# Lakeland Industry & Community Association

Cold Lake Monitoring Site
Ambient Air Monitoring
Data Report
For
March 2012

Prepared By:


April 27, 2012



JOB #: 2833-12-03-01-C

# Lakeland Industry & Community Association
# Cold Lake Monitoring Site
# Ambient Air Monitoring

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# Introduction

The following Ambient Air Monitoring report was prepared for:

Mr. Mike Bisaga
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Box 8237
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Bonnyville, Alberta
T9N 2J5

Monitoring Location:  Cold Lake
Data Period: March 2012

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Katherine Rapske

The monthly analytical report for passive monitoring:
Authorized by Levi Manchak

The 6-day analytical report for VOCs and PAHs:
Authorized by Petro Oh

# Calibration Procedure

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

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

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

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

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

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

### Continuous Ambient Monitoring – March 2012

| 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 | 0.12 | 2 | 2, 16 | VAR | VAR | VAR | 0.7 | 9 | 99.9 |
| TRS (PPB) | - | - | - | - | 0.00 | 0 | ALL | ALL | VAR | VAR | 0.0 | ALL | 99.9 |
| $NO_2$ (PPB) | 159 | - | 0 | - | 4.35 | 29 | 15 | 6 | 1.2 | 93(E) | 8.8 | 21 | 99.9 |
| NO (PPB) | - | - | - | - | 0.71 | 32 | 16 | 8 | 0.6 | 53(NE) | 3.0 | 16 | 99.9 |
| NOx (PPB) | - | - | - | - | 5.07 | 51 | 16 | 8 | 0.6 | 53(NE) | 10.4 | 21 | 99.9 |
| $O_3$ (PPB) | 82 | - | 0 | - | 34.15 | 56 | 31 | VAR | VAR | VAR | 43.1 | 11 | 99.9 |
| THC (PPM) | - | - | - | - | 2.08 | 3.1 | 2 | 8 | 2.4 | 227(SW) | 2.4 | 3, 9 | 99.9 |
| PM 2.5 ($UG/M^3$) | - | 30 | - | 0 | 4.92 | 25.5 | 31 | 21 | 0.8 | 100(E) | 10.0 | 3, 21 | 99.1 |
| TEMPERATURE (DEG C) | - | - | - | - | -1.67 | 12.9 | 30 | 15 | 10.6 | 264(W) | 6.1 | 30 | 100.0 |
| RELATIVE HUMIDITY (%) | - | - | - | - | 69.32 | 98 | 29 | VAR | VAR | VAR | 85.5 | 3 | 100.0 |
| VECTOR WS (KPH) | - | - | - | - | 6.68 | 21.0 | 15 | 21 | - | 129(SE) | 11.8 | 14 | 100.0 |
| VECTOR WD (DEGREES) | - | - | - | - | 204(SSW) | - | - | - | - | - | - | - | 100.0 |

VAR-VARIOUS NA: NOT AVAILABLE

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

### Passive Ambient Monitoring Network – March 2012

| LAKELAND INDUSTRY & COMMUNITY ASSOCIATION PASSIVE NETWORK | | | |
|---|---|---|---|
| NETWORK MAXIMUM | | | NETWORK AVERAGE |
| PARAMETER | STATION | READING (PPB) | READING (PPB) |
| $SO_2$ | #14 | 0.9 | 0.46 |
| $H_2S$ | #26 | 0.15 | 0.10 |
| $NO_2$ | #28 | 4.1 | 1.1 |
| $O_3$ | #4 | 42.3 | 35.7 |

# Volatile Organics Data Summary
## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION – COLD LAKE

### Xontech Model 910A – March 4 2012

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

### Xontech Model 910A – March 10 2012

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

### Xontech Model 910A – March 16 2012

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

### Xontech Model 910A – March 22 2012

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

### Xontech Model 910A – March 28 2012

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

# Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary
## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION – COLD LAKE

### PUF cartridge – March 4 2012

| Maximum reading (ng/m3) | Semi-Volatile Organic |
|---|---|
| <6.054 | 3-Methylcholanthrene |

### PUF cartridge – March 10 2012

| Maximum reading (ng/m3) | Semi-Volatile Organic |
|---|---|
| <6.054 | 3-Methylcholanthrene |

### PUF cartridge – March 16 2012

| Maximum reading (ng/m3) | Semi-Volatile Organic |
|---|---|
| <6.054 | 3-Methylcholanthrene |

### PUF cartridge – March 22 2012

| Maximum reading (ng/m3) | Semi-Volatile Organic |
|---|---|
| <6.054 | 3-Methylcholanthrene |

### PUF cartridge – March 28 2012

| Maximum reading (ng/m3) | Semi-Volatile Organic |
|---|---|
| <6.054 | 3-Methylcholanthrene |

# General Monthly Summary - Cold Lake

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

**AQM STATION – LICA – COLD LAKE**

**A trailer audit was performed by Alberta Environment on March 15th.**

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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on March 19th. 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 inlet filter was changed before the monthly calibration was started on March 19th. Data was corrected using daily zero information.

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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on March 19th. Data was corrected using daily zero information.

# General Monthly Summary - Cold Lake

**AQM STATION – LICA – COLD LAKE**

**Total Hydrocarbon (PPM)**

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

No operational issues were observed during the month. The H2 gas cylinder was replaced following a daily zero/span check on March 8th. The inlet filter was changed before the monthly calibration was started on March 19th. The H2 gas cylinder was replaced again following a daily zero/span check on March 30th. Data was corrected using daily zero information.

**Nitrogen Dioxide (PPB)**

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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on March 19th. Data was corrected using daily zero information.

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

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

No operational issues were observed this month. A routine Teom audit was performed on March 23rd. Both the Teom filter and the FDMS filter were changed on March 23rd. 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. Seven hours of data were invalidated as the data were below –3 ug/m3.

# General Monthly Summary - Cold Lake

**AQM STATION – LICA – COLD LAKE**

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

- System make / model –RM Young, S/N: 46553

The wind system is reported as vector wind speed and vector wind direction.
No operational issues were observed during the month.

**Relative Humidity (PERCENT)**

- System make / model - Rotronic Hygroclip-S3

No operational issues were observed during the month.

**Ambient Temperature (DEGC)**

- System make / model - Rotronic Hygroclip-S3

No operational issues were observed during the month.

**Trailer Temperature (DEGC)**

- System make / model - R&R 61

No operational issues were observed during the month.

**Datalogger**

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

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

**Trailer**

The manifold and sample inlet were cleaned on March 23rd.

# General Monthly Summary - Cold Lake

**AQM STATION – LICA – COLD LAKE**

**Air Quality Index (AQI)**
The AQI data was adjusted to reflect regular monthly and daily calibrations, maintenance, and downtime. Nine hours of AQI value recorded in March 2012 was within the Fair range, and they were all due to ozone. Others were within the Good range. The highest hourly concentration of ozone was 56 ppb and an AQI value of 30 on March 31$^{st}$, in various hours. The highest hourly concentration of PM2.5 was 25.5 ug/m3 and an AQI value of 21 on March 31$^{st}$, hour of 21.

**Passive Network**
No issues were observed this month. The 10% duplicate sampling program was run this month.

**Volatile Organics (VOCs)**
The volatile organics were sampled from March 4$^{th}$ to March 28$^{th}$. The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the VOCs in this report were reported as ug/m3 in 3 significant figures.

**Polycyclic Aromatic Hydrocarbons (PAHs)**
The PAHs scheduled to be sampled on March 4$^{th}$ to March 28$^{th}$. The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the PAHs in this report were reported as ng/m3.

# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Air Quality Index

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

MARCH 2012

**AIR QUALITY INDEX (AQI)**

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 | 19 | 19 | 18 | 18 | - | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 16 | 17 | 17 | 18 | 18 | 17 | 17 | 17 | 17 | 17 | 16 | 16 | 19 |
| | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 2 | 14 | 14 | 12 | - | 11 | 10 | 7 | 6 | 10 | 12 | 16 | 16 | 17 | 17 | 17 | 18 | 18 | 18 | 18 | 18 | 18 | 17 | 16 | 16 | 18 |
| | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | PM2 | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 3 | 15 | 14 | - | 14 | 14 | 12 | 11 | 10 | 13 | 14 | 14 | 15 | 16 | 17 | 17 | 17 | 17 | 17 | 16 | 14 | 15 | 13 | 14 | 14 | 17 |
| | O3_ | O3_ | **NA** | PM2 | PM2 | O3_ | O3_ | PM2 | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 4 | 14 | - | 14 | 11 | 16 | 17 | 17 | 17 | 18 | 19 | 20 | 20 | 20 | 21 | 21 | 21 | 21 | 21 | 21 | 20 | 19 | 18 | 17 | 16 | 21 |
| | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 5 | - | 19 | 17 | 15 | 16 | 15 | 9 | 8 | 16 | 18 | 18 | 19 | 18 | 18 | 19 | 18 | 19 | 19 | 19 | 19 | 18 | 18 | 18 | - | 19 |
| | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ |
| 6 | 17 | 17 | 17 | 17 | 17 | 17 | 16 | 16 | 16 | 17 | 17 | 17 | 17 | 18 | 18 | 19 | 18 | 18 | 17 | 17 | 17 | 16 | - | 13 | 19 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ |
| 7 | 12 | 12 | 12 | 12 | 12 | 13 | 12 | 14 | 13 | 15 | 18 | 19 | 19 | 20 | 21 | 21 | 22 | 21 | 21 | 20 | 20 | - | 21 | 21 | 22 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ |
| 8 | 19 | 19 | 18 | 18 | 17 | - | 13 | 18 | 19 | 19 | 19 | 20 | 20 | 20 | 21 | 21 | 20 | 21 | 21 | 21 | - | 20 | 20 | 20 | 21 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ |
| 9 | 20 | 21 | 21 | 21 | 20 | 20 | 19 | 19 | 19 | 19 | 19 | 19 | 20 | 21 | 21 | 21 | 21 | 21 | 20 | - | 17 | 17 | 14 | 14 | 21 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ |
| 10 | 17 | 17 | 18 | 19 | 19 | 20 | 20 | 19 | 20 | 20 | 21 | 22 | 23 | 23 | 24 | 25 | 24 | 23 | - | 15 | 13 | 7 | 13 | 18 | 25 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 11 | 23 | 23 | 22 | 22 | 22 | 21 | 20 | 17 | 21 | 22 | 22 | 22 | 23 | 23 | 23 | 23 | 22 | - | 22 | 23 | 22 | 21 | 21 | 21 | 23 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 12 | 21 | 20 | 16 | 12 | 15 | 18 | 20 | 20 | 19 | 21 | 21 | 22 | 23 | 23 | 23 | 24 | - | 23 | 21 | 20 | 20 | 19 | 19 | 19 | 24 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 13 | 19 | 18 | 18 | 17 | 17 | 13 | - | 15 | 16 | 15 | 16 | 17 | 18 | 19 | 20 | - | 20 | 17 | 14 | 15 | 14 | 15 | 16 | 15 | 20 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 14 | 15 | 14 | 14 | 15 | 15 | 15 | 14 | 15 | 15 | 16 | 16 | 17 | 18 | 19 | - | 23 | 24 | 23 | 22 | 20 | 17 | 15 | 12 | 10 | 24 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 15 | 6 | 7 | 8 | 15 | 15 | 7 | 13 | - | - | - | - | - | - | - | 20 | 20 | 20 | 19 | 19 | 19 | 20 | 20 | 20 | 19 | 20 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 16 | 19 | 17 | 15 | 11 | 9 | 5 | 2 | 2 | 12 | 13 | 16 | 17 | - | 22 | 23 | 24 | 25 | 23 | 22 | 20 | 18 | 16 | 15 | 14 | 25 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | O3_ | PM2 | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 17 | 12 | 14 | 15 | 15 | 11 | 7 | 6 | 5 | 12 | 18 | 20 | - | 23 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 23 | 22 | 21 | - | 23 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | PM2 | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ |
| 18 | 21 | 21 | 21 | - | 20 | 19 | 19 | 18 | 18 | 17 | - | 16 | 16 | 17 | 18 | 18 | 17 | 16 | 16 | 17 | 17 | 15 | 14 | 14 | 21 |
| | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 19 | 14 | 14 | 14 | 14 | 15 | 14 | 15 | 16 | - | - | - | - | - | - | - | - | - | - | - | 15 | 16 | 15 | 15 | 15 | 16 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 20 | 15 | 15 | 15 | 15 | 15 | 15 | 13 | 14 | - | 17 | 18 | 19 | 20 | 20 | 21 | 21 | 20 | 19 | 18 | 17 | 15 | 12 | 13 | 13 | 21 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 21 | 10 | 12 | 14 | 13 | 12 | 13 | 14 | - | 12 | 12 | 14 | 18 | 20 | 22 | 23 | 23 | 23 | 23 | 21 | 15 | 11 | 7 | 14 | 9 | 23 |
| | O3_ | O3_ | O3_ | PM2 | O3_ | PM2 | PM2 | **NA** | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | PM2 | PM2 | O3_ |
| 22 | 12 | 16 | 14 | 12 | 12 | 14 | - | 15 | 16 | 17 | 18 | 18 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | - | 19 | 19 | 19 | 19 |
| | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ |
| 23 | 19 | 18 | 18 | 18 | - | - | 18 | 18 | 19 | 19 | 19 | 19 | 19 | - | - | 19 | 19 | 18 | 18 | 17 | 18 | 18 | 18 | 17 | 19 |
| | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 24 | 16 | 14 | 15 | 13 | - | 13 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 19 | 19 | 20 | 21 | 21 | 21 | 15 | 10 | 8 | 10 | 10 | 21 |
| | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | PM2 | O3_ |
| 25 | 6 | 15 | 18 | - | 14 | 13 | 12 | 17 | 19 | 19 | 19 | 20 | 21 | 21 | 21 | 21 | 22 | 22 | 21 | 20 | 19 | 19 | 17 | 16 | 22 |
| | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 26 | 15 | 16 | - | 13 | 11 | 8 | 7 | 11 | 13 | 14 | 15 | 17 | 19 | 20 | 21 | 23 | 25 | 22 | 13 | 8 | 12 | 8 | 21 | 21 | 25 |
| | O3_ | O3_ | **NA** | O3_ | PM2 | O3_ | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | PM2 | O3_ | O3_ | O3_ |
| 27 | 22 | - | 23 | 21 | 19 | 17 | 18 | 20 | 22 | 23 | 23 | 24 | 24 | 25 | 25 | 27 | 27 | 25 | 23 | 23 | 19 | 19 | 17 | 17 | 27 |
| | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 28 | - | 16 | 15 | 20 | 19 | 19 | 19 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 23 | 23 | 23 | 22 | 21 | 21 | 21 | 20 | 19 | - | 24 |
| | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ |
| 29 | 17 | 16 | 15 | 14 | 12 | 12 | 11 | 9 | 10 | 9 | 9 | 10 | 12 | 17 | 20 | 20 | 18 | 16 | 18 | 16 | 17 | 18 | - | 17 | 20 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ |
| 30 | 17 | 18 | 16 | 14 | 15 | 13 | 11 | 12 | 14 | 15 | 16 | - | 20 | 20 | 21 | 21 | 24 | 24 | 25 | 24 | 27 | - | 23 | 20 | 27 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ |
| 31 | 21 | 21 | 22 | 20 | 20 | 19 | 18 | 19 | 21 | 23 | 22 | 24 | 27 | 29 | 29 | 30 | 30 | 30 | 25 | 19 | - | **21** | 12 | 10 | 30 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | **PM2** | PM2 | O3_ | O3_ |
| PEAK | 23 | 23 | 23 | 22 | 22 | 21 | 20 | 20 | 22 | 23 | 23 | 24 | 27 | 29 | 29 | 30 | 30 | 30 | 25 | 24 | 27 | 22 | 23 | 21 | |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | |

| STATUS FLAG CODES | NA - NOT APPLICABLE |
|---|---|

VAR - VARIOUS

| AQI CLASS | OZONE ($O_3$) | | | | | PARTICULATE MATTER 2.5 (PM2) | | | | | NITROGEN DIOXIDE ($NO_2$) | | | | | SULPHUR DIOXIDE ($SO_2$) | | | | | FREQUENCY | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HRS | % | MAX AQI | HR | DAY | HRS | % | MAX AQI | HR | DAY | HRS | % | MAX AQI | HR | DAY | HRS | % | MAX AQI | HR | DAY | HRS | % |
| VERY POOR (101-255) | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% |
| POOR (51-100) | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% |
| FAIR (26-50) | 9 | 1.2% | 30 | VAR | 31 | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 9 | 1.2% |
| GOOD (1-25) | 645 | 86.7% | - | - | - | 32 | 4.3% | 21 | 21 | 31 | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 677 | 91.0% |
| OVERALL | 654 | 87.9% | - | - | - | 32 | 4.3% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 686 | 92.2% |
| UNAVAILABLE | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 58 | 7.8% |



JOB #: 2833-12-03-01-C

# Sulphur Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

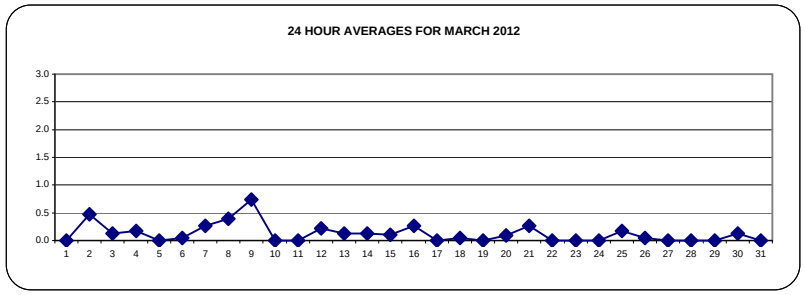
**SULPHUR DIOXIDE ($SO_2$)** hourly averages in ppb

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 | **IZS** | 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 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | **2** | 0.5 | 24 |
| 3 | 1 | 1 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 4 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0.2 | 24 |
| 5 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 0.0 | 24 |
| 7 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 1 | 0.3 | 24 |
| 8 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | **IZS** | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 9 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 0 | 0 | 1 | **0.7** | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0.2 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | 0 | 0 | 0 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** | 0.3 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **M** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 23 |
| 24 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 26 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 27 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0.0 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 1 | 0.1 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0.0 | 24 |
| HOURLY MAX | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| HOURLY AVG | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | | |

**STATUS FLAG CODES**

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



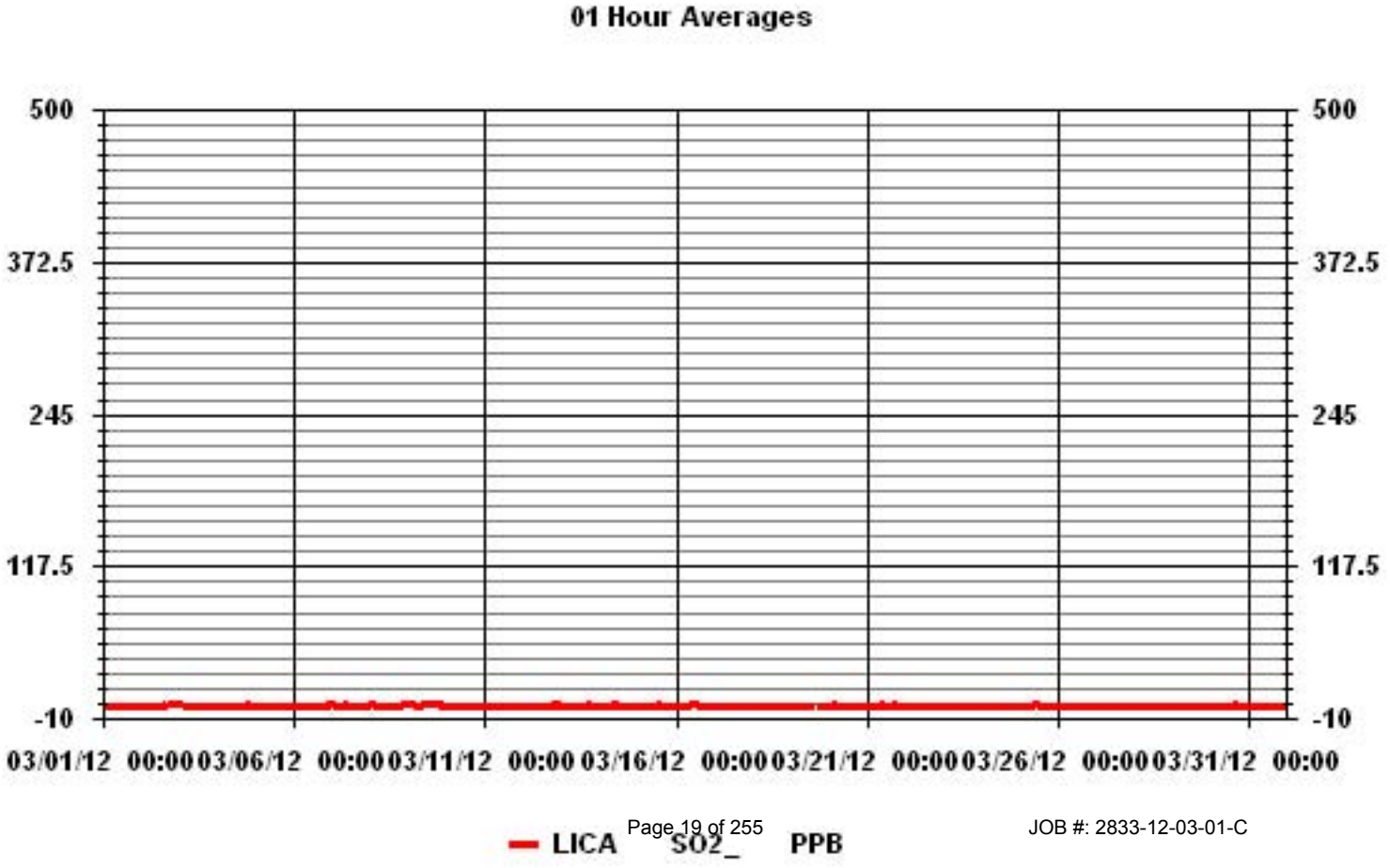

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 84 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 2 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 2, 16 |
| MAXIMUM 24-HR AVERAGE: | 0.7 | PPB | | | ON DAY(S) | 9 |
| IZS CALIBRATION TIME: | 33 | HRS | OPERATIONAL TIME: | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 8 | HRS | AMD OPERATION UPTIME: | | 99.9 | % |
| STANDARD DEVIATION: | 0.34 | | MONTHLY AVERAGE: | | 0.12 | PPB |



JOB #: 2833-12-03-01-C






JOB #: 2833-12-03-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

**SULPHUR DIOXIDE MAX** instantaneous maximum in ppb

MST

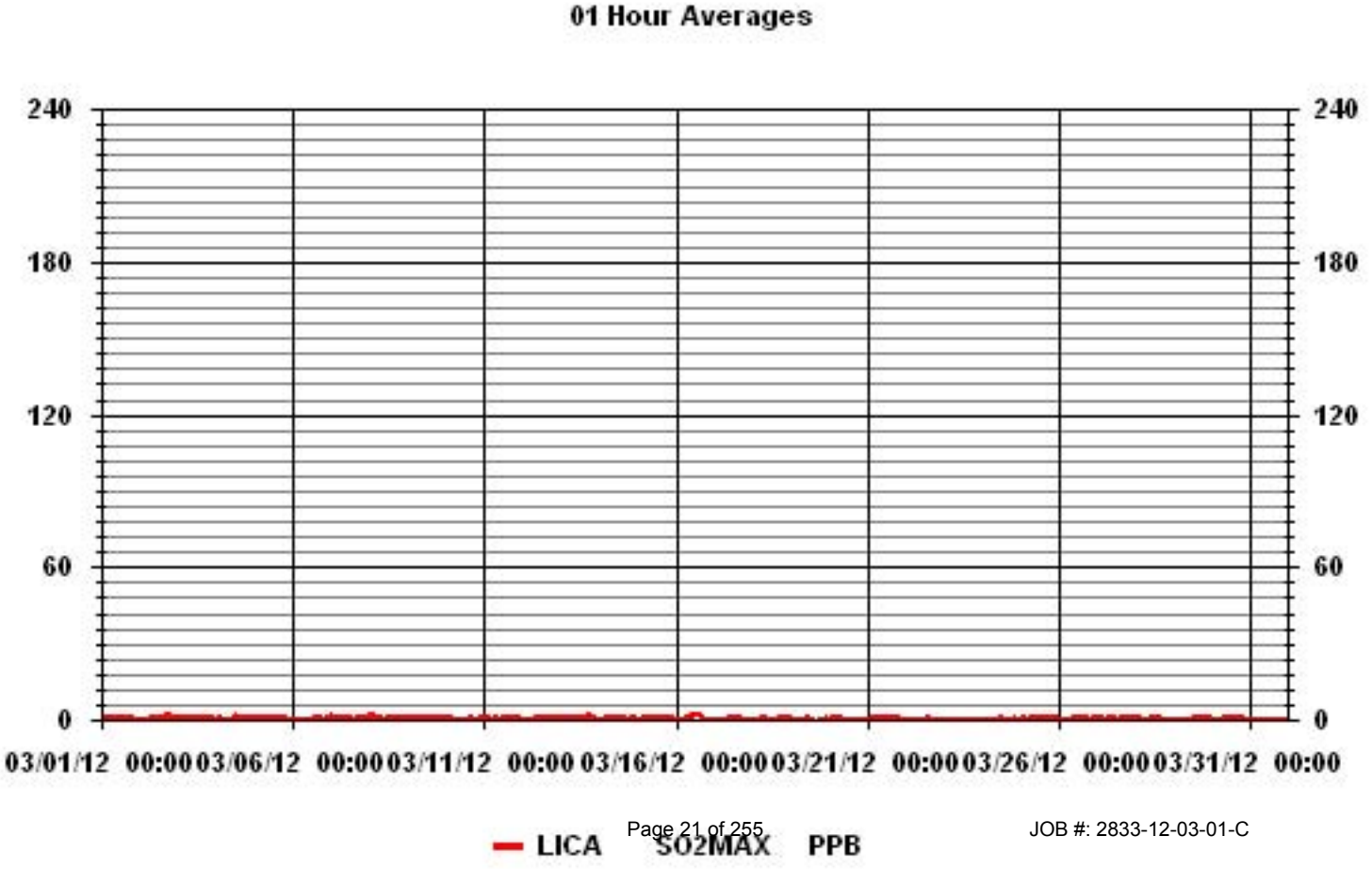
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 1 | 1 | 1 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0.8 | 24 |
| 2 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 0.9 | 24 |
| 3 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1.0 | 24 |
| 4 | 0 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 0.6 | 24 |
| 5 | **IZS** | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | **IZS** | 1 | 0.6 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | **IZS** | 1 | 1 | 0.3 | 24 |
| 7 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 2 | 1.0 | 24 |
| 8 | 2 | 2 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 2 | 0.9 | 24 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 10 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **IZS** | 0 | 0 | 1 | 0 | 0 | 1 | 0.3 | 24 |
| 11 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0.5 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.6 | 24 |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | **IZS** | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 0.9 | 24 |
| 14 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0.7 | 24 |
| 15 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | **C** | **C** | **C** | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0.6 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.6 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **IZS** | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 1 | 0 | 1 | 0.1 | 24 |
| 20 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 21 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.6 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **M** | **M** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 22 |
| 24 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.1 | 24 |
| 25 | 0 | 0 | 1 | **IZS** | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0.8 | 24 |
| 26 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0.5 | 24 |
| 27 | 1 | **IZS** | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0.7 | 24 |
| 28 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0.2 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | **IZS** | 0 | 1 | 0.3 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | **IZS** | 0 | 0 | 1 | 0.5 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0.0 | 24 |
| HOURLY MAX | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | | |
| HOURLY AVG | 0.3 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.4 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.7 | 0.7 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 | 0.3 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 347 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 2 | PPB | @ HOUR(S) | VAR | ON DAY(S) | VAR |
| IZS CALIBRATION TIME: | 33 | HRS | OPERATIONAL TIME: | | 742 | HRS |
| MONTHLY CALIBRATION TIME: | 8 | HRS | | | | |
| STANDARD DEVIATION: | 0.54 | | | | | |






JOB #: 2833-12-03-01-C

LICA
SO2_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 20 | 2.42 | 6.55 | 11.53 | 2.99 | 9.25 | 9.25 | 12.53 | 1.56 | 1.70 | 2.70 | 15.81 | 11.82 | 5.84 | 2.42 | 1.28 | 2.27 | 100.00 |
| < | 60 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 170 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 2.42 | 6.55 | 11.53 | 2.99 | 9.25 | 9.25 | 12.53 | 1.56 | 1.70 | 2.70 | 15.81 | 11.82 | 5.84 | 2.42 | 1.28 | 2.27 | |

Calm : .00 %

Total # Operational Hours : 702

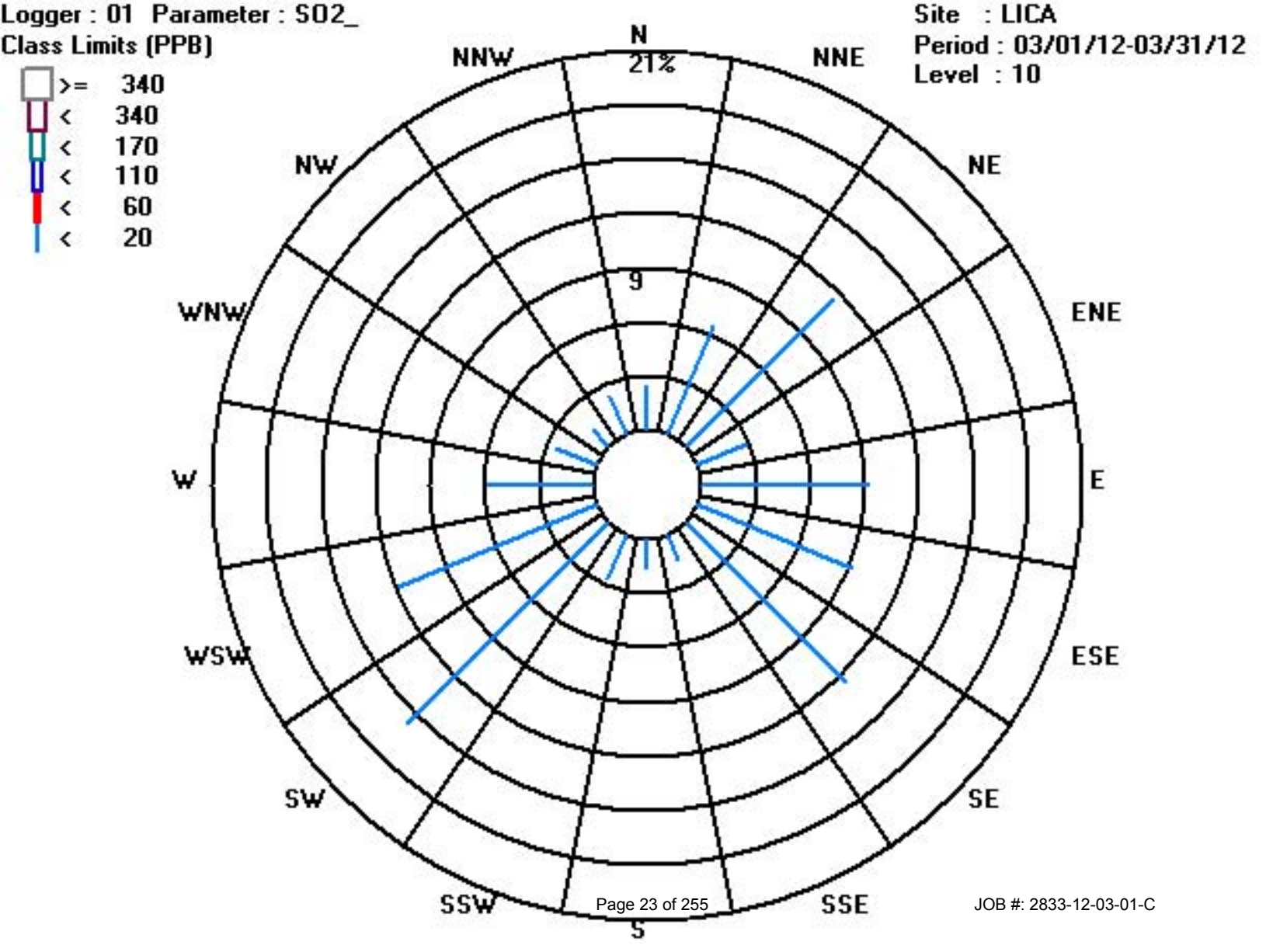
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 20 | 17 | 46 | 81 | 21 | 65 | 65 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 9 | 16 | 702 |
| < | 60 | | | | | | | | | | | | | | | | | |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 170 | | | | | | | | | | | | | | | | | |
| < | 340 | | | | | | | | | | | | | | | | | |
| >= | 340 | | | | | | | | | | | | | | | | | |
| | Totals | 17 | 46 | 81 | 21 | 65 | 65 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 9 | 16 | |

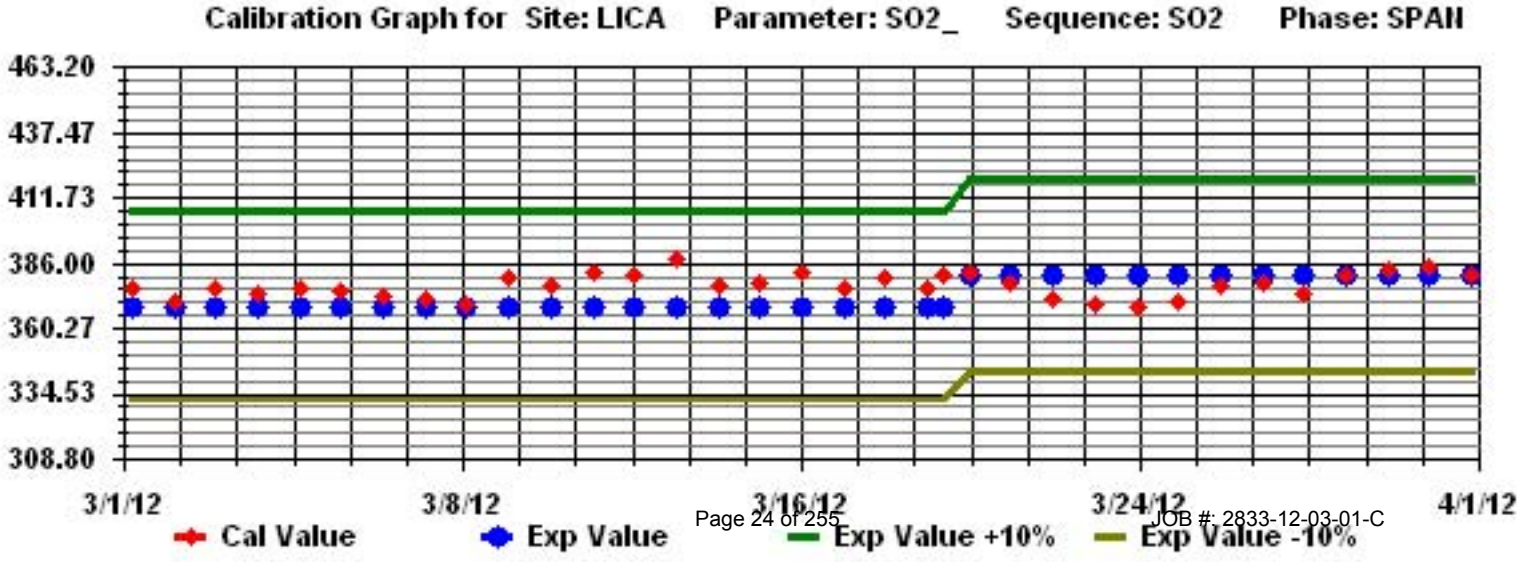
Calm : .00 %

Total # Operational Hours : 702






JOB #: 2833-12-03-01-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
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Reduced Sulphur

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

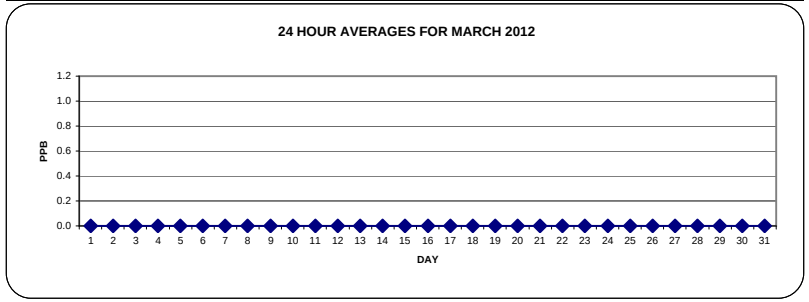
**TOTAL REDUCED SULPHUR (TRS)** hourly averages in ppb

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 | **IZS** | 0 | 0 | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 3 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | 0 | 0 | 0 | **IZS** | 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 | **IZS** | 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 | **IZS** | 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 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **M** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 23 |
| 24 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 26 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 27 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0.0 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0.0 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 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**

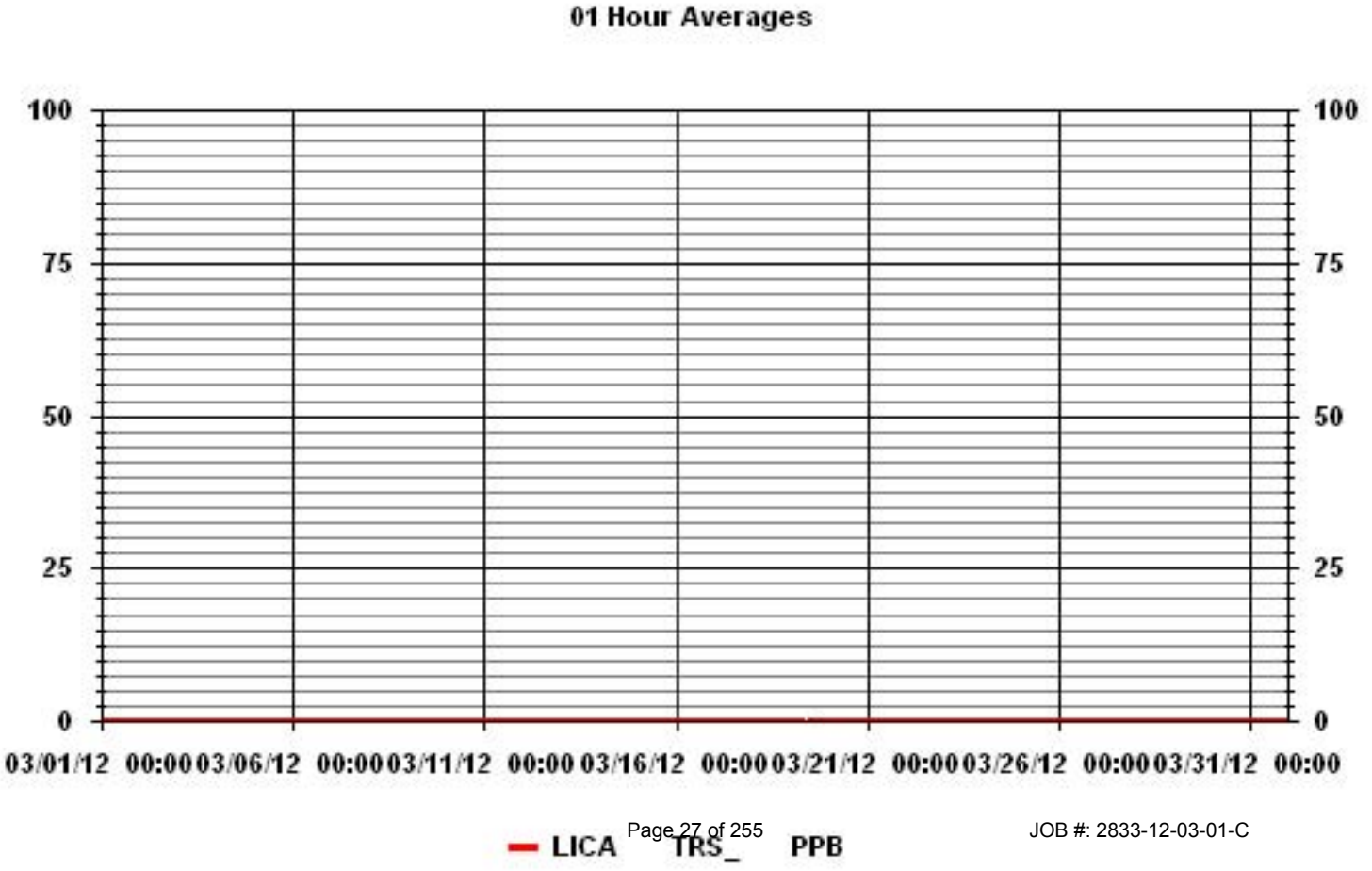
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MISSING DATA |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |




**MONTHLY SUMMARY**

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

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 9 | HRS | AMD OPERATION UPTIME: | 99.9 | % |
| STANDARD DEVIATION: | 0.00 | | MONTHLY AVERAGE: | 0.00 | PPB |






JOB #: 2833-12-03-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

**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 | IZS | 0 | 0 | C | C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 3 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | C | C | C | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C | C | C | C | C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | M | M | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 22 |
| 24 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 26 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 27 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0.0 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0.0 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0.0 | 24 |
| HOURLY MAX | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 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**

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

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS: 3

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

VAR - VARIOUS

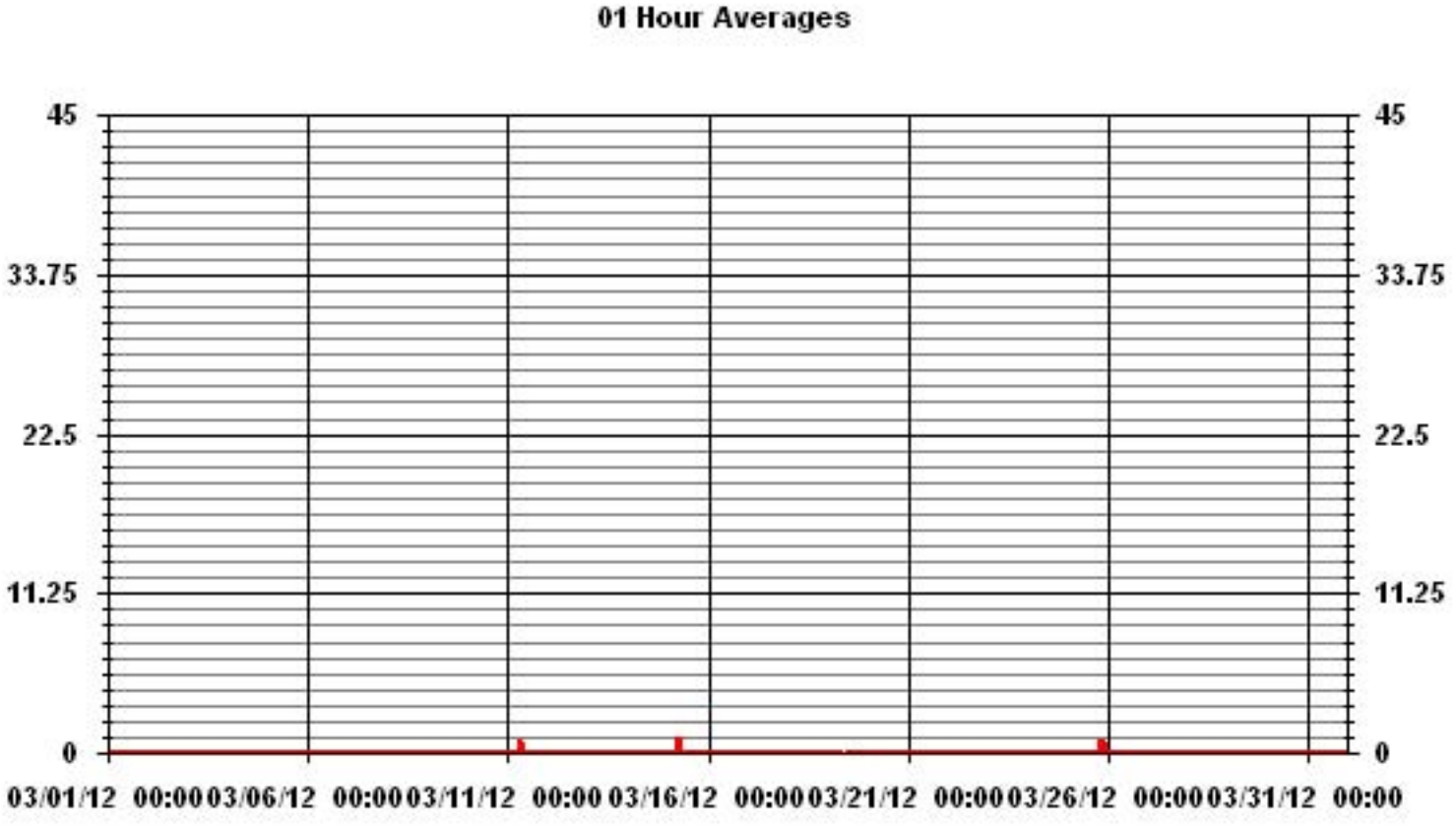
IZS CALIBRATION TIME: 32 HRS OPERATIONAL TIME: 742 HRS

MONTHLY CALIBRATION TIME: 10 HRS

STANDARD DEVIATION: 0.07



JOB #: 2833-12-03-01-C






JOB #: 2833-12-03-01-C

LICA
TRS_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3 | 2.13 | 6.41 | 11.53 | 2.99 | 9.25 | 9.25 | 12.53 | 1.56 | 1.70 | 2.70 | 15.81 | 11.82 | 5.84 | 2.42 | 1.56 | 2.42 | 100.00 |
| < | 10 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 50 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 50 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 2.13 | 6.41 | 11.53 | 2.99 | 9.25 | 9.25 | 12.53 | 1.56 | 1.70 | 2.70 | 15.81 | 11.82 | 5.84 | 2.42 | 1.56 | 2.42 | |

Calm : .00 %

Total # Operational Hours : 702

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3 | 15 | 45 | 81 | 21 | 65 | 65 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 11 | 17 | 702 |
| < | 10 | | | | | | | | | | | | | | | | | |
| < | 50 | | | | | | | | | | | | | | | | | |
| >= | 50 | | | | | | | | | | | | | | | | | |
| | Totals | 15 | 45 | 81 | 21 | 65 | 65 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 11 | 17 | |

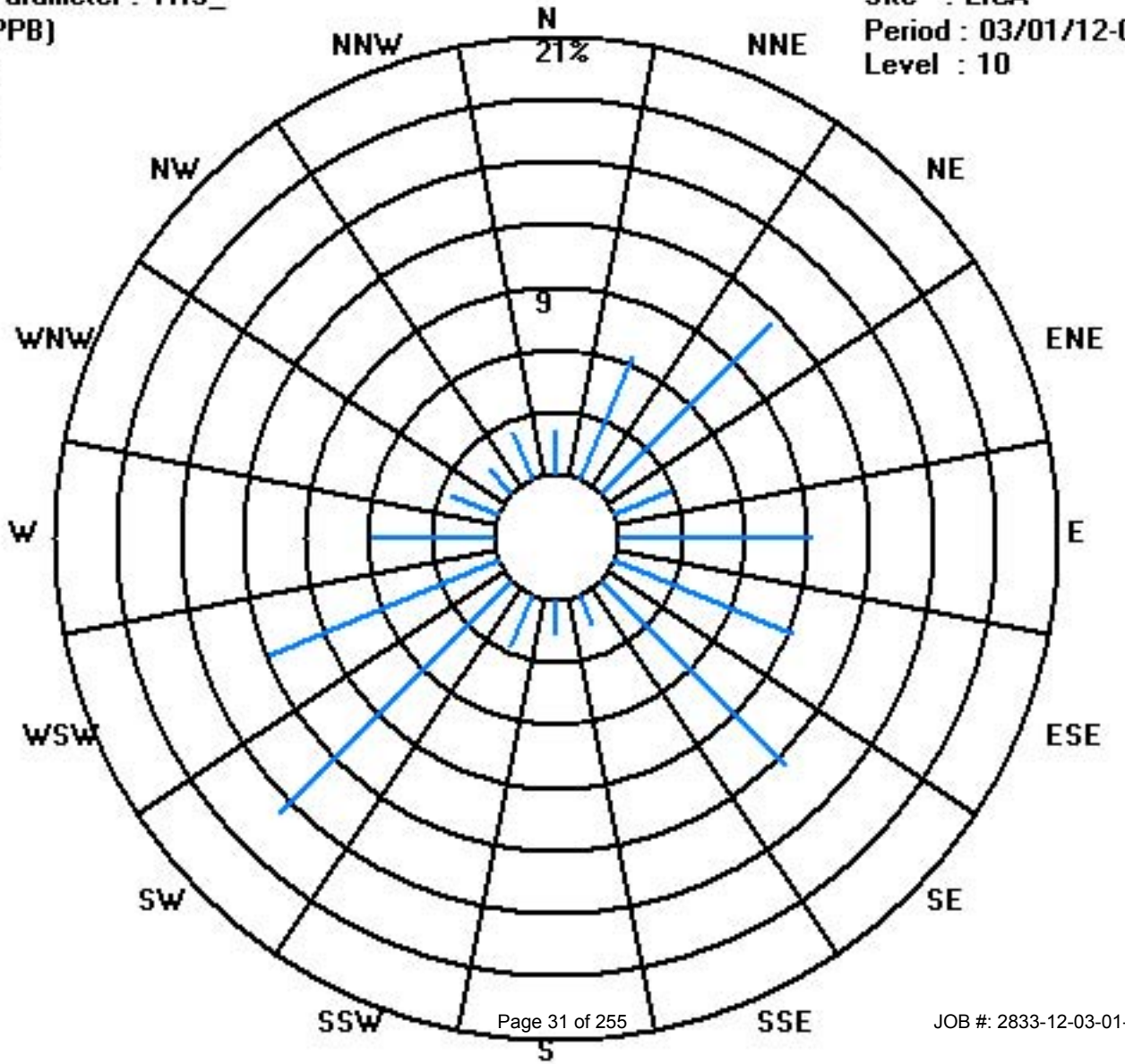
Calm : .00 %

Total # Operational Hours : 702

Logger : 01 Parameter : TRS_
Class Limits (PPB)

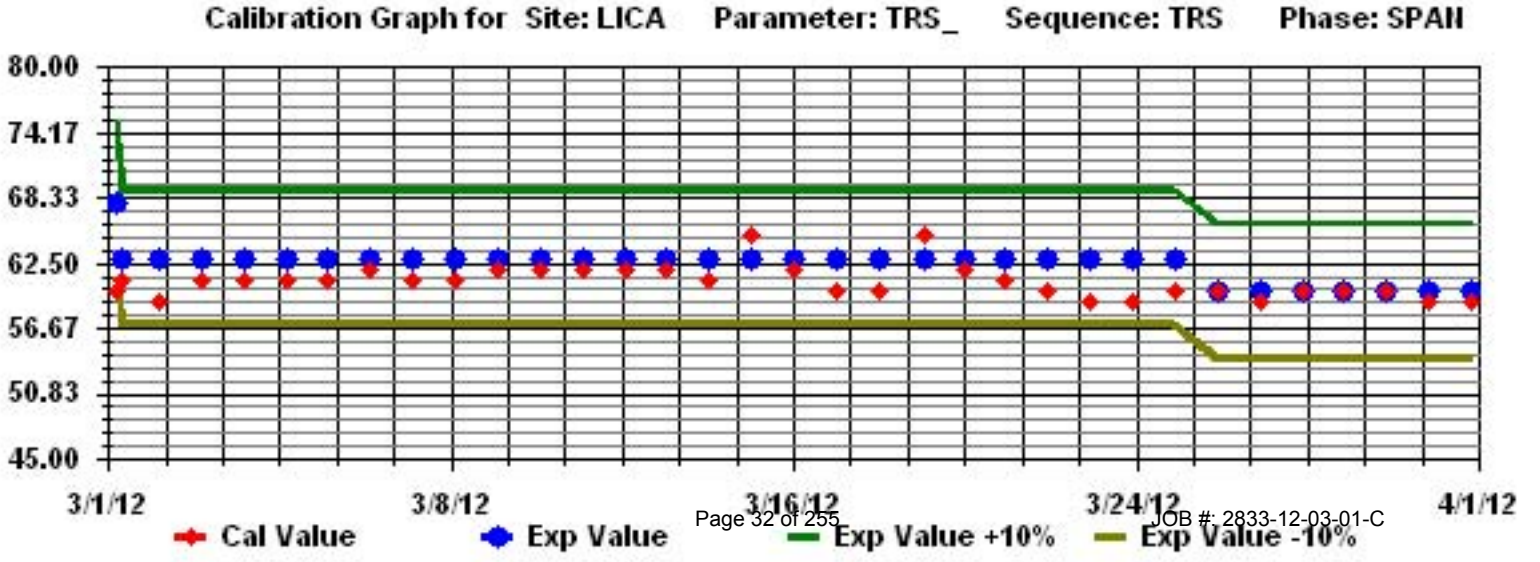
>= 50
< 50
< 10
< 3

Site : LICA
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-01-C


Calibration Graph for Site: LICA Parameter: TRS_ Sequence: TRS Phase: SPAN
80.00
74.17
68.33
62.50
56.67
50.83
45.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Hydrocarbons

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

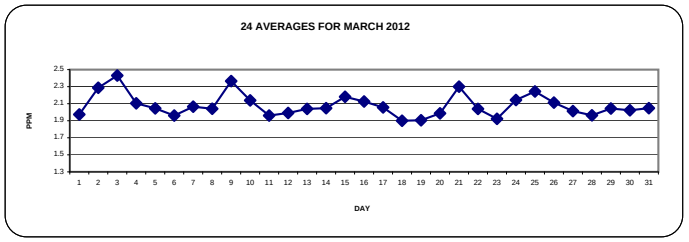
**TOTAL HYDROCARBONS (THC)** hourly averages in ppm

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 | 1.9 | 1.9 | 1.9 | 1.9 | **IZS** | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 2.0 | 24 |
| 2 | 2.1 | 2.3 | 2.3 | **IZS** | 2.1 | 2.1 | 2.2 | 2.2 | **3.1** | 3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.3 | 2.4 | 2.4 | 2.5 | **3.1** | 2.3 | 24 |
| 3 | 2.7 | 2.9 | **IZS** | 2.8 | 2.6 | 2.7 | 2.9 | 3 | 2.5 | 2.2 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.4 | 2.7 | 2.6 | 2.3 | 2.2 | 3.0 | **2.4** | 24 |
| 4 | 2.2 | **IZS** | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 1.9 | 1.9 | 2 | 2 | 2 | 2.4 | 2.1 | 24 |
| 5 | **IZS** | 2.1 | 2.2 | 2.3 | 2.4 | 2.4 | 2.5 | 2.5 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **IZS** | 2.5 | 2.0 | 24 |
| 6 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 2.1 | 2.2 | 2.2 | 2.1 | **IZS** | 2 | 2.2 | 2.0 | 24 |
| 7 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.3 | 2.1 | 2.1 | 2.1 | 2 | 2 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 1.9 | **IZS** | 2 | 1.9 | 2.4 | 2.1 | 24 |
| 8 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **C** | 2.4 | 2 | 2.1 | **IZS** | 2.1 | 2.2 | 2.3 | 2.4 | 2.0 | 24 |
| 9 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.4 | 2.4 | **IZS** | 2.2 | 2.3 | 2.3 | 2.4 | 2.5 | **2.4** | 24 |
| 10 | 2.5 | 2.4 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2.2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.9 | 2 | **IZS** | 2.1 | 2.2 | 2.5 | 2.3 | 2.1 | 2.5 | 2.1 | 24 |
| 11 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 1.9 | 1.9 | 2.0 | 2.0 | 24 |
| 12 | 1.9 | 1.9 | 1.9 | 1.9 | 2.1 | 2.1 | 2 | 1.9 | 2 | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **IZS** | 2 | 2 | 2 | 2.1 | 2.2 | 2.2 | 2.1 | 2.2 | 2.0 | 24 |
| 13 | 2.1 | 2.1 | 2 | 2 | 2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2 | 1.9 | 1.9 | **IZS** | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.0 | 24 |
| 14 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 2.1 | 2.3 | 2.4 | 2.4 | 2.0 | 24 |
| 15 | 2.4 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.5 | 2.4 | 2.3 | **C** | **C** | 2.3 | 2.3 | **IZS** | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 2.5 | 2.2 | 24 |
| 16 | 1.9 | 1.9 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.5 | 2.7 | 2.2 | 2.1 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2.2 | 2.2 | 2.3 | 2.7 | 2.1 | 24 |
| 17 | 2.3 | 2.4 | 2.4 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.4 | 2.2 | 2.1 | **IZS** | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.9 | 1.8 | 2.4 | 2.1 | 24 |
| 18 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | **IZS** | 1.9 | 2 | 2 | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2.0 | 1.9 | 24 |
| 19 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **IZS** | 1.9 | **C** | **C** | **C** | **C** | **C** | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 1.9 | 24 |
| 20 | 1.9 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.2 | **IZS** | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 1.9 | 1.9 | 2 | 2 | 2 | 2.3 | 2.6 | 2.6 | 2.0 | 24 |
| 21 | 2.6 | 2.4 | 2.7 | 2.5 | 2.4 | 2.3 | 2.4 | **IZS** | 2.8 | 2.6 | 2.3 | 2.2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.2 | 2.1 | 2.2 | 2.4 | 2.7 | 2.8 | 2.3 | 24 |
| 22 | 2.5 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.5 | 2.0 | 24 |
| 23 | 2 | 2 | 2 | 2 | 2 | **IZS** | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **M** | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 1.9 | 23 |
| 24 | 1.9 | 2.1 | 2.1 | 2.1 | **IZS** | 2.4 | 2.3 | 2.4 | 2.5 | 2.3 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2 | 2 | 1.9 | 2 | 2 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.1 | 24 |
| 25 | 2.3 | 2.5 | 2.5 | **IZS** | 2.5 | 2.6 | 2.5 | 2.5 | 2.6 | 2.5 | 2.5 | 2.4 | 2.2 | 2.2 | 2.2 | 2.1 | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2.6 | 2.2 | 24 |
| 26 | 2 | 2 | **IZS** | 2.1 | 2.1 | 2 | 2.1 | 2 | 2.1 | 2.3 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.4 | 2.5 | 2.4 | 2.3 | 2 | 2 | 2.5 | 2.1 | 24 |
| 27 | 2 | **IZS** | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 1.9 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 2.1 | 2.3 | 2.4 | 2.4 | 2.4 | 2.0 | 24 |
| 28 | **IZS** | 2.3 | 2.2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **IZS** | 2.3 | 2.0 | 24 |
| 29 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.2 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2 | 2.2 | 2.0 | 24 |
| 30 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.2 | **C** | 2.3 | 2.2 | 2 | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | **IZS** | 2 | 2.4 | 2.4 | 2.0 | 24 |
| 31 | 2 | 2 | 2.1 | 2 | 2.1 | 2.1 | 2.3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2.1 | **IZS** | 2.3 | 2.3 | 2.2 | 2.3 | 2.0 | 24 |
| HOURLY MAX | 2.7 | 2.9 | 2.7 | 2.8 | 2.6 | 2.7 | 2.9 | 3.0 | 3.1 | 3.0 | 2.5 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.4 | 2.4 | 2.5 | 2.7 | 2.6 | 2.4 | 2.7 | | | |
| HOURLY AVG | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | | | |

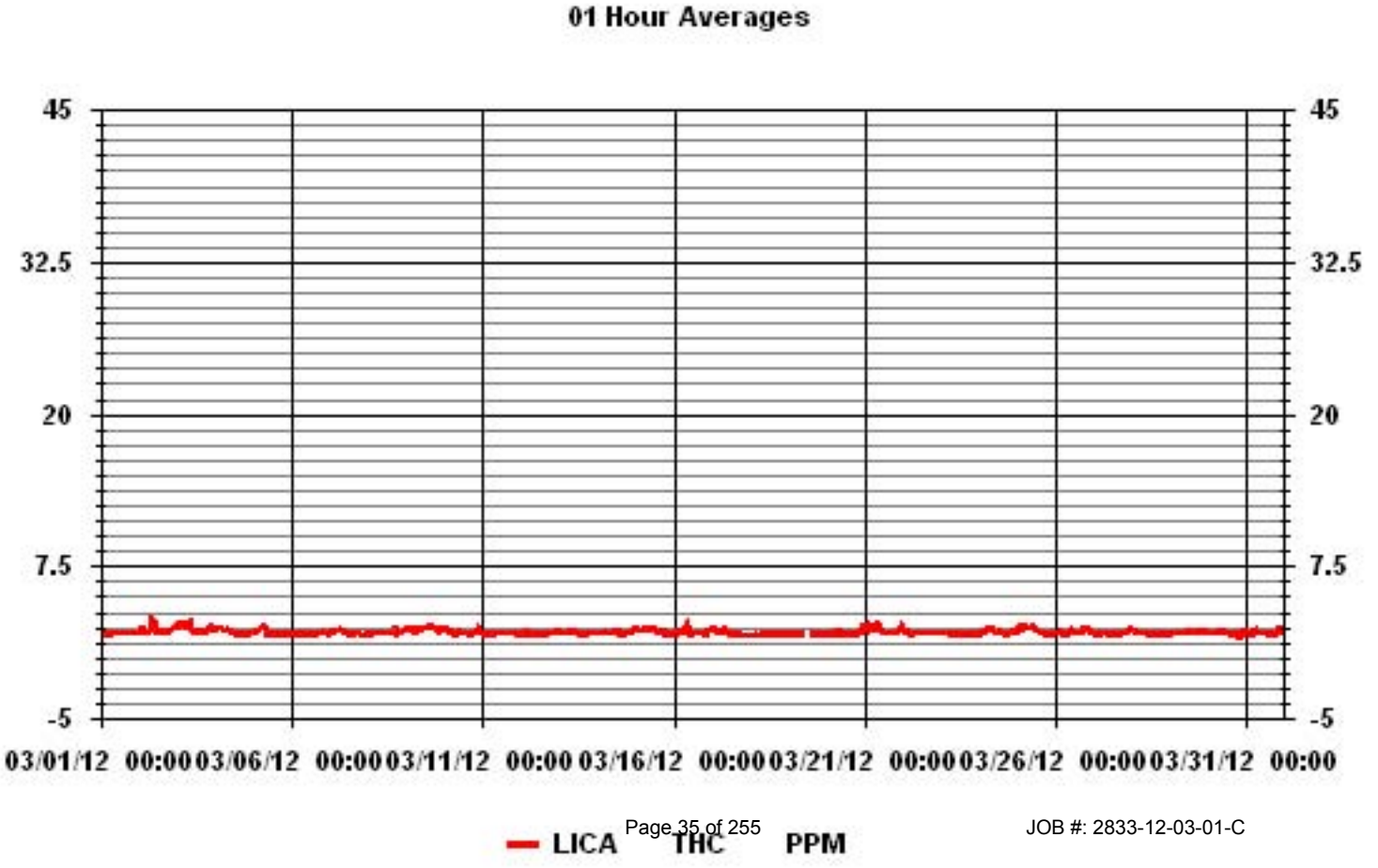
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |
| BB | - BELOW BACKGROUND OF 1.5 PPM | | |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 701 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 3.1 | PPM | @ HOUR(S) | 8 | ON DAY(S) | 2 |
| MAXIMUM 24-HR AVERAGE: | 2.4 | PPM | | | ON DAY(S) | 3, 9 |
| IZS CALIBRATION TIME: | 33 | HRS | OPERATIONAL TIME: | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 9 | HRS | AMD OPERATION UPTIME: | | 99.9 | % |
| STANDARD DEVIATION: | 0.20 | | MONTHLY AVERAGE: | | 2.08 | PPM |






JOB #: 2833-12-03-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

**TOTAL HYDROCARBONS MAX** instantaneous maximum in ppm

MST

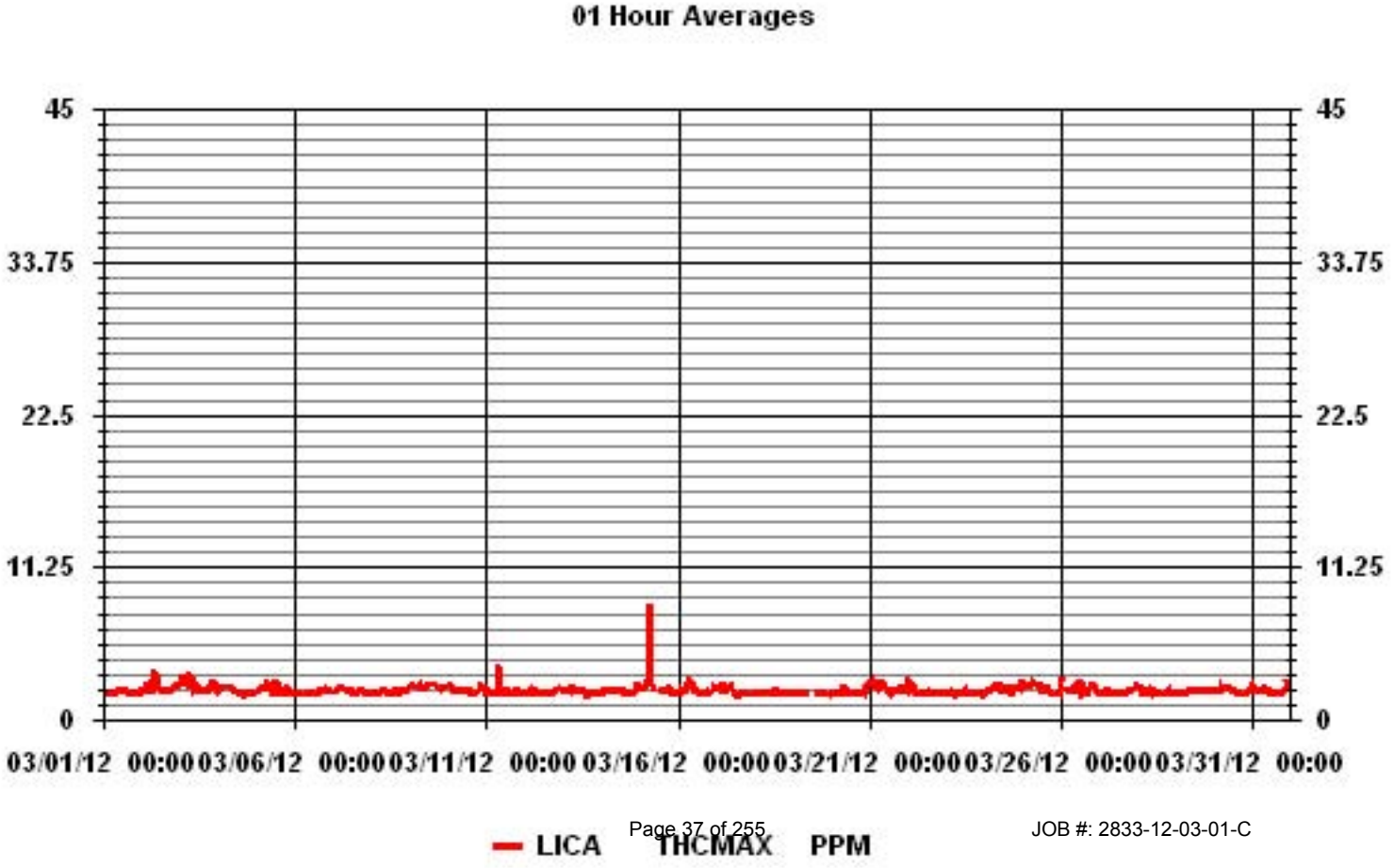
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2 | 2.1 | 2 | 2.2 | 2.1 | 24 |
| 2 | 2.3 | 2.4 | 2.7 | **IZS** | 2.2 | 2.2 | 2.2 | 2.9 | 3.5 | 3.4 | 2.6 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.6 | 2.5 | 2.6 | 3.5 | 2.5 | 24 |
| 3 | 2.8 | 3.2 | **IZS** | 3 | 2.8 | 2.7 | 3.2 | 3.1 | 3 | 2.3 | 2.5 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.5 | 2.8 | 2.8 | 2.5 | 2.2 | 3.2 | 2.6 | 24 |
| 4 | 2.4 | **IZS** | 2.4 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 | 2.2 | 2 | 2 | 2 | 2 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.5 | 2.2 | 24 |
| 5 | **IZS** | 2.2 | 2.3 | 2.3 | 2.5 | 2.4 | 2.8 | 2.7 | 2.3 | 1.9 | 1.9 | 2 | 2.9 | 1.9 | 1.9 | 2 | 2 | 2.3 | 1.9 | 2.5 | 1.9 | 1.9 | 1.9 | **IZS** | 2.9 | 2.2 | 24 |
| 6 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.2 | **IZS** | 2.1 | 2.3 | 2.0 | 24 |
| 7 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | **IZS** | 2 | 2 | 2.4 | 2.2 | 24 |
| 8 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.2 | 2.1 | 2.2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2.3 | **C** | **C** | 2.1 | 2.2 | **IZS** | 2.2 | 2.2 | 2.4 | 2.4 | 2.1 | 24 |
| 9 | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.6 | 2.3 | 2.3 | 2.4 | 2.6 | 2.5 | 2.6 | 2.6 | 2.7 | 2.6 | 2.6 | 2.6 | 2.5 | **IZS** | 2.3 | 2.4 | 2.4 | 2.5 | 2.7 | 2.5 | 24 |
| 10 | 2.6 | 2.5 | 2.5 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | **IZS** | 2.3 | 2.6 | 2.6 | 2.5 | 2.4 | 2.6 | 2.3 | 24 |
| 11 | 2 | 2 | 2 | 1.9 | 1.9 | 2 | 2 | 4 | 2 | 2 | 2 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2 | **IZS** | 2 | 2.4 | 2 | 2 | 2 | 2 | 4 | 2.1 | 24 |
| 12 | 2 | 2 | 2 | 2 | 2.4 | 2.3 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2.2 | 2.1 | 2.2 | 2.3 | 2.3 | 2.1 | 2.4 | 2.1 | 24 |
| 13 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 1.9 | **IZS** | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2.3 | 2.1 | 24 |
| 14 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | **IZS** | 2 | 2 | 2 | 2.1 | 2 | 2.1 | 2.2 | 2.5 | 2.5 | 2.5 | 2.1 | 24 |
| 15 | 2.5 | 2.4 | 2.5 | 2.4 | 2.5 | 2.9 | **8.6** | 2.6 | 2.4 | **C** | **C** | **C** | 2.4 | **IZS** | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | **8.6** | 2.6 | 24 |
| 16 | 2 | 2 | 2.3 | 2.2 | 2.2 | 2.5 | 2.7 | 3.1 | 2.8 | 2.5 | 2.2 | 2.2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.1 | 2.2 | 2.6 | 2.5 | 3.1 | 2.3 | 24 |
| 17 | 2.4 | 2.5 | 2.6 | 2.2 | 2.2 | 2.2 | 2.5 | 2.5 | 2.6 | 2.3 | 2.2 | **IZS** | 1.9 | 2 | 1.9 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 1.9 | 1.9 | 2.6 | 2.2 | 24 |
| 18 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | **IZS** | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.0 | 24 |
| 19 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 1.9 | **C** | **C** | **C** | **C** | **C** | 2 | 2 | 2 | 2 | 1.9 | 1.9 | 2 | 1.9 | 2.1 | 2.0 | 24 |
| 20 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.4 | **IZS** | 2.2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2.1 | 2.3 | 2.1 | 2.4 | 2.7 | 2.7 | 2.1 | 24 |
| 21 | 2.8 | 2.5 | 2.9 | 2.7 | 2.6 | 2.4 | 2.6 | **IZS** | 2.9 | 2.7 | 2.5 | 2.3 | 2.2 | 2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.4 | 2.3 | 2.6 | 2.9 | 2.9 | 2.4 | 24 |
| 22 | 2.9 | 2.2 | 2.3 | 2.7 | 2.2 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2.2 | 2 | 2.1 | 2 | 2 | 2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2.9 | 2.1 | 24 |
| 23 | 2 | 2 | 2 | 2.2 | 2.1 | **IZS** | 1.9 | 2 | 2 | 1.9 | 1.9 | 1.9 | 2.2 | 2 | **M** | **M** | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 1.9 | 2.2 | 2.0 | 22 |
| 24 | 2 | 2.2 | 2.2 | 2.2 | **IZS** | 2.5 | 2.4 | 2.6 | 2.5 | 2.8 | 2.1 | 2.1 | 2.1 | 2.2 | 2.6 | 2.1 | 2 | 2 | 2.4 | 2.5 | 2.3 | 2.3 | 2.5 | 3 | 3 | 2.3 | 24 |
| 25 | 2.5 | 2.7 | 2.6 | **IZS** | 2.6 | 2.8 | 2.6 | 2.6 | 2.6 | 2.6 | 2.5 | 2.5 | 2.3 | 2.2 | 2.2 | 2.5 | 2.1 | 2 | 2 | 2 | 1.9 | 1.9 | 2.1 | 2 | 2.8 | 2.3 | 24 |
| 26 | 3 | 3 | **IZS** | 2.3 | 2.2 | 2.1 | 2.2 | 2.2 | 2.4 | 2.5 | 2.2 | 2.2 | 3 | 2 | 2.1 | 2 | 2 | 2.4 | 2.6 | 2.6 | 2.5 | 2.5 | 2.1 | 2 | 3 | 2.4 | 24 |
| 27 | 2 | **IZS** | 2 | 2 | 2.1 | 2.1 | 2.2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.5 | 2.5 | 2.5 | 2.1 | 24 |
| 28 | **IZS** | 2.4 | 2.4 | 2.1 | 2 | 2.1 | 2.1 | 2.3 | 2.1 | 2.4 | 2 | 2.1 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 1.9 | 1.9 | 2.2 | 1.9 | 1.9 | 1.9 | **IZS** | 2.4 | 2.1 | 24 |
| 29 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.3 | 2.2 | 2.1 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.3 | 2.1 | 24 |
| 30 | 2.1 | 2.1 | 2.1 | 2.1 | 2.5 | 2.3 | 2.3 | **C** | **C** | 2.4 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 1.9 | 1.9 | 1.9 | **IZS** | 2.3 | 2.5 | 2.5 | 2.1 | 24 |
| 31 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.3 | **IZS** | 2.8 | 2.6 | 2.4 | 2.8 | 2.2 | 24 |
| HOURLY MAX | 3 | 3 | 3 | 3 | 3 | 3 | 9 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | |
| HOURLY AVG | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.5 | 2.4 | 2.3 | 2.3 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MISSING DATA |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |
| BB | - BELOW BACKGROUND OF 1.5 PPM | | |

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 697 | | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 8.6 | PPM | @ HOUR(S) | 6 | ON DAY(S) | 15 | |
| IZS CALIBRATION TIME: | 33 | HRS | OPERATIONAL TIME: | 742 | HRS | | |
| MONTHLY CALIBRATION TIME: | 12 | HRS | | | | | |
| STANDARD DEVIATION: | 0.36 | | | | | | |






JOB #: 2833-12-03-01-C

LICA
THC / WD Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 2.28 | 6.56 | 11.55 | 2.99 | 9.41 | 9.12 | 12.41 | 1.56 | 1.56 | 2.71 | 15.69 | 11.69 | 5.84 | 2.42 | 1.56 | 2.13 | 99.57 |
| < | 10.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .14 | .00 | .14 | .14 | .00 | .00 | .00 | .00 | .42 |
| < | 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 | 2.28 | 6.56 | 11.55 | 2.99 | 9.41 | 9.12 | 12.41 | 1.56 | 1.71 | 2.71 | 15.83 | 11.84 | 5.84 | 2.42 | 1.56 | 2.13 | |

Calm : .00 %

Total # Operational Hours : 701

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 16 | 46 | 81 | 21 | 66 | 64 | 87 | 11 | 11 | 19 | 110 | 82 | 41 | 17 | 11 | 15 | 698 |
| < | 10.0 | | | | | | | | | 1 | | 1 | 1 | | | | | 3 |
| < | 50.0 | | | | | | | | | | | | | | | | | |
| >= | 50.0 | | | | | | | | | | | | | | | | | |
| | Totals | 16 | 46 | 81 | 21 | 66 | 64 | 87 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 11 | 15 | |

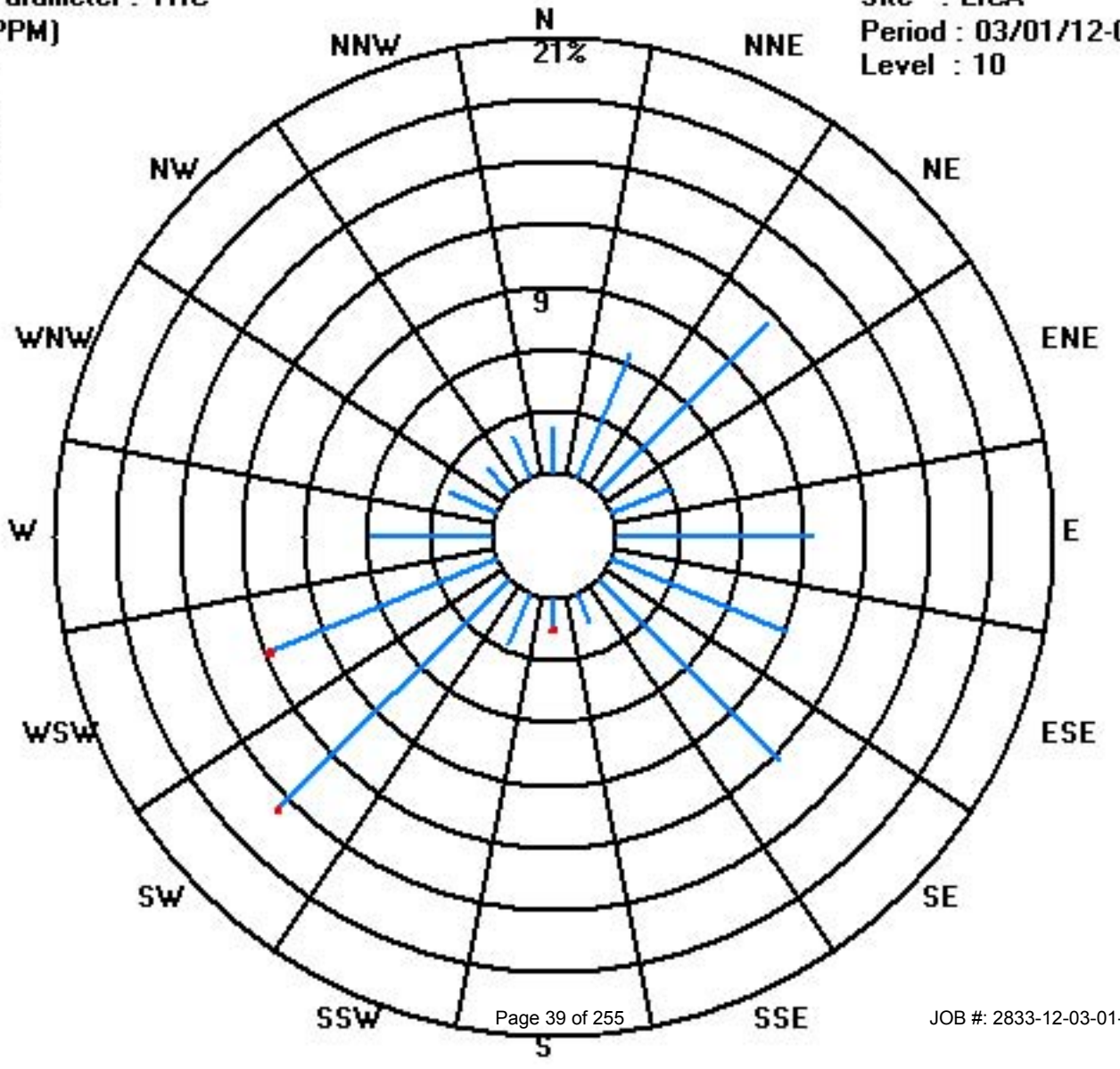
Calm : .00 %

Total # Operational Hours : 701

Logger : 01 Parameter : THC
Class Limits (PPM)

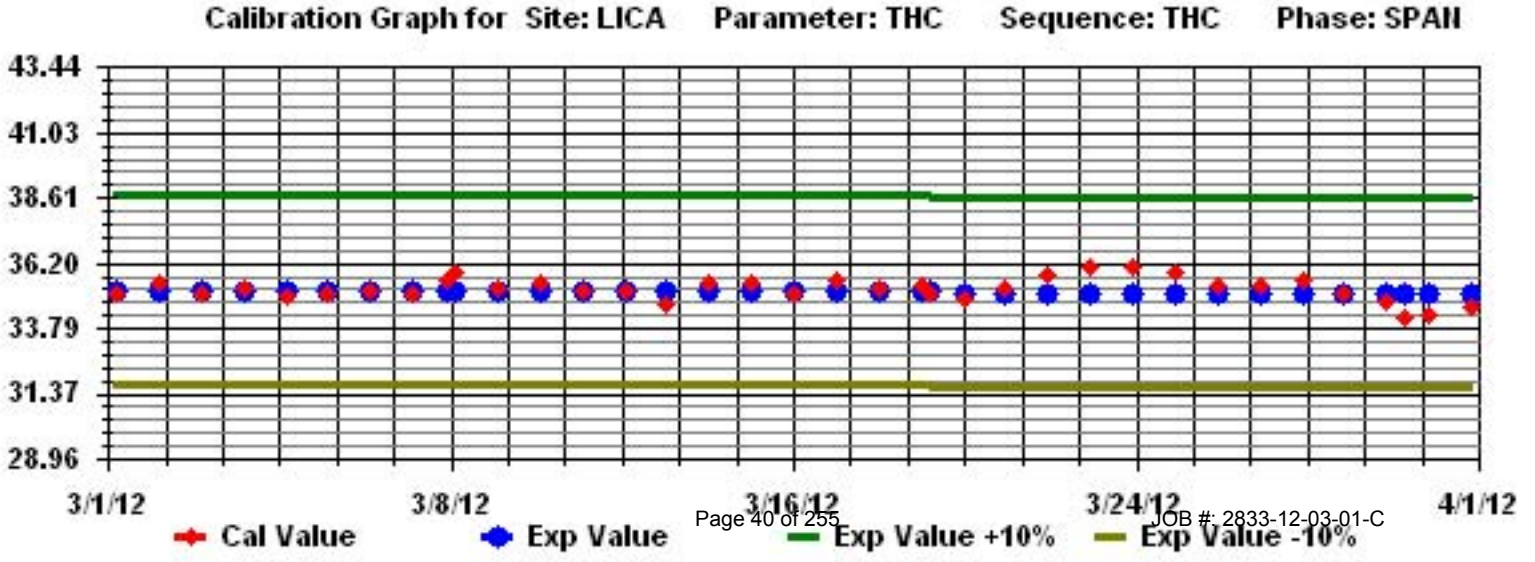
>= 50.0
< 50.0
< 10.0
< 3.0

Site : LICA
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-01-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
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Particulate Matter 2.5

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

MARCH 2012

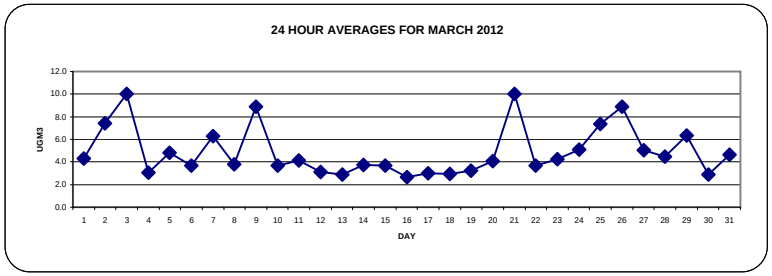
**PARTICULATE MATTER 2.5 (PM2.5)** hourly averages in ug/m$^3$

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 | 2.5 | 0 | 6 | 1.9 | 7.5 | 1.9 | 4.4 | 2.5 | 10.9 | 1 | 4.4 | 1.4 | 5 | 5.5 | 7.9 | 3.4 | 7.9 | 4.4 | 7.5 | 3.4 | 5.5 | 4.4 | 3.4 | 0.5 | 10.9 | 4.3 | 24 |
| 2 | 7.5 | 3.4 | 2.9 | 6.5 | 3.4 | 7 | 3.4 | 7.5 | 11.5 | 13 | 6.5 | 7.5 | 9.4 | 8.4 | 7 | 6.5 | 8.4 | 5.5 | 8.4 | 7.5 | 8.4 | 6.9 | 9.9 | 10.9 | 13.0 | 7.4 | 24 |
| 3 | 9 | 14.4 | 14.5 | 16.5 | 17 | 13 | 7.9 | 11.5 | 16 | 9.4 | 11.5 | 8.4 | 14.4 | 5.5 | 11.5 | 7.9 | 6.5 | 1.4 | 4.4 | 5 | 9 | 11.5 | 6 | 8.4 | 17.0 | **10.0** | 24 |
| 4 | 7.9 | 4.4 | 0 | 6 | 1 | 0 | 1.9 | 1.9 | 6 | 0 | 3.4 | 1.9 | 1.4 | 2.5 | 0.4 | 3.4 | 4 | 4 | 2.9 | 3.4 | 2.5 | 4 | 4.4 | 6 | 7.9 | 3.1 | 24 |
| 5 | 4 | 6.5 | 5 | 6.9 | 6 | 8.4 | 10.5 | 9 | 6.5 | 6.5 | 0.5 | 1.4 | 5 | 7.9 | 6 | 1.4 | 2.5 | 4.4 | 1.4 | 1.9 | 0 | 5 | 2.5 | 6 | 10.5 | 4.8 | 24 |
| 6 | 0.5 | 2.5 | 0 | 1.4 | 2.5 | 1 | 1.9 | 2.9 | 4 | 2.5 | 0 | 2.9 | 4 | 5.5 | 1.9 | 7.5 | 1.9 | 5.5 | 7 | 3.4 | 4 | 1.9 | 7.5 | 15.5 | 15.5 | 3.7 | 24 |
| 7 | 7.9 | 9.4 | 7.5 | 6 | 11.5 | 13.4 | 14.5 | 16.5 | 10.9 | 11.5 | 4 | 3.4 | 1.9 | 1.9 | 2.9 | 0 | 6.5 | 5.5 | 2.5 | 5.5 | 1.4 | 4.4 | 1.4 | 1 | 16.5 | 6.3 | 24 |
| 8 | 4.4 | 2.9 | 6.9 | 3.4 | 1.4 | **N** | 2.5 | 13.5 | 4 | 0 | 3.4 | 2.9 | 0 | 2.5 | 1.4 | 6.5 | 0.5 | 6.9 | 2.9 | 6.9 | 1.4 | 2.9 | 6.5 | 4 | 13.5 | 3.8 | 23 |
| 9 | 13.9 | 7.9 | 10.5 | 9.4 | 9.4 | 7.5 | 4.4 | 6.9 | 9 | 5.5 | 6 | 5 | 7.5 | 7.9 | 9 | 14 | 12 | 9.9 | 8.4 | 11 | 9.4 | 9.9 | 12 | 7.5 | 14.0 | 8.9 | 24 |
| 10 | 12 | 9.9 | 2.9 | 0.4 | 4.4 | 4.4 | 5 | 2.5 | 2.9 | 1.4 | 0 | 0.4 | 2.5 | 0 | 1 | 1 | 3.4 | 0.4 | 6.4 | 2.5 | 4.4 | 6.5 | 7.9 | 5.5 | 12.0 | 3.7 | 24 |
| 11 | 5.5 | 3.4 | 1 | 0 | 5 | 0 | 5 | 7.5 | 1.4 | 1.4 | 6 | 5 | 3.4 | 4.4 | 6.9 | 1.9 | 6.4 | 3.4 | 3.4 | 5 | 6.5 | 1.4 | 6.9 | 9 | 9.0 | 4.2 | 24 |
| 12 | 5.5 | 6.5 | 8.4 | 7.5 | 5.5 | 3.4 | 2.9 | 2.5 | 3.4 | 1 | 1.9 | 1.9 | 2.5 | 1.9 | 0 | 0 | 5 | 7.9 | 2.5 | 4 | 0 | 0 | 0 | 0.4 | 8.4 | 3.1 | 24 |
| 13 | 1 | 4.4 | 1.4 | 2.5 | 0 | 5.5 | **N** | 2.9 | 2.5 | 0 | 5.5 | 2.5 | 4.4 | 1.9 | 0 | 0.4 | 3.4 | 5.5 | 9.4 | 1.9 | 2.9 | 0 | 6 | 1.9 | 9.4 | 2.9 | 23 |
| 14 | 6 | 5 | 6 | 2.5 | 4 | 1.9 | 9.9 | 9 | 7.9 | 5 | 1 | 2.5 | 2.5 | 1 | 1.4 | 1.9 | 0 | 1.4 | 2.9 | 3.4 | 1.4 | 3.4 | 2.9 | 6.9 | 9.9 | 3.7 | 24 |
| 15 | 5 | 0 | 2.9 | 0.4 | 0.4 | 4 | 15 | **C** | **C** | **C** | **C** | 7.9 | 1.9 | 3.4 | 4.4 | 6.4 | 1.9 | 3.4 | 6.9 | 2.5 | 0.4 | 1 | 5.5 | 0.4 | 15.0 | 3.7 | 24 |
| 16 | 0 | 2.9 | 2.9 | 0.4 | 1 | 0 | 2.9 | 1.4 | 14 | 5 | 2.5 | 1.9 | 4 | 5 | 3.4 | 2.5 | 1.4 | 1.9 | 3.4 | 1.4 | 1.4 | 4 | 0 | 0 | 14.0 | 2.6 | 24 |
| 17 | 0 | 0 | 2.9 | 0 | 1 | 0 | 6.9 | 6.5 | 6.5 | 0 | 5 | 2.5 | 0 | 4.4 | 3.4 | 4 | 3.4 | 6 | 5 | 5.5 | 2.5 | 2.9 | 0 | **N** | 6.9 | 3.0 | 23 |
| 18 | 1.4 | 0 | 2.5 | **N** | 2.5 | 5 | 0 | 3.4 | 3.4 | 1 | 3.4 | 2.9 | 2.5 | 4 | 6 | 1.9 | 6.4 | 0.4 | 3.4 | 4 | 5.5 | 2.9 | 3.4 | 1.4 | 6.4 | 2.9 | 23 |
| 19 | 5 | 2.5 | 2.5 | 5.5 | 6.5 | 6 | 4 | 0 | 3.4 | 5 | 3.4 | 4.4 | 0 | 1 | 0 | 1 | 1.9 | 1 | 4 | 2.5 | 1.9 | 5 | 7 | 4.4 | 7.0 | 3.2 | 24 |
| 20 | 5.5 | 1 | 2.9 | 1.9 | 3.4 | 7.5 | 9 | 6 | 0 | 1.9 | 0 | 2.9 | 7.9 | 3.4 | 4.4 | 2.9 | 5 | 6.5 | 1 | 5.5 | 6 | 4 | 1.9 | 6.9 | 9.0 | 4.1 | 24 |
| 21 | 8.4 | 12 | 11.5 | 15.5 | 12 | 15.5 | 17 | 10.9 | 14.5 | 12 | 10 | 7.5 | 6.5 | 5 | 2.5 | 6.5 | 6.9 | 9.9 | 6.9 | 7.4 | 5.5 | 8.4 | 17.3 | 10.9 | 17.3 | **10.0** | 24 |
| 22 | 14.1 | 2.9 | 5.4 | 1 | 2.9 | 5 | 2.5 | 0 | 2.9 | 6.5 | 2.4 | 5 | 1 | 5.9 | 6.4 | 6 | 1.5 | 4 | 0 | 6.6 | **N** | 1.4 | 0 | 0.7 | 14.1 | 3.7 | 23 |
| 23 | 8.2 | 1.9 | 0 | 4.4 | **N** | 8.4 | 4 | 6.3 | 4.8 | 0.5 | 1.1 | 2.9 | 0.3 | **C** | **C** | 10.8 | 2.1 | 2.4 | 8.5 | 6 | 2 | 4.7 | 4.8 | 4.7 | 10.8 | 4.2 | 23 |
| 24 | 0 | 7.1 | 7.2 | 4.1 | 4.1 | 7.3 | 4 | 3.1 | 4 | 10.2 | 1.6 | 5.7 | 2.7 | 4 | 2.5 | 7.1 | 2.9 | 3.8 | 6.2 | 4 | 4.7 | 2.2 | 12 | 11.5 | 12.0 | 5.1 | 24 |
| 25 | 6.7 | 6.5 | 4.4 | 7.9 | 4.7 | 5.9 | 9.7 | 4 | 9.2 | 6.9 | 13 | 8.7 | 6.7 | 6.3 | 7.1 | 5 | 5.5 | 4.8 | 5 | 10 | 7.1 | 9.7 | 12 | 9.8 | 13.0 | 7.4 | 24 |
| 26 | 10.2 | 8.1 | 12.8 | 8.7 | 12.6 | 8.1 | 8.4 | 5.8 | 8.8 | 10.5 | 16.3 | 8.4 | 11.3 | 6.8 | 6 | 9.6 | 7.3 | 7.7 | 9.6 | 7.1 | 14.4 | 9 | 4.7 | 1 | 16.3 | 8.9 | 24 |
| 27 | 2 | 3.3 | 5.8 | 5.8 | 5.5 | 4.9 | 5 | 3 | 4.9 | 8.7 | 5.3 | 5.5 | 1 | 3.9 | 2.7 | 4.9 | 1.9 | 3.5 | 8 | 4.4 | 9.9 | 5 | 7.9 | 8.5 | 9.9 | 5.1 | 24 |
| 28 | 6.4 | 7.9 | 6 | 4.4 | 1.9 | 1.9 | 3.4 | 5 | 1.9 | 0 | 3 | 6.9 | 5.5 | 6 | 6 | 5.5 | 4 | 4 | 6 | 6.9 | 0 | 2.5 | 5 | 6.9 | 7.9 | 4.5 | 24 |
| 29 | 2.5 | 4 | 2.5 | 1.4 | 5 | 0.4 | 6 | 10.9 | 2.5 | 2.9 | 5 | 8.4 | 2.9 | 13.9 | 14.9 | 14.9 | 9 | 8.4 | 11.5 | 7.5 | 4.4 | 7.9 | 2.5 | 2.5 | 14.9 | 6.3 | 24 |
| 30 | 4.4 | 2.5 | 4 | 1.9 | 4.4 | 4.4 | 6.5 | 5.5 | 3.4 | 3.4 | 1 | **N** | 1.9 | 0 | 5 | 2.9 | 0 | 1.4 | 4 | 2.9 | 0 | 5 | 1.4 | 0.4 | 6.5 | 2.9 | 23 |
| 31 | 3.4 | 5.5 | 2.9 | 1.9 | 0.5 | 3.4 | 2.9 | 2.9 | 0.5 | 2.5 | 2.9 | 3.4 | 0 | 2.5 | 1 | 0.4 | 0 | 4 | 1.9 | 8.4 | 10.5 | **25.5** | 14.4 | 9.9 | **25.5** | 4.6 | 24 |
| HOURLY MAX | 14 | 14 | 15 | 17 | 17 | 16 | 17 | 17 | 16 | 13 | 16 | 9 | 14 | 14 | 15 | 15 | 12 | 10 | 12 | 11 | 14 | 26 | 17 | 16 | | | |
| HOURLY AVG | 5.5 | 4.8 | 4.9 | 4.5 | 4.9 | 5.2 | 6.0 | 5.7 | 6.1 | 4.5 | 4.3 | 4.4 | 3.9 | 4.4 | 4.4 | 4.8 | 4.2 | 4.5 | 5.2 | 5.1 | 4.4 | 5.3 | 5.7 | 5.4 | | | |

**STATUS FLAG CODES**

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



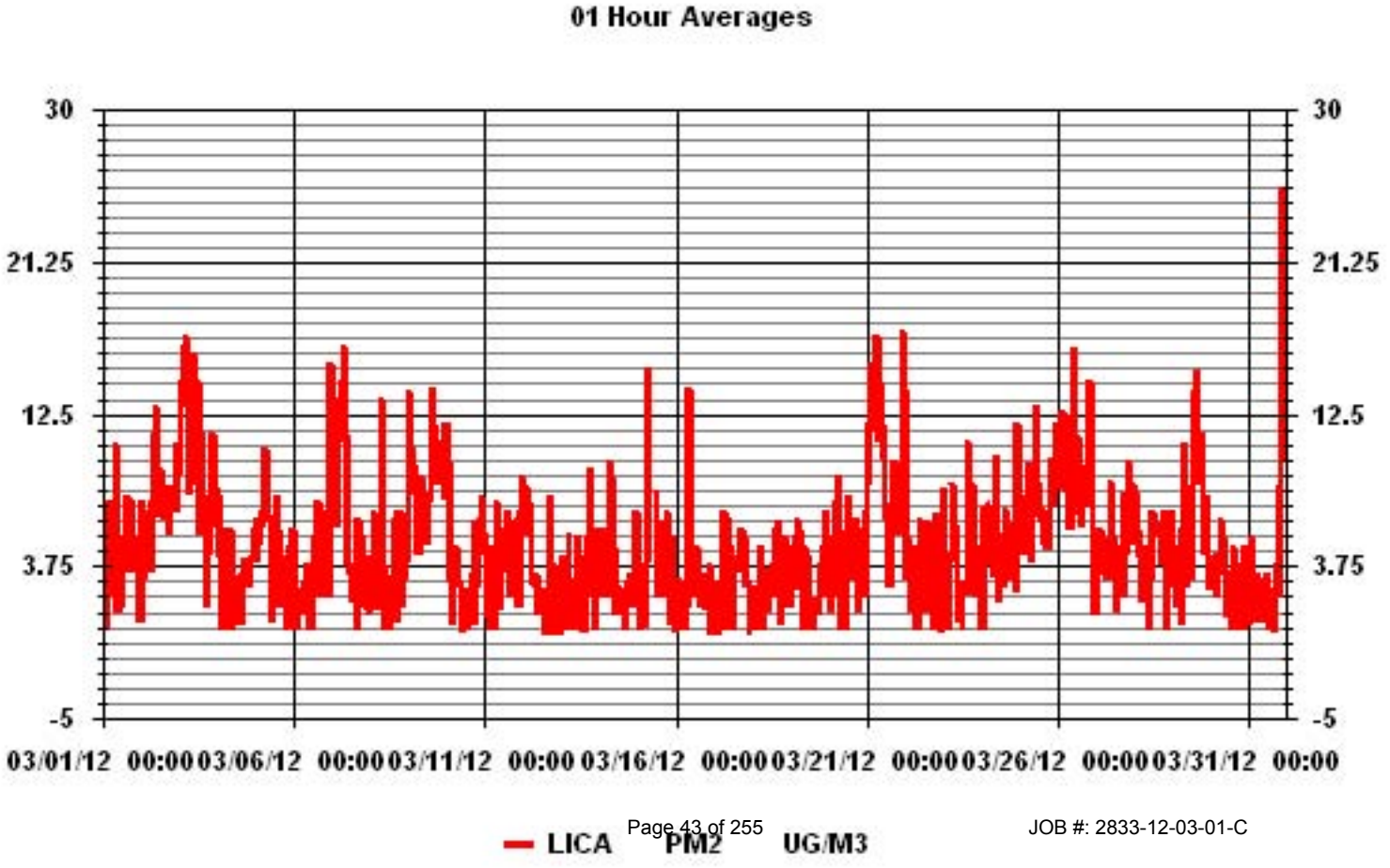

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR - ug/m3 | 24-HR 30 ug/m3

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | - | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | PROPOSED CANADA WIDE GUIDELINE | | | | |
| NUMBER OF NON-ZERO READINGS: | 676 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 25.5 | UG/M$^3$ | @ HOUR(S) | 21 | ON DAY(S) | 31 |
| MAXIMUM 24-HR AVERAGE: | 10.0 | UG/M$^3$ | | | ON DAY(S) | 3, 21 |
| IZS CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 737 | HRS | |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | 99.1 | % | |
| STANDARD DEVIATION: | 3.71 | | MONTHLY AVERAGE: | 4.92 | UG/M$^3$ | |



JOB #: 2833-12-03-01-C






JOB #: 2833-12-03-01-C

LICA
PM2 / WD Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30.0 | 2.46 | 6.42 | 11.08 | 2.73 | 9.30 | 9.30 | 12.17 | 1.50 | 1.77 | 2.73 | 16.27 | 12.03 | 5.74 | 2.32 | 1.50 | 2.59 | 100.00 |
| < | 60.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 80.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 120.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 240.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 240.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 2.46 | 6.42 | 11.08 | 2.73 | 9.30 | 9.30 | 12.17 | 1.50 | 1.77 | 2.73 | 16.27 | 12.03 | 5.74 | 2.32 | 1.50 | 2.59 | |

Calm : .00 %

Total # Operational Hours : 731

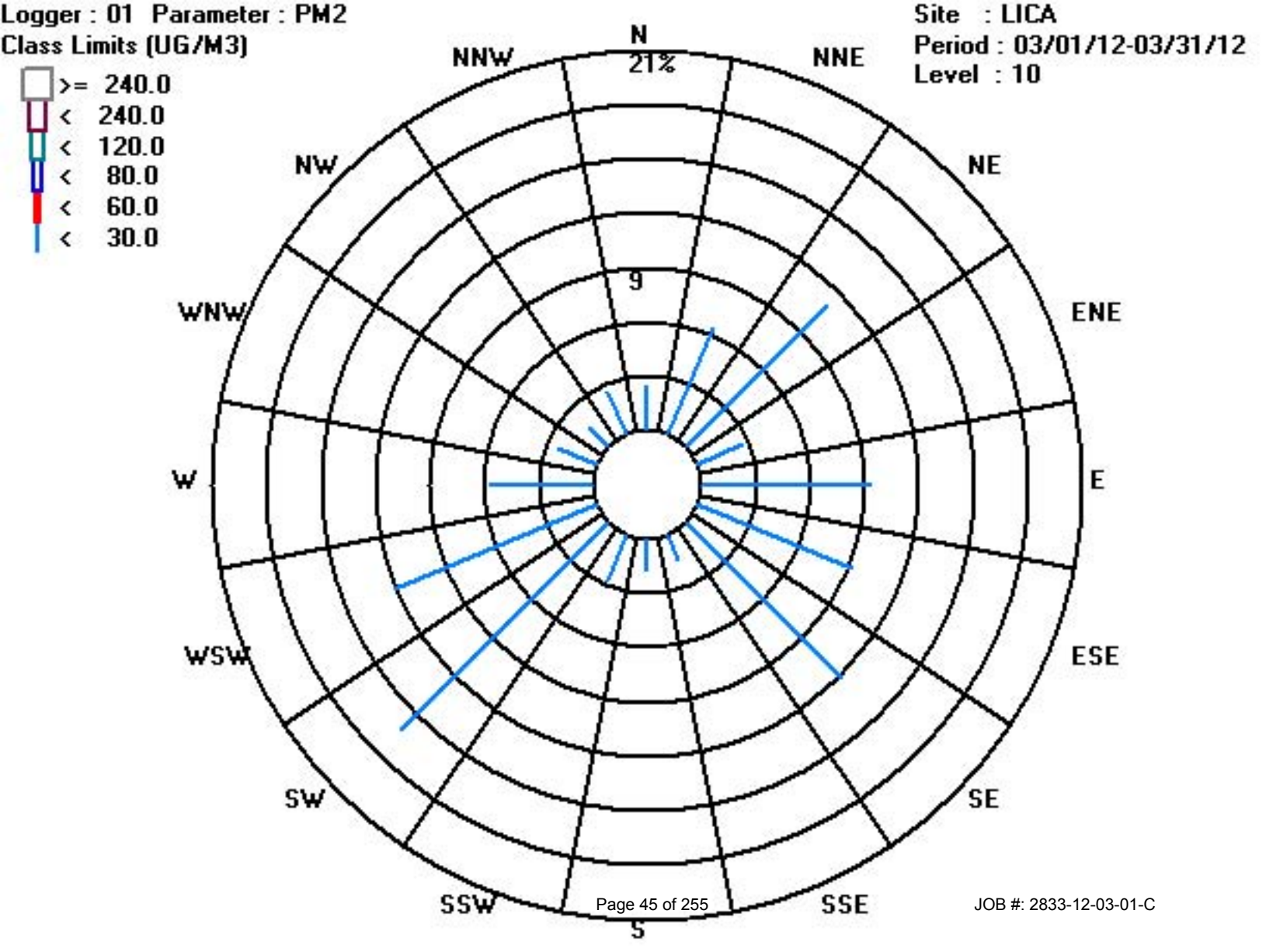
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30.0 | 18 | 47 | 81 | 20 | 68 | 68 | 89 | 11 | 13 | 20 | 119 | 88 | 42 | 17 | 11 | 19 | 731 |
| < | 60.0 | | | | | | | | | | | | | | | | | |
| < | 80.0 | | | | | | | | | | | | | | | | | |
| < | 120.0 | | | | | | | | | | | | | | | | | |
| < | 240.0 | | | | | | | | | | | | | | | | | |
| >= | 240.0 | | | | | | | | | | | | | | | | | |
| | Totals | 18 | 47 | 81 | 20 | 68 | 68 | 89 | 11 | 13 | 20 | 119 | 88 | 42 | 17 | 11 | 19 | |

Calm : .00 %

Total # Operational Hours : 731






JOB #: 2833-12-03-01-C

# Nitrogen Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

**NITROGEN DIOXIDE** hourly averages in ppb

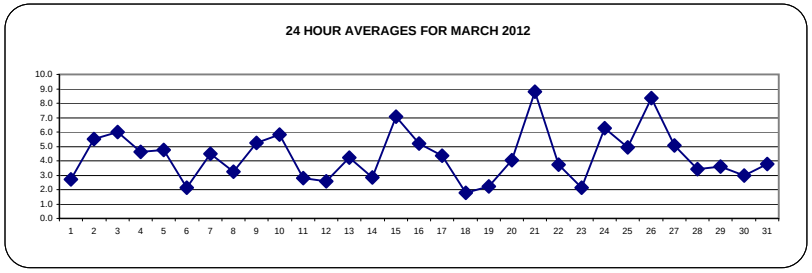
MST

| 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 | 2 | 2 | 2 | 2 | **IZS** | 2 | 3 | 2 | 2 | 3 | 1 | 2 | 6 | 7 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 7 | 2.7 | 24 |
| 2 | 3 | 4 | 6 | **IZS** | 6 | 6 | 11 | 18 | 14 | 8 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 6 | 18 | 5.5 | 24 |
| 3 | 6 | 7 | **IZS** | 5 | 5 | 5 | 7 | 11 | 6 | 5 | 4 | 4 | 4 | 4 | 4 | 6 | 5 | 5 | 6 | 8 | 7 | 10 | 7 | 7 | 11 | 6.0 | 24 |
| 4 | 9 | **IZS** | 7 | 7 | 6 | 4 | 4 | 5 | 4 | 4 | 3 | 3 | 4 | 3 | 2 | 2 | 2 | 3 | 3 | 5 | 6 | 7 | 7 | 6 | 9 | 4.6 | 24 |
| 5 | **IZS** | 4 | 5 | 6 | 6 | 7 | 20 | 23 | 6 | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | **IZS** | 23 | 4.8 | 24 |
| 6 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 4 | 5 | 4 | 3 | **IZS** | 4 | 5 | 2.1 | 24 |
| 7 | 5 | 5 | 6 | 6 | 6 | 6 | 8 | 10 | 8 | 7 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 4 | 4 | 4 | **IZS** | 2 | 1 | 10 | 4.5 | 24 |
| 8 | 2 | 2 | 3 | 4 | 6 | 9 | 13 | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 3 | 2 | 3 | 3 | **IZS** | 3 | 3 | 4 | 13 | 3.3 | 24 |
| 9 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 7 | 9 | **IZS** | 10 | 9 | 9 | 8 | 10 | 5.3 | 24 |
| 10 | 8 | 7 | 5 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 11 | 14 | 25 | 16 | 6 | 25 | 5.8 | 24 |
| 11 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | 6 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | **IZS** | 4 | 3 | 3 | 3 | 3 | 2 | 6 | 2.8 | 24 |
| 12 | 2 | 3 | 3 | 3 | 4 | 3 | 3 | 2 | 3 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | **IZS** | 3 | 4 | 4 | 3 | 3 | 3 | 2 | 4 | 2.6 | 24 |
| 13 | 2 | 2 | 2 | 2 | 3 | 11 | 17 | 6 | 3 | 3 | 4 | 4 | 3 | 2 | 2 | **IZS** | 2 | 5 | 9 | 5 | 4 | 3 | 2 | 1 | 17 | 4.2 | 24 |
| 14 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 1 | 1 | 2 | 3 | 3 | 5 | 5 | 8 | 9 | 9 | 2.8 | 24 |
| 15 | 16 | 17 | 12 | 6 | 6 | 16 | **29** | **C** | **C** | **C** | **C** | 2 | 2 | **IZS** | 3 | 4 | 3 | 5 | 5 | 3 | 2 | 1 | 1 | 1 | **29** | 7.1 | 24 |
| 16 | 1 | 2 | 2 | 2 | 3 | 9 | 14 | 15 | 20 | 7 | 5 | 4 | **IZS** | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 4 | 6 | 5 | 20 | 5.2 | 24 |
| 17 | 4 | 4 | 5 | 6 | 5 | 7 | 17 | 14 | 6 | 3 | 3 | **IZS** | 1 | 2 | 2 | 3 | 4 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 17 | 4.3 | 24 |
| 18 | 2 | 1 | 1 | 1 | 2 | 3 | 2 | 1 | 1 | 1 | **IZS** | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 1.8 | 24 |
| 19 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 2 | 3 | 3 | 3 | 4 | 2 | 3 | 4 | 3 | 4 | 2.2 | 24 |
| 20 | 3 | 3 | 3 | 3 | 2 | 2 | 6 | 5 | **IZS** | 3 | 2 | 1 | 1 | 1 | 2 | 2 | 3 | 6 | 7 | 5 | 8 | 9 | 8 | 8 | 9 | 4.0 | 24 |
| 21 | 9 | 10 | 6 | 11 | 10 | 12 | 12 | **IZS** | 10 | 8 | 7 | 5 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 8 | 10 | 15 | 24 | 27 | 27 | **8.8** | 24 |
| 22 | 19 | 6 | 9 | 7 | 6 | 3 | **IZS** | 4 | 2 | 2 | 2 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 19 | 3.7 | 24 |
| 23 | 1 | 2 | 3 | 2 | 3 | **IZS** | 4 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | **M** | 2 | 1 | 2 | 3 | 4 | 3 | 3 | 2 | 2 | 4 | 2.1 | 23 |
| 24 | 3 | 7 | 4 | 4 | **IZS** | 7 | 9 | 8 | 6 | 6 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 7 | 14 | 17 | 14 | 18 | 18 | 6.3 | 24 |
| 25 | 17 | 7 | 4 | **IZS** | 8 | 11 | 13 | 6 | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 6 | 7 | 17 | 4.9 | 24 |
| 26 | 9 | 7 | **IZS** | 9 | 23 | 8 | 9 | 9 | 7 | 7 | 6 | 3 | 2 | 2 | 3 | 3 | 3 | 5 | 12 | 19 | 18 | 19 | 4 | 5 | 23 | 8.3 | 24 |
| 27 | 3 | **IZS** | 3 | 5 | 11 | 15 | 12 | 9 | 4 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 4 | 8 | 6 | 5 | 5 | 4 | 7 | 15 | 5.1 | 24 |
| 28 | **IZS** | 11 | 8 | 3 | 6 | 7 | 5 | 5 | 3 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 3 | 4 | 3 | 1 | 1 | 1 | **IZS** | 11 | 3.4 | 24 |
| 29 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 6 | 4 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 4 | 5 | 6 | 6 | 5 | 7 | **IZS** | 3 | 7 | 3.6 | 24 |
| 30 | 2 | 2 | 4 | 5 | 3 | 7 | 8 | 6 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | **IZS** | 3 | 3 | 8 | 3.0 | 24 |
| 31 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 6 | **IZS** | 14 | 14 | 11 | 14 | 3.8 | 24 |
| HOURLY MAX | 19 | 17 | 12 | 11 | 23 | 16 | 29 | 23 | 20 | 8 | 7 | 5 | 6 | 7 | 6 | 7 | 8 | 7 | 12 | 19 | 18 | 25 | 24 | 27 | | | |
| HOURLY AVG | 4.9 | 4.5 | 4.1 | 4.0 | 5.2 | 6.1 | 8.3 | 6.7 | 4.9 | 3.4 | 2.7 | 2.4 | 2.1 | 2.3 | 2.4 | 2.5 | 2.7 | 3.3 | 4.3 | 4.8 | 5.1 | 6.4 | 5.7 | 5.6 | | | |

**STATUS FLAG CODES**

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

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



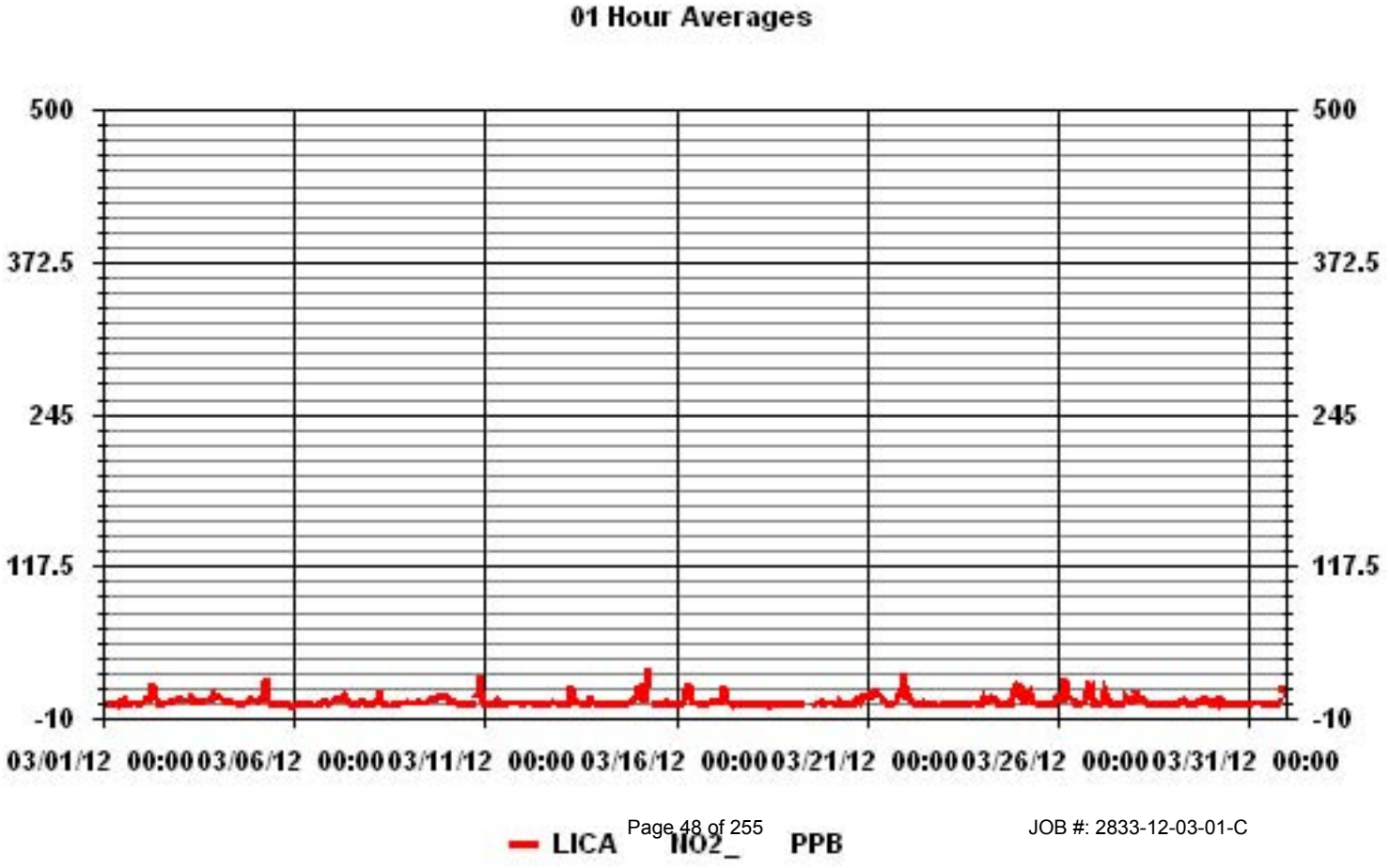

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 700 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 29 | PPB | @ HOUR(S) | 6 | ON DAY(S) | 15 |
| MAXIMUM 24-HR AVERAGE: | 8.8 | PPB | | | ON DAY(S) | 21 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 11 | HRS | AMD OPERATION UPTIME: | 99.9 | % |
| STANDARD DEVIATION: | 3.94 | | MONTHLY AVERAGE: | 4.35 | PPB |



JOB #: 2833-12-03-01-C






JOB #: 2833-12-03-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

**NITROGEN DIOXIDE MAX** instantaneous maximum in ppb

MST

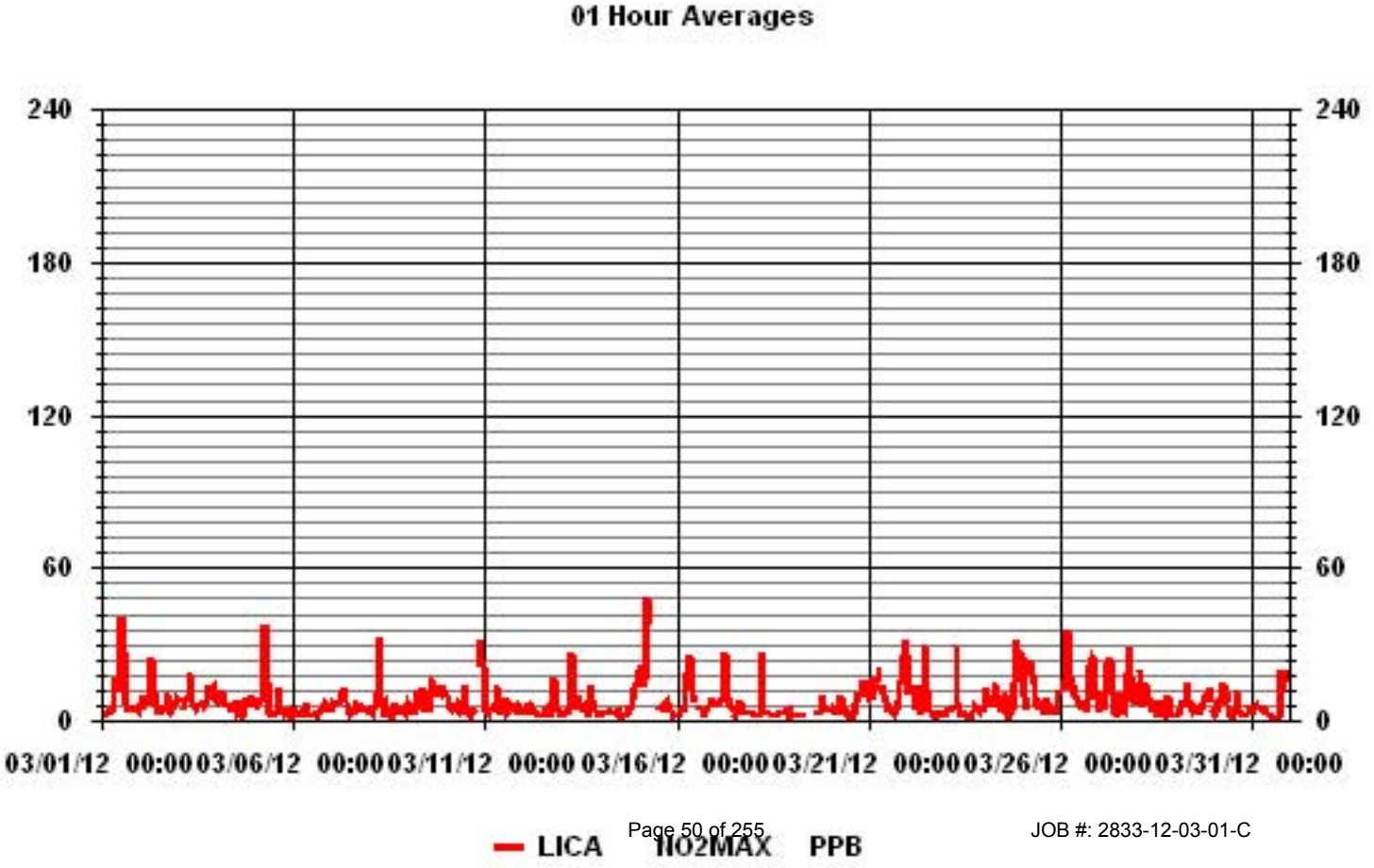
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 2 | 2 | 2 | 2 | **IZS** | 4 | 5 | 4 | 13 | 17 | 11 | 15 | 40 | 41 | 28 | 7 | 4 | 4 | 5 | 5 | 4 | 4 | 5 | 4 | 41 | 9.9 | 24 |
| 2 | 5 | 5 | 9 | **IZS** | 7 | 7 | 17 | 25 | 19 | 12 | 6 | 4 | 3 | 3 | 6 | 4 | 4 | 11 | 5 | 4 | 5 | 7 | 7 | 9 | 25 | 8.0 | 24 |
| 3 | 8 | 8 | **IZS** | 6 | 8 | 9 | 9 | 19 | 9 | 7 | 6 | 5 | 6 | 6 | 6 | 8 | 6 | 7 | 9 | 14 | 12 | 13 | 9 | 8 | 19 | 8.6 | 24 |
| 4 | 11 | **IZS** | 9 | 12 | 7 | 6 | 6 | 6 | 6 | 5 | 4 | 4 | 8 | 4 | 5 | 6 | 3 | 4 | 6 | 6 | 8 | 9 | 9 | 7 | 12 | 6.6 | 24 |
| 5 | **IZS** | 6 | 7 | 8 | 8 | 10 | 38 | 35 | 16 | 3 | 3 | 2 | 2 | 3 | 3 | 13 | 4 | 4 | 3 | 4 | 3 | 4 | 2 | **IZS** | 38 | 8.2 | 24 |
| 6 | 3 | 4 | 2 | 2 | 2 | 2 | 4 | 4 | 7 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 4 | 5 | 7 | 6 | 5 | **IZS** | 5 | 7 | 3.5 | 24 |
| 7 | 7 | 6 | 6 | 7 | 7 | 8 | 11 | 12 | 12 | 8 | 6 | 3 | 4 | 3 | 3 | 8 | 3 | 5 | 6 | 6 | 5 | **IZS** | 4 | 2 | 12 | 6.2 | 24 |
| 8 | 4 | 3 | 5 | 6 | 11 | 14 | 33 | 6 | 7 | 2 | 2 | 5 | 2 | 3 | 2 | 6 | 6 | 3 | 3 | 3 | **IZS** | 5 | 4 | 7 | 33 | 6.2 | 24 |
| 9 | 6 | 4 | 3 | 3 | 7 | 4 | 12 | 5 | 6 | 13 | 4 | 4 | 4 | 10 | 17 | 13 | 10 | 10 | 12 | **IZS** | 13 | 11 | 12 | 10 | 17 | 8.4 | 24 |
| 10 | 10 | 8 | 6 | 5 | 6 | 6 | 5 | 7 | 6 | 4 | 5 | 14 | 2 | 4 | 3 | 2 | 3 | 4 | **IZS** | 22 | 26 | 32 | 24 | 22 | 32 | 9.8 | 24 |
| 11 | 4 | 4 | 3 | 4 | 4 | 4 | 7 | 14 | 5 | 3 | 3 | 3 | 3 | 9 | 4 | 5 | 6 | **IZS** | 6 | 5 | 6 | 5 | 4 | 3 | 14 | 5.0 | 24 |
| 12 | 3 | 4 | 7 | 5 | 6 | 5 | 4 | 3 | 3 | 3 | 2 | 2 | 2 | 4 | 5 | 3 | **IZS** | 3 | 7 | 17 | 5 | 4 | 4 | 2 | 17 | 4.5 | 24 |
| 13 | 2 | 3 | 3 | 3 | 5 | 25 | 25 | 12 | 4 | 7 | 10 | 6 | 6 | 4 | 4 | **IZS** | 3 | 8 | 14 | 9 | 4 | 4 | 2 | 2 | 25 | 7.2 | 24 |
| 14 | 2 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 4 | 2 | **IZS** | 2 | 2 | 3 | 5 | 6 | 10 | 9 | 15 | 13 | 15 | 4.7 | 24 |
| 15 | 20 | 22 | 15 | 13 | 16 | **48** | 39 | **C** | **C** | **C** | **C** | **C** | 3 | **IZS** | 5 | 6 | 4 | 6 | 7 | 4 | 4 | 2 | 3 | 2 | **48** | 12.2 | 24 |
| 16 | 2 | 2 | 4 | 5 | 4 | 15 | 18 | 19 | 26 | 13 | 7 | 9 | **IZS** | 5 | 5 | 5 | 2 | 2 | 4 | 5 | 6 | 6 | 9 | 7 | 26 | 7.8 | 24 |
| 17 | 6 | 6 | 7 | 8 | 9 | 15 | 27 | 22 | 10 | 6 | 5 | **IZS** | 2 | 3 | 4 | 7 | 7 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 27 | 7.3 | 24 |
| 18 | 3 | 2 | 2 | 2 | 3 | 27 | 4 | 3 | 3 | 3 | **IZS** | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 2 | 27 | 3.8 | 24 |
| 19 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 3 | 3 | 3 | 4 | 10 | 4 | 5 | 5 | 4 | 10 | 3.4 | 24 |
| 20 | 4 | 5 | 4 | 3 | 3 | 3 | 10 | 7 | **IZS** | 4 | 3 | 2 | 3 | 2 | 3 | 3 | 7 | 10 | 10 | 11 | 15 | 15 | 11 | 10 | 15 | 6.4 | 24 |
| 21 | 15 | 15 | 8 | 17 | 14 | 15 | 20 | **IZS** | 13 | 11 | 8 | 7 | 4 | 4 | 4 | 4 | 3 | 4 | 8 | 15 | 15 | 26 | 28 | 31 | 31 | 12.6 | 24 |
| 22 | 27 | 10 | 14 | 12 | 13 | 5 | **IZS** | 13 | 3 | 4 | 5 | 30 | 13 | 4 | 4 | 4 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 30 | 7.9 | 24 |
| 23 | 2 | 4 | 4 | 4 | 5 | **IZS** | 28 | 8 | 5 | 2 | 2 | 3 | 3 | 2 | **M** | **M** | 2 | 4 | 6 | 5 | 5 | 4 | 5 | 3 | 28 | 5.0 | 22 |
| 24 | 6 | 13 | 6 | 6 | **IZS** | 7 | 10 | 15 | 7 | 10 | 4 | 4 | 7 | 11 | 3 | 2 | 3 | 3 | 4 | 15 | 32 | 23 | 22 | 26 | 32 | 10.4 | 24 |
| 25 | 25 | 10 | 6 | **IZS** | 21 | 24 | 19 | 15 | 5 | 9 | 5 | 5 | 5 | 3 | 3 | 9 | 3 | 7 | 3 | 5 | 2 | 4 | 11 | 11 | 25 | 9.1 | 24 |
| 26 | 12 | 15 | **IZS** | 13 | 36 | 15 | 18 | 15 | 10 | 10 | 9 | 6 | 6 | 4 | 8 | 5 | 3 | 8 | 22 | 25 | 24 | 25 | 13 | 9 | 36 | 13.5 | 24 |
| 27 | 5 | **IZS** | 5 | 11 | 16 | 23 | 15 | 25 | 11 | 3 | 3 | 3 | 2 | 11 | 4 | 6 | 5 | 10 | 19 | 29 | 18 | 8 | 6 | 14 | 29 | 11.0 | 24 |
| 28 | **IZS** | 19 | 15 | 5 | 14 | 14 | 8 | 9 | 7 | 3 | 7 | 8 | 2 | 3 | 8 | 4 | 3 | 7 | 6 | 10 | 2 | 2 | 2 | **IZS** | 19 | 7.2 | 24 |
| 29 | 2 | 2 | 3 | 5 | 7 | 7 | 6 | 15 | 9 | 6 | 4 | 5 | 4 | 3 | 3 | 4 | 5 | 7 | 9 | 10 | 7 | 12 | **IZS** | 4 | 15 | 6.0 | 24 |
| 30 | 3 | 4 | 7 | 8 | 6 | 15 | 14 | 12 | 7 | 4 | 3 | 2 | 5 | 3 | 12 | 3 | 3 | 3 | 2 | 2 | 2 | **IZS** | 5 | 3 | 15 | 5.6 | 24 |
| 31 | 3 | 5 | 6 | 4 | 6 | 4 | 4 | 6 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 20 | 12 | **IZS** | 19 | 19 | 16 | 20 | 6.3 | 24 |
| HOURLY MAX | 27 | 22 | 15 | 17 | 36 | 48 | 39 | 35 | 26 | 17 | 11 | 30 | 40 | 41 | 28 | 13 | 10 | 11 | 22 | 29 | **32** | 32 | 28 | 31 | | | |
| HOURLY AVG | 7.1 | 6.8 | 6.0 | 6.3 | 8.8 | 11.5 | 14.1 | 11.8 | 8.4 | 6.2 | 4.9 | 5.7 | 5.2 | 5.5 | 5.6 | 5.1 | 3.9 | 5.2 | 7.3 | 9.2 | 8.7 | 9.3 | 8.6 | 8.3 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 698 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 48 | PPB | @ HOUR(S) | 5 | ON DAY(S) | 15 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 742 | HRS |
| MONTHLY CALIBRATION TIME: | 12 | HRS | | | | |
| STANDARD DEVIATION | 6.74 | | | | | |






JOB #: 2833-12-03-01-C

LICA
NO2_ / WD Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 2.00 | 6.57 | 11.57 | 3.00 | 9.28 | 9.14 | 12.57 | 1.57 | 1.71 | 2.71 | 15.85 | 11.85 | 5.85 | 2.42 | 1.57 | 2.28 | 100.00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 2.00 | 6.57 | 11.57 | 3.00 | 9.28 | 9.14 | 12.57 | 1.57 | 1.71 | 2.71 | 15.85 | 11.85 | 5.85 | 2.42 | 1.57 | 2.28 | |

Calm : .00 %

Total # Operational Hours : 700

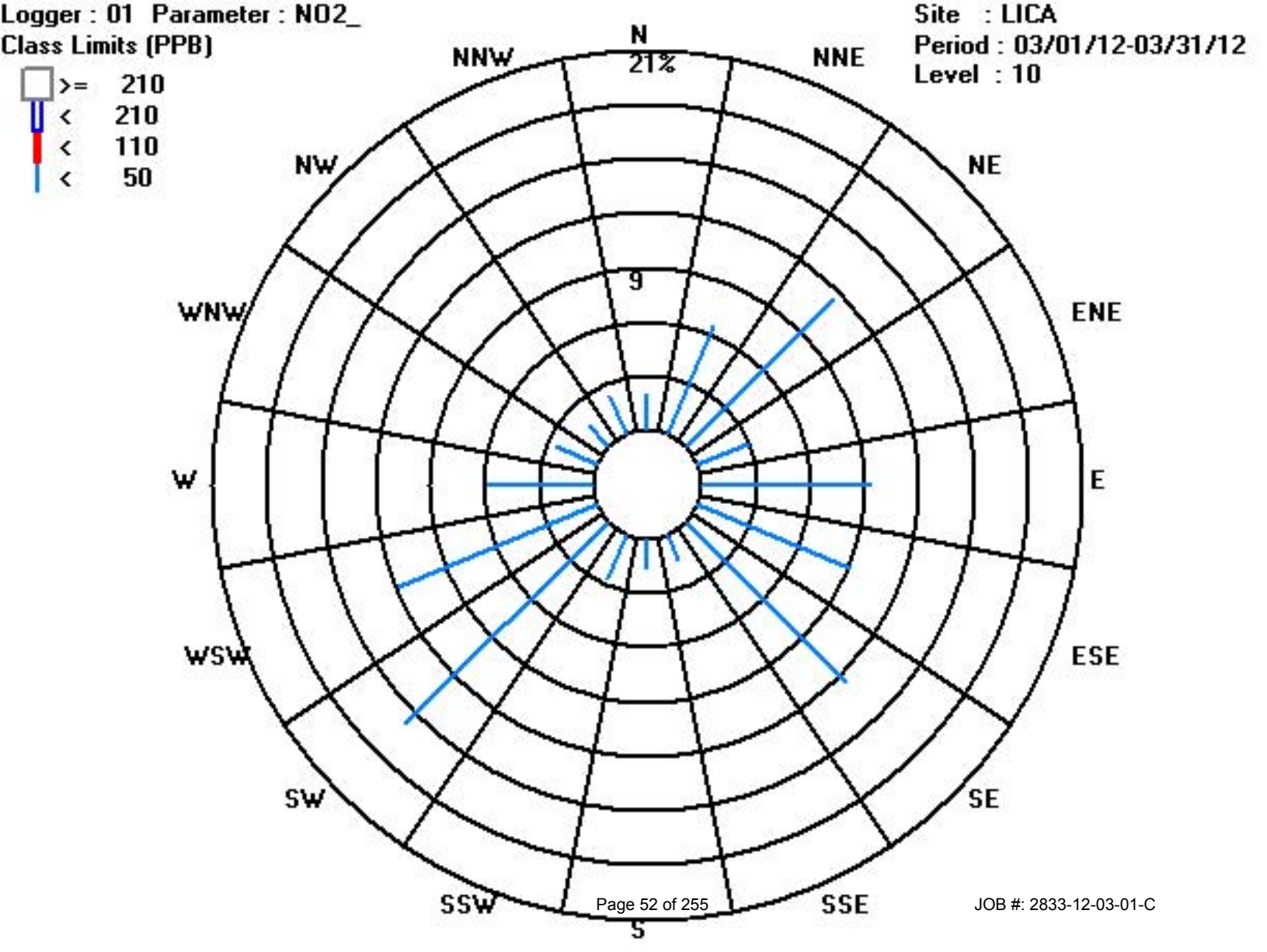
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 14 | 46 | 81 | 21 | 65 | 64 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 11 | 16 | 700 |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 14 | 46 | 81 | 21 | 65 | 64 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 11 | 16 | |

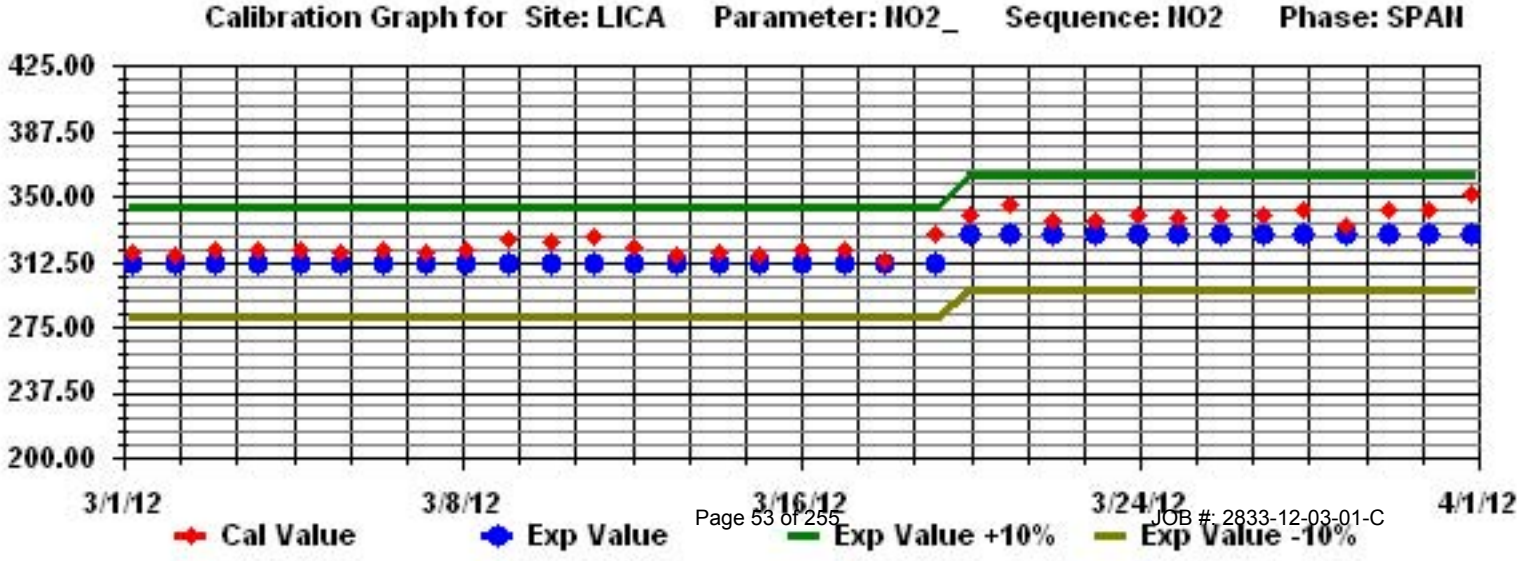
Calm : .00 %

Total # Operational Hours : 700






JOB #: 2833-12-03-01-C


Calibration Graph for Site: LICA Parameter: NO2_ Sequence: NO2 Phase: SPAN
425.00
387.50
350.00
312.50
275.00
237.50
200.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitric Oxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

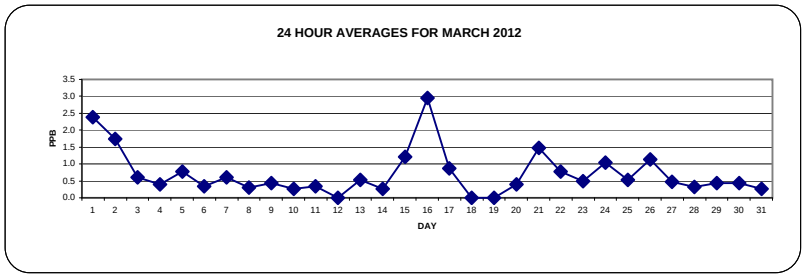
**NITRIC OXIDE** hourly averages in ppb

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 | **IZS** | 0 | 0 | 0 | 3 | 3 | 6 | 6 | 16 | 11 | 7 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 2.4 | 24 |
| 2 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 13 | 12 | 6 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13 | 1.7 | 24 |
| 3 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.6 | 24 |
| 4 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 5 | **IZS** | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 5 | 0.8 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 0.3 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 4 | 0.6 | 24 |
| 8 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 2 | 0.3 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.3 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | **IZS** | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 15 | 1 | 1 | 1 | 0 | 0 | 3 | 13 | **C** | **C** | **C** | **C** | 1 | 1 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 1.2 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 20 | **32** | 4 | 2 | 2 | **IZS** | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **32** | **3.0** | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 9 | 3 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0.9 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **IZS** | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **IZS** | 6 | 8 | 6 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 8 | 1.5 | 24 |
| 22 | 4 | 0 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.8 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | **IZS** | 4 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | **M** | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0.5 | 23 |
| 24 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 3 | 3 | 4 | 3 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 4 | 1.0 | 24 |
| 25 | 1 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.5 | 24 |
| 26 | 0 | 0 | **IZS** | 0 | 2 | 0 | 2 | 3 | 3 | 5 | 4 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 5 | 1.1 | 24 |
| 27 | 0 | **IZS** | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0.5 | 24 |
| 28 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 2 | 0.3 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | **IZS** | 0 | 2 | 0.4 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 2 | 0.4 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | **IZS** | 0 | 0 | 0 | 2 | 0.3 | 24 |
| HOURLY MAX | 4 | 1 | 1 | 1 | 2 | 3 | 13 | 20 | 32 | 8 | 6 | 6 | 16 | 11 | 7 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 4 | | | |
| HOURLY AVG | 0.2 | 0.0 | 0.1 | 0.0 | 0.2 | 0.3 | 1.4 | 2.6 | 2.9 | 1.8 | 1.5 | 1.2 | 1.2 | 1.0 | 0.9 | 0.6 | 0.2 | 0.2 | 0.2 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | | | |

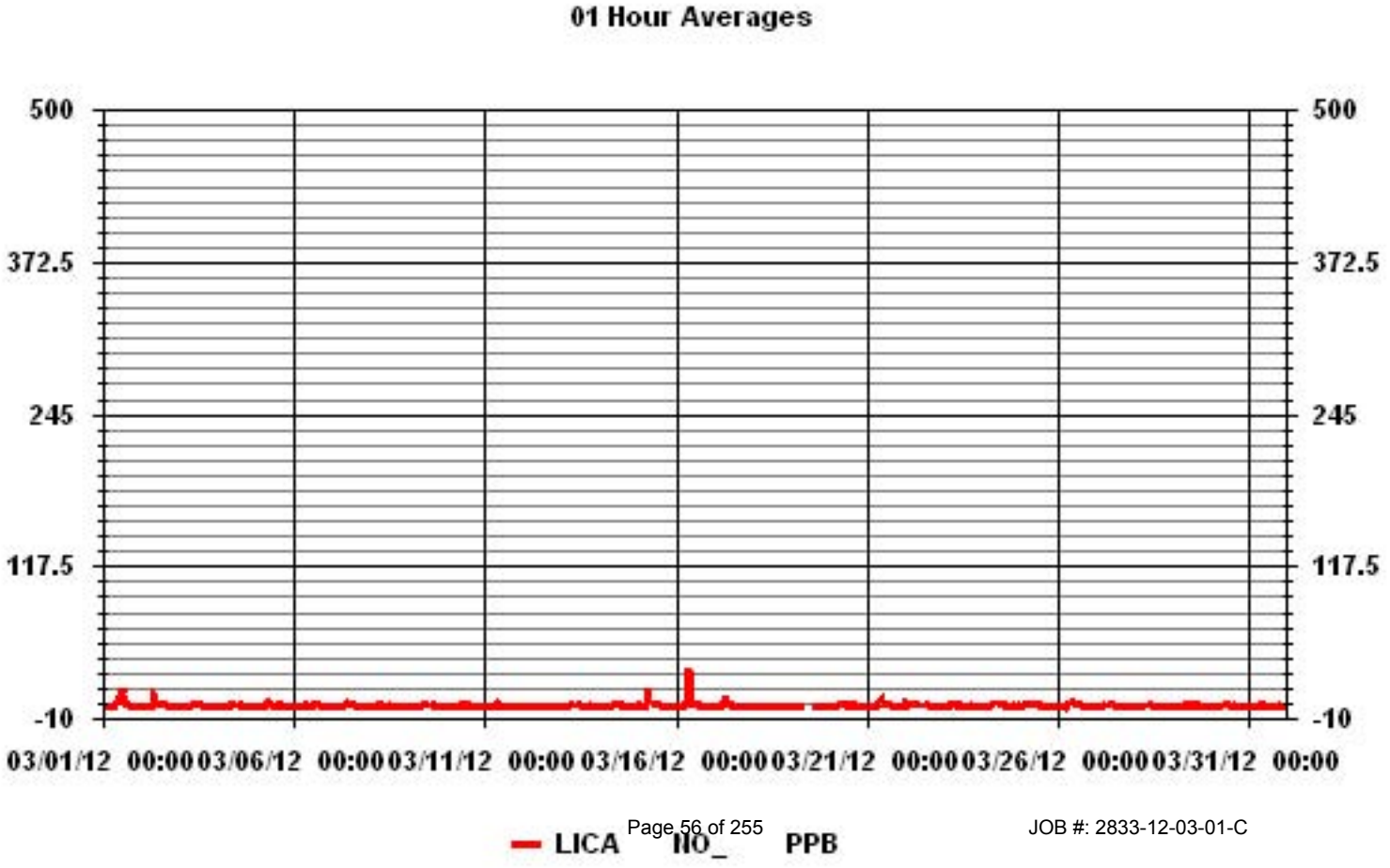
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | | | 251 | | | | |
| MAXIMUM 1-HR AVERAGE: | | | 32 | PPB | @ HOUR(S) | 8 | ON DAY(S) 16 |
| MAXIMUM 24-HR AVERAGE: | | | 3.0 | PPB | | | ON DAY(S) 16 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 11 | HRS | AMD OPERATION UPTIME: | | | 99.9 | % |
| STANDARD DEVIATION: | 2.04 | | MONTHLY AVERAGE: | | | 0.71 | PPB |






JOB #: 2833-12-03-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

**NITRIC OXIDE MAX** instantaneous maximum in ppb

MST

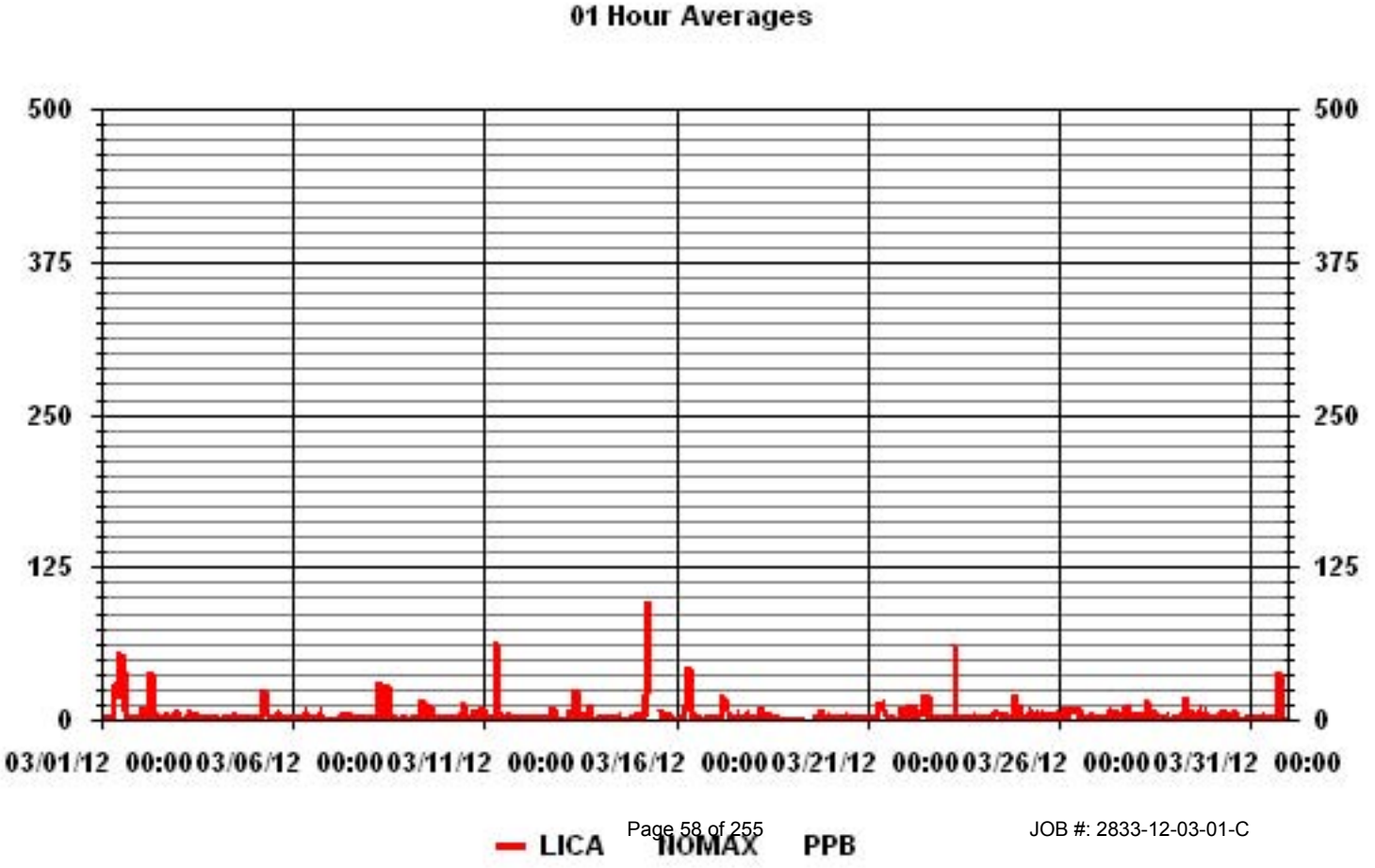
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 28 | 16 | 31 | 55 | 46 | 53 | 41 | 8 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 55 | 12.8 | 24 |
| 2 | 1 | 1 | 8 | **IZS** | 1 | 1 | 1 | 40 | 23 | 8 | 4 | 3 | 1 | 1 | 3 | 2 | 1 | 6 | 0 | 0 | 0 | 3 | 1 | 8 | 40 | 5.1 | 24 |
| 3 | 1 | 1 | **IZS** | 0 | 1 | 3 | 1 | 8 | 3 | 4 | 3 | 3 | 3 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 8 | 2.1 | 24 |
| 4 | 2 | **IZS** | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 4 | 4 | 1 | 2 | 3 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1.5 | 24 |
| 5 | **IZS** | 1 | 1 | 1 | 2 | 3 | 25 | 11 | 5 | 1 | 1 | 1 | 1 | 3 | 1 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | **IZS** | 25 | 3.2 | 24 |
| 6 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 1 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 4 | 0 | 0 | 0 | 1 | **IZS** | 0 | 5 | 1.4 | 24 |
| 7 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 4 | 4 | 5 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | **IZS** | 1 | 1 | 5 | 1.6 | 24 |
| 8 | 1 | 1 | 1 | 1 | 2 | 3 | 31 | 1 | 2 | 0 | 1 | 29 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | **IZS** | 1 | 1 | 1 | 31 | 3.6 | 24 |
| 9 | 1 | 0 | 1 | 1 | 1 | 0 | 3 | 1 | 6 | 16 | 2 | 4 | 2 | 5 | 10 | 9 | 2 | 2 | 1 | **IZS** | 1 | 1 | 1 | 1 | 16 | 3.1 | 24 |
| 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 2 | 14 | 1 | 2 | 3 | 1 | 1 | 7 | **IZS** | 3 | 1 | 3 | 1 | 10 | 14 | 2.7 | 24 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 64 | 1 | 1 | 1 | 3 | 1 | 3 | 4 | 1 | 1 | **IZS** | 1 | 2 | 2 | 1 | 1 | 1 | 64 | 4.2 | 24 |
| 12 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 6 | 11 | 1 | 1 | 0 | 0 | 11 | 1.7 | 24 |
| 13 | 0 | 0 | 1 | 0 | 1 | 2 | 8 | 2 | 1 | 24 | 4 | 3 | 4 | 3 | 3 | **IZS** | 1 | 1 | 12 | 1 | 0 | 0 | 0 | 1 | 24 | 3.1 | 24 |
| 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 3 | 1 | **IZS** | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 3 | 1.0 | 24 |
| 15 | 6 | 3 | 5 | 2 | 3 | 21 | **94** | **C** | **C** | **C** | **C** | **C** | 4 | **IZS** | 6 | 2 | 3 | 1 | 1 | 6 | 3 | 1 | 1 | 1 | **94** | 9.1 | 24 |
| 16 | 0 | 0 | 1 | 2 | 1 | 10 | 12 | 37 | 43 | 9 | 4 | 6 | **IZS** | 3 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 43 | 6.0 | 24 |
| 17 | 1 | 2 | 2 | 1 | 1 | 20 | 17 | 16 | 8 | 1 | 1 | **IZS** | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | 2 | 4 | 1 | 1 | 20 | 3.9 | 24 |
| 18 | 1 | 0 | 1 | 1 | 2 | 10 | 1 | 1 | 1 | 4 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 10 | 1.3 | 24 |
| 19 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 1 | 1 | 0 | 0 | 7 | 1 | 1 | 1 | 3 | 7 | 1.0 | 24 |
| 20 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 3 | **IZS** | 2 | 4 | 2 | 1 | 1 | 1 | 2 | 3 | 2 | 2 | 3 | 1 | 0 | 2 | 1 | 4 | 1.6 | 24 |
| 21 | 2 | 2 | 2 | 2 | 2 | 1 | 12 | **IZS** | 9 | 12 | 9 | 5 | 3 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 4 | 1 | 5 | 8 | 12 | 3.7 | 24 |
| 22 | 9 | 2 | 3 | 3 | 1 | 10 | **IZS** | 4 | 6 | 6 | 3 | 20 | 9 | 2 | 21 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 21 | 4.7 | 24 |
| 23 | 1 | 1 | 1 | 2 | 1 | **IZS** | 59 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | **M** | **M** | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 59 | 4.0 | 22 |
| 24 | 2 | 1 | 1 | 1 | **IZS** | 1 | 3 | 6 | 5 | 6 | 5 | 3 | 3 | 3 | 1 | 5 | 1 | 1 | 0 | 2 | 20 | 7 | 1 | 13 | 20 | 4.0 | 24 |
| 25 | 5 | 3 | 1 | **IZS** | 3 | 6 | 4 | 3 | 1 | 3 | 5 | 3 | 5 | 2 | 1 | 2 | 1 | 6 | 0 | 4 | 3 | 1 | 4 | 1 | 6 | 2.9 | 24 |
| 26 | 1 | 5 | **IZS** | 1 | 10 | 1 | 6 | 10 | 5 | 8 | 8 | 7 | 7 | 1 | 6 | 1 | 1 | 2 | 2 | 1 | 4 | 4 | 1 | 1 | 10 | 4.0 | 24 |
| 27 | 1 | **IZS** | 1 | 1 | 2 | 3 | 4 | 7 | 5 | 2 | 2 | 1 | 8 | 4 | 2 | 5 | 1 | 2 | 3 | 12 | 6 | 1 | 0 | 3 | 12 | 3.3 | 24 |
| 28 | **IZS** | 5 | 2 | 1 | 3 | 4 | 2 | 16 | 2 | 4 | 3 | 7 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 3 | 0 | 0 | 1 | **IZS** | 16 | 2.8 | 24 |
| 29 | 1 | 1 | 1 | 1 | 3 | 4 | 2 | 18 | 9 | 3 | 1 | 3 | 5 | 3 | 1 | 3 | 6 | 2 | 2 | 5 | 1 | 1 | **IZS** | 1 | 18 | 3.3 | 24 |
| 30 | 1 | 1 | 2 | 1 | 4 | 3 | 3 | 7 | 3 | 1 | 2 | 1 | 6 | 1 | 7 | 1 | 1 | 1 | 0 | 1 | 0 | **IZS** | 1 | 1 | 7 | 2.1 | 24 |
| 31 | 1 | 2 | 1 | 1 | 2 | 0 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 40 | 1 | **IZS** | 1 | 1 | 2 | 40 | 2.9 | 24 |
| HOURLY MAX | 9 | 5 | 8 | 3 | 10 | 21 | 94 | 64 | 43 | 24 | 31 | 55 | 46 | 53 | 41 | 9 | 6 | 7 | 40 | 12 | 20 | 7 | 5 | 13 | | | |
| HOURLY AVG | 1.6 | 1.3 | 1.6 | 1.1 | 1.9 | 3.8 | 10.0 | 9.5 | 6.5 | 5.0 | 3.9 | 6.6 | 4.5 | 3.7 | 4.6 | 2.3 | 1.4 | 1.7 | 2.7 | 2.4 | 2.1 | 1.4 | 1.2 | 2.3 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 634 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 94 | PPB | @ HOUR(S) | 6 | ON DAY(S) | 15 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 742 | HRS |
| MONTHLY CALIBRATION TIME: | 12 | HRS | | | | |
| STANDARD DEVIATION | 7.56 | | | | | |






JOB #: 2833-12-03-01-C

LICA
NO_ / WD Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 2.00 | 6.57 | 11.57 | 3.00 | 9.28 | 9.14 | 12.57 | 1.57 | 1.71 | 2.71 | 15.85 | 11.85 | 5.85 | 2.42 | 1.57 | 2.28 | 100.00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 2.00 | 6.57 | 11.57 | 3.00 | 9.28 | 9.14 | 12.57 | 1.57 | 1.71 | 2.71 | 15.85 | 11.85 | 5.85 | 2.42 | 1.57 | 2.28 | |

Calm : .00 %

Total # Operational Hours : 700

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 14 | 46 | 81 | 21 | 65 | 64 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 11 | 16 | 700 |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 14 | 46 | 81 | 21 | 65 | 64 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 11 | 16 | |

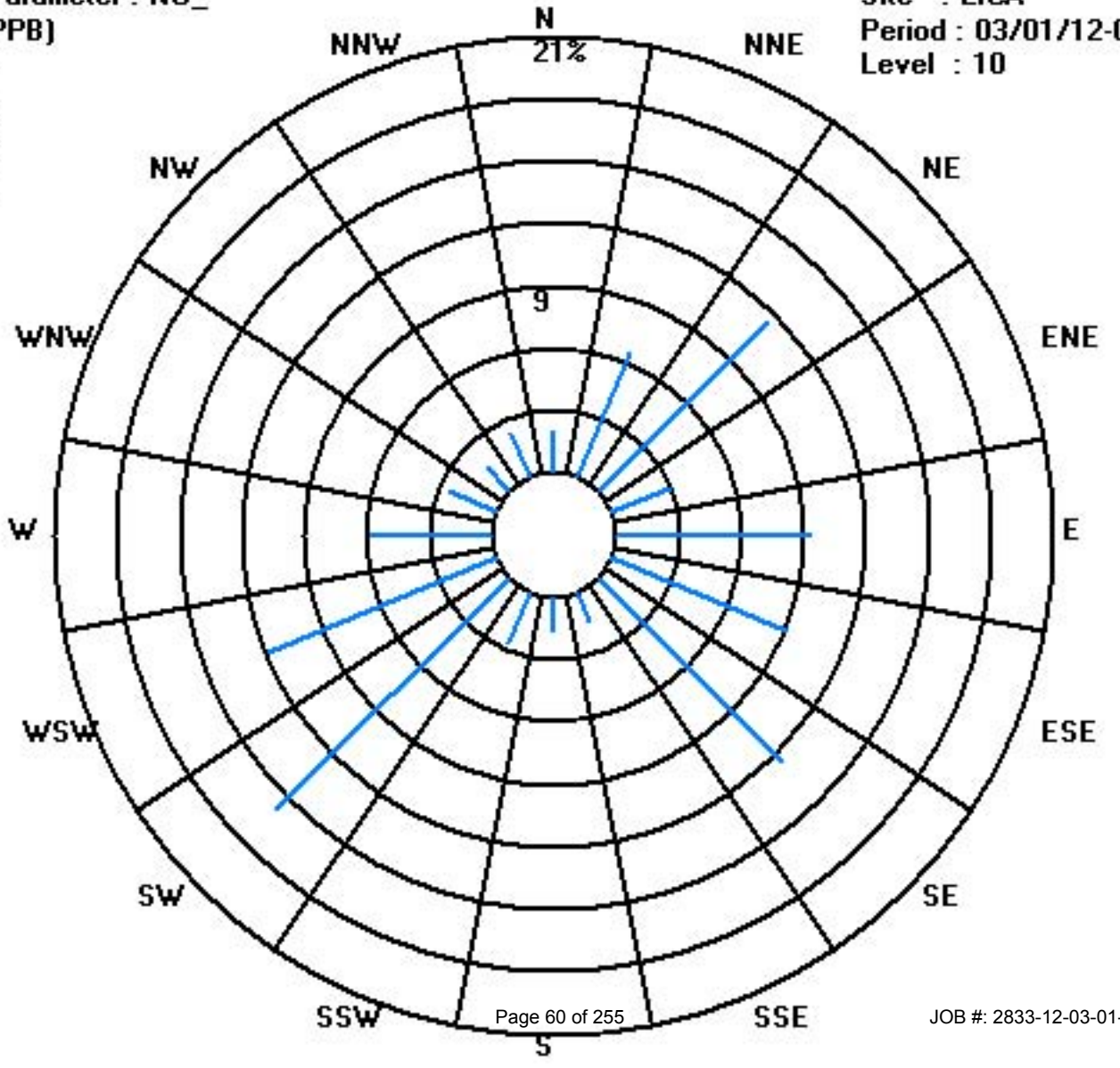
Calm : .00 %

Total # Operational Hours : 700

Logger : 01 Parameter : NO_
Class Limits (PPB)

>= 210
< 210
< 110
< 50

Site : LICA
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-01-C

# Oxides of Nitrogen

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

MARCH 2012

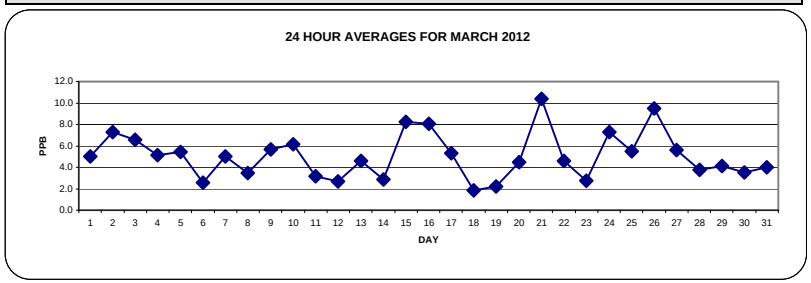
**OXIDES OF NITROGEN** hourly averages in ppb

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 | 2 | 2 | 2 | 2 | **IZS** | 2 | 3 | 3 | 5 | 6 | 7 | 7 | 22 | 18 | 9 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 22 | 5.0 | 24 |
| 2 | 3 | 4 | 6 | **IZS** | 6 | 6 | 11 | 31 | 26 | 14 | 5 | 4 | 3 | 3 | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 5 | 6 | 6 | 31 | 7.3 | 24 |
| 3 | 6 | 7 | **IZS** | 5 | 6 | 5 | 7 | 13 | 7 | 6 | 6 | 6 | 6 | 5 | 5 | 6 | 5 | 5 | 6 | 8 | 7 | 10 | 7 | 7 | 13 | 6.6 | 24 |
| 4 | 9 | **IZS** | 7 | 7 | 6 | 4 | 5 | 6 | 5 | 5 | 4 | 4 | 6 | 4 | 3 | 3 | 2 | 3 | 4 | 5 | 6 | 7 | 7 | 6 | 9 | 5.1 | 24 |
| 5 | **IZS** | 5 | 5 | 6 | 6 | 7 | 24 | 28 | 7 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | **IZS** | 28 | 5.5 | 24 |
| 6 | 2 | 2 | 2 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 4 | 4 | 5 | 4 | 3 | **IZS** | 4 | 5 | 2.6 | 24 |
| 7 | 5 | 5 | 5 | 6 | 6 | 6 | 8 | 11 | 11 | 10 | 5 | 4 | 4 | 3 | 2 | 2 | 3 | 4 | 4 | 4 | 4 | **IZS** | 2 | 1 | 11 | 5.0 | 24 |
| 8 | 2 | 2 | 3 | 4 | 7 | 9 | 15 | 3 | 3 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | **IZS** | 3 | 3 | 4 | 15 | 3.5 | 24 |
| 9 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 6 | 8 | 8 | 8 | 7 | 9 | **IZS** | 10 | 9 | 9 | 8 | 10 | 5.7 | 24 |
| 10 | 8 | 7 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 3 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 11 | 15 | 26 | 16 | 6 | 26 | 6.2 | 24 |
| 11 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 9 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 4 | **IZS** | 4 | 3 | 3 | 4 | 3 | 2 | 9 | 3.2 | 24 |
| 12 | 2 | 3 | 3 | 3 | 4 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | **IZS** | 3 | 4 | 5 | 3 | 3 | 3 | 2 | 5 | 2.7 | 24 |
| 13 | 2 | 2 | 2 | 2 | 3 | 11 | 19 | 7 | 3 | 5 | 5 | 5 | 4 | 3 | 2 | **IZS** | 2 | 5 | 10 | 5 | 4 | 2 | 2 | 1 | 19 | 4.6 | 24 |
| 14 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 1 | 2 | 3 | 3 | 5 | 5 | 8 | 9 | 9 | 2.9 | 24 |
| 15 | 17 | 18 | 13 | 6 | 6 | 19 | 42 | **C** | **C** | **C** | **C** | 3 | 3 | **IZS** | 4 | 4 | 3 | 5 | 5 | 3 | 2 | 1 | 1 | 1 | 42 | 8.2 | 24 |
| 16 | 1 | 1 | 2 | 3 | 3 | 10 | 18 | 36 | **51** | 11 | 7 | 5 | **IZS** | 3 | 4 | 3 | 2 | 2 | 2 | 3 | 3 | 4 | 6 | 5 | **51** | 8.0 | 24 |
| 17 | 4 | 4 | 5 | 6 | 5 | 8 | 22 | 23 | 9 | 4 | 4 | **IZS** | 1 | 2 | 3 | 3 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 23 | 5.3 | 24 |
| 18 | 2 | 1 | 1 | 1 | 2 | 3 | 2 | 1 | 1 | 1 | **IZS** | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 1.9 | 24 |
| 19 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 2 | 3 | 3 | 3 | 4 | 2 | 3 | 4 | 3 | 4 | 2.2 | 24 |
| 20 | 3 | 3 | 3 | 3 | 2 | 2 | 6 | 7 | **IZS** | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 4 | 7 | 8 | 6 | 8 | 8 | 8 | 8 | 8 | 4.5 | 24 |
| 21 | 10 | 11 | 6 | 11 | 10 | 12 | 13 | **IZS** | 16 | 17 | 13 | 8 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 7 | 10 | 15 | 26 | 31 | 31 | **10.4** | 24 |
| 22 | 23 | 7 | 9 | 8 | 7 | 4 | **IZS** | 5 | 3 | 3 | 3 | 6 | 4 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 23 | 4.6 | 24 |
| 23 | 1 | 2 | 3 | 2 | 3 | **IZS** | 8 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | **M** | 2 | 2 | 3 | 4 | 4 | 3 | 3 | 3 | 2 | 8 | 2.7 | 23 |
| 24 | 3 | 7 | 4 | 4 | **IZS** | 7 | 10 | 10 | 9 | 10 | 6 | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 8 | 16 | 18 | 14 | 19 | 19 | 7.3 | 24 |
| 25 | 18 | 7 | 4 | **IZS** | 9 | 12 | 15 | 7 | 4 | 5 | 5 | 4 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 6 | 7 | 18 | 5.5 | 24 |
| 26 | 9 | 7 | **IZS** | 9 | 25 | 8 | 11 | 12 | 10 | 12 | 10 | 4 | 3 | 3 | 4 | 3 | 3 | 5 | 12 | 20 | 19 | 20 | 5 | 5 | 25 | 9.5 | 24 |
| 27 | 4 | **IZS** | 3 | 5 | 11 | 16 | 13 | 11 | 5 | 3 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 8 | 7 | 6 | 5 | 4 | 7 | 16 | 5.6 | 24 |
| 28 | **IZS** | 12 | 9 | 3 | 6 | 7 | 6 | 7 | 4 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 3 | 4 | 4 | 1 | 1 | 1 | **IZS** | 12 | 3.8 | 24 |
| 29 | 2 | 2 | 2 | 2 | 5 | 5 | 4 | 8 | 5 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 5 | 7 | 6 | 5 | 7 | **IZS** | 3 | 8 | 4.1 | 24 |
| 30 | 3 | 2 | 4 | 5 | 4 | 8 | 9 | 7 | 4 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 1 | **IZS** | 3 | 3 | 9 | 3.5 | 24 |
| 31 | 2 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 6 | **IZS** | 14 | 14 | 12 | 14 | 4.0 | 24 |
| HOURLY MAX | 23 | 18 | 13 | 11 | 25 | 19 | 42 | 36 | 51 | 17 | 13 | 8 | 22 | 18 | 9 | 8 | 8 | 7 | 12 | 20 | 19 | 26 | 26 | 31 | | | |
| HOURLY AVG | 5.2 | 4.7 | 4.1 | 4.1 | 5.5 | 6.4 | 9.9 | 9.2 | 7.6 | 5.1 | 4.2 | 3.5 | 3.5 | 3.2 | 3.1 | 2.9 | 2.9 | 3.5 | 4.5 | 5.0 | 5.3 | 6.5 | 5.9 | 5.8 | | | |

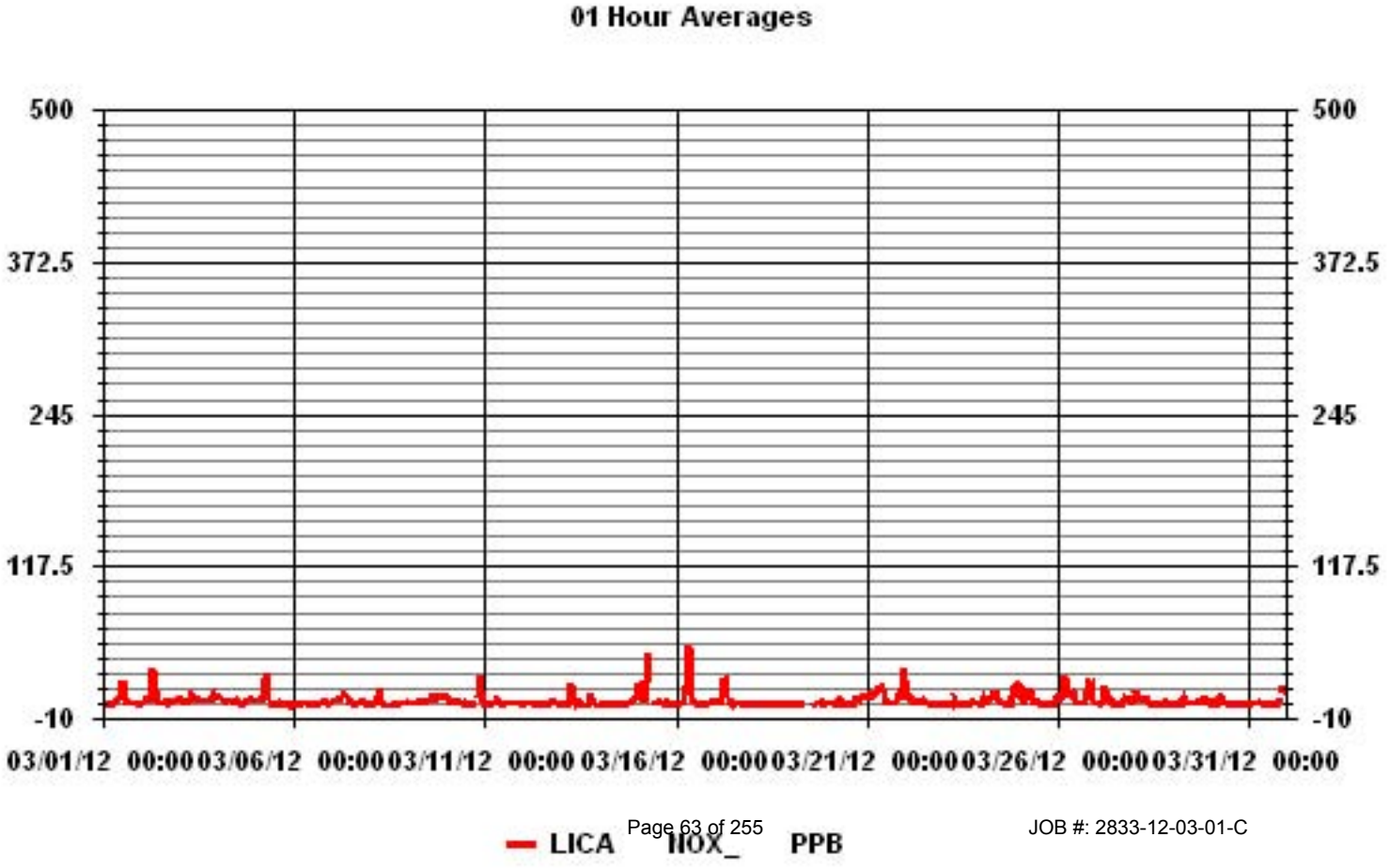
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 700 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 51 | PPB | @ HOUR(S) | 8 | ON DAY(S) | 16 |
| MAXIMUM 24-HR AVERAGE: | 10.4 | PPB | | | ON DAY(S) | 21 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 11 | HRS | AMD OPERATION UPTIME: | | 99.9 | % |
| STANDARD DEVIATION: | 5.09 | | MONTHLY AVERAGE: | | 5.07 | PPB |






JOB #: 2833-12-03-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

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

MST

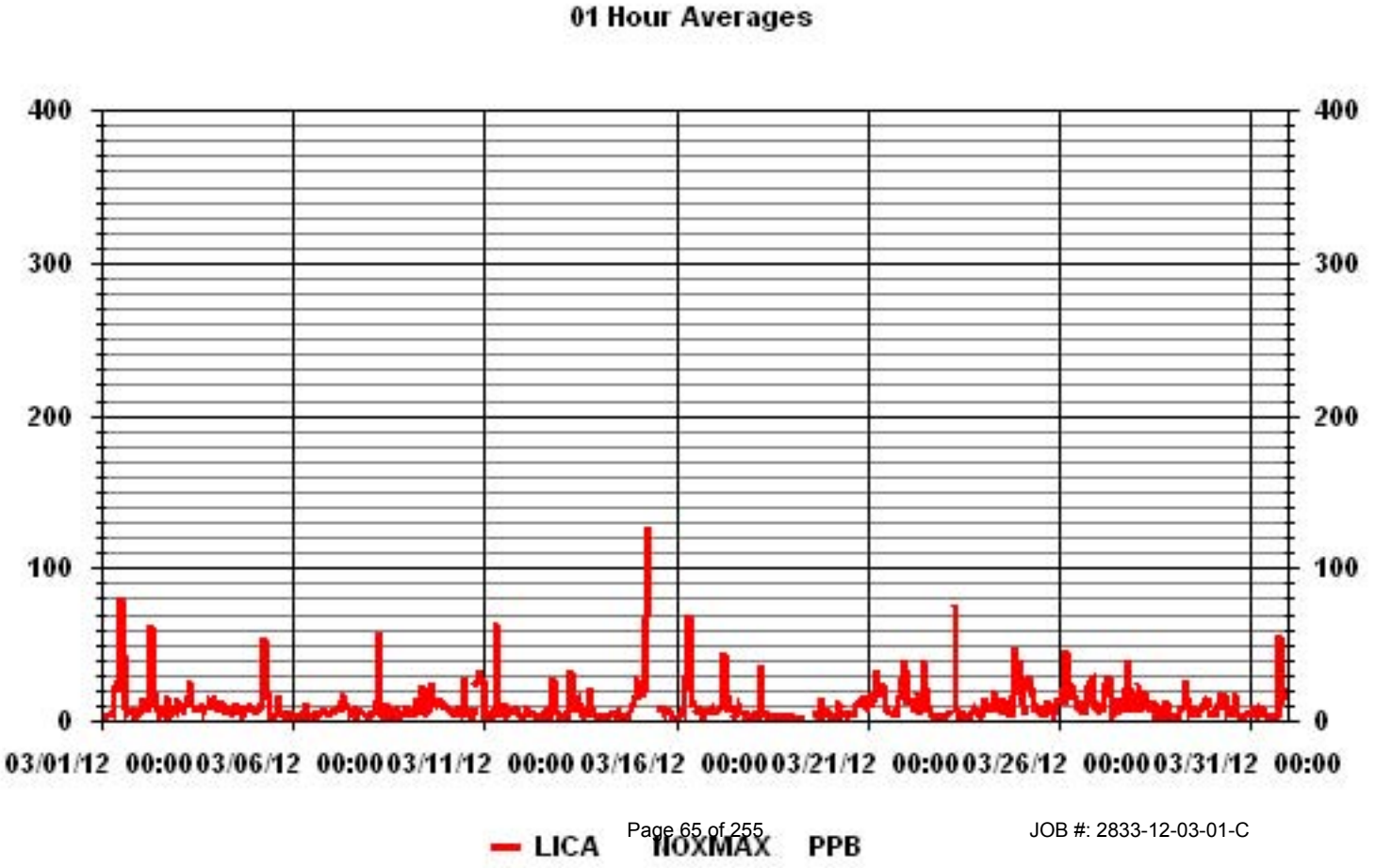
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 3 | 3 | 3 | 3 | **IZS** | 5 | 6 | 5 | 21 | 21 | 25 | 26 | 80 | 70 | 45 | 9 | 5 | 6 | 6 | 6 | 4 | 6 | 6 | 4 | 80 | 16.0 | 24 |
| 2 | 5 | 6 | 13 | **IZS** | 8 | 8 | 18 | 63 | 42 | 20 | 10 | 7 | 4 | 5 | 9 | 5 | 4 | 16 | 6 | 4 | 5 | 8 | 7 | 15 | 63 | 12.5 | 24 |
| 3 | 8 | 8 | **IZS** | 7 | 9 | 12 | 10 | 26 | 12 | 11 | 8 | 8 | 9 | 8 | 9 | 9 | 6 | 8 | 9 | 14 | 13 | 14 | 10 | 9 | 26 | 10.3 | 24 |
| 4 | 12 | **IZS** | 9 | 12 | 8 | 6 | 6 | 7 | 8 | 6 | 5 | 6 | 11 | 5 | 7 | 9 | 3 | 4 | 6 | 7 | 9 | 10 | 9 | 7 | 12 | 7.5 | 24 |
| 5 | **IZS** | 6 | 7 | 9 | 9 | 13 | 55 | 46 | 20 | 3 | 4 | 3 | 3 | 4 | 4 | 16 | 6 | 5 | 4 | 4 | 3 | 4 | 2 | **IZS** | 55 | 10.5 | 24 |
| 6 | 4 | 4 | 3 | 3 | 3 | 3 | 5 | 5 | 11 | 3 | 2 | 2 | 3 | 4 | 4 | 3 | 4 | 5 | 5 | 7 | 6 | 5 | **IZS** | 5 | 11 | 4.3 | 24 |
| 7 | 7 | 6 | 6 | 7 | 8 | 8 | 12 | 16 | 16 | 13 | 9 | 5 | 6 | 5 | 4 | 9 | 4 | 6 | 7 | 6 | 5 | **IZS** | 4 | 2 | 16 | 7.4 | 24 |
| 8 | 4 | 4 | 5 | 7 | 12 | 15 | 57 | 7 | 8 | 2 | 2 | 12 | 4 | 4 | 3 | 6 | 7 | 3 | 3 | 4 | **IZS** | 6 | 5 | 7 | 57 | 8.1 | 24 |
| 9 | 7 | 4 | 4 | 4 | 7 | 4 | 14 | 6 | 8 | 23 | 6 | 5 | 6 | 16 | 25 | 22 | 12 | 11 | 14 | **IZS** | 13 | 11 | 12 | 10 | 25 | 10.6 | 24 |
| 10 | 10 | 9 | 7 | 5 | 6 | 7 | 6 | 8 | 8 | 5 | 7 | 28 | 3 | 5 | 6 | 3 | 3 | 7 | **IZS** | 25 | 26 | 33 | 24 | 28 | 33 | 11.7 | 24 |
| 11 | 4 | 5 | 3 | 4 | 5 | 4 | 8 | 65 | 5 | 4 | 4 | 5 | 4 | 12 | 6 | 5 | 7 | **IZS** | 6 | 7 | 7 | 6 | 5 | 3 | 65 | 8.0 | 24 |
| 12 | 3 | 5 | 8 | 7 | 6 | 5 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 6 | 7 | 4 | **IZS** | 3 | 10 | 28 | 6 | 6 | 4 | 3 | 28 | 5.9 | 24 |
| 13 | 2 | 3 | 3 | 3 | 6 | 26 | 33 | 14 | 5 | 12 | 14 | 10 | 10 | 5 | 4 | **IZS** | 4 | 8 | 22 | 9 | 4 | 4 | 2 | 2 | 33 | 8.9 | 24 |
| 14 | 2 | 3 | 3 | 3 | 3 | 3 | 5 | 4 | 4 | 4 | 6 | 4 | 6 | 3 | **IZS** | 3 | 3 | 3 | 5 | 6 | 10 | 10 | 15 | 15 | 15 | 5.3 | 24 |
| 15 | 26 | 25 | 19 | 15 | 18 | 68 | **124** | **C** | **C** | **C** | **C** | **C** | 5 | **IZS** | 7 | 7 | 5 | 7 | 7 | 6 | 6 | 2 | 3 | 2 | **124** | 19.6 | 24 |
| 16 | 2 | 2 | 4 | 6 | 5 | 22 | 29 | 54 | 69 | 22 | 11 | 11 | **IZS** | 6 | 7 | 7 | 2 | 2 | 4 | 6 | 6 | 7 | 9 | 7 | 69 | 13.0 | 24 |
| 17 | 7 | 6 | 7 | 9 | 10 | 34 | 44 | 37 | 18 | 7 | 7 | **IZS** | 3 | 4 | 5 | 10 | 8 | 6 | 4 | 4 | 3 | 5 | 4 | 3 | 44 | 10.7 | 24 |
| 18 | 4 | 2 | 3 | 2 | 5 | 36 | 5 | 4 | 4 | 4 | **IZS** | 2 | 3 | 2 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 36 | 4.7 | 24 |
| 19 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 4 | 4 | 3 | 4 | 15 | 4 | 5 | 5 | 6 | 15 | 4.0 | 24 |
| 20 | 4 | 5 | 4 | 3 | 4 | 3 | 11 | 10 | **IZS** | 6 | 4 | 3 | 4 | 4 | 4 | 4 | 9 | 11 | 12 | 14 | 15 | 15 | 11 | 10 | 15 | 7.4 | 24 |
| 21 | 15 | 15 | 9 | 18 | 14 | 16 | 31 | **IZS** | 22 | 22 | 17 | 12 | 7 | 6 | 5 | 5 | 4 | 4 | 8 | 15 | 17 | 27 | 32 | 39 | 39 | 15.7 | 24 |
| 22 | 35 | 11 | 14 | 13 | 15 | 8 | **IZS** | 16 | 4 | 7 | 8 | 40 | 23 | 5 | 12 | 5 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 40 | 10.5 | 24 |
| 23 | 3 | 4 | 5 | 5 | 6 | **IZS** | 74 | 9 | 7 | 3 | 3 | 4 | 4 | 3 | **M** | **M** | 3 | 6 | 8 | 6 | 6 | 5 | 6 | 4 | 74 | 8.3 | 22 |
| 24 | 7 | 14 | 7 | 7 | **IZS** | 8 | 12 | 20 | 12 | 15 | 8 | 7 | 9 | 14 | 4 | 6 | 4 | 4 | 4 | 16 | 48 | 29 | 23 | 40 | 48 | 13.8 | 24 |
| 25 | 30 | 12 | 6 | **IZS** | 24 | 29 | 22 | 17 | 6 | 11 | 8 | 8 | 6 | 4 | 4 | 10 | 4 | 13 | 4 | 9 | 3 | 4 | 12 | 12 | 30 | 11.2 | 24 |
| 26 | 12 | 19 | **IZS** | 13 | 46 | 17 | 23 | 25 | 14 | 17 | 16 | 9 | 9 | 5 | 13 | 6 | 4 | 10 | 23 | 26 | 28 | 29 | 14 | 9 | 46 | 16.8 | 24 |
| 27 | 6 | **IZS** | 7 | 11 | 16 | 25 | 18 | 29 | 16 | 4 | 5 | 5 | 5 | 15 | 5 | 9 | 6 | 12 | 21 | 40 | 23 | 8 | 6 | 16 | 40 | 13.4 | 24 |
| 28 | **IZS** | 23 | 17 | 5 | 17 | 17 | 10 | 14 | 9 | 6 | 10 | 13 | 2 | 3 | 9 | 5 | 3 | 7 | 7 | 13 | 2 | 2 | 2 | **IZS** | 23 | 8.9 | 24 |
| 29 | 3 | 3 | 3 | 6 | 9 | 10 | 7 | 26 | 17 | 10 | 5 | 6 | 7 | 4 | 4 | 6 | 7 | 8 | 10 | 12 | 8 | 13 | **IZS** | 4 | 26 | 8.2 | 24 |
| 30 | 4 | 4 | 7 | 9 | 9 | 16 | 15 | 18 | 8 | 4 | 5 | 3 | 10 | 3 | 18 | 4 | 4 | 3 | 2 | 2 | 2 | **IZS** | 5 | 4 | 18 | 6.9 | 24 |
| 31 | 4 | 7 | 7 | 5 | 7 | 4 | 5 | 9 | 5 | 4 | 4 | 3 | 2 | 3 | 1 | 1 | 3 | 1 | 56 | 13 | **IZS** | 19 | 19 | 16 | 56 | 8.6 | 24 |
| HOURLY MAX | 35 | 25 | 19 | 18 | 46 | 68 | 124 | 65 | 69 | 23 | 25 | 40 | 80 | 70 | 45 | 22 | 12 | 16 | 56 | 40 | 48 | 33 | 32 | 40 | | | |
| HOURLY AVG | 8.1 | 7.6 | 6.7 | 7.0 | 10.2 | 14.5 | 22.4 | 19.5 | 13.7 | 9.4 | 7.7 | 8.9 | 8.7 | 8.0 | 8.4 | 6.8 | 4.9 | 6.3 | 9.4 | 11.0 | 10.0 | 10.3 | 9.1 | 9.9 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 698 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 124 | PPB | @ HOUR(S) | 6 | ON DAY(S) | 15 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 742 | HRS |
| MONTHLY CALIBRATION TIME: | 12 | HRS | | | | |
| STANDARD DEVIATION | 11.27 | | | | | |






JOB #: 2833-12-03-01-C

LICA
NOX_ / WD Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 2.00 | 6.57 | 11.42 | 3.00 | 9.28 | 9.14 | 12.57 | 1.57 | 1.71 | 2.71 | 15.85 | 11.85 | 5.85 | 2.42 | 1.57 | 2.28 | 99.85 |
| < | 110 | .00 | .00 | .14 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .14 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 2.00 | 6.57 | 11.57 | 3.00 | 9.28 | 9.14 | 12.57 | 1.57 | 1.71 | 2.71 | 15.85 | 11.85 | 5.85 | 2.42 | 1.57 | 2.28 | |

Calm : .00 %

Total # Operational Hours : 700

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 14 | 46 | 80 | 21 | 65 | 64 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 11 | 16 | 699 |
| < | 110 | | | 1 | | | | | | | | | | | | | | 1 |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 14 | 46 | 81 | 21 | 65 | 64 | 88 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 11 | 16 | |

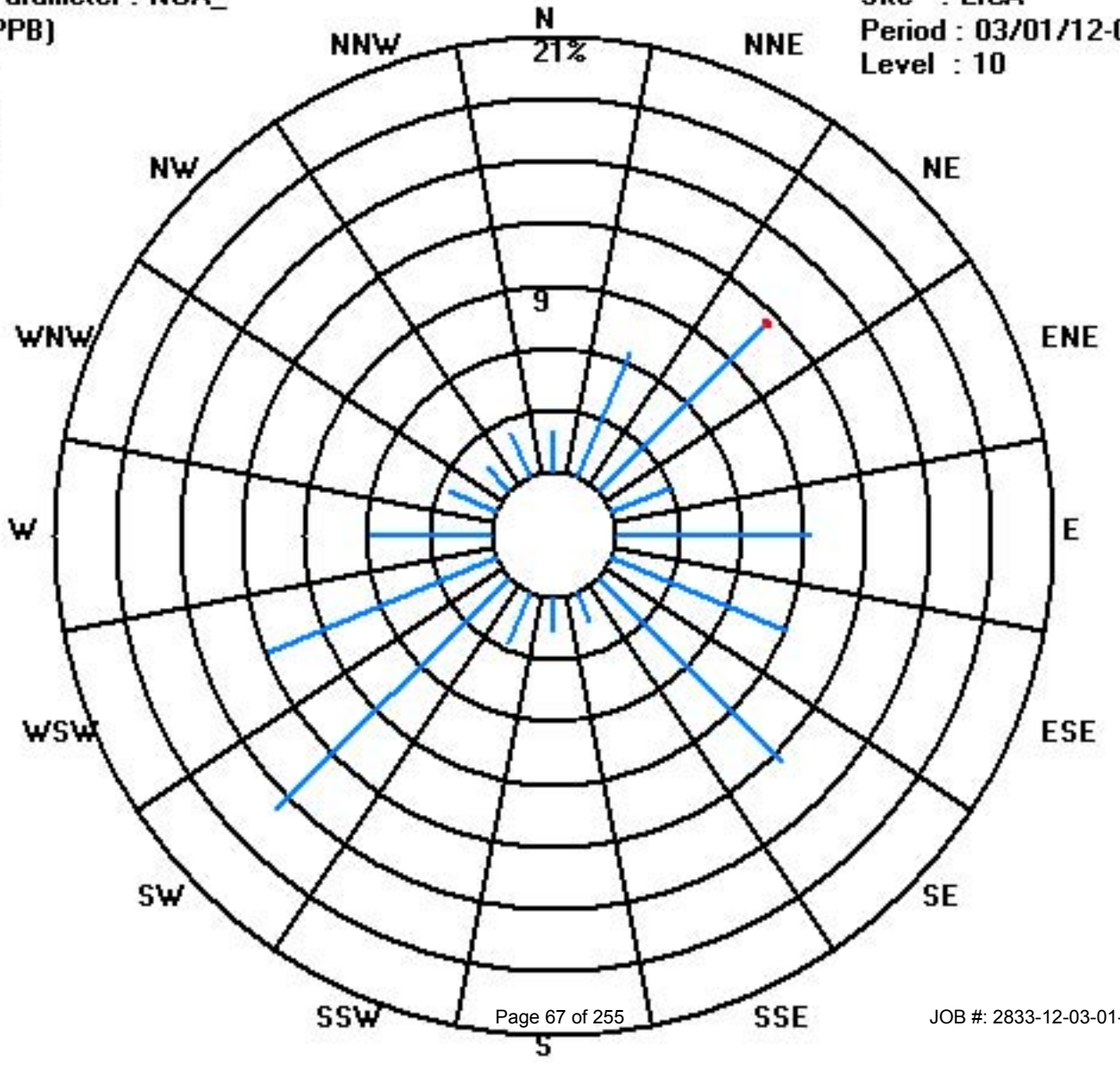
Calm : .00 %

Total # Operational Hours : 700

Logger : 01 Parameter : NOX_
Class Limits (PPB)

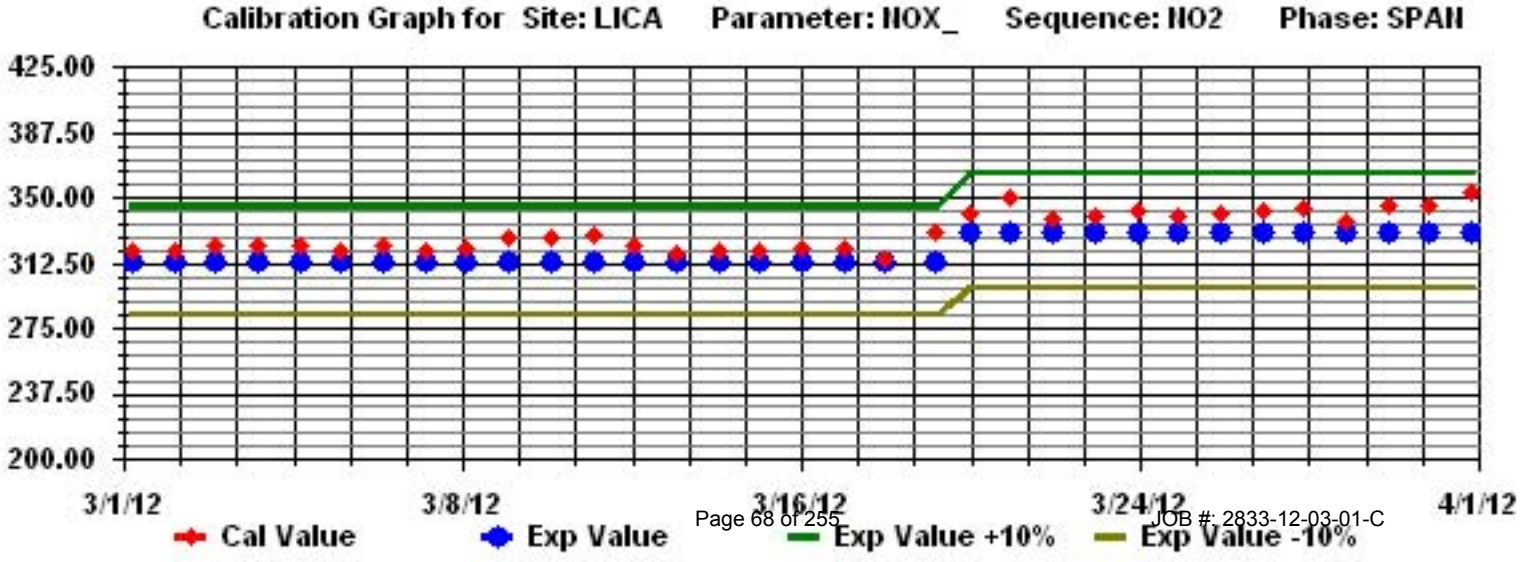
>= 210
< 210
< 110
< 50

Site : LICA
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-01-C


Calibration Graph for Site: LICA Parameter: NOX_ Sequence: NO2 Phase: SPAN
425.00
387.50
350.00
312.50
275.00
237.50
200.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Ozone

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

MARCH 2012

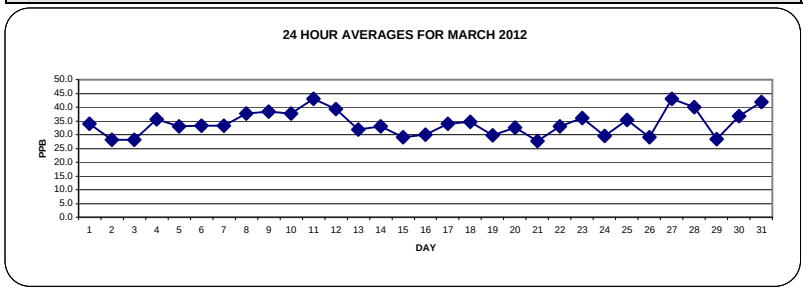
**OZONE ($O_3$)** hourly averages in ppb

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 | 37 | 37 | 36 | 36 | **IZS** | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 32 | 33 | 34 | 35 | 35 | 34 | 34 | 33 | 33 | 33 | 32 | 31 | 37 | 34.0 | 24 |
| 2 | 28 | 27 | 24 | **IZS** | 21 | 19 | 13 | 7 | 13 | 24 | 31 | 32 | 33 | 33 | 34 | 35 | 36 | 35 | 36 | 36 | 35 | 33 | 32 | 31 | 36 | 28.2 | 24 |
| 3 | 29 | 28 | **IZS** | 26 | 25 | 23 | 21 | 15 | 24 | 28 | 28 | 29 | 32 | 34 | 34 | 34 | 34 | 34 | 32 | 28 | 29 | 25 | 28 | 28 | 34 | 28.2 | 24 |
| 4 | 27 | **IZS** | 28 | 21 | 31 | 33 | 33 | 34 | 36 | 37 | 39 | 39 | 39 | 41 | 42 | 42 | 42 | 41 | 41 | 39 | 37 | 35 | 33 | 31 | 42 | 35.7 | 24 |
| 5 | **IZS** | 37 | 34 | 29 | 31 | 30 | 15 | 10 | 31 | 35 | 36 | 37 | 36 | 36 | 37 | 36 | 37 | 37 | 37 | 37 | 36 | 35 | 35 | **IZS** | 37 | 32.9 | 24 |
| 6 | 33 | 33 | 34 | 34 | 34 | 33 | 32 | 32 | 32 | 33 | 34 | 34 | 34 | 35 | 35 | 37 | 36 | 35 | 34 | 33 | 33 | 31 | **IZS** | 26 | 37 | 33.3 | 24 |
| 7 | 24 | 24 | 23 | 23 | 24 | 25 | 23 | 21 | 26 | 30 | 35 | 37 | 38 | 40 | 41 | 42 | 44 | 42 | 41 | 40 | 40 | **IZS** | 41 | 41 | 44 | 33.3 | 24 |
| 8 | 37 | 38 | 36 | 35 | 33 | 32 | 26 | 36 | 37 | 38 | 38 | 39 | 40 | 40 | 41 | 41 | 40 | 41 | 41 | 41 | **IZS** | 40 | 40 | 39 | 41 | 37.8 | 24 |
| 9 | 40 | 41 | 41 | 41 | 40 | 40 | 38 | 37 | 37 | 37 | 38 | 38 | 40 | 42 | 42 | 42 | 41 | 42 | 39 | **IZS** | 34 | 34 | 28 | 28 | 42 | 38.3 | 24 |
| 10 | 33 | 33 | 36 | 38 | 38 | 39 | 40 | 38 | 40 | 40 | 42 | 43 | 45 | 46 | 47 | 49 | 47 | 45 | **IZS** | 30 | 25 | 14 | 25 | 36 | 49 | 37.8 | 24 |
| 11 | 46 | 46 | 44 | 44 | 43 | 42 | 39 | 34 | 42 | 43 | 43 | 44 | 45 | 45 | 45 | 45 | 44 | **IZS** | 44 | 45 | 43 | 42 | 42 | 42 | 46 | **43.1** | 24 |
| 12 | 41 | 39 | 31 | 23 | 29 | 36 | 39 | 39 | 38 | 41 | 42 | 44 | 45 | 45 | 45 | 47 | **IZS** | 45 | 42 | 40 | 39 | 38 | 38 | 38 | 47 | 39.3 | 24 |
| 13 | 37 | 36 | 35 | 34 | 33 | 26 | 17 | 29 | 32 | 30 | 32 | 33 | 35 | 37 | 39 | **IZS** | 40 | 34 | 27 | 30 | 28 | 30 | 31 | 29 | 40 | 31.9 | 24 |
| 14 | 29 | 27 | 28 | 30 | 30 | 29 | 28 | 30 | 30 | 31 | 32 | 34 | 36 | 38 | **IZS** | 45 | 47 | 45 | 43 | 40 | 34 | 30 | 23 | 19 | 47 | 33.0 | 24 |
| 15 | 11 | 13 | 16 | 30 | 29 | 14 | 3 | 10 | 31 | 33 | 33 | **C** | **C** | **IZS** | 39 | 39 | 40 | 38 | 37 | 38 | 40 | 40 | 39 | 38 | 40 | 29.1 | 24 |
| 16 | 37 | 34 | 29 | 22 | 17 | 10 | 4 | 4 | 7 | 25 | 31 | 34 | **IZS** | 43 | 45 | 47 | 49 | 46 | 43 | 40 | 36 | 31 | 30 | 28 | 49 | 30.1 | 24 |
| 17 | 24 | 28 | 29 | 29 | 22 | 14 | 5 | 7 | 23 | 36 | 39 | **IZS** | 46 | 44 | 44 | 44 | 43 | 43 | 43 | 44 | 46 | 44 | 42 | 42 | 46 | 34.0 | 24 |
| 18 | 41 | 41 | 41 | 41 | 39 | 38 | 37 | 36 | 35 | 34 | **IZS** | 32 | 32 | 33 | 35 | 35 | 33 | 32 | 32 | 33 | 33 | 30 | 28 | 28 | 41 | 34.7 | 24 |
| 19 | 27 | 27 | 28 | 28 | 29 | 28 | 30 | 32 | 31 | **IZS** | 32 | 31 | 31 | 32 | **C** | **C** | **C** | **C** | 29 | 29 | 31 | 30 | 29 | 30 | 32 | 29.7 | 24 |
| 20 | 30 | 29 | 30 | 30 | 30 | 30 | 26 | 27 | **IZS** | 34 | 36 | 37 | 39 | 40 | 41 | 41 | 40 | 38 | 36 | 34 | 29 | 24 | 25 | 25 | 41 | 32.7 | 24 |
| 21 | 20 | 23 | 28 | 24 | 24 | 19 | 14 | **IZS** | 21 | 23 | 27 | 36 | 40 | 43 | 45 | 46 | 46 | 46 | 42 | 30 | 22 | 13 | 4 | 2 | 46 | 27.7 | 24 |
| 22 | 7 | 32 | 27 | 24 | 24 | 27 | **IZS** | 29 | 32 | 34 | 35 | 36 | 37 | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 37 | 38 | 33.0 | 24 |
| 23 | 38 | 36 | 35 | 36 | 36 | **IZS** | 35 | 36 | 37 | 37 | 37 | 37 | 38 | 37 | **M** | 37 | 37 | 36 | 36 | 34 | 35 | 35 | 35 | 34 | 38 | 36.1 | 23 |
| 24 | 32 | 28 | 29 | 25 | **IZS** | 26 | 23 | 25 | 27 | 29 | 34 | 36 | 37 | 38 | 38 | 40 | 42 | 42 | 41 | 29 | 19 | 15 | 16 | 9 | 42 | 29.6 | 24 |
| 25 | 12 | 29 | 35 | **IZS** | 28 | 25 | 23 | 33 | 37 | 38 | 38 | 40 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 39 | 38 | 37 | 33 | 31 | 43 | 35.3 | 24 |
| 26 | 29 | 32 | **IZS** | 25 | 12 | 15 | 10 | 21 | 26 | 27 | 29 | 34 | 37 | 39 | 41 | 46 | 49 | 43 | 26 | 16 | 14 | 14 | 42 | 42 | 49 | 29.1 | 24 |
| 27 | 44 | **IZS** | 46 | 42 | 37 | 33 | 35 | 39 | 43 | 45 | 45 | 47 | 48 | 49 | 49 | 52 | 52 | 50 | 45 | 45 | 38 | 37 | 34 | 33 | 52 | 43.0 | 24 |
| 28 | **IZS** | 31 | 29 | 40 | 37 | 37 | 37 | 35 | 38 | 39 | 42 | 44 | 45 | 47 | 46 | 45 | 46 | 43 | 41 | 41 | 42 | 39 | 37 | **IZS** | 47 | 40.0 | 24 |
| 29 | 34 | 32 | 30 | 27 | 24 | 23 | 21 | 18 | 19 | 18 | 17 | 19 | 23 | 33 | 39 | 39 | 36 | 31 | 35 | 31 | 33 | 36 | **IZS** | 34 | 39 | 28.3 | 24 |
| 30 | 34 | 35 | 31 | 28 | 29 | 25 | 22 | 24 | 28 | 29 | 32 | 38 | 40 | 39 | 41 | 42 | 47 | 48 | 49 | 47 | 52 | **IZS** | 46 | 40 | 52 | 36.8 | 24 |
| 31 | 41 | 41 | 43 | 40 | 39 | 37 | 36 | 37 | 41 | 45 | 44 | 48 | 52 | 55 | 55 | 56 | 56 | 56 | 50 | 38 | **IZS** | 17 | 15 | 19 | **56** | 41.8 | 24 |
| HOURLY MAX | 46 | 46 | 46 | 44 | 43 | 42 | 40 | 39 | 43 | 45 | 45 | 48 | 52 | 55 | 55 | 56 | 56 | 56 | 50 | 47 | 52 | 44 | 46 | 42 | | | |
| HOURLY AVG | 31.1 | 32.3 | 32.3 | 31.2 | 29.9 | 28.1 | 25.3 | 27.0 | 30.9 | 33.6 | 35.2 | 36.8 | 38.5 | 39.9 | 41.2 | 42.0 | 42.1 | 40.8 | 38.5 | 35.9 | 34.2 | 31.0 | 31.8 | 30.7 | | | |

**STATUS FLAG CODES**

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



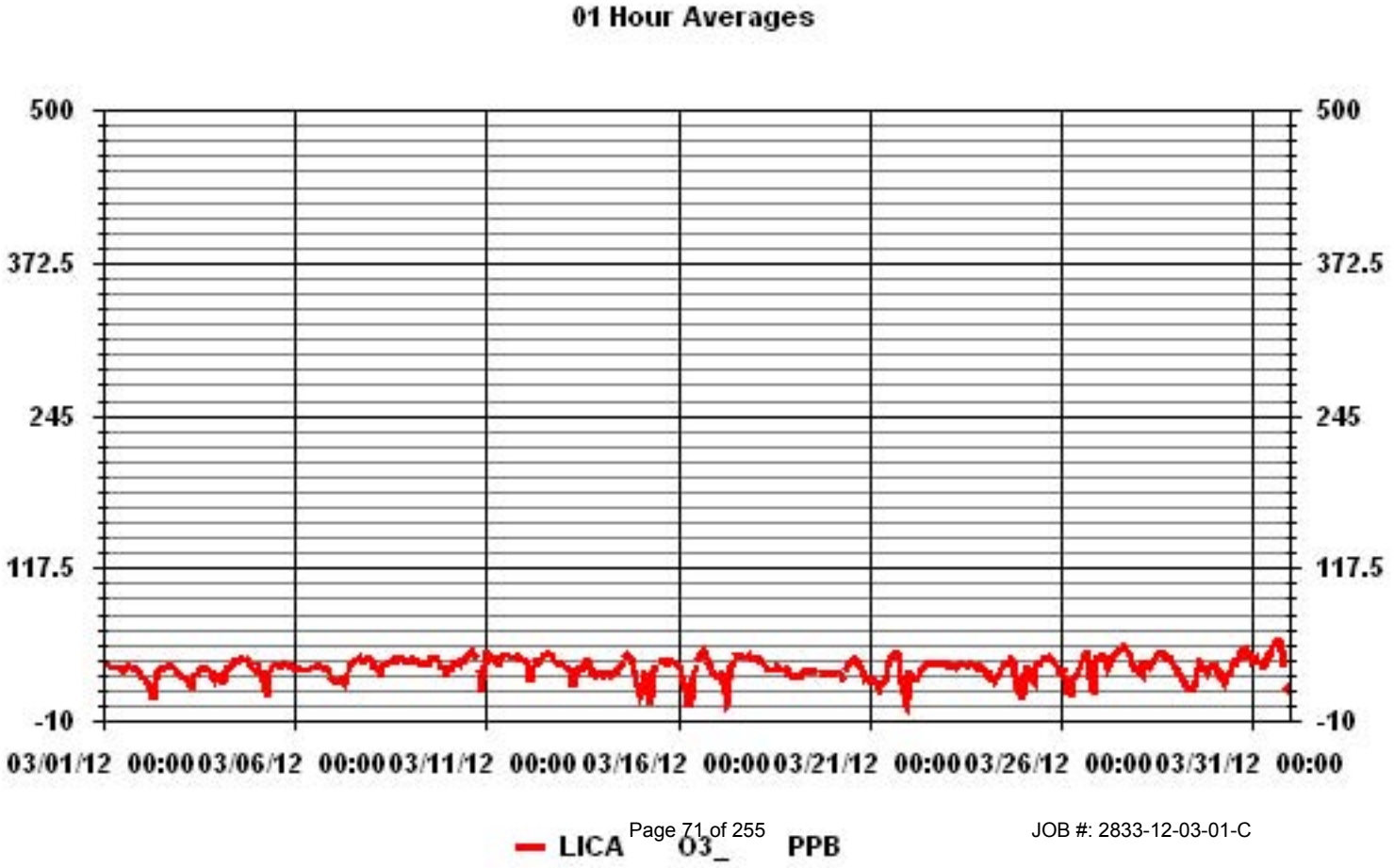

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 82 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 704 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 56 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 31 |
| MAXIMUM 24-HR AVERAGE: | 43.1 | PPB | | | ON DAY(S) | 11 |
| | | | | | VAR-VARIOUS | |
| IZS CALIBRATION TIME: | 33 | HRS | OPERATIONAL TIME: | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME | | 99.9 | % |
| STANDARD DEVIATION | 8.80 | | MONTHLY AVERAGE | | 34.15 | PPB |



JOB #: 2833-12-03-01-C






JOB #: 2833-12-03-01-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

**OZONE MAX** instantaneous maximum in ppb

MST

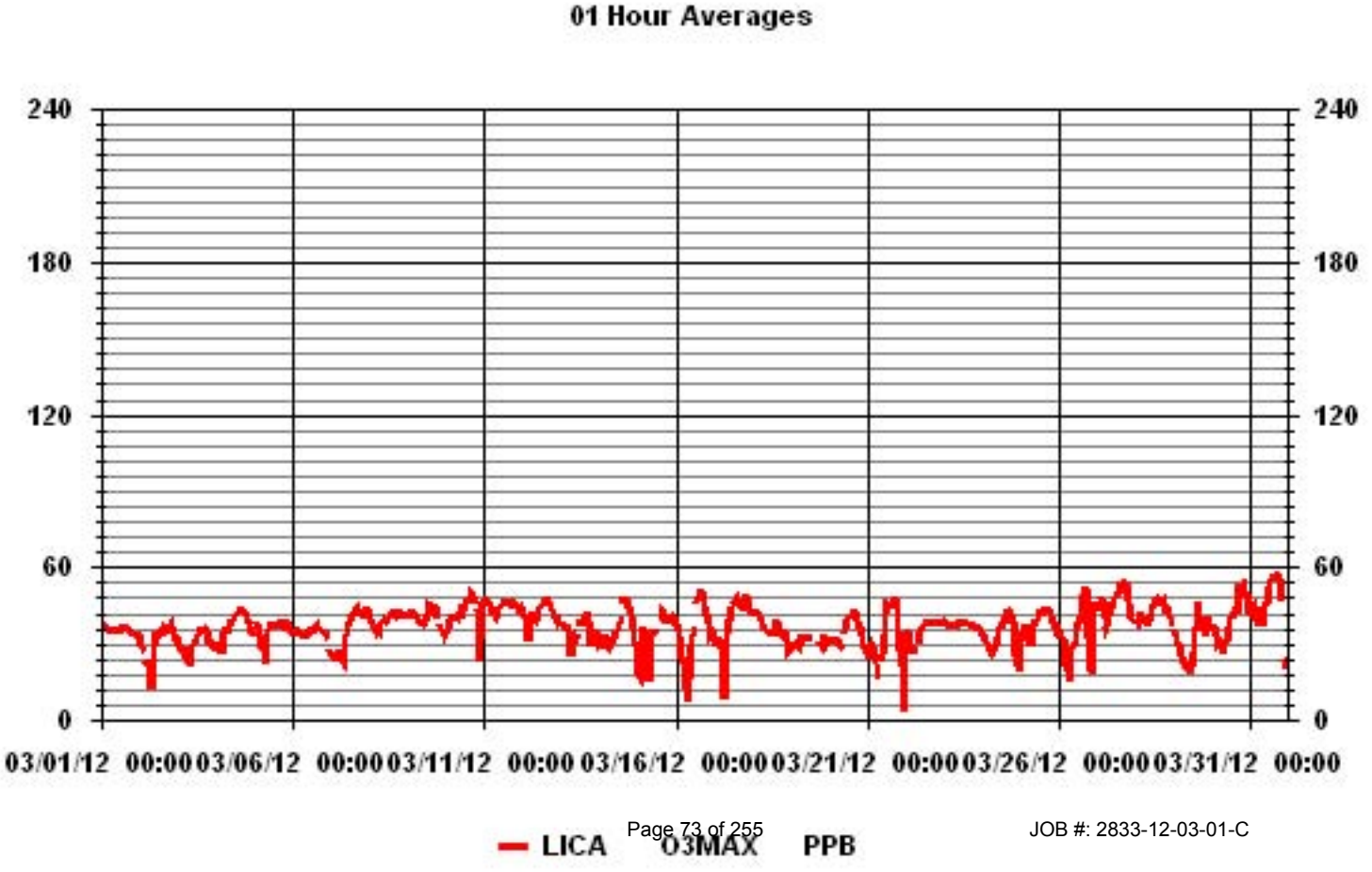
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 38 | 37 | 37 | 36 | **IZS** | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 35 | 34 | 34 | 34 | 33 | 33 | 33 | 38 | 35.2 | 24 |
| 2 | 30 | 29 | 28 | **IZS** | 23 | 24 | 18 | 12 | 21 | 29 | 33 | 33 | 34 | 34 | 36 | 35 | 36 | 36 | 37 | 38 | 35 | 35 | 32 | 32 | 38 | 30.4 | 24 |
| 3 | 30 | 28 | **IZS** | 27 | 27 | 25 | 23 | 21 | 28 | 29 | 30 | 31 | 33 | 35 | 35 | 35 | 35 | 36 | 35 | 31 | 30 | 29 | 30 | 29 | 36 | 30.1 | 24 |
| 4 | 30 | **IZS** | 29 | 26 | 34 | 35 | 35 | 35 | 38 | 38 | 39 | 40 | 41 | 42 | 43 | 43 | 43 | 42 | 42 | 40 | 39 | 37 | 35 | 34 | 43 | 37.4 | 24 |
| 5 | **IZS** | 38 | 37 | 32 | 33 | 32 | 28 | 22 | 35 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 38 | 38 | 37 | 38 | 38 | 36 | 35 | **IZS** | 38 | 35.3 | 24 |
| 6 | 34 | 34 | 35 | 35 | 34 | 34 | 33 | 33 | 33 | 34 | 34 | 35 | 35 | 36 | 37 | 38 | 37 | 36 | 35 | 34 | 34 | 33 | **IZS** | 27 | 38 | 34.3 | 24 |
| 7 | 26 | 25 | 24 | 24 | 26 | 26 | 24 | 23 | 28 | 33 | 37 | 38 | 39 | 41 | 42 | 44 | 45 | 44 | 42 | 42 | 41 | **IZS** | 43 | 43 | 45 | 34.8 | 24 |
| 8 | 39 | 39 | 38 | 37 | 35 | 36 | 35 | 38 | 39 | 40 | 39 | 40 | 41 | 41 | 42 | 42 | 41 | 42 | 42 | 42 | **IZS** | 41 | 41 | 41 | 42 | 39.6 | 24 |
| 9 | 41 | 42 | 42 | 42 | 41 | 41 | 39 | 38 | 38 | 39 | 38 | 39 | 41 | 45 | 44 | 45 | 44 | 44 | 41 | **IZS** | 37 | 36 | 35 | 33 | 45 | 40.2 | 24 |
| 10 | 34 | 36 | 39 | 40 | 40 | 40 | 41 | 40 | 41 | 41 | 44 | 44 | 46 | 47 | 48 | 50 | 49 | 47 | **IZS** | 42 | 37 | 23 | 32 | 46 | 50 | 41.2 | 24 |
| 11 | 47 | 47 | 46 | 46 | 45 | 43 | 42 | 41 | 43 | 44 | 45 | 46 | 46 | 46 | 46 | 46 | 46 | **IZS** | 45 | 46 | 45 | 43 | 43 | 44 | 47 | 44.8 | 24 |
| 12 | 42 | 41 | 39 | 31 | 32 | 38 | 41 | 41 | 40 | 42 | 44 | 45 | 46 | 46 | 46 | 48 | **IZS** | 46 | 44 | 42 | 41 | 39 | 40 | 39 | 48 | 41.4 | 24 |
| 13 | 38 | 37 | 37 | 36 | 36 | 33 | 25 | 33 | 34 | 32 | 33 | 34 | 38 | 38 | 41 | **IZS** | 42 | 39 | 29 | 32 | 29 | 34 | 34 | 30 | 42 | 34.5 | 24 |
| 14 | 31 | 28 | 30 | 32 | 32 | 30 | 29 | 31 | 31 | 32 | 34 | 35 | 38 | 40 | **IZS** | 47 | 47 | 47 | 45 | 43 | 41 | 37 | 31 | 30 | 47 | 35.7 | 24 |
| 15 | 18 | 17 | 21 | 37 | 36 | 25 | 16 | 16 | 34 | 34 | 35 | **C** | **C** | **IZS** | 40 | 43 | 42 | 39 | 39 | 39 | 40 | 41 | 40 | 40 | 43 | 33.0 | 24 |
| 16 | 38 | 36 | 33 | 25 | 23 | 16 | 13 | 7 | 16 | 30 | 33 | 36 | **IZS** | 47 | 48 | 50 | 50 | 48 | 45 | 42 | 39 | 34 | 35 | 34 | 50 | 33.8 | 24 |
| 17 | 29 | 32 | 31 | 31 | 29 | 22 | 9 | 10 | 34 | 39 | 43 | **IZS** | 47 | 48 | 45 | 47 | 45 | 44 | 44 | 48 | 48 | 46 | 43 | 43 | 48 | 37.3 | 24 |
| 18 | 42 | 42 | 42 | 42 | 41 | 40 | 38 | 37 | 36 | 35 | **IZS** | 34 | 34 | 34 | 38 | 38 | 35 | 34 | 33 | 34 | 34 | 33 | 28 | 29 | 42 | 36.2 | 24 |
| 19 | 28 | 29 | 29 | 30 | 30 | 29 | 32 | 32 | 33 | **IZS** | 32 | 32 | 32 | **C** | **C** | **C** | **C** | **C** | 30 | 29 | 32 | 32 | 30 | 31 | 33 | 30.7 | 24 |
| 20 | 31 | 31 | 31 | 31 | 31 | 31 | 30 | 29 | **IZS** | 35 | 36 | 39 | 40 | 41 | 42 | 42 | 42 | 40 | 39 | 37 | 34 | 30 | 29 | 27 | 42 | 34.7 | 24 |
| 21 | 24 | 27 | 30 | 29 | 28 | 23 | 17 | **IZS** | 24 | 26 | 34 | 47 | 42 | 44 | 46 | 47 | 47 | 47 | 45 | 36 | 28 | 22 | 6 | 3 | 47 | 31.4 | 24 |
| 22 | 33 | 35 | 32 | 30 | 26 | 28 | **IZS** | 31 | 34 | 35 | 36 | 37 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 35.3 | 24 |
| 23 | 39 | 38 | 37 | 37 | 37 | **IZS** | 37 | 37 | 37 | 38 | 38 | 38 | 38 | 38 | **M** | **M** | 38 | 37 | 37 | 36 | 36 | 36 | 36 | 35 | 39 | 37.1 | 22 |
| 24 | 34 | 32 | 31 | 28 | **IZS** | 27 | 26 | 27 | 29 | 32 | 36 | 37 | 37 | 39 | 39 | 42 | 42 | 43 | 42 | 39 | 26 | 21 | 23 | 19 | 43 | 32.7 | 24 |
| 25 | 31 | 34 | 37 | **IZS** | 33 | 35 | 29 | 37 | 38 | 38 | 39 | 42 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 41 | 39 | 37 | 37 | 34 | 43 | 38.3 | 24 |
| 26 | 32 | 35 | **IZS** | 31 | 22 | 20 | 15 | 27 | 28 | 29 | 31 | 36 | 38 | 40 | 43 | 49 | 51 | 51 | 33 | 20 | 18 | 30 | 46 | 45 | 51 | 33.5 | 24 |
| 27 | 46 | **IZS** | 47 | 44 | 41 | 36 | 37 | 41 | 45 | 45 | 47 | 48 | 49 | 50 | 53 | 53 | 54 | 54 | 50 | 51 | 46 | 41 | 40 | 39 | 54 | 46.0 | 24 |
| 28 | **IZS** | 37 | 41 | 41 | 39 | 39 | 38 | 38 | 39 | 41 | 44 | 45 | 47 | 48 | 47 | 46 | 46 | 47 | 42 | 44 | 44 | 41 | 38 | **IZS** | 48 | 42.4 | 24 |
| 29 | 35 | 34 | 31 | 30 | 26 | 25 | 23 | 21 | 20 | 20 | 18 | 21 | 27 | 37 | 45 | 45 | 39 | 35 | 38 | 33 | 39 | 39 | **IZS** | 36 | 45 | 31.2 | 24 |
| 30 | 36 | 36 | 34 | 30 | 31 | 30 | 26 | 28 | 30 | 31 | 36 | 40 | 41 | 41 | 43 | 43 | 52 | 52 | 51 | 48 | 54 | **IZS** | 49 | 43 | 54 | 39.3 | 24 |
| 31 | 42 | 44 | 45 | 42 | 41 | 38 | 38 | 38 | 44 | 45 | 46 | 52 | 55 | 56 | 56 | 56 | **57** | **57** | 56 | 48 | **IZS** | 23 | 20 | 24 | **57** | 44.5 | 24 |
| HOURLY MAX | 47 | 47 | 47 | 46 | 45 | 43 | 42 | 41 | 45 | 45 | 47 | 52 | 55 | 56 | 56 | 56 | 57 | 57 | 56 | 51 | 54 | 46 | 49 | 46 | | | |
| HOURLY AVG | 34.4 | 34.5 | 34.9 | 33.9 | 32.8 | 31.2 | 29.1 | 30.0 | 33.5 | 35.3 | 36.9 | 38.5 | 39.9 | 41.6 | 42.8 | 43.9 | 43.4 | 42.8 | 40.4 | 38.9 | 37.1 | 34.5 | 34.6 | 33.8 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 702 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 57 | PPB | @ HOUR(S) | 16, 17 | ON DAY(S) | 31 |
| IZS CALIBRATION TIME: | 33 | HRS | OPERATIONAL TIME: | | 742 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | |
| STANDARD DEVIATION | 7.86 | | | | | |






JOB #: 2833-12-03-01-C

LICA
O3_ / WD Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 2.41 | 6.53 | 11.36 | 2.84 | 9.37 | 8.80 | 12.78 | 1.56 | 1.70 | 2.69 | 15.48 | 11.07 | 5.82 | 2.27 | 1.27 | 2.41 | 98.43 |
| < | 110 | .00 | .00 | .14 | .14 | .00 | .14 | .00 | .00 | .00 | .00 | .28 | .71 | .00 | .14 | .00 | .00 | 1.56 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 2.41 | 6.53 | 11.50 | 2.98 | 9.37 | 8.94 | 12.78 | 1.56 | 1.70 | 2.69 | 15.76 | 11.78 | 5.82 | 2.41 | 1.27 | 2.41 | |

Calm : .00 %

Total # Operational Hours : 704

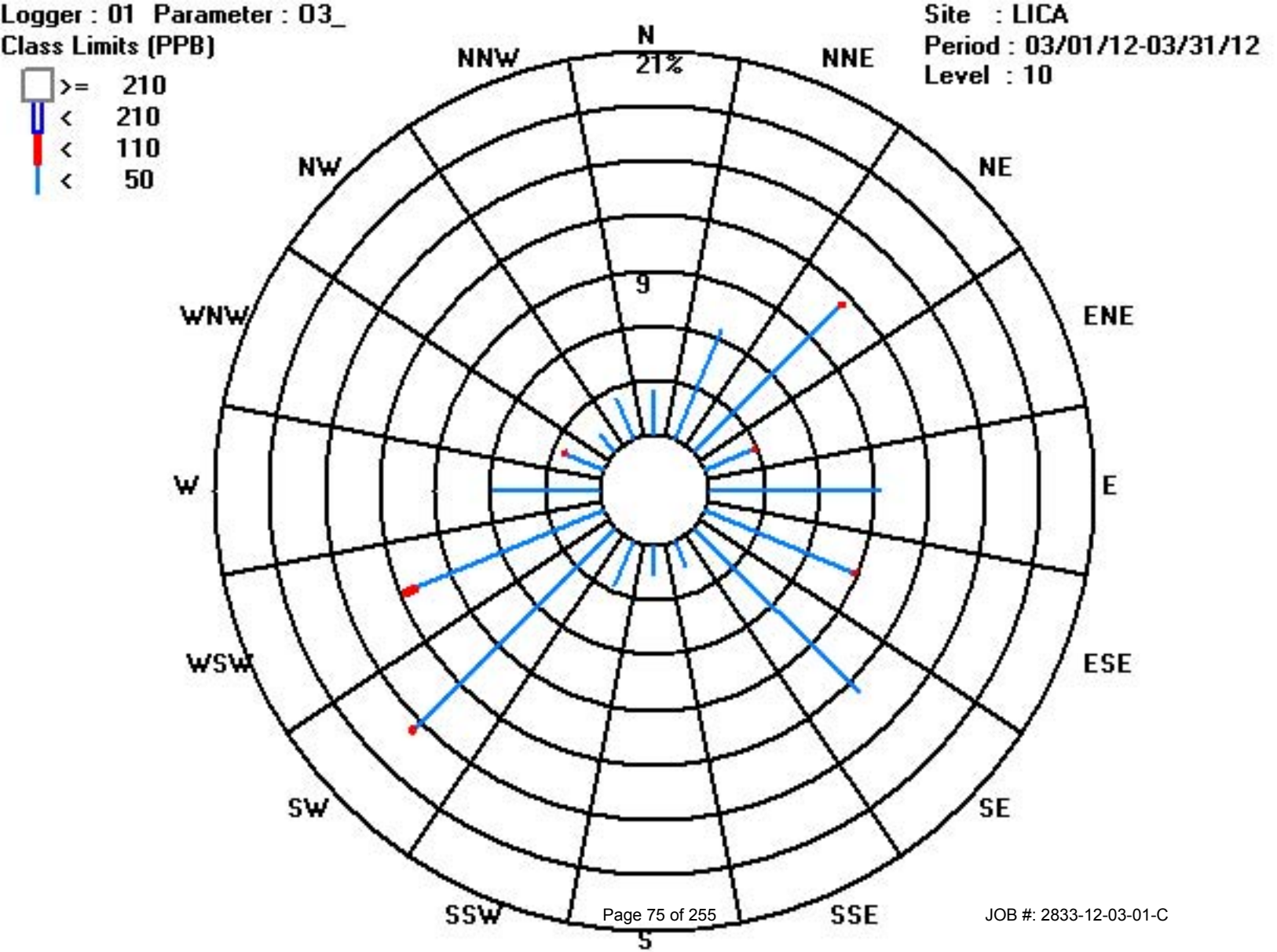
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 17 | 46 | 80 | 20 | 66 | 62 | 90 | 11 | 12 | 19 | 109 | 78 | 41 | 16 | 9 | 17 | 693 |
| < | 110 | | | 1 | 1 | | 1 | | | | | 2 | 5 | | 1 | | | 11 |
| < | 210 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 17 | 46 | 81 | 21 | 66 | 63 | 90 | 11 | 12 | 19 | 111 | 83 | 41 | 17 | 9 | 17 | |

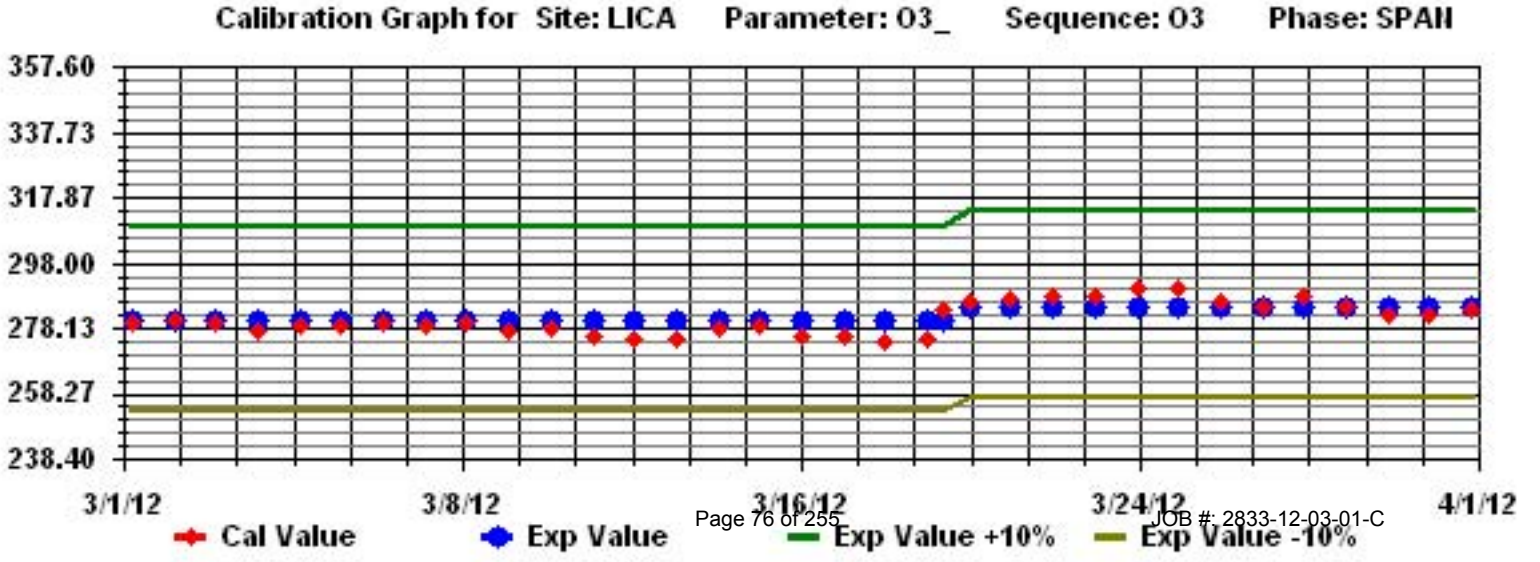
Calm : .00 %

Total # Operational Hours : 704






JOB #: 2833-12-03-01-C


Calibration Graph for Site: LICA Parameter: O3_ Sequence: O3 Phase: SPAN
357.60
337.73
317.87
298.00
278.13
258.27
238.40
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Ambient Temperature

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

MARCH 2012

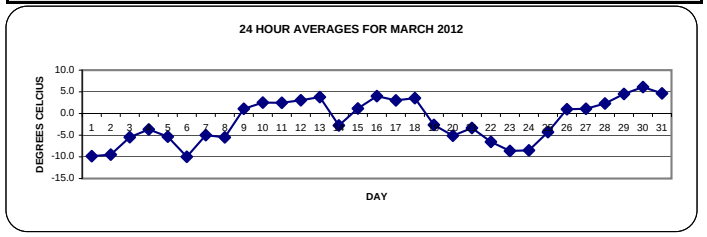
**AMBIENT TEMPERATURE** hourly averages (Degrees C)

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 | -8.7 | -9.4 | -9.9 | -10.5 | -10.9 | -11.4 | -11.8 | -11.8 | -11.3 | -10.8 | -10.5 | -10.1 | -9.5 | -8.6 | -8.1 | -7.7 | -7.7 | -8 | -8.5 | -8.9 | -9.3 | -10.1 | -11 | -11.7 | -7.7 | -9.8 | 24 |
| 2 | -11.7 | -11.6 | -12.7 | -13.4 | -13.3 | -13.3 | -15.1 | **-15.7** | -13.4 | -11.3 | -9.9 | -9 | -7.5 | -5.8 | -5.6 | -4.7 | -4.7 | -5.2 | -6 | -6.9 | -7.3 | -7.8 | -7.8 | -8 | -4.7 | -9.5 | 24 |
| 3 | -8 | -8 | -8 | -8 | -8.6 | -8.7 | -8.6 | -9.3 | -9 | -8.5 | -7.5 | -5.7 | -4.4 | -2.7 | -1.8 | -1.9 | -1.7 | -1.7 | -1.8 | -2.2 | -2.7 | -4 | -3.8 | -4.5 | -1.7 | -5.5 | 24 |
| 4 | -5.2 | -5.9 | -6.9 | -9.3 | -8.8 | -9.6 | -9.9 | -9.2 | -7.8 | -6.1 | -4.1 | -2.3 | -0.6 | 0.6 | 1.7 | 2.1 | 1.9 | 0.6 | -0.5 | -0.7 | -1.2 | -1.6 | -2.2 | -3.1 | 2.1 | -3.7 | 24 |
| 5 | -3.1 | -3 | -3.8 | -5 | -5 | -5.2 | -6.9 | -7.5 | -6.8 | -8.1 | -7.8 | -5.9 | -5.2 | -4.8 | -3.8 | -3 | -3.1 | -3.8 | -4.6 | -4.9 | -5.5 | -5.9 | -7.1 | -8.4 | -3.0 | -5.3 | 24 |
| 6 | -9.7 | -10.8 | -11.2 | -11.6 | -12.1 | -12.8 | -13.5 | -13.5 | -12.9 | -11.8 | -10.6 | -9.4 | -7.9 | -6.5 | -5.7 | -4.9 | -5.6 | -6.6 | -8 | -9.2 | -10.1 | -11 | -11.9 | -12.4 | -4.9 | -10.0 | 24 |
| 7 | -12.1 | -11.5 | -11.1 | -11.1 | -10.4 | -10 | -10.5 | -10.8 | -9.4 | -6.7 | -4.2 | -2.9 | -1.2 | -0.2 | 0.5 | 1 | 0.4 | -0.6 | -1.9 | -2.5 | -2.7 | -1.2 | 0.1 | -0.8 | 1.0 | -5.0 | 24 |
| 8 | -4.8 | -5.6 | -6.4 | -7.2 | -8.5 | -9.6 | -9.5 | -9.4 | -9.1 | -8.5 | -7.4 | -5.9 | -4.5 | -3.2 | -3.1 | -3.1 | -3 | -2.9 | -3.3 | -3.5 | -3.5 | -3.5 | -3.3 | -3.1 | -2.9 | -5.5 | 24 |
| 9 | -3 | -3.1 | -3.2 | -3.4 | -3.3 | -3.5 | -3.5 | -3.3 | -2.9 | -1.8 | -0.2 | 2.2 | 5.3 | 6.5 | 6 | 7.3 | 7.6 | 7.6 | 5.6 | 4.5 | 3.1 | 2.4 | -0.2 | -0.5 | 7.6 | 1.1 | 24 |
| 10 | 0.7 | 0.3 | 0.2 | 0.4 | -0.1 | -0.3 | -0.3 | -0.3 | 1.1 | 2.2 | 4.2 | 5.2 | 6.3 | 6.2 | 6.9 | 6.7 | 5.9 | 4.8 | 3 | 1.4 | 1.3 | 1.2 | 1.5 | 1.9 | 6.9 | 2.5 | 24 |
| 11 | 1.7 | 0.9 | -0.2 | 0 | -1.2 | -1.6 | -2.3 | -2.5 | 0.4 | 1.7 | 2.8 | 3.9 | 4.4 | 5.1 | 5.7 | 5.7 | 5.2 | 4.8 | 4.6 | 4.7 | 4.5 | 3.8 | 3.9 | 3.3 | 5.7 | 2.5 | 24 |
| 12 | 2.2 | 2.2 | 1.5 | 0.6 | 1.3 | 1.4 | 1.2 | 1.8 | 2.4 | 3.1 | 3.9 | 4.5 | 5.1 | 5.1 | 5.8 | 5.9 | 5.4 | 4.2 | 3.4 | 2.8 | 2.3 | 2 | 2.5 | 2.7 | 5.9 | 3.1 | 24 |
| 13 | 3 | 2.5 | 1.9 | 1.3 | 1.2 | 0.8 | -0.6 | 1 | 2 | 3.3 | 5.1 | 7.4 | 8.5 | 9.3 | 10.9 | 11.9 | 10 | 6.8 | 4.6 | 3.5 | 0.8 | -0.5 | -1.2 | -2.6 | 11.9 | 3.8 | 24 |
| 14 | -3.5 | -4.9 | -6.1 | -6.8 | -7.2 | -7.3 | -7 | -6.7 | -5.8 | -4.5 | -2.8 | -1.2 | 0.2 | 1.1 | 2.5 | 3.3 | 3.3 | 2.7 | 1.1 | -0.6 | -2.3 | -3.3 | -4.5 | -5.8 | 3.3 | -2.8 | 24 |
| 15 | -6.7 | -6.3 | -5.2 | -2.5 | -3 | -5.2 | -6.5 | -5 | -2.2 | -0.9 | 0.9 | 2.6 | 4.4 | 6.2 | 8 | 8.1 | 7.5 | 6.4 | 5.4 | 4.6 | 4.7 | 4.5 | 4 | 3.8 | 8.1 | 1.2 | 24 |
| 16 | 3.5 | 2.9 | 1.2 | 0 | -0.3 | -1.3 | -2 | -1.4 | 1.8 | 6.6 | 8.6 | 9.1 | 10.4 | 11.5 | 11.3 | 9.9 | 9.2 | 7.3 | 4.7 | 3.2 | 1.5 | -0.3 | -0.4 | -0.8 | 11.5 | 4.0 | 24 |
| 17 | -1.8 | -1.6 | -1.1 | -1 | -2.9 | -4.1 | -4.6 | -2.8 | 1.9 | 4.7 | 6.7 | 8.1 | 9.1 | 7.7 | 8.2 | 8.4 | 8.1 | 7.4 | 7 | 6.4 | 4.1 | 1.8 | 1.2 | 1.7 | 9.1 | 3.0 | 24 |
| 18 | 1.8 | 2.3 | 2.2 | 2.5 | 2.2 | 2.1 | 1.9 | 2 | 2.7 | 3.1 | 3.9 | 4.8 | 5.8 | 6.2 | 6.7 | 6 | 5.1 | 5.3 | 4.1 | 3.7 | 3.5 | 3.2 | 2.4 | 1.5 | 6.7 | 3.5 | 24 |
| 19 | 0.7 | 0.6 | 0.3 | -0.2 | -0.4 | -0.8 | -1.5 | -1.9 | -2.4 | -2.5 | -2 | -1.8 | -1.7 | -1.6 | -2.6 | -3.7 | -4.2 | -4.5 | -4.8 | -5 | -5.4 | -5.5 | -5.9 | -6.4 | 0.7 | -2.6 | 24 |
| 20 | -6.8 | -7.2 | -7.1 | -7.4 | -8 | -8.7 | -9.6 | -8.7 | -7 | -6 | -5.4 | -4.3 | -3.3 | -2 | -0.5 | 0.2 | -0.2 | -1.7 | -2.9 | -3.9 | -4.7 | -6.4 | -5.7 | -5.8 | 0.2 | -5.1 | 24 |
| 21 | -7.4 | -6.6 | -7.2 | -7.4 | -8 | -9.3 | -10.8 | -7.9 | -6.1 | -3.2 | -1.5 | 0.1 | 1.5 | 3 | 3.2 | 3.7 | 3.4 | 3.1 | 1.1 | -2.1 | -3.6 | -5.1 | -6 | -7.2 | 3.7 | -3.3 | 24 |
| 22 | -8.1 | -8.4 | -8 | -8.5 | -10 | -10.9 | -10.9 | -9.9 | -8.5 | -6.5 | -4.2 | -2.2 | -1.9 | -3.5 | -3.2 | -3.2 | -4.3 | -5 | -5.6 | -6.2 | -6.5 | -6.9 | -7.2 | -7.4 | -1.9 | -6.5 | 24 |
| 23 | -7.7 | -8 | -8.1 | -8.5 | -8.5 | -8.5 | -8.8 | -9.1 | -9.4 | -9 | -8.8 | -8.6 | -8.4 | -8.3 | -8.2 | -8.3 | -8.4 | -8.6 | -8.8 | -9 | -9.1 | -9.1 | -9.1 | -9 | -7.7 | -8.6 | 24 |
| 24 | -9.2 | -9.2 | -9.4 | -11.5 | -13.6 | -14 | -14.8 | -13.9 | -11.7 | -9.5 | -6.4 | -5 | -4.2 | -3.8 | -3.7 | -3.2 | -2.7 | -2.5 | -3.7 | -6.7 | -9.2 | -10.7 | -12.1 | -13.2 | -2.5 | -8.5 | 24 |
| 25 | -13.4 | -11.3 | -10.5 | -10.9 | -12.1 | -12.1 | -11.6 | -9.1 | -7.1 | -5.7 | -4 | -1.7 | 0.1 | 0.6 | 1 | 1.6 | 1.8 | 1.7 | 1.7 | 0.9 | 0.4 | -0.5 | -1 | -1.9 | 1.8 | -4.3 | 24 |
| 26 | -2.5 | -2.1 | -2.1 | -3.8 | -4.6 | -5 | -5 | -3.3 | -1.3 | 0.2 | 2.4 | 3.8 | 4.5 | 6.5 | 7 | 8 | 8.3 | 7.5 | 4.5 | 1.6 | 0 | -0.8 | 0.3 | -0.4 | 8.3 | 1.0 | 24 |
| 27 | -1.2 | -1.5 | -1.9 | -2.9 | -3.5 | -4 | -3.9 | -3.4 | -1.8 | 0.7 | 3 | 4.5 | 5.3 | 5.7 | 6 | 6.3 | 6.5 | 6 | 4.8 | 3.1 | 1.1 | 0.3 | -1.1 | -2.1 | 6.5 | 1.1 | 24 |
| 28 | -1.7 | -2.7 | -3.9 | -2.7 | -3.2 | -3.3 | -3.4 | -2.7 | -0.6 | 1.8 | 4.1 | 5.6 | 6.9 | 6.8 | 7.1 | 7.4 | 7.4 | 6.5 | 5.4 | 5.1 | 5.2 | 4.4 | 3.3 | 2.6 | 7.4 | 2.3 | 24 |
| 29 | 2.1 | 1.8 | 1.8 | 1.7 | 1.5 | 1.2 | 1.1 | 1.4 | 1.8 | 1.9 | 2.4 | 3.9 | 5.9 | 7.4 | 9.9 | 10.4 | 10.3 | 9.8 | 8.9 | 6.3 | 5.1 | 4.6 | 3.8 | 3.3 | 10.4 | 4.5 | 24 |
| 30 | 3.2 | 2.9 | 2.1 | 1.5 | 1.3 | 1 | 0.8 | 1.9 | 3.8 | 5.9 | 8.5 | 10.8 | 12.4 | 12.7 | 12.5 | **12.9** | 12 | 10.9 | 9.1 | 6.6 | 5.1 | 3.9 | 2.8 | 1.9 | **12.9** | **6.1** | 24 |
| 31 | 1.7 | 1.2 | 1.1 | 0.1 | -0.4 | -0.9 | -0.6 | 1.2 | 3.6 | 5.3 | 6.8 | 8.4 | 9.8 | 10.6 | 11.1 | 11.2 | 11.2 | 10.7 | 8.9 | 4.8 | 2.7 | 1.8 | 1 | 0.1 | 11.2 | 4.6 | 24 |
| HOURLY MAX | 3.5 | 2.9 | 2.2 | 2.5 | 2.2 | 2.1 | 1.9 | 2.0 | 3.8 | 6.6 | 8.6 | 10.8 | 12.4 | 12.7 | 12.5 | 12.9 | 12.0 | 10.9 | 9.1 | 6.6 | 5.2 | 4.6 | 4.0 | 3.8 | | | |
| HOURLY AVG | -3.7 | -3.9 | -4.2 | -4.7 | -5.2 | -5.6 | -6.1 | -5.5 | -4.0 | -2.6 | -1.1 | 0.3 | 1.5 | 2.2 | 2.8 | 3.0 | 2.7 | 2.0 | 0.9 | -0.3 | -1.2 | -1.9 | -2.4 | -3.0 | | | |

**STATUS FLAG CODES**

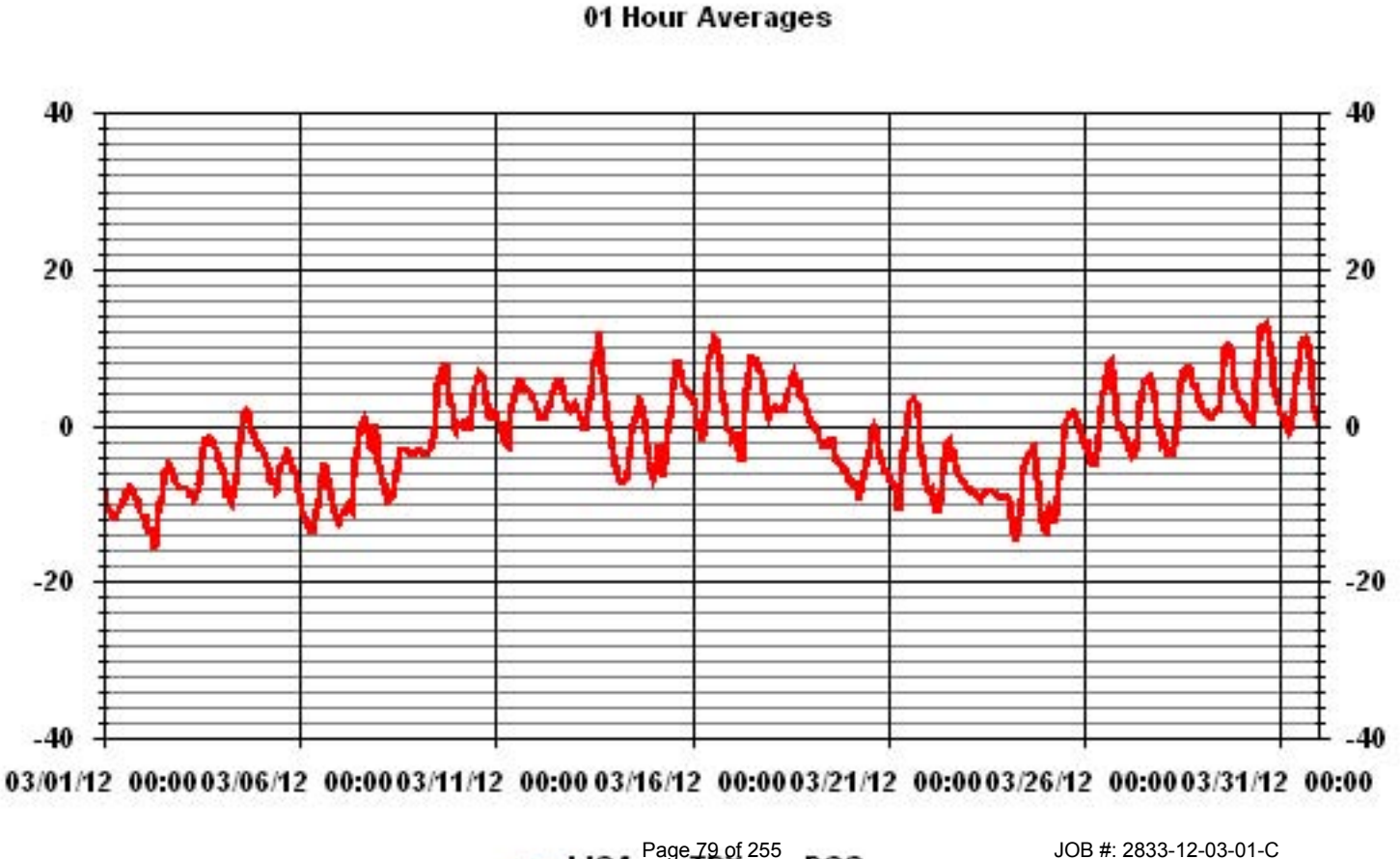
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | OD | - OUTSIDE DECTECTION LIMITS |
| N | - INVALID DATA | M | - MISSING DATA |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MINIMUM 1-HR AVERAGE: | -15.7 | $^{O}$C | @ HOUR(S) | 7 | ON DAY(S) | 2 |
| MAXIMUM 1-HR AVERAGE: | 12.9 | $^{O}$C | @ HOUR(S) | 15 | ON DAY(S) | 30 |
| MAXIMUM 24-HR AVERAGE: | 6.1 | $^{O}$C | | | ON DAY(S) | 30 |
| | | | | | VAR-VARIOUS | |
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 744 | HRS |
| | | | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 6.06 | | MONTHLY AVERAGE: | | -1.67 | $^{O}$C |

*** Outside detection limits of sensor.**






JOB #: 2833-12-03-01-C

# Relative Humidity

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

MARCH 2012

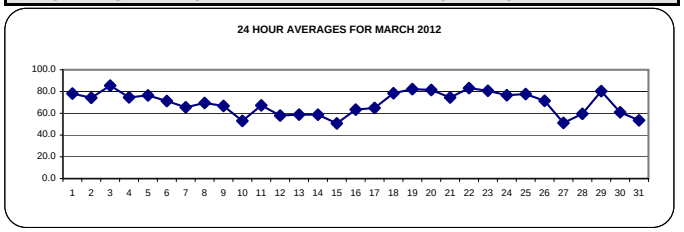
**RELATIVE HUMIDITY** hourly averages (%)

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 | 75 | 78 | 79 | 80 | 81 | 81 | 81 | 81 | 80 | 77 | 76 | 76 | 76 | 72 | 71 | 72 | 73 | 77 | 77 | 81 | 83 | 83 | 82 | 83 | 83 | 78.1 | 24 |
| 2 | 83 | 83 | 84 | 83 | 82 | 83 | 81 | 80 | 79 | 76 | 72 | 70 | 65 | 59 | 59 | 57 | 59 | 66 | 65 | 70 | 76 | 82 | 83 | 85 | 85 | 74.3 | 24 |
| 3 | 85 | 85 | 86 | 85 | 87 | 87 | 87 | 87 | 88 | 90 | 86 | 79 | 76 | 72 | 76 | 82 | 82 | 84 | 86 | 87 | 91 | 94 | 95 | 94 | 95 | **85.5** | 24 |
| 4 | 92 | 92 | 92 | 88 | 89 | 87 | 88 | 87 | 85 | 83 | 77 | 68 | 62 | 57 | 51 | 48 | 47 | 55 | 65 | 72 | 75 | 76 | 77 | 79 | 92 | 74.7 | 24 |
| 5 | 80 | 79 | 82 | 85 | 87 | 88 | 91 | 90 | 81 | 85 | 85 | 81 | 76 | 75 | 71 | 66 | 63 | 65 | 67 | 65 | 66 | 68 | 68 | 71 | 91 | 76.5 | 24 |
| 6 | 75 | 78 | 78 | 76 | 75 | 76 | 76 | 77 | 76 | 71 | 67 | 65 | 61 | 57 | 54 | 51 | 54 | 65 | 76 | 81 | 81 | 81 | 80 | 80 | 81 | 71.3 | 24 |
| 7 | 79 | 81 | 84 | 85 | 86 | 86 | 86 | 86 | 85 | 75 | 64 | 56 | 50 | 46 | 42 | 41 | 47 | 52 | 56 | 59 | 62 | 60 | 52 | 53 | 86 | 65.5 | 24 |
| 8 | 69 | 69 | 71 | 76 | 77 | 77 | 78 | 75 | 72 | 69 | 66 | 60 | 55 | 52 | 51 | 56 | 64 | 70 | 73 | 75 | 76 | 78 | 79 | 80 | 80 | 69.5 | 24 |
| 9 | 80 | 79 | 79 | 79 | 79 | 79 | 79 | 78 | 76 | 72 | 66 | 58 | 49 | 47 | 49 | 47 | 47 | 49 | 57 | 62 | 66 | 68 | 78 | 79 | 80 | 66.8 | 24 |
| 10 | 75 | 76 | 71 | 63 | 59 | 57 | 57 | 57 | 52 | 49 | 42 | 40 | 36 | 36 | 35 | 35 | 39 | 43 | 50 | 59 | 60 | 64 | 61 | 57 | 76 | 53.0 | 24 |
| 11 | 77 | 85 | 89 | 86 | 89 | 90 | 90 | 84 | 58 | 55 | 52 | 50 | 50 | 51 | 50 | 52 | 55 | 57 | 59 | 59 | 65 | 69 | 68 | 75 | 90 | 67.3 | 24 |
| 12 | 84 | 82 | 88 | 94 | 91 | 90 | 92 | 87 | 71 | 53 | 43 | 36 | 33 | 40 | 34 | 31 | 32 | 36 | 39 | 43 | 47 | 51 | 48 | 46 | 94 | 58.0 | 24 |
| 13 | 48 | 51 | 55 | 59 | 60 | 62 | 68 | 63 | 61 | 60 | 55 | 49 | 47 | 48 | 46 | 45 | 51 | 60 | 67 | 67 | 77 | 74 | 70 | 69 | 77 | 58.8 | 24 |
| 14 | 70 | 71 | 71 | 70 | 70 | 70 | 71 | 71 | 67 | 65 | 60 | 56 | 52 | 51 | 45 | 41 | 36 | 38 | 43 | 47 | 52 | 57 | 64 | 71 | 71 | 58.7 | 24 |
| 15 | 74 | 71 | 67 | 53 | 56 | 69 | 73 | 67 | 54 | 52 | 48 | 45 | 42 | 37 | 32 | 31 | 32 | 36 | 40 | 44 | 44 | 47 | 50 | 54 | 74 | 50.8 | 24 |
| 16 | 59 | 64 | 71 | 77 | 80 | 84 | 87 | 84 | 74 | 58 | 51 | 47 | 42 | 34 | 33 | 41 | 46 | 53 | 61 | 66 | 72 | 79 | 79 | 80 | 87 | 63.4 | 24 |
| 17 | 84 | 83 | 79 | 78 | 85 | 88 | 89 | 83 | 71 | 61 | 51 | 37 | 33 | 43 | 43 | 38 | 38 | 40 | 39 | 45 | 73 | 90 | 94 | 93 | 94 | 64.9 | 24 |
| 18 | 92 | 89 | 88 | 84 | 85 | 84 | 83 | 82 | 80 | 78 | 75 | 73 | 71 | 70 | 68 | 70 | 72 | 71 | 76 | 75 | 74 | 79 | 82 | 82 | 92 | 78.5 | 24 |
| 19 | 84 | 84 | 84 | 83 | 82 | 84 | 82 | 77 | 76 | 70 | 66 | 64 | 61 | 64 | 81 | 93 | 94 | 93 | 93 | 93 | 92 | 92 | 91 | 91 | 94 | 82.3 | 24 |
| 20 | 90 | 91 | 91 | 91 | 90 | 89 | 88 | 89 | 90 | 89 | 87 | 82 | 77 | 72 | 65 | 58 | 61 | 68 | 73 | 78 | 81 | 87 | 84 | 84 | 91 | 81.5 | 24 |
| 21 | 87 | 86 | 86 | 86 | 87 | 89 | 88 | 85 | 81 | 72 | 66 | 60 | 54 | 50 | 52 | 51 | 53 | 54 | 66 | 82 | 85 | 89 | 89 | 90 | 90 | 74.5 | 24 |
| 22 | 89 | 91 | 89 | 85 | 87 | 86 | 84 | 81 | 77 | 73 | 68 | 61 | 64 | 85 | 78 | 80 | 90 | 91 | 92 | 92 | 90 | 89 | 88 | 86 | 92 | 83.2 | 24 |
| 23 | 83 | 82 | 81 | 80 | 80 | 81 | 81 | 82 | 82 | 81 | 79 | 77 | 76 | 74 | 75 | 77 | 77 | 77 | 81 | 87 | 86 | 86 | 86 | 86 | 87 | 80.7 | 24 |
| 24 | 87 | 87 | 86 | 85 | 85 | 87 | 83 | 84 | 84 | 81 | 71 | 64 | 62 | 62 | 62 | 62 | 60 | 60 | 66 | 80 | 85 | 86 | 86 | 84 | 87 | 76.6 | 24 |
| 25 | 85 | 88 | 88 | 87 | 87 | 88 | 87 | 87 | 84 | 80 | 75 | 69 | 66 | 66 | 65 | 63 | 64 | 68 | 71 | 74 | 76 | 79 | 82 | 86 | 88 | 77.7 | 24 |
| 26 | 87 | 86 | 86 | 90 | 91 | 90 | 90 | 83 | 77 | 75 | 67 | 64 | 62 | 54 | 52 | 46 | 43 | 47 | 65 | 76 | 80 | 80 | 61 | 63 | 91 | 71.5 | 24 |
| 27 | 61 | 58 | 60 | 65 | 67 | 69 | 66 | 63 | 57 | 49 | 40 | 32 | 31 | 31 | 31 | 31 | 31 | 33 | 39 | 46 | 59 | 65 | 71 | 74 | 74 | 51.2 | 24 |
| 28 | 72 | 72 | 73 | 54 | 57 | 60 | 61 | 62 | 60 | 57 | 52 | 49 | 45 | 44 | 45 | 46 | 47 | 51 | 56 | 59 | 62 | 72 | 84 | 89 | 89 | 59.5 | 24 |
| 29 | 91 | 93 | 93 | 94 | 97 | 97 | 98 | 98 | 98 | 97 | 98 | 91 | 79 | 71 | 61 | 58 | 59 | 61 | 62 | 71 | 67 | 61 | 65 | 69 | **98** | 80.4 | 24 |
| 30 | 68 | 68 | 72 | 75 | 75 | 77 | 79 | 77 | 70 | 64 | 57 | 50 | 45 | 47 | 45 | 41 | 37 | 39 | 45 | 53 | 60 | 70 | 73 | 75 | 79 | 60.9 | 24 |
| 31 | 72 | 68 | 65 | 71 | 74 | 78 | 76 | 69 | 59 | 52 | 49 | 43 | 36 | 29 | 25 | 24 | 26 | 29 | 35 | 48 | 59 | 63 | 66 | 70 | 78 | 53.6 | 24 |
| HOURLY MAX | 92 | 93 | 93 | 94 | 97 | 97 | 98 | 98 | 98 | 97 | 98 | 91 | 79 | 85 | 81 | 93 | 94 | 93 | 93 | 93 | 92 | 94 | 95 | 94 | | | |
| HOURLY AVG | 78.6 | 79.0 | 79.6 | 78.9 | 79.9 | 81.1 | 81.3 | 79.2 | 74.4 | 70.0 | 64.9 | 59.7 | 55.9 | 54.7 | 53.1 | 52.7 | 54.2 | 57.7 | 62.6 | 67.6 | 71.7 | 74.8 | 75.4 | 76.7 | | | |

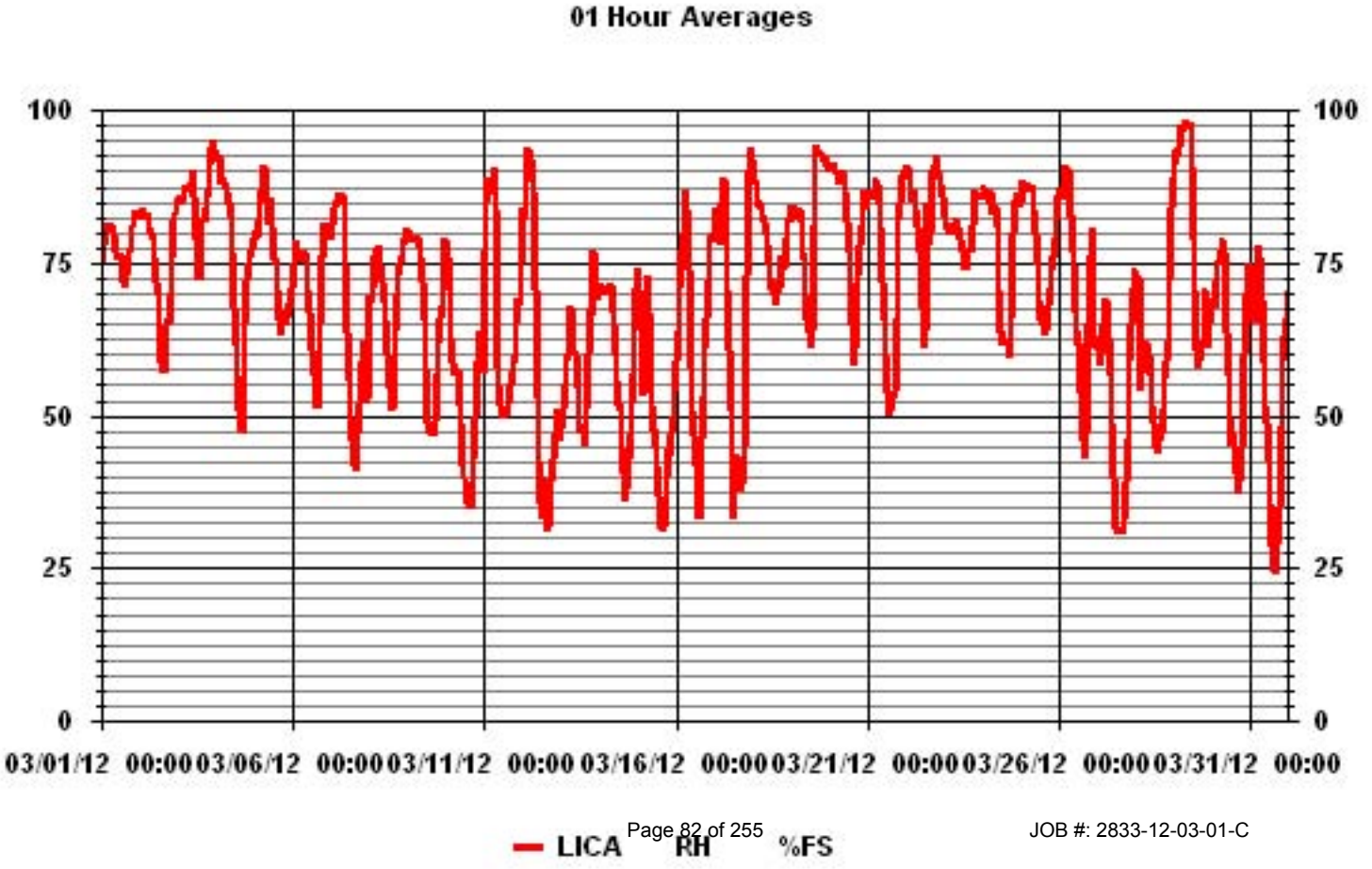
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 98 | % | @ HOUR(S) | VAR | ON DAY(S) | 29 |
| MAXIMUM 24-HR AVERAGE: | 85.5 | % | | | ON DAY(S) | 3 |
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 744 | HRS |
| | | | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 16.47 | | MONTHLY AVERAGE: | | 69.32 | % |






JOB #: 2833-12-03-01-C

# Vector Wind Speed

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

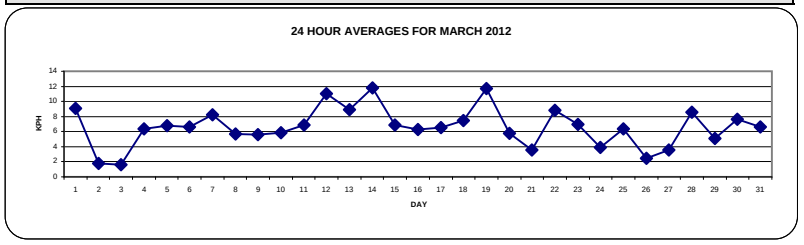
**VECTOR WIND SPEED (WS)** hourly averages (km/hr)

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 | 9.7 | 10.4 | 12.9 | 11.5 | 8.1 | 8.5 | 7.9 | 10.2 | 11.1 | 11.1 | 12.1 | 12.2 | 13 | 13.3 | 12.6 | 10.6 | 8.5 | 7.3 | 7.1 | 6.1 | 6.4 | 5.2 | 3.3 | 1.4 | 13.3 | 9.1 | 24 |
| 2 | 2.5 | 2.3 | 2.7 | 1.1 | 3 | 0.7 | 1.1 | 0.5 | 2.4 | 3.7 | 4.9 | 6 | 5 | 1.4 | 4.4 | 4.6 | 4.3 | 3.6 | 3.4 | 3.1 | 2.7 | 4.1 | 3.3 | 3.7 | 6 | 1.8 | 24 |
| 3 | 1.7 | 1.2 | 1.4 | 1 | 1.1 | 0.8 | 1.3 | 0.9 | 3.5 | 2.6 | 3.4 | 0.6 | 4.9 | 3.9 | 1.9 | 1.4 | 2.1 | 2.6 | 1.1 | 3.5 | 5.6 | 5.3 | 8.4 | 8.1 | 8.4 | 1.6 | 24 |
| 4 | 8.3 | 6.1 | 6.5 | 1.9 | 6 | 4.5 | 6 | 5.6 | 6 | 6.2 | 7.7 | 8.3 | 8.8 | 9.7 | 10 | 8.1 | 10.6 | 7.3 | 5.7 | 5.6 | 4.6 | 3.8 | 3.1 | 3.3 | 10.6 | 6.4 | 24 |
| 5 | 5 | 5.1 | 4.1 | 2.7 | 4 | 3.5 | 0.7 | 0.9 | 6.4 | 10.9 | 7.7 | 8.8 | 10.1 | 9.4 | 7.6 | 6.5 | 8.6 | 8.2 | 8 | 7.5 | 7.8 | 7.3 | 10.7 | 12 | 12.0 | 6.8 | 24 |
| 6 | 8.3 | 5.5 | 6 | 6.3 | 8.5 | 8.8 | 8.1 | 6.3 | 6.5 | 7.3 | 8.6 | 7 | 5.9 | 4.9 | 3.1 | 5.1 | 7.3 | 7 | 5.9 | 5.2 | 6.4 | 7.6 | 8.1 | 5.1 | 8.8 | 6.6 | 24 |
| 7 | 4.4 | 3 | 2.5 | 2.5 | 4.1 | 4.5 | 3.1 | 4 | 5.3 | 6.3 | 8.7 | 12.3 | 10.7 | 11.8 | 12.8 | 12.4 | 10.7 | 8.9 | 8.4 | 9 | 11.3 | 12.6 | 12.6 | 14.9 | 14.9 | 8.2 | 24 |
| 8 | 6.5 | 6.4 | 4.4 | 5.3 | 4 | 2.3 | 2.3 | 5.7 | 7.1 | 9.2 | 8 | 7.6 | 8.5 | 6 | 7.9 | 8.3 | 7.5 | 4.4 | 3.5 | 5.1 | 4.5 | 4.8 | 4 | 3.8 | 9.2 | 5.7 | 24 |
| 9 | 6 | 8 | 5.7 | 6.1 | 4.4 | 6 | 4.6 | 6.2 | 7.6 | 6.3 | 6.5 | 6.2 | 5 | 7.6 | 5.8 | 5.2 | 5 | 5.2 | 5 | 5.2 | 4.9 | 5.3 | 2.1 | 4.8 | 8.0 | 5.6 | 24 |
| 10 | 5.6 | 5.8 | 6.2 | 5.9 | 6.1 | 5.8 | 6.7 | 5.7 | 6.5 | 8.8 | 9.4 | 9.1 | 7.9 | 9.8 | 8.4 | 9.3 | 8.1 | 5.6 | 1.7 | 0.9 | 2.7 | 0.3 | 1.8 | 3.2 | 9.8 | 5.9 | 24 |
| 11 | 8.4 | 5.6 | 6.8 | 7.1 | 5.4 | 6.1 | 3.3 | 2.2 | 8 | 7 | 6.9 | 7.3 | 8.3 | 8.1 | 7.9 | 7.6 | 7.9 | 8 | 4.9 | 5.3 | 6.7 | 7.1 | 9.3 | 8.8 | 9.3 | 6.8 | 24 |
| 12 | 8.1 | 5.5 | 1.5 | 3 | 7.7 | 13.8 | 16.6 | 17.6 | 17 | 20.2 | 19.9 | 18.4 | 16.6 | 15.4 | 12 | 10.5 | 9.3 | 4.2 | 4.7 | 7.7 | 9.5 | 9.2 | 8.8 | 6.8 | 20.2 | 11.0 | 24 |
| 13 | 5.2 | 4 | 3.3 | 2.5 | 4.7 | 2.9 | 3.3 | 5.9 | 8.9 | 4.6 | 5.4 | 5.1 | 7.5 | 8.3 | 11.4 | 9.6 | 10.4 | 10.6 | 11.6 | 16.1 | 17.6 | 18.1 | 17.9 | 18.8 | 18.8 | 8.9 | 24 |
| 14 | 18.2 | 15.7 | 17.4 | 15.3 | 14.7 | 14.2 | 12.6 | 14.1 | 14.2 | 14.8 | 15.5 | 15.4 | 15 | 13.7 | 14 | 13.7 | 14.2 | 10.7 | 8.1 | 4.2 | 2.4 | 1.3 | 1.9 | 0.8 | 18.2 | **11.8** | 24 |
| 15 | 2 | 2 | 3.4 | 3.9 | 0.8 | 1.2 | 1.2 | 1.5 | 6.7 | 6.3 | 4.3 | 6.4 | 6.8 | 8.1 | 7.9 | 7.7 | 8.9 | 7.3 | 8.1 | 9.6 | 14.6 | **21** | 17.5 | 8.2 | **21.0** | 6.9 | 24 |
| 16 | 7.8 | 4.2 | 0.9 | 2 | 2.1 | 1.7 | 0.8 | 0.4 | 0.6 | 1.8 | 6.3 | 9.8 | 8.1 | 9.4 | 16.7 | 16.4 | 13.5 | 12.8 | 10.3 | 8.8 | 4.3 | 4 | 4.1 | 3.6 | 16.7 | 6.3 | 24 |
| 17 | 2.3 | 4.5 | 5.8 | 4.4 | 1 | 1.6 | 1.4 | 0.7 | 1.3 | 2.2 | 3.9 | 7.1 | 7.6 | 6.5 | 6.8 | 8.5 | 10.2 | 11.4 | 12.4 | 13.3 | 12.9 | 10.7 | 9.5 | 10 | 13.3 | 6.5 | 24 |
| 18 | 7.4 | 13.2 | 11.8 | 9.9 | 8.7 | 6.7 | 6.5 | 4.8 | 4.7 | 4.5 | 4.7 | 3 | 6.6 | 6.4 | 7.4 | 8.8 | 12.1 | 10.3 | 7.5 | 5.9 | 3.1 | 8.4 | 7.3 | 9.5 | 13.2 | 7.5 | 24 |
| 19 | 8.6 | 9.1 | 10.7 | 9.7 | 8.9 | 10.3 | 11.5 | 10.4 | 12.8 | 12.8 | 12.6 | 13.1 | 12 | 14.6 | 10.6 | 13.4 | 11.1 | 11.1 | 14.3 | 15.6 | 14.1 | 9.7 | 10.6 | 12.5 | 15.6 | 11.7 | 24 |
| 20 | 10.8 | 8.2 | 8.6 | 10.8 | 11.9 | 8.2 | 5 | 5.6 | 6.4 | 8.2 | 10.3 | 8.8 | 8.1 | 5.8 | 1.1 | 1.7 | 1.9 | 3.1 | 2.7 | 2.2 | 0.6 | 1.1 | 3.2 | 3.5 | 11.9 | 5.7 | 24 |
| 21 | 3.3 | 4.8 | 5.4 | 4.7 | 5 | 1.9 | 0.4 | 3.1 | 3.4 | 1.5 | 0.2 | 5.7 | 8 | 6.4 | 8.8 | 5.7 | 6.6 | 5.3 | 1.5 | 0.9 | 0.9 | 0.7 | 1.6 | 0.5 | 8.8 | 3.6 | 24 |
| 22 | 1.7 | 2.9 | 3.2 | 3 | 3.8 | 7.2 | 6.3 | 7.8 | 10.1 | 10.1 | 8.5 | 10.3 | 9.7 | 9.2 | 12.5 | 10.6 | 11.3 | 13.3 | 12.3 | 13.7 | 12.8 | 11.2 | 11 | 9.5 | 13.7 | 8.8 | 24 |
| 23 | 10.4 | 9 | 9.1 | 9.7 | 5.9 | 4.9 | 6.9 | 8 | 9 | 8.2 | 10.3 | 9.2 | 8.9 | 8.6 | 8.5 | 9.3 | 8.9 | 7.5 | 4.2 | 3.1 | 2.3 | 2.5 | 0.9 | 2.2 | 10.4 | 7.0 | 24 |
| 24 | 3 | 3 | 2.4 | 2.7 | 4.7 | 5.4 | 3.7 | 2.8 | 3.2 | 5 | 6.4 | 6.5 | 5.9 | 6.6 | 7.2 | 6.7 | 5.3 | 4.5 | 2 | 0.8 | 1.7 | 1.6 | 1.5 | 1.4 | 7.2 | 3.9 | 24 |
| 25 | 2.3 | 3.3 | 6.1 | 2.7 | 3.9 | 3.4 | 2 | 4.9 | 6.8 | 6.4 | 7.2 | 6.4 | 8.4 | 10.3 | 11.2 | 9 | 10.9 | 10.9 | 9.1 | 6.7 | 8.7 | 6.6 | 3.3 | 2.9 | 11.2 | 6.4 | 24 |
| 26 | 2.8 | 3.7 | 2.6 | 1 | 1 | 0.7 | 0.8 | 0.9 | 0.3 | 2 | 1.1 | 6.2 | 5.1 | 4.5 | 5 | 4.8 | 3.8 | 1.7 | 2.6 | 1.4 | 0.2 | 1.2 | 3.1 | 2.3 | 6.2 | 2.5 | 24 |
| 27 | 2.5 | 4.1 | 4.2 | 2.9 | 2.9 | 2.5 | 3.5 | 4.5 | 5.2 | 4.7 | 3.8 | 6.3 | 4.8 | 3.9 | 3.9 | 3.3 | 3.4 | 3.2 | 2.1 | 3.9 | 1.9 | 3.6 | 1.6 | 3 | 6.3 | 3.6 | 24 |
| 28 | 2.9 | 2.2 | 2.7 | 4.6 | 4.2 | 5.2 | 6.1 | 6.8 | 6.4 | 8.3 | 10.3 | 11.2 | 15 | 15 | 11.8 | 10.3 | 11.5 | 9.5 | 7 | 6.7 | 12.2 | 16 | 9.3 | 10.1 | 16.0 | 8.6 | 24 |
| 29 | 8.2 | 8 | 7.2 | 4.2 | 5.3 | 5 | 4.5 | 2.6 | 2.4 | 4.8 | 4.4 | 6.8 | 7.6 | 6.7 | 4.7 | 3.3 | 5.4 | 4.3 | 4.4 | 4.1 | 5.1 | 3.8 | 4.6 | 4.9 | 8.2 | 5.1 | 24 |
| 30 | 5 | 5.3 | 3.8 | 4.8 | 5.8 | 3 | 4 | 3.7 | 7.1 | 6.3 | 8 | 6.7 | 7.6 | 10.2 | 13.8 | 10.6 | 12.7 | 13.6 | 12.5 | 11.2 | 10.7 | 4.6 | 4.6 | 6.9 | 13.8 | 7.6 | 24 |
| 31 | 8.3 | 7.7 | 7.3 | 6.9 | 6.1 | 6.5 | 6.9 | 8 | 8.6 | 9.2 | 7.6 | 8.8 | 10 | 9.1 | 10.1 | 10.4 | 8.7 | 8.5 | 2.9 | 1.9 | 1.5 | 0.8 | 1.1 | 1 | 10.4 | 6.6 | 24 |
| HOURLY MAX | 18.2 | 15.7 | 17.4 | 15.3 | 14.7 | 14.2 | 16.6 | 17.6 | 17.0 | 20.2 | 19.9 | 18.4 | 16.6 | 15.4 | 16.7 | 16.4 | 14.2 | 13.6 | 14.3 | 16.1 | 17.6 | 21.0 | 17.9 | 18.8 | | | |
| HOURLY AVG | 6.0 | 5.8 | 5.7 | 5.2 | 5.3 | 5.1 | 4.8 | 5.2 | 6.6 | 7.1 | 7.6 | 8.3 | 8.6 | 8.5 | 8.6 | 8.2 | 8.4 | 7.5 | 6.3 | 6.3 | 6.5 | 6.4 | 6.1 | 6.0 | | | |

**STATUS FLAG CODES**

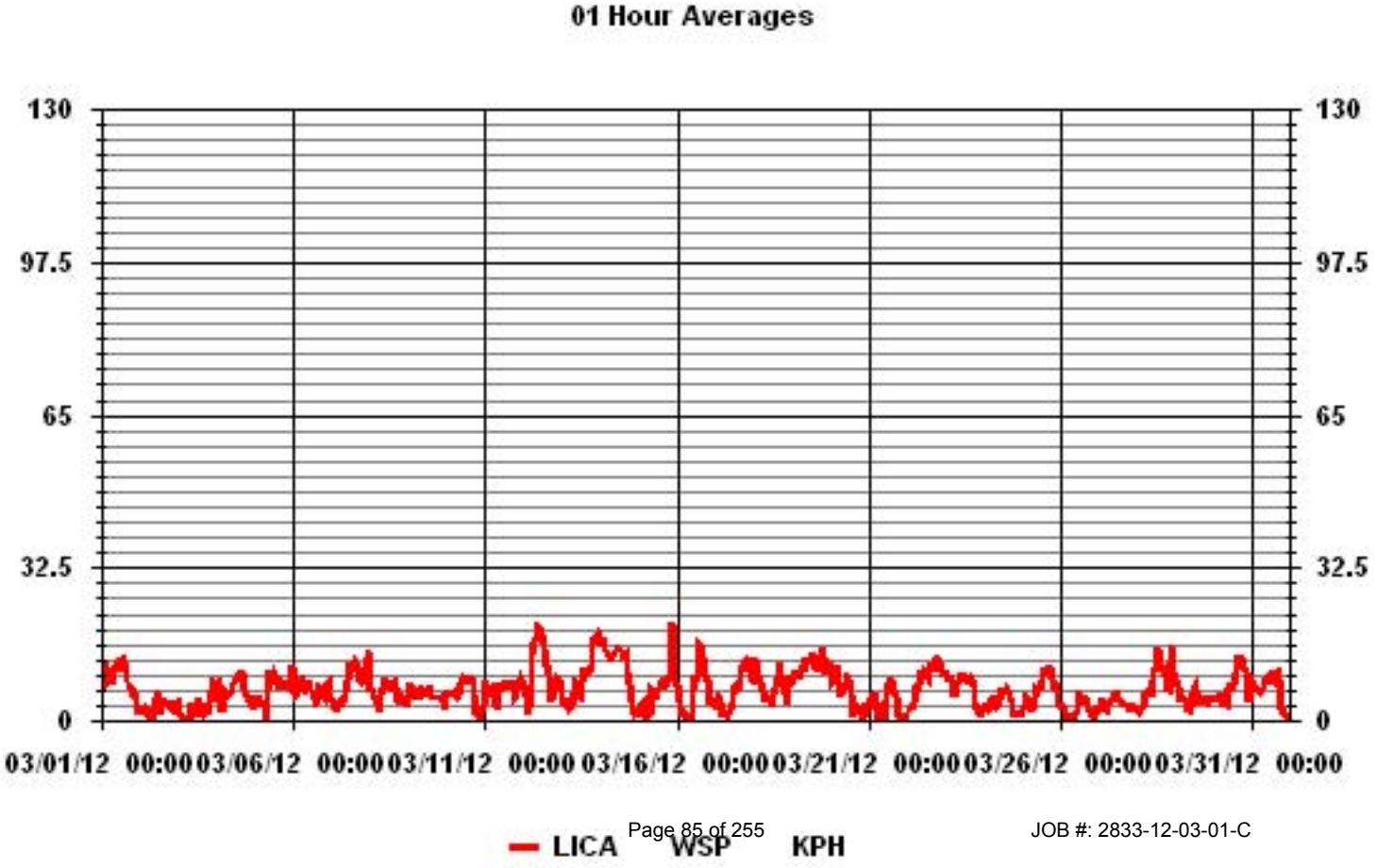
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MISSING DATA |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |




LAST CALIBRATION: December 16, 2010

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 21.0 | KPH | @ HOUR(S) | 21 | ON DAY(S) | 15 | |
| MAXIMUM 24-HR AVERAGE: | 11.8 | KPH | | | ON DAY(S) | 14 | |
| CALMS (≤ 0 KPH) | 0.54 | % | OPERATIONAL TIME: | | 744 | HRS | |
| MONTHLY CALIBRATION TIME: | 0 | HRS | AMD OPERATION UPTIME | | 100.0 | % | |
| STANDARD DEVIATION: | 3.98 | | MONTHLY AVERAGE: | | 6.68 | KPH | |






JOB #: 2833-12-03-01-C

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

MARCH 2012

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

MST

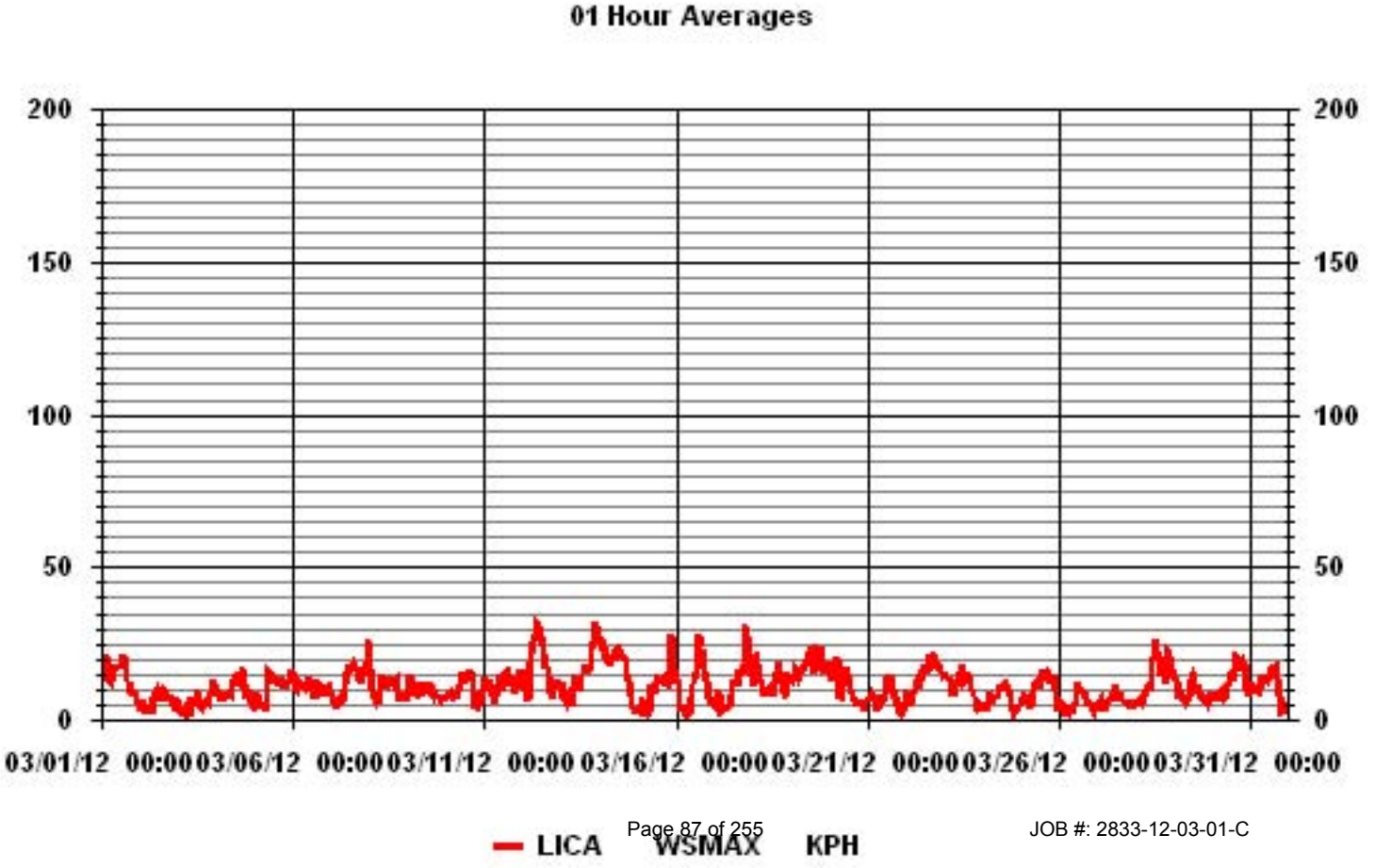
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 15.1 | 15.8 | 20.5 | 20.5 | 13.4 | 13.3 | 12.6 | 15.1 | 16.8 | 16.7 | 17.4 | 17.9 | 20.4 | 20.3 | 21.2 | 17.2 | 13.1 | 10.7 | 11.3 | 9.1 | 9.4 | 8.2 | 5.8 | 4.2 | 21.2 |
| 2 | 4.6 | 4.1 | 6 | 3.9 | 5.1 | 2.5 | 4 | 2.2 | 6.8 | 7.1 | 9.1 | 10.3 | 9.2 | 5.8 | 8.4 | 10 | 9.1 | 7.4 | 7.1 | 7 | 5.5 | 6.6 | 5.8 | 7.2 | 10.3 |
| 3 | 3.7 | 3.4 | 2.9 | 2.4 | 3.6 | 1.9 | 3.2 | 2.8 | 7 | 5.7 | 6.3 | 5.8 | 9.6 | 7.4 | 4.9 | 4 | 5.2 | 6 | 6.8 | 6 | 9 | 7.6 | 13 | 11.4 | 13 |
| 4 | 10.6 | 8.2 | 9.4 | 6.4 | 8.7 | 6.7 | 8.3 | 8.5 | 9.6 | 8.9 | 12.8 | 12.6 | 14.7 | 14.3 | 15.7 | 12.7 | 17.1 | 11.3 | 8.9 | 9.6 | 7.7 | 6 | 5.2 | 4.6 | 17.1 |
| 5 | 7.6 | 9 | 7.1 | 4.2 | 5.3 | 4.7 | 4.1 | 3.3 | 16.9 | 16.4 | 11.9 | 13.9 | 14.1 | 13.7 | 12.8 | 11.1 | 13.4 | 13.2 | 11 | 10.9 | 11.8 | 12.5 | 14.2 | 16.7 | 16.9 |
| 6 | 13.1 | 10.1 | 9.4 | 10.9 | 13.3 | 12.9 | 11.6 | 10.9 | 10.2 | 11.1 | 14 | 11.9 | 9.4 | 8.2 | 6.8 | 12.8 | 11.7 | 11 | 9.1 | 7.9 | 9.9 | 10.7 | 11.3 | 9.5 | 14 |
| 7 | 8.5 | 5.9 | 5 | 4.7 | 7 | 7.6 | 5.9 | 6.3 | 9.7 | 11.9 | 15.4 | 17.8 | 17.6 | 16.4 | 18.7 | 17.7 | 17 | 13.6 | 12.4 | 12.4 | 14.4 | 17 | 18.9 | 26.5 | 26.5 |
| 8 | 16.9 | 10.4 | 6.9 | 8.6 | 6.3 | 7.3 | 5.2 | 10.2 | 14.9 | 13.1 | 12.9 | 11.8 | 13 | 13 | 12.3 | 12.4 | 13.3 | 10 | 7.4 | 7.6 | 7.2 | 7.8 | 6.9 | 7 | 16.9 |
| 9 | 9.4 | 14.4 | 8.1 | 9.3 | 8.9 | 8.6 | 7.3 | 11.5 | 11.6 | 10.6 | 9.7 | 10.7 | 9.9 | 12 | 11.8 | 9.1 | 7.7 | 8.8 | 8 | 7.8 | 6.8 | 8.2 | 5.8 | 7.4 | 14.4 |
| 10 | 7.7 | 8.5 | 9.3 | 8.4 | 7.8 | 8.5 | 9.7 | 9.1 | 11.6 | 12.9 | 15.4 | 13.5 | 12.3 | 15.1 | 14.6 | 16 | 13.6 | 9.6 | 5 | 4.6 | 5.9 | 5.5 | 5.6 | 9.5 | 16 |
| 11 | 14.1 | 10 | 12.1 | 13.3 | 8 | 9.2 | 5.6 | 7.8 | 11.7 | 14.4 | 9.9 | 11 | 15 | 15.7 | 11.7 | 12.6 | 14.4 | 12 | 8.8 | 11.1 | 11.7 | 10 | 15.8 | 15.5 | 15.8 |
| 12 | 16.4 | 10.2 | 6.3 | 7.2 | 18.9 | 21.8 | 25.3 | 28 | 25.7 | 31.3 | 30.6 | 27.6 | 24.8 | 22.5 | 17.7 | 17.2 | 15 | 9 | 7.2 | 10 | 11.8 | 11.7 | 13.1 | 11.1 | 31.3 |
| 13 | 9.1 | 10 | 6.9 | 5.7 | 7.1 | 5.2 | 5.1 | 11 | 14.9 | 10.7 | 10.5 | 9.5 | 13.5 | 15 | 17.4 | 17.3 | 16.7 | 16.3 | 17.9 | 23.8 | 25.3 | **32.2** | 30.8 | 26.2 | **32.2** |
| 14 | 26.3 | 27.4 | 23.3 | 23.4 | 20.8 | 19.6 | 17.5 | 20.1 | 20.7 | 20.5 | 22.3 | 23 | 23.5 | 21.6 | 19.8 | 21.5 | 19.8 | 15.9 | 13.1 | 8.5 | 4.1 | 3.1 | 2.9 | 3.3 | 27.4 |
| 15 | 4.2 | 3.6 | 6.2 | 5.7 | 3.8 | 3.2 | 2.3 | 3.1 | 11.4 | 9.5 | 8.5 | 12.3 | 13.4 | 13.4 | 12.8 | 12.7 | 13.8 | 12.5 | 12 | 15 | 22.6 | 27.7 | 26.1 | 17.5 | 27.7 |
| 16 | 12.9 | 12.5 | 3.3 | 4.6 | 4 | 4.1 | 2.2 | 1.7 | 2.4 | 7.5 | 11.8 | 14.8 | 14.5 | 16.4 | 27.8 | 24.1 | 21.8 | 21.9 | 16 | 13.3 | 8 | 6.2 | 5.7 | 6.2 | 27.8 |
| 17 | 4.8 | 5.6 | 9.1 | 8.7 | 2.9 | 3.3 | 3.8 | 3.7 | 4 | 4.8 | 8.1 | 13.4 | 11.9 | 12.4 | 10.9 | 16.5 | 15.7 | 16 | 18.3 | 31 | 28.2 | 21 | 15.7 | 14.9 | 31 |
| 18 | 10.6 | 20.2 | 20.7 | 18.6 | 13.8 | 12.9 | 11.4 | 7.7 | 8.7 | 8.9 | 9.9 | 7.3 | 10.5 | 10 | 12.6 | 15.2 | 18.6 | 16.7 | 12.2 | 9.2 | 7.3 | 12.6 | 15.6 | 13.4 | 20.7 |
| 19 | 12.9 | 14.1 | 16.6 | 15.8 | 13.9 | 14.9 | 15.7 | 16.3 | 18.1 | 19.8 | 18.4 | 21.8 | 17.4 | 24.1 | 15.2 | 24.5 | 19.9 | 15.6 | 20 | 23.7 | 19.7 | 15.4 | 16.4 | 17.3 | 24.5 |
| 20 | 18.8 | 12.6 | 14.7 | 18.1 | 19.4 | 20.5 | 8.3 | 8 | 12.6 | 14 | 17.6 | 15.3 | 12.2 | 10 | 9.5 | 6.9 | 6.8 | 5.4 | 5.3 | 5.4 | 5.6 | 2.8 | 5.9 | 6.4 | 20.5 |
| 21 | 6.6 | 6.9 | 8.7 | 7.5 | 7 | 4.5 | 3.1 | 8 | 6.1 | 6.3 | 7.9 | 12.9 | 14.1 | 10.9 | 14.4 | 9.8 | 9.6 | 7.9 | 4.8 | 2.5 | 3.6 | 2.2 | 2.9 | 3.5 | 14.4 |
| 22 | 9.7 | 6 | 5.7 | 5.9 | 8.3 | 9.8 | 12.2 | 11.9 | 14.7 | 16.1 | 12.5 | 18.1 | 17.1 | 15.3 | 21 | 17.2 | 17.7 | 22 | 19.4 | 18.7 | 18.4 | 16.6 | 15.7 | 14.4 | 22 |
| 23 | 14.9 | 14.2 | 13.8 | 13.5 | 10.2 | 7.8 | 11.5 | 12.3 | 14 | 13.1 | 14.5 | 18.3 | 12.8 | 13.5 | 12.4 | 15.8 | 12.9 | 10.5 | 8.1 | 4.8 | 5.3 | 4.1 | 4.7 | 3.2 | 18.3 |
| 24 | 5.3 | 5 | 3.8 | 3.7 | 6.2 | 9.2 | 5.6 | 8.1 | 6.7 | 8.4 | 10.7 | 11 | 9.8 | 11.8 | 12.4 | 11.7 | 10.6 | 8.1 | 4.7 | 2.7 | 3.8 | 3.4 | 4 | 4.5 | 12.4 |
| 25 | 7.4 | 6.1 | 8.7 | 5.7 | 6.8 | 6.3 | 3.9 | 8.8 | 11.6 | 11.8 | 11.8 | 10.3 | 13.9 | 14.7 | 16.5 | 15 | 16.1 | 15.2 | 13.4 | 13.1 | 13.5 | 10.4 | 8 | 4.3 | 16.5 |
| 26 | 4.2 | 6.2 | 4.8 | 2.8 | 3.3 | 2.4 | 4.1 | 3.8 | 2.5 | 5.1 | 5.4 | 12 | 9 | 10.5 | 9.2 | 9.3 | 8.1 | 6.9 | 5.8 | 5.3 | 4.5 | 3.3 | 4.9 | 4.4 | 12 |
| 27 | 5.2 | 6 | 6.9 | 3.9 | 3.7 | 4.1 | 5.7 | 7.1 | 8 | 7.2 | 7.5 | 11.5 | 8 | 7.6 | 9 | 7.2 | 7 | 6 | 4.5 | 6.8 | 3.8 | 4.8 | 3.5 | 5.3 | 11.5 |
| 28 | 5.9 | 4.1 | 6.6 | 7.7 | 6.5 | 8.2 | 9.4 | 10.2 | 10.3 | 12.5 | 19.7 | 20.5 | 26.5 | 22.4 | 21.5 | 14.2 | 20.9 | 18.5 | 11.6 | 17.1 | 22.2 | 21.4 | 14.8 | 15.3 | 26.5 |
| 29 | 13.9 | 13.9 | 13 | 6.9 | 10.1 | 7.2 | 7.5 | 5.7 | 6.2 | 8 | 13.3 | 14.8 | 13.4 | 11.1 | 8.6 | 11.2 | 9.4 | 7.7 | 7.1 | 6.7 | 7.4 | 5.8 | 6.9 | 8.4 | 14.8 |
| 30 | 8.4 | 8.4 | 6 | 8.2 | 9 | 7.7 | 6.9 | 7.5 | 11.1 | 11.5 | 12.1 | 14.5 | 14.1 | 16.5 | 22 | 18.7 | 18 | 19.3 | 20 | 17 | 19.3 | 10.4 | 8 | 10 | 22 |
| 31 | 11.2 | 11.8 | 11 | 9.9 | 9.4 | 11.7 | 10.8 | 12 | 14.1 | 14 | 13.2 | 14.7 | 16.4 | 16.1 | 17.3 | 17.8 | 14.2 | 13.3 | 8.1 | 2.9 | 3.3 | 4.1 | 5.4 | 3.1 | 17.8 |
| PEAK | 26.3 | 27.4 | 23.3 | 23.4 | 20.8 | 21.8 | 25.3 | 28.0 | 25.7 | 31.3 | 30.6 | 27.6 | 26.5 | 24.1 | 27.8 | 24.5 | 21.8 | 22.0 | 20.0 | 31.0 | 28.2 | 32.2 | 30.8 | 26.5 | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | |
|---|---|---|---|---|
| MAXIMUM INSTANTANEOUS READING | 32.2 | KPH | @ HOUR(S) | 21 |
| | | | ON DAY(S) | 13 |






JOB #: 2833-12-03-01-C

LICA
WSP / WD Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WD
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | .80 | 1.47 | 4.97 | 2.55 | 4.03 | 5.77 | 5.10 | 1.47 | 1.74 | 2.41 | 7.79 | 5.10 | 1.61 | .80 | .13 | .40 | 46.23 |
| < | 12.0 | .67 | 4.30 | 5.64 | .40 | 4.97 | 2.82 | 6.58 | .00 | .00 | .26 | 6.85 | 5.37 | .94 | 1.20 | 1.07 | 1.20 | 42.33 |
| < | 20.0 | .80 | .53 | .67 | .00 | .40 | .53 | .53 | .00 | .00 | .00 | 1.34 | 1.34 | 2.95 | .26 | .26 | .94 | 10.61 |
| < | 29.0 | .00 | .00 | .00 | .00 | .00 | .00 | .13 | .00 | .00 | .00 | .00 | .00 | .13 | .00 | .00 | .00 | .26 |
| < | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 2.28 | 6.31 | 11.29 | 2.95 | 9.40 | 9.13 | 12.36 | 1.47 | 1.74 | 2.68 | 15.99 | 11.82 | 5.64 | 2.28 | 1.47 | 2.55 | |

Calm : .53 %

Total # Operational Hours : 744

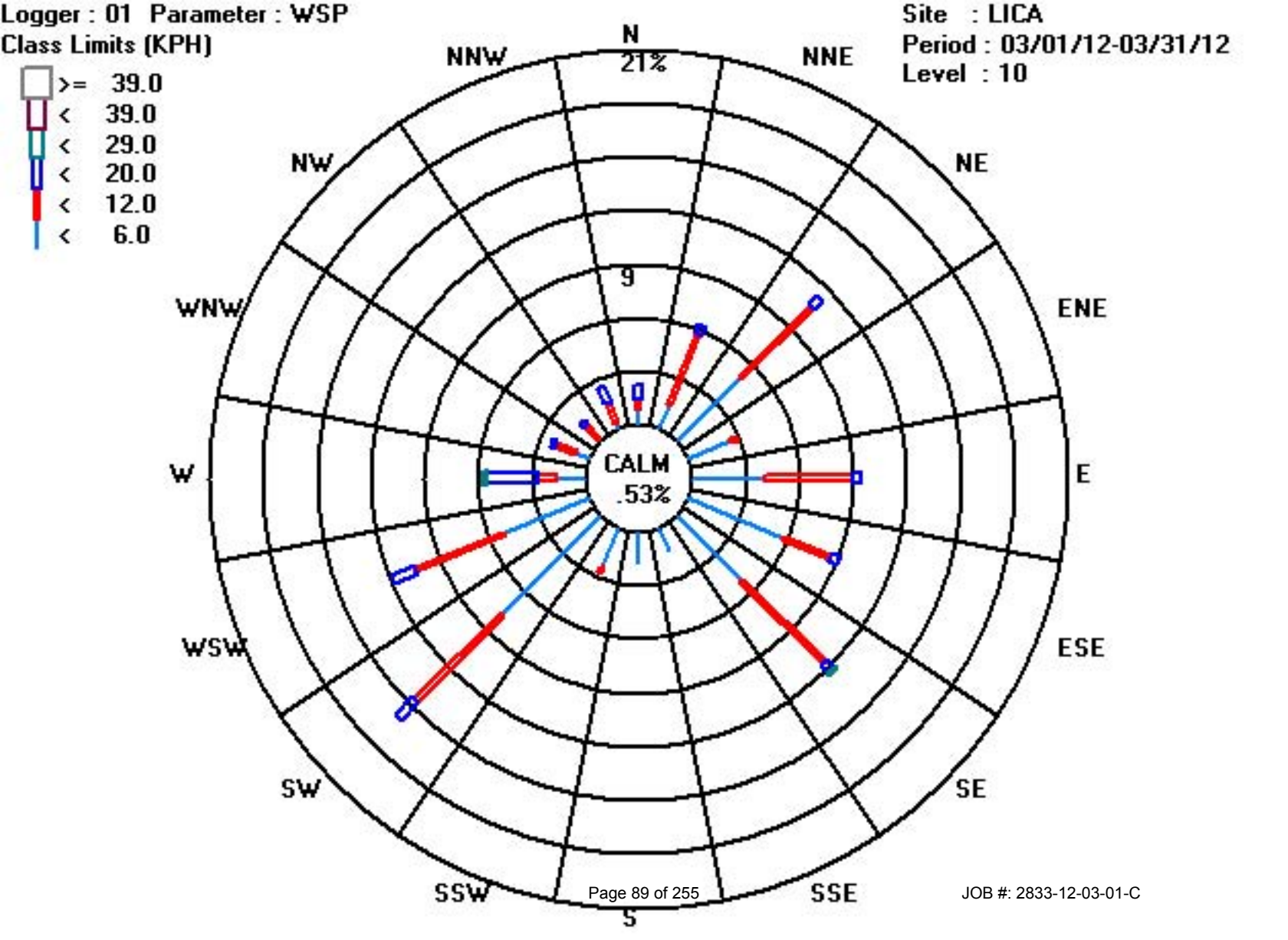
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 6 | 11 | 37 | 19 | 30 | 43 | 38 | 11 | 13 | 18 | 58 | 38 | 12 | 6 | 1 | 3 | 344 |
| < | 12.0 | 5 | 32 | 42 | 3 | 37 | 21 | 49 | | | 2 | 51 | 40 | 7 | 9 | 8 | 9 | 315 |
| < | 20.0 | 6 | 4 | 5 | | 3 | 4 | 4 | | | | 10 | 10 | 22 | 2 | 2 | 7 | 79 |
| < | 29.0 | | | | | | | 1 | | | | | | 1 | | | | 2 |
| < | 39.0 | | | | | | | | | | | | | | | | | |
| >= | 39.0 | | | | | | | | | | | | | | | | | |
| | Totals | 17 | 47 | 84 | 22 | 70 | 68 | 92 | 11 | 13 | 20 | 119 | 88 | 42 | 17 | 11 | 19 | |

Calm : .53 %

Total # Operational Hours : 744






JOB #: 2833-12-03-01-C

# Vector Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

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

MST

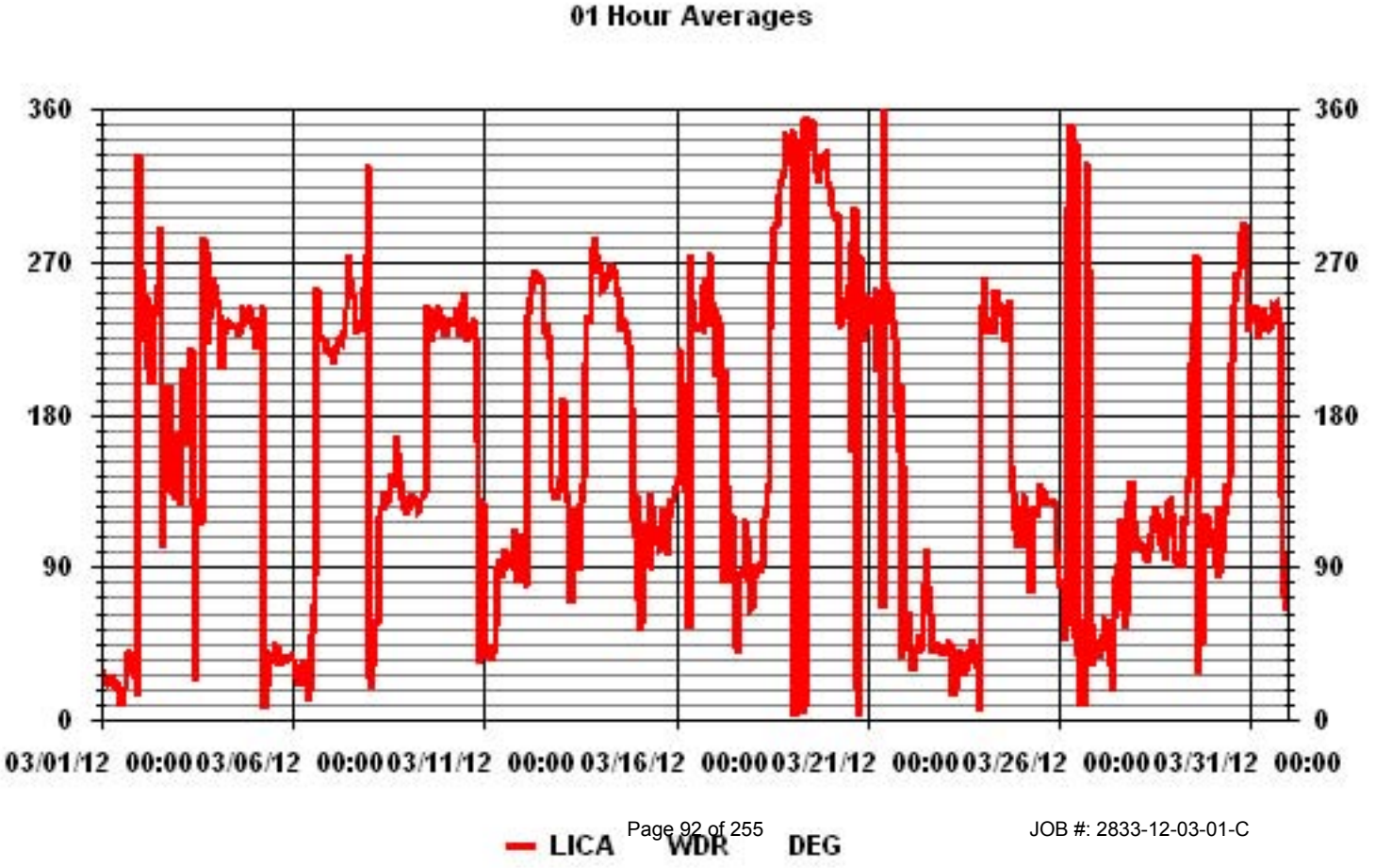
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24-HOUR | 24-HOUR AVG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 29 | 26 | 25 | 23 | 25 | 19 | 27 | 24 | 19 | 23 | 19 | 19 | 10 | 10 | 18 | 20 | 39 | 40 | 38 | 32 | 29 | 26 | 13 | 333 | 23 | NNE | 24 |
| 2 | 271 | 267 | 255 | 223 | 250 | 211 | 212 | 198 | 227 | 237 | 245 | 256 | 284 | 290 | 101 | 134 | 169 | 189 | 196 | 196 | 170 | 134 | 132 | 131 | 205 | SSW | 24 |
| 3 | 131 | 126 | 170 | 208 | 167 | 162 | 186 | 180 | 219 | 197 | 127 | 23 | 115 | 122 | 131 | 115 | 285 | 248 | 277 | 221 | 236 | 253 | 260 | 258 | 214 | SSW | 24 |
| 4 | 248 | 245 | 240 | 206 | 231 | 236 | 228 | 232 | 235 | 234 | 233 | 230 | 233 | 225 | 232 | 231 | 245 | 231 | 237 | 234 | 238 | 244 | 237 | 232 | 235 | SW | 24 |
| 5 | 218 | 234 | 237 | 231 | 236 | 244 | 6 | 41 | 20 | 33 | 39 | 35 | 40 | 44 | 43 | 31 | 39 | 36 | 38 | 33 | 39 | 36 | 37 | 38 | 33 | NNE | 24 |
| 6 | 36 | 34 | 25 | 28 | 19 | 25 | 33 | 36 | 30 | 10 | 21 | 17 | 50 | 68 | 84 | 255 | 239 | 226 | 225 | 225 | 221 | 222 | 218 | 217 | 11 | NNE | 24 |
| 7 | 218 | 209 | 216 | 221 | 224 | 225 | 223 | 226 | 229 | 242 | 272 | 272 | 261 | 248 | 251 | 227 | 229 | 233 | 232 | 236 | 247 | 255 | 274 | 328 | 249 | WSW | 24 |
| 8 | 25 | 18 | 32 | 56 | 58 | 56 | 120 | 126 | 123 | 135 | 128 | 129 | 134 | 145 | 141 | 140 | 145 | 168 | 158 | 142 | 131 | 125 | 125 | 121 | 121 | ESE | 24 |
| 9 | 124 | 131 | 133 | 129 | 126 | 132 | 123 | 124 | 130 | 133 | 133 | 134 | 244 | 235 | 223 | 241 | 229 | 231 | 235 | 245 | 233 | 232 | 238 | 226 | 175 | S | 24 |
| 10 | 232 | 233 | 237 | 234 | 234 | 236 | 243 | 240 | 226 | 230 | 246 | 252 | 236 | 223 | 225 | 227 | 229 | 237 | 227 | 165 | 42 | 33 | 130 | 128 | 232 | SW | 24 |
| 11 | 47 | 38 | 38 | 45 | 34 | 43 | 39 | 55 | 90 | 95 | 84 | 90 | 88 | 100 | 89 | 92 | 92 | 91 | 104 | 112 | 109 | 80 | 90 | 109 | 81 | E | 24 |
| 12 | 96 | 87 | 78 | 239 | 249 | 261 | 253 | 266 | 261 | 260 | 264 | 261 | 258 | 231 | 232 | 225 | 228 | 213 | 135 | 135 | 132 | 130 | 134 | 143 | 236 | SW | 24 |
| 13 | 180 | 190 | 163 | 135 | 129 | 88 | 68 | 114 | 124 | 113 | 114 | 88 | 128 | 139 | 143 | 211 | 237 | 237 | 234 | 263 | 279 | 284 | 276 | 270 | 223 | SW | 24 |
| 14 | 269 | 264 | 254 | 255 | 260 | 263 | 259 | 270 | 261 | 261 | 265 | 257 | 250 | 229 | 231 | 236 | 235 | 231 | 223 | 207 | 186 | 119 | 107 | 133 | 251 | WSW | 24 |
| 15 | 71 | 52 | 57 | 103 | 116 | 90 | 93 | 92 | 133 | 128 | 116 | 107 | 105 | 101 | 102 | 117 | 124 | 109 | 96 | 107 | 119 | 129 | 130 | 134 | 115 | ESE | 24 |
| 16 | 138 | 143 | 219 | 196 | 189 | 133 | 198 | 88 | 53 | 275 | 249 | 231 | 233 | 228 | 234 | 232 | 231 | 256 | 259 | 259 | 231 | 276 | 247 | 238 | 234 | SW | 24 |
| 17 | 202 | 236 | 238 | 236 | 183 | 150 | 80 | 206 | 140 | 80 | 104 | 122 | 110 | 43 | 39 | 83 | 87 | 88 | 87 | 119 | 108 | 100 | 85 | 65 | 98 | E | 24 |
| 18 | 66 | 84 | 92 | 90 | 91 | 87 | 91 | 119 | 124 | 134 | 140 | 230 | 269 | 290 | 293 | 290 | 309 | 315 | 319 | 323 | 347 | 326 | 338 | 327 | 13 | NNE | 24 |
| 19 | 335 | 349 | 3 | 5 | 340 | 338 | 343 | 355 | 4 | 8 | 356 | 336 | 343 | 354 | 346 | 335 | 323 | 316 | 330 | 332 | 333 | 334 | 326 | 318 | 342 | NNW | 24 |
| 20 | 314 | 304 | 298 | 295 | 295 | 299 | 235 | 231 | 249 | 242 | 238 | 236 | 256 | 282 | 157 | 172 | 302 | 20 | 2 | 274 | 241 | 223 | 236 | 230 | 273 | W | 24 |
| 21 | 250 | 237 | 234 | 240 | 236 | 255 | 204 | 230 | 251 | 66 | 360 | 259 | 233 | 254 | 249 | 252 | 237 | 226 | 183 | 158 | 199 | 36 | 109 | 150 | 238 | SW | 24 |
| 22 | 40 | 51 | 63 | 45 | 29 | 41 | 41 | 41 | 51 | 41 | 50 | 79 | 80 | 101 | 80 | 64 | 39 | 41 | 42 | 43 | 45 | 40 | 42 | 38 | 52 | NE | 24 |
| 23 | 44 | 42 | 40 | 47 | 45 | 14 | 34 | 18 | 23 | 31 | 41 | 37 | 26 | 33 | 28 | 42 | 39 | 48 | 45 | 34 | 34 | 32 | 5 | 239 | 35 | NE | 24 |
| 24 | 244 | 261 | 236 | 227 | 237 | 234 | 236 | 227 | 254 | 250 | 239 | 246 | 239 | 231 | 223 | 237 | 240 | 248 | 151 | 135 | 111 | 128 | 102 | 106 | 232 | SW | 24 |
| 25 | 105 | 123 | 134 | 115 | 125 | 113 | 74 | 120 | 124 | 126 | 119 | 127 | 139 | 135 | 135 | 131 | 127 | 129 | 128 | 128 | 130 | 126 | 95 | 96 | 126 | SE | 24 |
| 26 | 78 | 83 | 81 | 47 | 55 | 303 | 278 | 352 | 116 | 79 | 48 | 341 | 39 | 7 | 59 | 41 | 7 | 329 | 267 | 232 | 31 | 56 | 38 | 44 | 31 | NNE | 24 |
| 27 | 45 | 36 | 40 | 51 | 60 | 59 | 56 | 55 | 33 | 17 | 60 | 85 | 91 | 89 | 118 | 112 | 65 | 53 | 63 | 129 | 139 | 139 | 139 | 119 | 73 | ENE | 24 |
| 28 | 100 | 105 | 103 | 105 | 104 | 96 | 96 | 93 | 99 | 109 | 111 | 120 | 126 | 123 | 118 | 103 | 118 | 101 | 94 | 109 | 128 | 129 | 121 | 121 | 114 | ESE | 24 |
| 29 | 101 | 94 | 90 | 95 | 91 | 91 | 120 | 114 | 133 | 143 | 211 | 233 | 233 | 245 | 274 | 27 | 54 | 44 | 89 | 113 | 122 | 103 | 106 | 101 | 114 | ESE | 24 |
| 30 | 103 | 112 | 91 | 83 | 126 | 86 | 98 | 121 | 125 | 139 | 133 | 142 | 211 | 244 | 247 | 264 | 262 | 266 | 287 | 285 | 294 | 272 | 229 | 234 | 232 | SW | 24 |
| 31 | 239 | 236 | 245 | 241 | 230 | 224 | 234 | 228 | 243 | 240 | 233 | 230 | 231 | 237 | 245 | 244 | 246 | 244 | 235 | 132 | 72 | 100 | 66 | 66 | 236 | SW | 24 |
| HOURLY AVG | 335 | 349 | 298 | 295 | 340 | 338 | 343 | 355 | 261 | 275 | 360 | 341 | 343 | 354 | 346 | 335 | 323 | 329 | 330 | 332 | 347 | 334 | 338 | 333 | | | |

**STATUS FLAG CODES**

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

| | |
|---|---|
| LAST CALIBRATION: | December 16, 2010 |
| DECLINATION : | 19 DEGREES FROM MAGNETIC NORTH |

| | | | | | |
|---|---|---|---|---|---|
| MONTHLY CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 744 | HRS |
| STANDARD DEVIATION | 91.54 | | AMD OPERATION UPTIME | 100.0 | % |
| | | | MONTHLY AVERAGE | 204 | DEG |






JOB #: 2833-12-03-01-C

# Standard Deviation Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *COLD LAKE*

MARCH 2012

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

MST

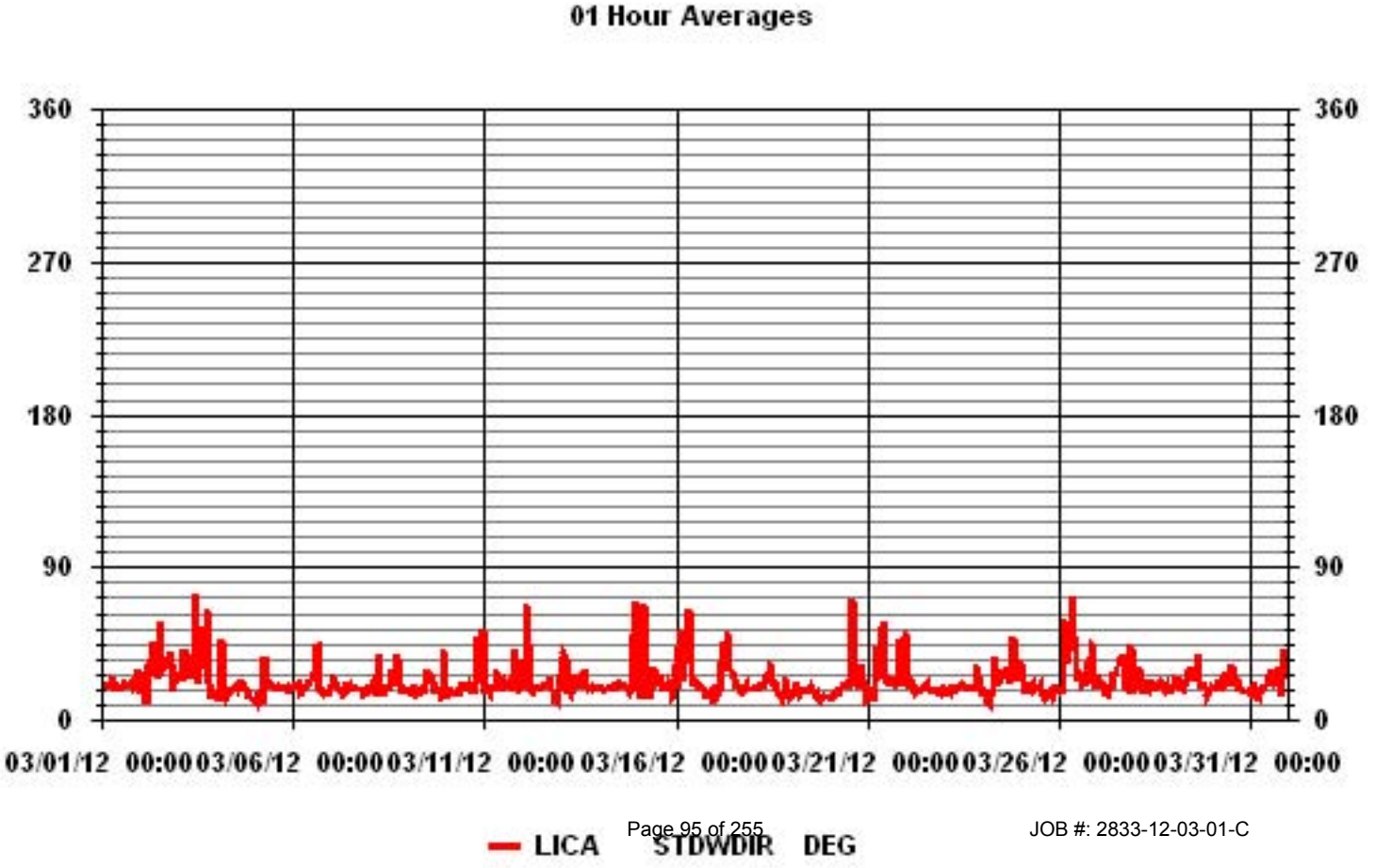
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 20 | 21 | 20 | 21 | 22 | 19 | 22 | 20 | 22 | 19 | 19 | 19 | 19 | 19 | 23 | 20 | 20 | 19 | 20 | 22 | 19 | 20 | 20 | 30 |
| 2 | 18 | 18 | 18 | 26 | 9 | 33 | 25 | 35 | 46 | 33 | 38 | 24 | 26 | 58 | 31 | 31 | 37 | 36 | 33 | 40 | 33 | 17 | 21 | 23 |
| 3 | 24 | 29 | 22 | 41 | 37 | 35 | 37 | 35 | 24 | 31 | 33 | 75 | 22 | 31 | 48 | 55 | 33 | 31 | 66 | 23 | 17 | 12 | 17 | 16 |
| 4 | 13 | 13 | 13 | 48 | 15 | 14 | 12 | 14 | 17 | 17 | 18 | 20 | 21 | 19 | 21 | 22 | 20 | 21 | 19 | 18 | 15 | 14 | 13 | 12 |
| 5 | 13 | 15 | 11 | 12 | 13 | 9 | 35 | 35 | 22 | 19 | 22 | 21 | 19 | 19 | 20 | 19 | 19 | 19 | 18 | 19 | 18 | 20 | 18 | 19 |
| 6 | 19 | 20 | 20 | 21 | 18 | 19 | 18 | 20 | 20 | 22 | 22 | 24 | 26 | 27 | 43 | 44 | 19 | 17 | 18 | 16 | 17 | 17 | 14 | 19 |
| 7 | 20 | 27 | 22 | 22 | 18 | 18 | 17 | 13 | 19 | 21 | 21 | 19 | 21 | 19 | 19 | 19 | 19 | 18 | 19 | 18 | 15 | 16 | 18 | 17 |
| 8 | 19 | 20 | 22 | 19 | 14 | 34 | 39 | 16 | 19 | 14 | 18 | 21 | 17 | 29 | 23 | 21 | 24 | 39 | 37 | 22 | 18 | 18 | 15 | 18 |
| 9 | 18 | 17 | 17 | 16 | 21 | 14 | 19 | 18 | 17 | 19 | 15 | 21 | 30 | 22 | 28 | 21 | 22 | 20 | 15 | 18 | 14 | 14 | 42 | 17 |
| 10 | 13 | 16 | 19 | 16 | 15 | 15 | 15 | 15 | 20 | 19 | 20 | 19 | 20 | 19 | 22 | 20 | 19 | 15 | 21 | 49 | 29 | 45 | 42 | 53 |
| 11 | 17 | 17 | 18 | 16 | 20 | 17 | 20 | 30 | 17 | 21 | 21 | 23 | 20 | 21 | 23 | 20 | 19 | 19 | 22 | 42 | 22 | 18 | 19 | 36 |
| 12 | 28 | 18 | 69 | 46 | 18 | 18 | 17 | 19 | 19 | 19 | 19 | 20 | 20 | 21 | 21 | 21 | 19 | 25 | 19 | 12 | 11 | 11 | 17 | 26 |
| 13 | 38 | 41 | 40 | 37 | 15 | 18 | 17 | 21 | 19 | 27 | 24 | 25 | 19 | 26 | 23 | 29 | 20 | 18 | 20 | 18 | 19 | 19 | 19 | 19 |
| 14 | 19 | 19 | 17 | 17 | 18 | 18 | 20 | 20 | 21 | 20 | 20 | 21 | 22 | 21 | 21 | 21 | 19 | 20 | 17 | 19 | 30 | 50 | 17 | 69 |
| 15 | 19 | 15 | 12 | 18 | 68 | 23 | 24 | 23 | 13 | 18 | 31 | 27 | 26 | 23 | 24 | 20 | 18 | 21 | 19 | 22 | 20 | 13 | 15 | 32 |
| 16 | 18 | 43 | 54 | 28 | 23 | 33 | 45 | 50 | 65 | 57 | 26 | 20 | 24 | 23 | 20 | 19 | 20 | 19 | 15 | 16 | 17 | 13 | 11 | 12 |
| 17 | 21 | 11 | 14 | 17 | 34 | 36 | 45 | 43 | 52 | 31 | 30 | 27 | 27 | 25 | 19 | 21 | 17 | 16 | 17 | 21 | 22 | 20 | 18 | 18 |
| 18 | 19 | 18 | 20 | 20 | 19 | 22 | 21 | 24 | 23 | 23 | 29 | 33 | 25 | 21 | 22 | 18 | 15 | 15 | 13 | 17 | 25 | 14 | 19 | 13 |
| 19 | 13 | 15 | 15 | 22 | 17 | 15 | 16 | 17 | 17 | 18 | 18 | 17 | 20 | 17 | 17 | 15 | 16 | 14 | 12 | 14 | 15 | 15 | 14 | 14 |
| 20 | 14 | 15 | 14 | 16 | 16 | 18 | 14 | 19 | 21 | 21 | 21 | 22 | 18 | 23 | 71 | 50 | 34 | 21 | 23 | 19 | 33 | 25 | 13 | 14 |
| 21 | 20 | 13 | 13 | 13 | 12 | 34 | 43 | 25 | 26 | 54 | 57 | 28 | 22 | 25 | 19 | 26 | 21 | 21 | 22 | 47 | 46 | 25 | 20 | 49 |
| 22 | 52 | 24 | 18 | 25 | 22 | 17 | 18 | 17 | 17 | 18 | 18 | 20 | 21 | 22 | 19 | 19 | 18 | 17 | 18 | 18 | 17 | 18 | 16 | 18 |
| 23 | 17 | 17 | 18 | 17 | 20 | 18 | 19 | 18 | 20 | 20 | 18 | 21 | 20 | 19 | 19 | 18 | 19 | 17 | 19 | 17 | 32 | 17 | 25 | 17 |
| 24 | 15 | 19 | 17 | 12 | 10 | 14 | 19 | 38 | 31 | 20 | 22 | 24 | 28 | 29 | 28 | 28 | 32 | 22 | 25 | 49 | 33 | 23 | 34 | 34 |
| 25 | 25 | 32 | 15 | 22 | 16 | 19 | 22 | 22 | 17 | 18 | 20 | 20 | 22 | 16 | 14 | 17 | 17 | 15 | 16 | 18 | 14 | 15 | 20 | 18 |
| 26 | 17 | 18 | 15 | 59 | 37 | 34 | 44 | 46 | 72 | 40 | 48 | 23 | 30 | 26 | 21 | 23 | 23 | 34 | 21 | 37 | 44 | 42 | 19 | 23 |
| 27 | 27 | 20 | 23 | 19 | 14 | 18 | 16 | 19 | 21 | 18 | 28 | 26 | 31 | 36 | 36 | 33 | 38 | 20 | 21 | 17 | 45 | 15 | 42 | 18 |
| 28 | 18 | 18 | 32 | 21 | 21 | 16 | 20 | 19 | 23 | 24 | 23 | 22 | 19 | 19 | 20 | 23 | 22 | 20 | 18 | 21 | 18 | 15 | 19 | 20 |
| 29 | 23 | 21 | 23 | 25 | 19 | 18 | 21 | 24 | 29 | 23 | 30 | 23 | 25 | 26 | 32 | 38 | 23 | 18 | 22 | 20 | 13 | 15 | 19 | 21 |
| 30 | 21 | 20 | 16 | 23 | 17 | 19 | 20 | 27 | 19 | 28 | 20 | 31 | 32 | 24 | 22 | 25 | 19 | 19 | 18 | 17 | 17 | 17 | 18 | 16 |
| 31 | 18 | 19 | 16 | 14 | 16 | 15 | 17 | 17 | 20 | 21 | 25 | 25 | 24 | 30 | 25 | 25 | 24 | 20 | 31 | 14 | 24 | 41 | 35 | 39 |

**STATUS FLAG CODES**

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

LAST CALIBRATION: December 16, 2010

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 744 HRS






JOB #: 2833-12-03-01-C

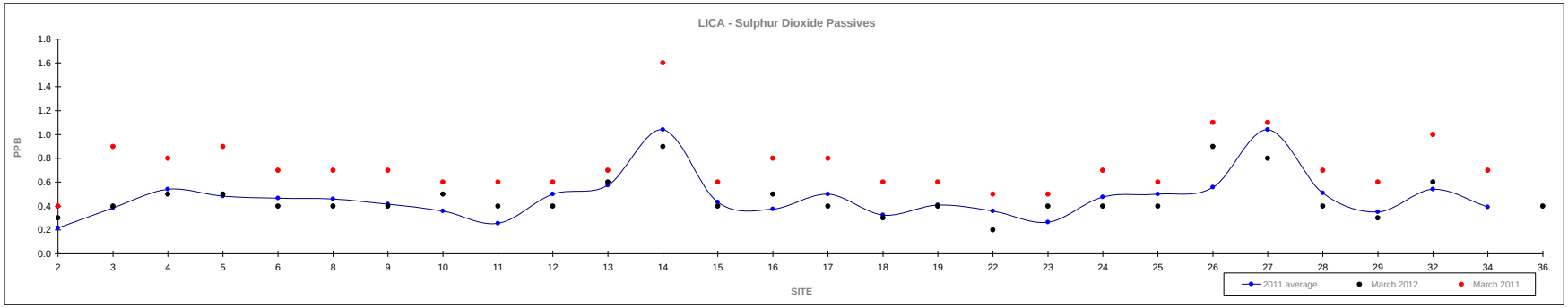
# Non-Continuous Monitoring

# Passive Summary Results for March 2012

## Lakeland Industry & Community Association

**Sulphur Dioxide**
**ppb**

| | 2011 | | | | | | | | | | | | | | | | | | | | | | | | | March 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** | **34** | **Reading** | **Site** |
| **Mean** | 0.2 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.3 | 0.5 | 0.6 | 1.0 | 0.4 | 0.4 | 0.5 | 0.3 | 0.4 | 0.4 | 0.3 | 0.5 | 0.5 | 0.6 | 1.0 | 0.5 | 0.4 | 0.5 | 0.4 | 0.46 | - |
| **Minimum** | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.1 | 0.2 | 0.1 | 0.2 | #22 |
| **Maximum** | 0.6 | 1.3 | 1.3 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 0.6 | 1.5 | 1.9 | 2.2 | 1.1 | 0.9 | 1.3 | 0.8 | 1.0 | 1.3 | 0.5 | 1.4 | 1.4 | 1.1 | 1.7 | 1.1 | 0.9 | 1.4 | 0.9 | 0.9 | #14 |





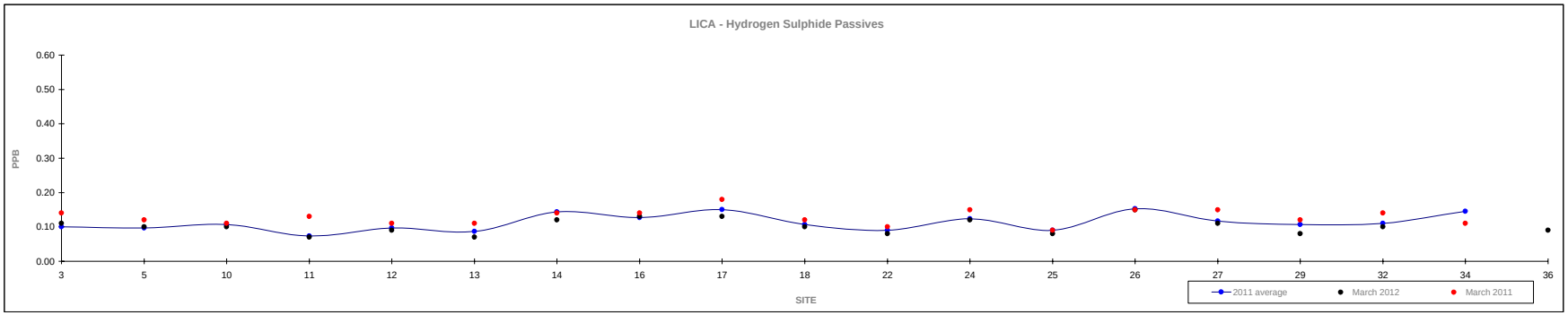

JOB #: 2833-12-03-01-C

# Passive Summary Results for March 2012

## Lakeland Industry & Community Association

**Hydrogen Sulphide**
**ppb**

| | 2011 | | | | | | | | | | | | | | | | | March 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **3** | **5** | **10** | **11** | **12** | **13** | **14** | **16** | **17** | **18** | **22** | **24** | **25** | **26** | **27** | **29** | **32** | **34** | **Reading** | **Site** |
| **Mean** | 0.15 | 0.20 | 0.14 | 0.09 | 0.11 | 0.15 | 0.17 | 0.15 | 0.29 | 0.12 | 0.14 | 0.16 | 0.09 | 0.17 | 0.48 | 0.15 | 0.15 | 0.18 | 0.10 | - |
| **Minimum** | 0.03 | 0.10 | 0.10 | 0.04 | 0.06 | 0.04 | 0.12 | 0.06 | 0.08 | 0.05 | 0.08 | 0.09 | 0.04 | 0.12 | 0.13 | 0.09 | 0.09 | 0.09 | 0.07 | #11 |
| **Maximum** | 0.29 | 0.38 | 0.21 | 0.13 | 0.17 | 0.80 | 0.21 | 0.21 | 0.67 | 0.18 | 0.23 | 0.21 | 0.18 | 0.25 | 1.12 | 0.25 | 0.22 | 0.29 | 0.15 | #26 |

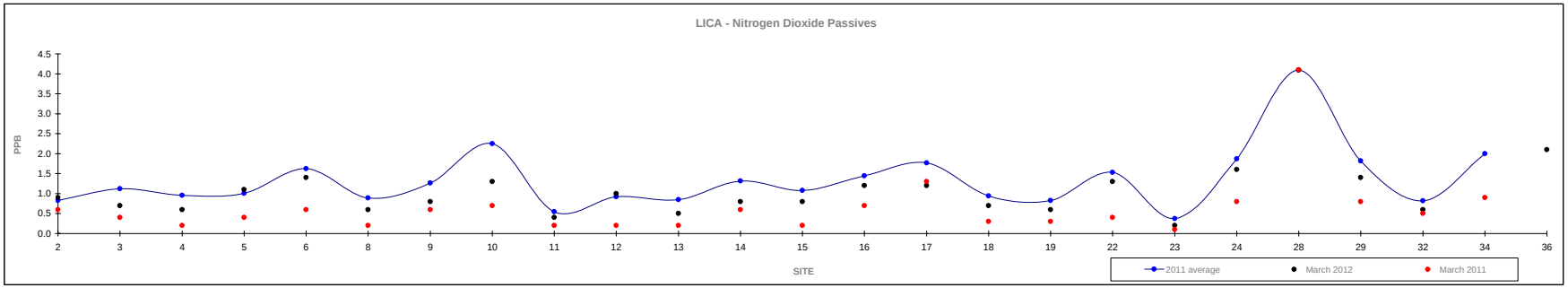


# Passive Summary Results for March 2012

## Lakeland Industry & Community Association

**Nitrogen Dioxide**
**ppb**

| | 2011 | | | | | | | | | | | | | | | | | | | | | | | | March 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2** | **3** | **4** | **5** | **6** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **22** | **23** | **24** | **28** | **29** | **32** | **34** | **Reading** | **Site** |
| **Mean** | 0.8 | 1.1 | 1.0 | 1.0 | 1.6 | 0.9 | 1.3 | 2.3 | 0.5 | 0.9 | 0.9 | 1.3 | 1.1 | 1.4 | 1.8 | 0.9 | 0.8 | 1.5 | 0.4 | 1.9 | 4.1 | 1.8 | 0.8 | 2.0 | 1.1 | - |
| **Minimum** | 0.1 | 0.4 | 0.1 | 0.2 | 0.6 | 0.2 | 0.4 | 0.7 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.4 | 0.9 | 0.2 | 0.2 | 0.3 | 0.1 | 0.8 | 1.6 | 0.3 | 0.2 | 0.5 | 0.2 | #23 |
| **Maximum** | 2.5 | 2.6 | 2.2 | 2.2 | 3.5 | 2.4 | 3.0 | 5.6 | 1.2 | 2.3 | 2.1 | 3.0 | 2.4 | 3.0 | 3.5 | 2.2 | 2.3 | 3.7 | 1.0 | 3.7 | 11.3 | 4.7 | 2.3 | 6.9 | 4.1 | #28 |

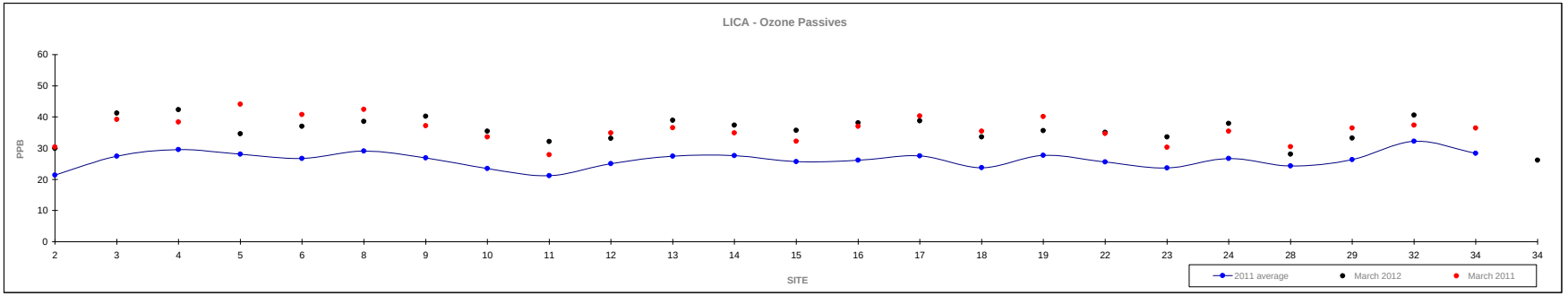


# Passive Summary Results for March 2012

## Lakeland Industry & Community Association

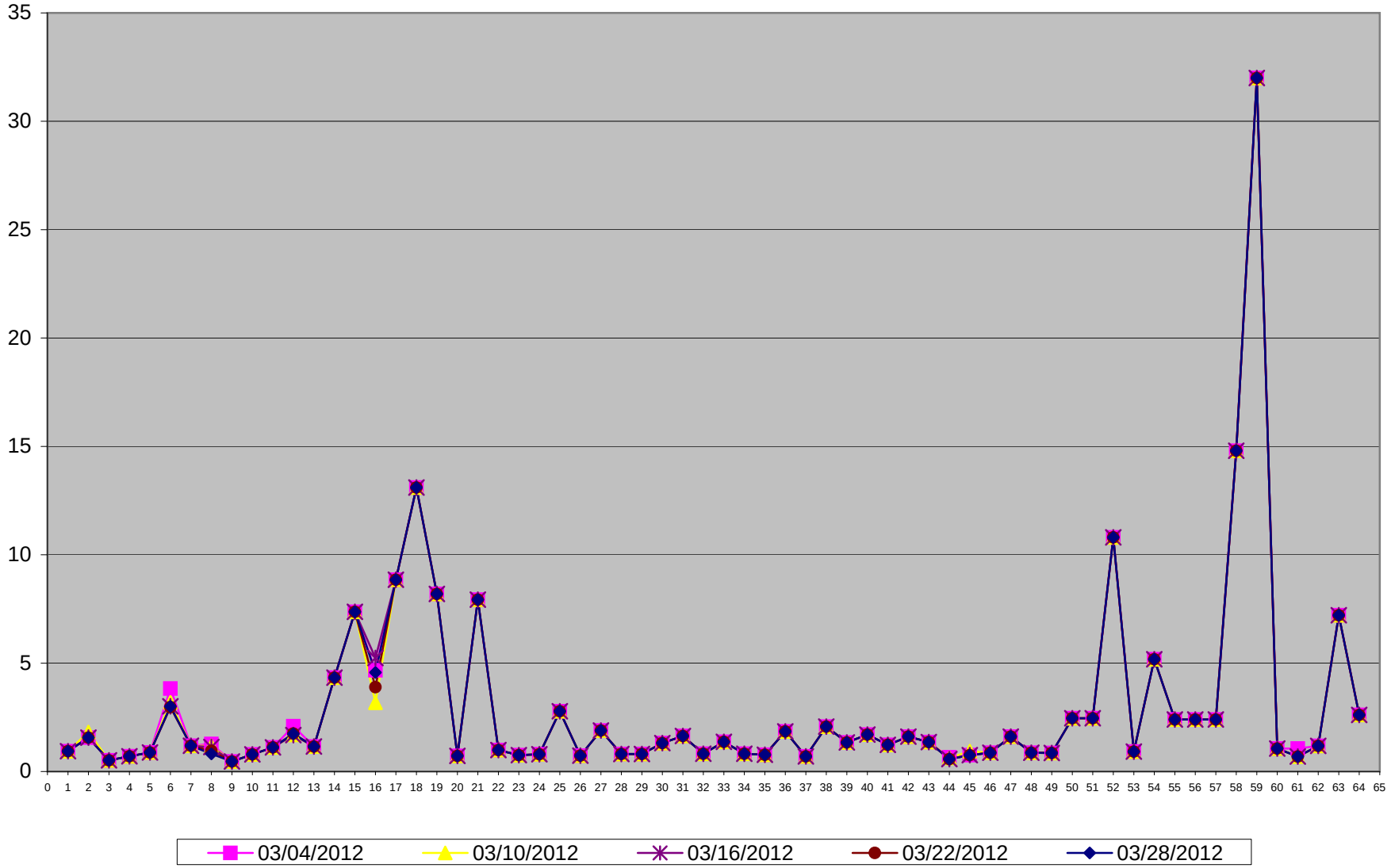
Ozone
ppb

| | 2011 | | | | | | | | | | | | | | | | | | | | | | | March 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 22 | 23 | 24 | 28 | 29 | 32 | 34 | Reading | Site |
| Mean | 21.4 | 27.5 | 29.6 | 28.0 | 26.6 | 29.1 | 26.9 | 23.5 | 21.2 | 25.1 | 27.5 | 27.6 | 25.7 | 26.1 | 27.5 | 23.8 | 27.7 | 25.6 | 23.7 | 26.7 | 24.3 | 26.3 | 32.2 | 28.3 | 35.7 | - |
| Minimum | 11.9 | 17.6 | 20.0 | 18.5 | 16.8 | 19.1 | 18.0 | 13.9 | 11.5 | 14.0 | 18.4 | 19.1 | 16.1 | 16.6 | 17.8 | 13.3 | 18.6 | 15.1 | 12.8 | 17.1 | 15.8 | 17.3 | 25.0 | 17.6 | 26.1 | #36 |
| Maximum | 33.2 | 39.2 | 39.6 | 44.1 | 40.8 | 42.4 | 38.2 | 33.9 | 30.9 | 34.9 | 38.1 | 39.1 | 40.3 | 37.0 | 40.3 | 35.4 | 40.1 | 37.0 | 32.5 | 35.9 | 34.8 | 36.4 | 42.0 | 42.5 | 42.3 | #4 |



# Volatile Organics

## Volatile Organics in ug/m3 Site: LICA - Cold Lake South



| | | | |
|---|---|---|---|
| 1 | 2,2,4-Trimethylpentane | 33 | 1,1,2,2-Tetrachloroethane |
| 2 | Carbon Disulfide | 34 | cis-1,3-Dichloropropene |
| 3 | Propene | 35 | trans-1,3-Dichloropropene |
| 4 | Vinyl Acetate | 36 | 1,2-Dichloropropane |
| 5 | Vinyl Bromide | 37 | Bromomethane |
| 6 | Dichlorodifluoromethane (FREON 12) | 38 | Bromoform |
| 7 | 1,2-Dichlorotetrafluoroethane | 39 | Bromodichloromethane |
| 8 | Chloromethane | 40 | Dibromochloromethane |
| 9 | Vinyl Chloride | 41 | Heptane |
| 10 | Chloroethane | 42 | Trichloroethylene |
| 11 | 1,3-Butadiene | 43 | Tetrachloroethylene |
| 12 | Trichlorofluoromethane (FREON 11) | 44 | Benzene |
| 13 | Trichlorotrifluoroethane | 45 | Toluene |
| 14 | Ethanol | 46 | Ethylbenzeze |
| 15 | 2-Propanol | 47 | p+m-Xylene |
| 16 | 2-Propanone | 48 | o-Xylene |
| 17 | Wethyl Ethyl Ketone (2-Butanone) | 49 | Styrene |
| 18 | Methyl Isobutyl Ketone | 50 | 1,3,5-Trimethylbenzene |
| 19 | Methyl Butyl Ketone (2-Hexanone) | 51 | 1,2,4-Trimethylbenzene |
| 20 | Methyl t-butyl ether (MTBE) | 52 | 4-ethyltoluene |
| 21 | Ethyl Acetate | 53 | Chlorobenzene |
| 22 | 1,1-Dichloroethylene | 54 | Benzyl chloride |
| 23 | cis-1,2-Dichloroethylene | 55 | 1,3-Dichlorobenzene |
| 24 | trans-1,2-Dichloroethylene | 56 | 1,4-Dichlorobenzene |
| 25 | Methylene Chloride (Dichloromethane) | 57 | 1,2-Dichlorobenzene |
| 26 | Chloroform | 58 | 1,2,4-Trichlorobenzene |
| 27 | Carbon Tetrachloride | 59 | Hexachlorobutadiene |
| 28 | 1,1-Dichloroethane | 60 | Hexane |
| 29 | 1,2-Dichloroethane | 61 | Cyclohexane |
| 30 | Ethylene Dibromide | 62 | Tetrahydrofuran |
| 31 | 1,1,1-Trichloroethane | 63 | 1,4-Dioxane |
| 32 | 1,1,2-Trichloroethane | 64 | Xylene (Total) |

# Polycyclic Aromatic Hydrocarbons

# Polycyclic Aromatic Hydrocarbons (PAHs) Results for March 2012

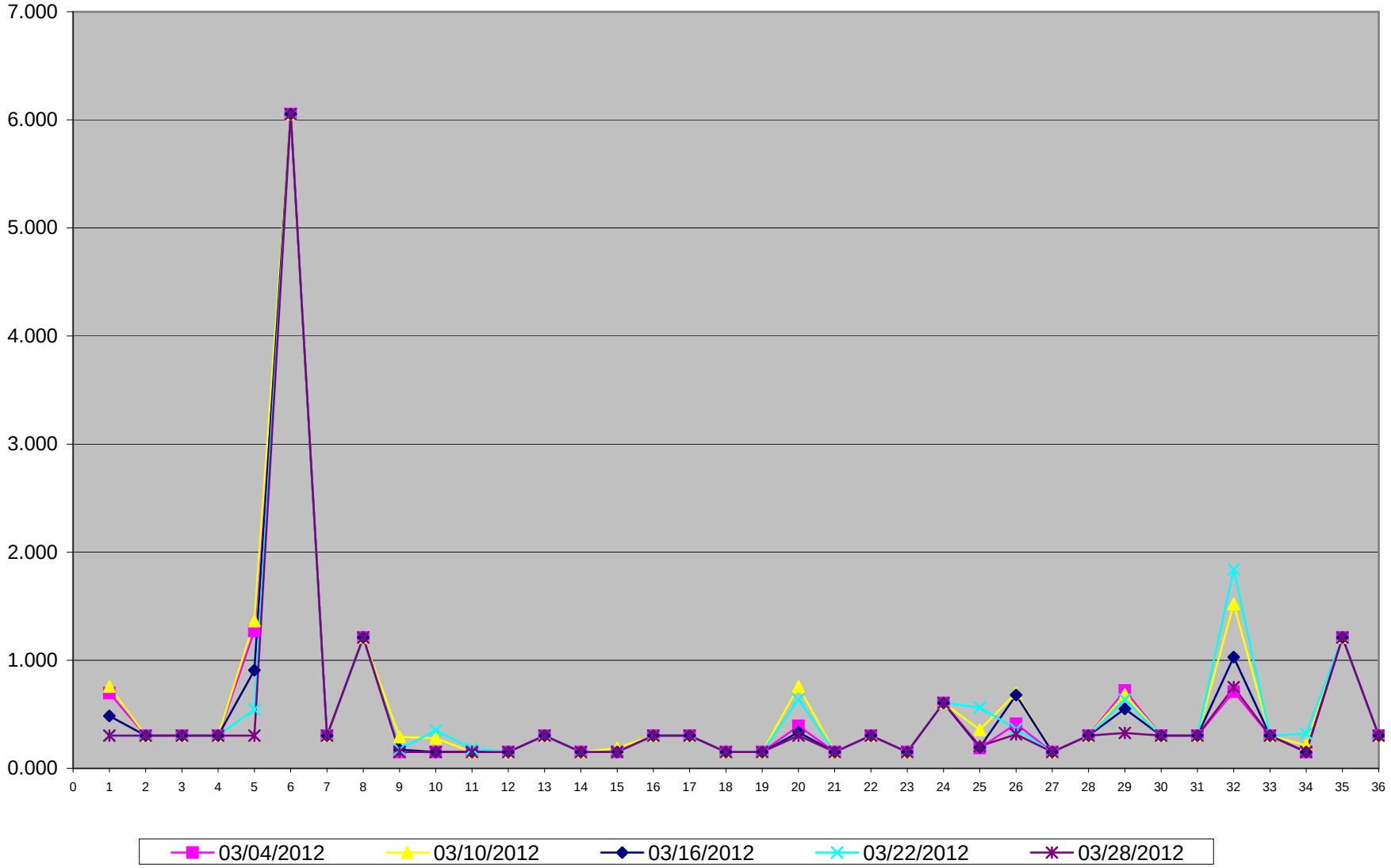
## LICA- Cold Lake South Site

## Unit: ng/m3

| | PAHs | 03/04/2012 | 03/10/2012 | 03/16/2012 | 03/22/2012 | 03/28/2012 |
|---|---|---|---|---|---|---|
| | Sample Volume (unit: m3) | 330.36 | 330.35 | 330.34 | 330.36 | 330.34 |
| 1 | 1-Methylnaphthalene | 0.696 | 0.757 | 0.484 | 0.303 | 0.303 |
| 2 | 1-Methylphenanthrene | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 3 | 2-Chloronaphthalene | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 4 | 2-Methlyanthracene | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 5 | 2-Methylnaphthalene | 1.271 | 1.362 | 0.908 | 0.545 | 0.303 |
| 6 | 3-Methylcholanthrene | 6.054 | 6.054 | 6.054 | 6.054 | 6.054 |
| 7 | 7,12-Dimethylbenzo(a)anthracene | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 8 | 9,10-Dimethylanthracene | 1.211 | 1.211 | 1.211 | 1.211 | 1.211 |
| 9 | Acenaphthene | 0.151 | 0.291 | 0.173 | 0.173 | 0.151 |
| 10 | Acenaphthylene | 0.151 | 0.279 | 0.151 | 0.351 | 0.151 |
| 11 | Anthracene | 0.151 | 0.151 | 0.151 | 0.182 | 0.151 |
| 12 | Benzo(a)anthracene | 0.151 | 0.151 | 0.151 | 0.151 | 0.151 |
| 13 | Benzo(a)fluorene | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 14 | Benzo(a)pyrene | 0.151 | 0.151 | 0.151 | 0.151 | 0.151 |
| 15 | Benzo(b)fluoranthene | 0.151 | 0.188 | 0.151 | 0.151 | 0.151 |
| 16 | Benzo(b)fluorene | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 17 | Benzo(e)pyrene | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 18 | Benzo(g,h,I)perylene | 0.151 | 0.151 | 0.151 | 0.151 | 0.151 |
| 19 | Benzo(k)fluoranthene | 0.151 | 0.151 | 0.151 | 0.151 | 0.151 |
| 20 | Biphenyl | 0.394 | 0.757 | 0.333 | 0.636 | 0.303 |
| 21 | Chrysene | 0.151 | 0.151 | 0.151 | 0.151 | 0.151 |
| 22 | Coronene | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 23 | Dibenz(a,h)anthracene | 0.151 | 0.151 | 0.151 | 0.151 | 0.151 |
| 24 | Dibenzo(a,e)pyrene | 0.605 | 0.605 | 0.605 | 0.605 | 0.605 |
| 25 | Fluoranthene | 0.188 | 0.357 | 0.194 | 0.563 | 0.206 |
| 26 | Fluorene | 0.412 | 0.696 | 0.678 | 0.363 | 0.315 |
| 27 | Indeno(1,2,3-cd)pyrene | 0.151 | 0.151 | 0.151 | 0.151 | 0.151 |
| 28 | m-Terphenyl | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 29 | Naphthalene | 0.720 | 0.684 | 0.551 | 0.636 | 0.327 |
| 30 | o-Terphenyl | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 31 | Perylene | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 32 | Phenanthrene | 0.708 | 1.520 | 1.029 | 1.841 | 0.751 |
| 33 | p-Terphenyl | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |
| 34 | Pyrene | 0.151 | 0.212 | 0.151 | 0.321 | 0.151 |
| 35 | Quinoline | 1.211 | 1.211 | 1.211 | 1.211 | 1.211 |
| 36 | Tetralin | 0.303 | 0.303 | 0.303 | 0.303 | 0.303 |

Note: - values were calculated by the formula of [reading (ug) x 1000 / sample volume (m3)].
- Where the analytical results are less than the minimum detection limit (MDL), the MDL has been used in calculations.

## PAHs in ng/m3 Site: LICA - Cold Lake South



| | |
|---|---|
| 1 | 1-Methylnaphthalene |
| 2 | 1-Methylphenanthrene |
| 3 | 2-Chloronaphthalene |
| 4 | 2-Methlyanthracene |
| 5 | 2-Methylnaphthalene |
| 6 | 3-Methylcholanthrene |
| 7 | 7,12-Dimethylbenzo(a)anthracene |
| 8 | 9,10-Dimethylanthracene |
| 9 | Acenaphthene |
| 10 | Acenaphthylene |
| 11 | Anthracene |
| 12 | Benzo(a)anthracene |
| 13 | Benzo(a)fluorene |
| 14 | Benzo(a)pyrene |
| 15 | Benzo(b)fluoranthene |
| 16 | Benzo(b)fluorene |
| 17 | Benzo(e)pyrene |
| 18 | Benzo(g,h,I)perylene |
| 19 | Benzo(k)fluoranthene |
| 20 | Biphenyl |
| 21 | Chrysene |
| 22 | Coronene |
| 23 | Dibenz(a,h)anthracene |
| 24 | Dibenzo(a,e)pyrene |
| 25 | Fluoranthene |
| 26 | Fluorene |
| 27 | Indeno(1,2,3-cd)pyrene |
| 28 | m-Terphenyl |
| 29 | Naphthalene |
| 30 | o-Terphenyl |
| 31 | Perylene |
| 32 | Phenanthrene |
| 33 | p-Terphenyl |
| 34 | Pyrene |
| 35 | Quinoline |
| 36 | Tetralin |

# Calibration Reports

# Sulphur Dioxide

# SO2 Calibration Report

## Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 19, 2012 | | Previous Calibration | February 24, 2012 | |
| Company | Lakeland Community and Industry Association | | | | |
| Plant / Location | LICA 1 - Cold Lake South | | | | |
| Start Time (MST) | 14:36 | | End Time (MST) | 18:15 | |
| Reason: | | | Monthly Calibration | | |
| Barometric Pressure | 0.914 | atm | Station Temperature | 23 | Deg C |
| Cal Gas | 49.6 ppm | Gas Cyl. # | LL42496 | Cal Gas Expiry date | January 16, 2014 |
| DAS Output Voltage | 0 - 10 | Volts | Chart Rec. Output | NA | Volts |

## Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | Thermo 43i | S/N : | 806528242 | Method: | Fluorescent |
| Converter Make / Model: | NA | S/N : | NA | | |
| Calibrator Make / Model: | API 700 | S/N : | 831 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | 3485 | | |
| Chart Recorder Make / Model: | NA | S/N: | NA | | |
| Flow Meter: | API 700 | S/N : | 831 | | |

## Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0 - 1000 | ppb | | | | |
| Sample Flow / Box Temp | 443 | ccm | 31.2 | Deg C | 443 | ccm | 30.8 | Deg C |
| HVPS / Lamp Setting | -632 | | 743 | | -632 | | 745 | |
| PMT / RxCell Temp | OK | Deg C | 45.1 | Deg C | OK | Deg C | 45.2 | Deg C |
| Converter / IZS Temp | NA | Deg C | 45 | Deg C | NA | Deg C | 45.0 | Deg C |
| Offset / Slope | 6 | | 1.018 | | 6 | | 1.024 | |

## 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 | | | |
| 4953 | 40.3 | 400 | 395 | 1.0134 |
| 4953 | 40.3 | 400 | 400 | 1.0000 |
| 4976 | 22.7 | 225 | 227 | 0.9923 |
| 4987 | 12.6 | 125 | 126 | 0.9921 |
| 4995 | 0 | 0 | 0 | N/A |
| | | | | |
| | | | Sum of Least Squares | 0.9983 |
| | | | New Correction Factor | 1.0000 |

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 376.0 | 381.0 |
| Sample Lines Connected | | YES |

## Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 1.0134 |
| Percent Change: | -1.3% |

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

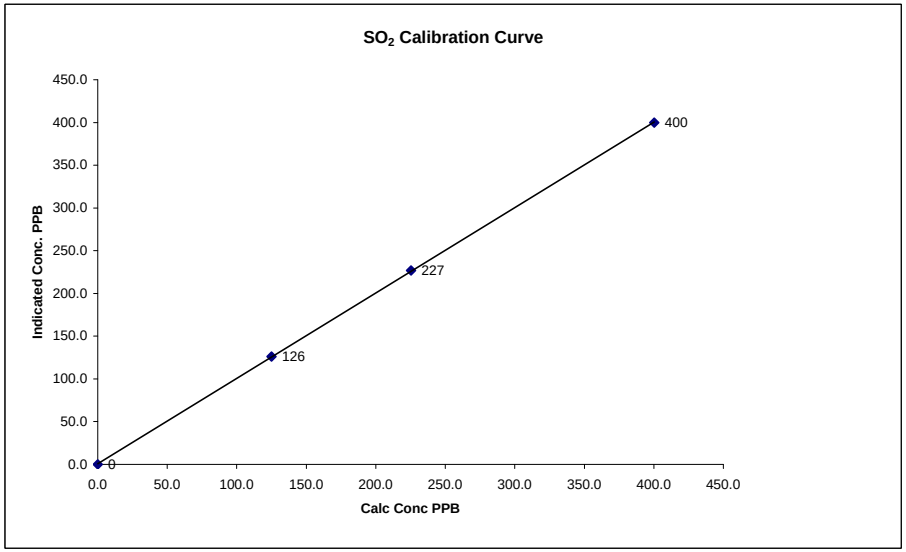
Calibration Performed by: Ting Xu

# $SO_2$ Calibration Curve

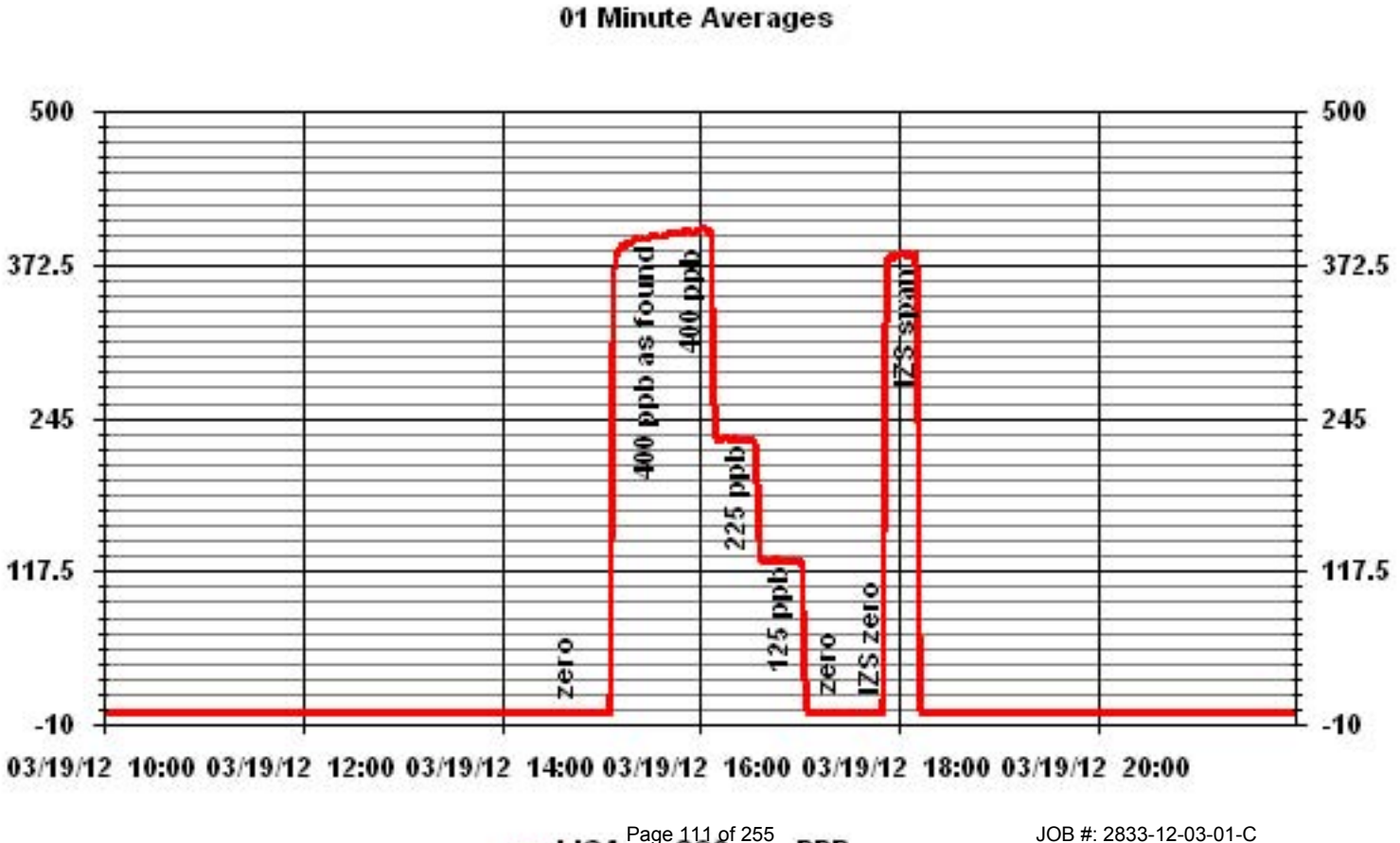
| | | | |
|---|---|---|---|
| Calibration Date | March 19, 2012 | | |
| Company | Lakeland Community and Industry Association | | |
| Plant / Location | LICA 1 - Cold Lake South | | |
| Start Time (MST) | 14:36 | End Time (MST) | 18:15 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | n/a |
| 125 | 126 | 0.9921 |
| 225 | 227 | 0.9923 |
| 400 | 400 | 1.0008 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999969 |
| Slope | (0.85 to 1.15) | 0.999267 |
| Intercept | (± 3% F.S.) | 0.748285 |




**Notes:**






JOB #: 2833-12-03-01-C

# Total Reduced Sulphur

# TRS Calibration Report

## Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 19, 2012 | | Previous Calibration | February 24, 2012 | |
| Company | **Lakeland Industry & Community Association** | | | | |
| Plant / Location | **LICA 1 - Cold Lake South** | | | | |
| Start Time (MST) | 8:33 | | End Time (MST) | 12:15 | |
| Reason: | Monthly Calibration | | | | |
| Barometric Pressure | 0.935 | atm | Station Temperature | 21 | Deg C |
| Cal Gas | 10 ppm | Gas Cyl. # | LL42648 | Cal Gas Expiry date | December 27, 2012 |
| DAS Output Voltage | 0 - 10 Volts | | Chart Rec. Output | NA | Volts |

## Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | Thermo 450i | S/N : | 812728560 | Method: | Fluorescent |
| Converter Make / Model: | CDN 101 | S/N : | 250 | | |
| Calibrator Make / Model: | API 700 | S/N : | 831 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | 3485 | | |
| Chart Recorder Make / Model: | NA | S/N: | NA | | |
| Flow Meter: | API 700 | S/N : | 831 | | |

## Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | 0 - 100 ppb | | | | | | | |
| Sample Flow / Box Temp | 350 ccm | | 31.9 Deg C | | 350 ccm | | 33.3 Deg C | |
| HVPS / Lamp Setting | -623.1 | | 751 | | -623.1 | | 750 | |
| PMT / RxCell Temp | OK Deg C | | 44.9 Deg C | | OK Deg C | | 45.2 Deg C | |
| Converter / IZS Temp | 810 Deg C | | 45 Deg C | | 810 Deg C | | 45.0 Deg C | |
| Offset / Slope | 13.8 | | 1.334 | | 13.5 | | 1.304 | |

## Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4996 | 0 | 0 | 0 | N/A |
| | No Zero Adj | | | |
| 4961 | 40.0 | 80 | 83 | 0.9637 |
| 4961 | 40.0 | 80 | 80 | 1.0000 |
| 4976 | 20.0 | 40 | 40 | 1.0000 |
| 4985 | 11.5 | 23 | 23 | 1.0000 |
| 4996 | 0.0 | 0 | 0 | N/A |
| | | | | |
| | | | Sum of Least Squares | 1.0000 |
| | | | New Correction Factor | 1.0000 |

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | -0.2 | -0.2 |
| Auto Span | 59.8 | 64.7 |
| Sample Lines Connected | | YES |

## Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 0.9872 |
| Current Correction Factor Before Span Adjust: | 0.9637 |
| Percent Change: | 2.4% |

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

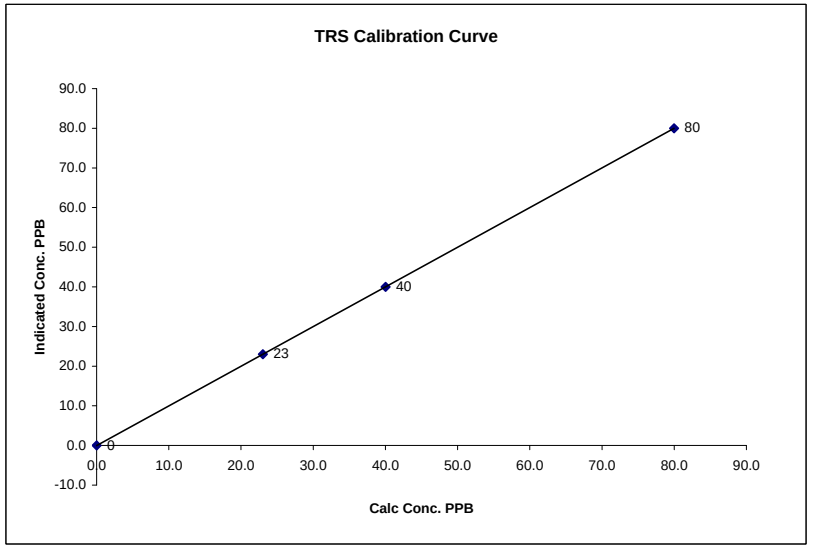
Calibration Performed by: Ting Xu

# TRS Calibration Curve

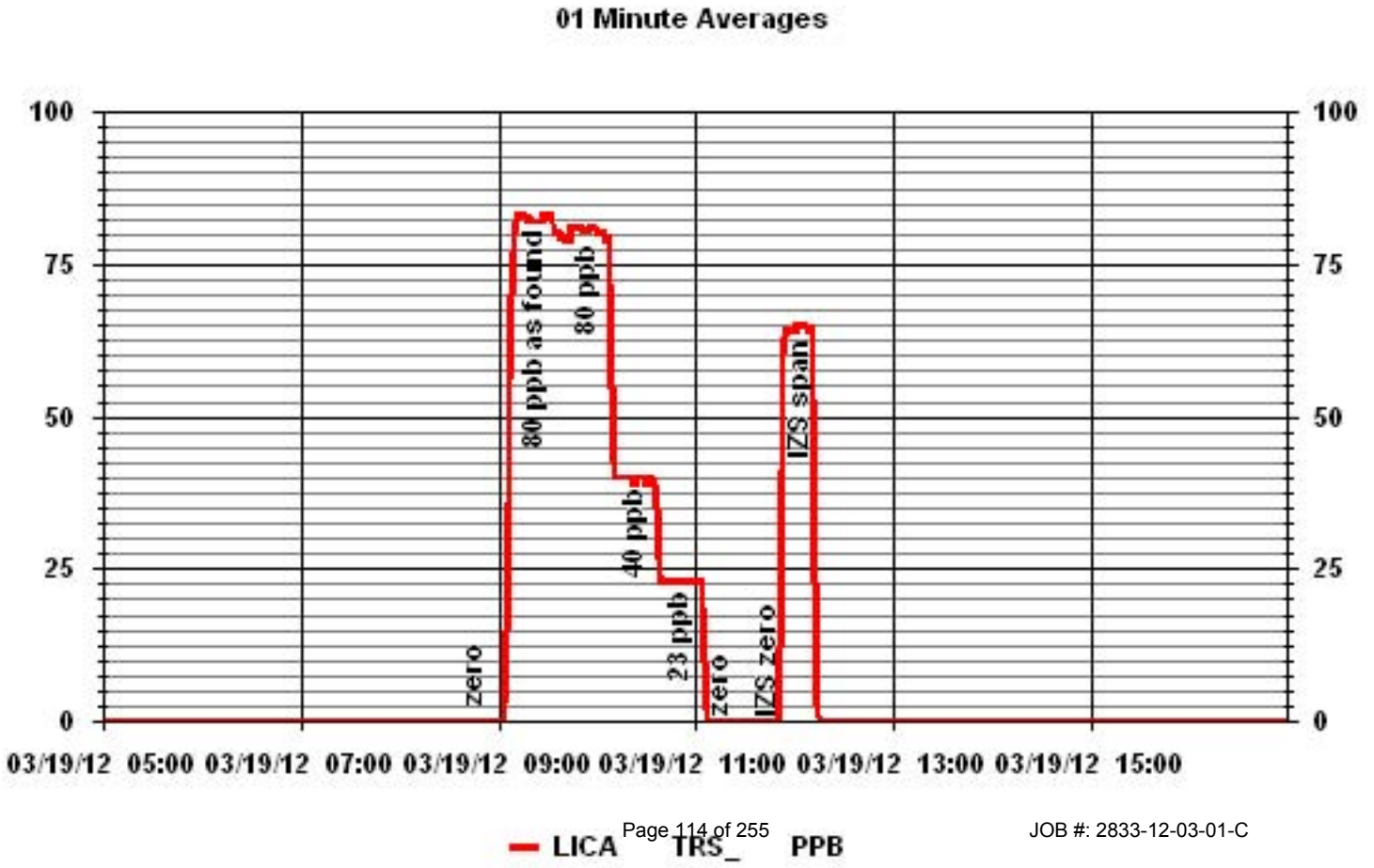
| | | | |
|---|---|---|---|
| Calibration Date | March 19, 2012 | | |
| Company | **Lakeland Industry & Community Association** | | |
| Plant / Location | **LICA 1 - Cold Lake South** | | |
| Start Time (MST) | 8:33 | End Time (MST) | 12:15 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | n/a |
| 23 | 23 | 0.0000 |
| 40 | 40 | 0.5754 |
| 80 | 80 | 0.5004 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 1.000000 |
| Slope | (0.85 to 1.15) | 1.000227 |
| Intercept | (± 3% F.S.) | -0.016159 |




Notes:






JOB #: 2833-12-03-01-C

# Total Hydrocarbons

## THC Calibration Report

Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date: | March 19, 2012 | | Previous Calibration | February 24, 2012 | |
| Company: | Lakeland Industry and Community Association | | | | |
| Plant / Location: | LICA1/Cold Lake | | | | |
| Start Time (MST) | 11:33 | | End Time (MST) | 15:18 | |
| Reason: | Monthly Calibration | | | | |
| Barometric Pressure: | 0.933 | atm | Station Temperature: | 23 | Deg C |
| Calibrator: | API 700 | | S/N: | 831 | |
| Cal Gas Concentration: | CH4 980 PPM | | C3H8 | 304 PPM | |
| | TOTAL CH4 1816.0 PPM | | Gas Cyl. # | LL84144 | Cal Gas Expiry Date: December 3, 2013 |
| DAS make & Model: | ESC 8832 | | S/N : | 3485 | |
| Chart Recorder: | NA | | S/N: | NA | |
| Output Voltage Range: | 0 - 10 | VDC | Chart Speed: | NA | mm/hr |

**Analyzer Information**

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

**Analyzer Settings**

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0 - 50 | ppm | 0 - 50 | ppm |
| Sample Pressure | 6.5 | psi | 6.5 | psi |
| Hydrogen Pressure | 8 | psi | 8 | psi |
| Air Pressure | 20 | psi | 20 | psi |

**Calibration Data**

| Dilution Flow | Source Gas Flow | Calculated Concentration | Indicated Concentration | Correction Factor |
|---|---|---|---|---|
| 3000 | 0.0 | 0.0 | -0.5 | NA |
| 3000 | 0.0 | 0.0 | 0.0 | NA |
| 3000 | 70.0 | 41.4 | 41.9 | 0.9882 |
| 3000 | 70.0 | 41.4 | 41.6 | 0.9954 |
| 3000 | 35.0 | 20.9 | 20.7 | 1.0117 |
| 3000 | 20.0 | 12.0 | 11.8 | 1.0192 |
| 3000 | 0.0 | 0.0 | 0.0 | NA |
| | | | New Correction Factor: | 0.9954 |

**Percent Change**

| | |
|---|---|
| Previous Calibration Correction Factor: | 0.9954 |
| Current Correction Factor Before Span Adjust: | 0.9882 |
| Percent Change: | 0.7% |

**IZS Calibration Data**

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.6 | 0.1 |
| Auto Span | 35.4 | 35.1 |
| Sample Lines Connected | | YES |

Cylinder Pressures

Span 1000 psi Hydrogen 400 psi Zero Air 32 psi

Notes: **NA : Not Applicable**

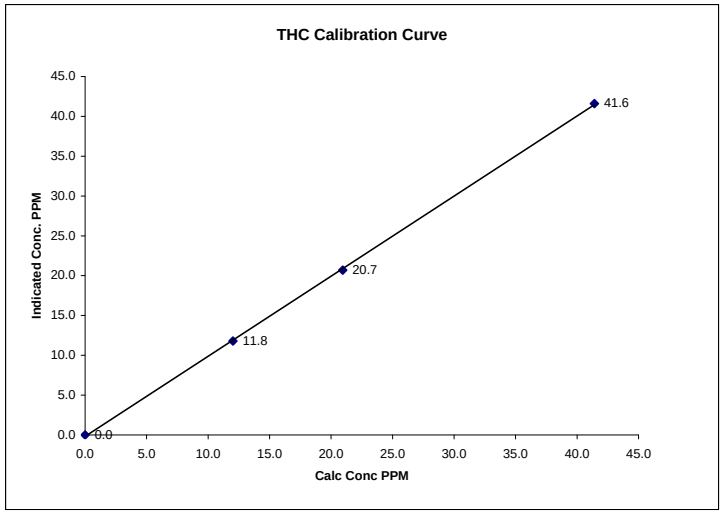
Calibration Performed by: Ting Xu

## THC Calibration Curve

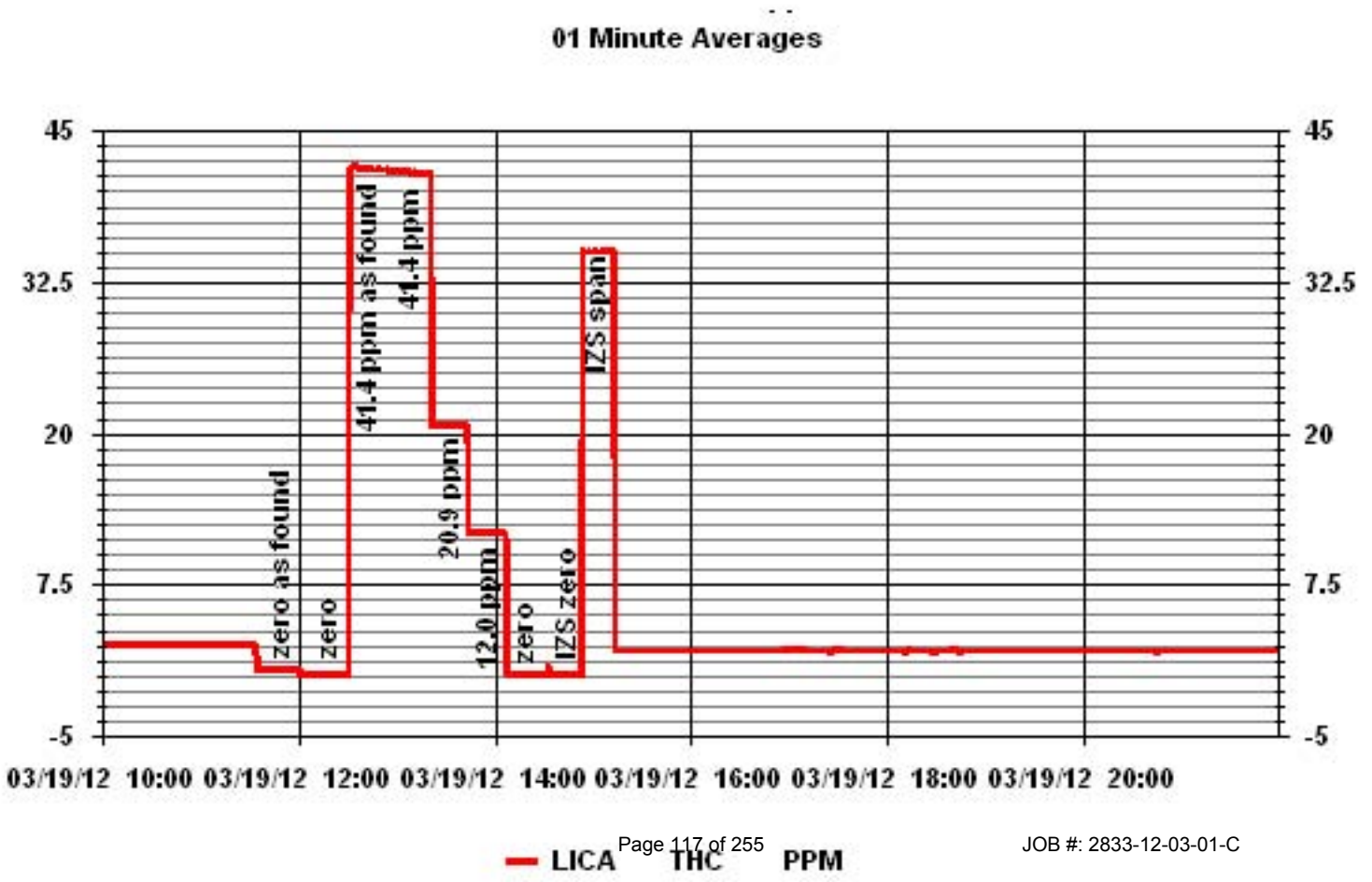
| | | | |
|---|---|---|---|
| Calibration Date | March 19, 2012 | | |
| Company | Lakeland Industry and Community Association | | |
| Plant / Location | LICA1/Cold Lake | | |
| Start Time (MST) | 11:33 | End Time (MST) | 15:18 |

| Calculated Conc. ppm | Indicated Response ppm | Correction Factor |
|---|---|---|
| 0.0 | 0.0 | NA |
| 12.0 | 11.8 | 1.0192 |
| 20.9 | 20.7 | 1.0117 |
| 41.4 | 41.6 | 0.9954 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999895 |
| Slope | (0.85 to 1.15) | 1.005813 |
| Intercept | (± 3% F.S.) | -0.17708 |




Notes:






JOB #: 2833-12-03-01-C

# Particulate Matter 2.5

# TEOM 1405F Audit

| Station | | Audit Transfer Standard | |
|---|---|---|---|
| Date: | March 23, 2012 | Make/Model: | Streamline FTS |
| Station Name: | LICA 1 | Serial Number: | Hi 091001 |
| Location: | Cold Lake South | Cell s/n: | Lo 091099 |
| Operator: | LICA | Thermometer s/n: | Station Temp Sensor |

| Sampler | | Set-up and current Sampler readings | |
|---|---|---|---|
| Make/Model | Thermo Scientific Series 1405F | F-Main Set Pt (l/min) | 3.00 |
| Unit # | AMU 1775 | F-Aux Set Pt (l/min) | 13.67 |
| Unit s/n | 1405A201620804 | Filter Load (%) | 37.6% |
| Firmware Ver. | 1.52 | $K_o$ Factor | 14578.0 |
| Parameter | PM 2.5 (with FDMS) | Temp ($^oC$) | -8.0 |
| | | Press (ATM) | 0.952 |

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

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

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

## Audit

**Status**

| | | | |
|---|---|---|---|
| Noise **<0.10*u* g** | 0.005 | Warnings | None |
| 0.36 | 0.37 | | |

**Temperature/Pressure**

| | | | |
|---|---|---|---|
| Measured Temp **(± 2 °C)** | -8.2 | Δ **°C** | 0.2 |
| Measured Press **(± 0.01atm)** | 0.948 | **DATM** | 0.004 |

**Flow Audit**

| | | | |
|---|---|---|---|
| Indicated Main Flow (l/min) | 3.00 | Main Flow Drift **(±10.0%)** | 1.71% |
| Measured Main Flow (l/min) | 3.04 | Flow Adjusted to Measured? | Yes |
| Indicated Bypass Flow (l/min) | 13.67 | Bypass Flow Drift **(±10.0%)** | 1.88% |
| Measured Bypass Flow (l/min) | 13.78 | Flow Adjusted to Measured? | Yes |

**Leak Check**

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

**Instrument Setup**

Flow Control = Active

Report Conditions = Actual

**$K_o$ Factor**

| | |
|---|---|
| Measured | NA |
| $K_o$ Difference **(± 2.5%)** | NA |

**Start Time:** 13:42 **Finish Time:** 15:00

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

**New Filter Loading %:** 28.4%

**Comments:**





**Auditor/s:** Ting Xu

# Nitrogen Dioxide

# NOx - NO- $NO_2$ Calibration Report

## Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 19, 2012 | | Previous Calibration | February 24, 2012 | |
| Company | LICA | | Plant/Location | Cold Lake South | |
| Start Time (MST) | 8:33 | | End Time (MST) | 14:43 | |
| Reason: | Monthly Calibration | | | | |
| Barometric Pressure | 0.935 atm | Station Temperature | 21 Deg C | MFCF | 0 |
| Cal Gas Concentration | NOx 49.6 ppm | NO 49.5 ppm | Cal Gas Expiry date | January 16, 2014 | |
| Cal Gas Cylinder # | LL42496 | | | | |
| DAS Output Voltage | 0 - 10 Volts | | Chart Rec. Output | NA Volts | |

## Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | Thermo 42C | S/N : | 427408716 | Method: | Chemiluminescent |
| Calibrator Make / Model: | Environics 6100 | S/N: | 4760 | | |
| DAS Make / Model: | ESC 8832 | S/N : | 3485 | | |
| Chart Recorder Make / Model: | NA | S/N: | NA | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

## Analyzer Settings

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | | | 0 - 500 ppb | | | | |
| Sample Flow/Conv. Temp | 725 | ccm | 317 | Deg C | | 727 | ccm | 317 | Deg C |
| Ozone Flow / Vacuum | OK | ccm | 174.7 | "Hg-A | | OK | ccm | 174 | "Hg-A |
| HVPS / A ZERO | -821 | Volts | NA | MV | | -821 | Volts | NA | MV |
| Rx/ Temp / PMT Temp | 49.6 | Deg C | -2.5 | Deg C | | 49.8 | Deg C | -2.4 | Deg C |
| Box Temp / IZS Temp | 28.3 | Deg C | OK | Deg C | | 30 | Deg C | OK | Deg C |
| Offset | 3.7 | NOx | 3.4 | NO | | 3.9 | NOx | 3.6 | NO |
| Slope | 1.007 | NOx | 0.888 | NO | | 1.004 | NOx | 0.921 | NO |
| $NO_2$ COEF / Conv Efficency | 0.998 | NO2 | NA | | | 0.998 | NO2 | NA | |

## Dilution Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | Correction Factor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | NOx | NO |
| 4995 | 0.0 | NA | 0 | 0 | NA | 0 | 0 | 0 | NA | NA |
| | No Zero Adj | | | | | | | | | |
| 4954 | 40.3 | NA | 400 | 399 | NA | 387 | 385 | 2 | 1.0342 | 1.0375 |
| 4954 | 40.3 | NA | 400 | 399 | NA | 401 | 400 | 1 | 0.9981 | 0.9986 |
| 4974 | 20.2 | NA | 201 | 200 | NA | 201 | 200 | 1 | 1.0000 | 1.0000 |
| 4985 | 10.1 | NA | 100 | 100 | NA | 101 | 101 | 0 | 0.9930 | 0.9910 |
| 4996 | 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 | | |
| 4954 | 40.3 | NA | 400 | 399 | NA | 400 | 399 | 1 | NA | NA |
| 4954 | 40.3 | 350 | 400 | NA | 329 | 400 | 71 | 329 | 1.0000 | 100.00% |
| | No NO2 Adj. | | | | | | | | | |
| 4954 | 40.3 | 150 | 400 | NA | 143 | 402 | 257 | 143 | 1.0000 | 100.00% |
| 4954 | 40.3 | 75 | 400 | NA | 72 | 401 | 328 | 72 | 1.0000 | 100.00% |

| Linearity | | | Sum of Least Squares | NOx= | 0.998 | NO= | 0.999 | NO2= | 1.000 |
|---|---|---|---|---|---|---|---|---|---|
| OK? | Yes | No | Correction Factors: | NOx= | 0.9981 | NO= | 0.9986 | NO2= | 1.0000 |
| | | | | | | Average Converter Efficiency= | | 100.00% | |

## IZS Calibration Data

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auto Zero | 0.1 | NOx | 0.2 | NO2 | | -0.1 | NOx | 0.0 | NO2 |
| Auto Span | 315 | NOx | 313 | NO2 | | 331 | NOx | 329 | NO2 |
| | | | | | Sample Lines Connected | YES | | | |
| Percent Change from Previous Calibration | | | NOx | -3.3% | NO | -3.6% | | NO2 | 0.0% |

Notes **NA : Not Applicable**

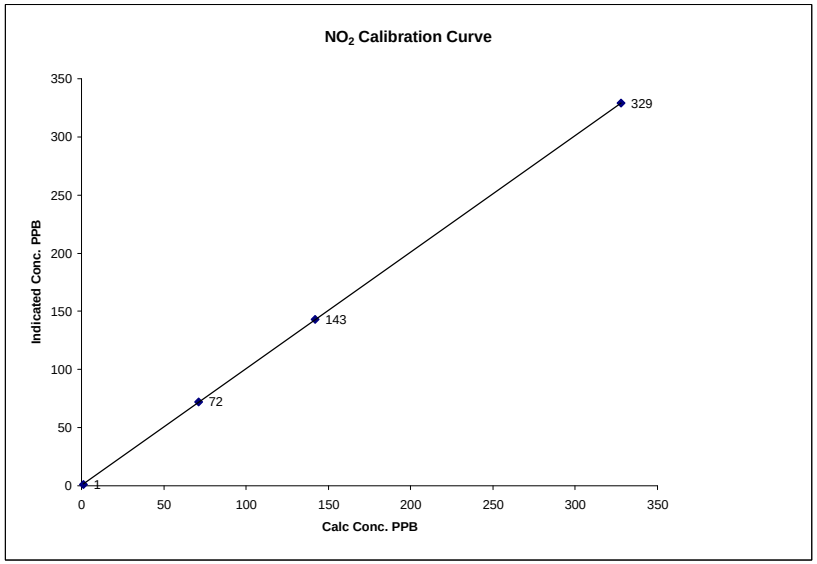
Calibration Performed by: Ting Xu

## $NO_2$ Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | March 19, 2012 | | |
| Company | LICA | | |
| Plant / Location | Cold Lake South | | |
| Start Time (MST) | 8:33 | End Time (MST) | 14:43 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 1 | 1 | N/A |
| 71 | 72 | 0.9861 |
| 142 | 143 | 0.9930 |
| 328 | 329 | 0.9970 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999993 |
| Slope | (0.85 to 1.15) | 1.002266 |
| Intercept | (± 3% F.S.) | 0.44292 |



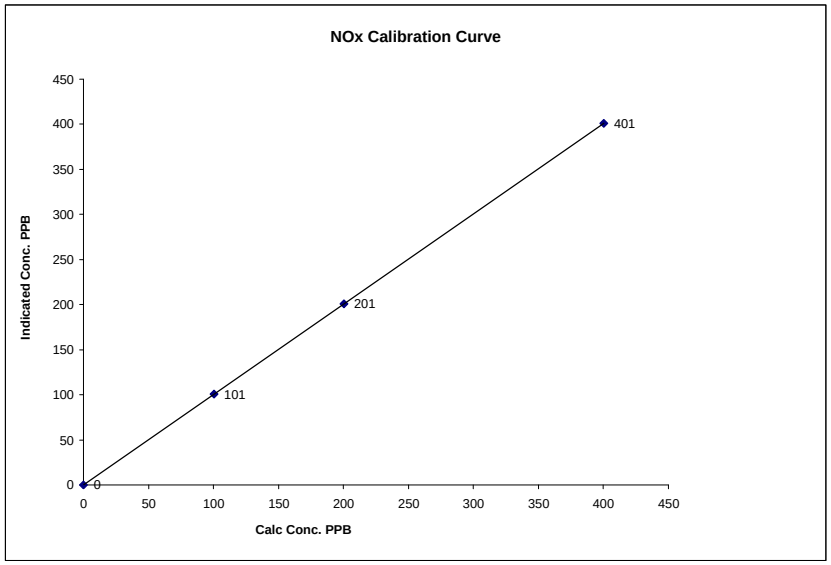

Notes:

## NOx Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | March 19, 2012 | | |
| Company | LICA | | |
| Plant / Location | Cold Lake South | | |
| Start Time (MST) | 8:33 | End Time (MST) | 14:43 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 100 | 101 | 0.9930 |
| 201 | 201 | 0.9981 |
| 400 | 401 | 0.9981 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999998 |
| Slope | (0.85 to 1.15) | 1.001475 |
| Intercept | (± 3% F.S.) | 0.20667 |



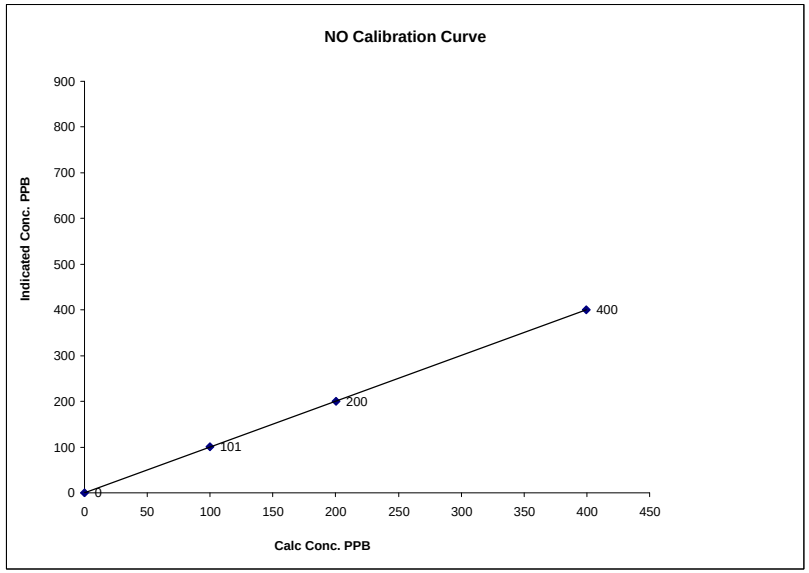

Notes:

## NO Calibration Curve

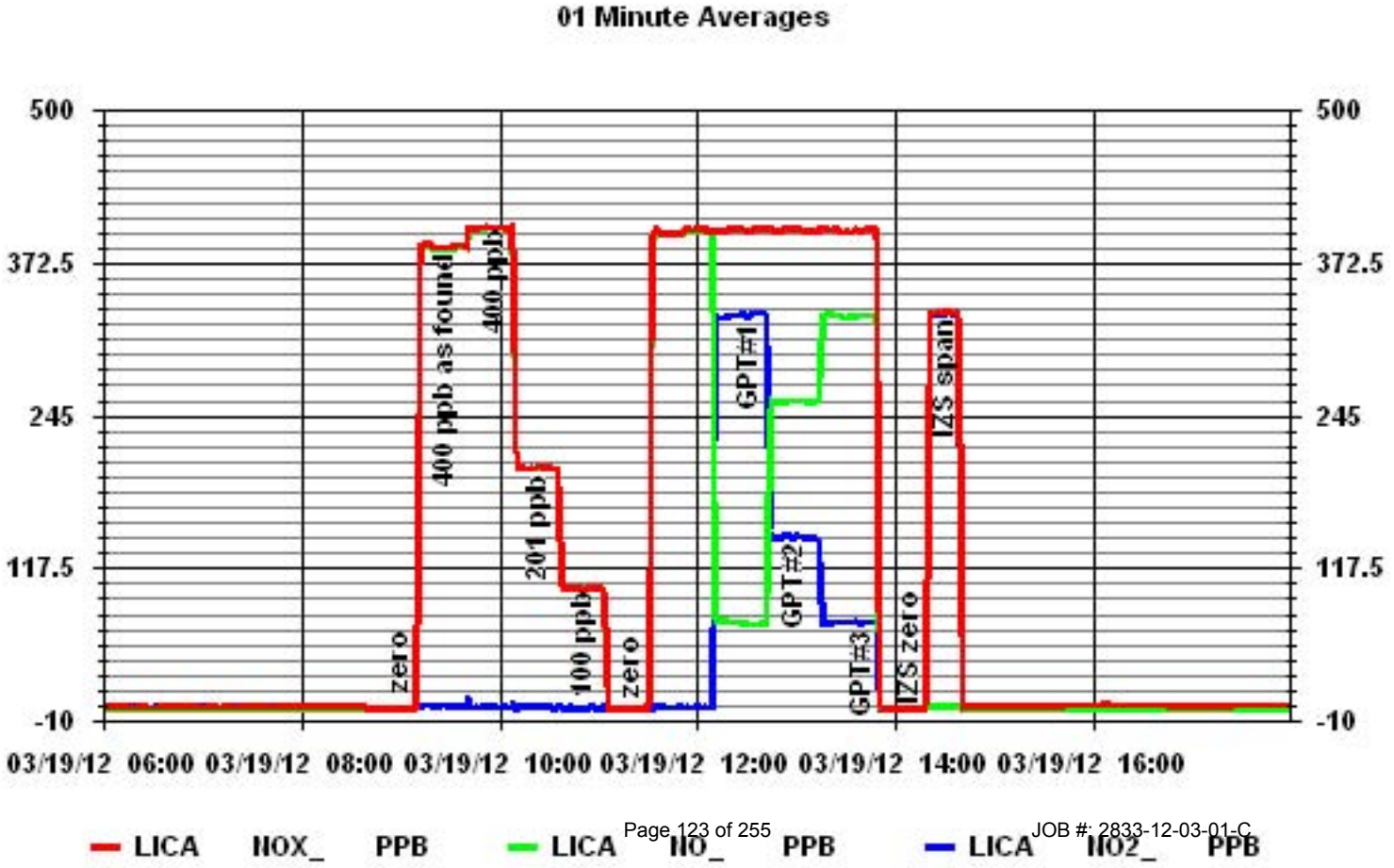
| | | | |
|---|---|---|---|
| Calibration Date | March 19, 2012 | | |
| Company | LICA | | |
| Plant / Location | Cold Lake South | | |
| Start Time (MST) | 8:33 | End Time (MST) | 14:43 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 100 | 101 | 0.9910 |
| 200 | 200 | 1.0011 |
| 399 | 400 | 0.9986 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999991 |
| Slope | (0.85 to 1.15) | 0.999593 |
| Intercept | (± 3% F.S.) | -1.0031 |




Notes:


01 Minute Averages
500
372.5
245
117.5
-10
zero
400 ppb as found
400 ppb
201 ppb
100 ppb
zero
GPT#1
GPT#2
GPT#3
IZS zero
IZS span
03/19/12 06:00
03/19/12 08:00
03/19/12 10:00
03/19/12 12:00
03/19/12 14:00
03/19/12 16:00
LICA NOX_ PPB
LICA NO_ PPB
LICA NO2_ PPB

# Ozone

# $O_3$ Calibration Report

## Station Information

| | | | |
|---|---|---|---|
| Calibration Date | March 19, 2012 | Previous Calibration | February 24, 2012 |
| Company | Lakeland Industry & Community Association | | |
| Plant / Location | LICA 1 - Cold Lake South | | |
| Start Time (MST) | 13:59 | End Time (MST) | 17:42 |
| Reason: | | Monthly Calibration | |
| Barometric Pressure | 0.914 atm | 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 | 705 LPM | 745 LPM | 709 LPM | 750 LPM |
| $O_3$ Set Level | 694 mmHg | | 702 mmHg | |
| Bench Lamp | 53.5 Deg C | | 53.6 Deg C | |
| O3 Lamp / Box Temp | 67.6 Deg | 29.4 Deg C | 67.5 Deg C | 29.3 Deg C |
| Offset / Slope | -0.1 | 1.004 | -0.1 | 1.038 |

## Calibration Data

| Dilution Flow Rate | Ozone Set Point | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4495 | 0 | 0 | 0 | NA |
| | No Zero Adj | | | |
| 4994 | 350 | 328 | 316 | 1.0380 |
| 4994 | 350 | 328 | 328 | 1.0000 |
| 4994 | 150 | 142 | 142 | 1.0000 |
| 4994 | 75 | 71 | 71 | 1.0000 |
| 4994 | 0 | 0 | 0 | NA |
| | | | Sum of Least Squares | 1.0000 |
| | | | New Correction Factor | 1.0000 |

## IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.1 | 0.3 |
| Auto Span | 275 | 285 |
| Sample Lines Connected | | YES |
| Previous Calibration Correction Factor: | | 1.0031 |
| Current Correctio Factor Before Span Adjust: | | 1.0380 |
| Percent Change: | | -3.4% |

Note: **NA : Not Applicable**

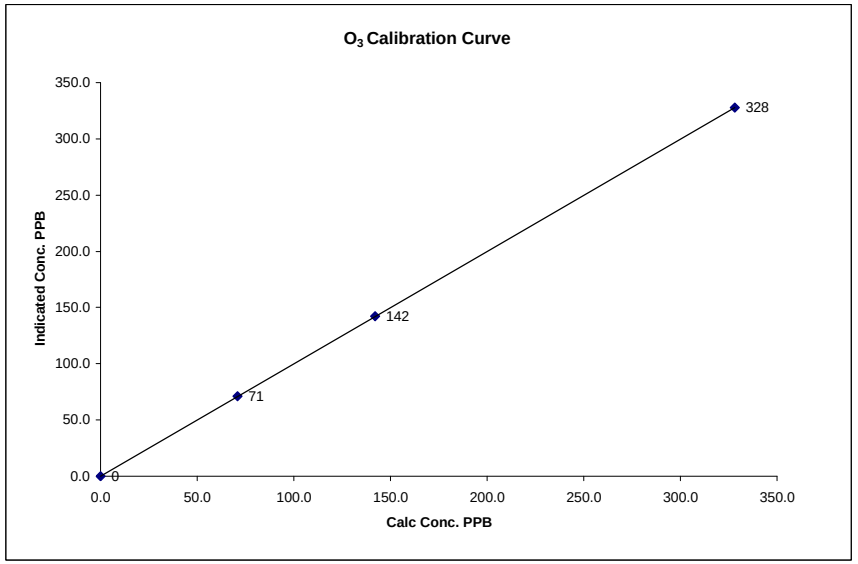
Calibration Performed by: Ting Xu

# $O_3$ Calibration Curve

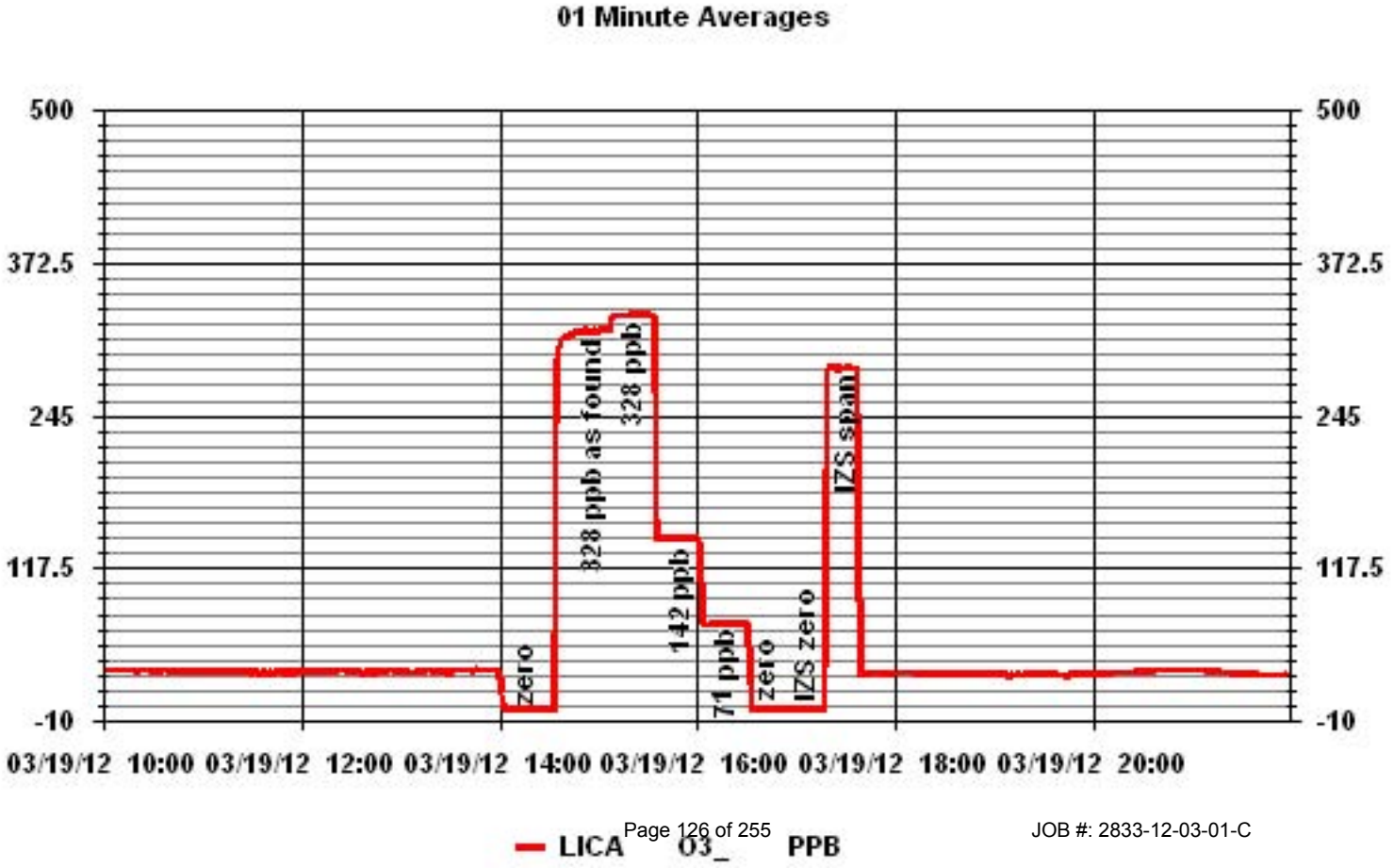
| | |
|---|---|
| Calibration Date | March 19, 2012 |
| Company | Lakeland Industry & Community Association |
| Plant / Location | LICA 1 - Cold Lake South |
| Start Time (MST) | 13:59 |
| End Time (MST) | 17:42 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | n/a |
| 71 | 71 | 1.0000 |
| 142 | 142 | 1.0000 |
| 328 | 328 | 1.0000 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 1.000000 |
| Slope | (0.85 to 1.15) | 1.000000 |
| Intercept | (± 3% F.S.) | 0.000000 |




Notes:






JOB #: 2833-12-03-01-C

# Passive Bubble Maps

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

## MARCH 2012

**PASSIVE STATIONS**

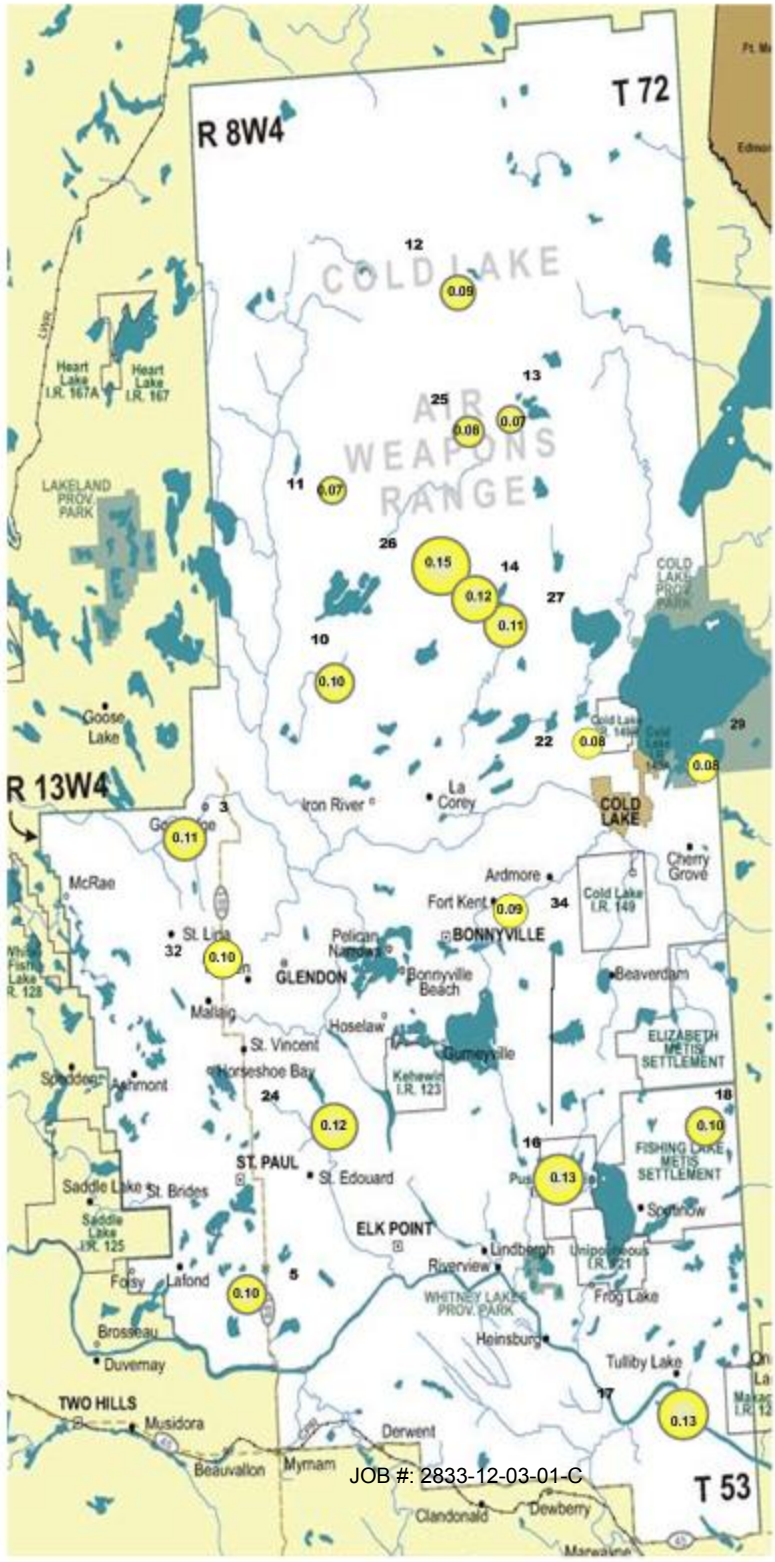
| | | DUPLICATE |
|---|---|---|
| 3 – Therien | 0.11 PPB | NA |
| 5 – Lake Eliza | 0.10 PPB | NA |
| 10 – La Corey | 0.12 PPB | NA |
| 11 – Wolf Lake | 0.07 PPB | NA |
| 12 – Foster Creek | 0.09 PPB | NA |
| 13 – Primrose | 0.07 PPB | NA |
| 14 – Maskwa | 0.12 PPB | NA |
| 16 – Frog Lake | 0.13 PPB | NA |
| 17 – Clear Range | 0.13 PPB | 0.13 PPB |
| 18 – Fishing Lake | 0.09 PPB | 0.10 PPB |
| 22 – Cold Lake South | 0.08 PPB | NA |
| 24 – Fort George | 0.12 PPB | NA |
| 25 – Burnt Lake | 0.08 PPB | NA |
| 26 – Mahihkan | 0.15 PPB | NA |
| 27 – Mahkeses | 0.11 PPB | NA |
| 29 – Cold Lake South 2 | 0.08 PPB | NA |
| 32 – St. Lina | 0.10 PPB | NA |
| 36 – Portable | 0.09 PPB | NA |

$H_2S$

PPB

## Summary

Minimum : 0.07 PPB – Wolf Lake
Maximum: 0.15 PPB – Mahihkan
Average: 0.10 PPB *Includes Duplicates






JOB #: 2833-12-03-01-C

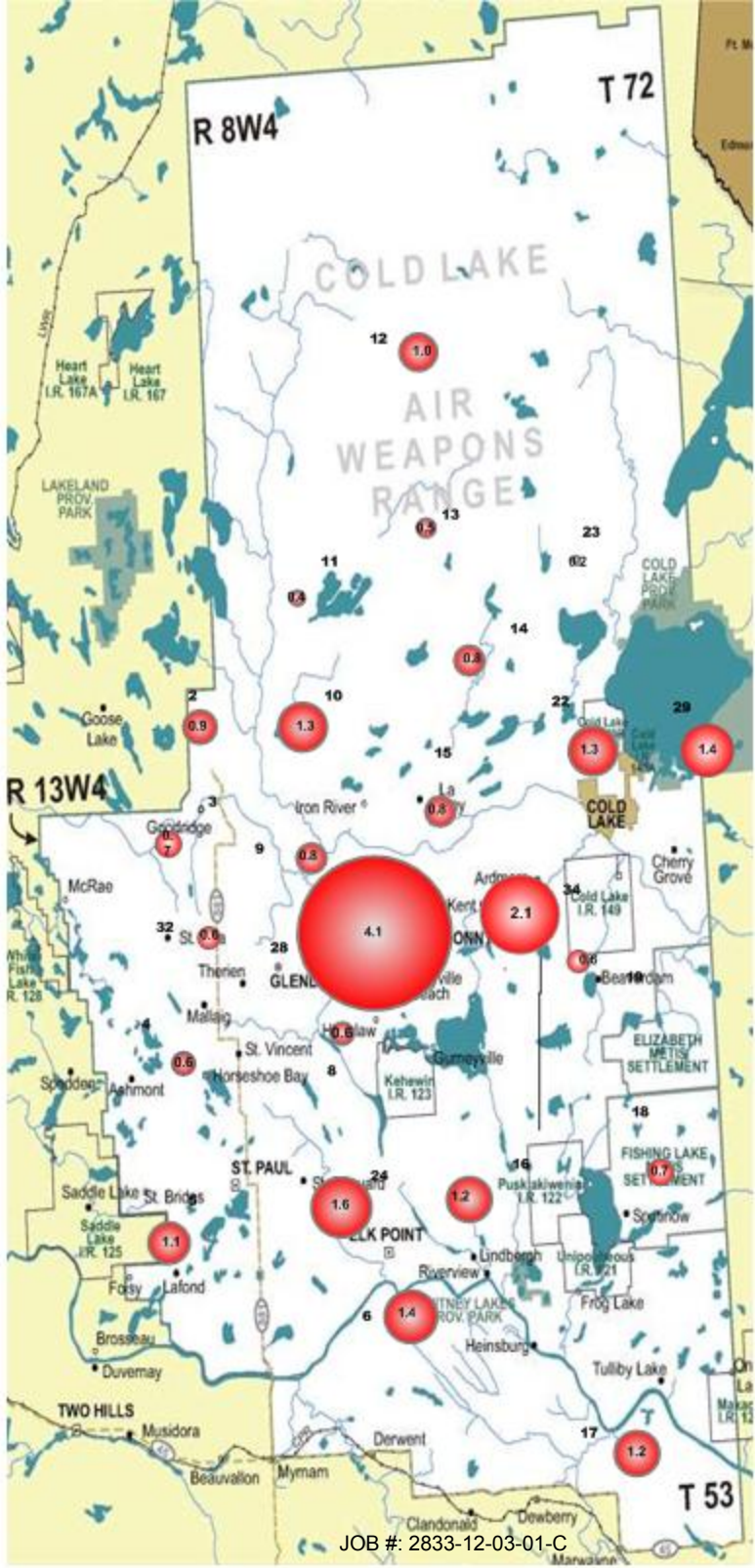
# Lakeland Industry & Community Association
# $NO_2$ Passive Bubble Map

## MARCH 2012

| PASSIVE STATIONS | | DUPLICATE |
|---|---|---|
| 2 – Sand River | 0.9 PPB | NA |
| 3 – Therien | 0.7 PPB | NA |
| 4 – Flat Lake | 0.6 PPB | NA |
| 5 – Lake Eliza | 1.1 PPB | NA |
| 6 – Telegraph Creek | 1.4 PPB | NA |
| 8 – Muriel-Kehewin | 0.6 PPB | NA |
| 9 – Dupre | 0.8 PPB | NA |
| 10 – La Corey | 1.3 PPB | NA |
| 11 – Wolf Lake | 0.4 PPB | 0.4 PPB |
| 12 – Foster Creek | 0.9 PPB | 1.0 PPB |
| 13 – Primrose | 0.5 PPB | NA |
| 14 – Maskwa | 0.8 PPB | NA |
| 15 – Ardmore | 0.8 PPB | NA |
| 16 – Frog Lake | 1.2PPB | NA |
| 17 – Clear Range | 1.2 PPB | NA |
| 18 – Fishing Lake | 0.7 PPB | NA |
| 19 – Beaverdam | 0.6 PPB | NA |
| 22 – Cold Lake South | 1.3 PPB | NA |
| 23 – Medley-Martineau | 0.2 PPB | NA |
| 24 – Fort George | 1.6 PPB | NA |
| 28 – Town of Bonnyville | 4.1 PPB | NA |
| 29 – Cold Lake South 2 | 1.4 PPB | NA |
| 32 – St. Lina | 0.6 PPB | NA |
| 36 – Portable | 2.1 PPB | NA |


## Summary

Minimum : 0.2 PPB – Medley-Martineau
Maximum: 4.1 PPB – Town of Bonnyville
Average: 1.1 PPB *Includes Duplicates






JOB #: 2833-12-03-01-C

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

## MARCH 2012

**PASSIVE STATIONS**

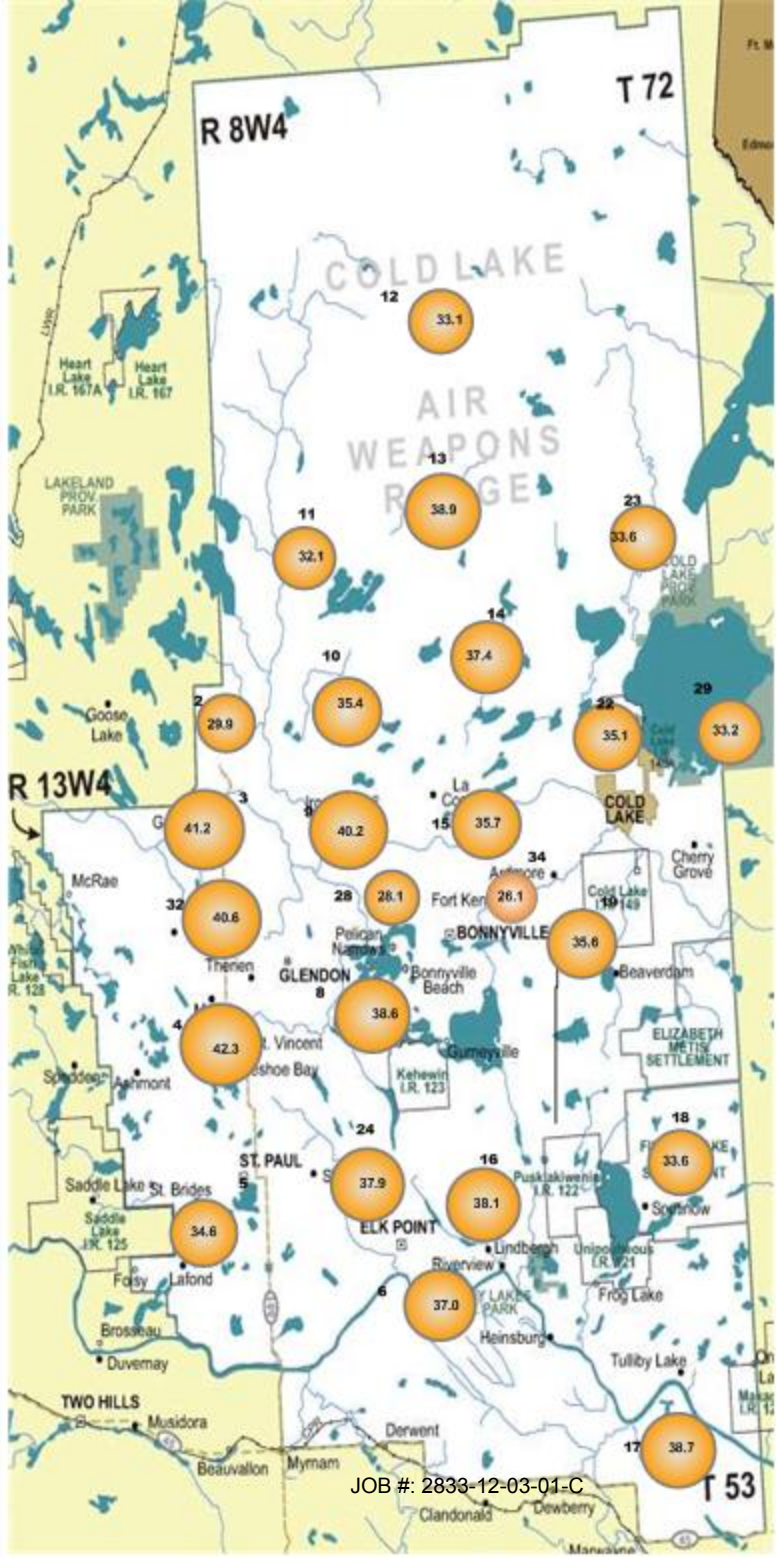
| | | DUPLICATE |
|---|---|---|
| 2 – Sand River | 29.9 PPB | NA |
| 3 – Therien | 41.2 PPB | NA |
| 4 – Flat Lake | 42.3 PPB | NA |
| 5 – Lake Eliza | 34.6 PPB | NA |
| 6 – Telegraph Creek | 37.0 PPB | NA |
| 8 – Muriel-Kehewin | 38.6 PPB | NA |
| 9 – Dupre | 40.2 PPB | NA |
| 10 – La Corey | 35.4 PPB | NA |
| 11 – Wolf Lake | 33.1 PPB | 31.1 PPB |
| 12 – Foster Creek | 33.7 PPB | 32.5 PPB |
| 13 – Primrose | 38.9PPB | NA |
| 14 – Maskwa | 37.4 PPB | NA |
| 15 – Ardmore | 35.7 PPB | NA |
| 16 – Frog Lake | 38.1 PPB | NA |
| 17 – Clear Range | 38.7 PPB | NA |
| 18 – Fishing Lake | 33.6 PPB | NA |
| 19 – Beaverdam | 35.6 PPB | NA |
| 22 – Cold Lake South | 35.1 PPB | NA |
| 23 – Medley-Martineau | 33.6 PPB | NA |
| 24 – Fort George | 37.9 PPB | NA |
| 28 – Town of Bonnyville | 28.1 PPB | NA |
| 29 – Cold Lake South 2 | 33.2 PPB | NA |
| 32 – St. Lina | 40.6 PPB | NA |
| 36 – Portable | 26.1 PPB | NA |

$O_3$ PPB

## Summary

Minimum : 26.1 PPB – Portable
Maximum: 42.3 PPB –Flat Lake
Average: 35.7 PPB *Includes Duplicates





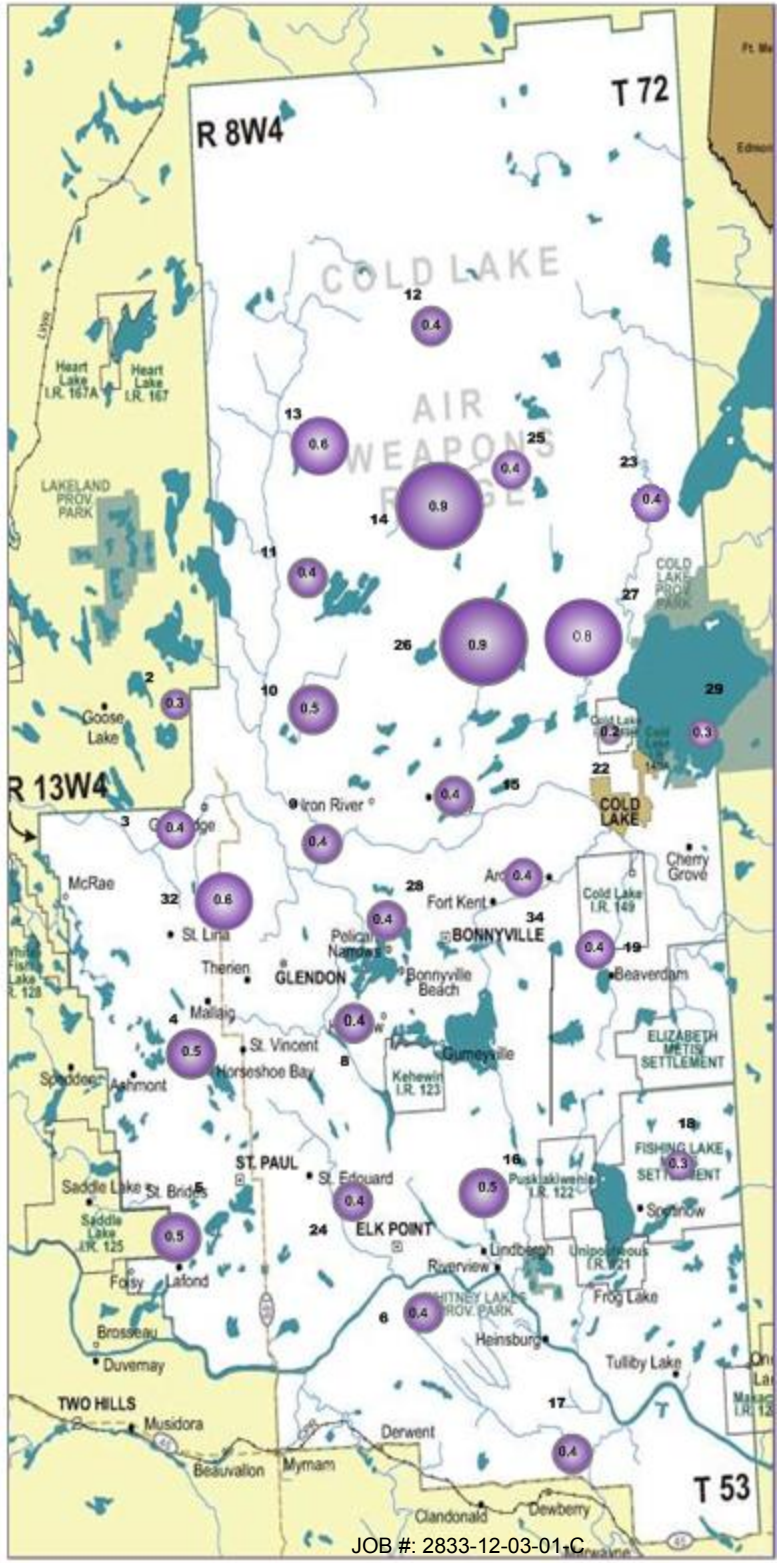
# Lakeland Industry & Community Association
# $SO_2$ Passive Bubble Map

## MARCH 2012

| PASSIVE STATIONS | | DUPLICATE |
|---|---|---|
| 2 – Sand River | 0.3 PPB | NA |
| 3 – Therien | 0.4 PPB | NA |
| 4 – Flat Lake | 0.5 PPB | NA |
| 5 – Lake Eliza | 0.5 PPB | NA |
| 6 – Telegraph Creek | 0.4 PPB | NA |
| 8 – Muriel-Kehewin | 0.4 PPB | NA |
| 9 – Dupre | 0.4 PPB | NA |
| 10 – La Corey | 0.5 PPB | NA |
| 11 – Wolf Lake | 0.4 PPB | NA |
| 12 – Foster Creek | 0.4 PPB | NA |
| 13 – Primrose | 0.6 PPB | NA |
| 14 – Maskwa | 0.9 PPB | NA |
| 15 – Ardmore | 0.4 PPB | 0.4 PPB |
| 16 – Frog Lake | 0.4 PPB | 0.5 PPB |
| 17 – Clear Range | 0.4 PPB | 0.4 PPB |
| 18 – Fishing Lake | 0.3 PPB | NA |
| 19 – Beaverdam | 0.4 PPB | NA |
| 22 – Cold Lake South | 0.2 PPB | NA |
| 23 – Medley-Martineau | 0.4 PPB | NA |
| 24 – Fort George | 0.4 PPB | NA |
| 25 – Burnt Lake | 0.4 PPB | NA |
| 26 – Mahikan | 0.9 PPB | NA |
| 27 – Mahkeses | 0.8 PPB | NA |
| 28 – Town of Bonnyville | 0.4 PPB | NA |
| 29 – Cold Lake South 2 | 0.3 PPB | NA |
| 32 – St. Lina | 0.6 PPB | NA |
| 36 – Portable | 0.4 PPB | NA |


## Summary

Minimum : 0.2 PPB –Cold Lake South
Maximum: 0.9 PPB –Maskwa
Average: 0.46 PPB *Includes Duplicates






JOB #: 2833-12-03-01-C

# Passive Field Data

# Field Notes

| ID | SAMPLER | START | | END | | NOTES |
|---|---|---|---|---|---|---|
| | | DATE | TIME | DATE | TIME | |
| 2 | $SO_2/NO_2/O_3$ | 02/28/2012 | 12:00 | 03//29//2012 | 12:11 | |
| 3 | $H_2S/SO_2/NO_2/O_3$ | 02/28/2012 | 12:59 | 03//29/2012 | 11:36 | |
| 4 | $SO_2/NO_2/O_3$ | 02/29/2012 | 16:10 | 03/30/2012 | 14:02 | |
| 5 | $H_2S/SO_2/NO_2/O_3$ | 02/29/2012 | 16:50 | 03/30/2012 | 13:18 | |
| 6 | $SO_2/NO_2/O_3$ | 03/01/2012 | 15:32 | 03/30/2012 | 11:36 | |
| 8 | $SO_2/NO_2/O_3$ | 02/28/2012 | 14:27 | 03/30/2012 | 15:00 | |
| 9 | $SO_2/NO_2/O_3$ | 02/29/2012 | 15:19 | 03/29/2012 | 09:32 | |
| 10 | $H_2S/SO_2/NO_2/O_3$ | 02/29/2012 | 13:10 | 03/28/2012 | 14:00 | |
| 11 | $H_2S/SO_2/NO_2/O_3$ | 02/29/2012 | 12:25 | 03/28/2012 | 10:00 | |
| 12 | $H_2S/SO_2/NO_2/O_3$ | 02/29/2012 | 09:42 | 03/28/2012 | 16:00 | |
| 13 | $H_2S/SO_2/NO_2/O_3$ | 02/27/2012 | 14:46 | 03/28/2012 | 09:00 | |
| 14 | $H_2S/SO_2/NO_2/O_3$ | 02/28/2012 | 09:40 | 03/28/2012 | 19:50 | |
| 15 | $SO_2/NO_2/O_3$ | 02/28/2012 | 10:35 | 03/29/2012 | 09:00 | |
| 16 | $H_2S/SO_2/NO_2/O_3$ | 03/01/2012 | 13:57 | 03/30/2012 | 09:50 | |
| 17 | $H_2S/SO_2/NO_2/O_3$ | 03/01/2012 | 14:50 | 03/30/2012 | 10:45 | |
| 18 | $H_2S/SO_2/NO_2/O_3$ | 03/01/2012 | 12:59 | 03/30/2012 | 09:10 | |
| 19 | $SO_2/NO_2/O_3$ | 03/01/2012 | 11:55 | 03/30/2012 | 08:15 | |
| 22 | $H_2S/SO_2/NO_2/O_3$ | 03/01/2012 | 10:25 | 03/29/2012 | 08:00 | |
| 23 | $SO_2/NO_2/O_3$ | 02/27/2012 | 13:36 | 03/28/2012 | 13:35 | |
| 24 | $H_2S/SO_2/NO_2/O_3$ | 02/29/2012 | 17:38 | 03/30/2012 | 12:12 | |
| 25 | $H_2S/SO_2$ | 02/29/2012 | 10:48 | 03/28/2012 | 17:00 | |
| 26 | $H_2S/SO_2$ | 02/27/2012 | 15:25 | 03/28/2012 | 19:30 | |
| 27 | $H_2S/SO_2$ | 02/28/2012 | 10:02 | 03/28/2012 | 20:10 | |
| 28 | $SO_2/NO_2/O_3$ | 02/28/2012 | 15:00 | 03/29/2012 | 09:52 | |
| 29 | $H_2S/SO_2/NO_2/O_3$ | 03/01/2012 | 10:10 | 03/29/2012 | 08:02 | |
| 32 | $H_2S/SO_2/NO_2/O_3$ | 02/28/2012 | 13:22 | 03/28/2012 | 10:50 | |
| 36 | $H_2S/SO_2/NO_2/O_3$ | 03/02/2012 | 11:45 | 03/30/2012 | 12:30 | |

| ID | SAMPLER | START | | END | | NOTES |
|---|---|---|---|---|---|---|
| | | DATE | TIME | DATE | TIME | |
| Duplicate # 15 | $SO_2$ | 02/28/2012 | 10:35 | 03/29/2012 | 09:00 | |
| Duplicate # 16 | $SO_2$ | 03/01/2012 | 13:57 | 03/30/2012 | 09:50 | |
| Duplicate # 17 | $SO_2$ | 03/01/2012 | 14:50 | 03/30/2012 | 10:45 | |
| Duplicate # 17 | $H_2S$ | 03/01/2012 | 14:50 | 03/30/2012 | 10:45 | |
| Duplicate # 18 | $H_2S$ | 03/01/2012 | 12:59 | 03/30/2012 | 09:10 | |
| Duplicate # 11 | $NO_2$ | 02/29/2012 | 12:25 | 03/28/2012 | 14:00 | |
| Duplicate # 12 | $NO_2$ | 02/29/2012 | 09:42 | 03/28/2012 | 16:00 | |
| Duplicate # 11 | $O_3$ | 02/29/2012 | 12:25 | 03/28/2012 | 14:40 | |
| Duplicate # 12 | $O_3$ | 02/29/2012 | 09:42 | 03/28/2012 | 16:00 | |

# Passive Network Laboratory Analysis

Maxxam

Your Project #: 2012/03/01 - 2012/03/29
Site Location: LICA

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

**Report Date: 2012/04/30**
This report supersedes all previous reports with the same Maxxam job number

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B227873**
**Received: 2012/04/04, 14:38**

Sample Matrix: Air
# Samples Received: 34

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Analytical Method |
|---|---|---|---|---|---|
| H2S Passive Analysis (1) | 21 | 2012/04/13 | 2012/04/16 | EINDSOP-00150 | Tang.Passive H2S in |
| NO2 Passive Analysis (1) | 20 | 2012/04/11 | 2012/04/16 | EINDSOP-00148 | Tang Passive NO2 in |
| NO2 Passive Analysis (1) | 6 | 2012/04/12 | 2012/04/16 | EINDSOP-00148 | Tang Passive NO2 in |
| O3 Passive Analysis (1) | 26 | 2012/04/13 | 2012/04/16 | EINDSOP-00197 | EPA 300 R2.1 |
| SO2 Passive Analysis (1) | 30 | 2012/04/14 | 2012/04/16 | EINDSOP-00149 | Tang Passive SO2 in |

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The detection limit is based on a 30 day sampling period.

Encryption Key

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

Levi Manchak, Customer Service
Email: LManchak@maxxam.ca
Phone# (780) 378-8500

==========

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

Total cover pages: 1

Maxxam Job #: B227873
Report Date: 2012/04/30

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2012/03/01 - 2012/03/29
Site Location: LICA
Sampler Initials: SB

## RESULTS OF CHEMICAL ANALYSES OF AIR

| Maxxam ID | | DC1989 | DC1990 | DC1991 | DC1992 | DC1993 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/02/29 12:00 | 2012/02/28 12:59 | 2012/02/29 16:10 | 2012/02/29 16:50 | 2012/03/01 15:32 | | |
| | **Units** | **2** | **3** | **4** | **5** | **6** | **RDL** | **QC Batch** |
| **Passive Monitoring** | | | | | | | | |
| Calculated H2S | ppb | | 0.11 | | 0.10 | | 0.02 | 5759473 |
| Calculated NO2 | ppb | 0.9 | 0.7 | 0.6 | 1.1 | 1.4 | 0.1 | 5752550 |
| Calculated O3 | ppb | 29.9 | 41.2 | 42.3 | 34.6 | 37.0 | 0.1 | 5760501 |
| Calculated SO2 | ppb | 0.3 | 0.4 | 0.5 | 0.5 | 0.4 | 0.1 | 5763034 |

RDL = Reportable Detection Limit

| Maxxam ID | | DC1994 | DC1995 | DC1996 | DC1997 | DC1998 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/02/28 14:27 | 2012/02/29 15:19 | 2012/02/29 13:10 | 2012/02/29 12:15 | 2012/02/29 09:42 | | |
| | **Units** | **8** | **9** | **10** | **11** | **12** | **RDL** | **QC Batch** |
| **Passive Monitoring** | | | | | | | | |
| Calculated H2S | ppb | | | 0.10 | 0.07 | 0.09 | 0.02 | 5759473 |
| Calculated NO2 | ppb | 0.6 | 0.8 | 1.3 | 0.4 | 0.9 | 0.1 | 5752550 |
| Calculated O3 | ppb | 38.6 | 40.2 | 35.4 | 33.1 | 33.7 | 0.1 | 5760501 |
| Calculated SO2 | ppb | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.1 | 5763034 |

RDL = Reportable Detection Limit

| Maxxam ID | | DC1999 | DC2012 | DC2013 | DC2014 | DC2015 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/02/27 14:46 | 2012/02/28 09:40 | 2012/02/28 10:35 | 2012/03/01 13:57 | 2012/03/01 14:50 | | |
| | **Units** | **13** | **14** | **15** | **16** | **17** | **RDL** | **QC Batch** |
| **Passive Monitoring** | | | | | | | | |
| Calculated H2S | ppb | 0.07 | 0.12 | | 0.13 | 0.13 | 0.02 | 5759473 |
| Calculated NO2 | ppb | 0.5 | 0.8 | 0.8 | 1.2 | 1.2 | 0.1 | 5752550 |
| Calculated O3 | ppb | 38.9 | 37.4 | 35.7 | 38.1 | 38.7 | 0.1 | 5760517 |
| Calculated SO2 | ppb | 0.6 | 0.9 | 0.4 | 0.4 | 0.4 | 0.1 | 5763034 |

RDL = Reportable Detection Limit

## RESULTS OF CHEMICAL ANALYSES OF AIR

| Maxxam ID | | DC2016 | DC2017 | DC2018 | | DC2019 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/01 12:59 | 2012/03/01 11:55 | 2012/03/01 10:25 | | 2012/02/27 13:36 | | |
| | **Units** | **18** | **19** | **22** | **QC Batch** | **23** | **RDL** | **QC Batch** |
| **Passive Monitoring** | | | | | | | | |
| Calculated H2S | ppb | 0.09 | | 0.08 | 5759473 | | 0.02 | 5759473 |
| Calculated NO2 | ppb | 0.7 | 0.6 | 1.3 | 5752550 | 0.2 | 0.1 | 5757838 |
| Calculated O3 | ppb | 33.6 | 35.6 | 35.1 | 5760517 | 33.6 | 0.1 | 5760517 |
| Calculated SO2 | ppb | 0.3 | 0.4 | 0.2 | 5763041 | 0.4 | 0.1 | 5763041 |

RDL = Reportable Detection Limit

| Maxxam ID | | DC2020 | DC2021 | DC2022 | DC2023 | DC2024 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/02/29 17:38 | 2012/02/29 10:48 | 2012/02/27 15:25 | 2012/02/28 10:02 | 2012/02/28 15:00 | | |
| | **Units** | **24** | **25** | **26** | **27** | **28** | **RDL** | **QC Batch** |
| **Passive Monitoring** | | | | | | | | |
| Calculated H2S | ppb | 0.12 | 0.08 | 0.15 | 0.11 | | 0.02 | 5759473 |
| Calculated NO2 | ppb | 1.6 | | | | 4.1 | 0.1 | 5757838 |
| Calculated O3 | ppb | 37.9 | | | | 28.1 | 0.1 | 5760517 |
| Calculated SO2 | ppb | 0.4 | 0.4 | 0.9 | 0.8 | 0.4 | 0.1 | 5763041 |

RDL = Reportable Detection Limit

| Maxxam ID | | DC2025 | DC2026 | DC2027 | | DC2137 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/01 10:10 | 2012/02/28 13:22 | 2012/02/22 11:45 | | 2012/02/29 12:15 | | |
| | **Units** | **29** | **32** | **36** | **QC Batch** | **11 DUP** | **RDL** | **QC Batch** |
| **Passive Monitoring** | | | | | | | | |
| Calculated H2S | ppb | 0.08 | 0.10 | 0.09 | 5759473 | | 0.02 | 5759473 |
| Calculated NO2 | ppb | 1.4 | 0.6 | 2.1 | 5757838 | 0.4 | 0.1 | 5752550 |
| Calculated O3 | ppb | 33.2 | 40.6 | 26.1 | 5760517 | 31.1 | 0.1 | 5760517 |
| Calculated SO2 | ppb | 0.3 | 0.6 | 0.4 | 5763041 | | 0.1 | |

RDL = Reportable Detection Limit

Maxxam Job #: B227873
Report Date: 2012/04/30

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: 2012/03/01 - 2012/03/29
Site Location: LICA
Sampler Initials: SB

## RESULTS OF CHEMICAL ANALYSES OF AIR

| Maxxam ID | | DC2138 | DC2139 | DC2140 | | DC2141 | | |
|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/02/29 12:42 | 2012/02/28 10:35 | 2012/03/01 13:57 | | 2012/03/01 14:50 | | |
| | **Units** | **12 DUP** | **15 DUP** | **16 DUP** | **QC Batch** | **17 DUP** | **RDL** | **QC Batch** |
| **Passive Monitoring** | | | | | | | | |
| Calculated H2S | ppb | | | | 5759473 | 0.13 | 0.02 | 5759473 |
| Calculated NO2 | ppb | 1.0 | | | 5752550 | | 0.1 | 5752550 |
| Calculated O3 | ppb | 32.5 | | | 5760517 | | 0.1 | 5760517 |
| Calculated SO2 | ppb | | 0.4 | 0.5 | 5763034 | 0.4 | 0.1 | 5763041 |

RDL = Reportable Detection Limit

| Maxxam ID | | DC2142 | DE1213 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2012/03/01 12:59 | 2011/12/28 13:05 | | |
| | **Units** | **18 DUP** | **17 JAN** | **RDL** | **QC Batch** |
| **Passive Monitoring** | | | | | |
| Calculated H2S | ppb | 0.10 | 0.07 | 0.02 | 5759473 |

RDL = Reportable Detection Limit

**General Comments**

Sample number 34 changed to 36 to reflect sampling station move.

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

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Attention: MICHAEL BISAGA
Client Project #: 2012/03/01 - 2012/03/29
P.O. #:
Site Location: LICA

# Quality Assurance Report

Maxxam Job Number: PB227873

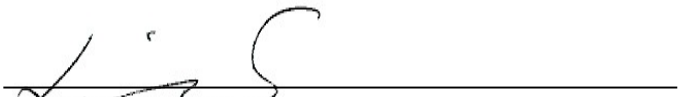
| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 5752550 | DF4 | Calibration Check | Calculated NO2 | 2012/04/11 | | 100 | % | 76 - 118 |
| | | Spiked Blank | Calculated NO2 | 2012/04/11 | | 100 | % | N/A |
| | | Method Blank | Calculated NO2 | 2012/04/11 | <0.1 | | ppb | |
| 5757838 | DF4 | Calibration Check | Calculated NO2 | 2012/04/12 | | 100 | % | 76 - 118 |
| | | Spiked Blank | Calculated NO2 | 2012/04/12 | | 100 | % | N/A |
| | | Method Blank | Calculated NO2 | 2012/04/12 | <0.1 | | ppb | |
| 5759473 | SS6 | Calibration Check | Calculated H2S | 2012/04/13 | | 97 | % | 80 - 120 |
| | | Spiked Blank | Calculated H2S | 2012/04/13 | | 100 | % | N/A |
| 5760501 | OZ | Calibration Check | Calculated O3 | 2012/04/13 | | 100 | % | 91 - 107 |
| | | Spiked Blank | Calculated O3 | 2012/04/13 | | 99 | % | N/A |
| | | Method Blank | Calculated O3 | 2012/04/13 | <0.1 | | ppb | |
| 5760517 | OZ | Calibration Check | Calculated O3 | 2012/04/13 | | 100 | % | 91 - 107 |
| | | Spiked Blank | Calculated O3 | 2012/04/13 | | 99 | % | N/A |
| | | Method Blank | Calculated O3 | 2012/04/13 | <0.1 | | ppb | |
| 5763034 | DF4 | Calibration Check | Calculated SO2 | 2012/04/14 | | 100 | % | 95 - 105 |
| | | Spiked Blank | Calculated SO2 | 2012/04/14 | | 100 | % | N/A |
| | | Method Blank | Calculated SO2 | 2012/04/14 | <0.1 | | ppb | |
| 5763041 | DF4 | Calibration Check | Calculated SO2 | 2012/04/14 | | 98 | % | 95 - 105 |
| | | Spiked Blank | Calculated SO2 | 2012/04/14 | | 100 | % | N/A |
| | | Method Blank | Calculated SO2 | 2012/04/14 | <0.1 | | ppb | |

Calibration Check: A calibration standard analyzed at different times to evaluate on-going calibration accuracy.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

## Validation Signature Page

**Maxxam Job #: B227873**

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.

# Volatile Organics Laboratory Analysis

# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA
Location: Cold Lake South
Station ID: Lica 1
Field Sample ID: LICA VOC/ CLS /Mar 04, 2012

Sampler s/n: 6167
Canister ID: 269
Canister Installation Date/Time: Mar 01 , 2012 @ 09:31 mst
Canister Removal Date/Time: Mar 06 , 2012 @ 08:38 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 04-Mar-12 | 03/04/2012 0:00 | 03/05/2012 0:00 | 24.00 |

| Flow Settings | | |
|---|---|---|
| Meter Reading (sccm) | Pot Set Pt. | Pump Pressure Setting (psig) |
| 10.0 | 646 | 25 |

| Canister Information | |
|---|---|
| Initial Canister Vacuum (inHg) | Final Canister Pressure (psig) |
| -28 | 24 |

**Canister valve open prior to sampling?: YES /** NO
**Timer set to 0.00 minutes prior to sampling? YES /** NO
**Canister valve closed prior to disconnection?: YES /** NO

Comments: System leak check prior to sampling. COC # 10681

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

Your C.O.C. #: 10681

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

**Report Date: 2012/03/22**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B235102**
**Received: 2012/03/12, 09:42**

Sample Matrix: AIR
# Samples Received: 1

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | 1 | N/A | 2012/03/19 | BRL SOP-00304 | EPA TO-15 |
| Volatile Organics in Air (TO-15) (1) | 1 | N/A | 2012/03/19 | BRL SOP-00304 | EPA TO-15 |

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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Total cover pages: 1


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Maxxam Analytics

Maxxam Job #: B235102
Report Date: 2012/03/22

## RESULTS OF ANALYSES OF AIR

| Maxxam ID | | MU0783 | |
|---|---|---|---|
| Sampling Date | | 2012/03/04 00:00 | |
| COC Number | | 10681 | |
| | **Units** | **LICA VOC/CLS/MAR4,12 - 269** | **QC Batch** |

| **Volatile Organics** | | | |
|---|---|---|---|
| Pressure on Receipt | psig | 23 | 2794260 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B235102
Report Date: 2012/03/22

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MU0783 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/04 00:00 | | | | |
| COC Number | | 10681 | | | | |
| | **Units** | **LICA VOC/CLS/MAR4,12 - 269** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2794295 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2794295 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2794295 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2794295 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2794295 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.77 | 0.20 | 3.83 | 0.989 | 2794295 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2794295 |
| Chloromethane | ppbv | 0.62 | 0.30 | 1.27 | 0.620 | 2794295 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2794295 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2794295 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2794295 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.37 | 0.20 | 2.09 | 1.12 | 2794295 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2794295 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2794295 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2794295 |
| 2-Propanone | ppbv | 1.96 | 0.80 | 4.67 | 1.90 | 2794295 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2794295 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2794295 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2794295 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2794295 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2794295 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2794295 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2794295 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2794295 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2794295 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2794295 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2794295 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2794295 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2794295 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2794295 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B235102
Report Date: 2012/03/22

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MU0783 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/04 00:00 | | | | |
| COC Number | | 10681 | | | | |
| | **Units** | **LICA VOC/CLS/MAR4,12 - 269** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2794295 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2794295 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2794295 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2794295 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2794295 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2794295 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2794295 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2794295 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2794295 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2794295 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2794295 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2794295 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2794295 |
| Benzene | ppbv | 0.20 | 0.18 | 0.654 | 0.575 | 2794295 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2794295 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2794295 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2794295 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2794295 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2794295 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2794295 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2794295 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2794295 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2794295 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2794295 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2794295 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2794295 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2794295 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2794295 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2794295 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2794295 |
| Cyclohexane | ppbv | 0.31 | 0.20 | 1.06 | 0.688 | 2794295 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2794295 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B235102
Report Date: 2012/03/22

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MU0783 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/04 00:00 | | | | |
| COC Number | | 10681 | | | | |
| | **Units** | **LICA VOC/CLS/MAR4,12 - 269** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2794295 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2794295 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 76 | | N/A | N/A | 2794295 |
| D5-Chlorobenzene | % | 72 | | N/A | N/A | 2794295 |
| Difluorobenzene | % | 77 | | N/A | N/A | 2794295 |

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


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Maxxam Analytics

Maxxam Job #: B235102
Report Date: 2012/03/22

## Test Summary

**Maxxam ID** MU0783
**Sample ID** LICA VOC/CLS/MAR4,12 - 269
**Matrix** AIR

**Collected** 2012/03/04
**Shipped**
**Received** 2012/03/12

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2794260 | N/A | 2012/03/19 | YAO LIANG SUN |
| Volatile Organics in Air (TO-15) | GC/MS | 2794295 | N/A | 2012/03/19 | YAO LIANG SUN |


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Maxxam Analytics

Maxxam Job #: B235102
Report Date: 2012/03/22

**GENERAL COMMENTS**

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


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

# Quality Assurance Report

Maxxam Job Number: GB235102

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2794295 | LSY | Spiked Blank | Bromochloromethane | 2012/03/19 | | 100 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/19 | | 104 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/19 | | 103 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/19 | | 99 | % | 70 - 130 |
| | | | Carbon Disulfide | 2012/03/19 | | 102 | % | 70 - 130 |
| | | | Propene | 2012/03/19 | | 101 | % | 70 - 130 |
| | | | Vinyl Acetate | 2012/03/19 | | 105 | % | 70 - 130 |
| | | | Vinyl Bromide | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/19 | | 99 | % | 70 - 130 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/19 | | 119 | % | 70 - 130 |
| | | | Chloromethane | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | Vinyl Chloride | 2012/03/19 | | 104 | % | 70 - 130 |
| | | | Chloroethane | 2012/03/19 | | 106 | % | 70 - 130 |
| | | | 1,3-Butadiene | 2012/03/19 | | 88 | % | 70 - 130 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/19 | | 100 | % | 70 - 130 |
| | | | Trichlorotrifluoroethane | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | Ethanol (ethyl alcohol) | 2012/03/19 | | 86 | % | 70 - 130 |
| | | | 2-propanol | 2012/03/19 | | 104 | % | 70 - 130 |
| | | | 2-Propanone | 2012/03/19 | | 94 | % | 70 - 130 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/19 | | 99 | % | 70 - 130 |
| | | | Methyl Isobutyl Ketone | 2012/03/19 | | 100 | % | 70 - 130 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/19 | | 102 | % | 70 - 130 |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | Ethyl Acetate | 2012/03/19 | | 104 | % | 70 - 130 |
| | | | 1,1-Dichloroethylene | 2012/03/19 | | 104 | % | 70 - 130 |
| | | | cis-1,2-Dichloroethylene | 2012/03/19 | | 104 | % | 70 - 130 |
| | | | trans-1,2-Dichloroethylene | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/19 | | 92 | % | 70 - 130 |
| | | | Chloroform | 2012/03/19 | | 101 | % | 70 - 130 |
| | | | Carbon Tetrachloride | 2012/03/19 | | 97 | % | 70 - 130 |
| | | | 1,1-Dichloroethane | 2012/03/19 | | 102 | % | 70 - 130 |
| | | | 1,2-Dichloroethane | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | Ethylene Dibromide | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | 1,1,1-Trichloroethane | 2012/03/19 | | 99 | % | 70 - 130 |
| | | | 1,1,2-Trichloroethane | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/19 | | 97 | % | 70 - 130 |
| | | | cis-1,3-Dichloropropene | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | trans-1,3-Dichloropropene | 2012/03/19 | | 105 | % | 70 - 130 |
| | | | 1,2-Dichloropropane | 2012/03/19 | | 101 | % | 70 - 130 |
| | | | Bromomethane | 2012/03/19 | | 104 | % | 70 - 130 |
| | | | Bromoform | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | Bromodichloromethane | 2012/03/19 | | 101 | % | 70 - 130 |
| | | | Dibromochloromethane | 2012/03/19 | | 104 | % | 70 - 130 |
| | | | Heptane | 2012/03/19 | | 101 | % | 70 - 130 |
| | | | Trichloroethylene | 2012/03/19 | | 100 | % | 70 - 130 |
| | | | Tetrachloroethylene | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | Benzene | 2012/03/19 | | 101 | % | 70 - 130 |
| | | | Toluene | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | Ethylbenzene | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | p+m-Xylene | 2012/03/19 | | 100 | % | 70 - 130 |
| | | | o-Xylene | 2012/03/19 | | 101 | % | 70 - 130 |
| | | | Styrene | 2012/03/19 | | 90 | % | 70 - 130 |
| | | | 1,3,5-Trimethylbenzene | 2012/03/19 | | 96 | % | 70 - 130 |
| | | | 1,2,4-Trimethylbenzene | 2012/03/19 | | 94 | % | 70 - 130 |
| | | | 4-ethyltoluene | 2012/03/19 | | 98 | % | 70 - 130 |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB235102

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2794295 | LSY | Spiked Blank | Chlorobenzene | 2012/03/19 | | 102 | % | 70 - 130 |
| | | | Benzyl chloride | 2012/03/19 | | 94 | % | 70 - 130 |
| | | | 1,3-Dichlorobenzene | 2012/03/19 | | 97 | % | 70 - 130 |
| | | | 1,4-Dichlorobenzene | 2012/03/19 | | 96 | % | 70 - 130 |
| | | | 1,2-Dichlorobenzene | 2012/03/19 | | 89 | % | 70 - 130 |
| | | | 1,2,4-Trichlorobenzene | 2012/03/19 | | 102 | % | 70 - 130 |
| | | | Hexachlorobutadiene | 2012/03/19 | | 93 | % | 70 - 130 |
| | | | Hexane | 2012/03/19 | | 104 | % | 70 - 130 |
| | | | Cyclohexane | 2012/03/19 | | 100 | % | 70 - 130 |
| | | | Tetrahydrofuran | 2012/03/19 | | 103 | % | 70 - 130 |
| | | | 1,4-Dioxane | 2012/03/19 | | 100 | % | 70 - 130 |
| | | | Xylene (Total) | 2012/03/19 | | 101 | % | 70 - 130 |
| | | Method Blank | Bromochloromethane | 2012/03/19 | | 92 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/19 | | 88 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/19 | | 93 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/19 | <0.20 | | ppbv | |
| | | | Carbon Disulfide | 2012/03/19 | <0.50 | | ppbv | |
| | | | Propene | 2012/03/19 | <0.30 | | ppbv | |
| | | | Vinyl Acetate | 2012/03/19 | <0.20 | | ppbv | |
| | | | Vinyl Bromide | 2012/03/19 | <0.20 | | ppbv | |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/19 | <0.20 | | ppbv | |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/19 | <0.17 | | ppbv | |
| | | | Chloromethane | 2012/03/19 | <0.30 | | ppbv | |
| | | | Vinyl Chloride | 2012/03/19 | <0.18 | | ppbv | |
| | | | Chloroethane | 2012/03/19 | <0.30 | | ppbv | |
| | | | 1,3-Butadiene | 2012/03/19 | <0.50 | | ppbv | |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/19 | <0.20 | | ppbv | |
| | | | Trichlorotrifluoroethane | 2012/03/19 | <0.15 | | ppbv | |
| | | | Ethanol (ethyl alcohol) | 2012/03/19 | <2.3 | | ppbv | |
| | | | 2-propanol | 2012/03/19 | <3.0 | | ppbv | |
| | | | 2-Propanone | 2012/03/19 | <0.80 | | ppbv | |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/19 | <3.0 | | ppbv | |
| | | | Methyl Isobutyl Ketone | 2012/03/19 | <3.2 | | ppbv | |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/19 | <2.0 | | ppbv | |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/19 | <0.20 | | ppbv | |
| | | | Ethyl Acetate | 2012/03/19 | <2.2 | | ppbv | |
| | | | 1,1-Dichloroethylene | 2012/03/19 | <0.25 | | ppbv | |
| | | | cis-1,2-Dichloroethylene | 2012/03/19 | <0.19 | | ppbv | |
| | | | trans-1,2-Dichloroethylene | 2012/03/19 | <0.20 | | ppbv | |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/19 | <0.80 | | ppbv | |
| | | | Chloroform | 2012/03/19 | <0.15 | | ppbv | |
| | | | Carbon Tetrachloride | 2012/03/19 | <0.30 | | ppbv | |
| | | | 1,1-Dichloroethane | 2012/03/19 | <0.20 | | ppbv | |
| | | | 1,2-Dichloroethane | 2012/03/19 | <0.20 | | ppbv | |
| | | | Ethylene Dibromide | 2012/03/19 | <0.17 | | ppbv | |
| | | | 1,1,1-Trichloroethane | 2012/03/19 | <0.30 | | ppbv | |
| | | | 1,1,2-Trichloroethane | 2012/03/19 | <0.15 | | ppbv | |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/19 | <0.20 | | ppbv | |
| | | | cis-1,3-Dichloropropene | 2012/03/19 | <0.18 | | ppbv | |
| | | | trans-1,3-Dichloropropene | 2012/03/19 | <0.17 | | ppbv | |
| | | | 1,2-Dichloropropane | 2012/03/19 | <0.40 | | ppbv | |
| | | | Bromomethane | 2012/03/19 | <0.18 | | ppbv | |
| | | | Bromoform | 2012/03/19 | <0.20 | | ppbv | |
| | | | Bromodichloromethane | 2012/03/19 | <0.20 | | ppbv | |
| | | | Dibromochloromethane | 2012/03/19 | <0.20 | | ppbv | |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB235102

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2794295 | LSY | Method Blank | Heptane | 2012/03/19 | <0.30 | | ppbv | |
| | | | Trichloroethylene | 2012/03/19 | <0.30 | | ppbv | |
| | | | Tetrachloroethylene | 2012/03/19 | <0.20 | | ppbv | |
| | | | Benzene | 2012/03/19 | <0.18 | | ppbv | |
| | | | Toluene | 2012/03/19 | <0.20 | | ppbv | |
| | | | Ethylbenzene | 2012/03/19 | <0.20 | | ppbv | |
| | | | p+m-Xylene | 2012/03/19 | <0.37 | | ppbv | |
| | | | o-Xylene | 2012/03/19 | <0.20 | | ppbv | |
| | | | Styrene | 2012/03/19 | <0.20 | | ppbv | |
| | | | 1,3,5-Trimethylbenzene | 2012/03/19 | <0.50 | | ppbv | |
| | | | 1,2,4-Trimethylbenzene | 2012/03/19 | <0.50 | | ppbv | |
| | | | 4-ethyltoluene | 2012/03/19 | <2.2 | | ppbv | |
| | | | Chlorobenzene | 2012/03/19 | <0.20 | | ppbv | |
| | | | Benzyl chloride | 2012/03/19 | <1.0 | | ppbv | |
| | | | 1,3-Dichlorobenzene | 2012/03/19 | <0.40 | | ppbv | |
| | | | 1,4-Dichlorobenzene | 2012/03/19 | <0.40 | | ppbv | |
| | | | 1,2-Dichlorobenzene | 2012/03/19 | <0.40 | | ppbv | |
| | | | 1,2,4-Trichlorobenzene | 2012/03/19 | <2.0 | | ppbv | |
| | | | Hexachlorobutadiene | 2012/03/19 | <3.0 | | ppbv | |
| | | | Hexane | 2012/03/19 | <0.30 | | ppbv | |
| | | | Cyclohexane | 2012/03/19 | <0.20 | | ppbv | |
| | | | Tetrahydrofuran | 2012/03/19 | <0.40 | | ppbv | |
| | | | 1,4-Dioxane | 2012/03/19 | <2.0 | | ppbv | |
| | | | Xylene (Total) | 2012/03/19 | <0.60 | | ppbv | |
| | | RPD - Sample/Sample Dup | 1,3-Dichlorobenzene | 2012/03/19 | NC | | % | 25 |

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.


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# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA
Location: Cold Lake South
Station ID: Lica 1
Field Sample ID: LICA VOC/ CLS /Mar 10, 2012

Sampler s/n: 6167
Canister ID: 113
Canister Installation Date/Time: Mar 08 , 2012 @ 07:48 mst
Canister Removal Date/Time: Mar 14 , 2012 @ 16:40 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 10-Mar-12 | 03/10/2012 0:00 | 03/11/2012 0:00 | 24.00 |

| Flow Settings | | |
|---|---|---|
| Meter Reading (sccm) | Pot Set Pt. | Pump Pressure Setting (psig) |
| 10.0 | 646 | 25 |

| Canister Information | |
|---|---|
| Initial Canister Vacuum (inHg) | Final Canister Pressure (psig) |
| -28 | 25 |

**Canister valve open prior to sampling?: YES /** NO
**Timer set to 0.00 minutes prior to sampling? YES /** NO
**Canister valve closed prior to disconnection?: YES /** NO

Comments: System leak check prior to sampling. COC # 10793

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

Your C.O.C. #: 10793

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

**Report Date: 2012/03/23**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B238766**
**Received: 2012/03/20, 09:45**

Sample Matrix: AIR
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | 2 | N/A | 2012/03/21 | BRL SOP-00304 | EPA TO-15 |
| Volatile Organics in Air (TO-15) (1) | 2 | N/A | 2012/03/21 | BRL SOP-00304 | EPA TO-15 |

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

## RESULTS OF ANALYSES OF AIR

| Maxxam ID | | MV8205 | MV8206 | |
|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | 2012/03/10 | |
| COC Number | | 10793 | 10793 | |
| | **Units** | **LICA VOC/CLS/ MAR 10,12 - 113** | **LICA VOC/PORT/ MAR 10,12 - 7845** | **QC Batch** |
| **Volatile Organics** | | | | |
| Pressure on Receipt | psig | 24 | 22 | 2798164 |

QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MV8205 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/CLS/ MAR 10,12 - 113** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2798162 |
| Carbon Disulfide | ppbv | 0.58 | 0.50 | 1.82 | 1.56 | 2798162 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2798162 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2798162 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2798162 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.64 | 0.20 | 3.19 | 0.989 | 2798162 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2798162 |
| Chloromethane | ppbv | 0.57 | 0.30 | 1.18 | 0.620 | 2798162 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2798162 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2798162 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2798162 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.30 | 0.20 | 1.69 | 1.12 | 2798162 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2798162 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2798162 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2798162 |
| 2-Propanone | ppbv | 1.33 | 0.80 | 3.17 | 1.90 | 2798162 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2798162 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2798162 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2798162 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2798162 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2798162 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2798162 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2798162 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2798162 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2798162 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2798162 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2798162 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2798162 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2798162 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2798162 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MV8205 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/CLS/ MAR 10,12 - 113** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2798162 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2798162 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2798162 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2798162 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2798162 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2798162 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2798162 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2798162 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2798162 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2798162 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2798162 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2798162 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2798162 |
| Benzene | ppbv | 0.20 | 0.18 | 0.628 | 0.575 | 2798162 |
| Toluene | ppbv | 0.25 | 0.20 | 0.934 | 0.753 | 2798162 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2798162 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2798162 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2798162 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2798162 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2798162 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2798162 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2798162 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2798162 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2798162 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2798162 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2798162 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2798162 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2798162 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2798162 |

QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| | | | | | | |
|---|---|---|---|---|---|---|
| Maxxam ID | | MV8205 | | | | |
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/CLS/ MAR 10,12 - 113** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2798162 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2798162 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 92 | | N/A | N/A | 2798162 |
| D5-Chlorobenzene | % | 86 | | N/A | N/A | 2798162 |
| Difluorobenzene | % | 92 | | N/A | N/A | 2798162 |

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


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MV8206 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/PORT/ MAR 10,12 - 7845** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2798162 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2798162 |
| Propene | ppbv | <1.3 | 1.3 | <2.27 | 2.27 | 2798162 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2798162 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2798162 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.70 | 0.20 | 3.45 | 0.989 | 2798162 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2798162 |
| Chloromethane | ppbv | 0.57 | 0.30 | 1.19 | 0.620 | 2798162 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2798162 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2798162 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2798162 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.29 | 0.20 | 1.64 | 1.12 | 2798162 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2798162 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2798162 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2798162 |
| 2-Propanone | ppbv | 1.18 | 0.80 | 2.79 | 1.90 | 2798162 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2798162 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2798162 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2798162 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2798162 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2798162 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2798162 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2798162 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2798162 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2798162 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2798162 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2798162 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2798162 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2798162 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2798162 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MV8206 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/PORT/ MAR 10,12 - 7845** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2798162 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2798162 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2798162 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2798162 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2798162 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2798162 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2798162 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2798162 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2798162 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2798162 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2798162 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2798162 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2798162 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2798162 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2798162 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2798162 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2798162 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2798162 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2798162 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2798162 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2798162 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2798162 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2798162 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2798162 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2798162 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2798162 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2798162 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2798162 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2798162 |

QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| | | | | | | |
|---|---|---|---|---|---|---|
| Maxxam ID | | MV8206 | | | | |
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/PORT/ MAR 10,12 - 7845** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2798162 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2798162 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 92 | | N/A | N/A | 2798162 |
| D5-Chlorobenzene | % | 85 | | N/A | N/A | 2798162 |
| Difluorobenzene | % | 92 | | N/A | N/A | 2798162 |

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


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Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

## Test Summary

**Maxxam ID** MV8205 **Collected** 2012/03/10
**Sample ID** LICA VOC/CLS/ MAR 10,12 - 113 **Shipped**
**Matrix** AIR **Received** 2012/03/20

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2798164 | N/A | 2012/03/21 | MELANIE MABINI |
| Volatile Organics in Air (TO-15) | GC/MS | 2798162 | N/A | 2012/03/21 | MELANIE MABINI |

**Maxxam ID** MV8206 **Collected** 2012/03/10
**Sample ID** LICA VOC/PORT/ MAR 10,12 - 7845 **Shipped**
**Matrix** AIR **Received** 2012/03/20

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2798164 | N/A | 2012/03/21 | MELANIE MABINI |
| Volatile Organics in Air (TO-15) | GC/MS | 2798162 | N/A | 2012/03/21 | MELANIE MABINI |


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Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

**GENERAL COMMENTS**

Sample MV8206-01: Increase MDL for propene due to matrix interference on a possible positive.

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


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

# Quality Assurance Report

Maxxam Job Number: GB238766

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2798162 | MM2 | Spiked Blank | Bromochloromethane | 2012/03/21 | | 110 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/21 | | 110 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/21 | | 113 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/21 | | 109 | % | 70 - 130 |
| | | | Carbon Disulfide | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Propene | 2012/03/21 | | 112 | % | 70 - 130 |
| | | | Vinyl Acetate | 2012/03/21 | | 115 | % | 70 - 130 |
| | | | Vinyl Bromide | 2012/03/21 | | 111 | % | 70 - 130 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/21 | | 111 | % | 70 - 130 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/21 | | 125 | % | 70 - 130 |
| | | | Chloromethane | 2012/03/21 | | 114 | % | 70 - 130 |
| | | | Vinyl Chloride | 2012/03/21 | | 110 | % | 70 - 130 |
| | | | Chloroethane | 2012/03/21 | | 105 | % | 70 - 130 |
| | | | 1,3-Butadiene | 2012/03/21 | | 115 | % | 70 - 130 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/21 | | 98 | % | 70 - 130 |
| | | | Trichlorotrifluoroethane | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Ethanol (ethyl alcohol) | 2012/03/21 | | 99 | % | 70 - 130 |
| | | | 2-propanol | 2012/03/21 | | 108 | % | 70 - 130 |
| | | | 2-Propanone | 2012/03/21 | | 111 | % | 70 - 130 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/21 | | 95 | % | 70 - 130 |
| | | | Methyl Isobutyl Ketone | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/21 | | 107 | % | 70 - 130 |
| | | | Ethyl Acetate | 2012/03/21 | | 110 | % | 70 - 130 |
| | | | 1,1-Dichloroethylene | 2012/03/21 | | 102 | % | 70 - 130 |
| | | | cis-1,2-Dichloroethylene | 2012/03/21 | | 103 | % | 70 - 130 |
| | | | trans-1,2-Dichloroethylene | 2012/03/21 | | 107 | % | 70 - 130 |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/21 | | 95 | % | 70 - 130 |
| | | | Chloroform | 2012/03/21 | | 99 | % | 70 - 130 |
| | | | Carbon Tetrachloride | 2012/03/21 | | 102 | % | 70 - 130 |
| | | | 1,1-Dichloroethane | 2012/03/21 | | 99 | % | 70 - 130 |
| | | | 1,2-Dichloroethane | 2012/03/21 | | 102 | % | 70 - 130 |
| | | | Ethylene Dibromide | 2012/03/21 | | 105 | % | 70 - 130 |
| | | | 1,1,1-Trichloroethane | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | 1,1,2-Trichloroethane | 2012/03/21 | | 100 | % | 70 - 130 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/21 | | 103 | % | 70 - 130 |
| | | | cis-1,3-Dichloropropene | 2012/03/21 | | 106 | % | 70 - 130 |
| | | | trans-1,3-Dichloropropene | 2012/03/21 | | 118 | % | 70 - 130 |
| | | | 1,2-Dichloropropane | 2012/03/21 | | 100 | % | 70 - 130 |
| | | | Bromomethane | 2012/03/21 | | 106 | % | 70 - 130 |
| | | | Bromoform | 2012/03/21 | | 112 | % | 70 - 130 |
| | | | Bromodichloromethane | 2012/03/21 | | 106 | % | 70 - 130 |
| | | | Dibromochloromethane | 2012/03/21 | | 107 | % | 70 - 130 |
| | | | Heptane | 2012/03/21 | | 110 | % | 70 - 130 |
| | | | Trichloroethylene | 2012/03/21 | | 97 | % | 70 - 130 |
| | | | Tetrachloroethylene | 2012/03/21 | | 97 | % | 70 - 130 |
| | | | Benzene | 2012/03/21 | | 99 | % | 70 - 130 |
| | | | Toluene | 2012/03/21 | | 102 | % | 70 - 130 |
| | | | Ethylbenzene | 2012/03/21 | | 98 | % | 70 - 130 |
| | | | p+m-Xylene | 2012/03/21 | | 97 | % | 70 - 130 |
| | | | o-Xylene | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Styrene | 2012/03/21 | | 95 | % | 70 - 130 |
| | | | 1,3,5-Trimethylbenzene | 2012/03/21 | | 103 | % | 70 - 130 |
| | | | 1,2,4-Trimethylbenzene | 2012/03/21 | | 104 | % | 70 - 130 |
| | | | 4-ethyltoluene | 2012/03/21 | | 113 | % | 70 - 130 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB238766

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2798162 | MM2 | Spiked Blank | Chlorobenzene | 2012/03/21 | | 96 | % | 70 - 130 |
| | | | Benzyl chloride | 2012/03/21 | | 129 | % | 70 - 130 |
| | | | 1,3-Dichlorobenzene | 2012/03/21 | | 109 | % | 70 - 130 |
| | | | 1,4-Dichlorobenzene | 2012/03/21 | | 113 | % | 70 - 130 |
| | | | 1,2-Dichlorobenzene | 2012/03/21 | | 108 | % | 70 - 130 |
| | | | 1,2,4-Trichlorobenzene | 2012/03/21 | | 114 | % | 70 - 130 |
| | | | Hexachlorobutadiene | 2012/03/21 | | 113 | % | 70 - 130 |
| | | | Hexane | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Cyclohexane | 2012/03/21 | | 105 | % | 70 - 130 |
| | | | Tetrahydrofuran | 2012/03/21 | | 108 | % | 70 - 130 |
| | | | 1,4-Dioxane | 2012/03/21 | | 97 | % | 70 - 130 |
| | | Method Blank | Bromochloromethane | 2012/03/21 | | 94 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/21 | | 87 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/21 | | 95 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Carbon Disulfide | 2012/03/21 | <0.50 | | ppbv | |
| | | | Propene | 2012/03/21 | <0.30 | | ppbv | |
| | | | Vinyl Acetate | 2012/03/21 | <0.20 | | ppbv | |
| | | | Vinyl Bromide | 2012/03/21 | <0.20 | | ppbv | |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/21 | <0.20 | | ppbv | |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/21 | <0.17 | | ppbv | |
| | | | Chloromethane | 2012/03/21 | <0.30 | | ppbv | |
| | | | Vinyl Chloride | 2012/03/21 | <0.18 | | ppbv | |
| | | | Chloroethane | 2012/03/21 | <0.30 | | ppbv | |
| | | | 1,3-Butadiene | 2012/03/21 | <0.50 | | ppbv | |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/21 | <0.20 | | ppbv | |
| | | | Trichlorotrifluoroethane | 2012/03/21 | <0.15 | | ppbv | |
| | | | Ethanol (ethyl alcohol) | 2012/03/21 | <2.3 | | ppbv | |
| | | | 2-propanol | 2012/03/21 | <3.0 | | ppbv | |
| | | | 2-Propanone | 2012/03/21 | <0.80 | | ppbv | |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/21 | <3.0 | | ppbv | |
| | | | Methyl Isobutyl Ketone | 2012/03/21 | <3.2 | | ppbv | |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/21 | <2.0 | | ppbv | |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/21 | <0.20 | | ppbv | |
| | | | Ethyl Acetate | 2012/03/21 | <2.2 | | ppbv | |
| | | | 1,1-Dichloroethylene | 2012/03/21 | <0.25 | | ppbv | |
| | | | cis-1,2-Dichloroethylene | 2012/03/21 | <0.19 | | ppbv | |
| | | | trans-1,2-Dichloroethylene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/21 | <0.80 | | ppbv | |
| | | | Chloroform | 2012/03/21 | <0.15 | | ppbv | |
| | | | Carbon Tetrachloride | 2012/03/21 | <0.30 | | ppbv | |
| | | | 1,1-Dichloroethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | 1,2-Dichloroethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Ethylene Dibromide | 2012/03/21 | <0.17 | | ppbv | |
| | | | 1,1,1-Trichloroethane | 2012/03/21 | <0.30 | | ppbv | |
| | | | 1,1,2-Trichloroethane | 2012/03/21 | <0.15 | | ppbv | |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | cis-1,3-Dichloropropene | 2012/03/21 | <0.18 | | ppbv | |
| | | | trans-1,3-Dichloropropene | 2012/03/21 | <0.17 | | ppbv | |
| | | | 1,2-Dichloropropane | 2012/03/21 | <0.40 | | ppbv | |
| | | | Bromomethane | 2012/03/21 | <0.18 | | ppbv | |
| | | | Bromoform | 2012/03/21 | <0.20 | | ppbv | |
| | | | Bromodichloromethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Dibromochloromethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Heptane | 2012/03/21 | <0.30 | | ppbv | |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB238766

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2798162 | MM2 | Method Blank | Trichloroethylene | 2012/03/21 | <0.30 | | ppbv | |
| | | | Tetrachloroethylene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Benzene | 2012/03/21 | <0.18 | | ppbv | |
| | | | Toluene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Ethylbenzene | 2012/03/21 | <0.20 | | ppbv | |
| | | | p+m-Xylene | 2012/03/21 | <0.37 | | ppbv | |
| | | | o-Xylene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Styrene | 2012/03/21 | <0.20 | | ppbv | |
| | | | 1,3,5-Trimethylbenzene | 2012/03/21 | <0.50 | | ppbv | |
| | | | 1,2,4-Trimethylbenzene | 2012/03/21 | <0.50 | | ppbv | |
| | | | 4-ethyltoluene | 2012/03/21 | <2.2 | | ppbv | |
| | | | Chlorobenzene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Benzyl chloride | 2012/03/21 | <1.0 | | ppbv | |
| | | | 1,3-Dichlorobenzene | 2012/03/21 | <0.40 | | ppbv | |
| | | | 1,4-Dichlorobenzene | 2012/03/21 | <0.40 | | ppbv | |
| | | | 1,2-Dichlorobenzene | 2012/03/21 | <0.40 | | ppbv | |
| | | | 1,2,4-Trichlorobenzene | 2012/03/21 | <2.0 | | ppbv | |
| | | | Hexachlorobutadiene | 2012/03/21 | <3.0 | | ppbv | |
| | | | Hexane | 2012/03/21 | <0.30 | | ppbv | |
| | | | Cyclohexane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Tetrahydrofuran | 2012/03/21 | <0.40 | | ppbv | |
| | | | 1,4-Dioxane | 2012/03/21 | <2.0 | | ppbv | |
| | | | Xylene (Total) | 2012/03/21 | <0.60 | | ppbv | |
| | | RPD - Sample/Sample Dup | 2,2,4-Trimethylpentane | 2012/03/21 | NC | | % | 25 |
| | | | Carbon Disulfide | 2012/03/21 | NC | | % | 25 |
| | | | Propene | 2012/03/21 | NC | | % | 25 |
| | | | Vinyl Acetate | 2012/03/21 | NC | | % | 25 |
| | | | Vinyl Bromide | 2012/03/21 | NC | | % | 25 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/21 | NC | | % | 25 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/21 | NC | | % | 25 |
| | | | Chloromethane | 2012/03/21 | NC | | % | 25 |
| | | | Vinyl Chloride | 2012/03/21 | NC | | % | 25 |
| | | | Chloroethane | 2012/03/21 | NC | | % | 25 |
| | | | 1,3-Butadiene | 2012/03/21 | NC | | % | 25 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/21 | NC | | % | 25 |
| | | | Trichlorotrifluoroethane | 2012/03/21 | NC | | % | 25 |
| | | | Ethanol (ethyl alcohol) | 2012/03/21 | 0.6 | | % | 25 |
| | | | 2-propanol | 2012/03/21 | NC | | % | 25 |
| | | | 2-Propanone | 2012/03/21 | 3.1 | | % | 25 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/21 | NC | | % | 25 |
| | | | Methyl Isobutyl Ketone | 2012/03/21 | NC | | % | 25 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/21 | NC | | % | 25 |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/21 | NC | | % | 25 |
| | | | Ethyl Acetate | 2012/03/21 | NC | | % | 25 |
| | | | 1,1-Dichloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | cis-1,2-Dichloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | trans-1,2-Dichloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/21 | NC | | % | 25 |
| | | | Chloroform | 2012/03/21 | NC | | % | 25 |
| | | | Carbon Tetrachloride | 2012/03/21 | NC | | % | 25 |
| | | | 1,1-Dichloroethane | 2012/03/21 | NC | | % | 25 |
| | | | 1,2-Dichloroethane | 2012/03/21 | NC | | % | 25 |
| | | | Ethylene Dibromide | 2012/03/21 | NC | | % | 25 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB238766

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2798162 | MM2 | RPD - Sample/Sample Dup | 1,1,1-Trichloroethane | 2012/03/21 | NC | | % | 25 |
| | | | 1,1,2-Trichloroethane | 2012/03/21 | NC | | % | 25 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/21 | NC | | % | 25 |
| | | | cis-1,3-Dichloropropene | 2012/03/21 | NC | | % | 25 |
| | | | trans-1,3-Dichloropropene | 2012/03/21 | NC | | % | 25 |
| | | | 1,2-Dichloropropane | 2012/03/21 | NC | | % | 25 |
| | | | Bromomethane | 2012/03/21 | NC | | % | 25 |
| | | | Bromoform | 2012/03/21 | NC | | % | 25 |
| | | | Bromodichloromethane | 2012/03/21 | NC | | % | 25 |
| | | | Dibromochloromethane | 2012/03/21 | NC | | % | 25 |
| | | | Heptane | 2012/03/21 | NC | | % | 25 |
| | | | Trichloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | Tetrachloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | Benzene | 2012/03/21 | NC | | % | 25 |
| | | | Toluene | 2012/03/21 | 4.1 | | % | 25 |
| | | | Ethylbenzene | 2012/03/21 | NC | | % | 25 |
| | | | p+m-Xylene | 2012/03/21 | NC | | % | 25 |
| | | | o-Xylene | 2012/03/21 | NC | | % | 25 |
| | | | Styrene | 2012/03/21 | NC | | % | 25 |
| | | | 1,3,5-Trimethylbenzene | 2012/03/21 | NC | | % | 25 |
| | | | 1,2,4-Trimethylbenzene | 2012/03/21 | NC | | % | 25 |
| | | | 4-ethyltoluene | 2012/03/21 | NC | | % | 25 |
| | | | Chlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | Benzyl chloride | 2012/03/21 | NC | | % | 25 |
| | | | 1,3-Dichlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | 1,4-Dichlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | 1,2-Dichlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | 1,2,4-Trichlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | Hexachlorobutadiene | 2012/03/21 | NC | | % | 25 |
| | | | Hexane | 2012/03/21 | NC | | % | 25 |
| | | | Cyclohexane | 2012/03/21 | NC | | % | 25 |
| | | | Tetrahydrofuran | 2012/03/21 | NC | | % | 25 |
| | | | 1,4-Dioxane | 2012/03/21 | NC | | % | 25 |
| | | | Xylene (Total) | 2012/03/21 | NC | | % | 25 |

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.


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# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA
Location: Cold Lake South
Station ID: Lica 1
Field Sample ID: LICA VOC/ CLS /Mar 16, 2012

Sampler s/n: 6167
Canister ID: 7822
Canister Installation Date/Time: Mar 15 , 2012 @ 12:41 mst
Canister Removal Date/Time: Mar 20 , 2012 @ 14:01 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 16-Mar-12 | 03/16/2012 0:00 | 03/17/2012 0:00 | 24.00 |

| Flow Settings | | |
|---|---|---|
| Meter Reading (sccm) | Pot Set Pt. | Pump Pressure Setting (psig) |
| 10.0 | 646 | 25 |

| Canister Information | |
|---|---|
| Initial Canister Vacuum (inHg) | Final Canister Pressure (psig) |
| -28 | 24 |

**Canister valve open prior to sampling?: YES /** NO
**Timer set to 0.00 minutes prior to sampling? YES /** NO
**Canister valve closed prior to disconnection?: YES /** NO

Comments: System leak check prior to sampling. COC # 10877

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

Your C.O.C. #: 10877

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

**Report Date: 2012/04/03**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B242436**
**Received: 2012/03/27, 09:50**

Sample Matrix: AIR
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | 2 | N/A | 2012/03/29 | BRL SOP-00304 | EPA TO-15 |
| Volatile Organics in Air (TO-15) (1) | 2 | N/A | 2012/03/29 | BRL SOP-00304 | EPA TO-15 |

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1


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Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

## RESULTS OF ANALYSES OF AIR

| Maxxam ID | | MX5110 | MX5111 | |
|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | 2012/03/16 | |
| COC Number | | 10877 | 10877 | |
| | **Units** | **LICAVOC/CLS/ MAR16,12 / 252** | **LICAVOC/PORT/ MAR16,12 / 7822** | **QC Batch** |
| **Volatile Organics** | | | | |
| Pressure on Receipt | psig | 22 | 23 | 2806819 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX5110 | | | MX5111 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | | 2012/03/16 | | | | |
| COC Number | | 10877 | | | 10877 | | | | |
| | **Units** | **LICAVOC/CLS/ MAR16,12 / 252** | **ug/m3** | **DL (ug/m3)** | **LICAVOC/PORT/ MAR16,12 / 7822** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | <0.934 | 0.934 | <0.20 | 0.20 | <0.934 | 0.934 | 2806846 |
| Carbon Disulfide | ppbv | <0.50 | <1.56 | 1.56 | <0.50 | 0.50 | <1.56 | 1.56 | 2806846 |
| Propene | ppbv | <0.30 | <0.516 | 0.516 | <0.30 | 0.30 | <0.516 | 0.516 | 2806846 |
| Vinyl Acetate | ppbv | <0.20 | <0.704 | 0.704 | <0.20 | 0.20 | <0.704 | 0.704 | 2806846 |
| Vinyl Bromide | ppbv | <0.20 | <0.875 | 0.875 | <0.20 | 0.20 | <0.875 | 0.875 | 2806846 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.61 | 3.01 | 0.989 | 0.60 | 0.20 | 2.96 | 0.989 | 2806846 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | <1.19 | 1.19 | <0.17 | 0.17 | <1.19 | 1.19 | 2806846 |
| Chloromethane | ppbv | 0.55 | 1.13 | 0.620 | 0.54 | 0.30 | 1.13 | 0.620 | 2806846 |
| Vinyl Chloride | ppbv | <0.18 | <0.460 | 0.460 | <0.18 | 0.18 | <0.460 | 0.460 | 2806846 |
| Chloroethane | ppbv | <0.30 | <0.792 | 0.792 | <0.30 | 0.30 | <0.792 | 0.792 | 2806846 |
| 1,3-Butadiene | ppbv | <0.50 | <1.11 | 1.11 | <0.50 | 0.50 | <1.11 | 1.11 | 2806846 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.30 | 1.68 | 1.12 | 0.30 | 0.20 | 1.67 | 1.12 | 2806846 |
| Trichlorotrifluoroethane | ppbv | <0.15 | <1.15 | 1.15 | <0.15 | 0.15 | <1.15 | 1.15 | 2806846 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | <4.33 | 4.33 | <2.3 | 2.3 | <4.33 | 4.33 | 2806846 |
| 2-propanol | ppbv | <3.0 | <7.37 | 7.37 | <3.0 | 3.0 | <7.37 | 7.37 | 2806846 |
| 2-Propanone | ppbv | 2.20 | 5.24 | 1.90 | 2.22 | 0.80 | 5.26 | 1.90 | 2806846 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | <8.85 | 8.85 | <3.0 | 3.0 | <8.85 | 8.85 | 2806846 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | <13.1 | 13.1 | <3.2 | 3.2 | <13.1 | 13.1 | 2806846 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | <8.19 | 8.19 | <2.0 | 2.0 | <8.19 | 8.19 | 2806846 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | <0.721 | 0.721 | <0.20 | 0.20 | <0.721 | 0.721 | 2806846 |
| Ethyl Acetate | ppbv | <2.2 | <7.93 | 7.93 | <2.2 | 2.2 | <7.93 | 7.93 | 2806846 |
| 1,1-Dichloroethylene | ppbv | <0.25 | <0.991 | 0.991 | <0.25 | 0.25 | <0.991 | 0.991 | 2806846 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | <0.753 | 0.753 | <0.19 | 0.19 | <0.753 | 0.753 | 2806846 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | <0.793 | 0.793 | <0.20 | 0.20 | <0.793 | 0.793 | 2806846 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | <2.78 | 2.78 | <0.80 | 0.80 | <2.78 | 2.78 | 2806846 |
| Chloroform | ppbv | <0.15 | <0.732 | 0.732 | <0.15 | 0.15 | <0.732 | 0.732 | 2806846 |
| Carbon Tetrachloride | ppbv | <0.30 | <1.89 | 1.89 | <0.30 | 0.30 | <1.89 | 1.89 | 2806846 |
| 1,1-Dichloroethane | ppbv | <0.20 | <0.809 | 0.809 | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| 1,2-Dichloroethane | ppbv | <0.20 | <0.809 | 0.809 | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| Ethylene Dibromide | ppbv | <0.17 | <1.31 | 1.31 | <0.17 | 0.17 | <1.31 | 1.31 | 2806846 |
| 1,1,1-Trichloroethane | ppbv | <0.30 | <1.64 | 1.64 | <0.30 | 0.30 | <1.64 | 1.64 | 2806846 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX5110 | | | MX5111 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | | 2012/03/16 | | | | |
| COC Number | | 10877 | | | 10877 | | | | |
| | **Units** | **LICAVOC/CLS/ MAR16,12 / 252** | **ug/m3** | **DL (ug/m3)** | **LICAVOC/PORT/ MAR16,12 / 7822** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,2-Trichloroethane | ppbv | <0.15 | <0.818 | 0.818 | <0.15 | 0.15 | <0.818 | 0.818 | 2806846 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | <1.37 | 1.37 | <0.20 | 0.20 | <1.37 | 1.37 | 2806846 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | <0.817 | 0.817 | <0.18 | 0.18 | <0.817 | 0.817 | 2806846 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | <0.772 | 0.772 | <0.17 | 0.17 | <0.772 | 0.772 | 2806846 |
| 1,2-Dichloropropane | ppbv | <0.40 | <1.85 | 1.85 | <0.40 | 0.40 | <1.85 | 1.85 | 2806846 |
| Bromomethane | ppbv | <0.18 | <0.699 | 0.699 | <0.18 | 0.18 | <0.699 | 0.699 | 2806846 |
| Bromoform | ppbv | <0.20 | <2.07 | 2.07 | <0.20 | 0.20 | <2.07 | 2.07 | 2806846 |
| Bromodichloromethane | ppbv | <0.20 | <1.34 | 1.34 | <0.20 | 0.20 | <1.34 | 1.34 | 2806846 |
| Dibromochloromethane | ppbv | <0.20 | <1.70 | 1.70 | <0.20 | 0.20 | <1.70 | 1.70 | 2806846 |
| Heptane | ppbv | <0.30 | <1.23 | 1.23 | <0.30 | 0.30 | <1.23 | 1.23 | 2806846 |
| Trichloroethylene | ppbv | <0.30 | <1.61 | 1.61 | <0.30 | 0.30 | <1.61 | 1.61 | 2806846 |
| Tetrachloroethylene | ppbv | <0.20 | <1.36 | 1.36 | <0.20 | 0.20 | <1.36 | 1.36 | 2806846 |
| Benzene | ppbv | <0.18 | <0.575 | 0.575 | 0.19 | 0.18 | 0.617 | 0.575 | 2806846 |
| Toluene | ppbv | <0.20 | <0.753 | 0.753 | 0.20 | 0.20 | 0.754 | 0.753 | 2806846 |
| Ethylbenzene | ppbv | <0.20 | <0.868 | 0.868 | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| p+m-Xylene | ppbv | <0.37 | <1.61 | 1.61 | <0.37 | 0.37 | <1.61 | 1.61 | 2806846 |
| o-Xylene | ppbv | <0.20 | <0.868 | 0.868 | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| Styrene | ppbv | <0.20 | <0.852 | 0.852 | <0.20 | 0.20 | <0.852 | 0.852 | 2806846 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | <2.46 | 2.46 | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | <2.46 | 2.46 | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 4-ethyltoluene | ppbv | <2.2 | <10.8 | 10.8 | <2.2 | 2.2 | <10.8 | 10.8 | 2806846 |
| Chlorobenzene | ppbv | <0.20 | <0.921 | 0.921 | <0.20 | 0.20 | <0.921 | 0.921 | 2806846 |
| Benzyl chloride | ppbv | <1.0 | <5.18 | 5.18 | <1.0 | 1.0 | <5.18 | 5.18 | 2806846 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | <2.40 | 2.40 | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | <2.40 | 2.40 | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | <2.40 | 2.40 | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | <14.8 | 14.8 | <2.0 | 2.0 | <14.8 | 14.8 | 2806846 |
| Hexachlorobutadiene | ppbv | <3.0 | <32.0 | 32.0 | <3.0 | 3.0 | <32.0 | 32.0 | 2806846 |
| Hexane | ppbv | <0.30 | <1.06 | 1.06 | <0.30 | 0.30 | <1.06 | 1.06 | 2806846 |
| Cyclohexane | ppbv | <0.20 | <0.688 | 0.688 | <0.20 | 0.20 | <0.688 | 0.688 | 2806846 |
| Tetrahydrofuran | ppbv | <0.40 | <1.18 | 1.18 | <0.40 | 0.40 | <1.18 | 1.18 | 2806846 |
| 1,4-Dioxane | ppbv | <2.0 | <7.21 | 7.21 | <2.0 | 2.0 | <7.21 | 7.21 | 2806846 |
| Xylene (Total) | ppbv | <0.60 | <2.61 | 2.61 | <0.60 | 0.60 | <2.61 | 2.61 | 2806846 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX5110 | | | MX5111 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | | 2012/03/16 | | | | |
| COC Number | | 10877 | | | 10877 | | | | |
| | **Units** | **LICAVOC/CLS/ MAR16,12 / 252** | **ug/m3** | **DL (ug/m3)** | **LICAVOC/PORT/ MAR16,12 / 7822** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Surrogate Recovery (%)** | | | | | | | | | |
| Bromochloromethane | % | 68 | N/A | N/A | 65 | | N/A | N/A | 2806846 |
| D5-Chlorobenzene | % | 69 | N/A | N/A | 66 | | N/A | N/A | 2806846 |
| Difluorobenzene | % | 68 | N/A | N/A | 65 | | N/A | N/A | 2806846 |

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


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Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

## Test Summary

**Maxxam ID** MX5110 **Collected** 2012/03/16
**Sample ID** LICAVOC/CLS/ MAR16,12 / 252 **Shipped**
**Matrix** AIR **Received** 2012/03/27

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2806819 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2806846 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |

**Maxxam ID** MX5111 **Collected** 2012/03/16
**Sample ID** LICAVOC/PORT/ MAR16,12 / 7822 **Shipped**
**Matrix** AIR **Received** 2012/03/27

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2806819 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2806846 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |


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Maxxam Job #: B242436
Report Date: 2012/04/03

**GENERAL COMMENTS**

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


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

# Quality Assurance Report

Maxxam Job Number: GB242436

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Spiked Blank | Bromochloromethane | 2012/03/29 | | 89 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/29 | | 91 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/29 | | 90 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Carbon Disulfide | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | Propene | 2012/03/29 | | 91 | % | 70 - 130 |
| | | | Vinyl Acetate | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | Vinyl Bromide | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/29 | | 109 | % | 70 - 130 |
| | | | Chloromethane | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | Vinyl Chloride | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | Chloroethane | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | 1,3-Butadiene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | Trichlorotrifluoroethane | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | Ethanol (ethyl alcohol) | 2012/03/29 | | 86 | % | 70 - 130 |
| | | | 2-propanol | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | 2-Propanone | 2012/03/29 | | 108 | % | 70 - 130 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | Methyl Isobutyl Ketone | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Ethyl Acetate | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | 1,1-Dichloroethylene | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | cis-1,2-Dichloroethylene | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | trans-1,2-Dichloroethylene | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | Chloroform | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Carbon Tetrachloride | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | 1,1-Dichloroethane | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | 1,2-Dichloroethane | 2012/03/29 | | 103 | % | 70 - 130 |
| | | | Ethylene Dibromide | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,1,1-Trichloroethane | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,1,2-Trichloroethane | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | cis-1,3-Dichloropropene | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | trans-1,3-Dichloropropene | 2012/03/29 | | 105 | % | 70 - 130 |
| | | | 1,2-Dichloropropane | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Bromomethane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Bromoform | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | Bromodichloromethane | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | Dibromochloromethane | 2012/03/29 | | 102 | % | 70 - 130 |
| | | | Heptane | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | Trichloroethylene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Tetrachloroethylene | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Benzene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Toluene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Ethylbenzene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | p+m-Xylene | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | o-Xylene | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | Styrene | 2012/03/29 | | 79 | % | 70 - 130 |
| | | | 1,3,5-Trimethylbenzene | 2012/03/29 | | 91 | % | 70 - 130 |
| | | | 1,2,4-Trimethylbenzene | 2012/03/29 | | 90 | % | 70 - 130 |
| | | | 4-ethyltoluene | 2012/03/29 | | 98 | % | 70 - 130 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB242436

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Spiked Blank | Chlorobenzene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Benzyl chloride | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | 1,3-Dichlorobenzene | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | 1,4-Dichlorobenzene | 2012/03/29 | | 90 | % | 70 - 130 |
| | | | 1,2-Dichlorobenzene | 2012/03/29 | | 88 | % | 70 - 130 |
| | | | 1,2,4-Trichlorobenzene | 2012/03/29 | | 102 | % | 70 - 130 |
| | | | Hexachlorobutadiene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Hexane | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Cyclohexane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Tetrahydrofuran | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,4-Dioxane | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | Xylene (Total) | 2012/03/29 | | 93 | % | 70 - 130 |
| | | Method Blank | Bromochloromethane | 2012/03/29 | | 82 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/29 | | 83 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/29 | | 82 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Carbon Disulfide | 2012/03/29 | <0.50 | | ppbv | |
| | | | Propene | 2012/03/29 | <0.30 | | ppbv | |
| | | | Vinyl Acetate | 2012/03/29 | <0.20 | | ppbv | |
| | | | Vinyl Bromide | 2012/03/29 | <0.20 | | ppbv | |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/29 | <0.17 | | ppbv | |
| | | | Chloromethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Vinyl Chloride | 2012/03/29 | <0.18 | | ppbv | |
| | | | Chloroethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,3-Butadiene | 2012/03/29 | <0.50 | | ppbv | |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/29 | <0.20 | | ppbv | |
| | | | Trichlorotrifluoroethane | 2012/03/29 | <0.15 | | ppbv | |
| | | | Ethanol (ethyl alcohol) | 2012/03/29 | <2.3 | | ppbv | |
| | | | 2-propanol | 2012/03/29 | <3.0 | | ppbv | |
| | | | 2-Propanone | 2012/03/29 | <0.80 | | ppbv | |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/29 | <3.0 | | ppbv | |
| | | | Methyl Isobutyl Ketone | 2012/03/29 | <3.2 | | ppbv | |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/29 | <2.0 | | ppbv | |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethyl Acetate | 2012/03/29 | <2.2 | | ppbv | |
| | | | 1,1-Dichloroethylene | 2012/03/29 | <0.25 | | ppbv | |
| | | | cis-1,2-Dichloroethylene | 2012/03/29 | <0.19 | | ppbv | |
| | | | trans-1,2-Dichloroethylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/29 | <0.80 | | ppbv | |
| | | | Chloroform | 2012/03/29 | <0.15 | | ppbv | |
| | | | Carbon Tetrachloride | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,1-Dichloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,2-Dichloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethylene Dibromide | 2012/03/29 | <0.17 | | ppbv | |
| | | | 1,1,1-Trichloroethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,1,2-Trichloroethane | 2012/03/29 | <0.15 | | ppbv | |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | cis-1,3-Dichloropropene | 2012/03/29 | <0.18 | | ppbv | |
| | | | trans-1,3-Dichloropropene | 2012/03/29 | <0.17 | | ppbv | |
| | | | 1,2-Dichloropropane | 2012/03/29 | <0.40 | | ppbv | |
| | | | Bromomethane | 2012/03/29 | <0.18 | | ppbv | |
| | | | Bromoform | 2012/03/29 | <0.20 | | ppbv | |
| | | | Bromodichloromethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Dibromochloromethane | 2012/03/29 | <0.20 | | ppbv | |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB242436

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Method Blank | Heptane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Trichloroethylene | 2012/03/29 | <0.30 | | ppbv | |
| | | | Tetrachloroethylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Benzene | 2012/03/29 | <0.18 | | ppbv | |
| | | | Toluene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethylbenzene | 2012/03/29 | <0.20 | | ppbv | |
| | | | p+m-Xylene | 2012/03/29 | <0.37 | | ppbv | |
| | | | o-Xylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Styrene | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,3,5-Trimethylbenzene | 2012/03/29 | <0.50 | | ppbv | |
| | | | 1,2,4-Trimethylbenzene | 2012/03/29 | <0.50 | | ppbv | |
| | | | 4-ethyltoluene | 2012/03/29 | <2.2 | | ppbv | |
| | | | Chlorobenzene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Benzyl chloride | 2012/03/29 | <1.0 | | ppbv | |
| | | | 1,3-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,4-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,2-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,2,4-Trichlorobenzene | 2012/03/29 | <2.0 | | ppbv | |
| | | | Hexachlorobutadiene | 2012/03/29 | <3.0 | | ppbv | |
| | | | Hexane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Cyclohexane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Tetrahydrofuran | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,4-Dioxane | 2012/03/29 | <2.0 | | ppbv | |
| | | | Xylene (Total) | 2012/03/29 | <0.60 | | ppbv | |
| | | RPD - Sample/Sample Dup | Benzene | 2012/03/29 | 2.5 | | % | 25 |
| | | | Toluene | 2012/03/29 | 1.0 | | % | 25 |
| | | | Ethylbenzene | 2012/03/29 | 1 | | % | 25 |
| | | | p+m-Xylene | 2012/03/29 | 0.4 | | % | 25 |
| | | | o-Xylene | 2012/03/29 | 0.9 | | % | 25 |
| | | | Xylene (Total) | 2012/03/29 | 0.5 | | % | 25 |

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA
Location: Cold Lake South
Station ID: Lica 1
Field Sample ID: LICA VOC/ CLS /Mar 22, 2012

Sampler s/n: 6167
Canister ID: 308
Canister Installation Date/Time: Mar 20 , 2012 @ 14:05 mst
Canister Removal Date/Time: Mar 23 , 2012 @ 15:09 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 22-Mar-12 | 03/22/2012 0:00 | 03/23/2012 0:00 | 24.00 |

| Flow Settings | | |
|---|---|---|
| Meter Reading (sccm) | Pot Set Pt. | Pump Pressure Setting (psig) |
| 10.0 | 646 | 25 |

| Canister Information | |
|---|---|
| Initial Canister Vacuum (inHg) | Final Canister Pressure (psig) |
| -28 | 24 |

**Canister valve open prior to sampling?: YES /** NO
**Timer set to 0.00 minutes prior to sampling? YES /** NO
**Canister valve closed prior to disconnection?: YES /** NO

Comments: System leak check prior to sampling. COC # 10842

Technician Signiture: Ting Xu

Success Through Science®

Your C.O.C. #: 10842

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

**Report Date: 2012/04/03**

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B243173**
**Received: 2012/03/28, 09:45**

Sample Matrix: AIR
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | 2 | N/A | 2012/03/29 | BRL SOP-00304 | EPA TO-15 |
| Volatile Organics in Air (TO-15) (1) | 2 | N/A | 2012/03/29 | BRL SOP-00304 | EPA TO-15 |

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

Maxxam Analytics

Maxxam Job #: B243173
Report Date: 2012/04/03

## RESULTS OF ANALYSES OF AIR

| Maxxam ID | | MX8248 | MX8249 | |
|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | 2012/03/22 00:00 | |
| COC Number | | 10842 | 10842 | |
| | **Units** | **LICA VOC\CLS\MAR 22,12 / 308** | **LICA VOC\PORT\MAR / 302** | **QC Batch** |
| **Volatile Organics** | | | | |
| Pressure on Receipt | psig | 14 | 13 | 2806819 |

QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8248 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\CLS\MAR 22,12 / 308** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2806846 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2806846 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2806846 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2806846 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2806846 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.60 | 0.20 | 2.97 | 0.989 | 2806846 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2806846 |
| Chloromethane | ppbv | 0.46 | 0.30 | 0.954 | 0.620 | 2806846 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2806846 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2806846 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2806846 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.31 | 0.20 | 1.75 | 1.12 | 2806846 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2806846 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2806846 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2806846 |
| 2-Propanone | ppbv | 1.64 | 0.80 | 3.89 | 1.90 | 2806846 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2806846 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2806846 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2806846 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2806846 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2806846 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2806846 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2806846 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2806846 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2806846 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2806846 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2806846 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2806846 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8248 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\CLS\MAR 22,12 / 308** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2806846 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2806846 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2806846 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2806846 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2806846 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2806846 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2806846 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2806846 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2806846 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2806846 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2806846 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2806846 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2806846 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2806846 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2806846 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2806846 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2806846 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2806846 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2806846 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2806846 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2806846 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2806846 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2806846 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2806846 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2806846 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B243173
Report Date: 2012/04/03

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8248 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\CLS\MAR 22,12 / 308** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2806846 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2806846 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 63 | | N/A | N/A | 2806846 |
| D5-Chlorobenzene | % | 64 | | N/A | N/A | 2806846 |
| Difluorobenzene | % | 63 | | N/A | N/A | 2806846 |

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


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Maxxam Job #: B243173
Report Date: 2012/04/03

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8249 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\PORT\MAR / 302** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2806846 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2806846 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2806846 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2806846 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2806846 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.63 | 0.20 | 3.11 | 0.989 | 2806846 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2806846 |
| Chloromethane | ppbv | 0.52 | 0.30 | 1.06 | 0.620 | 2806846 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2806846 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2806846 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2806846 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.32 | 0.20 | 1.78 | 1.12 | 2806846 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2806846 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2806846 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2806846 |
| 2-Propanone | ppbv | 2.44 | 0.80 | 5.80 | 1.90 | 2806846 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2806846 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2806846 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2806846 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2806846 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2806846 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2806846 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2806846 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2806846 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2806846 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2806846 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2806846 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2806846 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8249 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\PORT\MAR / 302** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2806846 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2806846 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2806846 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2806846 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2806846 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2806846 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2806846 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2806846 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2806846 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2806846 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2806846 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2806846 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2806846 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2806846 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2806846 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2806846 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2806846 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2806846 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2806846 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2806846 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2806846 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2806846 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2806846 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2806846 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2806846 |

QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8249 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\PORT\MAR / 302** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2806846 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2806846 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 61 | | N/A | N/A | 2806846 |
| D5-Chlorobenzene | % | 62 | | N/A | N/A | 2806846 |
| Difluorobenzene | % | 61 | | N/A | N/A | 2806846 |

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


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Maxxam Analytics

Maxxam Job #: B243173
Report Date: 2012/04/03

## Test Summary

**Maxxam ID** MX8248 **Collected** 2012/03/22
**Sample ID** LICA VOC\CLS\MAR 22,12 / 308 **Shipped**
**Matrix** AIR **Received** 2012/03/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2806819 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2806846 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |

**Maxxam ID** MX8249 **Collected** 2012/03/22
**Sample ID** LICA VOC\PORT\MAR / 302 **Shipped**
**Matrix** AIR **Received** 2012/03/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2806819 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2806846 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |


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Maxxam Analytics

Maxxam Job #: B243173
Report Date: 2012/04/03

**GENERAL COMMENTS**

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


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

# Quality Assurance Report

Maxxam Job Number: GB243173

| QA/QC Batch Num Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|
| 2806846 S_S | Spiked Blank | Bromochloromethane | 2012/03/29 | | 89 | % | 60 - 140 |
| | | D5-Chlorobenzene | 2012/03/29 | | 91 | % | 60 - 140 |
| | | Difluorobenzene | 2012/03/29 | | 90 | % | 60 - 140 |
| | | 2,2,4-Trimethylpentane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | Carbon Disulfide | 2012/03/29 | | 96 | % | 70 - 130 |
| | | Propene | 2012/03/29 | | 91 | % | 70 - 130 |
| | | Vinyl Acetate | 2012/03/29 | | 101 | % | 70 - 130 |
| | | Vinyl Bromide | 2012/03/29 | | 93 | % | 70 - 130 |
| | | Dichlorodifluoromethane (FREON 12) | 2012/03/29 | | 100 | % | 70 - 130 |
| | | 1,2-Dichlorotetrafluoroethane | 2012/03/29 | | 109 | % | 70 - 130 |
| | | Chloromethane | 2012/03/29 | | 98 | % | 70 - 130 |
| | | Vinyl Chloride | 2012/03/29 | | 93 | % | 70 - 130 |
| | | Chloroethane | 2012/03/29 | | 93 | % | 70 - 130 |
| | | 1,3-Butadiene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | Trichlorofluoromethane (FREON 11) | 2012/03/29 | | 99 | % | 70 - 130 |
| | | Trichlorotrifluoroethane | 2012/03/29 | | 98 | % | 70 - 130 |
| | | Ethanol (ethyl alcohol) | 2012/03/29 | | 86 | % | 70 - 130 |
| | | 2-propanol | 2012/03/29 | | 97 | % | 70 - 130 |
| | | 2-Propanone | 2012/03/29 | | 108 | % | 70 - 130 |
| | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/29 | | 92 | % | 70 - 130 |
| | | Methyl Isobutyl Ketone | 2012/03/29 | | 96 | % | 70 - 130 |
| | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/29 | | 97 | % | 70 - 130 |
| | | Methyl t-butyl ether (MTBE) | 2012/03/29 | | 97 | % | 70 - 130 |
| | | Ethyl Acetate | 2012/03/29 | | 100 | % | 70 - 130 |
| | | 1,1-Dichloroethylene | 2012/03/29 | | 100 | % | 70 - 130 |
| | | cis-1,2-Dichloroethylene | 2012/03/29 | | 98 | % | 70 - 130 |
| | | trans-1,2-Dichloroethylene | 2012/03/29 | | 97 | % | 70 - 130 |
| | | Methylene Chloride(Dichloromethane) | 2012/03/29 | | 92 | % | 70 - 130 |
| | | Chloroform | 2012/03/29 | | 97 | % | 70 - 130 |
| | | Carbon Tetrachloride | 2012/03/29 | | 98 | % | 70 - 130 |
| | | 1,1-Dichloroethane | 2012/03/29 | | 96 | % | 70 - 130 |
| | | 1,2-Dichloroethane | 2012/03/29 | | 103 | % | 70 - 130 |
| | | Ethylene Dibromide | 2012/03/29 | | 99 | % | 70 - 130 |
| | | 1,1,1-Trichloroethane | 2012/03/29 | | 99 | % | 70 - 130 |
| | | 1,1,2-Trichloroethane | 2012/03/29 | | 97 | % | 70 - 130 |
| | | 1,1,2,2-Tetrachloroethane | 2012/03/29 | | 93 | % | 70 - 130 |
| | | cis-1,3-Dichloropropene | 2012/03/29 | | 100 | % | 70 - 130 |
| | | trans-1,3-Dichloropropene | 2012/03/29 | | 105 | % | 70 - 130 |
| | | 1,2-Dichloropropane | 2012/03/29 | | 95 | % | 70 - 130 |
| | | Bromomethane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | Bromoform | 2012/03/29 | | 99 | % | 70 - 130 |
| | | Bromodichloromethane | 2012/03/29 | | 101 | % | 70 - 130 |
| | | Dibromochloromethane | 2012/03/29 | | 102 | % | 70 - 130 |
| | | Heptane | 2012/03/29 | | 96 | % | 70 - 130 |
| | | Trichloroethylene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | Tetrachloroethylene | 2012/03/29 | | 97 | % | 70 - 130 |
| | | Benzene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | Toluene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | Ethylbenzene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | p+m-Xylene | 2012/03/29 | | 93 | % | 70 - 130 |
| | | o-Xylene | 2012/03/29 | | 93 | % | 70 - 130 |
| | | Styrene | 2012/03/29 | | 79 | % | 70 - 130 |
| | | 1,3,5-Trimethylbenzene | 2012/03/29 | | 91 | % | 70 - 130 |
| | | 1,2,4-Trimethylbenzene | 2012/03/29 | | 90 | % | 70 - 130 |
| | | 4-ethyltoluene | 2012/03/29 | | 98 | % | 70 - 130 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB243173

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Spiked Blank | Chlorobenzene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Benzyl chloride | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | 1,3-Dichlorobenzene | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | 1,4-Dichlorobenzene | 2012/03/29 | | 90 | % | 70 - 130 |
| | | | 1,2-Dichlorobenzene | 2012/03/29 | | 88 | % | 70 - 130 |
| | | | 1,2,4-Trichlorobenzene | 2012/03/29 | | 102 | % | 70 - 130 |
| | | | Hexachlorobutadiene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Hexane | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Cyclohexane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Tetrahydrofuran | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,4-Dioxane | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | Xylene (Total) | 2012/03/29 | | 93 | % | 70 - 130 |
| | | Method Blank | Bromochloromethane | 2012/03/29 | | 82 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/29 | | 83 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/29 | | 82 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Carbon Disulfide | 2012/03/29 | <0.50 | | ppbv | |
| | | | Propene | 2012/03/29 | <0.30 | | ppbv | |
| | | | Vinyl Acetate | 2012/03/29 | <0.20 | | ppbv | |
| | | | Vinyl Bromide | 2012/03/29 | <0.20 | | ppbv | |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/29 | <0.17 | | ppbv | |
| | | | Chloromethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Vinyl Chloride | 2012/03/29 | <0.18 | | ppbv | |
| | | | Chloroethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,3-Butadiene | 2012/03/29 | <0.50 | | ppbv | |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/29 | <0.20 | | ppbv | |
| | | | Trichlorotrifluoroethane | 2012/03/29 | <0.15 | | ppbv | |
| | | | Ethanol (ethyl alcohol) | 2012/03/29 | <2.3 | | ppbv | |
| | | | 2-propanol | 2012/03/29 | <3.0 | | ppbv | |
| | | | 2-Propanone | 2012/03/29 | <0.80 | | ppbv | |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/29 | <3.0 | | ppbv | |
| | | | Methyl Isobutyl Ketone | 2012/03/29 | <3.2 | | ppbv | |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/29 | <2.0 | | ppbv | |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethyl Acetate | 2012/03/29 | <2.2 | | ppbv | |
| | | | 1,1-Dichloroethylene | 2012/03/29 | <0.25 | | ppbv | |
| | | | cis-1,2-Dichloroethylene | 2012/03/29 | <0.19 | | ppbv | |
| | | | trans-1,2-Dichloroethylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/29 | <0.80 | | ppbv | |
| | | | Chloroform | 2012/03/29 | <0.15 | | ppbv | |
| | | | Carbon Tetrachloride | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,1-Dichloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,2-Dichloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethylene Dibromide | 2012/03/29 | <0.17 | | ppbv | |
| | | | 1,1,1-Trichloroethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,1,2-Trichloroethane | 2012/03/29 | <0.15 | | ppbv | |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | cis-1,3-Dichloropropene | 2012/03/29 | <0.18 | | ppbv | |
| | | | trans-1,3-Dichloropropene | 2012/03/29 | <0.17 | | ppbv | |
| | | | 1,2-Dichloropropane | 2012/03/29 | <0.40 | | ppbv | |
| | | | Bromomethane | 2012/03/29 | <0.18 | | ppbv | |
| | | | Bromoform | 2012/03/29 | <0.20 | | ppbv | |
| | | | Bromodichloromethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Dibromochloromethane | 2012/03/29 | <0.20 | | ppbv | |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB243173

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Method Blank | Heptane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Trichloroethylene | 2012/03/29 | <0.30 | | ppbv | |
| | | | Tetrachloroethylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Benzene | 2012/03/29 | <0.18 | | ppbv | |
| | | | Toluene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethylbenzene | 2012/03/29 | <0.20 | | ppbv | |
| | | | p+m-Xylene | 2012/03/29 | <0.37 | | ppbv | |
| | | | o-Xylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Styrene | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,3,5-Trimethylbenzene | 2012/03/29 | <0.50 | | ppbv | |
| | | | 1,2,4-Trimethylbenzene | 2012/03/29 | <0.50 | | ppbv | |
| | | | 4-ethyltoluene | 2012/03/29 | <2.2 | | ppbv | |
| | | | Chlorobenzene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Benzyl chloride | 2012/03/29 | <1.0 | | ppbv | |
| | | | 1,3-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,4-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,2-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,2,4-Trichlorobenzene | 2012/03/29 | <2.0 | | ppbv | |
| | | | Hexachlorobutadiene | 2012/03/29 | <3.0 | | ppbv | |
| | | | Hexane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Cyclohexane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Tetrahydrofuran | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,4-Dioxane | 2012/03/29 | <2.0 | | ppbv | |
| | | | Xylene (Total) | 2012/03/29 | <0.60 | | ppbv | |
| | | RPD - Sample/Sample Dup | Benzene | 2012/03/29 | 2.5 | | % | 25 |
| | | | Toluene | 2012/03/29 | 1.0 | | % | 25 |
| | | | Ethylbenzene | 2012/03/29 | 1 | | % | 25 |
| | | | p+m-Xylene | 2012/03/29 | 0.4 | | % | 25 |
| | | | o-Xylene | 2012/03/29 | 0.9 | | % | 25 |
| | | | Xylene (Total) | 2012/03/29 | 0.5 | | % | 25 |

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA
Location: Cold Lake South
Station ID: Lica 1
Field Sample ID: LICA VOC/ CLS /Mar 28, 2012

Sampler s/n: 6167
Canister ID: 320
Canister Installation Date/Time: Mar 23 , 2012 @ 14:19 mst
Canister Removal Date/Time: Mar 30 , 2012 @ 08:04 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 28-Mar-12 | 03/28/2012 0:00 | 03/29/2012 0:00 | 24.00 |

| Flow Settings | | |
|---|---|---|
| Meter Reading (sccm) | Pot Set Pt. | Pump Pressure Setting (psig) |
| 10.0 | 646 | 25 |

| Canister Information | |
|---|---|
| Initial Canister Vacuum (inHg) | Final Canister Pressure (psig) |
| -28 | 24 |

**Canister valve open prior to sampling?: YES /** NO
**Timer set to 0.00 minutes prior to sampling? YES /** NO
**Canister valve closed prior to disconnection?: YES /** NO

Comments: System leak check prior to sampling. COC # 10683

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

Your C.O.C. #: 10683

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

**Report Date: 2012/04/11**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B247052**
**Received: 2012/04/04, 10:34**

Sample Matrix: AIR
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | 2 | N/A | 2012/04/05 | BRL SOP-00304 | EPA TO-15 |
| Volatile Organics in Air (TO-15) (1) | 2 | N/A | 2012/04/05 | BRL SOP-00304 | EPA TO-15 |

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## RESULTS OF ANALYSES OF AIR

| Maxxam ID | | MZ9328 | MZ9329 | |
|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | 2012/03/28 | |
| COC Number | | 10683 | 10683 | |
| | **Units** | **LICAVOC/CLS/MAR 28,12 - 320** | **LICAVOC/PORT/MAR 28,12 - 7820** | **QC Batch** |
| **Volatile Organics** | | | | |
| Pressure on Receipt | psig | 23 | 22 | 2813383 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9328 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/CLS/MAR 28,12 - 320** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2813406 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2813406 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2813406 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2813406 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2813406 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.61 | 0.20 | 3.00 | 0.989 | 2813406 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2813406 |
| Chloromethane | ppbv | 0.39 | 0.30 | 0.811 | 0.620 | 2813406 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2813406 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2813406 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2813406 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.31 | 0.20 | 1.74 | 1.12 | 2813406 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2813406 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2813406 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2813406 |
| 2-Propanone | ppbv | 1.92 | 0.80 | 4.57 | 1.90 | 2813406 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2813406 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2813406 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2813406 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2813406 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2813406 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2813406 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2813406 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2813406 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2813406 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2813406 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2813406 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2813406 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2813406 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2813406 |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2813406 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2813406 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9328 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/CLS/MAR 28,12 - 320** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2813406 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2813406 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2813406 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2813406 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2813406 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2813406 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2813406 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2813406 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2813406 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2813406 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2813406 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2813406 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2813406 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2813406 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2813406 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2813406 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2813406 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2813406 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2813406 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2813406 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2813406 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2813406 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2813406 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2813406 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2813406 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2813406 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2813406 |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2813406 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2813406 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 92 | | N/A | N/A | 2813406 |

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


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Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9328 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/CLS/MAR 28,12 - 320** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| D5-Chlorobenzene | % | 82 | | N/A | N/A | 2813406 |
| Difluorobenzene | % | 94 | | N/A | N/A | 2813406 |

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


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9329 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/PORT/MAR 28,12 - 7820** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2813406 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2813406 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2813406 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2813406 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2813406 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.60 | 0.20 | 2.96 | 0.989 | 2813406 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2813406 |
| Chloromethane | ppbv | 0.36 | 0.30 | 0.740 | 0.620 | 2813406 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2813406 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2813406 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2813406 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.31 | 0.20 | 1.73 | 1.12 | 2813406 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2813406 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2813406 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2813406 |
| 2-Propanone | ppbv | 1.87 | 0.80 | 4.45 | 1.90 | 2813406 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2813406 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2813406 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2813406 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2813406 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2813406 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2813406 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2813406 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2813406 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2813406 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2813406 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2813406 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2813406 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2813406 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2813406 |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2813406 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2813406 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9329 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/PORT/MAR 28,12 - 7820** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2813406 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2813406 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2813406 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2813406 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2813406 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2813406 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2813406 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2813406 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2813406 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2813406 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2813406 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2813406 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2813406 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2813406 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2813406 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2813406 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2813406 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2813406 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2813406 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2813406 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2813406 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2813406 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2813406 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2813406 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2813406 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2813406 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2813406 |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2813406 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2813406 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 89 | | N/A | N/A | 2813406 |

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


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Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## VOLATILE ORGANICS BY GC/MS (AIR)

| | | | | | | |
|---|---|---|---|---|---|---|
| Maxxam ID | | MZ9329 | | | | |
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/PORT/MAR 28,12 - 7820** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| D5-Chlorobenzene | % | 80 | | N/A | N/A | 2813406 |
| Difluorobenzene | % | 91 | | N/A | N/A | 2813406 |

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


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Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## Test Summary

**Maxxam ID** MZ9328 **Collected** 2012/03/28
**Sample ID** LICAVOC/CLS/MAR 28,12 - 320 **Shipped**
**Matrix** AIR **Received** 2012/04/04

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2813383 | N/A | 2012/04/05 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2813406 | N/A | 2012/04/05 | SPOMENKA SMILJANIC |

**Maxxam ID** MZ9329 **Collected** 2012/03/28
**Sample ID** LICAVOC/PORT/MAR 28,12 - 7820 **Shipped**
**Matrix** AIR **Received** 2012/04/04

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2813383 | N/A | 2012/04/05 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2813406 | N/A | 2012/04/05 | SPOMENKA SMILJANIC |


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Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

**GENERAL COMMENTS**

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


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

# Quality Assurance Report

Maxxam Job Number: GB247052

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2813406 | S_S | Spiked Blank | Bromochloromethane | 2012/04/05 | | 117 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/04/05 | | 109 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/04/05 | | 120 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/04/05 | | 82 | % | 70 - 130 |
| | | | Carbon Disulfide | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | Propene | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | Vinyl Acetate | 2012/04/05 | | 95 | % | 70 - 130 |
| | | | Vinyl Bromide | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/04/05 | | 103 | % | 70 - 130 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/04/05 | | 115 | % | 70 - 130 |
| | | | Chloromethane | 2012/04/05 | | 101 | % | 70 - 130 |
| | | | Vinyl Chloride | 2012/04/05 | | 95 | % | 70 - 130 |
| | | | Chloroethane | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | 1,3-Butadiene | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/04/05 | | 102 | % | 70 - 130 |
| | | | Trichlorotrifluoroethane | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | Ethanol (ethyl alcohol) | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | 2-propanol | 2012/04/05 | | 88 | % | 70 - 130 |
| | | | 2-Propanone | 2012/04/05 | | 112 | % | 70 - 130 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/04/05 | | 82 | % | 70 - 130 |
| | | | Methyl Isobutyl Ketone | 2012/04/05 | | 89 | % | 70 - 130 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | Methyl t-butyl ether (MTBE) | 2012/04/05 | | 97 | % | 70 - 130 |
| | | | Ethyl Acetate | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | 1,1-Dichloroethylene | 2012/04/05 | | 95 | % | 70 - 130 |
| | | | cis-1,2-Dichloroethylene | 2012/04/05 | | 93 | % | 70 - 130 |
| | | | trans-1,2-Dichloroethylene | 2012/04/05 | | 91 | % | 70 - 130 |
| | | | Methylene Chloride(Dichloromethane) | 2012/04/05 | | 83 | % | 70 - 130 |
| | | | Chloroform | 2012/04/05 | | 94 | % | 70 - 130 |
| | | | Carbon Tetrachloride | 2012/04/05 | | 99 | % | 70 - 130 |
| | | | 1,1-Dichloroethane | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | 1,2-Dichloroethane | 2012/04/05 | | 101 | % | 70 - 130 |
| | | | Ethylene Dibromide | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | 1,1,1-Trichloroethane | 2012/04/05 | | 98 | % | 70 - 130 |
| | | | 1,1,2-Trichloroethane | 2012/04/05 | | 86 | % | 70 - 130 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | cis-1,3-Dichloropropene | 2012/04/05 | | 99 | % | 70 - 130 |
| | | | trans-1,3-Dichloropropene | 2012/04/05 | | 107 | % | 70 - 130 |
| | | | 1,2-Dichloropropane | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | Bromomethane | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | Bromoform | 2012/04/05 | | 105 | % | 70 - 130 |
| | | | Bromodichloromethane | 2012/04/05 | | 102 | % | 70 - 130 |
| | | | Dibromochloromethane | 2012/04/05 | | 100 | % | 70 - 130 |
| | | | Heptane | 2012/04/05 | | 86 | % | 70 - 130 |
| | | | Trichloroethylene | 2012/04/05 | | 80 | % | 70 - 130 |
| | | | Tetrachloroethylene | 2012/04/05 | | 82 | % | 70 - 130 |
| | | | Benzene | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | Toluene | 2012/04/05 | | 87 | % | 70 - 130 |
| | | | Ethylbenzene | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | p+m-Xylene | 2012/04/05 | | 91 | % | 70 - 130 |
| | | | o-Xylene | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | Styrene | 2012/04/05 | | 74 | % | 70 - 130 |
| | | | 1,3,5-Trimethylbenzene | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | 1,2,4-Trimethylbenzene | 2012/04/05 | | 91 | % | 70 - 130 |
| | | | 4-ethyltoluene | 2012/04/05 | | 99 | % | 70 - 130 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB247052

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2813406 | S_S | Spiked Blank | Chlorobenzene | 2012/04/05 | | 82 | % | 70 - 130 |
| | | | Benzyl chloride | 2012/04/05 | | 119 | % | 70 - 130 |
| | | | 1,3-Dichlorobenzene | 2012/04/05 | | 87 | % | 70 - 130 |
| | | | 1,4-Dichlorobenzene | 2012/04/05 | | 88 | % | 70 - 130 |
| | | | 1,2-Dichlorobenzene | 2012/04/05 | | 84 | % | 70 - 130 |
| | | | 1,2,4-Trichlorobenzene | 2012/04/05 | | 94 | % | 70 - 130 |
| | | | Hexachlorobutadiene | 2012/04/05 | | 93 | % | 70 - 130 |
| | | | Hexane | 2012/04/05 | | 91 | % | 70 - 130 |
| | | | Cyclohexane | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | Tetrahydrofuran | 2012/04/05 | | 86 | % | 70 - 130 |
| | | | 1,4-Dioxane | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | Xylene (Total) | 2012/04/05 | | 91 | % | 70 - 130 |
| | | Method Blank | Bromochloromethane | 2012/04/05 | | 87 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/04/05 | | 76 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/04/05 | | 89 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/04/05 | <0.20 | | ppbv | |
| | | | Carbon Disulfide | 2012/04/05 | <0.50 | | ppbv | |
| | | | Propene | 2012/04/05 | <0.30 | | ppbv | |
| | | | Vinyl Acetate | 2012/04/05 | <0.20 | | ppbv | |
| | | | Vinyl Bromide | 2012/04/05 | <0.20 | | ppbv | |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/04/05 | <0.20 | | ppbv | |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/04/05 | <0.17 | | ppbv | |
| | | | Chloromethane | 2012/04/05 | <0.30 | | ppbv | |
| | | | Vinyl Chloride | 2012/04/05 | <0.18 | | ppbv | |
| | | | Chloroethane | 2012/04/05 | <0.30 | | ppbv | |
| | | | 1,3-Butadiene | 2012/04/05 | <0.50 | | ppbv | |
| | | | Trichlorofluoromethane (FREON 11) | 2012/04/05 | <0.20 | | ppbv | |
| | | | Trichlorotrifluoroethane | 2012/04/05 | <0.15 | | ppbv | |
| | | | Ethanol (ethyl alcohol) | 2012/04/05 | <2.3 | | ppbv | |
| | | | 2-propanol | 2012/04/05 | <3.0 | | ppbv | |
| | | | 2-Propanone | 2012/04/05 | <0.80 | | ppbv | |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/04/05 | <3.0 | | ppbv | |
| | | | Methyl Isobutyl Ketone | 2012/04/05 | <3.2 | | ppbv | |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/04/05 | <2.0 | | ppbv | |
| | | | Methyl t-butyl ether (MTBE) | 2012/04/05 | <0.20 | | ppbv | |
| | | | Ethyl Acetate | 2012/04/05 | <2.2 | | ppbv | |
| | | | 1,1-Dichloroethylene | 2012/04/05 | <0.25 | | ppbv | |
| | | | cis-1,2-Dichloroethylene | 2012/04/05 | <0.19 | | ppbv | |
| | | | trans-1,2-Dichloroethylene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Methylene Chloride(Dichloromethane) | 2012/04/05 | <0.80 | | ppbv | |
| | | | Chloroform | 2012/04/05 | <0.15 | | ppbv | |
| | | | Carbon Tetrachloride | 2012/04/05 | <0.30 | | ppbv | |
| | | | 1,1-Dichloroethane | 2012/04/05 | <0.20 | | ppbv | |
| | | | 1,2-Dichloroethane | 2012/04/05 | <0.20 | | ppbv | |
| | | | Ethylene Dibromide | 2012/04/05 | <0.17 | | ppbv | |
| | | | 1,1,1-Trichloroethane | 2012/04/05 | <0.30 | | ppbv | |
| | | | 1,1,2-Trichloroethane | 2012/04/05 | <0.15 | | ppbv | |
| | | | 1,1,2,2-Tetrachloroethane | 2012/04/05 | <0.20 | | ppbv | |
| | | | cis-1,3-Dichloropropene | 2012/04/05 | <0.18 | | ppbv | |
| | | | trans-1,3-Dichloropropene | 2012/04/05 | <0.17 | | ppbv | |
| | | | 1,2-Dichloropropane | 2012/04/05 | <0.40 | | ppbv | |
| | | | Bromomethane | 2012/04/05 | <0.18 | | ppbv | |
| | | | Bromoform | 2012/04/05 | <0.20 | | ppbv | |
| | | | Bromodichloromethane | 2012/04/05 | <0.20 | | ppbv | |
| | | | Dibromochloromethane | 2012/04/05 | <0.20 | | ppbv | |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB247052

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2813406 | S_S | Method Blank | Heptane | 2012/04/05 | <0.30 | | ppbv | |
| | | | Trichloroethylene | 2012/04/05 | <0.30 | | ppbv | |
| | | | Tetrachloroethylene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Benzene | 2012/04/05 | <0.18 | | ppbv | |
| | | | Toluene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Ethylbenzene | 2012/04/05 | <0.20 | | ppbv | |
| | | | p+m-Xylene | 2012/04/05 | <0.37 | | ppbv | |
| | | | o-Xylene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Styrene | 2012/04/05 | <0.20 | | ppbv | |
| | | | 1,3,5-Trimethylbenzene | 2012/04/05 | <0.50 | | ppbv | |
| | | | 1,2,4-Trimethylbenzene | 2012/04/05 | <0.50 | | ppbv | |
| | | | 4-ethyltoluene | 2012/04/05 | <2.2 | | ppbv | |
| | | | Chlorobenzene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Benzyl chloride | 2012/04/05 | <1.0 | | ppbv | |
| | | | 1,3-Dichlorobenzene | 2012/04/05 | <0.40 | | ppbv | |
| | | | 1,4-Dichlorobenzene | 2012/04/05 | <0.40 | | ppbv | |
| | | | 1,2-Dichlorobenzene | 2012/04/05 | <0.40 | | ppbv | |
| | | | 1,2,4-Trichlorobenzene | 2012/04/05 | <2.0 | | ppbv | |
| | | | Hexachlorobutadiene | 2012/04/05 | <3.0 | | ppbv | |
| | | | Hexane | 2012/04/05 | <0.30 | | ppbv | |
| | | | Cyclohexane | 2012/04/05 | <0.20 | | ppbv | |
| | | | Tetrahydrofuran | 2012/04/05 | <0.40 | | ppbv | |
| | | | 1,4-Dioxane | 2012/04/05 | <2.0 | | ppbv | |
| | | | Xylene (Total) | 2012/04/05 | <0.60 | | ppbv | |

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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# Polycyclic Aromatic Hydrocarbons Laboratory Analysis

# MAXXAM

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: Cold Lake South
Station ID: Lica1
Field Sample ID: LICA PUF/CLS/Mar 04, 2012

Puf+ s/n: 100-1020
Motor s/n: 1138
Installation Date/Time: Mar 01, 2011 @ 10:15 mst
Removal Date/Time: Mar 06, 2011 @ 08:52 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | Finish Time (MST) | Elapsed Time (Hours) |
| 04-Mar-12 | 03/04/2012 0:00 | 03/05/2012 0:00 | 24.000 |

| PUF and QFF Information | | | |
|---|---|---|---|
| Date Received | Date Shipped | Puf Expiration Date | QFF Prep Date |
| 28-Feb-12 | 05-Mar-12 | 09-Mar-12 | ???? |

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

| Sampling Data | | | |
|---|---|---|---|
| Average Pressure(mmHg) | AverageFlow (Qstd slpm) | Average Tempurature ( C) | Volume (Vstd $m^3$) |
| 709 | 229 | -2.3 | 330.36 |

**Time set correctly prior to sampling? YES**
**Timer set correctly prior to sampling? YES**
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 10682
GB1K1685 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Mar 04, 2012

Technician Signiture: Ting Xu

# MAXXAM

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: Cold Lake South
Station ID: Lica1
Field Sample ID: LICA PUF/CLS/Mar 10, 2012

Puf+ s/n: 100-1020
Motor s/n: 1138
Installation Date/Time: Mar 08, 2011 @ 08:05 mst
Removal Date/Time: Mar 14, 2011 @ 17:00 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | Finish Time (MST) | Elapsed Time (Hours) |
| 10-Mar-12 | 03/10/2012 0:00 | 03/11/2012 0:00 | 24.000 |

| PUF and QFF Information | | | |
|---|---|---|---|
| Date Received | Date Shipped | Puf Expiration Date | QFF Prep Date |
| 07-Mar-12 | 12-Mar-12 | 19-Mar-12 | ???? |

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

| Sampling Data | | | |
|---|---|---|---|
| Average Pressure(mmHg) | AverageFlow (Qstd slpm) | Average Tempurature ( C) | Volume (Vstd $m^3$) |
| 704 | 229 | 4.3 | 330.35 |

**Time set correctly prior to sampling? YES**
**Timer set correctly prior to sampling? YES**
**Sampling data saved to memory card after sampling? YES**

Comments: COC#
GB1K1688 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Mar 10, 2012

Technician Signiture: Ting Xu

Success Through Science®

Your C.O.C. #: na

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

**Report Date: 2012/03/16**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B234754**
**Received: 2012/03/12, 09:06**

Sample Matrix: PUF AND FILTER
# Samples Received: 1

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | 1 | 2012/03/12 | 2012/03/13 | BRL SOP-00201 | CARB429(ARBM1,M2)mod |

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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Total cover pages: 1

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

| Maxxam ID | | MT9406 | | |
|---|---|---|---|---|
| Sampling Date | | 2012/03/04 | | |
| COC Number | | na | | |
| | **Units** | **LICA PUFF+QFF/CLS/ MAR 4, 12** | **RDL** | **QC Batch** |
| **Semivolatile Organics** | | | | |
| 1-Methylnaphthalene | ug | 0.23 | 0.10 | 2787265 |
| 1-Methylphenanthrene | ug | <0.10 | 0.10 | 2787265 |
| 2-Chloronaphthalene | ug | <0.10 | 0.10 | 2787265 |
| 2-Methylanthracene | ug | <0.10 | 0.10 | 2787265 |
| 2-Methylnaphthalene | ug | 0.42 | 0.10 | 2787265 |
| 3-Methylcholanthrene | ug | <2.0 | 2.0 | 2787265 |
| 7,12-Dimethylbenzo(a)anthracene | ug | <0.10 | 0.10 | 2787265 |
| 9,10-Dimethylanthracene | ug | <0.40 | 0.40 | 2787265 |
| Acenaphthene | ug | <0.050 | 0.050 | 2787265 |
| Acenaphthylene | ug | <0.050 | 0.050 | 2787265 |
| Anthracene | ug | <0.050 | 0.050 | 2787265 |
| Benzo(a)anthracene | ug | <0.050 | 0.050 | 2787265 |
| Benzo(a)fluorene | ug | <0.10 | 0.10 | 2787265 |
| Benzo(a)pyrene | ug | <0.050 | 0.050 | 2787265 |
| Benzo(b)fluoranthene | ug | <0.050 | 0.050 | 2787265 |
| Benzo(b)fluorene | ug | <0.10 | 0.10 | 2787265 |
| Benzo(e)pyrene | ug | <0.10 | 0.10 | 2787265 |
| Benzo(g,h,i)perylene | ug | <0.050 | 0.050 | 2787265 |
| Benzo(k)fluoranthene | ug | <0.050 | 0.050 | 2787265 |
| Biphenyl | ug | 0.13 | 0.10 | 2787265 |
| Chrysene | ug | <0.050 | 0.050 | 2787265 |
| Coronene | ug | <0.10 | 0.10 | 2787265 |
| Dibenz(a,h)anthracene | ug | <0.050 | 0.050 | 2787265 |
| Dibenzo(a,e)pyrene | ug | <0.20 | 0.20 | 2787265 |
| Fluoranthene | ug | 0.062 | 0.050 | 2787265 |
| Fluorene | ug | 0.136 | 0.050 | 2787265 |
| Indeno(1,2,3-cd)pyrene | ug | <0.050 | 0.050 | 2787265 |
| m-Terphenyl | ug | <0.10 | 0.10 | 2787265 |
| Naphthalene | ug | 0.238 | 0.072 | 2787265 |
| o-Terphenyl | ug | <0.10 | 0.10 | 2787265 |
| Perylene | ug | <0.10 | 0.10 | 2787265 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B234754
Report Date: 2012/03/16

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

| | | | | |
|---|---|---|---|---|
| Maxxam ID | | MT9406 | | |
| Sampling Date | | 2012/03/04 | | |
| COC Number | | na | | |
| | **Units** | **LICA PUFF+QFF/CLS/ MAR 4, 12** | **RDL** | **QC Batch** |
| Phenanthrene | ug | 0.234 | 0.050 | 2787265 |
| p-Terphenyl | ug | <0.10 | 0.10 | 2787265 |
| Pyrene | ug | <0.050 | 0.050 | 2787265 |
| Quinoline | ug | <0.40 | 0.40 | 2787265 |
| Tetralin | ug | <0.10 | 0.10 | 2787265 |
| **Surrogate Recovery (%)** | | | | |
| D10-2-Methylnaphthalene | % | 56 | | 2787265 |
| D10-Fluoranthene | % | 92 | | 2787265 |
| D10-Fluorene (FS) | % | 31 (1) | | 2787265 |
| D10-Phenanthrene | % | 80 | | 2787265 |
| D12-Benzo(a)anthracene | % | 86 | | 2787265 |
| D12-Benzo(a)pyrene | % | 86 | | 2787265 |
| D12-Benzo(b)fluoranthene | % | 82 | | 2787265 |
| D12-Benzo(ghi)perylene | % | 88 | | 2787265 |
| D12-Benzo(k)fluoranthene | % | 84 | | 2787265 |
| D12-Chrysene | % | 84 | | 2787265 |
| D12-Indeno(1,2,3-cd)pyrene | % | 84 | | 2787265 |
| D12-Perylene | % | 84 | | 2787265 |
| D14-Dibenzo(a,h)anthracene | % | 84 | | 2787265 |
| D14-Terphenyl (FS) | % | 86 | | 2787265 |
| D8-Acenaphthylene | % | 66 | | 2787265 |
| D8-Naphthalene | % | 54 | | 2787265 |

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


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Maxxam Analytics

Maxxam Job #: B234754
Report Date: 2012/03/16

## Test Summary

**Maxxam ID** MT9406
**Sample ID** LICA PUFF+QFF/CLS/ MAR 4, 12
**Matrix** PUF AND FILTER

**Collected** 2012/03/04
**Shipped**
**Received** 2012/03/12

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2787265 | 2012/03/12 | 2012/03/13 | JIE WU |


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Maxxam Analytics

Maxxam Job #: B234754
Report Date: 2012/03/16

**GENERAL COMMENTS**

PAHMS-F
9.10-Dimethylanthracene and 7,12-dimethylbenzo(a)anthracene are above 25% RSD in initial calibration. No positives found for these 2 compounds.

Hold time past when samples were received.

Recovery of acenaphthylene is 63% in spike:dup, which statistically violated rule 2, 2 of 3 points in zone A, same side of mean. Spike recovery is in control. Acceptance criteria met for both spike and dup. Both spike and spike:dup vials were rerun with similar results. Original run reported. Data reported and flagged.

Low recovery of naphthalene, acenaphthene and fluorene in spike:dup.

Low recovery of d10-2-methylnaphthalene, d8-acenaphthylene and d8-naphthalene in blank.

Not calibrated for benzo(b)anthracene, picene, dibenzo(a,c)anthracene and triphenylene. An estimated mdl for each of these compounds is 0.1ug.

Since dibenzo(a,c)anthracene co-elutes with dibenz(a,h)anthracene and triphenylene with chrysene each would have a value below estimated mdl.

Benzo(b)anthracene elutes after benzo(a)anthracene and chysene. Picene elutes after dibenz(a,h)anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MT9406-01: Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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


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

# Quality Assurance Report

Maxxam Job Number: GB234754

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2787265 | JIW | Spiked Blank | D10-2-Methylnaphthalene | 2012/03/13 | | 62 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/03/13 | | 86 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/03/13 | | 72 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/03/13 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/03/13 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/03/13 | | 82 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/03/13 | | 90 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/03/13 | | 88 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/03/13 | | 84 | % | 50 - 150 |
| | | | D12-Indeno(1,2,3-cd)pyrene | 2012/03/13 | | 86 | % | 50 - 150 |
| | | | D12-Perylene | 2012/03/13 | | 88 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/03/13 | | 86 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/03/13 | | 70 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/03/13 | | 64 | % | 50 - 150 |
| | | | Acenaphthene | 2012/03/13 | | 61 | % | 60 - 130 |
| | | RPD | Acenaphthene | 2012/03/13 | 3.4 | | % | 50 |
| | | Spiked Blank | Acenaphthylene | 2012/03/13 | | 65 | % | 60 - 130 |
| | | RPD | Acenaphthylene | 2012/03/13 | 2.4 | | % | 50 |
| | | Spiked Blank | Anthracene | 2012/03/13 | | 62 | % | 60 - 130 |
| | | RPD | Anthracene | 2012/03/13 | 7.8 | | % | 50 |
| | | Spiked Blank | Benzo(a)anthracene | 2012/03/13 | | 73 | % | 60 - 130 |
| | | RPD | Benzo(a)anthracene | 2012/03/13 | 4.4 | | % | 50 |
| | | Spiked Blank | Benzo(a)pyrene | 2012/03/13 | | 67 | % | 60 - 130 |
| | | RPD | Benzo(a)pyrene | 2012/03/13 | 2.9 | | % | 50 |
| | | Spiked Blank | Benzo(b)fluoranthene | 2012/03/13 | | 75 | % | 60 - 130 |
| | | RPD | Benzo(b)fluoranthene | 2012/03/13 | 3.6 | | % | 50 |
| | | Spiked Blank | Benzo(g,h,i)perylene | 2012/03/13 | | 76 | % | 60 - 130 |
| | | RPD | Benzo(g,h,i)perylene | 2012/03/13 | 0.3 | | % | 50 |
| | | Spiked Blank | Benzo(k)fluoranthene | 2012/03/13 | | 78 | % | 60 - 130 |
| | | RPD | Benzo(k)fluoranthene | 2012/03/13 | 2.8 | | % | 50 |
| | | Spiked Blank | Chrysene | 2012/03/13 | | 77 | % | 60 - 130 |
| | | RPD | Chrysene | 2012/03/13 | 3.8 | | % | 50 |
| | | Spiked Blank | Dibenz(a,h)anthracene | 2012/03/13 | | 72 | % | 60 - 130 |
| | | RPD | Dibenz(a,h)anthracene | 2012/03/13 | 0.7 | | % | 50 |
| | | Spiked Blank | Fluoranthene | 2012/03/13 | | 79 | % | 60 - 130 |
| | | RPD | Fluoranthene | 2012/03/13 | 1.3 | | % | 50 |
| | | Spiked Blank | Fluorene | 2012/03/13 | | 61 | % | 60 - 130 |
| | | RPD | Fluorene | 2012/03/13 | 2.5 | | % | 50 |
| | | Spiked Blank | Indeno(1,2,3-cd)pyrene | 2012/03/13 | | 73 | % | 60 - 130 |
| | | RPD | Indeno(1,2,3-cd)pyrene | 2012/03/13 | 1.4 | | % | 50 |
| | | Spiked Blank | Naphthalene | 2012/03/13 | | 61 | % | 60 - 130 |
| | | RPD | Naphthalene | 2012/03/13 | 7.2 | | % | 50 |
| | | Spiked Blank | Phenanthrene | 2012/03/13 | | 61 | % | 60 - 130 |
| | | RPD | Phenanthrene | 2012/03/13 | 3.6 | | % | 50 |
| | | Spiked Blank | Pyrene | 2012/03/13 | | 78 | % | 60 - 130 |
| | | RPD | Pyrene | 2012/03/13 | 1 | | % | 50 |
| | | Method Blank | D10-2-Methylnaphthalene | 2012/03/13 | | 34 (1) | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/03/13 | | 86 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/03/13 | | 70 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/03/13 | | 82 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/03/13 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/03/13 | | 84 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/03/13 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/03/13 | | 88 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/03/13 | | 84 | % | 50 - 150 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB234754

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2787265 | JIW | Method Blank | D12-Indeno(1,2,3-cd)pyrene | 2012/03/13 | | 80 | % | 50 - 150 |
| | | | D12-Perylene | 2012/03/13 | | 86 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/03/13 | | 80 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/03/13 | | 42 (1) | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/03/13 | | 34 (1) | % | 50 - 150 |
| | | | 1-Methylnaphthalene | 2012/03/13 | <0.10 | | ug | |
| | | | 1-Methylphenanthrene | 2012/03/13 | <0.10 | | ug | |
| | | | 2-Chloronaphthalene | 2012/03/13 | <0.10 | | ug | |
| | | | 2-Methylanthracene | 2012/03/13 | <0.10 | | ug | |
| | | | 2-Methylnaphthalene | 2012/03/13 | <0.10 | | ug | |
| | | | 3-Methylcholanthrene | 2012/03/13 | <2.0 | | ug | |
| | | | 7,12-Dimethylbenzo(a)anthracene | 2012/03/13 | <0.10 | | ug | |
| | | | 9,10-Dimethylanthracene | 2012/03/13 | <0.40 | | ug | |
| | | | Acenaphthene | 2012/03/13 | <0.050 | | ug | |
| | | | Acenaphthylene | 2012/03/13 | <0.050 | | ug | |
| | | | Anthracene | 2012/03/13 | <0.050 | | ug | |
| | | | Benzo(a)anthracene | 2012/03/13 | <0.050 | | ug | |
| | | | Benzo(a)fluorene | 2012/03/13 | <0.10 | | ug | |
| | | | Benzo(a)pyrene | 2012/03/13 | <0.050 | | ug | |
| | | | Benzo(b)fluoranthene | 2012/03/13 | <0.050 | | ug | |
| | | | Benzo(b)fluorene | 2012/03/13 | <0.10 | | ug | |
| | | | Benzo(e)pyrene | 2012/03/13 | <0.10 | | ug | |
| | | | Benzo(g,h,i)perylene | 2012/03/13 | <0.050 | | ug | |
| | | | Benzo(k)fluoranthene | 2012/03/13 | <0.050 | | ug | |
| | | | Biphenyl | 2012/03/13 | <0.10 | | ug | |
| | | | Chrysene | 2012/03/13 | <0.050 | | ug | |
| | | | Coronene | 2012/03/13 | <0.10 | | ug | |
| | | | Dibenz(a,h)anthracene | 2012/03/13 | <0.050 | | ug | |
| | | | Dibenzo(a,e)pyrene | 2012/03/13 | <0.20 | | ug | |
| | | | Fluoranthene | 2012/03/13 | <0.050 | | ug | |
| | | | Fluorene | 2012/03/13 | <0.050 | | ug | |
| | | | Indeno(1,2,3-cd)pyrene | 2012/03/13 | <0.050 | | ug | |
| | | | m-Terphenyl | 2012/03/13 | <0.10 | | ug | |
| | | | Naphthalene | 2012/03/13 | <0.072 | | ug | |
| | | | o-Terphenyl | 2012/03/13 | <0.10 | | ug | |
| | | | Perylene | 2012/03/13 | <0.10 | | ug | |
| | | | Phenanthrene | 2012/03/13 | <0.050 | | ug | |
| | | | p-Terphenyl | 2012/03/13 | <0.10 | | ug | |
| | | | Pyrene | 2012/03/13 | <0.050 | | ug | |
| | | | Quinoline | 2012/03/13 | <0.40 | | ug | |
| | | | Tetralin | 2012/03/13 | <0.10 | | ug | |

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
( 1 ) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.


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Your C.O.C. #: 10794

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

**Report Date: 2012/03/30**

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B238743**
**Received: 2012/03/20, 09:15**

Sample Matrix: PUF AND FILTER
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | 2 | 2012/03/26 | 2012/03/29 | BRL SOP-00201 | CARB429(ARBM1,M2)mod |

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

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

| Maxxam ID | | MV8117 | MV8118 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | 2012/03/10 | | |
| COC Number | | 10794 | 10794 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 10,2012** | **LICA PUFF+QFF/PORT/MAR 10,2012** | **RDL** | **QC Batch** |
| **Semivolatile Organics** | | | | | |
| 1-Methylnaphthalene | ug | 0.25 | 0.26 | 0.10 | 2795265 |
| 1-Methylphenanthrene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| 2-Chloronaphthalene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| 2-Methylanthracene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| 2-Methylnaphthalene | ug | 0.45 | 0.49 | 0.10 | 2795265 |
| 3-Methylcholanthrene | ug | <2.0 | <2.0 | 2.0 | 2795265 |
| 7,12-Dimethylbenzo(a)anthracene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| 9,10-Dimethylanthracene | ug | <0.40 | <0.40 | 0.40 | 2795265 |
| Acenaphthene | ug | 0.096 | <0.050 | 0.050 | 2795265 |
| Acenaphthylene | ug | 0.092 | <0.050 | 0.050 | 2795265 |
| Anthracene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Benzo(a)anthracene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Benzo(a)fluorene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Benzo(a)pyrene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Benzo(b)fluoranthene | ug | 0.062 | <0.050 | 0.050 | 2795265 |
| Benzo(b)fluorene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Benzo(e)pyrene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Benzo(g,h,i)perylene | ug | <0.050 | 0.050 | 0.050 | 2795265 |
| Benzo(k)fluoranthene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Biphenyl | ug | 0.25 | 0.10 | 0.10 | 2795265 |
| Chrysene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Coronene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Dibenz(a,h)anthracene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Dibenzo(a,e)pyrene | ug | <0.20 | <0.20 | 0.20 | 2795265 |
| Fluoranthene | ug | 0.118 | <0.050 | 0.050 | 2795265 |
| Fluorene | ug | 0.230 | 0.146 | 0.050 | 2795265 |
| Indeno(1,2,3-cd)pyrene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| m-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Naphthalene | ug | 0.226 | 0.160 | 0.072 | 2795265 |
| o-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Perylene | ug | <0.10 | <0.10 | 0.10 | 2795265 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B238743
Report Date: 2012/03/30

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

| Maxxam ID | | MV8117 | MV8118 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | 2012/03/10 | | |
| COC Number | | 10794 | 10794 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 10,2012** | **LICA PUFF+QFF/PORT/MAR 10,2012** | **RDL** | **QC Batch** |
| Phenanthrene | ug | 0.502 | 0.158 | 0.050 | 2795265 |
| p-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Pyrene | ug | 0.070 | <0.050 | 0.050 | 2795265 |
| Quinoline | ug | <0.40 | <0.40 | 0.40 | 2795265 |
| Tetralin | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| **Surrogate Recovery (%)** | | | | | |
| D10-2-Methylnaphthalene | % | 54 | 80 | | 2795265 |
| D10-Fluoranthene | % | 102 | 92 | | 2795265 |
| D10-Fluorene (FS) | % | 23 (1) | 20 (1) | | 2795265 |
| D10-Phenanthrene | % | 92 | 88 | | 2795265 |
| D12-Benzo(a)anthracene | % | 100 | 96 | | 2795265 |
| D12-Benzo(a)pyrene | % | 96 | 92 | | 2795265 |
| D12-Benzo(b)fluoranthene | % | 94 | 88 | | 2795265 |
| D12-Benzo(ghi)perylene | % | 98 | 96 | | 2795265 |
| D12-Benzo(k)fluoranthene | % | 94 | 94 | | 2795265 |
| D12-Chrysene | % | 90 | 92 | | 2795265 |
| D12-Indeno(1,2,3-cd)pyrene | % | 98 | 94 | | 2795265 |
| D12-Perylene | % | 96 | 94 | | 2795265 |
| D14-Dibenzo(a,h)anthracene | % | 100 | 96 | | 2795265 |
| D14-Terphenyl (FS) | % | 96 | 92 | | 2795265 |
| D8-Acenaphthylene | % | 66 | 84 | | 2795265 |
| D8-Naphthalene | % | 52 | 78 | | 2795265 |

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


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Maxxam Analytics

Maxxam Job #: B238743
Report Date: 2012/03/30

## Test Summary

**Maxxam ID** MV8117 **Collected** 2012/03/10
**Sample ID** LICA PUFF+QFF/CLS/MAR 10,2012 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/20

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2795265 | 2012/03/26 | 2012/03/29 | JIE WU |

**Maxxam ID** MV8118 **Collected** 2012/03/10
**Sample ID** LICA PUFF+QFF/PORT/MAR 10,2012 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/20

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2795265 | 2012/03/26 | 2012/03/29 | JIE WU |


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Maxxam Analytics

Maxxam Job #: B238743
Report Date: 2012/03/30

**GENERAL COMMENTS**

PAHMS-F
Samples received past hold time.

7,12-dimethylbenzo(a)anthracene is above 25% RSD in initial and continuing calibrations. No positive found for this compound.

Acenaphylene is statistically out of control at 65% recovery in the spike and 68 % recovery in spike:dup. Acceptance criteria met for both spike and dup. Data reported and flagged.

Reovery of naphthalene is low in spike.

Not calibrated for benzo(b)anthracene, picene, dibenzo(a,c)anthracene and triphenylene. An estimated mdl for each of these compounds is 0.1ug.

Since dibenzo(a,c)anthracene co-elutes with dibenz(a,h)anthracene and triphenylene with chrysene each would have a value below estimated mdl.

Benzo(b)anthracene elutes after benzo(a)anthracene and chysene. Picene elutes after dibenz(a,h)anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MV8117-01: Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Sample MV8118-01: Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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


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

# Quality Assurance Report

Maxxam Job Number: GB238743

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2795265 | JIW | Spiked Blank | D10-2-Methylnaphthalene | 2012/03/29 | | 68 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/03/29 | | 84 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/03/29 | | 100 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/03/29 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/03/29 | | 94 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/03/29 | | 92 | % | 50 - 150 |
| | | | D12-Indeno(1,2,3-cd)pyrene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Perylene | 2012/03/29 | | 94 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/03/29 | | 72 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/03/29 | | 64 | % | 50 - 150 |
| | | | Acenaphthene | 2012/03/29 | | 68 | % | 60 - 130 |
| | | RPD | Acenaphthene | 2012/03/29 | 0.4 | | % | 50 |
| | | Spiked Blank | Acenaphthylene | 2012/03/29 | | 65 | % | 60 - 130 |
| | | RPD | Acenaphthylene | 2012/03/29 | 4.1 | | % | 50 |
| | | Spiked Blank | Anthracene | 2012/03/29 | | 86 | % | 60 - 130 |
| | | RPD | Anthracene | 2012/03/29 | 12.4 | | % | 50 |
| | | Spiked Blank | Benzo(a)anthracene | 2012/03/29 | | 91 | % | 60 - 130 |
| | | RPD | Benzo(a)anthracene | 2012/03/29 | 1.7 | | % | 50 |
| | | Spiked Blank | Benzo(a)pyrene | 2012/03/29 | | 77 | % | 60 - 130 |
| | | RPD | Benzo(a)pyrene | 2012/03/29 | 1.6 | | % | 50 |
| | | Spiked Blank | Benzo(b)fluoranthene | 2012/03/29 | | 88 | % | 60 - 130 |
| | | RPD | Benzo(b)fluoranthene | 2012/03/29 | 2.3 | | % | 50 |
| | | Spiked Blank | Benzo(g,h,i)perylene | 2012/03/29 | | 82 | % | 60 - 130 |
| | | RPD | Benzo(g,h,i)perylene | 2012/03/29 | 0 | | % | 50 |
| | | Spiked Blank | Benzo(k)fluoranthene | 2012/03/29 | | 89 | % | 60 - 130 |
| | | RPD | Benzo(k)fluoranthene | 2012/03/29 | 1.1 | | % | 50 |
| | | Spiked Blank | Chrysene | 2012/03/29 | | 83 | % | 60 - 130 |
| | | RPD | Chrysene | 2012/03/29 | 2.1 | | % | 50 |
| | | Spiked Blank | Dibenz(a,h)anthracene | 2012/03/29 | | 89 | % | 60 - 130 |
| | | RPD | Dibenz(a,h)anthracene | 2012/03/29 | 3.1 | | % | 50 |
| | | Spiked Blank | Fluoranthene | 2012/03/29 | | 90 | % | 60 - 130 |
| | | RPD | Fluoranthene | 2012/03/29 | 2.0 | | % | 50 |
| | | Spiked Blank | Fluorene | 2012/03/29 | | 71 | % | 60 - 130 |
| | | RPD | Fluorene | 2012/03/29 | 0.4 | | % | 50 |
| | | Spiked Blank | Indeno(1,2,3-cd)pyrene | 2012/03/29 | | 84 | % | 60 - 130 |
| | | RPD | Indeno(1,2,3-cd)pyrene | 2012/03/29 | 0.3 | | % | 50 |
| | | Spiked Blank | Naphthalene | 2012/03/29 | | 60 (1) | % | 60 - 130 |
| | | RPD | Naphthalene | 2012/03/29 | 6.1 | | % | 50 |
| | | Spiked Blank | Phenanthrene | 2012/03/29 | | 76 | % | 60 - 130 |
| | | RPD | Phenanthrene | 2012/03/29 | 2.0 | | % | 50 |
| | | Spiked Blank | Pyrene | 2012/03/29 | | 85 | % | 60 - 130 |
| | | RPD | Pyrene | 2012/03/29 | 0.9 | | % | 50 |
| | | Method Blank | D10-2-Methylnaphthalene | 2012/03/29 | | 76 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/03/29 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/03/29 | | 90 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/03/29 | | 90 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/03/29 | | 88 | % | 50 - 150 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB238743

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2795265 | JIW | Method Blank | D12-Indeno(1,2,3-cd)pyrene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Perylene | 2012/03/29 | | 92 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/03/29 | | 82 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/03/29 | | 76 | % | 50 - 150 |
| | | | 1-Methylnaphthalene | 2012/03/29 | <0.10 | | ug | |
| | | | 1-Methylphenanthrene | 2012/03/29 | <0.10 | | ug | |
| | | | 2-Chloronaphthalene | 2012/03/29 | <0.10 | | ug | |
| | | | 2-Methylanthracene | 2012/03/29 | <0.10 | | ug | |
| | | | 2-Methylnaphthalene | 2012/03/29 | <0.10 | | ug | |
| | | | 3-Methylcholanthrene | 2012/03/29 | <2.0 | | ug | |
| | | | 7,12-Dimethylbenzo(a)anthracene | 2012/03/29 | <0.10 | | ug | |
| | | | 9,10-Dimethylanthracene | 2012/03/29 | <0.40 | | ug | |
| | | | Acenaphthene | 2012/03/29 | <0.050 | | ug | |
| | | | Acenaphthylene | 2012/03/29 | <0.050 | | ug | |
| | | | Anthracene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(a)anthracene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(a)fluorene | 2012/03/29 | <0.10 | | ug | |
| | | | Benzo(a)pyrene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(b)fluoranthene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(b)fluorene | 2012/03/29 | <0.10 | | ug | |
| | | | Benzo(e)pyrene | 2012/03/29 | <0.10 | | ug | |
| | | | Benzo(g,h,i)perylene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(k)fluoranthene | 2012/03/29 | <0.050 | | ug | |
| | | | Biphenyl | 2012/03/29 | <0.10 | | ug | |
| | | | Chrysene | 2012/03/29 | <0.050 | | ug | |
| | | | Coronene | 2012/03/29 | <0.10 | | ug | |
| | | | Dibenz(a,h)anthracene | 2012/03/29 | <0.050 | | ug | |
| | | | Dibenzo(a,e)pyrene | 2012/03/29 | <0.20 | | ug | |
| | | | Fluoranthene | 2012/03/29 | <0.050 | | ug | |
| | | | Fluorene | 2012/03/29 | <0.050 | | ug | |
| | | | Indeno(1,2,3-cd)pyrene | 2012/03/29 | <0.050 | | ug | |
| | | | m-Terphenyl | 2012/03/29 | <0.10 | | ug | |
| | | | Naphthalene | 2012/03/29 | <0.072 | | ug | |
| | | | o-Terphenyl | 2012/03/29 | <0.10 | | ug | |
| | | | Perylene | 2012/03/29 | <0.10 | | ug | |
| | | | Phenanthrene | 2012/03/29 | <0.050 | | ug | |
| | | | p-Terphenyl | 2012/03/29 | <0.10 | | ug | |
| | | | Pyrene | 2012/03/29 | <0.050 | | ug | |
| | | | Quinoline | 2012/03/29 | <0.40 | | ug | |
| | | | Tetralin | 2012/03/29 | <0.10 | | ug | |

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
( 1 ) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.


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# MAXXAM

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: Cold Lake South
Station ID: Lica1
Field Sample ID: LICA PUF/CLS/Mar 16, 2012

Puf+ s/n: 100-1020
Motor s/n: 1138
Installation Date/Time: Mar 15, 2011 @ 13:04 mst
Removal Date/Time: Mar 20, 2011 @ 14:09 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | Finish Time (MST) | Elapsed Time (Hours) |
| 16-Mar-12 | 03/16/2012 0:00 | 03/17/2012 0:00 | 24.000 |

| PUF and QFF Information | | | |
|---|---|---|---|
| Date Received | Date Shipped | Puf Expiration Date | QFF Prep Date |
| 13-Mar-12 | 19-Mar-12 | 27-Mar-12 | ???? |

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

| Sampling Data | | | |
|---|---|---|---|
| Average Pressure(mmHg) | AverageFlow (Qstd slpm) | Average Tempurature ( C) | Volume (Vstd $m^3$) |
| 697 | 229 | 5.5 | 330.34 |

**Time set correctly prior to sampling? YES**
**Timer set correctly prior to sampling? YES**
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 10878
GB1K1690 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Mar 16, 2012

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

ACCREDITED IN ACCORDANCE WITH nelac

Your C.O.C. #: 10878

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

**Report Date: 2012/04/09**

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B242512**
**Received: 2012/03/27, 09:00**

Sample Matrix: PUF AND FILTER
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | 2 | 2012/03/29 | 2012/04/03 | BRL SOP-00201 | CARB429(ARBM1,M2)mod |

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

Maxxam Analytics

Maxxam Job #: B242512
Report Date: 2012/04/09

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

| Maxxam ID | | MX5462 | | MX5463 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | 2012/03/16 | | |
| COC Number | | 10878 | | 10878 | | |
| | **Units** | **LICAPUFF/QFF/CLS/MAR16,12** | **RDL** | **LICAPUFF/QFF/PORT/MAR16,12** | **RDL** | **QC Batch** |
| **Semivolatile Organics** | | | | | | |
| 1-Methylnaphthalene | ug | 0.16 | 0.10 | <0.10 | 0.10 | 2805193 |
| 1-Methylphenanthrene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Chloronaphthalene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Methylanthracene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Methylnaphthalene | ug | 0.30 | 0.10 | 0.20 | 0.10 | 2805193 |
| 3-Methylcholanthrene | ug | <2.0 | 2.0 | <2.0 | 2.0 | 2805193 |
| 7,12-Dimethylbenzo(a)anthracene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 9,10-Dimethylanthracene | ug | <0.40 | 0.40 | <0.40 | 0.40 | 2805193 |
| Acenaphthene | ug | <0.057 | 0.057 | <0.050 | 0.050 | 2805193 |
| Acenaphthylene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(a)anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(a)fluorene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(a)pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(b)fluoranthene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(b)fluorene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(e)pyrene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(g,h,i)perylene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(k)fluoranthene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Biphenyl | ug | 0.11 | 0.10 | <0.10 | 0.10 | 2805193 |
| Chrysene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Coronene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Dibenz(a,h)anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Dibenzo(a,e)pyrene | ug | <0.20 | 0.20 | <0.20 | 0.20 | 2805193 |
| Fluoranthene | ug | 0.064 | 0.050 | <0.050 | 0.050 | 2805193 |
| Fluorene | ug | 0.224 | 0.050 | 0.126 | 0.050 | 2805193 |
| Indeno(1,2,3-cd)pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| m-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Naphthalene | ug | 0.182 | 0.072 | 0.114 | 0.072 | 2805193 |
| o-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Perylene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Phenanthrene | ug | 0.340 | 0.050 | 0.162 | 0.050 | 2805193 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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

| Maxxam ID | | MX5462 | | MX5463 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | 2012/03/16 | | |
| COC Number | | 10878 | | 10878 | | |
| | **Units** | **LICAPUFF/QFF/CLS/MAR16,12** | **RDL** | **LICAPUFF/QFF/PORT/MAR16,12** | **RDL** | **QC Batch** |
| p-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Quinoline | ug | <0.40 | 0.40 | <0.40 | 0.40 | 2805193 |
| Tetralin | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| **Surrogate Recovery (%)** | | | | | | |
| D10-2-Methylnaphthalene | % | 64 | | 82 | | 2805193 |
| D10-Fluoranthene | % | 110 | | 116 | | 2805193 |
| D10-Fluorene (FS) | % | 11 (1) | | 20 (1) | | 2805193 |
| D10-Phenanthrene | % | 96 | | 104 | | 2805193 |
| D12-Benzo(a)anthracene | % | 104 | | 108 | | 2805193 |
| D12-Benzo(a)pyrene | % | 100 | | 106 | | 2805193 |
| D12-Benzo(b)fluoranthene | % | 96 | | 100 | | 2805193 |
| D12-Benzo(ghi)perylene | % | 104 | | 112 | | 2805193 |
| D12-Benzo(k)fluoranthene | % | 94 | | 104 | | 2805193 |
| D12-Chrysene | % | 88 | | 96 | | 2805193 |
| D12-Indeno(1,2,3-cd)pyrene | % | 104 | | 110 | | 2805193 |
| D12-Perylene | % | 98 | | 104 | | 2805193 |
| D14-Dibenzo(a,h)anthracene | % | 110 | | 114 | | 2805193 |
| D14-Terphenyl (FS) | % | 112 | | 118 | | 2805193 |
| D8-Acenaphthylene | % | 78 | | 96 | | 2805193 |
| D8-Naphthalene | % | 58 | | 76 | | 2805193 |

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


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Maxxam Analytics

Maxxam Job #: B242512
Report Date: 2012/04/09

## Test Summary

**Maxxam ID** MX5462 **Collected** 2012/03/16
**Sample ID** LICAPUFF/QFF/CLS/MAR16,12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/27

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2805193 | 2012/03/29 | 2012/04/03 | WENDY ZHAO |

**Maxxam ID** MX5463 **Collected** 2012/03/16
**Sample ID** LICAPUFF/QFF/PORT/MAR16,12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/27

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2805193 | 2012/03/29 | 2012/04/03 | WENDY ZHAO |


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Maxxam Analytics

Maxxam Job #: B242512
Report Date: 2012/04/09

**GENERAL COMMENTS**

PAHMS-F
7,12-Dimethylbenzo(a)anthracene is above 25% RSD in initial calibration. No positive found for this compounds.

Chrysene is statistically out of control at 85.25% recovery in the spike:dup. Spike recovery is in control. Acceptance criteria met for both spike and dup. Data reported and flagged.

Not calibrated for Benzo(b)Anthracene, Picene, Dibenzo(a,c) anthracene or Triphenylene. An estimated mdl for each of these compounds is 0.1ug .
Since Dibenzo(a,c) anthracene co-elutes with Dibenzo(a,h) anthracene and Triphenylene with Chrysene each would have a value below estimated mdl.
Benzo(b)Anthracene elutes after Benzo(a)Anthracene and Chysene. Picene elutes after Dibenzo(a,h) anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MX5462-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Internal Std area response criteria was high in Sample. Rerun with similar results. Original run reported.

Mdl was raised for Acenphthene due to sample matrix interference on a possible possitive.

Sample MX5463-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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


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

# Quality Assurance Report

Maxxam Job Number: GB242512

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2805193 | WZ | Spiked Blank | D10-2-Methylnaphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/03 | | 78 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/03 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/03 | | 90 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/03 | | 70 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | Acenaphthene | 2012/04/03 | | 63 | % | 60 - 130 |
| | | RPD | Acenaphthene | 2012/04/03 | 9.5 | | % | 50 |
| | | Spiked Blank | Acenaphthylene | 2012/04/03 | | 63 | % | 60 - 130 |
| | | RPD | Acenaphthylene | 2012/04/03 | 10.6 | | % | 50 |
| | | Spiked Blank | Anthracene | 2012/04/03 | | 76 | % | 60 - 130 |
| | | RPD | Anthracene | 2012/04/03 | 11.7 | | % | 50 |
| | | Spiked Blank | Benzo(a)anthracene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Benzo(a)anthracene | 2012/04/03 | 13.2 | | % | 50 |
| | | Spiked Blank | Benzo(a)pyrene | 2012/04/03 | | 72 | % | 60 - 130 |
| | | RPD | Benzo(a)pyrene | 2012/04/03 | 14.5 | | % | 50 |
| | | Spiked Blank | Benzo(b)fluoranthene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Benzo(b)fluoranthene | 2012/04/03 | 12.1 | | % | 50 |
| | | Spiked Blank | Benzo(g,h,i)perylene | 2012/04/03 | | 81 | % | 60 - 130 |
| | | RPD | Benzo(g,h,i)perylene | 2012/04/03 | 12.7 | | % | 50 |
| | | Spiked Blank | Benzo(k)fluoranthene | 2012/04/03 | | 89 | % | 60 - 130 |
| | | RPD | Benzo(k)fluoranthene | 2012/04/03 | 10.9 | | % | 50 |
| | | Spiked Blank | Chrysene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Chrysene | 2012/04/03 | 9.5 | | % | 50 |
| | | Spiked Blank | Dibenz(a,h)anthracene | 2012/04/03 | | 82 | % | 60 - 130 |
| | | RPD | Dibenz(a,h)anthracene | 2012/04/03 | 16.7 | | % | 50 |
| | | Spiked Blank | Fluoranthene | 2012/04/03 | | 86 | % | 60 - 130 |
| | | RPD | Fluoranthene | 2012/04/03 | 15.9 | | % | 50 |
| | | Spiked Blank | Fluorene | 2012/04/03 | | 65 | % | 60 - 130 |
| | | RPD | Fluorene | 2012/04/03 | 11.9 | | % | 50 |
| | | Spiked Blank | Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 80 | % | 60 - 130 |
| | | RPD | Indeno(1,2,3-cd)pyrene | 2012/04/03 | 15.7 | | % | 50 |
| | | Spiked Blank | Naphthalene | 2012/04/03 | | 61 | % | 60 - 130 |
| | | RPD | Naphthalene | 2012/04/03 | 4.8 | | % | 50 |
| | | Spiked Blank | Phenanthrene | 2012/04/03 | | 69 | % | 60 - 130 |
| | | RPD | Phenanthrene | 2012/04/03 | 12.6 | | % | 50 |
| | | Spiked Blank | Pyrene | 2012/04/03 | | 75 | % | 60 - 130 |
| | | RPD | Pyrene | 2012/04/03 | 15.6 | | % | 50 |
| | | Method Blank | D10-2-Methylnaphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/03 | | 110 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/03 | | 100 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/03 | | 98 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/03 | | 88 | % | 50 - 150 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB242512

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2805193 | WZ | Method Blank | D12-Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/03 | | 102 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/03 | | 106 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/03 | | 70 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/03 | | 60 | % | 50 - 150 |
| | | | 1-Methylnaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 1-Methylphenanthrene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Chloronaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Methylanthracene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Methylnaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 3-Methylcholanthrene | 2012/04/03 | <2.0 | | ug | |
| | | | 7,12-Dimethylbenzo(a)anthracene | 2012/04/03 | <0.10 | | ug | |
| | | | 9,10-Dimethylanthracene | 2012/04/03 | <0.40 | | ug | |
| | | | Acenaphthene | 2012/04/03 | <0.050 | | ug | |
| | | | Acenaphthylene | 2012/04/03 | <0.050 | | ug | |
| | | | Anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(a)anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(a)fluorene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(a)pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(b)fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(b)fluorene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(e)pyrene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(g,h,i)perylene | 2012/04/03 | 0.050, RDL=0.050 | | ug | |
| | | | Benzo(k)fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Biphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Chrysene | 2012/04/03 | <0.050 | | ug | |
| | | | Coronene | 2012/04/03 | <0.10 | | ug | |
| | | | Dibenz(a,h)anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Dibenzo(a,e)pyrene | 2012/04/03 | <0.20 | | ug | |
| | | | Fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Fluorene | 2012/04/03 | <0.050 | | ug | |
| | | | Indeno(1,2,3-cd)pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | m-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Naphthalene | 2012/04/03 | <0.072 | | ug | |
| | | | o-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Perylene | 2012/04/03 | <0.10 | | ug | |
| | | | Phenanthrene | 2012/04/03 | <0.050 | | ug | |
| | | | p-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | Quinoline | 2012/04/03 | <0.40 | | ug | |
| | | | Tetralin | 2012/04/03 | <0.10 | | ug | |

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
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# MAXXAM

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: Cold Lake South
Station ID: Lica1
Field Sample ID: LICA PUF/CLS/Mar 22, 2012

Puf+ s/n: 100-1020
Motor s/n: 1138
Installation Date/Time: Mar 20, 2011 @ 14:20 mst
Removal Date/Time: Mar 23, 2011 @ 14:25 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | Finish Time (MST) | Elapsed Time (Hours) |
| 22-Mar-12 | 03/22/2012 0:00 | 03/23/2012 0:00 | 24.000 |

| PUF and QFF Information | | | |
|---|---|---|---|
| Date Received | Date Shipped | Puf Expiration Date | QFF Prep Date |
| 16-Mar-12 | 26-Mar-12 | 28-Mar-12 | ???? |

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

| Sampling Data | | | |
|---|---|---|---|
| Average Pressure(mmHg) | AverageFlow (Qstd slpm) | Average Tempurature ( C) | Volume (Vstd $m^3$) |
| 715 | 229 | -5.8 | 330.36 |

**Time set correctly prior to sampling? YES**
**Timer set correctly prior to sampling? YES**
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 10843
GB234606 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Mar 22, 2012

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

ACCREDITED IN ACCORDANCE WITH nelac

Your C.O.C. #: 10843

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

**Report Date: 2012/04/09**

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B243302**
**Received: 2012/03/28, 09:30**

Sample Matrix: PUF AND FILTER
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | 2 | 2012/03/29 | 2012/04/03 | BRL SOP-00201 | CARB429(ARBM1,M2)mod |

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

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

| Maxxam ID | | MX8768 | | MX8769 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 | | 2012/03/22 | | |
| COC Number | | 10843 | | 10843 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 22, 12** | **RDL** | **LICA PUFF+QFF/PORT/MAR 22, 12** | **RDL** | **QC Batch** |
| **Semivolatile Organics** | | | | | | |
| 1-Methylnaphthalene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 1-Methylphenanthrene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Chloronaphthalene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Methylanthracene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Methylnaphthalene | ug | 0.18 | 0.10 | <0.10 | 0.10 | 2805193 |
| 3-Methylcholanthrene | ug | <2.0 | 2.0 | <2.0 | 2.0 | 2805193 |
| 7,12-Dimethylbenzo(a)anthracene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 9,10-Dimethylanthracene | ug | <0.40 | 0.40 | <0.40 | 0.40 | 2805193 |
| Acenaphthene | ug | <0.057 | 0.057 | <0.050 | 0.050 | 2805193 |
| Acenaphthylene | ug | 0.116 | 0.050 | <0.050 | 0.050 | 2805193 |
| Anthracene | ug | 0.060 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(a)anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(a)fluorene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(a)pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(b)fluoranthene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(b)fluorene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(e)pyrene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(g,h,i)perylene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(k)fluoranthene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Biphenyl | ug | 0.21 | 0.10 | <0.10 | 0.10 | 2805193 |
| Chrysene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Coronene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Dibenz(a,h)anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Dibenzo(a,e)pyrene | ug | <0.20 | 0.20 | <0.20 | 0.20 | 2805193 |
| Fluoranthene | ug | 0.186 | 0.050 | <0.050 | 0.050 | 2805193 |
| Fluorene | ug | 0.120 | 0.050 | 0.100 | 0.050 | 2805193 |
| Indeno(1,2,3-cd)pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| m-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Naphthalene | ug | 0.210 | 0.072 | <0.072 | 0.072 | 2805193 |
| o-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Perylene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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

| Maxxam ID | | MX8768 | | MX8769 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 | | 2012/03/22 | | |
| COC Number | | 10843 | | 10843 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 22, 12** | **RDL** | **LICA PUFF+QFF/PORT/MAR 22, 12** | **RDL** | **QC Batch** |
| Phenanthrene | ug | 0.608 | 0.050 | 0.110 | 0.050 | 2805193 |
| p-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Pyrene | ug | 0.106 | 0.050 | <0.050 | 0.050 | 2805193 |
| Quinoline | ug | <0.40 | 0.40 | <0.40 | 0.40 | 2805193 |
| Tetralin | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| **Surrogate Recovery (%)** | | | | | | |
| D10-2-Methylnaphthalene | % | 74 | | 68 | | 2805193 |
| D10-Fluoranthene | % | 106 | | 98 | | 2805193 |
| D10-Fluorene (FS) | % | 43 (1) | | 36 (1) | | 2805193 |
| D10-Phenanthrene | % | 96 | | 88 | | 2805193 |
| D12-Benzo(a)anthracene | % | 100 | | 98 | | 2805193 |
| D12-Benzo(a)pyrene | % | 104 | | 100 | | 2805193 |
| D12-Benzo(b)fluoranthene | % | 98 | | 96 | | 2805193 |
| D12-Benzo(ghi)perylene | % | 108 | | 102 | | 2805193 |
| D12-Benzo(k)fluoranthene | % | 102 | | 96 | | 2805193 |
| D12-Chrysene | % | 92 | | 96 | | 2805193 |
| D12-Indeno(1,2,3-cd)pyrene | % | 106 | | 102 | | 2805193 |
| D12-Perylene | % | 102 | | 98 | | 2805193 |
| D14-Dibenzo(a,h)anthracene | % | 110 | | 102 | | 2805193 |
| D14-Terphenyl (FS) | % | 107 | | 100 | | 2805193 |
| D8-Acenaphthylene | % | 86 | | 78 | | 2805193 |
| D8-Naphthalene | % | 70 | | 64 | | 2805193 |

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


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Maxxam Analytics

Maxxam Job #: B243302
Report Date: 2012/04/09

## Test Summary

**Maxxam ID** MX8768 **Collected** 2012/03/22
**Sample ID** LICA PUFF+QFF/CLS/MAR 22, 12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2805193 | 2012/03/29 | 2012/04/03 | WENDY ZHAO |

**Maxxam ID** MX8769 **Collected** 2012/03/22
**Sample ID** LICA PUFF+QFF/PORT/MAR 22, 12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2805193 | 2012/03/29 | 2012/04/03 | WENDY ZHAO |


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**GENERAL COMMENTS**

PAHMS-F
7,12-Dimethylbenzo(a)anthracene is above 25% RSD in initial calibration. No positive found for this compounds.

Chrysene is statistically out of control at 85.25% recovery in the spike:dup. Spike recovery is in control. Acceptance criteria met for both spike and dup. Data reported and flagged.

Not calibrated for Benzo(b)Anthracene, Picene, Dibenzo(a,c) anthracene or Triphenylene. An estimated mdl for each of these compounds is 0.1ug .
Since Dibenzo(a,c) anthracene co-elutes with Dibenzo(a,h) anthracene and Triphenylene with Chrysene each would have a value below estimated mdl.
Benzo(b)Anthracene elutes after Benzo(a)Anthracene and Chysene. Picene elutes after Dibenzo(a,h) anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MX8768-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Mdl was raised for Acenphthene due to sample matrix interference on a possible possitive.

Sample MX8769-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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


Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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

# Quality Assurance Report

Maxxam Job Number: GB243302

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2805193 | WZ | Spiked Blank | D10-2-Methylnaphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/03 | | 78 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/03 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/03 | | 90 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/03 | | 70 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | Acenaphthene | 2012/04/03 | | 63 | % | 60 - 130 |
| | | RPD | Acenaphthene | 2012/04/03 | 9.5 | | % | 50 |
| | | Spiked Blank | Acenaphthylene | 2012/04/03 | | 63 | % | 60 - 130 |
| | | RPD | Acenaphthylene | 2012/04/03 | 10.6 | | % | 50 |
| | | Spiked Blank | Anthracene | 2012/04/03 | | 76 | % | 60 - 130 |
| | | RPD | Anthracene | 2012/04/03 | 11.7 | | % | 50 |
| | | Spiked Blank | Benzo(a)anthracene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Benzo(a)anthracene | 2012/04/03 | 13.2 | | % | 50 |
| | | Spiked Blank | Benzo(a)pyrene | 2012/04/03 | | 72 | % | 60 - 130 |
| | | RPD | Benzo(a)pyrene | 2012/04/03 | 14.5 | | % | 50 |
| | | Spiked Blank | Benzo(b)fluoranthene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Benzo(b)fluoranthene | 2012/04/03 | 12.1 | | % | 50 |
| | | Spiked Blank | Benzo(g,h,i)perylene | 2012/04/03 | | 81 | % | 60 - 130 |
| | | RPD | Benzo(g,h,i)perylene | 2012/04/03 | 12.7 | | % | 50 |
| | | Spiked Blank | Benzo(k)fluoranthene | 2012/04/03 | | 89 | % | 60 - 130 |
| | | RPD | Benzo(k)fluoranthene | 2012/04/03 | 10.9 | | % | 50 |
| | | Spiked Blank | Chrysene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Chrysene | 2012/04/03 | 9.5 | | % | 50 |
| | | Spiked Blank | Dibenz(a,h)anthracene | 2012/04/03 | | 82 | % | 60 - 130 |
| | | RPD | Dibenz(a,h)anthracene | 2012/04/03 | 16.7 | | % | 50 |
| | | Spiked Blank | Fluoranthene | 2012/04/03 | | 86 | % | 60 - 130 |
| | | RPD | Fluoranthene | 2012/04/03 | 15.9 | | % | 50 |
| | | Spiked Blank | Fluorene | 2012/04/03 | | 65 | % | 60 - 130 |
| | | RPD | Fluorene | 2012/04/03 | 11.9 | | % | 50 |
| | | Spiked Blank | Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 80 | % | 60 - 130 |
| | | RPD | Indeno(1,2,3-cd)pyrene | 2012/04/03 | 15.7 | | % | 50 |
| | | Spiked Blank | Naphthalene | 2012/04/03 | | 61 | % | 60 - 130 |
| | | RPD | Naphthalene | 2012/04/03 | 4.8 | | % | 50 |
| | | Spiked Blank | Phenanthrene | 2012/04/03 | | 69 | % | 60 - 130 |
| | | RPD | Phenanthrene | 2012/04/03 | 12.6 | | % | 50 |
| | | Spiked Blank | Pyrene | 2012/04/03 | | 75 | % | 60 - 130 |
| | | RPD | Pyrene | 2012/04/03 | 15.6 | | % | 50 |
| | | Method Blank | D10-2-Methylnaphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/03 | | 110 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/03 | | 100 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/03 | | 98 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/03 | | 88 | % | 50 - 150 |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB243302

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2805193 | WZ | Method Blank | D12-Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/03 | | 102 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/03 | | 106 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/03 | | 70 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/03 | | 60 | % | 50 - 150 |
| | | | 1-Methylnaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 1-Methylphenanthrene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Chloronaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Methylanthracene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Methylnaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 3-Methylcholanthrene | 2012/04/03 | <2.0 | | ug | |
| | | | 7,12-Dimethylbenzo(a)anthracene | 2012/04/03 | <0.10 | | ug | |
| | | | 9,10-Dimethylanthracene | 2012/04/03 | <0.40 | | ug | |
| | | | Acenaphthene | 2012/04/03 | <0.050 | | ug | |
| | | | Acenaphthylene | 2012/04/03 | <0.050 | | ug | |
| | | | Anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(a)anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(a)fluorene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(a)pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(b)fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(b)fluorene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(e)pyrene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(g,h,i)perylene | 2012/04/03 | 0.050, RDL=0.050 | | ug | |
| | | | Benzo(k)fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Biphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Chrysene | 2012/04/03 | <0.050 | | ug | |
| | | | Coronene | 2012/04/03 | <0.10 | | ug | |
| | | | Dibenz(a,h)anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Dibenzo(a,e)pyrene | 2012/04/03 | <0.20 | | ug | |
| | | | Fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Fluorene | 2012/04/03 | <0.050 | | ug | |
| | | | Indeno(1,2,3-cd)pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | m-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Naphthalene | 2012/04/03 | <0.072 | | ug | |
| | | | o-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Perylene | 2012/04/03 | <0.10 | | ug | |
| | | | Phenanthrene | 2012/04/03 | <0.050 | | ug | |
| | | | p-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | Quinoline | 2012/04/03 | <0.40 | | ug | |
| | | | Tetralin | 2012/04/03 | <0.10 | | ug | |

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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# MAXXAM

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: Cold Lake South
Station ID: Lica1
Field Sample ID: LICA PUF/CLS/Mar 28, 2012

Puf+ s/n: 100-1020
Motor s/n: 1138
Installation Date/Time: Mar 23, 2011 @ 14:40 mst
Removal Date/Time: Mar 30, 2011 @ 08:10 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | Finish Time (MST) | Elapsed Time (Hours) |
| 28-Mar-12 | 03/28/2012 0:00 | 03/29/2012 0:00 | 24.000 |

| PUF and QFF Information | | | |
|---|---|---|---|
| Date Received | Date Shipped | Puf Expiration Date | QFF Prep Date |
| 22-Mar-12 | 02-Apr-12 | 28-Mar-12 | ???? |

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

| Sampling Data | | | |
|---|---|---|---|
| Average Pressure(mmHg) | AverageFlow (Qstd slpm) | Average Tempurature ( C) | Volume (Vstd $m^3$) |
| 707 | 229 | 2.8 | 330.34 |

**Time set correctly prior to sampling? YES**
**Timer set correctly prior to sampling? YES**
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 10795
GB234609 PUFF # 1
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/CLS/Mar 28, 2012

Technician Signiture: Ting Xu

Success Through Science®

Your C.O.C. #: 10795

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

**Report Date: 2012/04/11**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B247211**
**Received: 2012/04/04, 09:00**

Sample Matrix: PUF AND FILTER
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | 2 | 2012/04/04 | 2012/04/09 | BRL SOP-00201 | CARB429(ARBM1,M2)mod |

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

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

| Maxxam ID | | NA0158 | NA0159 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | 2012/03/28 | | |
| COC Number | | 10795 | 10795 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 28,12** | **LICA PUFF+QFF/PORT/MAR 28,12** | **RDL** | **QC Batch** |
| **Semivolatile Organics** | | | | | |
| 1-Methylnaphthalene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 1-Methylphenanthrene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 2-Chloronaphthalene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 2-Methylanthracene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 2-Methylnaphthalene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 3-Methylcholanthrene | ug | <2.0 | <2.0 | 2.0 | 2810843 |
| 7,12-Dimethylbenzo(a)anthracene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 9,10-Dimethylanthracene | ug | <0.40 | <0.40 | 0.40 | 2810843 |
| Acenaphthene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Acenaphthylene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Anthracene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(a)anthracene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(a)fluorene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Benzo(a)pyrene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(b)fluoranthene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(b)fluorene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Benzo(e)pyrene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Benzo(g,h,i)perylene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(k)fluoranthene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Biphenyl | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Chrysene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Coronene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Dibenz(a,h)anthracene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Dibenzo(a,e)pyrene | ug | <0.20 | <0.20 | 0.20 | 2810843 |
| Fluoranthene | ug | 0.068 | <0.050 | 0.050 | 2810843 |
| Fluorene | ug | 0.104 | 0.122 | 0.050 | 2810843 |
| Indeno(1,2,3-cd)pyrene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| m-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Naphthalene | ug | 0.108 | 0.074 | 0.072 | 2810843 |
| o-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Perylene | ug | <0.10 | <0.10 | 0.10 | 2810843 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B247211
Report Date: 2012/04/11

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

| Maxxam ID | | NA0158 | NA0159 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | 2012/03/28 | | |
| COC Number | | 10795 | 10795 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 28,12** | **LICA PUFF+QFF/PORT/MAR 28,12** | **RDL** | **QC Batch** |
| Phenanthrene | ug | 0.248 | 0.132 | 0.050 | 2810843 |
| p-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Pyrene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Quinoline | ug | <0.40 | <0.40 | 0.40 | 2810843 |
| Tetralin | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| **Surrogate Recovery (%)** | | | | | |
| D10-2-Methylnaphthalene | % | 78 | 76 | | 2810843 |
| D10-Fluoranthene | % | 106 | 108 | | 2810843 |
| D10-Fluorene (FS) | % | 16 (1) | 18 (1) | | 2810843 |
| D10-Phenanthrene | % | 98 | 98 | | 2810843 |
| D12-Benzo(a)anthracene | % | 100 | 102 | | 2810843 |
| D12-Benzo(a)pyrene | % | 92 | 94 | | 2810843 |
| D12-Benzo(b)fluoranthene | % | 92 | 92 | | 2810843 |
| D12-Benzo(ghi)perylene | % | 92 | 92 | | 2810843 |
| D12-Benzo(k)fluoranthene | % | 92 | 90 | | 2810843 |
| D12-Chrysene | % | 82 | 80 | | 2810843 |
| D12-Indeno(1,2,3-cd)pyrene | % | 90 | 90 | | 2810843 |
| D12-Perylene | % | 92 | 92 | | 2810843 |
| D14-Dibenzo(a,h)anthracene | % | 94 | 96 | | 2810843 |
| D14-Terphenyl (FS) | % | 111 | 114 | | 2810843 |
| D8-Acenaphthylene | % | 82 | 88 | | 2810843 |
| D8-Naphthalene | % | 72 | 70 | | 2810843 |

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


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Maxxam Analytics

Maxxam Job #: B247211
Report Date: 2012/04/11

## Test Summary

**Maxxam ID** NA0158 **Collected** 2012/03/28
**Sample ID** LICA PUFF+QFF/CLS/MAR 28,12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/04/04

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2810843 | 2012/04/04 | 2012/04/09 | WENDY ZHAO |

**Maxxam ID** NA0159 **Collected** 2012/03/28
**Sample ID** LICA PUFF+QFF/PORT/MAR 28,12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/04/04

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2810843 | 2012/04/04 | 2012/04/09 | WENDY ZHAO |


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Maxxam Analytics

Maxxam Job #: B247211
Report Date: 2012/04/11

**GENERAL COMMENTS**

PAHMS-F
7,12-Dimethylbenzo(a)anthracene is above 25% RSD in initial calibration.Coronene and Dibenzo(a,e)pyrene are above 25% RSD in continune calibration .No positives found for these compounds.

Not calibrated for Benzo(b)Anthracene, Picene, Dibenzo(a,c) anthracene or Triphenylene. An estimated mdl for each of these compounds is 0.1ug .
Since Dibenzo(a,c) anthracene co-elutes with Dibenzo(a,h) anthracene and Triphenylene with Chrysene each would have a value below estimated mdl.
Benzo(b)Anthracene elutes after Benzo(a)Anthracene and Chysene. Picene elutes after Dibenzo(a,h) anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample NA0158-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Sample NA0159-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Internal Std area response criteria was high in Sample. Rerun with similar results. Original run reported.

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


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

# Quality Assurance Report

Maxxam Job Number: GB247211

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2810843 | WZ | Spiked Blank | D10-2-Methylnaphthalene | 2012/04/09 | | 82 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/09 | | 98 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/09 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/09 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/09 | | 98 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/09 | | 98 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/09 | | 90 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/09 | | 86 | % | 50 - 150 |
| | | | D12-Indeno(1,2,3-cd)pyrene | 2012/04/09 | | 88 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/09 | | 96 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/09 | | 88 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/09 | | 80 | % | 50 - 150 |
| | | | Acenaphthene | 2012/04/09 | | 80 | % | 60 - 130 |
| | | RPD | Acenaphthene | 2012/04/09 | 5.1 | | % | 50 |
| | | Spiked Blank | Acenaphthylene | 2012/04/09 | | 81 | % | 60 - 130 |
| | | RPD | Acenaphthylene | 2012/04/09 | 3.1 | | % | 50 |
| | | Spiked Blank | Anthracene | 2012/04/09 | | 85 | % | 60 - 130 |
| | | RPD | Anthracene | 2012/04/09 | 2.9 | | % | 50 |
| | | Spiked Blank | Benzo(a)anthracene | 2012/04/09 | | 84 | % | 60 - 130 |
| | | RPD | Benzo(a)anthracene | 2012/04/09 | 2.7 | | % | 50 |
| | | Spiked Blank | Benzo(a)pyrene | 2012/04/09 | | 74 | % | 60 - 130 |
| | | RPD | Benzo(a)pyrene | 2012/04/09 | 0.3 | | % | 50 |
| | | Spiked Blank | Benzo(b)fluoranthene | 2012/04/09 | | 83 | % | 60 - 130 |
| | | RPD | Benzo(b)fluoranthene | 2012/04/09 | 0.9 | | % | 50 |
| | | Spiked Blank | Benzo(g,h,i)perylene | 2012/04/09 | | 76 | % | 60 - 130 |
| | | RPD | Benzo(g,h,i)perylene | 2012/04/09 | 4.2 | | % | 50 |
| | | Spiked Blank | Benzo(k)fluoranthene | 2012/04/09 | | 90 | % | 60 - 130 |
| | | RPD | Benzo(k)fluoranthene | 2012/04/09 | 6.6 | | % | 50 |
| | | Spiked Blank | Chrysene | 2012/04/09 | | 75 | % | 60 - 130 |
| | | RPD | Chrysene | 2012/04/09 | 6.5 | | % | 50 |
| | | Spiked Blank | Dibenz(a,h)anthracene | 2012/04/09 | | 81 | % | 60 - 130 |
| | | RPD | Dibenz(a,h)anthracene | 2012/04/09 | 5.4 | | % | 50 |
| | | Spiked Blank | Fluoranthene | 2012/04/09 | | 92 | % | 60 - 130 |
| | | RPD | Fluoranthene | 2012/04/09 | 1.9 | | % | 50 |
| | | Spiked Blank | Fluorene | 2012/04/09 | | 82 | % | 60 - 130 |
| | | RPD | Fluorene | 2012/04/09 | 1.5 | | % | 50 |
| | | Spiked Blank | Indeno(1,2,3-cd)pyrene | 2012/04/09 | | 77 | % | 60 - 130 |
| | | RPD | Indeno(1,2,3-cd)pyrene | 2012/04/09 | 4.1 | | % | 50 |
| | | Spiked Blank | Naphthalene | 2012/04/09 | | 79 | % | 60 - 130 |
| | | RPD | Naphthalene | 2012/04/09 | 12.8 | | % | 50 |
| | | Spiked Blank | Phenanthrene | 2012/04/09 | | 84 | % | 60 - 130 |
| | | RPD | Phenanthrene | 2012/04/09 | 0.9 | | % | 50 |
| | | Spiked Blank | Pyrene | 2012/04/09 | | 81 | % | 60 - 130 |
| | | RPD | Pyrene | 2012/04/09 | 2.7 | | % | 50 |
| | | Method Blank | D10-2-Methylnaphthalene | 2012/04/09 | | 84 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/09 | | 88 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/09 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/09 | | 90 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/09 | | 84 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/09 | | 82 | % | 50 - 150 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB247211

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2810843 | WZ | Method Blank | D12-Indeno(1,2,3-cd)pyrene | 2012/04/09 | | 82 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/09 | | 84 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/09 | | 86 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/09 | | 82 | % | 50 - 150 |
| | | | 1-Methylnaphthalene | 2012/04/09 | <0.10 | | ug | |
| | | | 1-Methylphenanthrene | 2012/04/09 | <0.10 | | ug | |
| | | | 2-Chloronaphthalene | 2012/04/09 | <0.10 | | ug | |
| | | | 2-Methylanthracene | 2012/04/09 | <0.10 | | ug | |
| | | | 2-Methylnaphthalene | 2012/04/09 | <0.10 | | ug | |
| | | | 3-Methylcholanthrene | 2012/04/09 | <2.0 | | ug | |
| | | | 7,12-Dimethylbenzo(a)anthracene | 2012/04/09 | <0.10 | | ug | |
| | | | 9,10-Dimethylanthracene | 2012/04/09 | <0.40 | | ug | |
| | | | Acenaphthene | 2012/04/09 | <0.050 | | ug | |
| | | | Acenaphthylene | 2012/04/09 | <0.050 | | ug | |
| | | | Anthracene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(a)anthracene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(a)fluorene | 2012/04/09 | <0.10 | | ug | |
| | | | Benzo(a)pyrene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(b)fluoranthene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(b)fluorene | 2012/04/09 | <0.10 | | ug | |
| | | | Benzo(e)pyrene | 2012/04/09 | <0.10 | | ug | |
| | | | Benzo(g,h,i)perylene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(k)fluoranthene | 2012/04/09 | 0.050, RDL=0.050 | | ug | |
| | | | Biphenyl | 2012/04/09 | <0.10 | | ug | |
| | | | Chrysene | 2012/04/09 | <0.050 | | ug | |
| | | | Coronene | 2012/04/09 | <0.10 | | ug | |
| | | | Dibenz(a,h)anthracene | 2012/04/09 | <0.050 | | ug | |
| | | | Dibenzo(a,e)pyrene | 2012/04/09 | <0.20 | | ug | |
| | | | Fluoranthene | 2012/04/09 | <0.050 | | ug | |
| | | | Fluorene | 2012/04/09 | <0.050 | | ug | |
| | | | Indeno(1,2,3-cd)pyrene | 2012/04/09 | <0.050 | | ug | |
| | | | m-Terphenyl | 2012/04/09 | <0.10 | | ug | |
| | | | Naphthalene | 2012/04/09 | <0.072 | | ug | |
| | | | o-Terphenyl | 2012/04/09 | <0.10 | | ug | |
| | | | Perylene | 2012/04/09 | <0.10 | | ug | |
| | | | Phenanthrene | 2012/04/09 | <0.050 | | ug | |
| | | | p-Terphenyl | 2012/04/09 | <0.10 | | ug | |
| | | | Pyrene | 2012/04/09 | <0.050 | | ug | |
| | | | Quinoline | 2012/04/09 | <0.40 | | ug | |
| | | | Tetralin | 2012/04/09 | <0.10 | | ug | |

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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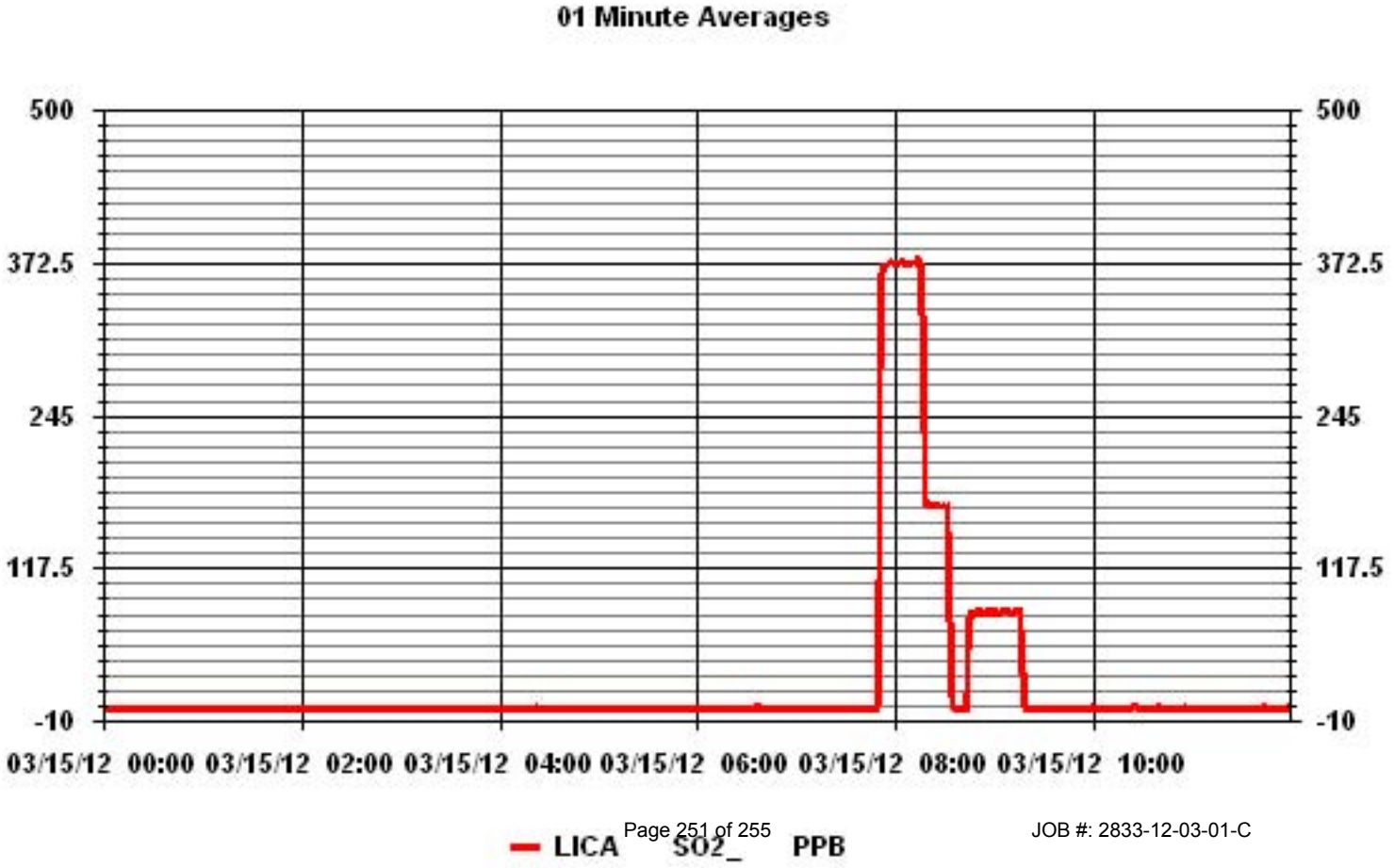
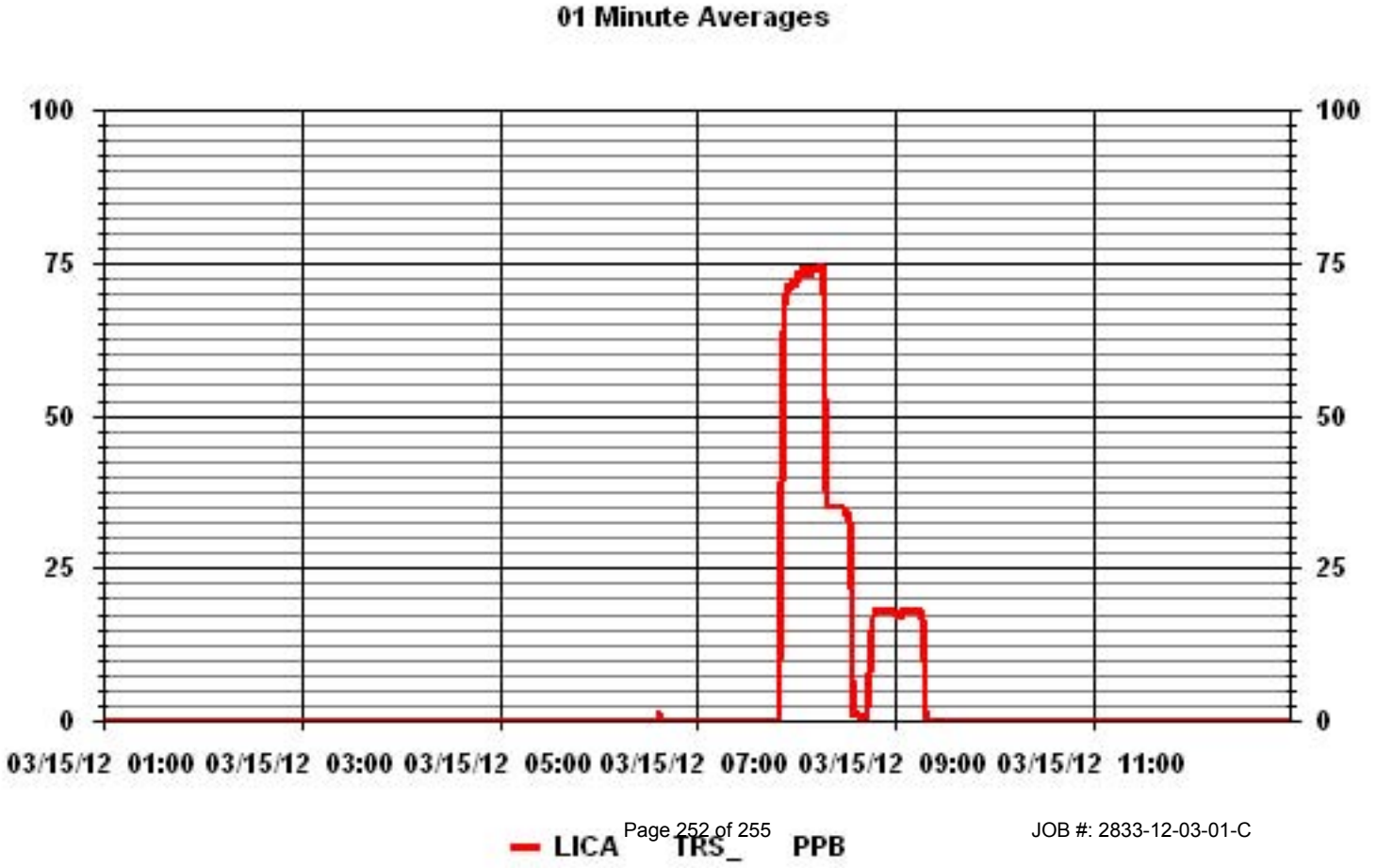
# AE Audit Results



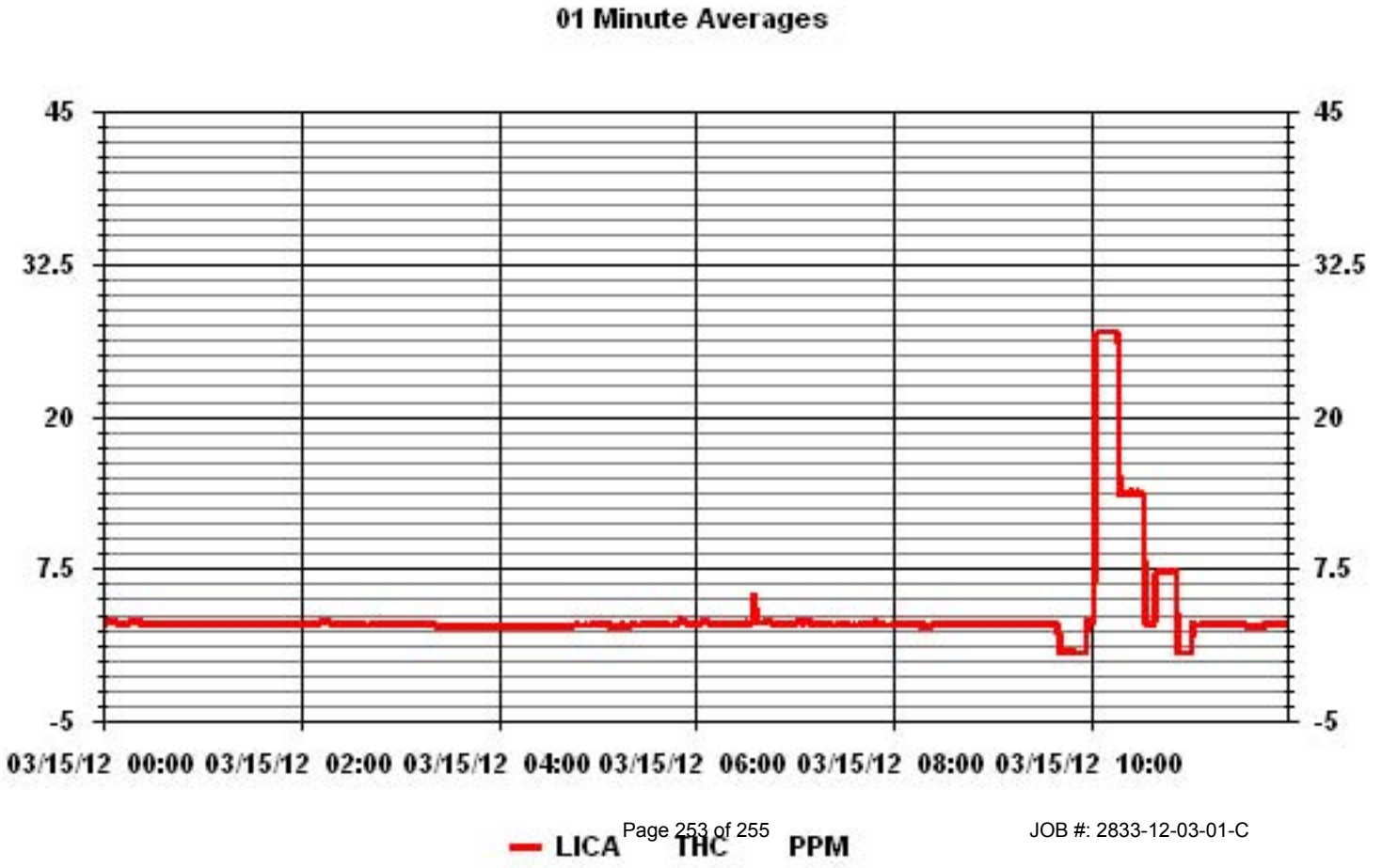



JOB #: 2833-12-03-01-C



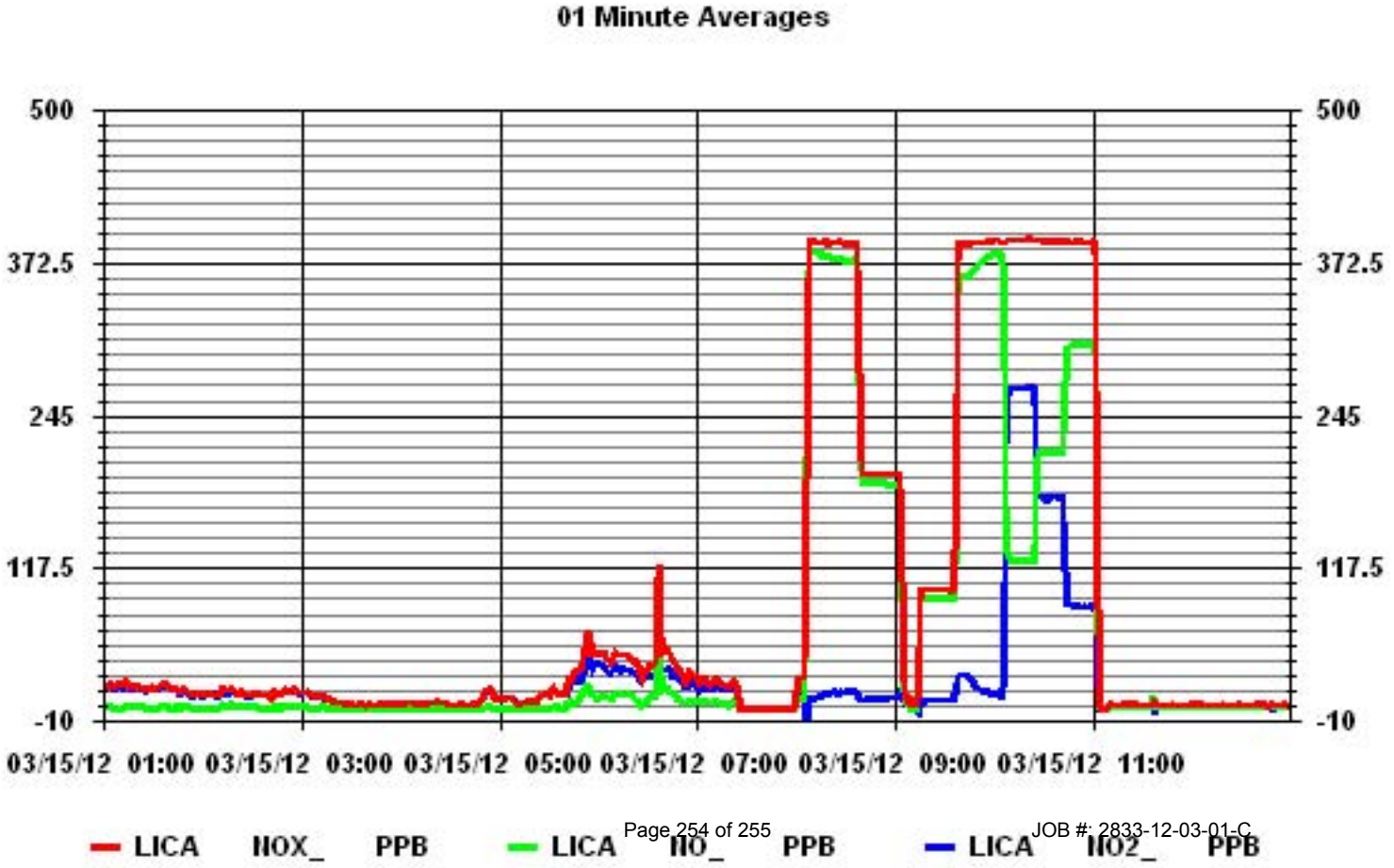


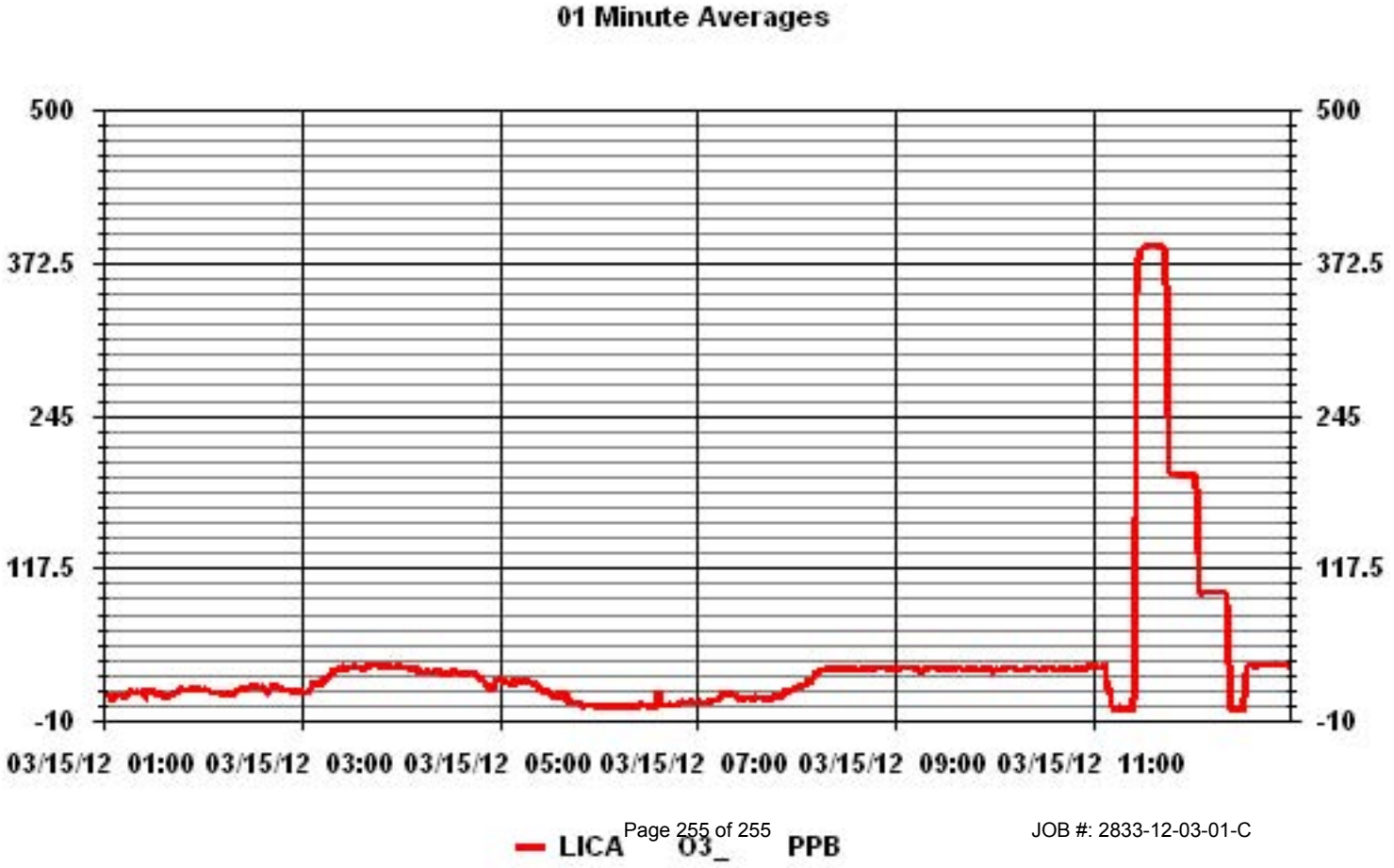

JOB #: 2833-12-03-01-C






JOB #: 2833-12-03-01-C


01 Minute Averages
500
372.5
245
117.5
-10
03/15/12 01:00
03/15/12 03:00
03/15/12 05:00
03/15/12 07:00
03/15/12 09:00
03/15/12 11:00
LICA NOX_ PPB
LICA NO_ PPB
LICA NO2_ PPB






JOB #: 2833-12-03-01-C

# Lakeland Industry & Community Association

Maskwa Monitoring Site
Ambient Air Monitoring
Data Report
For
March 2012

Prepared By:


April 26, 2012

# 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: March 2012

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Katherine Rapske

# 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 – March 2012

| 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 | 0.54 | 11 | 28 | 18 | 10.1 | 111(ESE) | 3.6 | 28 | 100.0 |
| H2S (PPB) | 10 | 3 | 0 | 0 | 0.26 | 1 | VAR | VAR | VAR | VAR | 1.0 | 11 | 99.9 |
| THC (PPM) | - | - | - | - | 2.13 | 3.7 | 3 | 8 | 2.8 | 191(S) | 2.5 | 3 | 99.9 |
| NOx (PPB) | - | - | - | - | 2.82 | 22 | 20 | 4 | 9.7 | 304(WNW) | 6.1 | 28 | 99.9 |
| NO (PPB) | - | - | - | - | 0.33 | 7 | 20 | 4 | 9.7 | 304(WNW) | 1.0 | 20, 21 | 99.9 |
| $NO_2$ (PPB) | 159 | - | 0 | - | 2.37 | 18 | 5 | 3 | 3.6 | 279(W) | 5.3 | 3 | 99.9 |
| VECTOR WS (KPH) | - | - | - | - | 6.49 | 17.4 | 14 | 0 | - | 288(WNW) | 10.9 | 1 | 100.0 |
| VECTOR WD (DEGREES) | - | - | - | - | 87(E) | - | - | - | - | - | - | - | 100.0 |
| RELATIVE HUMIDITY (%) | - | - | - | - | 65.37 | 90 | 17, 18 | VAR | VAR | VAR | 80.5 | 18 | 100.0 |
| TEMPERATURE (DEG C) | - | - | - | - | -1.75 | 13.5 | 30 | 15 | 8.8 | 287(WNW) | 5.2 | 30 | 100.0 |
| BAROMETRIC PRESSURE (MILIBAR) | - | - | - | - | 932 | 950 | 23 | 10 | 9.3 | 46(NE) | 948.5 | 23 | 100.0 |
| PRECIPITATION (MM) | - | - | - | - | 0.01 | 1.1 | 17 | 21 | 9.4 | 108(ESE) | 2.5 | 17 | 100.0 |

NA-NOT APPLICABLE VAR-VARIOUS

# General Monthly Summary

**Equipment Operation**

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

**AQM STATION – LICA – Maskwa**

**A trailer audit was performed by Alberta Environment on March 16th.**

**Sulphur Dioxide (PPB)**

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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on March 29th. Data was corrected using daily zero information.

**Hydrogen Sulphide (PPB)**

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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on March 29th. Data was corrected using daily zero information.

**Total HydroCarbon (PPM)**

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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on March 29th. Data was corrected using daily zero information.

# General Monthly Summary

**AQM STATION – LICA – Maskwa**

**Nitrogen Dioxide (PPB)**

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

No operational issues were observed during the month. The inlet filter was changed before the monthly calibration was started on March 29th. Data was corrected using daily zero information.

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

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

The wind system is reported as vector wind speed and vector wind direction.
No operational issues were observed this month.

**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 this 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 March 29th.

# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Sulphur Dioxide

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

MARCH 2012

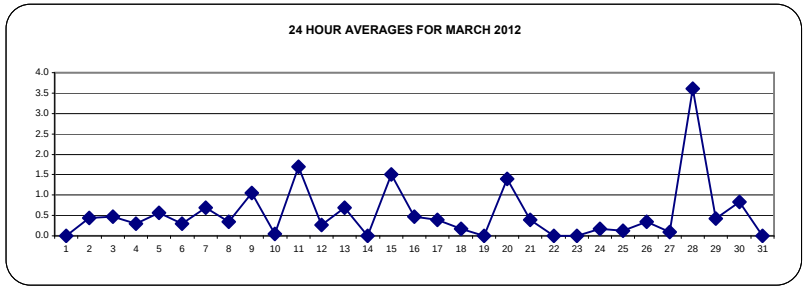
**SULPHUR DIOXIDE ($SO_2$)** hourly averages in ppb

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 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **IZS** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | **IZS** | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0.5 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.3 | 24 |
| 5 | 0 | 0 | 1 | 3 | 4 | 2 | 1 | 1 | 1 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.6 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 1 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0.3 | 24 |
| 7 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 3 | 0.7 | 24 |
| 8 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 9 | 0 | 0 | 0 | 1 | 1 | 1 | **IZS** | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 0 | 3 | 1.0 | 24 |
| 10 | 0 | 0 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 11 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 5 | 1 | 2 | 6 | 4 | 3 | 3 | 4 | 5 | 0 | 0 | 3 | 6 | 1.7 | 24 |
| 12 | 3 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 3 | 0.3 | 24 |
| 13 | 0 | 0 | **IZS** | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 3 | 0 | 0 | 4 | 0.7 | 24 |
| 14 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 15 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 5 | 0 | 5 | 9 | 5 | 2 | 4 | 1 | **IZS** | 9 | 1.5 | 24 |
| 16 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | 3 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 3 | 0.5 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 2 | 3 | 0 | **IZS** | 0 | 0 | 3 | 0.4 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 2 | 0.2 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 3 | 3 | 7 | 10 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 10 | 1.4 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.4 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 2 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.3 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 28 | 0 | 0 | 0 | 1 | 1 | 0 | 8 | 7 | 2 | 2 | **IZS** | 5 | 5 | 7 | 6 | 7 | 7 | 7 | **11** | 3 | 2 | 0 | 0 | 2 | **11** | **3.6** | 24 |
| 29 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | 2 | 0 | 1 | 0 | 0 | 0 | 3 | 0.4 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 8 | 5 | 2 | 0 | 0 | 0 | 8 | 0.8 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| HOURLY MAX | 3 | 3 | 3 | 7 | 10 | 8 | 8 | 7 | 2 | 2 | 3 | 5 | 5 | 7 | 6 | 7 | 7 | 7 | 11 | 5 | 5 | 4 | 3 | 3 | | | |
| HOURLY AVG | 0.4 | 0.3 | 0.2 | 0.5 | 0.6 | 0.4 | 0.4 | 0.6 | 0.3 | 0.5 | 0.6 | 0.7 | 0.6 | 0.5 | 0.5 | 1.0 | 0.6 | 0.7 | 1.3 | 0.8 | 0.7 | 0.4 | 0.2 | 0.3 | | | |

**STATUS FLAG CODES**

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



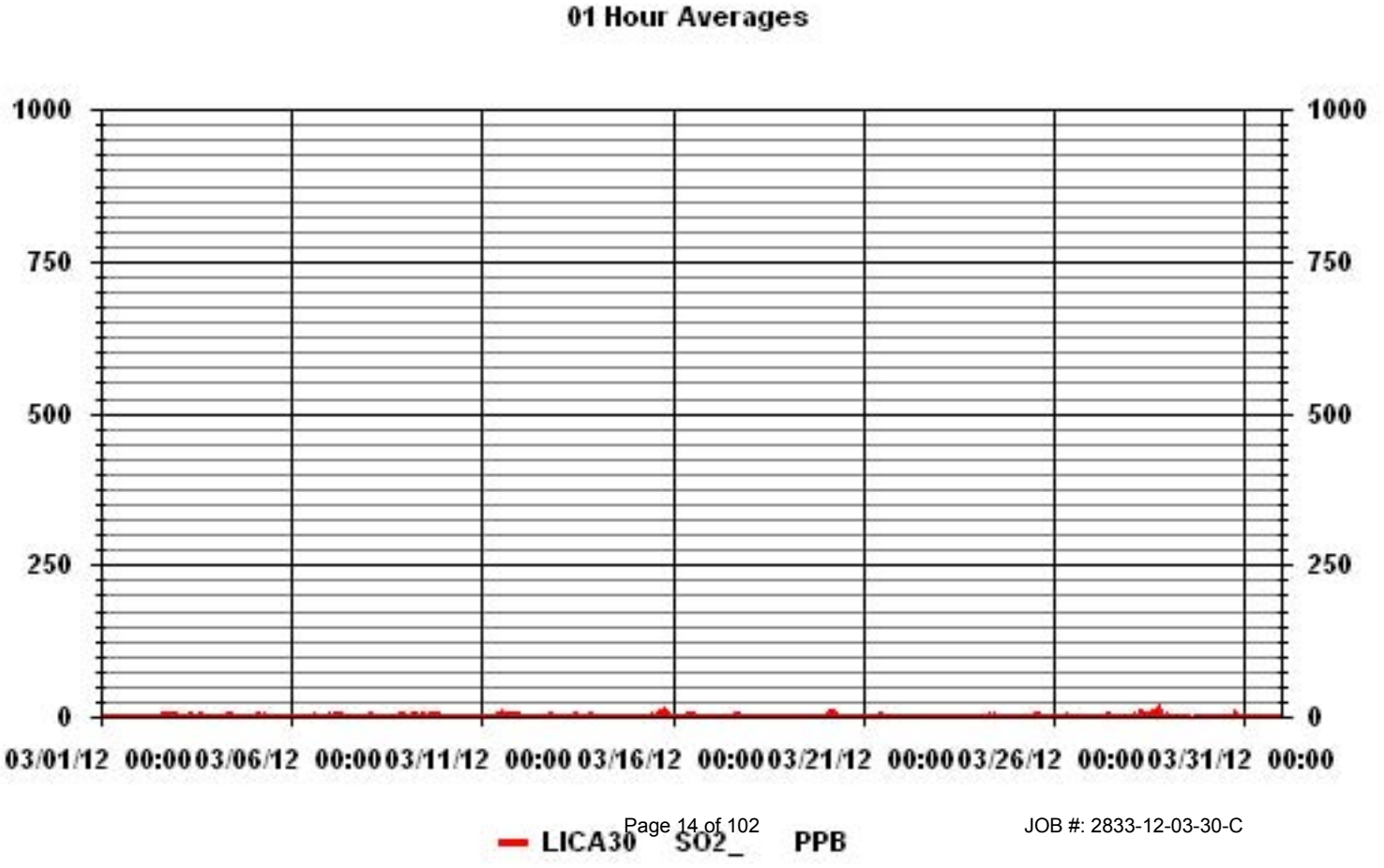

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 177 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 11 | PPB | @ HOUR(S) | 18 | ON DAY(S) | 28 |
| MAXIMUM 24-HR AVERAGE: | 3.6 | PPB | | | ON DAY(S) | 28 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 744 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 1.36 | | MONTHLY AVERAGE: | | 0.54 | PPB |



JOB #: 2833-12-03-30-C






JOB #: 2833-12-03-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

MARCH 2012

**SULPHUR DIOXIDE MAX** instantaneous maximum in ppb

MST

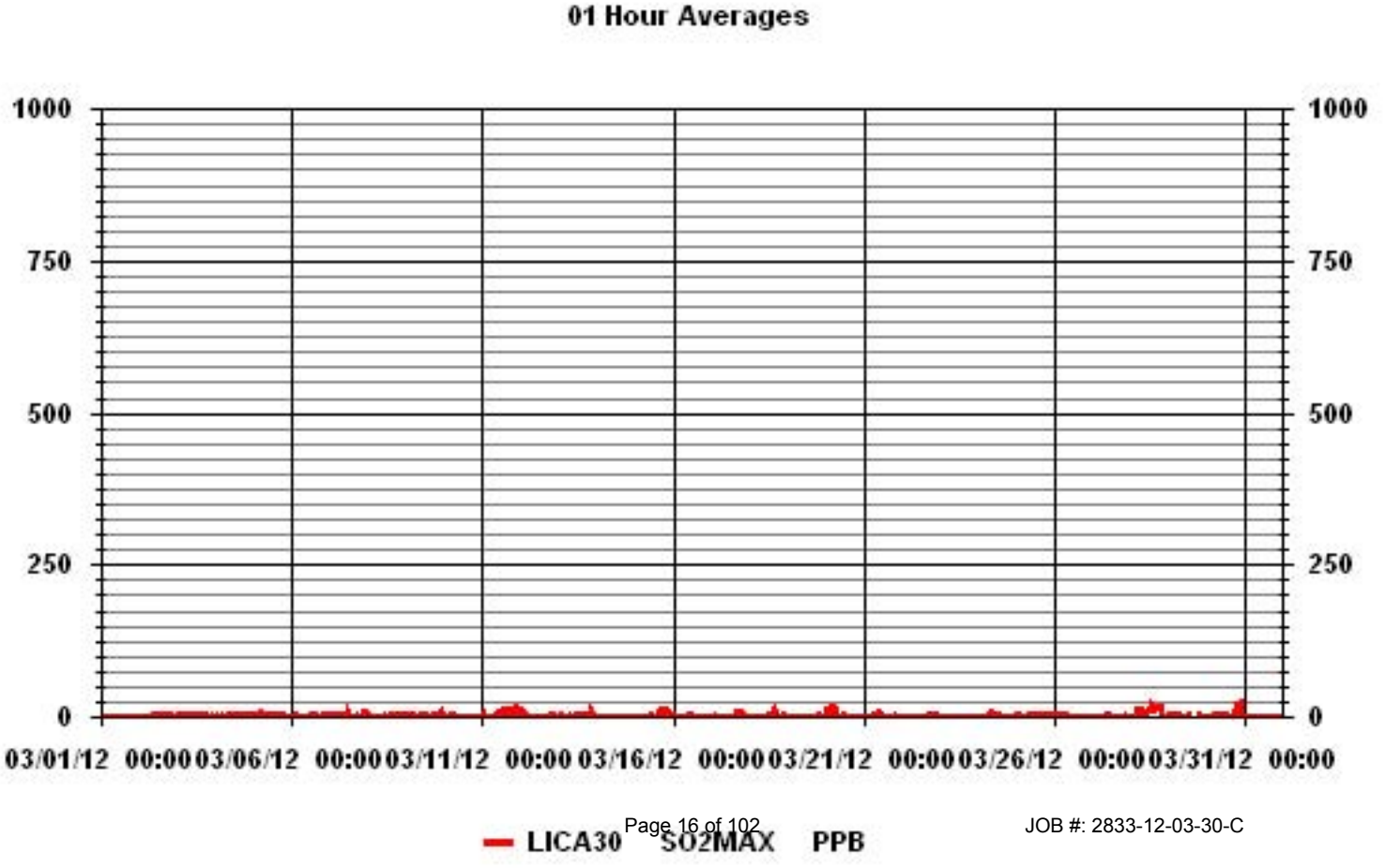
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | **IZS** | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 0.9 | 24 |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 1.2 | 24 |
| 4 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 3 | 4 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1.2 | 24 |
| 5 | 1 | 1 | 2 | 4 | 7 | 7 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 7 | 1.7 | 24 |
| 6 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 6 | 7 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 7 | 1.2 | 24 |
| 7 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 1 | 1 | 10 | 4 | 1 | 1 | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 12 | 1 | 12 | 2.5 | 24 |
| 8 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | **IZS** | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 2 | 2 | 3 | 1.2 | 24 |
| 9 | 1 | 1 | 1 | 1 | 2 | 2 | **IZS** | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 6 | 9 | 1 | 9 | 2.2 | 24 |
| 10 | 1 | 1 | 2 | 1 | 1 | **IZS** | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0.6 | 24 |
| 11 | 6 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 4 | 7 | 7 | 13 | 11 | 7 | 13 | 11 | 10 | 10 | 9 | 13 | 2 | 0 | 13 | 13 | 5.9 | 24 |
| 12 | 12 | 1 | 1 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 1 | 1 | 2 | 12 | 1.2 | 24 |
| 13 | 1 | 1 | **IZS** | 1 | 1 | 2 | 1 | 3 | 2 | 1 | 1 | 6 | 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 | 9 | 1 | 0 | 13 | 2.5 | 24 |
| 14 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 15 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 1 | 2 | 1 | 11 | 4 | 14 | 15 | 9 | 4 | 8 | 6 | **IZS** | 15 | 3.8 | 24 |
| 16 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | 5 | 3 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 5 | 1.0 | 24 |
| 17 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 3 | 8 | 7 | 3 | 7 | 7 | 1 | **IZS** | 1 | 0 | 8 | 1.8 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 1 | 1 | 5 | 11 | 5 | 0 | 0 | 0 | **IZS** | 4 | 1 | 0 | 11 | 1.4 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 0 | 1 | 1 | 0.1 | 24 |
| 20 | 1 | 13 | 12 | 12 | 18 | 17 | 3 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 18 | 3.5 | 24 |
| 21 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 5 | 1 | 9 | 8 | 3 | 1 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 1 | 0 | 0 | 0 | 9 | 1.4 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 6 | 6 | 3 | 2 | 1 | 1 | **IZS** | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 6 | 1.2 | 24 |
| 25 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.0 | 24 |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 4 | 3 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.8 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 5 | 0.5 | 24 |
| 28 | 0 | 0 | 0 | 7 | 2 | 2 | 13 | 13 | 3 | 7 | **IZS** | 11 | 10 | 20 | 15 | 12 | 16 | 15 | 16 | 6 | 4 | 1 | 2 | 5 | 20 | 7.8 | 24 |
| 29 | 4 | 3 | 0 | 2 | 3 | 2 | 1 | 1 | 0 | **IZS** | 0 | 1 | 1 | 1 | **C** | **C** | **C** | **C** | **C** | 1 | 1 | 1 | 0 | 0 | 4 | 1.2 | 23 |
| 30 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 10 | 20 | 18 | **21** | 2 | 0 | 1 | **21** | 3.7 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 | 24 |
| HOURLY MAX | 12 | 13 | 12 | 12 | 18 | 17 | 13 | 13 | 6 | 9 | 8 | 11 | 13 | 20 | 15 | 13 | 16 | 15 | 20 | 18 | 21 | 9 | 12 | 13 | | | |
| HOURLY AVG | 1.3 | 1.1 | 1.0 | 1.2 | 1.4 | 1.3 | 1.0 | 1.4 | 0.8 | 1.9 | 1.7 | 2.1 | 2.0 | 1.9 | 1.7 | 2.4 | 2.0 | 2.2 | 2.8 | 2.3 | 2.6 | 1.6 | 1.6 | 1.2 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 398 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 21 | PPB | @ HOUR(S) | 20 | ON DAY(S) | 30 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | | 743 HRS |
| MONTHLY CALIBRATION TIME: | 8 | HRS | | | | |
| STANDARD DEVIATION: | 3.21 | | | | | |






JOB #: 2833-12-03-30-C

LICA30
SO2_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 20 | 4.53 | 6.65 | 12.60 | 6.23 | 5.09 | 7.08 | 6.37 | 4.81 | 5.24 | 11.75 | 7.36 | 5.66 | 8.07 | 4.67 | 2.54 | 1.27 | 100.00 |
| < 60 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < 170 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 4.53 | 6.65 | 12.60 | 6.23 | 5.09 | 7.08 | 6.37 | 4.81 | 5.24 | 11.75 | 7.36 | 5.66 | 8.07 | 4.67 | 2.54 | 1.27 | |

Calm : .00 %

Total # Operational Hours : 706

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 20 | 32 | 47 | 89 | 44 | 36 | 50 | 45 | 34 | 37 | 83 | 52 | 40 | 57 | 33 | 18 | 9 | 706 |
| < 60 | | | | | | | | | | | | | | | | | |
| < 110 | | | | | | | | | | | | | | | | | |
| < 170 | | | | | | | | | | | | | | | | | |
| < 340 | | | | | | | | | | | | | | | | | |
| >= 340 | | | | | | | | | | | | | | | | | |
| Totals | 32 | 47 | 89 | 44 | 36 | 50 | 45 | 34 | 37 | 83 | 52 | 40 | 57 | 33 | 18 | 9 | |

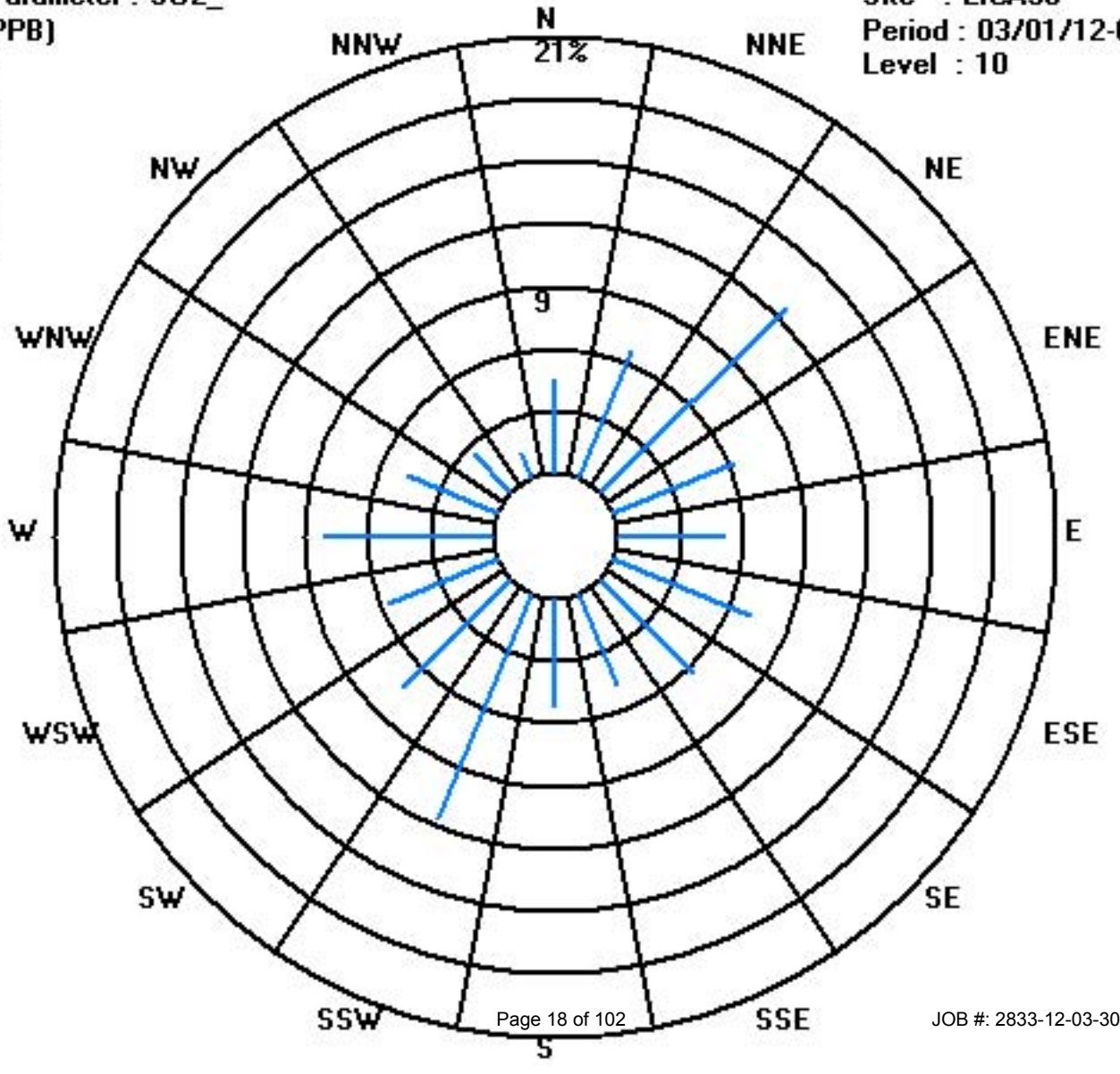
Calm : .00 %

Total # Operational Hours : 706

Logger : 30 Parameter : SO2_
Class Limits (PPB)

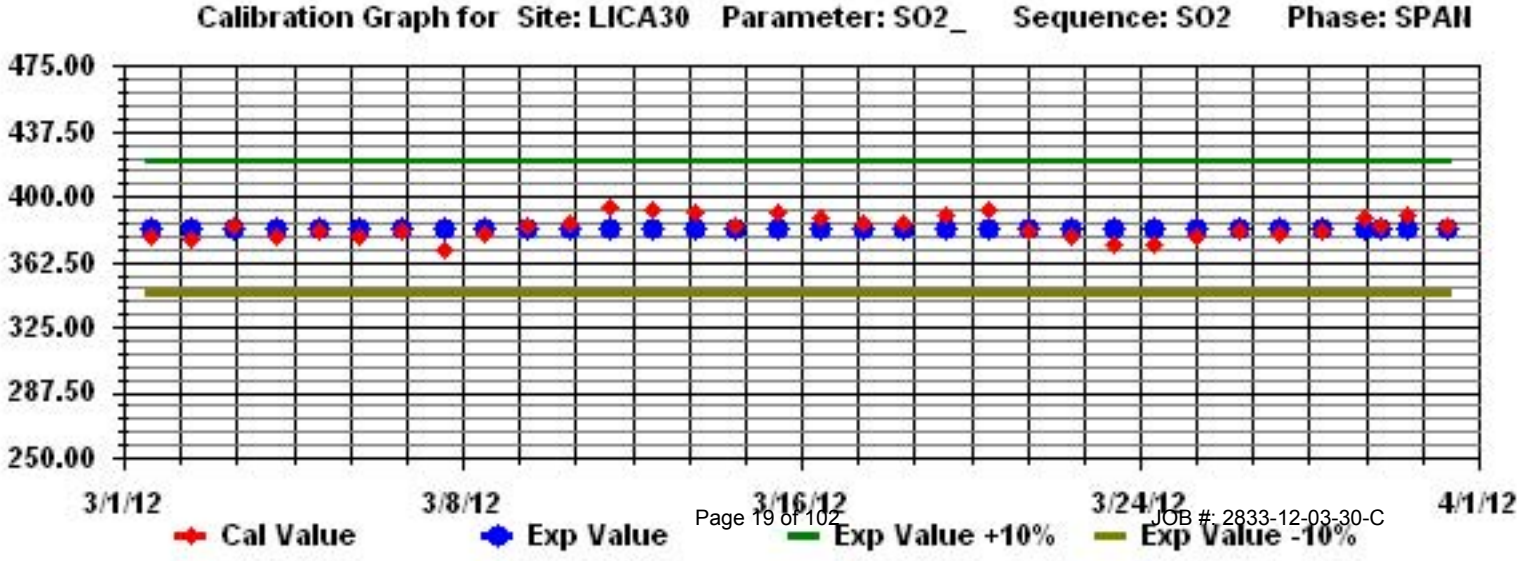
>= 340
< 340
< 170
< 110
< 60
< 20

Site : LICA30
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-30-C


Calibration Graph for Site: LICA30 Parameter: SO2_ Sequence: SO2 Phase: SPAN
475.00
437.50
400.00
362.50
325.00
287.50
250.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Hydrogen Sulphide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

MARCH 2012

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

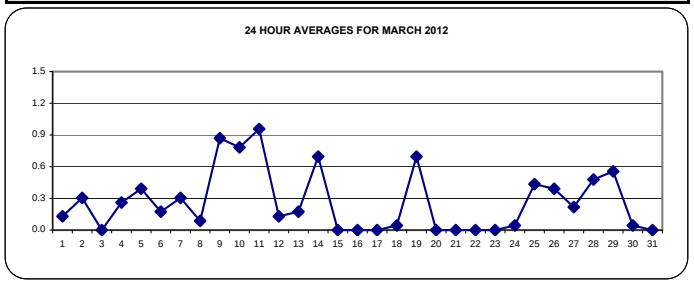
MST

| 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 7 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 9 | 1 | 1 | 1 | 1 | 1 | 0 | **IZS** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0.9 | 24 |
| 10 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0.8 | 24 |
| 11 | 1 | 1 | 1 | 1 | **IZS** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **1.0** | 24 |
| 12 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 13 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 14 | 0 | **IZS** | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0.7 | 24 |
| 15 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0.0 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 1 | 1 | 0.0 | 24 |
| 19 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | 0.7 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.0 | 24 |
| 25 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 27 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.5 | 24 |
| 29 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **C** | **C** | **C** | **C** | **C** | 0 | 1 | 0 | 0 | **M** | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0.6 | 23 |
| 30 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 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 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.4 | 0.3 | 0.3 | 0.3 | 0.1 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.1 | 0.2 | 0.3 | | | |

**STATUS FLAG CODES**

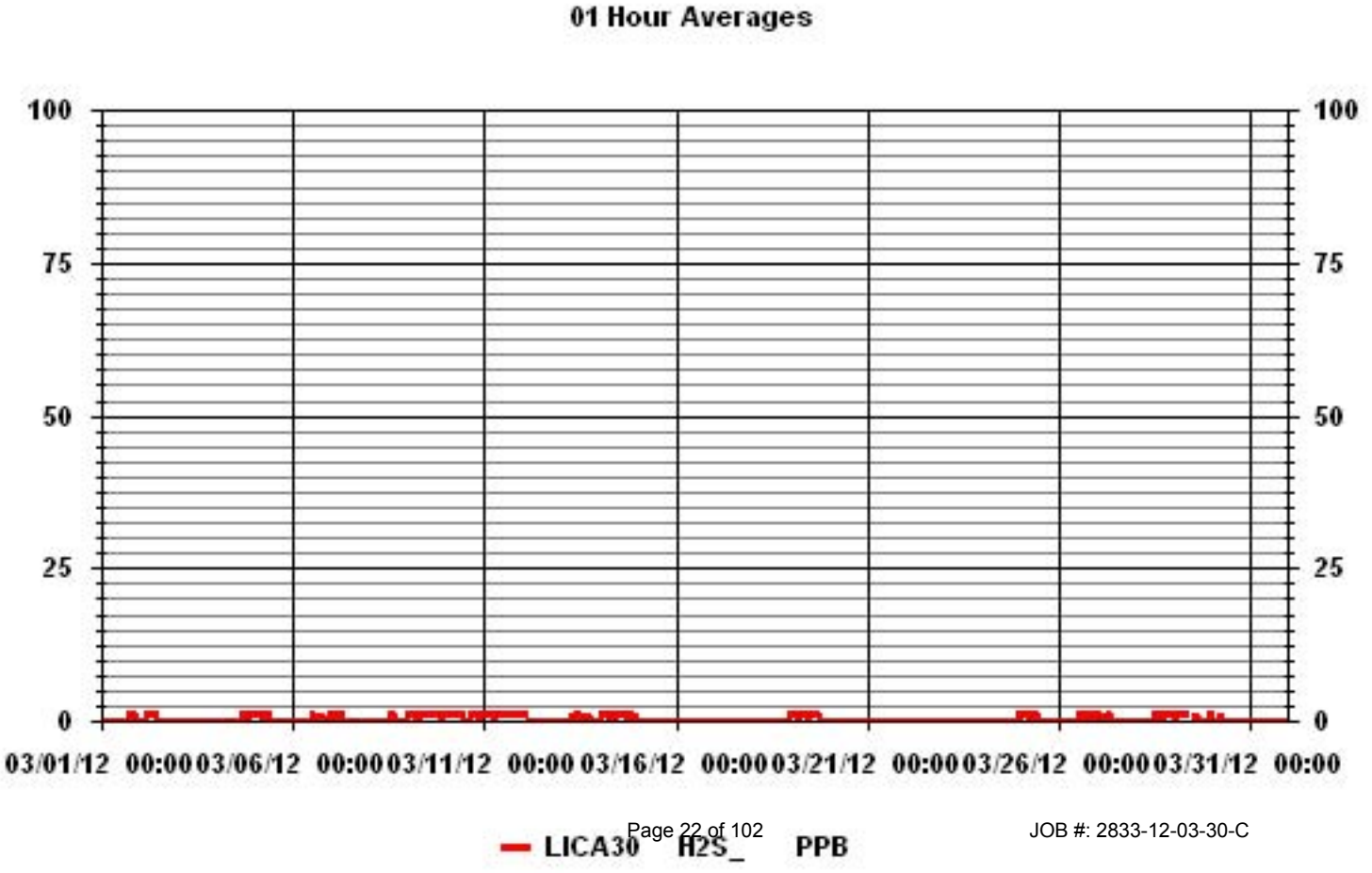
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 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: | 185 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 1 | PPB | @ HOUR(S) | VAR | ON DAY(S) | VAR |
| MAXIMUM 24-HR AVERAGE: | 1.0 | PPB | | | ON DAY(S) | 11 |
| | | | | VAR-VARIOUS | | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 8 | HRS | AMD OPERATION UPTIME: | | 99.9 | % |
| STANDARD DEVIATION: | 0.44 | | MONTHLY AVERAGE: | | 0.26 | PPB |






JOB #: 2833-12-03-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

MARCH 2012

**HYDROGEN SULPHIDE MAX instantaneous maximum in ppb**

MST

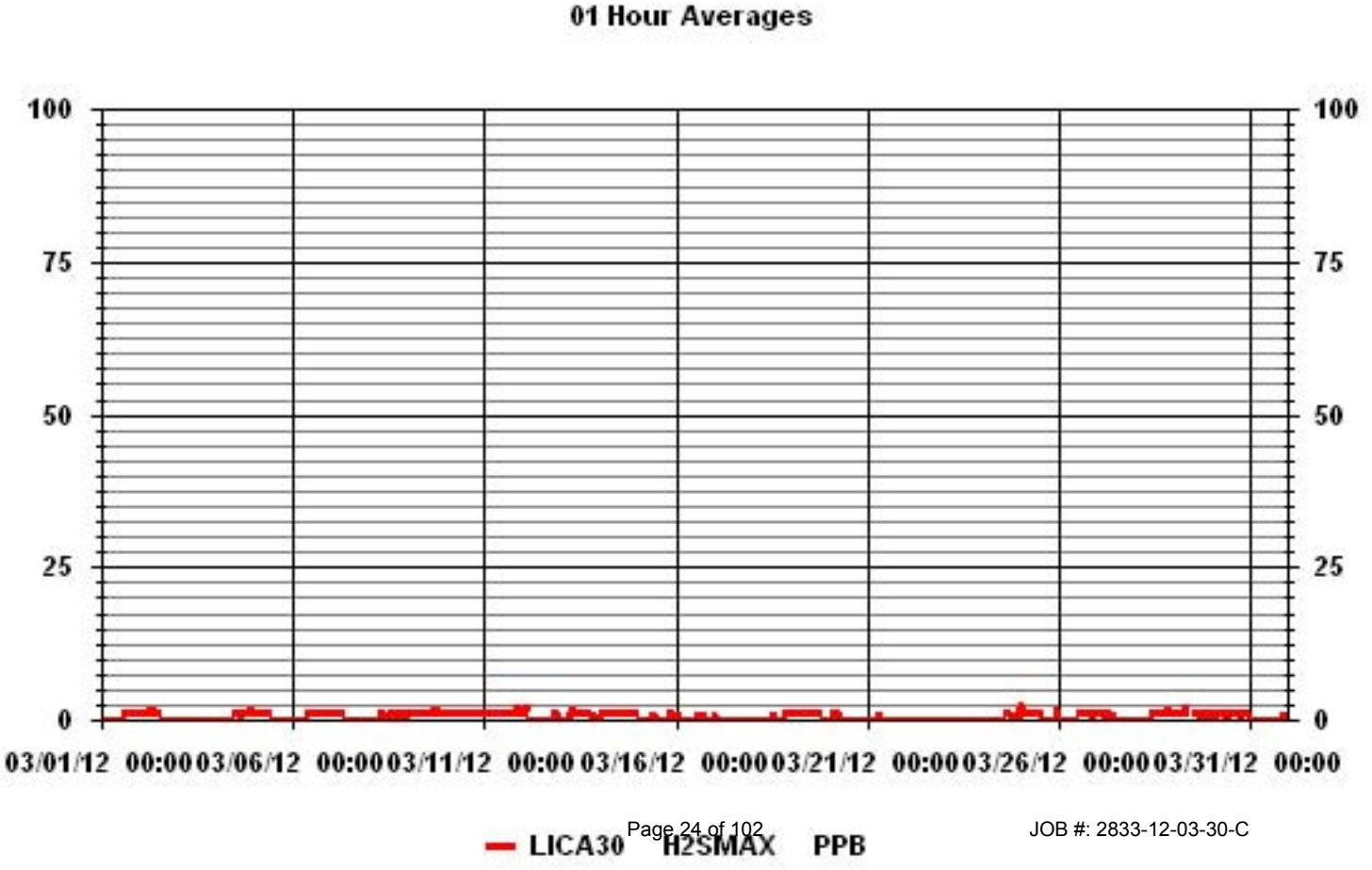
| HOUR START / HOUR END | 0:00 1:00 | 1:00 2:00 | 2:00 3:00 | 3:00 4:00 | 4:00 5:00 | 5:00 6:00 | 6:00 7:00 | 7:00 8:00 | 8:00 9:00 | 9:00 10:00 | 10:00 11:00 | 11:00 12:00 | 12:00 13:00 | 13:00 14:00 | 14:00 15:00 | 15:00 16:00 | 16:00 17:00 | 17:00 18:00 | 18:00 19:00 | 19:00 20:00 | 20:00 21:00 | 21:00 22:00 | 22:00 23:00 | 23:00 0:00 | DAILY MAX. | 24-HOUR AVG. | RDGS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.7 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 0.5 | 24 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.6 | 24 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0.5 | 24 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | IZS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1.1 | 24 |
| 10 | 1 | 1 | 1 | 1 | 1 | IZS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 11 | 1 | 1 | 1 | 1 | IZS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1.1 | 24 |
| 12 | 1 | 1 | 2 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0.3 | 24 |
| 13 | 0 | 0 | IZS | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0.7 | 24 |
| 14 | 0 | IZS | 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 |
| 15 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | IZS | 1 | 0.1 | 24 |
| 16 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | C | C | C | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | IZS | 0 | 1 | 0.2 | 24 |
| 17 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 1 | 0.0 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 1 | 1 | 1 | 0.2 | 24 |
| 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | IZS | 0 | 0 | 0 | 0 | 1 | 0.8 | 24 |
| 20 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 0.3 | 24 |
| 25 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0.7 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0.4 | 24 |
| 27 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.4 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 0.6 | 24 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | C | C | C | C | C | 1 | 1 | 1 | 0 | M | 1 | 1 | 1 | 0 | 1 | 1 | 2 | 0.9 | 23 |
| 30 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | IZS | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0.8 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.0 | 24 |
| HOURLY MAX | 3 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | | | |
| HOURLY AVG | 0.5 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 308 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 3 | PPB | @ HOUR(S) | 0 | ON DAY(S) | 25 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 8 | HRS | | | | |
| STANDARD DEVIATION: | 0.54 | | | | | |






JOB #: 2833-12-03-30-C

LICA30
H2S_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3 | 4.54 | 6.67 | 12.64 | 6.25 | 4.97 | 7.24 | 6.39 | 4.97 | 5.25 | 11.36 | 7.38 | 5.68 | 8.09 | 4.68 | 2.55 | 1.27 | 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 | 4.54 | 6.67 | 12.64 | 6.25 | 4.97 | 7.24 | 6.39 | 4.97 | 5.25 | 11.36 | 7.38 | 5.68 | 8.09 | 4.68 | 2.55 | 1.27 | |

Calm : .00 %

Total # Operational Hours : 704

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3 | 32 | 47 | 89 | 44 | 35 | 51 | 45 | 35 | 37 | 80 | 52 | 40 | 57 | 33 | 18 | 9 | 704 |
| < | 10 | | | | | | | | | | | | | | | | | |
| < | 50 | | | | | | | | | | | | | | | | | |
| >= | 50 | | | | | | | | | | | | | | | | | |
| | Totals | 32 | 47 | 89 | 44 | 35 | 51 | 45 | 35 | 37 | 80 | 52 | 40 | 57 | 33 | 18 | 9 | |

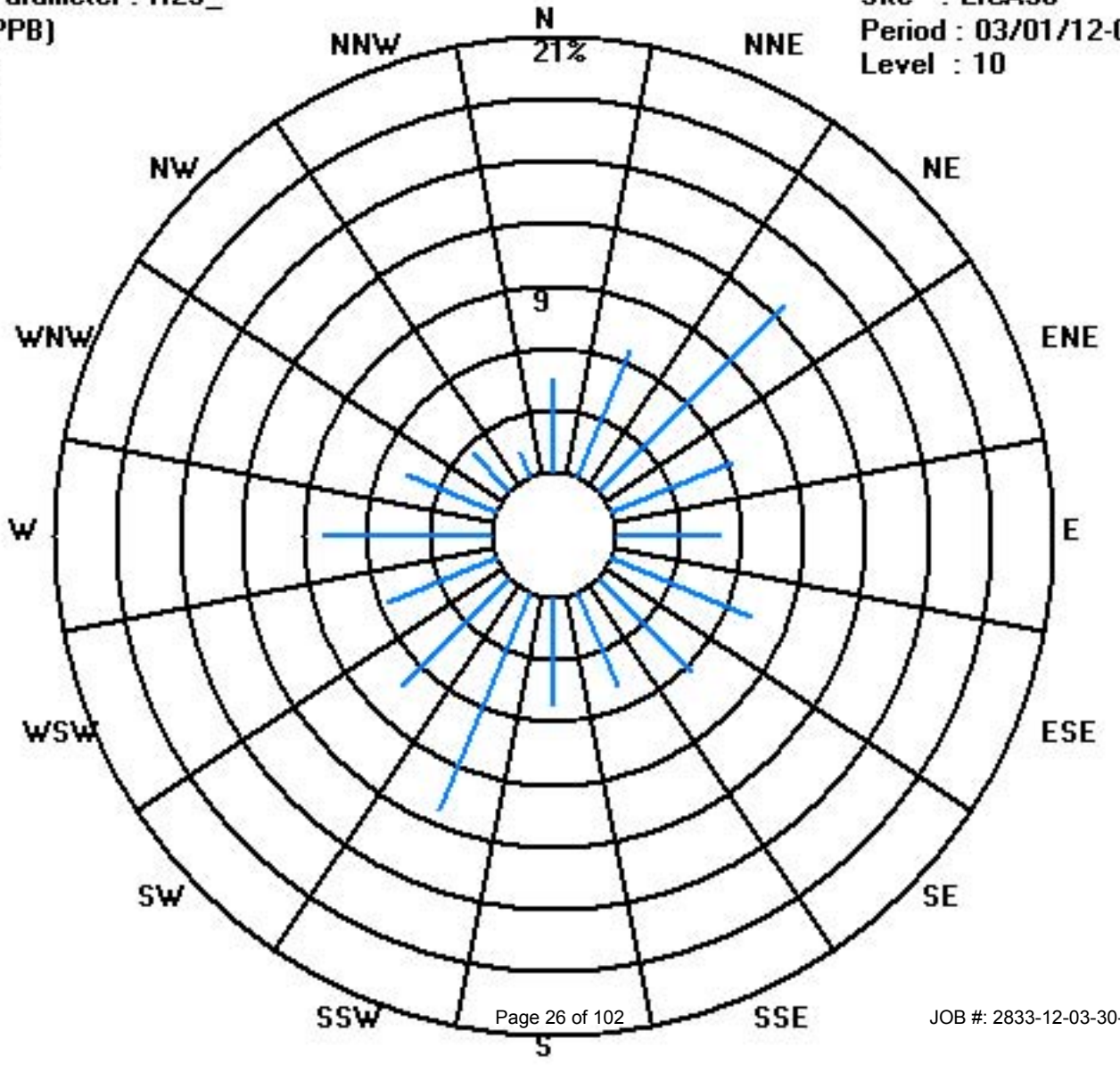
Calm : .00 %

Total # Operational Hours : 704

Logger : 30 Parameter : H2S_
Class Limits (PPB)

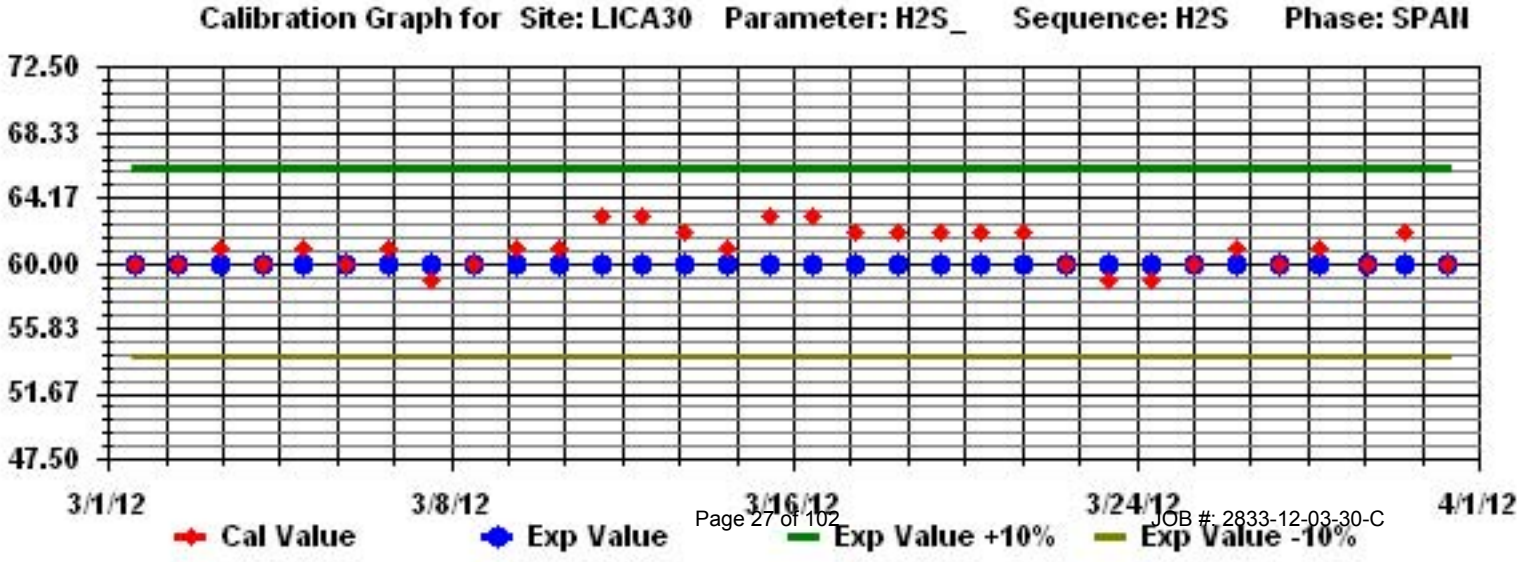
>= 50
< 50
< 10
< 3

Site : LICA30
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-30-C


Calibration Graph for Site: LICA30 Parameter: H2S_ Sequence: H2S Phase: SPAN
72.50
68.33
64.17
60.00
55.83
51.67
47.50
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Hydrocarbons

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -MASKWA

MARCH 2012

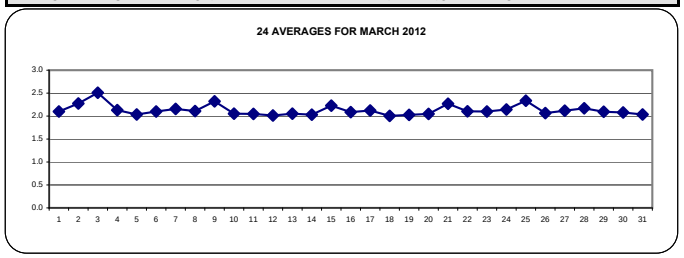
**TOTAL HYDROCARBONS** hourly averages in ppm

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 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | **IZS** | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.3 | 24 |
| 3 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 3.2 | **3.7** | 3.1 | 2.6 | 2.4 | **IZS** | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | **3.7** | **2.5** | 24 |
| 4 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.3 | 2.5 | 2.4 | **IZS** | 2.2 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2.5 | 2.1 | 24 |
| 5 | 2 | 2 | 2.1 | 2.1 | 2.3 | 2.1 | 2 | 2.1 | 2.1 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.3 | 2.0 | 24 |
| 6 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 24 |
| 7 | 2.2 | 2.3 | 2.4 | 2.2 | 2.3 | 2.3 | 2.4 | 2.5 | **IZS** | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.5 | 2.2 | 24 |
| 8 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.1 | 24 |
| 9 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | **IZS** | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.6 | 2.5 | 2.6 | 2.5 | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2 | 2 | 2.6 | 2.3 | 24 |
| 10 | 2 | 2 | 2.1 | 2 | 2 | **IZS** | 2.2 | 2.2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 11 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2.1 | 2 | 2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.2 | 2.0 | 24 |
| 12 | 2 | 1.9 | 1.9 | **IZS** | 2 | 2.1 | 2 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.0 | 24 |
| 13 | 2.2 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2.1 | 2 | 2 | 2 | 2.2 | 2.1 | 24 |
| 14 | 2 | **IZS** | 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 | 2.0 | 24 |
| 15 | **IZS** | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 2.4 | 2.5 | 2.2 | 2 | 2 | 2 | **IZS** | 2.5 | 2.2 | 24 |
| 16 | 2 | 2 | 2 | 2.1 | 2.2 | 2.4 | 2.5 | 2.4 | 2.2 | **C** | **C** | 2.1 | 2.1 | 2 | 2 | 1.9 | 2 | 2 | 2 | 1.9 | 2 | 2 | **IZS** | 2 | 2.5 | 2.1 | 24 |
| 17 | 2.1 | 2 | 2.2 | 2.4 | 2.3 | 2.2 | 2.3 | 2.4 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2 | **IZS** | 2 | 1.9 | 2.4 | 2.1 | 24 |
| 18 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2.1 | 2.1 | 2.0 | 24 |
| 19 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2.1 | 2.0 | 24 |
| 20 | 2 | 2 | 2 | 2.1 | 2.1 | 2.3 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.0 | 24 |
| 21 | 2.2 | 2.4 | 2.6 | 2.7 | 2.8 | 2.4 | 2.3 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **IZS** | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.8 | 2.3 | 24 |
| 22 | 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 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 23 | 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 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 24 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | **IZS** | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.1 | 24 |
| 25 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.5 | **IZS** | 2.3 | 2.4 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.6 | 2.3 | 24 |
| 26 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | **IZS** | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.1 | 24 |
| 27 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.4 | 2.4 | 2.1 | 24 |
| 28 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.3 | 2.3 | 2.1 | 2.1 | **IZS** | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2 | 2 | 2 | 2 | 2.2 | 2.3 | 2.2 | 24 |
| 29 | 2.3 | 2.1 | 2 | 2 | 2.1 | 2 | 2 | 2 | 2 | **IZS** | 2.1 | 2.2 | **C** | **C** | **C** | **C** | 2.1 | **M** | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.1 | 23 |
| 30 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2 | 2.1 | **IZS** | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2 | 2 | 2 | 1.9 | 2 | 2 | 2.2 | 2.3 | 2.1 | 24 |
| 31 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.0 | 24 |
| HOURLY MAX | 2.6 | 2.6 | 2.6 | 2.7 | 2.8 | 2.6 | 2.7 | 3.2 | 3.7 | 3.1 | 2.6 | 2.6 | 2.5 | 2.6 | 2.5 | 2.6 | 2.5 | 2.4 | 2.5 | 2.3 | 2.5 | 2.6 | 2.6 | 2.6 | | | |
| HOURLY AVG | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | | | |

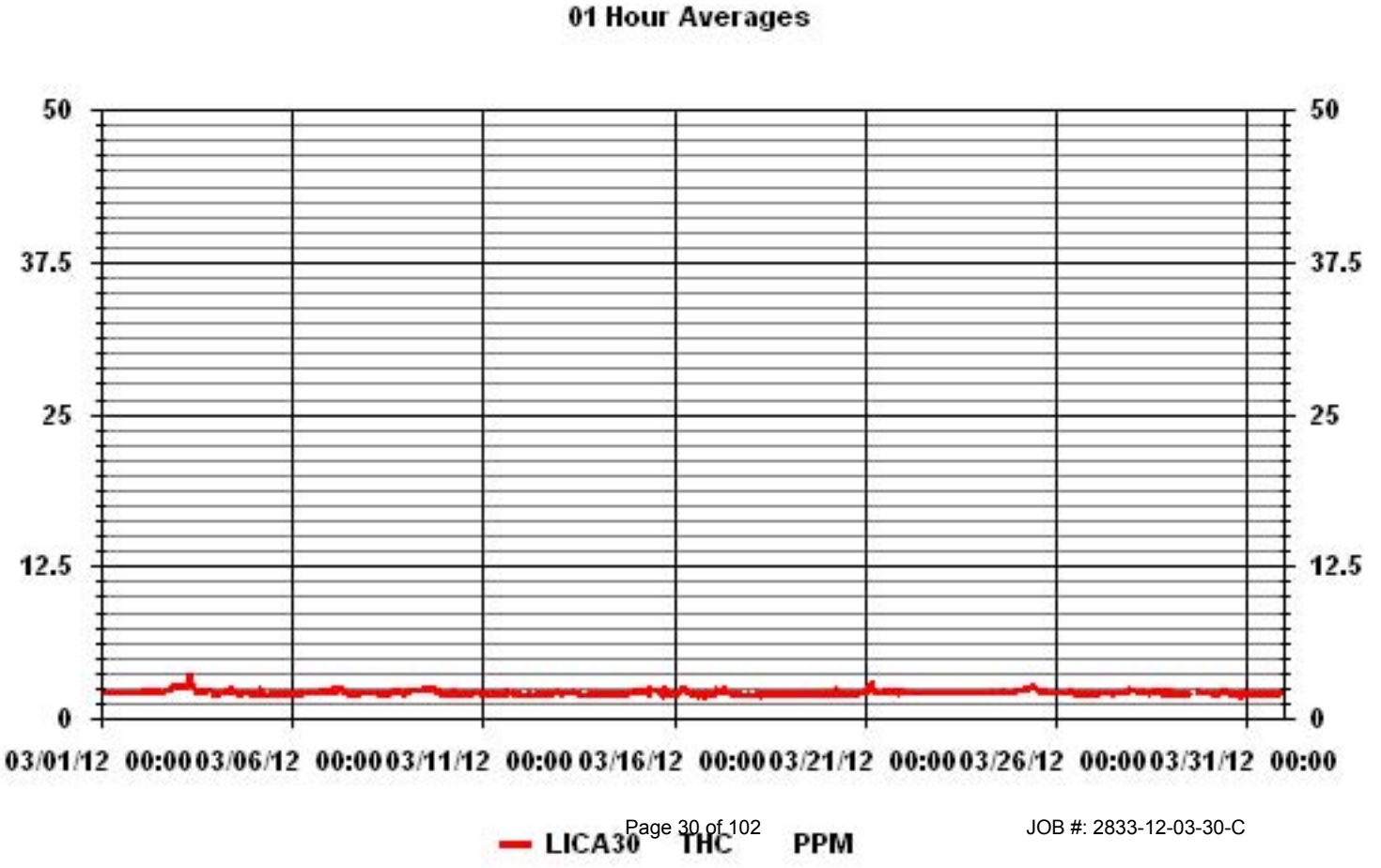
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 705 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 3.7 | PPM | @ HOUR(S) | 8 | ON DAY(S) | 3 | |
| MAXIMUM 24-HR AVERAGE: | 2.5 | PPM | | | ON DAY(S) | 3 | |
| | | | | | VAR- VARIOUS | | |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | | | 99.9 | % |
| STANDARD DEVIATION: | 0.16 | | MONTHLY AVERAGE: | | | 2.13 | PPM |






JOB #: 2833-12-03-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

MARCH 2012

**TOTAL HYDROCARBONS MAX** instantaneous maximum in ppm

MST

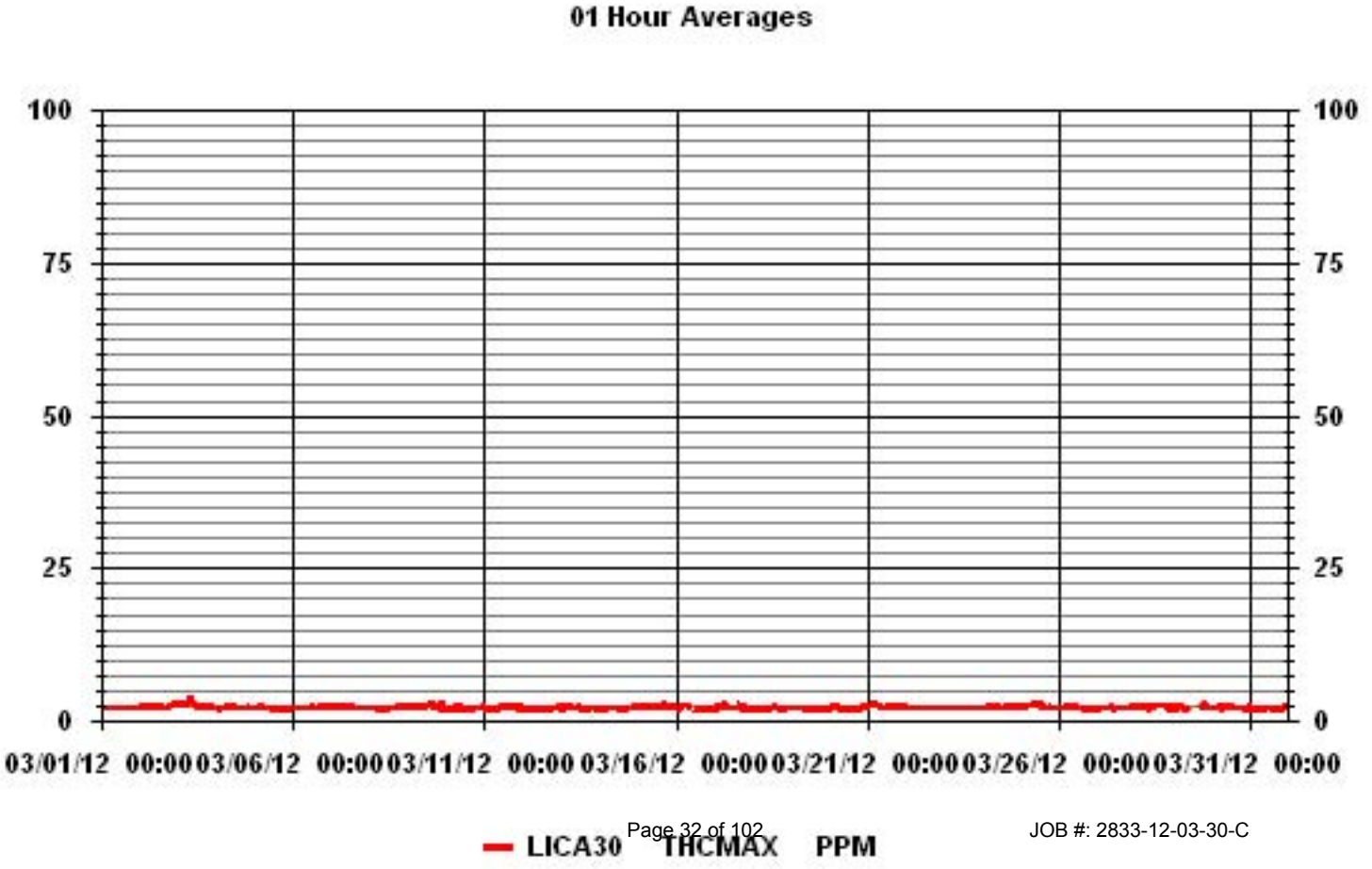
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.5 | 2.5 | **IZS** | 2.2 | 2.2 | 2.2 | 2.4 | 2.4 | 2.4 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.4 | 24 |
| 3 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.8 | 3.7 | **3.9** | 3.4 | 2.8 | 2.5 | **IZS** | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.3 | 2.4 | 2.4 | 2.3 | 2.3 | 2.1 | **3.9** | 2.6 | 24 |
| 4 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.2 | 2.1 | 2.3 | 2.5 | 2.6 | 2.4 | **IZS** | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.6 | 2.2 | 24 |
| 5 | 2.1 | 2.1 | 2.1 | 2.3 | 2.5 | 2.4 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.5 | 2.1 | 24 |
| 6 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.3 | 2.3 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 24 |
| 7 | 2.2 | 2.4 | 2.4 | 2.3 | 2.3 | 2.4 | 2.5 | 2.5 | **IZS** | 2.3 | 2.2 | 2.3 | 2.2 | 2.2 | 2.3 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.5 | 2.2 | 24 |
| 8 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 24 |
| 9 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | **IZS** | 2.4 | 2.3 | 2.4 | 2.4 | 2.4 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.4 | 2.4 | 2.5 | 2.3 | 3.1 | 2.2 | 2 | 3.1 | 2.4 | 24 |
| 10 | 2 | 2 | 2.2 | 2.1 | 2 | **IZS** | 2.2 | 2.2 | 2.1 | 2.4 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.4 | 2.1 | 24 |
| 11 | 2.2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2.3 | 2.3 | 2.7 | 2.5 | 2.3 | 2.3 | 2.5 | 2.4 | 2.4 | 2.4 | 2.3 | 2.4 | 2 | 2 | 2.5 | 2.7 | 2.2 | 24 |
| 12 | 2.5 | 2 | 1.9 | **IZS** | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.5 | 2.1 | 24 |
| 13 | 2.2 | 2.1 | **IZS** | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.4 | 2.2 | 2.2 | 2.3 | 2.3 | 2.1 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2.1 | 2.2 | 2.1 | 2 | 2 | 2.4 | 2.1 | 24 |
| 14 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 24 |
| 15 | **IZS** | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.5 | 2.6 | 2.4 | 2.3 | 2.3 | 2.5 | 2.3 | 2.7 | 2.7 | 2.6 | 2.2 | 2.2 | 2.2 | **IZS** | 2.7 | 2.3 | 24 |
| 16 | 2.1 | 2.1 | 2 | 2.1 | 2.4 | 2.5 | 2.5 | 2.5 | 2.4 | **C** | **C** | **C** | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2.1 | 2.5 | 2.1 | 24 |
| 17 | 2.2 | 2.1 | 2.4 | 2.5 | 2.3 | 2.4 | 2.6 | 2.6 | 2.5 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.7 | 2.5 | 2.2 | 2.4 | 2.4 | 2 | **IZS** | 2.2 | 2 | 2.7 | 2.3 | 24 |
| 18 | 2 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.3 | 2.5 | 2.2 | 2.1 | 2 | 2 | 2 | **IZS** | 2.1 | 2.1 | 2.1 | 2.5 | 2.1 | 24 |
| 19 | 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 | **IZS** | 2 | 2 | 2 | 2 | 2.1 | 2.0 | 24 |
| 20 | 2 | 2.3 | 2.3 | 2.2 | 2.3 | 2.5 | 2.4 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.5 | 2.1 | 24 |
| 21 | 2.3 | 2.5 | 2.7 | 2.7 | 3 | 2.6 | 2.5 | 2.6 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **IZS** | 2.2 | 2.2 | 2.2 | 2.2 | 2.5 | 2.3 | 3 | 2.3 | 24 |
| 22 | 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 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 23 | 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 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 24 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.3 | **IZS** | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.3 | 2.4 | 2.4 | 2.2 | 24 |
| 25 | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | **IZS** | 2.4 | 2.4 | 2.4 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.6 | 2.4 | 24 |
| 26 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | **IZS** | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.3 | 2.1 | 24 |
| 27 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.4 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.1 | 24 |
| 28 | 2.4 | 2.3 | 2.3 | 2.4 | 2.3 | 2.2 | 2.5 | 2.6 | 2.1 | 2.3 | **IZS** | 2.3 | 2.5 | 2.7 | 2.5 | 2.5 | 2.6 | 2.7 | 2.6 | 2.2 | 2.2 | 2 | 2.1 | 2.6 | 2.7 | 2.4 | 24 |
| 29 | 2.5 | 2.4 | 2.1 | 2.2 | 2.3 | 2.2 | 2.1 | 2 | 2.2 | **IZS** | 2.1 | **C** | **C** | **C** | **C** | **C** | 2.1 | **M** | 2.6 | 2.8 | 2.3 | 2.3 | 2.1 | 2.1 | 2.8 | 2.3 | 23 |
| 30 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.4 | 2.1 | 2.2 | **IZS** | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.2 | 2.4 | 2.2 | 24 |
| 31 | 2.2 | 2 | 2 | 2 | 2 | 2 | 2.2 | **IZS** | 2 | 2.2 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.3 | 2.3 | 2.3 | 2.1 | 24 |
| HOURLY MAX | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | |
| HOURLY AVG | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MISSING DATA |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |
| BB | - BELOW BACKGROUND OF 1.5 PPM | | |

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 703 | | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 3.9 | PPM | @ HOUR(S) | 8 | ON DAY(S) | 3 | |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 8 | HRS | | | | | |
| STANDARD DEVIATION: | 0.21 | | | | | | |






JOB #: 2833-12-03-30-C

LICA30
THC / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 4.53 | 6.66 | 12.62 | 6.24 | 5.10 | 7.23 | 6.38 | 4.82 | 4.96 | 11.34 | 7.37 | 5.67 | 8.08 | 4.68 | 2.55 | 1.27 | 99.57 |
| < | 10.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .28 | .14 | .00 | .00 | .00 | .00 | .00 | .00 | .42 |
| < | 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.53 | 6.66 | 12.62 | 6.24 | 5.10 | 7.23 | 6.38 | 4.82 | 5.24 | 11.48 | 7.37 | 5.67 | 8.08 | 4.68 | 2.55 | 1.27 | |

Calm : .00 %

Total # Operational Hours : 705

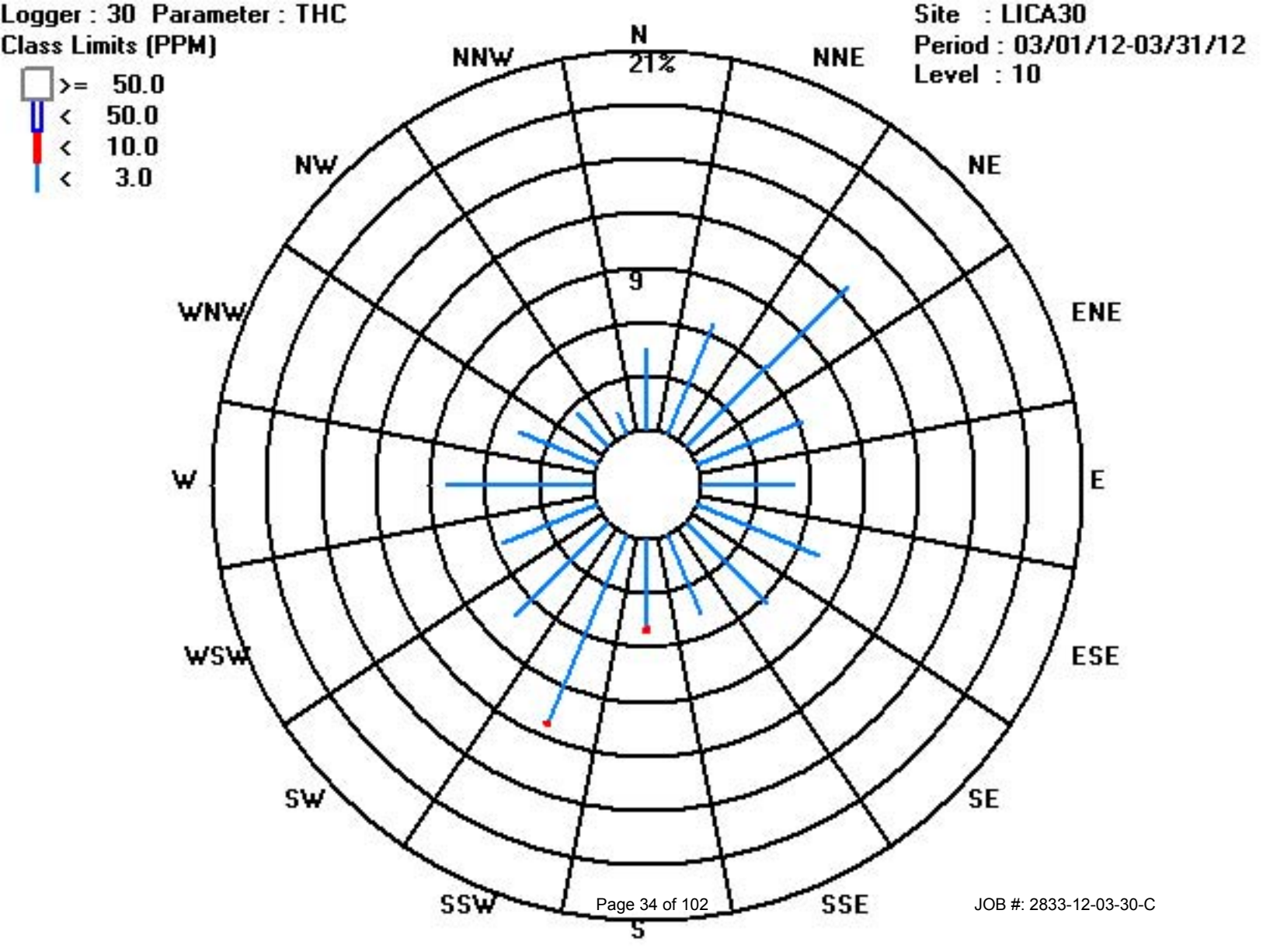
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 32 | 47 | 89 | 44 | 36 | 51 | 45 | 34 | 35 | 80 | 52 | 40 | 57 | 33 | 18 | 9 | 702 |
| < | 10.0 | | | | | | | | | 2 | 1 | | | | | | | 3 |
| < | 50.0 | | | | | | | | | | | | | | | | | |
| >= | 50.0 | | | | | | | | | | | | | | | | | |
| | Totals | 32 | 47 | 89 | 44 | 36 | 51 | 45 | 34 | 37 | 81 | 52 | 40 | 57 | 33 | 18 | 9 | |

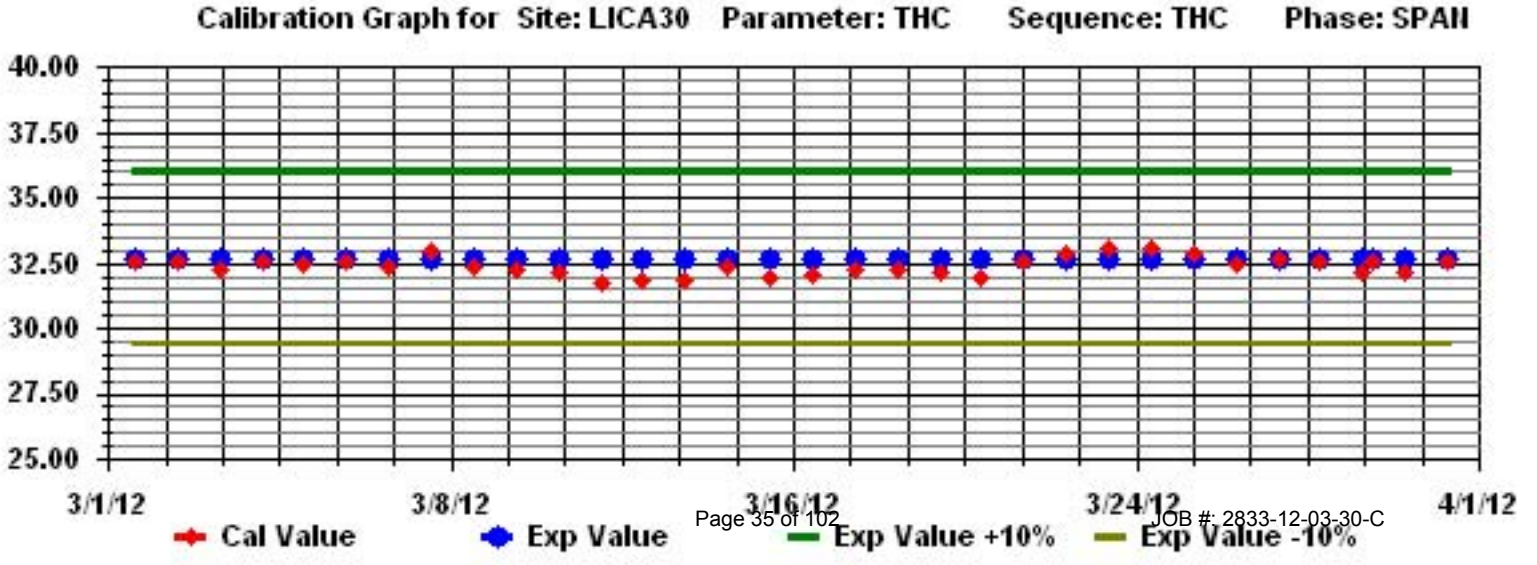
Calm : .00 %

Total # Operational Hours : 705






JOB #: 2833-12-03-30-C


Calibration Graph for Site: LICA30 Parameter: THC Sequence: THC Phase: SPAN
40.00
37.50
35.00
32.50
30.00
27.50
25.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitrogen Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

MARCH 2012

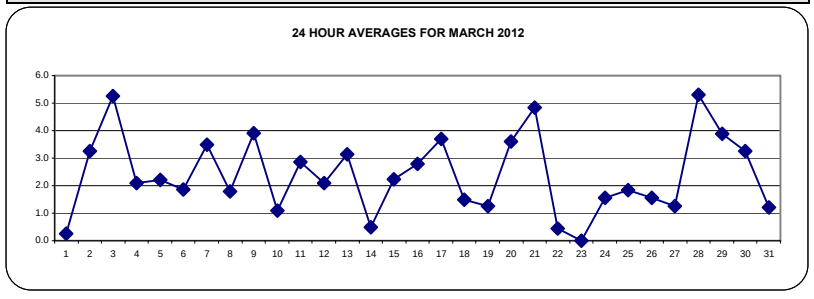
**NITROGEN DIOXIDE** hourly averages in ppb

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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 1 | 1 | 2 | 0.3 | 24 |
| 2 | 0 | 0 | 1 | 2 | 2 | 2 | 8 | 5 | 9 | 4 | 2 | 2 | 2 | **IZS** | 1 | 2 | 3 | 3 | 4 | 3 | 4 | 5 | 5 | 6 | 9 | 3.3 | 24 |
| 3 | 6 | 6 | 5 | 5 | 5 | 5 | 6 | 9 | 12 | 10 | 6 | 5 | **IZS** | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 5 | 4 | 4 | 4 | 12 | **5.3** | 24 |
| 4 | 1 | 2 | 0 | 0 | 1 | 2 | 4 | 7 | 6 | 7 | 5 | **IZS** | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 0 | 7 | 2.1 | 24 |
| 5 | 0 | 1 | 2 | **18** | 17 | 5 | 2 | 3 | 2 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **18** | 2.2 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 2 | 1 | 1 | 3 | 2 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 1.9 | 24 |
| 7 | 5 | 7 | 7 | 7 | 8 | 8 | 11 | 12 | **IZS** | 3 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 0 | 12 | 3.5 | 24 |
| 8 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | **IZS** | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 1.8 | 24 |
| 9 | 2 | 2 | 3 | 3 | 4 | 4 | **IZS** | 2 | 2 | 3 | 3 | 3 | 3 | 5 | 4 | 5 | 5 | 7 | 7 | 7 | 3 | 5 | 8 | 0 | 8 | 3.9 | 24 |
| 10 | 0 | 0 | 1 | 1 | 0 | **IZS** | 5 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 6 | 1.1 | 24 |
| 11 | 2 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 5 | 3 | 3 | 7 | 6 | 5 | 5 | 6 | 8 | 1 | 1 | 5 | 8 | 2.9 | 24 |
| 12 | 5 | 1 | 1 | **IZS** | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 3 | 4 | 4 | 3 | 3 | 4 | 5 | 2.1 | 24 |
| 13 | 2 | 2 | **IZS** | 2 | 3 | 3 | 2 | 5 | 2 | 2 | 2 | 3 | 4 | 2 | 1 | 2 | 2 | 3 | 4 | 3 | 12 | 9 | 1 | 1 | 12 | 3.1 | 24 |
| 14 | 2 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 0.5 | 24 |
| 15 | **IZS** | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 5 | 0 | 6 | 11 | 7 | 6 | 7 | 1 | **IZS** | 11 | 2.2 | 24 |
| 16 | 3 | 2 | 2 | 2 | 3 | 6 | 7 | 8 | **C** | **C** | **C** | 4 | 3 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | **IZS** | 2 | 8 | 2.8 | 24 |
| 17 | 1 | 2 | 6 | 9 | 6 | 5 | 8 | 8 | 6 | 4 | 2 | 2 | 1 | 1 | 2 | 3 | 4 | 2 | 4 | 6 | 2 | **IZS** | 1 | 0 | 9 | 3.7 | 24 |
| 18 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 4 | 5 | 2 | 2 | 1 | 2 | **IZS** | 2 | 1 | 1 | 5 | 1.5 | 24 |
| 19 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 3 | **IZS** | 5 | 4 | 2 | 2 | 5 | 1.3 | 24 |
| 20 | 2 | 7 | 6 | 11 | 15 | 13 | 5 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 15 | 3.6 | 24 |
| 21 | 3 | 7 | 8 | 9 | 12 | 9 | 11 | 10 | 4 | 4 | 6 | 5 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 3 | 2 | 2 | 2 | 12 | 4.8 | 24 |
| 22 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.4 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 1 | 1 | 2 | 3 | 5 | 3 | 1 | 2 | 2 | 3 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 5 | 1.6 | 24 |
| 25 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 4 | 3 | 3 | 3 | 2 | 3 | **IZS** | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1.8 | 24 |
| 26 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 4 | 2 | 2 | 4 | 3 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1.6 | 24 |
| 27 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 3 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 3 | 1.3 | 24 |
| 28 | 2 | 2 | 1 | 2 | 5 | 2 | 12 | 10 | 4 | 3 | **IZS** | 5 | 5 | 6 | 6 | 8 | 6 | 7 | 10 | 6 | 6 | 1 | 4 | 9 | 12 | 5.3 | 24 |
| 29 | 12 | 6 | 1 | 2 | 4 | 2 | 2 | 3 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 3 | 3 | **M** | 6 | 6 | 5 | 3 | 2 | 2 | 12 | 3.9 | 23 |
| 30 | 2 | 2 | 1 | 1 | 3 | 4 | 2 | 3 | **IZS** | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 4 | 13 | 14 | 5 | 2 | 1 | 3 | 14 | 3.3 | 24 |
| 31 | 2 | 2 | 1 | 1 | 1 | 3 | 5 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 5 | 1.2 | 24 |
| HOURLY MAX | 12 | 7 | 8 | 18 | 17 | 13 | 12 | 12 | 12 | 10 | 6 | 5 | 5 | 6 | 6 | 8 | 6 | 7 | 13 | 14 | 12 | 9 | 8 | 9 | | | |
| HOURLY AVG | 2.0 | 1.9 | 1.8 | 2.7 | 3.2 | 2.8 | 3.4 | 3.9 | 2.5 | 2.2 | 2.0 | 1.8 | 1.6 | 1.5 | 1.6 | 2.2 | 1.8 | 2.1 | 3.2 | 3.0 | 3.0 | 2.4 | 2.0 | 2.1 | | | |

**STATUS FLAG CODES**

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




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

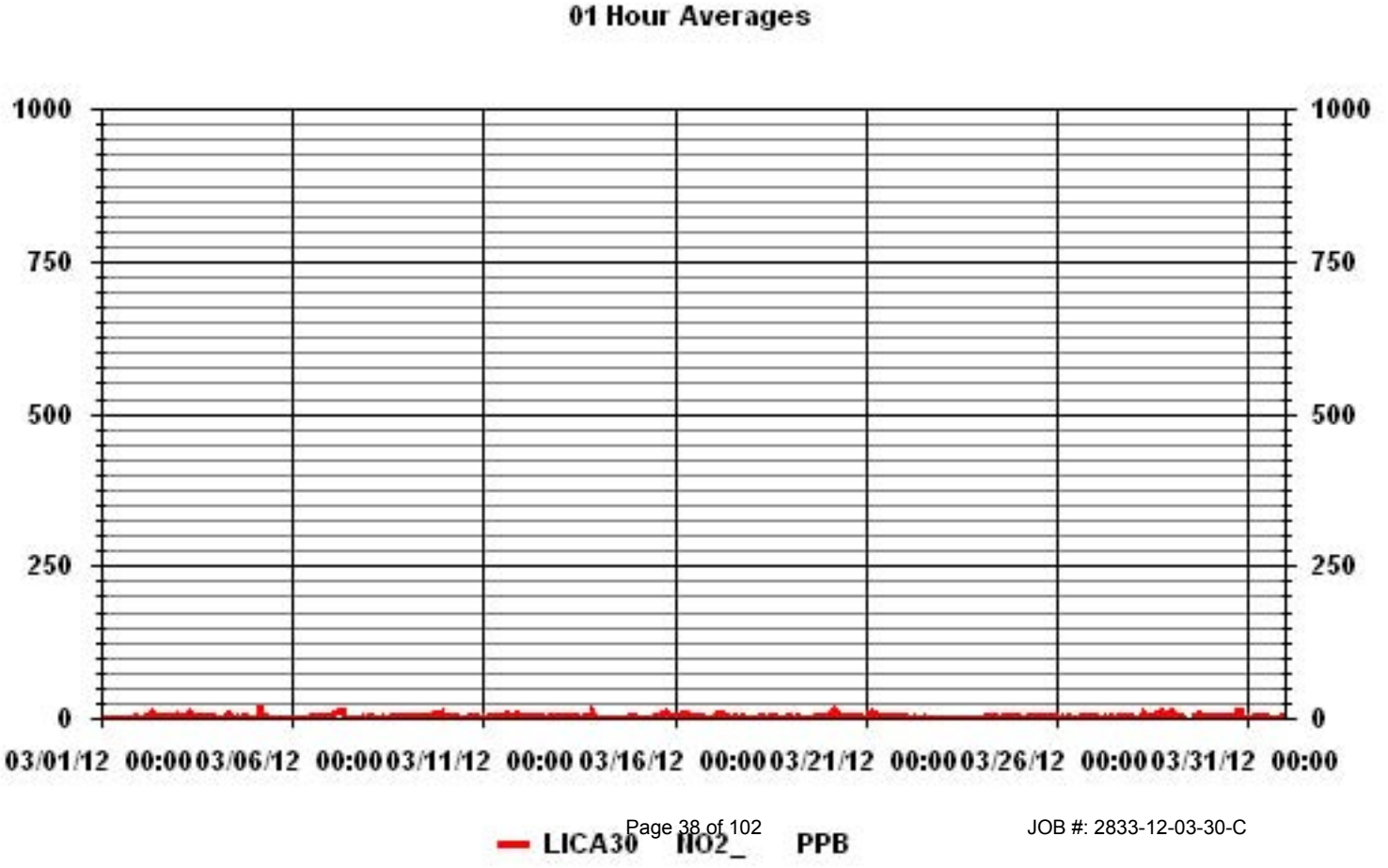
**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 547 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 18 | PPB | @ HOUR(S) | 3 | ON DAY(S) | 5 |
| MAXIMUM 24-HR AVERAGE: | 5.3 | PPB | | | ON DAY(S) | 3 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 10 | HRS | AMD OPERATION UPTIME: | 99.9 | % |
| STANDARD DEVIATION: | 2.66 | | MONTHLY AVERAGE: | 2.37 | PPB |



JOB #: 2833-12-03-30-C






JOB #: 2833-12-03-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

MARCH 2012

**NITROGEN DIOXIDE MAX** instantaneous maximum in ppb

MST

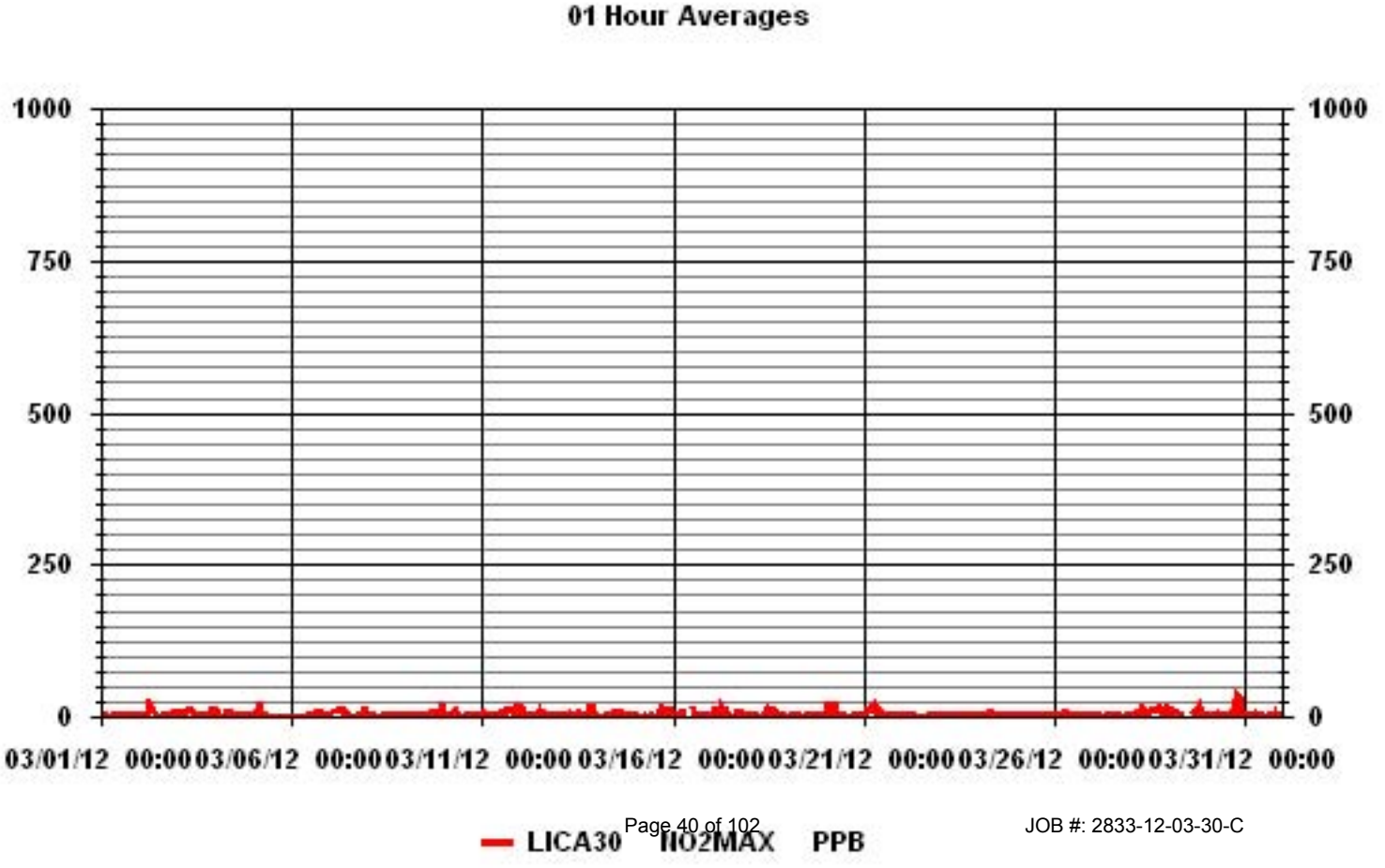
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 2 | 2 | 4 | 1 | 2 | 2 | 2 | 2 | 4 | 1.5 | 24 |
| 2 | 1 | 1 | 3 | 3 | 3 | 5 | 29 | 9 | 15 | 10 | 2 | 4 | 3 | **IZS** | 2 | 3 | 3 | 4 | 5 | 4 | 5 | 6 | 6 | 6 | 29 | 5.7 | 24 |
| 3 | 7 | 6 | 6 | 6 | 6 | 6 | 8 | 12 | 14 | 12 | 8 | 5 | **IZS** | 3 | 4 | 5 | 4 | 4 | 5 | 5 | 6 | 5 | 12 | 13 | 14 | 7.0 | 24 |
| 4 | 3 | 6 | 1 | 1 | 2 | 3 | 8 | 9 | 8 | 9 | 7 | **IZS** | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 9 | 3.4 | 24 |
| 5 | 1 | 2 | 10 | 21 | 21 | 11 | 3 | 5 | 4 | 3 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 3.5 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 3 | 2 | 5 | 5 | 4 | 8 | 4 | 4 | 6 | 6 | 5 | 4 | 5 | 6 | 8 | 2.9 | 24 |
| 7 | 6 | 8 | 8 | 8 | 8 | 9 | 13 | 14 | **IZS** | 6 | 2 | 7 | 3 | 1 | 1 | 3 | 1 | 2 | 2 | 5 | 2 | 2 | 15 | 1 | 15 | 5.5 | 24 |
| 8 | 1 | 2 | 2 | 2 | 1 | 1 | 0 | **IZS** | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 5 | 5 | 4 | 4 | 5 | 2.5 | 24 |
| 9 | 3 | 3 | 3 | 3 | 4 | 5 | **IZS** | 4 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 7 | 7 | 8 | 8 | 9 | 5 | 12 | 26 | 1 | 26 | 6.0 | 24 |
| 10 | 1 | 1 | 4 | 3 | 0 | **IZS** | 8 | 10 | 3 | 1 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 10 | 2.4 | 24 |
| 11 | 7 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 5 | 6 | 5 | 10 | 8 | 6 | 13 | 11 | 11 | 12 | 10 | 15 | 4 | 2 | 18 | 18 | 6.5 | 24 |
| 12 | 17 | 2 | 2 | **IZS** | 7 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 9 | 2 | 2 | 12 | 2 | 4 | 4 | 5 | 5 | 3 | 4 | 5 | 17 | 4.3 | 24 |
| 13 | 3 | 3 | **IZS** | 3 | 4 | 4 | 4 | 7 | 4 | 3 | 3 | 6 | 8 | 4 | 2 | 3 | 2 | 5 | 6 | 6 | 22 | 17 | 3 | 2 | 22 | 5.4 | 24 |
| 14 | 3 | **IZS** | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 9 | 1 | 2 | 2 | 12 | 1 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 12 | 2.2 | 24 |
| 15 | **IZS** | 1 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 4 | 3 | 1 | 2 | 1 | 10 | 4 | 15 | 16 | 11 | 8 | 10 | 10 | **IZS** | 16 | 4.7 | 24 |
| 16 | 5 | 5 | 2 | 3 | 5 | 9 | 8 | C | C | C | C | C | 12 | 3 | 4 | 3 | 1 | 1 | 1 | 2 | 3 | 3 | **IZS** | 5 | 12 | 4.2 | 24 |
| 17 | 2 | 3 | 10 | 10 | 6 | 8 | 17 | 12 | 13 | 5 | 3 | 4 | 2 | 3 | 4 | 10 | 9 | 5 | 11 | 10 | 4 | **IZS** | 4 | 1 | 17 | 6.8 | 24 |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 4 | 10 | 3 | 3 | 2 | 10 | 17 | 8 | 3 | 2 | 2 | **IZS** | 6 | 3 | 2 | 17 | 3.9 | 24 |
| 19 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 4 | **IZS** | 6 | 5 | 3 | 3 | 6 | 2.2 | 24 |
| 20 | 3 | 19 | 19 | 18 | 19 | 21 | 8 | 5 | 5 | 1 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | **IZS** | 6 | 3 | 2 | 2 | 3 | 21 | 6.5 | 24 |
| 21 | 5 | 13 | 11 | 11 | 15 | 13 | 19 | 14 | 6 | 11 | 14 | 11 | 3 | 4 | 3 | 3 | 3 | **IZS** | 3 | 3 | 6 | 3 | 3 | 3 | 19 | 7.8 | 24 |
| 22 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.1 | 24 |
| 23 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 24 | 1 | 1 | 1 | 5 | 2 | 4 | 7 | 9 | 8 | 8 | 4 | 5 | 4 | 4 | **IZS** | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 4 | 3 | 9 | 3.6 | 24 |
| 25 | 4 | 4 | 2 | 2 | 2 | 2 | 3 | 5 | 4 | 3 | 3 | 3 | 3 | **IZS** | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 2.7 | 24 |
| 26 | 2 | 2 | 2 | 2 | 2 | 3 | 7 | 9 | 2 | 4 | 5 | 5 | **IZS** | 3 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 9 | 3.0 | 24 |
| 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 6 | 4 | **IZS** | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 3 | 3 | 3 | 6 | 2.2 | 24 |
| 28 | 4 | 3 | 3 | 8 | 7 | 6 | 16 | 15 | 6 | 7 | **IZS** | 7 | 9 | 13 | 10 | 11 | 14 | 15 | 15 | 9 | 10 | 3 | 9 | 16 | 16 | 9.4 | 24 |
| 29 | 16 | 14 | 2 | 5 | 10 | 8 | 4 | 4 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 8 | 4 | **M** | 12 | 17 | 6 | 5 | 2 | 2 | 17 | 7.4 | 23 |
| 30 | 2 | 2 | 2 | 2 | 6 | 7 | 4 | 7 | **IZS** | 3 | 3 | 2 | 2 | 4 | 3 | 7 | 5 | 14 | 27 | **38** | 35 | 5 | 2 | 5 | **38** | 8.1 | 24 |
| 31 | 3 | 2 | 2 | 2 | 2 | **5** | 8 | **IZS** | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 8 | 2 | 2 | 2 | 2 | 8 | 2.5 | 24 |
| HOURLY MAX | 17 | 19 | 19 | 21 | 21 | 21 | 29 | 15 | 15 | 12 | 14 | 11 | 12 | 13 | 10 | 17 | 14 | 15 | 27 | 38 | 35 | 17 | 26 | 18 | | | |
| HOURLY AVG | 3.6 | 3.7 | 3.5 | 4.2 | 4.6 | 4.7 | 6.2 | 5.9 | 4.3 | 4.2 | 3.8 | 3.7 | 3.6 | 2.9 | 3.0 | 5.2 | 3.5 | 4.1 | 5.3 | 5.8 | 5.7 | 4.1 | 4.6 | 4.0 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 670 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 38 | PPB | @ HOUR(S) | 19 | ON DAY(S) | 30 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 12 | HRS | | | | |
| STANDARD DEVIATION | 4.65 | | | | | |






JOB #: 2833-12-03-30-C

LICA30
NO2_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 4.55 | 6.69 | 12.67 | 6.26 | 4.98 | 7.26 | 6.41 | 4.98 | 5.27 | 11.25 | 7.26 | 5.69 | 8.11 | 4.70 | 2.56 | 1.28 | 100.00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.55 | 6.69 | 12.67 | 6.26 | 4.98 | 7.26 | 6.41 | 4.98 | 5.27 | 11.25 | 7.26 | 5.69 | 8.11 | 4.70 | 2.56 | 1.28 | |

Calm : .00 %

Total # Operational Hours : 702

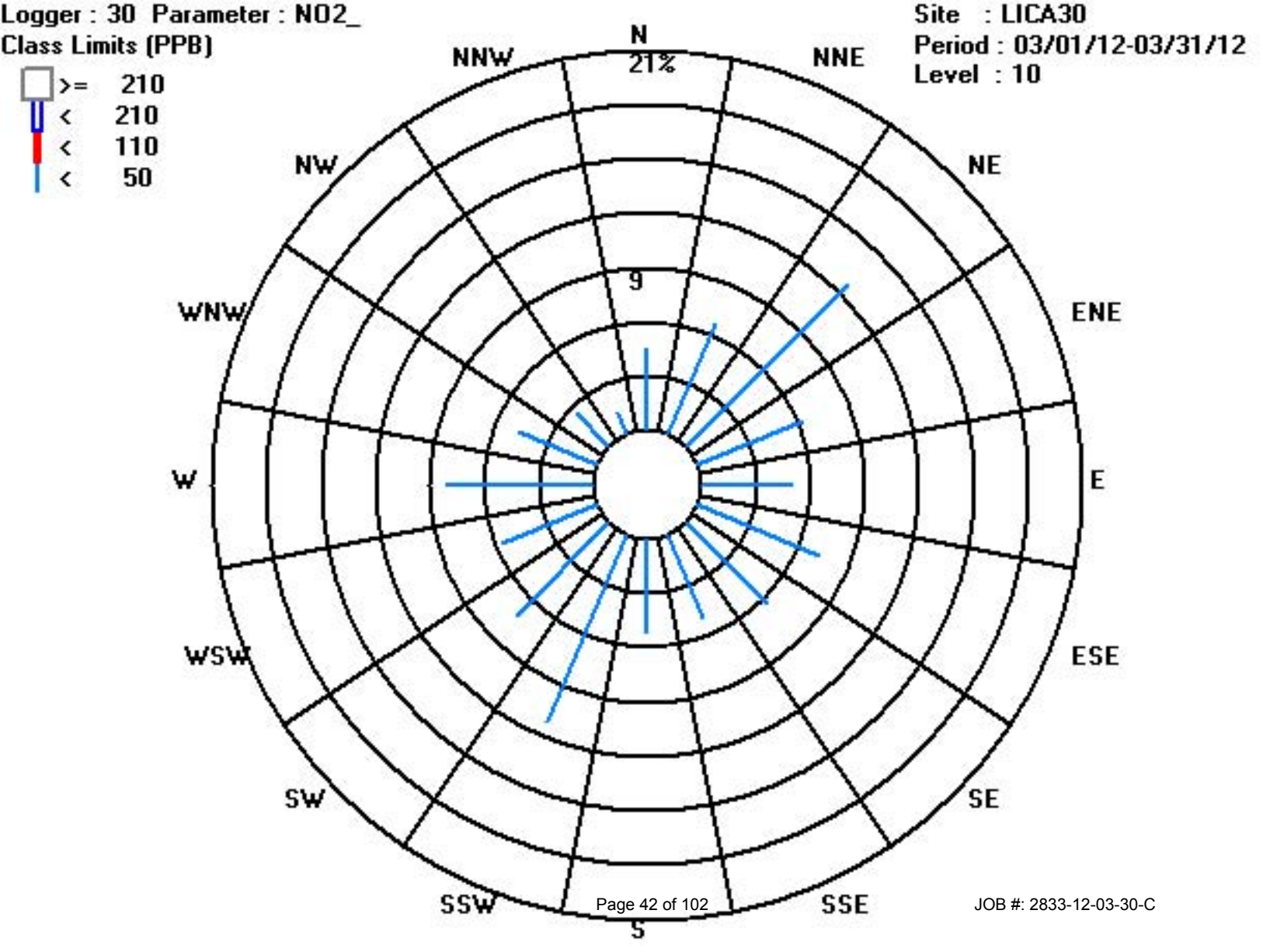
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 32 | 47 | 89 | 44 | 35 | 51 | 45 | 35 | 37 | 79 | 51 | 40 | 57 | 33 | 18 | 9 | 702 |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 32 | 47 | 89 | 44 | 35 | 51 | 45 | 35 | 37 | 79 | 51 | 40 | 57 | 33 | 18 | 9 | |

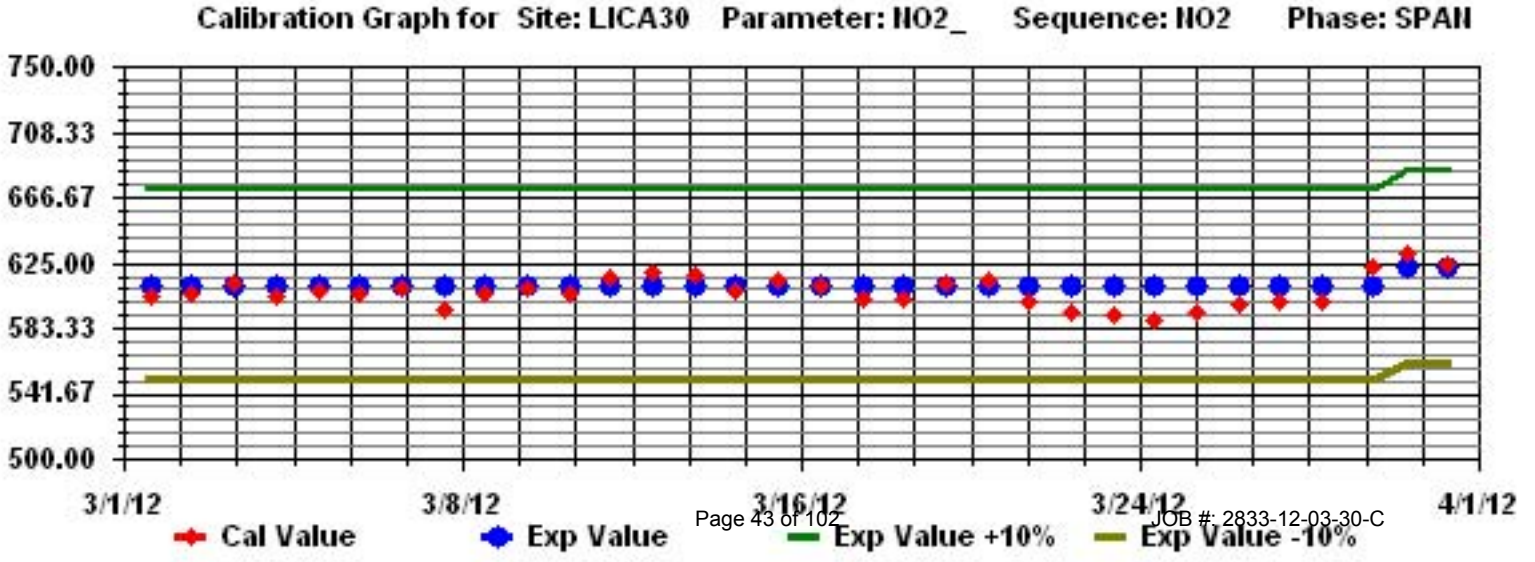
Calm : .00 %

Total # Operational Hours : 702






JOB #: 2833-12-03-30-C


Calibration Graph for Site: LICA30 Parameter: NO2_ Sequence: NO2 Phase: SPAN
750.00
708.33
666.67
625.00
583.33
541.67
500.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitric Oxide

# LAKELAND INDUSTRY & COMMUNITY ASSCOICATION - MASKWA

MARCH 2012

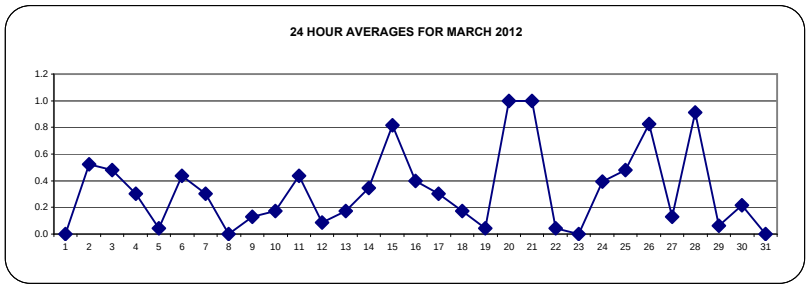
**NITRIC OXIDE** hourly averages in ppb

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 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 2 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.5 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 2 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.5 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.3 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 7 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 2 | **IZS** | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.3 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 11 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 12 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 13 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 0.2 | 24 |
| 14 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 15 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | **IZS** | 2 | 0.8 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | **C** | **C** | **C** | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 2 | 0.4 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 2 | 0.3 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 1 | 0.2 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 20 | 0 | 2 | 2 | 4 | **7** | 4 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | **7** | **1.0** | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 4 | 1 | 3 | 5 | 3 | 1 | 1 | 1 | 1 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 5 | **1.0** | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.5 | 24 |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 3 | 3 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.8 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | **IZS** | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 3 | 0.9 | 24 |
| 29 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 0 | 0 | **M** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 23 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 0.2 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| HOURLY MAX | 1 | 2 | 2 | 4 | 7 | 4 | 2 | 4 | 5 | 5 | 5 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | | | |
| HOURLY AVG | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.2 | 0.4 | 0.7 | 0.7 | 0.9 | 0.9 | 0.8 | 0.6 | 0.4 | 0.4 | 0.5 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.0 | 0.1 | | | |

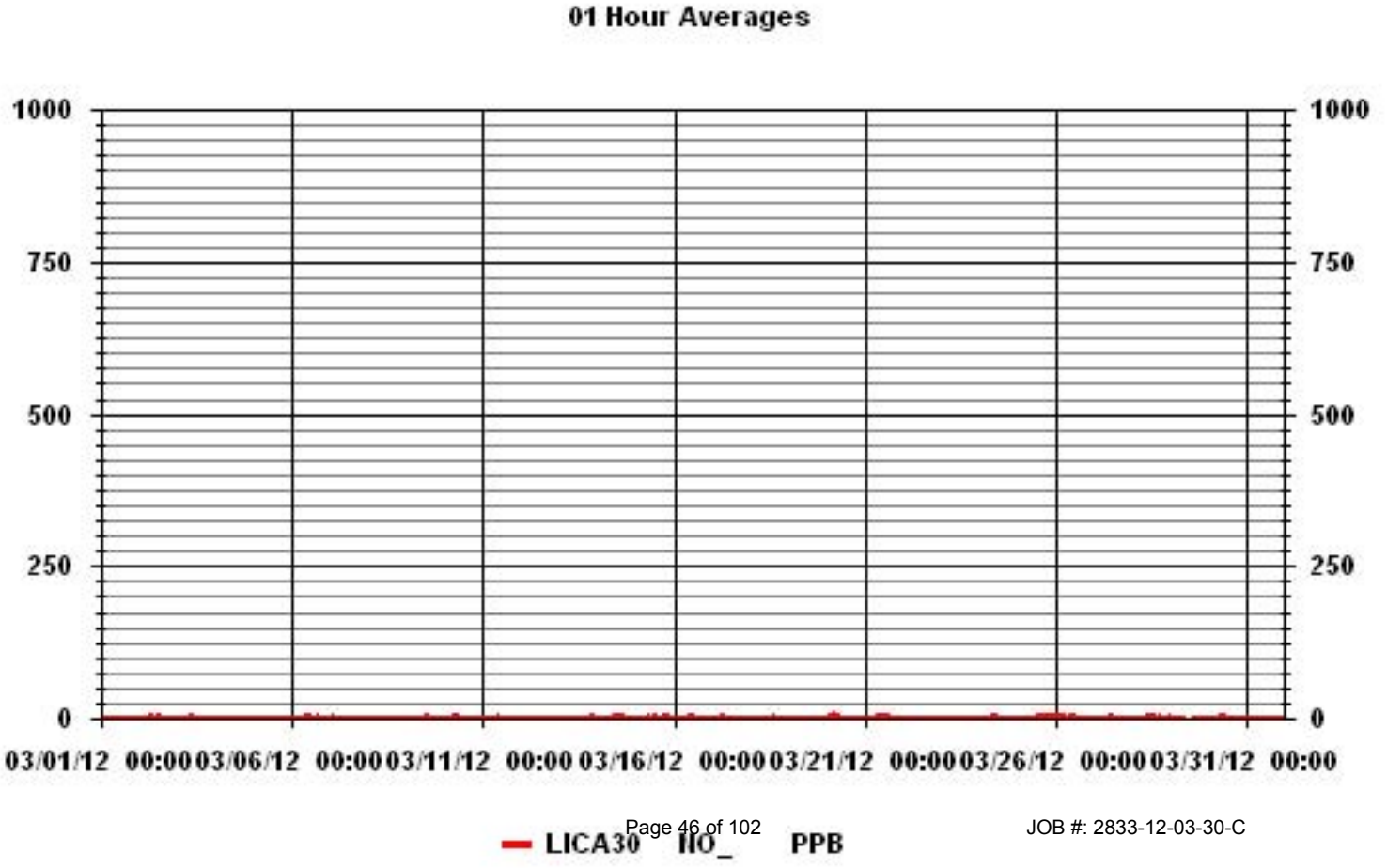
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 159 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 7 | PPB | @ HOUR(S) | 4 | ON DAY(S) | 20 | |
| MAXIMUM 24-HR AVERAGE: | 1.0 | PPB | | | ON DAY(S) | 20, 21 | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 743 | HRS | |
| MONTHLY CALIBRATION TIME: | 10 | HRS | AMD OPERATION UPTIME: | | 99.9 | % | |
| STANDARD DEVIATION: | 0.76 | | MONTHLY AVERAGE: | | 0.33 | PPB | |






JOB #: 2833-12-03-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

MARCH 2012

**NITRIC OXIDE MAX** instantaneous maximum in ppb

MST

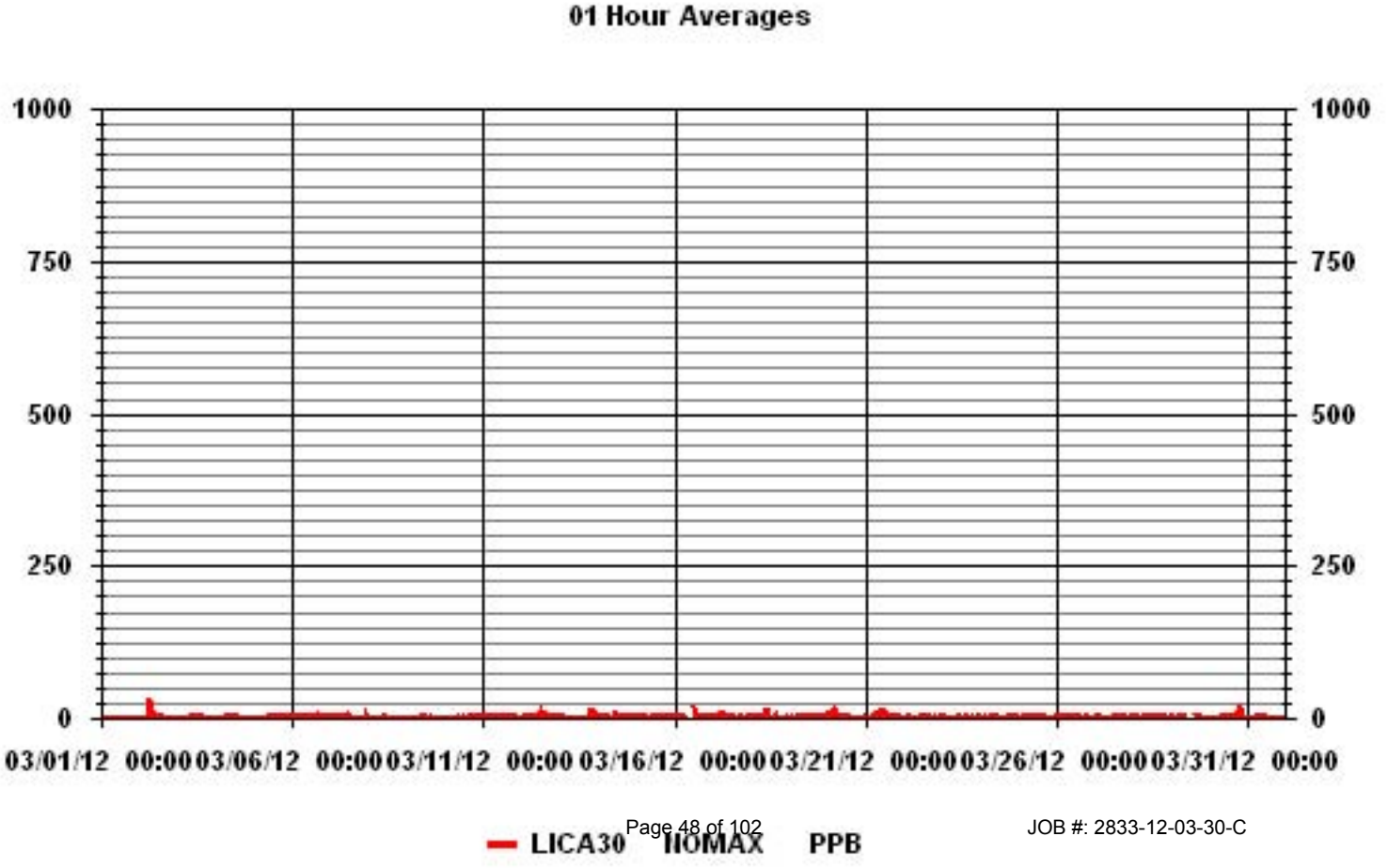
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | **31** | 1 | 10 | 7 | 2 | 2 | 2 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **31** | 2.5 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 6 | 4 | 2 | **IZS** | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.0 | 24 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 4 | 4 | 4 | **IZS** | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.9 | 24 |
| 5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.7 | 24 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 2 | 3 | 4 | 2 | 6 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1.6 | 24 |
| 7 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 5 | **IZS** | 3 | 1 | 5 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 1.4 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0.4 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | **IZS** | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1.0 | 24 |
| 11 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 5 | 3 | 2 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 1.7 | 24 |
| 12 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 | 1 | 2 | 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 | 1.7 | 24 |
| 13 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 16 | 7 | 0 | 0 | 16 | 1.3 | 24 |
| 14 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 11 | 3 | 3 | 3 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 11 | 1.9 | 24 |
| 15 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 3 | 2 | 2 | 2 | 4 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | **IZS** | 4 | 1.7 | 24 |
| 16 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | **C** | **C** | **C** | **C** | **C** | 15 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 15 | 2.0 | 24 |
| 17 | 1 | 1 | 1 | 1 | 1 | 2 | 10 | 3 | 5 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | **IZS** | 1 | 1 | 10 | 1.7 | 24 |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 17 | 1 | 2 | 1 | 3 | 7 | 2 | 1 | 0 | 0 | **IZS** | 2 | 1 | 1 | 17 | 2.1 | 24 |
| 19 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 0.9 | 24 |
| 20 | 1 | 9 | 10 | 8 | 14 | 11 | 5 | 4 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | **IZS** | 1 | 0 | 0 | 0 | 1 | 14 | 3.3 | 24 |
| 21 | 1 | 2 | 0 | 0 | 1 | 4 | 9 | 6 | 3 | 10 | 14 | 12 | 2 | 2 | 2 | 2 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 0 | 14 | 3.3 | 24 |
| 22 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | **IZS** | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 4 | 0.9 | 24 |
| 23 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | **IZS** | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0.6 | 24 |
| 24 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 3 | 4 | 4 | 3 | 2 | 3 | 2 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1.7 | 24 |
| 25 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1.2 | 24 |
| 26 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 2 | 3 | 5 | 5 | **IZS** | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 5 | 1.7 | 24 |
| 27 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 3 | 2 | **IZS** | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 3 | 1.0 | 24 |
| 28 | 1 | 1 | 1 | 1 | 0 | 1 | 3 | 3 | 2 | 4 | **IZS** | 5 | 6 | 5 | 4 | 3 | 4 | 3 | 1 | 1 | 1 | 0 | 1 | 3 | 6 | 2.3 | 24 |
| 29 | 3 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 5 | 0 | **M** | 1 | 1 | 0 | 0 | 0 | 0 | 5 | 1.1 | 23 |
| 30 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | **IZS** | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 9 | 15 | 8 | 0 | 0 | 0 | 15 | 2.3 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **IZS** | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.3 | 24 |
| HOURLY MAX | 3 | 9 | 10 | 8 | 14 | 11 | 31 | 6 | 10 | 10 | 17 | 12 | 15 | 5 | 4 | 10 | 4 | 3 | 9 | 15 | 16 | 7 | 6 | 3 | | | |
| HOURLY AVG | 0.7 | 1.0 | 0.9 | 0.8 | 1.1 | 1.2 | 2.8 | 1.8 | 1.9 | 2.3 | 2.9 | 2.6 | 2.4 | 1.5 | 1.4 | 2.2 | 0.9 | 0.9 | 0.9 | 1.2 | 1.4 | 0.8 | 0.8 | 0.7 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 491 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 31 | PPB | @ HOUR(S) | 6 | ON DAY(S) | 2 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 12 | HRS | | | | |
| STANDARD DEVIATION | 2.40 | | | | | |






JOB #: 2833-12-03-30-C

LICA30
NO_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 4.55 | 6.69 | 12.67 | 6.26 | 4.98 | 7.26 | 6.41 | 4.98 | 5.27 | 11.25 | 7.26 | 5.69 | 8.11 | 4.70 | 2.56 | 1.28 | 100.00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.55 | 6.69 | 12.67 | 6.26 | 4.98 | 7.26 | 6.41 | 4.98 | 5.27 | 11.25 | 7.26 | 5.69 | 8.11 | 4.70 | 2.56 | 1.28 | |

Calm : .00 %

Total # Operational Hours : 702

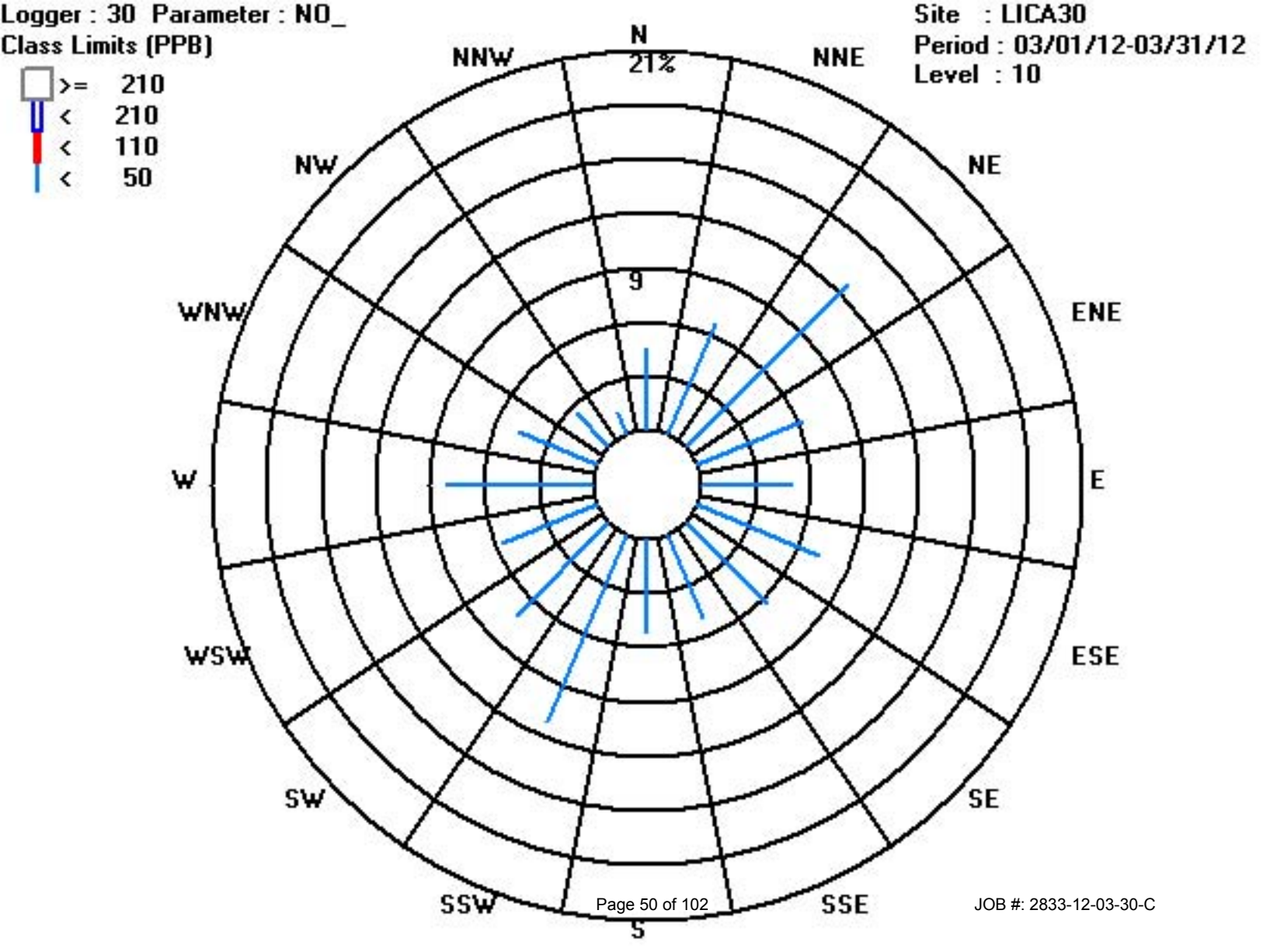
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 32 | 47 | 89 | 44 | 35 | 51 | 45 | 35 | 37 | 79 | 51 | 40 | 57 | 33 | 18 | 9 | 702 |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 32 | 47 | 89 | 44 | 35 | 51 | 45 | 35 | 37 | 79 | 51 | 40 | 57 | 33 | 18 | 9 | |

Calm : .00 %

Total # Operational Hours : 702






JOB #: 2833-12-03-30-C

# Oxides of Nitrogen

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

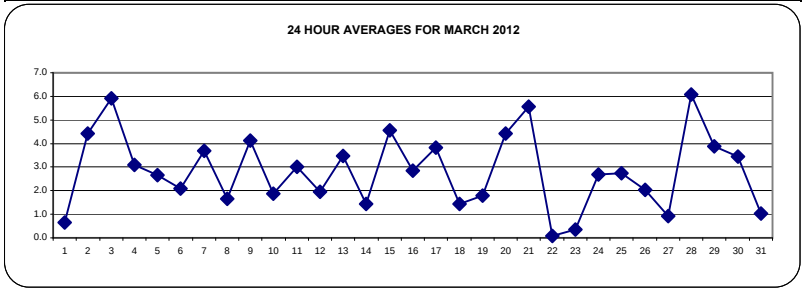
MARCH 2012

**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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 0.7 | 24 |
| 2 | 1 | 1 | 2 | 3 | 3 | 3 | 12 | 6 | 15 | 8 | 4 | 5 | 4 | **IZS** | 2 | 2 | 2 | 3 | 4 | 3 | 4 | 5 | 5 | 5 | 15 | 4.4 | 24 |
| 3 | 6 | 6 | 5 | 5 | 5 | 5 | 6 | 9 | 15 | 16 | 9 | 6 | **IZS** | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 5 | 4 | 4 | 4 | 16 | 5.9 | 24 |
| 4 | 1 | 1 | 0 | 0 | 1 | 2 | 4 | 8 | 8 | 11 | 8 | **IZS** | 4 | 3 | 3 | 1 | 2 | 1 | 2 | 2 | 3 | 3 | 2 | 1 | 11 | 3.1 | 24 |
| 5 | 1 | 1 | 3 | 19 | 18 | 6 | 3 | 4 | 3 | 2 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 2.7 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 3 | 1 | 2 | 5 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 5 | 2.1 | 24 |
| 7 | 5 | 7 | 7 | 7 | 8 | 8 | 11 | 13 | **IZS** | 5 | 1 | 5 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 1 | 0 | 2 | 0 | 13 | 3.7 | 24 |
| 8 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | **IZS** | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 1.7 | 24 |
| 9 | 2 | 2 | 2 | 3 | 3 | 4 | **IZS** | 2 | 2 | 3 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 7 | 7 | 6 | 3 | 5 | 8 | 0 | 8 | 4.1 | 24 |
| 10 | 0 | 0 | 1 | 1 | 0 | **IZS** | 6 | 8 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 8 | 1.9 | 24 |
| 11 | 3 | 1 | 1 | 1 | **IZS** | 1 | 0 | 0 | 0 | 2 | 2 | 1 | 6 | 3 | 3 | 8 | 6 | 5 | 5 | 6 | 8 | 1 | 1 | 5 | 8 | 3.0 | 24 |
| 12 | 5 | 1 | 1 | **IZS** | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 4 | 4 | 3 | 2 | 4 | 5 | 2.0 | 24 |
| 13 | 2 | 2 | **IZS** | 3 | 3 | 3 | 2 | 5 | 2 | 2 | 2 | 4 | 5 | 2 | 1 | 2 | 2 | 3 | 4 | 3 | 15 | 11 | 1 | 1 | 15 | 3.5 | 24 |
| 14 | 1 | **IZS** | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 3 | 1.4 | 24 |
| 15 | **IZS** | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 4 | 3 | 3 | 3 | 8 | 2 | 9 | 14 | 9 | 8 | 9 | 3 | **IZS** | 14 | 4.5 | 24 |
| 16 | 3 | 2 | 1 | 2 | 3 | 5 | 7 | 10 | **C** | **C** | **C** | 6 | 5 | 2 | 3 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | **IZS** | 2 | 10 | 2.9 | 24 |
| 17 | 1 | 1 | 6 | 9 | 5 | 5 | 10 | 10 | 8 | 5 | 2 | 2 | 1 | 1 | 2 | 3 | 4 | 1 | 4 | 6 | 1 | **IZS** | 1 | 0 | 10 | 3.8 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 5 | 6 | 2 | 1 | 1 | 1 | **IZS** | 3 | 1 | 2 | 6 | 1.4 | 24 |
| 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 2 | 3 | 4 | **IZS** | 4 | 4 | 2 | 2 | 4 | 1.8 | 24 |
| 20 | 1 | 9 | 8 | 15 | **22** | 17 | 6 | 4 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | **IZS** | 2 | 2 | 1 | 1 | 2 | **22** | 4.4 | 24 |
| 21 | 3 | 7 | 8 | 9 | 12 | 9 | 13 | 14 | 5 | 7 | 10 | 8 | 3 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 14 | 5.6 | 24 |
| 22 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 24 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 7 | 5 | 3 | 3 | 4 | 5 | 3 | **IZS** | 3 | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 3 | 7 | 2.7 | 24 |
| 25 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 5 | 4 | 4 | 4 | 4 | 4 | **IZS** | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 2.7 | 24 |
| 26 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 6 | 2 | 4 | 7 | 7 | **IZS** | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 2.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 2 | 2 | 4 | 0.9 | 24 |
| 28 | 2 | 2 | 1 | 2 | 4 | 2 | 12 | 12 | 5 | 4 | **IZS** | 7 | 8 | 9 | 7 | 10 | 8 | 8 | 11 | 6 | 5 | 1 | 4 | 10 | 12 | **6.1** | 24 |
| 29 | 13 | 6 | 1 | 2 | 4 | 2 | 2 | 3 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 4 | 3 | **M** | 6 | 6 | 5 | 2 | 2 | 1 | 13 | 3.9 | 23 |
| 30 | 1 | 1 | 1 | 1 | 3 | 3 | 1 | 3 | **IZS** | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 4 | 16 | 15 | 5 | 1 | 1 | 3 | 16 | 3.4 | 24 |
| 31 | 2 | 1 | 1 | 1 | 1 | 3 | 5 | **IZS** | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 5 | 1.0 | 24 |
| HOURLY MAX | 13 | 9 | 8 | 19 | 22 | 17 | 13 | 14 | 15 | 16 | 10 | 8 | 8 | 9 | 7 | 10 | 8 | 9 | 16 | 15 | 15 | 11 | 8 | 10 | | | |
| HOURLY AVG | 2.0 | 2.0 | 2.0 | 3.2 | 3.6 | 3.0 | 3.8 | 4.7 | 3.3 | 3.4 | 3.0 | 3.0 | 2.4 | 2.1 | 2.1 | 2.9 | 2.2 | 2.4 | 3.5 | 3.1 | 3.1 | 2.5 | 2.2 | 2.3 | | | |

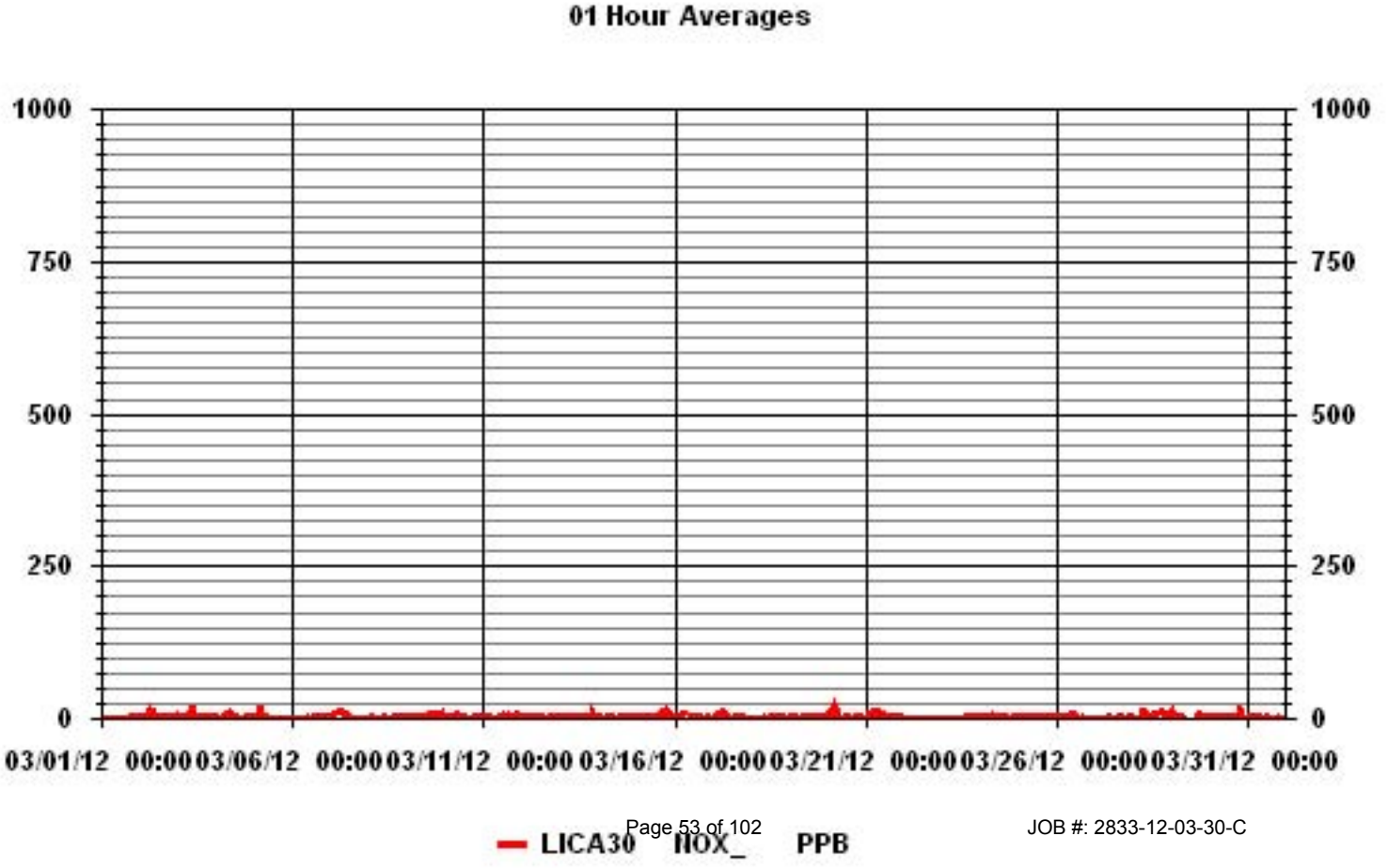
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 576 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 22 | PPB | @ HOUR(S) | 4 | ON DAY(S) | 20 | |
| MAXIMUM 24-HR AVERAGE: | 6.1 | PPB | | | ON DAY(S) | 28 | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 743 | HRS | |
| MONTHLY CALIBRATION TIME: | 10 | HRS | AMD OPERATION UPTIME: | | 99.9 | % | |
| STANDARD DEVIATION: | 3.13 | | MONTHLY AVERAGE: | | 2.82 | PPB | |






JOB #: 2833-12-03-30-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

MARCH 2012

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

MST

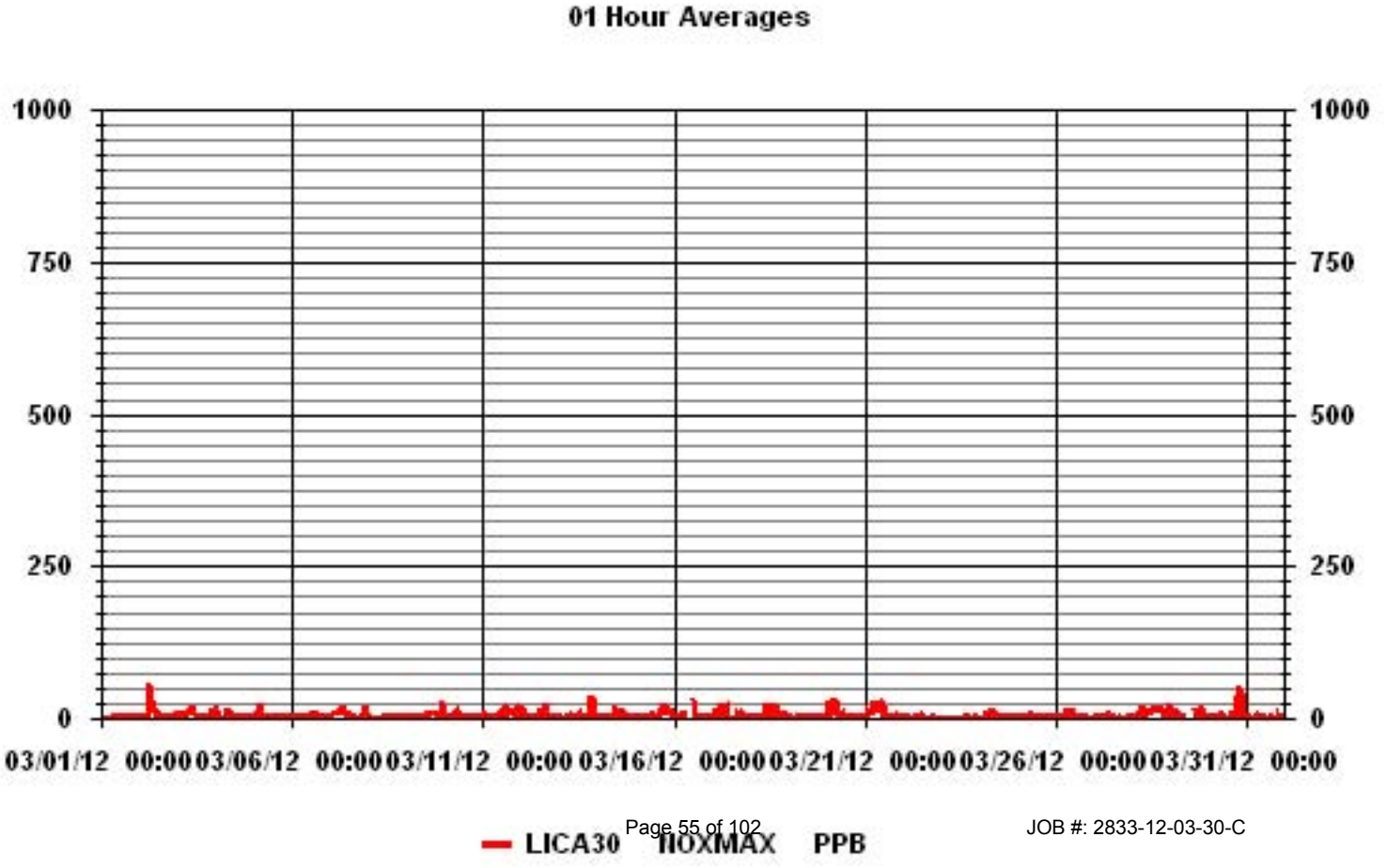
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 3 | 3 | 4 | 1 | 2 | 3 | 3 | 3 | 4 | 1.5 | 24 |
| 2 | 2 | 2 | 4 | 4 | 3 | 6 | **59** | 11 | 27 | 18 | 5 | 7 | 7 | **IZS** | 3 | 5 | 3 | 4 | 5 | 4 | 5 | 5 | 5 | 6 | **59** | 8.7 | 24 |
| 3 | 7 | 6 | 6 | 6 | 6 | 6 | 8 | 14 | 17 | 18 | 12 | 7 | **IZS** | 4 | 4 | 5 | 5 | 4 | 5 | 4 | 6 | 5 | 12 | 14 | 18 | 7.9 | 24 |
| 4 | 3 | 6 | 1 | 1 | 2 | 3 | 11 | 11 | 11 | 14 | 11 | **IZS** | 6 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 14 | 4.7 | 24 |
| 5 | 2 | 2 | 11 | 22 | 23 | 12 | 4 | 7 | 5 | 5 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 23 | 4.6 | 24 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 5 | 2 | 7 | 8 | 4 | 12 | 5 | 4 | 6 | 5 | 5 | 4 | 5 | 5 | 12 | 3.7 | 24 |
| 7 | 6 | 8 | 8 | 8 | 8 | 10 | 13 | 18 | **IZS** | 9 | 2 | 12 | 5 | 1 | 1 | 4 | 1 | 1 | 2 | 4 | 2 | 1 | 18 | 1 | 18 | 6.2 | 24 |
| 8 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | **IZS** | 2 | 3 | 3 | 4 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 5 | 5 | 3 | 3 | 5 | 2.3 | 24 |
| 9 | 3 | 3 | 3 | 3 | 4 | 4 | **IZS** | 4 | 3 | 5 | 5 | 5 | 6 | 7 | 6 | 8 | 9 | 8 | 8 | 9 | 5 | 13 | 27 | 1 | 27 | 6.5 | 24 |
| 10 | 1 | 0 | 4 | 3 | 0 | **IZS** | 10 | 13 | 5 | 2 | 4 | 1 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 5 | 13 | 3.3 | 24 |
| 11 | 8 | 2 | 2 | 1 | **IZS** | 1 | 1 | 1 | 1 | 5 | 8 | 6 | 14 | 10 | 7 | 16 | 12 | 12 | 12 | 10 | 15 | 3 | 2 | 19 | 19 | 7.3 | 24 |
| 12 | 18 | 2 | 2 | **IZS** | 7 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 15 | 2 | 3 | 23 | 2 | 3 | 3 | 5 | 5 | 3 | 3 | 5 | 23 | 5.0 | 24 |
| 13 | 3 | 2 | **IZS** | 3 | 4 | 4 | 4 | 7 | 4 | 3 | 3 | 7 | 10 | 4 | 2 | 4 | 2 | 5 | 6 | 6 | 38 | 24 | 3 | 1 | 38 | 6.5 | 24 |
| 14 | 3 | **IZS** | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 19 | 5 | 5 | 5 | 16 | 2 | 2 | 3 | 2 | 3 | 4 | 4 | 4 | 19 | 4.1 | 24 |
| 15 | **IZS** | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 4 | 8 | 7 | 4 | 5 | 3 | 15 | 6 | 19 | 19 | 13 | 10 | 12 | 12 | **IZS** | 19 | 7.2 | 24 |
| 16 | 5 | 5 | 2 | 3 | 4 | 10 | 9 | **C** | **C** | **C** | **C** | **C** | 27 | 3 | 5 | 4 | 1 | 1 | 1 | 1 | 2 | 2 | **IZS** | 5 | 27 | 5.0 | 24 |
| 17 | 2 | 3 | 10 | 10 | 7 | 9 | 25 | 13 | 18 | 6 | 4 | 4 | 2 | 2 | 4 | 12 | 10 | 5 | 12 | 10 | 3 | **IZS** | 4 | 1 | 25 | 7.7 | 24 |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 6 | 4 | 23 | 2 | 4 | 3 | 12 | 23 | 9 | 2 | 2 | 2 | **IZS** | 9 | 5 | 3 | 23 | 5.1 | 24 |
| 19 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 4 | 4 | 3 | 4 | 4 | **IZS** | 5 | 5 | 3 | 3 | 5 | 2.8 | 24 |
| 20 | 3 | 27 | 28 | 26 | 32 | 31 | 11 | 8 | 6 | 1 | 7 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | **IZS** | 6 | 3 | 2 | 2 | 2 | 32 | 8.9 | 24 |
| 21 | 5 | 14 | 11 | 11 | 15 | 17 | 28 | 19 | 8 | 20 | 26 | 22 | 4 | 5 | 4 | 5 | 3 | **IZS** | 2 | 2 | 6 | 3 | 3 | 3 | 28 | 10.3 | 24 |
| 22 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 6 | 2 | 1 | 2 | 1 | **IZS** | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 6 | 1.1 | 24 |
| 23 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 0.7 | 24 |
| 24 | 2 | 1 | 2 | 7 | 3 | 5 | 9 | 12 | 13 | 13 | 7 | 7 | 8 | 7 | **IZS** | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 4 | 4 | 13 | 5.3 | 24 |
| 25 | 4 | 6 | 3 | 3 | 3 | 3 | 4 | 7 | 6 | 4 | 4 | 4 | 4 | **IZS** | 5 | 4 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 7 | 3.7 | 24 |
| 26 | 3 | 3 | 3 | 2 | 2 | 4 | 8 | 14 | 4 | 6 | 10 | 10 | **IZS** | 4 | 3 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 14 | 3.9 | 24 |
| 27 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 | 6 | **IZS** | 6 | 4 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 3 | 3 | 2 | 8 | 2.3 | 24 |
| 28 | 3 | 3 | 2 | 8 | 6 | 6 | 18 | 17 | 8 | 10 | **IZS** | 11 | 15 | 17 | 14 | 14 | 17 | 17 | 16 | 9 | 10 | 3 | 9 | 18 | 18 | 10.9 | 24 |
| 29 | 18 | 15 | 2 | 5 | 11 | 8 | 4 | 4 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 14 | 4 | **M** | 12 | 18 | 6 | 4 | 2 | 2 | 18 | 8.1 | 23 |
| 30 | 2 | 2 | 2 | 2 | 6 | 7 | 3 | 9 | **IZS** | 4 | 4 | 2 | 3 | 7 | 5 | 9 | 7 | 17 | 36 | 52 | 43 | 5 | 2 | 5 | 52 | 10.2 | 24 |
| 31 | 3 | 2 | 2 | 1 | 2 | 5 | 8 | **IZS** | 4 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 8 | 2 | 1 | 2 | 2 | 8 | 2.4 | 24 |
| HOURLY MAX | 18 | 27 | 28 | 26 | 32 | 31 | 59 | 19 | 27 | 20 | 26 | 22 | 27 | 17 | 14 | 23 | 17 | 19 | 36 | 52 | 43 | 24 | 27 | 19 | | | |
| HOURLY AVG | 3.9 | 4.2 | 4.0 | 4.7 | 5.3 | 5.4 | 8.4 | 7.3 | 6.0 | 6.1 | 6.2 | 5.8 | 6.0 | 4.1 | 3.9 | 7.3 | 4.2 | 4.5 | 5.9 | 6.3 | 6.6 | 4.5 | 5.0 | 4.2 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 675 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 59 | PPB | @ HOUR(S) | 6 | ON DAY(S) | 2 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 743 | HRS |
| MONTHLY CALIBRATION TIME: | 12 | HRS | | | | |
| STANDARD DEVIATION | 6.40 | | | | | |






JOB #: 2833-12-03-30-C

LICA30
NOX_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 4.55 | 6.69 | 12.67 | 6.26 | 4.98 | 7.26 | 6.41 | 4.98 | 5.27 | 11.25 | 7.26 | 5.69 | 8.11 | 4.70 | 2.56 | 1.28 | 100.00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.55 | 6.69 | 12.67 | 6.26 | 4.98 | 7.26 | 6.41 | 4.98 | 5.27 | 11.25 | 7.26 | 5.69 | 8.11 | 4.70 | 2.56 | 1.28 | |

Calm : .00 %

Total # Operational Hours : 702

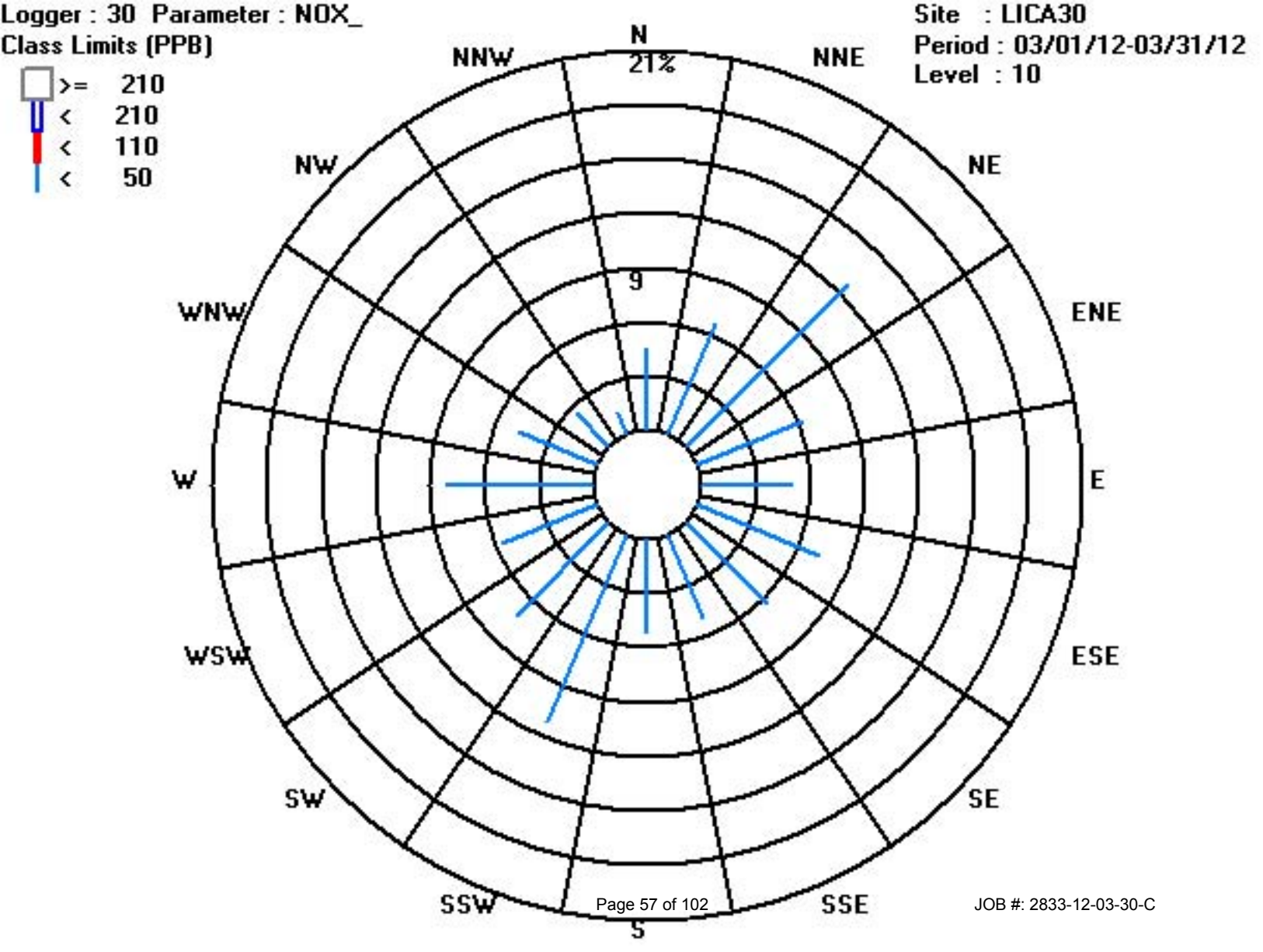
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 32 | 47 | 89 | 44 | 35 | 51 | 45 | 35 | 37 | 79 | 51 | 40 | 57 | 33 | 18 | 9 | 702 |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 32 | 47 | 89 | 44 | 35 | 51 | 45 | 35 | 37 | 79 | 51 | 40 | 57 | 33 | 18 | 9 | |

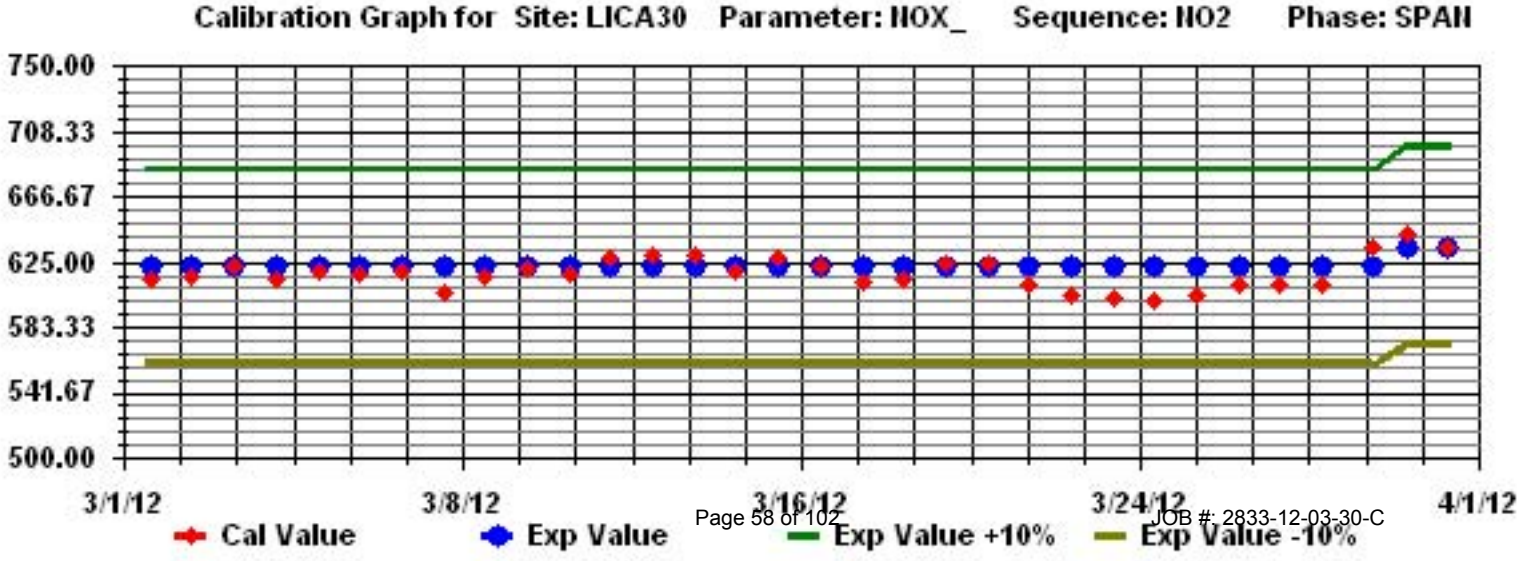
Calm : .00 %

Total # Operational Hours : 702






JOB #: 2833-12-03-30-C


Calibration Graph for Site: LICA30 Parameter: NOX_ Sequence: NO2 Phase: SPAN
750.00
708.33
666.67
625.00
583.33
541.67
500.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Temperature

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

MARCH 2012

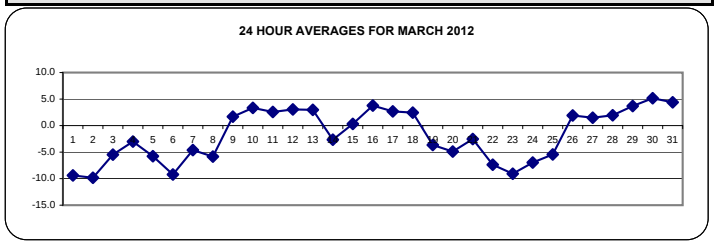
**AMBIENT TEMPERATURE** hourly averages (Degrees C)

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 | -8.5 | -9.2 | -9.9 | -10.3 | -10.6 | -11.3 | -11.8 | -11.8 | -11.1 | -10.4 | -9.4 | -8.3 | -7.2 | -5.8 | -5.4 | -5.7 | -6.4 | -7.4 | -8.2 | -9.1 | -10 | -11.4 | -13 | -13.1 | -5.4 | -9.4 | 24 |
| 2 | -12.4 | -12.9 | -13.4 | -14 | -13.3 | -14.6 | -16.1 | -16.4 | -13.1 | -9.9 | -7.8 | -7.7 | -6.1 | -6.1 | -5.7 | -4.8 | -5.9 | -6.6 | -7.6 | -7.9 | -8.2 | -8.6 | -8.5 | -8.4 | -4.8 | -9.8 | 24 |
| 3 | -8.5 | -8.6 | -8.9 | -9 | -10.2 | -9.5 | -9.4 | -9.7 | -8.5 | -5.5 | -2.6 | -2.1 | -0.3 | -1.7 | -2.3 | -2.5 | -2.4 | -2.7 | -3.2 | -4.4 | -4.3 | -5 | -5.1 | -4.9 | -0.3 | -5.5 | 24 |
| 4 | -5.3 | -5.7 | -6.4 | -7.5 | -8.2 | -9.1 | -8.8 | -8.7 | -7.2 | -5.1 | -2.2 | -0.7 | 1.8 | 2.6 | 3 | 3 | 1.7 | 0.2 | -0.9 | -1.2 | -1.4 | -1.6 | -2 | -2.5 | 3.0 | -3.0 | 24 |
| 5 | -3 | -4.2 | -4.3 | -5 | -5.9 | -6.5 | -7.5 | -8.3 | -7.8 | -7.4 | -5.9 | -4.5 | -4.2 | -4 | -3.8 | -4.1 | -4.5 | -5 | -5.6 | -5.9 | -6.2 | -7.3 | -8.4 | -9.3 | -3.0 | -5.8 | 24 |
| 6 | -9.8 | -10.3 | -11.4 | -11.8 | -12.6 | -13.2 | -13.5 | -13.1 | -12 | -9.9 | -7.7 | -4.8 | -2.2 | -1.8 | -2.3 | -3.5 | -5.3 | -6.7 | -9 | -10.7 | -11.7 | -12 | -12.9 | -13.1 | -1.8 | -9.2 | 24 |
| 7 | -12.6 | -12.4 | -12.6 | -12.3 | -12.2 | -12.6 | -12.8 | -11.9 | -8.5 | -4 | -1.3 | 0.6 | 1.8 | 2.8 | 3.2 | 2.7 | 1.6 | -0.3 | -2 | -1.8 | -1.4 | -0.8 | -0.5 | -3.5 | 3.2 | -4.6 | 24 |
| 8 | -5.2 | -6.6 | -7.7 | -8.5 | -10 | -10.8 | -10.2 | -9.7 | -8.6 | -7.2 | -5.9 | -3.8 | -3.5 | -3.4 | -3.5 | -3.4 | -3.3 | -4 | -4.3 | -4.5 | -4.3 | -4.1 | -4 | -3.8 | -3.3 | -5.8 | 24 |
| 9 | -3.6 | -3.7 | -3.9 | -3.7 | -3.7 | -3.7 | -3.7 | -3.5 | -2.1 | -0.7 | 2.1 | 4.7 | 6 | 7.8 | 8.4 | 7.1 | 6.1 | 5.7 | 3.9 | 3.9 | 4.2 | 4.5 | 4.9 | 3.5 | 8.4 | 1.7 | 24 |
| 10 | 2.7 | 2.6 | 1.6 | 0.5 | 0.8 | 0.4 | -1.6 | -0.9 | 2.9 | 5.6 | 7 | 8.3 | 9.8 | 9.8 | 8.4 | 7.6 | 6.1 | 3.8 | 1.6 | 0.6 | -0.3 | 0.4 | 1.1 | 1.3 | 9.8 | 3.3 | 24 |
| 11 | 0.9 | 0.3 | -0.5 | -1.4 | -1.8 | -1.7 | -2.1 | -1.8 | 0.4 | 3.4 | 4.6 | 5.8 | 7.1 | 7 | 6.7 | 5.9 | 4.9 | 4.1 | 4 | 4.2 | 3.8 | 2.9 | 2.3 | 2.8 | 7.1 | 2.6 | 24 |
| 12 | 1.8 | 1.5 | 1.3 | 1.1 | 1.3 | 0.9 | 0.8 | 0.9 | 1.7 | 3.3 | 5 | 5.6 | 7 | 7 | 7.5 | 7.2 | 5.3 | 3.3 | 2 | 2 | 2.1 | 1.3 | 1.6 | 1.7 | 7.5 | 3.1 | 24 |
| 13 | 1 | 0.8 | 0.6 | 0.2 | 0.2 | -0.8 | -1.4 | 0.2 | 2 | 3.7 | 5.8 | 6.2 | 7.2 | 9.4 | 11 | 10.6 | 8.3 | 6.5 | 4.9 | 3 | -0.6 | -1.9 | -2.3 | -3.3 | 11.0 | 3.0 | 24 |
| 14 | -5 | -5.9 | -7.1 | -7.9 | -8 | -7.7 | -8 | -7.3 | -5.5 | -3.4 | -1.3 | 0.9 | 2.2 | 3 | 3.5 | 4.2 | 4.1 | 2.1 | 0.2 | -1.4 | -3.1 | -3.4 | -3.4 | -5.6 | 4.2 | -2.7 | 24 |
| 15 | -6.4 | -7.5 | -7.3 | -6.6 | -6.1 | -6.7 | -7.9 | -6.9 | -2.8 | 1.4 | 3.4 | 5.2 | 5.9 | 6.3 | 7.6 | 6.4 | 5.2 | 4.5 | 4.1 | 3.6 | 3.7 | 3.2 | 2.7 | 2.6 | 7.6 | 0.3 | 24 |
| 16 | 1.5 | -0.6 | -1.9 | -0.7 | 0.2 | -0.5 | -0.3 | 0.3 | 3.5 | 7.3 | 9.5 | 10.6 | 12 | 12 | 11.5 | 11 | 9.4 | 5.9 | 3.4 | 1.6 | 0.5 | -0.7 | -2.5 | -2.3 | 12.0 | 3.8 | 24 |
| 17 | -2.8 | -1.8 | -2 | -2.6 | -4 | -5 | -5.1 | -2.3 | 2.2 | 4.5 | 7.5 | 8.4 | 10 | 8.5 | 8.8 | 8 | 7.3 | 6.7 | 6.1 | 6.4 | 3.6 | 1.2 | 0.4 | 0.3 | 10.0 | 2.7 | 24 |
| 18 | 0.4 | 0.5 | 0.5 | 0.8 | 0.7 | 0.8 | 0.7 | 1 | 1.7 | 2.9 | 4 | 5 | 6.1 | 7.4 | 5.6 | 4.6 | 3.9 | 3.6 | 3 | 2.6 | 2 | 1.1 | 0 | -0.3 | 7.4 | 2.4 | 24 |
| 19 | -0.6 | -0.8 | -1.1 | -1.4 | -1.6 | -2.3 | -2.9 | -3.6 | -3.5 | -3.3 | -3.1 | -2.6 | -2.4 | -2.9 | -3.2 | -4.2 | -4.9 | -5.2 | -5.5 | -5.9 | -6 | -6.4 | -6.9 | -7.4 | -0.6 | -3.7 | 24 |
| 20 | -7.9 | -7.9 | -8 | -8.4 | -9 | -9.6 | -10.6 | -8.8 | -6.3 | -4.6 | -3.4 | -2.5 | 1.4 | 2.1 | 0.8 | 0 | -0.4 | -0.7 | -3 | -4.9 | -5.5 | -5.9 | -6.3 | -8.1 | 2.1 | -4.9 | 24 |
| 21 | -7.5 | -7.2 | -7.5 | -7.7 | -8.6 | -9.2 | -9.8 | -6.3 | -4.3 | 1.3 | 2.3 | 3.8 | 3.3 | 4.2 | 5.6 | 5.2 | 4.6 | 2.2 | -0.3 | -1.9 | -2.8 | -5.4 | -6.8 | -8 | 5.6 | -2.5 | 24 |
| 22 | -7.9 | -8.6 | -9.5 | -10.2 | -11.1 | -11.8 | -11.2 | -9.7 | -8.1 | -6.5 | -5.5 | -4.4 | -3.4 | -3.2 | -4.4 | -4.9 | -5.4 | -6.1 | -6.6 | -7 | -7.4 | -7.7 | -8.1 | -8.3 | -3.2 | -7.4 | 24 |
| 23 | -8.3 | -8.3 | -8.6 | -9.2 | -9.5 | -9.6 | -9.9 | -9.9 | -9.4 | -9 | -8.7 | -8.5 | -8.6 | -8.7 | -8.5 | -8.4 | -8.6 | -9.1 | -9.4 | -9.5 | -9.5 | -9.5 | -9.5 | -9.5 | -8.3 | -9.1 | 24 |
| 24 | -9.8 | -10.1 | -11.2 | -11.7 | -11.8 | -11.5 | -10.1 | -8.4 | -6.5 | -4.4 | -0.7 | -1.6 | -1.2 | -1.4 | -1.7 | -1.5 | -1.4 | -3.3 | -5.3 | -8.1 | -10.7 | -11.3 | -10.1 | -13.4 | -0.7 | -7.0 | 24 |
| 25 | -15.3 | -14.7 | -15 | -15.8 | **-17** | **-17** | -15.1 | -10.3 | -5.7 | -4.4 | -2.9 | -1.5 | -0.3 | 0.7 | 1.8 | 1.9 | 1.9 | 1.3 | 0.6 | 0.1 | -0.5 | -0.9 | -1.3 | -1 | 1.9 | -5.4 | 24 |
| 26 | -0.8 | -1.8 | -3.6 | -3.8 | -4.4 | -5.5 | -6.2 | -3.8 | -0.3 | 2.3 | 5.3 | 8.1 | 8.9 | 9.3 | 9.3 | 8.7 | 8.7 | 7.4 | 5.4 | 3.7 | 2.3 | 0.2 | -0.9 | -2.7 | 9.3 | 1.9 | 24 |
| 27 | -2.8 | -2.6 | -3.4 | -4 | -4.6 | -4.8 | -4.2 | -2.5 | -0.2 | 3.8 | 6.4 | 7.5 | 8.1 | 7.7 | 6.7 | 6.8 | 6.9 | 6.1 | 3 | 0.8 | 0.6 | 0.7 | 0.2 | -0.6 | 8.1 | 1.5 | 24 |
| 28 | -3.4 | -4.3 | -5 | -5.5 | -4 | -4.9 | -2.8 | -1.5 | 0.2 | 3 | 4.6 | 6.5 | 8.3 | 7.8 | 7.2 | 7.2 | 7 | 5.8 | 4.6 | 4 | 3.9 | 3.6 | 2.5 | 1.9 | 8.3 | 1.9 | 24 |
| 29 | 1.4 | 1 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 1.1 | 1.7 | 2.5 | 2.1 | 3.8 | 4.8 | 7.2 | 9.9 | 11.3 | 11.4 | 9.2 | 6.2 | 4.8 | 3.6 | 1.4 | 0.6 | 0.1 | 11.4 | 3.7 | 24 |
| 30 | 0.1 | 0.1 | -0.7 | -0.6 | -0.8 | -0.6 | -0.8 | 0.9 | 5.9 | 7.3 | 9.4 | 11.2 | 11.6 | 12 | 12.5 | **13.5** | 12.6 | 10.5 | 7 | 5 | 3.1 | 2.1 | 1.1 | 1.4 | **13.5** | **5.2** | 24 |
| 31 | 1.4 | 1.3 | 0.7 | 0 | -0.9 | -0.9 | -1 | 2.1 | 5.7 | 8 | 8.7 | 9.4 | 10 | 10.6 | 10.9 | 10.7 | 10.8 | 9.7 | 7.7 | 3.7 | 0.6 | -0.6 | -1.5 | -1.7 | 10.9 | 4.4 | 24 |
| HOURLY MAX | 2.7 | 2.6 | 1.6 | 1.1 | 1.3 | 0.9 | 0.8 | 2.1 | 5.9 | 8.0 | 9.5 | 11.2 | 12.0 | 12.0 | 12.5 | 13.5 | 12.6 | 10.5 | 7.7 | 6.4 | 4.2 | 4.5 | 4.9 | 3.5 | | | |
| HOURLY AVG | -4.4 | -4.8 | -5.3 | -5.7 | -6.0 | -6.4 | -6.5 | -5.5 | -3.3 | -1.1 | 0.6 | 1.9 | 3.0 | 3.4 | 3.5 | 3.2 | 2.6 | 1.3 | -0.1 | -1.1 | -1.9 | -2.6 | -3.1 | -3.7 | | | |

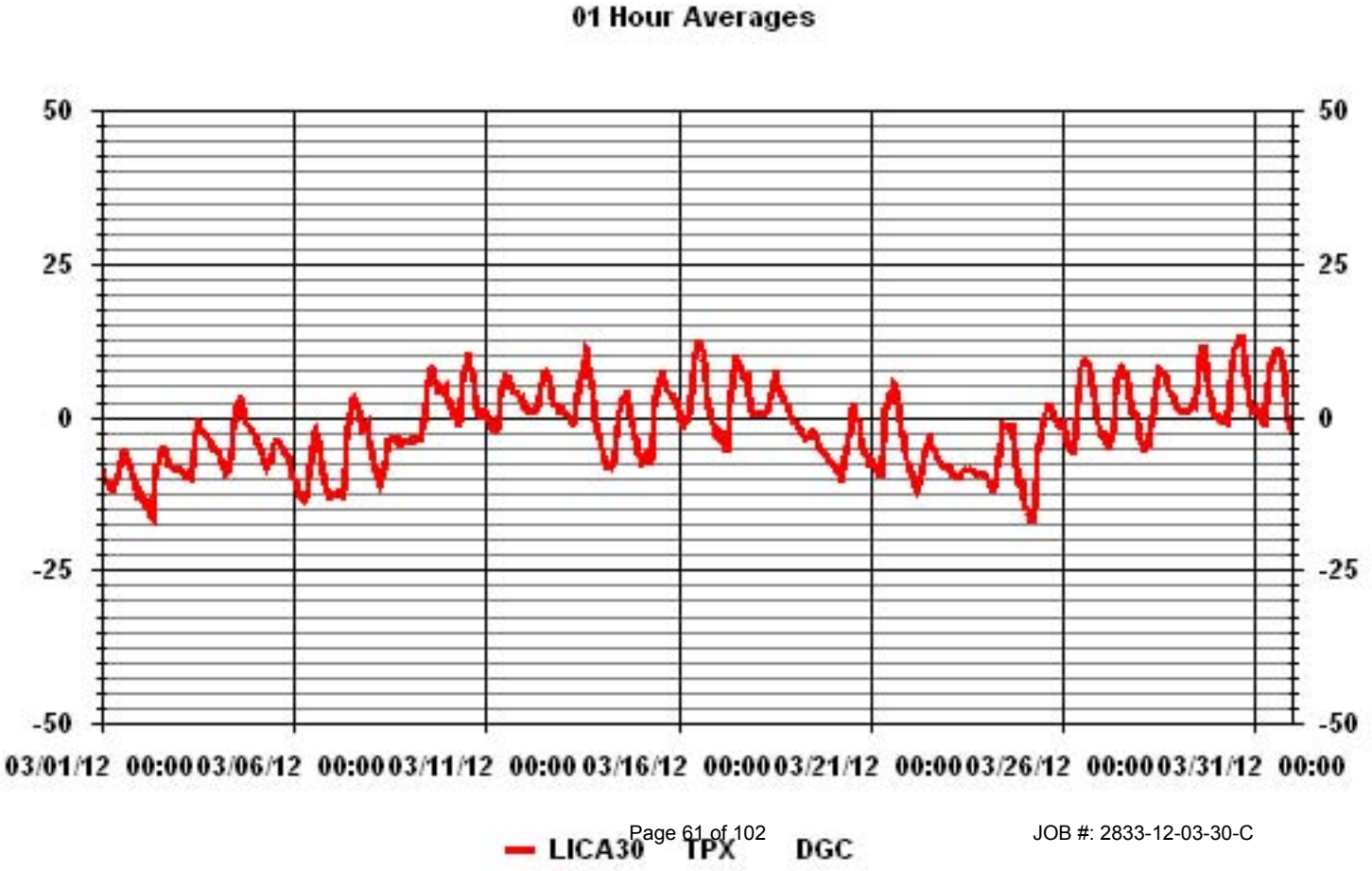
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MINIMUM 1-HR AVERAGE: | -17 | $^{O}$C | @ HOUR(S) | 4, 5 | ON DAY(S) | 25 | |
| MAXIMUM 1-HR AVERAGE: | 13.5 | $^{O}$C | @ HOUR(S) | 15 | ON DAY(S) | 30 | |
| MAXIMUM 24-HR AVERAGE: | 5.2 | $^{O}$C | | | ON DAY(S) | 30 | |
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 744 | HRS | |
| | | | AMD OPERATION UPTIME: | | 100.0 | % | |
| STANDARD DEVIATION: | 6.28 | | MONTHLY AVERAGE: | | -1.75 | $^{O}$C | |






JOB #: 2833-12-03-30-C

# Precipitation

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA**

MARCH 2012

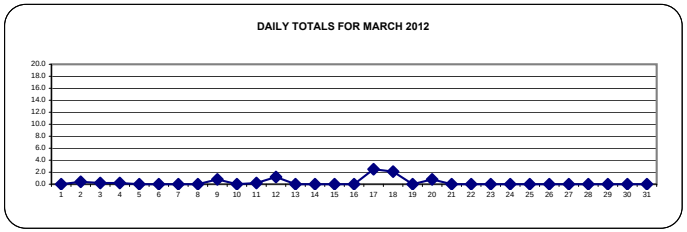
**PRECIPITATION hourly averages (mm)**

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 | 0.1 | 0 | 0 | 0.1 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 | 0.4 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.2 | 24 |
| 4 | 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 | 0.1 | 0.2 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.3 | 0.3 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.8 | 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 | 0.1 | 0 | 0.1 | 0.1 | 0.2 | 24 |
| 12 | 0.4 | 0 | 0 | 0 | 0 | 0.2 | 0.5 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 1.2 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.9 | **1.1** | 0.3 | 0.2 | **1.1** | **2.5** | 24 |
| 18 | 0.5 | 0.4 | 0.6 | 0.5 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.6 | 2.1 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 | 0.1 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.8 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| HOURLY MAX | 0.5 | 0.4 | 0.6 | 0.5 | 0.1 | 0.2 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.3 | 0.3 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 1.1 | 0.3 | 0.2 | | | |

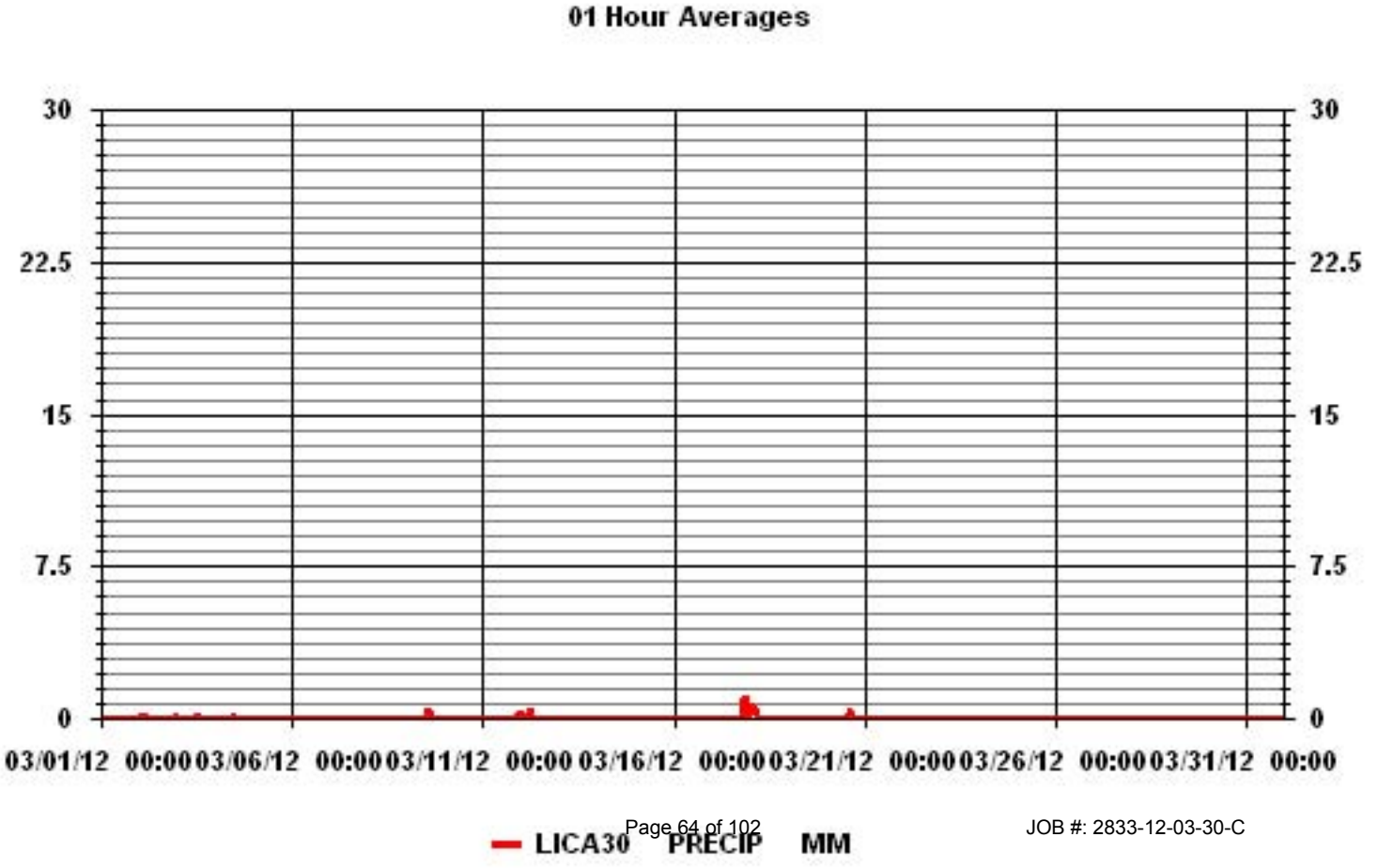
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 1.1 | MM | HOUR(S) | 21 | ON DAY(S) | 17 |
| MAXIMUM DAILY TOTAL | 2.5 | MM | | | ON DAY(S) | 17 |
| MONTHLY TOTAL | 8.4 | MM | | | | |
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 744 | HRS |
| | | | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 0.07 | | MONTHLY AVERAGE: | | 0.01 | MM |






JOB #: 2833-12-03-30-C

# Relative Humidity

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - MASKWA

MARCH 2012

**RELATIVE HUMIDITY** hourly averages (%)

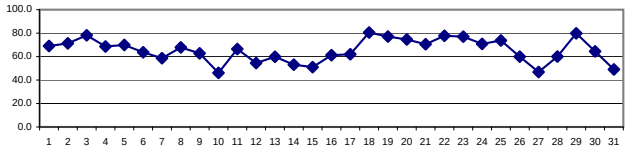
MST

| 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 | 68 | 71 | 72 | 73 | 73 | 74 | 74 | 74 | 73 | 70 | 67 | 63 | 59 | 56 | 55 | 56 | 59 | 66 | 72 | 74 | 74 | 76 | 79 | 79 | 79 | 69.0 | 24 |
| 2 | 79 | 79 | 79 | 79 | 78 | 78 | 77 | 76 | 73 | 68 | 63 | 63 | 58 | 58 | 58 | 58 | 66 | 72 | 74 | 70 | 73 | 76 | 77 | 79 | 79 | 71.3 | 24 |
| 3 | 79 | 80 | 81 | 81 | 82 | 82 | 81 | 82 | 79 | 71 | 65 | 63 | 60 | 67 | 75 | 78 | 78 | 79 | 81 | 84 | 86 | 87 | 88 | 87 | 88 | 78.2 | 24 |
| 4 | 87 | 86 | 84 | 84 | 83 | 84 | 84 | 81 | 79 | 76 | 67 | 62 | 53 | 50 | 47 | 43 | 47 | 52 | 58 | 62 | 69 | 70 | 70 | 69 | 87 | 68.6 | 24 |
| 5 | 70 | 75 | 75 | 77 | 79 | 76 | 73 | 76 | 76 | 77 | 75 | 69 | 67 | 67 | 66 | 65 | 65 | 64 | 63 | 63 | 63 | 64 | 66 | 67 | 79 | 69.9 | 24 |
| 6 | 66 | 65 | 64 | 65 | 74 | 75 | 74 | 72 | 70 | 64 | 57 | 49 | 42 | 41 | 43 | 46 | 52 | 59 | 69 | 75 | 79 | 76 | 76 | 75 | 79 | 63.7 | 24 |
| 7 | 75 | 77 | 78 | 79 | 79 | 79 | 80 | 80 | 77 | 64 | 51 | 46 | 42 | 37 | 31 | 32 | 35 | 40 | 46 | 55 | 58 | 55 | 50 | 61 | 80 | 58.6 | 24 |
| 8 | 64 | 69 | 72 | 75 | 76 | 78 | 76 | 72 | 67 | 62 | 59 | 54 | 54 | 54 | 55 | 57 | 62 | 70 | 73 | 75 | 75 | 76 | 76 | 77 | 78 | 67.8 | 24 |
| 9 | 78 | 78 | 78 | 78 | 77 | 77 | 76 | 75 | 70 | 66 | 59 | 52 | 49 | 45 | 44 | 48 | 52 | 54 | 61 | 62 | 60 | 58 | 53 | 56 | 78 | 62.8 | 24 |
| 10 | 53 | 51 | 53 | 54 | 49 | 50 | 58 | 55 | 44 | 37 | 35 | 31 | 27 | 26 | 28 | 32 | 36 | 45 | 51 | 56 | 64 | 59 | 58 | 55 | 64 | 46.1 | 24 |
| 11 | 74 | 80 | 83 | 85 | 87 | 87 | 87 | 85 | 74 | 57 | 46 | 45 | 46 | 46 | 47 | 50 | 54 | 57 | 58 | 59 | 65 | 72 | 77 | 74 | 87 | 66.5 | 24 |
| 12 | 83 | 83 | 84 | 86 | 86 | 85 | 87 | 84 | 70 | 47 | 36 | 31 | 26 | 25 | 23 | 23 | 30 | 38 | 42 | 44 | 46 | 50 | 50 | 49 | 87 | 54.5 | 24 |
| 13 | 53 | 56 | 58 | 60 | 61 | 65 | 68 | 64 | 60 | 57 | 53 | 52 | 50 | 47 | 46 | 48 | 54 | 60 | 63 | 66 | 80 | 75 | 72 | 69 | 80 | 59.9 | 24 |
| 14 | 66 | 68 | 69 | 68 | 65 | 67 | 69 | 66 | 59 | 54 | 49 | 45 | 45 | 42 | 40 | 35 | 32 | 36 | 41 | 46 | 50 | 51 | 52 | 60 | 69 | 53.1 | 24 |
| 15 | 65 | 69 | 67 | 65 | 64 | 63 | 66 | 64 | 52 | 42 | 39 | 37 | 37 | 37 | 34 | 38 | 41 | 46 | 46 | 45 | 46 | 51 | 54 | 57 | 69 | 51.0 | 24 |
| 16 | 63 | 69 | 75 | 76 | 75 | 79 | 79 | 77 | 66 | 55 | 47 | 42 | 34 | 32 | 32 | 35 | 41 | 54 | 63 | 69 | 72 | 74 | 81 | 79 | 81 | 61.2 | 24 |
| 17 | 81 | 77 | 78 | 80 | 83 | 86 | 86 | 78 | 66 | 59 | 45 | 39 | 33 | 37 | 33 | 34 | 37 | 40 | 41 | 40 | 69 | 87 | 89 | 90 | **90** | 62.0 | 24 |
| 18 | 90 | 90 | 90 | 90 | 89 | 89 | 89 | 88 | 84 | 79 | 74 | 72 | 70 | 65 | 71 | 74 | 75 | 75 | 75 | 77 | 82 | 82 | 81 | 82 | **90** | **80.5** | 24 |
| 19 | 82 | 82 | 82 | 81 | 81 | 79 | 77 | 74 | 72 | 69 | 64 | 60 | 59 | 63 | 70 | 81 | 85 | 85 | 85 | 85 | 84 | 83 | 84 | 83 | 85 | 77.1 | 24 |
| 20 | 82 | 82 | 82 | 81 | 80 | 80 | 80 | 80 | 80 | 78 | 75 | 72 | 57 | 52 | 56 | 56 | 60 | 63 | 74 | 83 | 84 | 84 | 83 | 86 | 86 | 74.6 | 24 |
| 21 | 85 | 83 | 84 | 83 | 85 | 85 | 84 | 81 | 76 | 57 | 52 | 51 | 54 | 53 | 49 | 50 | 52 | 59 | 67 | 72 | 76 | 84 | 86 | 85 | 86 | 70.5 | 24 |
| 22 | 85 | 84 | 84 | 83 | 81 | 81 | 79 | 77 | 72 | 67 | 65 | 63 | 63 | 67 | 79 | 80 | 82 | 83 | 83 | 83 | 82 | 81 | 81 | 81 | 85 | 77.8 | 24 |
| 23 | 80 | 79 | 79 | 79 | 79 | 78 | 78 | 78 | 76 | 73 | 72 | 71 | 71 | 71 | 73 | 74 | 76 | 78 | 80 | 81 | 80 | 80 | 81 | 81 | 81 | 77.0 | 24 |
| 24 | 81 | 81 | 82 | 81 | 80 | 80 | 80 | 77 | 71 | 63 | 50 | 54 | 54 | 56 | 59 | 58 | 58 | 63 | 69 | 77 | 83 | 82 | 81 | 80 | 83 | 70.8 | 24 |
| 25 | 79 | 80 | 79 | 77 | 76 | 77 | 77 | 80 | 81 | 78 | 71 | 67 | 65 | 65 | 65 | 64 | 63 | 66 | 71 | 74 | 77 | 78 | 80 | 80 | 81 | 73.8 | 24 |
| 26 | 79 | 82 | 86 | 85 | 86 | 87 | 87 | 84 | 74 | 67 | 59 | 51 | 45 | 40 | 37 | 34 | 33 | 36 | 39 | 42 | 44 | 48 | 53 | 61 | 87 | 60.0 | 24 |
| 27 | 59 | 59 | 61 | 62 | 63 | 62 | 61 | 56 | 49 | 35 | 24 | 24 | 26 | 27 | 30 | 30 | 31 | 31 | 39 | 43 | 45 | 60 | 71 | 76 | 76 | 46.8 | 24 |
| 28 | 78 | 79 | 77 | 70 | 57 | 62 | 59 | 58 | 57 | 51 | 48 | 46 | 44 | 46 | 46 | 47 | 48 | 53 | 57 | 60 | 63 | 68 | 81 | 86 | 86 | 60.0 | 24 |
| 29 | 87 | 89 | 89 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 90 | 87 | 81 | 72 | 63 | 56 | 55 | 59 | 69 | 73 | 74 | 78 | 82 | 83 | 90 | 79.8 | 24 |
| 30 | 83 | 83 | 85 | 83 | 82 | 81 | 83 | 78 | 63 | 60 | 54 | 50 | 50 | 48 | 46 | 38 | 38 | 41 | 53 | 57 | 72 | 75 | 75 | 69 | 85 | 64.5 | 24 |
| 31 | 62 | 59 | 60 | 63 | 67 | 66 | 68 | 60 | 47 | 40 | 39 | 35 | 31 | 30 | 28 | 27 | 27 | 30 | 35 | 46 | 56 | 64 | 68 | 69 | 69 | 49.0 | 24 |
| HOURLY MAX | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 90 | 87 | 81 | 72 | 79 | 81 | 85 | 85 | 85 | 85 | 86 | 87 | 89 | 90 | | | |
| HOURLY AVG | 74.7 | 75.6 | 76.5 | 76.5 | 76.4 | 76.8 | 77.0 | 74.9 | 69.3 | 62.3 | 56.5 | 53.1 | 50.1 | 49.1 | 49.3 | 49.9 | 52.4 | 56.6 | 61.2 | 64.5 | 68.7 | 71.1 | 72.7 | 73.7 | | | |

**STATUS FLAG CODES**

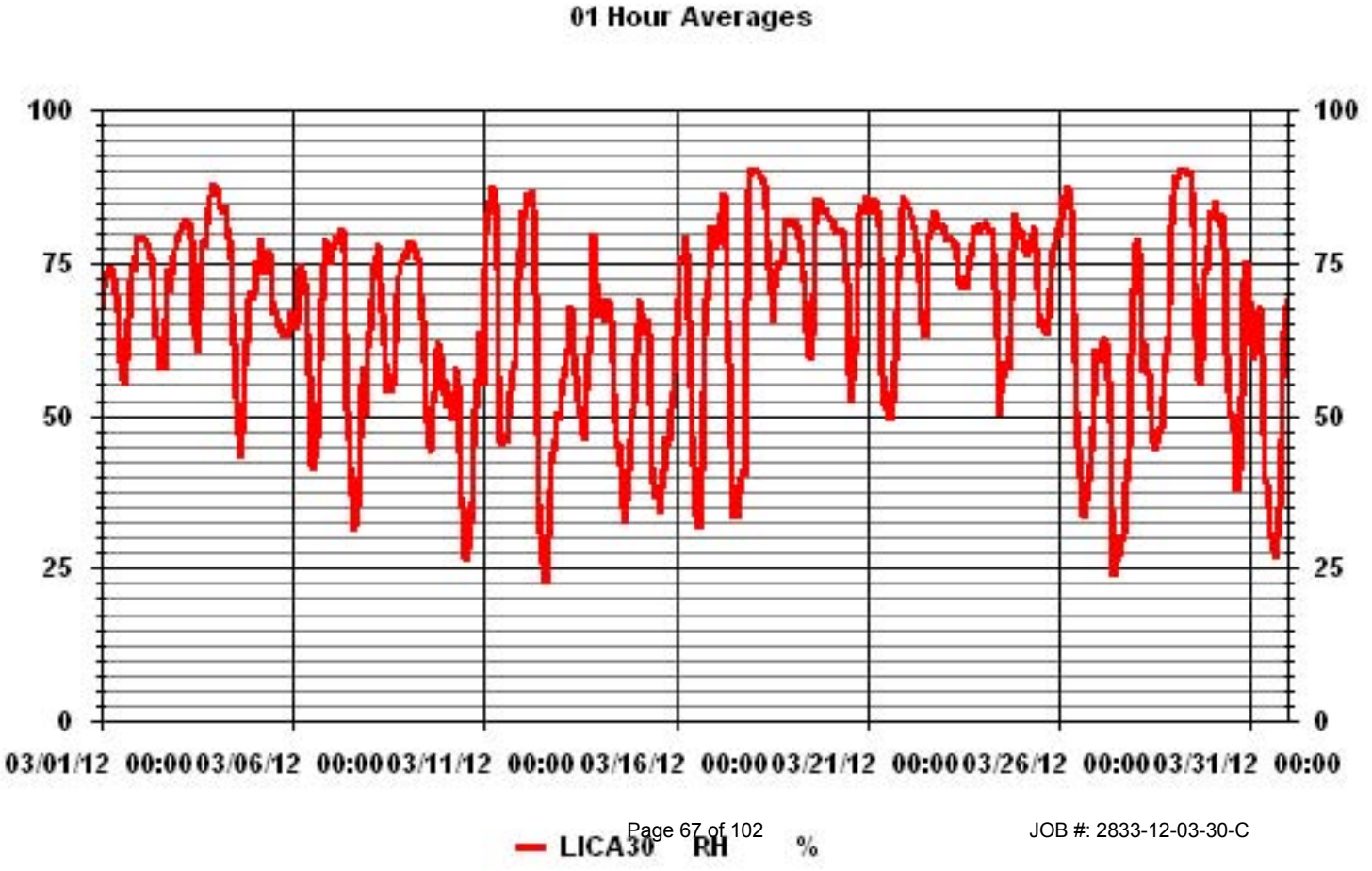
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |

**24 HOUR AVERAGES FOR MARCH 2012**




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 90 | % | @ HOUR(S) | VAR | ON DAY(S) | 17, 18 |
| MAXIMUM 24-HR AVERAGE: | 80.5 | % | | | ON DAY(S) | 18 |
| | | | | VAR-VARIOUS | | |
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 744 | HRS |
| | | | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 16.20 | | MONTHLY AVERAGE: | | 65.37 | % |






JOB #: 2833-12-03-30-C

# Barometric Pressure

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

MARCH 2012

**BAROMETRIC PRESSURE** hourly averages (millibar)

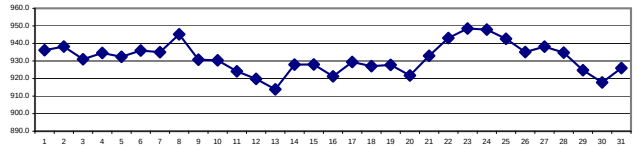
MST

| 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 | 931 | 932 | 932 | 932 | 932 | 932 | 933 | 934 | 934 | 935 | 936 | 936 | 936 | 936 | 937 | 938 | 939 | 939 | 940 | 940 | 941 | 941 | 941 | 941 | 941 | 936.2 | 24 |
| 2 | 942 | 942 | 942 | 941 | 941 | 941 | 941 | 940 | 940 | 940 | 939 | 939 | 938 | 938 | 937 | 937 | 936 | 936 | 935 | 935 | 935 | 934 | 934 | 934 | 942 | 938.2 | 24 |
| 3 | 934 | 933 | 933 | 933 | 932 | 932 | 932 | 931 | 931 | 930 | 931 | 930 | 929 | 929 | 928 | 929 | 929 | 929 | 930 | 930 | 931 | 932 | 933 | 933 | 934 | 931.0 | 24 |
| 4 | 934 | 935 | 935 | 935 | 936 | 936 | 936 | 936 | 936 | 936 | 936 | 936 | 936 | 936 | 935 | 935 | 934 | 933 | 933 | 933 | 932 | 932 | 932 | 932 | 936 | 934.6 | 24 |
| 5 | 932 | 932 | 932 | 932 | 932 | 932 | 932 | 932 | 933 | 933 | 933 | 933 | 933 | 933 | 932 | 932 | 932 | 932 | 932 | 932 | 932 | 933 | 933 | 933 | 933 | 932.4 | 24 |
| 6 | 933 | 934 | 934 | 934 | 934 | 935 | 935 | 936 | 937 | 937 | 937 | 938 | 938 | 938 | 937 | 937 | 937 | 937 | 937 | 937 | 936 | 936 | 935 | 934 | 938 | 936.0 | 24 |
| 7 | 934 | 933 | 933 | 932 | 932 | 932 | 932 | 933 | 933 | 934 | 935 | 935 | 936 | 936 | 936 | 936 | 936 | 936 | 936 | 936 | 937 | 937 | 939 | 941 | 941 | 935.0 | 24 |
| 8 | 942 | 943 | 944 | 944 | 945 | 946 | 947 | 947 | 947 | 948 | 948 | 948 | 948 | 947 | 947 | 946 | 946 | 945 | 945 | 944 | 943 | 942 | 942 | 941 | 948 | 945.2 | 24 |
| 9 | 939 | 938 | 937 | 936 | 935 | 934 | 933 | 932 | 931 | 931 | 930 | 930 | 930 | 929 | 928 | 928 | 927 | 927 | 926 | 927 | 927 | 927 | 928 | 928 | 939 | 930.8 | 24 |
| 10 | 929 | 929 | 929 | 929 | 929 | 930 | 930 | 930 | 931 | 931 | 932 | 932 | 932 | 932 | 931 | 931 | 931 | 931 | 930 | 930 | 930 | 930 | 930 | 930 | 932 | 930.4 | 24 |
| 11 | 930 | 929 | 928 | 928 | 928 | 927 | 927 | 926 | 926 | 926 | 926 | 925 | 925 | 924 | 924 | 923 | 922 | 921 | 921 | 921 | 920 | 919 | 917 | 916 | 930 | 924.1 | 24 |
| 12 | 916 | 914 | 915 | 914 | 915 | 916 | 916 | 919 | 920 | 921 | 923 | 923 | 924 | 924 | 924 | 924 | 923 | 923 | 922 | 922 | 920 | 920 | 919 | 918 | 924 | 919.8 | 24 |
| 13 | 918 | 918 | 917 | 917 | 916 | 916 | 915 | 915 | 914 | 914 | 913 | 912 | 911 | 911 | 910 | 911 | 910 | 910 | 911 | 912 | 913 | 915 | 916 | 917 | 918 | 913.8 | 24 |
| 14 | 919 | 920 | 921 | 923 | 924 | 925 | 926 | 927 | 928 | 929 | 929 | 930 | 930 | 931 | 931 | 931 | 931 | 931 | 931 | 931 | 931 | 931 | 931 | 930 | 931 | 928.0 | 24 |
| 15 | 930 | 930 | 930 | 930 | 930 | 930 | 930 | 930 | 931 | 931 | 932 | 931 | 931 | 930 | 930 | 929 | 928 | 927 | 926 | 924 | 922 | 921 | 920 | 919 | 932 | 928.0 | 24 |
| 16 | 919 | 919 | 919 | 919 | 919 | 919 | 920 | 920 | 920 | 920 | 921 | 921 | 921 | 921 | 921 | 922 | 923 | 923 | 924 | 924 | 923 | 924 | 924 | 924 | 924 | 921.3 | 24 |
| 17 | 925 | 926 | 927 | 928 | 928 | 928 | 928 | 929 | 931 | 931 | 932 | 933 | 932 | 932 | 931 | 931 | 930 | 930 | 929 | 929 | 930 | 930 | 929 | 927 | 933 | 929.4 | 24 |
| 18 | 926 | 926 | 925 | 925 | 924 | 925 | 924 | 925 | 925 | 925 | 925 | 927 | 927 | 928 | 927 | 928 | 928 | 928 | 929 | 930 | 930 | 930 | 931 | 931 | 931 | 927.0 | 24 |
| 19 | 931 | 931 | 930 | 930 | 931 | 931 | 931 | 931 | 931 | 931 | 930 | 929 | 929 | 927 | 926 | 925 | 925 | 926 | 926 | 924 | 923 | 923 | 923 | 922 | 931 | 927.8 | 24 |
| 20 | 922 | 922 | 922 | 922 | 922 | 921 | 921 | 921 | 921 | 921 | 922 | 922 | 922 | 922 | 921 | 921 | 921 | 921 | 921 | 922 | 922 | 923 | 923 | 924 | 924 | 921.8 | 24 |
| 21 | 925 | 925 | 926 | 927 | 928 | 929 | 929 | 931 | 932 | 932 | 933 | 934 | 934 | 935 | 935 | 936 | 936 | 936 | 937 | 937 | 938 | 938 | 939 | 939 | 939 | 933.0 | 24 |
| 22 | 940 | 940 | 941 | 941 | 942 | 942 | 943 | 943 | 943 | 943 | 943 | 944 | 943 | 943 | 943 | 943 | 943 | 944 | 944 | 944 | 945 | 945 | 946 | 946 | 946 | 943.1 | 24 |
| 23 | 947 | 947 | 947 | 947 | 947 | 948 | 949 | 949 | 949 | 949 | **950** | 949 | 949 | 949 | 949 | 949 | 948 | 948 | 949 | 949 | 949 | 949 | 949 | 949 | **950** | **948.5** | 24 |
| 24 | 949 | 948 | 948 | 948 | 948 | 948 | 948 | 948 | 948 | 948 | 949 | 949 | 949 | 949 | 949 | 948 | 948 | 948 | 947 | 947 | 946 | 946 | 947 | 946 | 949 | 947.9 | 24 |
| 25 | 946 | 945 | 945 | 945 | 945 | 945 | 945 | 945 | 945 | 945 | 945 | 944 | 944 | 943 | 943 | 942 | 941 | 940 | 940 | 939 | 938 | 938 | 938 | 937 | 946 | 942.6 | 24 |
| 26 | 937 | 936 | 936 | 935 | 935 | 935 | 934 | 935 | 935 | 935 | 936 | 936 | 935 | 935 | 935 | 934 | 934 | 935 | 935 | 935 | 935 | 935 | 935 | 934 | 937 | 935.1 | 24 |
| 27 | 934 | 935 | 935 | 936 | 936 | 937 | 937 | 937 | 938 | 939 | 939 | 940 | 940 | 939 | 939 | 940 | 940 | 940 | 939 | 939 | 939 | 939 | 940 | 939 | 940 | 938.2 | 24 |
| 28 | 939 | 939 | 939 | 938 | 938 | 937 | 937 | 937 | 937 | 936 | 936 | 936 | 935 | 935 | 934 | 933 | 932 | 932 | 932 | 931 | 931 | 931 | 930 | 929 | 939 | 934.8 | 24 |
| 29 | 927 | 927 | 927 | 926 | 926 | 925 | 925 | 925 | 925 | 925 | 926 | 926 | 926 | 926 | 926 | 925 | 925 | 924 | 924 | 923 | 922 | 922 | 921 | 920 | 927 | 924.8 | 24 |
| 30 | 920 | 919 | 918 | 917 | 917 | 917 | 916 | 916 | 916 | 916 | 916 | 916 | 916 | 916 | 916 | 917 | 917 | 918 | 919 | 920 | 920 | 921 | 921 | 922 | 922 | 917.8 | 24 |
| 31 | 922 | 923 | 923 | 924 | 924 | 925 | 925 | 926 | 927 | 927 | 928 | 928 | 928 | 927 | 927 | 927 | 927 | 927 | 927 | 927 | 926 | 926 | 926 | 926 | 928 | 926.0 | 24 |
| HOURLY MAX | 949 | 948 | 948 | 948 | 948 | 948 | 949 | 949 | 949 | 949 | 950 | 949 | 949 | 949 | 949 | 949 | 948 | 948 | 949 | 949 | 949 | 949 | 949 | 949 | | | |
| HOURLY AVG | 931 | 931 | 931 | 931 | 931 | 931 | 932 | 932 | 932 | 932 | 933 | 933 | 932 | 932 | 932 | 932 | 932 | 932 | 932 | 931 | 931 | 931 | 931 | 931 | | | |

**STATUS FLAG CODES**

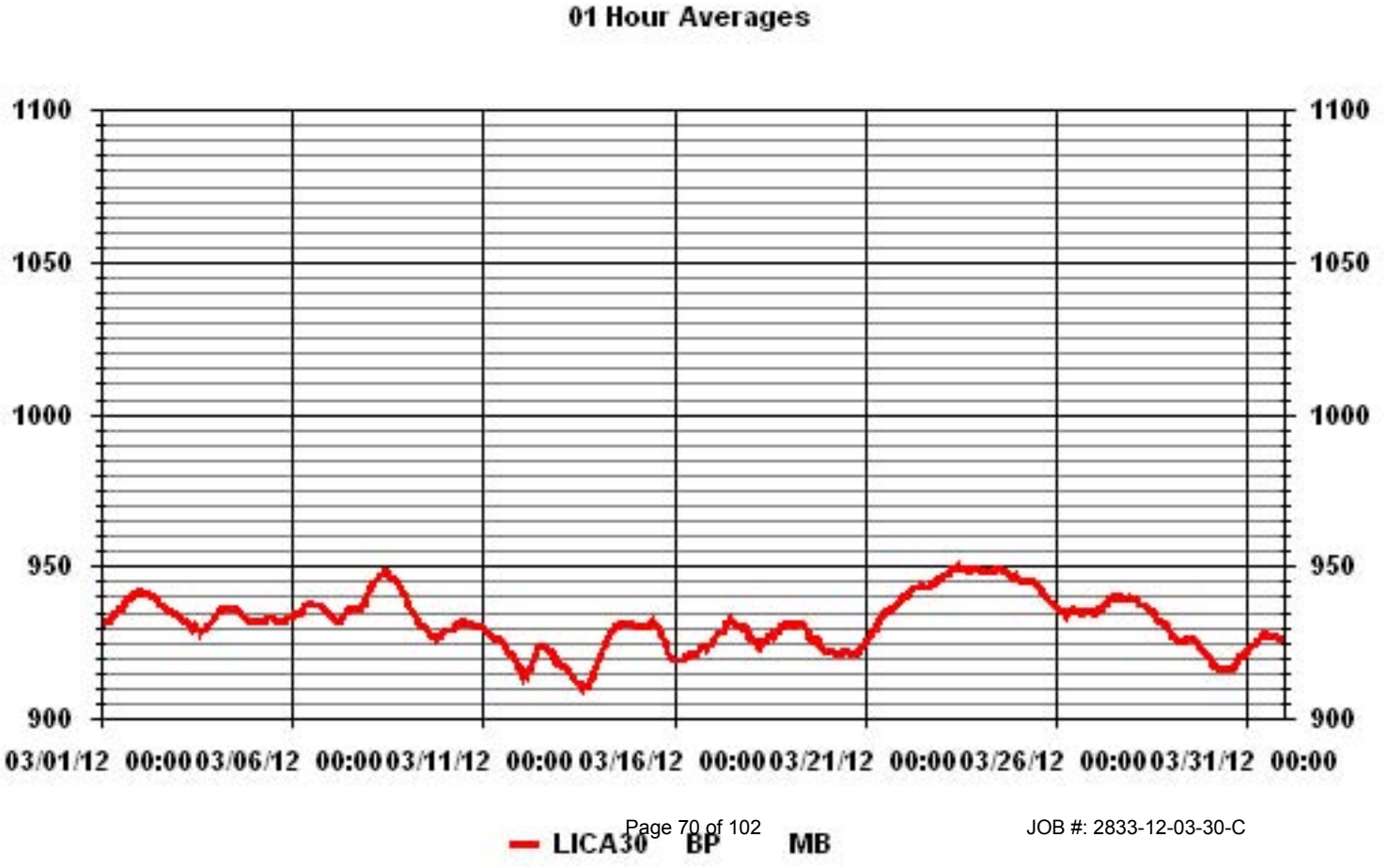
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |

**24 HOUR AVERAGES FOR MARCH 2012**




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 950 | MB | @ HOUR(S) | 10 | ON DAY(S) | 23 |
| MAXIMUM 24-HR AVERAGE: | 948.5 | MB | | | ON DAY(S) | 23 |
| | | | | | VAR-VARIOUS | |
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 744 | HRS |
| | | | AMD OPERATION UPTIME: | | 100.0 | % |
| STANDARD DEVIATION: | 8.81 | | MONTHLY AVERAGE: | | 932 | MB |






JOB #: 2833-12-03-30-C

# Vector Wind Speed

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -MASKWA

MARCH 2012

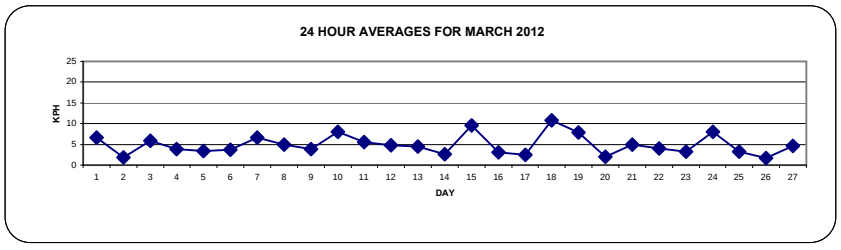
**WIND SPEED** hourly averages (km/hr)

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 | 14.8 | 13 | 14.6 | 14.8 | 13.3 | 10.7 | 11.1 | 12 | 14.8 | 17.1 | 14.4 | 14.9 | 13.4 | 12.6 | 13.2 | 12.5 | 9.7 | 9 | 7.1 | 6.6 | 6.3 | 4.7 | 1.6 | 1.3 | 17.1 | **10.9** | 24 |
| 2 | 1.4 | 1.4 | 1.2 | 1.2 | 1.1 | 0.4 | 1.2 | 0.9 | 1.5 | 4.4 | 4.5 | 6.6 | 6.5 | 7.6 | 7.7 | 7.7 | 5.7 | 4.4 | 4.3 | 5.5 | 4.8 | 3.9 | 2.8 | 1.1 | 7.7 | 3.2 | 24 |
| 3 | 0.3 | 0.8 | 0.9 | 1.5 | 0.8 | 3.3 | 2.7 | 4.1 | 2.8 | 2.5 | 4.6 | 5.8 | 5.5 | 5.9 | 4.7 | 3.8 | 4.2 | 3.7 | 3.6 | 3.3 | 3.5 | 5.5 | 6.8 | 7.1 | 7.1 | 2.9 | 24 |
| 4 | 6.4 | 6.7 | 5.3 | 2.9 | 4.8 | 3.7 | 3.7 | 5.8 | 6.6 | 6.5 | 7.1 | 7.7 | 7.4 | 7.3 | 6 | 6.2 | 6.4 | 4.3 | 3 | 3.4 | 3.6 | 3.9 | 2.9 | 3.9 | 7.7 | 4.8 | 24 |
| 5 | 2.4 | 2.6 | 2.6 | 3.6 | 2.7 | 3 | 2 | 2.1 | 9.8 | 14.3 | 11.2 | 9.3 | 11.7 | 10 | 9.7 | 10.2 | 11.4 | 9.3 | 9.6 | 7.4 | 8.9 | 12.5 | 12.3 | 11.7 | 14.3 | 6.7 | 24 |
| 6 | 13.3 | 12.1 | 9.7 | 10.6 | 8.6 | 8.7 | 4.4 | 7 | 9.3 | 9.1 | 7 | 4.8 | 3.4 | 2.3 | 5.4 | 8.3 | 7.9 | 6.7 | 4.6 | 4.3 | 4.5 | 6.6 | 6.2 | 7.7 | 13.3 | 1.9 | 24 |
| 7 | 7.9 | 5.9 | 4.8 | 4.9 | 4.7 | 4.4 | 4.2 | 4.4 | 4.6 | 5.9 | 9.8 | 9.6 | 11 | 10.1 | 11.7 | 10.4 | 9.3 | 5.2 | 6.6 | 6.4 | 6.4 | 8.4 | 10.7 | 9.3 | 11.7 | 5.8 | 24 |
| 8 | 10.1 | 7.7 | 4.5 | 5.6 | 2.5 | 3 | 3.4 | 3 | 4.1 | 6.6 | 7.3 | 7.6 | 8.3 | 8.7 | 8.6 | 9.2 | 9.2 | 8.3 | 6.7 | 6 | 5.3 | 5.3 | 5.6 | 4.5 | 10.1 | 3.8 | 24 |
| 9 | 4.9 | 3.9 | 4.6 | 4.6 | 4.5 | 4.4 | 3.7 | 3.8 | 3.9 | 4.3 | 6.5 | 7.3 | 7.6 | 5.9 | 7.6 | 8.1 | 6.3 | 5.8 | 4 | 3.8 | 4.4 | 6.6 | 8.9 | 7.3 | 8.9 | 3.4 | 24 |
| 10 | 5.2 | 5.5 | 4.8 | 5.5 | 6.4 | 4.4 | 6.1 | 3.6 | 4.6 | 6.2 | 6 | 6.7 | 5.4 | 5.6 | 5 | 7.4 | 9 | 7.5 | 4.4 | 2.2 | 1.4 | 3.4 | 5.5 | 5.2 | 9 | 3.7 | 24 |
| 11 | 4.7 | 6.4 | 6.1 | 6.4 | 6.1 | 7.2 | 6.4 | 4.3 | 7.2 | 5.3 | 7.3 | 8.2 | 10.8 | 11.1 | 9.7 | 8.6 | 7.8 | 7.5 | 5.9 | 6.9 | 5 | 6.1 | 7.6 | 8.7 | 11.1 | 6.6 | 24 |
| 12 | 6.6 | 5.4 | 3 | 1.4 | 7.4 | 10.9 | 12.3 | 15.4 | 12.6 | 14 | 15.6 | 16.4 | 11.7 | 10.8 | 9.1 | 9.2 | 10.3 | 7.2 | 4.9 | 7.5 | 9.6 | 8.1 | 11.4 | 8.4 | 16.4 | 4.9 | 24 |
| 13 | 7.1 | 7.6 | 7.9 | 5.7 | 4.4 | 3.2 | 3.7 | 6.2 | 6.7 | 5.7 | 7 | 7.9 | 7.8 | 9.2 | 13.6 | 16.2 | 10.2 | 8.2 | 7.2 | 15.5 | 14.8 | 15 | 16.3 | 15.6 | 16.3 | 3.9 | 24 |
| 14 | **17.4** | 13 | 11.7 | 10.8 | 12.2 | 12.3 | 12 | 10.6 | 9.9 | 9.5 | 9 | 8.5 | 8.3 | 9 | 10.3 | 9.7 | 7.3 | 8.6 | 7.3 | 5.4 | 3.4 | 4.4 | 4 | 2.3 | **17.4** | 8 | 24 |
| 15 | 1.5 | 2.8 | 3.9 | 3.7 | 3.8 | 4.9 | 4.1 | 5.1 | 4.4 | 4.6 | 6.4 | 6.1 | 6.2 | 6.9 | 8 | 8.1 | 6.7 | 8.4 | 9.1 | 10.8 | 13.2 | 9.3 | 7.3 | 6.3 | 13.2 | 5.6 | 24 |
| 16 | 2.8 | 1.2 | 0.3 | 5 | 5.2 | 5.1 | 6.4 | 4.4 | 4.3 | 3.8 | 6.7 | 6.9 | 7.3 | 11 | 10.9 | 9.5 | 9.8 | 8.5 | 6.3 | 5.1 | 4.5 | 3.4 | 2.6 | 2.6 | 11 | 4.8 | 24 |
| 17 | 3.3 | 3.9 | 6.3 | 4.3 | 2.1 | 1.8 | 3.3 | 0.4 | 1.8 | 3.1 | 3.4 | 5.2 | 5.9 | 6 | 8.1 | 8.6 | 7.9 | 8 | 8.8 | 12.6 | 14.5 | 9.4 | 7.8 | 8.7 | 14.5 | 4.5 | 24 |
| 18 | 8 | 8.6 | 7.3 | 5.5 | 6.1 | 5.5 | 4.9 | 3.5 | 4 | 3.7 | 2.9 | 2.4 | 3 | 4 | 6.4 | 6.6 | 4.2 | 5.2 | 4.4 | 3.8 | 5.6 | 6.9 | 5.5 | 6.2 | 8.6 | 2.7 | 24 |
| 19 | 6.3 | 7.7 | 9 | 9.1 | 7.8 | 9.6 | 9.5 | 9.7 | 11.2 | 11.1 | 12 | 9.3 | 11.1 | 12.5 | 12.9 | 10.6 | 8.8 | 5.8 | 8.3 | 10.3 | 11.4 | 9.7 | 8.8 | 8.5 | 12.9 | 9.5 | 24 |
| 20 | 6.6 | 7.1 | 7.9 | 8.5 | 9.7 | 5.8 | 3.8 | 4.1 | 5.2 | 5.1 | 5.5 | 6.3 | 4.2 | 5.3 | 6.1 | 5.6 | 4.4 | 1.1 | 0.7 | 0.6 | 1.9 | 2.4 | 1.2 | 2 | 9.7 | 3.1 | 24 |
| 21 | 2.7 | 3.4 | 3.1 | 1.3 | 2.2 | 2.3 | 2 | 1.5 | 1.4 | 1.2 | 3 | 2.9 | 8.3 | 5.8 | 3.8 | 3.6 | 4.1 | 5.7 | 4.5 | 4.7 | 4 | 1.4 | 1 | 2.1 | 8.3 | 2.5 | 24 |
| 22 | 4.3 | 4.8 | 5 | 5.2 | 5.9 | 6 | 7.1 | 8.7 | 10.9 | 12.2 | 12.4 | 12.1 | 14.1 | 12.8 | 12.4 | 13.9 | 16 | 15.8 | 15.1 | 15.6 | 14.5 | 12.8 | 12.8 | 10.2 | 16 | 10.8 | 24 |
| 23 | 8.4 | 7.8 | 9.9 | 9.8 | 9.9 | 8.3 | 10.7 | 10.8 | 10.4 | 10.9 | 9.3 | 8.7 | 10.2 | 10.5 | 9.6 | 10 | 8.9 | 7.3 | 4.7 | 3.8 | 3.4 | 2.6 | 2.7 | 0.2 | 10.9 | 7.8 | 24 |
| 24 | 0.5 | 1.5 | 2.3 | 2.6 | 2.1 | 2.2 | 1.5 | 1.6 | 3.7 | 4.6 | 3.9 | 3.1 | 3.9 | 2.8 | 6.8 | 7.5 | 7.4 | 8.4 | 5.6 | 1.9 | 1.2 | 3.7 | 3.2 | 1.5 | 8.4 | 2 | 24 |
| 25 | 2.6 | 3 | 1.7 | 1.8 | 2.4 | 2.8 | 2.2 | 2.9 | 3.8 | 8.9 | 7.7 | 6.6 | 7.7 | 7.9 | 8.7 | 8.6 | 7.8 | 7.6 | 7.4 | 9.4 | 8.3 | 6.4 | 4.8 | 5.2 | 9.4 | 5 | 24 |
| 26 | 4.6 | 4.3 | 2.7 | 3.7 | 2.6 | 2.3 | 3 | 2.2 | 1.9 | 2 | 1.4 | 5 | 7.1 | 9.6 | 10.5 | 9.8 | 8.7 | 6.5 | 4.8 | 4.9 | 4 | 3 | 3.1 | 2.4 | 10.5 | 4 | 24 |
| 27 | 3.4 | 4.2 | 3.9 | 3.9 | 3.9 | 3.9 | 4.2 | 5.1 | 4.5 | 4.6 | 7.4 | 5.9 | 4.5 | 6.1 | 5.9 | 5.1 | 5.3 | 3 | 3 | 4.4 | 5.9 | 5.7 | 5.6 | 4.2 | 7.4 | 3.3 | 24 |
| 28 | 3.5 | 3.9 | 3.4 | 4 | 5.2 | 5 | 6 | 7.1 | 9.1 | 9.5 | 10.6 | 11.5 | 11.9 | 11.9 | 11.4 | 10.7 | 8.9 | 10.5 | 10.1 | 8.5 | 9.3 | 9.1 | 8.8 | 8.9 | 11.9 | 8.1 | 24 |
| 29 | 7.9 | 7.3 | 5.6 | 4.3 | 4.9 | 4.5 | 2.8 | 2 | 0.5 | 3.2 | 6.7 | 4.9 | 7 | 3.8 | 4.7 | 5.3 | 6.6 | 6.6 | 5 | 6.4 | 5.3 | 4.1 | 4.9 | 4.8 | 7.9 | 3.3 | 24 |
| 30 | 6 | 5 | 4.4 | 4.1 | 3.7 | 4.4 | 4.1 | 2.8 | 5.3 | 6.2 | 6.6 | 5.8 | 9.9 | 9.4 | 7.8 | 8.8 | 8.1 | 10.7 | 9.3 | 10.7 | 5.5 | 3.8 | 4.6 | 4.8 | 10.7 | 1.7 | 24 |
| 31 | 5.3 | 5.5 | 4.7 | 4.8 | 3.7 | 4.5 | 6 | 3.8 | 4.3 | 3.9 | 6.7 | 9.9 | 10.1 | 8.4 | 10.3 | 11 | 9 | 8.6 | 4.7 | 1.6 | 1.4 | 1.9 | 2.2 | 2.9 | 11 | 4.7 | 24 |
| HOURLY MAX | 17.4 | 13.0 | 14.6 | 14.8 | 13.3 | 12.3 | 12.3 | 15.4 | 14.8 | 17.1 | 15.6 | 16.4 | 14.1 | 12.8 | 13.6 | 16.2 | 16.0 | 15.8 | 15.1 | 15.6 | 14.8 | 15.0 | 16.3 | 15.6 | | | |
| HOURLY AVG | 5.8 | 5.6 | 5.3 | 5.2 | 5.2 | 5.1 | 5.1 | 5.1 | 6.0 | 6.8 | 7.4 | 7.5 | 8.1 | 8.1 | 8.6 | 8.7 | 8.0 | 7.2 | 6.2 | 6.4 | 6.3 | 6.1 | 6.1 | 5.7 | | | |

**STATUS FLAG CODES**

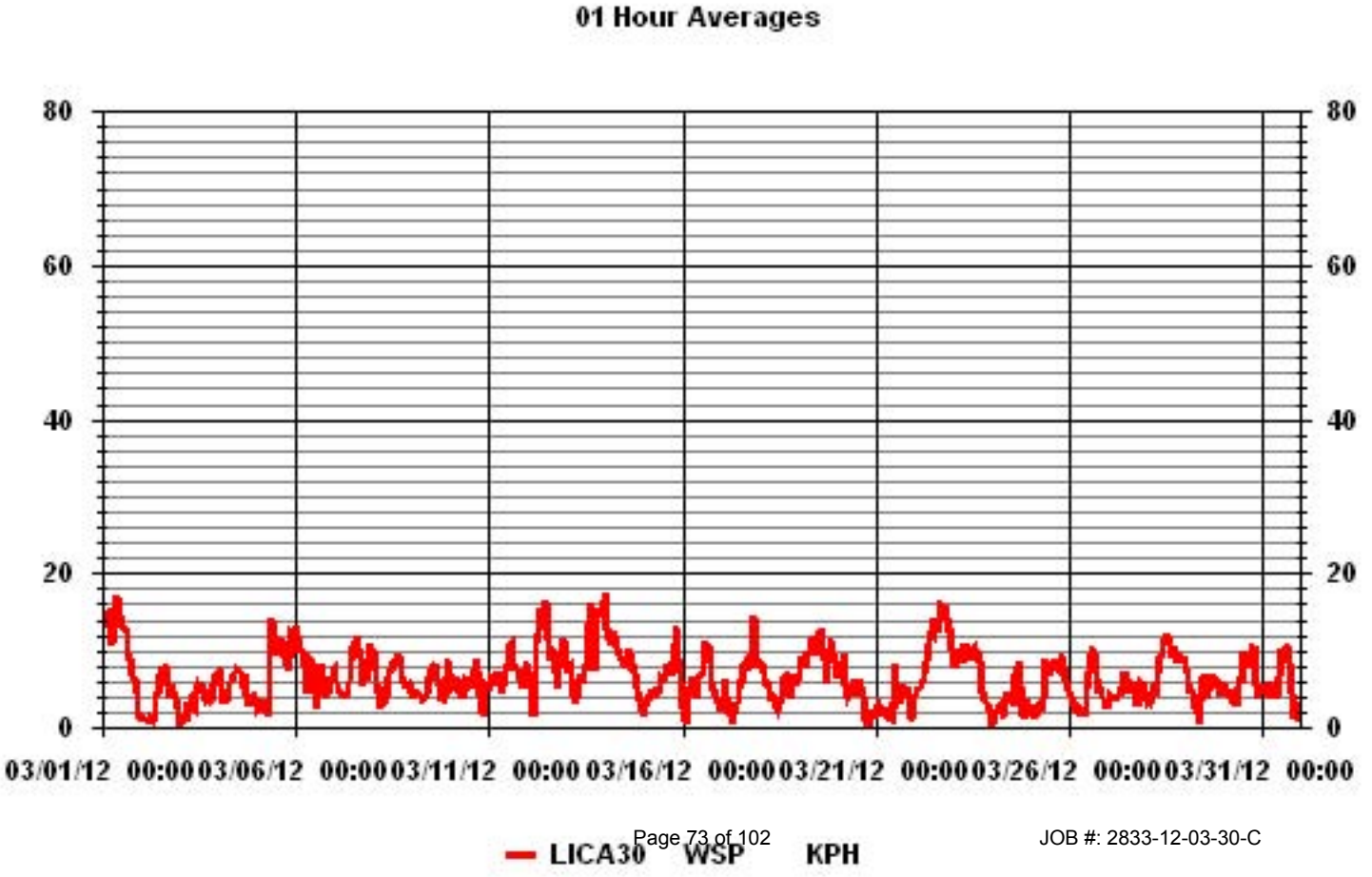
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |




LAST CALIBRATION: December 20, 2011

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | | 17.4 | KPH | @ HOUR(S) | 0 | ON DAY(S) | 14 |
| MAXIMUM 24-HR AVERAGE: | | 10.9 | KPH | | | ON DAY(S) | 1 |
| CALMS (≤ 1 KPH) | 1.48 | % | | OPERATIONAL TIME: | | 744 | HRS |
| MONTHLY CALIBRATION TIME: | 0 | HRS | | AMD OPERATION UPTIME | | 100.0 | % |
| STANDARD DEVIATION | 3.42 | | | MONTHLY AVERAGE | | 6.49 | KPH |






JOB #: 2833-12-03-30-C

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

MARCH 2012

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

MST

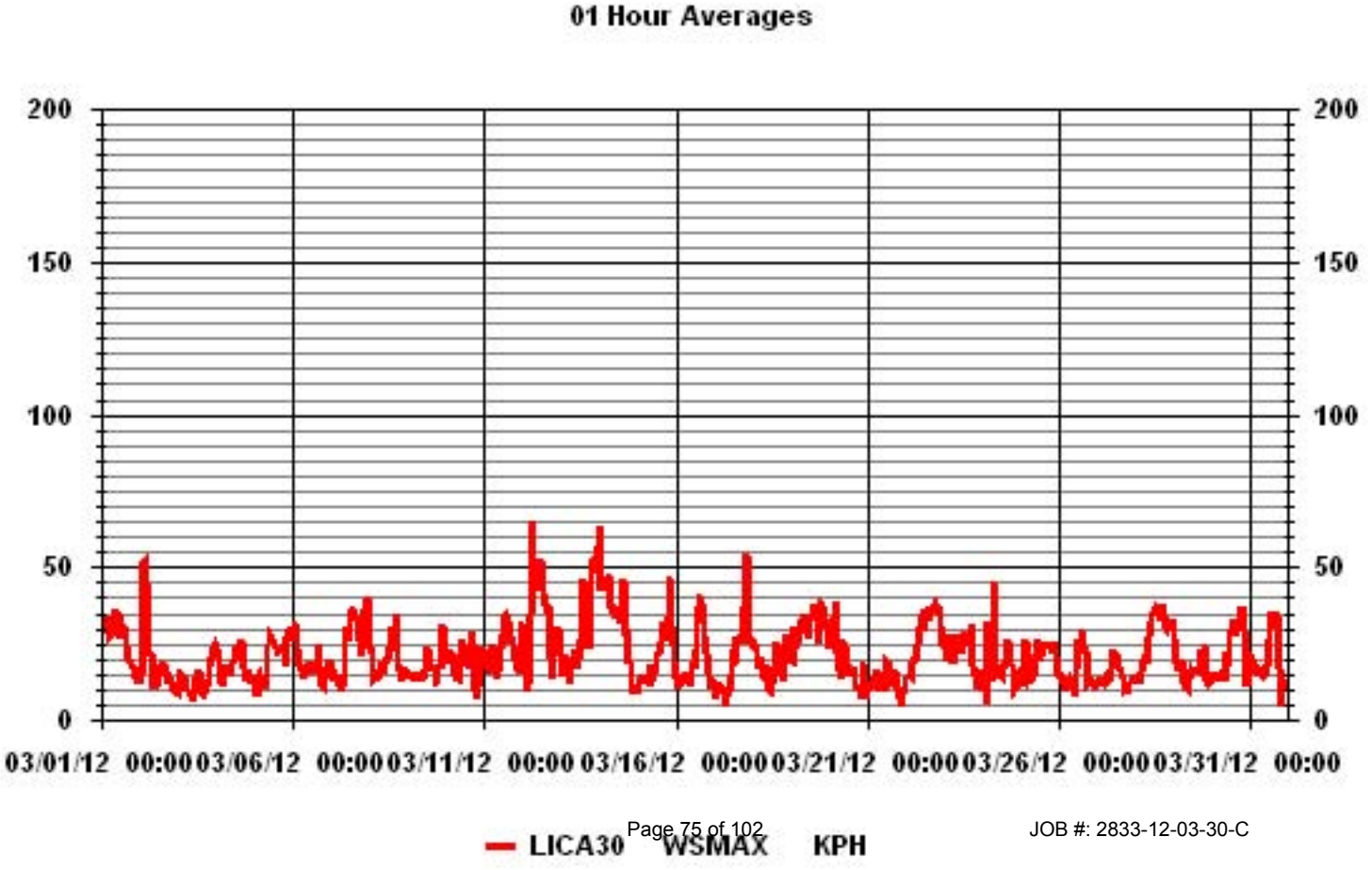
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 33.8 | 28.7 | 30.2 | 30.4 | 33.9 | 27.3 | 27.8 | 29.8 | 32.4 | 36.1 | 34.1 | 35 | 26.7 | 27.7 | 30.4 | 29.7 | 24.9 | 19.9 | 19.4 | 17.9 | 17.5 | 13.1 | 17.5 | 12.9 | 36.1 |
| 2 | 12.9 | 14.9 | 51.2 | 51.9 | 44.9 | 33.1 | 21.2 | 22.1 | 11.6 | 11.3 | 11.5 | 14.8 | 14.8 | 17.3 | 17.5 | 19 | 17 | 13.3 | 11.5 | 13.7 | 12.7 | 10 | 10 | 9.3 | 51.9 |
| 3 | 8.9 | 16.6 | 12.4 | 10.3 | 14.6 | 10.4 | 10 | 9.6 | 8.5 | 6.4 | 12.4 | 13.5 | 15.7 | 15.7 | 9.6 | 9.1 | 11.5 | 10.9 | 12.7 | 11.6 | 17.7 | 20.5 | 24 | 25.1 | 25.1 |
| 4 | 24 | 20.8 | 19 | 12.9 | 11.5 | 16.1 | 17.9 | 15.5 | 14.4 | 16.8 | 19.3 | 19.7 | 24 | 22.7 | 24 | 25.1 | 25.1 | 17.7 | 13.9 | 14.2 | 16.4 | 13.8 | 12.3 | 14.4 | 25.1 |
| 5 | 12.2 | 7.4 | 14.4 | 15.3 | 13.3 | 13.7 | 11.6 | 10.4 | 24.9 | 28.9 | 28.2 | 26.7 | 26 | 24.3 | 22.3 | 22.5 | 23.6 | 23.1 | 22.1 | 17.5 | 26.9 | 29 | 30 | 25.6 | 30 |
| 6 | 30.4 | 31.7 | 26.2 | 24.1 | 18 | 16.4 | 13.5 | 14.6 | 17.7 | 18.4 | 18.6 | 16.6 | 17 | 15.5 | 18.8 | 23.4 | 23.4 | 17.3 | 11.8 | 10.9 | 13.3 | 17.5 | 15.7 | 19.8 | 31.7 |
| 7 | 17.7 | 16.8 | 13.1 | 14.4 | 10.5 | 14.4 | 9.3 | 11.6 | 12.2 | 28.6 | 28 | 30.7 | 35.6 | 36.1 | 35.2 | 33.4 | 33 | 26.6 | 21 | 22.3 | 23.4 | 36.2 | 39.2 | 40.3 | 40.3 |
| 8 | 24.9 | 22.5 | 13.9 | 14.6 | 16.6 | 14.2 | 14.6 | 16.2 | 18.8 | 14.8 | 18.3 | 20.3 | 24.1 | 26.4 | 30.2 | 22.1 | 35 | 30.4 | 18.6 | 16.4 | 13.9 | 14.2 | 16.8 | 15 | 35 |
| 9 | 15.3 | 14.6 | 14.2 | 15.3 | 12.2 | 15.9 | 12.6 | 15.5 | 14.4 | 13.1 | 16.6 | 17.9 | 23.6 | 17.7 | 18.3 | 17.7 | 16.6 | 12.8 | 13.1 | 17.3 | 17.4 | 30.4 | 30.2 | 24 | 30.4 |
| 10 | 18.3 | 21.8 | 23.1 | 19.2 | 22 | 15 | 13.7 | 13.4 | 20.1 | 19.6 | 26 | 24.9 | 19.9 | 19.9 | 18.1 | 17.7 | 28.8 | 25.5 | 9.8 | 7.1 | 10.7 | 13.7 | 16.4 | 24 | 28.8 |
| 11 | 19.4 | 19.2 | 19.2 | 15.5 | 17.5 | 24.9 | 22.5 | 12.9 | 23.2 | 15.6 | 26 | 25.3 | 34.5 | 35 | 32.8 | 32.3 | 26.2 | 26.4 | 18.8 | 24.2 | 16.6 | 15.3 | 22.5 | 31.8 | 35 |
| 12 | 24.1 | 18.6 | 9.1 | 12 | 34.6 | 35.2 | **65** | 53.8 | 42.2 | 47.7 | 51 | 53 | 48 | 41.8 | 38.2 | 35.2 | 37.8 | 21 | 13.7 | 20.5 | 24.2 | 21.2 | 30.8 | 24.7 | **65** |
| 13 | 16 | 15.8 | 19.9 | 21.2 | 14.8 | 11.8 | 16.6 | 20.5 | 22.9 | 17.2 | 18.8 | 19.9 | 26 | 31.8 | 46 | 43.2 | 30.4 | 23.3 | 44 | 52.9 | 51.4 | 53.6 | 56.7 | 47.5 | 56.7 |
| 14 | 63.7 | 42.2 | 46.1 | 43.8 | 47.1 | 46 | 47.7 | 37.4 | 35.7 | 32.9 | 36.1 | 35.4 | 33.9 | 31.5 | 38.9 | 46.4 | 29.1 | 29.3 | 19.2 | 18.8 | 8.8 | 10.2 | 10.7 | 10.7 | 63.7 |
| 15 | 10.2 | 12 | 13.3 | 14.8 | 12 | 13.9 | 14.2 | 11.1 | 18.3 | 12.2 | 15.3 | 18.1 | 21.6 | 22.3 | 25.4 | 32.2 | 27.1 | 26 | 33.9 | 32.6 | 46.8 | 31.3 | 24.7 | 19.9 | 46.8 |
| 16 | 14.1 | 10.2 | 11.3 | 13.5 | 13.4 | 14.8 | 14.6 | 12.6 | 12.6 | 12.4 | 18.8 | 17 | 22.7 | 35.2 | 36.7 | 40.9 | 38.2 | 31.9 | 27.7 | 22 | 15.6 | 10.1 | 13.7 | 12 | 40.9 |
| 17 | 6.9 | 9.8 | 12.2 | 11.1 | 11.3 | 9.6 | 9.7 | 4.1 | 7.8 | 9.1 | 14.6 | 17.7 | 23.3 | 18.1 | 27.1 | 25.8 | 26.9 | 25.1 | 37.2 | 49.6 | 54.5 | 30.7 | 28 | 25.6 | 54.5 |
| 18 | 23.4 | 24.7 | 23.6 | 17 | 18.3 | 20.7 | 14.8 | 14.6 | 12.5 | 18 | 10.2 | 9.6 | 12.2 | 13.3 | 20.5 | 25.5 | 17.2 | 20.5 | 15 | 12.8 | 20.5 | 28 | 27.1 | 19.5 | 28 |
| 19 | 19.7 | 19.4 | 30.6 | 23.8 | 25.3 | 28.9 | 32.6 | 28.4 | 33.3 | 33.3 | 32.2 | 26.9 | 33.7 | 33.9 | 37.8 | 33.3 | 32.8 | 25.2 | 39.8 | 32.2 | 37.9 | 31.5 | 30.6 | 31.1 | 39.8 |
| 20 | 23.6 | 27.8 | 30.2 | 33.9 | 38.7 | 22.1 | 16.4 | 13.4 | 26 | 22.7 | 24.7 | 17.2 | 13.9 | 16.8 | 15.9 | 17.5 | 11.5 | 11.4 | 10.7 | 9.8 | 7.1 | 19 | 10.4 | 6.9 | 38.7 |
| 21 | 9.3 | 10.3 | 11.5 | 10 | 12.6 | 13.5 | 16.4 | 11.3 | 11.8 | 9.2 | 11.5 | 11.3 | 19.9 | 19.4 | 16.8 | 11.3 | 13.7 | 16.8 | 10.7 | 9.3 | 7.4 | 4.2 | 8.5 | 10.2 | 19.9 |
| 22 | 13.9 | 14.4 | 15.3 | 14.6 | 18.7 | 19.9 | 19.9 | 24.5 | 30.2 | 34.1 | 32.9 | 28.7 | 35.4 | 35.9 | 32.4 | 34.8 | 36.5 | 37.2 | 38.3 | 36.2 | 36.3 | 34.4 | 30.9 | 25.4 | 38.3 |
| 23 | 24 | 19.2 | 23 | 28.2 | 23.2 | 18.6 | 22.1 | 26 | 28.3 | 24.5 | 24.5 | 21.6 | 25.8 | 28.6 | 25.6 | 26.1 | 25.8 | 31.7 | 17.9 | 15.3 | 11.1 | 11.2 | 11.6 | 9.1 | 31.7 |
| 24 | 16.8 | 10.2 | 5.4 | 32 | 12.7 | 19.2 | 12.6 | 45.3 | 18.8 | 15.9 | 14.6 | 15 | 14.2 | 17.2 | 18.1 | 18.8 | 26.4 | 23.8 | 18.6 | 9.6 | 10.2 | 10.9 | 11.5 | 15.9 | 45.3 |
| 25 | 17.5 | 13.3 | 12.7 | 26.5 | 17.3 | 12 | 13.1 | 14.7 | 15 | 21.2 | 26 | 19 | 21.6 | 20.7 | 25.3 | 24 | 25.1 | 24.8 | 23.1 | 25.8 | 21.6 | 25.3 | 14.2 | 20.3 | 26.5 |
| 26 | 14.8 | 14.6 | 12.4 | 10.7 | 11.1 | 11.8 | 13.7 | 12.6 | 11.5 | 7.6 | 10.2 | 16.3 | 26.4 | 23.8 | 29.5 | 24.5 | 23 | 22.6 | 12 | 12.6 | 10.7 | 12.6 | 11.3 | 12 | 29.5 |
| 27 | 13.1 | 13.1 | 11.3 | 13.3 | 13.8 | 14.6 | 12.2 | 12.6 | 16.6 | 17.7 | 23.1 | 19 | 19.6 | 17.4 | 16.6 | 14.4 | 14 | 10.1 | 10.7 | 8.2 | 12.4 | 13.7 | 14.2 | 13.7 | 23.1 |
| 28 | 14.4 | 13.5 | 13.3 | 15.1 | 16 | 19.9 | 21.6 | 21 | 27.5 | 31.9 | 33.9 | 35 | 36.9 | 36.1 | 36.1 | 32.9 | 32.9 | 38.1 | 31.9 | 30.4 | 31.7 | 30.6 | 31.1 | 33 | 38.1 |
| 29 | 26.9 | 19 | 19.9 | 15.7 | 19.2 | 18.9 | 12.9 | 11.1 | 10.4 | 13.5 | 16.4 | 15.5 | 16.8 | 16.6 | 16.3 | 16.8 | 23.1 | 15.9 | 14.1 | 24.4 | 13.3 | 12.2 | 13.1 | 11.8 | 26.9 |
| 30 | 15.7 | 12.4 | 14.4 | 13.9 | 13.7 | 14.8 | 13.5 | 13.5 | 22.5 | 17.3 | 19.5 | 29.9 | 28.1 | 33.2 | 27.7 | 30.1 | 32.3 | 36.9 | 32.3 | 36.7 | 29.7 | 12.2 | 11.1 | 20.5 | 36.9 |
| 31 | 21.2 | 20.5 | 16.6 | 16.9 | 14.4 | 16.1 | 16.4 | 14.8 | 14.1 | 14.8 | 17.7 | 26.2 | 35.8 | 30.1 | 35.6 | 30.4 | 35.6 | 34.3 | 17.7 | 4.4 | 9.4 | 12 | 12 | 12.6 | 35.8 |
| PEAK | 63.7 | 42.2 | 51.2 | 51.9 | 47.1 | 46.0 | 65.0 | 53.8 | 42.2 | 47.7 | 51.0 | 53.0 | 48.0 | 41.8 | 46.0 | 46.4 | 38.2 | 38.1 | 44.0 | 52.9 | 54.5 | 53.6 | 56.7 | 47.5 | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | |
|---|---|---|---|---|
| MAXIMUM INSTANTANEOUS READING | 65 | KPH | @ HOUR(S) | 6 |
| | | | ON DAY(S) | 12 |






JOB #: 2833-12-03-30-C

LICA30
WSP / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | .67 | 1.88 | 4.97 | 4.03 | 2.82 | 2.68 | 3.22 | 3.49 | 3.09 | 6.31 | 4.97 | 3.76 | 4.16 | 1.07 | 1.47 | 1.07 | 49.73 |
| < | 12.0 | 3.49 | 2.68 | 4.97 | 2.01 | 2.28 | 4.56 | 3.09 | 1.34 | 2.01 | 5.37 | 2.55 | 1.74 | 3.09 | 2.15 | .94 | .26 | 42.60 |
| < | 20.0 | .40 | 2.01 | 2.41 | .00 | .00 | .26 | .13 | .00 | .13 | .13 | .00 | .00 | .53 | 1.61 | .00 | .00 | 7.66 |
| < | 29.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.56 | 6.58 | 12.36 | 6.04 | 5.10 | 7.52 | 6.45 | 4.83 | 5.24 | 11.82 | 7.52 | 5.51 | 7.79 | 4.83 | 2.41 | 1.34 | |

Calm : .00 %

Total # Operational Hours : 744

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 5 | 14 | 37 | 30 | 21 | 20 | 24 | 26 | 23 | 47 | 37 | 28 | 31 | 8 | 11 | 8 | 370 |
| < | 12.0 | 26 | 20 | 37 | 15 | 17 | 34 | 23 | 10 | 15 | 40 | 19 | 13 | 23 | 16 | 7 | 2 | 317 |
| < | 20.0 | 3 | 15 | 18 | | | 2 | 1 | | 1 | 1 | | | 4 | 12 | | | 57 |
| < | 29.0 | | | | | | | | | | | | | | | | | |
| < | 39.0 | | | | | | | | | | | | | | | | | |
| >= | 39.0 | | | | | | | | | | | | | | | | | |
| | Totals | 34 | 49 | 92 | 45 | 38 | 56 | 48 | 36 | 39 | 88 | 56 | 41 | 58 | 36 | 18 | 10 | |

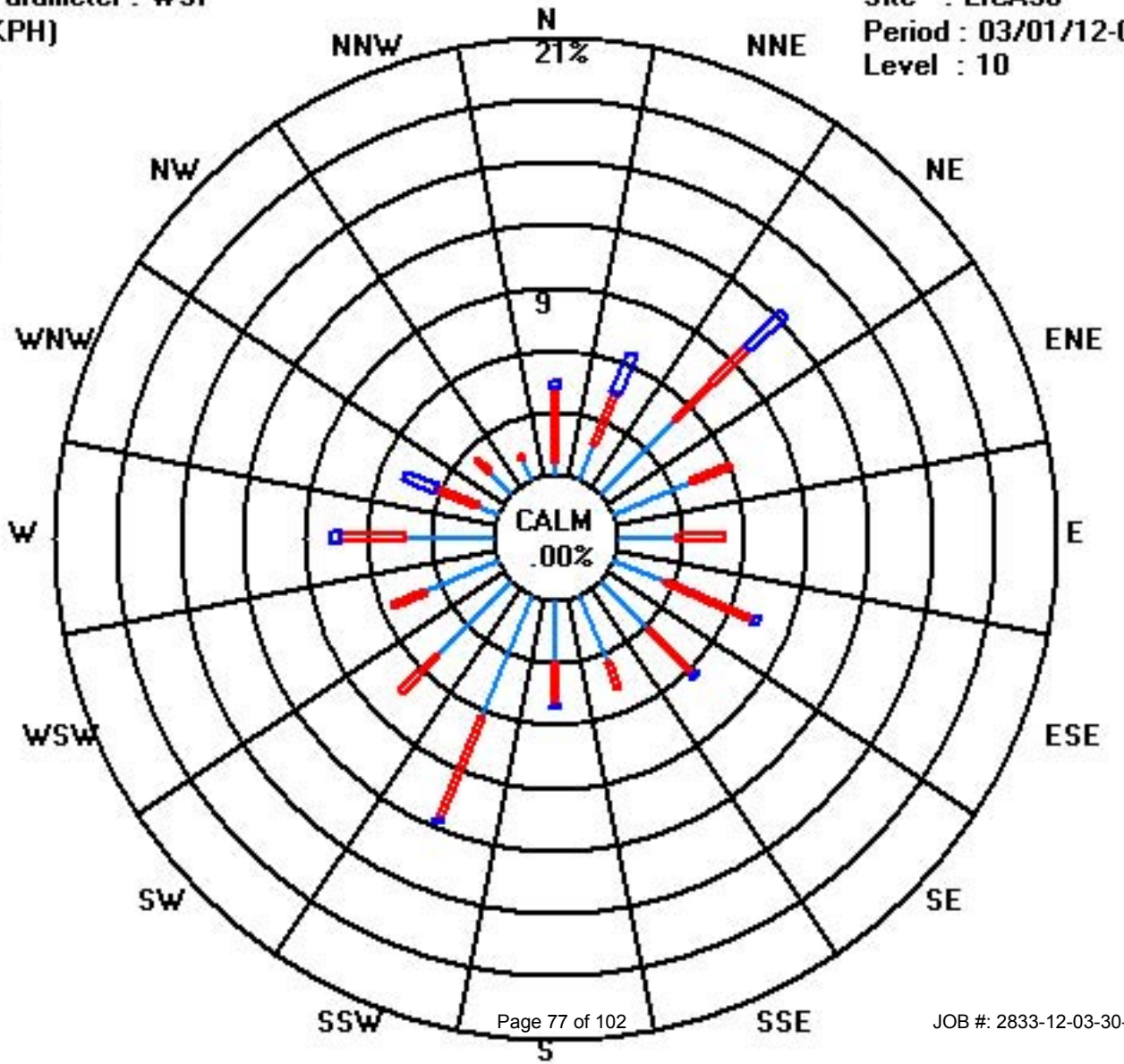
Calm : .00 %

Total # Operational Hours : 744

Logger : 30 Parameter : WSP
Class Limits (KPH)

>= 39.0
< 39.0
< 29.0
< 20.0
< 12.0
< 6.0

Site : LICA30
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-30-C

# Vector Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -COLD LAKE- MASKWA

MARCH 2012

**WIND DIRECTION** hourly averages in degrees

MST

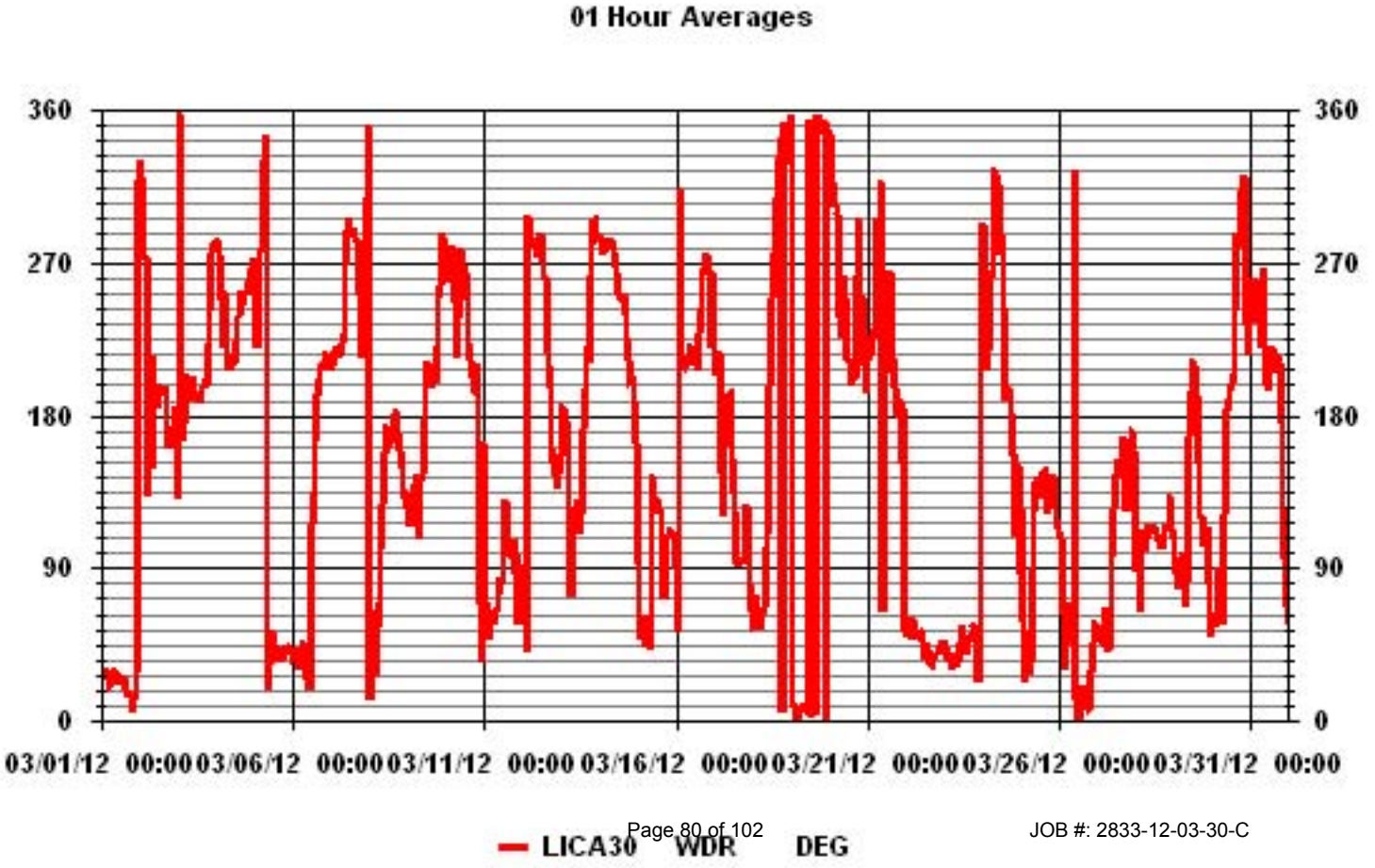
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24-HOUR | 24-HOUR AVG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 29 | 28 | 31 | 28 | 28 | 21 | 22 | 28 | 29 | 29 | 28 | 26 | 22 | 25 | 25 | 20 | 14 | 16 | 15 | 4 | 14 | 15 | 28 | 318 | 24 | NNE | 24 |
| 2 | 330 | 322 | 296 | 272 | 275 | 132 | 208 | 149 | 215 | 189 | 184 | 187 | 199 | 192 | 195 | 192 | 197 | 160 | 165 | 173 | 169 | 163 | 185 | 162 | 188 | S | 24 |
| 3 | 130 | 359 | 177 | 165 | 175 | 205 | 198 | 189 | 191 | 203 | 196 | 190 | 194 | 187 | 192 | 197 | 199 | 199 | 197 | 222 | 242 | 276 | 281 | 282 | 212 | SSW | 24 |
| 4 | 283 | 281 | 275 | 249 | 219 | 254 | 248 | 213 | 207 | 214 | 214 | 210 | 224 | 238 | 239 | 254 | 249 | 246 | 254 | 251 | 260 | 267 | 259 | 272 | 242 | WSW | 24 |
| 5 | 257 | 219 | 265 | 279 | 277 | 306 | 331 | 346 | 18 | 33 | 45 | 54 | 41 | 42 | 38 | 39 | 35 | 43 | 38 | 39 | 45 | 40 | 43 | 42 | 34 | NE | 24 |
| 6 | 37 | 38 | 43 | 36 | 30 | 32 | 47 | 34 | 28 | 29 | 19 | 23 | 116 | 135 | 165 | 192 | 202 | 210 | 207 | 212 | 218 | 215 | 213 | 211 | 51 | NE | 24 |
| 7 | 207 | 209 | 218 | 221 | 214 | 216 | 222 | 223 | 228 | 269 | 289 | 296 | 289 | 285 | 290 | 285 | 284 | 252 | 214 | 234 | 249 | 275 | 308 | 352 | 266 | W | 24 |
| 8 | 12 | 29 | 27 | 28 | 66 | 55 | 70 | 101 | 127 | 158 | 175 | 161 | 162 | 164 | 169 | 181 | 184 | 179 | 171 | 160 | 150 | 131 | 136 | 127 | 143 | SE | 24 |
| 9 | 126 | 115 | 132 | 138 | 138 | 146 | 121 | 107 | 141 | 145 | 178 | 199 | 212 | 209 | 198 | 198 | 205 | 204 | 221 | 250 | 256 | 288 | 286 | 280 | 194 | SSW | 24 |
| 10 | 265 | 263 | 258 | 271 | 280 | 248 | 213 | 238 | 261 | 278 | 258 | 269 | 265 | 249 | 224 | 214 | 203 | 195 | 194 | 210 | 69 | 92 | 34 | 165 | 240 | WSW | 24 |
| 11 | 89 | 71 | 67 | 47 | 59 | 59 | 62 | 65 | 66 | 75 | 84 | 80 | 101 | 130 | 116 | 101 | 99 | 96 | 87 | 107 | 99 | 56 | 63 | 92 | 85 | E | 24 |
| 12 | 71 | 61 | 40 | 298 | 279 | 281 | 279 | 284 | 275 | 275 | 283 | 287 | 272 | 262 | 261 | 218 | 210 | 197 | 162 | 153 | 146 | 137 | 145 | 157 | 250 | WSW | 24 |
| 13 | 185 | 185 | 184 | 178 | 158 | 115 | 73 | 106 | 122 | 125 | 130 | 110 | 122 | 158 | 172 | 195 | 217 | 216 | 262 | 286 | 294 | 295 | 285 | 286 | 210 | SSW | 24 |
| 14 | 288 | 283 | 275 | 277 | 280 | 284 | 282 | 284 | 280 | 277 | 269 | 265 | 252 | 250 | 247 | 252 | 241 | 226 | 214 | 200 | 201 | 203 | 189 | 165 | 263 | W | 24 |
| 15 | 94 | 48 | 57 | 50 | 44 | 60 | 60 | 42 | 51 | 145 | 130 | 127 | 132 | 123 | 125 | 103 | 72 | 100 | 108 | 110 | 114 | 110 | 110 | 103 | 100 | E | 24 |
| 16 | 90 | 52 | 315 | 207 | 215 | 212 | 210 | 212 | 220 | 220 | 216 | 209 | 218 | 206 | 229 | 243 | 264 | 266 | 269 | 275 | 268 | 220 | 266 | 242 | 232 | SW | 24 |
| 17 | 203 | 217 | 207 | 218 | 147 | 120 | 190 | 162 | 192 | 193 | 172 | 156 | 135 | 124 | 94 | 91 | 96 | 94 | 94 | 110 | 127 | 108 | 81 | 66 | 120 | ESE | 24 |
| 18 | 57 | 58 | 74 | 54 | 56 | 56 | 62 | 67 | 102 | 110 | 197 | 198 | 249 | 276 | 302 | 309 | 332 | 344 | 4 | 353 | 333 | 328 | 336 | 349 | 17 | NNE | 24 |
| 19 | 357 | 9 | 11 | 2 | 2 | 7 | 8 | 6 | 10 | 8 | 11 | 355 | 3 | 5 | 6 | 3 | 358 | 345 | 352 | 349 | 353 | 355 | 0 | 349 | 2 | N | 24 |
| 20 | 346 | 316 | 319 | 305 | 304 | 300 | 239 | 225 | 256 | 263 | 251 | 214 | 212 | 198 | 202 | 207 | 201 | 262 | 296 | 214 | 213 | 250 | 228 | 193 | 262 | W | 24 |
| 21 | 218 | 213 | 216 | 226 | 232 | 261 | 296 | 293 | 319 | 64 | 220 | 245 | 208 | 235 | 266 | 205 | 215 | 197 | 182 | 181 | 190 | 151 | 186 | 53 | 216 | SW | 24 |
| 22 | 58 | 49 | 53 | 48 | 60 | 57 | 52 | 51 | 52 | 47 | 53 | 40 | 37 | 46 | 42 | 35 | 34 | 38 | 38 | 40 | 43 | 41 | 39 | 43 | 43 | NE | 24 |
| 23 | 48 | 37 | 39 | 36 | 37 | 30 | 33 | 33 | 39 | 38 | 46 | 56 | 44 | 39 | 42 | 46 | 50 | 51 | 57 | 49 | 35 | 23 | 31 | 266 | 41 | NE | 24 |
| 24 | 293 | 208 | 208 | 218 | 232 | 262 | 266 | 326 | 312 | 321 | 317 | 275 | 286 | 244 | 189 | 196 | 196 | 191 | 182 | 158 | 108 | 149 | 151 | 88 | 216 | SW | 24 |
| 25 | 58 | 125 | 23 | 32 | 53 | 27 | 34 | 91 | 123 | 141 | 144 | 131 | 139 | 146 | 147 | 133 | 123 | 125 | 128 | 141 | 145 | 133 | 113 | 118 | 127 | SE | 24 |
| 26 | 112 | 108 | 64 | 30 | 45 | 49 | 69 | 51 | 52 | 12 | 325 | 14 | 0 | 13 | 15 | 21 | 10 | 11 | 8 | 10 | 29 | 46 | 59 | 47 | 27 | NNE | 24 |
| 27 | 56 | 48 | 47 | 55 | 52 | 66 | 49 | 41 | 61 | 97 | 124 | 145 | 152 | 154 | 148 | 142 | 167 | 136 | 123 | 134 | 148 | 170 | 169 | 160 | 119 | ESE | 24 |
| 28 | 87 | 97 | 64 | 76 | 112 | 102 | 100 | 107 | 115 | 113 | 111 | 115 | 113 | 105 | 110 | 108 | 102 | 106 | 111 | 116 | 114 | 134 | 114 | 108 | 109 | ESE | 24 |
| 29 | 98 | 88 | 77 | 86 | 93 | 79 | 99 | 67 | 82 | 168 | 194 | 213 | 208 | 208 | 192 | 153 | 123 | 121 | 103 | 110 | 111 | 81 | 49 | 54 | 118 | ESE | 24 |
| 30 | 58 | 55 | 64 | 58 | 91 | 83 | 56 | 122 | 127 | 183 | 189 | 195 | 199 | 205 | 242 | 287 | 279 | 303 | 313 | 296 | 321 | 234 | 215 | 247 | 248 | WSW | 24 |
| 31 | 258 | 256 | 261 | 235 | 249 | 247 | 219 | 235 | 267 | 223 | 199 | 195 | 208 | 221 | 208 | 206 | 211 | 216 | 212 | 177 | 128 | 96 | 68 | 59 | 218 | SW | 24 |
| HOURLY AVG | 357 | 359 | 319 | 305 | 304 | 306 | 331 | 346 | 319 | 321 | 325 | 355 | 289 | 285 | 302 | 309 | 358 | 345 | 352 | 353 | 353 | 355 | 336 | 352 | | | |

**STATUS FLAG CODES**

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

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

| | | | | | |
|---|---|---|---|---|---|
| MONTHLY CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 744 | HRS |
| STANDARD DEVIATION | 94.40 | | AMD OPERATION UPTIME | 100.0 | % |
| | | | MONTHLY AVERAGE | 87 | DEG |






JOB #: 2833-12-03-30-C

# Standard Deviation Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *MASKWA*

MARCH 2012

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

MST

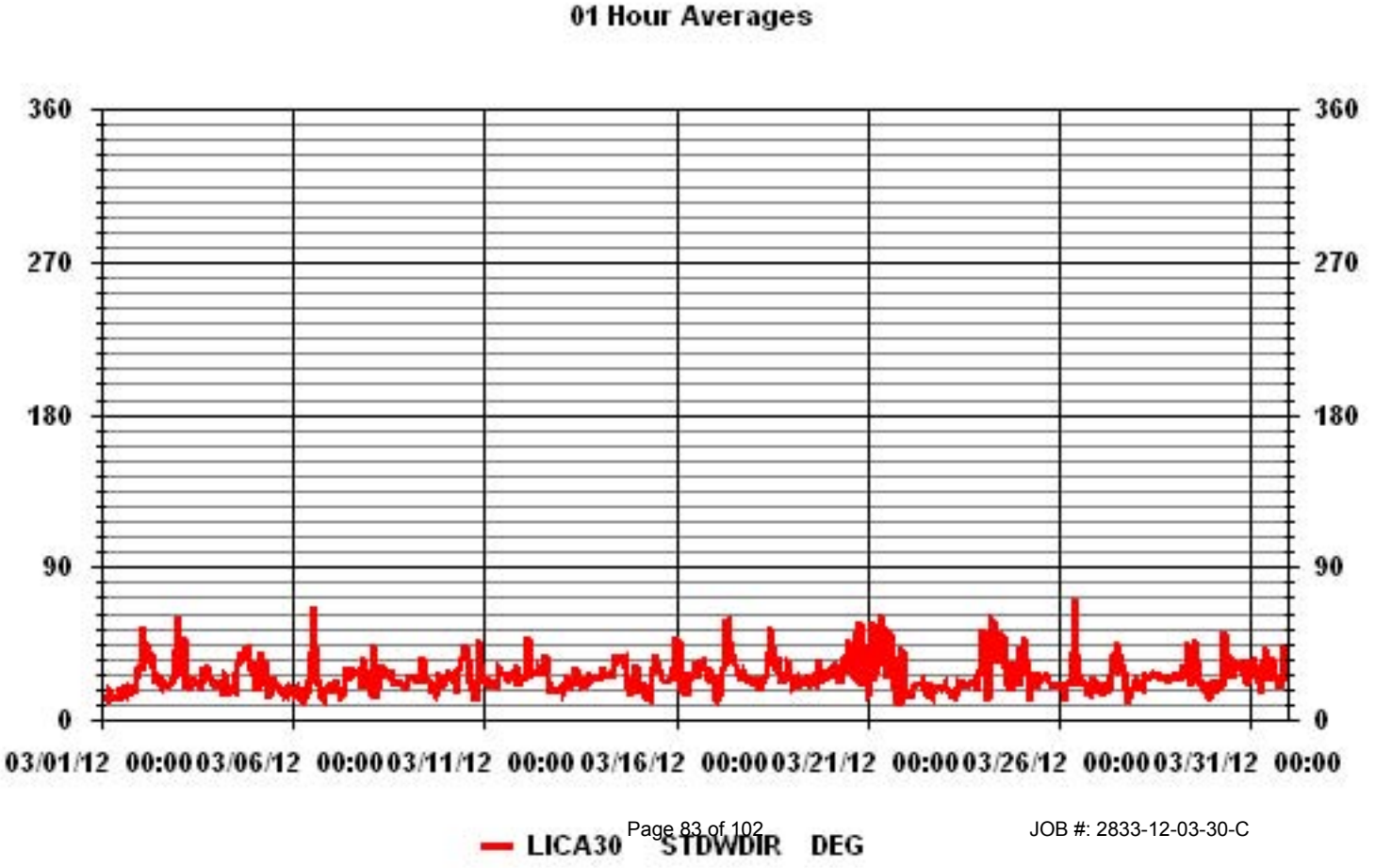
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|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

**STATUS FLAG CODES**

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

LAST CALIBRATION: December 20, 2011

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 744 HRS






JOB #: 2833-12-03-30-C

# Calibration Reports

# Sulphur Dioxide

# SO2 Calibration Report

## Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 29, 2012 | | Previous Calibration | February 29, 2012 | |
| Company | Lakeland Industry & Community Association | | | | |
| Plant / Location | Cold Lake - Maskwa | | | | |
| Start Time (MST) | 14:03 | | End Time (MST) | 18:04 | |
| Reason: | | | Post Repair Calibration | | |
| Barometric Pressure | 926 | mmHg | Station Temperature | 23 | Deg C |
| Cal Gas | 49.6 ppm | Gas Cyl. # | LL42496 | Cal Gas Expiry date | January 16, 2014 |
| DAS Output Voltage | 0 - 1 | Volts | Chart Rec. Output | NA | Volts |

## Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 100E | S/N : | 508 | Method: | Fluorescent |
| Converter Make / Model: | NA | S/N : | NA | | |
| Calibrator Make / Model: | Environics 6100 | S/N : | 4760 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO 791 | | |
| Chart Recorder Make / Model: | NA | S/N: | NA | | |
| Flow Meter: | Environics 6100 | S/N : | 4760 | | |

## Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | 0 - 1000 ppb | | | | | | | |
| Sample Flow / Box Temp | 588 | ccm | 33.8 | Deg C | 583 | ccm | 33.4 | Deg C |
| HVPS / Lamp Setting | 494 | | 2578 | | 494 | | 2578 | |
| PMT / RxCell Temp | 7.7 | Deg C | 50 | Deg C | 7.7 | Deg C | 50 | Deg C |
| Converter / IZS Temp | NA | Deg C | 45 | Deg C | NA | Deg C | 45.0 | Deg C |
| Offset / Slope | 40.2 | | 1.254 | | 42.2 | | 1.242 | |

## Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4994 | 0 | 0 | 2 | N/A |
| 4994 | 0 | 0 | 0 | N/A |
| 4921 | 75.4 | 749 | 757 | 0.9888 |
| 4921 | 75.4 | 749 | 750 | 0.9980 |
| 4955 | 40.2 | 399 | 396 | 1.0080 |
| 4977 | 17.1 | 170 | 169 | 1.0049 |
| 4995 | 0 | 0 | 0 | N/A |
| | | | | |
| | | | Sum of Least Squares | 1.0004 |
| | | | New Correction Factor | 0.9980 |

## IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 2.2 | 0.6 |
| Auto Span | 388.0 | 384.0 |
| Sample Lines Connected | | YES |

## Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 0.9977 |
| Current Correction Factor Before Span Adjust: | 0.9888 |
| Percent Change: | 0.9% |

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

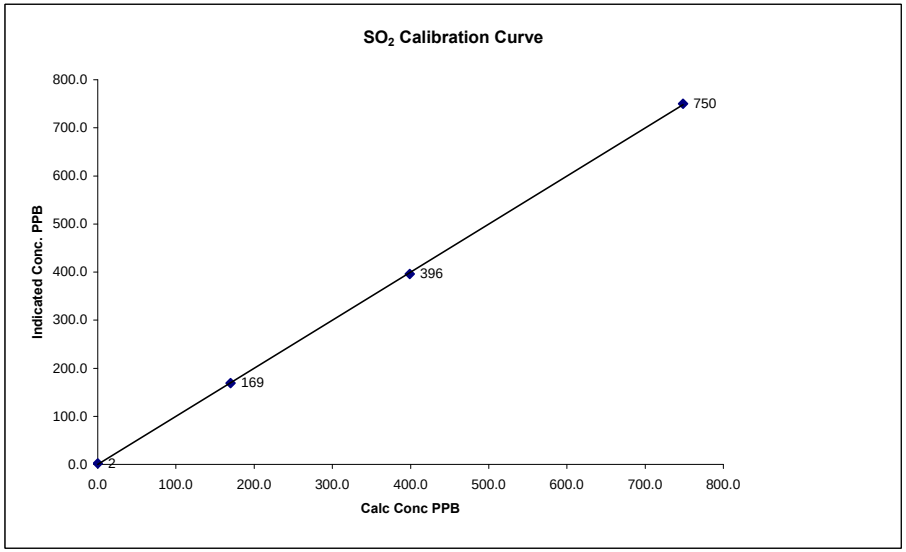
Calibration Performed by: Ting Xu

## $SO_2$ Calibration Curve

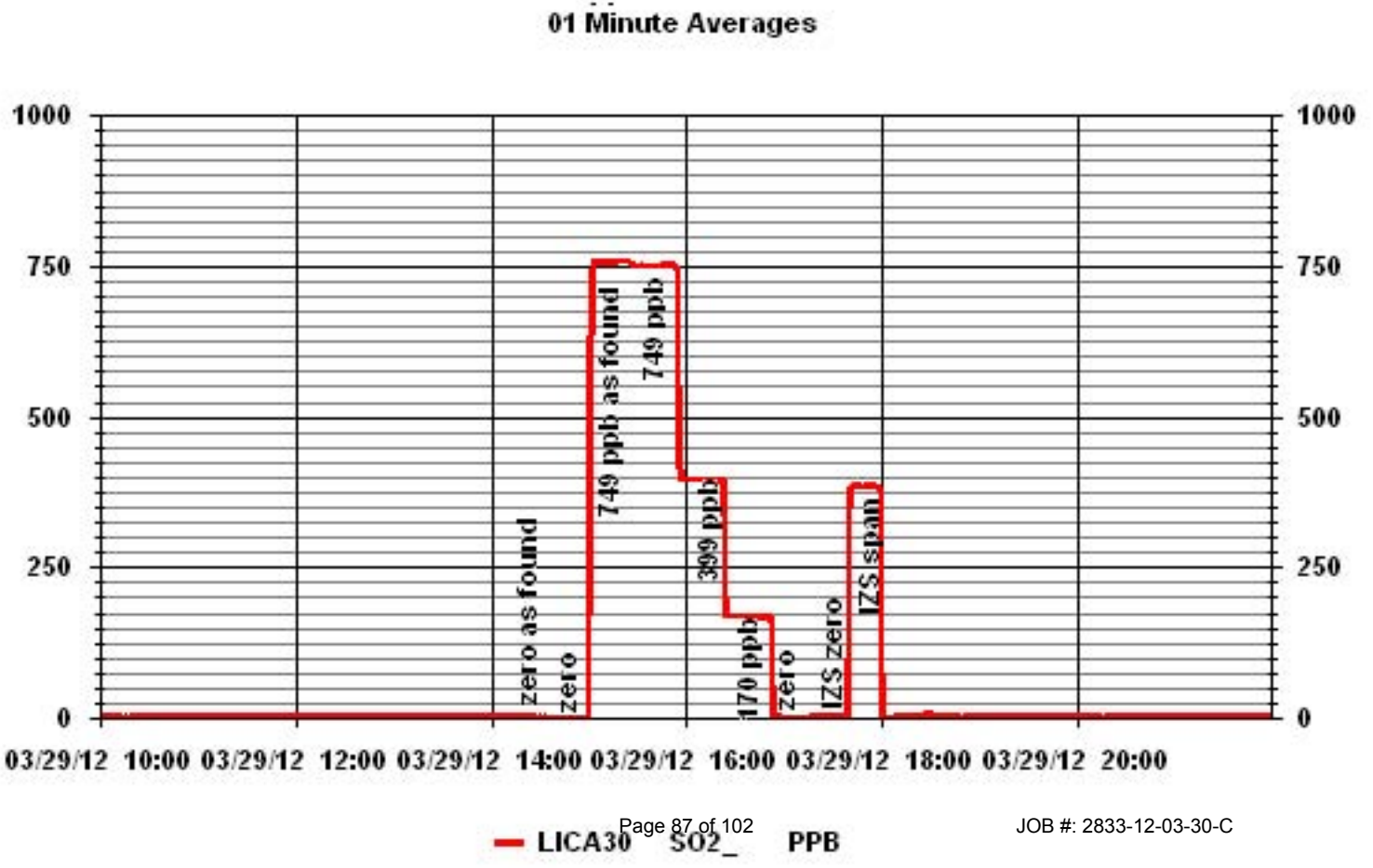
| | | | |
|---|---|---|---|
| Calibration Date | March 29, 2012 | | |
| Company | Lakeland Industry & Community Association | | |
| Plant / Location | Cold Lake - Maskwa | | |
| Start Time (MST) | 14:03 | End Time (MST) | 18:04 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 2 | n/a |
| 170 | 169 | 1.0049 |
| 399 | 396 | 1.0080 |
| 749 | 750 | 0.9980 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999946 |
| Slope | (0.85 to 1.15) | 0.999615 |
| Intercept | (± 3% F.S.) | 0.000303 |




**Notes:**






JOB #: 2833-12-03-30-C

# Hydrogen Sulphide

## H2S Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 29, 2012 | | Previous Calibration | February 15, 2012 | |
| Company | Lakelnad Industry & Community Association | | | | |
| Plant / Location | Cold Lake - Maskwa | | | | |
| Start Time (MST) | 8:42 | | End Time (MST) | 12:42 | |
| Reason: | | | Monthly Calibration | | |
| Barometric Pressure | 926 | mBar | Station Temperature | 21 | Deg C |
| Cal Gas | 10 ppm | Gas Cyl. # | LL42648 | Cal Gas Expiry date | December 27, 2012 |
| DAS Output Voltage | 0 - 1 | Volts | Chart Rec. Output | NA | Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 101E | S/N : | 511 | Method: | Fluorescent |
| Converter Make / Model: | Internal | S/N : | NA | | |
| Calibrator Make / Model: | API 700 | S/N : | 831 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO 791 | | |
| Chart Recorder Make / Model: | Not in use | S/N: | NA | | |
| Flow Meter: | API 700 | S/N : | 831 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | 0 - 100 ppb | | | | | | | |
| Sample Flow / Box Temp | 470 | ccm | 30.8 | Deg C | 467 | ccm | 32.4 | Deg C |
| HVPS / Lamp Setting | 552 | | 2491 | | 552 | | 2491 | |
| 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 | 315.4 | Deg C | 45.0 | Deg C |
| Offset / Slope | 35.7 | | 0.834 | | 38.2 | | 0.82 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4997 | 0 | 0 | 1 | NA |
| 4996 | 0 | 0 | 0 | NA |
| 4960 | 40.0 | 80 | 83 | 0.9639 |
| 4960 | 40.0 | 80 | 80 | 1.0000 |
| 4976 | 20.0 | 40 | 41 | 0.9764 |
| 4986 | 11.5 | 23 | 24 | 0.9588 |
| 4996 | 0 | 0 | 0 | NA |
| | | | | |
| | | | Sum of Least Squares | 0.9928 |
| | | | New Correction Factor | 1.0000 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.4 | -0.3 |
| Auto Span | 60.5 | 59.9 |
| Sample Lines Connected | | YES |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 0.9639 |
| Percent Change: | 3.8% |

Notes: **NA : Not Applicable**

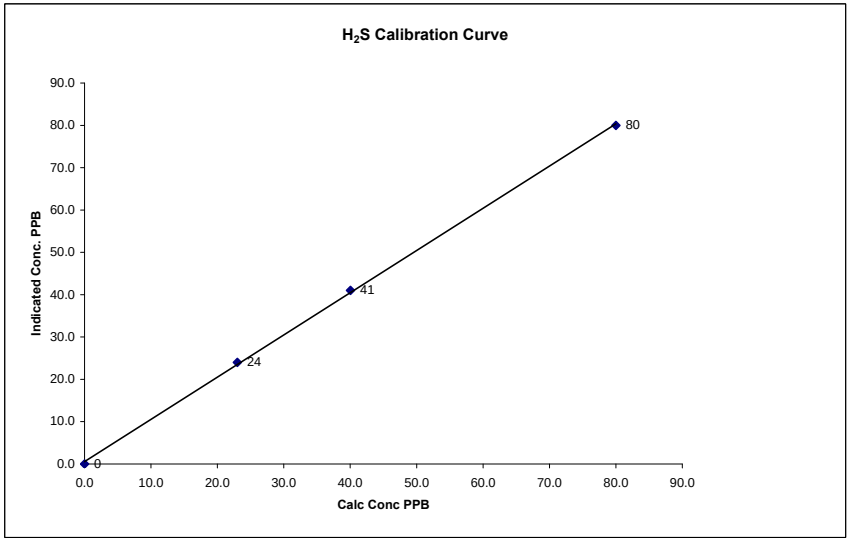
Calibration Performed by: Ting Xu / Theo Mclaren

## $H_2S$ Calibration Curve

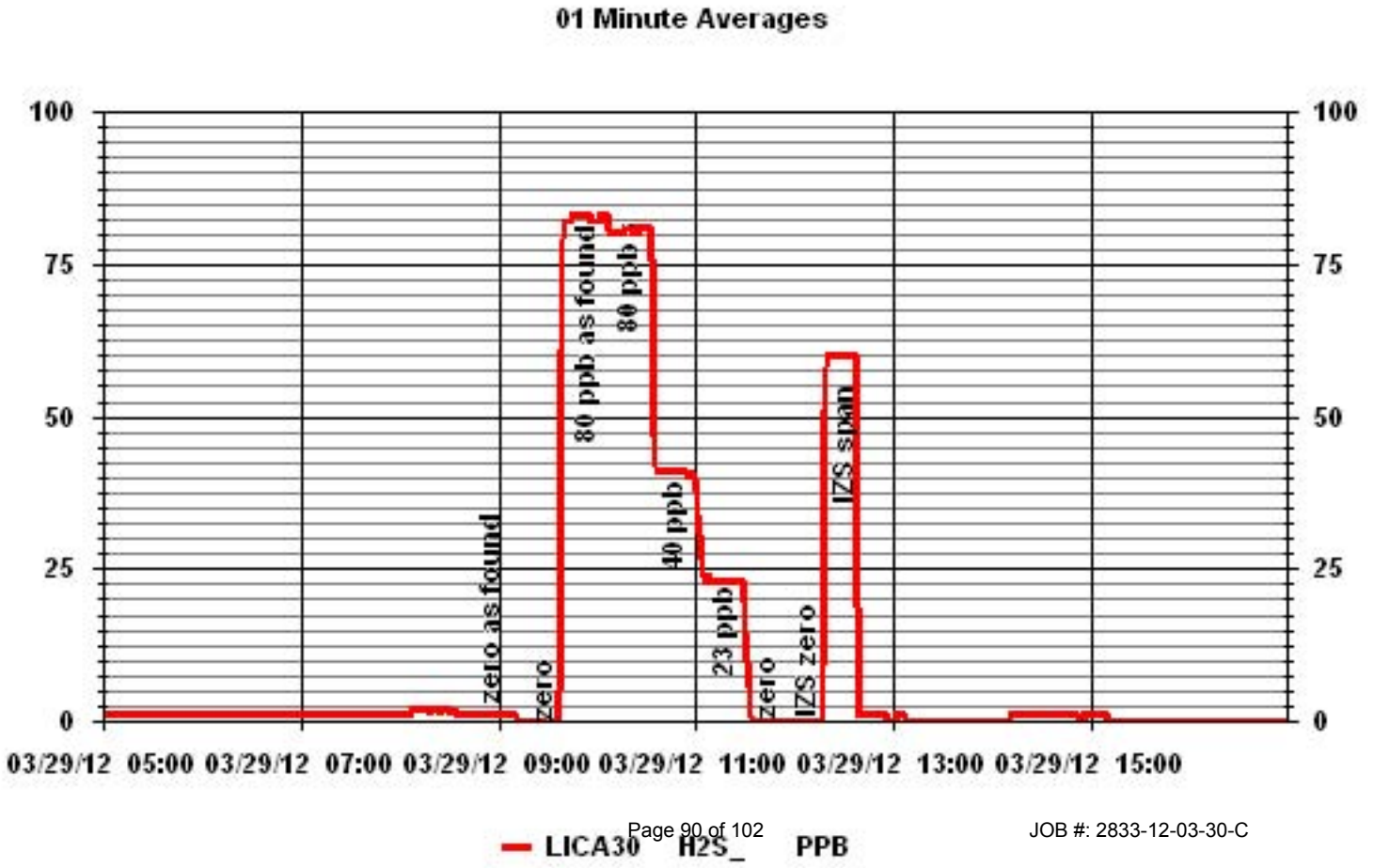
| | | | |
|---|---|---|---|
| Calibration Date | March 29, 2012 | | |
| Company | Lakelnad Industry & Community Association | | |
| Plant / Location | Cold Lake - Maskwa | | |
| Start Time (MST) | 8:42 | End Time (MST) | 12:42 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | |
| 23 | 24 | 0.9588 |
| 40 | 41 | 0.9764 |
| 80 | 80 | 1.0000 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999725 |
| Slope | (0.85 to 1.15) | 0.997522 |
| Intercept | (± 3% F.S.) | 0.577750 |




**Notes:**






JOB #: 2833-12-03-30-C

# Total Hydrocarbons

## THC Calibration Report

Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date: | March 29, 2012 | | Previous Calibration | February 15, 2012 | |
| Company: | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location: | Maskwa | | | | |
| Start Time (MST) | 11:59 | | End Time (MST) | 15:22 | |
| Reason: | Monthly Calibration | | | | |
| Barometric Pressure: | 927 | mmHg | Station Temperature: | 22 | Deg C |
| Calibrator: | API 700 | | S/N: | 831 | |
| Cal Gas Concentration: | CH4 980 PPM | | C3H8 | 304 PPM | |
| | TOTAL CH4 1816.0 PPM | | Gas Cyl. # | LL84144 | Cal Gas Expiry Date: December 3, 2013 |
| DAS make & Model: | ESC 8832 | | S/N : | AO 791 | |
| Chart Recorder: | NA | | S/N: | NA | |
| Output Voltage Range: | 0 - 1 | VDC | Chart Speed: | NA | mm/hr |

**Analyzer Information**

| Make / Model | Thermo 51C-LT | S/N : | 436609738 | Method | Flame Ionization |
|---|---|---|---|---|---|

**Analyzer Settings**

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0 - 50 | ppm | 0 - 50 | ppm |
| Sample Pressure | 7.5 | psi | 7.5 | psi |
| Hydrogen Pressure | 8 | psi | 8 | psi |
| Air Pressure | 20 | psi | 20 | psi |

**Calibration Data**

| Dilution Flow | Source Gas Flow | Calculated Concentration | Indicated Concentration | Correction Factor |
|---|---|---|---|---|
| 3000 | 0.0 | 0.0 | 0.0 | NA |
| | No Zero Adj. | | | |
| 3000 | 70.0 | 41.4 | 41.2 | 1.0050 |
| 3000 | 70.0 | 41.4 | 41.7 | 0.9930 |
| 3000 | 35.0 | 20.9 | 20.9 | 1.0000 |
| 3000 | 20.0 | 12.0 | 12.0 | 1.0000 |
| 3000 | 0.0 | 0.0 | 0.0 | NA |
| | | | New Correction Factor: | 0.9930 |

**Percent Change**

| | |
|---|---|
| Previous Calibration Correction Factor: | 0.9954 |
| Current Correction Factor Before Span Adjust: | 1.0050 |
| Percent Change: | -1.0% |

**IZS Calibration Data**

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 32.2 | 32.7 |
| Sample Lines Connected | | YES |

Cylinder Pressures

Span 1400 psi Hydrogen 500 psi Zero Air 32 psi

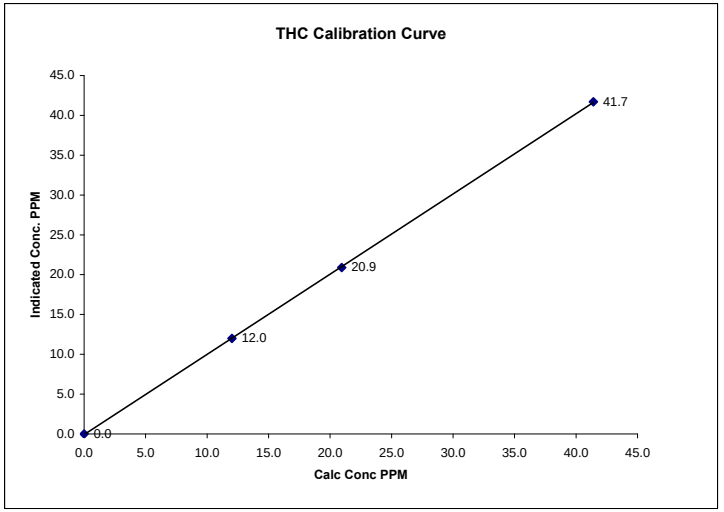
Notes: **NA : Not Applicable**

Calibration Performed by: Ting Xu / Theo McLaren

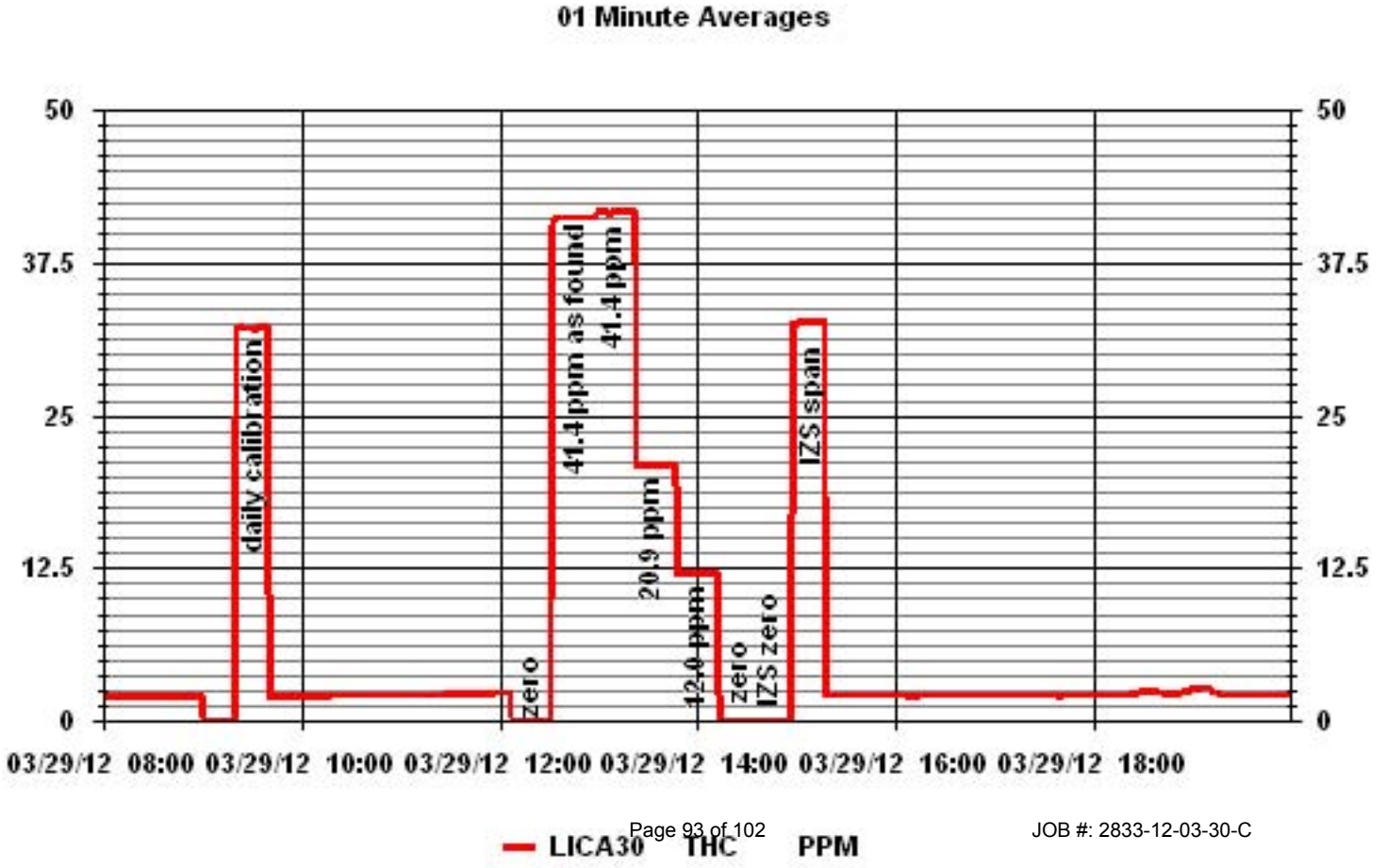
## THC Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 29, 2012 | | | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | Maskwa | | | | |
| Start Time (MST) | 11:59 | End Time | (MST) | 15:22 | |

| Calculated Conc. ppm | Indicated Response ppm | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999972 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 1.007384 |
| 0.0 | 0.0 | NA | Intercept (± 3% F.S.) | -0.08130 |
| 12.0 | 12.0 | 1.0022 | | |
| 20.9 | 20.9 | 1.0020 | | |
| 41.4 | 41.7 | 0.9930 | | |




Notes:






JOB #: 2833-12-03-30-C

# Nitrogen Dioxide

# NOx - NO- $NO_2$ Calibration Report

## Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 29, 2012 | | Previous Calibration | February 15, 2012 | |
| Company | LICA | | Plant/Location | Maskwa | |
| Start Time (MST) | 8:42 | | End Time (MST) | 14:48 | |
| Reason: | Monthly Calibration | | | | |
| Barometric Pressure | 926 | mBar | Station Temperature | 21 | Deg C |
| Cal Gas Concentration | NOx 49.6 | ppm | NO 49.5 | ppm | Cal Gas Expiry date: January 16, 2014 |
| Cal Gas Cylinder # | LL42496 | | | | |
| DAS Output Voltage | 0 - 1 | Volts | Chart Rec. Output | NA | Volts |

MFCF: 1

## 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 : | AO 791 | | |
| Chart Recorder Make / Model: | Not in use | S/N: | NA | | |
| Flow Meter: | ESC 8832 | S/N : | 4760 | | |

## Analyzer Settings

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | | | 0 - 1000 ppb | | | | |
| Sample Flow/Conv. Temp | 450 | ccm | 316 | Deg C | | 453 | ccm | 315 | Deg C |
| Ozone Flow / Vacuum | 78 | ccm | 5.1 | "Hg-A | | 78 | ccm | 5.3 | "Hg-A |
| HVPS / A ZERO | 767 | Volts | 16.9 | MV | | 767 | Volts | 17 | MV |
| Rx/ Temp / PMT Temp | 49.9 | Deg C | 6.5 | Deg C | | 50.0 | Deg C | 6.6 | Deg C |
| Box Temp / IZS Temp | 29.2 | Deg C | 40.0 | Deg C | | 31.7 | Deg C | 40.2 | Deg C |
| Offset | 0.9 | NOx | 0.8 | NO | | 0.9 | NOx | 0.8 | NO |
| Slope | 1.205 | NOx | 1.196 | NO | | 1.240 | NOx | 1.237 | NO |
| $NO_2$ COEF / Conv Efficency | NA | NO2 | 0.994 | | | NA | NO2 | 0.994 | |

## Dilution Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | Correction Factor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | NOx | NO |
| 4994 | 0.0 | NA | 0 | 0 | NA | 1 | 1 | 1 | NA | NA |
| | No Zero Adj. | | | | | | | | | |
| 4918 | 75.6 | NA | 751 | 749 | NA | 729 | 723 | 7 | 1.0315 | 1.0379 |
| 4918 | 75.6 | NA | 751 | 749 | NA | 752 | 748 | 4 | 0.9999 | 1.0032 |
| 4962 | 35.3 | NA | 350 | 350 | NA | 350 | 349 | 2 | 1.0000 | 1.0048 |
| 4975 | 20.2 | NA | 201 | 200 | NA | 201 | 200 | 1 | 1.0000 | 1.0000 |
| 4994 | 0.0 | NA | 0 | 0 | NA | 0 | 1 | 1 | 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 | | |
| 4919 | 75.6 | NA | 751 | 749 | NA | 754 | 750 | 4 | NA | NA |
| | No Adj. | | | | | | | | | |
| 4919 | 75.6 | 600 | 751 | NA | 561 | 753 | 193 | 560 | 1.0036 | 99.82% |
| 4919 | 75.6 | 250 | 751 | NA | 235 | 754 | 519 | 235 | 1.0043 | 100.00% |
| 4919 | 75.6 | 140 | 751 | NA | 133 | 755 | 621 | 133 | 1.0076 | 100.00% |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Linearity OK? | Yes | No | Sum of Least Squares Correction Factors: | NOx= | 1.023 | NO= | 1.028 | NO2= | 1.001 |
| | | | | NOx= | 0.9999 | NO= | 1.0032 | NO2= | 1.0036 |
| | | | | Average Converter Efficiency= | | 99.94% | | | |

## IZS Calibration Data

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auto Zero | 0.6 | NOx | 1.2 | NO2 | | 0.2 | NOx | 0.1 | NO2 |
| Auto Span | 611 | NOx | 600 | NO2 | | 635 | NOx | 622 | NO2 |
| | | | | | Sample Lines Connected | YES | | | |
| Percent Change from Previous Calibration | | | | | NOx -3.0% | NO | -3.8% | NO2 | 0.0% |

Notes

**NA : Not Applicable**

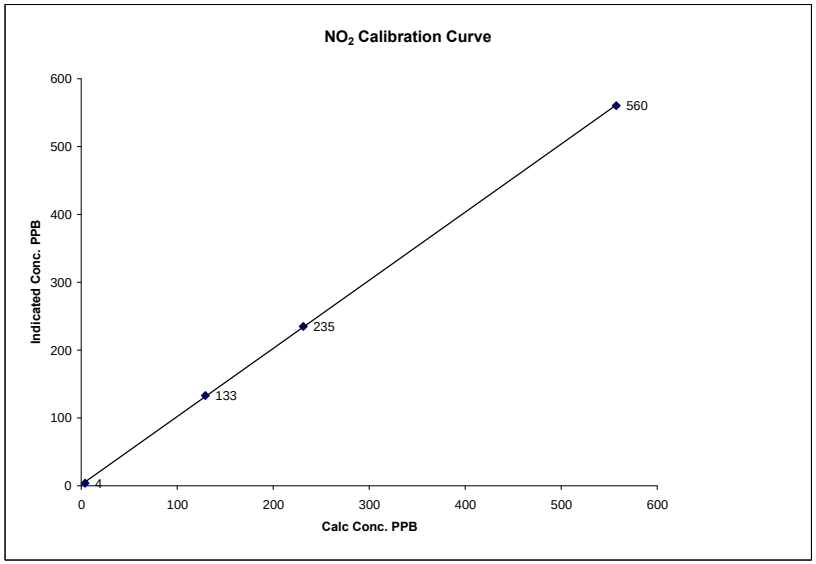
Calibration Performed by: Ting Xu / Theo Mclaren

## $NO_2$ Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | March 29, 2012 | | |
| Company | LICA | | |
| Plant / Location | Maskwa | | |
| Start Time (MST) | 8:42 | End Time (MST) | 14:48 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 4 | 4 | N/A |
| 129 | 133 | 0.9699 |
| 231 | 235 | 0.9830 |
| 557 | 560 | 0.9946 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999948 |
| Slope | (0.85 to 1.15) | 1.003438 |
| Intercept | (± 3% F.S.) | 1.95846 |



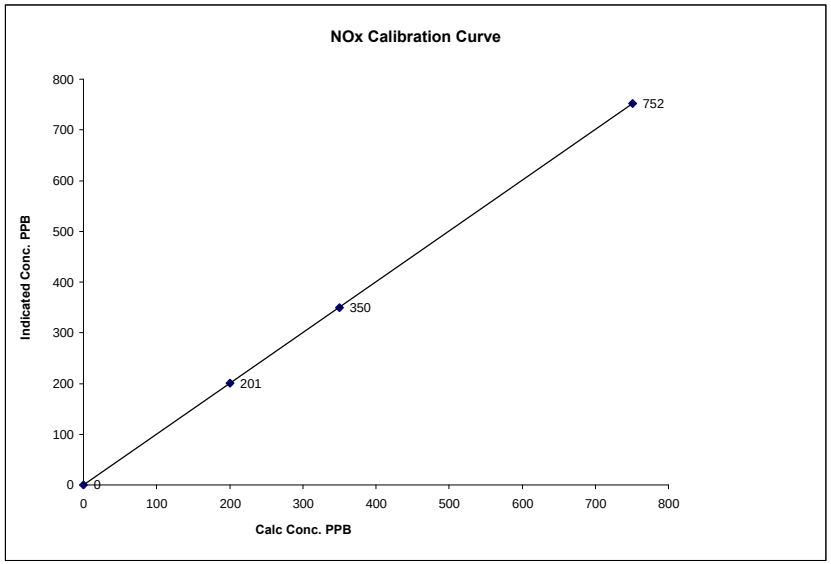

Notes:

## NOx Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | March 29, 2012 | | |
| Company | LICA | | |
| Plant / Location | Maskwa | | |
| Start Time (MST) | 8:42 | End Time (MST) | 14:48 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | N/A |
| 201 | 201 | 0.9979 |
| 350 | 350 | 1.0010 |
| 751 | 752 | 0.9986 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999998 |
| Slope | (0.85 to 1.15) | 1.001321 |
| Intercept | (± 3% F.S.) | -0.14362 |



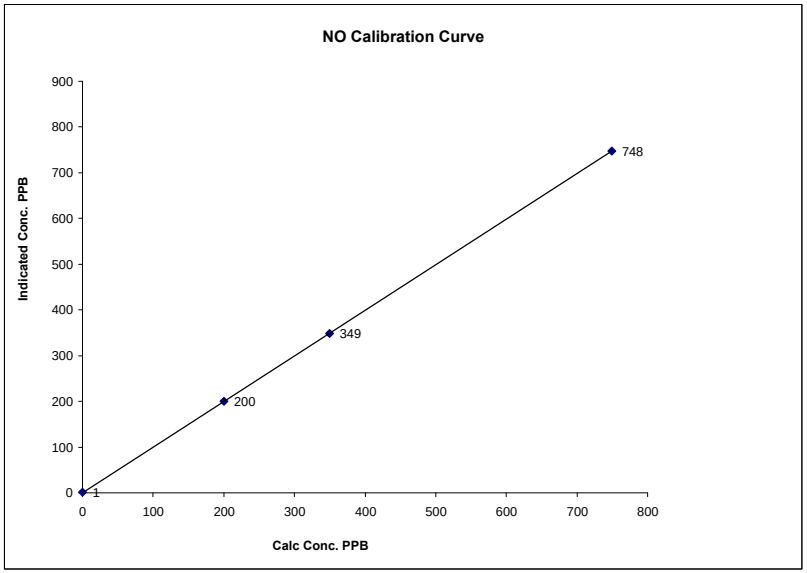

Notes:

## NO Calibration Curve

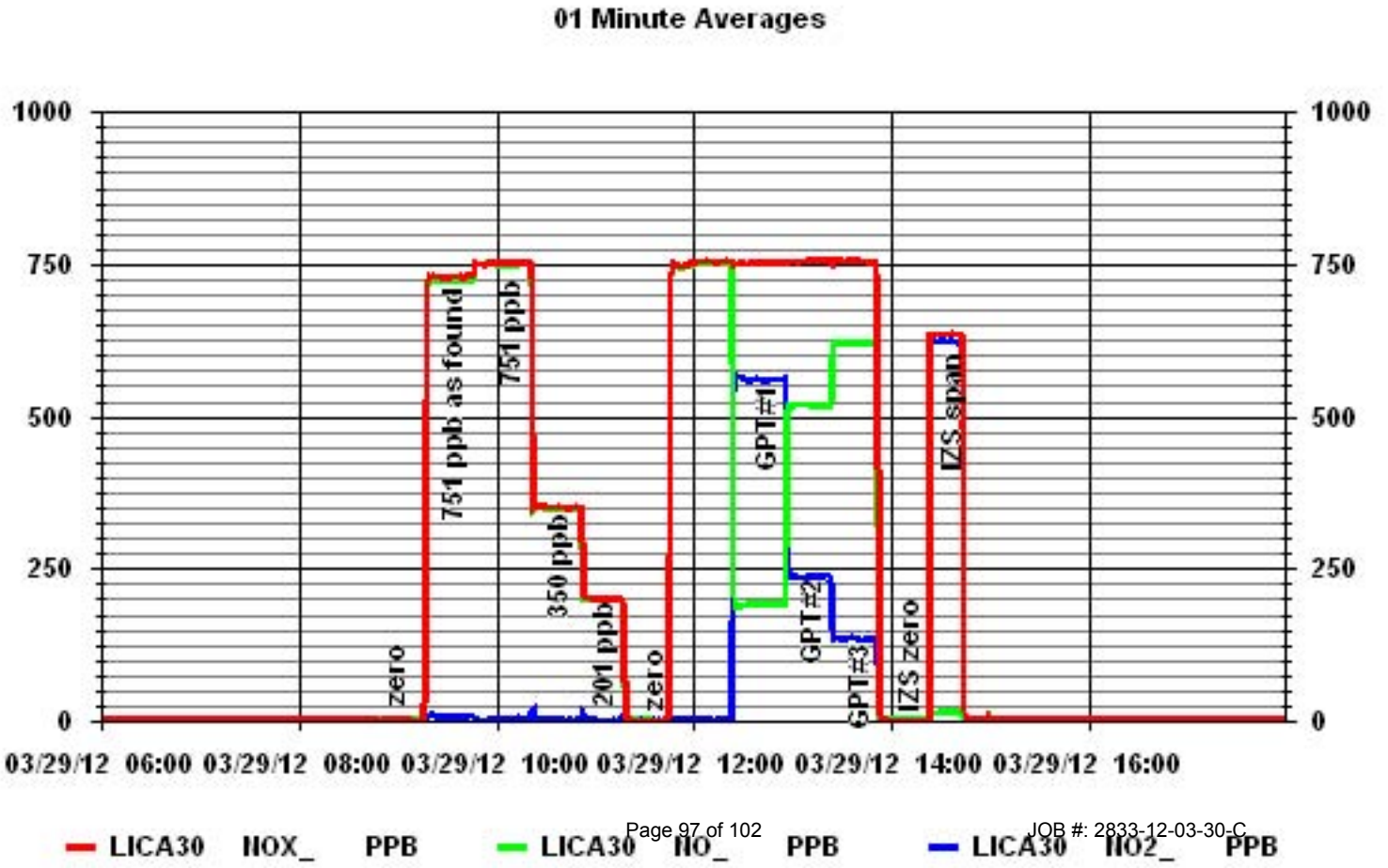
| | | | |
|---|---|---|---|
| Calibration Date | March 29, 2012 | | |
| Company | LICA | | |
| Plant / Location | Maskwa | | |
| Start Time (MST) | 8:42 | End Time (MST) | 14:48 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 1 | N/A |
| 200 | 200 | 1.0009 |
| 350 | 349 | 1.0019 |
| 749 | 748 | 1.0019 |

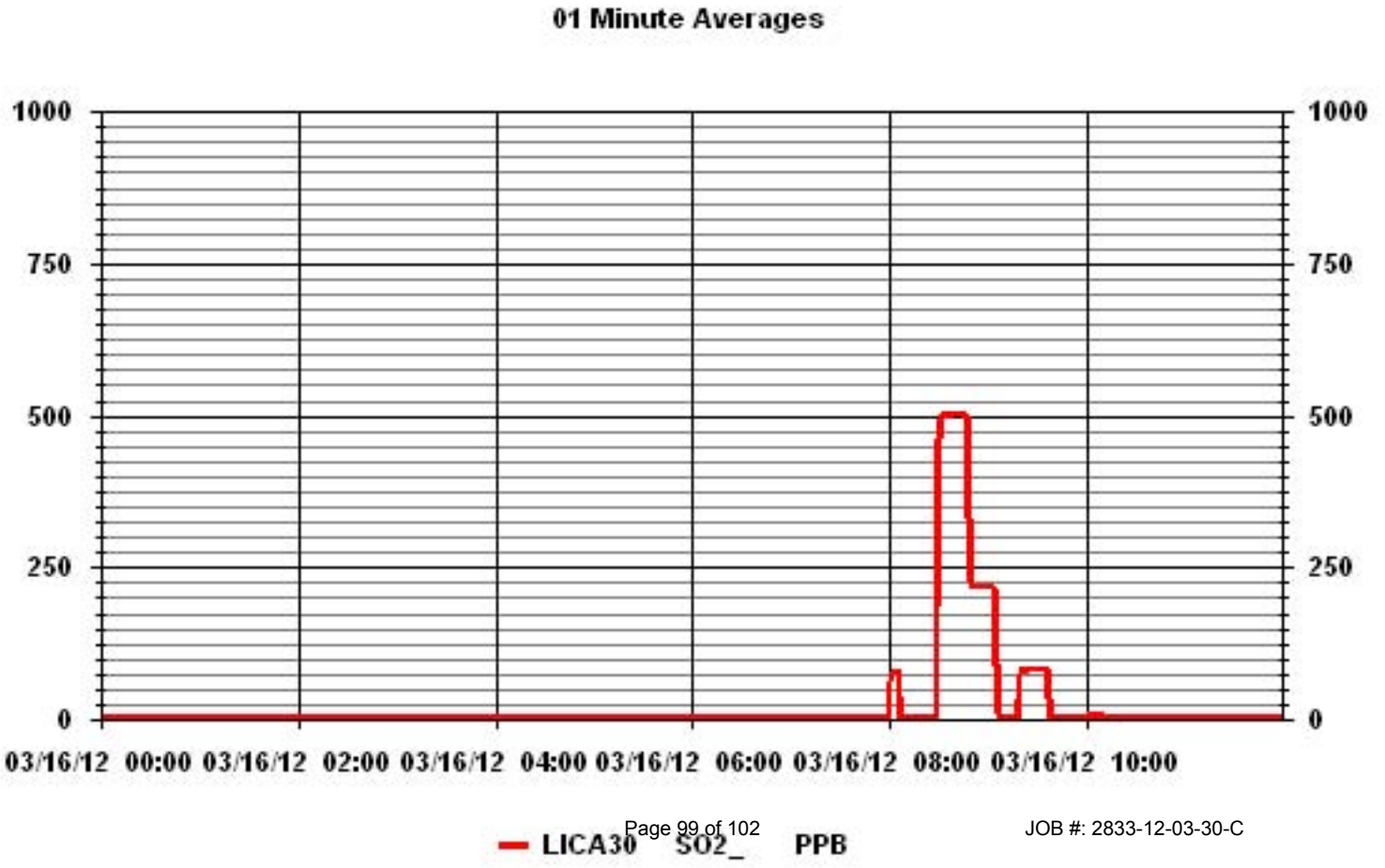
| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999999 |
| Slope | (0.85 to 1.15) | 0.997845 |
| Intercept | (± 3% F.S.) | -0.0112 |




Notes:

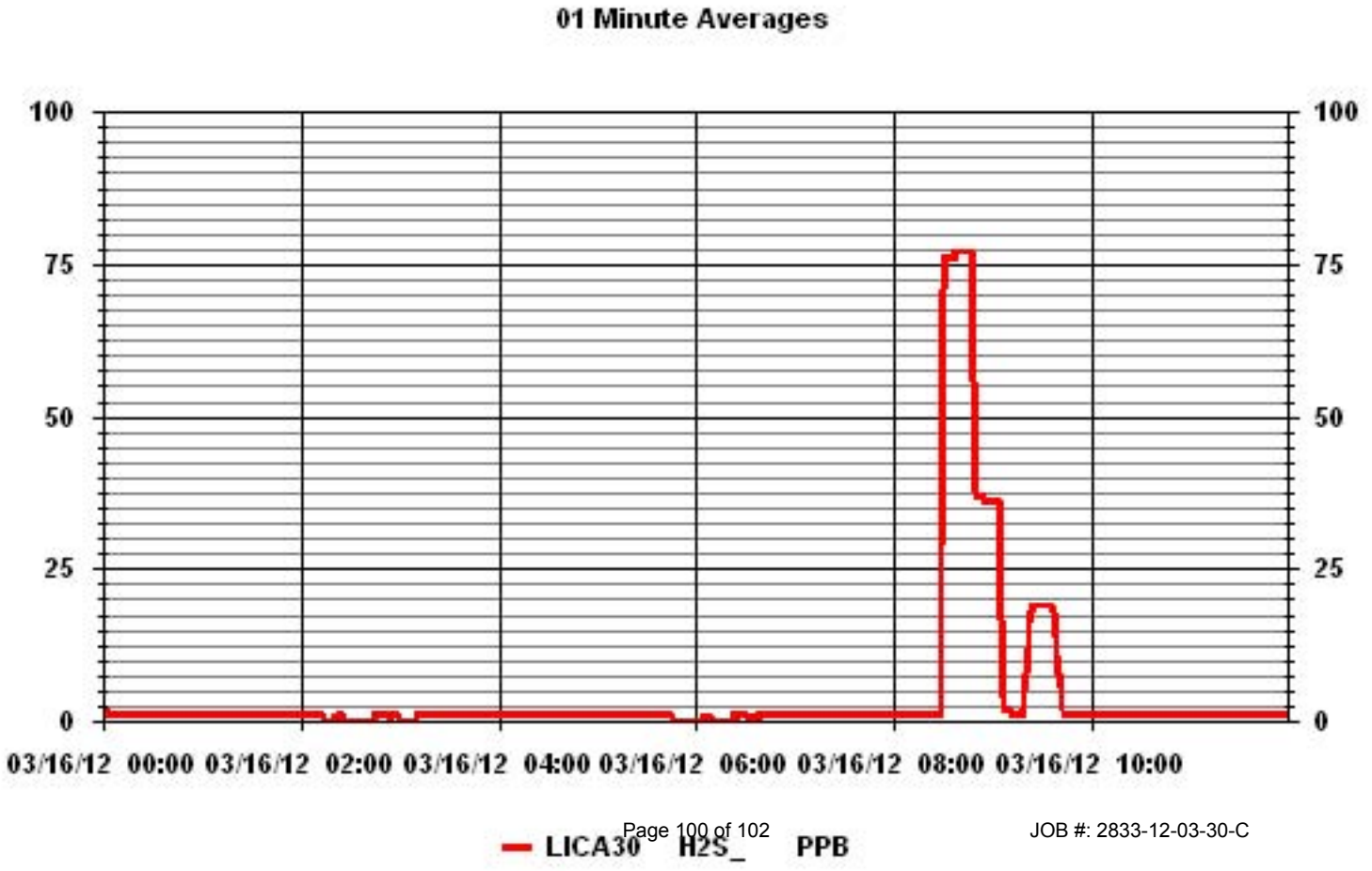

01 Minute Averages
1000
750
500
250
0
zero
751 ppb as found
751 ppb
350 ppb
201 ppb
zero
GPT #1
GPT #2
GPT #3
IZS zero
IZS span
03/29/12 06:00
03/29/12 08:00
03/29/12 10:00
03/29/12 12:00
03/29/12 14:00
03/29/12 16:00
LICA30 NOX_ PPB
LICA30 NO_ PPB
LICA30 NO2_ PPB

# AE Audit Results



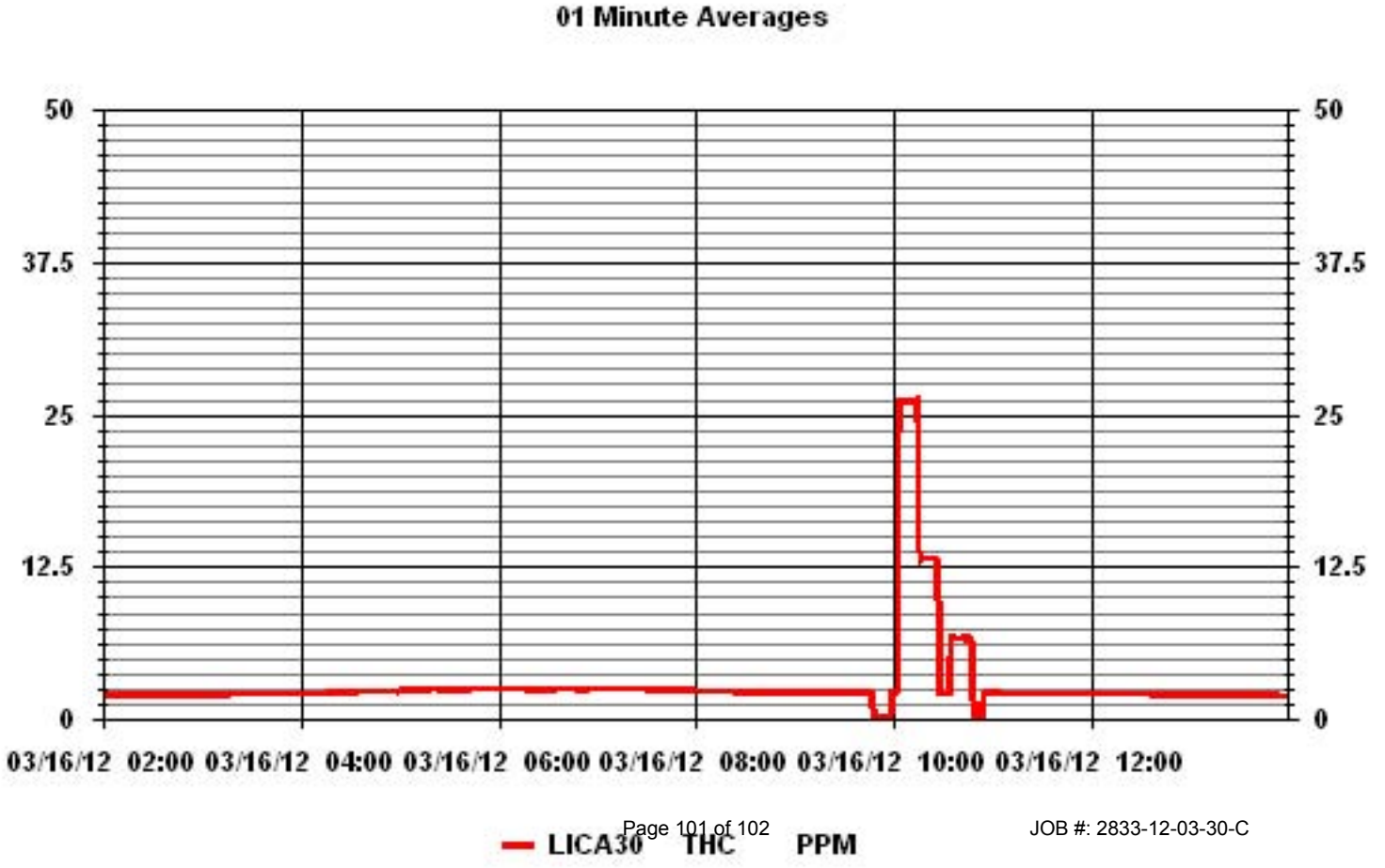



JOB #: 2833-12-03-30-C



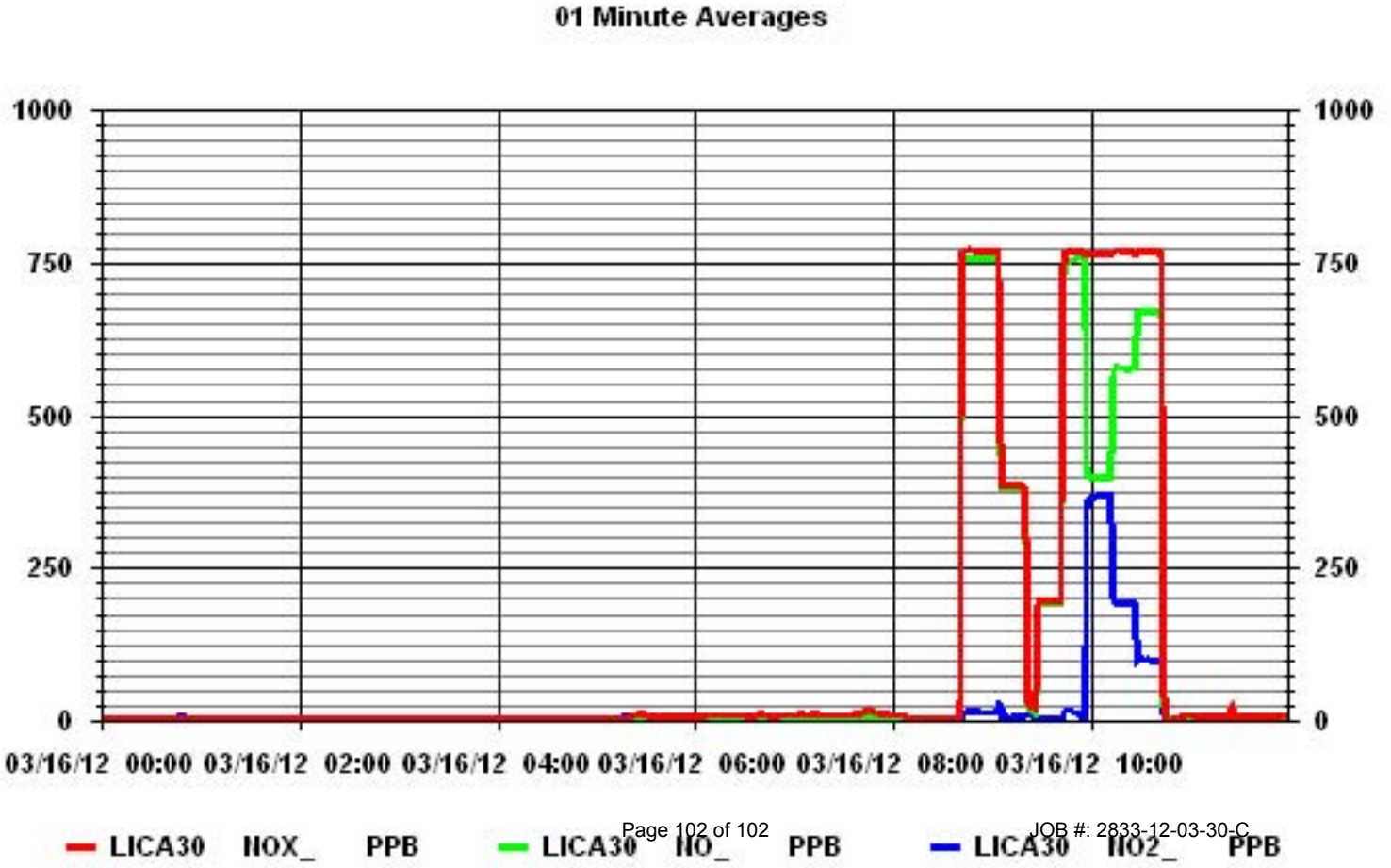



JOB #: 2833-12-03-30-C






JOB #: 2833-12-03-30-C


01 Minute Averages
1000
750
500
250
0
03/16/12 00:00
03/16/12 02:00
03/16/12 04:00
03/16/12 06:00
03/16/12 08:00
03/16/12 10:00
LICA30 NOX_ PPB
LICA30 NO_ PPB
LICA30 NO2_ PPB

# Lakeland Industry & Community Association

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

Prepared By:


April 26, 2012

# 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: March 2012

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Katherine Rapske

# 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 – March 2012

| 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 | 0.15 | 6 | 2 | 11 | 9.4 | 356(N) | 0.8 | 9 | 98.9 |
| H2S (PPB) | 10 | 3 | 0 | 0 | 0.12 | 1 | VAR | VAR | VAR | VAR | 0.7 | 3 | 98.8 |
| THC (PPM) | - | - | - | - | 2.14 | 3.1 | 28 | VAR | VAR | VAR | 2.4 | 26, 28 | 96.8 |
| OZONE (PPB) | 82 | - | 0 | - | 34.8 | 51 | 31 | VAR | VAR | VAR | 45.2 | 31 | 99.1 |
| NOx (PPB) | - | - | - | - | 2.07 | 11 | 9 | 17 | 8.9 | 337(NNW) | 5.3 | 9 | 98.9 |
| NO (PPB) | - | - | - | - | 0.43 | 11 | 3 | 22 | 10 | 289(WNW) | 1.2 | 2 | 98.9 |
| $NO_2$ (PPB) | 159 | - | 0 | - | 1.76 | 8 | 9 | VAR | VAR | VAR | 4.5 | 9 | 98.9 |
| PM2.5 (ug/m3) | - | 30 | - | 0 | 4.76 | 28.1 | 22 | 4 | 14.4 | 90(E) | 10.7 | 25 | 98.1 |
| TEMPERATURE (DEGREE C) | - | - | - | - | -1.47 | 12.3 | 29 | 15 | 13 | 161(SSE) | 6.0 | 29 | 99.1 |
| BP (MILLIBAR) | - | - | - | - | 919 | 937 | 24 | 12, 13 | 4.6, 6.5 | 330(NNW), 345(NNW) | 934.5 | 24 | 99.1 |
| RH (%) | - | - | - | - | 66.45 | 90 | VAR | VAR | VAR | VAR | 83.1 | 18 | 99.1 |
| PRECIPITATION (MM) | - | - | - | - | 0.03 | 3.6 | 6 | 14 | 5.7 | 241(WSW) | 7.7 | 19 | 98.9 |
| VECTOR WS (KPH) | - | - | - | - | 10.51 | 27.6 | 22 | 19 | - | 55(NE) | 18.4 | 22 | 99.1 |
| VECTOR WD (DEGREES) | - | - | - | - | 152(SSE) | - | - | - | - | - | - | - | 99.1 |

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**

**A trailer audit was performed by Alberta Environment on March 13th.**

**Sulphur Dioxide (PPB)**
Analyzer make / model - API 100E, S/N: 468
The analyzer was working well throughout the month. The inlet filter was changed before the monthly calibration was started on March 6th. Data on March 3rd between 19:00 and 21:59 and March 15 between 12:00 and 15:59 are invalidated due to power failures. Data was corrected using daily zero information.

**Hydrogen Sulphide (PPB)**
Analyzer make / model - API 101E, S/N: 510
The analyzer was working well throughout the month. The inlet filter was changed before the monthly calibration was started on March 5th. Data on March 3rd between 19:00 and 21:59 and March 15 between 12:00 and 15:59 are invalidated due to power failures. Data on March 3rd at hour of 22 was also invalid because the analyzer was recovery from the power failure. Data was corrected using daily zero information.

**Total HydroCarbon (PPM)**
Analyzer make / model –TECO 51C, S/N: 77021-384
The monthly calibration was performed on March 6th. The inlet filter was changed before the monthly calibration was started. Data on March 3rd between 19:00 and 21:59 and March 15th at hour of 12 are invalidated due to power failures. The analyzer flamed out after the power failure on March 15th, and it was re-lit on March 16th. 19 hours of data was invalidated due to this issue. Data was corrected using daily zero information.

# General Monthly Summary

**AQM STATION – LICA – St. Lina**

**Ozone (PPB)**

The analyzer was working well throughout the month. The inlet filter was changed before the monthly calibration was started on March 6th. Data on March 3rd between 19:00 and 21:59 and March 15 between 12:00 and 15:59 are invalidated due to power failures. Data was corrected using daily zero information.

**Nitrogen Dioxide (PPB)**

Analyzer make / model - API 200E, S/N: 592

The analyzer was working well throughout the month. The inlet filter was changed before the monthly calibration was started on March 5th. Data on March 3rd between 19:00 and 21:59 and March 15 between 12:00 and 15:59 are invalidated due to power failures. It was noticed that the daily span results were drifting down, but still within –10% range. This issue will be checked during the site visit in April. Data was corrected using daily zero information.

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

Analyzer make / model –Thermo Scientific Series 1405F, S/N: 1405A207691003

The Teom unit was working well throughout the month. A routine Teom audit was performed on March 5th. Data on March 3rd between 19:00 and 21:59 and March 15 between 12:00 and 15:59 are invalidated due to power failures. 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. 7 hours of data were invalidated as the data were below –3 ug/m3.

# General Monthly Summary

**AQM STATION – LICA – St. Lina**

**Temperature (Degree C)**
Analyzer make / model – Met One 060
No operational issues were observed during the month. Data on March 3rd between 19:00 and 21:59 and March 15 between 12:00 and 15:59 are invalidated due to power failures.

**Barometric Pressure (Millibar)**
Analyzer make / model - Met One 092
No operational issues were observed during the month. Data on March 3rd between 19:00 and 21:59 and March 15 between 12:00 and 15:59 are invalidated due to power failures.

**Relative Humidity (%)**
Analyzer make / model - Met One 083
No operational issues were observed during the month. Data on March 3rd between 19:00 and 21:59 and March 15 between 12:00 and 15:59 are invalidated due to power failures.

**Precipitation (MM)**
Analyzer make / model - Met One 387
During the site visit on February 8th, it was found that the heater for the tipping bucket was not working. We are not sure when the heater failed. Data between March 1st and March 14th should be used with caution. A new tipping bucket with a new heater was installed on March 14th. Data on March 3rd between 19:00 and 20:59 and March 15 between 12:00 and 14:59 are invalidated due to power failures.

**Vector Wind Speed (KPH) & Vector Wind Direction (DEG)**
System make / model – Met 50.5, S/N: H12635
The wind system is reported as vector wind speed and vector wind direction.
The wind system was working well throughout the month. Data on March 3rd between 19:00 and 21:59 and March 15 between 12:00 and 15:59 are invalid due to power failures. Hourly maximum data for wind speed on March 12th at hour of 3 was invalid because the reading went above the full scale.

# General Monthly Summary

**AQM STATION – LICA – St. Lina**
**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**
No issue was observed this month. The manifold was cleaned on March 6th.

**Air Quality Index (AQI)**
The AQI data was adjusted to reflect regular monthly and daily calibrations, maintenance, and downtime. Five AQI values for recorded in March 2012 were within the Fair range, and there were all due to ozone. Others were within the Good range. The highest hourly concentration of Ozone was 51 ppb and an AQI value of 26, on March 31st, in various hours. The highest concentration of PM2.5 was 28.1ug/m3 and an AQI value of 23, on March 22nd, hour of 4.

# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Air Quality Index

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA***

MARCH 2012

**AIR QUALITY INDEX (AQI)**

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 | 17 | 17 | 17 | 17 | 17 | 17 | 16 | 16 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | - | 18 | 17 | 16 | 16 | 16 | 15 | 15 | 18 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 2 | 15 | 15 | 15 | 15 | 14 | 14 | 13 | 12 | 12 | 12 | 13 | 13 | 15 | 17 | 17 | - | 16 | 15 | 14 | 14 | 14 | 13 | 13 | 13 | 17 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | O3_ | O3_ |
| 3 | 14 | 15 | 15 | 16 | 15 | 14 | 14 | 15 | 15 | 14 | 15 | 15 | 17 | 17 | - | 17 | 17 | 17 | 18 | - | - | - | 19 | 19 | 19 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | **NA** | O3_ | O3_ | O3_ |
| 4 | 20 | 19 | 19 | 19 | 19 | 18 | 17 | 18 | 18 | 17 | 17 | 19 | 19 | - | 20 | 21 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 21 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 5 | 20 | 20 | 19 | 19 | 19 | 18 | 18 | 18 | 18 | 18 | 17 | 16 | - | - | - | - | - | - | - | 17 | 17 | 17 | 17 | 16 | 20 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 6 | 16 | 15 | 15 | 15 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | - | - | - | - | - | 17 | - | 14 | 13 | 13 | 11 | 11 | 11 | 17 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | **NA** | **NA** | **NA** | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 7 | 11 | 12 | 12 | 12 | 13 | 15 | 16 | 17 | 17 | 18 | - | 18 | 19 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | - | 21 | 21 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ |
| 8 | 21 | 19 | 18 | 18 | 18 | 18 | 16 | 17 | 17 | - | 17 | 18 | 18 | 18 | 19 | 19 | 20 | 20 | 20 | 20 | 20 | 21 | 21 | 21 | 21 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 9 | 21 | 20 | 20 | 19 | 19 | 19 | 18 | 18 | - | 17 | 17 | 18 | 18 | 19 | 20 | 20 | 20 | 19 | 20 | 20 | 20 | 19 | 19 | 20 | 21 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 10 | 21 | 22 | 22 | 21 | 20 | 19 | 20 | - | 19 | 19 | 20 | 21 | 22 | 23 | 23 | 23 | 23 | 22 | 22 | 22 | 22 | 21 | 21 | 21 | 23 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 11 | 20 | 20 | 22 | 21 | 21 | 20 | - | 20 | 20 | 20 | 20 | 21 | 22 | 22 | 22 | 22 | 21 | 21 | 19 | 18 | 18 | 18 | 18 | 18 | 22 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 12 | 18 | 17 | 16 | 19 | - | - | 19 | 19 | 19 | 20 | - | 21 | 22 | 22 | 22 | 22 | 20 | 20 | 20 | 19 | 19 | 19 | 18 | 18 | 22 |
| | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 13 | 18 | 18 | 17 | 17 | - | 16 | 16 | 15 | 15 | - | - | - | - | - | 1 | 16 | 15 | 15 | 15 | 14 | 14 | 14 | 14 | 16 | 18 |
| | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | **NA** | **NA** | **NA** | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 14 | 16 | 16 | 15 | - | 15 | 14 | 14 | 14 | 14 | 14 | 15 | 18 | 21 | 22 | 22 | 22 | 22 | 22 | 21 | 21 | 20 | 20 | 20 | 20 | 22 |
| | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 15 | 20 | 19 | - | 17 | 16 | 16 | 15 | 14 | 14 | 16 | 17 | 18 | - | - | - | - | 19 | 19 | 19 | 18 | 18 | 17 | 16 | 16 | 20 |
| | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | **NA** | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 16 | 15 | - | 13 | 13 | 12 | 12 | 11 | 11 | 11 | 14 | 17 | 18 | 19 | 22 | 23 | 22 | 21 | 22 | 23 | - | - | 22 | 22 | 21 | 23 |
| | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | **NA** | O3_ | O3_ | O3_ | O3_ |
| 17 | - | 17 | 18 | 19 | 19 | 17 | 17 | 16 | 18 | 20 | 20 | 21 | 20 | 19 | 20 | 20 | 21 | 21 | 21 | - | 22 | 21 | 20 | - | 22 |
| | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | **NA** | O3_ |
| 18 | 19 | 19 | 18 | 17 | 17 | 16 | 16 | 15 | 15 | 14 | 13 | 13 | 14 | 14 | 15 | 16 | 19 | 19 | 16 | 16 | 15 | 13 | - | 13 | 19 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ |
| 19 | 14 | 14 | 14 | 15 | 16 | 16 | 16 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 16 | 15 | - | 15 | 16 | 16 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ |
| 20 | 16 | 15 | 16 | 15 | 16 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 17 | 18 | 18 | 19 | 18 | 18 | 17 | 17 | - | 15 | 16 | 15 | 19 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ |
| 21 | 15 | 14 | 14 | 14 | 15 | 14 | 14 | 13 | 13 | 13 | 16 | 18 | 19 | 19 | 19 | 20 | 20 | 20 | 21 | - | 20 | 20 | 19 | 18 | 21 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ |
| 22 | 19 | 20 | 18 | 18 | **23** | 16 | 12 | 13 | 14 | 15 | 15 | 16 | 16 | 16 | 16 | 17 | 17 | 17 | - | 17 | 17 | 17 | 17 | 17 | 23 |
| | O3_ | O3_ | O3_ | PM2 | **PM2** | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 |
| 23 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 17 | 17 | 17 | 17 | 17 | - | 17 | 16 | 16 | 16 | 15 | 16 | 17 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 24 | 16 | 16 | 16 | 15 | 14 | 14 | 15 | 16 | 17 | 17 | 17 | 17 | 17 | 18 | 19 | 19 | - | 20 | 20 | 20 | 19 | 19 | 19 | 18 | 20 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 25 | 18 | 17 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 18 | 18 | 18 | 18 | 19 | - | 20 | 20 | 19 | 17 | 17 | 16 | 15 | 15 | 20 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 26 | 14 | 14 | 13 | 14 | 14 | 12 | 12 | 12 | 12 | 13 | 14 | 16 | 16 | 18 | - | 21 | 21 | 22 | 22 | 22 | 23 | 23 | 23 | 23 | 23 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 27 | 23 | 21 | 21 | 21 | 20 | 19 | 18 | 19 | 20 | 21 | 21 | 21 | 22 | - | 23 | 23 | 22 | 21 | 22 | 22 | 21 | 19 | 18 | 18 | 23 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 28 | 17 | 17 | 17 | 16 | 16 | 16 | 16 | 16 | 16 | 17 | 18 | 19 | - | 18 | 19 | 20 | 20 | 19 | 18 | 17 | 15 | 13 | 13 | 12 | 20 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 29 | 12 | 11 | 10 | 10 | 9 | 8 | 8 | 8 | 8 | 10 | 15 | - | 21 | 22 | 24 | 24 | 24 | 24 | 23 | 22 | 22 | 21 | 20 | 19 | 24 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 30 | 18 | 18 | 17 | 16 | 14 | 14 | 12 | 11 | 13 | 14 | - | 16 | 17 | 20 | 22 | 23 | 24 | 24 | 24 | 24 | 23 | 23 | 22 | 21 | 24 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 31 | 21 | 21 | 21 | 21 | 19 | 18 | 18 | 18 | 20 | - | 24 | 23 | 24 | 25 | 26 | 26 | 26 | 26 | 25 | 26 | 25 | 24 | 24 | 23 | 26 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | **NA** | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| PEAK | 23 | 22 | 22 | 21 | 23 | 20 | 20 | 20 | 20 | 21 | 24 | 23 | 24 | 25 | 26 | 26 | 26 | 26 | 25 | 26 | 25 | 24 | 24 | 23 | |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | |

| STATUS FLAG CODES | NA - NOT APPLICABLE |
|---|---|

V - VARIOUS

| AQI CLASS | OZONE ($O_3$) | | | | | PARTICULATE MATTER 2.5 (PM2) | | | | | NITROGEN DIOXIDE ($NO_2$) | | | | | SULPHUR DIOXIDE ($SO_2$) | | | | | FREQUENCY | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HRS | % | MAX AQI | HR | DAY | HRS | % | MAX AQI | HR | DAY | HRS | % | MAX AQI | HR | DAY | HRS | % | MAX AQI | HR | DAY | HRS | % |
| VERY POOR (101-255) | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% |
| POOR (51-100) | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% |
| FAIR (26-50) | 5 | 0.7% | 26 | VAR | 31 | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 5 | 0.7% |
| GOOD (1-25) | 672 | 90.3% | - | - | - | 6 | 0.8% | 23 | 4 | 22 | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 678 | 91.1% |
| OVERALL | 677 | 91.0% | - | - | - | 12 | 0.8% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 683 | 91.8% |
| UNAVAILABLE | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 61 | 8.2% |



JOB #: 2833-12-03-31-C

# Sulphur Dioxide

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

MARCH 2012

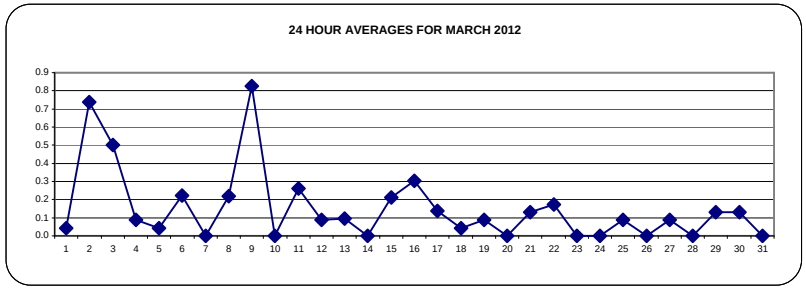
**SULPHUR DIOXIDE ($SO_2$)** hourly averages in ppb

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 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 4 | 2 | 2 | IZS | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 0.7 | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | IZS | 1 | 1 | 1 | 0 | P | P | P | 2 | 0 | 2 | 0.5 | 21 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | C | C | C | C | 0 | M | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 0.2 | 23 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0.2 | 24 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | IZS | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0.8 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 12 | 1 | 1 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 13 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | C | C | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 14 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 15 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | P | P | P | P | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.2 | 20 |
| 16 | 1 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.3 | 24 |
| 17 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 2 | 0.1 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 1 | 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 | IZS | 1 | 0 | 1 | 0.1 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 1 | 1 | 1 | 1 | 0.1 | 24 |
| 22 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 2 | 0.2 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | IZS | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| HOURLY MAX | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 6 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | | | |
| HOURLY AVG | 0.1 | 0.2 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | 0.4 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.1 | | | |

**STATUS FLAG CODES**

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



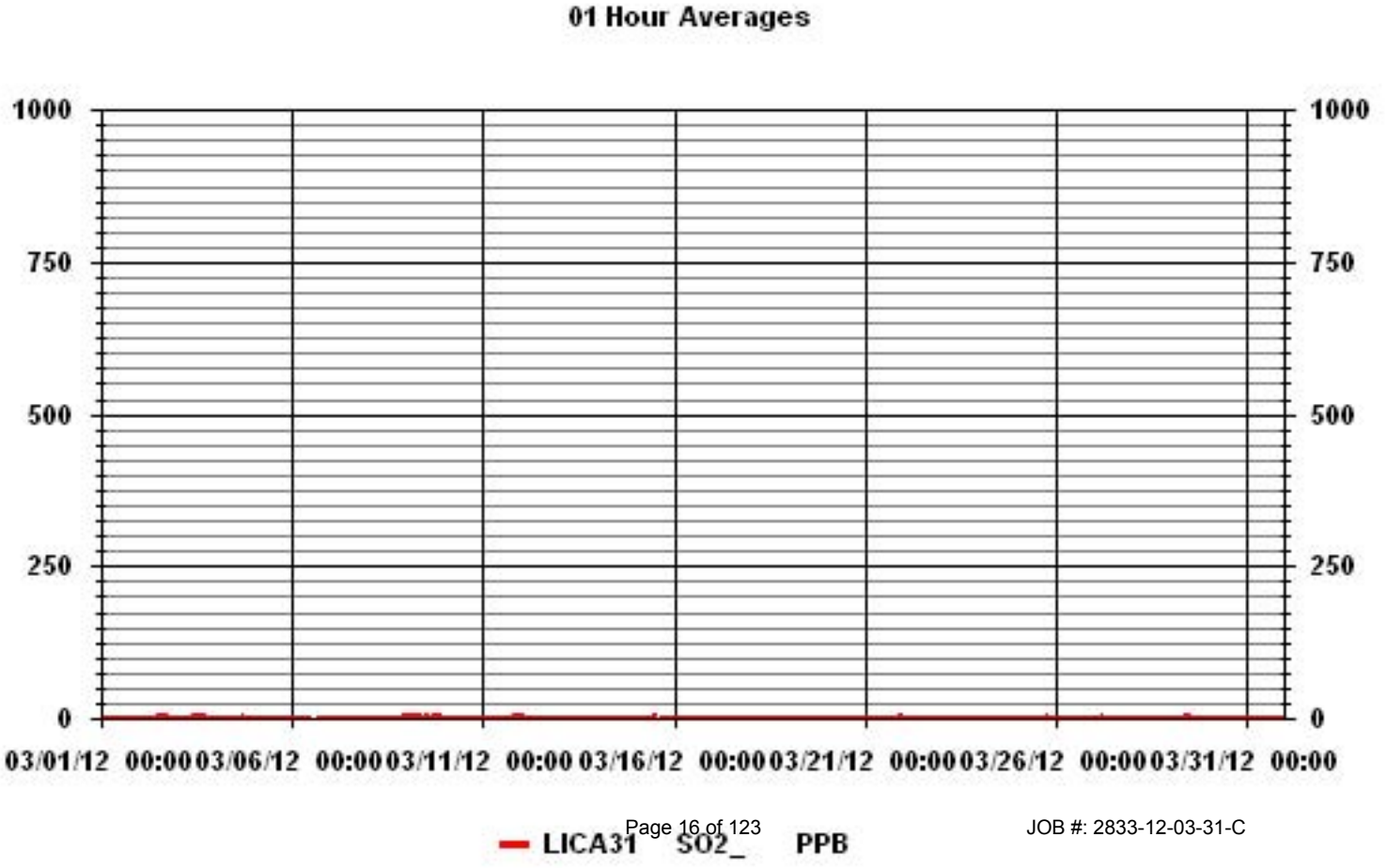

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 86 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 6 | PPB | @ HOUR(S) | 11 | ON DAY(S) | 2 |
| MAXIMUM 24-HR AVERAGE: | 0.8 | PPB | | | ON DAY(S) | 9 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 736 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | | 98.9 | % |
| STANDARD DEVIATION: | 0.46 | | MONTHLY AVERAGE: | | 0.15 | PPB |



JOB #: 2833-12-03-31-C






JOB #: 2833-12-03-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

MARCH 2012

**SULPHUR DIOXIDE MAX** instantaneous maximum in ppb

MST

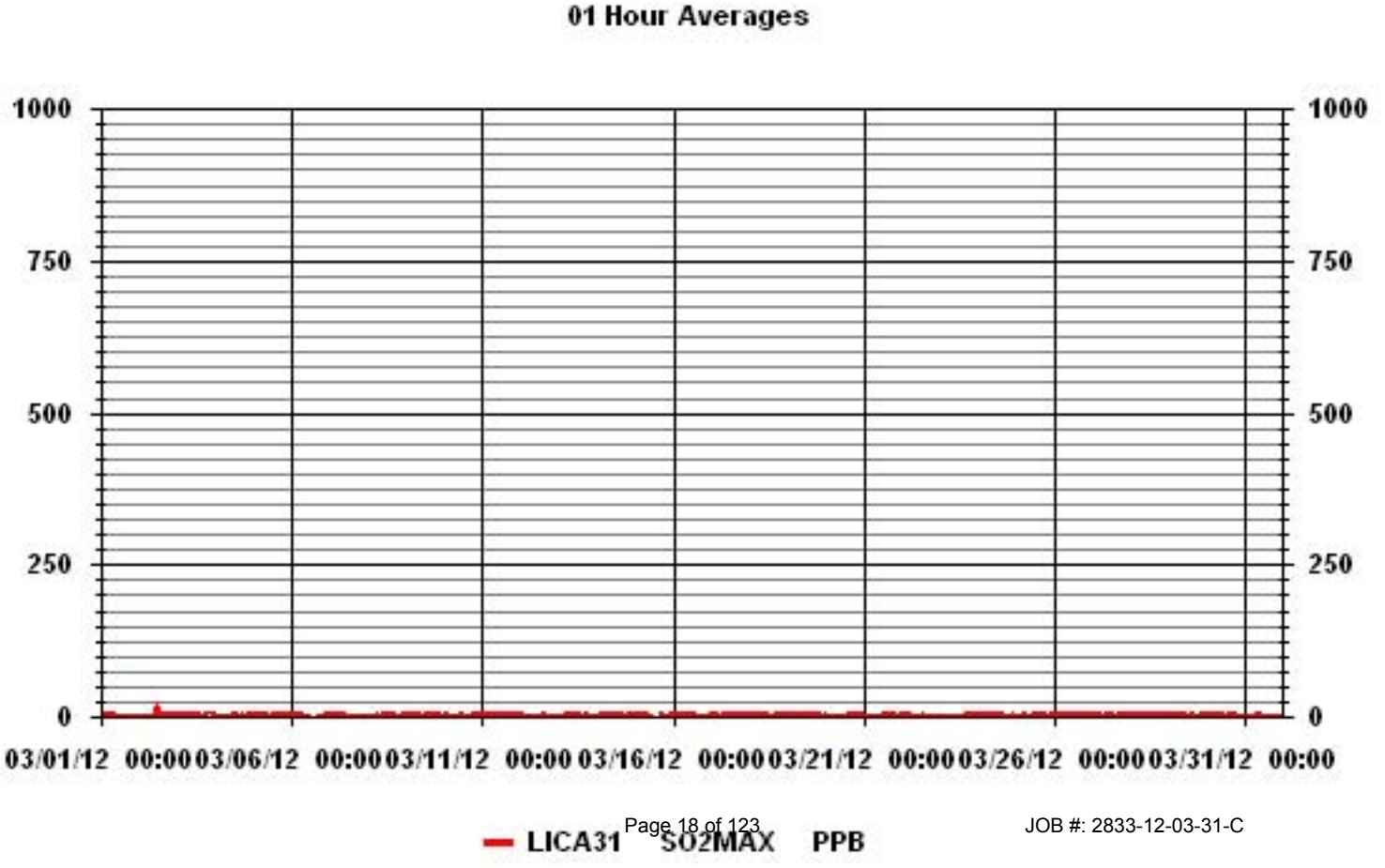
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.6 | 24 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | **13** | 8 | 3 | 3 | **IZS** | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | **13** | 1.8 | 24 |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 1 | 2 | 2 | **P** | **P** | **P** | 7 | 0 | 7 | 1.7 | 21 |
| 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | **IZS** | 0 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 0.7 | 24 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.0 | 24 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | **IZS** | **C** | **C** | **C** | **C** | 0 | **M** | 0 | 0 | 1 | 3 | 3 | 2 | 3 | 0.9 | 23 |
| 7 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 0.9 | 24 |
| 9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1.8 | 24 |
| 10 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | **IZS** | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.6 | 24 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.3 | 24 |
| 12 | 2 | 2 | 1 | 2 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 | 24 |
| 13 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | **C** | **C** | **C** | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0.6 | 24 |
| 14 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 0.9 | 24 |
| 15 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | **P** | **P** | **P** | **P** | **P** | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 3 | 1.2 | 19 |
| 16 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1.1 | 24 |
| 17 | **IZS** | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 5 | 1.4 | 24 |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 2 | 1.0 | 24 |
| 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | **IZS** | 2 | 1 | 2 | 1.1 | 24 |
| 20 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 1 | 1 | 1 | 0.4 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 2 | 2 | 2 | 0.6 | 24 |
| 22 | 2 | 3 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 3 | 0.6 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0.8 | 24 |
| 25 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 0.8 | 24 |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 27 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 2 | 1.0 | 24 |
| 28 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | **IZS** | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 3 | 1.0 | 24 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 3 | 1.0 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **P** | 2 | 0.2 | 23 |
| HOURLY MAX | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 4 | 5 | 4 | 4 | 13 | 8 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 7 | 2 | | | |
| HOURLY AVG | 0.8 | 0.9 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.9 | 0.8 | 0.9 | 1.0 | 1.4 | 1.3 | 1.0 | 0.9 | 0.8 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 1.2 | 0.8 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 497 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 13 | PPB | @ HOUR(S) | 11 | ON DAY(S) | 2 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 734 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | |
| STANDARD DEVIATION: | 0.92 | | | | | |






JOB #: 2833-12-03-31-C

LICA31
SO2_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 20 | 4.44 | 4.72 | 8.73 | 6.73 | 4.01 | 7.16 | 6.87 | 6.59 | 7.30 | 4.01 | 8.30 | 8.16 | 8.73 | 3.58 | 4.44 | 6.16 | 100.00 |
| < | 60 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 170 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.44 | 4.72 | 8.73 | 6.73 | 4.01 | 7.16 | 6.87 | 6.59 | 7.30 | 4.01 | 8.30 | 8.16 | 8.73 | 3.58 | 4.44 | 6.16 | |

Calm : .00 %

Total # Operational Hours : 698

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 20 | 31 | 33 | 61 | 47 | 28 | 50 | 48 | 46 | 51 | 28 | 58 | 57 | 61 | 25 | 31 | 43 | 698 |
| < | 60 | | | | | | | | | | | | | | | | | |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 170 | | | | | | | | | | | | | | | | | |
| < | 340 | | | | | | | | | | | | | | | | | |
| >= | 340 | | | | | | | | | | | | | | | | | |
| | Totals | 31 | 33 | 61 | 47 | 28 | 50 | 48 | 46 | 51 | 28 | 58 | 57 | 61 | 25 | 31 | 43 | |

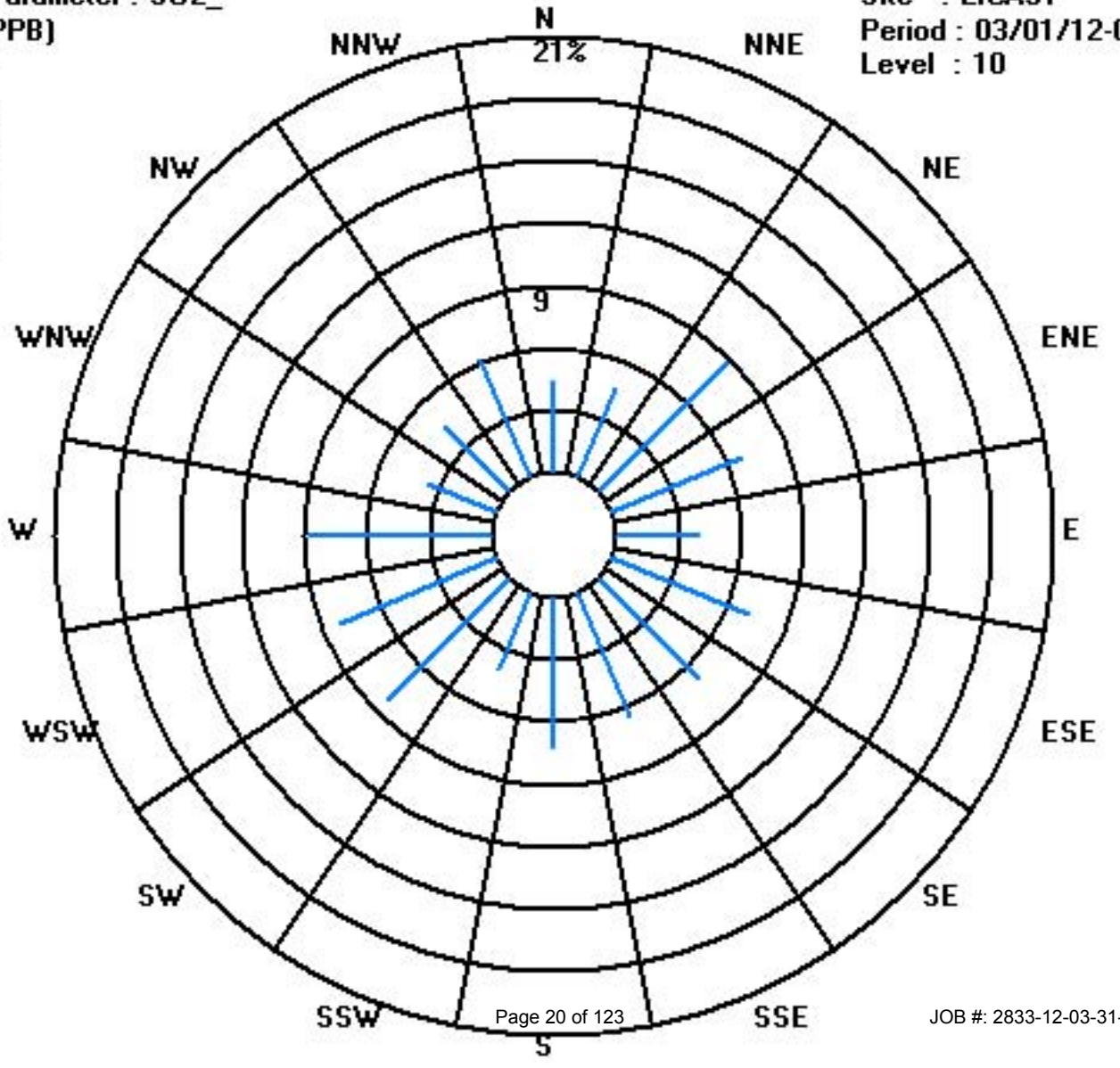
Calm : .00 %

Total # Operational Hours : 698

Logger : 31 Parameter : SO2_
Class Limits (PPB)

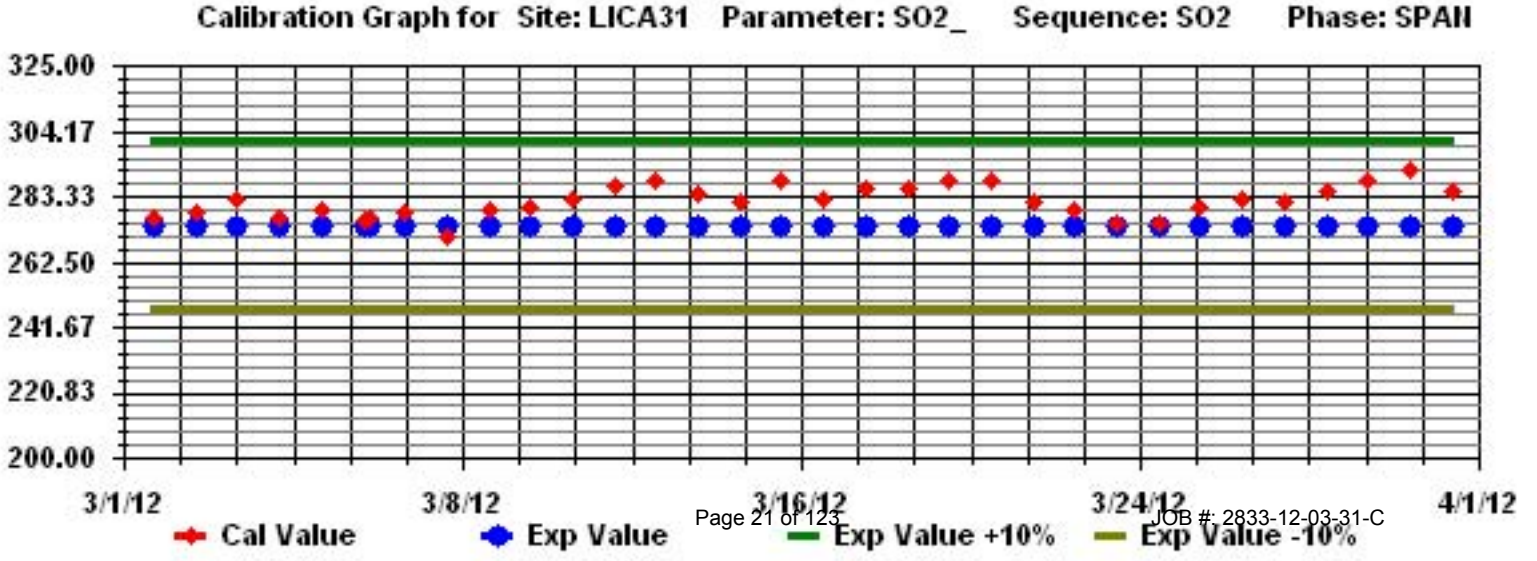
>= 340
< 340
< 170
< 110
< 60
< 20

Site : LICA31
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-31-C


Calibration Graph for Site: LICA31 Parameter: SO2_ Sequence: SO2 Phase: SPAN
325.00
304.17
283.33
262.50
241.67
220.83
200.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Hydrogen Sulphide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

MARCH 2012

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

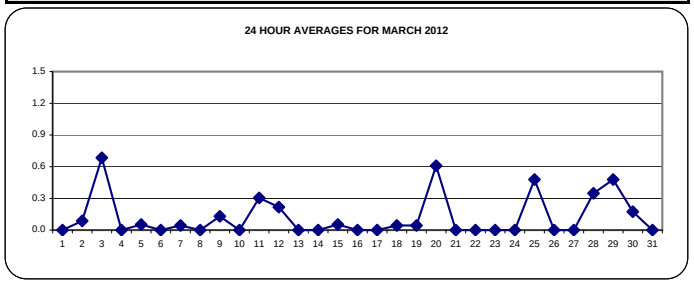
MST

| 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 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 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0.1 | 24 |
| 3 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | **P** | **P** | **P** | **N** | 0 | 1 | **0.7** | 20 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **IZS** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | **M** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 23 |
| 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 12 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 13 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 14 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 15 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **P** | **P** | **P** | **P** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 20 |
| 16 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 17 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| 18 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 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 | **IZS** | 1 | 0 | 1 | 0.0 | 24 |
| 20 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 1 | 0.6 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.5 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.3 | 24 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.5 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 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 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 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 | | | |

**STATUS FLAG CODES**

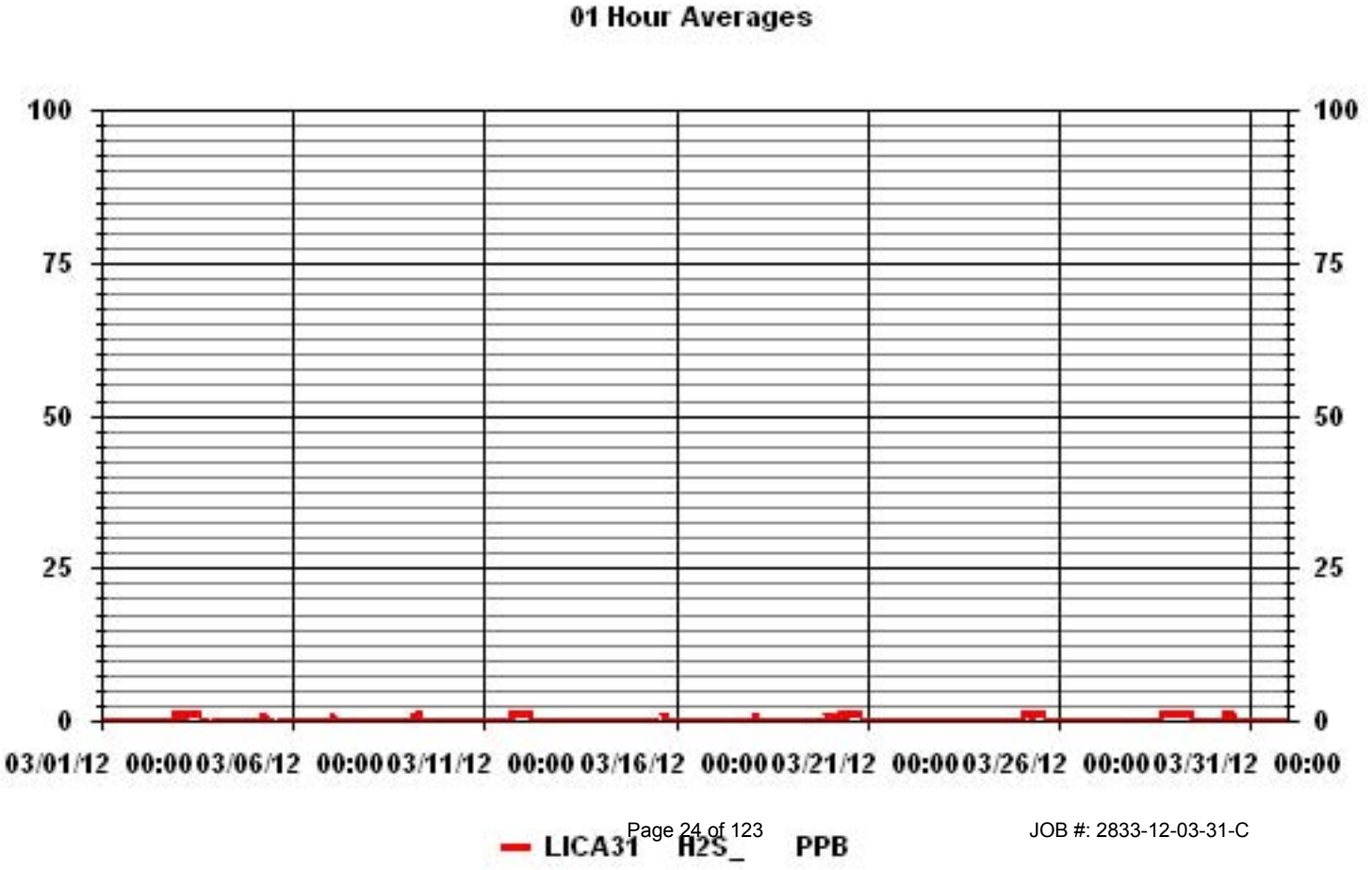
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |

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




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 83 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 1 | PPB | @ HOUR(S) | VAR | ON DAY(S) | VAR |
| MAXIMUM 24-HR AVERAGE: | 0.7 | PPB | | | ON DAY(S) | 3 |
| | | | | VAR-VARIOUS | | |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 735 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | | 98.8 | % |
| STANDARD DEVIATION: | 0.32 | | MONTHLY AVERAGE: | | 0.12 | PPB |






JOB #: 2833-12-03-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST.LINA*

MARCH 2012

**HYDROGEN SULPHIDE MAX instantaneous maximum in ppb**

MST

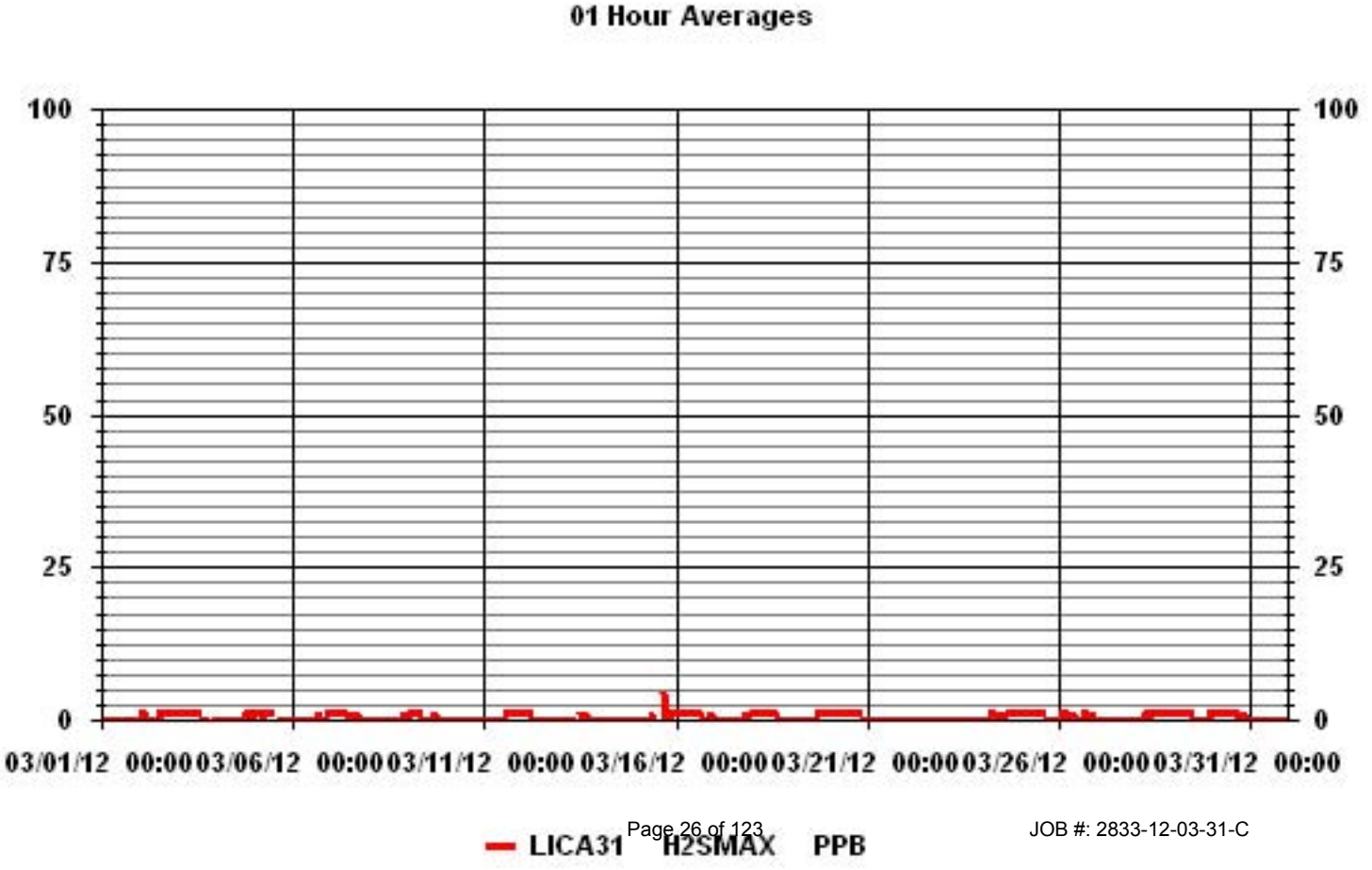
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.5 | 24 |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | **P** | **P** | **P** | **N** | 0 | 1 | 0.7 | 20 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0.2 | 24 |
| 5 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.6 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | **M** | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0.2 | 23 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.5 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.0 | 24 |
| 9 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.5 | 24 |
| 12 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 13 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | **C** | **C** | **C** | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 14 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 15 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **P** | **P** | **P** | **P** | **P** | **4** | 0 | 0 | 0 | 0 | 1 | 1 | 1 | **4** | 0.4 | 19 |
| 16 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.7 | 24 |
| 17 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **IZS** | 1 | 0.0 | 24 |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 0.7 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 0.3 | 24 |
| 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 1 | 0.9 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.5 | 24 |
| 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.7 | 24 |
| 26 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.3 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.7 | 24 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.5 | 24 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.7 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **P** | 0 | 0.0 | 23 |
| HOURLY MAX | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| HOURLY AVG | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.2 | 0.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 225 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 4 | PPB | @ HOUR(S) | 16 | ON DAY(S) | 15 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 733 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | |
| STANDARD DEVIATION: | 0.49 | | | | | |






JOB #: 2833-12-03-31-C

LICA31
H2S_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3 | 4.44 | 4.73 | 8.75 | 6.74 | 4.01 | 6.59 | 6.88 | 6.59 | 7.60 | 4.01 | 8.32 | 8.46 | 8.75 | 3.44 | 4.44 | 6.16 | 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 | 4.44 | 4.73 | 8.75 | 6.74 | 4.01 | 6.59 | 6.88 | 6.59 | 7.60 | 4.01 | 8.32 | 8.46 | 8.75 | 3.44 | 4.44 | 6.16 | |

Calm : .00 %

Total # Operational Hours : 697

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3 | 31 | 33 | 61 | 47 | 28 | 46 | 48 | 46 | 53 | 28 | 58 | 59 | 61 | 24 | 31 | 43 | 697 |
| < 10 | | | | | | | | | | | | | | | | | |
| < 50 | | | | | | | | | | | | | | | | | |
| >= 50 | | | | | | | | | | | | | | | | | |
| Totals | 31 | 33 | 61 | 47 | 28 | 46 | 48 | 46 | 53 | 28 | 58 | 59 | 61 | 24 | 31 | 43 | |

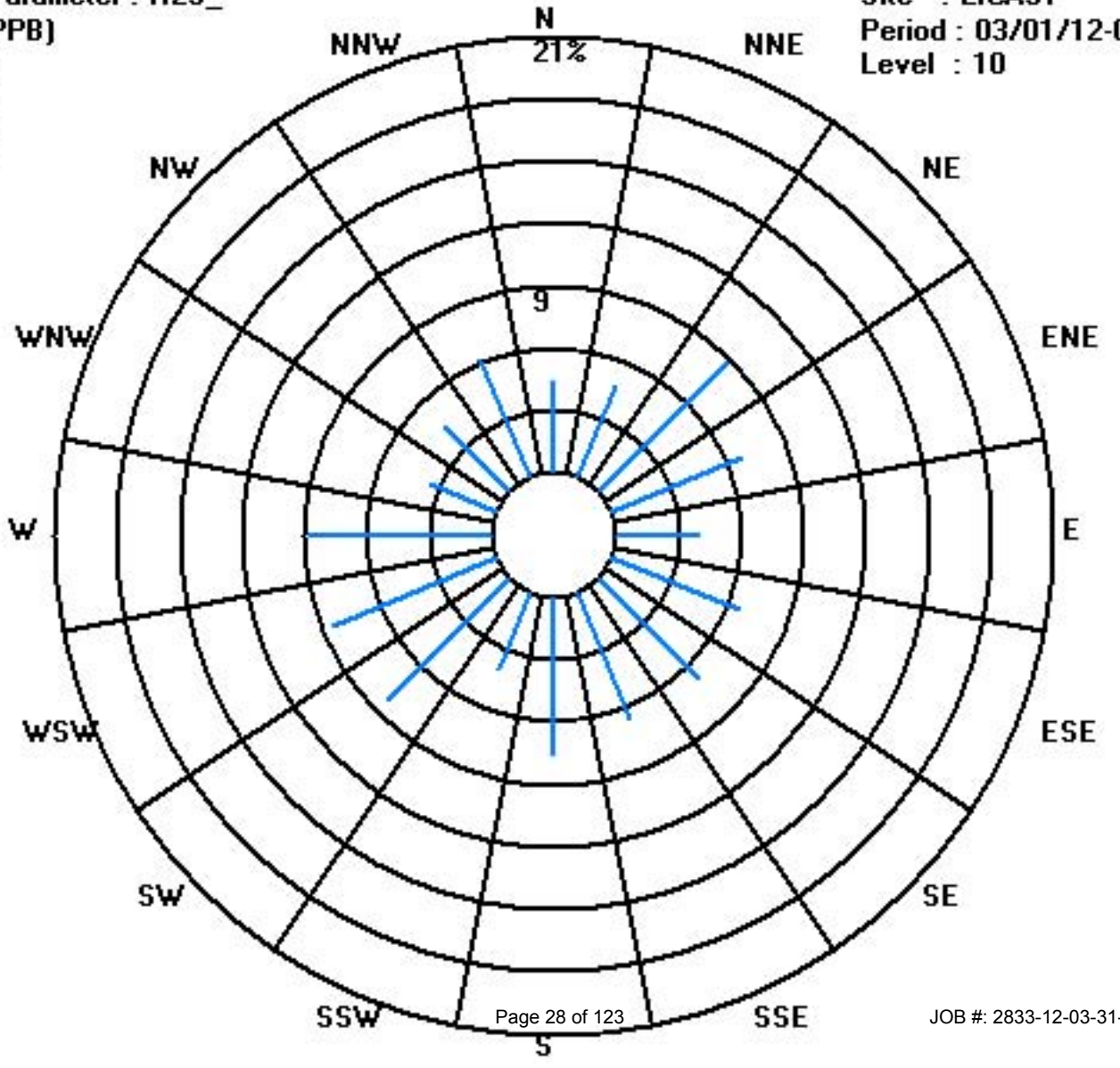
Calm : .00 %

Total # Operational Hours : 697

Logger : 31 Parameter : H2S_
Class Limits (PPB)

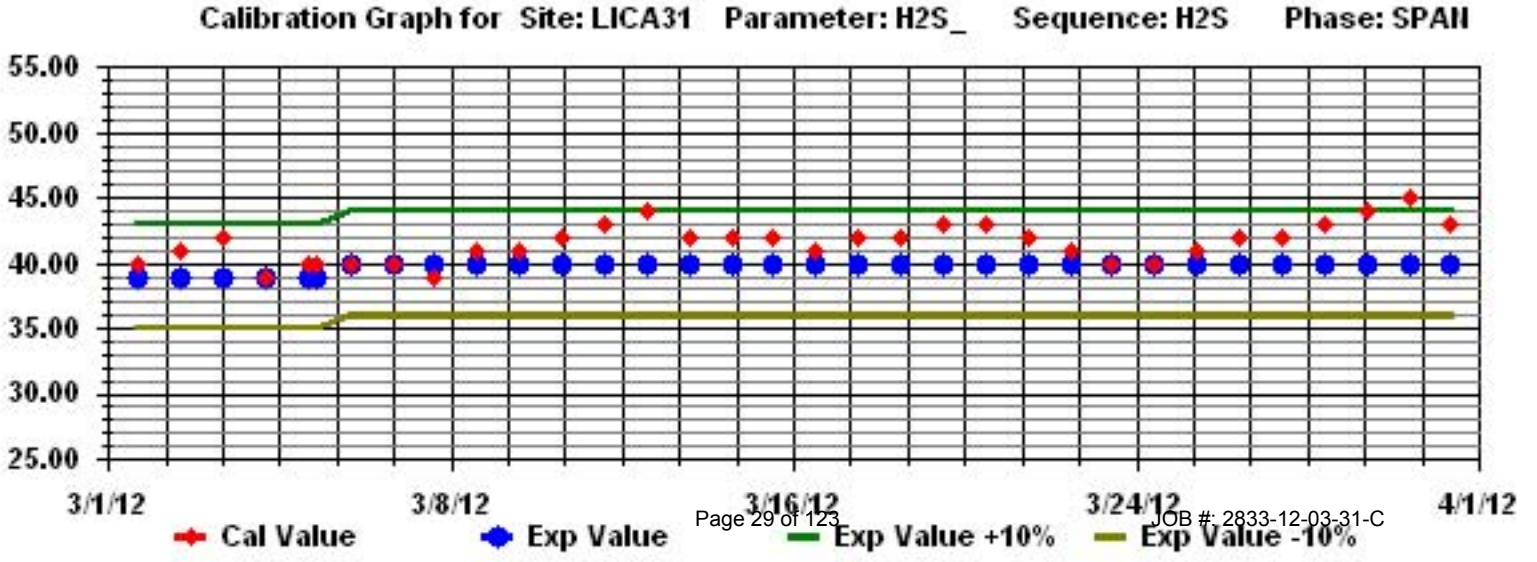
>= 50
< 50
< 10
< 3

Site : LICA31
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-31-C


Calibration Graph for Site: LICA31 Parameter: H2S_ Sequence: H2S Phase: SPAN
55.00
50.00
45.00
40.00
35.00
30.00
25.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Hydrocarbons

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION -ST.LINA

MARCH 2012

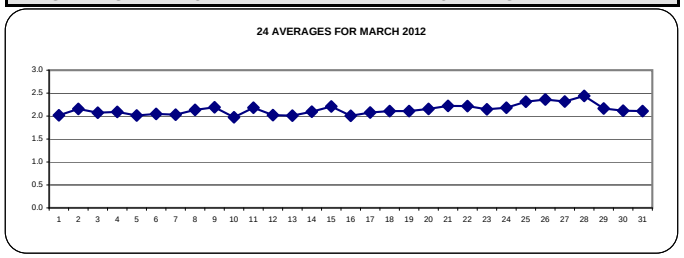
**TOTAL HYDROCARBONS** hourly averages in ppm

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 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.0 | 24 |
| 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2 | 2.1 | **IZS** | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 24 |
| 3 | 2.2 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 1.9 | 2 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | **P** | **P** | **P** | **P** | 2.1 | 2.2 | 2.1 | 20 |
| 4 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.1 | 24 |
| 5 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.0 | 24 |
| 6 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | **C** | **C** | **C** | **C** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 24 |
| 7 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.0 | 24 |
| 8 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.1 | 24 |
| 9 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | **IZS** | 2.4 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2.4 | 2.2 | 24 |
| 10 | 1.9 | 1.9 | 1.9 | 1.9 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.0 | 2.0 | 24 |
| 11 | 2.1 | 2.2 | 2 | 2 | 2 | 2 | **IZS** | 2.1 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.4 | 2.3 | 2.1 | 2.2 | 2.1 | 2.4 | 2.2 | 24 |
| 12 | 2.1 | 2.1 | 2.2 | 2 | 1.9 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.0 | 24 |
| 13 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2.1 | 2.1 | 2.2 | **C** | **C** | 1.9 | 1.9 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.0 | 24 |
| 14 | 2 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 24 |
| 15 | 2.1 | 2.2 | **IZS** | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | **P** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | 2.3 | 2.2 | 12 |
| 16 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **C** | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.0 | 16 |
| 17 | **IZS** | 2 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2.3 | 2.1 | 24 |
| 18 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.2 | 2.1 | 24 |
| 19 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 20 | 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 | 2.3 | 2.3 | 2.3 | **IZS** | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 24 |
| 21 | 2.2 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **IZS** | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 24 |
| 22 | 2.2 | 2.2 | 2.2 | 2.4 | 2.6 | 2.9 | 2.8 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.9 | 2.2 | 24 |
| 23 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | **IZS** | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 24 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.5 | 2.2 | 24 |
| 25 | 2.4 | 2.4 | 2.4 | 2.3 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | **IZS** | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | 2.5 | 2.5 | 2.3 | 24 |
| 26 | 2.5 | 2.6 | 2.5 | 2.5 | 2.4 | 2.4 | 2.5 | 2.6 | 2.5 | 2.5 | 2.4 | 2.3 | 2.3 | 2.2 | **IZS** | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.1 | 2.2 | 2.2 | 2.6 | **2.4** | 24 |
| 27 | 2.2 | 2.2 | 2.3 | 2.2 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | **IZS** | 2.2 | 2.1 | 2.1 | 2.2 | 2.3 | 2.5 | 2.5 | 2.5 | 2.5 | 2.4 | 2.5 | 2.3 | 24 |
| 28 | 2.5 | 2.4 | 2.5 | 2.7 | 2.9 | 3.1 | 3.1 | 3.1 | 2.7 | 2.4 | 2.3 | 2.2 | **IZS** | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **3.1** | **2.4** | 24 |
| 29 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | **IZS** | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.2 | 24 |
| 30 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.3 | 2.4 | 2.2 | 2.1 | **IZS** | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.4 | 2.1 | 24 |
| 31 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 24 |
| HOURLY MAX | 2.5 | 2.6 | 2.5 | 2.7 | 2.9 | 3.1 | 3.1 | 3.1 | 2.7 | 2.5 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.3 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | | | |
| HOURLY AVG | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | | | |

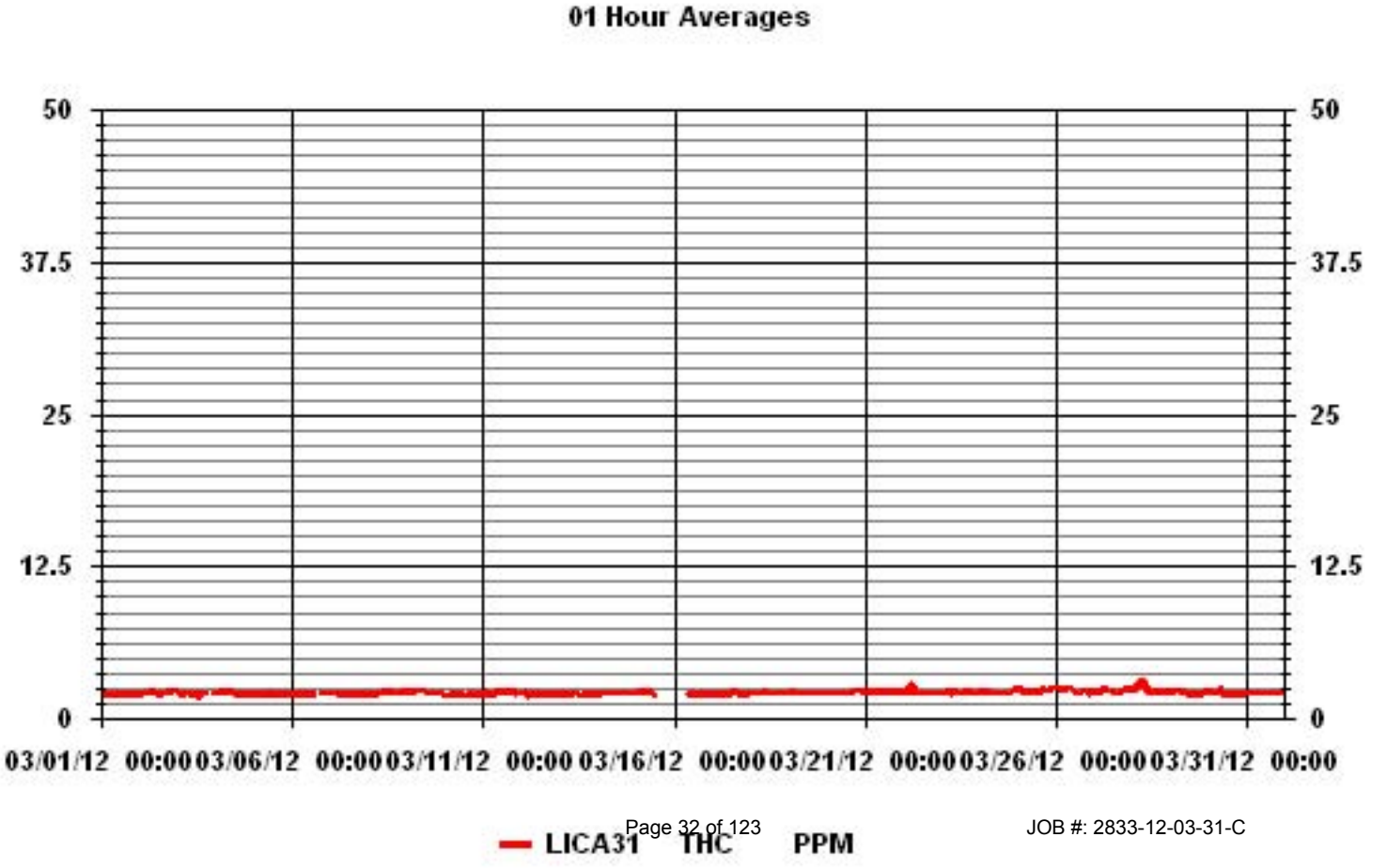
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 682 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 3.1 | PPM | @ HOUR(S) | VAR | ON DAY(S) | 28 |
| MAXIMUM 24-HR AVERAGE: | 2.4 | PPM | | | ON DAY(S) | 26, 28 |
| | | | | | VAR- VARIOUS | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 720 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | AMD OPERATION UPTIME: | | 96.8 | % |
| STANDARD DEVIATION: | 0.15 | | MONTHLY AVERAGE: | | 2.14 | PPM |






JOB #: 2833-12-03-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

MARCH 2012

**TOTAL HYDROCARBONS MAX** instantaneous maximum in ppm

MST

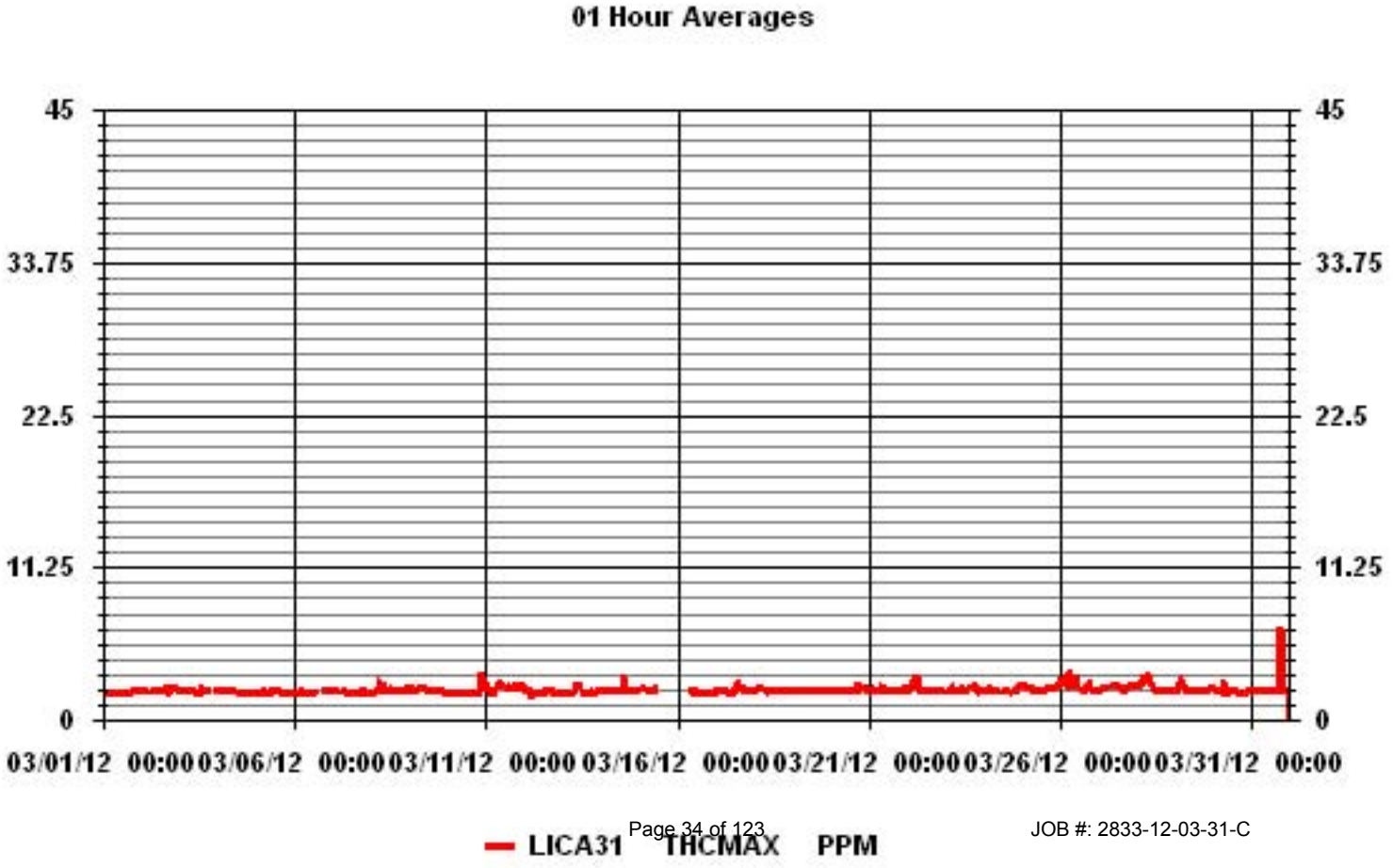
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 24 |
| 2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.4 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.2 | 24 |
| 3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.4 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | **P** | **P** | **P** | **P** | 2.1 | 2.4 | 2.1 | 20 |
| 4 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.2 | 2.1 | 24 |
| 5 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.2 | 2.2 | 2.2 | **IZS** | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2 | 2 | 2.2 | 2.1 | 24 |
| 6 | 2 | 2 | 2 | 2.1 | 2.2 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2.1 | **C** | **C** | **C** | **C** | **C** | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 24 |
| 7 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2.2 | 2.1 | 24 |
| 8 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2.6 | 2.4 | 2.5 | 2.1 | **IZS** | 2.3 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.6 | 2.2 | 24 |
| 9 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.4 | 2.4 | **IZS** | 2.5 | 2.4 | 2.3 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2 | 2.5 | 2.2 | 24 |
| 10 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | **IZS** | 2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 3.5 | 3.2 | 2.9 | 3.5 | 2.2 | 24 |
| 11 | 2.1 | 2.4 | 2.3 | 2 | 2 | 2 | **IZS** | 2.5 | 2.7 | 2.6 | 2.8 | 2.7 | 2.5 | 2.4 | 2.6 | 2.5 | 2.4 | 2.5 | 2.6 | 2.7 | 2.6 | 2.2 | 2.5 | 2.5 | 2.8 | 2.4 | 24 |
| 12 | 2.3 | 2.2 | 2.3 | 2.2 | 1.9 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2.3 | 2.1 | 24 |
| 13 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2.1 | 2.7 | 2.3 | 2.6 | **C** | **C** | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.1 | 2.7 | 2.1 | 24 |
| 14 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 3.4 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 3.4 | 2.2 | 24 |
| 15 | 2.2 | 2.3 | **IZS** | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.5 | **P** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | 2.5 | 2.3 | 11 |
| 16 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **C** | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.0 | 16 |
| 17 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2 | 2 | 2.1 | 2.4 | 2.6 | 2.7 | 2.4 | 2.3 | 2.4 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | **IZS** | 2.7 | 2.2 | 24 |
| 18 | 2.2 | 2.2 | 2.3 | 2.3 | 2.5 | 2.4 | 2.4 | 2.3 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | **IZS** | 2.2 | 2.5 | 2.2 | 24 |
| 19 | 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 | 2.1 | **IZS** | 2.1 | 2.1 | 2.2 | 2.1 | 24 |
| 20 | 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 | 2.1 | 2.4 | 2.3 | 2.7 | 2.3 | 2.3 | **IZS** | 2.4 | 2.3 | 2.3 | 2.7 | 2.2 | 24 |
| 21 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.3 | 2.5 | 2.3 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | **IZS** | 2.2 | 2.3 | 2.3 | 2.3 | 2.5 | 2.3 | 24 |
| 22 | 2.3 | 2.2 | 2.3 | 2.5 | 2.8 | 3.1 | 3.1 | 2.5 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 3.1 | 2.3 | 24 |
| 23 | 2.1 | 2.2 | 2.2 | 2.2 | 2.4 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.4 | 2.4 | 2.4 | **IZS** | 2.6 | 2.4 | 2.1 | 2.2 | 2.3 | 2.2 | 2.6 | 2.3 | 24 |
| 24 | 2.2 | 2.3 | 2.2 | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.1 | 2.2 | 2.2 | 2.2 | 2.4 | 2.5 | 2.5 | 2.5 | 2.2 | 24 |
| 25 | 2.5 | 2.5 | 2.5 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | **IZS** | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.4 | 2.5 | 2.5 | 2.5 | 2.3 | 24 |
| 26 | 3 | 3.1 | 3 | 3.2 | 2.7 | 2.5 | 2.6 | 3.2 | 3 | 3.1 | 2.5 | 2.4 | 2.4 | 2.3 | **IZS** | 2.3 | 2.4 | 2.6 | 2.7 | 2.4 | 2.2 | 2.1 | 2.2 | 2.2 | 3.2 | 2.6 | 24 |
| 27 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.5 | 2.6 | 2.6 | 2.6 | 2.5 | 2.5 | **IZS** | 2.4 | 2.2 | 2.1 | 2.2 | 2.4 | 2.6 | 2.6 | 2.5 | 2.5 | 2.5 | 2.6 | 2.4 | 24 |
| 28 | 2.5 | 2.5 | 2.6 | 2.8 | 3.1 | 3.1 | 3.2 | 3.2 | 2.9 | 2.7 | 2.3 | 2.2 | **IZS** | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 3.2 | 2.5 | 24 |
| 29 | 2.2 | 2.2 | 2.7 | 2.9 | 2.5 | 2.5 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.3 | 2.3 | 2.9 | 2.3 | 24 |
| 30 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.9 | 2.7 | 2.3 | 2.1 | **IZS** | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.9 | 2.2 | 24 |
| 31 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **IZS** | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | **6.8** | 2.1 | 2.1 | 2.1 | 2.1 | **P** | **6.8** | 2.3 | 23 |
| HOURLY MAX | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 7 | 3 | 3 | 4 | 3 | 3 | | | |
| HOURLY AVG | 2.2 | 2.2 | 2.2 | 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 | 2.2 | 2.4 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | | | |

**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MISSING DATA |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |
| BB | - BELOW BACKGROUND OF 1.5 PPM | | |

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 679 | | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 6.8 | PPM | @ HOUR(S) | 18 | ON DAY(S) | 31 | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | | 718 | HRS |
| MONTHLY CALIBRATION TIME: | 8 | HRS | | | | | |
| STANDARD DEVIATION: | 0.29 | | | | | | |






JOB #: 2833-12-03-31-C

LICA31
THC / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 4.54 | 4.83 | 8.94 | 6.89 | 3.95 | 6.89 | 5.86 | 6.59 | 7.62 | 3.51 | 8.06 | 8.50 | 8.94 | 3.51 | 4.54 | 6.30 | 99.56 |
| < | 10.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .43 | .00 | .00 | .00 | .00 | .00 | .00 | .43 |
| < | 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.54 | 4.83 | 8.94 | 6.89 | 3.95 | 6.89 | 5.86 | 6.59 | 7.62 | 3.95 | 8.06 | 8.50 | 8.94 | 3.51 | 4.54 | 6.30 | |

Calm : .00 %

Total # Operational Hours : 682

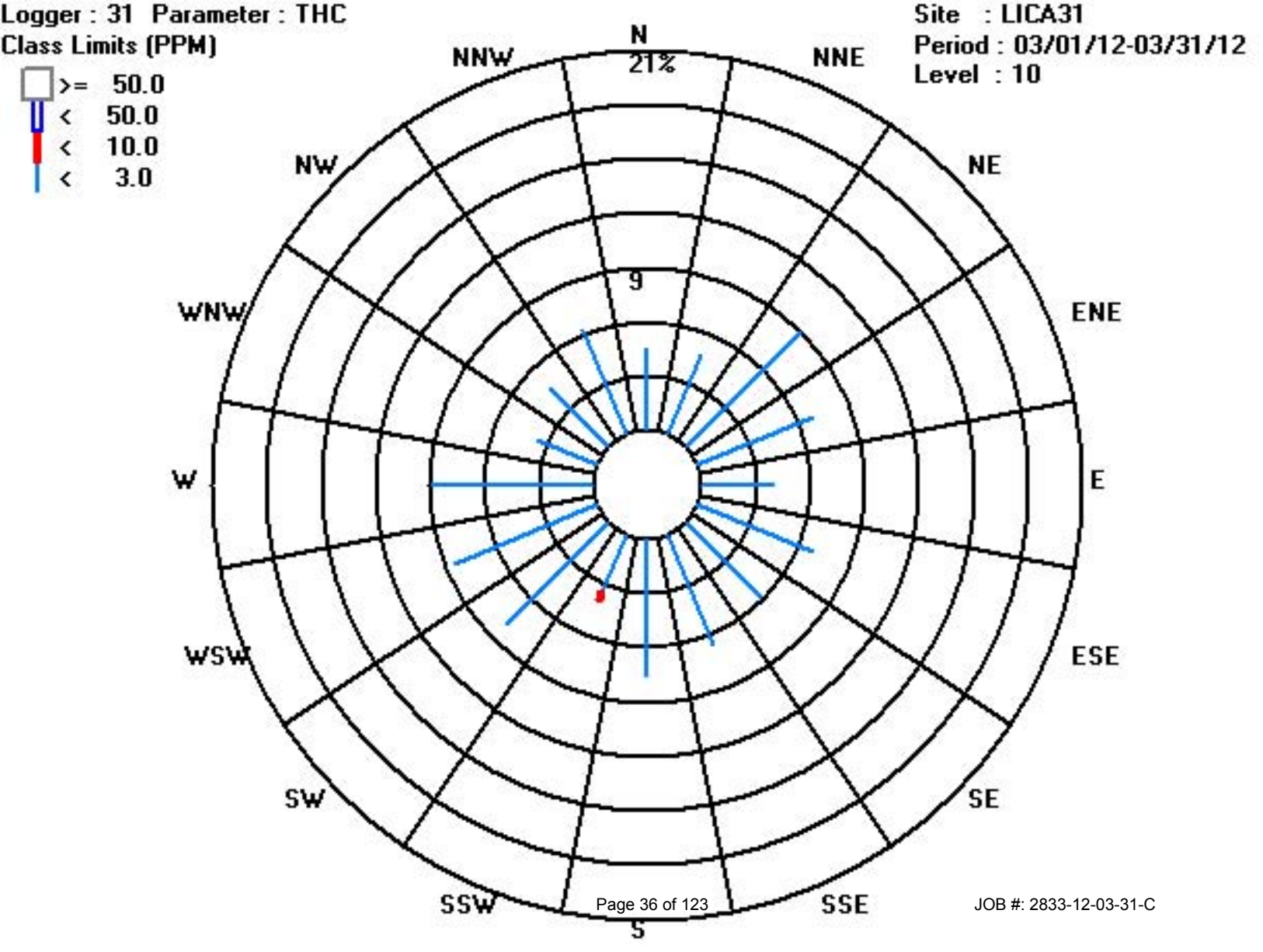
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 31 | 33 | 61 | 47 | 27 | 47 | 40 | 45 | 52 | 24 | 55 | 58 | 61 | 24 | 31 | 43 | 679 |
| < | 10.0 | | | | | | | | | | 3 | | | | | | | 3 |
| < | 50.0 | | | | | | | | | | | | | | | | | |
| >= | 50.0 | | | | | | | | | | | | | | | | | |
| | Totals | 31 | 33 | 61 | 47 | 27 | 47 | 40 | 45 | 52 | 27 | 55 | 58 | 61 | 24 | 31 | 43 | |

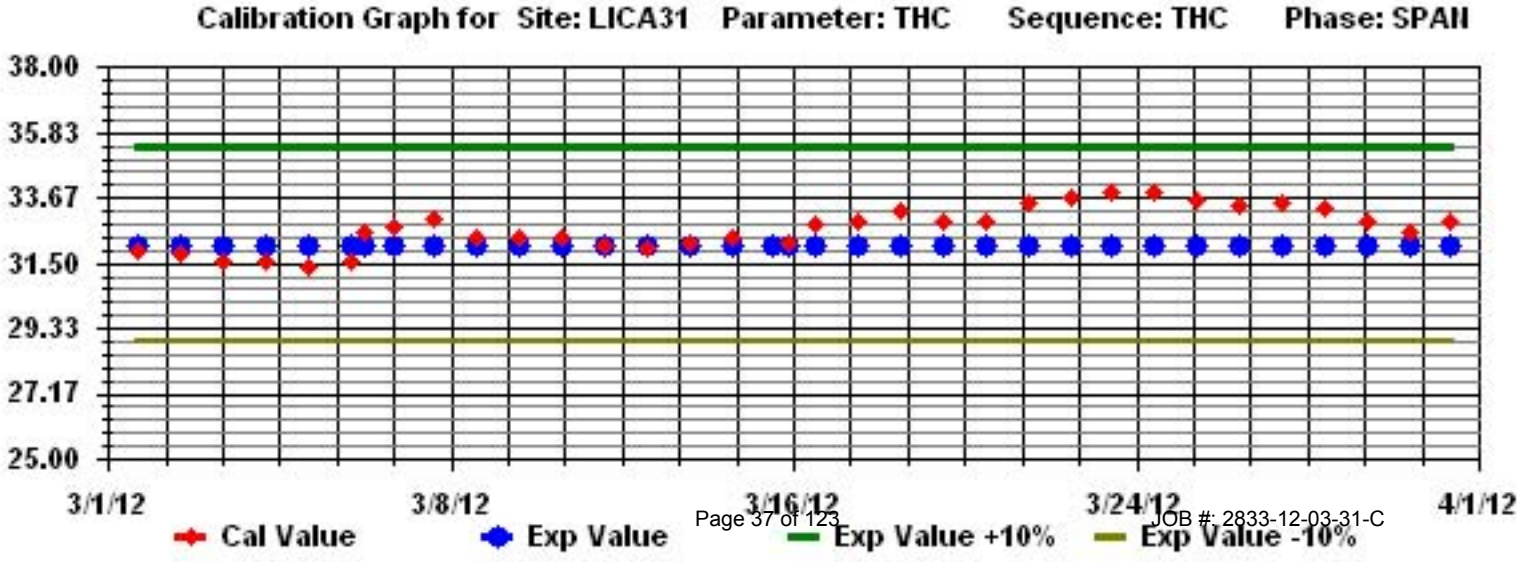
Calm : .00 %

Total # Operational Hours : 682






JOB #: 2833-12-03-31-C


Calibration Graph for Site: LICA31 Parameter: THC Sequence: THC Phase: SPAN
38.00
35.83
33.67
31.50
29.33
27.17
25.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Ozone

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

MARCH 2012

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

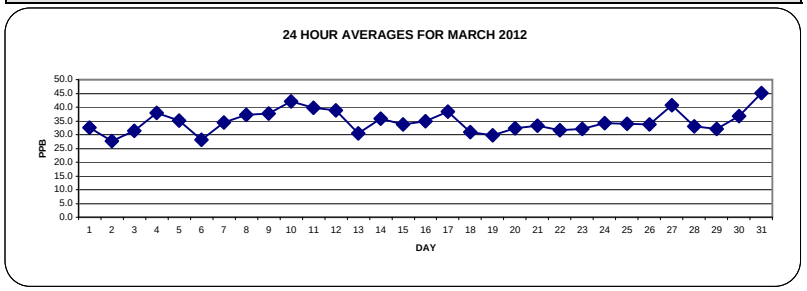
MST

| 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 | 34 | 33 | 33 | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | **IZS** | 35 | 33 | 32 | 31 | 31 | 30 | 30 | 35 | 32.7 | 24 |
| 2 | 30 | 30 | 29 | 29 | 27 | 27 | 26 | 23 | 24 | 24 | 25 | 26 | 30 | 33 | 34 | **IZS** | 31 | 30 | 28 | 27 | 27 | 26 | 25 | 25 | 34 | 27.7 | 24 |
| 3 | 27 | 29 | 30 | 31 | 30 | 27 | 28 | 29 | 29 | 28 | 29 | 30 | 33 | 34 | **IZS** | 34 | 34 | 34 | 35 | **P** | **P** | **P** | 38 | 38 | 38 | 31.4 | 21 |
| 4 | 39 | 38 | 38 | 37 | 37 | 36 | 34 | 35 | 36 | 34 | 34 | 37 | 38 | **IZS** | 40 | 41 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 40 | 41 | 37.9 | 24 |
| 5 | 39 | 39 | 38 | 37 | 37 | 36 | 35 | 35 | 35 | 35 | 33 | 32 | **IZS** | 34 | 36 | 36 | 36 | 35 | 34 | 33 | 33 | 33 | 33 | 32 | 39 | 35.0 | 24 |
| 6 | 32 | 30 | 30 | 30 | 29 | 30 | 30 | 31 | 31 | 31 | 32 | **IZS** | **C** | **C** | **C** | **C** | 33 | 24 | 27 | 26 | 25 | 22 | 21 | 21 | 33 | 28.2 | 24 |
| 7 | 22 | 23 | 23 | 23 | 26 | 30 | 32 | 34 | 34 | 35 | **IZS** | 36 | 37 | 39 | 40 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 41 | 41 | 41 | 34.5 | 24 |
| 8 | 41 | 38 | 36 | 36 | 36 | 35 | 32 | 33 | 33 | **IZS** | 34 | 35 | 35 | 36 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 37.3 | 24 |
| 9 | 41 | 40 | 39 | 38 | 38 | 37 | 36 | 35 | **IZS** | 34 | 34 | 35 | 36 | 37 | 39 | 40 | 40 | 38 | 39 | 39 | 39 | 37 | 37 | 39 | 41 | 37.7 | 24 |
| 10 | 41 | 43 | 43 | 42 | 40 | 38 | 39 | **IZS** | 37 | 37 | 40 | 42 | 44 | 45 | 45 | 45 | 46 | 44 | 44 | 44 | 43 | 42 | 42 | 42 | 46 | 42.1 | 24 |
| 11 | 39 | 39 | 44 | 42 | 41 | 40 | **IZS** | 39 | 39 | 39 | 40 | 42 | 43 | 43 | 44 | 43 | 42 | 41 | 38 | 35 | 35 | 36 | 35 | 35 | 44 | 39.7 | 24 |
| 12 | 35 | 33 | 32 | 37 | 42 | **IZS** | 38 | 38 | 38 | 39 | 40 | 41 | 43 | 44 | 44 | 43 | 40 | 40 | 40 | 38 | 38 | 37 | 35 | 36 | 44 | 38.7 | 24 |
| 13 | 36 | 35 | 33 | 33 | **IZS** | 32 | 31 | 30 | 30 | 29 | 29 | 29 | **C** | **C** | **C** | 31 | 30 | 30 | 30 | 27 | 27 | 28 | 28 | 31 | 36 | 30.5 | 24 |
| 14 | 32 | 31 | 30 | **IZS** | 29 | 28 | 28 | 27 | 27 | 28 | 30 | 35 | 41 | 43 | 44 | 44 | 44 | 43 | 42 | 41 | 40 | 39 | 40 | 40 | 44 | 35.9 | 24 |
| 15 | 39 | 37 | **IZS** | 34 | 32 | 31 | 30 | 28 | 28 | 31 | 34 | 36 | **P** | **P** | **P** | **P** | 37 | 38 | 37 | 36 | 35 | 34 | 32 | 31 | 39 | 33.7 | 20 |
| 16 | 29 | **IZS** | 26 | 25 | 23 | 23 | 22 | 21 | 21 | 27 | 33 | 36 | 38 | 43 | 46 | 43 | 42 | 44 | 45 | 44 | 43 | 43 | 43 | 41 | 46 | 34.8 | 24 |
| 17 | **IZS** | 34 | 35 | 37 | 37 | 34 | 33 | 32 | 35 | 39 | 39 | 41 | 40 | 38 | 40 | 40 | 41 | 41 | 42 | 43 | 44 | 41 | 39 | **IZS** | 44 | 38.4 | 24 |
| 18 | 38 | 37 | 36 | 34 | 33 | 32 | 31 | 30 | 29 | 27 | 25 | 26 | 27 | 28 | 29 | 32 | 37 | 37 | 32 | 31 | 29 | 26 | **IZS** | 26 | 38 | 31.0 | 24 |
| 19 | 28 | 28 | 28 | 29 | 31 | 31 | 31 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 31 | 31 | 31 | 31 | 31 | 30 | **IZS** | 29 | 31 | 31 | 29.8 | 24 |
| 20 | 31 | 30 | 31 | 30 | 31 | 32 | 31 | 31 | 31 | 30 | 31 | 32 | 34 | 35 | 36 | 37 | 35 | 35 | 34 | 33 | **IZS** | 30 | 31 | 30 | 37 | 32.2 | 24 |
| 21 | 29 | 28 | 27 | 27 | 29 | 28 | 27 | 26 | 25 | 26 | 32 | 36 | 37 | 37 | 38 | 39 | 39 | 40 | 41 | **IZS** | 39 | 39 | 38 | 36 | 41 | 33.2 | 24 |
| 22 | 38 | 39 | 36 | 32 | 31 | 25 | 24 | 26 | 27 | 29 | 30 | 31 | 32 | 32 | 32 | 34 | 33 | 33 | **IZS** | 33 | 33 | 33 | 33 | 33 | 39 | 31.7 | 24 |
| 23 | 33 | 32 | 32 | 32 | 31 | 31 | 31 | 31 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | **IZS** | 33 | 32 | 32 | 31 | 30 | 31 | 33 | 32.0 | 24 |
| 24 | 31 | 31 | 31 | 30 | 28 | 27 | 29 | 32 | 33 | 33 | 33 | 34 | 34 | 36 | 37 | 38 | **IZS** | 40 | 40 | 40 | 38 | 37 | 37 | 35 | 40 | 34.1 | 24 |
| 25 | 35 | 34 | 33 | 32 | 32 | 32 | 32 | 32 | 32 | 34 | 36 | 36 | 36 | 36 | 37 | **IZS** | 40 | 40 | 37 | 34 | 33 | 31 | 30 | 29 | 40 | 34.0 | 24 |
| 26 | 28 | 27 | 26 | 27 | 27 | 24 | 24 | 23 | 24 | 25 | 28 | 31 | 32 | 35 | **IZS** | 42 | 42 | 43 | 43 | 44 | 45 | 46 | 45 | 45 | 46 | 33.7 | 24 |
| 27 | 45 | 42 | 41 | 41 | 39 | 37 | 36 | 37 | 39 | 41 | 41 | 42 | 43 | **IZS** | 46 | 45 | 44 | 42 | 43 | 43 | 41 | 38 | 36 | 35 | 46 | 40.7 | 24 |
| 28 | 33 | 33 | 33 | 31 | 31 | 32 | 32 | 32 | 32 | 34 | 35 | 37 | **IZS** | 36 | 37 | 40 | 39 | 38 | 36 | 34 | 30 | 26 | 25 | 24 | 40 | 33.0 | 24 |
| 29 | 23 | 21 | 20 | 19 | 18 | 16 | 15 | 16 | 16 | 19 | 29 | **IZS** | 42 | 44 | 47 | 48 | 48 | 47 | 46 | 44 | 44 | 41 | 39 | 38 | 48 | 32.2 | 24 |
| 30 | 36 | 35 | 33 | 31 | 28 | 27 | 24 | 22 | 25 | 27 | **IZS** | 31 | 33 | 39 | 44 | 46 | 47 | 48 | 48 | 47 | 45 | 45 | 43 | 41 | 48 | 36.7 | 24 |
| 31 | 42 | 42 | 42 | 42 | 38 | 36 | 35 | 35 | 40 | **IZS** | 48 | 45 | 48 | 50 | 51 | 51 | 51 | 51 | 50 | 51 | 50 | 48 | 48 | 46 | **51** | **45.2** | 24 |
| HOURLY MAX | 45 | 43 | 44 | 42 | 42 | 40 | 39 | 39 | 40 | 41 | 48 | 45 | 48 | 50 | 51 | 51 | 51 | 51 | 50 | 51 | 50 | 48 | 48 | 46 | | | |
| HOURLY AVG | 34.2 | 33.7 | 32.9 | 32.7 | 32.1 | 30.9 | 30.3 | 30.2 | 30.8 | 31.3 | 33.4 | 34.8 | 36.6 | 37.4 | 39.3 | 39.6 | 39.1 | 38.7 | 38.3 | 37.3 | 36.8 | 35.8 | 35.4 | 34.8 | | | |

**STATUS FLAG CODES**

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

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



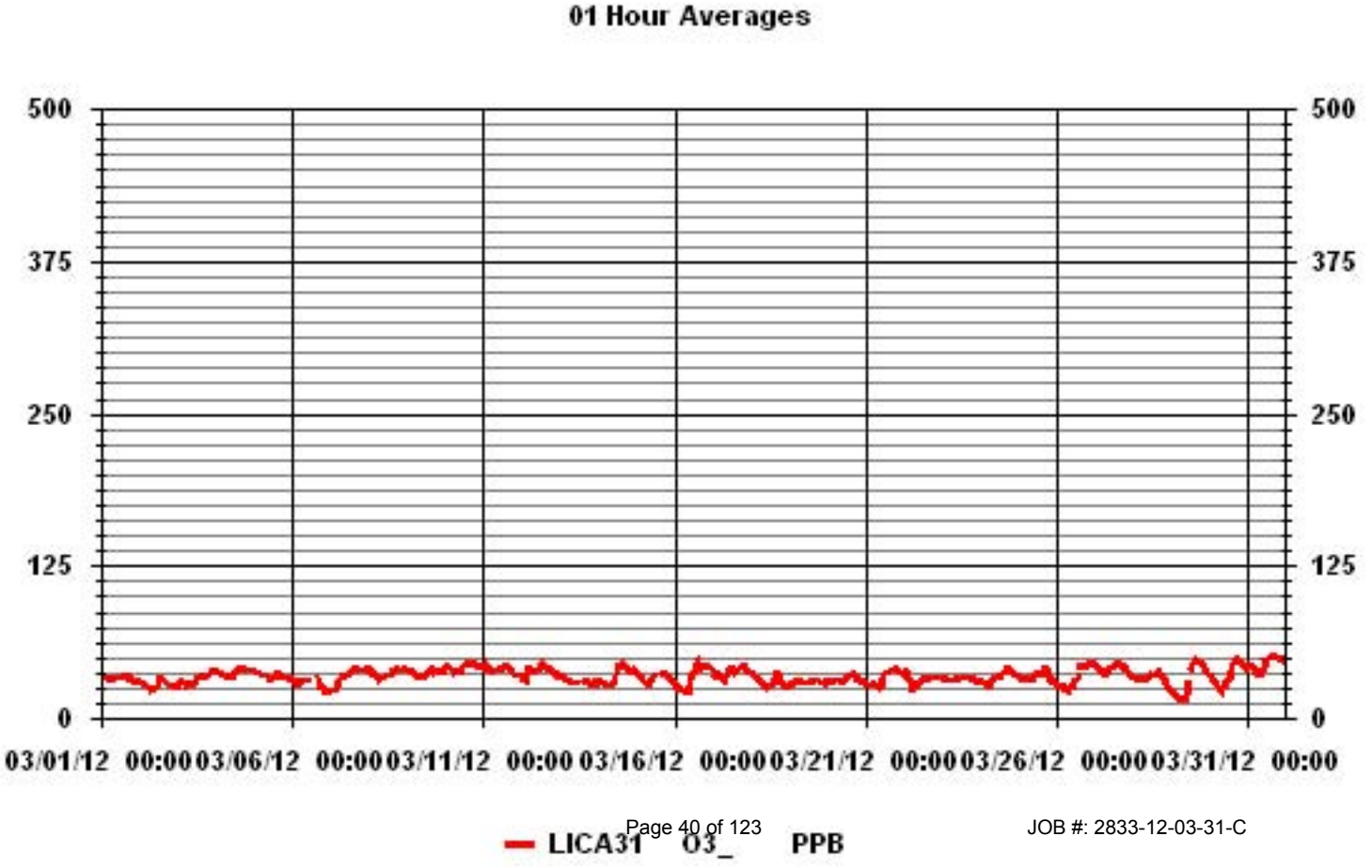

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 698 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 51 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 31 |
| MAXIMUM 24-HR AVERAGE: | 45.2 | PPB | | | ON DAY(S) | 31 |
| | | | | | VAR-VARIOUS | |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | 737 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | AMD OPERATION UPTIME | 99.1 | % |
| STANDARD DEVIATION | 6.29 | | MONTHLY AVERAGE | 34.8 | PPB |



JOB #: 2833-12-03-31-C






JOB #: 2833-12-03-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

MARCH 2012

**OZONE MAX** instantaneous maximum in ppb

MST

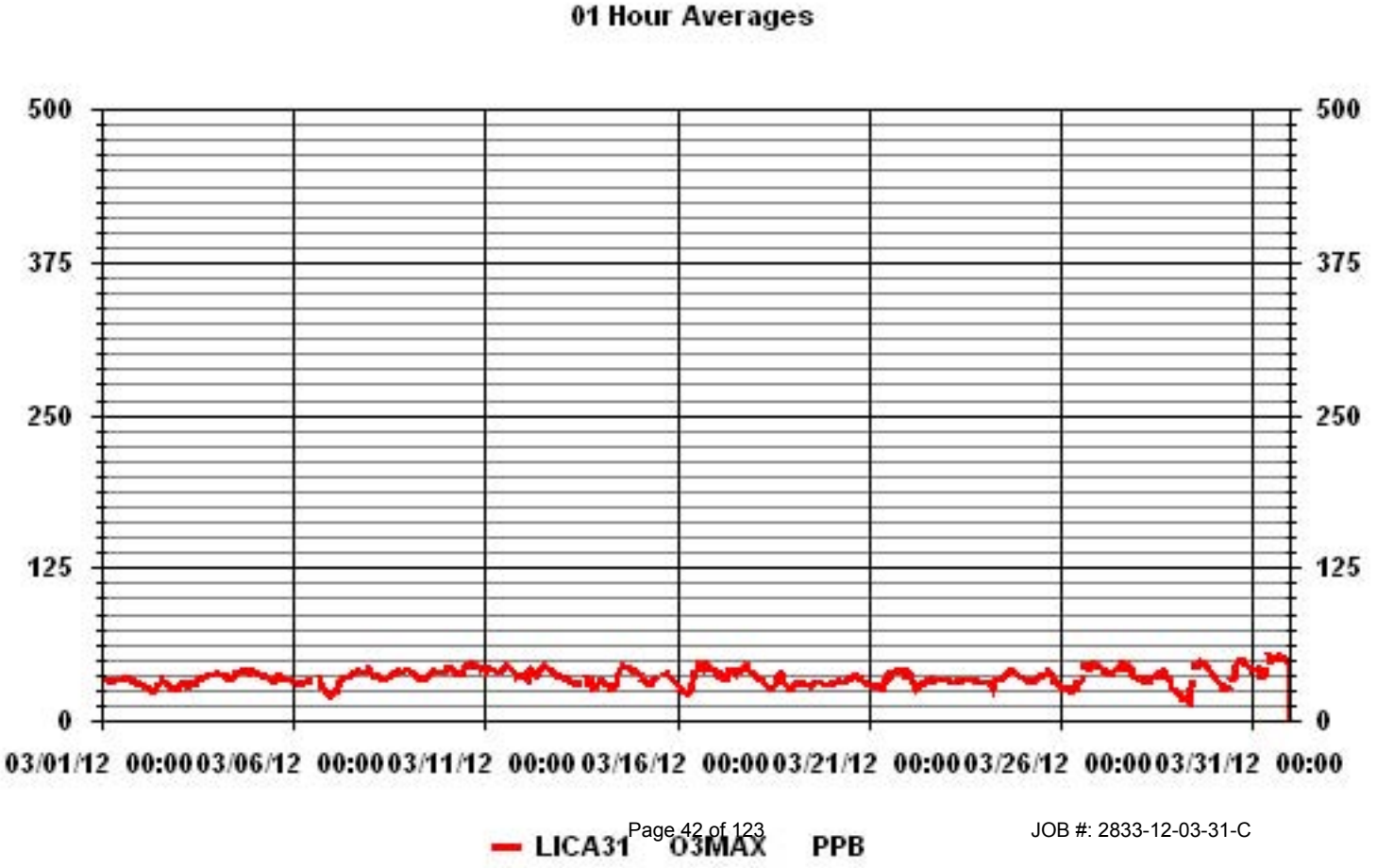
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 35 | 34 | 34 | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 34 | **IZS** | 35 | 34 | 32 | 32 | 32 | 31 | 30 | 35 | 33.0 | 24 |
| 2 | 30 | 30 | 29 | 29 | 27 | 27 | 27 | 25 | 24 | 25 | 26 | 29 | 31 | 35 | 35 | **IZS** | 32 | 31 | 30 | 28 | 27 | 26 | 26 | 26 | 35 | 28.5 | 24 |
| 3 | 28 | 30 | 31 | 31 | 31 | 30 | 29 | 30 | 30 | 29 | 29 | 31 | 34 | 35 | **IZS** | 34 | 35 | 35 | 38 | **P** | **P** | **P** | 38 | 39 | 39 | 32.4 | 21 |
| 4 | 39 | 39 | 38 | 37 | 37 | 37 | 35 | 36 | 36 | 35 | 36 | 38 | 38 | **IZS** | 40 | 41 | 41 | 41 | 41 | 40 | 40 | 39 | 40 | 40 | 41 | 38.4 | 24 |
| 5 | 39 | 39 | 39 | 38 | 37 | 37 | 36 | 36 | 35 | 35 | 34 | 32 | **IZS** | 35 | 37 | 36 | 36 | 36 | 35 | 33 | 33 | 33 | 33 | 33 | 39 | 35.5 | 24 |
| 6 | 32 | 31 | 31 | 31 | 30 | 30 | 30 | 31 | 31 | 32 | 32 | **IZS** | **C** | **C** | **C** | **C** | 35 | 32 | 28 | 27 | 26 | 23 | 22 | 21 | 35 | 29.2 | 24 |
| 7 | 23 | 23 | 24 | 24 | 28 | 31 | 33 | 35 | 35 | 35 | **IZS** | 37 | 38 | 39 | 40 | 41 | 41 | 41 | 40 | 39 | 39 | 39 | 42 | 42 | 42 | 35.2 | 24 |
| 8 | 41 | 40 | 36 | 36 | 36 | 36 | 33 | 33 | 34 | **IZS** | 34 | 35 | 35 | 37 | 38 | 38 | 39 | 40 | 40 | 40 | 40 | 41 | 41 | 41 | 41 | 37.6 | 24 |
| 9 | 41 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | **IZS** | 34 | 34 | 35 | 37 | 38 | 40 | 41 | 40 | 40 | 39 | 39 | 39 | 39 | 39 | 40 | 41 | 38.3 | 24 |
| 10 | 43 | 43 | 43 | 43 | 41 | 39 | 40 | **IZS** | 38 | 38 | 41 | 43 | 45 | 45 | 45 | 46 | 46 | 45 | 45 | 45 | 44 | 42 | 43 | 43 | 46 | 42.9 | 24 |
| 11 | 40 | 42 | 44 | 43 | 41 | 41 | **IZS** | 39 | 39 | 40 | 41 | 43 | 43 | 44 | 44 | 44 | 43 | 42 | 40 | 36 | 37 | 37 | 36 | 36 | 44 | 40.7 | 24 |
| 12 | 36 | 35 | 34 | 41 | 43 | **IZS** | 38 | 39 | 38 | 40 | 41 | 42 | 43 | 45 | 45 | 44 | 41 | 41 | 41 | 39 | 38 | 37 | 36 | 36 | 45 | 39.7 | 24 |
| 13 | 36 | 35 | 34 | 34 | **IZS** | 33 | 32 | 30 | 30 | 30 | 30 | 30 | **C** | **C** | **C** | 35 | 30 | 30 | 32 | 27 | 28 | 28 | 30 | 32 | 36 | 31.3 | 24 |
| 14 | 32 | 32 | 30 | **IZS** | 30 | 29 | 28 | 27 | 28 | 29 | 31 | 39 | 42 | 44 | 44 | 44 | 45 | 44 | 42 | 42 | 40 | 40 | 40 | 40 | 45 | 36.6 | 24 |
| 15 | 39 | 38 | **IZS** | 34 | 33 | 32 | 31 | 29 | 29 | 34 | 35 | **P** | **P** | **P** | **P** | **P** | 38 | 39 | 37 | 37 | 36 | 34 | 33 | 32 | 39 | 34.4 | 19 |
| 16 | 30 | **IZS** | 26 | 25 | 25 | 23 | 23 | 22 | 24 | 31 | 34 | 39 | 40 | 46 | 46 | 45 | 43 | 46 | 46 | 44 | 43 | 43 | 43 | 42 | 46 | 36.0 | 24 |
| 17 | **IZS** | 36 | 37 | 38 | 38 | 35 | 34 | 34 | 40 | 40 | 41 | 41 | 41 | 39 | 42 | 41 | 42 | 42 | 45 | 44 | 45 | 43 | 40 | **IZS** | 45 | 39.9 | 24 |
| 18 | 38 | 38 | 37 | 35 | 33 | 33 | 32 | 31 | 30 | 28 | 26 | 27 | 28 | 31 | 31 | 36 | 38 | 38 | 34 | 32 | 30 | 26 | **IZS** | 27 | 38 | 32.1 | 24 |
| 19 | 28 | 29 | 29 | 30 | 31 | 31 | 31 | 31 | 30 | 29 | 29 | 30 | 29 | 30 | 31 | 31 | 31 | 31 | 31 | 31 | 30 | **IZS** | 30 | 32 | 32 | 30.2 | 24 |
| 20 | 31 | 30 | 31 | 31 | 31 | 32 | 32 | 31 | 31 | 31 | 32 | 33 | 34 | 35 | 37 | 38 | 36 | 35 | 34 | 34 | **IZS** | 31 | 31 | 30 | 38 | 32.7 | 24 |
| 21 | 30 | 29 | 29 | 28 | 30 | 29 | 28 | 28 | 27 | 30 | 35 | 37 | 39 | 37 | 39 | 39 | 40 | 41 | 41 | **IZS** | 40 | 40 | 38 | 37 | 41 | 34.4 | 24 |
| 22 | 40 | 40 | 38 | 34 | 32 | 29 | 26 | 27 | 28 | 30 | 30 | 31 | 32 | 33 | 34 | 34 | 34 | 33 | **IZS** | 33 | 33 | 33 | 33 | 33 | 40 | 32.6 | 24 |
| 23 | 33 | 33 | 33 | 33 | 31 | 31 | 32 | 32 | 32 | 32 | 32 | 33 | 33 | 33 | 33 | 33 | 33 | **IZS** | 33 | 32 | 32 | 32 | 31 | 31 | 33 | 32.3 | 24 |
| 24 | 31 | 31 | 32 | 31 | 30 | 27 | 31 | 33 | 33 | 33 | 33 | 34 | 35 | 37 | 38 | 38 | **IZS** | 40 | 40 | 40 | 39 | 38 | 37 | 36 | 40 | 34.7 | 24 |
| 25 | 35 | 35 | 34 | 32 | 32 | 32 | 32 | 32 | 33 | 35 | 36 | 36 | 36 | 37 | 38 | **IZS** | 41 | 41 | 39 | 36 | 33 | 32 | 30 | 30 | 41 | 34.7 | 24 |
| 26 | 29 | 27 | 26 | 27 | 27 | 26 | 25 | 24 | 26 | 26 | 31 | 31 | 33 | 36 | **IZS** | 44 | 44 | 44 | 43 | 45 | 46 | 46 | 45 | 45 | 46 | 34.6 | 24 |
| 27 | 45 | 44 | 41 | 42 | 40 | 38 | 37 | 37 | 40 | 41 | 41 | 42 | 44 | **IZS** | 47 | 47 | 44 | 43 | 44 | 44 | 43 | 39 | 37 | 36 | 47 | 41.6 | 24 |
| 28 | 34 | 34 | 35 | 32 | 32 | 34 | 34 | 32 | 33 | 35 | 36 | 37 | **IZS** | 36 | 39 | 40 | 40 | 38 | 37 | 35 | 33 | 28 | 25 | 25 | 40 | 34.1 | 24 |
| 29 | 24 | 22 | 21 | 20 | 19 | 17 | 17 | 17 | 16 | 27 | 32 | **IZS** | 45 | 45 | 48 | 49 | 49 | 48 | 47 | 45 | 44 | 42 | 40 | 38 | 49 | 33.6 | 24 |
| 30 | 37 | 36 | 34 | 32 | 29 | 28 | 28 | 23 | 27 | 28 | **IZS** | 34 | 35 | 44 | 46 | 48 | 48 | 48 | 49 | 47 | 47 | 46 | 44 | 42 | 49 | 38.3 | 24 |
| 31 | 43 | 43 | 42 | 43 | 40 | 37 | 36 | 37 | 42 | **IZS** | **53** | 46 | 49 | 50 | 51 | 51 | 52 | 52 | 51 | 51 | 51 | 49 | 49 | **P** | **53** | 46.3 | 23 |
| HOURLY MAX | 45 | 44 | 44 | 43 | 43 | 41 | 40 | 39 | 42 | 41 | 53 | 46 | 49 | 50 | 51 | 51 | 52 | 52 | 51 | 51 | 51 | 49 | 49 | 45 | | | |
| HOURLY AVG | 34.7 | 34.6 | 33.7 | 33.5 | 32.8 | 31.8 | 31.3 | 30.9 | 31.7 | 32.6 | 34.4 | 35.6 | 37.4 | 38.4 | 40.1 | 40.4 | 39.9 | 39.7 | 39.2 | 37.8 | 37.5 | 36.5 | 36.1 | 35.0 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 696 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 53 | PPB | @ HOUR(S) | 10 | ON DAY(S) | 31 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 735 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | |
| STANDARD DEVIATION | 6.24 | | | | | |






JOB #: 2833-12-03-31-C

LICA31
O3_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 4.44 | 4.44 | 8.73 | 6.73 | 4.15 | 7.30 | 6.59 | 6.16 | 7.02 | 4.01 | 8.45 | 8.02 | 8.59 | 3.58 | 4.44 | 6.16 | 98.85 |
| < 110 | .00 | .28 | .00 | .00 | .00 | .00 | .28 | .28 | .14 | .00 | .00 | .14 | .00 | .00 | .00 | .00 | 1.14 |
| < 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 4.44 | 4.72 | 8.73 | 6.73 | 4.15 | 7.30 | 6.87 | 6.44 | 7.16 | 4.01 | 8.45 | 8.16 | 8.59 | 3.58 | 4.44 | 6.16 | |

Calm : .00 %

Total # Operational Hours : 698

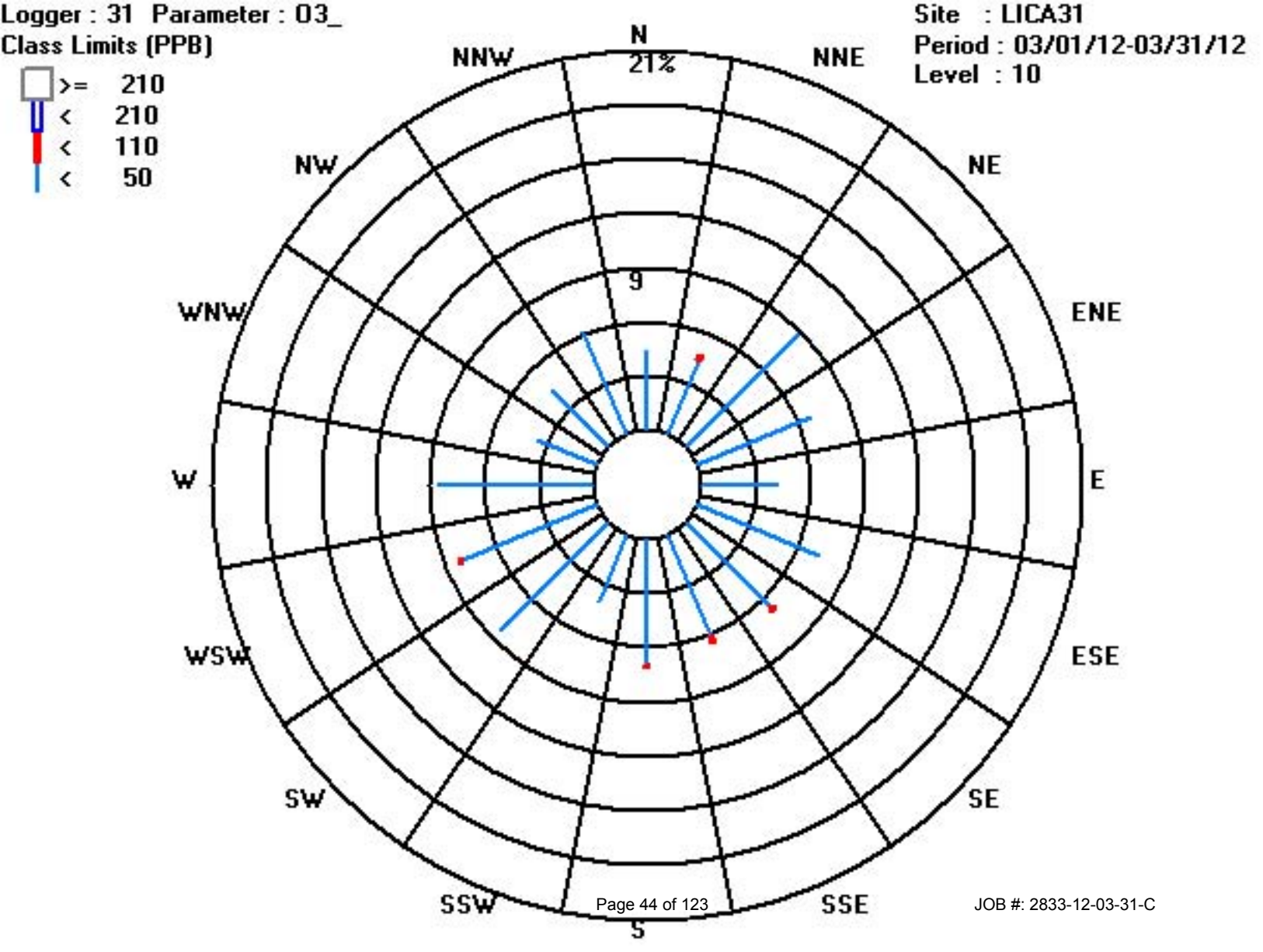
Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 31 | 31 | 61 | 47 | 29 | 51 | 46 | 43 | 49 | 28 | 59 | 56 | 60 | 25 | 31 | 43 | 690 |
| < 110 | | 2 | | | | | 2 | 2 | 1 | | | 1 | | | | | 8 |
| < 210 | | | | | | | | | | | | | | | | | |
| >= 210 | | | | | | | | | | | | | | | | | |
| Totals | 31 | 33 | 61 | 47 | 29 | 51 | 48 | 45 | 50 | 28 | 59 | 57 | 60 | 25 | 31 | 43 | |

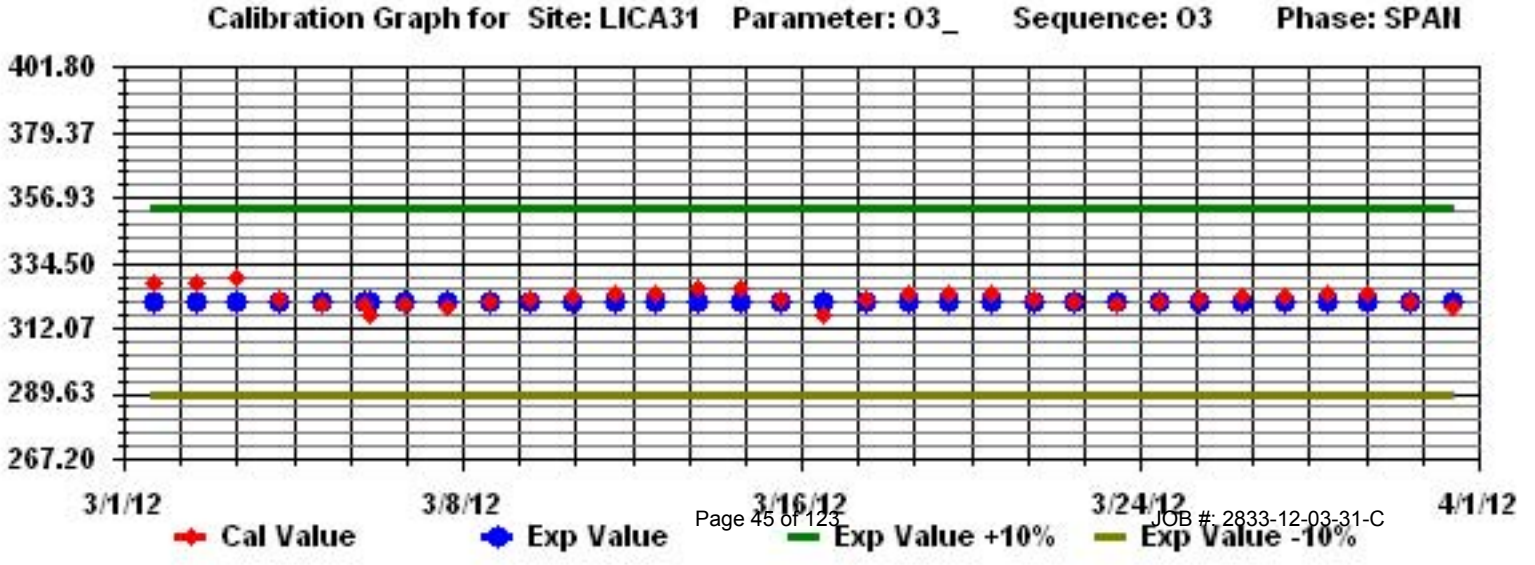
Calm : .00 %

Total # Operational Hours : 698






JOB #: 2833-12-03-31-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
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitrogen Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

MARCH 2012

**NITROGEN DIOXIDE** hourly averages in ppb

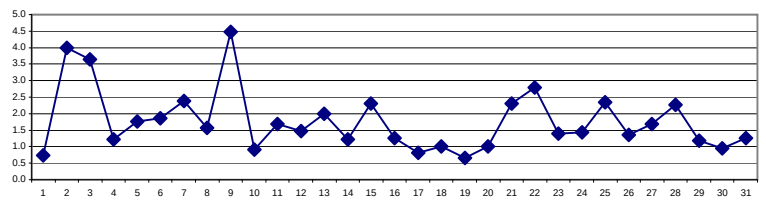
MST

| 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 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 0.7 | 24 |
| 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 3 | 2 | 3 | 4 | 3 | 2 | 3 | **IZS** | 4 | 5 | 6 | 6 | 7 | 7 | 8 | 8 | 8 | 4.0 | 24 |
| 3 | 7 | 6 | 4 | 4 | 3 | 5 | 4 | 3 | 3 | 4 | 5 | 5 | 4 | 4 | **IZS** | 2 | 3 | 3 | 3 | **P** | **P** | **P** | 1 | 0 | 7 | 3.7 | 21 |
| 4 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 1 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 1.2 | 24 |
| 5 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 3 | 4 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 2 | 2 | 2 | 1 | 1 | 4 | 1.8 | 24 |
| 6 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 0 | **IZS** | 0 | 0 | 1 | 1 | 1 | **M** | 2 | 2 | 3 | 6 | 6 | 6 | 6 | 1.9 | 23 |
| 7 | 6 | 6 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 2 | **IZS** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 0 | 6 | 2.4 | 24 |
| 8 | 1 | 1 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | **IZS** | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 1.6 | 24 |
| 9 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **IZS** | 3 | 3 | 3 | 4 | 5 | 5 | 5 | 6 | 8 | 8 | 8 | 7 | 7 | 5 | 2 | **8** | **4.5** | 24 |
| 10 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | **IZS** | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 0.9 | 24 |
| 11 | 3 | 3 | 1 | 2 | 2 | 2 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 1.7 | 24 |
| 12 | 1 | 1 | 1 | 1 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 1.5 | 24 |
| 13 | 2 | 1 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | **C** | **C** | **C** | **C** | 1 | 1 | 4 | 5 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 5 | 2.0 | 24 |
| 14 | 1 | 1 | 1 | **IZS** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.2 | 24 |
| 15 | 2 | 2 | **IZS** | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | **P** | **P** | **P** | **P** | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 2.3 | 20 |
| 16 | 2 | **IZS** | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1.3 | 24 |
| 17 | **IZS** | 1 | 1 | 1 | 1 | 2 | 3 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 3 | 0.8 | 24 |
| 18 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 2 | 1.0 | 24 |
| 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 0.7 | 24 |
| 20 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | **IZS** | 3 | 3 | 3 | 3 | 1.0 | 24 |
| 21 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 3 | 3 | 4 | 4 | 4 | 2.3 | 24 |
| 22 | 4 | 4 | 4 | 5 | 6 | 8 | 7 | 4 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | **IZS** | 1 | 1 | 1 | 1 | 1 | 8 | 2.8 | 24 |
| 23 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1.4 | 24 |
| 24 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | **IZS** | 1 | 1 | 2 | 2 | 3 | 4 | 4 | 4 | 1.4 | 24 |
| 25 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 4 | 2.3 | 24 |
| 26 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | **IZS** | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 1.3 | 24 |
| 27 | 0 | 1 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 1.7 | 24 |
| 28 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 4 | 3 | 2 | 2 | 2 | **IZS** | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 2.3 | 24 |
| 29 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 1.2 | 24 |
| 30 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.0 | 24 |
| 31 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 3 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1.3 | 24 |
| HOURLY MAX | 7 | 6 | 6 | 6 | 6 | 8 | 7 | 4 | 3 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 6 | 8 | 8 | 8 | 7 | 7 | 8 | 8 | | | |
| HOURLY AVG | 1.9 | 1.8 | 1.7 | 1.8 | 1.8 | 2.2 | 2.2 | 2.0 | 1.8 | 1.6 | 1.6 | 1.4 | 1.4 | 1.3 | 1.1 | 1.2 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 2.1 | 2.0 | 2.0 | | | |

**STATUS FLAG CODES**

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

**24 HOUR AVERAGES FOR MARCH 2012**



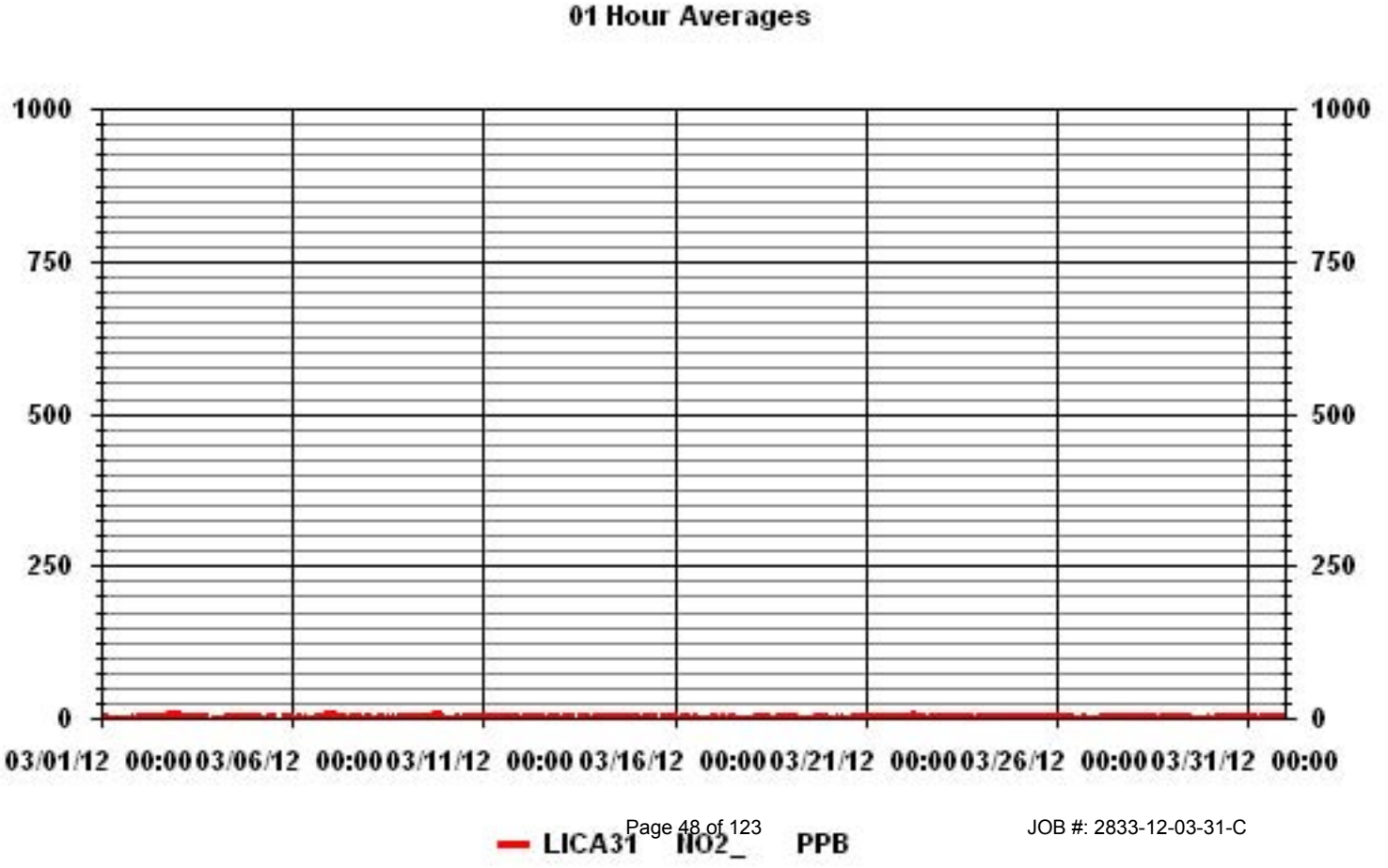

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 159 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 604 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 8 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 9 |
| MAXIMUM 24-HR AVERAGE: | 4.5 | PPB | | | ON DAY(S) | 9 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 736 | HRS |
| MONTHLY CALIBRATION TIME: | 11 | HRS | AMD OPERATION UPTIME: | | 98.9 | % |
| STANDARD DEVIATION: | 1.44 | | MONTHLY AVERAGE: | | 1.76 | PPB |



JOB #: 2833-12-03-31-C






JOB #: 2833-12-03-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

MARCH 2012

**NITROGEN DIOXIDE MAX** instantaneous maximum in ppb

MST

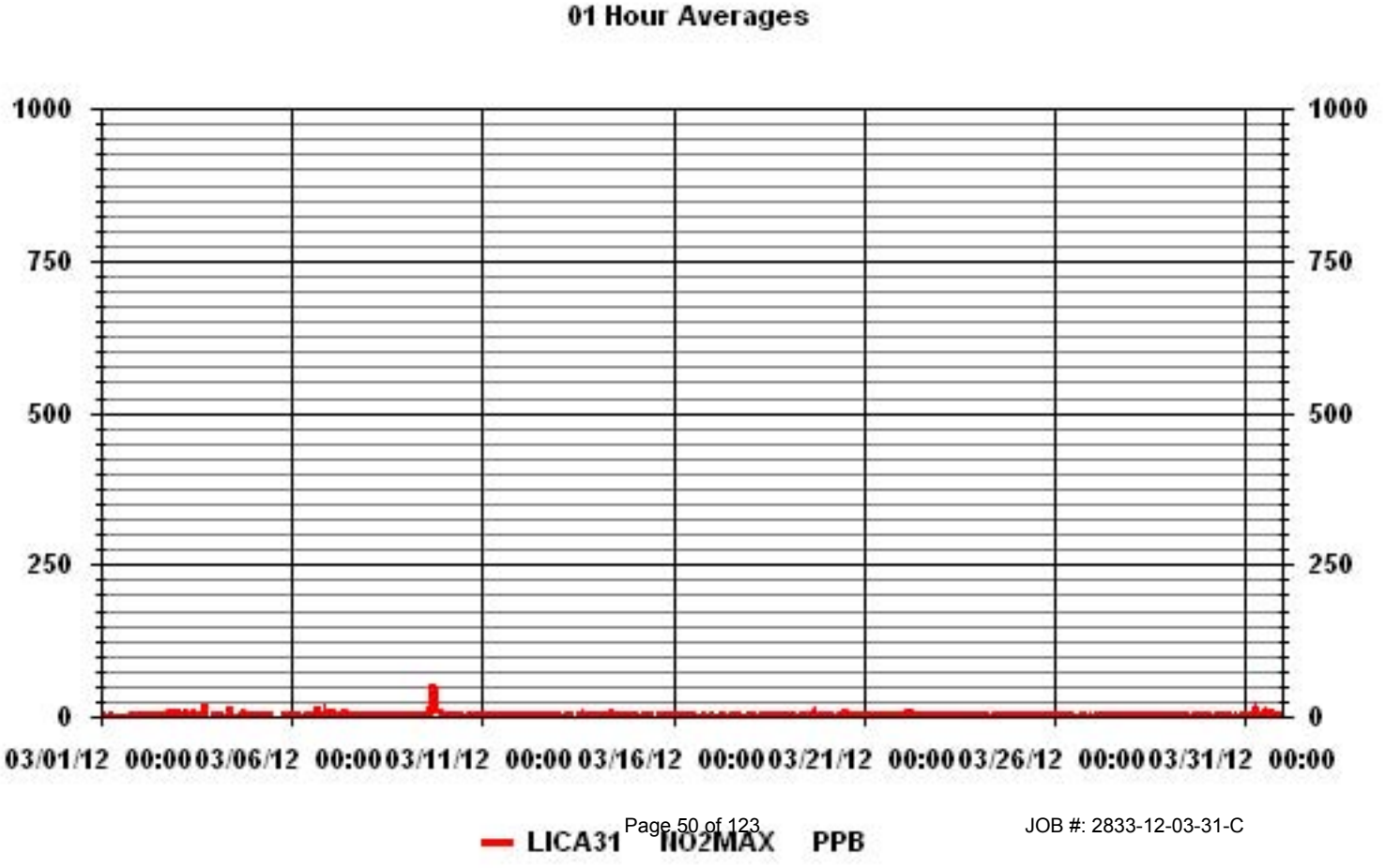
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | **IZS** | 1 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 1.3 | 24 |
| 2 | 2 | 3 | 3 | 3 | 4 | 3 | 4 | 5 | 4 | 4 | 4 | 5 | 3 | 3 | 3 | **IZS** | 5 | 6 | 7 | 7 | 8 | 9 | 8 | 9 | 9 | 4.9 | 24 |
| 3 | 8 | 7 | 5 | 4 | 4 | 6 | 6 | 5 | 4 | 5 | 6 | 7 | 4 | 5 | **IZS** | 3 | 7 | 19 | 5 | **P** | **P** | **P** | 3 | 1 | 19 | 5.7 | 21 |
| 4 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 16 | 6 | 1 | 2 | **IZS** | 1 | 2 | 4 | 4 | 13 | 3 | 3 | 3 | 3 | 3 | 16 | 3.2 | 24 |
| 5 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 2 | 2 | 2 | 5 | 5 | **IZS** | **C** | **C** | **C** | **C** | **C** | **C** | 3 | 3 | 2 | 2 | 2 | 5 | 2.6 | 24 |
| 6 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | **IZS** | 1 | 2 | 2 | 12 | 13 | **M** | 4 | 3 | 6 | 12 | 7 | 7 | 13 | 4.2 | 23 |
| 7 | 7 | 7 | 6 | 6 | 6 | 5 | 4 | 3 | 3 | 10 | **IZS** | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 10 | 3.5 | 24 |
| 8 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | **IZS** | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 3 | 4 | 2.3 | 24 |
| 9 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | **IZS** | 3 | 4 | 4 | 5 | 5 | 16 | 6 | 7 | **53** | 9 | 9 | 9 | 8 | 7 | 3 | **53** | 7.7 | 24 |
| 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 5 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 1.9 | 24 |
| 11 | 4 | 5 | 2 | 3 | 2 | 3 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 2.6 | 24 |
| 12 | 2 | 3 | 2 | 2 | 1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 5 | 3 | 3 | 4 | 3 | 2 | 2 | 2 | 5 | 2.4 | 24 |
| 13 | 2 | 2 | 3 | 2 | **IZS** | 3 | 3 | 3 | 3 | **C** | **C** | **C** | **C** | 2 | 2 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 6 | 3.0 | 24 |
| 14 | 2 | 2 | 2 | **IZS** | 1 | 2 | 2 | 2 | 2 | 11 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 11 | 2.6 | 24 |
| 15 | 2 | 3 | **IZS** | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 5 | **P** | **P** | **P** | **P** | **P** | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 5 | 3.0 | 19 |
| 16 | 3 | **IZS** | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 2 | 5 | 5 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 5 | 2.1 | 24 |
| 17 | **IZS** | 2 | 2 | 1 | 2 | 4 | 4 | 5 | 3 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | **IZS** | 5 | 1.7 | 24 |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 3 | 1.8 | 24 |
| 19 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 8 | 2 | 2 | 2 | **IZS** | 2 | 2 | 8 | 1.7 | 24 |
| 20 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 10 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | **IZS** | 4 | 4 | 4 | 10 | 2.3 | 24 |
| 21 | 3 | 4 | 4 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | **IZS** | 3 | 4 | 5 | 5 | 5 | 3.1 | 24 |
| 22 | 5 | 4 | 4 | 8 | 7 | 11 | 10 | 5 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | **IZS** | 2 | 2 | 2 | 2 | 2 | 11 | 3.8 | 24 |
| 23 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2.3 | 24 |
| 24 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | **IZS** | 2 | 2 | 2 | 3 | 4 | 4 | 4 | 4 | 2.1 | 24 |
| 25 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 3.0 | 24 |
| 26 | 3 | 3 | 3 | 3 | 2 | 3 | 4 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | **IZS** | 1 | 2 | 2 | 3 | 1 | 1 | 0 | 0 | 1 | 4 | 2.2 | 24 |
| 27 | 1 | 2 | 2 | 2 | 3 | 4 | 4 | 4 | 3 | 2 | 1 | 1 | 1 | **IZS** | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 3 | 3 | 3 | 4 | 2.5 | 24 |
| 28 | 3 | 3 | 3 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 2 | 2 | **IZS** | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 5 | 3.0 | 24 |
| 29 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 6 | 5 | **IZS** | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 2.2 | 24 |
| 30 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | **IZS** | 2 | 3 | 3 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 1.7 | 24 |
| 31 | 2 | 2 | 2 | 2 | 2 | 2 | 13 | 8 | 7 | **IZS** | 3 | 8 | 1 | 2 | 1 | 2 | 13 | 2 | 2 | 2 | 2 | 2 | 2 | **P** | 13 | 3.7 | 23 |
| HOURLY MAX | 8 | 7 | 6 | 8 | 7 | 11 | 13 | 8 | 7 | 16 | 6 | 8 | 10 | 5 | 16 | 12 | 13 | 53 | 13 | 9 | 9 | 12 | 8 | 9 | | | |
| HOURLY AVG | 2.6 | 2.7 | 2.5 | 2.6 | 2.6 | 3.0 | 3.5 | 3.0 | 2.6 | 3.6 | 2.7 | 2.4 | 2.5 | 2.3 | 2.4 | 2.6 | 3.5 | 5.0 | 3.2 | 2.7 | 2.8 | 3.0 | 2.9 | 2.8 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 676 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 53 | PPB | @ HOUR(S) | 17 | ON DAY(S) | 9 |
| IZS CALIBRATION TIME: | 32 | HRS | OPERATIONAL TIME: | | 734 | HRS |
| MONTHLY CALIBRATION TIME: | 10 | HRS | | | | |
| STANDARD DEVIATION | 2.86 | | | | | |






JOB #: 2833-12-03-31-C

LICA31
NO2_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 4.46 | 4.75 | 8.78 | 6.77 | 4.03 | 6.34 | 6.77 | 6.48 | 7.63 | 4.03 | 8.35 | 8.50 | 8.78 | 3.60 | 4.46 | 6.19 | 100.00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.46 | 4.75 | 8.78 | 6.77 | 4.03 | 6.34 | 6.77 | 6.48 | 7.63 | 4.03 | 8.35 | 8.50 | 8.78 | 3.60 | 4.46 | 6.19 | |

Calm : .00 %

Total # Operational Hours : 694

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 31 | 33 | 61 | 47 | 28 | 44 | 47 | 45 | 53 | 28 | 58 | 59 | 61 | 25 | 31 | 43 | 694 |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 31 | 33 | 61 | 47 | 28 | 44 | 47 | 45 | 53 | 28 | 58 | 59 | 61 | 25 | 31 | 43 | |

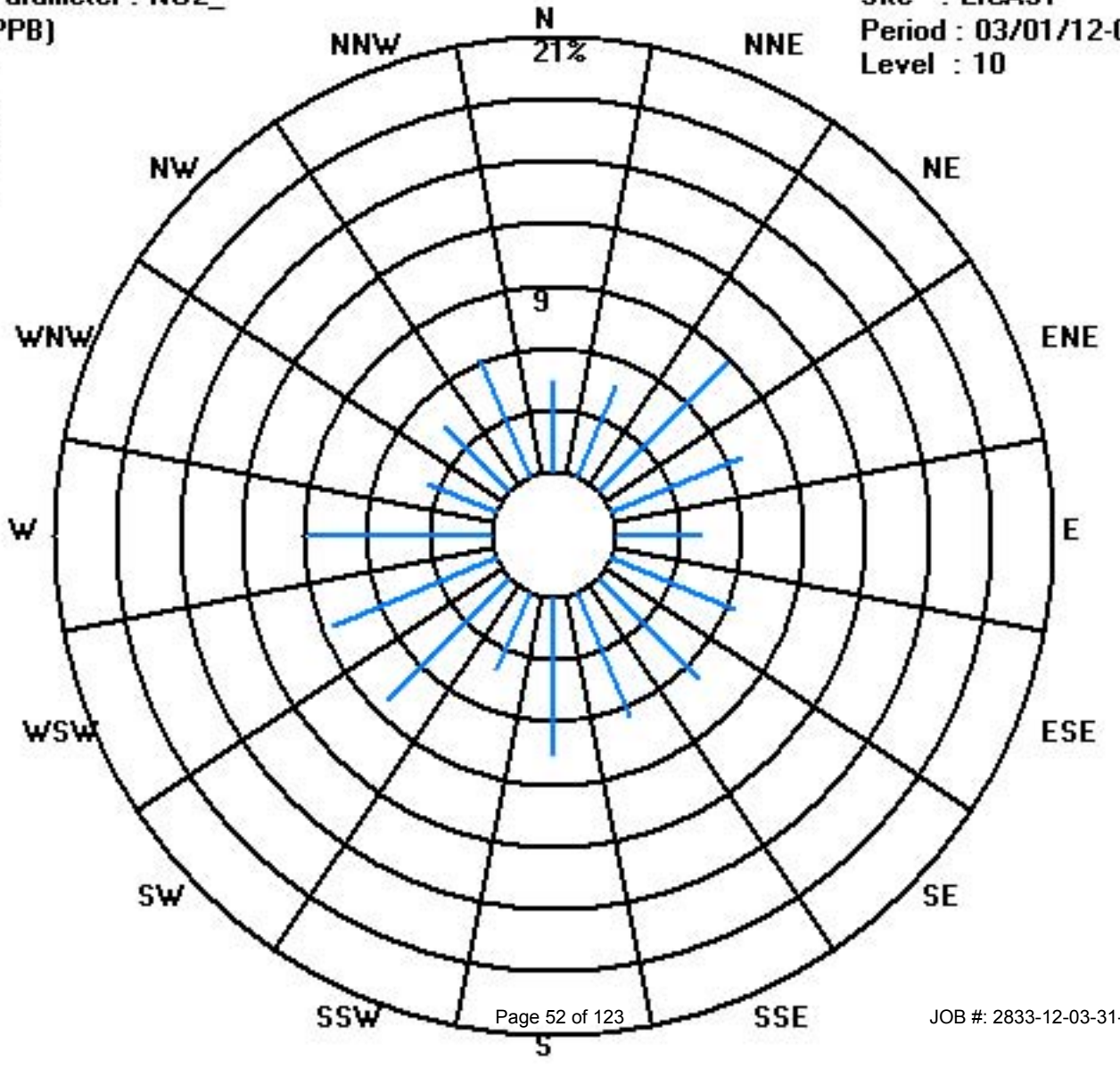
Calm : .00 %

Total # Operational Hours : 694

Logger : 31 Parameter : NO2_
Class Limits (PPB)

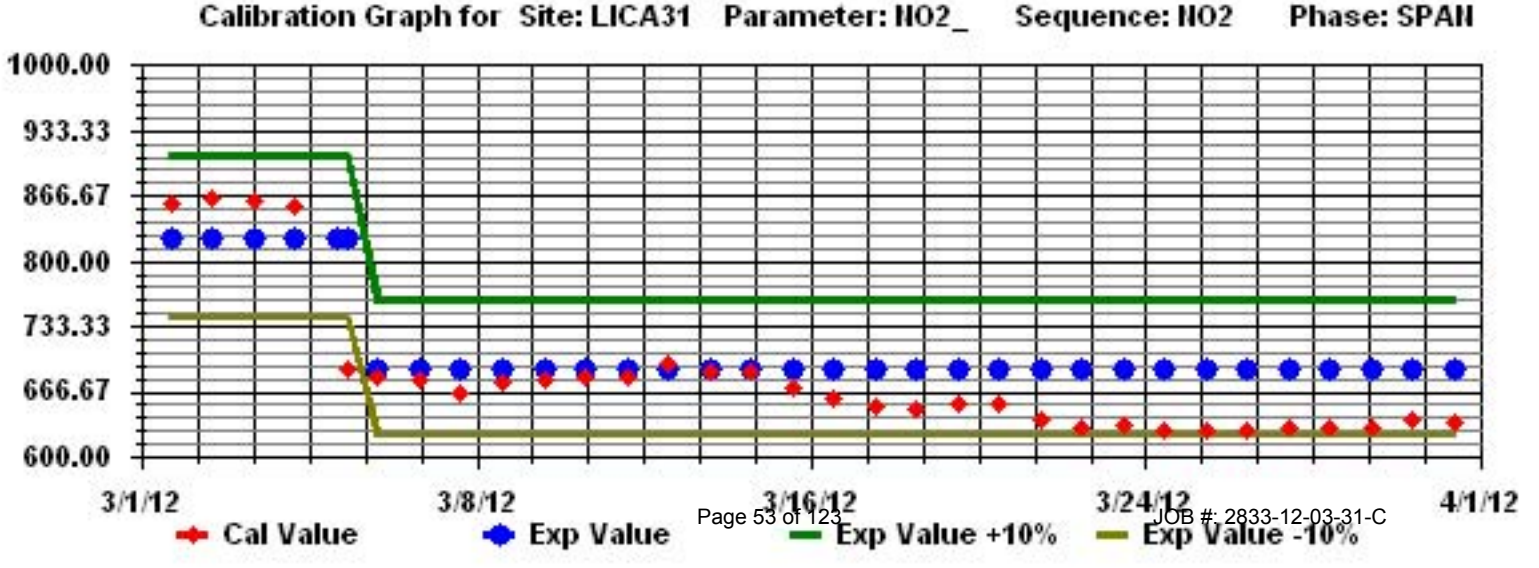
>= 210
< 210
< 110
< 50

Site : LICA31
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-31-C


Calibration Graph for Site: LICA31 Parameter: NO2_ Sequence: NO2 Phase: SPAN
1000.00
933.33
866.67
800.00
733.33
666.67
600.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitric Oxide

# LAKELAND INDUSTRY & COMMUNITY ASSCOICATION - ST. LINA

MARCH 2012

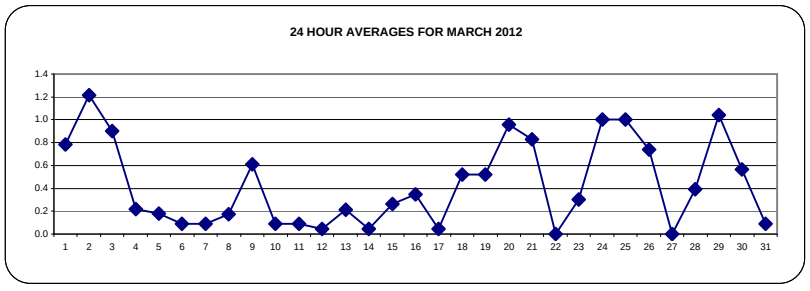
**NITRIC OXIDE** hourly averages in ppb

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 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 0.8 | 24 |
| 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 4 | 3 | 2 | 2 | **IZS** | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | **1.2** | 24 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | **IZS** | 1 | 1 | 1 | 0 | **P** | **P** | **P** | **11** | 0 | **11** | 0.9 | 21 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | **IZS** | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 2 | 0.2 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 0 | 1 | **M** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 23 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.6 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 14 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 15 | 0 | 0 | **IZS** | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | **P** | **P** | **P** | **P** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 20 |
| 16 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.3 | 24 |
| 17 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0.0 | 24 |
| 18 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 0.5 | 24 |
| 19 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | **IZS** | 1 | 1 | 1 | 0.5 | 24 |
| 20 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | **IZS** | 2 | 1 | 1 | 2 | 1.0 | 24 |
| 21 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 2 | 0.8 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 0.3 | 24 |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 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 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 24 |
| 26 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.7 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 0.4 | 24 |
| 29 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 2 | 1.0 | 24 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | **IZS** | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.6 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| HOURLY MAX | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 4 | 3 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 11 | 1 | | | |
| HOURLY AVG | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.4 | 0.5 | 0.8 | 0.8 | 0.8 | 0.7 | 0.6 | 0.5 | 0.3 | 0.5 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.6 | 0.3 | | | |

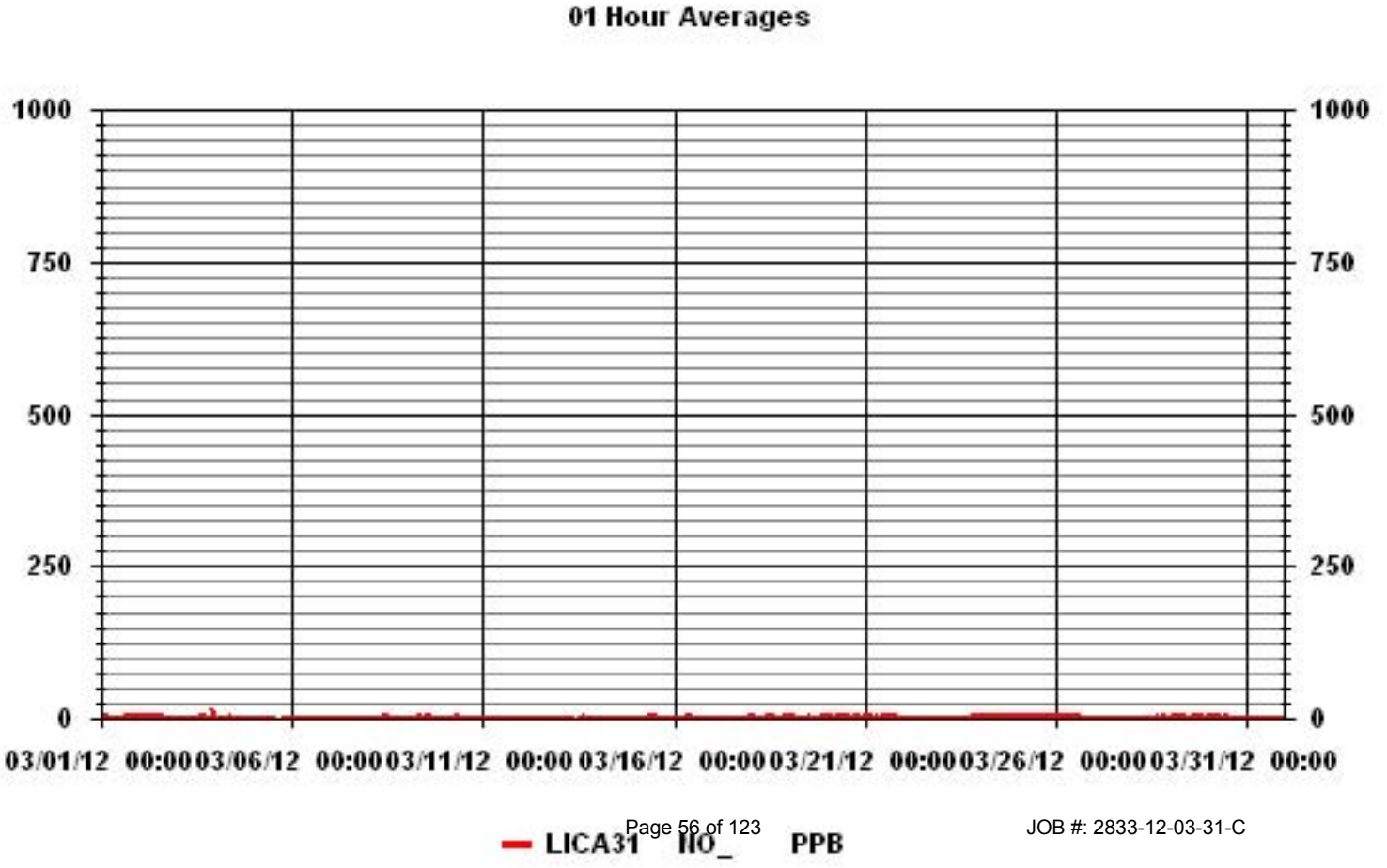
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 260 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 11 | PPB | @ HOUR(S) | 22 | ON DAY(S) | 3 | |
| MAXIMUM 24-HR AVERAGE: | 1.2 | PPB | | | ON DAY(S) | 2 | |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 736 | HRS | |
| MONTHLY CALIBRATION TIME: | 11 | HRS | AMD OPERATION UPTIME: | | 98.9 | % | |
| STANDARD DEVIATION: | 0.71 | | MONTHLY AVERAGE: | | 0.43 | PPB | |






JOB #: 2833-12-03-31-C

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

MARCH 2012

**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 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | **IZS** | 3 | 1 | 1 | 2 | 2 | 2 | 1 | 3 | 1.3 | 24 |
| 2 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 4 | 4 | 5 | 4 | 2 | 3 | **IZS** | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 2.0 | 24 |
| 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 2 | 1 | 1 | **IZS** | 3 | 4 | 12 | 1 | **P** | **P** | **P** | **75** | 1 | **75** | 5.5 | 21 |
| 4 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 8 | 29 | 1 | 2 | **IZS** | 2 | 1 | 1 | 1 | 8 | 1 | 1 | 1 | 1 | 0 | 29 | 2.7 | 24 |
| 5 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | **IZS** | **C** | **C** | **C** | **C** | **C** | **C** | 1 | 1 | 1 | 0 | 0 | 3 | 0.9 | 24 |
| 6 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | **IZS** | 2 | 1 | 1 | 18 | 21 | **M** | 2 | 1 | 11 | 8 | 1 | 1 | 21 | 3.2 | 23 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 9 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 9 | 1.3 | 24 |
| 8 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | **IZS** | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 3 | 0.8 | 24 |
| 9 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | **IZS** | 2 | 2 | 3 | 3 | 3 | 9 | 2 | 2 | 55 | 1 | 1 | 1 | 1 | 1 | 0 | 55 | 4.0 | 24 |
| 10 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | **IZS** | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 3 | 1.0 | 24 |
| 11 | 1 | 1 | 0 | 0 | 0 | 0 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 0.8 | 24 |
| 12 | 0 | 1 | 1 | 1 | 0 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 2 | 0.9 | 24 |
| 13 | 0 | 0 | 0 | 1 | **IZS** | 2 | 1 | 1 | 1 | **C** | **C** | **C** | **C** | 3 | 1 | 2 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 3 | 0.9 | 24 |
| 14 | 0 | 1 | 1 | **IZS** | 2 | 1 | 1 | 1 | 1 | 17 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 17 | 1.6 | 24 |
| 15 | 1 | 1 | **IZS** | 3 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | **P** | **P** | **P** | **P** | **P** | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 1.1 | 19 |
| 16 | 0 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 3 | 1.3 | 24 |
| 17 | **IZS** | 2 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | **IZS** | 2 | 0.7 | 24 |
| 18 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 3 | 3 | 1.4 | 24 |
| 19 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 | 1 | 2 | 1 | **IZS** | 3 | 1 | 8 | 1.5 | 24 |
| 20 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 10 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | **IZS** | 3 | 2 | 1 | 10 | 1.8 | 24 |
| 21 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | **IZS** | 1 | 0 | 0 | 0 | 2 | 1.4 | 24 |
| 22 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **IZS** | 2 | 0 | 0 | 0 | 0 | 2 | 0.5 | 24 |
| 23 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 3 | 1 | 1 | 1 | 2 | 2 | 3 | 0.9 | 24 |
| 24 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | **IZS** | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 3 | 1.6 | 24 |
| 25 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | **IZS** | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1.5 | 24 |
| 26 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | **IZS** | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 1.3 | 24 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.3 | 24 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | **IZS** | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 3 | 0.9 | 24 |
| 29 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 2 | 14 | 3 | **IZS** | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 14 | 2.2 | 24 |
| 30 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 3 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 3 | 1.3 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 3 | 2 | **IZS** | 2 | 4 | 1 | 1 | 1 | 0 | 8 | 0 | 0 | 0 | 0 | 1 | 0 | **P** | 22 | 2.0 | 23 |
| HOURLY MAX | 2 | 2 | 2 | 3 | 2 | 2 | 22 | 3 | 3 | 17 | 29 | 5 | 10 | 3 | 9 | 18 | 21 | 55 | 8 | 2 | 11 | 8 | 75 | 3 | | | |
| HOURLY AVG | 0.7 | 0.9 | 0.7 | 0.8 | 0.8 | 0.8 | 1.7 | 1.3 | 1.4 | 3.0 | 2.8 | 1.8 | 1.9 | 1.4 | 1.5 | 1.8 | 2.3 | 3.5 | 1.2 | 0.9 | 1.1 | 1.1 | 3.3 | 0.8 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

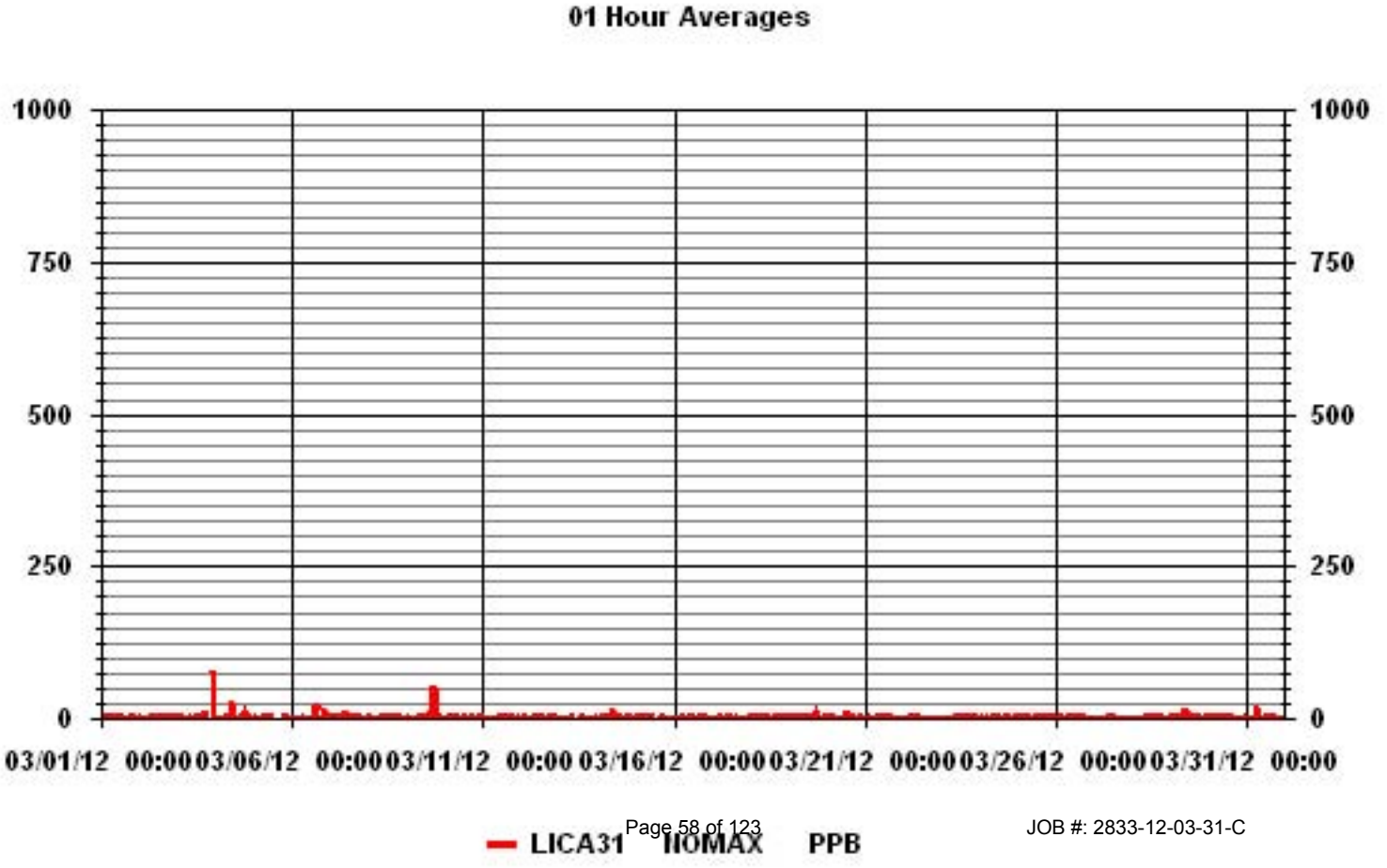
NUMBER OF NON-ZERO READINGS: 549

MAXIMUM INSTANTANEOUS VALUE: 75 PPB @ HOUR(S) 22 ON DAY(S) 3

IZS CALIBRATION TIME: 32 HRS OPERATIONAL TIME: 734 HRS

MONTHLY CALIBRATION TIME: 10 HRS

STANDARD DEVIATION 4.10






JOB #: 2833-12-03-31-C

LICA31
NO_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 4.46 | 4.75 | 8.78 | 6.77 | 4.03 | 6.34 | 6.77 | 6.48 | 7.63 | 4.03 | 8.35 | 8.50 | 8.78 | 3.60 | 4.46 | 6.19 | 100.00 |
| < 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 4.46 | 4.75 | 8.78 | 6.77 | 4.03 | 6.34 | 6.77 | 6.48 | 7.63 | 4.03 | 8.35 | 8.50 | 8.78 | 3.60 | 4.46 | 6.19 | |

Calm : .00 %

Total # Operational Hours : 694

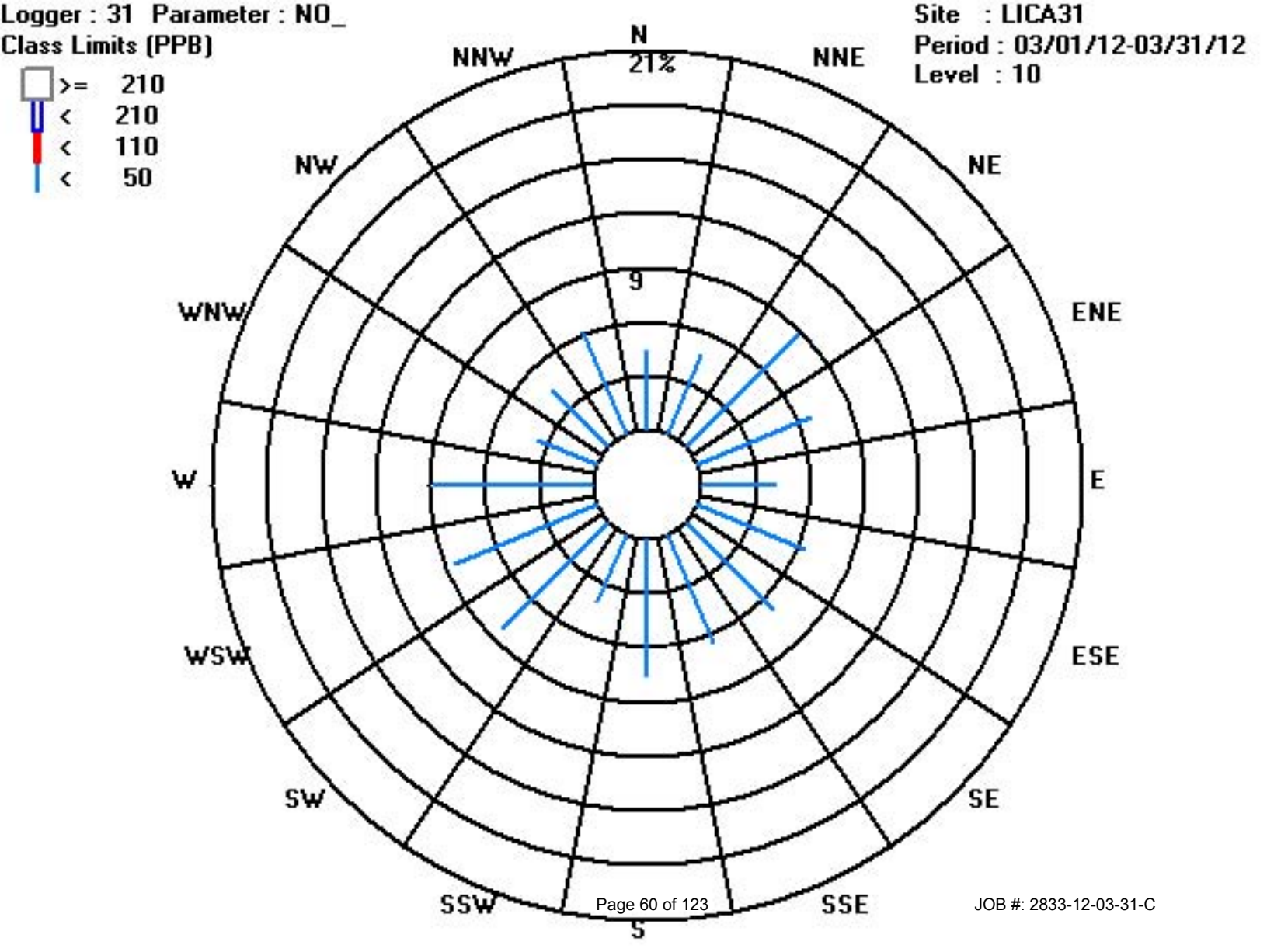
Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 31 | 33 | 61 | 47 | 28 | 44 | 47 | 45 | 53 | 28 | 58 | 59 | 61 | 25 | 31 | 43 | 694 |
| < 110 | | | | | | | | | | | | | | | | | |
| < 210 | | | | | | | | | | | | | | | | | |
| >= 210 | | | | | | | | | | | | | | | | | |
| Totals | 31 | 33 | 61 | 47 | 28 | 44 | 47 | 45 | 53 | 28 | 58 | 59 | 61 | 25 | 31 | 43 | |

Calm : .00 %

Total # Operational Hours : 694






JOB #: 2833-12-03-31-C

# Oxides of Nitrogen

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

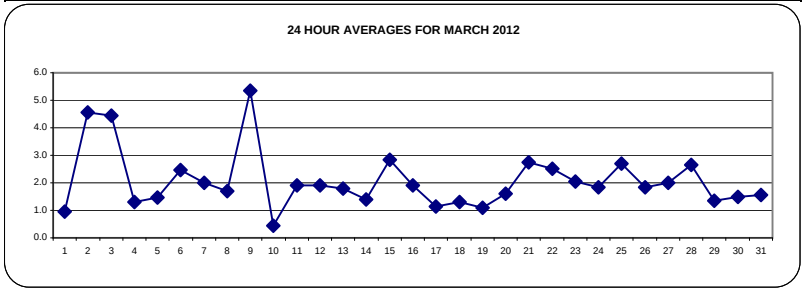
MARCH 2012

**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 | 2 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.0 | 24 |
| 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 5 | 4 | 4 | 5 | 7 | 5 | 4 | 4 | **IZS** | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 4.6 | 24 |
| 3 | 6 | 5 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 6 | 6 | 4 | 4 | **IZS** | 4 | 5 | 5 | 4 | **P** | **P** | **P** | 11 | 1 | 11 | 4.5 | 21 |
| 4 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 1 | 1 | **IZS** | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 3 | 1.3 | 24 |
| 5 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | 5 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 2 | 2 | 2 | 1 | 1 | 5 | 1.5 | 24 |
| 6 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 2 | 3 | **M** | 3 | 3 | 4 | 6 | 7 | 7 | 7 | 2.5 | 23 |
| 7 | 7 | 6 | 6 | 6 | 5 | 4 | 3 | 2 | 2 | 3 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 7 | 2.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | **IZS** | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 1.7 | 24 |
| 9 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | **IZS** | 4 | 5 | 5 | 6 | 7 | 7 | 6 | 7 | **11** | 9 | 8 | 7 | 8 | 6 | 2 | **11** | **5.3** | 24 |
| 10 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | **IZS** | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0.4 | 24 |
| 11 | 3 | 3 | 0 | 1 | 1 | 1 | **IZS** | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 1.9 | 24 |
| 12 | 2 | 2 | 2 | 1 | 0 | **IZS** | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 5 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 5 | 1.9 | 24 |
| 13 | 2 | 2 | 2 | 2 | **IZS** | 2 | 1 | 1 | 2 | **C** | **C** | **C** | **C** | 1 | 1 | 5 | 6 | 4 | 1 | 1 | 1 | 0 | 0 | 0 | 6 | 1.8 | 24 |
| 14 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.4 | 24 |
| 15 | 2 | 2 | **IZS** | 3 | 2 | 2 | 3 | 3 | 5 | 5 | 5 | 5 | **P** | **P** | **P** | **P** | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 2.8 | 20 |
| 16 | 2 | **IZS** | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 2 | 5 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1.9 | 24 |
| 17 | **IZS** | 2 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 3 | 1.1 | 24 |
| 18 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 3 | 1.3 | 24 |
| 19 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 2 | 2 | 1.1 | 24 |
| 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | **IZS** | 5 | 3 | 4 | 5 | 1.6 | 24 |
| 21 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | **IZS** | 3 | 3 | 4 | 4 | 4 | 2.7 | 24 |
| 22 | 4 | 3 | 3 | 5 | 6 | 8 | 7 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | **IZS** | 2 | 2 | 2 | 1 | 2 | 8 | 2.5 | 24 |
| 23 | 2 | 2 | 1 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 1 | 3 | 2.0 | 24 |
| 24 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 2 | 2 | 3 | 4 | 4 | 4 | 4 | 1.8 | 24 |
| 25 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 2.7 | 24 |
| 26 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | **IZS** | 1 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 3 | 1.8 | 24 |
| 27 | 0 | 1 | 2 | 2 | 3 | 3 | 3 | 4 | 3 | 2 | 1 | 1 | 1 | **IZS** | 2 | 1 | 1 | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 4 | 2.0 | 24 |
| 28 | 2 | 2 | 2 | 3 | 4 | 4 | 5 | 4 | 4 | 3 | 3 | 2 | **IZS** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 5 | 2.7 | 24 |
| 29 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | **IZS** | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 1.3 | 24 |
| 30 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | **IZS** | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1.5 | 24 |
| 31 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 5 | 4 | **IZS** | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 1.6 | 24 |
| HOURLY MAX | 7 | 6 | 6 | 6 | 6 | 8 | 7 | 5 | 5 | 5 | 6 | 7 | 6 | 7 | 7 | 6 | 7 | 11 | 9 | 8 | 7 | 8 | 11 | 7 | | | |
| HOURLY AVG | 2.0 | 1.9 | 1.8 | 2.0 | 2.0 | 2.2 | 2.3 | 2.3 | 2.2 | 2.3 | 2.4 | 2.2 | 2.0 | 1.9 | 1.6 | 1.6 | 2.2 | 2.1 | 2.1 | 2.0 | 1.9 | 2.2 | 2.4 | 2.0 | | | |

**STATUS FLAG CODES**

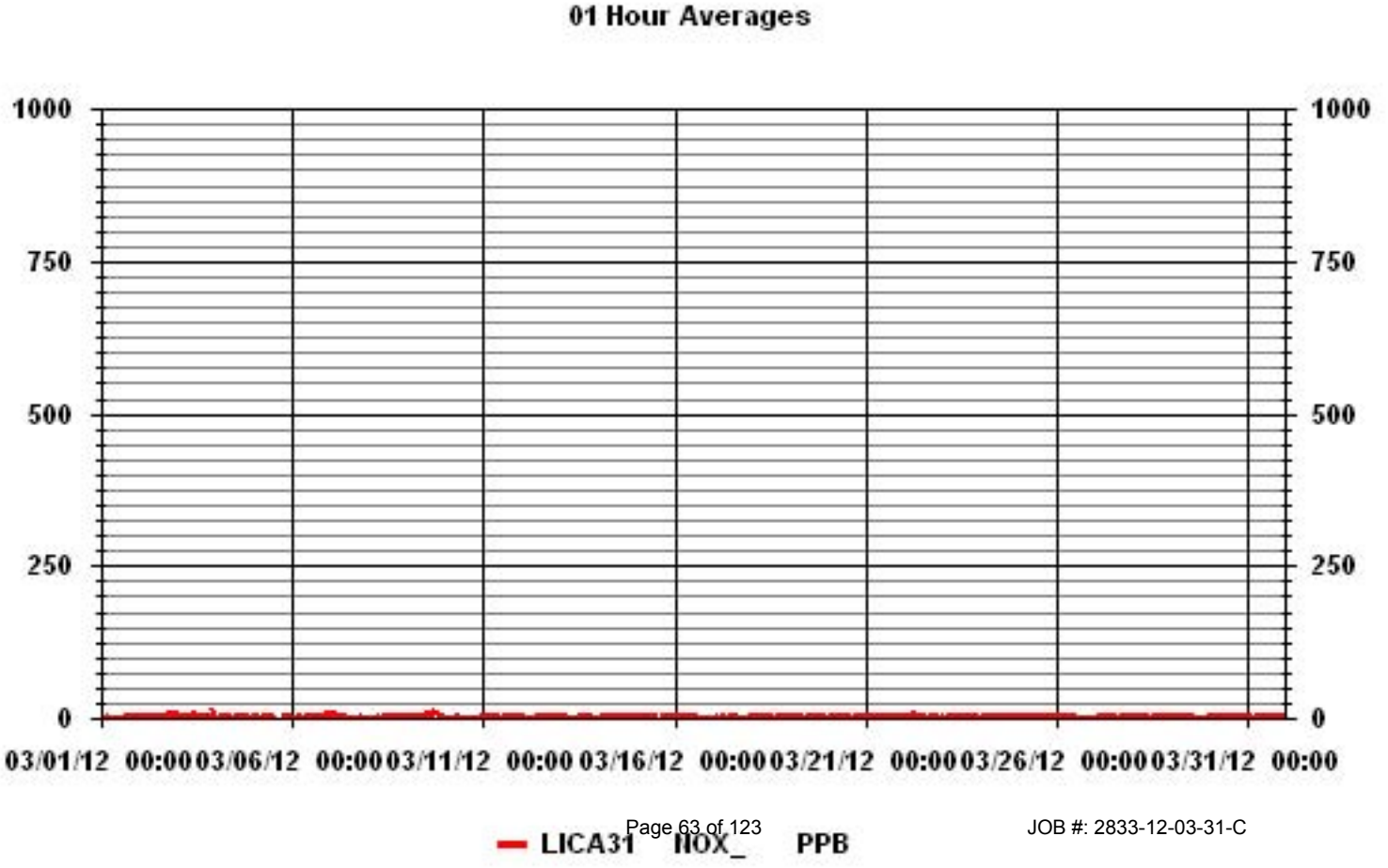
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 611 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 11 | PPB | @ HOUR(S) | 17 | ON DAY(S) | 9 |
| MAXIMUM 24-HR AVERAGE: | 5.3 | PPB | | | ON DAY(S) | 9 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | 736 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | AMD OPERATION UPTIME: | 98.9 | % |
| STANDARD DEVIATION: | 1.64 | | MONTHLY AVERAGE: | 2.07 | PPB |






JOB #: 2833-12-03-31-C

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

MARCH 2012

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

MST

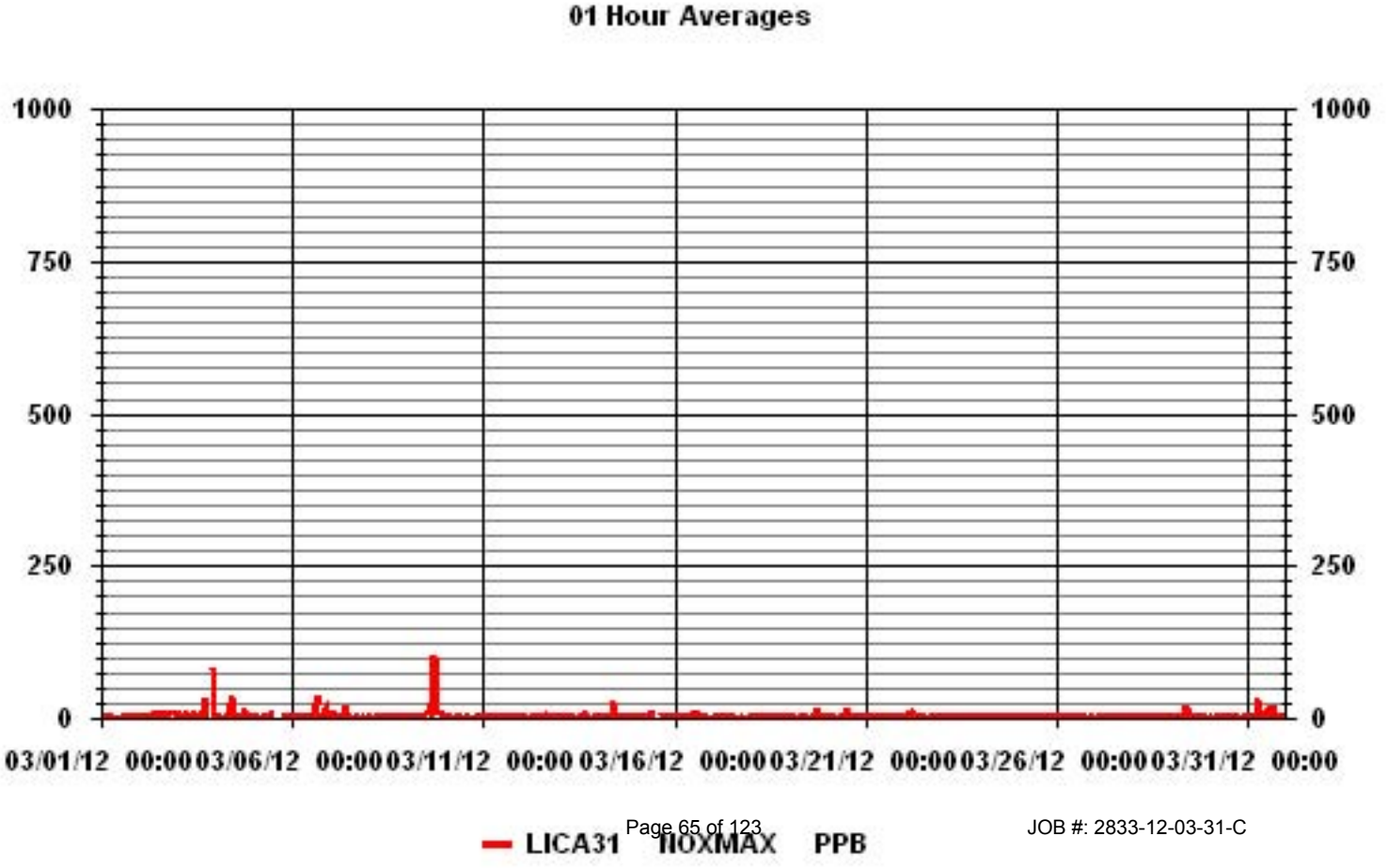
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | **IZS** | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 1.8 | 24 |
| 2 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 6 | 5 | 7 | 7 | 10 | 7 | 5 | 5 | **IZS** | 6 | 6 | 6 | 7 | 8 | 8 | 8 | 8 | 10 | 5.7 | 24 |
| 3 | 7 | 6 | 5 | 4 | 3 | 6 | 6 | 4 | 4 | 5 | 9 | 8 | 5 | 4 | **IZS** | 5 | 11 | 31 | 5 | **P** | **P** | **P** | 76 | 1 | 76 | 10.3 | 21 |
| 4 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 23 | 35 | 2 | 3 | **IZS** | 2 | 2 | 4 | 4 | 15 | 2 | 3 | 3 | 2 | 2 | 35 | 5.0 | 24 |
| 5 | 2 | 2 | 1 | 1 | 1 | 2 | 4 | 2 | 2 | 2 | 6 | 6 | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 3 | 3 | 3 | 2 | 2 | 6 | 2.6 | 24 |
| 6 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | **IZS** | 2 | 3 | 3 | 24 | 34 | **M** | 5 | 4 | 15 | 19 | 7 | 8 | 34 | 6.9 | 23 |
| 7 | 8 | 7 | 7 | 7 | 7 | 5 | 4 | 3 | 3 | 16 | **IZS** | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 16 | 3.5 | 24 |
| 8 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | **IZS** | 5 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 5 | 2.5 | 24 |
| 9 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | **IZS** | 5 | 5 | 6 | 8 | 8 | 22 | 7 | 9 | **103** | 10 | 9 | 9 | 9 | 8 | 3 | **103** | 11.0 | 24 |
| 10 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | **IZS** | 5 | 5 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 2 | 2 | 5 | 1.7 | 24 |
| 11 | 4 | 4 | 1 | 2 | 2 | 2 | **IZS** | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 2.9 | 24 |
| 12 | 2 | 3 | 3 | 2 | 1 | **IZS** | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 6 | 6 | 4 | 3 | 4 | 3 | 2 | 2 | 2 | 6 | 2.8 | 24 |
| 13 | 2 | 2 | 3 | 3 | **IZS** | 3 | 2 | 2 | 3 | **C** | **C** | **C** | **C** | 3 | 2 | 7 | 7 | 5 | 3 | 2 | 1 | 1 | 1 | 1 | 7 | 2.8 | 24 |
| 14 | 1 | 1 | 1 | **IZS** | 3 | 2 | 2 | 2 | 2 | 27 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 3 | 3 | 27 | 3.4 | 24 |
| 15 | 3 | 3 | **IZS** | 4 | 4 | 4 | 4 | 5 | 6 | 6 | 6 | **P** | **P** | **P** | **P** | **P** | 6 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 6 | 3.9 | 19 |
| 16 | 3 | **IZS** | 5 | 4 | 3 | 4 | 4 | 5 | 6 | 5 | 5 | 4 | 8 | 9 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 9 | 3.3 | 24 |
| 17 | **IZS** | 3 | 2 | 2 | 2 | 4 | 5 | 7 | 4 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | **IZS** | 7 | 2.1 | 24 |
| 18 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | **IZS** | 3 | 4 | 2.3 | 24 |
| 19 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 15 | 2 | 2 | 2 | **IZS** | 4 | 3 | 15 | 2.3 | 24 |
| 20 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 | 2 | 3 | 2 | 17 | 2 | 2 | 2 | 2 | 3 | 3 | 5 | **IZS** | 6 | 4 | 4 | 17 | 3.0 | 24 |
| 21 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 5 | 4 | 2 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | **IZS** | 4 | 4 | 4 | 5 | 5 | 3.6 | 24 |
| 22 | 5 | 4 | 4 | 8 | 7 | 11 | 9 | 5 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | **IZS** | 4 | 2 | 2 | 2 | 2 | 11 | 3.7 | 24 |
| 23 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **IZS** | 4 | 2 | 2 | 3 | 3 | 3 | 4 | 2.8 | 24 |
| 24 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | **IZS** | 3 | 3 | 3 | 3 | 4 | 5 | 5 | 5 | 2.6 | 24 |
| 25 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | **IZS** | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 5 | 3.5 | 24 |
| 26 | 3 | 3 | 3 | 3 | 2 | 3 | 5 | 4 | 3 | 4 | 5 | 3 | 4 | 3 | **IZS** | 3 | 3 | 3 | 4 | 2 | 1 | 1 | 1 | 1 | 5 | 2.9 | 24 |
| 27 | 1 | 3 | 3 | 3 | 3 | 4 | 4 | 5 | 4 | 3 | 2 | 2 | 2 | **IZS** | 4 | 2 | 2 | 2 | 3 | 4 | 4 | 3 | 3 | 3 | 5 | 3.0 | 24 |
| 28 | 3 | 3 | 3 | 4 | 5 | 5 | 6 | 5 | 5 | 4 | 3 | 3 | **IZS** | 4 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 6 | 3.5 | 24 |
| 29 | 3 | 3 | 3 | 3 | 5 | 3 | 3 | 4 | 3 | 20 | 6 | **IZS** | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 20 | 3.2 | 24 |
| 30 | 1 | 1 | 2 | 1 | 3 | 2 | 2 | 3 | 3 | 3 | **IZS** | 4 | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 1 | 3 | 2 | 3 | 2 | 4 | 2.4 | 24 |
| 31 | 2 | 2 | 2 | 2 | 2 | 2 | 32 | 11 | 9 | **IZS** | 5 | 10 | 2 | 1 | 2 | 2 | 20 | 2 | 2 | 2 | 2 | 2 | 2 | **P** | 32 | 5.4 | 23 |
| HOURLY MAX | 8 | 7 | 7 | 8 | 7 | 11 | 32 | 11 | 9 | 27 | 35 | 10 | 17 | 9 | 22 | 24 | 34 | 103 | 15 | 9 | 15 | 19 | 76 | 8 | | | |
| HOURLY AVG | 2.8 | 2.7 | 2.6 | 2.8 | 2.9 | 3.3 | 4.4 | 3.5 | 3.2 | 5.9 | 4.8 | 3.4 | 3.6 | 3.0 | 3.2 | 3.5 | 5.1 | 7.7 | 3.5 | 2.9 | 3.2 | 3.4 | 5.4 | 2.9 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 681 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 103 | PPB | @ HOUR(S) | 17 | ON DAY(S) | 9 |
| IZS CALIBRATION TIME: | 31 | HRS | OPERATIONAL TIME: | | 734 | HRS |
| MONTHLY CALIBRATION TIME: | 11 | HRS | | | | |
| STANDARD DEVIATION: | 5.92 | | | | | |






JOB #: 2833-12-03-31-C

LICA31
NOX_ / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 4.46 | 4.75 | 8.78 | 6.77 | 4.03 | 6.34 | 6.77 | 6.48 | 7.63 | 4.03 | 8.35 | 8.50 | 8.78 | 3.60 | 4.46 | 6.19 | 100.00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.46 | 4.75 | 8.78 | 6.77 | 4.03 | 6.34 | 6.77 | 6.48 | 7.63 | 4.03 | 8.35 | 8.50 | 8.78 | 3.60 | 4.46 | 6.19 | |

Calm : .00 %

Total # Operational Hours : 694

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 31 | 33 | 61 | 47 | 28 | 44 | 47 | 45 | 53 | 28 | 58 | 59 | 61 | 25 | 31 | 43 | 694 |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 31 | 33 | 61 | 47 | 28 | 44 | 47 | 45 | 53 | 28 | 58 | 59 | 61 | 25 | 31 | 43 | |

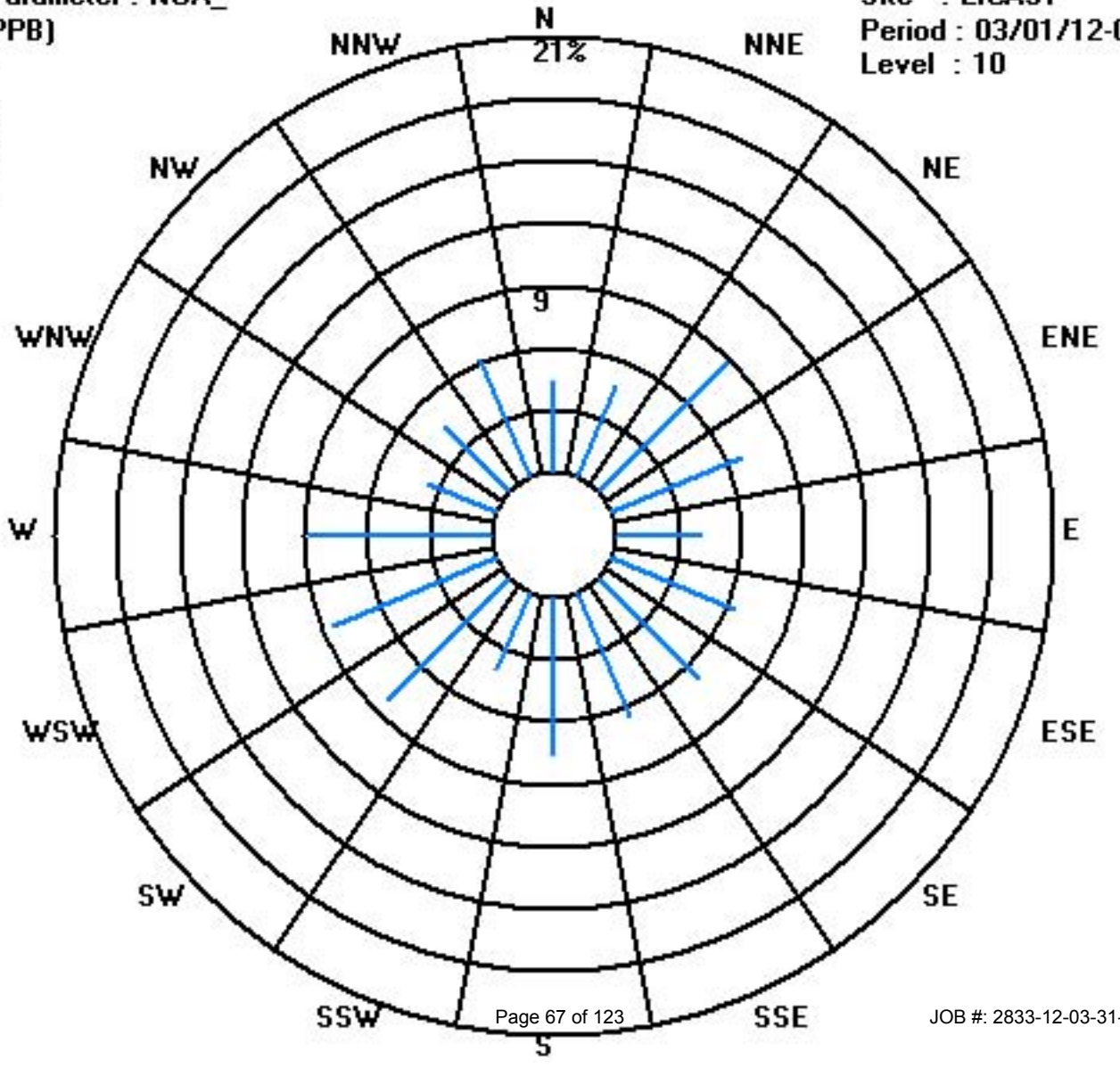
Calm : .00 %

Total # Operational Hours : 694

Logger : 31 Parameter : NOX_
Class Limits (PPB)

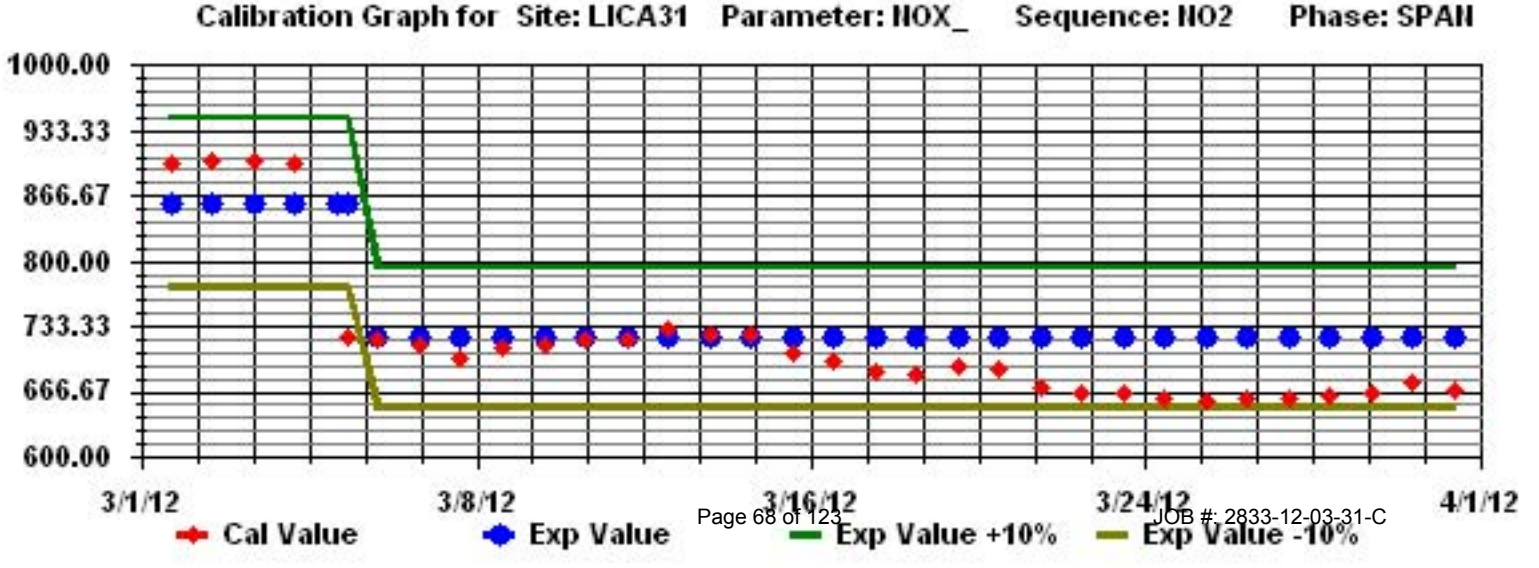
>= 210
< 210
< 110
< 50

Site : LICA31
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-31-C


Calibration Graph for Site: LICA31 Parameter: NOX_ Sequence: NO2 Phase: SPAN
1000.00
933.33
866.67
800.00
733.33
666.67
600.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Particulate Matter 2.5

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

MARCH 2012

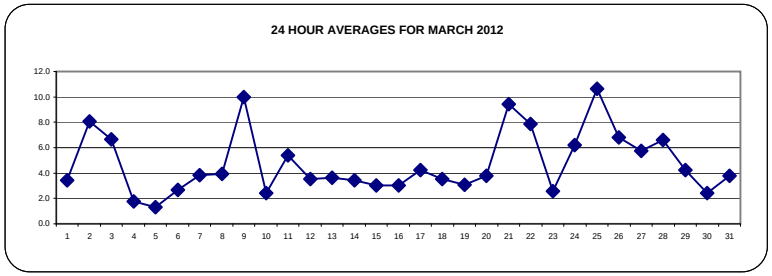
**PARTICULATE MATTER 2.5 (PM2.5)** hourly averages in ug/m$^3$

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 | 5.1 | 3.6 | 6.6 | 1.5 | 4 | 3 | 6 | 3 | 2.1 | 2.6 | 0.5 | 1.5 | 3 | 1.5 | 2.1 | 5.5 | 4 | 2.1 | 4 | 5.1 | 3 | 5.1 | 3 | 4 | 6.6 | 3.4 | 24 |
| 2 | 3 | 3 | 4 | 1.1 | 5.1 | 9.6 | 7.1 | 5.5 | 6.6 | 5.1 | 10 | 9.1 | 9.1 | 7.1 | 7.1 | 9.1 | 10.1 | 9.1 | 8.6 | 11.1 | 12.1 | 14.1 | 15.5 | 11.6 | 15.5 | 8.1 | 24 |
| 3 | 13.1 | 13.1 | 8.6 | 7.6 | 6.1 | 6.1 | 1.1 | 4 | 6 | 6 | 10 | 9.1 | 5.5 | 4 | 11 | 6.1 | 7.6 | 7.1 | 6.6 | **P** | **P** | **P** | 1.1 | 0 | 13.1 | 6.7 | 21 |
| 4 | 0 | 2.1 | 0 | 2.6 | 0 | 1.1 | 0.5 | 1.5 | 3.1 | 0 | 3.6 | 0 | 2.1 | 0 | 0 | 0 | 5.5 | 5.1 | 3.1 | 0.5 | 2.6 | 0.5 | 3.6 | 5.1 | 5.5 | 1.8 | 24 |
| 5 | 1.5 | 0.5 | 1.1 | 3.1 | 1.5 | 0 | 0 | 3.6 | 0 | 0 | 1.1 | 0.5 | 5.5 | 0.5 | **C** | 0.5 | 0.5 | 4.1 | 0 | 3.1 | 1.5 | 0 | 1.5 | 0.5 | 5.5 | 1.3 | 24 |
| 6 | 0 | 0 | 1.1 | 0.5 | 0.5 | 0 | 1.1 | 2.6 | 3.6 | 1.5 | 0 | 0.5 | 0 | 0 | 1.1 | 5.1 | 0 | 0 | 3.6 | 2.1 | 6.6 | 11.1 | 11.6 | 12.1 | 12.1 | 2.7 | 24 |
| 7 | 12.1 | 9.1 | 10.1 | 9.6 | 13.1 | 9.1 | 3.6 | 2.6 | 2.1 | 2.6 | 1.5 | 0 | 0 | 1.5 | 0 | 1.5 | 0 | 0 | 2.6 | 0 | 0 | 2.6 | **N** | 4.6 | 13.1 | 3.8 | 23 |
| 8 | 1.5 | 1.1 | 1.5 | 0 | 0 | 4.6 | 7.1 | 1.1 | 6.6 | 1.5 | 5.1 | 0 | 5.5 | 7.1 | 3.1 | 0 | 5.1 | 5.1 | 5.1 | 2.6 | 7.1 | 8.1 | 7.6 | 8 | 8.1 | 3.9 | 24 |
| 9 | 7.6 | 8.1 | 11.6 | 9.6 | 8.1 | 10.1 | 10.1 | 12.6 | 8.1 | 10.1 | 8 | 10.5 | 8.6 | 10.1 | 12.6 | 10.1 | 12.6 | 13.6 | 15.1 | 12.1 | 9.1 | 10.5 | 5.5 | 5.1 | 15.1 | 10.0 | 24 |
| 10 | 0 | 3 | 0 | 0 | 0.5 | 1.5 | 2.1 | 1.5 | 0.5 | 3 | 0 | 4 | 2.1 | 1.5 | 5.5 | 5.5 | 2.1 | 1.5 | 4 | 1.1 | 5.1 | 4 | 6.6 | 2.6 | 6.6 | 2.4 | 24 |
| 11 | 1.1 | 1.5 | 0.5 | 2.1 | 5.1 | 1.5 | 1.5 | 4 | 3.6 | 4.6 | 4.6 | 6.1 | 3 | 7.1 | 11.1 | 4.6 | 8.1 | 6.1 | 4 | 14.1 | 5.5 | 11.6 | 11.1 | 6.6 | 14.1 | 5.4 | 24 |
| 12 | 8.1 | 10.1 | 6.6 | 3 | **N** | 0 | 2.6 | 1.5 | 3 | 2.6 | **N** | 5.1 | 0 | 2.6 | 3 | 3.6 | 2.6 | 5.1 | 7.1 | 6.6 | 0 | 0 | 2.6 | 2.1 | 10.1 | 3.5 | 22 |
| 13 | 5.5 | 3.1 | 0 | 1.1 | 1.1 | 2.1 | 2.6 | 1.5 | 0 | **N** | 1.1 | **C** | **C** | **C** | 1.1 | 1.5 | 13.1 | 12.6 | 9.1 | 5.5 | 4 | 5.1 | 1.5 | 1.1 | 13.1 | 3.6 | 23 |
| 14 | 0.5 | 5.1 | 8.6 | 4 | 0 | 5.1 | 7.1 | 1.5 | 6.6 | 5.5 | 3 | 5.1 | 5.5 | 0 | 7.1 | 3 | 0.5 | 4 | 0 | 3.1 | 0.5 | 2.6 | 1.5 | 2.6 | 8.6 | 3.4 | 24 |
| 15 | 2.1 | 1.1 | 1.5 | 2.1 | 0 | 3 | 2.6 | 0 | 5.1 | 7.6 | 5.1 | 7.6 | **P** | **P** | **P** | **P** | 3.6 | 3 | 5.5 | 4.6 | 1.1 | 2.1 | 0 | 2.6 | 7.6 | 3.0 | 20 |
| 16 | 8.1 | 5.1 | 0 | 5.1 | 5.5 | 5.1 | 3.1 | 3.6 | 3.1 | 5.1 | 0 | 0 | 3 | 5.5 | 1.5 | 2.6 | 0 | 3.6 | 3.1 | **N** | **N** | 0 | 2.1 | 1.1 | 8.1 | 3.0 | 22 |
| 17 | 0 | 1.5 | 2.1 | 6.1 | 4.6 | 4.6 | 6.6 | 6.1 | 11.1 | 1.5 | 2.1 | 4.1 | 7.1 | 3.6 | 6.6 | 6.6 | 4.1 | 8 | 2.6 | **N** | 0 | 3 | 2.1 | 3.1 | 11.1 | 4.2 | 23 |
| 18 | 5.1 | 5.1 | 4.6 | 3 | 3 | 0 | 3.6 | 1.5 | 0 | 0.5 | 6.6 | 7.6 | 2.1 | 6.1 | 1.5 | 2.6 | 6.6 | 4.6 | 1.1 | 1.5 | 3 | 4 | 6.6 | 4 | 7.6 | 3.5 | 24 |
| 19 | 5.5 | 4 | 0 | 4 | 4 | 3 | 4 | 2.6 | 2.6 | 4.6 | 2.6 | 0.5 | 7.1 | 3 | 2.6 | 4.6 | 2.1 | 6.6 | 0.5 | 3.6 | 3 | 0 | 0 | 3.6 | 7.1 | 3.1 | 24 |
| 20 | 1.5 | 2.6 | 5.5 | 2.1 | 3.6 | 1.1 | 2.1 | 1.1 | 4 | 3.6 | 2.6 | 2.1 | 6.1 | 0 | 1.5 | 4.6 | 5.5 | 0 | 3.6 | 6.6 | 3.6 | 8.6 | 6.6 | 11.6 | 11.6 | 3.8 | 24 |
| 21 | 5.5 | 9.6 | 8 | 8.6 | 2.6 | 6.6 | 6.1 | 6.1 | 6.6 | 9.1 | 6.1 | 4 | 5.5 | 8.6 | 8 | 10.5 | 9.1 | 12.1 | 10.5 | 10.5 | 13.6 | 17.5 | 20.6 | 21.1 | 21.1 | 9.4 | 24 |
| 22 | 17.5 | 15 | 12.1 | 21.5 | **28.1** | 19.6 | 14.1 | 7.1 | 5.1 | 1.5 | 1.1 | 2.1 | 5.1 | 4.6 | 6.1 | 7.1 | 2.1 | 3 | 1.5 | 2.6 | 3.1 | 3.6 | 3.6 | 1.5 | **28.1** | 7.9 | 24 |
| 23 | 2.1 | 2.6 | 3 | 2.6 | 4 | 5.5 | 2.1 | 5.5 | 1.5 | 0 | 5.5 | 0.5 | 0 | 2.6 | 0 | 1.1 | 0 | 0 | 3.6 | 3 | 8.1 | 4.6 | 3.1 | 0.5 | 8.1 | 2.6 | 24 |
| 24 | 6.6 | 1.5 | 3.6 | 4 | 5.1 | 5.1 | 5.5 | 6.1 | 5.5 | 5.1 | 4.6 | 1.5 | 4.6 | 4.6 | 4 | 5.1 | 2.1 | 8 | 9.6 | 9.6 | 6.1 | 13.6 | 12 | 15.5 | 15.5 | 6.2 | 24 |
| 25 | 12.6 | 15.1 | 14.1 | 12.6 | 12.1 | 14.6 | 12.6 | 11.6 | 8.6 | 9.6 | 9.1 | 10.1 | 8.6 | 9.6 | 10.5 | 8 | 11.1 | 9.6 | 12.1 | 8.6 | 9.1 | 7.6 | 9.5 | 8.6 | 15.1 | **10.7** | 24 |
| 26 | 7.6 | 13.6 | 10.5 | 11.5 | 7.6 | 8 | 8.6 | 8 | 8 | 8.6 | 9.5 | 11.5 | 9.1 | 10.1 | 7.1 | 1.5 | 5.5 | 1.5 | 3.6 | 3.6 | 2.6 | 1.1 | 4 | 1.1 | 13.6 | 6.8 | 24 |
| 27 | 3 | 2.1 | 1.1 | 3.6 | 4 | 2.6 | 4 | 6.6 | 3 | 4.6 | 6.6 | 7.1 | 11 | 6.1 | 4 | 3 | 5.5 | 6.6 | 10.1 | 9.1 | 9.5 | 8.6 | 9.1 | 7.6 | 11.0 | 5.8 | 24 |
| 28 | 6.6 | 9.6 | 3.6 | 7.6 | 10.1 | 11.1 | 7.1 | 8.6 | 7.1 | 4 | 7.6 | 7.6 | 4.6 | 10.5 | 2.1 | 8 | 6.6 | 3.6 | 6.1 | 3.6 | 4 | 6.6 | 6.6 | 5.1 | 11.1 | 6.6 | 24 |
| 29 | 5.5 | 7.6 | 10.1 | 6.1 | 7.6 | 3.6 | 0.5 | 2.1 | 6.6 | 11.6 | 10.1 | 11.1 | 3.6 | 3.1 | 1.1 | 0 | 3.1 | 0 | 1.1 | 1.1 | 0 | 5.5 | 0 | 0 | 11.6 | 4.2 | 24 |
| 30 | 2.6 | 5.1 | 0 | 3.6 | 0.5 | 3 | 1.5 | 3.6 | 0.5 | 3.1 | 0.5 | 4.6 | 3 | 5.1 | 3.1 | 4 | 3.1 | 1.1 | 0 | 1.5 | 0 | 0.5 | 2.6 | 5.5 | 5.5 | 2.4 | 24 |
| 31 | 4 | 4 | 1.5 | 0.5 | 3.6 | 2.6 | 2.6 | 5.1 | 9.6 | 2.6 | 19.6 | 0.5 | 2.6 | 1.1 | 2.1 | 2.1 | 4 | 4.6 | 4 | 6.6 | 1.1 | 4 | 1.5 | 0.5 | 19.6 | 3.8 | 24 |
| HOURLY MAX | 18 | 15 | 14 | 22 | 28 | 20 | 14 | 13 | 11 | 12 | 20 | 12 | 11 | 11 | 13 | 11 | 13 | 14 | 15 | 14 | 14 | 18 | 21 | 21 | | | |
| HOURLY AVG | 5.0 | 5.4 | 4.6 | 4.9 | 5.0 | 4.9 | 4.5 | 4.3 | 4.5 | 4.3 | 4.9 | 4.5 | 4.6 | 4.4 | 4.4 | 4.3 | 4.7 | 4.9 | 4.9 | 5.1 | 4.3 | 5.5 | 5.4 | 5.1 | | | |

**STATUS FLAG CODES**

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

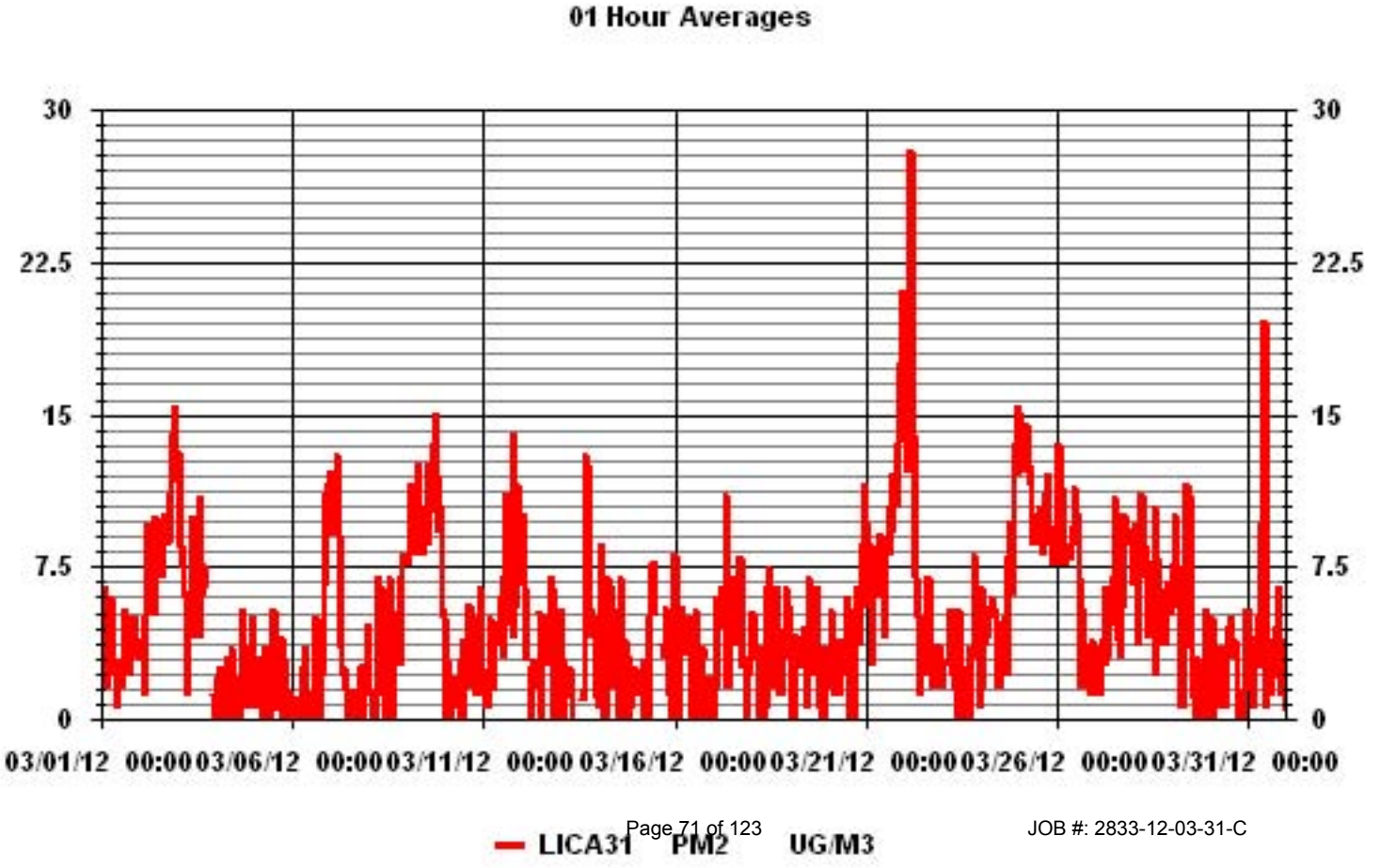



**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR - ug/m3 | 24-HR 30 ug/m3

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | - | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | PROPOSED CANADA WIDE GUIDELINE | | | | |
| NUMBER OF NON-ZERO READINGS: | 649 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 28.1 | UG/M$^3$ | @ HOUR(S) | 4 | ON DAY(S) | 22 |
| MAXIMUM 24-HR AVERAGE: | 10.7 | UG/M$^3$ | | | ON DAY(S) | 25 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 730 | HRS |
| MONTHLY CALIBRATION TIME: | 4 | HRS | AMD OPERATION UPTIME: | 98.1 | % |
| STANDARD DEVIATION: | 3.99 | | MONTHLY AVERAGE: | 4.76 | UG/M$^3$ |






JOB #: 2833-12-03-31-C

LICA31
PM2 / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30.0 | 4.68 | 4.68 | 8.81 | 6.33 | 4.54 | 6.74 | 7.02 | 6.47 | 7.71 | 3.85 | 8.40 | 8.40 | 8.67 | 3.58 | 4.13 | 5.92 | 100.00 |
| < | 60.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 80.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 120.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 240.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 240.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.68 | 4.68 | 8.81 | 6.33 | 4.54 | 6.74 | 7.02 | 6.47 | 7.71 | 3.85 | 8.40 | 8.40 | 8.67 | 3.58 | 4.13 | 5.92 | |

Calm : .00 %

Total # Operational Hours : 726

Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30.0 | 34 | 34 | 64 | 46 | 33 | 49 | 51 | 47 | 56 | 28 | 61 | 61 | 63 | 26 | 30 | 43 | 726 |
| < | 60.0 | | | | | | | | | | | | | | | | | |
| < | 80.0 | | | | | | | | | | | | | | | | | |
| < | 120.0 | | | | | | | | | | | | | | | | | |
| < | 240.0 | | | | | | | | | | | | | | | | | |
| >= | 240.0 | | | | | | | | | | | | | | | | | |
| | Totals | 34 | 34 | 64 | 46 | 33 | 49 | 51 | 47 | 56 | 28 | 61 | 61 | 63 | 26 | 30 | 43 | |

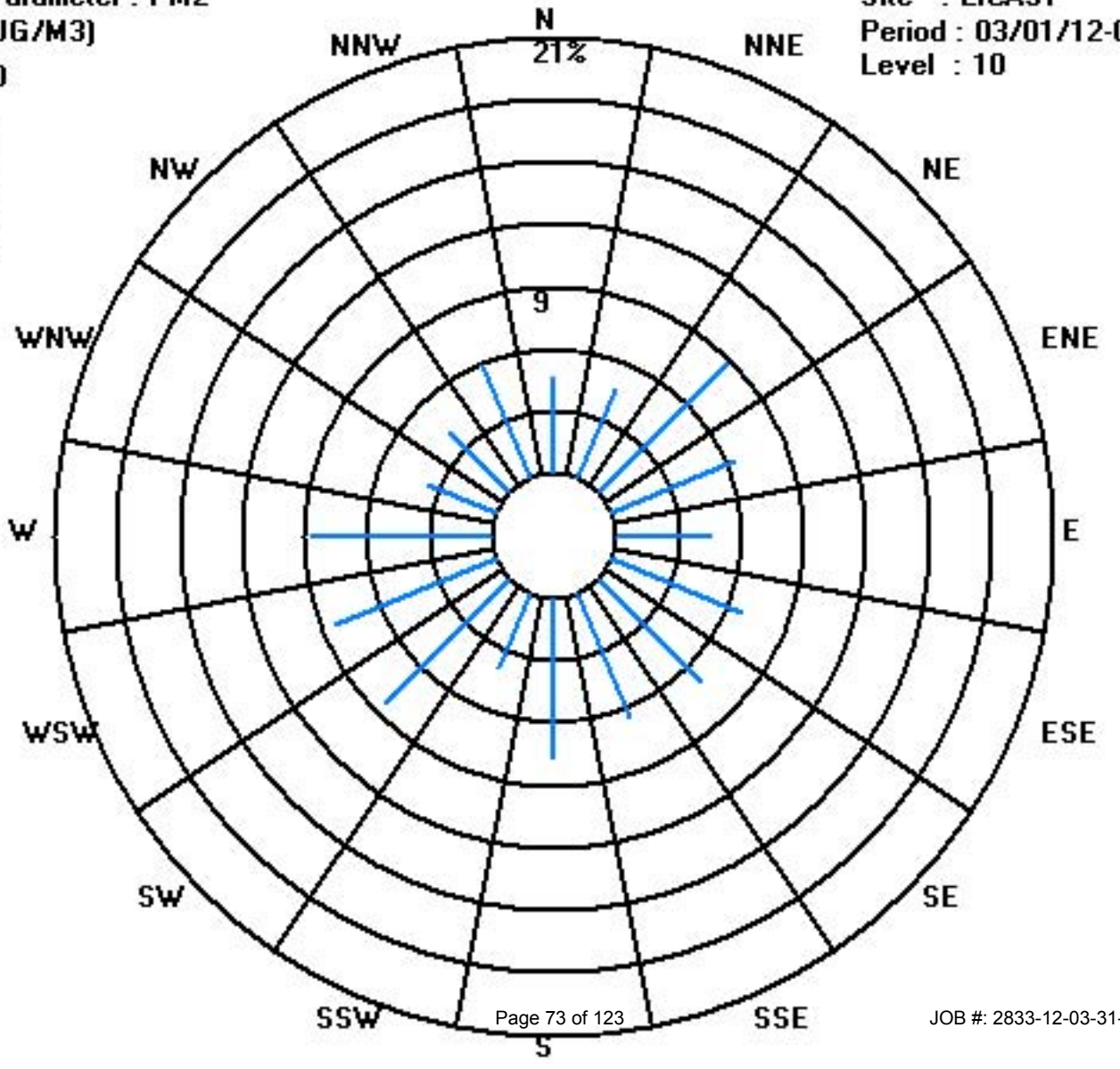
Calm : .00 %

Total # Operational Hours : 726

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

>= 240.0
< 240.0
< 120.0
< 80.0
< 60.0
< 30.0

Site : LICA31
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-31-C

# Temperature

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA**

MARCH 2012

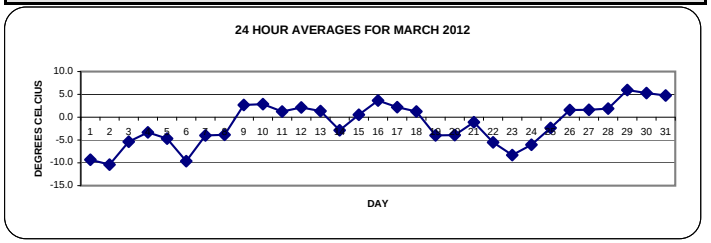
**AMBIENT TEMPERATURE** hourly averages (Degrees C)

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 | -8.1 | -8.8 | -9.5 | -10.3 | -10.9 | -11.4 | -11.9 | -12.1 | -11.7 | -10.6 | -9.9 | -8.5 | -7.4 | -6.4 | -5.7 | -5.2 | -6 | -7 | -8.2 | -9.1 | -10.2 | -10.7 | -11.7 | -12.3 | -5.2 | -9.3 | 24 |
| 2 | -12.5 | -12.8 | -13.9 | -14.4 | -14.9 | -15.5 | -15.9 | **-16.5** | -15 | -13.3 | -10 | -9 | -6.8 | -6.2 | -4.5 | -4.8 | -6 | -6.5 | -7.6 | -8.6 | -9 | -8.9 | -8.4 | -8.5 | -4.5 | -10.4 | 24 |
| 3 | -7.2 | -7.5 | -7.2 | -7.4 | -8.2 | -11.1 | -10.7 | -10.7 | -9.5 | -7.3 | -5.1 | -3.2 | -2.3 | -1.9 | -2.3 | -0.3 | -0.1 | -0.6 | -2 | **P** | **P** | **P** | -3.7 | -4.5 | -0.1 | -5.4 | 21 |
| 4 | -4.7 | -4.9 | -6 | -6.9 | -7 | -7.6 | -9.8 | -9 | -7.9 | -6.2 | -3.3 | -0.6 | 0.7 | 1.4 | 1.9 | 1.5 | 0.3 | -0.5 | -1.1 | -1.2 | -1.7 | -2.1 | -2.3 | -2.7 | 1.9 | -3.3 | 24 |
| 5 | -3 | -3.2 | -3.7 | -4.2 | -4.2 | -4.6 | -5.3 | -6.1 | -5.2 | -4 | -3.7 | -3.3 | -3.4 | -3.4 | -3.6 | -4 | -4.5 | -5 | -5.4 | -5.7 | -6.3 | -6.6 | -6.9 | -7.4 | -3.0 | -4.7 | 24 |
| 6 | -8.3 | -9.5 | -10.5 | -11.2 | -12.1 | -12.7 | -12.7 | -13.1 | -12.4 | -9.5 | -7.1 | -5.3 | -3.8 | -3.3 | -3.7 | -5.2 | -6.8 | -8.2 | -10.5 | -12 | -13.3 | -13.7 | -13.1 | -13.2 | -3.3 | -9.6 | 24 |
| 7 | -12.4 | -11.9 | -11.2 | -10.9 | -10 | -9.1 | -9 | -8.7 | -6.6 | -3.6 | -0.6 | 1 | 1.6 | 1.3 | 1 | 0.6 | 0.4 | -0.4 | -1.9 | -2.4 | -1.4 | -1 | -0.1 | -0.6 | 1.6 | -4.0 | 24 |
| 8 | -1.2 | -2.2 | -4.2 | -5.1 | -6 | -6.3 | -6.8 | -6.8 | -6.1 | -5.4 | -4.5 | -3.9 | -3.8 | -3.1 | -2.8 | -3.1 | -2.8 | -2.9 | -3 | -3 | -2.9 | -2.5 | -2.1 | -2.1 | -1.2 | -3.9 | 24 |
| 9 | -2.5 | -2.2 | -1.9 | -2 | -2.2 | -2.4 | -2.5 | -2.1 | -1.2 | 0.5 | 2.5 | 5.2 | 8.1 | 9.8 | 9 | 7.3 | 7.7 | 7.6 | 5.6 | 4.9 | 5.5 | 3.5 | 2.9 | 3.2 | 9.8 | 2.7 | 24 |
| 10 | 2.9 | 2.7 | 2.7 | 2.2 | 0.8 | -0.5 | -0.3 | -0.2 | -0.2 | 1.5 | 4.5 | 6.5 | 8.2 | 7.6 | 6.4 | 5.1 | 4.3 | 3.5 | 2.8 | 2.4 | 1.6 | 1.2 | 1.4 | 1.4 | 8.2 | 2.9 | 24 |
| 11 | 0.4 | 0.5 | -0.1 | -1.4 | -2.2 | -2.5 | -2.9 | -2.7 | -0.7 | 0.3 | 1.5 | 2.9 | 3.5 | 4.2 | 4.4 | 4.2 | 3.7 | 3.1 | 2.6 | 2.4 | 2.4 | 2.2 | 2 | 1.9 | 4.4 | 1.2 | 24 |
| 12 | 1.9 | 1.4 | 0.7 | 0.1 | 0.2 | 0.4 | 0.2 | 0.3 | 1.4 | 2.8 | 3.7 | 3.7 | 4.1 | 4.4 | 4.8 | 3.9 | 3.3 | 2.5 | 1.9 | 1.9 | 2.1 | 2.1 | 1.7 | 1.8 | 4.8 | 2.1 | 24 |
| 13 | 1.5 | 1 | 0.6 | 0.5 | 0.2 | 0.3 | -0.1 | 0.5 | 1.3 | 2.4 | 3.6 | 4.2 | 6.5 | 8.5 | 7.9 | 5.8 | 2.8 | 2.2 | 1.4 | -1.7 | -2.5 | -4.1 | -4.9 | -5.6 | 8.5 | 1.3 | 24 |
| 14 | -6.7 | -7.5 | -7.9 | -8.3 | -8.6 | -9.2 | -9.5 | -8.1 | -5.5 | -3.9 | -1.6 | 0.9 | 2.1 | 1.7 | 2.4 | 2.7 | 2.7 | 2.1 | 0.3 | -0.3 | -1.1 | -1.8 | -1.9 | -1.7 | 2.7 | -2.9 | 24 |
| 15 | -1.4 | -1.4 | -2.4 | -3.5 | -4.4 | -5.3 | -6 | -5.3 | -2.4 | 2.6 | 4 | 4.5 | **P** | **P** | **P** | **P** | 4.6 | 4.7 | 4.3 | 4 | 3.8 | 3.6 | 3.3 | 3.3 | 4.7 | 0.5 | 20 |
| 16 | 3.2 | 3.1 | 2.3 | 2 | 1.1 | 0.6 | 0.6 | 0.9 | 2.1 | 4.2 | 7.3 | 8.6 | 8.6 | 7.6 | 7.4 | 6.8 | 6 | 5.2 | 3.2 | 2.4 | 1.7 | 0.9 | 1.5 | 0.3 | 8.6 | 3.7 | 24 |
| 17 | -1.7 | -1.8 | -1.9 | -0.8 | -1 | -1.1 | -0.5 | -0.2 | 1.9 | 3.7 | 4.8 | 5.7 | 5.8 | 5.3 | 5.9 | 5.7 | 5.5 | 5.2 | 5.1 | 4.5 | 2 | 0.3 | 0.1 | 0.1 | 5.9 | 2.2 | 24 |
| 18 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.5 | 0.4 | 0.5 | 0.8 | 1.4 | 2 | 2.8 | 3.3 | 3.7 | 3.5 | 3.6 | 3.8 | 2.9 | 1.3 | 0.3 | 0.1 | -0.3 | -0.9 | -1.3 | 3.8 | 1.2 | 24 |
| 19 | -1.2 | -1.5 | -2 | -2.6 | -3.3 | -3.8 | -4.2 | -4.4 | -4.6 | -4.5 | -4 | -3.8 | -3.6 | -3.2 | -3.1 | -3.3 | -4.3 | -5.1 | -5.2 | -5.3 | -5.3 | -5.6 | -5.8 | -6 | -1.2 | -4.0 | 24 |
| 20 | -6.2 | -6.3 | -5.9 | -5.8 | -6.6 | -6.7 | -6.6 | -6.1 | -5.7 | -4.9 | -2.1 | 1.5 | 2.5 | -0.4 | -0.6 | -0.1 | -1.4 | -1.9 | -2.8 | -4.2 | -5.2 | -5.9 | -6 | -6.7 | 2.5 | -3.9 | 24 |
| 21 | -6.6 | -6.3 | -6.7 | -5.8 | -5.3 | -5.9 | -6.7 | -5.5 | -0.8 | -0.3 | 1.7 | 3.2 | 3.7 | 4.5 | 5.7 | 5.1 | 4.3 | 2.7 | 1.3 | -0.5 | -1.2 | -1.8 | -2.4 | -2.6 | 5.7 | -1.1 | 24 |
| 22 | -1.8 | -1.7 | -3.8 | -5.9 | -6.2 | -7.6 | -8.1 | -7.6 | -6.9 | -6.2 | -5.6 | -5 | -4.2 | -3.7 | -3.5 | -4 | -4.1 | -5.2 | -5.9 | -6.4 | -6.8 | -7.1 | -7.4 | -7.7 | -1.7 | -5.5 | 24 |
| 23 | -7.9 | -8.3 | -8.6 | -8.7 | -8.7 | -8.8 | -8.9 | -8.7 | -8.6 | -8.1 | -7.3 | -6.4 | -6 | -5.9 | -6.2 | -7 | -7.9 | -8.5 | -9.2 | -9.5 | -9.6 | -9.7 | -10 | -10.8 | -5.9 | -8.3 | 24 |
| 24 | -10.5 | -10.2 | -11.1 | -11.3 | -10.7 | -10.5 | -9.6 | -8.5 | -7.5 | -6.3 | -4.4 | -2 | 0.1 | -0.8 | -1.1 | -1.2 | -1.4 | -2.2 | -3.9 | -5.3 | -5.6 | -6.5 | -7 | -7.5 | 0.1 | -6.0 | 24 |
| 25 | -7.9 | -8.2 | -8.6 | -7.8 | -5.3 | -5.3 | -4.9 | -4 | -3 | -1.9 | -0.9 | -0.3 | 0.1 | 0.6 | 1.4 | 1.9 | 0.9 | 0.2 | 0.2 | -0.2 | -0.3 | -1 | -1 | -1.2 | 1.9 | -2.4 | 24 |
| 26 | -1.9 | -3.1 | -3.1 | -3.2 | -3.4 | -5.2 | -5.7 | -5.3 | -2.6 | 0.1 | 4.1 | 4.5 | 6.3 | 6.9 | 8.1 | 9.1 | 7.6 | 6.3 | 4.9 | 4.1 | 3.4 | 2.8 | 1.9 | 1.2 | 9.1 | 1.6 | 24 |
| 27 | 0.6 | -0.3 | -0.9 | -1.4 | -1.8 | -2.3 | -2.6 | -2.1 | 0.8 | 2.7 | 3.9 | 4.9 | 4.7 | 5.4 | 6.7 | 5.9 | 5.6 | 4.2 | 2.7 | 1.8 | 1 | 0.2 | -0.4 | -0.5 | 6.7 | 1.6 | 24 |
| 28 | -1.1 | -0.7 | 0 | -0.3 | -1.2 | -1.8 | -2 | -1.7 | 0.7 | 1.9 | 3.8 | 4.1 | 3.8 | 4.2 | 4.6 | 5.9 | 5 | 4.3 | 3.8 | 3.3 | 2.9 | 2.2 | 1.8 | 1.7 | 5.9 | 1.9 | 24 |
| 29 | 1.6 | 1.5 | 1.3 | 1.2 | 1.1 | 1.1 | 1 | 1.3 | 1.9 | 4.1 | 7.2 | 8.8 | 10.4 | 11.3 | 11.9 | **12.3** | 11.4 | 11.9 | 10 | 8.1 | 7 | 6 | 5.4 | 5 | **12.3** | **6.0** | 24 |
| 30 | 4.3 | 3.5 | 3 | 3 | 2.4 | 2 | 0.2 | 1.8 | 4.7 | 7.4 | 9.3 | 9.7 | 10.5 | 11.8 | 10.8 | 10.7 | 9.1 | 6.8 | 5.1 | 3.3 | 2.9 | 2.5 | 1.4 | 0.6 | 11.8 | 5.3 | 24 |
| 31 | 0.6 | 0.8 | 0.4 | 0 | -1.2 | -1.6 | -1.2 | 0.9 | 4.1 | 6.3 | 7.7 | 8 | 9 | 9.7 | 9.8 | 10 | 9.9 | 8.5 | 7.2 | 6.3 | 5.5 | 4.7 | 4.7 | 4 | 10.0 | 4.8 | 24 |
| HOURLY MAX | 4.3 | 3.5 | 3.0 | 3.0 | 2.4 | 2.0 | 1.0 | 1.8 | 4.7 | 7.4 | 9.3 | 9.7 | 10.5 | 11.8 | 11.9 | 12.3 | 11.4 | 11.9 | 10.0 | 8.1 | 7.0 | 6.0 | 5.4 | 5.0 | | | |
| HOURLY AVG | -3.2 | -3.4 | -3.9 | -4.2 | -4.5 | -5.0 | -5.2 | -4.8 | -3.4 | -1.7 | 0.0 | 1.3 | 2.1 | 2.4 | 2.6 | 2.3 | 1.7 | 1.0 | -0.1 | -0.9 | -1.4 | -1.9 | -2.2 | -2.5 | | | |

**STATUS FLAG CODES**

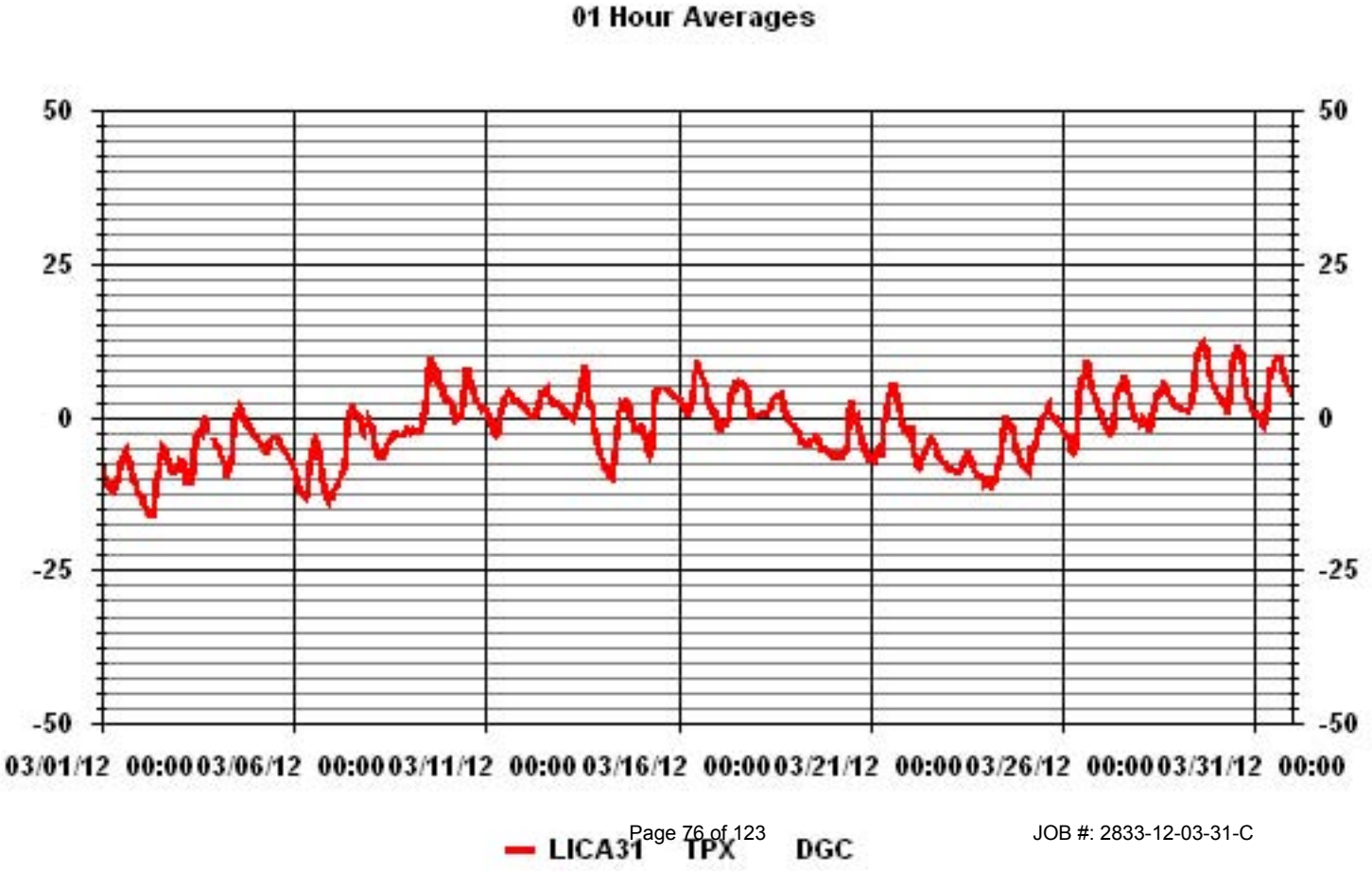
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MINIMUM 1-HR AVERAGE: | -16.5 | $^{O}$C | @ HOUR(S) | 7 | ON DAY(S) | 2 |
| MAXIMUM 1-HR AVERAGE: | 12.3 | $^{O}$C | @ HOUR(S) | 15 | ON DAY(S) | 29 |
| MAXIMUM 24-HR AVERAGE: | 6.0 | $^{O}$C | | | ON DAY(S) | 29 |

| | | | | | |
|---|---|---|---|---|---|
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 737 | HRS |
| | | | AMD OPERATION UPTIME: | 99.1 | % |
| STANDARD DEVIATION: | 5.54 | | MONTHLY AVERAGE: | -1.47 | $^{O}$C |






JOB #: 2833-12-03-31-C

# Barometric Pressure

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

MARCH 2012

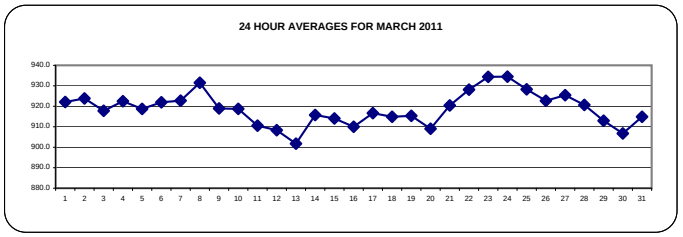
**BAROMETRIC PRESSURE** hourly averages (millibar)

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 | 916 | 917 | 917 | 917 | 917 | 918 | 919 | 919 | 920 | 921 | 922 | 922 | 923 | 923 | 924 | 925 | 925 | 926 | 926 | 926 | 926 | 927 | 927 | 927 | 927 | 922.1 | 24 |
| 2 | 927 | 927 | 927 | 927 | 926 | 926 | 926 | 925 | 925 | 925 | 925 | 924 | 924 | 924 | 924 | 923 | 923 | 922 | 921 | 921 | 920 | 920 | 920 | 920 | 927 | 923.8 | 24 |
| 3 | 920 | 920 | 920 | 919 | 919 | 919 | 918 | 917 | 917 | 916 | 916 | 916 | 916 | 916 | 916 | 916 | 917 | 917 | 917 | **P** | **P** | **P** | 921 | 921 | 921 | 917.8 | 21 |
| 4 | 922 | 923 | 923 | 923 | 923 | 924 | 924 | 923 | 923 | 923 | 924 | 924 | 924 | 924 | 923 | 923 | 922 | 922 | 921 | 921 | 920 | 920 | 920 | 920 | 924 | 922.5 | 24 |
| 5 | 920 | 920 | 919 | 919 | 919 | 919 | 919 | 919 | 919 | 919 | 919 | 920 | 919 | 919 | 918 | 918 | 918 | 918 | 918 | 918 | 918 | 918 | 918 | 918 | 920 | 918.7 | 24 |
| 6 | 919 | 919 | 919 | 919 | 919 | 920 | 921 | 921 | 922 | 923 | 924 | 924 | 925 | 925 | 925 | 924 | 924 | 924 | 923 | 923 | 922 | 921 | 921 | 920 | 925 | 922.0 | 24 |
| 7 | 919 | 919 | 919 | 919 | 919 | 919 | 919 | 920 | 920 | 921 | 923 | 923 | 924 | 924 | 924 | 925 | 925 | 925 | 925 | 925 | 926 | 927 | 928 | 928 | 928 | 922.8 | 24 |
| 8 | 929 | 930 | 931 | 931 | 931 | 932 | 933 | 933 | 933 | 934 | 934 | 934 | 934 | 933 | 933 | 933 | 932 | 932 | 931 | 930 | 929 | 929 | 928 | 927 | 934 | 931.5 | 24 |
| 9 | 925 | 925 | 924 | 923 | 922 | 921 | 920 | 919 | 918 | 918 | 918 | 918 | 919 | 918 | 918 | 917 | 917 | 916 | 916 | 916 | 917 | 916 | 917 | 917 | 925 | 919.0 | 24 |
| 10 | 918 | 918 | 918 | 918 | 918 | 919 | 918 | 918 | 919 | 920 | 920 | 920 | 921 | 921 | 920 | 920 | 919 | 919 | 919 | 918 | 918 | 917 | 917 | 917 | 921 | 918.8 | 24 |
| 11 | 916 | 915 | 915 | 914 | 914 | 913 | 913 | 912 | 913 | 913 | 912 | 912 | 912 | 911 | 910 | 909 | 909 | 908 | 908 | 907 | 906 | 904 | 904 | 903 | 916 | 910.5 | 24 |
| 12 | 903 | 904 | 904 | 904 | 905 | 907 | 908 | 909 | 910 | 911 | 912 | 912 | 912 | 912 | 912 | 912 | 911 | 910 | 909 | 908 | 907 | 906 | 906 | 906 | 912 | 908.3 | 24 |
| 13 | 906 | 905 | 904 | 904 | 903 | 902 | 901 | 901 | 900 | 900 | 899 | 898 | 899 | 899 | 899 | 899 | 899 | 900 | 902 | 902 | 903 | 905 | 905 | 907 | 907 | 901.8 | 24 |
| 14 | 908 | 909 | 910 | 911 | 912 | 912 | 913 | 914 | 915 | 916 | 917 | 918 | 918 | 919 | 919 | 920 | 920 | 920 | 919 | 918 | 918 | 918 | 917 | 917 | 920 | 915.8 | 24 |
| 15 | 917 | 916 | 916 | 916 | 916 | 916 | 916 | 917 | 917 | 918 | 919 | 919 | **P** | **P** | **P** | **P** | 914 | 913 | 911 | 909 | 909 | 908 | 907 | 907 | 919 | 914.1 | 20 |
| 16 | 907 | 907 | 908 | 908 | 908 | 908 | 908 | 908 | 908 | 908 | 909 | 910 | 910 | 910 | 911 | 912 | 913 | 913 | 913 | 912 | 912 | 912 | 912 | 913 | 913 | 910.0 | 24 |
| 17 | 914 | 915 | 915 | 916 | 916 | 916 | 916 | 917 | 918 | 919 | 919 | 920 | 920 | 919 | 918 | 918 | 917 | 917 | 916 | 916 | 916 | 915 | 914 | 913 | 920 | 916.7 | 24 |
| 18 | 913 | 912 | 912 | 912 | 911 | 911 | 912 | 912 | 913 | 913 | 914 | 915 | 915 | 916 | 916 | 917 | 917 | 917 | 917 | 917 | 918 | 919 | 919 | 919 | 919 | 914.9 | 24 |
| 19 | 919 | 918 | 918 | 918 | 919 | 918 | 918 | 918 | 918 | 918 | 917 | 917 | 916 | 915 | 914 | 913 | 914 | 913 | 913 | 912 | 911 | 911 | 910 | 910 | 919 | 915.3 | 24 |
| 20 | 910 | 910 | 910 | 910 | 909 | 909 | 908 | 908 | 908 | 909 | 909 | 909 | 909 | 909 | 908 | 908 | 908 | 908 | 909 | 909 | 909 | 910 | 910 | 911 | 911 | 909.0 | 24 |
| 21 | 912 | 912 | 913 | 914 | 915 | 916 | 916 | 917 | 918 | 920 | 920 | 921 | 922 | 923 | 924 | 924 | 925 | 925 | 925 | 925 | 925 | 926 | 926 | 926 | 926 | 920.4 | 24 |
| 22 | 926 | 927 | 927 | 927 | 927 | 927 | 927 | 927 | 927 | 927 | 928 | 928 | 928 | 928 | 928 | 928 | 928 | 929 | 929 | 929 | 930 | 930 | 931 | 932 | 932 | 928.1 | 24 |
| 23 | 932 | 933 | 932 | 932 | 933 | 934 | 934 | 935 | 935 | 935 | 935 | 935 | 936 | 935 | 935 | 935 | 934 | 935 | 935 | 935 | 935 | 935 | 935 | 935 | 936 | 934.4 | 24 |
| 24 | 934 | 934 | 934 | 934 | 934 | 934 | 935 | 935 | 935 | 935 | 936 | 936 | **937** | **937** | 936 | 936 | 935 | 935 | 934 | 933 | 932 | 932 | 932 | 932 | **937** | **934.5** | 24 |
| 25 | 931 | 931 | 931 | 930 | 930 | 930 | 930 | 930 | 930 | 930 | 930 | 930 | 930 | 929 | 929 | 928 | 927 | 926 | 926 | 925 | 925 | 924 | 924 | 923 | 931 | 928.3 | 24 |
| 26 | 923 | 922 | 922 | 921 | 921 | 921 | 921 | 921 | 922 | 923 | 924 | 924 | 924 | 924 | 924 | 924 | 924 | 923 | 923 | 923 | 923 | 923 | 923 | 922 | 924 | 922.7 | 24 |
| 27 | 922 | 922 | 923 | 923 | 923 | 923 | 923 | 924 | 924 | 926 | 926 | 927 | 927 | 927 | 928 | 928 | 928 | 928 | 927 | 927 | 926 | 926 | 926 | 926 | 928 | 925.4 | 24 |
| 28 | 925 | 925 | 925 | 925 | 924 | 923 | 923 | 922 | 922 | 922 | 922 | 921 | 921 | 920 | 920 | 920 | 919 | 919 | 918 | 917 | 917 | 916 | 915 | 915 | 925 | 920.7 | 24 |
| 29 | 914 | 914 | 914 | 913 | 913 | 913 | 913 | 913 | 913 | 914 | 914 | 915 | 915 | 915 | 915 | 914 | 914 | 914 | 913 | 911 | 910 | 910 | 909 | 908 | 915 | 913.0 | 24 |
| 30 | 907 | 907 | 906 | 905 | 905 | 904 | 903 | 903 | 904 | 904 | 905 | 905 | 906 | 906 | 907 | 908 | 908 | 909 | 909 | 909 | 910 | 910 | 911 | 911 | 911 | 906.8 | 24 |
| 31 | 912 | 912 | 912 | 913 | 913 | 913 | 914 | 914 | 915 | 916 | 917 | 917 | 917 | 917 | 917 | 916 | 917 | 916 | 916 | 915 | 915 | 915 | 914 | 914 | 917 | 914.9 | 24 |
| HOURLY MAX | 934 | 934 | 934 | 934 | 934 | 934 | 935 | 935 | 935 | 935 | 936 | 936 | 937 | 937 | 936 | 936 | 935 | 935 | 935 | 935 | 935 | 935 | 935 | 935 | | | |
| HOURLY AVG | 918 | 918 | 918 | 918 | 918 | 918 | 918 | 918 | 919 | 919 | 920 | 920 | 920 | 920 | 920 | 920 | 919 | 919 | 919 | 919 | 918 | 918 | 918 | 918 | | | |

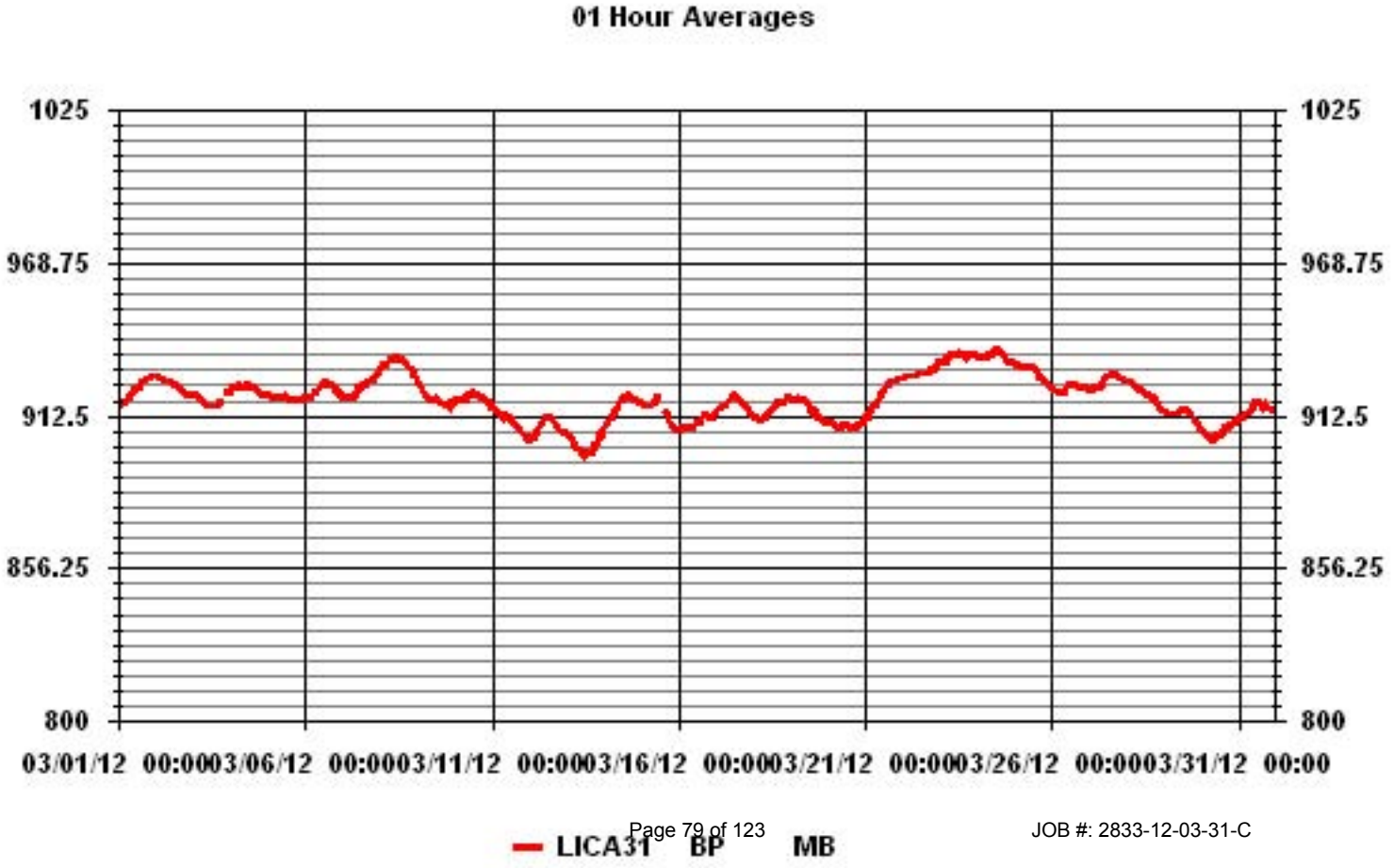
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 937 | MB | @ HOUR(S) | 12, 13 | ON DAY(S) | 24 |
| MAXIMUM 24-HR AVERAGE: | 934.5 | MB | | | ON DAY(S) | 24 |
| | | | | | VAR-VARIOUS | |
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | | 737 | HRS |
| | | | AMD OPERATION UPTIME: | | 99.1 | % |
| STANDARD DEVIATION: | 8.19 | | MONTHLY AVERAGE: | | 919 | MB |






JOB #: 2833-12-03-31-C

# Relative Humidity

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA

MARCH 2012

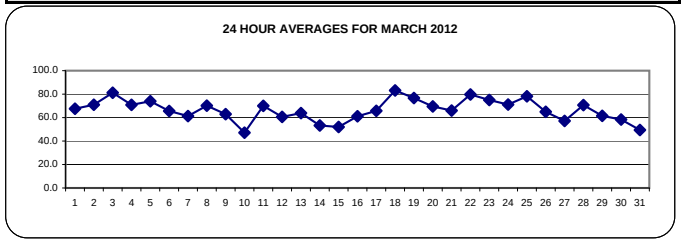
**RELATIVE HUMIDITY** hourly averages (%)

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 | 61 | 66 | 70 | 73 | 74 | 75 | 75 | 75 | 72 | 68 | 66 | 61 | 58 | 57 | 56 | 54 | 58 | 61 | 66 | 69 | 73 | 76 | 78 | 79 | 79 | 67.5 | 24 |
| 2 | 79 | 79 | 79 | 78 | 78 | 77 | 76 | 75 | 75 | 73 | 67 | 64 | 58 | 58 | 57 | 58 | 63 | 64 | 67 | 74 | 77 | 76 | 75 | 76 | 79 | 71.0 | 24 |
| 3 | 78 | 83 | 85 | 84 | 83 | 80 | 81 | 80 | 81 | 82 | 82 | 82 | 82 | 82 | 82 | 76 | 75 | 76 | 79 | **P** | **P** | **P** | 86 | 86 | 86 | 81.2 | 21 |
| 4 | 81 | 77 | 79 | 80 | 80 | 80 | 82 | 82 | 81 | 75 | 68 | 58 | 52 | 49 | 47 | 53 | 67 | 70 | 69 | 68 | 70 | 74 | 78 | 81 | 82 | 70.9 | 24 |
| 5 | 84 | 85 | 85 | 87 | 87 | 86 | 85 | 79 | 73 | 69 | 68 | 67 | 66 | 66 | 67 | 68 | 70 | 71 | 72 | 70 | 68 | 67 | 67 | 67 | 87 | 73.9 | 24 |
| 6 | 68 | 70 | 72 | 74 | 74 | 72 | 72 | 73 | 70 | 63 | 56 | 50 | 47 | 46 | 47 | 53 | 63 | 66 | 69 | 71 | 74 | 76 | 74 | 75 | 76 | 65.6 | 24 |
| 7 | 78 | 79 | 79 | 80 | 81 | 82 | 81 | 78 | 69 | 56 | 46 | 41 | 38 | 41 | 45 | 47 | 48 | 52 | 57 | 61 | 60 | 62 | 56 | 54 | 82 | 61.3 | 24 |
| 8 | 58 | 63 | 66 | 67 | 66 | 68 | 71 | 71 | 68 | 66 | 64 | 67 | 72 | 71 | 70 | 71 | 72 | 73 | 75 | 76 | 77 | 77 | 77 | 78 | 78 | 70.2 | 24 |
| 9 | 79 | 78 | 79 | 79 | 78 | 78 | 78 | 76 | 73 | 67 | 60 | 53 | 45 | 41 | 45 | 51 | 49 | 49 | 54 | 57 | 55 | 61 | 64 | 61 | 79 | 62.9 | 24 |
| 10 | 53 | 47 | 45 | 48 | 54 | 58 | 56 | 57 | 58 | 55 | 44 | 35 | 28 | 27 | 32 | 39 | 41 | 44 | 45 | 47 | 51 | 55 | 57 | 55 | 58 | 47.1 | 24 |
| 11 | 58 | 61 | 74 | 82 | 86 | 88 | 88 | 87 | 75 | 67 | 60 | 54 | 54 | 56 | 60 | 61 | 64 | 67 | 69 | 72 | 73 | 73 | 75 | 76 | 88 | 70.0 | 24 |
| 12 | 76 | 79 | 86 | 89 | 90 | 90 | 87 | 79 | 69 | 58 | 50 | 45 | 37 | 33 | 37 | 37 | 43 | 48 | 52 | 54 | 53 | 53 | 55 | 54 | 90 | 60.6 | 24 |
| 13 | 56 | 59 | 60 | 61 | 63 | 65 | 68 | 68 | 68 | 67 | 65 | 64 | 58 | 53 | 56 | 60 | 68 | 69 | 64 | 73 | 68 | 67 | 67 | 65 | 73 | 63.8 | 24 |
| 14 | 65 | 68 | 71 | 72 | 73 | 75 | 76 | 70 | 62 | 60 | 55 | 49 | 44 | 42 | 38 | 35 | 34 | 36 | 38 | 40 | 44 | 47 | 44 | 41 | 76 | 53.3 | 24 |
| 15 | 40 | 41 | 48 | 53 | 57 | 62 | 65 | 63 | 56 | 44 | 43 | 42 | **P** | **P** | **P** | **P** | 47 | 45 | 47 | 49 | 53 | 57 | 62 | 66 | 66 | 52.0 | 20 |
| 16 | 68 | 68 | 71 | 72 | 75 | 76 | 75 | 74 | 71 | 62 | 48 | 43 | 40 | 48 | 51 | 55 | 54 | 54 | 58 | 59 | 59 | 63 | 60 | 63 | 76 | 61.1 | 24 |
| 17 | 72 | 77 | 80 | 76 | 76 | 78 | 75 | 74 | 65 | 58 | 56 | 49 | 48 | 53 | 48 | 49 | 48 | 46 | 47 | 57 | 78 | 89 | 89 | 90 | 90 | 65.8 | 24 |
| 18 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 85 | 80 | 76 | 74 | 71 | 67 | 68 | 76 | 79 | 81 | 83 | 83 | 83 | 90 | **83.1** | 24 |
| 19 | 82 | 81 | 81 | 80 | 79 | 79 | 78 | 78 | 77 | 74 | 72 | 69 | 67 | 63 | 59 | 59 | 73 | 83 | 85 | 85 | 85 | 84 | 83 | 84 | 85 | 76.7 | 24 |
| 20 | 83 | 80 | 80 | 79 | 80 | 81 | 80 | 77 | 74 | 70 | 60 | 49 | 46 | 56 | 55 | 56 | 62 | 62 | 65 | 68 | 73 | 76 | 77 | 79 | 83 | 69.5 | 24 |
| 21 | 79 | 79 | 80 | 80 | 80 | 82 | 85 | 81 | 63 | 60 | 51 | 47 | 49 | 48 | 45 | 47 | 50 | 56 | 60 | 64 | 69 | 73 | 77 | 79 | 85 | 66.0 | 24 |
| 22 | 73 | 71 | 78 | 84 | 85 | 85 | 84 | 81 | 77 | 73 | 71 | 70 | 74 | 78 | 80 | 84 | 84 | 84 | 84 | 84 | 83 | 83 | 82 | 81 | 85 | 79.7 | 24 |
| 23 | 80 | 80 | 79 | 79 | 79 | 79 | 79 | 78 | 75 | 73 | 70 | 66 | 65 | 66 | 67 | 70 | 72 | 72 | 75 | 77 | 78 | 79 | 80 | 82 | 82 | 75.0 | 24 |
| 24 | 82 | 81 | 82 | 82 | 81 | 81 | 81 | 81 | 79 | 72 | 65 | 57 | 50 | 54 | 56 | 59 | 60 | 63 | 67 | 70 | 72 | 75 | 77 | 80 | 82 | 71.1 | 24 |
| 25 | 82 | 84 | 84 | 85 | 84 | 83 | 83 | 82 | 80 | 77 | 73 | 72 | 70 | 70 | 70 | 69 | 72 | 75 | 77 | 79 | 79 | 81 | 82 | 83 | 85 | 78.2 | 24 |
| 26 | 85 | 87 | 88 | 88 | 88 | 87 | 86 | 85 | 85 | 84 | 73 | 67 | 57 | 53 | 46 | 40 | 44 | 46 | 50 | 50 | 43 | 41 | 42 | 43 | 88 | 64.9 | 24 |
| 27 | 43 | 47 | 48 | 49 | 53 | 57 | 59 | 60 | 54 | 50 | 49 | 48 | 50 | 49 | 45 | 47 | 49 | 58 | 65 | 71 | 76 | 80 | 83 | 82 | 83 | 57.2 | 24 |
| 28 | 83 | 80 | 77 | 78 | 77 | 73 | 71 | 73 | 68 | 65 | 62 | 61 | 63 | 64 | 63 | 57 | 60 | 64 | 68 | 71 | 74 | 78 | 82 | 84 | 84 | 70.7 | 24 |
| 29 | 86 | 88 | 89 | 90 | 90 | 90 | 90 | 90 | 90 | 87 | 68 | 60 | 48 | 39 | 29 | 25 | 27 | 28 | 32 | 38 | 41 | 48 | 50 | 53 | 90 | 61.5 | 24 |
| 30 | 58 | 60 | 62 | 61 | 66 | 69 | 76 | 72 | 64 | 57 | 51 | 49 | 45 | 40 | 38 | 39 | 46 | 53 | 59 | 67 | 68 | 64 | 67 | 69 | 76 | 58.3 | 24 |
| 31 | 66 | 65 | 66 | 67 | 72 | 75 | 75 | 70 | 58 | 49 | 43 | 40 | 33 | 28 | 31 | 31 | 31 | 34 | 38 | 40 | 42 | 43 | 43 | 46 | 75 | 49.4 | 24 |
| HOURLY MAX | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 89 | 85 | 82 | 82 | 82 | 84 | 84 | 84 | 85 | 85 | 85 | 89 | 89 | 90 | | | |
| HOURLY AVG | 71.8 | 72.7 | 74.6 | 75.7 | 76.7 | 77.5 | 77.7 | 76.1 | 71.6 | 66.8 | 61.1 | 56.9 | 54.1 | 53.6 | 53.2 | 54.0 | 56.8 | 59.3 | 62.2 | 64.7 | 66.6 | 68.7 | 70.1 | 70.8 | | | |

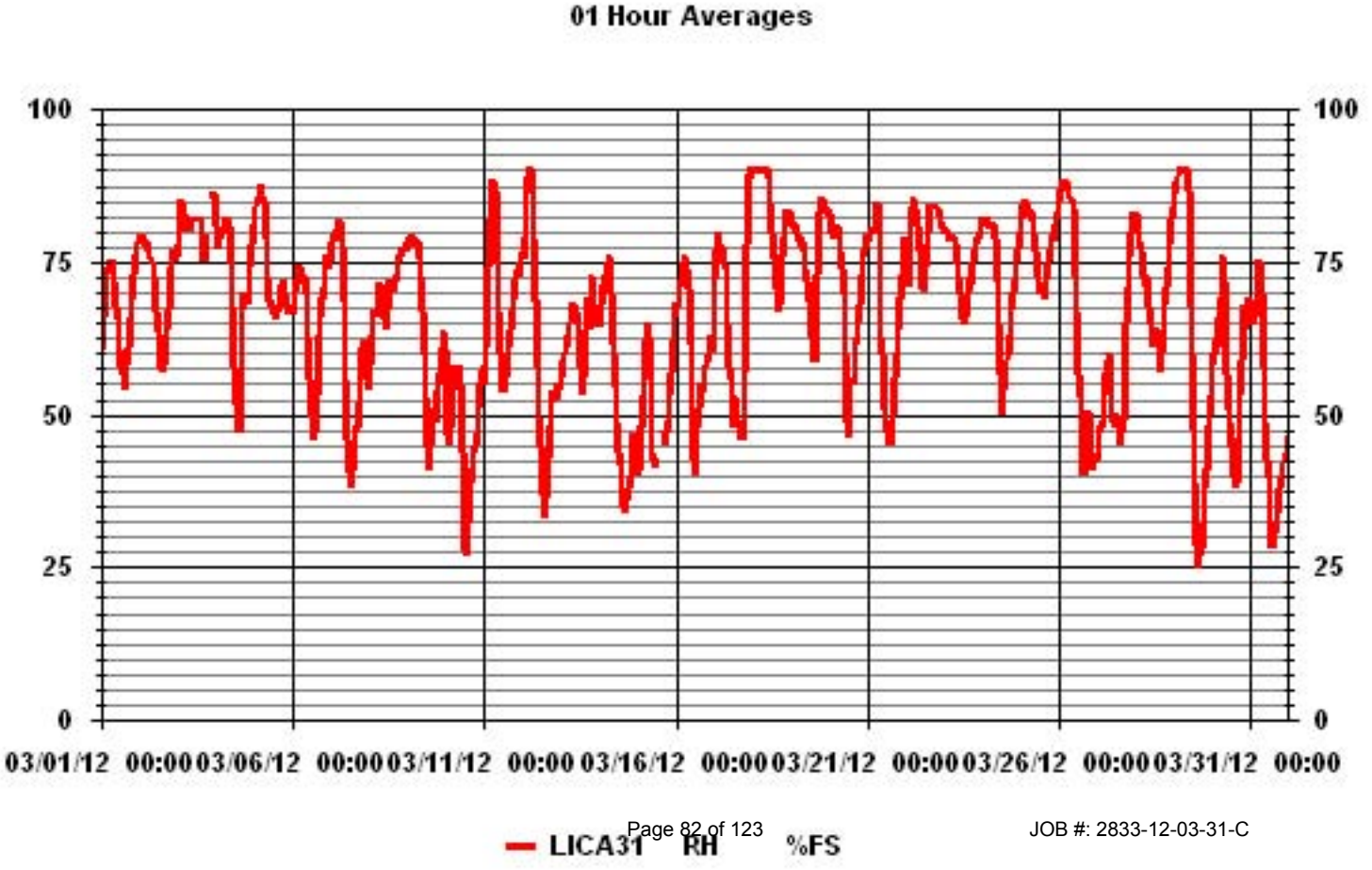
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | | 90 | % | @ HOUR(S) | VAR | ON DAY(S) | VAR |
| MAXIMUM 24-HR AVERAGE: | | 83.1 | % | | | ON DAY(S) | 18 |
| | | | | | | VAR-VARIOUS | |
| CALIBRATION TIME: | 0 | HRS | | OPERATIONAL TIME: | | 737 | HRS |
| | | | | AMD OPERATION UPTIME: | | 99.1 | % |
| STANDARD DEVIATION: | 14.68 | | | MONTHLY AVERAGE: | | 66.45 | % |






JOB #: 2833-12-03-31-C

# Precipitation

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST. LINA**

MARCH 2012

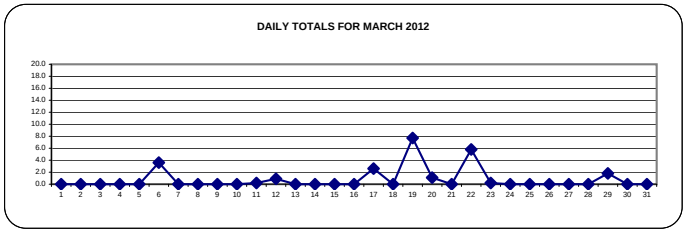
**PRECIPITATION hourly averages (mm)**

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 | **P** | **P** | 0 | 0 | 0 | 0.0 | 0.0 | 22 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3.6** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3.6** | **3.6** | 24 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0.1 | 0.2 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.1 | 0 | 0 | 0 | 0.3 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.9 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 23 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **M** | **M** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 22 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **P** | **P** | **P** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 21 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0.8 | 0.7 | 0.5 | 0.8 | 2.6 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 1.3 | 1.8 | 3 | 1 | 0.2 | 0.1 | 0.2 | 3.0 | 7.7 | 24 |
| 20 | 0.1 | 0 | 0 | 0.1 | 0.4 | 0.4 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 1.1 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 1.1 | 1.2 | 1.2 | 1 | 0.5 | 0.5 | 0.2 | 0 | 0 | 1.2 | 5.8 | 24 |
| 23 | 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 | 0.1 | 0.2 | 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 | 1.3 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.3 | 1.8 | 24 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 24 |
| HOURLY MAX | 0.1 | 0.0 | 0.0 | 0.1 | 0.4 | 0.4 | 1.3 | 0.5 | 0.0 | 0.0 | 0.3 | 0.3 | 0.1 | 0.1 | 3.6 | 1.1 | 1.2 | 1.3 | 1.8 | 3.0 | 1.0 | 0.8 | 0.7 | 0.5 | | | |

**STATUS FLAG CODES**

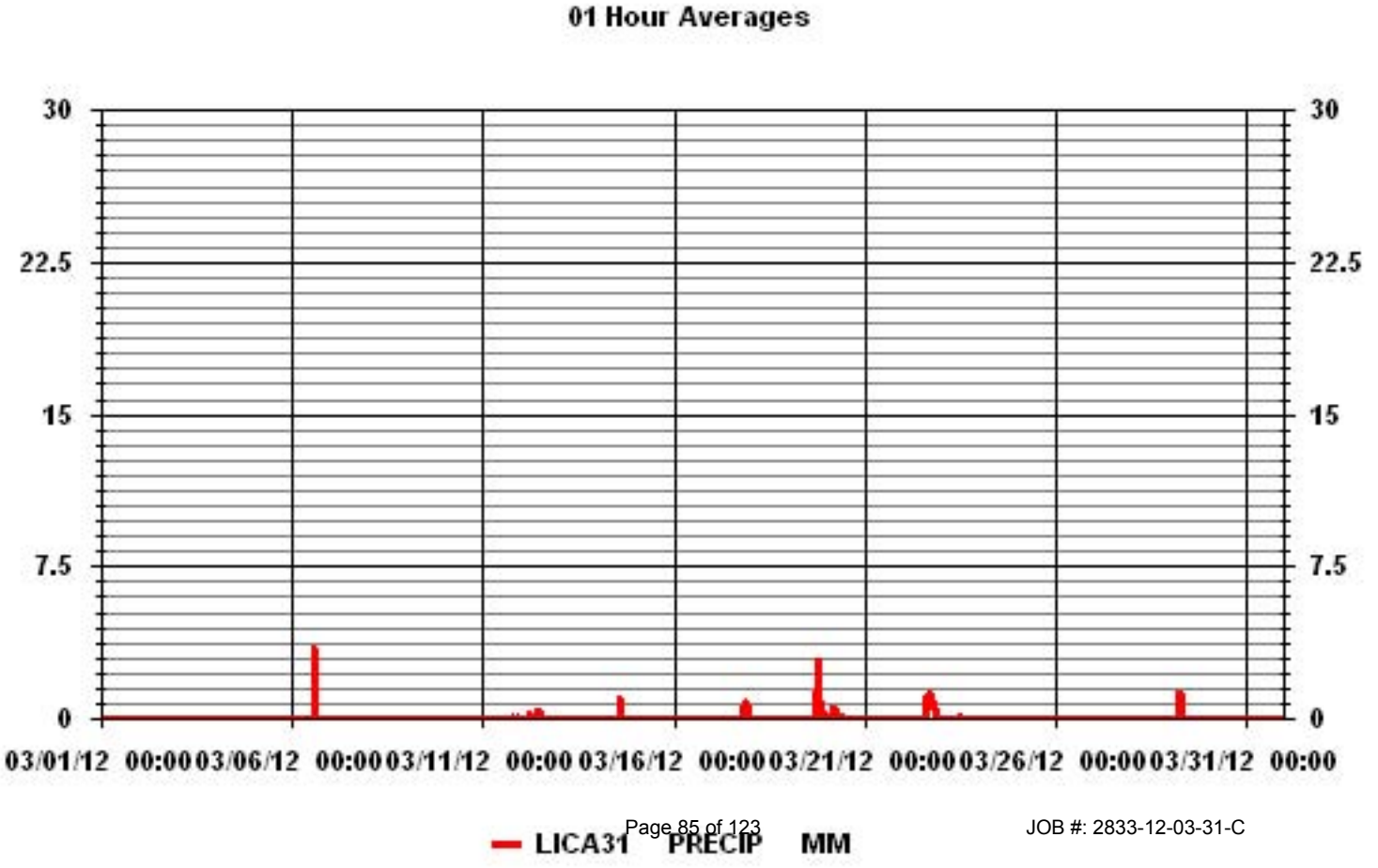
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | MD | -MISSING DATA |




**MONTHLY SUMMARY**

| | | | | | |
|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | 3.6 | MM@ HOUR(S) | 14 | ON DAY(S) | 6 |
| MAXIMUM DAILY TOTAL | 7.7 | MM | | ON DAY(S) | 19 |
| MONTHLY TOTAL | 23.9 | MM | | | |

| | | | | | |
|---|---|---|---|---|---|
| CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 736 | HRS |
| | | | AMD OPERATION UPTIME: | 98.9 | % |
| STANDARD DEVIATION: | 0.22 | | MONTHLY AVERAGE: | 0.03 | MM |






JOB #: 2833-12-03-31-C

# Vector Wind Speed

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST.LINA

MARCH 2012

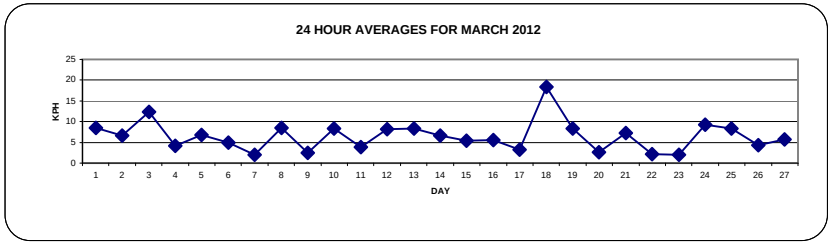
**WIND SPEED** hourly averages (km/hr)

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 | 18.1 | 20.9 | 21.9 | 21.3 | 8.7 | 7.2 | 6.6 | 6 | 6.9 | 6.8 | 3.6 | 4.2 | 3.2 | 4.3 | 5.1 | 6.9 | 6.8 | 8.8 | 10.7 | 8.7 | 11.1 | 11.6 | 11.2 | 11.7 | 21.9 | 3.9 | 24 |
| 2 | 12.8 | 9.8 | 5.8 | 5.3 | 4.9 | 6 | 5.7 | 13 | 14.6 | 12 | 12.4 | 9.4 | 9.5 | 8.3 | 8.3 | 9 | 7.9 | 9.1 | 11.9 | 11.7 | 9.5 | 9.8 | 11.7 | 12.3 | 14.6 | 6.4 | 24 |
| 3 | 9.3 | 11 | 9.9 | 8.4 | 7.3 | 10.9 | 13.5 | 15.1 | 15.9 | 15.3 | 15.5 | 12.2 | 9.3 | 11.9 | 12 | 7.7 | 14.5 | 15.6 | 7 | **P** | **P** | **P** | 10 | 10.3 | 15.9 | 3.3 | 21 |
| 4 | 12 | 12.1 | 10.4 | 11.2 | 10.7 | 11.1 | 11.8 | 8.4 | 12.7 | 11.5 | 13.9 | 18 | 20.1 | 21.2 | 20.4 | 18.2 | 15.2 | 13.1 | 15.3 | 10.3 | 9.6 | 9.5 | 8.4 | 7.8 | 21.2 | 11.7 | 24 |
| 5 | 7.7 | 7.8 | 7.6 | 7.3 | 8.2 | 8.2 | 4.9 | 11.3 | 14.1 | 14.3 | 16.4 | 16.4 | 15.6 | 17.9 | 17.8 | 17.1 | 17.1 | 15.9 | 12.6 | 13.3 | 14.4 | 15.6 | 15.1 | 16.7 | 17.9 | 8.5 | 24 |
| 6 | 20.1 | 18.9 | 17.5 | 11.4 | 9.8 | 8.6 | 9.4 | 9.2 | 7.4 | 9.7 | 11.6 | 11.4 | 6.6 | 13 | 5.7 | 10.4 | 13.7 | 16.2 | 13.1 | 14.8 | 11.8 | 12.4 | 6.7 | 10.4 | 20.1 | 6.7 | 24 |
| 7 | 9.3 | 10.5 | 10.8 | 10.9 | 13.6 | 11.2 | 11.7 | 11.3 | 10.8 | 13 | 14.5 | 15 | 16.4 | 18.1 | 19.4 | 22.6 | 20.8 | 19.6 | 15.5 | 15.6 | 14.9 | 13.1 | 16.9 | 13.1 | 22.6 | 12.3 | 24 |
| 8 | 10.7 | 13.4 | 3.8 | 11.5 | 12.1 | 8.7 | 11.7 | 9 | 10.2 | 6.2 | 7.3 | 8.6 | 8.1 | 8.4 | 4.9 | 4.4 | 3.7 | 5.9 | 3.1 | 1.7 | 3.1 | 2.7 | 3.7 | 3.7 | 13.4 | 4.2 | 24 |
| 9 | 4.7 | 3.2 | 6.3 | 6.4 | 6.8 | 9 | 11.4 | 11.9 | 11.2 | 8.9 | 8 | 10.1 | 12.8 | 10.2 | 11.8 | 12.5 | 12.3 | 8.9 | 10.1 | 9.9 | 14.9 | 12.8 | 13.2 | 13.9 | 14.9 | 6.8 | 24 |
| 10 | 10.1 | 11.4 | 10 | 8.5 | 7.2 | 10.6 | 10 | 9.2 | 8.6 | 7.7 | 10.6 | 11.4 | 9.4 | 8.1 | 9.8 | 11.4 | 5.6 | 6.8 | 5 | 7.2 | 6.9 | 7.6 | 9.5 | 9.6 | 11.4 | 5 | 24 |
| 11 | 15.1 | 18 | 4.9 | 8.1 | 6.7 | 6 | 4.7 | 4.4 | 5.2 | 5.3 | 5.8 | 3.7 | 1.4 | 3.7 | 3 | 2 | 1.8 | 1.2 | 3.8 | 2.6 | 2.2 | 8.6 | 2 | 5.5 | 18 | 2 | 24 |
| 12 | 6.2 | 14.7 | 18.5 | 14.8 | 8.8 | 3.6 | 2.9 | 2.4 | 6.2 | 6.3 | 5 | 8.8 | 11.8 | 11.1 | 12.5 | 14.7 | 17 | 11.3 | 13.1 | 16.9 | 17.5 | 17.4 | 16.7 | 18.7 | 18.7 | 8.5 | 24 |
| 13 | 18.3 | 12.8 | 17.5 | 13.2 | 10.9 | 12.1 | 12 | 12.7 | 11.4 | 12.1 | 9.9 | 11.3 | 13.4 | 13.1 | 16.2 | 22.7 | 22.3 | 14 | 9.4 | 8.9 | 9.5 | 11.7 | 10.8 | 8.2 | 22.7 | 2.5 | 24 |
| 14 | 9 | 4.2 | 0.9 | 1.9 | 5.7 | 7.1 | 9.1 | 9.2 | 11.1 | 12.9 | 11.2 | 15.2 | 17.7 | 24.4 | 21.9 | 23.4 | 20.3 | 14.2 | 8.3 | 8.1 | 9.5 | 9.8 | 11.5 | 11.4 | 24.4 | 8.4 | 24 |
| 15 | 10.7 | 10.5 | 10.6 | 7.1 | 8.6 | 11.1 | 11.5 | 11.6 | 9.2 | 0.1 | 6.3 | 7.9 | **P** | **P** | **P** | **P** | 16.9 | 19.8 | 22.4 | 14.9 | 8 | 10.6 | 15.6 | 14.6 | 22.4 | 3.9 | 20 |
| 16 | 10.5 | 7.8 | 13.2 | 15 | 15.3 | 13.9 | 15.6 | 14.7 | 12.3 | 9.2 | 11.1 | 13.9 | 12.2 | 12.6 | 11.1 | 4 | 4.6 | 7.1 | 10.4 | 10.5 | 11.6 | 11 | 9.5 | 8.8 | 15.6 | 8.2 | 24 |
| 17 | 13.1 | 10.2 | 9.1 | 7.8 | 11.4 | 5.6 | 11.9 | 8.9 | 9.4 | 8.8 | 8.5 | 7.8 | 14.3 | 12.5 | 13.6 | 13.2 | 14.8 | 15.1 | 17.8 | 22.9 | 11.6 | 2 | 3.5 | 5.3 | 22.9 | 8.3 | 24 |
| 18 | 5.3 | 5.4 | 2.4 | 2.2 | 4.5 | 4.4 | 7.4 | 10.3 | 10.2 | 11.4 | 7.4 | 9.6 | 9.5 | 9.5 | 12.1 | 14.2 | 13.7 | 15.3 | 14.7 | 15.1 | 15.3 | 15 | 14.5 | 11.9 | 15.3 | 6.7 | 24 |
| 19 | 12.1 | 9.2 | 3.6 | 5.1 | 7 | 5.1 | 4.5 | 4.7 | 2.8 | 3.1 | 2.8 | 2.9 | 4.4 | 5.4 | 5.6 | 4.6 | 9.1 | 11.8 | 8.4 | 10.4 | 9.5 | 11.6 | 11.2 | 13.1 | 13.1 | 5.4 | 24 |
| 20 | 14 | 15.4 | 15.1 | 12 | 9.7 | 11.9 | 10.2 | 9.2 | 12 | 10.3 | 6.1 | 12.7 | 9.2 | 10.6 | 10.8 | 11.8 | 9.3 | 5.2 | 15.3 | 15.9 | 14.3 | 12.2 | 13.9 | 12.8 | 15.9 | 5.6 | 24 |
| 21 | 9.5 | 9.2 | 8.5 | 8.5 | 7.9 | 7.1 | 5.2 | 1.8 | 7 | 3.2 | 11.6 | 11.9 | 12.3 | 8.9 | 4.8 | 5.3 | 7.7 | 5.1 | 6.9 | 6.9 | 9.6 | 1.9 | 12.1 | 12.1 | 12.3 | 3.2 | 24 |
| 22 | 15.4 | 12.1 | 9.7 | 16.1 | 14.4 | 13.8 | 14.3 | 17.1 | 21.7 | 23.7 | 21.5 | 22.9 | 23.3 | 22.9 | 22 | 21.5 | 20.1 | 22.4 | 24.1 | **27.6** | 25.4 | 23.5 | 22.5 | 19.1 | **27.6** | **18.4** | 24 |
| 23 | 15.4 | 13.6 | 14.7 | 13.9 | 11.9 | 12.1 | 12.4 | 11.7 | 12 | 12.1 | 13.4 | 12.6 | 13.3 | 13.6 | 13.6 | 13.8 | 10.5 | 8.5 | 6.1 | 5.4 | 15.4 | 13.7 | 2.3 | 4.8 | 15.4 | 8.3 | 24 |
| 24 | 4.5 | 4 | 5.5 | 6.3 | 5.1 | 5.1 | 5.1 | 5.8 | 6.5 | 11.6 | 9.3 | 9.1 | 4.6 | 6.5 | 9.3 | 9.5 | 8.2 | 9.5 | 10.8 | 13.2 | 8.7 | 6 | 5.7 | 7.7 | 13.2 | 2.6 | 24 |
| 25 | 5.1 | 5.3 | 4.3 | 3.2 | 1.8 | 7.1 | 9.3 | 5.6 | 3.5 | 1.8 | 3.9 | 3.7 | 3.8 | 3.1 | 8.9 | 11.3 | 16.3 | 15.3 | 15.6 | 13.2 | 10.1 | 10.4 | 10.4 | 13.1 | 16.3 | 7.2 | 24 |
| 26 | 12.2 | 9 | 9.4 | 9.2 | 6.3 | 7.5 | 5.7 | 12.8 | 13.6 | 14.1 | 3.4 | 12.1 | 8.7 | 8.7 | 9.9 | 4.4 | 4.7 | 3.2 | 3.2 | 6.8 | 11.5 | 12.4 | 11.9 | 13.8 | 14.1 | 2.1 | 24 |
| 27 | 13.8 | 10.6 | 9.5 | 10.5 | 11 | 12.2 | 11.1 | 11.2 | 11.8 | 13.7 | 9.9 | 9.2 | 10.2 | 10.8 | 6.7 | 16.1 | 12.3 | 10.3 | 12.9 | 14.9 | 16.4 | 16.6 | 15.7 | 12.8 | 16.6 | 2 | 24 |
| 28 | 13.1 | 14.9 | 11.3 | 11.3 | 8.9 | 7 | 5.8 | 4.3 | 5.5 | 8.9 | 10.5 | 14.6 | 15.3 | 12.5 | 7 | 8.8 | 12.6 | 10 | 7.3 | 7.9 | 8.4 | 10.6 | 10.6 | 9.4 | 15.3 | 9.3 | 24 |
| 29 | 9.2 | 10.4 | 9.9 | 10.5 | 4.2 | 3.7 | 6.9 | 7.2 | 10 | 9.8 | 13.8 | 16.1 | 16 | 17.2 | 15.1 | 13 | 11.1 | 10.1 | 8.9 | 9.8 | 11.9 | 11.4 | 12.8 | 13.9 | 17.2 | 8.4 | 24 |
| 30 | 14.8 | 15.1 | 10.9 | 11.7 | 10.9 | 6.2 | 7.5 | 7.1 | 8.5 | 5.5 | 6.7 | 8.4 | 10.6 | 4.6 | 12.6 | 8.3 | 13.8 | 13 | 16.5 | 9.4 | 8.8 | 6.8 | 3.9 | 7 | 16.5 | 4.3 | 24 |
| 31 | 4.4 | 4.5 | 4.4 | 6 | 6.2 | 5.3 | 7.6 | 8.3 | 8.1 | 11.1 | 10.8 | 13.6 | 11.8 | 11.7 | 10.1 | 8.1 | 5.7 | 6.9 | 1.4 | 5.5 | 8.4 | 9.1 | 10.9 | 11.9 | 13.6 | 5.7 | 24 |
| HOURLY MAX | 20.1 | 20.9 | 21.9 | 21.3 | 15.3 | 13.9 | 15.6 | 17.1 | 21.7 | 23.7 | 21.5 | 22.9 | 23.3 | 24.4 | 22.0 | 23.4 | 22.3 | 22.4 | 24.1 | 27.6 | 25.4 | 23.5 | 22.5 | 19.1 | | | |
| HOURLY AVG | 11.2 | 10.8 | 9.6 | 9.6 | 8.6 | 8.4 | 8.9 | 9.2 | 10.0 | 9.7 | 9.8 | 11.1 | 11.2 | 11.5 | 11.4 | 11.7 | 11.9 | 11.3 | 11.0 | 11.3 | 11.3 | 10.9 | 10.8 | 11.1 | | | |

**STATUS FLAG CODES**

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



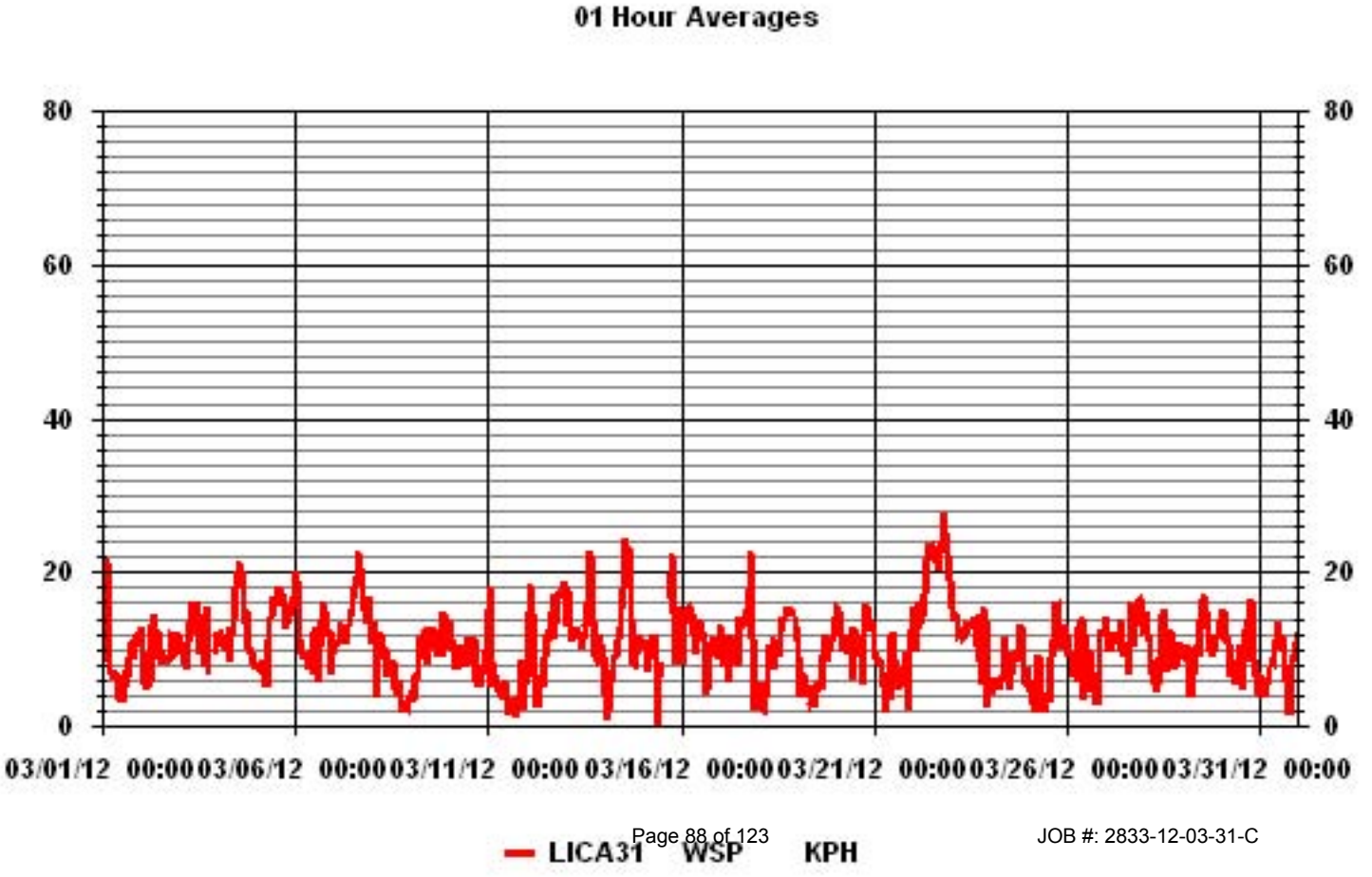

LAST CALIBRATION: June 17, 2010

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | | 27.6 | KPH | @ HOUR(S) | 19 | ON DAY(S) | 22 |
| MAXIMUM 24-HR AVERAGE: | | 18.4 | KPH | | | ON DAY(S) | 22 |
| CALMS (≤ 0 KPH) | 0.13 | % | | OPERATIONAL TIME: | | 737 | HRS |
| MONTHLY CALIBRATION TIME: | 0 | HRS | | AMD OPERATION UPTIME | | 99.1 | % |
| STANDARD DEVIATION | 4.64 | | | MONTHLY AVERAGE | | 10.51 | KPH |



JOB #: 2833-12-03-31-C






JOB #: 2833-12-03-31-C

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *ST. LINA*

MARCH 2012

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

MST

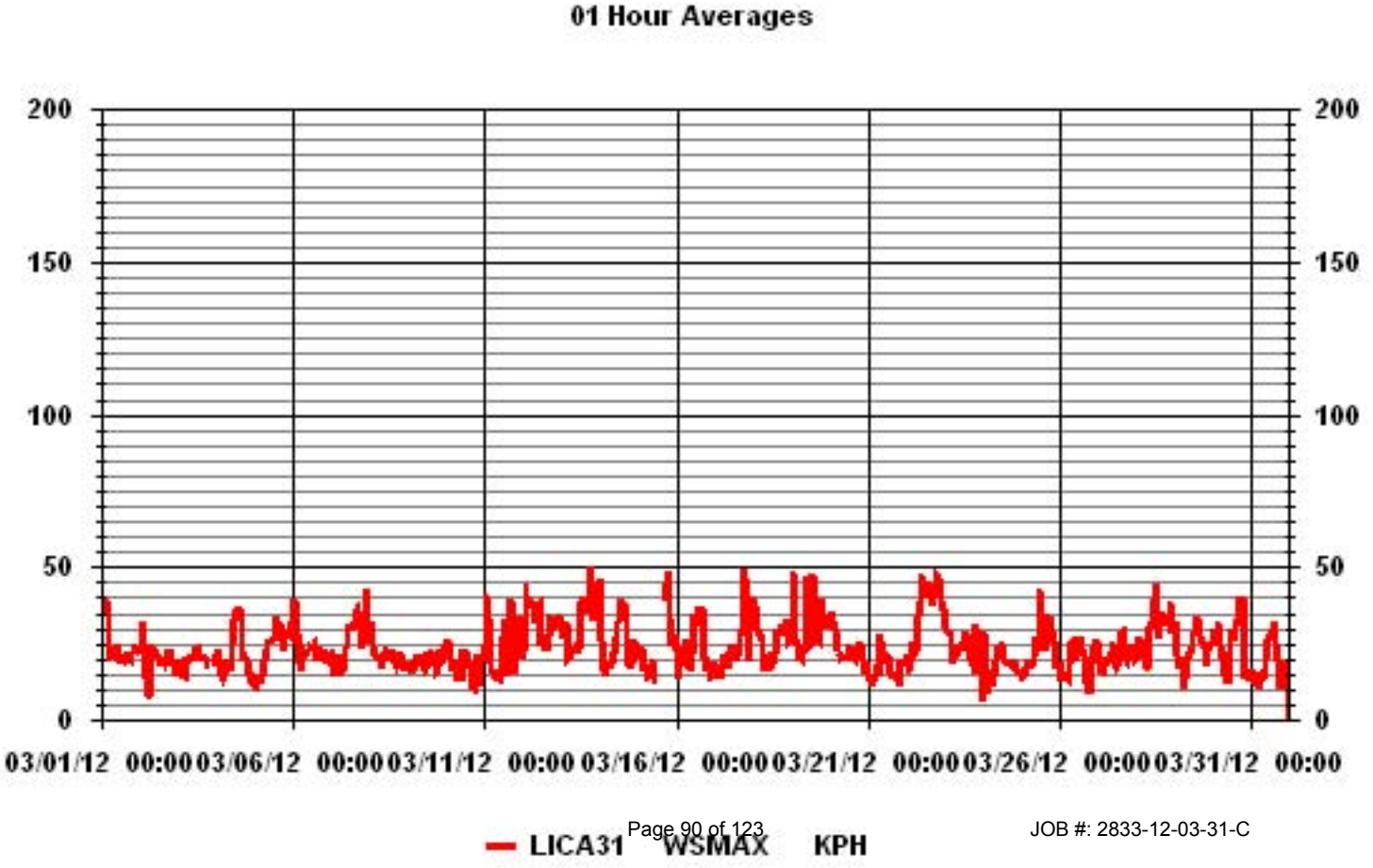
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 36.8 | 36.4 | 39.2 | 38.8 | 34.9 | 20.8 | 21.1 | 22.2 | 21.1 | 20.6 | 24.6 | 20.6 | 20.2 | 19.6 | 20.6 | 20.2 | 22.4 | 21.3 | 20.2 | 21.7 | 23.7 | 23.7 | 22.8 | 23.5 | 39.2 |
| 2 | 21.9 | 25.2 | 32 | 14.1 | 13.8 | 8.4 | 7.5 | 23.5 | 23.5 | 21.5 | 23 | 20.9 | 20.6 | 18.9 | 18.7 | 19.5 | 18.2 | 19.3 | 23.3 | 21.7 | 19.1 | 18.7 | 14.5 | 16.7 | 32 |
| 3 | 18.7 | 18.7 | 17.3 | 14.9 | 14.5 | 20.2 | 18.7 | 20.8 | 20.4 | 19.8 | 19.8 | 23 | 23.5 | 19.5 | 21.3 | 21.3 | 21 | 20 | 17.8 | **P** | **P** | **P** | 19.5 | 17.8 | 23.5 |
| 4 | 21.1 | 23 | 15.6 | 14.9 | 13.6 | 15 | 18.9 | 19.1 | 16.9 | 16 | 25.2 | 32.5 | 35.5 | 36 | 37.3 | 33.1 | 23.2 | 20.2 | 20.4 | 19.7 | 14.5 | 16 | 13 | 12.5 | 37.3 |
| 5 | 11.9 | 14.7 | 12.7 | 12.7 | 14.5 | 14.8 | 19.3 | 22.6 | 25.9 | 26.1 | 25.9 | 26.5 | 26.7 | 34 | 32.9 | 30.3 | 31.8 | 26.3 | 22.8 | 28.1 | 29 | 28.3 | 27.6 | 32.2 | 34 |
| 6 | 39.5 | 37.9 | 38.8 | 28.5 | 19.1 | 16.3 | 20.2 | 22.8 | 21.9 | 23 | 24.4 | 23.9 | 23.9 | 25 | 23.5 | 19.1 | 20.4 | 24.1 | 21.1 | 22.9 | 19.8 | 18.2 | 20.9 | 21.5 | 39.5 |
| 7 | 18.7 | 18 | 14.5 | 16.7 | 19.8 | 21.5 | 19.5 | 16.7 | 17.3 | 23.5 | 30.5 | 30.5 | 30.3 | 30.5 | 32.4 | 35.7 | 36.4 | 32.5 | 23.5 | 25.7 | 28.1 | 32.7 | 43 | 28.1 | 43 |
| 8 | 24.8 | 32 | 24.8 | 21.7 | 20.8 | 19.1 | 21.3 | 16.7 | 18.9 | 21.7 | 23.5 | 19.1 | 21.3 | 21.7 | 21.7 | 19.1 | 17.8 | 19.5 | 17.1 | 22.4 | 18 | 19.5 | 16 | 17.3 | 32 |
| 9 | 17.4 | 18.2 | 15.6 | 16.7 | 17.3 | 18.4 | 21.1 | 19.8 | 20.4 | 19.3 | 16.7 | 17.3 | 22.4 | 19.1 | 22.8 | 20.4 | 18.2 | 16.2 | 17.2 | 23.1 | 18.9 | 19.3 | 23.7 | 25 | 25 |
| 10 | 20.2 | 26.3 | 22.8 | 20.6 | 15.6 | 17.4 | 19.4 | 13.2 | 14.5 | 14.3 | 22.6 | 22.4 | 22.1 | 16.4 | 19.7 | 17.1 | 11.2 | 10.6 | 12.5 | 21 | 11.2 | 12.3 | 19.7 | 19.7 | 26.3 |
| 11 | 24.8 | 41.2 | 33.8 | 18.9 | 17.2 | 16.2 | 13.8 | 16.2 | 13.6 | 13.2 | 15.4 | 27 | 32.9 | 17.6 | 13.8 | 20.2 | 39.4 | 30.9 | 14.7 | 29 | 31 | 26.1 | 33.5 | 20 | 41.2 |
| 12 | 22.8 | 30 | 43.2 | **N** | 39.4 | 36.2 | 38.1 | 31.6 | 37.7 | 37.5 | 38.1 | 24.3 | 27.8 | 25.4 | 22.6 | 27.8 | 34.2 | 28.5 | 29.2 | 30.1 | 31.4 | 33.3 | 33.8 | 33.8 | 43.2 |
| 13 | 28.8 | 26.5 | 30.9 | 32.5 | 20.2 | 20.7 | 23.3 | 23.7 | 23.2 | 24.1 | 21.7 | 23.3 | 38.8 | 40.3 | 37.2 | 40.1 | 35.3 | 37 | **49.9** | 32.2 | 40.5 | 44.9 | 39.7 | 36.8 | **49.9** |
| 14 | 46.2 | 26.5 | 16.9 | 14.1 | 16.5 | 17.1 | 17.6 | 18.5 | 21.9 | 26.7 | 21.9 | 32 | 33.3 | 39.4 | 37.5 | 38.8 | 33.1 | 26.8 | 18.4 | 17.3 | 19.7 | 18.7 | 26.5 | 21.7 | 46.2 |
| 15 | 20.8 | 20.8 | 24.1 | 16.5 | 17.3 | 18.2 | 14.5 | 15 | 16.5 | 20 | 13 | **P** | **P** | **P** | **P** | **P** | 39.9 | 44.3 | 47.8 | 47.8 | 33.5 | 24.3 | 26.9 | 27.2 | 47.8 |
| 16 | 23.2 | 13 | 17.3 | 24.1 | 21.5 | 17.5 | 26.3 | 20.2 | 17.6 | 16.5 | 21.5 | 34.6 | 32 | 36.2 | 36.2 | 30.9 | 36.9 | 20 | 21 | 16 | 16.9 | 14.7 | 15.2 | 13.8 | 36.9 |
| 17 | 18.7 | 17.8 | 16.7 | 13.4 | 14.9 | 21.5 | 16.9 | 21.5 | 16.5 | 22.1 | 24.3 | 19.3 | 24.5 | 23.5 | 22 | 23.2 | 28.9 | 28.7 | 49.3 | 46.7 | 37.9 | 18.9 | 29.2 | 37.7 | 49.3 |
| 18 | 40.1 | 37.5 | 33.3 | 30.3 | 28.3 | 26.5 | 15.8 | 18.2 | 21 | 21.3 | 15.8 | 17.1 | 18.5 | 20.2 | 21.5 | 30 | 27.6 | 31.4 | 29 | 27.6 | 30.3 | 32.7 | 26.3 | 27 | 40.1 |
| 19 | 28.7 | 48.4 | 27.2 | 25 | 19.5 | 20.6 | 20 | 22.1 | 25 | 47.2 | 24.8 | 24.1 | 24.6 | 47.4 | 42.6 | 27 | 26.3 | 34.2 | 34.5 | 39.9 | 29.8 | 34.2 | 30 | 33.8 | 48.4 |
| 20 | 30.5 | 35.5 | 32.5 | 29.8 | 23.7 | 23 | 20.4 | 21.1 | 20.4 | 20.4 | 21.5 | 23.5 | 23.5 | 22.4 | 19.7 | 21.5 | 20.4 | 22.1 | 23.3 | 25.4 | 22.4 | 15.4 | 18 | 18.9 | 35.5 |
| 21 | 13.8 | 13.8 | 11.6 | 12.8 | 14.5 | 16.7 | 16.3 | 27.7 | 26.5 | 20.4 | 20 | 20.8 | 20 | 21.3 | 15.6 | 13.4 | 15.2 | 13.6 | 13.6 | 11 | 20 | 19.1 | 17.6 | 19.6 | 27.7 |
| 22 | 21 | 16.7 | 17.1 | 21.9 | 25.3 | 22.1 | 22.8 | 33.8 | 38.8 | 47.6 | 46.7 | 40.3 | 41.6 | 41.9 | 45.6 | 41.2 | 37.3 | 39.7 | 43.6 | 47.6 | 46.9 | 42.3 | 39.1 | 36.8 | 47.6 |
| 23 | 31.1 | 29.4 | 29 | 27.8 | 20.2 | 18.2 | 20.2 | 21.1 | 24.8 | 22.4 | 23.7 | 25.7 | 22.4 | 29 | 25.9 | 22 | 20.2 | 18.4 | 15 | 30.9 | 25.2 | 29.4 | 20 | 6 | 31.1 |
| 24 | 28.7 | 16 | 14.1 | 8.4 | 12.3 | 11 | 15.8 | 15.6 | 20 | 23.7 | 24.1 | 24.1 | 22.1 | 19.7 | 19.7 | 18.9 | 19.4 | 18.9 | 18 | 20 | 17.1 | 16.5 | 15.4 | 15.6 | 28.7 |
| 25 | 14.1 | 14.3 | 14.9 | 17.1 | 19.8 | 17.1 | 19.3 | 18 | 20.4 | 27 | 23.3 | 42.7 | 30.7 | 27.2 | 22.8 | 24.9 | 34.2 | 30.9 | 33.6 | 29.4 | 25.9 | 17.8 | 18 | 18.2 | 42.7 |
| 26 | 18.4 | 12.6 | 15.2 | 14.9 | 13.6 | 13.2 | 25.4 | 25.9 | 20.2 | 20.8 | 22.4 | 21.5 | 23.2 | 27.2 | 23.7 | 21.5 | 12.7 | 10.6 | 8.6 | 13.4 | 18 | 24.1 | 20 | 26.3 | 27.2 |
| 27 | 21.3 | 20.2 | 16.5 | 16 | 17.8 | 20.8 | 19.3 | 19.7 | 22.4 | 25.2 | 20 | 17.3 | 18 | 20.4 | 28.5 | 28.9 | 21.7 | 20.2 | 19.3 | 21.9 | 22.4 | 24.3 | 22.4 | 20.2 | 28.9 |
| 28 | 21 | 27 | 25 | 26.3 | 23 | 20.6 | 18 | 16.3 | 30.3 | 31.8 | 38.6 | 38.8 | 44.5 | 36.6 | 26.3 | 32.4 | 35.3 | 33.1 | 31.8 | 32 | 34.2 | 38.8 | 28.7 | 30.3 | 44.5 |
| 29 | 30.7 | 21.5 | 17.1 | 18.2 | 21 | 9.7 | 16.3 | 15.8 | 19.7 | 21.9 | 23.5 | 28.3 | 28.5 | 30.9 | 34 | 31.1 | 27.8 | 26.1 | 23.7 | 17.6 | 21.5 | 23 | 25 | 25.2 | 34 |
| 30 | 25.4 | 29.8 | 27.2 | 31.8 | 25 | 20.4 | 15.2 | 14.9 | 21.9 | 11.4 | 17.3 | 30 | 26.1 | 27.4 | 32.4 | 32.2 | 40.5 | 38.8 | 40.1 | 19.5 | 13.8 | 16.2 | 12.7 | 13.6 | 40.5 |
| 31 | 13 | 16.1 | 12.7 | 12.7 | 10.1 | 13.6 | 13 | 13.8 | 16.5 | 20.2 | 26.5 | 28.3 | 27.9 | 26.3 | 31.8 | 25.2 | 20.4 | 20 | 10.3 | 11.4 | 12.3 | 13.8 | 18.9 | **P** | 31.8 |
| PEAK | 46.2 | 48.4 | 43.2 | 38.8 | 39.4 | 36.2 | 38.1 | 33.8 | 38.8 | 47.6 | 46.7 | 42.7 | 44.5 | 47.4 | 45.6 | 41.2 | 40.5 | 44.3 | 49.9 | 47.8 | 46.9 | 44.9 | 43.0 | 37.7 | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | |
|---|---|---|---|---|
| MAXIMUM INSTANTANEOUS READING | 49.9 | KPH | @ HOUR(S) | 18 |
| | | | ON DAY(S) | 13 |






JOB #: 2833-12-03-31-C

LICA31
WSP / WDR Joint Frequency Distribution (Percent)

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | .67 | .94 | 2.17 | 1.22 | .40 | .81 | .27 | .94 | 1.49 | .81 | 1.62 | 1.35 | 2.30 | .94 | .94 | .67 | 17.63 |
| < | 12.0 | 2.71 | 2.71 | 2.44 | 2.57 | 2.57 | 2.71 | 2.98 | 3.66 | 4.74 | 2.30 | 2.98 | 4.07 | 4.47 | 1.22 | 1.35 | 4.47 | 48.03 |
| < | 20.0 | 1.22 | .94 | 2.71 | 1.62 | 1.22 | 3.52 | 3.66 | 1.76 | 1.49 | .67 | 3.66 | 2.17 | 1.62 | .81 | 1.89 | .81 | 29.85 |
| < | 29.0 | .00 | .00 | 1.35 | 1.08 | .27 | .13 | .00 | .00 | .00 | .00 | .00 | .81 | .13 | .54 | .00 | .00 | 4.34 |
| < | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.61 | 4.61 | 8.68 | 6.51 | 4.47 | 7.19 | 6.91 | 6.37 | 7.73 | 3.79 | 8.27 | 8.41 | 8.54 | 3.52 | 4.20 | 5.97 | |

Calm : .13 %

Total # Operational Hours : 737

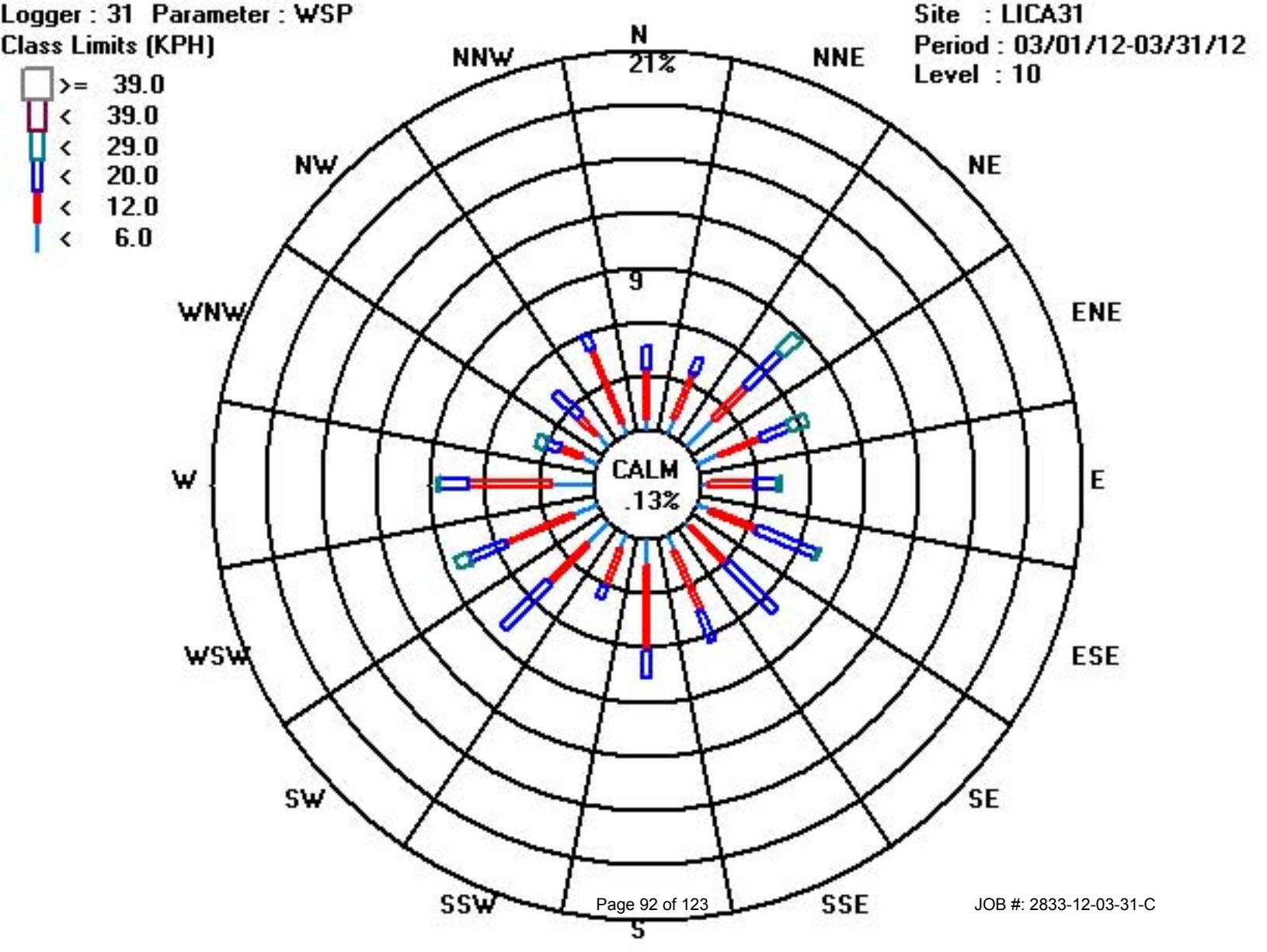
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 5 | 7 | 16 | 9 | 3 | 6 | 2 | 7 | 11 | 6 | 12 | 10 | 17 | 7 | 7 | 5 | 130 |
| < | 12.0 | 20 | 20 | 18 | 19 | 19 | 20 | 22 | 27 | 35 | 17 | 22 | 30 | 33 | 9 | 10 | 33 | 354 |
| < | 20.0 | 9 | 7 | 20 | 12 | 9 | 26 | 27 | 13 | 11 | 5 | 27 | 16 | 12 | 6 | 14 | 6 | 220 |
| < | 29.0 | | | 10 | 8 | 2 | 1 | | | | | | 6 | 1 | 4 | | | 32 |
| < | 39.0 | | | | | | | | | | | | | | | | | |
| >= | 39.0 | | | | | | | | | | | | | | | | | |
| | Totals | 34 | 34 | 64 | 48 | 33 | 53 | 51 | 47 | 57 | 28 | 61 | 62 | 63 | 26 | 31 | 44 | |

Calm : .13 %

Total # Operational Hours : 737






JOB #: 2833-12-03-31-C

# Vector Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST.LINA

MARCH 2012

**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 | 37 | 38 | 38 | 35 | 57 | 148 | 176 | 161 | 164 | 165 | 186 | 174 | 175 | 168 | 182 | 187 | 182 | 177 | 203 | 193 | 179 | 170 | 167 | 182 | 137 | SE | 24 |
| 2 | 193 | 198 | 209 | 290 | 266 | 256 | 233 | 354 | 351 | 347 | 345 | 356 | 338 | 351 | 337 | 354 | 7 | 12 | 9 | 12 | 0 | 332 | 333 | 325 | 338 | NNW | 24 |
| 3 | 273 | 273 | 281 | 278 | 263 | 124 | 106 | 116 | 116 | 114 | 115 | 115 | 232 | 262 | 264 | 114 | 108 | 111 | 146 | **P** | **P** | **P** | 289 | 272 | 151 | SSE | 21 |
| 4 | 278 | 284 | 256 | 255 | 255 | 246 | 220 | 254 | 320 | 317 | 311 | 299 | 291 | 292 | 295 | 295 | 301 | 323 | 325 | 269 | 255 | 260 | 264 | 255 | 285 | WNW | 24 |
| 5 | 248 | 279 | 271 | 274 | 296 | 315 | 300 | 173 | 171 | 143 | 126 | 123 | 124 | 116 | 121 | 119 | 120 | 123 | 124 | 112 | 111 | 102 | 110 | 105 | 128 | SE | 24 |
| 6 | 101 | 104 | 100 | 121 | 126 | 135 | 123 | 191 | 193 | 180 | 187 | 190 | 181 | 184 | 241 | 247 | 224 | 226 | 230 | 234 | 225 | 219 | 229 | 334 | 181 | S | 24 |
| 7 | 327 | 335 | 328 | 333 | 320 | 269 | 250 | 249 | 247 | 256 | 276 | 269 | 264 | 246 | 242 | 242 | 247 | 245 | 232 | 241 | 261 | 270 | 316 | 318 | 268 | W | 24 |
| 8 | 321 | 0 | 86 | 160 | 161 | 116 | 102 | 109 | 134 | 89 | 59 | 56 | 67 | 68 | 55 | 44 | 35 | 6 | 41 | 88 | 38 | 18 | 47 | 50 | 75 | ENE | 24 |
| 9 | 61 | 22 | 343 | 344 | 355 | 13 | 14 | 23 | 14 | 343 | 319 | 315 | 312 | 342 | 298 | 304 | 322 | 337 | 339 | 235 | 208 | 338 | 316 | 225 | 327 | NW | 24 |
| 10 | 264 | 277 | 283 | 263 | 244 | 246 | 271 | 244 | 225 | 231 | 267 | 280 | 299 | 311 | 241 | 228 | 224 | 228 | 201 | 10 | 41 | 66 | 67 | 67 | 264 | W | 24 |
| 11 | 67 | 78 | 4 | 344 | 332 | 333 | 339 | 307 | 278 | 263 | 261 | 332 | 235 | 202 | 235 | 322 | 78 | 181 | 224 | 211 | 23 | 8 | 49 | 282 | 349 | NNW | 24 |
| 12 | 177 | 223 | 250 | 258 | 327 | 246 | 277 | 274 | 221 | 250 | 248 | 218 | 215 | 194 | 156 | 150 | 141 | 163 | 203 | 220 | 216 | 210 | 153 | 146 | 201 | SSW | 24 |
| 13 | 139 | 158 | 218 | 179 | 150 | 134 | 124 | 122 | 109 | 117 | 101 | 108 | 151 | 175 | 270 | 276 | 292 | 278 | 320 | 348 | 329 | 329 | 340 | 336 | 188 | SSE | 24 |
| 14 | 313 | 332 | 336 | 100 | 76 | 276 | 293 | 283 | 281 | 284 | 267 | 262 | 239 | 237 | 241 | 243 | 242 | 232 | 217 | 186 | 178 | 165 | 166 | 157 | 241 | WSW | 24 |
| 15 | 148 | 150 | 161 | 3 | 340 | 346 | 340 | 331 | 327 | 150 | 116 | 178 | **P** | **P** | **P** | **P** | 95 | 105 | 101 | 113 | 172 | 207 | 226 | 139 | 122 | ESE | 20 |
| 16 | 133 | 124 | 123 | 130 | 129 | 132 | 132 | 129 | 132 | 141 | 141 | 146 | 193 | 219 | 210 | 187 | 24 | 50 | 63 | 65 | 74 | 92 | 70 | 99 | 125 | SE | 24 |
| 17 | 118 | 119 | 114 | 99 | 110 | 48 | 353 | 1 | 12 | 16 | 33 | 42 | 49 | 65 | 98 | 96 | 92 | 88 | 97 | 109 | 136 | 175 | 56 | 49 | 81 | E | 24 |
| 18 | 69 | 52 | 360 | 318 | 313 | 287 | 269 | 278 | 255 | 116 | 95 | 96 | 90 | 55 | 51 | 48 | 40 | 40 | 44 | 50 | 43 | 43 | 43 | 40 | 46 | NE | 24 |
| 19 | 34 | 352 | 244 | 249 | 229 | 236 | 235 | 234 | 265 | 299 | 253 | 259 | 263 | 301 | 275 | 266 | 239 | 251 | 250 | 306 | 254 | 256 | 245 | 250 | 263 | W | 24 |
| 20 | 242 | 245 | 242 | 240 | 233 | 225 | 225 | 260 | 247 | 231 | 260 | 347 | 357 | 15 | 19 | 33 | 58 | 46 | 359 | 354 | 350 | 323 | 334 | 329 | 305 | WNW | 24 |
| 21 | 260 | 260 | 248 | 263 | 290 | 290 | 255 | 314 | 355 | 312 | 339 | 345 | 320 | 310 | 219 | 189 | 198 | 151 | 134 | 140 | 172 | 165 | 3 | 356 | 289 | WNW | 24 |
| 22 | 358 | 12 | 133 | 135 | 90 | 63 | 65 | 62 | 62 | 66 | 67 | 62 | 62 | 64 | 61 | 61 | 47 | 40 | 47 | 55 | 53 | 55 | 53 | 58 | 59 | ENE | 24 |
| 23 | 54 | 47 | 46 | 41 | 150 | 148 | 149 | 140 | 132 | 134 | 131 | 135 | 135 | 136 | 137 | 139 | 78 | 80 | 96 | 155 | 173 | 175 | 246 | 246 | 123 | ESE | 24 |
| 24 | 264 | 281 | 269 | 234 | 231 | 233 | 271 | 273 | 279 | 207 | 211 | 197 | 330 | 345 | 352 | 353 | 10 | 359 | 14 | 35 | 48 | 36 | 39 | 37 | 330 | NNW | 24 |
| 25 | 57 | 43 | 19 | 353 | 352 | 9 | 22 | 29 | 62 | 105 | 73 | 105 | 59 | 57 | 63 | 60 | 60 | 64 | 61 | 66 | 56 | 30 | 40 | 31 | 50 | NE | 24 |
| 26 | 37 | 83 | 95 | 101 | 99 | 43 | 48 | 294 | 275 | 276 | 120 | 180 | 178 | 178 | 184 | 147 | 113 | 118 | 310 | 344 | 19 | 30 | 35 | 26 | 55 | NE | 24 |
| 27 | 31 | 43 | 42 | 43 | 52 | 60 | 66 | 67 | 74 | 85 | 92 | 101 | 96 | 100 | 183 | 219 | 233 | 241 | 237 | 234 | 230 | 231 | 228 | 224 | 133 | SE | 24 |
| 28 | 226 | 225 | 213 | 203 | 207 | 200 | 197 | 201 | 181 | 164 | 172 | 168 | 173 | 174 | 173 | 167 | 183 | 176 | 169 | 163 | 167 | 177 | 176 | 177 | 185 | S | 24 |
| 29 | 199 | 225 | 257 | 261 | 288 | 266 | 252 | 279 | 255 | 226 | 229 | 223 | 233 | 237 | 229 | 161 | 177 | 198 | 179 | 153 | 142 | 153 | 159 | 161 | 210 | SSW | 24 |
| 30 | 161 | 169 | 165 | 163 | 185 | 178 | 94 | 111 | 182 | 223 | 228 | 152 | 165 | 190 | 13 | 15 | 21 | 35 | 35 | 74 | 116 | 146 | 138 | 121 | 228 | SW | 24 |
| 31 | 127 | 154 | 118 | 113 | 132 | 152 | 130 | 128 | 103 | 102 | 118 | 139 | 142 | 150 | 158 | 138 | 174 | 142 | 249 | 32 | 28 | 33 | 32 | 47 | 249 | WSW | 24 |
| HOURLY AVG | 358 | 352 | 360 | 353 | 355 | 346 | 353 | 354 | 355 | 347 | 345 | 356 | 357 | 351 | 352 | 354 | 322 | 359 | 359 | 354 | 350 | 338 | 340 | 356 | | | |

**STATUS FLAG CODES**

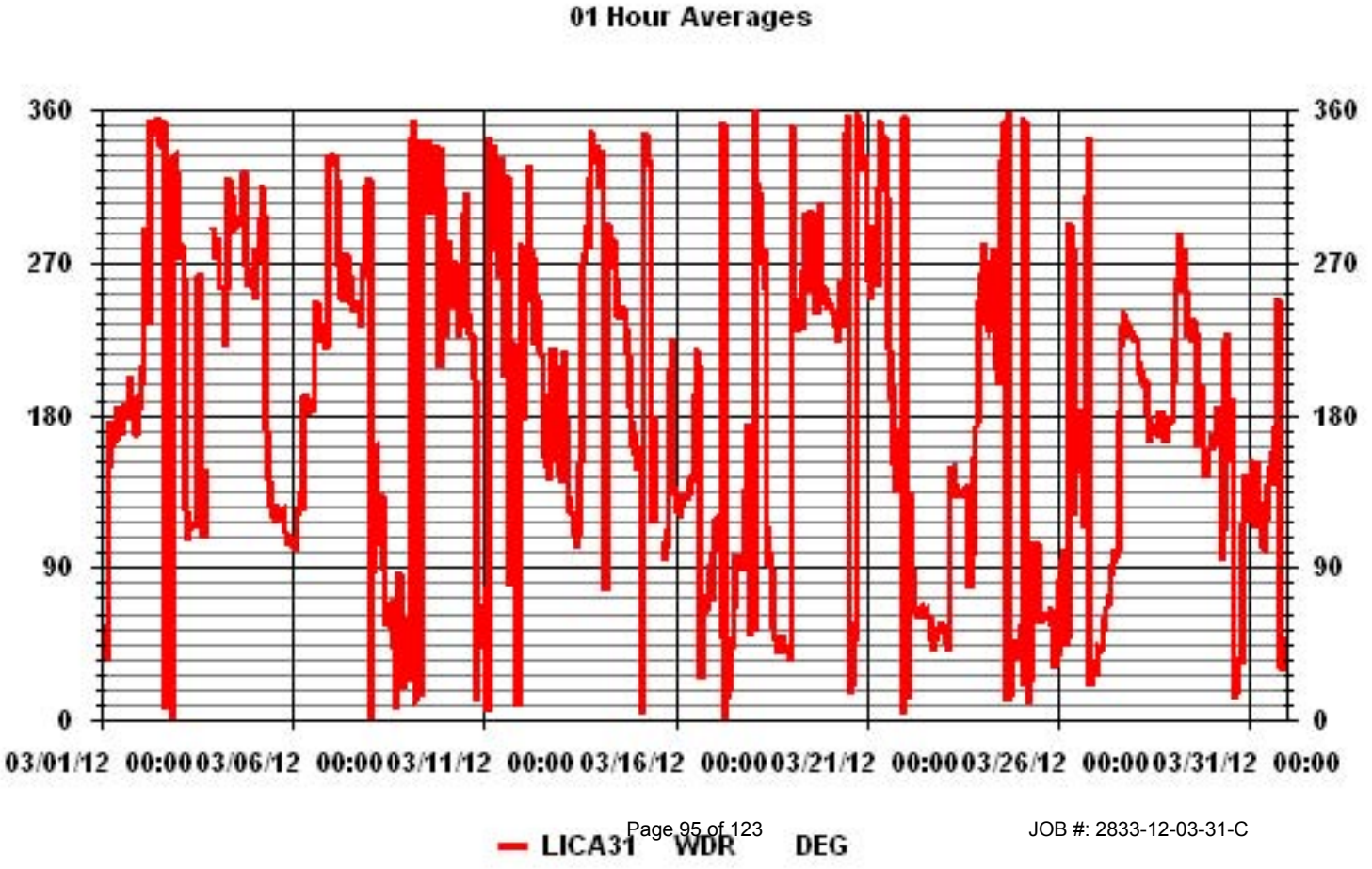
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |

| | |
|---|---|
| LAST CALIBRATION: | June 17, 2010 |
| DECLINATION : | 19 DEGREES FROM MAGNETIC NORTH |

| | | | | | |
|---|---|---|---|---|---|
| MONTHLY CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 737 | HRS |
| STANDARD DEVIATION | 99.16 | | AMD OPERATION UPTIME | 99.1 | % |
| | | | MONTHLY AVERAGE | 152 | DEG |



JOB #: 2833-12-03-31-C






JOB #: 2833-12-03-31-C

# Standard Deviation Wind Direction

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - ST.LINA

MARCH 2012

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

MST

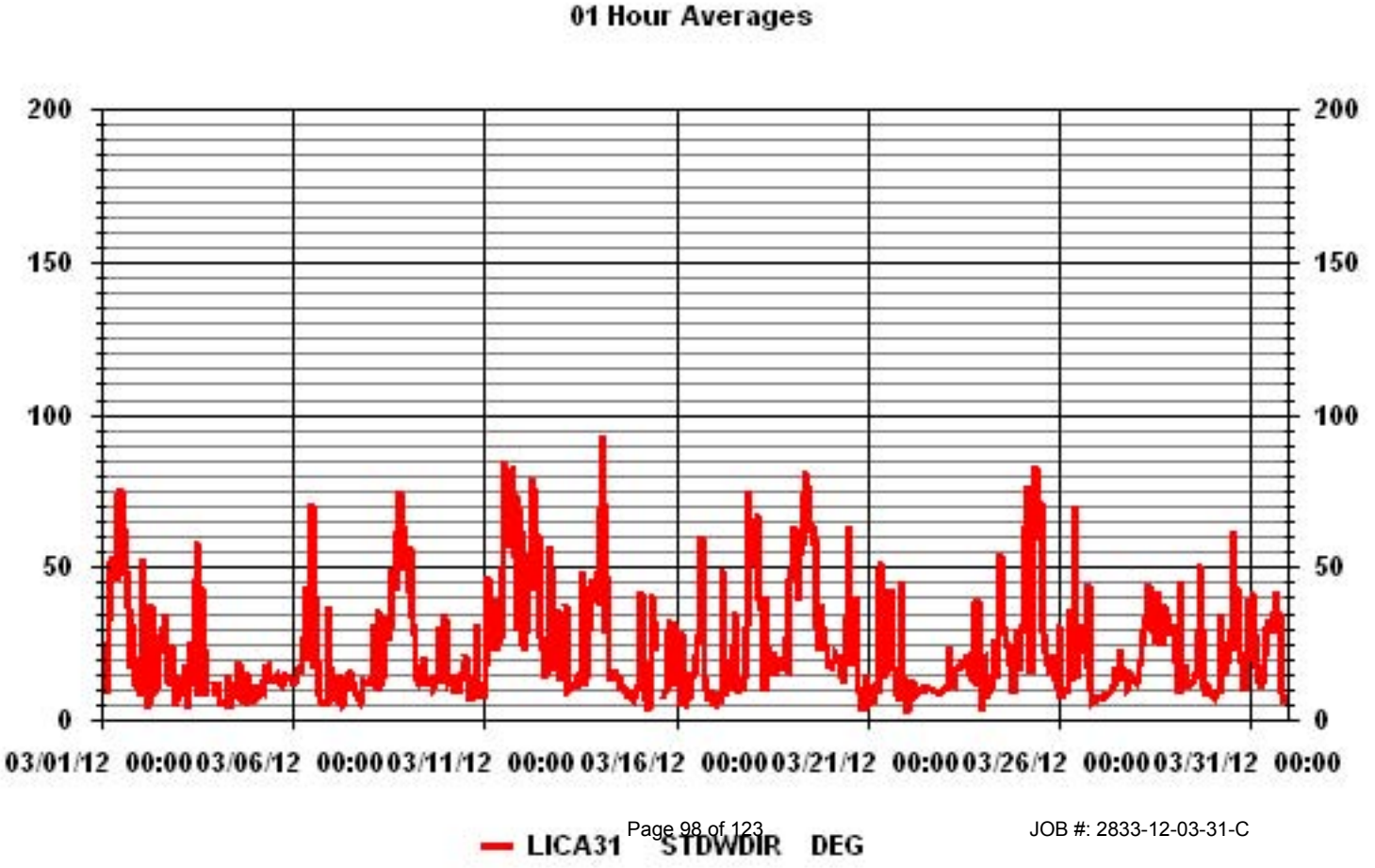
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 9 | 9 | 9 | 26 | 33 | 52 | 53 | 47 | 47 | 74 | 68 | 76 | 68 | 63 | 47 | 49 | 37 | 16 | 33 | 21 | 12 | 12 | 14 |
| 2 | 8 | 19 | 53 | 9 | 13 | 3 | 5 | 38 | 9 | 9 | 11 | 28 | 22 | 27 | 30 | 25 | 34 | 25 | 13 | 11 | 24 | 11 | 4 | 15 |
| 3 | 10 | 8 | 9 | 10 | 7 | 18 | 4 | 25 | 18 | 11 | 13 | 46 | 58 | 8 | 10 | 44 | 15 | 8 | 22 | **P** | **P** | **P** | 11 | 8 |
| 4 | 11 | 13 | 7 | 4 | 6 | 6 | 5 | 15 | 4 | 6 | 8 | 10 | 9 | 12 | 19 | 13 | 10 | 7 | 6 | 16 | 6 | 6 | 8 | 5 |
| 5 | 9 | 11 | 8 | 9 | 10 | 10 | 13 | 18 | 18 | 12 | 13 | 13 | 14 | 14 | 15 | 14 | 12 | 12 | 13 | 15 | 14 | 15 | 14 | 14 |
| 6 | 12 | 12 | 14 | 17 | 17 | 18 | 20 | 28 | 44 | 36 | 19 | 20 | 71 | 16 | 41 | 20 | 9 | 6 | 6 | 5 | 6 | 6 | 37 | 13 |
| 7 | 17 | 9 | 7 | 7 | 6 | 15 | 7 | 5 | 6 | 9 | 15 | 16 | 16 | 13 | 11 | 9 | 9 | 7 | 6 | 7 | 14 | 12 | 13 | 13 |
| 8 | 12 | 14 | 31 | 11 | 10 | 36 | 9 | 11 | 13 | 31 | 34 | 26 | 30 | 30 | 50 | 49 | 62 | 42 | 57 | 75 | 59 | 64 | 49 | 51 |
| 9 | 41 | 57 | 34 | 28 | 32 | 19 | 13 | 12 | 13 | 17 | 21 | 15 | 11 | 13 | 13 | 10 | 10 | 15 | 12 | 30 | 12 | 15 | 35 | 33 |
| 10 | 21 | 12 | 13 | 14 | 15 | 9 | 11 | 8 | 14 | 14 | 16 | 19 | 22 | 19 | 10 | 6 | 15 | 12 | 10 | 32 | 13 | 7 | 12 | 9 |
| 11 | 7 | 18 | 47 | 25 | 24 | 27 | 39 | 37 | 23 | 25 | 26 | 50 | 85 | 56 | 59 | 74 | 82 | 82 | 53 | 59 | 74 | 29 | 69 | 63 |
| 12 | 25 | 22 | 28 | 53 | 54 | 64 | 79 | 77 | 43 | 54 | 61 | 28 | 23 | 22 | 15 | 15 | 25 | 57 | 51 | 26 | 16 | 23 | 37 | 12 |
| 13 | 16 | 32 | 32 | 38 | 9 | 10 | 12 | 12 | 11 | 13 | 13 | 15 | 16 | 48 | 33 | 11 | 14 | 29 | 44 | 42 | 46 | 40 | 39 | 49 |
| 14 | 53 | 69 | 93 | 72 | 28 | 47 | 14 | 13 | 15 | 15 | 15 | 14 | 15 | 11 | 11 | 11 | 10 | 10 | 7 | 9 | 7 | 6 | 7 | 10 |
| 15 | 11 | 12 | 42 | 24 | 13 | 7 | 4 | 4 | 19 | 41 | 22 | 31 | **P** | **P** | **P** | **P** | 8 | 10 | 9 | 29 | 33 | 22 | 17 | 33 |
| 16 | 12 | 12 | 4 | 29 | 6 | 5 | 10 | 6 | 7 | 15 | 14 | 15 | 21 | 28 | 25 | 52 | 60 | 37 | 15 | 10 | 7 | 6 | 10 | 5 |
| 17 | 5 | 8 | 8 | 9 | 5 | 49 | 8 | 17 | 9 | 16 | 19 | 24 | 17 | 36 | 10 | 9 | 11 | 11 | 14 | 13 | 30 | 75 | 64 | 51 |
| 18 | 56 | 52 | 66 | 67 | 39 | 37 | 14 | 9 | 40 | 25 | 21 | 16 | 16 | 22 | 14 | 19 | 16 | 20 | 19 | 16 | 27 | 17 | 17 | 46 |
| 19 | 49 | 55 | 64 | 54 | 39 | 53 | 58 | 57 | 74 | 81 | 75 | 76 | 61 | 65 | 57 | 60 | 30 | 22 | 36 | 38 | 31 | 25 | 23 | 20 |
| 20 | 18 | 18 | 19 | 23 | 22 | 18 | 22 | 15 | 14 | 12 | 34 | 32 | 64 | 22 | 17 | 26 | 31 | 41 | 12 | 9 | 4 | 4 | 4 | 15 |
| 21 | 6 | 4 | 8 | 5 | 11 | 13 | 9 | 50 | 52 | 39 | 14 | 17 | 15 | 37 | 43 | 41 | 18 | 17 | 9 | 8 | 6 | 46 | 15 | 12 |
| 22 | 2 | 3 | 10 | 8 | 13 | 8 | 8 | 10 | 9 | 10 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 9 | 9 | 9 | 10 |
| 23 | 11 | 11 | 10 | 24 | 18 | 13 | 12 | 17 | 17 | 17 | 18 | 20 | 19 | 17 | 21 | 21 | 15 | 14 | 12 | 39 | 11 | 40 | 27 | 3 |
| 24 | 19 | 20 | 10 | 7 | 9 | 10 | 14 | 15 | 27 | 13 | 34 | 55 | 50 | 31 | 28 | 23 | 26 | 18 | 14 | 8 | 19 | 28 | 29 | 16 |
| 25 | 31 | 28 | 49 | 63 | 76 | 36 | 15 | 42 | 59 | 83 | 63 | 69 | 62 | 72 | 29 | 22 | 18 | 17 | 17 | 17 | 22 | 13 | 16 | 10 |
| 26 | 31 | 8 | 8 | 9 | 11 | 8 | 36 | 22 | 13 | 30 | 70 | 14 | 26 | 31 | 21 | 24 | 24 | 16 | 45 | 10 | 7 | 8 | 7 | 6 |
| 27 | 7 | 7 | 7 | 7 | 8 | 8 | 9 | 9 | 11 | 10 | 11 | 17 | 13 | 14 | 23 | 18 | 15 | 14 | 10 | 11 | 16 | 13 | 13 | 13 |
| 28 | 12 | 14 | 17 | 20 | 24 | 29 | 34 | 43 | 44 | 38 | 36 | 29 | 25 | 29 | 42 | 39 | 24 | 30 | 38 | 35 | 34 | 31 | 28 | 31 |
| 29 | 27 | 19 | 10 | 9 | 45 | 16 | 11 | 18 | 10 | 12 | 12 | 12 | 13 | 14 | 16 | 30 | 51 | 31 | 11 | 8 | 10 | 11 | 10 | 9 |
| 30 | 8 | 8 | 9 | 9 | 8 | **35** | 24 | 15 | 16 | 18 | 25 | 29 | 22 | 62 | 28 | 43 | 31 | 19 | 20 | 15 | 9 | 23 | 39 | 19 |
| 31 | 35 | 42 | 29 | 18 | 11 | 18 | 10 | 12 | 17 | 21 | 30 | 33 | 30 | 28 | 36 | 40 | 42 | 36 | 35 | 9 | 6 | 7 | 8 | 8 |

**STATUS FLAG CODES**

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

LAST CALIBRATION: June 17, 2010

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 737 HRS






JOB #: 2833-12-03-31-C

# Calibration Reports

# Sulphur Dioxide

# SO2 Calibration Report

## Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 6, 2012 | | Previous Calibration | February 8, 2012 | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | ST. LINA | | | | |
| Start Time (MST) | 12:01 | | End Time (MST) | 15:34 | |
| Reason: | | | Monthly Calibration | | |
| Barometric Pressure | 925 | mBar | Station Temperature | 21 | Deg C |
| Cal Gas | 48.3 ppm | Gas Cyl. # | LL103831 | Cal Gas Expiry date | February 28, 2013 |
| DAS Output Voltage | 0 - 1 | Volts | Chart Rec. Output | NA | Volts |

## Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 100E | S/N : | 468 | Method: | Fluorescent |
| Converter Make / Model: | NA | S/N : | NA | | |
| Calibrator Make / Model: | API 700 | S/N : | 831 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | NA | S/N: | NA | | |
| Flow Meter: | API 700 | S/N : | 831 | | |

## Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | 0 - 1000 ppb | | | | | | | |
| Sample Flow / Box Temp | 521 | ccm | 28.9 | Deg C | 524 | ccm | 28.4 | Deg C |
| HVPS / Lamp Setting | 540 | | 2317 | | 540 | | 2315 | |
| PMT / RxCell Temp | 7.8 | Deg C | 50 | Deg C | 7.9 | Deg C | 50 | Deg C |
| Converter / IZS Temp | NA | Deg C | 40 | Deg C | NA | Deg C | 40.0 | Deg C |
| Offset / Slope | 80.6 | | 1.039 | | 80.6 | | 1.048 | |

## Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4996 | 0 | 0 | 0 | N/A |
| | No Zero Adj. | | | |
| 4920 | 77.6 | 750 | 741 | 1.0121 |
| 4920 | 77.6 | 750 | 749 | 1.0013 |
| 4954 | 41.4 | 400 | 403 | 0.9933 |
| 4981 | 17.6 | 170 | 170 | 1.0000 |
| 4997 | 0 | 0 | 0 | N/A |
| | | | | |
| | | | Sum of Least Squares | 0.9995 |
| | | | New Correction Factor | 1.0013 |

## IZS alibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.7 | 0.4 |
| Auto Span | 276.0 | 277.0 |
| Sample Lines Connected | | YES |

## Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 0.9929 |
| Current Correction Factor Before Span Adjust: | 1.0121 |
| Percent Change: | -1.9% |

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

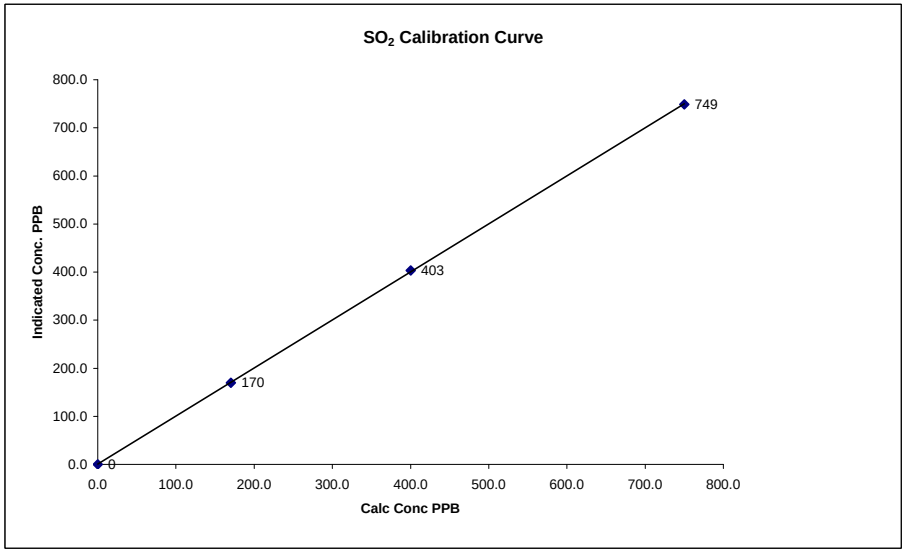
Calibration Performed by: Ting Xu

## $SO_2$ Calibration Curve

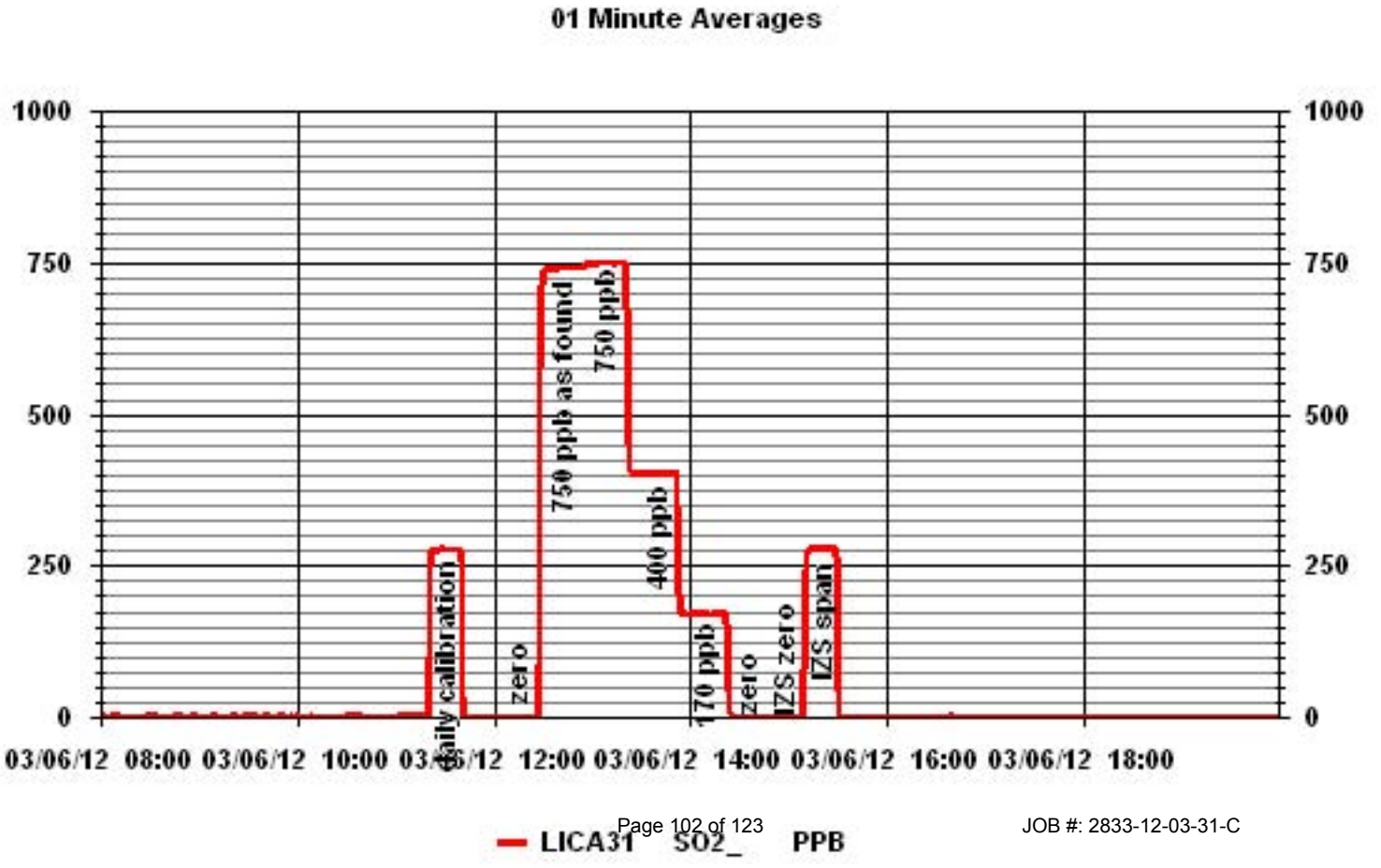
| | | | |
|---|---|---|---|
| Calibration Date | March 6, 2012 | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 12:01 | End Time (MST) | 15:34 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | n/a |
| 170 | 170 | 1.0004 |
| 400 | 403 | 0.9933 |
| 750 | 749 | 1.0013 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999976 |
| Slope | (0.85 to 1.15) | 0.999337 |
| Intercept | (± 3% F.S.) | 0.636030 |




**Notes:**






JOB #: 2833-12-03-31-C

# Hydrogen Sulphide

# H2S Calibration Report

## Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 5, 2012 | | Previous Calibration | February 8, 2012 | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | ST.LINA | | | | |
| Start Time (MST) | 12:45 | | End Time (MST) | 16:42 | |
| Reason: | | | Monthly Calibration | | |
| Barometric Pressure | 919 | mBar | Station Temperature | 20 | Deg C |
| Cal Gas | 10.2 ppm | Gas Cyl. # | BLM00080 | Cal Gas Expiry date | February 25, 2012 |
| DAS Output Voltage | 0 - 1 | Volts | Chart Rec. Output | NA | Volts |

## Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 101E | S/N : | 510 | Method: | Fluorescent |
| Converter Make / Model: | NA | S/N : | NA | | |
| Calibrator Make / Model: | API 700 | S/N : | 831 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | NA | S/N: | NA | | |
| Flow Meter: | API 700 | S/N : | 831 | | |

## Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | | 0 - 100 ppb | | | | |
| Sample Flow / Box Temp | 532 ccm | | 31.3 | Deg C | 531 ccm | | 31.1 | Deg C |
| HVPS / Lamp Setting | 518 | | 2407 | | 518 | | 2406 | |
| PMT / RxCell Temp | 8.4 | Deg C | 50 | Deg C | 8.4 | Deg C | 50 | Deg C |
| Converter / IZS Temp | 314.8 | Deg C | 45 | Deg C | 314.5 | Deg C | 45.0 | Deg C |
| Offset / Slope | 75.6 | | 1.005 | | 77.4 | | 1.035 | |

## 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 | 1.0000 |
| 4960 | 39.2 | 80 | 78 | 1.0254 |
| 4960 | 39.2 | 80 | 80 | 1.0000 |
| 4980 | 19.6 | 40 | 40 | 1.0000 |
| 4988 | 11.2 | 23 | 24 | 0.9522 |
| 5000 | 0 | 0 | 0 | NA |
| | | | | |
| | | | Sum of Least Squares | 0.9967 |
| | | | New Correction Factor | 1.0000 |

## IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 1.1 | 0.5 |
| Auto Span | 39.5 | 40.4 |
| Sample Lines Connected | | YES |

## Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 1.0254 |
| Percent Change: | -2.5% |

Notes: **NA : Not Applicable**

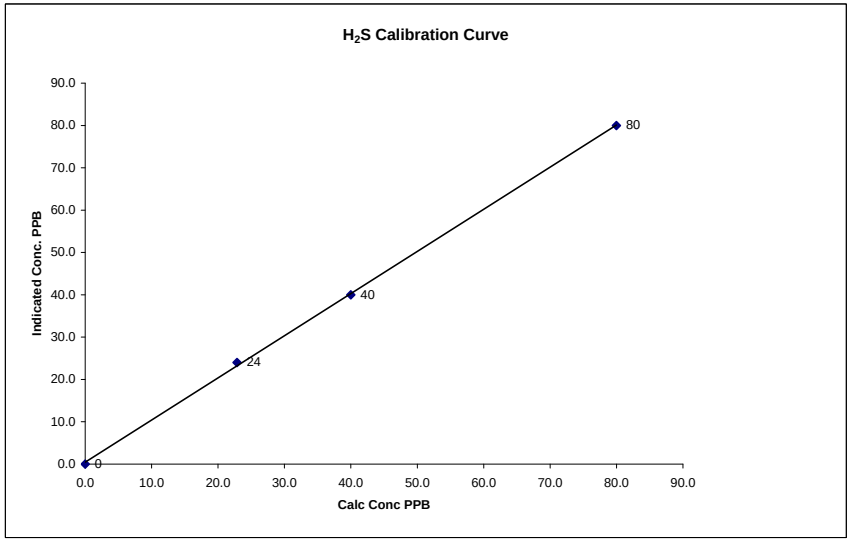
Calibration Performed by: Ting Xu

# $H_2S$ Calibration Curve

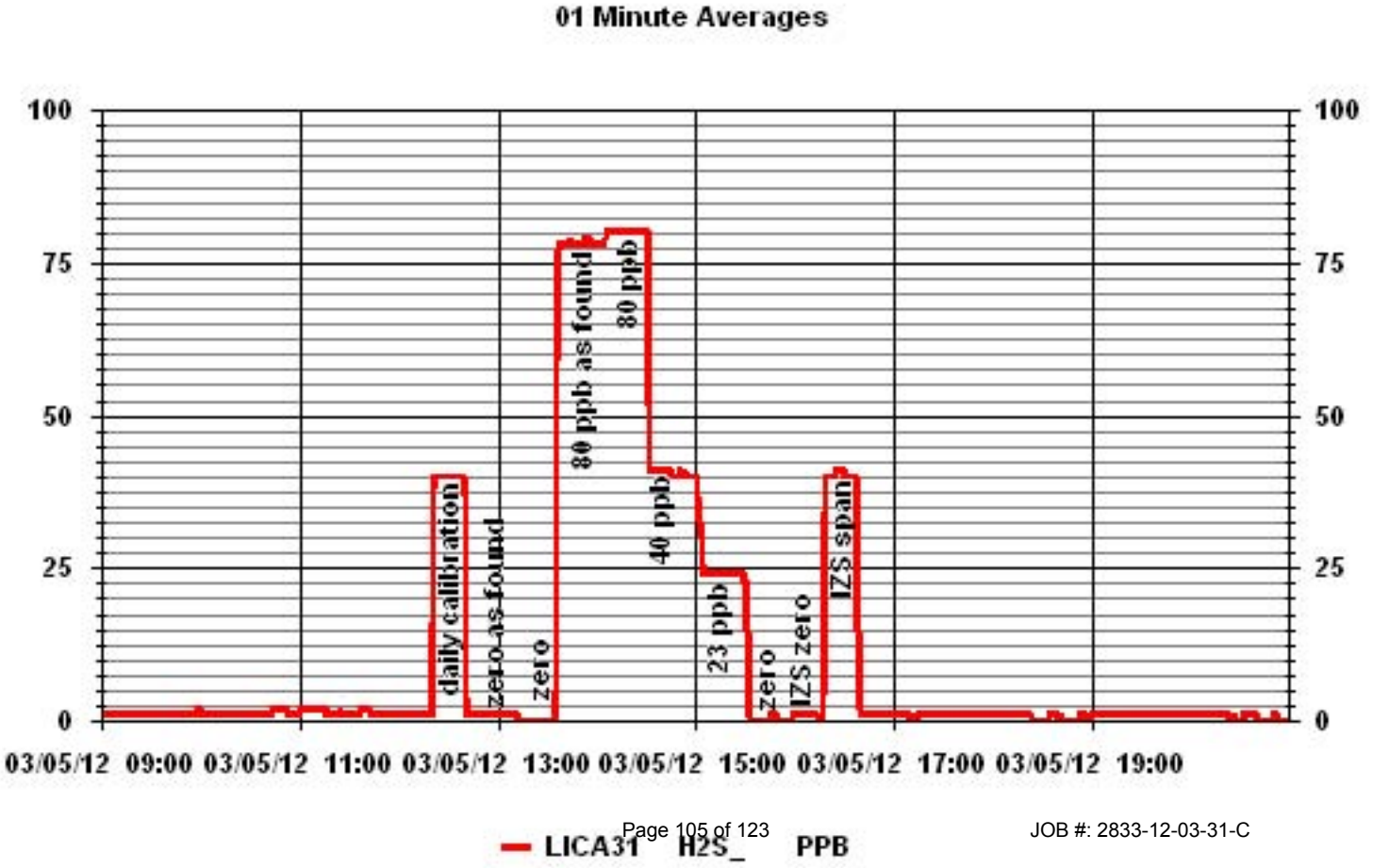
| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 5, 2012 | | | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | ST.LINA | | | | |
| Start Time (MST) | 12:45 | | End Time (MST) | 16:42 | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | |
| 23 | 24 | 0.9522 |
| 40 | 40 | 0.9997 |
| 80 | 80 | 0.9998 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999730 |
| Slope | (0.85 to 1.15) | 0.995947 |
| Intercept | (± 3% F.S.) | 0.439786 |




**Notes:**






JOB #: 2833-12-03-31-C

# Total Hydrocarbons

## THC Calibration Report

Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date: | March 6, 2012 | | Previous Calibration | February 9, 2012 | |
| Company: | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location: | ST. LINA | | | | |
| Start Time (MST) | 14:56 | | End Time (MST) | 18:46 | |
| Reason: | Monthly Calibration | | | | |
| Barometric Pressure: | 924 | mBar | Station Temperature: | 20 | Deg C |
| Calibrator: | API 700 | | S/N: | 831 | |
| Cal Gas Concentration: | CH4 980 PPM | | C3H8 | 304 PPM | |
| | TOTAL CH4 1816.0 PPM | | Gas Cyl. # | LL84144 | Cal Gas Expiry Date: December 3, 2013 |
| DAS make & Model: | ESC 8832 | | S/N : | AO 717 | |
| Chart Recorder: | NA | | S/N: | NA | |
| Output Voltage Range: | 0 - 10 | VDC | Chart Speed: | NA | mm/hr |

**Analyzer Information**

| Make / Model | TECO 51C | S/N : | 77021-384 | Method | Flame Ionization |
|---|---|---|---|---|---|

**Analyzer Settings**

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0 - 50 | ppm | 0 - 50 | ppm |
| Sample Pressure | 6.9 | psi | 6.9 | psi |
| Hydrogen Pressure | 10 | psi | 10 | psi |
| Air Pressure | 21 | psi | 21 | psi |

**Calibration Data**

| Dilution Flow | Source Gas Flow | Calculated Concentration | Indicated Concentration | Correction Factor |
|---|---|---|---|---|
| 3000 | 0.0 | 0.0 | -0.4 | NA |
| 3000 | 0.0 | 0.0 | 0.0 | NA |
| 3000 | 70.0 | 41.4 | 42.2 | 0.9812 |
| 3000 | 70.0 | 41.4 | 41.5 | 0.9978 |
| 3000 | 35.0 | 20.9 | 20.8 | 1.0068 |
| 3000 | 20.0 | 12.0 | 11.9 | 1.0106 |
| 3000 | 0.0 | 0.0 | 0.0 | NA |
| | | | New Correction Factor: | 0.9978 |

**Percent Change**

| | |
|---|---|
| Previous Calibration Correction Factor: | 1.0000 |
| Current Correction Factor Before Span Adjust: | 0.9812 |
| Percent Change: | 1.9% |

**IZS Calibration Data**

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | -0.1 | -0.1 |
| Auto Span | 31.6 | 32.5 |
| Sample Lines Connected | | YES |

Cylinder Pressures

Span 800 psi Hydrogen 600 psi Zero Air 34 psi

Notes: **NA : Not Applicable**

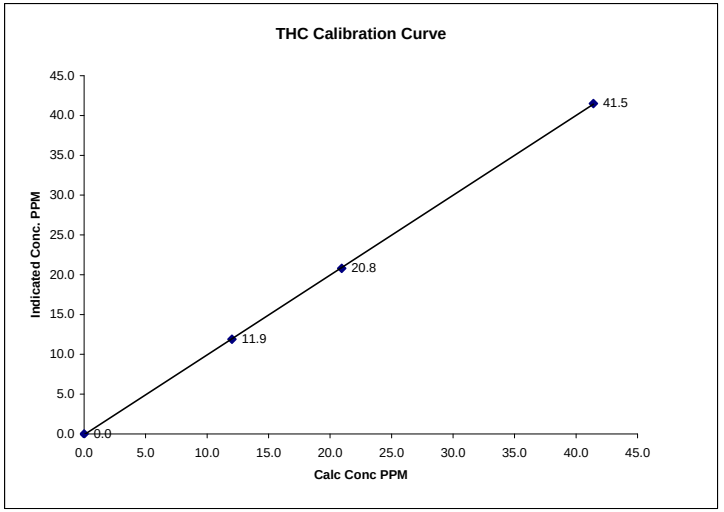
Calibration Performed by: Ting Xu

## THC Calibration Curve

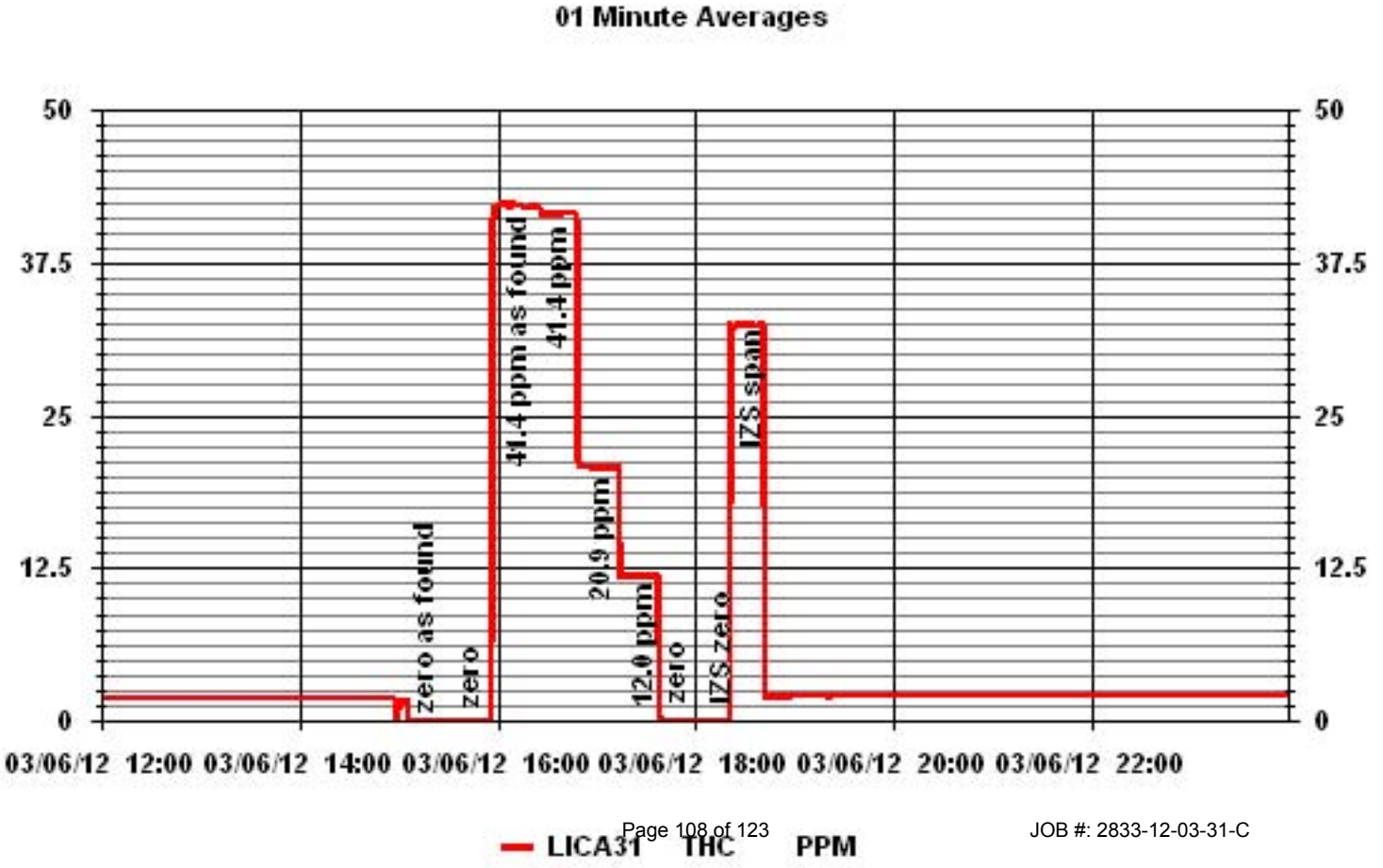
| | | | |
|---|---|---|---|
| Calibration Date | March 6, 2012 | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | |
| Plant / Location | ST. LINA | | |
| Start Time (MST) | 14:56 | End Time (MST) | 18:46 |

| Calculated Conc. ppm | Indicated Response ppm | Correction Factor |
|---|---|---|
| 0.0 | 0.0 | NA |
| 12.0 | 11.9 | 1.0106 |
| 20.9 | 20.8 | 1.0068 |
| 41.4 | 41.5 | 0.9978 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999968 |
| Slope | (0.85 to 1.15) | 1.002858 |
| Intercept | (± 3% F.S.) | -0.09714 |




Notes:






JOB #: 2833-12-03-31-C

# Nitrogen Dioxide

## NOx - NO- $NO_2$ Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 5, 2012 | | Previous Calibration | February 8, 2012 | |
| Company | LICA | | Plant/Location | St. Lina | |
| Start Time (MST) | 12:45 | | End Time (MST) | 18:42 | |
| Reason: | Monthly Calibration | | | | |
| Barometric Pressure | 919 mBar | Station Temperature | 20 Deg C | MFCF | 1 |
| Cal Gas Concentration | NOx 49.7 ppm | NO 49.4 ppm | Cal Gas Expiry date | February 28, 2013 | |
| Cal Gas Cylinder # | LL103831 | | | | |
| DAS Output Voltage | 0 - 1 Volts | | Chart Rec. Output | NA Volts | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | TAPI 200E | S/N : | 592 | Method: | Chemiluminescent |
| Calibrator Make / Model: | 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 | 475 | ccm | 315 | Deg C | | 478 | ccm | 314 | Deg C |
| Ozone Flow / Vacuum | 72 | ccm | 5.0 | "Hg-A | | 71 | ccm | 5 | "Hg-A |
| HVPS / A ZERO | 662 | Volts | 18.9 | MV | | 662 | Volts | 18.7 | 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 | 28.1 | Deg C | 45.0 | Deg C | | 28 | Deg C | 42.2 | Deg C |
| Offset | 1.5 | NOx | 0.5 | NO | | 1.5 | NOx | 0.5 | NO |
| Slope | 1.289 | NOx | 1.266 | NO | | 1.289 | NOx | 1.266 | NO |
| $NO_2$ COEF / Conv Efficency | NA | NO2 | 0.993 | | | NA | 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 |
| 4994 | 0.0 | NA | 0 | 0 | NA | 1 | 1 | 0 | NA | NA |
| | No Zero Adj. | | | | | | | | | |
| 4919 | 75.7 | NA | 753 | 749 | NA | 756 | 748 | 8 | 0.9977 | 1.0023 |
| | No Span Adj. | | | | | | | | | |
| 4961 | 35.3 | NA | 351 | 349 | NA | 353 | 347 | 6 | 0.9976 | 1.0087 |
| 4977 | 17.2 | NA | 171 | 170 | NA | 172 | 170 | 2 | 1.0010 | 1.0000 |
| 4994 | 0.0 | NA | 0 | 0 | NA | 0 | 1 | 0 | NA | NA |

### Gas Phase Titration Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | $NO_2$ Correction Factor | NO2 Conv Efficency |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | | |
| 4919 | 75.7 | NA | 753 | 749 | NA | 758 | 748 | 11 | NA | NA |
| 4919 | 75.7 | 600 | 753 | NA | 539 | 758 | 220 | 539 | 1.0000 | 100.00% |
| | No Span Adj. | | | | | | | | | |
| 4919 | 75.7 | 300 | 753 | NA | 277 | 759 | 482 | 277 | 1.0000 | 100.00% |
| 4919 | 75.7 | 120 | 753 | NA | 117 | 759 | 642 | 117 | 1.0000 | 100.00% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Linearity OK? | Yes | No | Sum of Least Squares | NOx= | 0.996 | NO= | 1.002 | NO2= 1.000 |
| | | | Correction Factors: | NOx= | 0.9977 | NO= | 1.0023 | NO2= 1.0000 |
| | | | | | | Average Converter Efficiency= | | 100.00% |

### IZS Calibration Data

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auto Zero | 0.6 | NOx | 0.3 | NO2 | | 0.0 | NOx | -0.1 | NO2 |
| Auto Span | 900 | NOx | 857 | NO2 | | 722 | NOx | 691 | NO2 |
| | | | | | Sample Lines Connected | YES | | | |
| Percent Change from Previous Calibration | | | NOx | 0.2% | NO | -0.2% | NO2 | 0.0% | |

Notes

**NA : Not Applicable**

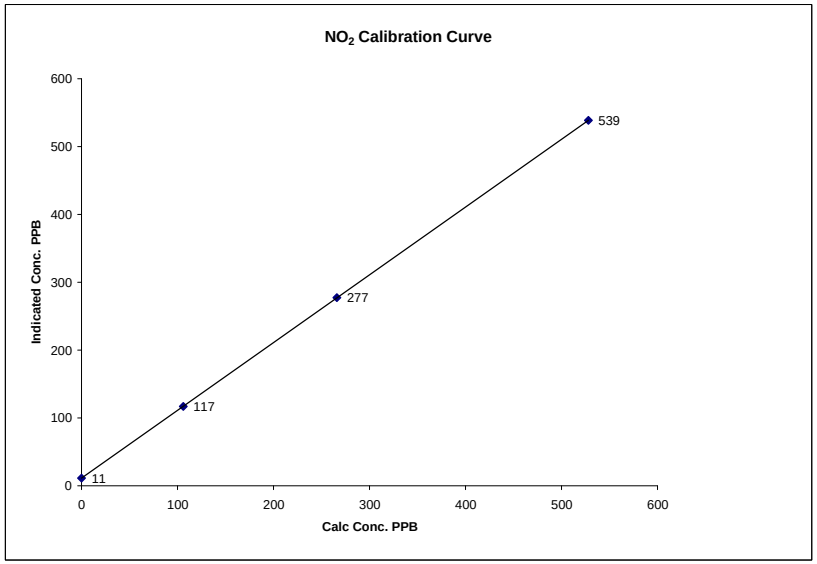
Additional GPT was done for O3 claibration. O3 set point 450, NO=350, NO2=410, NOx=760

Calibration Performed by: Ting Xu

## $NO_2$ Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | March 5, 2012 | | |
| Company | LICA | | |
| Plant / Location | St. Lina | | |
| Start Time (MST) | 12:45 | End Time (MST) | 18:42 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | | | |
|---|---|---|---|---|---|
| 0 | 11 | N/A | Correlation Coefficient | (≥ 0.995) | 1.000000 |
| 106 | 117 | 0.9060 | Slope | (0.85 to 1.15) | 1.000000 |
| 266 | 277 | 0.9603 | Intercept | (± 3% F.S.) | 11.00000 |
| 528 | 539 | 0.9796 | | | |

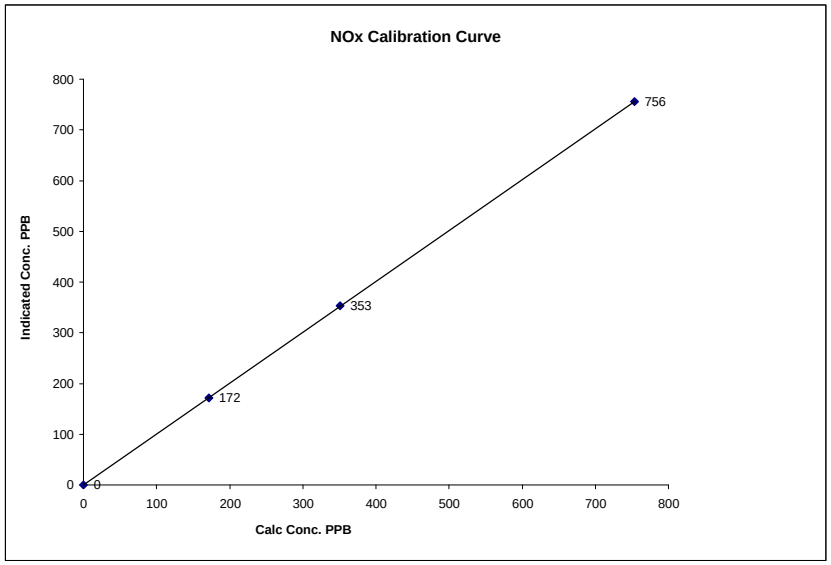



Notes:

## NOx Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | March 5, 2012 | | |
| Company | LICA | | |
| Plant / Location | St. Lina | | |
| Start Time (MST) | 12:45 | End Time (MST) | 18:42 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999999 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 1.003603 |
| 0 | 0 | N/A | Intercept (± 3% F.S.) | 0.20987 |
| 171 | 172 | 0.9952 | | |
| 351 | 353 | 0.9947 | | |
| 753 | 756 | 0.9964 | | |

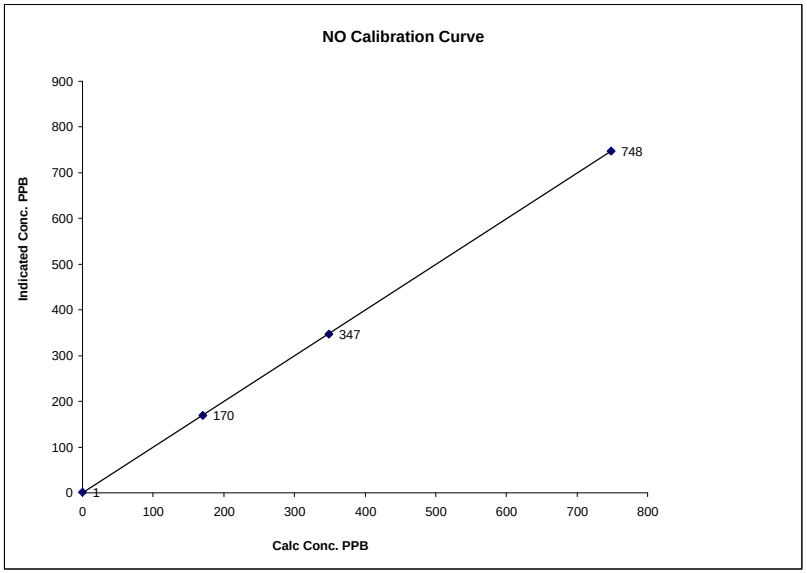



Notes:

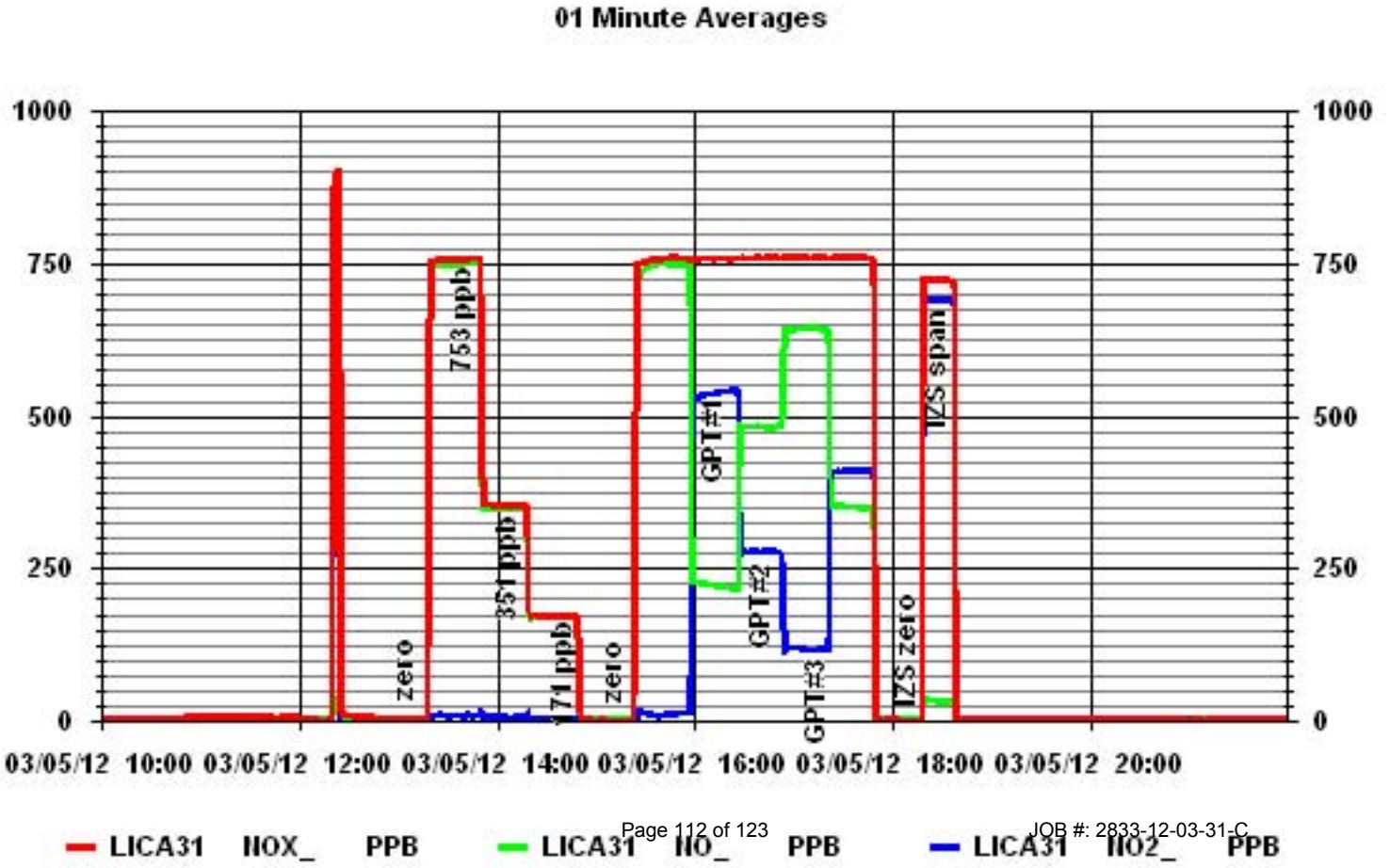
## NO Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | March 5, 2012 | | |
| Company | LICA | | |
| Plant / Location | St. Lina | | |
| Start Time (MST) | 12:45 | End Time (MST) | 18:42 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999989 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 0.999721 |
| 0 | 1 | N/A | Intercept (± 3% F.S.) | -3.1685 |
| 170 | 170 | 1.0008 | | |
| 349 | 347 | 1.0058 | | |
| 749 | 748 | 1.0009 | | |




Notes:


01 Minute Averages
1000
750
500
250
0
zero
753 ppb
351 ppb
171 ppb
zero
GPT #1
GPT #2
GPT #3
TZS zero
TZS span
03/05/12 10:00
03/05/12 12:00
03/05/12 14:00
03/05/12 16:00
03/05/12 18:00
03/05/12 20:00
LICA31 NOX_ PPB
LICA31 NO_ PPB
LICA31 NO2_ PPB

# Ozone

## $O_3$ Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | March 5, 2012 | Previous Calibration | February 9, 2012 |
| Company | **Lakeland Industry & Community Association** | | |
| Plant / Location | **St. Lina** | | |
| Start Time (MST) | 11:00 | End Time (MST) | 15:34 |
| Reason: | Monthly Calibration | | |
| Barometric Pressure | 925 mBar | Station Temperature | 21 Deg C |
| DAS Output Voltage | 0 - 10 Volts | | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | Thermo 49C | S/N : | 49C-54926-302 | Method: | Fluorescent |
| Calibrator Make / Model: | Environics 6100 | S/N : | 4760 | Method: | GPT |
| DAS Make / Model: | ESC 8832 | S/N : | AO 717 | | |

### Analyzer Settings

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0 - 500 ppb | | | |
| CellA Flow / Cell B Flow | 824 ccm | 843 ccm | 837 ccm | 856 ccm |
| Pressure | 684.9 mmHg | | 702 mmHg | |
| Bench Temp | 56.7 Deg C | | 56.7 Deg C | |
| O3 Lamp / Box Temp | 80 Deg C | 30.3 Deg C | 80 Deg C | 30.2 Deg C |
| Offset / Slope | 0.1 | 0.976 | 0.1 | 0.976 |

### Calibration Data

| Dilution Flow Rate | Ozone Set Point | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4994 | 0 | 0 | 0 | NA |
| | No Zero Adj | | | |
| 4994 | 450 | 399 | 397 | 1.0050 |
| | No Span Adj. | | | |
| 4994 | 300 | 266 | 267 | 0.9963 |
| 4994 | 120 | 106 | 108 | 0.9815 |
| 4994 | 0 | 0 | 0 | N/A |
| | | | Sum of Least Squares | N/A |
| | | | New Correction Factor | 0.0000 |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.8 | 0.4 |
| Auto Span | 320 | 317 |
| Sample Lines Connected | | YES |
| Percent Change from Previous Calibration | | -0.5% |

Note: **NA: Not Applicable**

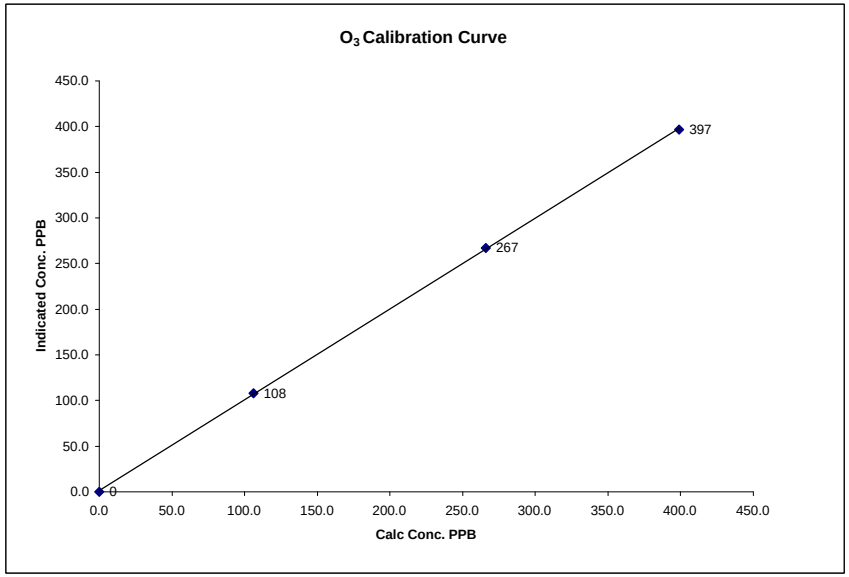
Calibration Performed by: Ting Xu

## $O_3$ Calibration Curve

| | | | |
|---|---|---|---|
| Calibration Date | March 5, 2012 | | |
| Company | **Lakeland Industry & Community Association** | | |
| Plant / Location | **St. Lina** | | |
| Start Time (MST) | 11:00 | End Time (MST) | 15:34 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | n/a |
| 106 | 108 | 0.9815 |
| 266 | 267 | 0.9963 |
| 399 | 397 | 1.0050 |

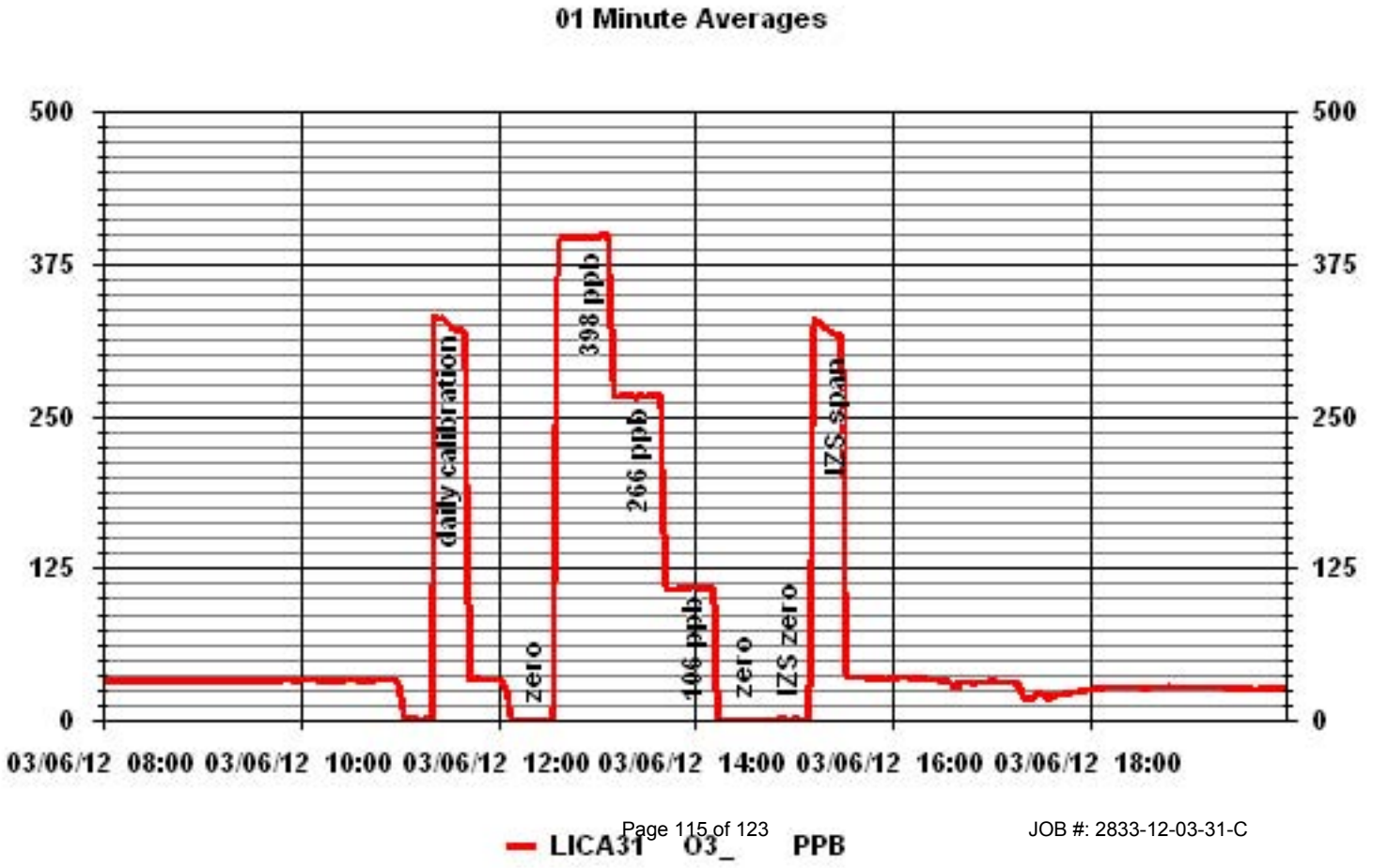
| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999935 |
| Slope | (0.85 to 1.15) | 0.994462 |
| Intercept | (± 3% F.S.) | 1.317505 |




Notes:



JOB #: 2833-12-03-31-C






JOB #: 2833-12-03-31-C

# Particulate Matter 2.5

# TEOMÒ 1405F Audit

| Station | | Audit Transfer Standard | |
|---|---|---|---|
| Date: | March 5, 2012 | Make/Model: | Streamline FTS |
| Station Name: | Lica St. Lina (CASA # 31) | Serial Number: | Lo 091099, Hi 091001 |
| Location: | St. Lina Station | Cell s/n: | NA |
| Operator: | LICA | Thermometer s/ | Station Temp. Sensor |

| Sampler | | Set-up and current Sampler readings | |
|---|---|---|---|
| Make/Model | Thermo Scientific Series 1405F | F-Main Set Pt (l/min) | 3.00 |
| Unit # | NA | F-Aux Set Pt (l/min) | 13.67 |
| Unit s/n | 1405A207691003 | Filter Load (%) | 32.1% |
| Firmware Ver. | 1.55 | $K_o$ Factor | 15634.0 |
| Parameter | PM 2.5 (with FDMS) | Temp ($^oC$) | -3.2 |
| | | Press (ATM) | 0.912 |

**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** | 0.003 | Warnings | None |
| Pump Vacuum **<0.4atm** | 0.29 | Pump Gauge (inHg) | NA |

**Temperature/Pressure**

| | | | |
|---|---|---|---|
| Measured Temp **(± 2 $^oC$)** | -3.8 | **D $^oC$** | 0.6 |
| Measured Press **(± 0.01atm)** | 0.907 | **DATM** | 0.005 |

**Flow Audit**

| | | | |
|---|---|---|---|
| Indicated Main Flow (l/min) | 3.00 | Main Flow Drift **(±10.0%)** | 3.73% |
| Measured Main Flow (l/min) | 2.84 | Flow Adjusted to Measured? | YES |
| Indicated Bypass Flow (l/min) | 13.67 | Bypass Flow Drift **(±10.0%)** | 1.85% |
| Measured Bypass Flow (l/min) | 13.60 | Flow Adjusted to Measured? | YES |

**Leak Check**

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

**Instrument Setup**

Flow Control = Active

Report Conditions = Actual

**$K_o$ Factor**

| | |
|---|---|
| Measured | NA |
| $K_o$ Difference **(± 2.5%)** | NA |

**Start Time:** 14:38 **Finish Time:** 15:51

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

**New Filter Loading %:** 21.0%

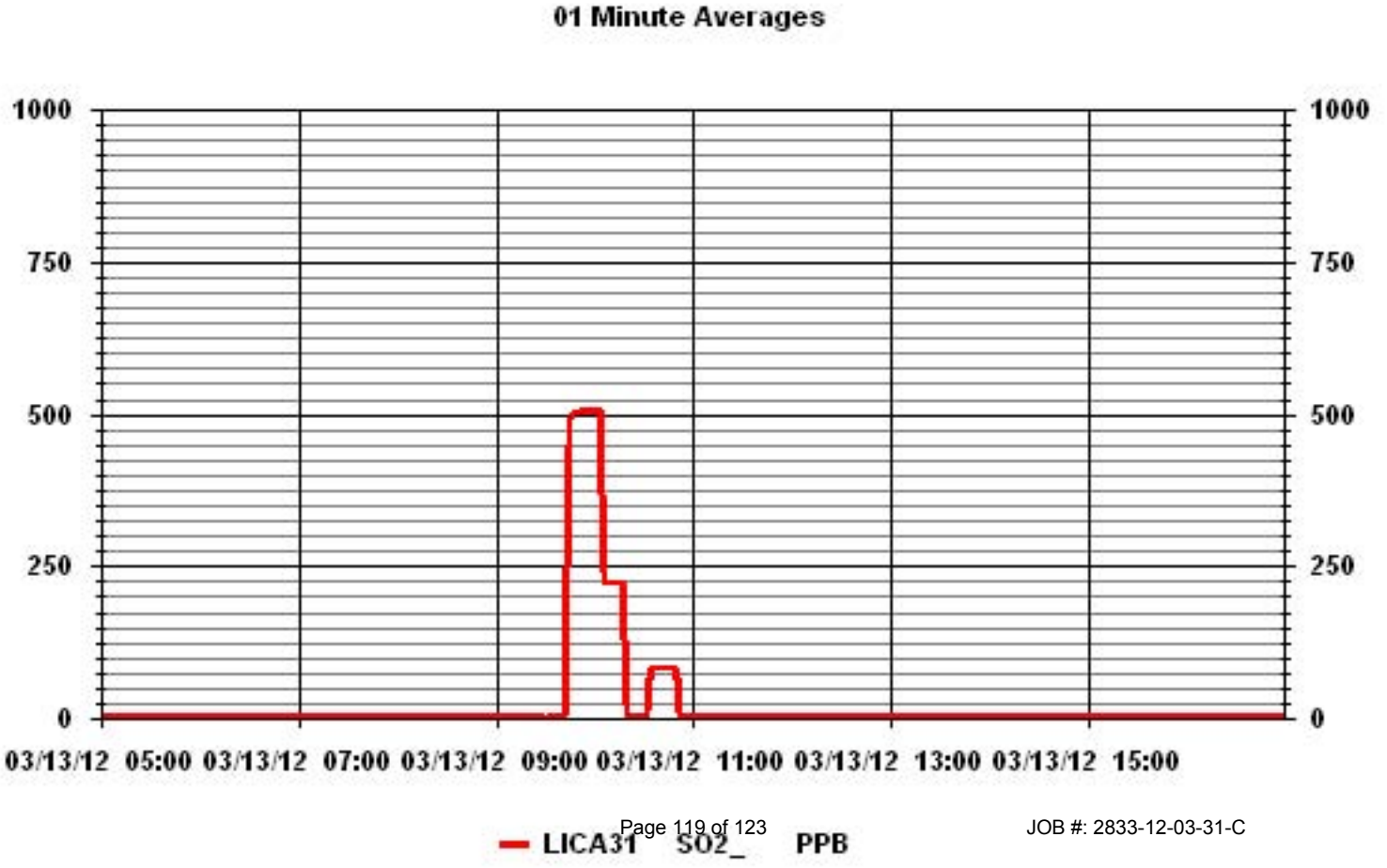
**Comments:**



JOB #: 2833-12-03-31-C

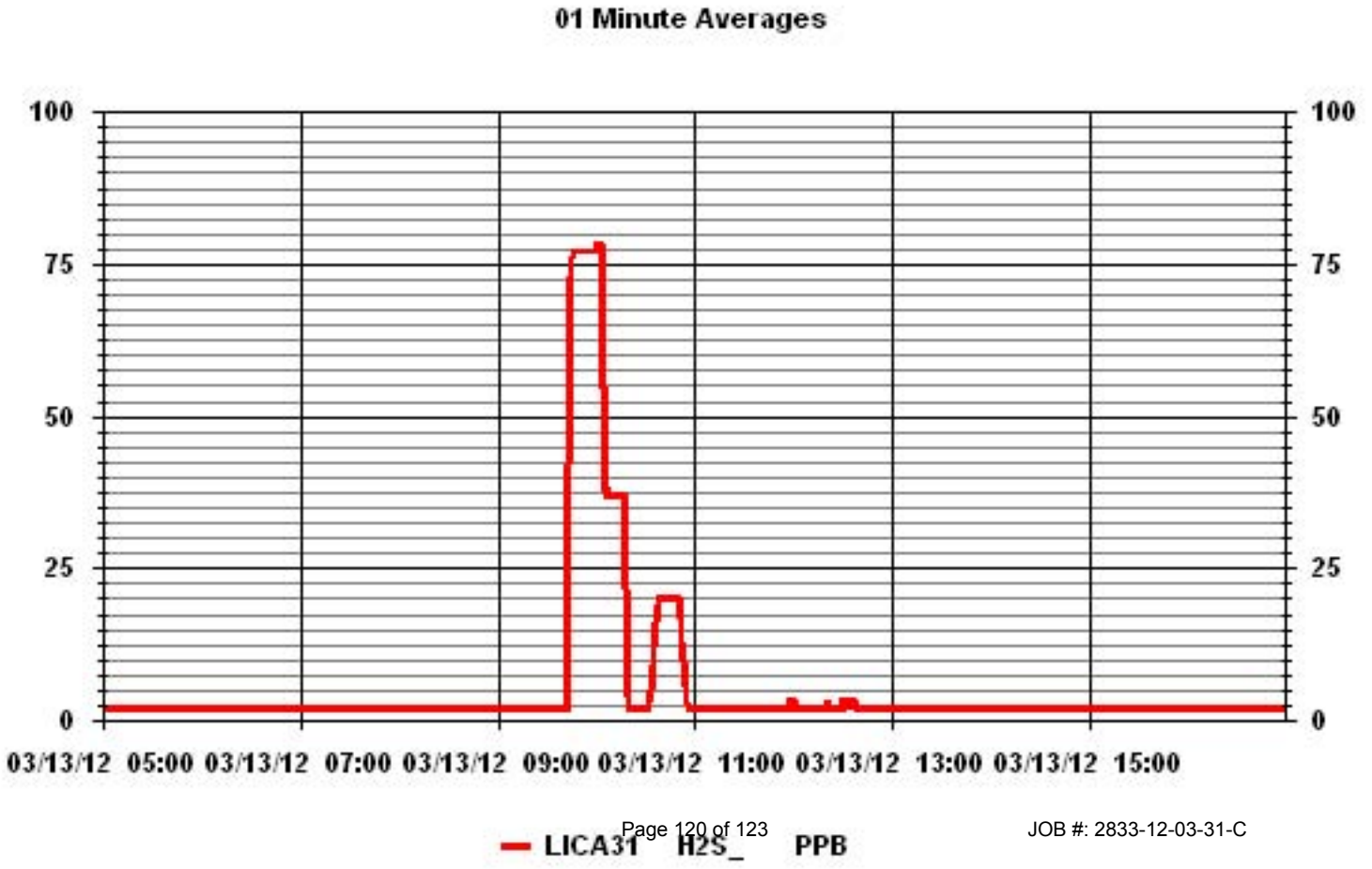
**Auditor/s:** Ting Xu

# AE Audit Results



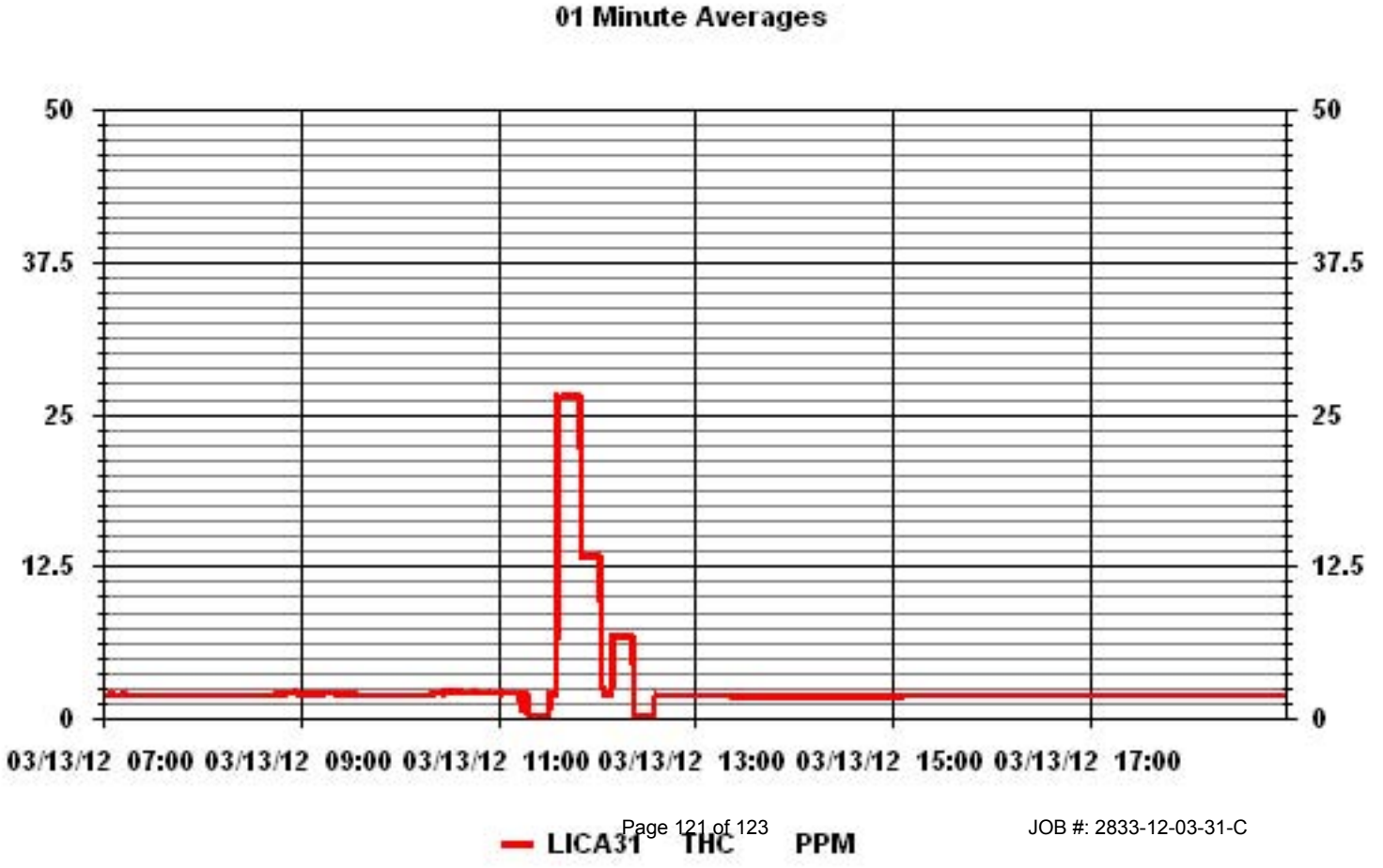



JOB #: 2833-12-03-31-C



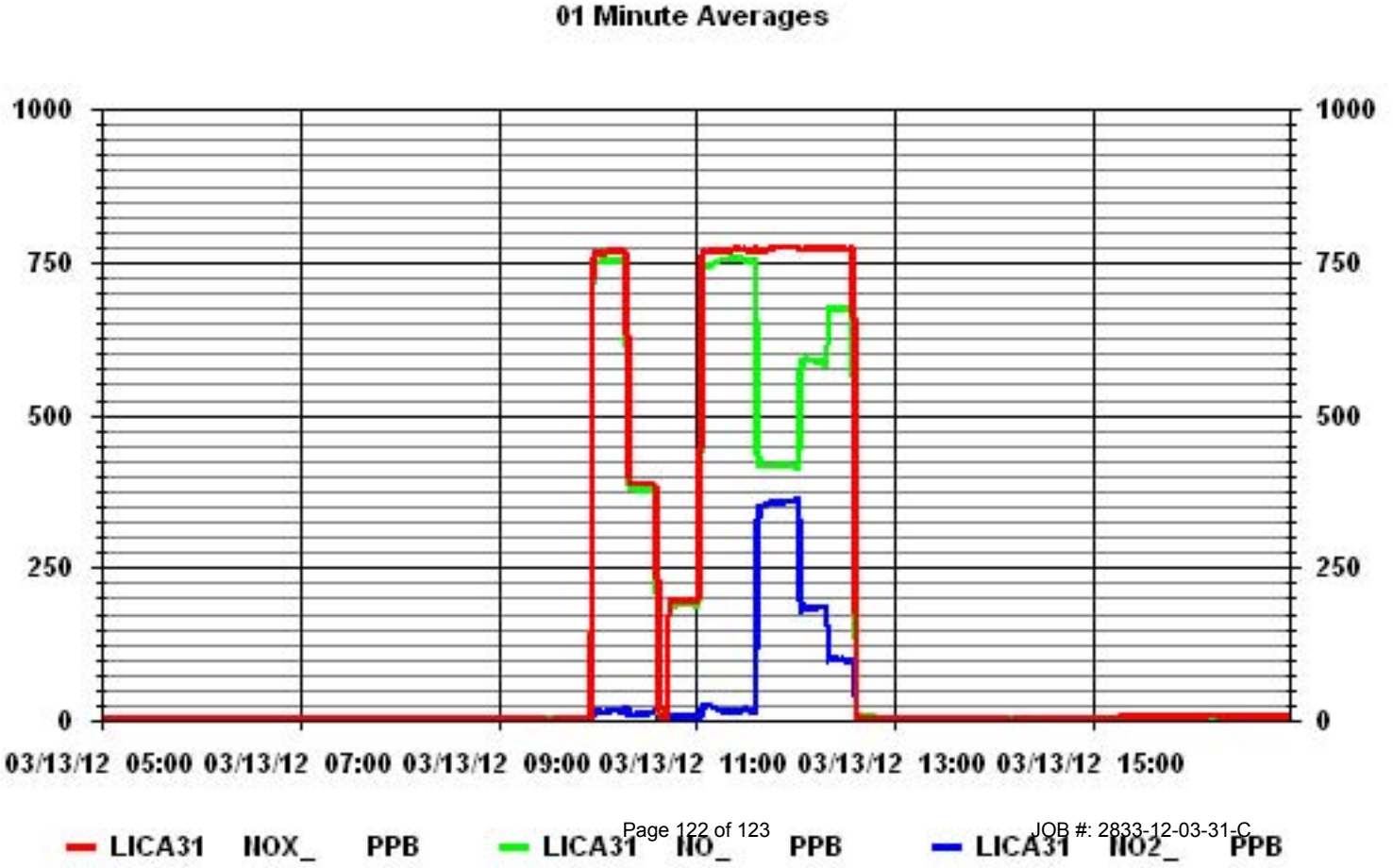


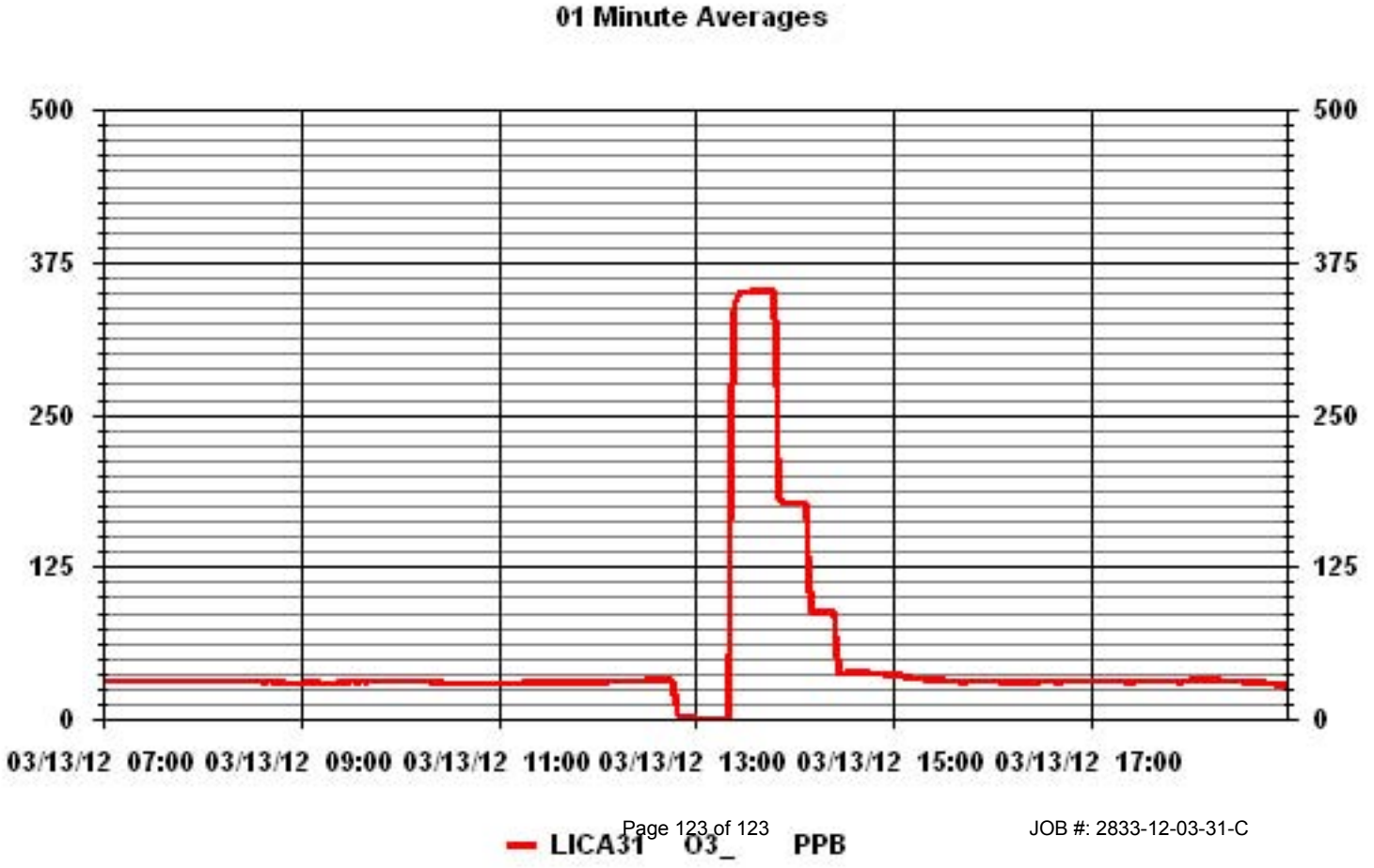

JOB #: 2833-12-03-31-C






JOB #: 2833-12-03-31-C


01 Minute Averages
1000
750
500
250
0
03/13/12 05:00
03/13/12 07:00
03/13/12 09:00
03/13/12 11:00
03/13/12 13:00
03/13/12 15:00
LICA31 NOX_ PPB
LICA31 NO_ PPB
LICA31 NO2_ PPB






JOB #: 2833-12-03-31-C

# Lakeland Industry & Community Association

Portable / Elk Point Airport Monitoring Site
Ambient Air Monitoring Data Report
For
March 2012

Prepared By:


April 27, 2012



JOB #: 2833-12-03-35-C

# 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: March 2012

The monthly ambient data report:

- Prepared by Lily Lin
- Reviewed by Katherine Rapske

The 6-days analytical report for VOCs and PAHs:
Authorized by Petro Oh

# Calibration Procedure

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

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

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

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

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

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

### Continuous Ambient Monitoring – March 2012

| LAKELAND INDUSTRY & COMMUNITY ASSOCIATION PORTABEL / 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 | 0.11 | 3 | 14 | 11 | 18.5 | 294(WNW) | 0.8 | 9 | 99.9 |
| $H_2S$ (PPB) | 10 | 3 | 0 | 0 | 0.02 | 1 | VAR | VAR | VAR | VAR | 0.3 | 16 | 99.9 |
| THC (PPM) | - | - | - | - | 2.63 | 23.0 | 19 | 22 | 14.2 | 341(NNW) | 4.1 | 21 | 99.5 |
| $NO_2$ (PPB) | 159 | - | 0 | - | 2.97 | 27 | 20 | 21 | 6.2 | 293(WNW) | 13.1 | 21 | 99.8 |
| NO (PPB) | - | - | - | - | 0.92 | 27 | 21 | 9 | 2.8 | 134(SE) | 5.1 | 21 | 99.8 |
| NOx (PPB) | - | - | - | - | 3.94 | 46 | 21 | 7 | 2.1 | 336(SW) | 18.7 | 21 | 99.8 |
| $O_3$ (PPB) | 82 | - | 0 | - | 31.76 | 53 | 31 | VAR | VAR | VAR | 42.6 | 31 | 99.9 |
| PM 2.5 ($UG/M^3$) | - | 30 | - | 2 | 10.89 | 120.2 | 9 | 15 | 7.2 | 231(SW) | 37.2 | 15 | 33.9 |
| VECTOR WS (KPH) | - | - | - | - | 11.67 | 36.2 | 13 | 23 | - | 298(WNW) | 22.8 | 18 | 99.9 |
| VECTOR WD (DEGREES) | - | - | - | - | 144(SE) | - | - | - | - | - | - | - | 99.9 |

VAR-VARIOUS

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

### Xontech Model 910A – March 10, 2012

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

### Xontech Model 910A – March 16, 2012

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

### Xontech Model 910A – March22, 2012

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

### Xontech Model 910A – March 28, 2012

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

# Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

## - PORTABLE – Elk Point Airport Site

### PUF cartridge – March 10, 2012

| Maximum reading (ng/m3) | Semi-Volatile Organic |
|---|---|
| <6.054 | 3-Methylcholanthrene |

### PUF cartridge – March 16, 2012

| Maximum reading (ng/m3) | Semi-Volatile Organic |
|---|---|
| <6.054 | 3-Methylcholanthrene |

### PUF cartridge – March 22, 2012

| Maximum reading (ng/m3) | Semi-Volatile Organic |
|---|---|
| <6.054 | 3-Methylcholanthrene |

### PUF cartridge – March 28, 2012

| Maximum reading (ng/m3) | Semi-Volatile Organic |
|---|---|
| <6.054 | 3-Methylcholanthrene |

# General Monthly Summary

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

**AQM STATION – LICA – PORTABLE**

**A trailer audit was performed by Alberta Environment on March 14th.**

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

No operational issues were observed this month. The analyzer was installed on March 3rd. Data collection started on March 4th. An installation calibration was performed on March 8th. As the daily calibration results were within +/-10% of limited range before the installation calibration, data before calibration were considered good and were kept. Data on March 9th at hour of 5 is missing. Data was corrected using daily zero information. The analyzer operational time was 672 hours.

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

No operational issues were observed this month. The analyzer was installed on March 3rd. Data collection started on March 4th. An installation calibration was performed on March 7th. As the daily calibration results were within +/-10% of limited range before the installation calibration, data before calibration were considered good and were kept. Data on March 9th at hour of 5 is missing. It was noticed that the daily span drifted upward after the installation calibration. It is likely because the analyzer was still stabilizing from the installation. Data was corrected using daily zero information. The analyzer operational time was 672 hours.

# General Monthly Summary

**AQM STATION – LICA – PORTABLE**

**Nitrogen Dioxide (PPB)**

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

No operational issues were observed this month. The analyzer was installed on March 3rd. Data collection started on March 4th. An installation calibration was performed on March 7th. As the daily calibration results were outside +/-10% of limited range before the installation calibration, data before an installation calibration were considered bad and were not included in the report. Data on March 9th at hour of 5 is missing. Data was corrected using daily zero information. The analyzer operational time was 590 hours.

**Ozone (PPB)**

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

No operational issues were observed this month. The analyzer was installed on March 3rd. Data collection started on March 4th. An installation calibration was performed on March 8th. As the daily calibration results were within +/-10% of limited range before the installation calibration, data before calibration were considered good and were kept. Data on March 9th at hour of 5 is missing. Data was corrected using daily zero information. The analyzer operational time was 672 hours.

**THC (PPM)**

- Analyzer make / model – TECO 51C, S/N: 04366-09739

No operational issues were observed this month. The analyzer was installed on March 3rd and was lit on March 5th. An installation calibration was performed on March 7th. As the daily calibration results were within +/-10% of limited range before the installation calibration, data before calibration were considered good and were kept. Data on March 9th at hour of 5 is missing. Data was corrected using daily zero information. The analyzer operational time was 635 hours.

# General Monthly Summary

**AQM STATION – LICA – PORTABLE**

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

- Analyzer make / model –TEOM 1405F, S/N: 1405A207691003

The Teom unit was installed on March 3rd. Data collection started on March 4th. The Teom exhausting pump was rebuilt on March 7th. The unit was allowed time to stabilize, and a Teom audit was performed on March 9th. It was noticed that the unit's stability was poor after the audit. Maintenance was performed on the Teom unit on March 10th to try to reduce the instability issue. However, te issue of instability was not improved after the maintenance. A replacement Teom unit attempted to be installed on March 15th, but the mass transducer for the unit broken during the installation. Both units was removed from the site and sent back to manufacturer for repair on March 15th. A contravention of the "below 90% of operational uptime" was reported to AE, and the AE Reference number 256799. The Teom unit will be put back to the service once it is available. Data on March 9th at hour of 5 is missing. Data was corrected using Alberta air quality guideline for PM2.5 analyzer. If the data was between 0 to –3, the data was corrected to 0. If the data was below –3, the data was invalidated. 35 hours of data were invalidated as they were below –3.0 ug/m$^3$. Two 24-Hour contraventions were recorded this month; On March 14th at concentration of 35.1 ug/m3 and pm March 15th at concentration of 37.2 ug/m3.

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

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

The wind system is reported as vector wind speed and vector wind direction.
No operational issues were observed this month. The wind system was installed on March 3rd. Data collection started on March 4th. Data on March 9th at hour of 5 is missing. The latest wind system calibration was done on September 24th, 2009 by manufacturer.

# General Monthly Summary

**AQM STATION – LICA – PORTABLE**

**Datalogger**

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

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

**Trailer**

The trailer was installed on March 3rd.

**Air Quality Index (AQI)**

The AQI data was adjusted to reflect regular monthly and daily calibrations, maintenance, and downtime. Two AQI values for recorded in March 2012 were within the Poor range, and Eight AQI values were within the Fair range, and there were all due to PM2.5. Others were within the Good range. The highest AQI value of Ozone was 23, on March 12th, hour of 13. The highest AQI value of PM2.5 was 71, on March 9th, hour of 15.

# General Monthly Summary

**AQM STATION – LICA – PORTABLE**

**Air Quality Index (AQI)**
The AQI data was adjusted to reflect regular monthly and daily calibrations, maintenance, and downtime. All AQI values were within the Good range. The highest hourly concentration of ozone was 38 ppb and an AQI value of 19 on March 27th, in various hour of18. The highest hourly concentration of PM2.5 was 28.8 ug/m3 and an AQI value of 24 on March 20th, hour of 22.

**Volatile Organics (VOCs)**
The volatile organics were sampled from March 5th to March 29th. The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the VOCs in this report were reported as ug/m3 in 3 significant figures.

**Polycyclic Aromatic Hydrocarbons (PAHs)**
The PAHs scheduled to be sampled from March 5th to March 29th. The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the PAHs in this report were reported as ng/m3.

# Continuous Monitoring

# Monthly Summaries, Graphs & Wind Roses

# Air Quality Index

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - *PORTABLESITE - Elk Point Airport***

MARCH 2012

**AIR QUALITY INDEX (AQI)**

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 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 20 | 19 | 20 | 20 | 20 | 21 | 21 |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ |
| 8 | - | 21 | 19 | 19 | 18 | 17 | 17 | 15 | 16 | 18 | - | - | - | - | - | 19 | 19 | 20 | 20 | 18 | 18 | 18 | 18 | - | 21 |
| | NA | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | NA | NA | NA | NA | NA | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | NA | O3_ |
| 9 | 19 | 20 | 19 | 19 | 17 | - | 14 | 16 | 16 | 17 | 17 | 18 | - | - | 20 | **71** | 21 | 21 | 20 | 22 | - | 24 | - | - | 71 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | NA | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | NA | NA | O3_ | **PM2** | O3_ | O3_ | O3_ | O3_ | NA | PM2 | NA | NA | PM2 |
| 10 | - | 35 | 19 | 29 | - | - | - | - | - | - | - | - | - | - | - | 32 | 22 | 18 | 16 | 13 | 15 | - | 15 | 13 | 35 |
| | NA | PM2 | O3_ | PM2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | NA | O3_ | O3_ | PM2 |
| 11 | - | 15 | - | - | 14 | 15 | 11 | 15 | 15 | 19 | 20 | 21 | 20 | 20 | 19 | 19 | 17 | 17 | 14 | 15 | - | 16 | 17 | 17 | 21 |
| | NA | O3_ | NA | NA | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | NA | O3_ | O3_ | O3_ | O3_ |
| 12 | 17 | 15 | 13 | 17 | 21 | 21 | 19 | 19 | 20 | 21 | - | 22 | 22 | **23** | 22 | 21 | 20 | - | 15 | - | 15 | - | 16 | 18 | 23 |
| | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | NA | O3_ | O3_ | **O3_** | O3_ | O3_ | O3_ | NA | O3_ | NA | O3_ | NA | O3_ | O3_ | O3_ |
| 13 | - | - | 23 | 26 | 12 | 12 | - | 13 | 13 | 13 | 14 | 15 | 14 | 17 | - | - | 16 | 12 | - | 15 | 14 | 14 | 15 | 16 | 26 |
| | NA | NA | PM2 | PM2 | O3_ | O3_ | NA | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | NA | NA | O3_ | O3_ | NA | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 |
| 14 | 18 | - | - | 16 | 15 | 14 | - | - | - | - | - | - | - | - | 22 | - | 22 | - | 18 | 33 | 62 | 56 | 12 | - | 62 |
| | PM2 | NA | NA | O3_ | PM2 | O3_ | NA | NA | NA | NA | NA | NA | NA | NA | O3_ | NA | O3_ | NA | O3_ | PM2 | PM2 | PM2 | O3_ | NA | PM2 |
| 15 | 42 | 47 | 11 | - | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 47 |
| | PM2 | PM2 | O3_ | NA | NA | PM2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | PM2 |
| 16 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 17 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 18 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 19 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 21 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 22 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 23 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 24 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 26 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 27 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 28 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 29 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 30 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 31 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PEAK | 42 | 47 | 23 | 29 | 21 | 21 | 19 | 19 | 20 | 21 | 20 | 22 | 22 | 23 | 22 | 71 | 22 | 21 | 20 | 33 | 62 | 56 | 20 | 21 | |
| | PM2 | PM2 | O3_ | PM2 | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | O3_ | PM2 | O3_ | O3_ | O3_ | PM2 | PM2 | PM2 | O3_ | O3_ | |

| STATUS FLAG CODES | NA - NOT APPLICABLE |
|---|---|

V - VARIOUS

| AQI CLASS | OZONE ($O_3$) | | | | | PARTICULATE MATTER 2.5 (PM2) | | | | | NITROGEN DIOXIDE ($NO_2$) | | | | | SULPHUR DIOXIDE ($SO_2$) | | | | | FREQUENCY | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HRS | % | MAX AQI | HR | DAY | HRS | % | MAX AQI | HR | DAY | HRS | % | MAX AQI | HR | DAY | HRS | % | MAX AQI | HR | DAY | HRS | % |
| VERY POOR (101-255) | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% |
| POOR (51-100) | 0 | 0.0% | - | - | - | 2 | 0.3% | 71 | 15 | 9 | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 2 | 0.3% |
| FAIR (26-50) | 0 | 0.0% | - | - | - | 8 | 1.1% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 8 | 1.2% |
| GOOD (1-25) | 110 | 14.8% | 23 | 13 | 12 | 5 | 0.7% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 115 | 15.5% |
| OVERALL | 110 | 14.8% | - | - | - | 15 | 2.0% | - | - | - | 0 | 0.0% | - | - | - | 0 | 0.0% | - | - | - | 125 | 18.6% |
| UNAVAILABLE | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 547 | 81.4% |

# Sulphur Dioxide

# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION - PORTABLE SITE

MARCH 2012

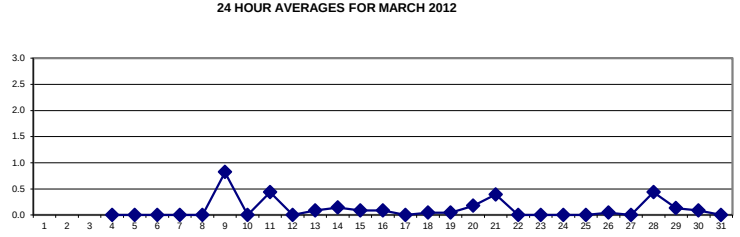
**SULPHUR DIOXIDE ($SO_2$)** hourly averages in ppb

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 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 6 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 7 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 8 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | **N** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | **IZS** | 0 | 2 | **0.8** | 23 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | **IZS** | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **3** | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | **3** | 0.1 | 24 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.0 | 24 |
| 20 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0.2 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0.4 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 29 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 30 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 | 24 |
| 31 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| HOURLY MAX | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | | | |
| HOURLY AVG | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | | | |

**STATUS FLAG CODES**

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



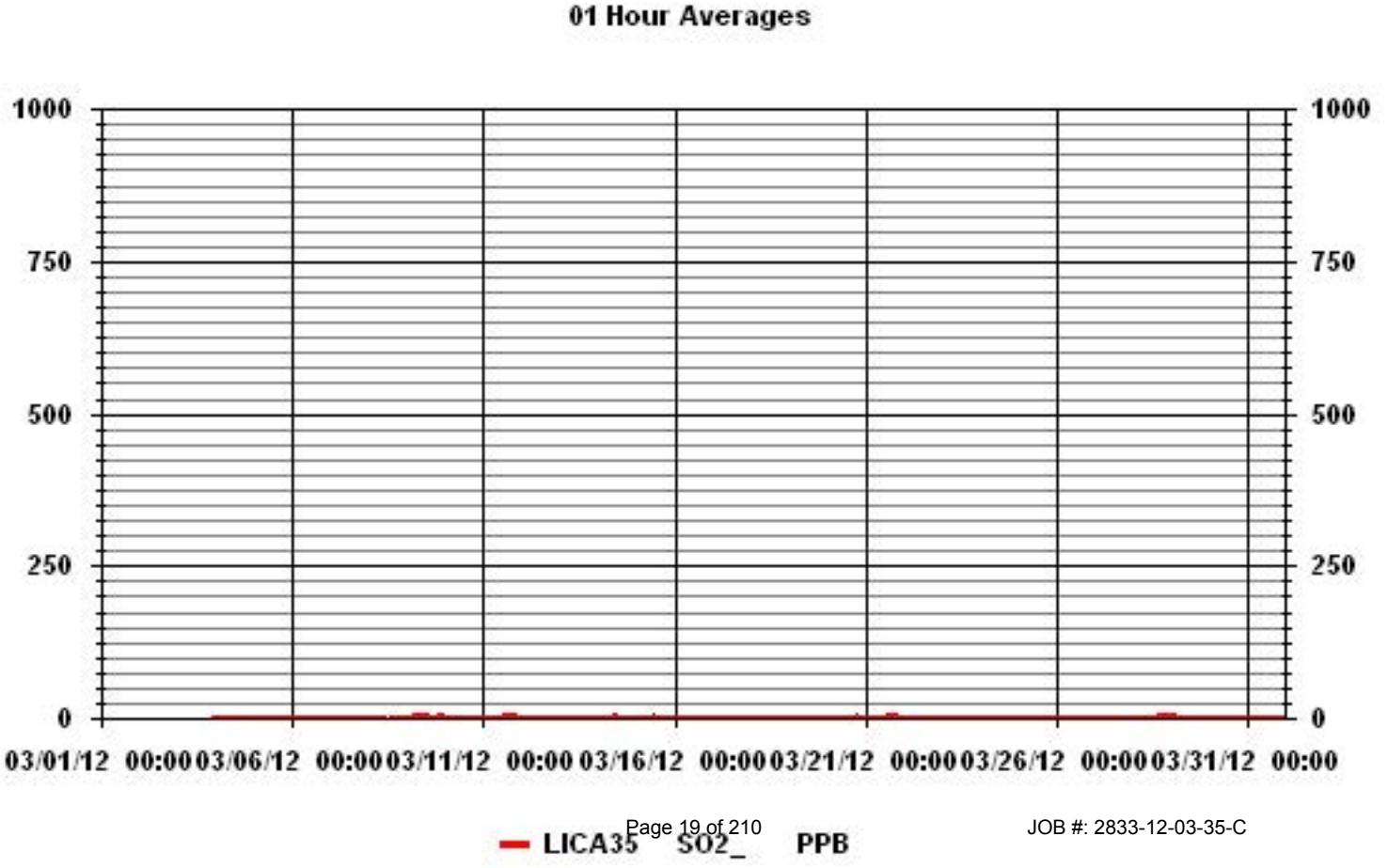

**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 59 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 3 | PPB | @ HOUR(S) | 11 | ON DAY(S) | 14 |
| MAXIMUM 24-HR AVERAGE: | 0.8 | PPB | | | ON DAY(S) | 9 |
| IZS CALIBRATION TIME: | 30 | HRS | OPERATIONAL TIME: | | 671 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | AMD OPERATION UPTIME: | | 99.9 | % |
| STANDARD DEVIATION: | 0.36 | | MONTHLY AVERAGE: | | 0.11 | PPB |



JOB #: 2833-12-03-35-C






JOB #: 2833-12-03-35-C

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

MARCH 2012

**SULPHUR DIOXIDE MAX** instantaneous maximum in ppb

MST

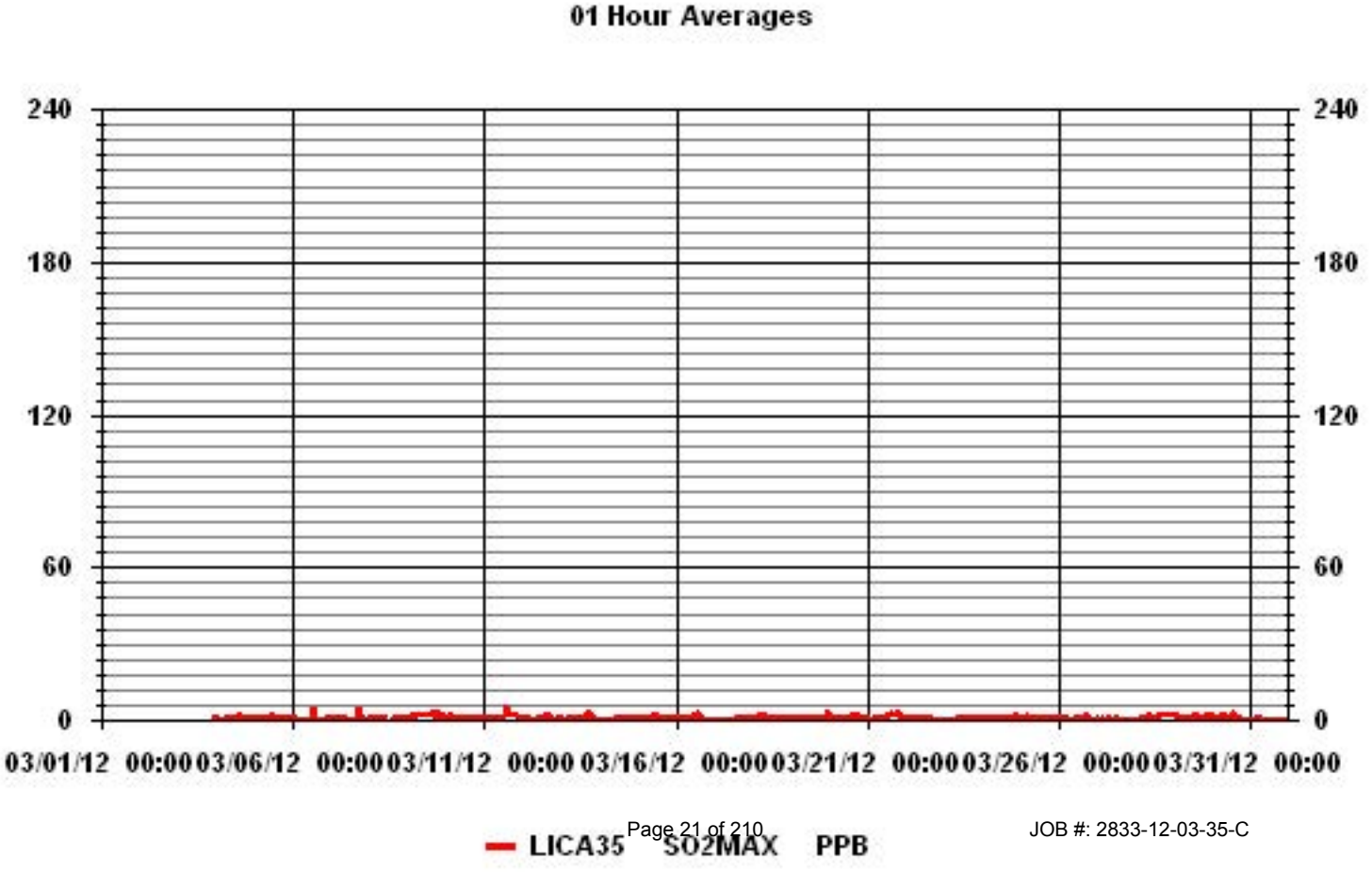
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | 1 | 1 | 0 | 0 | **IZS** | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 0.9 | 24 |
| 5 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.1 | 24 |
| 6 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **5** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | **5** | 0.4 | 24 |
| 7 | 1 | **IZS** | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **5** | 1 | 1 | 1 | 0 | 0 | 0 | **5** | 0.7 | 24 |
| 8 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **C** | **C** | **C** | **C** | **C** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 0.9 | 24 |
| 9 | 1 | 1 | 1 | 2 | 1 | **N** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | **IZS** | 1 | 3 | 1.9 | 23 |
| 10 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | **IZS** | 0 | 1 | 2 | 0.7 | 24 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 5 | 3 | 2 | 2 | 2 | 2 | **IZS** | 0 | 1 | 1 | 5 | 1.6 | 24 |
| 12 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 2 | 1 | 1 | **IZS** | 0 | 0 | 1 | 1 | 2 | 0.6 | 24 |
| 13 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | **IZS** | 1 | 1 | 1 | 0 | 0 | 3 | 1.0 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.6 | 24 |
| 15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | **IZS** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.1 | 24 |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 3 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.9 | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 18 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.1 | 24 |
| 19 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 1.0 | 24 |
| 20 | 3 | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 1.2 | 24 |
| 21 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 1 | 1 | 3 | 1.3 | 24 |
| 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.7 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.7 | 24 |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1.0 | 24 |
| 25 | 1 | 1 | 1 | 1 | 2 | 1 | **IZS** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.0 | 24 |
| 26 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0.7 | 24 |
| 27 | 1 | 0 | 0 | 1 | **IZS** | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 28 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1.3 | 24 |
| 29 | 2 | 2 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1.3 | 24 |
| 30 | 2 | **IZS** | 0 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 1.0 | 24 |
| 31 | **IZS** | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0.1 | 24 |
| HOURLY MAX | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 5 | 5 | 3 | 3 | 5 | 3 | 3 | 3 | 2 | 2 | 3 | | | |
| HOURLY AVG | 1.0 | 0.8 | 0.6 | 0.7 | 0.9 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 1.0 | 1.0 | 1.3 | 1.2 | 1.1 | 1.1 | 1.2 | 1.0 | 1.0 | 0.9 | 0.9 | 0.7 | 0.8 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 463 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 5 | PPB | @ HOUR(S) | 13, 17 | ON DAY(S) | 6, 7 |
| IZS CALIBRATION TIME: | 30 | HRS | OPERATIONAL TIME: | | 671 | HRS |
| MONTHLY CALIBRATION TIME: | 9 | HRS | | | | |
| STANDARD DEVIATION: | 0.75 | | | | | |






JOB #: 2833-12-03-35-C

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

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 20 | 4.10 | 2.99 | 4.25 | 5.20 | 4.73 | 13.40 | 16.08 | 2.99 | 2.36 | 1.26 | 2.68 | 5.04 | 12.46 | 12.30 | 5.52 | 4.57 | 100.00 |
| < | 60 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 170 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < | 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 340 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.10 | 2.99 | 4.25 | 5.20 | 4.73 | 13.40 | 16.08 | 2.99 | 2.36 | 1.26 | 2.68 | 5.04 | 12.46 | 12.30 | 5.52 | 4.57 | |

Calm : .00 %

Total # Operational Hours : 634

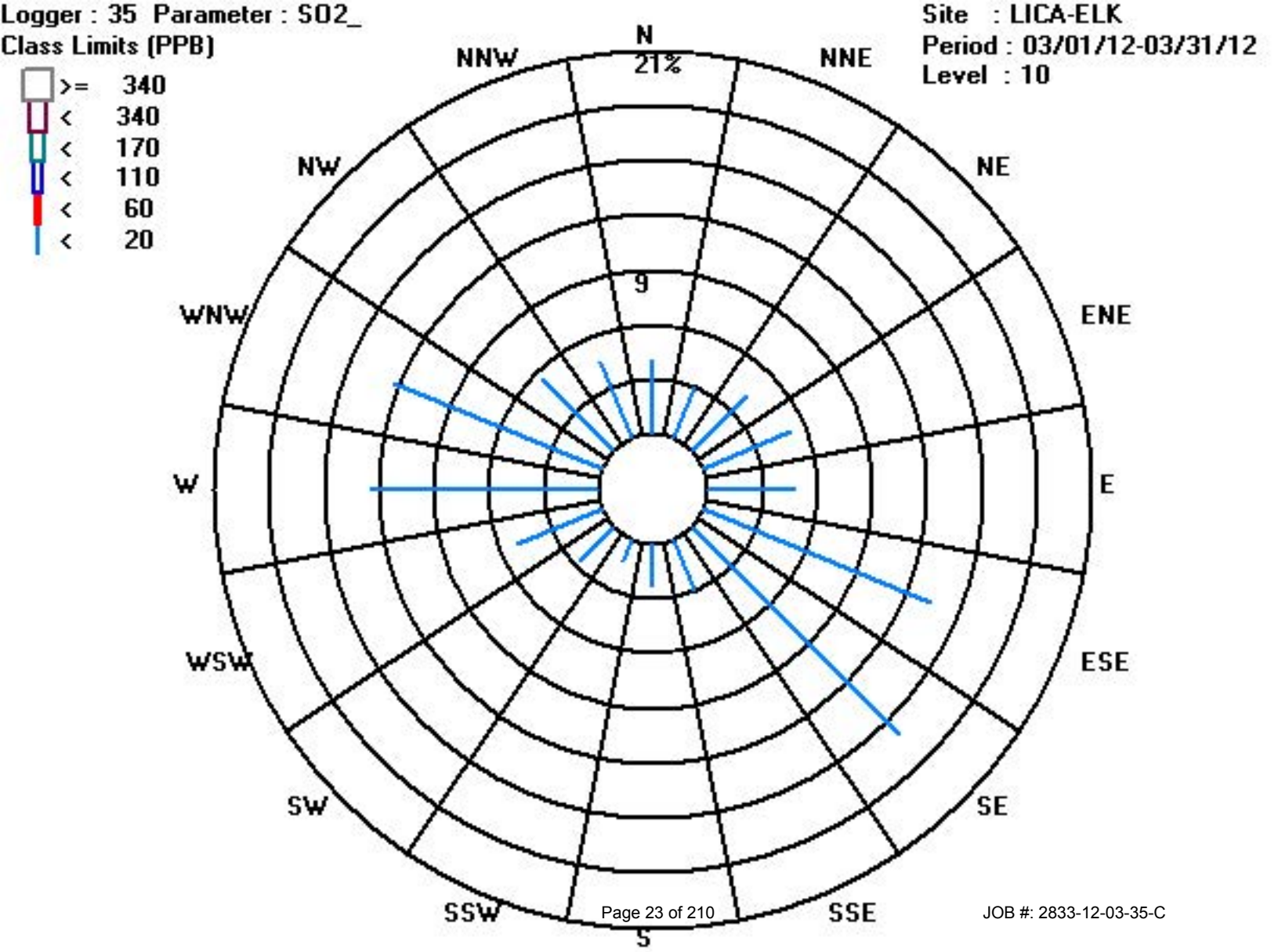
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 20 | 26 | 19 | 27 | 33 | 30 | 85 | 102 | 19 | 15 | 8 | 17 | 32 | 79 | 78 | 35 | 29 | 634 |
| < | 60 | | | | | | | | | | | | | | | | | |
| < | 110 | | | | | | | | | | | | | | | | | |
| < | 170 | | | | | | | | | | | | | | | | | |
| < | 340 | | | | | | | | | | | | | | | | | |
| >= | 340 | | | | | | | | | | | | | | | | | |
| | Totals | 26 | 19 | 27 | 33 | 30 | 85 | 102 | 19 | 15 | 8 | 17 | 32 | 79 | 78 | 35 | 29 | |

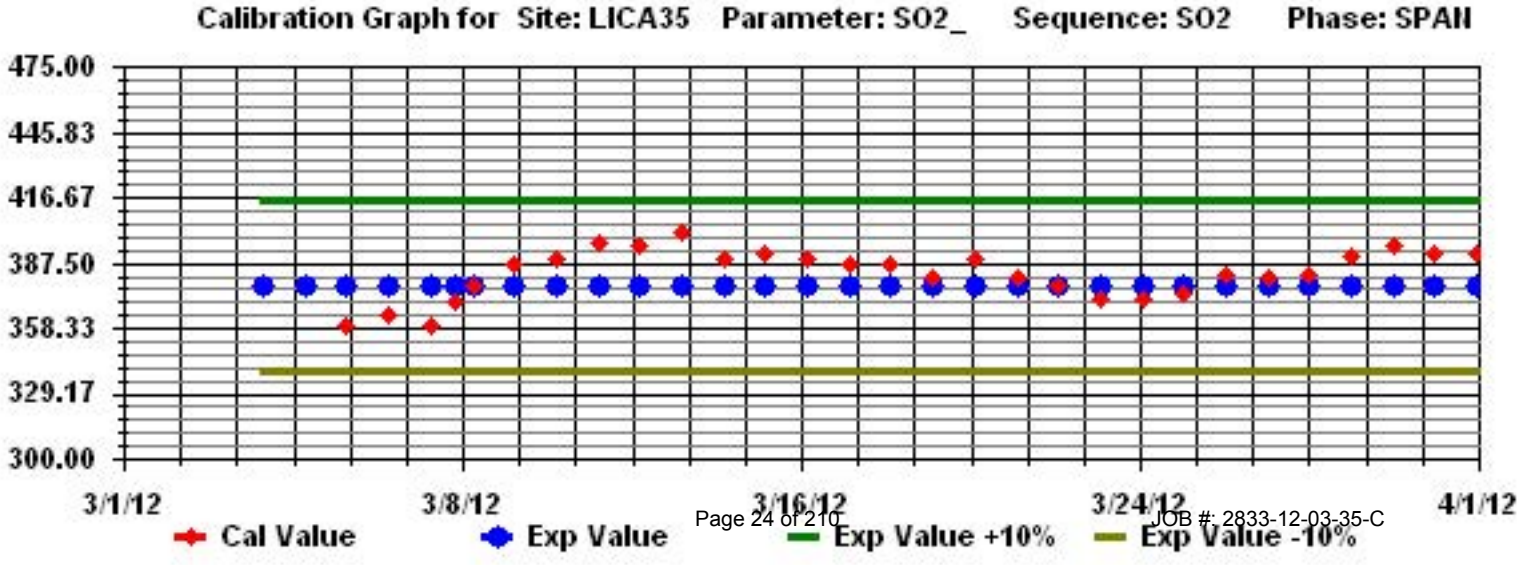
Calm : .00 %

Total # Operational Hours : 634






JOB #: 2833-12-03-35-C


Calibration Graph for Site: LICA35 Parameter: SO2_ Sequence: SO2 Phase: SPAN
475.00
445.83
416.67
387.50
358.33
329.17
300.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Hydrogen Sulphide

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

MARCH 2012

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

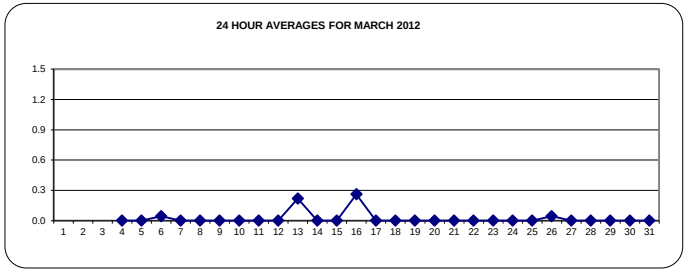
MST

| 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 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 6 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 7 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 8 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | **N** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0.0 | 23 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 16 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **0.3** | 24 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 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 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 26 | 0 | 0 | 0 | 0 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 27 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 29 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 30 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 31 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| HOURLY MAX | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 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 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |

**STATUS FLAG CODES**

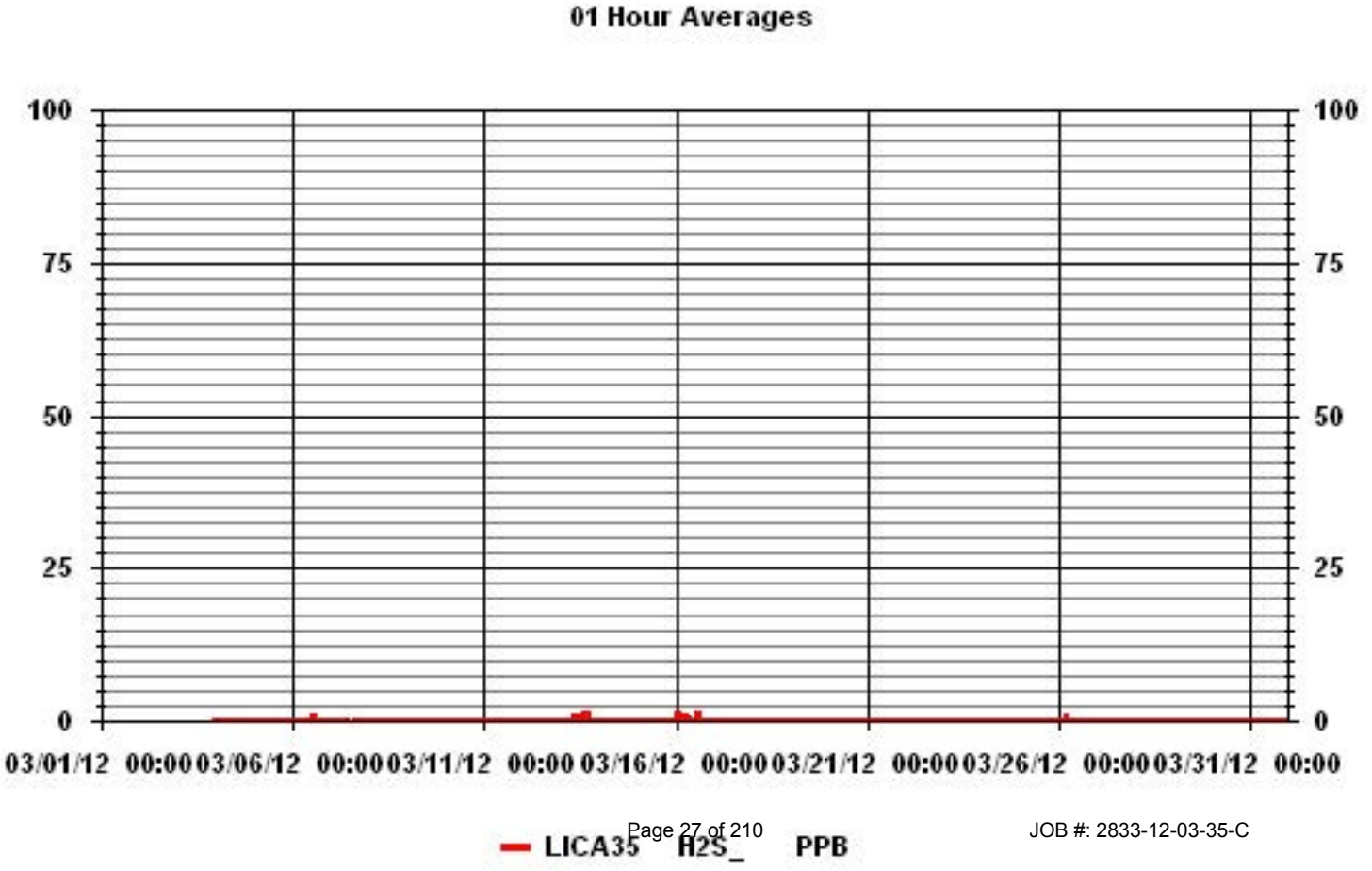
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |

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




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 13 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 1 | PPB | @ HOUR(S) | VAR | ON DAY(S) | VAR |
| MAXIMUM 24-HR AVERAGE: | 0.3 | PPB | | | ON DAY(S) | 16 |
| | | | | | VAR-VARIOUS | |
| IZS CALIBRATION TIME: | 30 | HRS | OPERATIONAL TIME: | | 671 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | | 99.9 | % |
| STANDARD DEVIATION: | 0.14 | | MONTHLY AVERAGE: | | 0.02 | PPB |






JOB #: 2833-12-03-35-C

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

MARCH 2012

**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 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 5 | 0 | 0 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 6 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **7** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **7** | 0.3 | 24 |
| 7 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 8 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **M** | **M** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 22 |
| 9 | 0 | 0 | 0 | 0 | 0 | **N** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 0 | 1 | 0.5 | 23 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0.0 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | **IZS** | 0 | 1 | 0 | 1 | 0.2 | 24 |
| 12 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | **IZS** | 0 | 1 | 1 | 0 | 1 | 0.3 | 24 |
| 13 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 2 | 0.8 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.1 | 24 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.4 | 24 |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0.7 | 24 |
| 17 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.1 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0.0 | 24 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 22 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | **IZS** | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.0 | 24 |
| 26 | 3 | 1 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.4 | 24 |
| 27 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 28 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 29 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 30 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 31 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0.0 | 24 |
| HOURLY MAX | 3 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| HOURLY AVG | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.4 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS: 98

MAXIMUM INSTANTANEOUS VALUE: 7 PPB @ HOUR(S) 13 ON DAY(S) 6

VAR - VARIOUS

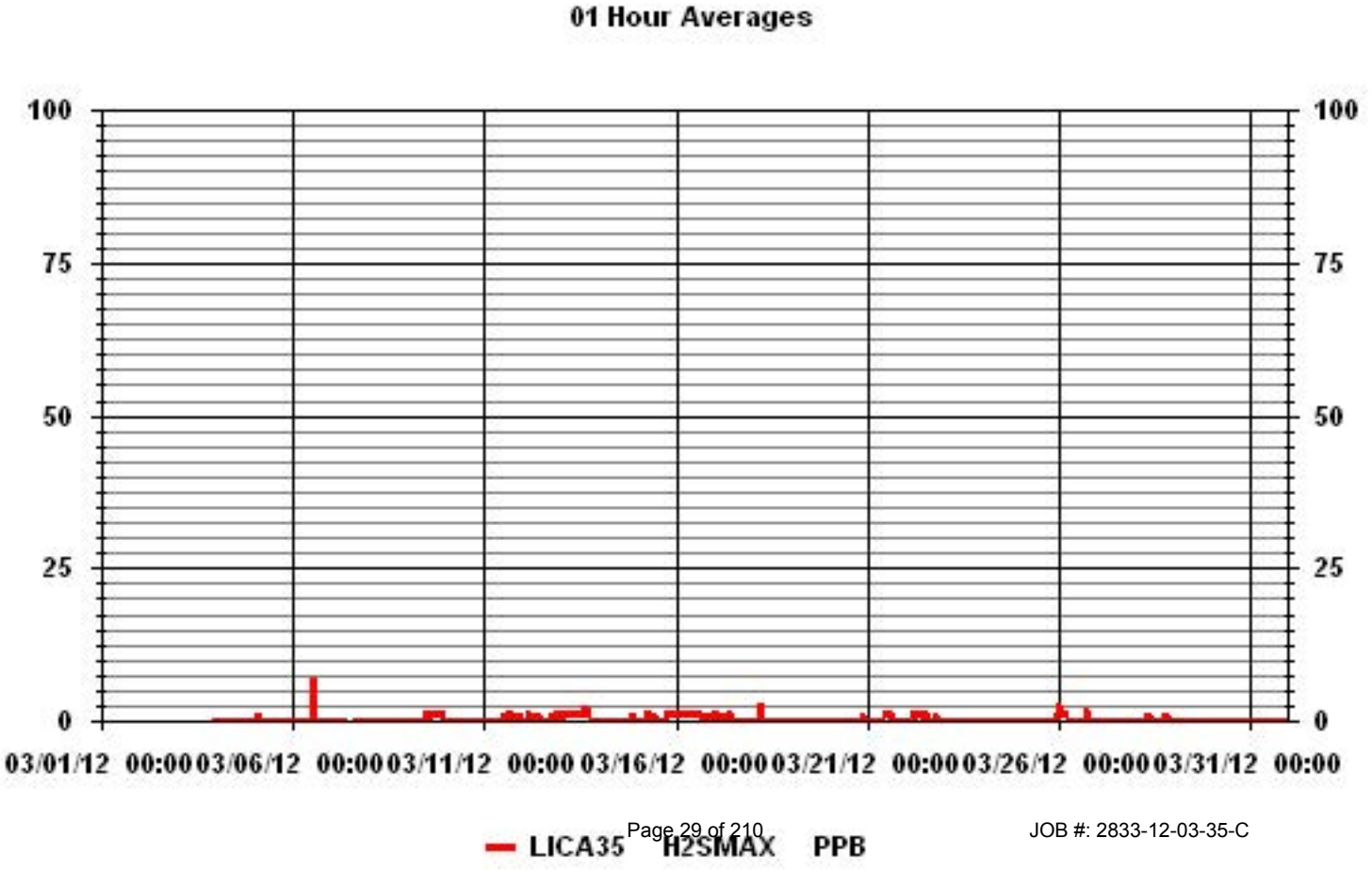
IZS CALIBRATION TIME: 30 HRS OPERATIONAL TIME: 669 HRS

MONTHLY CALIBRATION TIME: 9 HRS

STANDARD DEVIATION: 0.49



JOB #: 2833-12-03-35-C






JOB #: 2833-12-03-35-C

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

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3 | 4.09 | 2.99 | 4.25 | 5.19 | 4.72 | 13.38 | 16.53 | 3.30 | 2.36 | 1.25 | 2.67 | 5.03 | 12.44 | 12.12 | 5.03 | 4.56 | 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 | 4.09 | 2.99 | 4.25 | 5.19 | 4.72 | 13.38 | 16.53 | 3.30 | 2.36 | 1.25 | 2.67 | 5.03 | 12.44 | 12.12 | 5.03 | 4.56 | |

Calm : .00 %

Total # Operational Hours : 635

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 3 | 26 | 19 | 27 | 33 | 30 | 85 | 105 | 21 | 15 | 8 | 17 | 32 | 79 | 77 | 32 | 29 | 635 |
| < 10 | | | | | | | | | | | | | | | | | |
| < 50 | | | | | | | | | | | | | | | | | |
| >= 50 | | | | | | | | | | | | | | | | | |
| Totals | 26 | 19 | 27 | 33 | 30 | 85 | 105 | 21 | 15 | 8 | 17 | 32 | 79 | 77 | 32 | 29 | |

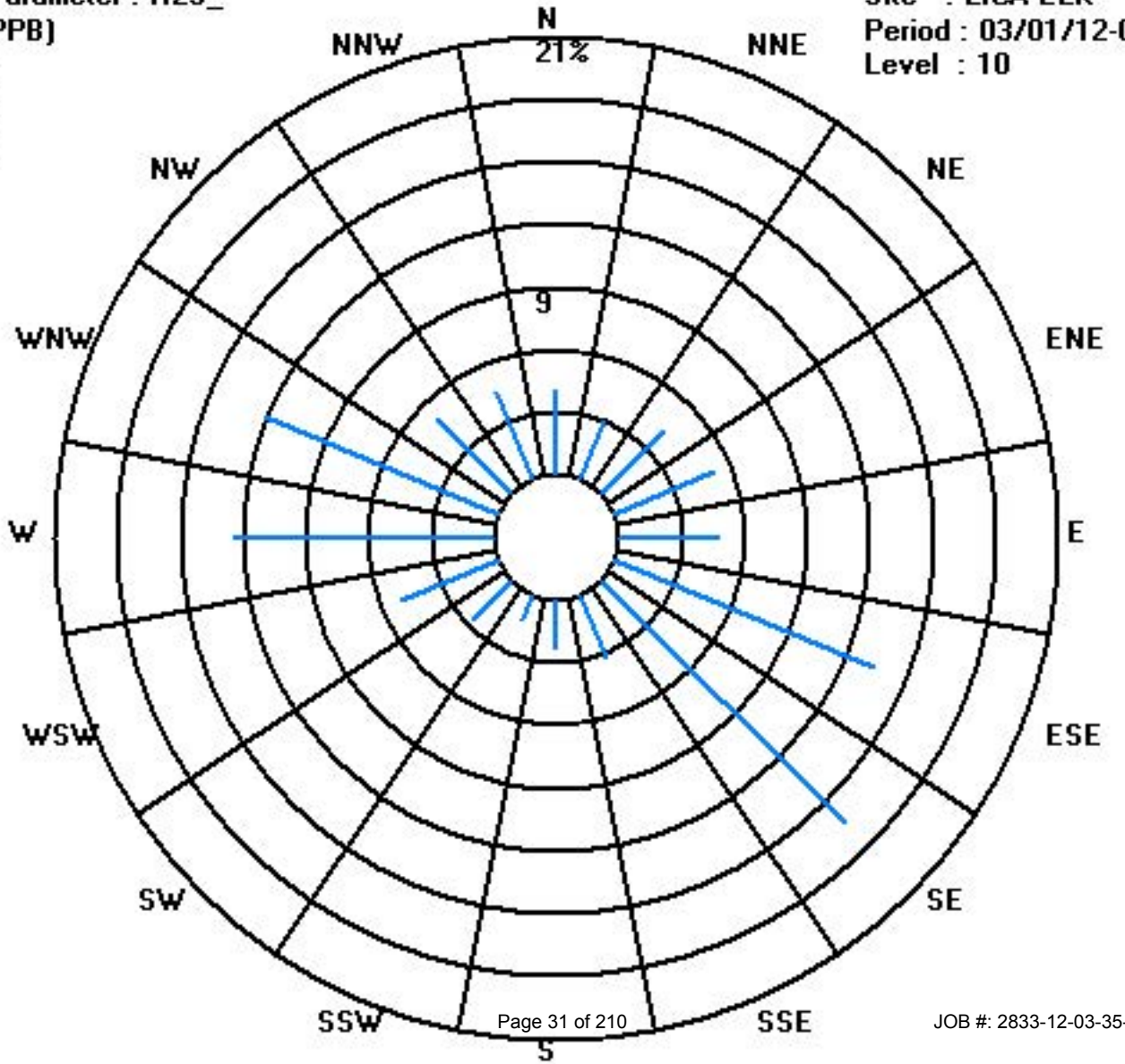
Calm : .00 %

Total # Operational Hours : 635

Logger : 35 Parameter : H2S_
Class Limits (PPB)

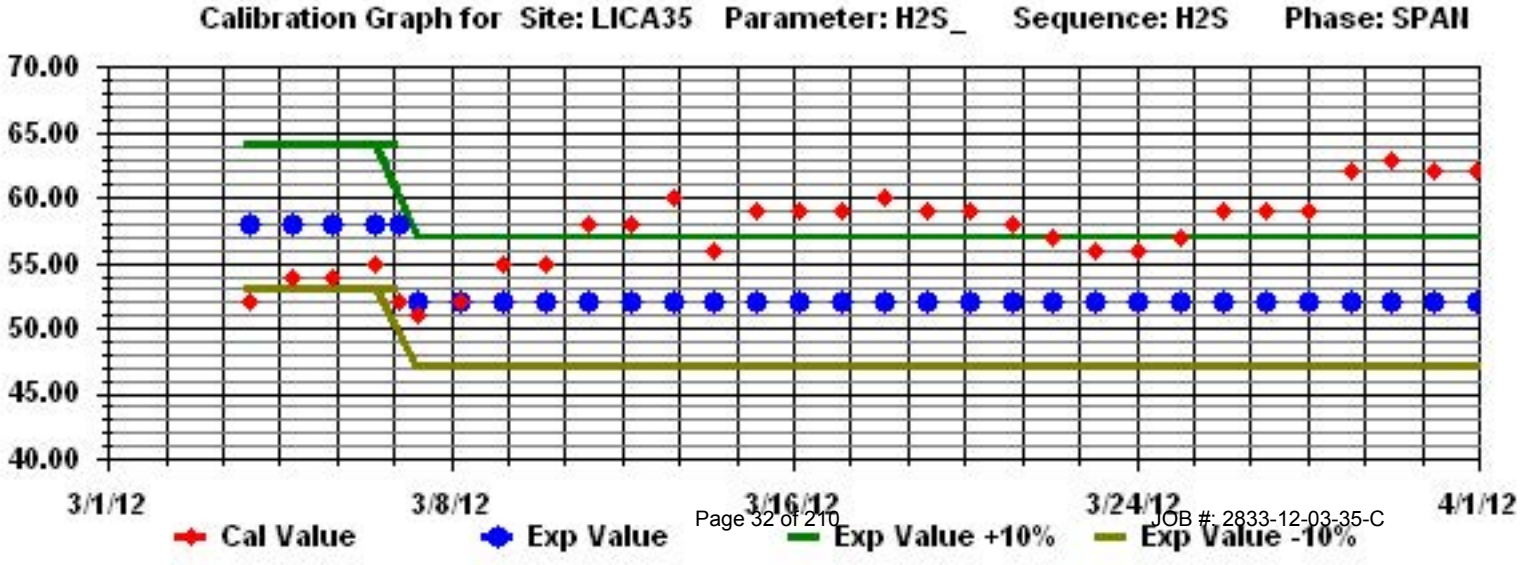
>= 50
< 50
< 10
< 3

Site : LICA-ELK
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-35-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
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Particulate Matter 2.5

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

MARCH 2012

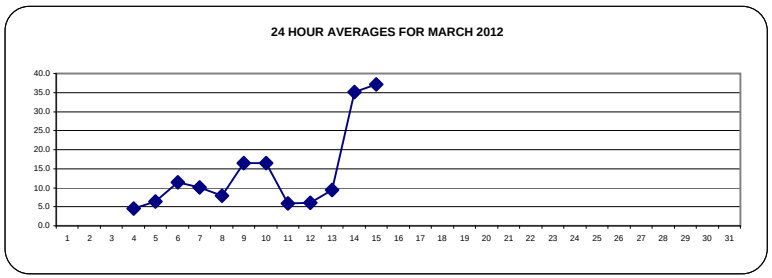
**PARTICULATE MATTER 2.5 (PM2.5)** hourly averages in ug/m$^3$

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 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | 1.3 | 1.3 | 0 | 0 | 0 | 1.8 | 0.8 | 3.3 | 0 | 0.8 | 8.3 | 3.3 | 5.8 | 3.3 | 6.8 | 7.3 | 4.8 | 11.3 | 10.3 | 6.8 | 9.3 | 12.8 | 0.8 | 9.3 | 12.8 | 4.6 | 24 |
| 5 | 1.8 | 12.3 | 6.3 | 12.3 | 11.8 | 6.3 | 12.3 | 12.3 | 7.8 | 12.8 | 0 | 4.3 | 6.8 | 4.8 | 3.8 | 5.8 | 4.8 | 0.8 | 3.3 | 5.8 | 10.3 | 0.8 | 4.3 | 0 | 12.8 | 6.3 | 24 |
| 6 | 15.3 | 16.8 | 16.3 | 8.8 | 13.8 | 1.3 | 6.3 | 0 | 0 | 0 | 1.8 | 1.3 | 13.3 | 39.8 | 5.8 | 12.8 | 13.8 | 13.8 | 13.3 | 10.8 | 11.8 | 15.3 | 19.7 | 20.8 | 39.8 | 11.4 | 24 |
| 7 | 15.3 | 15.3 | 13.3 | 10.3 | 22.3 | 16.8 | 16.3 | 18.8 | 12.8 | 5.7 | 7.3 | **M** | **M** | 0.8 | 2.8 | 13.8 | 0 | 3.7 | 5.8 | 9.8 | 6.3 | 16.8 | 9.3 | 0 | 22.3 | 10.2 | 22 |
| 8 | 3.8 | 0.3 | 1.8 | 0.3 | 9.3 | 10.8 | 6.8 | 9.3 | 7.8 | 9.8 | 12.7 | **N** | 9.7 | 41.7 | 7.2 | 0.2 | 4.2 | 4.7 | 3.7 | 6.2 | 3.7 | 7.7 | 12.2 | 8.2 | 41.7 | 7.9 | 23 |
| 9 | 7.7 | 6.2 | 8.2 | 6.2 | 6.2 | **N** | 6.7 | 4.2 | 6.2 | 4.7 | 7.7 | 0.7 | **C** | **C** | 13.8 | **120.2** | 24.7 | 16.2 | 14.2 | 13.2 | **N** | 28.3 | **N** | **N** | **120.2** | 16.4 | 20 |
| 10 | **N** | 49.7 | 0 | 36.2 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **M** | **M** | **M** | **M** | 42.2 | 1.7 | 20.2 | 12.2 | 13.2 | 8.7 | 4.2 | 2.7 | 5.7 | 49.7 | 16.4 | 12 |
| 11 | **N** | 3.7 | **N** | **N** | 6.7 | 0.7 | 3.2 | N | 0 | 0 | 0.2 | 7.7 | 12.7 | 10.7 | 10.2 | 9.7 | 3.2 | 9.2 | 6.2 | 7.2 | 11.2 | 5.2 | 4.2 | 5.7 | 12.7 | 5.9 | 21 |
| 12 | 2.7 | 7.7 | 0 | 9.7 | 7.2 | 20.2 | 0 | 7.7 | 0.2 | 1.2 | **N** | 2.2 | 5.7 | 13.2 | 3.7 | 11.2 | 8.7 | **N** | 11.2 | 0 | 0 | **N** | 9.7 | 6.2 | 20.2 | 6.1 | 21 |
| 13 | **N** | **N** | 27.2 | 30.7 | N | 6.2 | **N** | 1.7 | 5.2 | 3.2 | **N** | 3.2 | 3.7 | 6.2 | **N** | **N** | 17.7 | 11.7 | 7.2 | 11.7 | 0 | 6.6 | 13.2 | 3.6 | 30.7 | 9.4 | 17 |
| 14 | 21.1 | **N** | **N** | 0 | 18.2 | 4.7 | **N** | **N** | **N** | **C** | **C** | **C** | **C** | 69.2 | 9.2 | **N** | 25.2 | 26.7 | **N** | 43.7 | 101.7 | 89.7 | 12.2 | **N** | 101.7 | 35.1 | 16 |
| 15 | 63.7 | 74.7 | 3.7 | **N** | **N** | 6.7 | **M** | **M** | **M** | **M** | **M** | **M** | **M** | **M** | **M** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | 74.7 | **37.2** | 4 |
| 16 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 17 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 18 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 19 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 20 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 21 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 22 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 23 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 24 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 25 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 26 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 27 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 28 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 29 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 30 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| 31 | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | **N** | | | 0 |
| HOURLY MAX | 64 | 75 | 27 | 36 | 22 | 20 | 16 | 19 | 13 | 13 | 13 | 8 | 13 | 69 | 14 | 120 | 25 | 27 | 14 | 44 | 102 | 90 | 20 | 21 | | | |
| HOURLY AVG | 14.7 | 18.8 | 7.7 | 11.5 | 10.6 | 7.6 | 6.6 | 7.2 | 4.4 | 4.2 | 5.4 | 3.2 | 8.2 | 21.1 | 7.0 | 24.8 | 9.9 | 11.8 | 8.7 | 11.7 | 16.3 | 18.7 | 8.8 | 6.6 | | | |

**STATUS FLAG CODES**

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




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

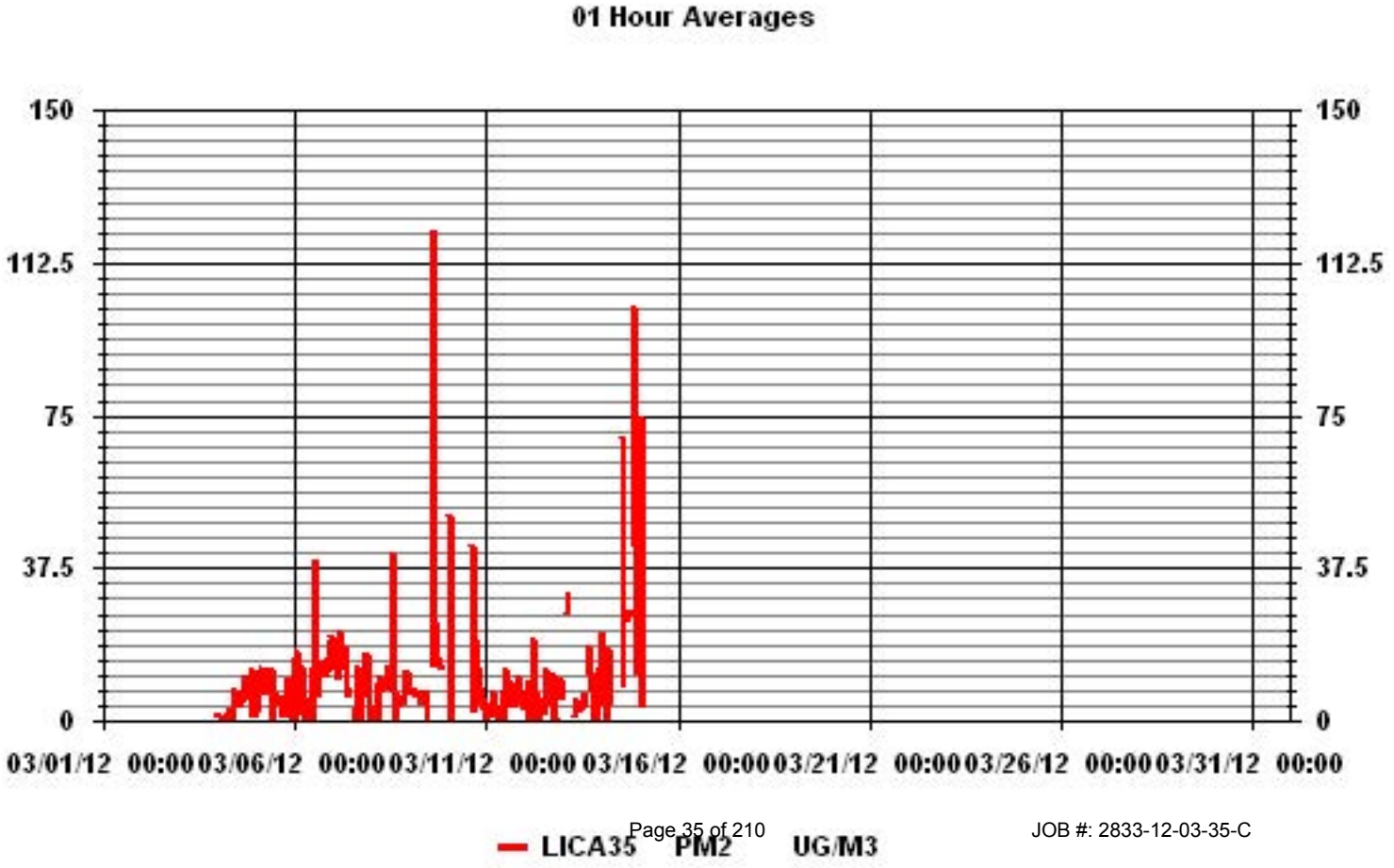
**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | - | | | | | |
| NUMBER OF 24-HR EXCEEDENCES: | 2 | PROPOSED CANADA WIDE GUIDELINE | | | | |
| NUMBER OF NON-ZERO READINGS: | 201 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 120.2 | UG/M$^3$ | @ HOUR(S) | 15 | ON DAY(S) | 9 |
| MAXIMUM 24-HR AVERAGE: | 37.2 | UG/M$^3$ | | | ON DAY(S) | 15 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 228 | HRS |
| MONTHLY CALIBRATION TIME: | 6 | HRS | AMD OPERATION UPTIME: | 33.9 | % |
| STANDARD DEVIATION: | 15.46 | | MONTHLY AVERAGE: | 10.89 | UG/M$^3$ |



JOB #: 2833-12-03-35-C






JOB #: 2833-12-03-35-C

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

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30.0 | 2.25 | 2.70 | 4.50 | 4.95 | 2.70 | 13.51 | 12.16 | 4.05 | .00 | .90 | 1.80 | 6.75 | 15.76 | 18.46 | 2.70 | .90 | 94.14 |
| < | 60.0 | .00 | .00 | .00 | .00 | .00 | .45 | .45 | .00 | .00 | .00 | .45 | .45 | .90 | .00 | .45 | .00 | 3.15 |
| < | 80.0 | .00 | .00 | .00 | .00 | .45 | .45 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .45 | .00 | .00 | 1.35 |
| < | 120.0 | .00 | .00 | .00 | .00 | .45 | .00 | .00 | .00 | .00 | .00 | .45 | .00 | .00 | .00 | .00 | .00 | .90 |
| < | 240.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .45 | .00 | .00 | .00 | .00 | .00 | .45 |
| >= | 240.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 2.25 | 2.70 | 4.50 | 4.95 | 3.60 | 14.41 | 12.61 | 4.05 | .00 | .90 | 3.15 | 7.20 | 16.66 | 18.91 | 3.15 | .90 | |

Calm : .00 %

Total # Operational Hours : 222

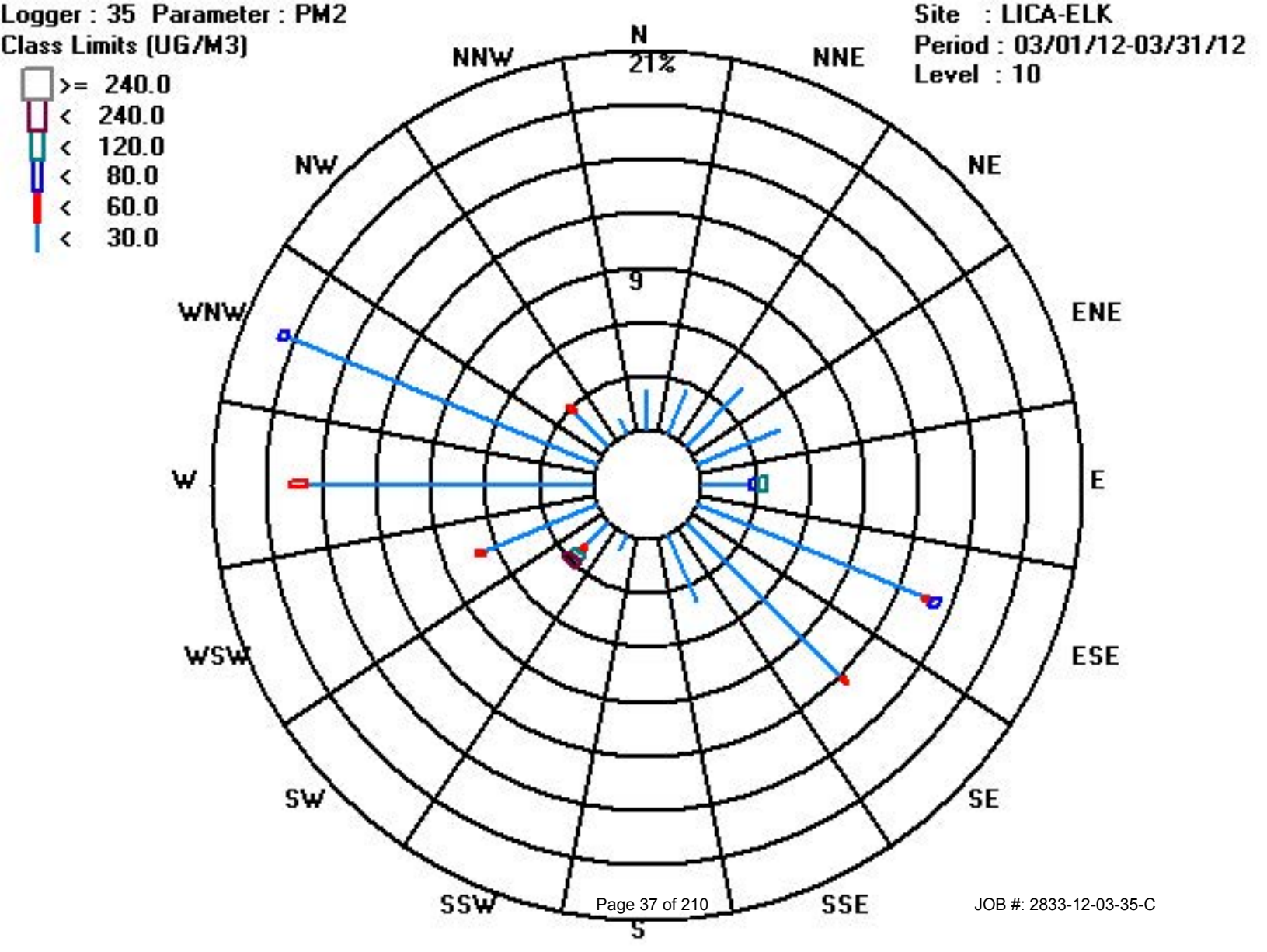
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 30.0 | 5 | 6 | 10 | 11 | 6 | 30 | 27 | 9 | | 2 | 4 | 15 | 35 | 41 | 6 | 2 | 209 |
| < | 60.0 | | | | | | 1 | 1 | | | | 1 | 1 | 2 | | 1 | | 7 |
| < | 80.0 | | | | | 1 | 1 | | | | | | | | 1 | | | 3 |
| < | 120.0 | | | | | 1 | | | | | | 1 | | | | | | 2 |
| < | 240.0 | | | | | | | | | | | 1 | | | | | | 1 |
| >= | 240.0 | | | | | | | | | | | | | | | | | |
| | Totals | 5 | 6 | 10 | 11 | 8 | 32 | 28 | 9 | | 2 | 7 | 16 | 37 | 42 | 7 | 2 | |

Calm : .00 %

Total # Operational Hours : 222






JOB #: 2833-12-03-35-C

# Nitrogen Dioxide

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

MARCH 2012

**NITROGEN DIOXIDE** hourly averages in ppb

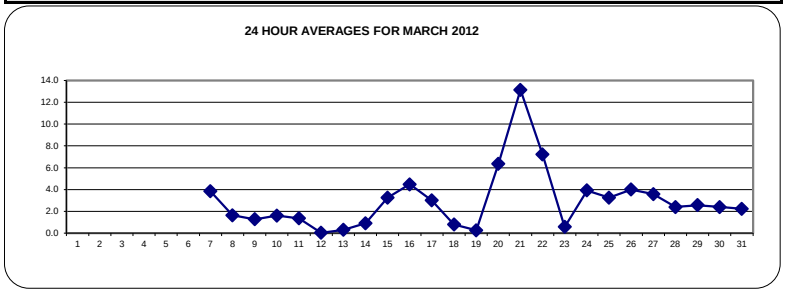
MST

| 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 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 7 | | | | | | | | | | | C | C | C | C | C | C | C | C | 5 | 5 | 4 | 3 | 4 | 2 | 5 | 3.8 | 14 |
| 8 | IZS | 0 | 0 | 0 | 0 | 3 | 1 | 6 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 4 | 3 | 5 | 4 | IZS | 6 | 1.6 | 24 |
| 9 | 1 | 0 | 0 | 0 | 0 | N | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 2 | 1 | 0 | IZS | 11 | 11 | 1.3 | 23 |
| 10 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 9 | 2 | IZS | 6 | 7 | 9 | 1.6 | 24 |
| 11 | 7 | 2 | 1 | 0 | 0 | 1 | 9 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | IZS | 0 | 0 | 0 | 9 | 1.3 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | IZS | 0 | 0 | 0 | 0 | 1 | 0.0 | 24 |
| 13 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | IZS | 0 | 0 | 0 | 0 | 0 | 4 | 0.3 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C | C | C | C | 0 | 0 | 0 | 0 | IZS | 2 | 0 | 0 | 4 | 7 | 4 | 7 | 0.9 | 24 |
| 15 | 0 | 1 | 5 | 5 | 11 | 14 | 12 | 15 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 15 | 3.3 | 24 |
| 16 | 4 | 4 | 5 | 9 | 10 | 15 | 15 | 12 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 2 | 3 | 9 | 3 | 2 | 4 | 15 | 4.5 | 24 |
| 17 | 7 | 3 | 0 | 2 | 8 | 6 | 14 | 14 | 7 | 5 | 2 | 0 | 0 | 0 | IZS | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 3.0 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 5 | 3 | 2 | 1 | 0 | 0 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0.8 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 0.3 | 24 |
| 20 | 2 | 1 | 0 | 0 | 0 | 7 | 9 | 2 | 0 | 0 | 0 | IZS | 0 | 0 | 1 | 2 | 2 | 5 | 12 | 22 | 21 | 27 | 21 | 12 | 27 | 6.3 | 24 |
| 21 | 16 | 17 | 20 | 23 | 14 | 15 | 25 | 22 | 16 | 14 | IZS | 5 | 4 | 2 | 1 | 2 | 3 | 7 | 11 | 10 | 14 | 23 | 25 | 13 | 25 | 13.1 | 24 |
| 22 | 18 | 21 | 23 | 20 | 23 | 26 | 25 | 8 | 2 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 7.2 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 8 | 8 | 0.6 | 24 |
| 24 | 7 | 10 | 6 | 5 | 2 | 3 | 8 | IZS | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 8 | 8 | 7 | 8 | 10 | 3.9 | 24 |
| 25 | 8 | 7 | 10 | 11 | 9 | 7 | IZS | 5 | 3 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 1 | 3 | 11 | 3.3 | 24 |
| 26 | 3 | 4 | 4 | 8 | 10 | IZS | 20 | 9 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 9 | 5 | 3 | 5 | 1 | 20 | 4.0 | 24 |
| 27 | 1 | 3 | 3 | 1 | IZS | 3 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 7 | 12 | 15 | 11 | 15 | 15 | 3.6 | 24 |
| 28 | 12 | 7 | 8 | IZS | 10 | 5 | 7 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 12 | 2.4 | 24 |
| 29 | 0 | 0 | IZS | 2 | 3 | 8 | 7 | 6 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 6 | 4 | 6 | 5 | 8 | 2.6 | 24 |
| 30 | 6 | IZS | 5 | 8 | 9 | 11 | 7 | 4 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 11 | 2.4 | 24 |
| 31 | IZS | 3 | 3 | 3 | 6 | 4 | 4 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 4 | 3 | IZS | 7 | 2.2 | 24 |
| HOURLY MAX | 18 | 21 | 23 | 23 | 23 | 26 | 25 | 22 | 16 | 14 | 2 | 5 | 4 | 2 | 1 | 2 | 3 | 7 | 12 | 22 | 21 | 27 | 25 | 15 | | | |
| HOURLY AVG | 4.4 | 3.6 | 4.0 | 4.2 | 5.0 | 5.9 | 7.7 | 5.2 | 2.9 | 1.5 | 0.4 | 0.4 | 0.3 | 0.2 | 0.1 | 0.3 | 0.4 | 1.3 | 2.5 | 3.6 | 4.0 | 4.2 | 4.5 | 4.2 | | | |

**STATUS FLAG CODES**

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

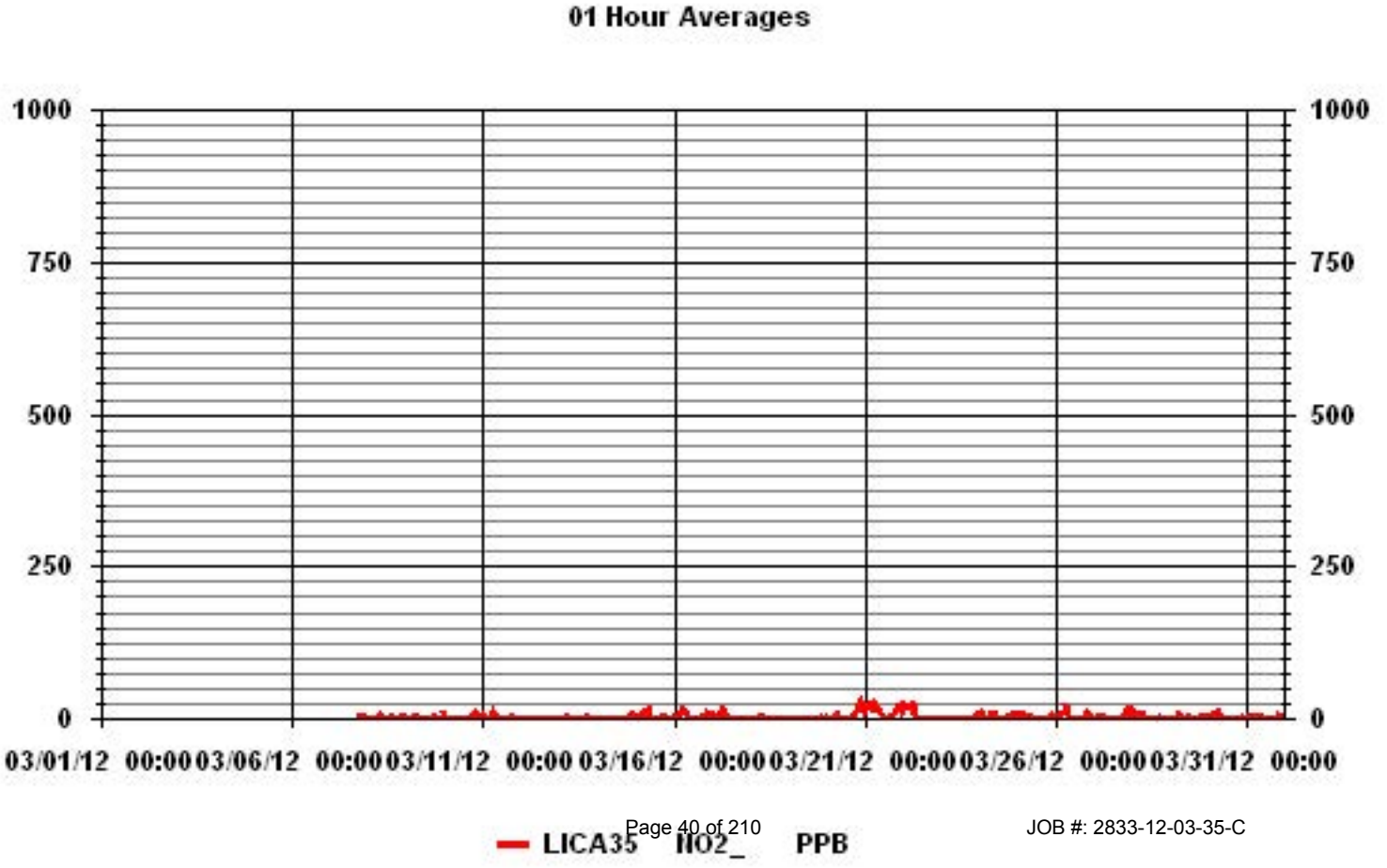
**OBJECTIVE LIMIT:** **ALBERTA ENVIRONMENT:** 1-HR 159 PPB




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 270 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 27 | PPB | @ HOUR(S) | 21 | ON DAY(S) | 20 |
| MAXIMUM 24-HR AVERAGE: | 13.1 | PPB | | | ON DAY(S) | 21 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 26 | HRS | OPERATIONAL TIME: | 589 | HRS |
| MONTHLY CALIBRATION TIME: | 12 | HRS | AMD OPERATION UPTIME: | 99.8 | % |
| STANDARD DEVIATION: | 5.09 | | MONTHLY AVERAGE: | 2.97 | PPB |






JOB #: 2833-12-03-35-C

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

MARCH 2012

**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 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 7 | | | | | | | | | | | C | C | C | C | C | C | C | C | 7 | 11 | 6 | 3 | 7 | 5 | 11 | 6.5 | 14 |
| 8 | **IZS** | 4 | 0 | 0 | 2 | 24 | 3 | 12 | 6 | 3 | 1 | 1 | 2 | **M** | **M** | 2 | 2 | 4 | 4 | 7 | 5 | 7 | 7 | **IZS** | 24 | 4.8 | 22 |
| 9 | 6 | 0 | 0 | 0 | 2 | **N** | 10 | 3 | 1 | 1 | 0 | 0 | 0 | 1 | 3 | 2 | 3 | 7 | 7 | 7 | 6 | 1 | **IZS** | 29 | 29 | 4.0 | 23 |
| 10 | 10 | 1 | 0 | 0 | 0 | 4 | 1 | 0 | 6 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 9 | 18 | 9 | **IZS** | 26 | 9 | 26 | 4.9 | 24 |
| 11 | 13 | 6 | 9 | 2 | 7 | 7 | 25 | 10 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 5 | 9 | 10 | **IZS** | 1 | 3 | 0 | 25 | 5.8 | 24 |
| 12 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 21 | **IZS** | 5 | 0 | 0 | 0 | 21 | 1.8 | 24 |
| 13 | 0 | 4 | 1 | 3 | 19 | 8 | 6 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 5 | 7 | **IZS** | 5 | 0 | 0 | 0 | 0 | 19 | 2.7 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | **IZS** | 6 | 3 | 0 | 45 | 11 | 11 | 45 | 4.6 | 24 |
| 15 | 4 | 4 | 8 | 7 | 16 | 18 | **68** | 23 | 10 | 6 | 3 | 1 | 0 | 0 | 0 | 0 | **IZS** | 7 | 3 | 5 | 2 | 0 | 0 | 5 | **68** | 8.3 | 24 |
| 16 | 7 | 10 | 10 | 15 | 14 | 22 | 21 | 18 | 8 | 3 | 0 | 0 | 0 | 0 | 1 | **IZS** | 0 | 2 | 17 | 9 | 17 | 7 | 4 | 6 | 22 | 8.3 | 24 |
| 17 | 9 | 9 | 3 | 7 | 17 | 11 | 22 | 17 | 12 | 8 | 4 | 0 | 0 | 0 | **IZS** | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 22 | 5.3 | 24 |
| 18 | 0 | 4 | 0 | 0 | 0 | 11 | 19 | 12 | 5 | 4 | 3 | 1 | 0 | **IZS** | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 2.7 | 24 |
| 19 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 3 | 3 | 0.7 | 24 |
| 20 | 3 | 3 | 2 | 3 | 3 | 57 | 19 | 5 | 3 | 1 | 1 | **IZS** | 2 | 2 | 2 | 4 | 4 | 13 | 25 | 47 | 29 | 38 | 35 | 20 | 57 | 14.0 | 24 |
| 21 | 20 | 22 | 23 | 27 | 19 | 19 | 41 | 30 | 28 | 16 | **IZS** | 7 | 5 | 4 | 2 | 3 | 6 | 13 | 19 | 17 | 21 | 34 | 36 | 21 | 41 | 18.8 | 24 |
| 22 | 24 | 27 | 26 | 24 | 25 | 29 | 29 | 20 | 4 | **IZS** | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 9.1 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 14 | 12 | 20 | 2.0 | 24 |
| 24 | 17 | 15 | 8 | 10 | 4 | 5 | 12 | **IZS** | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 8 | 9 | 21 | 21 | 10 | 10 | 21 | 7.7 | 24 |
| 25 | 10 | 10 | 13 | 15 | 16 | 12 | **IZS** | 8 | 7 | 3 | 4 | 3 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 5 | 16 | 2 | 3 | 8 | 16 | 6.1 | 24 |
| 26 | 6 | 7 | 8 | 10 | 16 | **IZS** | 27 | 21 | 9 | 4 | 4 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 3 | 16 | 14 | 7 | 12 | 2 | 27 | 7.5 | 24 |
| 27 | 4 | 12 | 6 | 2 | **IZS** | 4 | 4 | 3 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 3 | 5 | 4 | 16 | 36 | 23 | 16 | 21 | 36 | 7.2 | 24 |
| 28 | 24 | 15 | 11 | **IZS** | 21 | 8 | 15 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 24 | 4.7 | 24 |
| 29 | 0 | 1 | **IZS** | 4 | 6 | 13 | 9 | 11 | 3 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 4 | 7 | 12 | 9 | 8 | 11 | 9 | 13 | 5.1 | 24 |
| 30 | 9 | **IZS** | 8 | 11 | 12 | 18 | 11 | 6 | 4 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 4 | 3 | 1 | 1 | 18 | 4.3 | 24 |
| 31 | **IZS** | 5 | 5 | 4 | 13 | 6 | 6 | 4 | 3 | 2 | 2 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 2 | 37 | 10 | 5 | 4 | **IZS** | 37 | 5.2 | 24 |
| HOURLY MAX | 24 | 27 | 26 | 27 | 25 | 57 | 68 | 30 | 28 | 20 | 4 | 7 | 5 | 4 | 3 | 4 | 18 | 15 | 25 | 47 | 36 | 45 | 36 | 29 | | | |
| HOURLY AVG | 7.5 | 6.9 | 6.3 | 6.3 | 9.2 | 12.5 | 15.3 | 9.0 | 6.0 | 4.3 | 1.2 | 0.8 | 0.8 | 0.6 | 0.7 | 1.0 | 2.2 | 4.5 | 6.5 | 9.9 | 8.8 | 8.6 | 8.4 | 7.5 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS: 375

MAXIMUM INSTANTANEOUS VALUE: 68 PPB @ HOUR(S) 6 ON DAY(S) 15

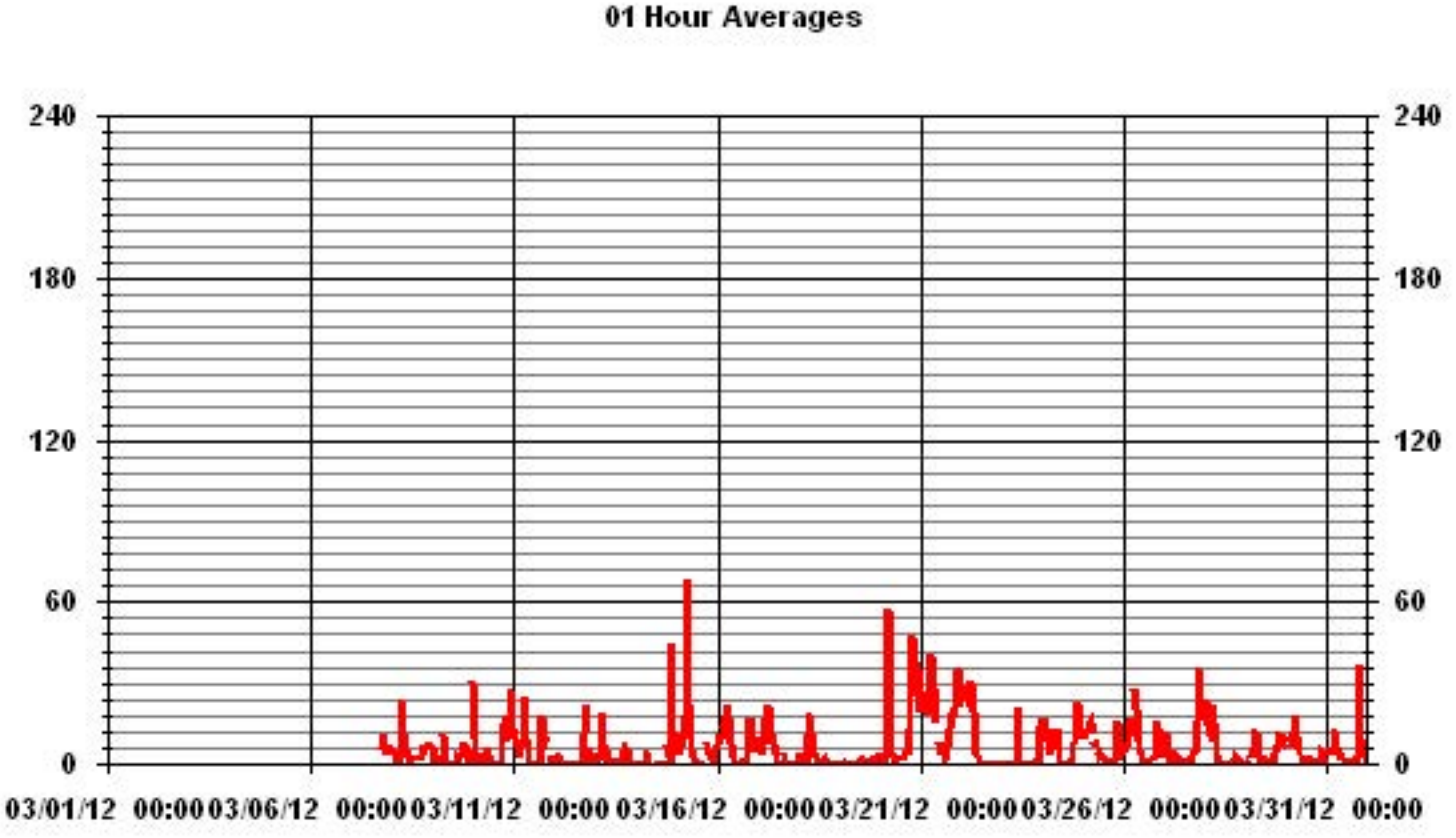
IZS CALIBRATION TIME: 26 HRS OPERATIONAL TIME: 587 HRS

MONTHLY CALIBRATION TIME: 13 HRS

STANDARD DEVIATION: 8.82



JOB #: 2833-12-03-35-C






JOB #: 2833-12-03-35-C

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

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 4.17 | 2.54 | 3.44 | 4.35 | 5.26 | 15.42 | 19.05 | 3.81 | 2.72 | 1.45 | 2.90 | 4.35 | 9.98 | 9.80 | 5.62 | 5.08 | 100.00 |
| < 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 4.17 | 2.54 | 3.44 | 4.35 | 5.26 | 15.42 | 19.05 | 3.81 | 2.72 | 1.45 | 2.90 | 4.35 | 9.98 | 9.80 | 5.62 | 5.08 | |

Calm : .00 %

Total # Operational Hours : 551

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 23 | 14 | 19 | 24 | 29 | 85 | 105 | 21 | 15 | 8 | 16 | 24 | 55 | 54 | 31 | 28 | 551 |
| < 110 | | | | | | | | | | | | | | | | | |
| < 210 | | | | | | | | | | | | | | | | | |
| >= 210 | | | | | | | | | | | | | | | | | |
| Totals | 23 | 14 | 19 | 24 | 29 | 85 | 105 | 21 | 15 | 8 | 16 | 24 | 55 | 54 | 31 | 28 | |

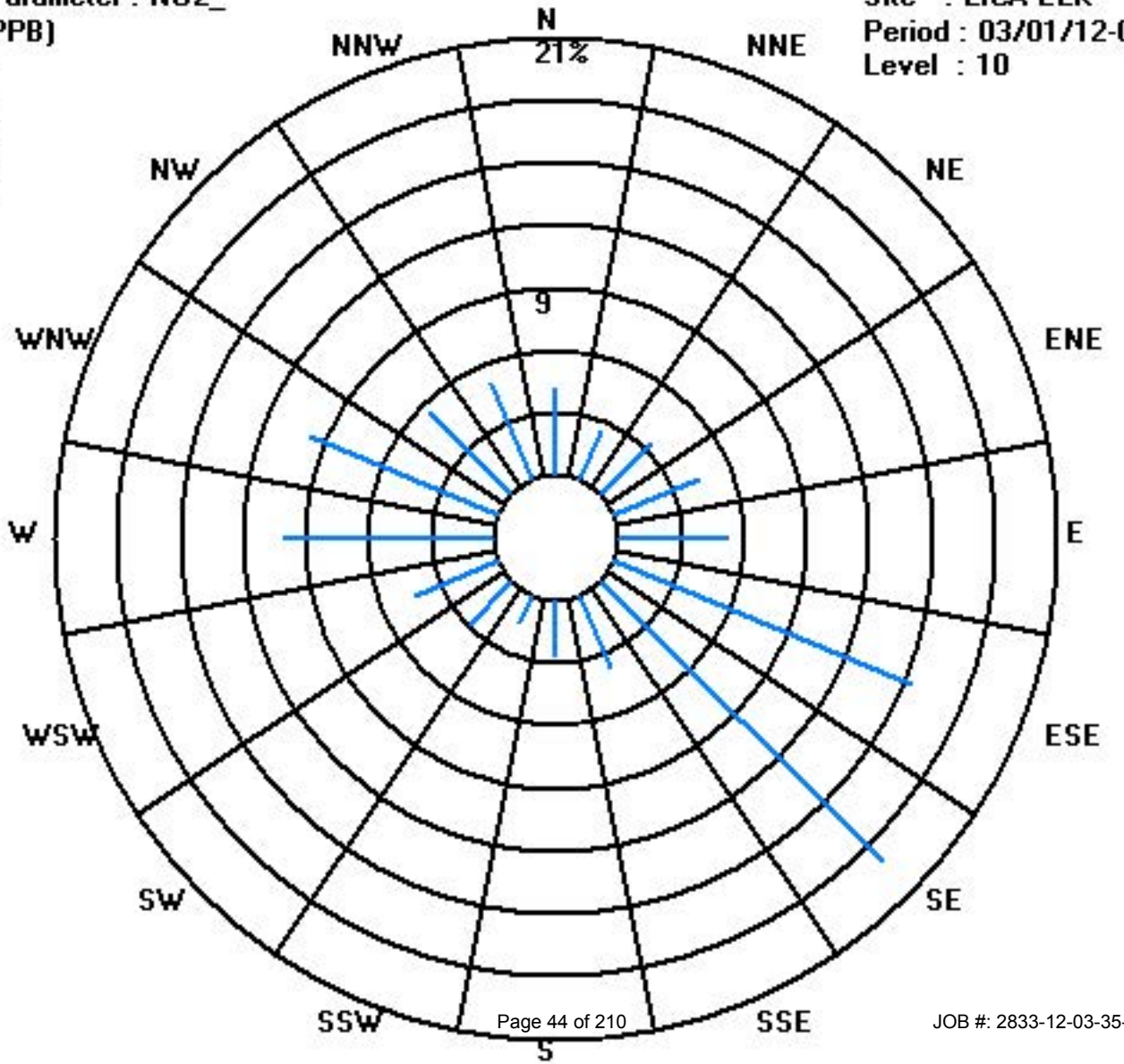
Calm : .00 %

Total # Operational Hours : 551

Logger : 35 Parameter : NO2_
Class Limits (PPB)

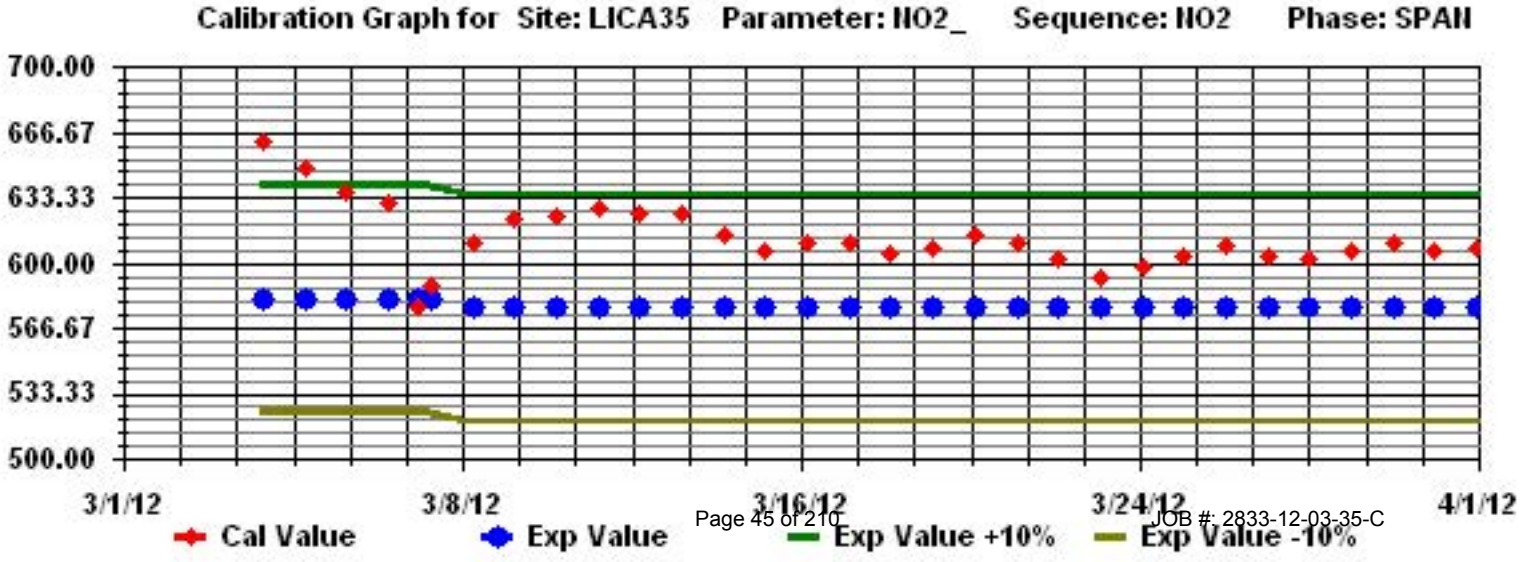
>= 210
< 210
< 110
< 50

Site : LICA-ELK
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-35-C


Calibration Graph for Site: LICA35 Parameter: NO2_ Sequence: NO2 Phase: SPAN
700.00
666.67
633.33
600.00
566.67
533.33
500.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Nitric Oxide

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

MARCH 2012

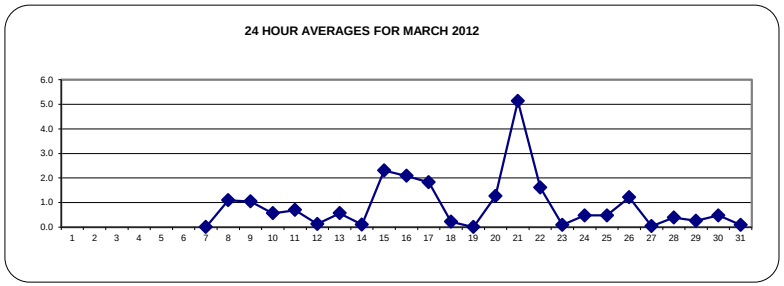
**NITRIC OXIDE** hourly averages in ppb

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 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 7 | | | | | | | | | | | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 14 |
| 8 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 3 | 1.1 | 24 |
| 9 | 0 | 0 | 0 | 0 | 0 | **N** | 0 | 1 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | **IZS** | 1 | 3 | 1.0 | 23 |
| 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 2 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | **IZS** | 1 | 0 | 2 | 0.6 | 24 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 4 | 0.7 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | **IZS** | 0 | 0 | 0 | 0 | 1 | 0.1 | 24 |
| 13 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 2 | 0.6 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0.1 | 24 |
| 15 | 0 | 0 | 0 | 0 | 1 | 1 | 6 | 18 | 7 | 9 | 5 | 3 | 2 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 2.3 | 24 |
| 16 | 0 | 0 | 0 | 0 | 2 | 6 | 5 | 13 | 7 | 2 | 1 | 1 | 1 | 0 | 1 | **IZS** | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 13 | 2.1 | 24 |
| 17 | 1 | 1 | 1 | 1 | 2 | 2 | 6 | 11 | 6 | 5 | 3 | 1 | 1 | 1 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1.8 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | **IZS** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 2 | 7 | 3 | 1 | 7 | 1.3 | 24 |
| 21 | 0 | 0 | 1 | 3 | 1 | 1 | 12 | 22 | 25 | **27** | **IZS** | 6 | 5 | 2 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 3 | 4 | 0 | **27** | **5.1** | 24 |
| 22 | 0 | 2 | 2 | 3 | 4 | 11 | 11 | 2 | 1 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1.6 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.1 | 24 |
| 24 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | **IZS** | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0.5 | 24 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.5 | 24 |
| 26 | 0 | 0 | 0 | 0 | 0 | **IZS** | 12 | 6 | 4 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 1.2 | 24 |
| 27 | 0 | 0 | 0 | 0 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.0 | 24 |
| 28 | 2 | 0 | 0 | **IZS** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.4 | 24 |
| 29 | 0 | 0 | **IZS** | 0 | 0 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.3 | 24 |
| 30 | 0 | **IZS** | 0 | 0 | 0 | 3 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.5 | 24 |
| 31 | **IZS** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 1 | 0.1 | 24 |
| HOURLY MAX | 2 | 2 | 2 | 3 | 4 | 11 | 12 | 22 | 25 | 27 | 5 | 6 | 5 | 3 | 3 | 1 | 1 | 2 | 1 | 4 | 2 | 7 | 4 | 1 | | | |
| HOURLY AVG | 0.2 | 0.2 | 0.2 | 0.3 | 0.5 | 1.4 | 2.7 | 3.8 | 3.2 | 2.9 | 1.2 | 1.0 | 1.0 | 0.6 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.5 | 0.4 | 0.2 | | | |

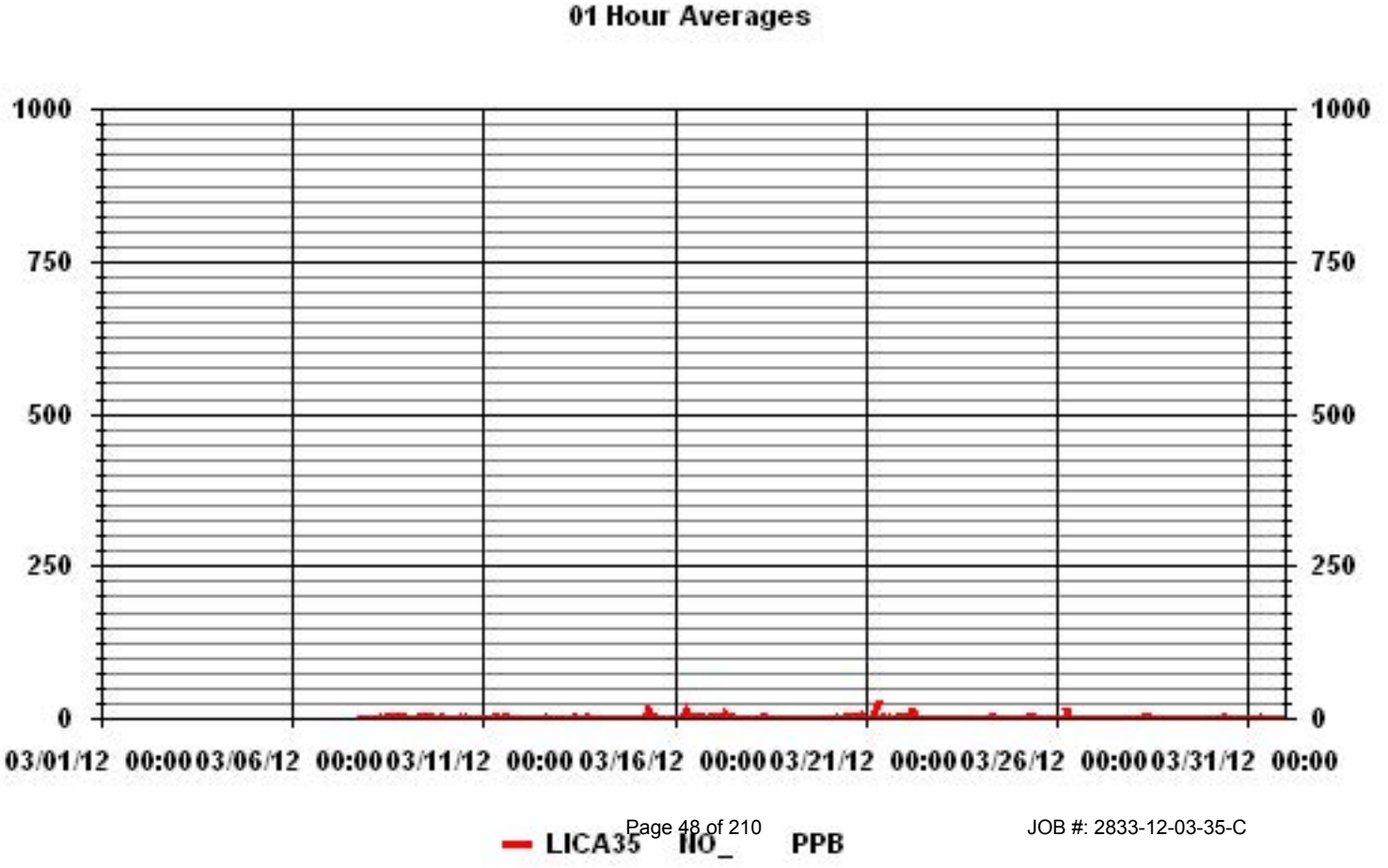
**STATUS FLAG CODES**

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




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 192 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 27 | PPB | @ HOUR(S) | 9 | ON DAY(S) | 21 |
| MAXIMUM 24-HR AVERAGE: | 5.1 | PPB | | | ON DAY(S) | 21 |
| IZS CALIBRATION TIME: | 26 | HRS | OPERATIONAL TIME: | | 589 | HRS |
| MONTHLY CALIBRATION TIME: | 12 | HRS | AMD OPERATION UPTIME: | | 99.8 | % |
| STANDARD DEVIATION: | 2.55 | | MONTHLY AVERAGE: | | 0.92 | PPB |






JOB #: 2833-12-03-35-C

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

MARCH 2012

**NITRIC OXIDE MAX** instantaneous maximum in ppb

MST

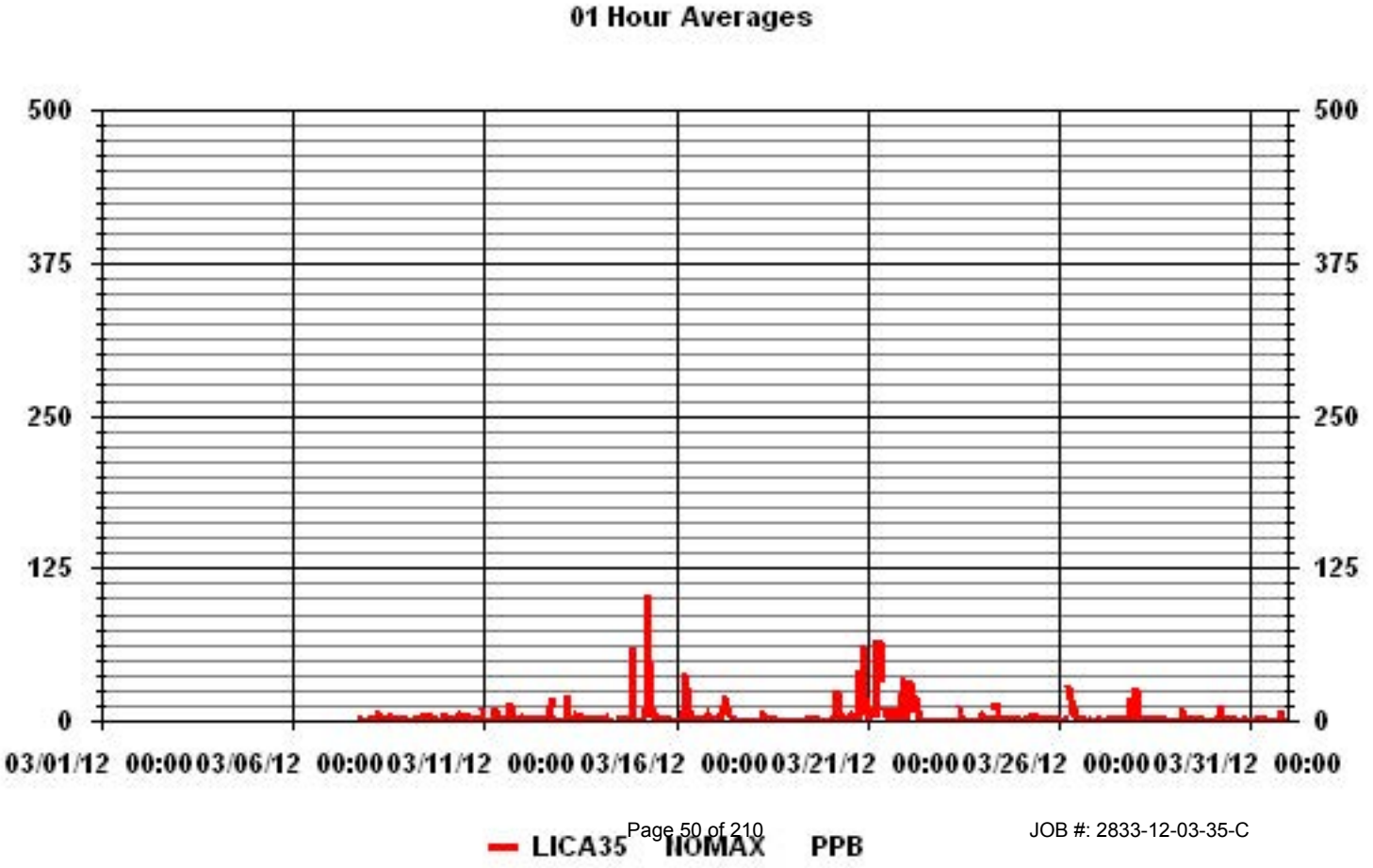
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 7 | | | | | | | | | | | C | C | C | C | C | C | C | C | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 0.7 | 14 |
| 8 | IZS | 1 | 1 | 1 | 1 | 7 | 1 | 4 | 4 | 3 | 2 | 3 | 4 | M | M | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | IZS | 7 | 2.3 | 22 |
| 9 | 1 | 0 | 0 | 0 | 0 | N | 2 | 2 | 3 | 4 | 3 | 5 | 4 | 4 | 5 | 3 | 2 | 1 | 2 | 1 | 0 | 1 | IZS | 3 | 5 | 2.1 | 23 |
| 10 | 3 | 1 | 1 | 1 | 0 | 2 | 3 | 2 | 6 | 5 | 4 | 5 | 4 | 4 | 3 | 3 | 1 | 3 | 2 | 1 | 1 | IZS | 9 | 1 | 9 | 2.8 | 24 |
| 11 | 1 | 0 | 0 | 1 | 0 | 2 | 11 | 5 | 6 | 4 | 3 | 1 | 2 | 2 | 2 | 2 | 15 | 2 | 2 | 2 | IZS | 1 | 3 | 0 | 15 | 2.9 | 24 |
| 12 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 12 | 16 | IZS | 2 | 1 | 0 | 0 | 16 | 2.1 | 24 |
| 13 | 0 | 0 | 0 | 0 | 21 | 1 | 3 | 2 | 2 | 5 | 3 | 3 | 4 | 2 | 1 | 1 | 3 | 2 | IZS | 1 | 1 | 1 | 1 | 1 | 21 | 2.5 | 24 |
| 14 | 1 | 1 | 1 | 1 | 3 | 0 | 0 | 1 | C | C | C | C | C | 1 | 1 | 1 | 1 | IZS | 1 | 1 | 0 | 59 | 2 | 1 | 59 | 4.2 | 24 |
| 15 | 0 | 0 | 1 | 0 | 5 | 3 | 103 | 49 | 12 | 11 | 7 | 4 | 3 | 2 | 1 | 1 | IZS | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 103 | 9.0 | 24 |
| 16 | 0 | 1 | 0 | 2 | 8 | 39 | 14 | 29 | 11 | 3 | 2 | 2 | 1 | 1 | 2 | IZS | 2 | 1 | 2 | 1 | 5 | 2 | 2 | 2 | 39 | 5.7 | 24 |
| 17 | 3 | 2 | 3 | 3 | 7 | 4 | 17 | 17 | 11 | 8 | 6 | 2 | 2 | 2 | IZS | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 3.8 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 2 | 2 | 2 | 2 | 1 | 1 | IZS | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.0 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | IZS | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 24 |
| 20 | 0 | 1 | 1 | 1 | 2 | 25 | 9 | 3 | 4 | 1 | 1 | IZS | 3 | 5 | 2 | 3 | 3 | 3 | 3 | 42 | 5 | 62 | 20 | 6 | 62 | 8.9 | 24 |
| 21 | 1 | 1 | 4 | 9 | 4 | 4 | 65 | 55 | 66 | 33 | IZS | 9 | 6 | 4 | 1 | 2 | 2 | 10 | 2 | 1 | 1 | 23 | 36 | 4 | 66 | 14.9 | 24 |
| 22 | 2 | 10 | 7 | 32 | 7 | 17 | 17 | 10 | 1 | IZS | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 4.5 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 10 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 10 | 0.8 | 24 |
| 24 | 1 | 3 | 1 | 1 | 1 | 1 | 2 | IZS | 11 | 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 1 | 11 | 2.0 | 24 |
| 25 | 1 | 0 | 1 | 1 | 1 | 1 | IZS | 3 | 3 | 3 | 4 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 0 | 1 | 4 | 1.5 | 24 |
| 26 | 1 | 0 | 0 | 0 | 3 | IZS | 26 | 18 | 8 | 6 | 7 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 26 | 3.5 | 24 |
| 27 | 0 | 4 | 0 | 0 | IZS | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 18 | 4 | 0 | 5 | 18 | 2.0 | 24 |
| 28 | 27 | 1 | 1 | IZS | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 27 | 2.5 | 24 |
| 29 | 0 | 1 | IZS | 0 | 1 | 9 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 9 | 1.4 | 24 |
| 30 | 0 | IZS | 0 | 1 | 4 | 11 | 4 | 4 | 3 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 11 | 1.7 | 24 |
| 31 | IZS | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | IZS | 8 | 0.7 | 24 |
| HOURLY MAX | 27 | 10 | 7 | 32 | 21 | 39 | 103 | 55 | 66 | 33 | 7 | 9 | 6 | 5 | 5 | 3 | 15 | 12 | 16 | 42 | 18 | 62 | 36 | 6 | | | |
| HOURLY AVG | 1.9 | 1.2 | 1.0 | 2.4 | 3.1 | 6.0 | 12.8 | 9.3 | 7.2 | 5.4 | 2.5 | 2.3 | 2.1 | 1.7 | 1.3 | 1.3 | 1.8 | 2.0 | 1.7 | 2.9 | 1.7 | 6.7 | 3.2 | 1.3 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 403 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 103 | PPB | @ HOUR(S) | 6 | ON DAY(S) | 15 |
| IZS CALIBRATION TIME: | 26 | HRS | OPERATIONAL TIME: | | 587 | HRS |
| MONTHLY CALIBRATION TIME: | 13 | HRS | | | | |
| STANDARD DEVIATION: | 8.88 | | | | | |






JOB #: 2833-12-03-35-C

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

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 4.17 | 2.54 | 3.44 | 4.35 | 5.26 | 15.42 | 19.05 | 3.81 | 2.72 | 1.45 | 2.90 | 4.35 | 9.98 | 9.80 | 5.62 | 5.08 | 100.00 |
| < 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 4.17 | 2.54 | 3.44 | 4.35 | 5.26 | 15.42 | 19.05 | 3.81 | 2.72 | 1.45 | 2.90 | 4.35 | 9.98 | 9.80 | 5.62 | 5.08 | |

Calm : .00 %

Total # Operational Hours : 551

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 23 | 14 | 19 | 24 | 29 | 85 | 105 | 21 | 15 | 8 | 16 | 24 | 55 | 54 | 31 | 28 | 551 |
| < 110 | | | | | | | | | | | | | | | | | |
| < 210 | | | | | | | | | | | | | | | | | |
| >= 210 | | | | | | | | | | | | | | | | | |
| Totals | 23 | 14 | 19 | 24 | 29 | 85 | 105 | 21 | 15 | 8 | 16 | 24 | 55 | 54 | 31 | 28 | |

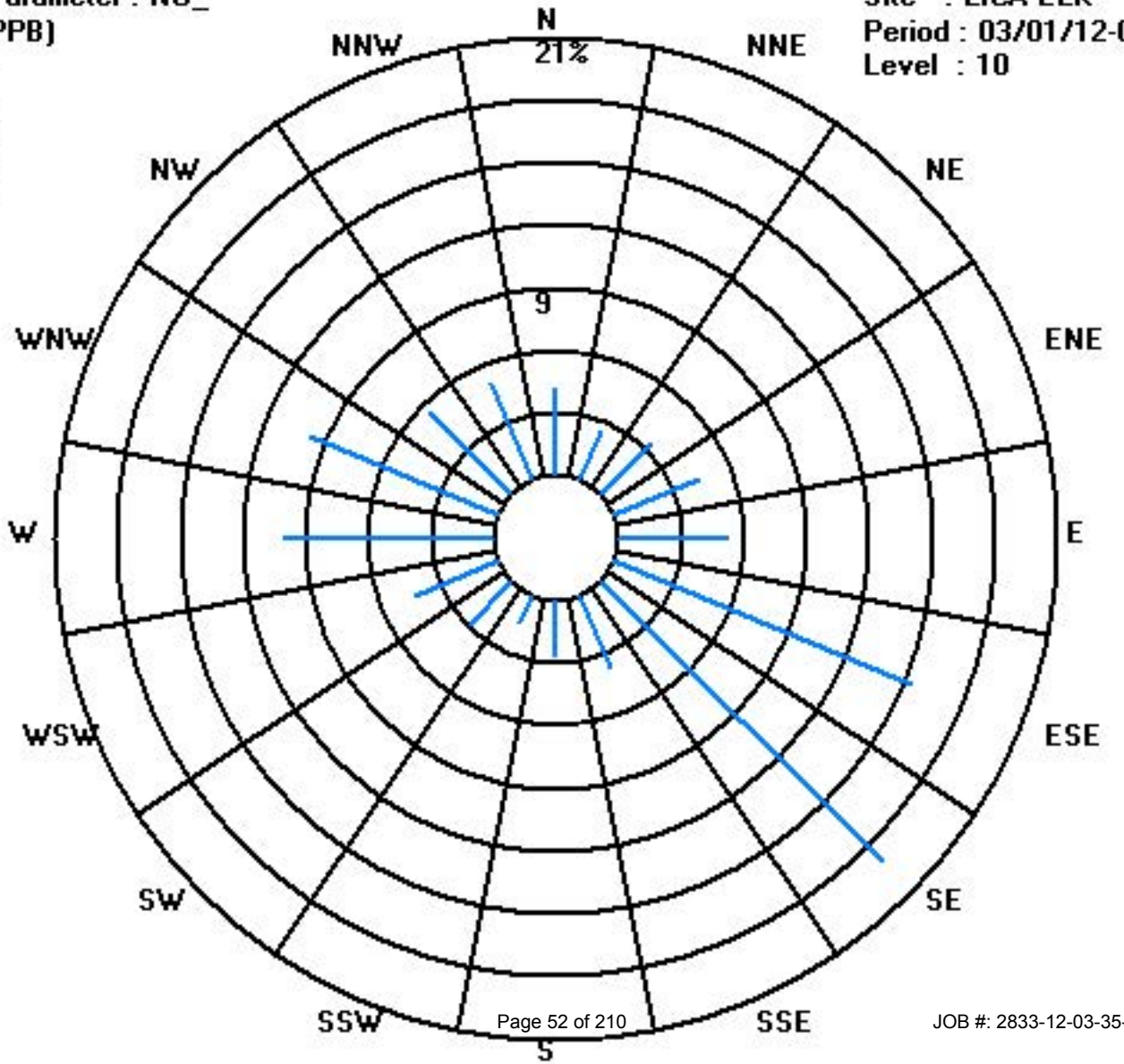
Calm : .00 %

Total # Operational Hours : 551

Logger : 35 Parameter : NO_
Class Limits (PPB)

>= 210
< 210
< 110
< 50

Site : LICA-ELK
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-35-C

# Oxides of Nitrogen

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

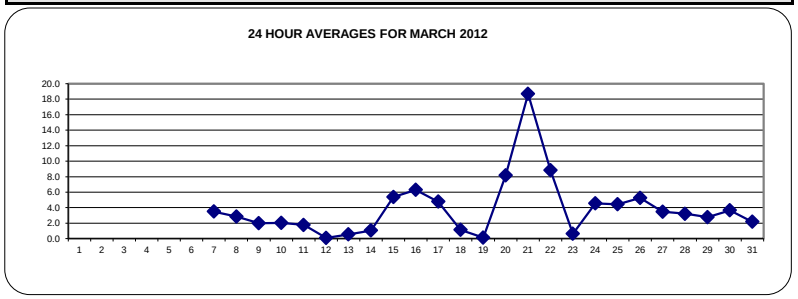
MARCH 2012

**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 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 7 | | | | | | | | | | | C | C | C | C | C | C | C | C | 5 | 5 | 4 | 2 | 3 | 2 | 5 | 3.5 | 14 |
| 8 | IZS | 1 | 0 | 0 | 1 | 4 | 2 | 9 | 5 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | 4 | 6 | 5 | IZS | 9 | 2.9 | 24 |
| 9 | 1 | 0 | 0 | 0 | 0 | N | 5 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 3 | 1 | 2 | 4 | 5 | 2 | 0 | 0 | IZS | 12 | 12 | 2.0 | 23 |
| 10 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 5 | 10 | 3 | IZS | 7 | 7 | 10 | 2.0 | 24 |
| 11 | 7 | 2 | 1 | 0 | 0 | 1 | 11 | 5 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | IZS | 0 | 0 | 0 | 11 | 1.8 | 24 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | IZS | 0 | 0 | 0 | 0 | 2 | 0.1 | 24 |
| 13 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | IZS | 2 | 0 | 0 | 0 | 0 | 5 | 0.6 | 24 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | C | C | C | C | 0 | 0 | 0 | 0 | IZS | 3 | 0 | 0 | 5 | 7 | 4 | 7 | 1.1 | 24 |
| 15 | 0 | 1 | 4 | 4 | 12 | 15 | 18 | 33 | 11 | 12 | 6 | 2 | 0 | 0 | 0 | 0 | IZS | 2 | 1 | 2 | 0 | 0 | 0 | 1 | 33 | 5.4 | 24 |
| 16 | 3 | 4 | 5 | 10 | 12 | 21 | 21 | 25 | 14 | 1 | 0 | 0 | 0 | 0 | 0 | IZS | 0 | 0 | 3 | 4 | 11 | 4 | 3 | 4 | 25 | 6.3 | 24 |
| 17 | 8 | 4 | 1 | 3 | 10 | 8 | 21 | 25 | 13 | 10 | 5 | 1 | 0 | 0 | IZS | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 4.8 | 24 |
| 18 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 6 | 4 | 3 | 2 | 0 | 0 | IZS | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.1 | 24 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0.1 | 24 |
| 20 | 2 | 1 | 0 | 0 | 0 | 10 | 10 | 2 | 1 | 0 | 0 | IZS | 2 | 3 | 3 | 4 | 4 | 7 | 14 | 27 | 24 | 35 | 25 | 14 | 35 | 8.2 | 24 |
| 21 | 18 | 18 | 22 | 27 | 16 | 16 | 38 | 46 | 42 | 42 | IZS | 11 | 9 | 4 | 2 | 3 | 5 | 8 | 11 | 10 | 14 | 26 | 29 | 13 | 46 | 18.7 | 24 |
| 22 | 18 | 23 | 25 | 23 | 27 | 37 | 36 | 11 | 3 | IZS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 8.8 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | IZS | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 9 | 0.7 | 24 |
| 24 | 7 | 10 | 5 | 4 | 2 | 3 | 8 | IZS | 16 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 5 | 9 | 9 | 8 | 9 | 16 | 4.6 | 24 |
| 25 | 9 | 8 | 11 | 12 | 9 | 8 | IZS | 8 | 6 | 5 | 5 | 3 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 6 | 1 | 1 | 4 | 12 | 4.4 | 24 |
| 26 | 4 | 5 | 4 | 9 | 11 | IZS | 32 | 15 | 7 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 9 | 4 | 2 | 5 | 0 | 32 | 5.3 | 24 |
| 27 | 1 | 3 | 3 | 0 | IZS | 3 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 7 | 12 | 15 | 11 | 15 | 15 | 3.5 | 24 |
| 28 | 13 | 7 | 7 | IZS | 12 | 7 | 9 | 5 | 3 | 2 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 13 | 3.2 | 24 |
| 29 | 0 | 0 | IZS | 2 | 3 | 11 | 8 | 8 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 6 | 3 | 6 | 5 | 11 | 2.8 | 24 |
| 30 | 6 | IZS | 6 | 9 | 10 | 15 | 9 | 6 | 4 | 2 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 15 | 3.7 | 24 |
| 31 | IZS | 3 | 3 | 2 | 6 | 4 | 4 | 4 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 4 | 4 | 3 | IZS | 7 | 2.2 | 24 |
| HOURLY MAX | 18 | 23 | 25 | 27 | 27 | 37 | 38 | 46 | 42 | 42 | 6 | 11 | 9 | 4 | 3 | 4 | 5 | 8 | 14 | 27 | 24 | 35 | 29 | 15 | | | |
| HOURLY AVG | 4.7 | 3.9 | 4.2 | 4.6 | 5.8 | 7.5 | 10.6 | 9.2 | 6.3 | 4.3 | 1.3 | 1.1 | 1.0 | 0.7 | 0.6 | 0.6 | 0.8 | 1.9 | 2.9 | 4.2 | 4.3 | 4.8 | 4.9 | 4.3 | | | |

**STATUS FLAG CODES**

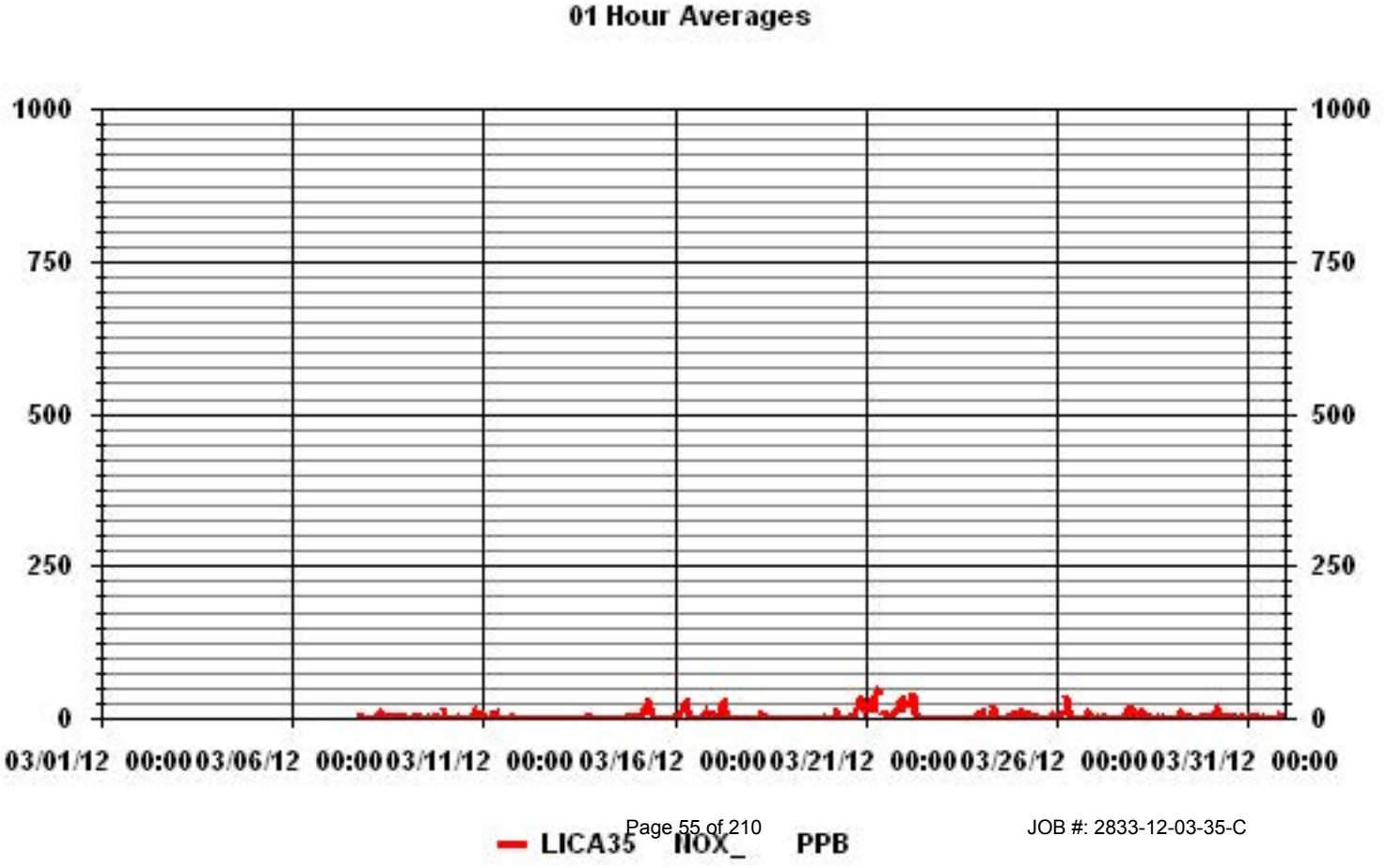
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |




**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 313 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 46 | PPB | @ HOUR(S) | 7 | ON DAY(S) | 21 |
| MAXIMUM 24-HR AVERAGE: | 18.7 | PPB | | | ON DAY(S) | 21 |

| | | | | | |
|---|---|---|---|---|---|
| IZS CALIBRATION TIME: | 26 | HRS | OPERATIONAL TIME: | 589 | HRS |
| MONTHLY CALIBRATION TIME: | 12 | HRS | AMD OPERATION UPTIME: | 99.8 | % |
| STANDARD DEVIATION: | 6.90 | | MONTHLY AVERAGE: | 3.94 | PPB |






JOB #: 2833-12-03-35-C

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

MARCH 2012

**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 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 7 | | | | | | | | | | | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | 9 | 12 | 6 | 3 | 7 | 4 | 12 | 6.8 | 14 |
| 8 | **IZS** | 5 | 0 | 1 | 3 | 31 | 4 | 17 | 10 | 6 | 3 | 4 | 6 | **M** | **M** | 3 | 3 | 5 | 5 | 8 | 6 | 8 | 8 | **IZS** | 31 | 6.8 | 22 |
| 9 | 6 | 0 | 0 | 0 | 2 | **N** | 12 | 5 | 3 | 3 | 2 | 5 | 3 | 5 | 8 | 4 | 4 | 7 | 8 | 7 | 6 | 2 | **IZS** | 32 | 32 | 5.6 | 23 |
| 10 | 11 | 3 | 0 | 1 | 0 | 6 | 4 | 1 | 13 | 10 | 3 | 5 | 3 | 1 | 0 | 1 | 0 | 18 | 11 | 19 | 10 | **IZS** | 34 | 9 | 34 | 7.1 | 24 |
| 11 | 14 | 6 | 10 | 2 | 7 | 7 | 35 | 15 | 13 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 6 | 9 | 11 | **IZS** | 1 | 6 | 0 | 35 | 7.7 | 24 |
| 12 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 34 | **IZS** | 7 | 1 | 0 | 0 | 34 | 3.0 | 24 |
| 13 | 0 | 4 | 1 | 3 | 39 | 8 | 8 | 1 | 1 | 6 | 0 | 1 | 6 | 0 | 0 | 0 | 7 | 7 | **IZS** | 7 | 0 | 0 | 0 | 0 | 39 | 4.3 | 24 |
| 14 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 2 | **C** | **C** | **C** | **C** | **C** | 0 | 0 | 0 | 0 | **IZS** | 7 | 4 | 0 | 104 | 11 | 11 | 104 | 8.2 | 24 |
| 15 | 3 | 3 | 9 | 6 | 21 | 20 | **164** | 72 | 22 | 16 | 10 | 4 | 2 | 1 | 0 | 0 | **IZS** | 9 | 4 | 6 | 2 | 0 | 0 | 4 | **164** | 16.4 | 24 |
| 16 | 7 | 11 | 10 | 17 | 22 | 58 | 33 | 45 | 19 | 5 | 1 | 0 | 1 | 0 | 3 | **IZS** | 1 | 3 | 19 | 10 | 21 | 9 | 5 | 7 | 58 | 13.3 | 24 |
| 17 | 10 | 10 | 6 | 7 | 24 | 14 | 36 | 34 | 22 | 15 | 9 | 2 | 1 | 2 | **IZS** | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 8.5 | 24 |
| 18 | 0 | 4 | 0 | 0 | 0 | 12 | 26 | 14 | 7 | 5 | 5 | 2 | 0 | **IZS** | 3 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 26 | 3.7 | 24 |
| 19 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | **IZS** | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0.9 | 24 |
| 20 | 2 | 3 | 2 | 3 | 3 | 82 | 28 | 7 | 4 | 2 | 1 | **IZS** | 4 | 7 | 4 | 8 | 8 | 18 | 28 | 86 | 34 | 94 | 56 | 21 | 94 | 22.0 | 24 |
| 21 | 22 | 24 | 25 | 36 | 23 | 23 | 106 | 84 | 94 | 49 | **IZS** | 15 | 10 | 7 | 2 | 4 | 7 | 22 | 20 | 17 | 21 | 55 | 69 | 24 | 106 | 33.0 | 24 |
| 22 | 24 | 37 | 33 | 49 | 32 | 44 | 43 | 30 | 5 | **IZS** | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 13.0 | 24 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **IZS** | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 14 | 15 | 28 | 2.5 | 24 |
| 24 | 17 | 18 | 9 | 10 | 4 | 5 | 13 | **IZS** | 24 | 23 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 4 | 10 | 12 | 23 | 22 | 11 | 11 | 24 | 9.7 | 24 |
| 25 | 10 | 11 | 14 | 16 | 17 | 13 | **IZS** | 11 | 10 | 7 | 8 | 6 | 5 | 1 | 2 | 2 | 1 | 1 | 3 | 7 | 17 | 3 | 4 | 9 | 17 | 7.7 | 24 |
| 26 | 7 | 7 | 9 | 11 | 17 | **IZS** | 52 | 39 | 16 | 10 | 10 | 2 | 0 | 1 | 1 | 1 | 2 | 2 | 3 | 16 | 14 | 7 | 12 | 2 | 52 | 10.5 | 24 |
| 27 | 3 | 15 | 6 | 2 | **IZS** | 4 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 1 | 0 | 2 | 4 | 5 | 4 | 17 | 53 | 27 | 16 | 23 | 53 | 8.5 | 24 |
| 28 | 50 | 16 | 11 | **IZS** | 24 | 9 | 19 | 6 | 5 | 4 | 2 | 2 | 2 | 2 | 1 | 2 | 3 | 5 | 3 | 3 | 1 | 1 | 1 | 1 | 50 | 7.5 | 24 |
| 29 | 1 | 2 | **IZS** | 4 | 7 | 21 | 11 | 15 | 5 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 4 | 6 | 12 | 9 | 7 | 10 | 8 | 21 | 5.9 | 24 |
| 30 | 9 | **IZS** | 9 | 12 | 17 | 28 | 15 | 8 | 8 | 3 | 2 | 3 | 3 | 6 | 3 | 2 | 2 | 2 | 0 | 0 | 4 | 3 | 2 | 1 | 28 | 6.2 | 24 |
| 31 | **IZS** | 5 | 5 | 3 | 13 | 6 | 7 | 5 | 3 | 3 | 2 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 45 | 9 | 5 | 4 | IZS | 45 | 5.4 | 24 |
| HOURLY MAX | 50 | 37 | 33 | 49 | 39 | 82 | 164 | 84 | 94 | 49 | 10 | 15 | 10 | 7 | 8 | 8 | 31 | 22 | 34 | 86 | 53 | 104 | 69 | 32 | | | |
| HOURLY AVG | 9.0 | 8.0 | 7.2 | 8.0 | 12.1 | 17.8 | 27.2 | 18.0 | 13.0 | 9.3 | 3.0 | 2.6 | 2.3 | 1.8 | 1.4 | 1.7 | 3.4 | 6.2 | 7.7 | 12.6 | 10.2 | 14.7 | 11.3 | 8.0 | | | |

**STATUS FLAG CODES**

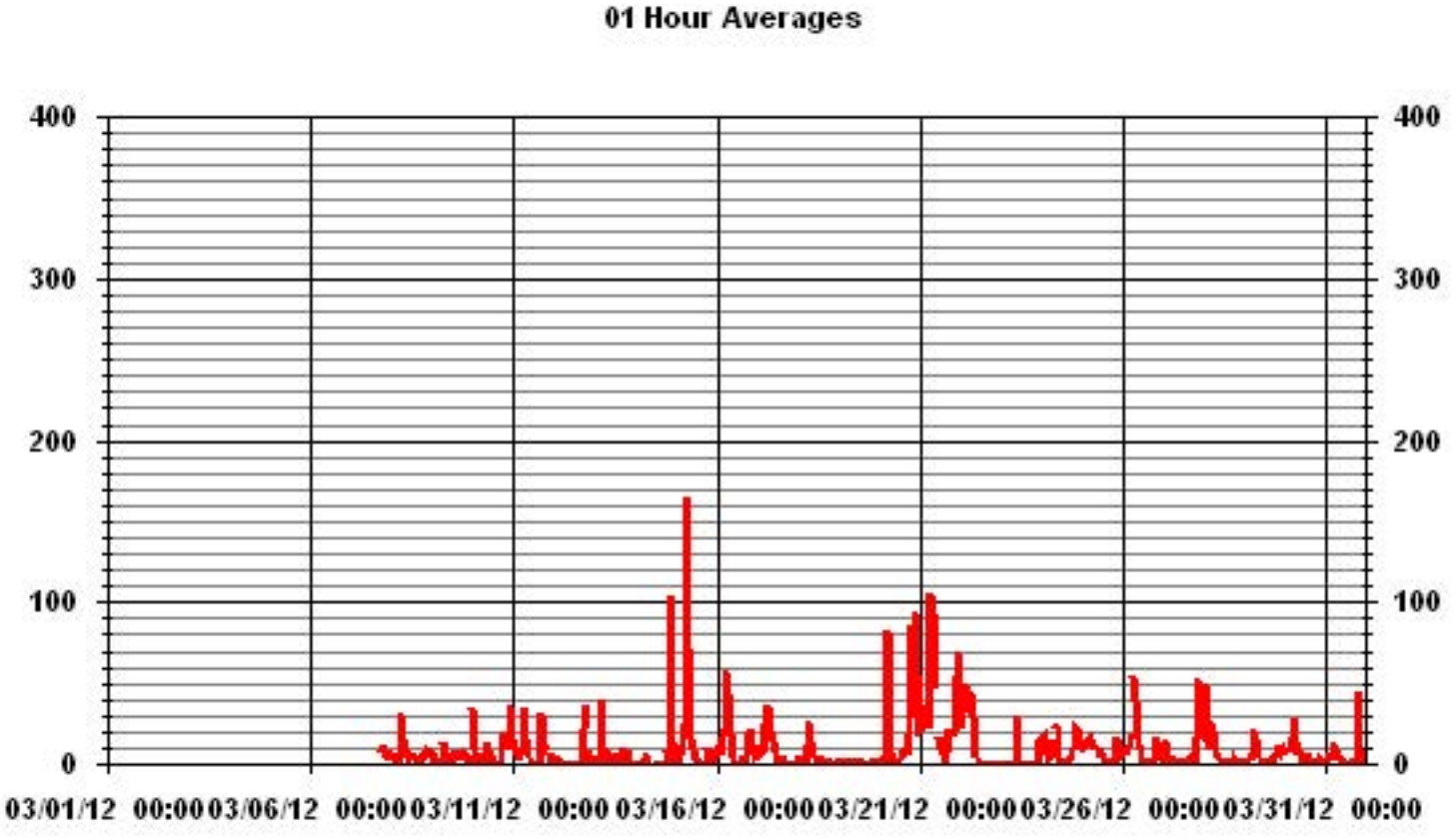
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | -MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 427 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 164 | PPB | @ HOUR(S) | 6 | ON DAY(S) | 15 |
| IZS CALIBRATION TIME: | 26 | HRS | OPERATIONAL TIME: | | 587 | HRS |
| MONTHLY CALIBRATION TIME: | 13 | HRS | | | | |
| STANDARD DEVIATION: | 16.01 | | | | | |



JOB #: 2833-12-03-35-C






JOB #: 2833-12-03-35-C

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

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 4.17 | 2.54 | 3.44 | 4.35 | 5.26 | 15.42 | 19.05 | 3.81 | 2.72 | 1.45 | 2.90 | 4.35 | 9.98 | 9.80 | 5.62 | 5.08 | 100.00 |
| < 110 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| < 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| Totals | 4.17 | 2.54 | 3.44 | 4.35 | 5.26 | 15.42 | 19.05 | 3.81 | 2.72 | 1.45 | 2.90 | 4.35 | 9.98 | 9.80 | 5.62 | 5.08 | |

Calm : .00 %

Total # Operational Hours : 551

Distribution By Samples

Direction

| Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 50 | 23 | 14 | 19 | 24 | 29 | 85 | 105 | 21 | 15 | 8 | 16 | 24 | 55 | 54 | 31 | 28 | 551 |
| < 110 | | | | | | | | | | | | | | | | | |
| < 210 | | | | | | | | | | | | | | | | | |
| >= 210 | | | | | | | | | | | | | | | | | |
| Totals | 23 | 14 | 19 | 24 | 29 | 85 | 105 | 21 | 15 | 8 | 16 | 24 | 55 | 54 | 31 | 28 | |

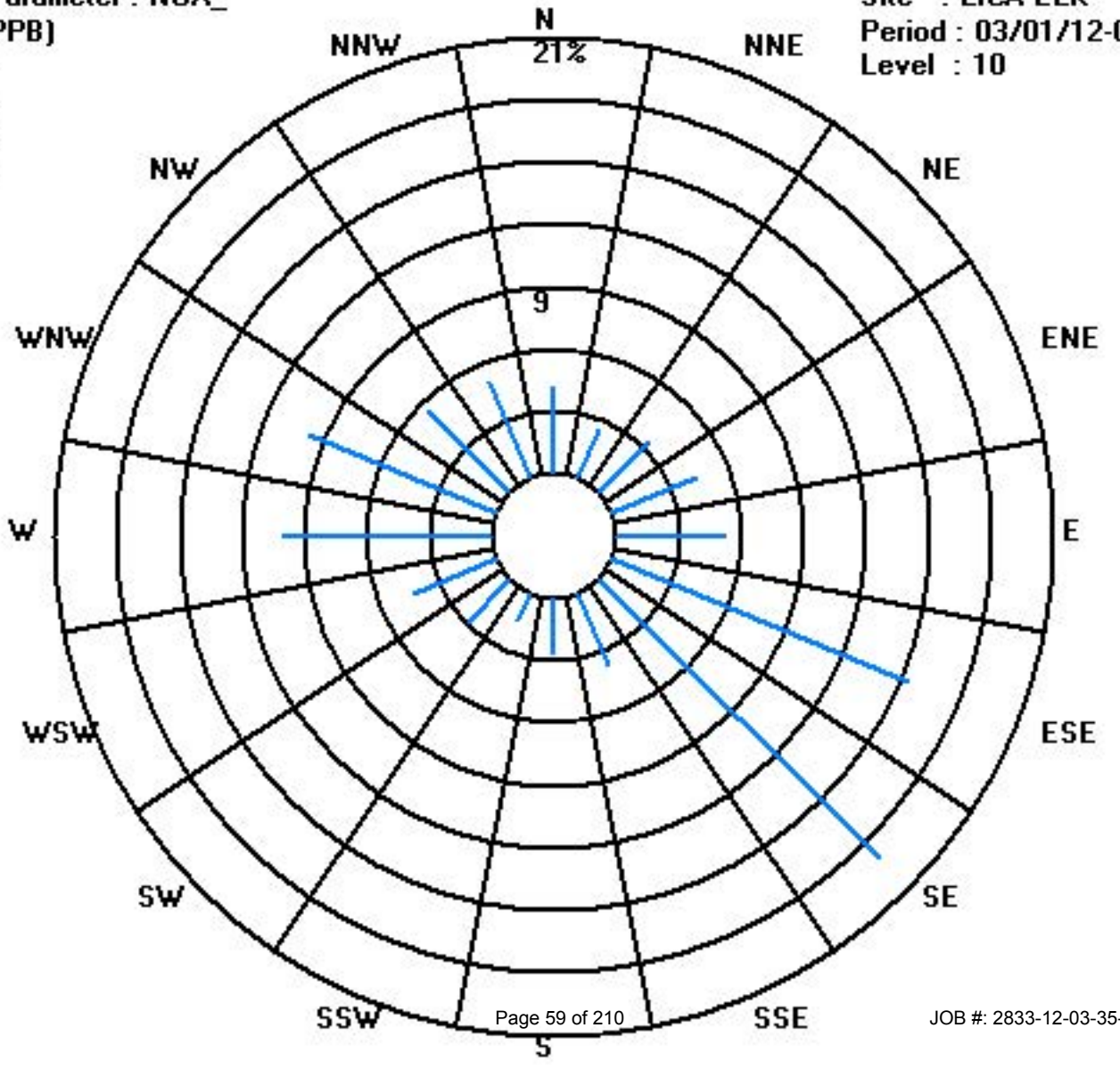
Calm : .00 %

Total # Operational Hours : 551

Logger : 35 Parameter : NOX_
Class Limits (PPB)

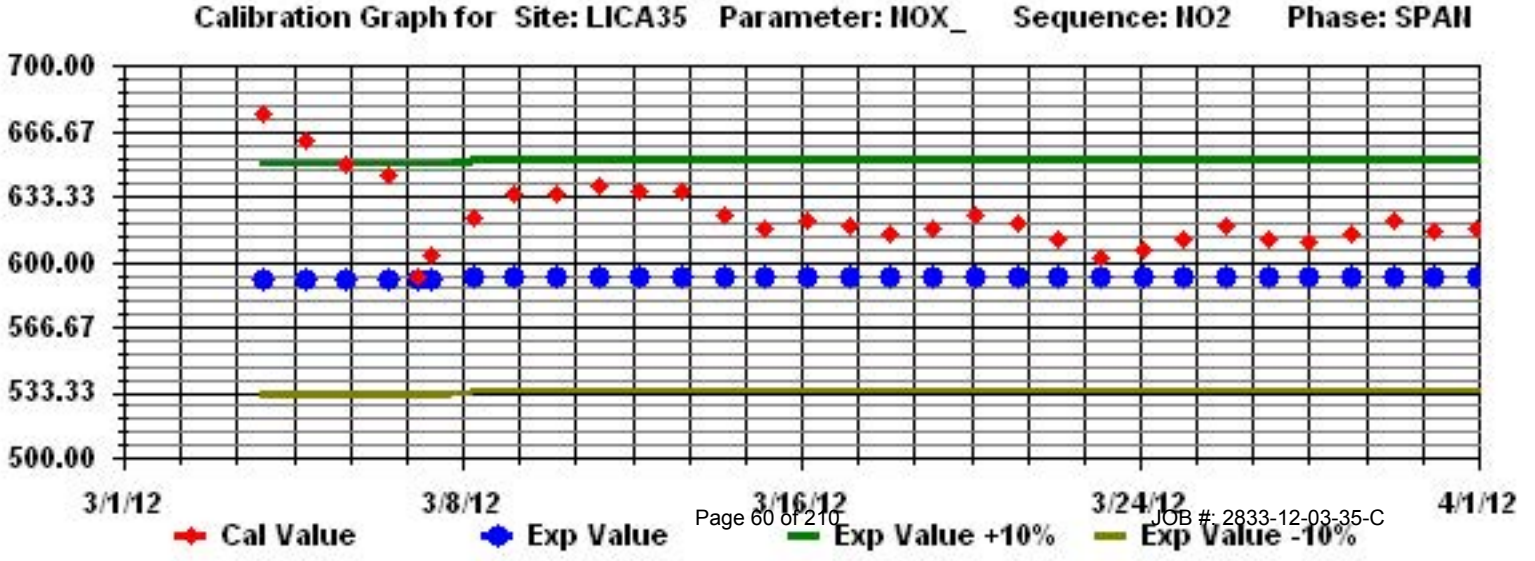
>= 210
< 210
< 110
< 50

Site : LICA-ELK
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-35-C


Calibration Graph for Site: LICA35 Parameter: NOX_ Sequence: NO2 Phase: SPAN
700.00
666.67
633.33
600.00
566.67
533.33
500.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Ozone

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

MARCH 2012

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

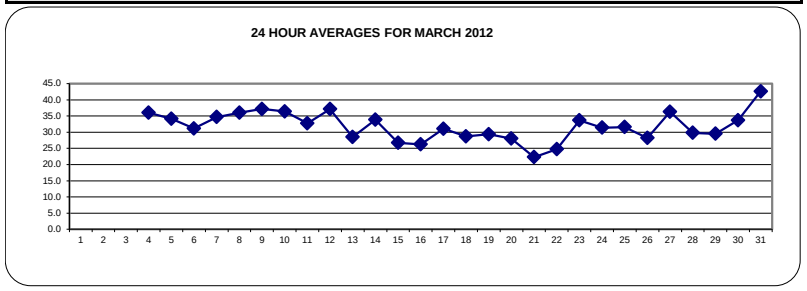
MST

| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | 35 | 38 | 37 | 36 | **IZS** | 35 | 35 | 33 | 31 | 34 | 35 | 37 | 39 | 41 | 41 | 41 | 42 | 41 | 36 | 25 | 32 | 33 | 35 | 35 | 42 | 36.0 | 24 |
| 5 | 36 | 33 | 18 | **IZS** | 35 | 31 | 18 | 26 | 31 | 31 | 37 | 38 | 38 | 37 | 38 | 39 | 39 | 38 | 39 | 38 | 37 | 36 | 36 | 36 | 39 | 34.1 | 24 |
| 6 | 35 | 34 | **IZS** | 34 | 34 | 34 | 34 | 33 | 33 | 33 | 34 | 35 | 35 | 32 | 33 | 33 | 33 | 31 | 30 | 28 | 25 | 22 | 19 | 22 | 35 | 31.1 | 24 |
| 7 | 22 | **IZS** | 25 | 28 | 28 | 25 | 23 | 26 | 31 | 34 | 36 | 37 | 39 | 41 | 41 | 42 | 42 | 41 | 39 | 38 | 39 | 39 | 39 | 42 | 42 | 34.7 | 24 |
| 8 | **IZS** | 41 | 38 | 37 | 36 | 33 | 34 | 29 | 32 | 35 | **C** | **C** | **C** | **C** | **C** | 37 | 38 | 39 | 39 | 36 | 36 | 36 | 36 | **IZS** | 41 | 36.0 | 24 |
| 9 | 38 | 39 | 38 | 37 | 34 | **N** | 28 | 32 | 32 | 33 | 34 | 35 | 37 | 38 | 40 | 42 | 42 | 42 | 40 | 44 | 42 | 42 | **IZS** | 28 | 44 | 37.1 | 23 |
| 10 | 31 | 37 | 38 | 38 | 38 | 35 | 35 | 38 | 32 | 37 | 39 | 42 | 44 | 44 | 45 | 44 | 43 | 35 | 32 | 26 | 30 | **IZS** | 29 | 25 | 45 | 36.4 | 24 |
| 11 | 25 | 30 | 31 | 32 | 28 | 30 | 21 | 29 | 30 | 37 | 39 | 41 | 40 | 40 | 38 | 37 | 33 | 33 | 28 | 30 | **IZS** | 32 | 34 | 34 | 41 | 32.7 | 24 |
| 12 | 33 | 29 | 25 | 33 | 42 | 41 | 37 | 38 | 40 | 41 | 42 | 43 | 43 | 45 | 44 | 42 | 40 | 38 | 29 | **IZS** | 30 | 31 | 32 | 35 | 45 | 37.1 | 24 |
| 13 | 34 | 29 | 28 | 26 | 24 | 23 | 23 | 25 | 25 | 25 | 27 | 29 | 28 | 33 | 37 | 39 | 32 | 24 | **IZS** | 29 | 27 | 28 | 30 | 31 | 39 | 28.5 | 24 |
| 14 | 32 | 33 | 33 | 31 | 29 | 28 | 25 | 28 | 32 | 35 | 37 | 41 | **C** | **C** | 44 | 44 | 43 | **IZS** | 36 | 40 | 40 | 30 | 24 | 26 | 44 | 33.9 | 24 |
| 15 | 28 | 26 | 22 | 21 | 14 | 10 | 10 | 7 | 18 | 20 | 26 | 32 | 35 | 38 | 40 | 41 | **IZS** | 35 | 33 | 31 | 34 | 34 | 33 | 26 | 41 | 26.7 | 24 |
| 16 | 21 | 17 | 15 | 9 | 10 | 4 | 4 | 7 | 14 | 29 | 31 | 32 | 38 | 45 | 45 | **IZS** | 47 | 43 | 36 | 31 | 27 | 34 | 34 | 30 | 47 | 26.2 | 24 |
| 17 | 23 | 29 | 31 | 25 | 17 | 18 | 8 | 8 | 17 | 21 | 29 | 37 | 40 | 41 | **IZS** | 41 | 42 | 41 | 43 | 45 | 41 | 39 | 39 | 39 | 45 | 31.0 | 24 |
| 18 | 37 | 33 | 31 | 29 | 30 | 27 | 18 | 20 | 22 | 22 | 25 | 27 | 27 | **IZS** | 33 | 31 | 35 | 35 | 34 | 32 | 31 | 29 | 27 | 25 | 37 | 28.7 | 24 |
| 19 | 27 | 28 | 27 | 27 | 26 | 27 | 27 | 27 | 29 | 31 | 29 | 30 | **IZS** | 30 | 31 | 31 | 32 | 32 | 32 | 32 | 32 | 31 | 30 | 29 | 32 | 29.3 | 24 |
| 20 | 29 | 32 | 32 | 32 | 31 | 25 | 24 | 32 | 33 | 32 | 32 | **IZS** | 34 | 34 | 34 | 35 | 36 | 33 | 27 | 18 | 14 | 8 | 16 | 21 | 36 | 28.0 | 24 |
| 21 | 15 | 13 | 12 | 8 | 16 | 15 | 4 | 8 | 13 | 16 | **IZS** | 29 | 33 | 38 | 43 | 41 | 40 | 38 | 33 | 29 | 24 | 16 | 11 | 18 | 43 | 22.3 | 24 |
| 22 | 12 | 7 | 3 | 2 | 1 | 1 | 4 | 22 | 29 | **IZS** | 34 | 34 | 34 | 34 | 34 | 33 | 34 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 24.7 | 24 |
| 23 | 36 | 36 | 35 | 34 | 34 | 34 | 34 | 34 | **IZS** | 34 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 34 | 33 | 33 | 33 | 27 | 22 | 36 | 33.6 | 24 |
| 24 | 24 | 21 | 25 | 26 | 29 | 27 | 22 | **IZS** | 21 | 32 | 35 | 36 | 36 | 38 | 39 | 39 | 40 | 40 | 36 | 36 | 31 | 31 | 30 | 28 | 40 | 31.4 | 24 |
| 25 | 27 | 28 | 23 | 22 | 25 | 28 | **IZS** | 28 | 31 | 32 | 33 | 35 | 37 | 40 | 42 | 42 | 40 | 37 | 34 | 32 | 27 | 30 | 28 | 25 | 42 | 31.6 | 24 |
| 26 | 24 | 23 | 23 | 18 | 15 | **IZS** | 6 | 15 | 15 | 22 | 26 | 33 | 36 | 38 | 40 | 41 | 38 | 37 | 35 | 26 | 33 | 32 | 32 | 40 | 41 | 28.2 | 24 |
| 27 | 40 | 35 | 32 | 34 | **IZS** | 37 | 38 | 39 | 40 | 43 | 43 | 44 | 44 | 45 | 45 | 42 | 43 | 43 | 43 | 32 | 22 | 18 | 19 | 14 | 45 | 36.3 | 24 |
| 28 | 17 | 23 | 23 | **IZS** | 21 | 28 | 25 | 28 | 30 | 32 | 34 | 34 | 35 | 38 | 40 | 39 | 37 | 35 | 34 | 30 | 27 | 26 | 25 | 24 | 40 | 29.8 | 24 |
| 29 | 23 | 21 | **IZS** | 17 | 14 | 8 | 8 | 9 | 13 | 16 | 29 | 38 | 43 | 47 | 50 | 50 | 49 | 47 | 44 | 39 | 32 | 29 | 26 | 27 | 50 | 29.5 | 24 |
| 30 | 25 | **IZS** | 23 | 18 | 16 | 11 | 15 | 19 | 26 | 30 | 33 | 32 | 35 | 40 | 45 | 49 | 49 | 47 | 48 | 49 | 44 | 39 | 42 | 40 | 49 | 33.7 | 24 |
| 31 | **IZS** | 36 | 35 | 34 | 27 | 31 | 30 | 32 | 36 | 40 | 45 | 50 | 52 | 53 | 53 | 53 | 52 | 53 | 52 | 42 | 43 | 44 | 44 | **IZS** | **53** | **42.6** | 24 |
| HOURLY MAX | 40 | 41 | 38 | 38 | 42 | 41 | 38 | 39 | 40 | 43 | 45 | 50 | 52 | 53 | 53 | 53 | 52 | 53 | 52 | 49 | 44 | 44 | 44 | 42 | | | |
| HOURLY AVG | 28.0 | 28.9 | 27.0 | 26.5 | 25.2 | 24.8 | 21.9 | 24.9 | 27.3 | 30.6 | 33.8 | 36.0 | 37.5 | 39.4 | 40.4 | 40.1 | 39.9 | 38.1 | 36.3 | 33.6 | 32.1 | 31.0 | 30.1 | 29.2 | | | |

**STATUS FLAG CODES**

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

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

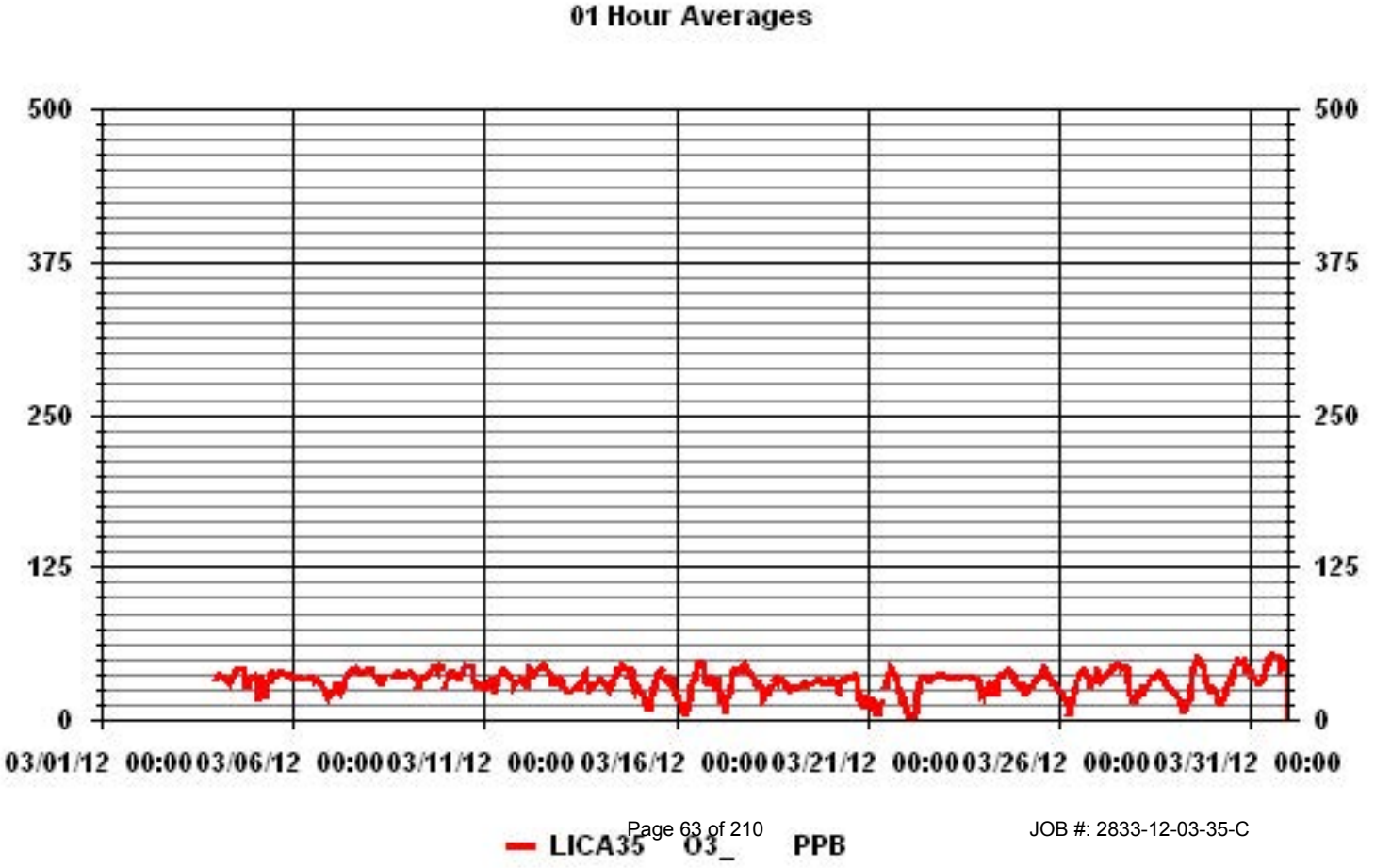



**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF 1-HR EXCEEDENCES: | 0 | | | | | |
| NUMBER OF NON-ZERO READINGS: | 634 | | | | | |
| MAXIMUM 1-HR AVERAGE: | 53 | PPB | @ HOUR(S) | VAR | ON DAY(S) | 31 |
| MAXIMUM 24-HR AVERAGE: | 42.6 | PPB | | | ON DAY(S) | 31 |
| | | | | | VAR-VARIOUS | |
| IZS CALIBRATION TIME: | 30 | HRS | OPERATIONAL TIME: | | 671 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | AMD OPERATION UPTIME: | | 99.9 | % |
| STANDARD DEVIATION: | 9.25 | | MONTHLY AVERAGE: | | 31.76 | PPB |



JOB #: 2833-12-03-35-C






JOB #: 2833-12-03-35-C

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

MARCH 2012

**OZONE MAX** instantaneous maximum in ppb

MST

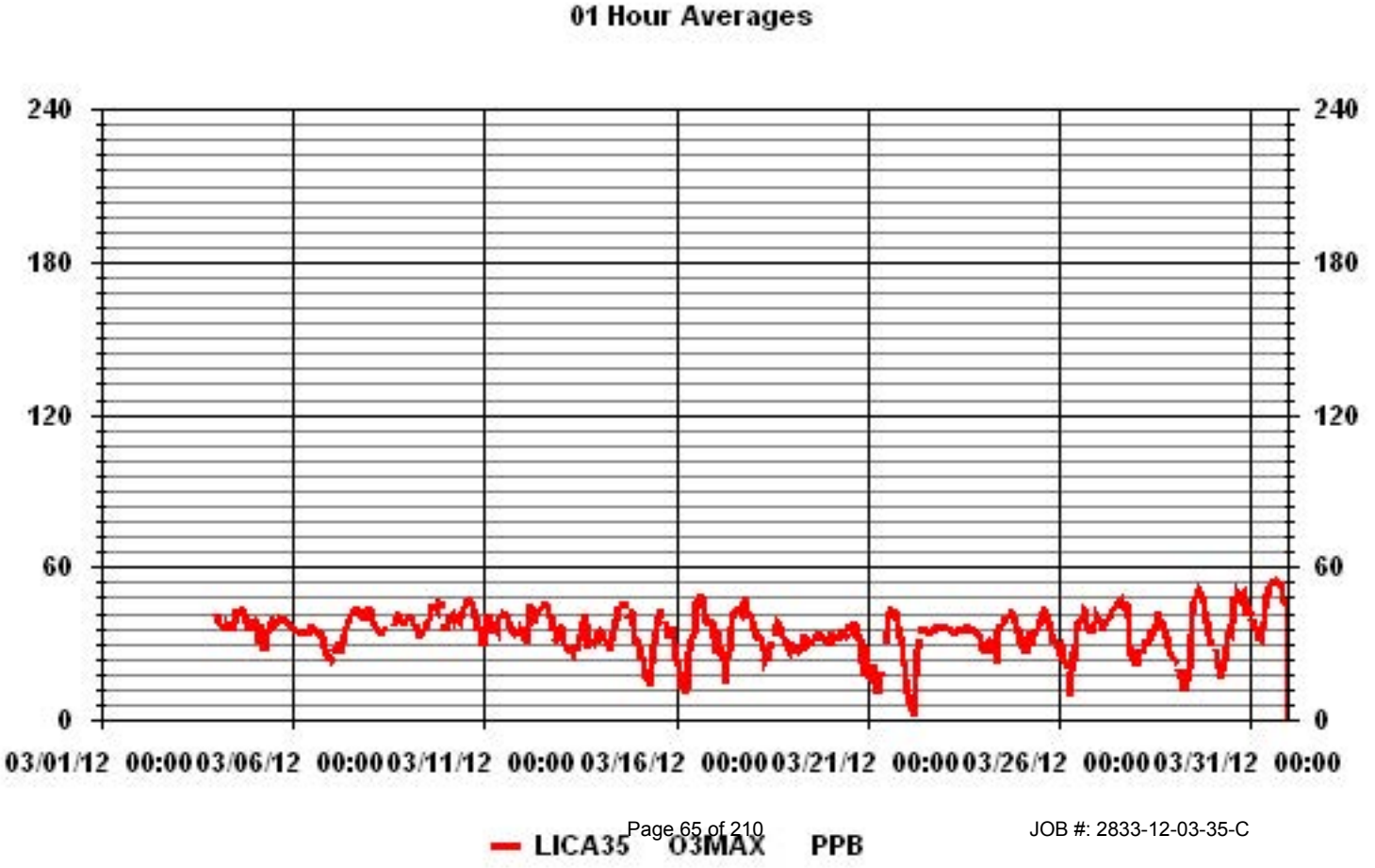
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY | 24-HOUR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | 41 | 39 | 38 | 37 | **IZS** | 36 | 38 | 37 | 37 | 36 | 36 | 38 | 42 | 42 | 42 | 42 | 43 | 43 | 42 | 39 | 36 | 36 | 38 | 38 | 43 | 39.0 | 24 |
| 5 | 39 | 38 | 31 | **IZS** | 37 | 35 | 27 | 33 | 34 | 35 | 38 | 39 | 39 | 38 | 39 | 40 | 39 | 39 | 39 | 39 | 38 | 37 | 37 | 36 | 40 | 36.8 | 24 |
| 6 | 36 | 35 | **IZS** | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 35 | 36 | 36 | 36 | 35 | 34 | 34 | 34 | 33 | 29 | 28 | 26 | 24 | 24 | 36 | 32.8 | 24 |
| 7 | 23 | **IZS** | 28 | 29 | 29 | 29 | 26 | 30 | 33 | 36 | 38 | 39 | 41 | 42 | 42 | 43 | 43 | 43 | 42 | 41 | 40 | 40 | 43 | 44 | 44 | 36.7 | 24 |
| 8 | **IZS** | 43 | 39 | 38 | 37 | 35 | 35 | 33 | 35 | 36 | **C** | **C** | **C** | **C** | **C** | 38 | 40 | 41 | 41 | 39 | 38 | 38 | 38 | **IZS** | 43 | 37.9 | 24 |
| 9 | 40 | 40 | 40 | 38 | 36 | **N** | 33 | 35 | 34 | 34 | 35 | 36 | 38 | 39 | 44 | 44 | 44 | 44 | 43 | 47 | 45 | 45 | **IZS** | 36 | 47 | 39.5 | 23 |
| 10 | 36 | 40 | 40 | 40 | 41 | 39 | 40 | 40 | 39 | 41 | 41 | 44 | 46 | 46 | 47 | 46 | 46 | 44 | 41 | 35 | 38 | **IZS** | 35 | 29 | 47 | 40.6 | 24 |
| 11 | 30 | 34 | 40 | 40 | 34 | 37 | 37 | 36 | 35 | 40 | 41 | 42 | 41 | 41 | 41 | 39 | 37 | 35 | 34 | 35 | **IZS** | 34 | 36 | 35 | 42 | 37.1 | 24 |
| 12 | 35 | 32 | 30 | 37 | 44 | 44 | 39 | 39 | 41 | 42 | 43 | 44 | 45 | 45 | 45 | 45 | 42 | 41 | 36 | **IZS** | 32 | 33 | 35 | 36 | 45 | 39.3 | 24 |
| 13 | 36 | 32 | 30 | 29 | 28 | 27 | 27 | 26 | 28 | 28 | 28 | 32 | 32 | 38 | 39 | 41 | 38 | 29 | **IZS** | 31 | 30 | 31 | 31 | 34 | 41 | 31.5 | 24 |
| 14 | 35 | 34 | 34 | 32 | 31 | 30 | 27 | 31 | 34 | 36 | 39 | 43 | **C** | **C** | 45 | 45 | 45 | **IZS** | 41 | 42 | 42 | 38 | 30 | 31 | 45 | 36.4 | 24 |
| 15 | 30 | 29 | 25 | 24 | 20 | 17 | 16 | 13 | 20 | 22 | 30 | 34 | 37 | 40 | 42 | 42 | **IZS** | 38 | 35 | 32 | 35 | 35 | 35 | 31 | 42 | 29.7 | 24 |
| 16 | 24 | 22 | 19 | 12 | 19 | 12 | 10 | 12 | 27 | 31 | 32 | 34 | 46 | 47 | 49 | **IZS** | 48 | 45 | 42 | 39 | 38 | 38 | 39 | 33 | 49 | 31.2 | 24 |
| 17 | 26 | 34 | 34 | 29 | 26 | 26 | 24 | 14 | 24 | 27 | 36 | 40 | 42 | 43 | **IZS** | 43 | 43 | 42 | 46 | 48 | 43 | 41 | 41 | 41 | 48 | 35.3 | 24 |
| 18 | 39 | 36 | 33 | 32 | 32 | 32 | 28 | 23 | 24 | 24 | 28 | 29 | 29 | **IZS** | 37 | 33 | 38 | 37 | 35 | 33 | 32 | 30 | 28 | 27 | 39 | 31.3 | 24 |
| 19 | 29 | 29 | 28 | 28 | 27 | 28 | 28 | 28 | 32 | 32 | 30 | 31 | **IZS** | 31 | 32 | 32 | 32 | 33 | 33 | 32 | 32 | 31 | 31 | 30 | 33 | 30.4 | 24 |
| 20 | 30 | 33 | 33 | 32 | 32 | 32 | 32 | 34 | 34 | 34 | 33 | **IZS** | 36 | 36 | 35 | 37 | 37 | 35 | 34 | 32 | 23 | 17 | 28 | 28 | 37 | 32.0 | 24 |
| 21 | 20 | 17 | 16 | 19 | 22 | 20 | 10 | 14 | 18 | 18 | **IZS** | 31 | 35 | 42 | 44 | 42 | 41 | 42 | 41 | 37 | 33 | 30 | 21 | 23 | 44 | 27.7 | 24 |
| 22 | 17 | 11 | 7 | 4 | 2 | 2 | 17 | 28 | 31 | **IZS** | 35 | 35 | 35 | 35 | 34 | 34 | 35 | 35 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 26.7 | 24 |
| 23 | 36 | 36 | 36 | 35 | 35 | 35 | 34 | 34 | **IZS** | 35 | 35 | 35 | 35 | 36 | 36 | 36 | 35 | 35 | 35 | 35 | 34 | 34 | 33 | 27 | 36 | 34.7 | 24 |
| 24 | 29 | 26 | 28 | 30 | 31 | 30 | 27 | **IZS** | 23 | 35 | 36 | 36 | 37 | 39 | 39 | 40 | 41 | 42 | 42 | 41 | 39 | 35 | 35 | 31 | 42 | 34.4 | 24 |
| 25 | 28 | 30 | 31 | 26 | 29 | 34 | **IZS** | 30 | 34 | 34 | 35 | 37 | 39 | 42 | 43 | 43 | 42 | 39 | 36 | 34 | 31 | 31 | 30 | 28 | 43 | 34.2 | 24 |
| 26 | 29 | 26 | 27 | 23 | 21 | **IZS** | 10 | 19 | 27 | 26 | 30 | 35 | 38 | 39 | 40 | 43 | 42 | 38 | 36 | 34 | 36 | 34 | 38 | 42 | 43 | 31.9 | 24 |
| 27 | 41 | 40 | 36 | 36 | **IZS** | 38 | 39 | 40 | 41 | 43 | 44 | 45 | 45 | 46 | 47 | 45 | 44 | 45 | 45 | 41 | 29 | 26 | 24 | 22 | 47 | 39.2 | 24 |
| 28 | 22 | 26 | 26 | **IZS** | 27 | 30 | 30 | 30 | 31 | 34 | 34 | 35 | 37 | 40 | 42 | 40 | 39 | 37 | 36 | 33 | 29 | 27 | 26 | 25 | 42 | 32.0 | 24 |
| 29 | 24 | 23 | **IZS** | 19 | 17 | 13 | 11 | 13 | 15 | 20 | 34 | 42 | 46 | 48 | 51 | 52 | 51 | 49 | 47 | 43 | 39 | 34 | 30 | 30 | 52 | 32.7 | 24 |
| 30 | 30 | **IZS** | 27 | 23 | 21 | 16 | 19 | 23 | 29 | 33 | 35 | 34 | 38 | 47 | 47 | 51 | 50 | 48 | 49 | 50 | 48 | 41 | 43 | 42 | 51 | 36.7 | 24 |
| 31 | **IZS** | 39 | 37 | 36 | 31 | 33 | 32 | 36 | 38 | 44 | 49 | 52 | 53 | 54 | 54 | **55** | 54 | 54 | 53 | 53 | 47 | 46 | 46 | **IZS** | **55** | 45.3 | 24 |
| HOURLY MAX | 41 | 43 | 40 | 40 | 44 | 44 | 40 | 40 | 41 | 44 | 49 | 52 | 53 | 54 | 54 | 55 | 54 | 54 | 53 | 53 | 48 | 46 | 46 | 44 | | | |
| HOURLY AVG | 31.0 | 31.7 | 30.5 | 29.3 | 28.6 | 28.6 | 27.0 | 28.3 | 30.8 | 33.0 | 35.8 | 37.6 | 39.5 | 41.3 | 42.0 | 41.7 | 41.6 | 40.3 | 39.7 | 38.1 | 36.0 | 34.2 | 33.7 | 32.3 | | | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 634 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 55 | PPB | @ HOUR(S) | 15 | ON DAY(S) | 31 |
| IZS CALIBRATION TIME: | 30 | HRS | OPERATIONAL TIME: | | 671 | HRS |
| MONTHLY CALIBRATION TIME: | 7 | HRS | | | | |
| STANDARD DEVIATION: | 8.26 | | | | | |






JOB #: 2833-12-03-35-C

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

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 4.10 | 2.99 | 4.10 | 5.20 | 4.73 | 13.40 | 16.08 | 2.99 | 2.36 | 1.10 | 2.36 | 4.41 | 12.46 | 11.98 | 5.67 | 4.41 | 98.42 |
| < | 110 | .00 | .00 | .15 | .00 | .00 | .00 | .00 | .00 | .00 | .15 | .31 | .63 | .00 | .15 | .00 | .15 | 1.57 |
| < | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 210 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.10 | 2.99 | 4.25 | 5.20 | 4.73 | 13.40 | 16.08 | 2.99 | 2.36 | 1.26 | 2.68 | 5.04 | 12.46 | 12.14 | 5.67 | 4.57 | |

Calm : .00 %

Total # Operational Hours : 634

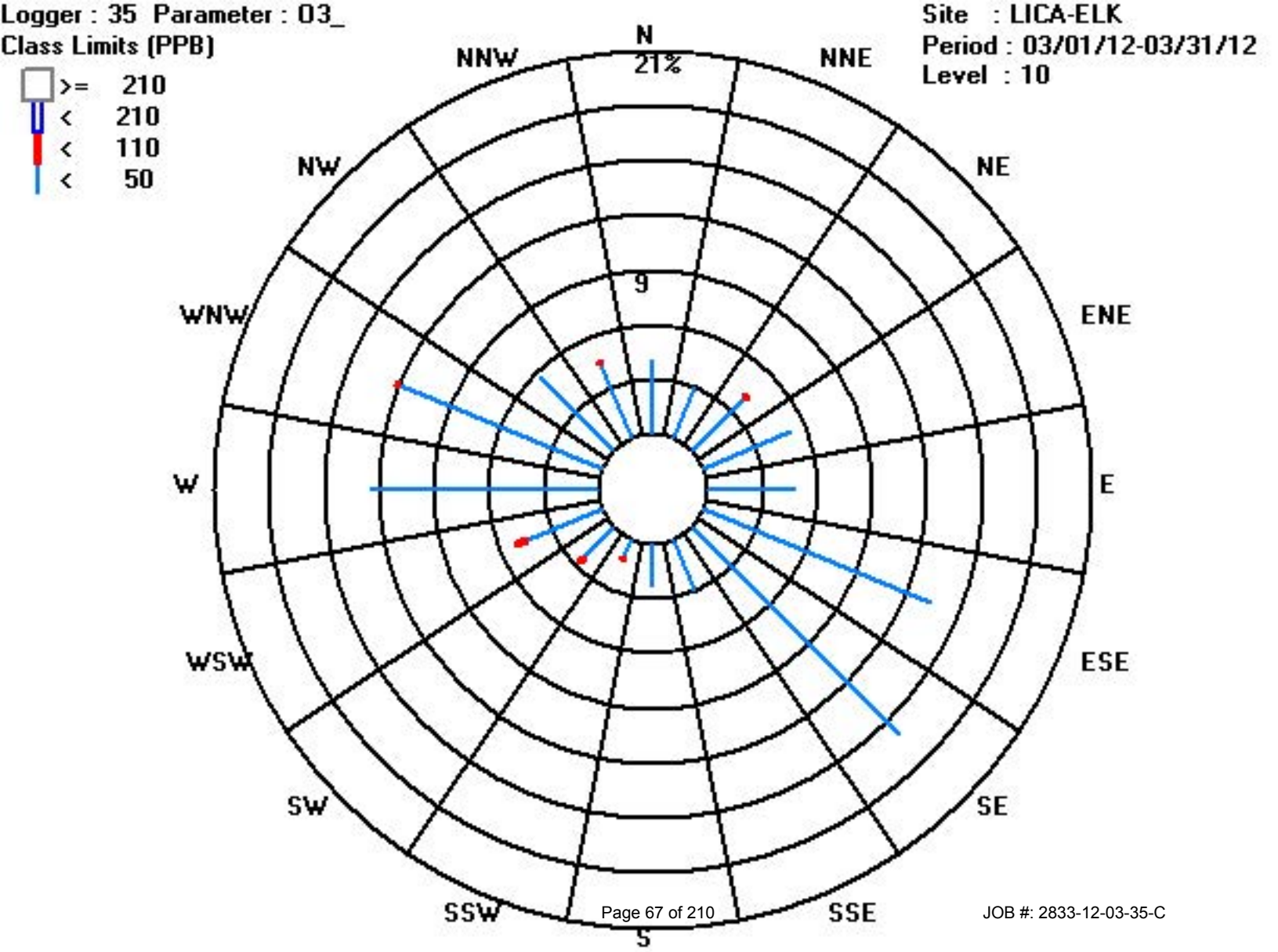
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 50 | 26 | 19 | 26 | 33 | 30 | 85 | 102 | 19 | 15 | 7 | 15 | 28 | 79 | 76 | 36 | 28 | 624 |
| < | 110 | | | 1 | | | | | | | 1 | 2 | 4 | | 1 | | 1 | 10 |
| < | 210 | | | | | | | | | | | | | | | | | |
| >= | 210 | | | | | | | | | | | | | | | | | |
| | Totals | 26 | 19 | 27 | 33 | 30 | 85 | 102 | 19 | 15 | 8 | 17 | 32 | 79 | 77 | 36 | 29 | |

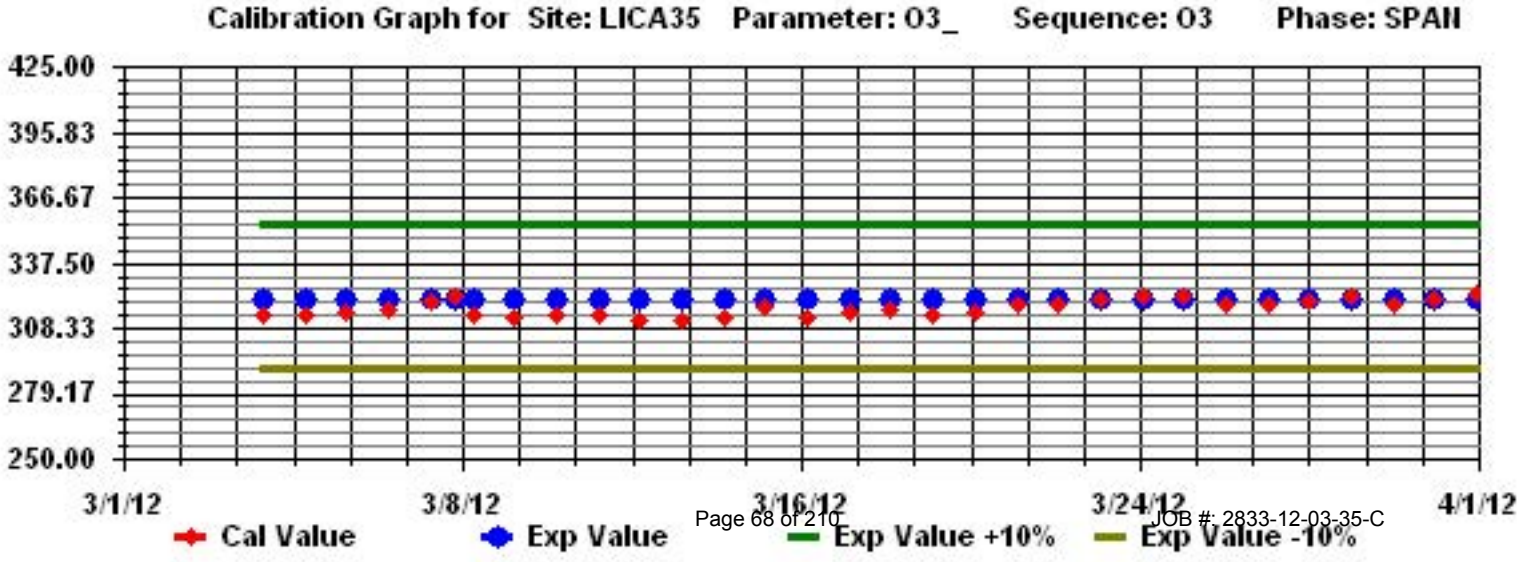
Calm : .00 %

Total # Operational Hours : 634






JOB #: 2833-12-03-35-C


Calibration Graph for Site: LICA35 Parameter: O3_ Sequence: O3 Phase: SPAN
425.00
395.83
366.67
337.50
308.33
279.17
250.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Total Hydrocarbons

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

MARCH 2012

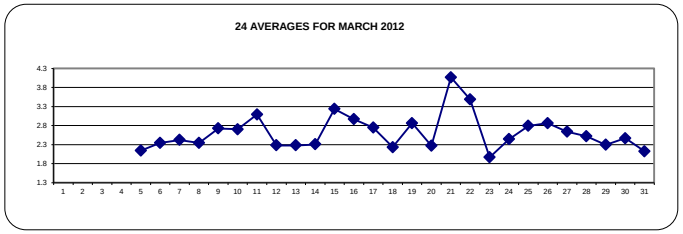
**TOTAL HYDROCARBONS (THC)** hourly averages in ppm

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 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 5 | | | | | | | | | | | | | 2.4 | 2.3 | 2.2 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2 | 2 | 2.1 | 2.1 | 2.4 | 2.1 | 13 |
| 6 | 2.1 | 2.2 | **IZS** | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.1 | 2 | 2.1 | 2.2 | 2.3 | 2.2 | 2.5 | 3.6 | 2.2 | 2.5 | 3 | 3 | 2.4 | 3.6 | 2.3 | 24 |
| 7 | 2.6 | **IZS** | 2.5 | 2.2 | 2.4 | 2.5 | 2.4 | 2.3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 | 2.1 | **C** | **C** | **C** | **C** | 2.4 | 2.5 | 2.6 | 2.5 | 2.5 | 2.7 | 2.7 | 2.4 | 24 |
| 8 | **IZS** | 2.1 | 2 | 2 | 2.2 | 2.5 | 2.2 | 3.5 | 2.5 | 2.2 | **M** | **M** | **C** | 2.6 | 2.5 | 2.1 | 2 | 2 | 2.1 | 2.5 | 2.4 | 2.5 | 2.6 | **IZS** | 3.5 | 2.3 | 22 |
| 9 | 3.1 | 2.6 | 2.7 | 2.6 | 2.8 | **N** | 2.9 | 2.6 | 2.9 | 2.8 | 3 | 3.1 | 3 | 3.1 | 2.9 | 2.6 | 2.4 | 2.5 | 2.4 | 2.3 | 2.1 | 2 | **IZS** | 3.5 | 3.5 | 2.7 | 23 |
| 10 | 2.5 | 2.2 | 2.2 | 2.2 | 2.4 | 2.5 | 2.4 | 2.2 | 3.2 | 2.3 | 2.4 | 2.3 | 2.3 | 2.1 | 2.1 | 2.4 | 2.3 | 2.5 | 3.8 | 4.3 | 3.6 | **IZS** | 3.6 | 4.3 | 4.3 | 2.7 | 24 |
| 11 | 4.1 | 3.6 | 3.5 | 3.5 | 3.7 | 4.6 | 3.5 | 3.6 | 4.1 | 3.2 | 2.6 | 2.3 | 2.5 | 2.3 | 2.6 | 2.6 | 2.9 | 2.8 | 2.8 | 2.6 | **IZS** | 2.7 | 2.7 | 2.2 | 4.6 | 3.1 | 24 |
| 12 | 2.3 | 2.5 | 2.8 | 2.4 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 2.1 | 2 | 2 | 2 | 1.9 | 2.4 | 2.3 | 3 | **IZS** | 2.7 | 2.3 | 2.3 | 2.2 | 3.0 | 2.3 | 24 |
| 13 | 2.3 | 2.6 | 2.7 | 2.8 | 2.5 | 3.1 | 2.7 | 2.6 | 2.3 | 2.3 | 2.2 | 2.1 | 2.1 | 2 | 1.9 | 1.7 | 1.8 | 1.9 | **IZS** | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 | 3.1 | 2.3 | 24 |
| 14 | 2.2 | 2.1 | 2.1 | 2.1 | 2.2 | 2 | 2.3 | 2.2 | 2.3 | 2.3 | 2.2 | **C** | **C** | 1.9 | 1.9 | 1.9 | 1.8 | **IZS** | 2.2 | 2.3 | 2.3 | 2.9 | 3.8 | 3.4 | 3.8 | 2.3 | 22 |
| 15 | 3 | 3.2 | 3.9 | 4.2 | 4.4 | 5 | 4.8 | 4.8 | 4.6 | 4.6 | 3.7 | 2.8 | 2.3 | 2.1 | 2.1 | 2.2 | **IZS** | 2.5 | 2.3 | 2.4 | 2.3 | 2.2 | 2.3 | 2.7 | 5.0 | 3.2 | 24 |
| 16 | 3.4 | 4.2 | 4.1 | 4.3 | 4.6 | 4.9 | 4.5 | 4.2 | 3.6 | 2.4 | 2.1 | 2 | 1.9 | 1.8 | 1.8 | **IZS** | 1.7 | 1.7 | 2 | 2.6 | 2.4 | 2.2 | 2.7 | 3.1 | 4.9 | 3.0 | 24 |
| 17 | 3.5 | 2.8 | 2.6 | 2.5 | 2.6 | 3.3 | 4.6 | 5.2 | 4.6 | 4 | 2.8 | 2.3 | 2.1 | 2.1 | **IZS** | 2 | 2 | 2 | 2 | 1.9 | 2 | 2.1 | 2 | 2.1 | 5.2 | 2.7 | 24 |
| 18 | 2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.2 | 2.6 | 2.7 | 2.9 | 2.9 | 2.7 | 2.3 | 2.2 | **IZS** | 1.8 | 2 | 1.9 | 2 | 2 | 1.9 | 2 | 2.1 | 2.1 | 2.1 | 2.9 | 2.2 | 24 |
| 19 | 2 | 2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | **IZS** | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | **23** | 1.7 | **23.0** | 2.9 | 24 |
| 20 | 1.7 | 1.8 | 1.8 | 1.7 | 1.7 | 1.9 | 1.9 | 1.7 | 1.8 | 1.7 | 1.8 | **IZS** | 2 | 1.9 | 1.9 | 1.9 | 2 | 2.2 | 2.6 | 2.5 | 4.7 | 4.2 | 3.3 | 3.5 | 4.7 | 2.3 | 24 |
| 21 | 5.4 | 5.5 | 5.7 | 4.8 | 4.7 | 4.3 | 5.5 | 5.1 | 4.9 | 6.1 | **IZS** | 3.4 | 3.1 | 2.4 | 1.8 | 2 | 2.1 | 2.9 | 4.6 | 2.8 | 3.4 | 3.6 | 3.8 | 5.5 | 6.1 | **4.1** | 24 |
| 22 | 6.2 | 6.8 | 6 | 8.1 | 6.9 | 7.4 | 6.3 | 3.4 | 2.4 | **IZS** | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 8.1 | 3.5 | 24 |
| 23 | 1.9 | 1.9 | 2 | 2 | 1.9 | 2 | 2 | 2 | **IZS** | 1.9 | 2 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 2 | 2.1 | 2.9 | 2.9 | 2.0 | 24 |
| 24 | 2.7 | 2.7 | 2.2 | 2.3 | 2.1 | 2.1 | 2.5 | **IZS** | 2.8 | 2.3 | 2 | 2 | 2 | 2 | 1.9 | 1.8 | 1.9 | 2.2 | 2.6 | 2.8 | 3 | 3.8 | 3.1 | 3.3 | 3.8 | 2.4 | 24 |
| 25 | 3.4 | 3.4 | 3.7 | 4.1 | 3.9 | 3.3 | **IZS** | 3.3 | 2.9 | 2.9 | 3.1 | 2.9 | 2.4 | 2.2 | 2.2 | 2 | 2 | 2.1 | 2.1 | 2.3 | 2.5 | 2.3 | 2.5 | 2.7 | 4.1 | 2.8 | 24 |
| 26 | 2.5 | 3 | 2.9 | 4.4 | 3.8 | **IZS** | 3.9 | 4.8 | 3.8 | 3 | 2.7 | 2.2 | 2.1 | 2 | 2.1 | 2 | 1.9 | 1.9 | 2.4 | 4 | 2.8 | 3.1 | 2.4 | 2.1 | 4.8 | 2.9 | 24 |
| 27 | 2.2 | 2.7 | 2.8 | 2.3 | **IZS** | 2.6 | 2.5 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2 | 1.9 | 2 | 2.2 | 2.5 | 2.4 | 2.9 | 3.7 | 4.5 | 3.8 | 4.4 | 4.5 | 2.6 | 24 |
| 28 | 4.4 | 3.6 | 4 | **IZS** | 3.9 | 3.4 | 3.1 | 3.2 | 2.6 | 2.3 | 2.2 | 2.1 | 1.9 | 1.9 | 1.9 | 1.8 | 1.9 | 2 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 4.4 | 2.5 | 24 |
| 29 | 2.1 | 2.1 | **IZS** | 2.2 | 2.4 | 2.7 | 3 | 3.2 | 2.2 | 2 | 2 | 2 | 1.8 | 1.7 | 1.8 | 1.8 | 2.1 | 2.3 | 2 | 2.3 | 2.4 | 2.7 | 2.9 | 3 | 3.2 | 2.3 | 24 |
| 30 | 3.2 | **IZS** | 3.2 | 3.8 | 3.5 | 3.4 | 3.1 | 2.9 | 2.6 | 2.4 | 2.2 | 2.1 | 1.9 | 1.9 | 2 | 2 | 2 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2 | 1.9 | 3.8 | 2.5 | 24 |
| 31 | **IZS** | 2 | 2 | 2.3 | 2.3 | 2.1 | 2.1 | 2.2 | 2.3 | 2.2 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.9 | 2.2 | 2.5 | 2.6 | 2.6 | **IZS** | 2.6 | 2.1 | 24 |
| HOURLY MAX | 6.2 | 6.8 | 6.0 | 8.1 | 6.9 | 7.4 | 6.3 | 5.2 | 4.9 | 6.1 | 3.7 | 3.4 | 3.1 | 3.1 | 2.9 | 2.6 | 2.9 | 2.9 | 4.6 | 4.3 | 4.7 | 4.5 | 23.0 | 5.5 | | | |
| HOURLY AVG | 3.0 | 2.9 | 3.0 | 3.0 | 3.0 | 3.1 | 3.1 | 3.1 | 2.9 | 2.7 | 2.4 | 2.3 | 2.2 | 2.1 | 2.0 | 2.0 | 2.0 | 2.2 | 2.4 | 2.4 | 2.5 | 2.6 | 3.4 | 2.8 | | | |

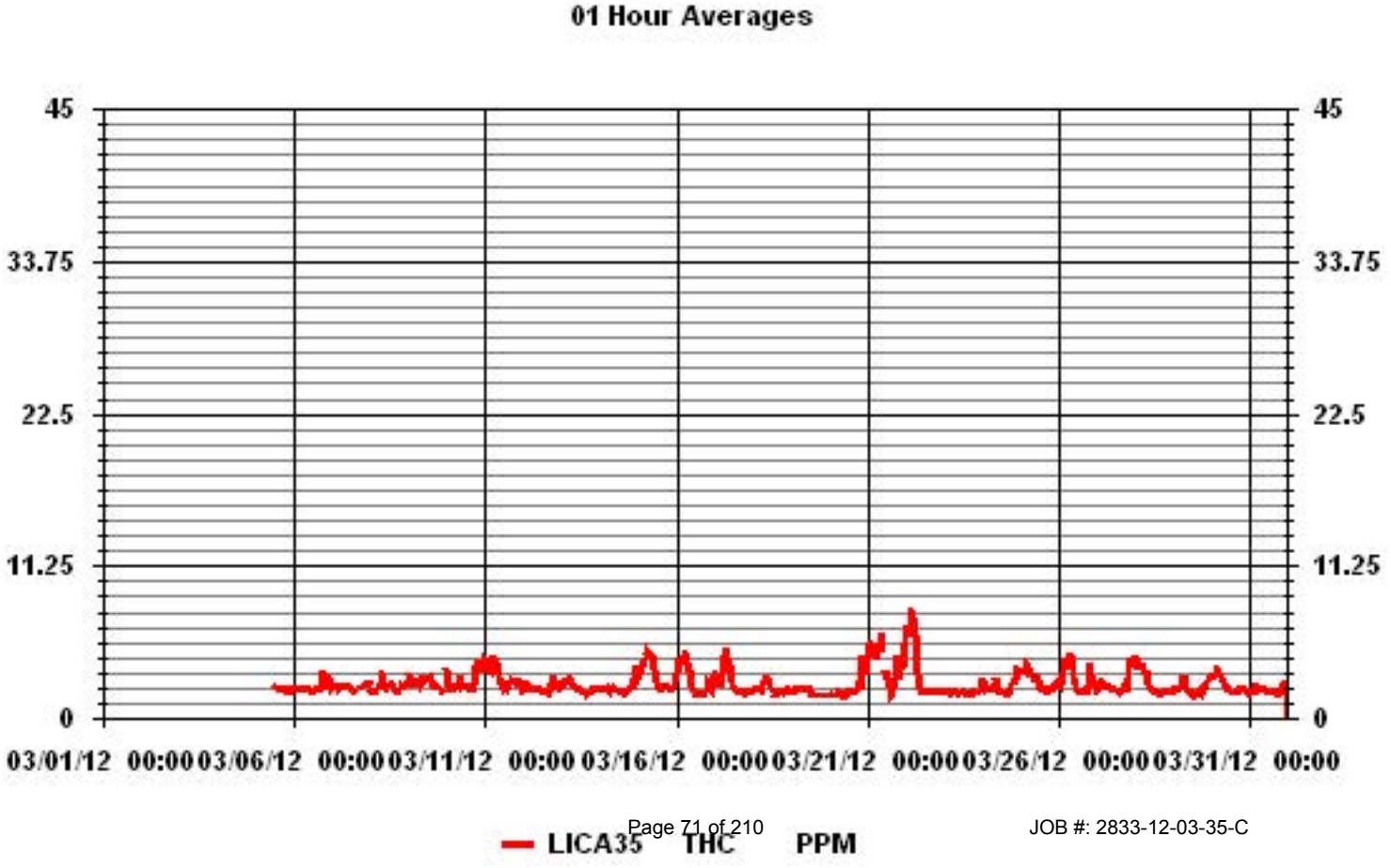
**STATUS FLAG CODES**

| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | - MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |
| BB | - BELOW BACKGROUND OF 1.5 PPM | | |




**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 598 | | | | | | |
| MAXIMUM 1-HR AVERAGE: | 23.0 | PPM | @ HOUR(S) | 22 | ON DAY(S) | 19 | |
| MAXIMUM 24-HR AVERAGE: | 4.1 | PPM | | | ON DAY(S) | 21 | |
| IZS CALIBRATION TIME: | 28 | HRS | OPERATIONAL TIME: | | 632 | HRS | |
| MONTHLY CALIBRATION TIME: | 7 | HRS | AMD OPERATION UPTIME: | | 99.5 | % | |
| STANDARD DEVIATION: | 1.23 | | MONTHLY AVERAGE: | | 2.63 | PPM | |






JOB #: 2833-12-03-35-C

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

MARCH 2012

**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 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 5 | | | | | | | | | | | | | 2.5 | 2.4 | 2.3 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.5 | 2.2 | 13 |
| 6 | 2.3 | 2.3 | **IZS** | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 2.2 | 2.1 | 2.3 | 2.5 | 2.9 | 2.4 | 11.6 | 5.4 | 2.7 | 2.7 | 3.5 | 4.3 | 2.7 | 11.6 | 3.1 | 24 |
| 7 | 2.9 | **IZS** | 3.4 | 2.4 | 2.6 | 3 | 2.8 | 2.4 | 2.9 | 2.7 | 2.6 | 3 | 3 | 2.3 | **C** | **C** | **C** | **C** | **C** | 2.7 | 2.9 | 2.8 | 2.9 | 3.5 | 3.5 | 2.8 | 24 |
| 8 | **IZS** | 3.3 | 2.2 | 2.1 | 2.9 | 4.3 | 2.9 | 8.5 | 2.8 | 2.6 | **M** | **M** | **C** | **C** | **C** | 2.2 | 2.2 | 2.1 | 2.4 | 3.5 | 3.5 | 2.9 | 3.1 | **IZS** | 8.5 | 3.1 | 22 |
| 9 | 5.5 | 3.4 | 3.4 | 2.8 | 3.3 | **N** | 3.2 | 3 | 4.5 | 3.1 | 3.4 | 3.5 | 3.3 | 3.2 | 3.8 | 2.8 | 2.4 | 2.6 | 2.6 | 2.6 | 2.9 | 2.2 | **IZS** | 6.3 | 6.3 | 3.4 | 23 |
| 10 | 2.8 | 2.5 | 2.3 | 2.5 | 2.7 | 3.7 | 3.1 | 2.3 | 5.9 | 3.6 | 3.3 | 2.7 | 3.4 | 2.4 | 2.3 | 4.5 | 2.7 | 3.3 | 7.2 | 5.3 | 6.7 | **IZS** | 5.3 | 5.1 | 7.2 | 3.7 | 24 |
| 11 | 4.9 | 4.5 | 4.3 | 4.4 | 4.7 | 11 | 4.6 | 4.2 | 5.6 | 4.4 | 3.2 | 2.4 | 2.9 | 2.5 | 2.8 | 2.9 | 3.8 | 3.6 | 3.2 | 3.7 | **IZS** | 4.2 | 7 | 2.7 | 11 | 4.2 | 24 |
| 12 | 2.7 | 2.8 | 3.7 | 2.5 | 2.4 | 2.4 | 2.3 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.1 | 2 | 2 | 2 | 7 | 2.7 | 4.4 | **IZS** | 3.8 | 2.9 | 2.6 | 4.4 | 7 | 2.9 | 24 |
| 13 | 2.9 | 3.2 | 4.6 | 3.8 | 3.5 | 5.4 | 5 | 4.3 | 2.6 | 2.3 | 2.3 | 2.2 | 2.3 | 2.6 | 4.5 | 1.9 | 2.1 | 2.4 | **IZS** | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 5.4 | 3.0 | 24 |
| 14 | 2.3 | 2.2 | 2.2 | 2.2 | 2.4 | 2.2 | 3.2 | 2.3 | 2.5 | 2.6 | 2.4 | **C** | **C** | 2 | 2.2 | 1.9 | 1.9 | **IZS** | 2.5 | 2.6 | 2.4 | 3.8 | 4.7 | 4.4 | 4.7 | 2.6 | 24 |
| 15 | 3.8 | 3.7 | 5.3 | 5.9 | 5.8 | 6.9 | 6.4 | 5.6 | 5.6 | 5.3 | 4.7 | 3.2 | 2.5 | 2.3 | 2.3 | 2.5 | **IZS** | 2.6 | 2.4 | 2.8 | 2.6 | 2.4 | 2.7 | 3.4 | 6.9 | 3.9 | 24 |
| 16 | 6.3 | 15.6 | 7 | 7.1 | 6.8 | 6.8 | 6.5 | 4.7 | 4.3 | 2.6 | 2.6 | 2.1 | 2.1 | 1.9 | 2 | **IZS** | 1.8 | 2 | 2.5 | 3.7 | 3.3 | 2.4 | 3.3 | 3.6 | 15.6 | 4.4 | 24 |
| 17 | 4.4 | 3.7 | 2.9 | 3 | 3.2 | 4.8 | 6.1 | 6.4 | 6.1 | 5.5 | 3.6 | 2.4 | 2.2 | 2.3 | **IZS** | 2.2 | 2.2 | 2.4 | 2.2 | 2.3 | 2.1 | 2.5 | 2.3 | 2.7 | 6.4 | 3.4 | 24 |
| 18 | 2.2 | 3.1 | 2.9 | 2.4 | 2.6 | 2.9 | 3.1 | 3.7 | 3.2 | 3.8 | 3 | 2.5 | 2.4 | **IZS** | 2.1 | 2.2 | 2 | 2.1 | 2.1 | 2 | 2.1 | 2.1 | 2.2 | 2.3 | 3.8 | 2.6 | 24 |
| 19 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | **IZS** | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.8 | 2.3 | 2.0 | 24 |
| 20 | 1.8 | 2.4 | 2.5 | 2.3 | 2.2 | 8.3 | 4.1 | 2.6 | 2 | 1.8 | 2 | **IZS** | 2.3 | 3.3 | 2.1 | 2.1 | 2.5 | 2.6 | 3.1 | 2.7 | 10.1 | 5 | 4.2 | 7.7 | 10.1 | 3.5 | 24 |
| 21 | 7.3 | 13.3 | 9.8 | 6.4 | 6.2 | 8.6 | 8.8 | 6 | 6 | 7.8 | **IZS** | 3.7 | 3.4 | 2.8 | 2 | 2.2 | 2.1 | 5 | 11.5 | 3.5 | 4.7 | 4.9 | 7.1 | 10 | 13.3 | 6.2 | 24 |
| 22 | 8.4 | 12.3 | 8.3 | **21.5** | 9.6 | 9.7 | 8.1 | 4.7 | 2.6 | **IZS** | 2.1 | 2.1 | 2.1 | 2 | 2 | 2 | 2 | 2.1 | 2 | 2 | 2 | 2 | 2 | 2 | **21.5** | 4.9 | 24 |
| 23 | 2 | 2 | 2.1 | 2.1 | 2 | 2.1 | 2.2 | 2.2 | **IZS** | 2 | 2.1 | 2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.2 | 2 | 2 | 2.2 | 2.6 | 4 | 4 | 2.1 | 24 |
| 24 | 3.9 | 3 | 2.5 | 2.6 | 2.3 | 2.3 | 3.6 | **IZS** | 3.5 | 3.5 | 2.2 | 2.4 | 2.1 | 2.1 | 2 | 1.9 | 2.3 | 4.5 | 5.8 | 4.9 | 4 | 6.7 | 3.5 | 4 | 6.7 | 3.3 | 24 |
| 25 | 4.1 | 3.8 | 4.4 | 5.5 | 5.2 | 4.6 | **IZS** | 4.2 | 3.6 | 3.2 | 3.3 | 3.1 | 3 | 2.3 | 2.4 | 2.2 | 2.3 | 2.3 | 2.3 | 2.8 | 3.7 | 3.2 | 3.3 | 3.9 | 5.5 | 3.4 | 24 |
| 26 | 3.3 | 4.7 | 4.5 | 6 | 4.7 | **IZS** | 4.5 | 9.6 | 9.8 | 3.4 | 4.4 | 2.4 | 2.2 | 2.1 | 2.2 | 2.1 | 1.9 | 2 | 6 | 6.1 | 5.6 | 6.2 | 3.4 | 2.3 | 9.8 | 4.3 | 24 |
| 27 | 2.4 | 7.9 | 4.9 | 2.8 | **IZS** | 2.8 | 2.7 | 2.5 | 2.4 | 2.3 | 2.2 | 2.2 | 2.3 | 2.3 | 2 | 2.4 | 2.7 | 3.1 | 2.5 | 4.2 | 4.7 | 8.8 | 5.7 | 8.2 | 8.8 | 3.7 | 24 |
| 28 | 6.1 | 4.2 | 5.2 | **IZS** | 5.7 | 3.8 | 3.5 | 4 | 3.2 | 2.6 | 2.3 | 2.3 | 2 | 2.1 | 2.1 | 1.9 | 2 | 2.1 | 2.2 | 2.3 | 2.1 | 2 | 2.1 | 2 | 6.1 | 2.9 | 24 |
| 29 | 2.2 | 2.3 | **IZS** | 2.5 | 2.7 | 3.1 | 3.6 | 4.2 | 2.5 | 2.1 | 2.1 | 2.3 | 1.9 | 2.1 | 2 | 2.3 | 2.7 | 3.2 | 2.3 | 2.6 | 3.1 | 4.3 | 4.1 | 4.4 | 4.4 | 2.8 | 24 |
| 30 | 3.6 | **IZS** | 3.8 | 7.6 | 5.6 | 3.8 | 3.6 | 3.3 | 3.2 | 2.6 | 2.5 | 3.1 | 1.9 | 2 | 2.1 | 2.1 | 2.1 | 2.5 | 2.1 | 2.1 | 2.9 | 2.3 | 2.3 | 2 | 7.6 | 3.0 | 24 |
| 31 | **IZS** | 2.2 | 2.3 | 2.7 | 3 | 2.3 | 2.3 | 2.4 | 2.3 | 2.3 | 2.3 | 2.1 | 2 | 2 | 2 | 2.1 | 2.5 | 1.9 | 2.5 | 2.5 | 2.9 | 2.9 | 2.9 | **IZS** | 3 | 2.4 | 24 |
| HOURLY MAX | 8 | 16 | 10 | 22 | 10 | 11 | 9 | 10 | 10 | 8 | 5 | 4 | 3 | 3 | 5 | 5 | 7 | 12 | 12 | 6 | 10 | 9 | 7 | 10 | | | |
| HOURLY AVG | 3.8 | 4.6 | 4.0 | 4.3 | 3.9 | 4.6 | 4.0 | 4.0 | 3.8 | 3.2 | 2.7 | 2.5 | 2.4 | 2.3 | 2.3 | 2.3 | 2.5 | 3.0 | 3.4 | 3.0 | 3.4 | 3.4 | 3.5 | 3.9 | | | |

**STATUS FLAG CODES**

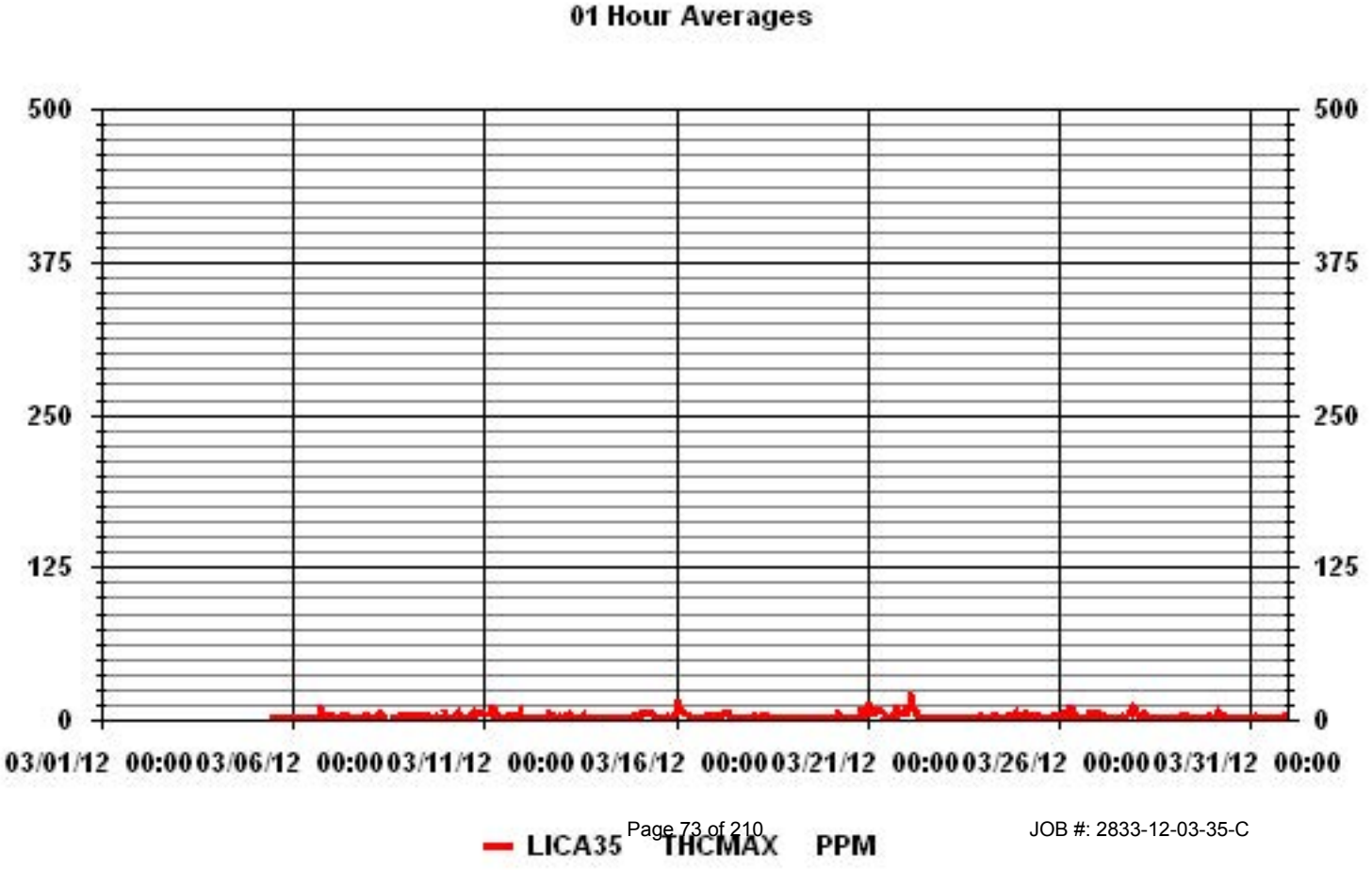
| | | | |
|---|---|---|---|
| S | - OUT OF SERVICE | IZS | - IZS - DAILY ZERO/SPAN CHECK |
| N | - INVALID DATA | M | -MAINTENANCE |
| D | - INSTRUMENT DRIFT | P | - POWER FAILURE |
| C | - CALIBRATION | NA | - NOT APPLICABLE |

**MONTHLY SUMMARY**

| | | | | | | |
|---|---|---|---|---|---|---|
| NUMBER OF NON-ZERO READINGS: | 595 | | | | | |
| MAXIMUM INSTANTANEOUS VALUE: | 21.5 | PPB | @ HOUR(S) | 3 | ON DAY(S) | 22 |
| IZS CALIBRATION TIME: | 28 | HRS | OPERATIONAL TIME: | | 634 | HRS |
| MONTHLY CALIBRATION TIME: | 10 | HRS | | | | |
| STANDARD DEVIATION: | 1.99 | | | | | |



JOB #: 2833-12-03-35-C






JOB #: 2833-12-03-35-C

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

**March 2012**

**Distribution By % Of Samples**

Logger Id : 35
Site Name : LICA-ELK
Parameter : THC
Units : PPM

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 3.51 | 2.84 | 4.34 | 4.01 | 2.84 | 8.02 | 12.54 | 2.84 | 1.67 | 1.17 | 2.34 | 5.01 | 9.53 | 9.19 | 4.68 | 4.18 | 78.76 |
| < | 10.0 | .66 | .16 | .16 | 1.17 | 2.17 | 6.18 | 4.68 | .50 | .83 | .16 | .50 | .33 | .83 | 1.00 | 1.17 | .66 | 21.23 |
| < | 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| >= | 50.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.18 | 3.01 | 4.51 | 5.18 | 5.01 | 14.21 | 17.22 | 3.34 | 2.50 | 1.33 | 2.84 | 5.35 | 10.36 | 10.20 | 5.85 | 4.84 | |

Calm : .00 %

Total # Operational Hours : 598

**Distribution By Samples**

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 3.0 | 21 | 17 | 26 | 24 | 17 | 48 | 75 | 17 | 10 | 7 | 14 | 30 | 57 | 55 | 28 | 25 | 471 |
| < | 10.0 | 4 | 1 | 1 | 7 | 13 | 37 | 28 | 3 | 5 | 1 | 3 | 2 | 5 | 6 | 7 | 4 | 127 |
| < | 50.0 | | | | | | | | | | | | | | | | | |
| >= | 50.0 | | | | | | | | | | | | | | | | | |
| | Totals | 25 | 18 | 27 | 31 | 30 | 85 | 103 | 20 | 15 | 8 | 17 | 32 | 62 | 61 | 35 | 29 | |

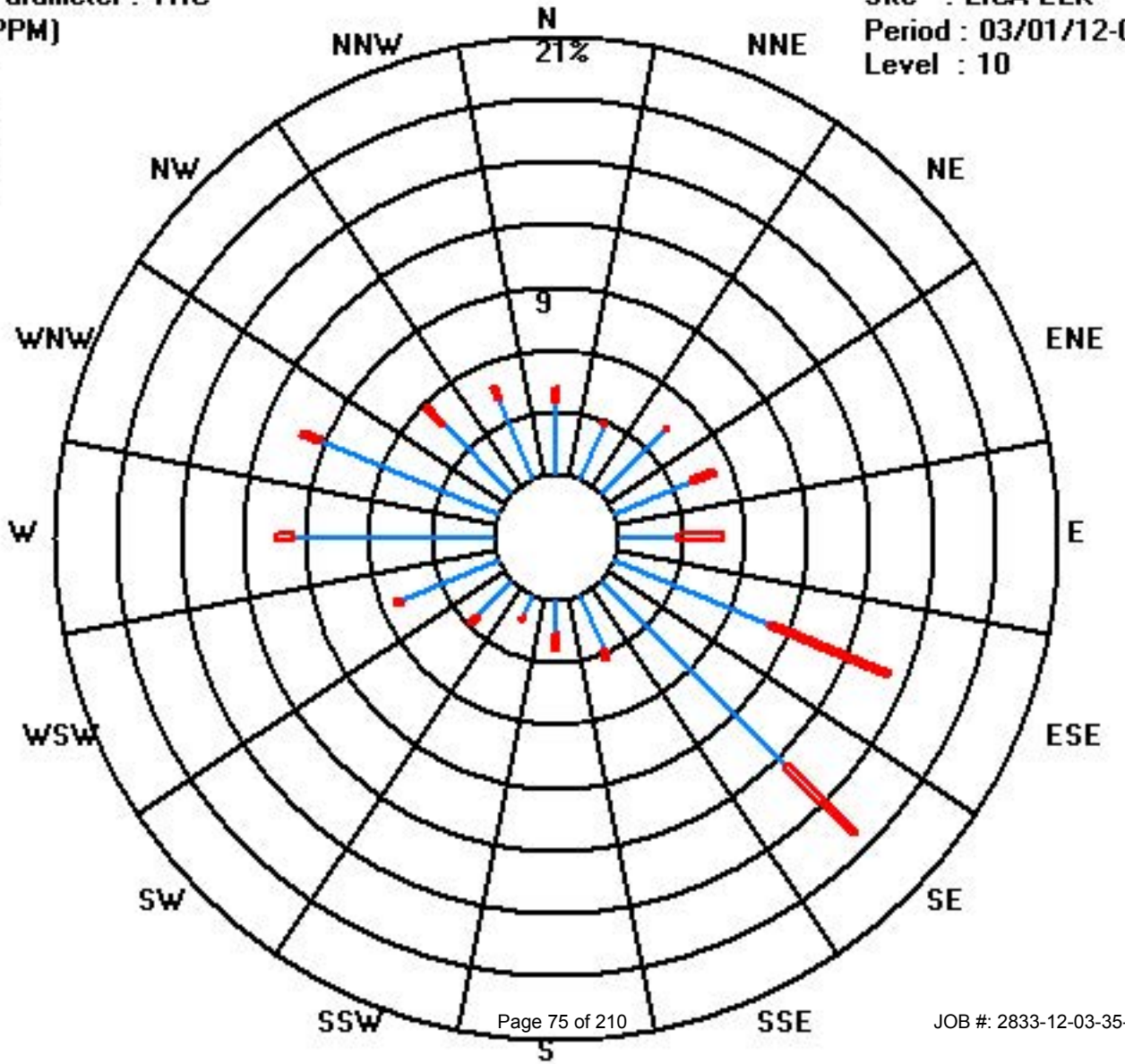
Calm : .00 %

Total # Operational Hours : 598

Logger : 35 Parameter : THC
Class Limits (PPM)

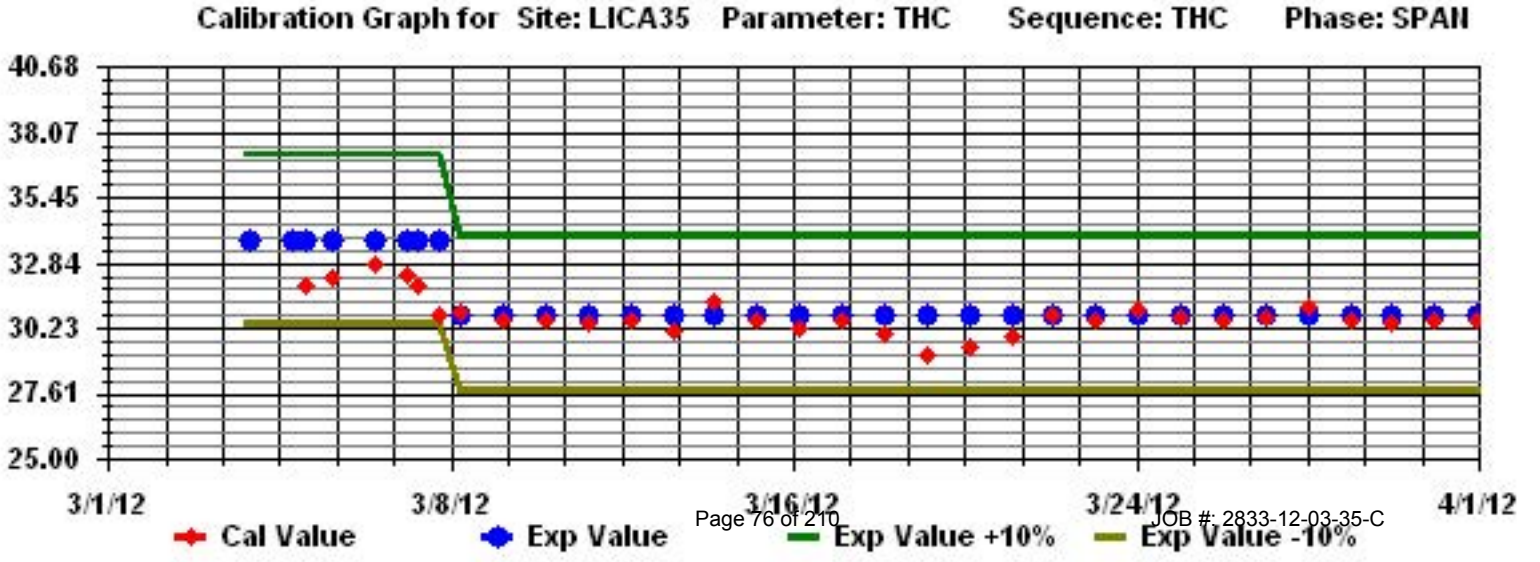
>= 50.0
< 50.0
< 10.0
< 3.0

Site : LICA-ELK
Period : 03/01/12-03/31/12
Level : 10






JOB #: 2833-12-03-35-C


Calibration Graph for Site: LICA35 Parameter: THC Sequence: THC Phase: SPAN
40.68
38.07
35.45
32.84
30.23
27.61
25.00
3/1/12
3/8/12
3/16/12
3/24/12
4/1/12
Cal Value
Exp Value
Exp Value +10%
Exp Value -10%

# Vector Wind Speed

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

MARCH 2012

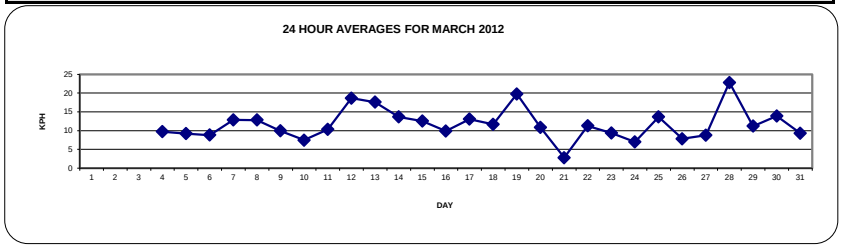
**VECTOR WIND SPEED (WS)** hourly averages (km/hr)

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 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | 14.1 | 13.9 | 12.9 | 10.1 | 12.3 | 9.2 | 8.6 | 5 | 5.8 | 4.9 | 8.6 | 9.2 | 9.1 | 16.8 | 15.8 | 13.5 | 13.6 | 10.7 | 6.8 | 1.8 | 5.7 | 6.7 | 9.3 | 9.6 | 16.8 | 9.8 | 24 |
| 5 | 10.3 | 6.5 | 9.3 | 7.3 | 9 | 10.7 | 2.3 | 4.7 | 2.5 | 0.6 | 9.9 | 9.3 | 14 | 12.6 | 12.4 | 15 | 14.3 | 11.1 | 9.1 | 7.8 | 8.7 | 8.6 | 9.7 | 15 | 15.0 | 9.2 | 24 |
| 6 | 12.3 | 10.6 | 11.2 | 10.3 | 15.6 | 13.4 | 12 | 11.1 | 9.6 | 11.5 | 8.5 | 4.3 | 1.5 | 4.1 | 9.4 | 10.3 | 7.5 | 4.9 | 8.3 | 10.2 | 8.6 | 7.1 | 3.8 | 5.6 | 15.6 | 8.8 | 24 |
| 7 | 3.5 | 5.4 | 6.4 | 11.9 | 12.2 | 6.1 | 4 | 8.3 | 8.5 | 8.5 | 14.8 | 20.2 | 20.3 | 18 | 18.8 | 15 | 13 | 13.4 | 14.4 | 15.8 | 19 | 17 | 13.7 | 20.1 | 20.3 | 12.8 | 24 |
| 8 | 13.9 | 11.4 | 9.5 | 9.6 | 9.8 | 6.5 | 9.3 | 10.8 | 12.7 | 13.2 | 13.9 | 17.1 | 19.5 | 20 | 18.4 | 14.9 | 13.7 | 12.2 | 11.7 | 9.7 | 11.4 | 13 | 13.5 | 12.2 | 20.0 | 12.8 | 24 |
| 9 | 14.8 | 12.8 | 13.6 | 13 | 9.8 | **N** | 12.4 | 14.4 | 13.5 | 11.2 | 8 | 5.2 | 3.8 | 1.7 | 5.2 | 7.2 | 11.1 | 8.5 | 10.9 | 13.1 | 9.9 | 12.1 | 8 | 8.2 | 14.8 | 9.9 | 23 |
| 10 | 9.7 | 8.5 | 11.4 | 10.4 | 12.5 | 10.9 | 9.8 | 12.7 | 5.3 | 5.5 | 2.7 | 13.1 | 10.7 | 11.1 | 9 | 6.1 | 1.1 | 1.3 | 4.5 | 3.4 | 2.4 | 5.8 | 5.4 | 5.9 | 13.1 | 7.5 | 24 |
| 11 | 5.8 | 3.4 | 5 | 5.4 | 3.5 | 2 | 4.9 | 7 | 4.6 | 8.6 | 10.6 | 14.8 | 15.8 | 15.2 | 16.3 | 15.1 | 11.8 | 12.3 | 13.1 | 14.4 | 12.2 | 11 | 19.9 | 14.7 | 19.9 | 10.3 | 24 |
| 12 | 15.3 | 3.5 | 17.4 | 32.2 | 35.4 | 26 | 25.6 | 29.8 | 28.6 | 26.4 | 24.9 | 23 | 17.4 | 15.9 | 11.7 | 17.1 | 10.8 | 9.4 | 11 | 12.3 | 15 | 17.4 | 10 | 11.4 | 35.4 | 18.6 | 24 |
| 13 | 9.4 | 7 | 7.9 | 9.4 | 12.4 | 9.2 | 12.8 | 15.6 | 14.7 | 14.3 | 14.3 | 14.1 | 13.2 | 10.2 | 14.1 | 18.3 | 14.6 | 14.1 | 25 | 30.7 | 33.2 | 36.2 | 35.2 | **36.5** | **36.5** | 17.6 | 24 |
| 14 | 31.5 | 27.4 | 22.8 | 14.5 | 9.2 | 7.1 | 2.8 | 3.7 | 6.8 | 15.9 | 16.3 | 18.5 | 19 | 19.4 | 21.9 | 19.2 | 14.3 | 10.7 | 8.1 | 10.2 | 10.3 | 3.6 | 6.5 | 7.7 | 31.5 | 13.6 | 24 |
| 15 | 8.8 | 9.8 | 8.1 | 5.5 | 6.4 | 5 | 4.2 | 0.5 | 1.8 | 4.7 | 7.9 | 8.9 | 12.5 | 16.2 | 20.6 | 22.6 | 20.2 | 19.7 | 23.3 | 25.2 | 26.4 | 22.4 | 13.3 | 7.6 | 26.4 | 12.6 | 24 |
| 16 | 5.8 | 0.9 | 2.1 | 1.8 | 1.2 | 1.3 | 1.6 | 1.9 | 1.6 | 10.5 | 12.5 | 8.3 | 15.7 | 20.8 | 24.2 | 23.4 | 22.9 | 22.6 | 13.4 | 12.3 | 5.4 | 10.3 | 10.3 | 7.1 | 24.2 | 9.9 | 24 |
| 17 | 6.6 | 9.3 | 8.7 | 6.3 | 4.1 | 3.5 | 3.8 | 5.5 | 4.5 | 7 | 8.3 | 15.1 | 17.4 | 19.3 | 19.3 | 18.9 | 19.2 | 19.5 | 21.3 | 29.8 | 23.5 | 16.5 | 14.6 | 11.8 | 29.8 | 13.1 | 24 |
| 18 | 11.3 | 12.2 | 8.1 | 6.6 | 11.8 | 6 | 4.5 | 6.6 | 4.7 | 3.4 | 9.7 | 10.2 | 12.6 | 10.7 | 21 | 17.7 | 17.1 | 17.4 | 11.9 | 11.5 | 16 | 17.8 | 16 | 15.6 | 21.0 | 11.7 | 24 |
| 19 | 10.8 | 15.9 | 17.5 | 15.3 | 16.1 | 20.3 | 19 | 19.3 | 21.6 | 23.7 | 21.1 | 22 | 24 | 26.8 | 25.8 | 23.9 | 18.2 | 19.1 | 23 | 19.4 | 20 | 17 | 14.2 | 20.3 | 26.8 | 19.8 | 24 |
| 20 | 19.4 | 23.1 | 24.9 | 21 | 10.3 | 10.9 | 11.5 | 11.9 | 8.6 | 11.7 | 5.9 | 5.1 | 7 | 10.7 | 13.2 | 12.1 | 12.1 | 10.3 | 1 | 2.7 | 6.7 | 6.2 | 8.4 | 6 | 24.9 | 10.9 | 24 |
| 21 | 4.5 | 3.7 | 4.8 | 0.4 | 0.5 | 2.9 | 2.6 | 2.1 | 1.2 | 2.8 | 2.8 | 2.2 | 1.1 | 2 | 4 | 4 | 2.9 | 7.7 | 5.8 | 2.7 | 1.5 | 1 | 0.8 | 3.2 | 7.7 | 2.8 | 24 |
| 22 | 3.7 | 4.1 | 1.7 | 6.1 | 2.4 | 3.4 | 3.6 | 6.5 | 10.8 | 12.1 | 15.4 | 14.4 | 16.2 | 18.2 | 19.6 | 15.9 | 14.9 | 13.3 | 14.4 | 14.4 | 16.9 | 14.4 | 15.3 | 13.3 | 19.6 | 11.3 | 24 |
| 23 | 13.6 | 12.1 | 12.9 | 12.7 | 8.7 | 8.4 | 7.6 | 9.3 | 11.8 | 13.6 | 11.7 | 11 | 10.5 | 11.8 | 11.5 | 12.5 | 9 | 6.3 | 6.1 | 7.6 | 5.3 | 2.8 | 3.1 | 5.7 | 13.6 | 9.4 | 24 |
| 24 | 6.3 | 6.6 | 5.5 | 7 | 6.7 | 4.5 | 2.2 | 2.2 | 2.1 | 12.4 | 12.4 | 10.8 | 7.4 | 2 | 5.1 | 4.3 | 2.8 | 9.7 | 7 | 10.9 | 9.5 | 10.6 | 10 | 9.8 | 12.4 | 7.0 | 24 |
| 25 | 6.4 | 6.5 | 7.9 | 8.9 | 9.4 | 10.6 | 9.8 | 9.1 | 11.5 | 13 | 16.3 | 15.5 | 17.5 | 21.8 | 23.3 | 23.1 | 21.7 | 20.7 | 17.2 | 13.1 | 14.1 | 15.3 | 9.8 | 5.6 | 23.3 | 13.7 | 24 |
| 26 | 8.8 | 8 | 7.6 | 6.1 | 4.8 | 4.4 | 2 | 2.3 | 4.2 | 2.4 | 6.7 | 10.9 | 14 | 15.1 | 12.7 | 10 | 9.9 | 9.3 | 5.6 | 10 | 11.9 | 8.4 | 4.3 | 8.5 | 15.1 | 7.8 | 24 |
| 27 | 6.7 | 6.5 | 4.8 | 7.4 | 6.3 | 7.1 | 7.4 | 5.9 | 9 | 11.8 | 10.4 | 12.7 | 12.4 | 13.3 | 14.7 | 13.5 | 10.2 | 9.8 | 7.8 | 6 | 5.8 | 6.9 | 7.4 | 6.9 | 14.7 | 8.8 | 24 |
| 28 | 6.5 | 9.9 | 9.8 | 10.7 | 10.2 | 11.2 | 13.2 | 16.4 | 21.8 | 27.5 | 28.2 | 30.8 | 31.7 | 29.6 | 34.1 | 33.1 | 27.5 | 23.2 | 21.7 | 29.3 | 33.3 | 30.2 | 29.7 | 28.1 | 34.1 | **22.8** | 24 |
| 29 | 21.6 | 19 | 11.6 | 6.9 | 3.3 | 2.4 | 2.8 | 6.5 | 10 | 8.8 | 6.3 | 9 | 14.9 | 14.6 | 18 | 13.3 | 15.4 | 18.6 | 10.3 | 11.8 | 12.1 | 12.5 | 11.3 | 8.1 | 21.6 | 11.2 | 24 |
| 30 | 7 | 6.3 | 6.4 | 7.8 | 7.9 | 9.3 | 7.7 | 9.2 | 5.9 | 6.1 | 10.6 | 17.4 | 15.9 | 24 | 26 | 26.9 | 26.1 | 24 | 21.6 | 18.6 | 11.9 | 9.7 | 14.1 | 12.4 | 26.9 | 13.9 | 24 |
| 31 | 14.8 | 11.8 | 11.9 | 9.4 | 9.9 | 14.4 | 10.3 | 7.1 | 12.1 | 10.3 | 10 | 10.6 | 8.2 | 9.9 | 11.1 | 7.5 | 5.6 | 3 | 4.9 | 4.8 | 6.6 | 9.2 | 9.8 | 9 | 14.8 | 9.3 | 24 |
| HOURLY MAX | 31.5 | 27.4 | 24.9 | 32.2 | 35.4 | 26.0 | 25.6 | 29.8 | 28.6 | 27.5 | 28.2 | 30.8 | 31.7 | 29.6 | 34.1 | 33.1 | 27.5 | 24.0 | 25.0 | 30.7 | 33.3 | 36.2 | 35.2 | 36.5 | | | |
| HOURLY AVG | 10.8 | 9.9 | 10.1 | 9.8 | 9.3 | 8.4 | 7.8 | 8.8 | 9.1 | 10.8 | 11.7 | 13.0 | 13.7 | 14.7 | 16.3 | 15.5 | 13.6 | 13.0 | 12.1 | 12.8 | 13.0 | 12.5 | 11.7 | 11.6 | | | |

**STATUS FLAG CODES**

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



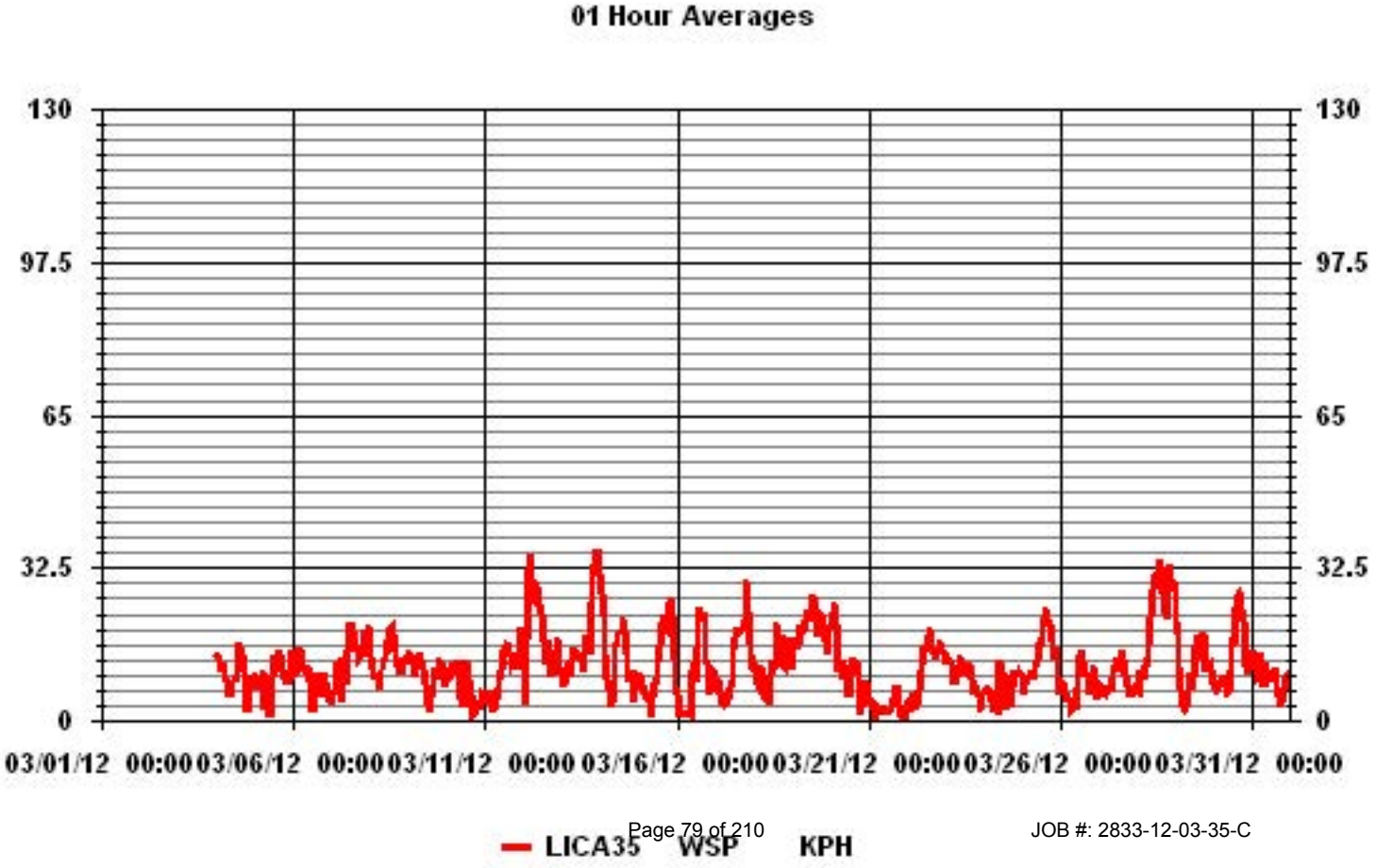

LAST CALIBRATION: September 24, 2009

**MONTHLY SUMMARY**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MAXIMUM 1-HR AVERAGE: | | | 36.5 | KPH | @ HOUR(S) | 23 | ON DAY(S) 13 |
| MAXIMUM 24-HR AVERAGE: | | | 22.8 | KPH | | | ON DAY(S) 18 |
| CALMS (≤ 0 KPH) | 0.00 | % | OPERATIONAL TIME: | | | 671 | HRS |
| MONTHLY CALIBRATION TIME: | 0 | HRS | AMD OPERATION UPTIME: | | | 99.9 | % |
| STANDARD DEVIATION: | 6.90 | | MONTHLY AVERAGE: | | | 11.67 | KPH |



JOB #: 2833-12-03-35-C






JOB #: 2833-12-03-35-C

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

MARCH 2012

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

MST

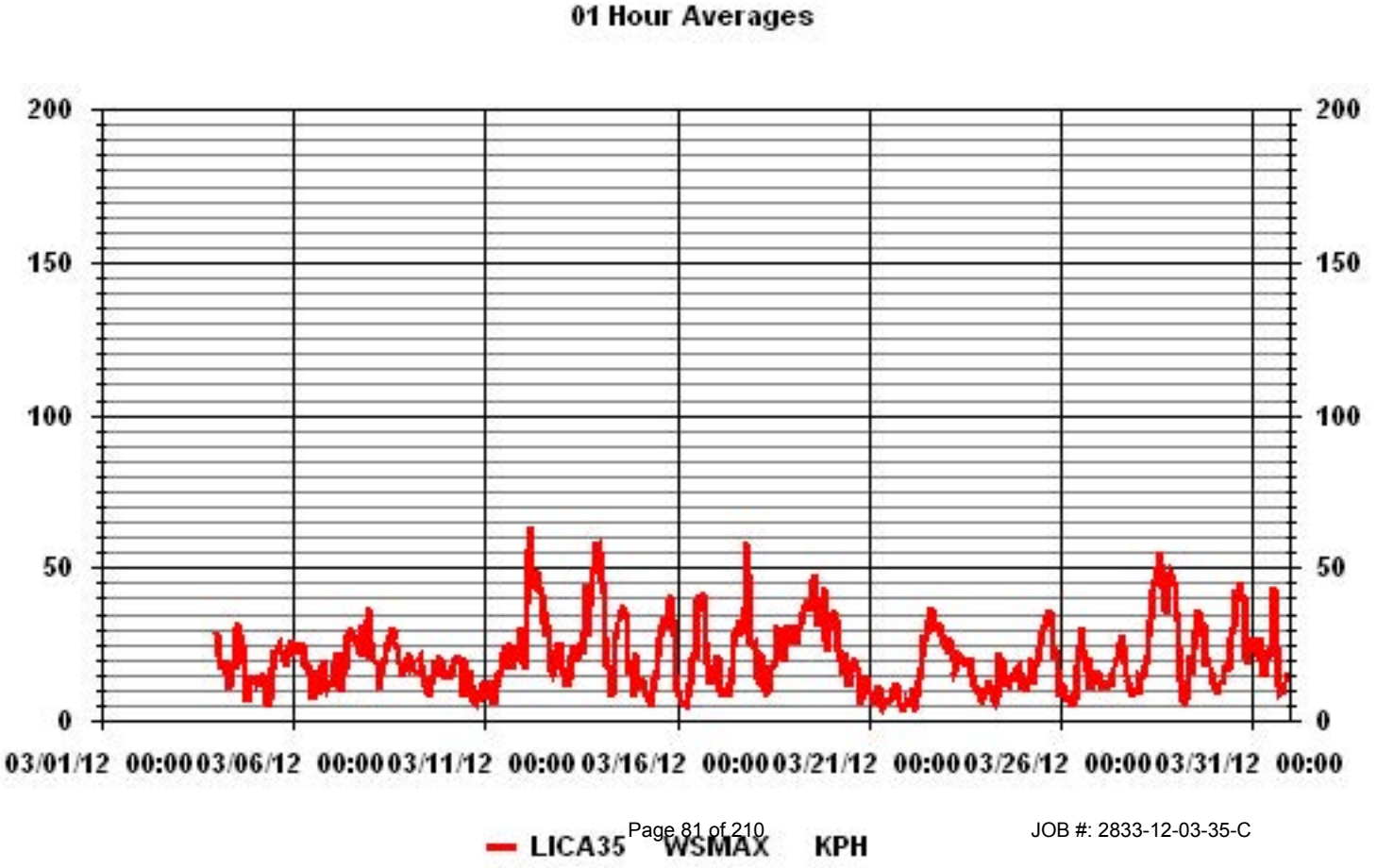
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | DAILY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 27.9 | 21.6 | 18.9 | 16.8 | 19.3 | 15.1 | 19.9 | 9.9 | 12.1 | 11.1 | 17.8 | 17.7 | 30.4 | 32.3 | 28.8 | 23.8 | 25.2 | 18.7 | 11.2 | 5.6 | 9.1 | 13.4 | 14.7 | 12.2 | 32.3 |
| 5 | 14.5 | 12.2 | 13.2 | 11.3 | 14.6 | 15.5 | 7.4 | 7.8 | 4.8 | 6.9 | 17.7 | 16.4 | 23.1 | 21.5 | 24.4 | 25.4 | 23.5 | 22.2 | 20.4 | 17.8 | 22.3 | 24.9 | 20.9 | 26.2 | 26.2 |
| 6 | 25 | 24.4 | 24.3 | 21.4 | 25.4 | 23 | 25.6 | 18.2 | 17.5 | 18.5 | 15.7 | 13.8 | 7.1 | 11.9 | 12.8 | 16.3 | 12.3 | 8.8 | 18.3 | 19.5 | 13.9 | 10.8 | 11.7 | 13.4 | 25.6 |
| 7 | 10.7 | 18.9 | 15.5 | 21.1 | 21.3 | 10.9 | 9.2 | 16.8 | 15 | 16.4 | 28.1 | 29.5 | 30.6 | 25.6 | 27.9 | 25.9 | 25.8 | 22.6 | 20.6 | 30.4 | 30.1 | 32.7 | 33 | 37.2 | 37.2 |
| 8 | 20.1 | 25.6 | 20.2 | 19.1 | 18.7 | 10.4 | 16 | 15.9 | 18.8 | 20.5 | 22.8 | 25.6 | 28.1 | 27.4 | 30.5 | 26.4 | 24.8 | 24.1 | 19.4 | 15.1 | 15.1 | 16.8 | 18.9 | 18.1 | 30.5 |
| 9 | 22.2 | 19.8 | 19.2 | 17.2 | 16.3 | **N** | 20.3 | 21.1 | 18.8 | 14.9 | 12.2 | 11.3 | 9.3 | 8.1 | 11.6 | 14.7 | 19.3 | 14.4 | 18.2 | 21.6 | 19.2 | 19.3 | 14.8 | 13.7 | 22.2 |
| 10 | 16.5 | 13.9 | 15.7 | 14.6 | 18.1 | 20 | 18.2 | 21 | 19.6 | 14.4 | 7.4 | 20.2 | 15.4 | 14.5 | 15 | 12.2 | 7 | 6.1 | 8.6 | 8.2 | 7.7 | 10.4 | 9.7 | 9.2 | 21 |
| 11 | 13 | 9.2 | 13.4 | 11.1 | 8.6 | 5.5 | 11.6 | 15.2 | 10.5 | 14.4 | 16.5 | 22.4 | 24.5 | 23.2 | 22.7 | 25.1 | 18.1 | 17.9 | 19.4 | 24.5 | 21 | 20.6 | 30.1 | 24.8 | 30.1 |
| 12 | 25.5 | 16.5 | 38.3 | 55.7 | **63.3** | 48.2 | 43 | 47.9 | 49.2 | 43.6 | 43.4 | 42.1 | 31.5 | 36 | 27.3 | 31.4 | 23.9 | 17.1 | 15.4 | 16.7 | 21.9 | 25.7 | 21.3 | 25.8 | **63.3** |
| 13 | 18.2 | 15.9 | 12 | 12 | 16.6 | 13.3 | 21.4 | 23.9 | 23.8 | 20.5 | 20.6 | 25.3 | 21.4 | 27.7 | 27.9 | 44.3 | 26.9 | 37.1 | 42.5 | 48.1 | 49.9 | 58.6 | 56 | 57.1 | 58.6 |
| 14 | 55.5 | 46.4 | 41.8 | 28.1 | 18.7 | 17.2 | 9.1 | 9.2 | 13.4 | 26.8 | 29 | 32.1 | 36 | 36.7 | 36.7 | 34.1 | 34.2 | 20.7 | 15.1 | 18.3 | 17 | 7.5 | 22.4 | 10.5 | 55.5 |
| 15 | 12.7 | 12.2 | 12.9 | 11.7 | 8.9 | 7.8 | 8.2 | 4.6 | 5.9 | 9.2 | 13.7 | 16.6 | 21.1 | 27.3 | 31.5 | 33.2 | 31.6 | 30.2 | 35.1 | 39.7 | 41.2 | 33.8 | 27.8 | 15.4 | 41.2 |
| 16 | 10.2 | 8.3 | 5.3 | 6.8 | 4.4 | 5.8 | 5.4 | 7.5 | 12 | 20.7 | 21.9 | 19.8 | 37.9 | 37.4 | 41.2 | 39.3 | 41.7 | 36.9 | 26 | 18.7 | 12.4 | 13.3 | 15.5 | 12.9 | 41.7 |
| 17 | 11.9 | 21.1 | 18.1 | 9.9 | 7.6 | 9.3 | 8.6 | 8.3 | 8.4 | 12.1 | 17.1 | 23.8 | 28.6 | 30.2 | 29.6 | 32.7 | 29.4 | 28.4 | 37 | 58.8 | 48.7 | 25.8 | 25.8 | 25.1 | 58.8 |
| 18 | 25.6 | 23.6 | 14.5 | 11.6 | 22.5 | 12 | 9.5 | 11.3 | 9.1 | 9.4 | 18.5 | 17.7 | 18.9 | 18 | 31.3 | 27.6 | 29.9 | 29.6 | 21.2 | 19.6 | 28.5 | 31.3 | 26 | 27 | 31.3 |
| 19 | 25.1 | 27.8 | 30.9 | 25.2 | 29.6 | 34.1 | 33.6 | 36.2 | 37.6 | 39.7 | 38.5 | 35.9 | 38.3 | 45.7 | 48 | 40.9 | 30.9 | 33.5 | 36.1 | 33.5 | 43.6 | 26.5 | 22.5 | 29.9 | 48 |
| 20 | 33.6 | 34.8 | 36.4 | 33.8 | 23.3 | 20.2 | 20.1 | 23.1 | 15.2 | 22.2 | 16.1 | 12.1 | 11.9 | 17.3 | 18.7 | 20.8 | 17.3 | 17 | 5.7 | 7.2 | 10.3 | 8.7 | 14.5 | 10.4 | 36.4 |
| 21 | 9.5 | 7.7 | 8 | 4.9 | 7.6 | 10.6 | 10.4 | 5.6 | 4.5 | 5.6 | 7 | 5 | 6.5 | 6.6 | 8.9 | 8.2 | 6.7 | 12.1 | 8.4 | 6.1 | 5.5 | 3 | 4.2 | 6.7 | 12.1 |
| 22 | 5.8 | 6.4 | 4.8 | 10.3 | 4.6 | 5 | 7.6 | 13 | 17 | 21 | 27.7 | 25.8 | 27.9 | 33.2 | 35.3 | 36.5 | 33.7 | 29.4 | 32.1 | 29.5 | 32.3 | 28.8 | 28.4 | 25.6 | 36.5 |
| 23 | 24.1 | 21.5 | 27.4 | 24.4 | 20 | 15.2 | 15.9 | 18.1 | 22.3 | 21.9 | 19.9 | 19.5 | 18.9 | 19.3 | 19.4 | 19.8 | 15.3 | 11.5 | 9.6 | 11.6 | 9 | 7 | 6.7 | 9.1 | 27.4 |
| 24 | 8.6 | 10.5 | 9 | 13.2 | 11.7 | 9.7 | 6.8 | 5.8 | 7.3 | 22 | 19.4 | 20.3 | 15.2 | 10.8 | 13.3 | 12.6 | 14.2 | 14.8 | 12.5 | 15.4 | 17.2 | 17.8 | 13.1 | 13.9 | 22 |
| 25 | 11.4 | 10.1 | 10.2 | 11.6 | 14 | 20.3 | 12.9 | 12 | 17.5 | 18.9 | 23.4 | 25 | 28.5 | 30.8 | 31 | 34.5 | 35.3 | 36.4 | 33.9 | 19.9 | 23.5 | 21.3 | 17.3 | 7.6 | 36.4 |
| 26 | 11.4 | 11.4 | 10.4 | 8.9 | 7.5 | 6.8 | 5.7 | 5.9 | 8.1 | 8.1 | 18 | 24.4 | 23.5 | 30.4 | 24 | 20.9 | 17.8 | 18.4 | 10 | 14.4 | 14.6 | 14.3 | 13.5 | 16.5 | 30.4 |
| 27 | 13.3 | 9.9 | 11.5 | 11.6 | 13.4 | 10.6 | 11.8 | 11.7 | 15.8 | 17.4 | 19.6 | 20.2 | 20.9 | 25.1 | 27.6 | 24.4 | 19.3 | 15.1 | 13.3 | 10 | 7.6 | 8.8 | 9.7 | 9.7 | 27.6 |
| 28 | 9.7 | 14.6 | 13.9 | 15.4 | 13.8 | 18 | 21.7 | 27.4 | 33.1 | 43.1 | 45.4 | 45.3 | 50.5 | 44.7 | 55 | 52 | 43.7 | 36.6 | 35 | 46.4 | 49.1 | 48.2 | 45.3 | 44.4 | 55 |
| 29 | 36 | 33.2 | 24.8 | 13.7 | 7.3 | 6.3 | 7.2 | 12.3 | 21.8 | 19.7 | 14.8 | 23.4 | 29.6 | 31.5 | 36.1 | 32.1 | 27.4 | 31.8 | 17.9 | 20.6 | 19.6 | 18.2 | 15.9 | 12.9 | 36.1 |
| 30 | 12.2 | 10.9 | 8.5 | 11.9 | 12.6 | 12.9 | 16.8 | 17.4 | 18.1 | 16.4 | 27.2 | 28.2 | 30.8 | 42.5 | 39.9 | 40.4 | 45 | 38.8 | 41.5 | 31.1 | 20.7 | 18.3 | 24.4 | 24.6 | 45 |
| 31 | 27.4 | 23.5 | 21.7 | 21.9 | 19 | 27.2 | 20.2 | 13.9 | 22 | 21.3 | 21.7 | 23.4 | 25.4 | 43.3 | 26.7 | 24.8 | 11.4 | 9.1 | 9.6 | 8.6 | 12.3 | 14.9 | 15.1 | 14.6 | 43.3 |
| PEAK | 55.5 | 46.4 | 41.8 | 55.7 | 63.3 | 48.2 | 43.0 | 47.9 | 49.2 | 43.6 | 45.4 | 45.3 | 50.5 | 45.7 | 55.0 | 52.0 | 45.0 | 38.8 | 42.5 | 58.8 | 49.9 | 58.6 | 56.0 | 57.1 | |

**STATUS FLAG CODES**

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

**MONTHLY SUMMARY**

| | | | | |
|---|---|---|---|---|
| MAXIMUM INSTANTANEOUS READING | 63.3 | KPH | @ HOUR(S) | 4 |
| | | | ON DAY(S) | 12 |






JOB #: 2833-12-03-35-C

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

March 2012

Distribution By % Of Samples

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

Wind Parameter : WDR
Instrument Height : 10 Meters

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | .89 | .74 | .29 | 1.04 | 1.78 | 2.08 | 2.68 | .59 | .89 | .14 | 1.19 | .44 | 2.38 | 2.23 | 1.49 | 1.19 | 20.11 |
| < | 12.0 | 1.04 | 1.49 | 2.38 | 2.23 | 2.08 | 6.85 | 3.42 | 1.34 | .89 | .59 | 1.19 | 2.68 | 6.70 | 3.57 | 1.63 | .74 | 38.89 |
| < | 20.0 | .89 | .59 | 1.63 | 1.93 | 1.19 | 3.72 | 6.11 | 1.19 | .44 | .44 | .14 | 1.78 | 3.12 | 2.68 | .89 | 1.93 | 28.76 |
| < | 29.0 | 1.19 | .00 | .00 | .00 | .00 | .59 | 2.83 | .00 | .00 | .00 | .00 | .00 | .29 | 2.53 | 1.49 | .44 | 9.38 |
| < | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | 1.49 | .00 | .00 | .00 | .00 | .00 | .00 | 1.04 | .29 | .00 | 2.83 |
| >= | 39.0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | Totals | 4.02 | 2.83 | 4.32 | 5.21 | 5.06 | 13.26 | 16.54 | 3.12 | 2.23 | 1.19 | 2.53 | 4.91 | 12.51 | 12.07 | 5.81 | 4.32 | |

Calm : .00 %

Total # Operational Hours : 671

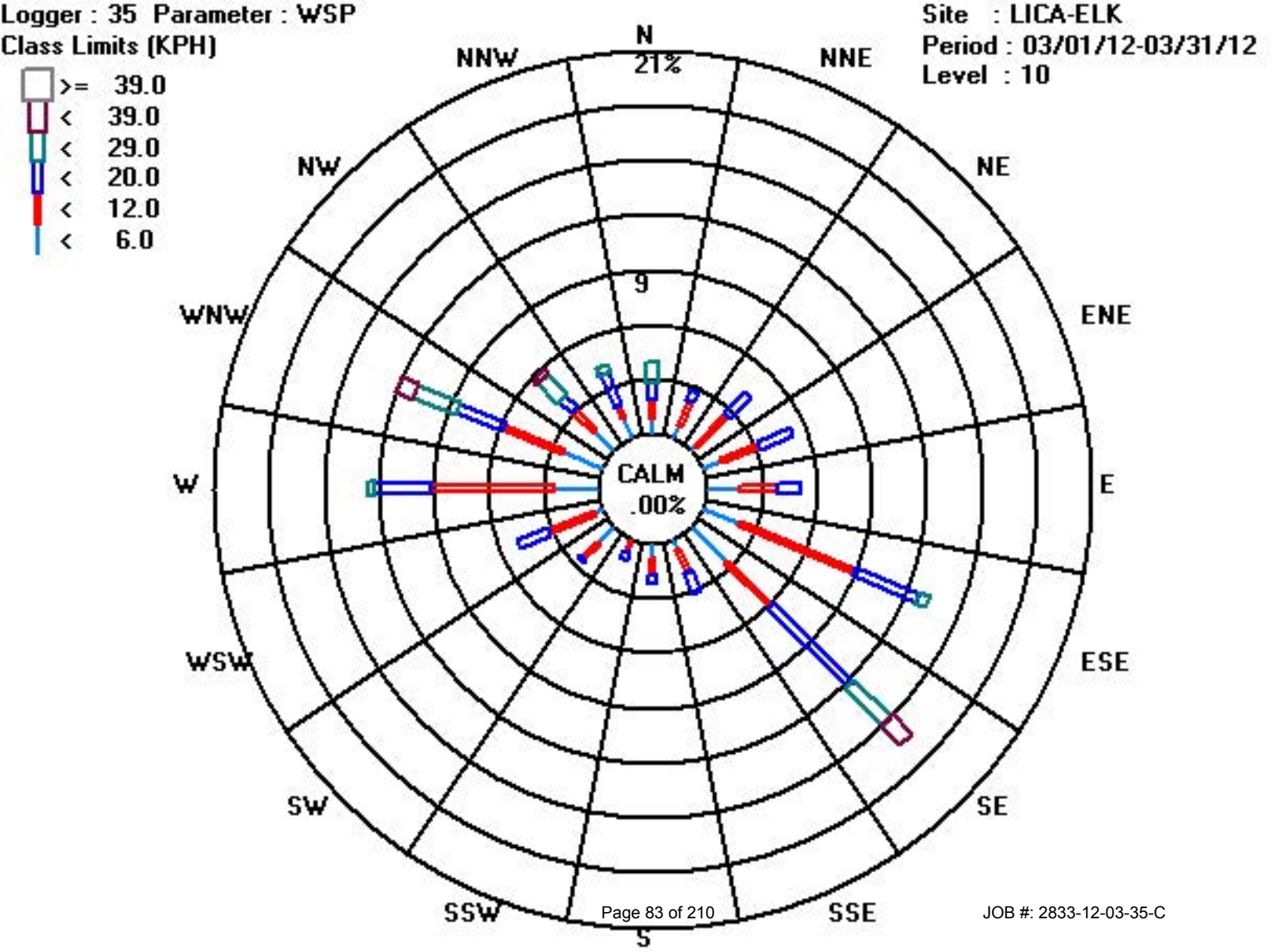
Distribution By Samples

Direction

| | Limit | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Freq |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < | 6.0 | 6 | 5 | 2 | 7 | 12 | 14 | 18 | 4 | 6 | 1 | 8 | 3 | 16 | 15 | 10 | 8 | 135 |
| < | 12.0 | 7 | 10 | 16 | 15 | 14 | 46 | 23 | 9 | 6 | 4 | 8 | 18 | 45 | 24 | 11 | 5 | 261 |
| < | 20.0 | 6 | 4 | 11 | 13 | 8 | 25 | 41 | 8 | 3 | 3 | 1 | 12 | 21 | 18 | 6 | 13 | 193 |
| < | 29.0 | 8 | | | | | 4 | 19 | | | | | | 2 | 17 | 10 | 3 | 63 |
| < | 39.0 | | | | | | | 10 | | | | | | | 7 | 2 | | 19 |
| >= | 39.0 | | | | | | | | | | | | | | | | | |
| | Totals | 27 | 19 | 29 | 35 | 34 | 89 | 111 | 21 | 15 | 8 | 17 | 33 | 84 | 81 | 39 | 29 | |

Calm : .00 %

Total # Operational Hours : 671






JOB #: 2833-12-03-35-C

# Vector Wind Direction

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

MARCH 2012

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

MST

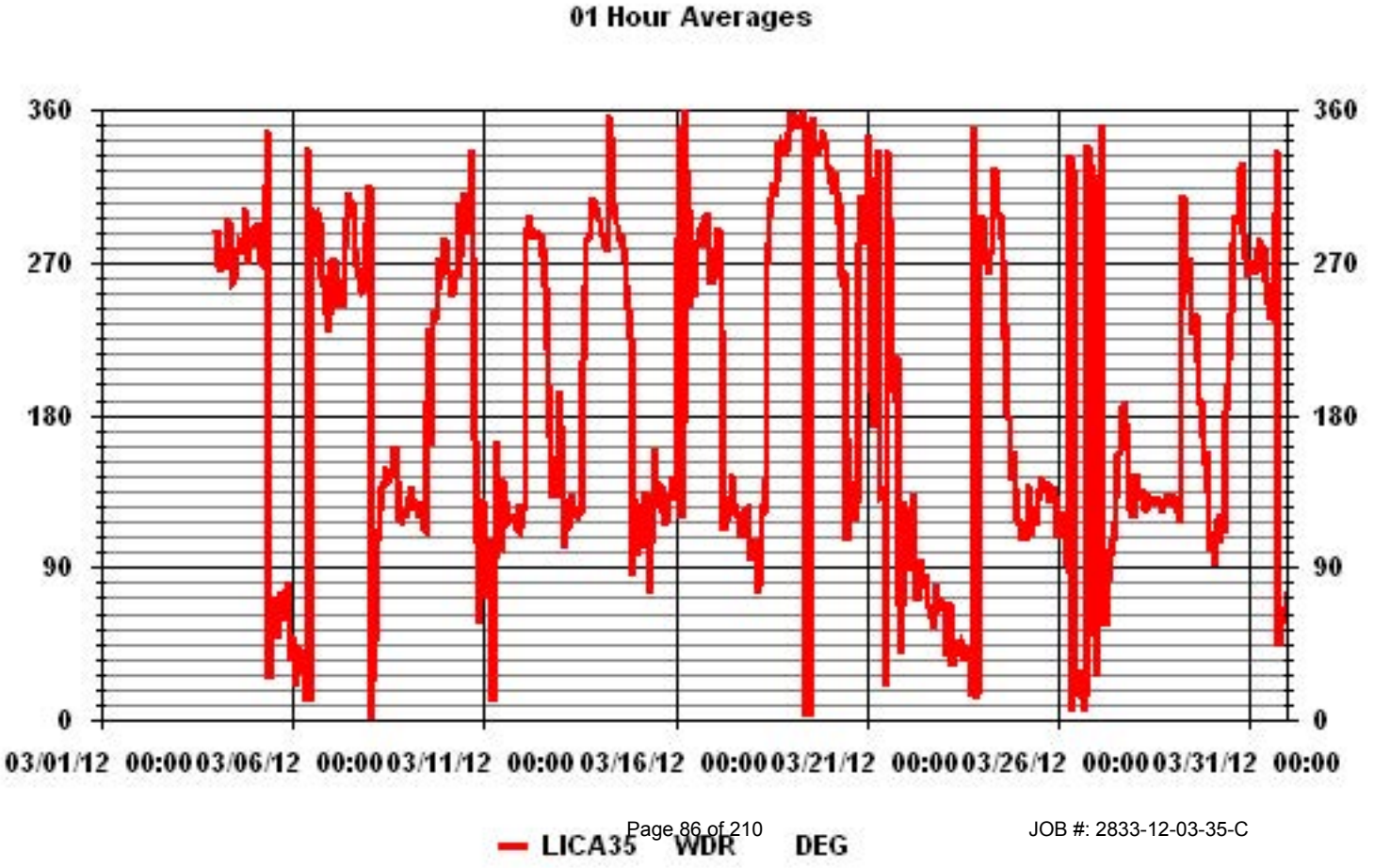
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24-HOUR | 24-HOUR AVG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| 4 | 288 | 268 | 264 | 278 | 274 | 266 | 273 | 297 | 289 | 293 | 259 | 260 | 279 | 274 | 283 | 282 | 275 | 282 | 303 | 290 | 268 | 279 | 286 | 289 | 278 | W | 24 |
| 5 | 290 | 279 | 293 | 271 | 270 | 294 | 288 | 316 | 349 | 24 | 61 | 64 | 73 | 55 | 48 | 70 | 76 | 59 | 62 | 66 | 77 | 82 | 34 | 50 | 42 | NE | 24 |
| 6 | 38 | 20 | 35 | 43 | 42 | 38 | 29 | 28 | 10 | 338 | 10 | 19 | 303 | 273 | 297 | 299 | 296 | 295 | 263 | 257 | 246 | 240 | 229 | 239 | 350 | N | 24 |
| 7 | 271 | 262 | 273 | 261 | 254 | 243 | 256 | 244 | 259 | 279 | 296 | 312 | 308 | 306 | 299 | 279 | 268 | 263 | 254 | 252 | 253 | 262 | 294 | 314 | 279 | W | 24 |
| 8 | 314 | 0 | 23 | 46 | 89 | 113 | 105 | 123 | 137 | 141 | 150 | 145 | 142 | 143 | 147 | 159 | 159 | 159 | 142 | 119 | 118 | 125 | 123 | 122 | 129 | SE | 24 |
| 9 | 124 | 132 | 138 | 131 | 125 | **N** | 121 | 129 | 122 | 124 | 114 | 113 | 188 | 232 | 162 | 231 | 235 | 241 | 236 | 254 | 273 | 261 | 276 | 283 | 169 | SSE | 23 |
| 10 | 283 | 265 | 264 | 258 | 250 | 264 | 264 | 261 | 306 | 273 | 294 | 295 | 311 | 298 | 287 | 305 | 336 | 274 | 166 | 106 | 57 | 101 | 109 | 130 | 274 | W | 24 |
| 11 | 126 | 85 | 72 | 107 | 71 | 10 | 91 | 95 | 165 | 119 | 104 | 103 | 142 | 130 | 122 | 117 | 118 | 116 | 121 | 119 | 113 | 112 | 128 | 113 | 116 | ESE | 24 |
| 12 | 123 | 128 | 288 | 291 | 298 | 288 | 284 | 287 | 285 | 289 | 284 | 287 | 273 | 278 | 256 | 219 | 199 | 167 | 139 | 131 | 141 | 144 | 155 | 194 | 266 | W | 24 |
| 13 | 175 | 132 | 101 | 112 | 118 | 117 | 121 | 133 | 127 | 122 | 121 | 126 | 121 | 142 | 212 | 256 | 285 | 283 | 287 | 301 | 308 | 302 | 304 | 298 | 269 | W | 24 |
| 14 | 296 | 288 | 286 | 282 | 281 | 276 | 357 | 345 | 342 | 305 | 299 | 294 | 284 | 283 | 287 | 280 | 272 | 258 | 243 | 224 | 227 | 84 | 132 | 98 | 284 | WNW | 24 |
| 15 | 98 | 105 | 102 | 124 | 123 | 135 | 101 | 110 | 74 | 104 | 125 | 160 | 132 | 141 | 135 | 140 | 124 | 115 | 117 | 123 | 130 | 133 | 143 | 135 | 127 | SE | 24 |
| 16 | 129 | 284 | 350 | 119 | 177 | 175 | 360 | 326 | 302 | 244 | 254 | 253 | 263 | 282 | 283 | 290 | 279 | 292 | 292 | 298 | 300 | 268 | 257 | 260 | 277 | W | 24 |
| 17 | 279 | 264 | 271 | 290 | 262 | 232 | 112 | 132 | 118 | 122 | 122 | 145 | 132 | 129 | 124 | 121 | 111 | 108 | 111 | 124 | 125 | 109 | 95 | 95 | 123 | ESE | 24 |
| 18 | 103 | 97 | 107 | 75 | 79 | 93 | 128 | 121 | 142 | 268 | 281 | 296 | 308 | 317 | 309 | 317 | 339 | 339 | 342 | 340 | 336 | 332 | 335 | 347 | 343 | NNW | 24 |
| 19 | 359 | 353 | 358 | 350 | 350 | 350 | 356 | 358 | 359 | 2 | 7 | 352 | 1 | 353 | 356 | 339 | 333 | 339 | 337 | 341 | 348 | 339 | 341 | 326 | 350 | N | 24 |
| 20 | 328 | 318 | 310 | 313 | 323 | 313 | 292 | 306 | 263 | 255 | 266 | 106 | 166 | 141 | 140 | 129 | 128 | 117 | 127 | 281 | 310 | 293 | 281 | 300 | 298 | WNW | 24 |
| 21 | 320 | 345 | 322 | 194 | 172 | 273 | 296 | 336 | 133 | 134 | 138 | 87 | 19 | 337 | 226 | 295 | 214 | 195 | 187 | 215 | 68 | 39 | 67 | 129 | 244 | WSW | 24 |
| 22 | 94 | 125 | 88 | 118 | 107 | 134 | 92 | 71 | 74 | 89 | 95 | 87 | 82 | 83 | 68 | 67 | 61 | 53 | 62 | 80 | 72 | 68 | 73 | 65 | 77 | ENE | 24 |
| 23 | 69 | 67 | 38 | 56 | 70 | 31 | 37 | 39 | 39 | 48 | 44 | 47 | 45 | 35 | 44 | 42 | 38 | 32 | 14 | 350 | 12 | 15 | 277 | 296 | 40 | NE | 24 |
| 24 | 298 | 275 | 275 | 270 | 263 | 277 | 275 | 311 | 326 | 317 | 299 | 298 | 285 | 273 | 229 | 230 | 181 | 178 | 141 | 149 | 159 | 138 | 119 | 116 | 235 | SW | 24 |
| 25 | 106 | 117 | 116 | 106 | 110 | 140 | 121 | 109 | 123 | 115 | 126 | 130 | 136 | 143 | 136 | 136 | 138 | 140 | 130 | 128 | 134 | 137 | 133 | 107 | 130 | SE | 24 |
| 26 | 116 | 110 | 107 | 112 | 123 | 92 | 86 | 333 | 4 | 136 | 324 | 13 | 24 | 29 | 12 | 25 | 4 | 14 | 340 | 319 | 325 | 327 | 323 | 50 | 22 | NNE | 24 |
| 27 | 25 | 315 | 321 | 352 | 62 | 56 | 60 | 82 | 99 | 99 | 106 | 117 | 131 | 157 | 158 | 182 | 184 | 185 | 177 | 160 | 128 | 125 | 120 | 120 | 126 | SE | 24 |
| 28 | 146 | 141 | 133 | 136 | 130 | 137 | 126 | 125 | 127 | 131 | 130 | 131 | 130 | 126 | 129 | 132 | 128 | 122 | 126 | 129 | 132 | 132 | 130 | 131 | 130 | SE | 24 |
| 29 | 128 | 126 | 132 | 124 | 116 | 242 | 310 | 253 | 261 | 266 | 273 | 227 | 240 | 237 | 240 | 212 | 186 | 190 | 168 | 155 | 156 | 135 | 106 | 99 | 182 | S | 24 |
| 30 | 111 | 101 | 90 | 119 | 104 | **122** | 112 | 112 | 167 | 182 | 198 | 212 | 240 | 281 | 292 | 297 | 295 | 313 | 326 | 329 | 288 | 273 | 262 | 268 | 279 | W | 24 |
| 31 | 267 | 271 | 262 | 269 | 278 | 264 | 284 | 275 | 271 | 280 | 259 | 247 | 236 | 255 | 252 | 235 | 300 | 337 | 43 | 63 | 56 | 66 | 64 | 74 | 273 | W | 24 |
| HOURLY AVG | 359 | 353 | 358 | 352 | 350 | 350 | 360 | 358 | 359 | 338 | 324 | 352 | 311 | 353 | 356 | 339 | 339 | 339 | 342 | 350 | 348 | 339 | 341 | 347 | | | |

**STATUS FLAG CODES**

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

| | |
|---|---|
| LAST CALIBRATION: | September 24, 2009 |
| DECLINATION : | 19 DEGREES FROM MAGNETIC NORTH |

| | | | | | |
|---|---|---|---|---|---|
| MONTHLY CALIBRATION TIME: | 0 | HRS | OPERATIONAL TIME: | 671 | HRS |
| STANDARD DEVIATION: | 98.28 | | AMD OPERATION UPTIME: | 99.9 | % |
| | | | MONTHLY AVERAGE: | 144 | DEG |






JOB #: 2833-12-03-35-C

# Standard Deviation Wind Direction

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

MARCH 2012

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

MST

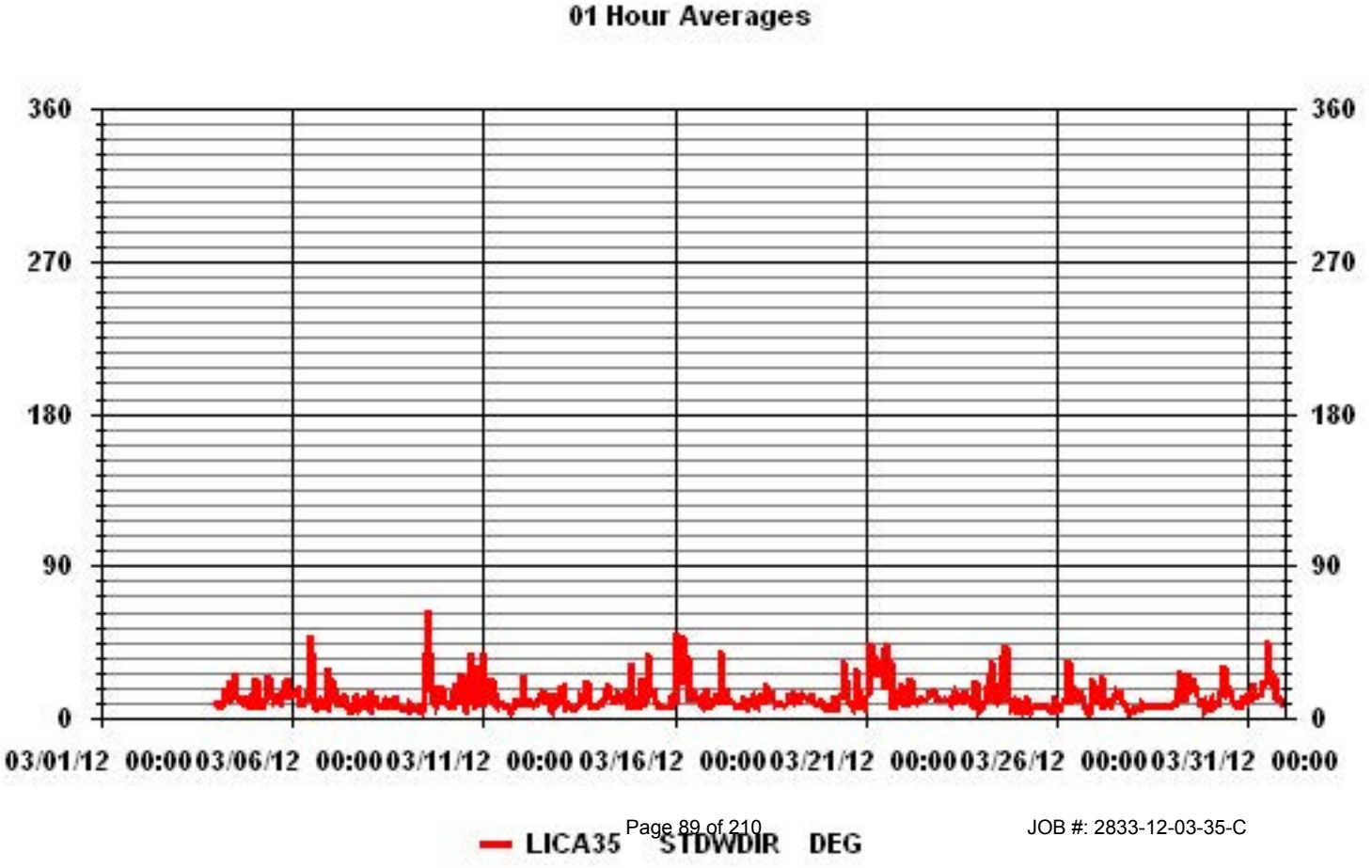
| HOUR START | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 10 | 9 | 8 | 9 | 8 | 10 | 18 | 15 | 14 | 22 | 12 | 13 | 26 | 14 | 12 | 11 | 10 | 9 | 7 | 14 | 9 | 11 | 7 | 5 |
| 5 | 12 | 24 | 8 | 8 | 6 | 7 | 10 | 10 | 16 | 26 | 13 | 16 | 12 | 13 | 13 | 10 | 10 | 12 | 16 | 19 | 21 | 23 | 17 | 12 |
| 6 | 13 | 14 | 15 | 16 | 9 | 9 | 11 | 10 | 12 | 12 | 16 | 49 | 41 | 26 | 7 | 6 | 8 | 11 | 10 | 10 | 7 | 6 | 30 | 13 |
| 7 | 19 | 24 | 19 | 11 | 8 | 8 | 12 | 8 | 11 | 14 | 9 | 6 | 7 | 5 | 6 | 13 | 13 | 10 | 6 | 8 | 8 | 10 | 13 | 7 |
| 8 | 6 | 17 | 12 | 10 | 13 | 8 | 7 | 7 | 7 | 9 | 11 | 10 | 8 | 7 | 10 | 11 | 13 | 12 | 8 | 6 | 7 | 5 | 5 | 6 |
| 9 | 5 | 9 | 7 | 6 | 7 | **N** | 5 | 6 | 7 | 5 | 8 | 19 | 39 | 65 | 14 | 39 | 8 | 10 | 7 | 10 | 19 | 8 | 19 | 9 |
| 10 | 9 | 9 | 8 | 8 | 4 | 16 | 21 | 8 | 20 | 24 | 27 | 10 | 5 | 5 | 8 | 9 | 39 | 14 | 8 | 9 | 31 | 19 | 12 | 6 |
| 11 | 38 | 25 | 15 | 9 | 20 | 23 | 9 | 8 | 15 | 11 | 9 | 9 | 9 | 9 | 8 | 7 | 7 | 5 | 6 | 6 | 11 | 11 | 6 | 9 |
| 12 | 9 | 26 | 8 | 8 | 9 | 11 | 10 | 8 | 9 | 9 | 11 | 12 | 15 | 14 | 16 | 10 | 10 | 11 | 5 | 4 | 5 | 7 | 15 | 12 |
| 13 | 18 | 18 | 9 | 6 | 6 | 8 | 6 | 6 | 6 | 7 | 7 | 7 | 8 | 13 | 12 | 15 | 11 | 22 | 11 | 7 | 7 | 7 | 8 | 7 |
| 14 | 8 | 8 | 9 | 11 | 12 | 18 | 21 | 14 | 13 | 10 | 10 | 12 | 15 | 14 | 12 | 14 | 15 | 12 | 7 | 7 | 8 | 33 | 14 | 7 |
| 15 | 8 | 5 | 8 | 23 | 6 | 11 | 12 | 39 | 23 | 14 | 13 | 18 | 10 | 10 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 6 | 12 | 15 |
| 16 | 7 | 51 | 33 | 20 | 22 | 49 | 32 | 36 | 37 | 12 | 13 | 17 | 13 | 13 | 14 | 11 | 12 | 8 | 6 | 7 | 17 | 8 | 7 | 7 |
| 17 | 11 | 11 | 14 | 10 | 10 | 40 | 11 | 9 | 18 | 15 | 12 | 10 | 10 | 9 | 8 | 8 | 7 | 7 | 8 | 13 | 7 | 7 | 9 | 10 |
| 18 | 12 | 8 | 8 | 9 | 8 | 12 | 14 | 7 | 13 | 20 | 14 | 12 | 12 | 17 | 11 | 9 | 10 | 9 | 9 | 8 | 9 | 8 | 8 | 11 |
| 19 | 14 | 15 | 12 | 10 | 12 | 11 | 13 | 12 | 14 | 14 | 13 | 12 | 12 | 13 | 14 | 10 | 8 | 9 | 8 | 8 | 11 | 8 | 8 | 6 |
| 20 | 7 | 7 | 6 | 6 | 14 | 11 | 9 | 13 | 14 | 14 | 34 | 23 | 21 | 9 | 9 | 9 | 7 | 9 | 29 | 18 | 8 | 7 | 8 | 7 |
| 21 | 12 | 15 | 13 | 45 | 24 | 33 | 34 | 32 | 24 | 30 | 25 | 17 | 42 | 45 | 22 | 24 | 34 | 7 | 7 | 16 | 10 | 17 | 20 | 9 |
| 22 | 9 | 7 | 15 | 13 | 23 | 8 | 10 | 10 | 9 | 10 | 11 | 12 | 11 | 11 | 12 | 14 | 14 | 15 | 17 | 16 | 12 | 11 | 11 | 11 |
| 23 | 11 | 11 | 11 | 11 | 12 | 10 | 12 | 15 | 12 | 11 | 12 | 14 | 15 | 12 | 13 | 11 | 11 | 11 | 8 | 8 | 10 | 22 | 10 | 4 |
| 24 | 5 | 8 | 9 | 9 | 10 | 20 | 26 | 34 | 22 | 11 | 9 | 10 | 15 | 38 | 24 | 30 | 43 | 11 | 10 | 7 | 9 | 5 | 4 | 5 |
| 25 | 11 | 7 | 4 | 5 | 7 | 13 | 7 | 5 | 6 | 7 | 6 | 7 | 7 | 8 | 7 | 7 | 7 | 7 | 7 | 5 | 5 | 5 | 13 | 10 |
| 26 | 5 | 5 | 5 | 8 | 11 | 12 | 20 | 34 | 8 | 20 | 16 | 16 | 12 | 12 | 14 | 15 | 12 | 8 | 7 | 4 | 3 | 6 | 23 | 10 |
| 27 | 14 | 8 | 20 | 10 | 26 | 5 | 8 | 12 | 9 | 8 | 11 | 9 | 13 | 16 | 13 | 14 | 14 | 10 | 9 | 8 | 5 | 3 | 4 | 4 |
| 28 | 6 | 6 | 6 | 5 | 5 | 9 | 7 | 7 | 7 | 7 | 8 | 7 | 8 | 8 | 7 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 7 | 7 |
| 29 | 8 | 9 | 8 | 10 | 18 | 28 | 23 | 11 | 11 | 15 | 27 | 25 | 19 | 20 | 16 | 20 | 13 | 9 | 10 | 8 | 9 | 5 | 6 | 7 |
| 30 | 10 | 11 | 6 | 7 | 10 | **6** | 16 | 12 | 29 | 29 | 19 | 15 | 16 | 14 | 11 | 8 | 9 | 7 | 8 | 7 | 11 | 11 | 11 | 13 |
| 31 | 11 | 13 | 10 | 20 | 15 | 11 | 13 | 14 | 14 | 19 | 22 | 20 | 46 | 28 | 27 | 21 | 18 | 26 | 13 | 10 | 13 | 9 | 9 | 9 |

**STATUS FLAG CODES**

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

LAST CALIBRATION: September 24, 2009

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 671 HRS

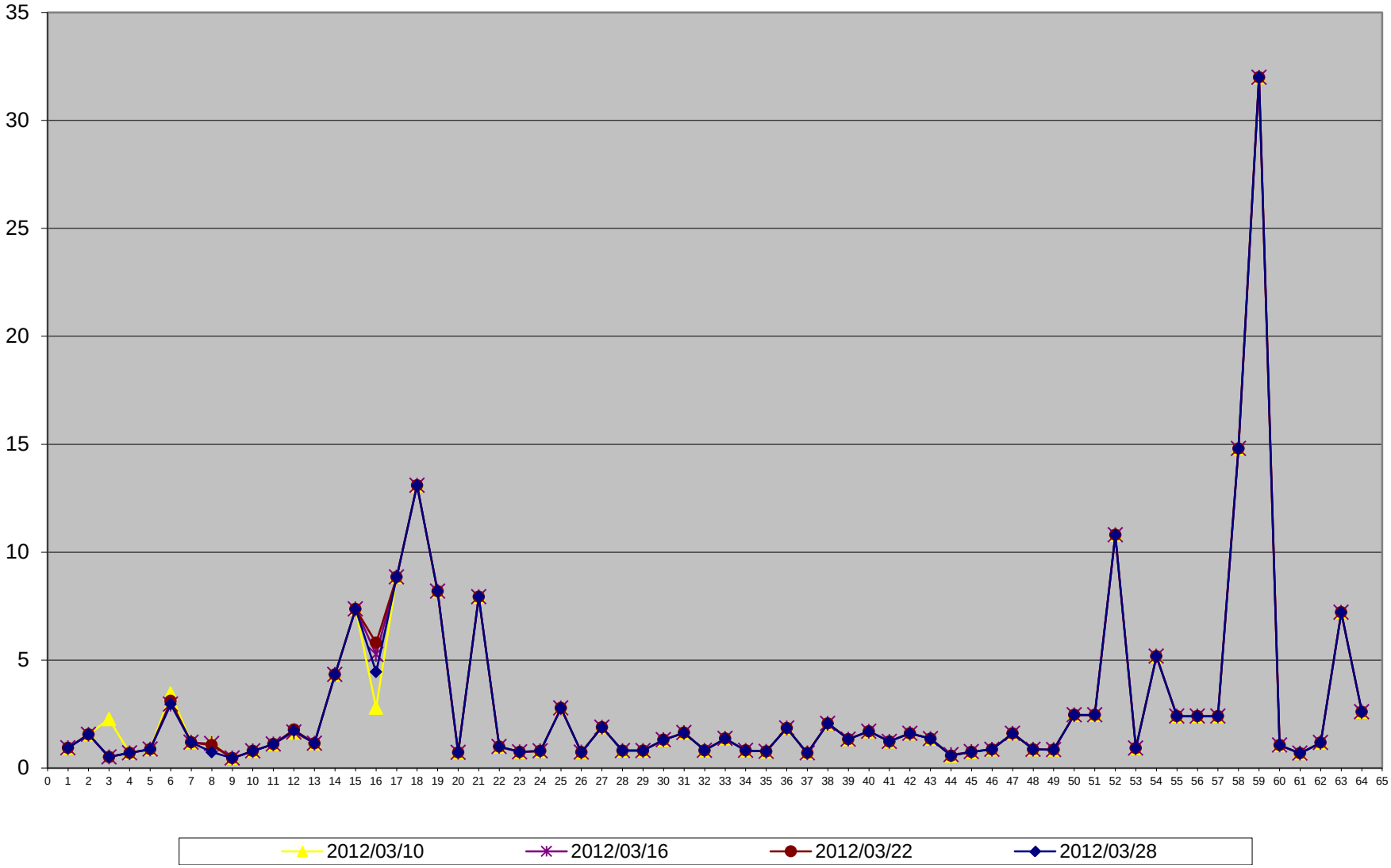





JOB #: 2833-12-03-35-C

# Volatile Organics

## Volatile Organics in ug/m3 Site: LICA - Portable - Elk Point Airport






JOB #: 2833-12-03-35-C

| | | | |
|---|---|---|---|
| 1 | 2,2,4-Trimethylpentane | 33 | 1,1,2,2-Tetrachloroethane |
| 2 | Carbon Disulfide | 34 | cis-1,3-Dichloropropene |
| 3 | Propene | 35 | trans-1,3-Dichloropropene |
| 4 | Vinyl Acetate | 36 | 1,2-Dichloropropane |
| 5 | Vinyl Bromide | 37 | Bromomethane |
| 6 | Dichlorodifluoromethane (FREON 12) | 38 | Bromoform |
| 7 | 1,2-Dichlorotetrafluoroethane | 39 | Bromodichloromethane |
| 8 | Chloromethane | 40 | Dibromochloromethane |
| 9 | Vinyl Chloride | 41 | Heptane |
| 10 | Chloroethane | 42 | Trichloroethylene |
| 11 | 1,3-Butadiene | 43 | Tetrachloroethylene |
| 12 | Trichlorofluoromethane (FREON 11) | 44 | Benzene |
| 13 | Trichlorotrifluoroethane | 45 | Toluene |
| 14 | Ethanol | 46 | Ethylbenzeze |
| 15 | 2-Propanol | 47 | p+m-Xylene |
| 16 | 2-Propanone | 48 | o-Xylene |
| 17 | Wethyl Ethyl Ketone (2-Butanone) | 49 | Styrene |
| 18 | Methyl Isobutyl Ketone | 50 | 1,3,5-Trimethylbenzene |
| 19 | Methyl Butyl Ketone (2-Hexanone) | 51 | 1,2,4-Trimethylbenzene |
| 20 | Methyl t-butyl ether (MTBE) | 52 | 4-ethyltoluene |
| 21 | Ethyl Acetate | 53 | Chlorobenzene |
| 22 | 1,1-Dichloroethylene | 54 | Benzyl chloride |
| 23 | cis-1,2-Dichloroethylene | 55 | 1,3-Dichlorobenzene |
| 24 | trans-1,2-Dichloroethylene | 56 | 1,4-Dichlorobenzene |
| 25 | Methylene Chloride (Dichloromethane) | 57 | 1,2-Dichlorobenzene |
| 26 | Chloroform | 58 | 1,2,4-Trichlorobenzene |
| 27 | Carbon Tetrachloride | 59 | Hexachlorobutadiene |
| 28 | 1,1-Dichloroethane | 60 | Hexane |
| 29 | 1,2-Dichloroethane | 61 | Cyclohexane |
| 30 | Ethylene Dibromide | 62 | Tetrahydrofuran |
| 31 | 1,1,1-Trichloroethane | 63 | 1,4-Dioxane |
| 32 | 1,1,2-Trichloroethane | 64 | Xylene (Total) |

# Polycyclic Aromatic Hydrocarbons

# Polycyclic Aromatic Hydrocarbons (PAHs) Results for March 2012

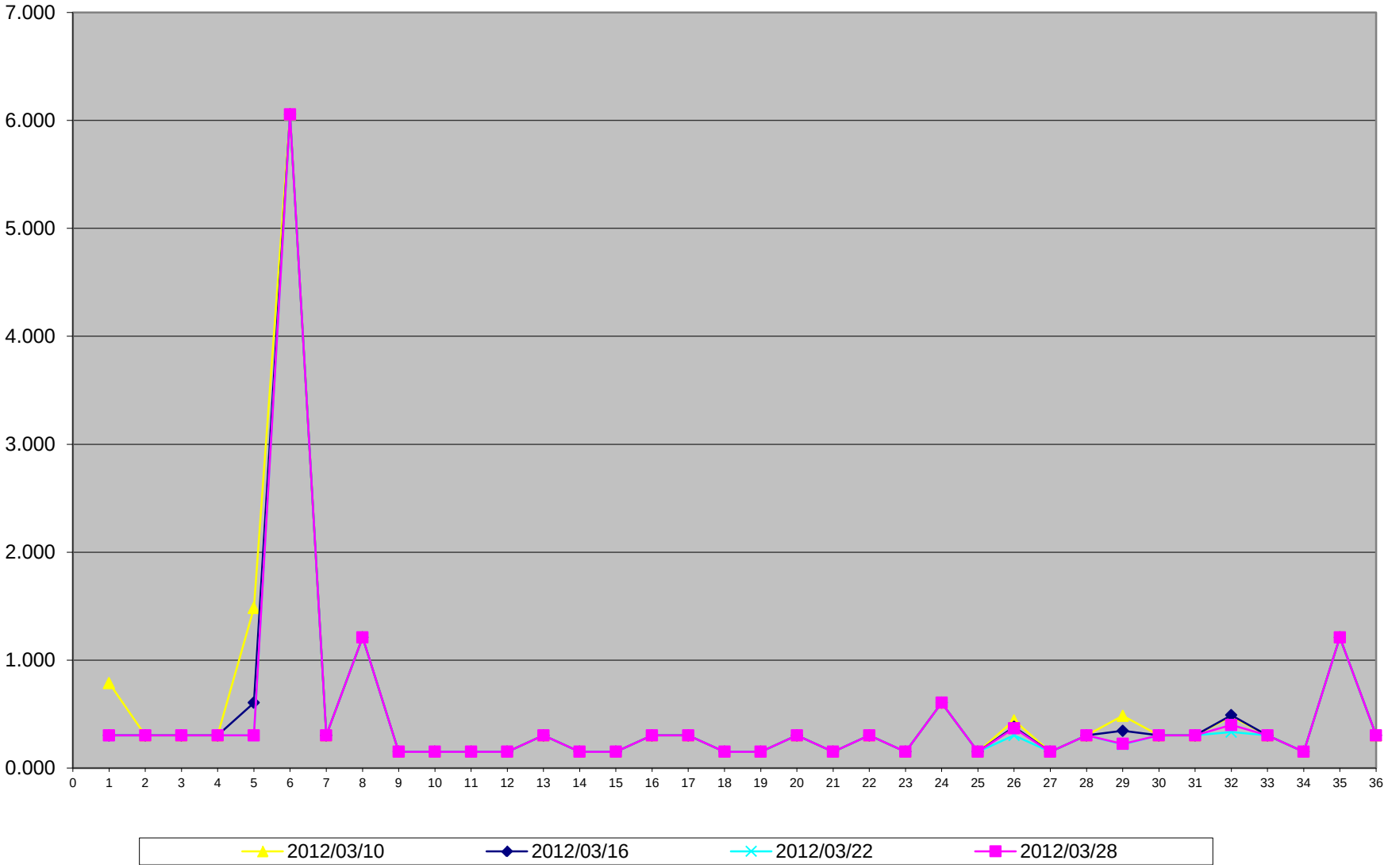
## LICA - Portable Site - Elk Point Airport

## Unit: ng/m3

| | PAHs | 2012/03/10 | 2012/03/16 | 2012/03/22 | 2012/03/28 |
|---|---|---|---|---|---|
| | Sample Volume (unit: m3) | 330.34 | 330.34 | 330.34 | 330.32 |
| 1 | 1-Methylnaphthalene | 0.787 | 0.303 | 0.303 | 0.303 |
| 2 | 1-Methylphenanthrene | 0.303 | 0.303 | 0.303 | 0.303 |
| 3 | 2-Chloronaphthalene | 0.303 | 0.303 | 0.303 | 0.303 |
| 4 | 2-Methlyanthracene | 0.303 | 0.303 | 0.303 | 0.303 |
| 5 | 2-Methylnaphthalene | 1.483 | 0.605 | 0.303 | 0.303 |
| 6 | 3-Methylcholanthrene | 6.054 | 6.054 | 6.054 | 6.054 |
| 7 | 7,12-Dimethylbenzo(a)anthracene | 0.303 | 0.303 | 0.303 | 0.303 |
| 8 | 9,10-Dimethylanthracene | 1.211 | 1.211 | 1.211 | 1.211 |
| 9 | Acenaphthene | 0.151 | 0.151 | 0.151 | 0.151 |
| 10 | Acenaphthylene | 0.151 | 0.151 | 0.151 | 0.151 |
| 11 | Anthracene | 0.151 | 0.151 | 0.151 | 0.151 |
| 12 | Benzo(a)anthracene | 0.151 | 0.151 | 0.151 | 0.151 |
| 13 | Benzo(a)fluorene | 0.303 | 0.303 | 0.303 | 0.303 |
| 14 | Benzo(a)pyrene | 0.151 | 0.151 | 0.151 | 0.151 |
| 15 | Benzo(b)fluoranthene | 0.151 | 0.151 | 0.151 | 0.151 |
| 16 | Benzo(b)fluorene | 0.303 | 0.303 | 0.303 | 0.303 |
| 17 | Benzo(e)pyrene | 0.303 | 0.303 | 0.303 | 0.303 |
| 18 | Benzo(g,h,I)perylene | 0.151 | 0.151 | 0.151 | 0.151 |
| 19 | Benzo(k)fluoranthene | 0.151 | 0.151 | 0.151 | 0.151 |
| 20 | Biphenyl | 0.303 | 0.303 | 0.303 | 0.303 |
| 21 | Chrysene | 0.151 | 0.151 | 0.151 | 0.151 |
| 22 | Coronene | 0.303 | 0.303 | 0.303 | 0.303 |
| 23 | Dibenz(a,h)anthracene | 0.151 | 0.151 | 0.151 | 0.151 |
| 24 | Dibenzo(a,e)pyrene | 0.605 | 0.605 | 0.605 | 0.605 |
| 25 | Fluoranthene | 0.151 | 0.151 | 0.151 | 0.151 |
| 26 | Fluorene | 0.442 | 0.381 | 0.303 | 0.369 |
| 27 | Indeno(1,2,3-cd)pyrene | 0.151 | 0.151 | 0.151 | 0.151 |
| 28 | m-Terphenyl | 0.303 | 0.303 | 0.303 | 0.303 |
| 29 | Naphthalene | 0.484 | 0.345 | 0.218 | 0.224 |
| 30 | o-Terphenyl | 0.303 | 0.303 | 0.303 | 0.303 |
| 31 | Perylene | 0.303 | 0.303 | 0.303 | 0.303 |
| 32 | Phenanthrene | 0.478 | 0.490 | 0.333 | 0.400 |
| 33 | p-Terphenyl | 0.303 | 0.303 | 0.303 | 0.303 |
| 34 | Pyrene | 0.151 | 0.151 | 0.151 | 0.151 |
| 35 | Quinoline | 1.211 | 1.211 | 1.211 | 1.211 |
| 36 | Tetralin | 0.303 | 0.303 | 0.303 | 0.303 |

Note: - values were calculated by the formula of [reading (ug) x 1000 / sample volume (m3)].
- Where the analytical results are less than the minimum detection limit (MDL), the MDL has been used in calculations.

## PAHs in ng/m3 Site: LICA - Portable - Elk Point Airport



| | |
|---|---|
| 1 | 1-Methylnaphthalene |
| 2 | 1-Methylphenanthrene |
| 3 | 2-Chloronaphthalene |
| 4 | 2-Methlyanthracene |
| 5 | 2-Methylnaphthalene |
| 6 | 3-Methylcholanthrene |
| 7 | 7,12-Dimethylbenzo(a)anthracene |
| 8 | 9,10-Dimethylanthracene |
| 9 | Acenaphthene |
| 10 | Acenaphthylene |
| 11 | Anthracene |
| 12 | Benzo(a)anthracene |
| 13 | Benzo(a)fluorene |
| 14 | Benzo(a)pyrene |
| 15 | Benzo(b)fluoranthene |
| 16 | Benzo(b)fluorene |
| 17 | Benzo(e)pyrene |
| 18 | Benzo(g,h,I)perylene |
| 19 | Benzo(k)fluoranthene |
| 20 | Biphenyl |
| 21 | Chrysene |
| 22 | Coronene |
| 23 | Dibenz(a,h)anthracene |
| 24 | Dibenzo(a,e)pyrene |
| 25 | Fluoranthene |
| 26 | Fluorene |
| 27 | Indeno(1,2,3-cd)pyrene |
| 28 | m-Terphenyl |
| 29 | Naphthalene |
| 30 | o-Terphenyl |
| 31 | Perylene |
| 32 | Phenanthrene |
| 33 | p-Terphenyl |
| 34 | Pyrene |
| 35 | Quinoline |
| 36 | Tetralin |

# Calibration Reports

# Sulphur Dioxide

# SO2 Calibration Report

## Station Information

| | | | |
|---|---|---|---|
| Calibration Date | March 8, 2012 | Previous Calibration | NA |
| Company | Lakeland Community and Industry Association | | |
| Plant / Location | Portable / Elk Poin Airport | | |
| Start Time (MST) | 10:24 | End Time (MST) | 14:20 |
| Reason: | Installation Calibraiton | | |
| Barometric Pressure | 0.941 atm | Station Temperature | 25 Deg C |
| Cal Gas | 48.3 ppm | Gas Cyl. # LL103831 | Cal Gas Expiry date February 28, 2013 |
| DAS Output Voltage | 0 - 1 Volts | Chart Rec. Output | NA Volts |

## Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 100E | S/N : | 467 | Method: | Fluorescent |
| Converter Make / Model: | NA | S/N : | NA | | |
| Calibrator Make / Model: | API 700 | S/N : | 831 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | NA | S/N: | NA | | |
| Flow Meter: | API 700 | S/N : | 831 | | |

## Analyzer Settings

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0 - 1000 ppb | | | |
| Sample Flow / Box Temp | 585 ccm | 37.8 Deg C | 589 ccm | 34.5 Deg C |
| HVPS / Lamp Setting | 612 | 1878 | 612 | 1881 |
| PMT / RxCell Temp | 8.1 Deg C | 50 Deg C | 8.1 Deg C | 50 Deg C |
| Converter / IZS Temp | NA Deg C | 45 Deg C | NA Deg C | 45.0 Deg C |
| Offset / Slope | 90.7 | 0.998 | 91.5 | 1.041 |

## 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. | | | |
| 4919 | 77.6 | 750 | 754 | 0.9949 |
| | No Span Adj. | | | |
| 4958 | 41.4 | 400 | 405 | 0.9876 |
| 4983 | 17.6 | 170 | 173 | 0.9826 |
| 4995 | 0 | 0 | 2 | N/A |
| | | | | |
| | | | Sum of Least Squares | 0.9928 |
| | | | New Correction Factor | 0.9949 |

## IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 2.3 | 1.5 |
| Auto Span | 360.0 | 370.0 |
| Sample Lines Connected | | YES |

## Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | NA |
| Current Correction Factor Before Span Adjust: | 0.9949 |
| Percent Change: | #VALUE! |

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

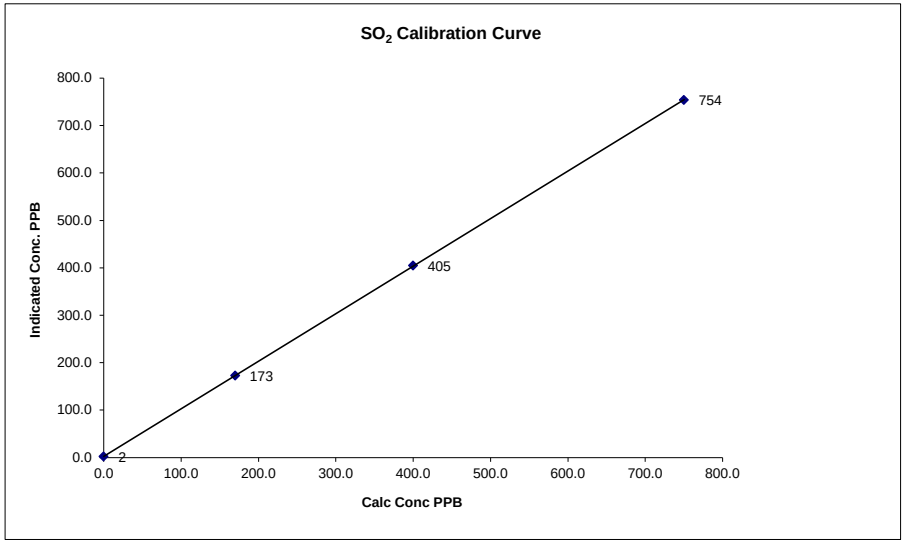
Calibration Performed by: Ting Xu

## $SO_2$ Calibration Curve

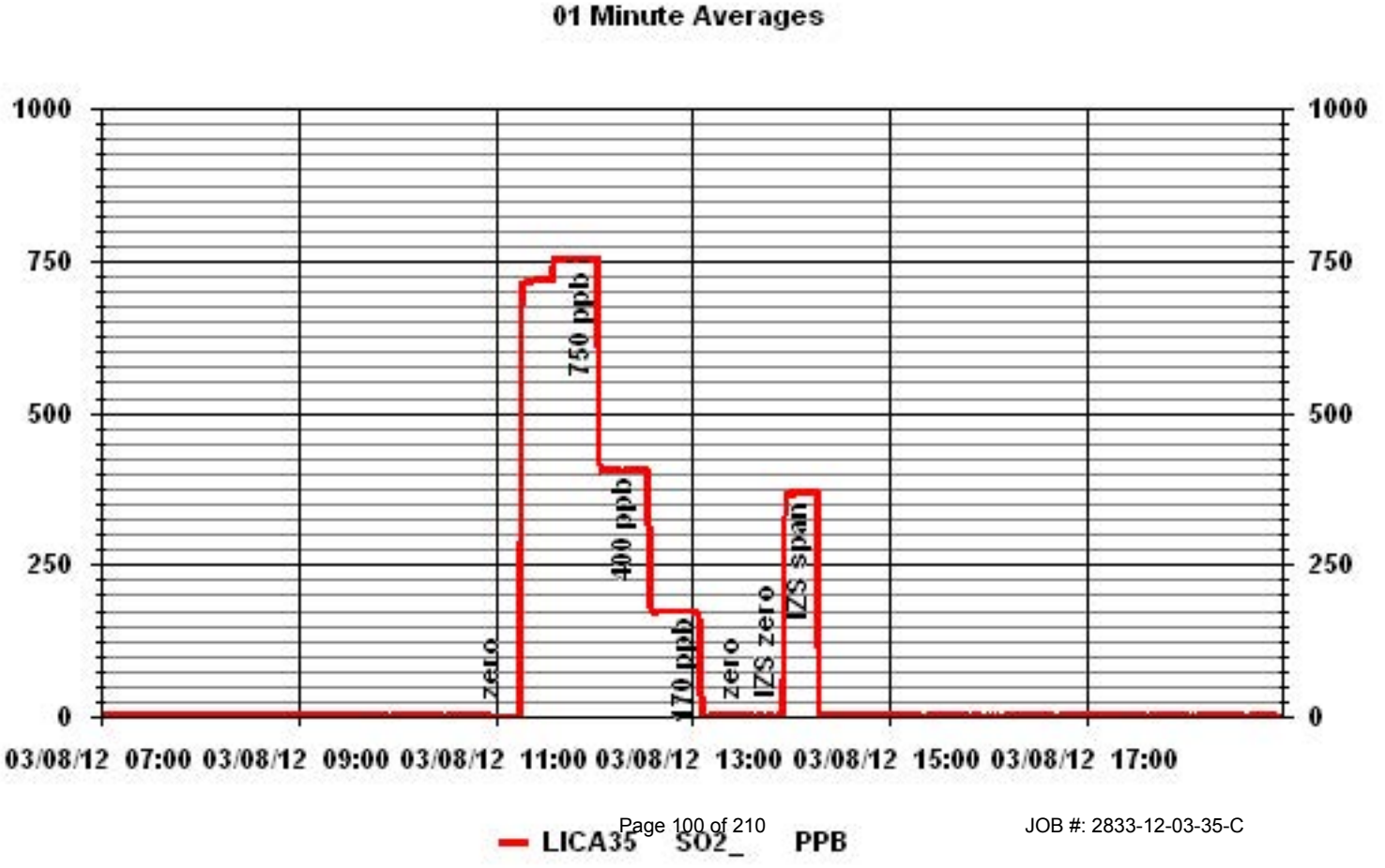
| | | | |
|---|---|---|---|
| Calibration Date | March 8, 2012 | | |
| Company | Lakeland Community and Industry Association | | |
| Plant / Location | Portable / Elk Poin Airport | | |
| Start Time (MST) | 10:24 | End Time (MST) | 14:20 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 2 | n/a |
| 170 | 173 | 0.9826 |
| 400 | 405 | 0.9876 |
| 750 | 754 | 0.9949 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999991 |
| Slope | (0.85 to 1.15) | 1.002654 |
| Intercept | (± 3% F.S.) | 2.600800 |




**Notes:**






JOB #: 2833-12-03-35-C

# Hydrogen Sulphide

## H2S Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 7, 2012 | | Previous Calibration | NA | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | Portable/ Elk Point Airport | | | | |
| Start Time (MST) | 10:46 | | End Time (MST) | 14:46 | |
| Reason: | Installation calibration | | | | |
| Barometric Pressure | 0.931 | atm | Station Temperature | 25 | Deg C |
| Cal Gas | 10.2 ppm | Gas Cyl. # | blm000804 | Cal Gas Expiry date | February 2, 2012 |
| DAS Output Voltage | 0 - 1 | Volts | Chart Rec. Output | NA | Volts |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | API 101E | S/N : | 509 | Method: | Fluorescent |
| Converter Make / Model: | NA | S/N : | NA | | |
| Calibrator Make / Model: | API 700 | S/N : | 831 | Method: | Dilution |
| DAS Make / Model: | ESC 8832 | S/N : | AO717 | | |
| Chart Recorder Make / Model: | NA | S/N: | NA | | |
| Flow Meter: | API 700 | S/N : | 831 | | |

### Analyzer Settings

| | Before Calibration | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|
| Concentration Range | | | 0 - 100 | ppb | | | | |
| Sample Flow / Box Temp | 515 | ccm | 34.6 | Deg C | 518 | ccm | 33.5 | Deg C |
| HVPS / Lamp Setting | 540 | | 2028 | | 540 | | 2036 | |
| PMT / RxCell Temp | 8 | Deg C | 50 | Deg C | 7.9 | Deg C | 50 | Deg C |
| Converter / IZS Temp | 314.7 | Deg C | 45 | Deg C | 313.8 | Deg C | 45.0 | Deg C |
| Offset / Slope | 68.1 | | 1.04 | | 71.5 | | 1.012 | |

### Calibration Data

| Dilution Flow Rate | Source Gas Flow Rate | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4995 | 0 | 0 | 0 | NA |
| | No Zero Adj. | | | |
| 4959 | 39.2 | 80 | 80 | 1.0000 |
| | No Span Adj. | | | |
| 4981 | 19.6 | 40 | 41 | 0.9751 |
| 4986 | 11.2 | 23 | 24 | 0.9525 |
| 4995 | 0 | 0 | 1 | NA |
| | | | | |
| | | | Sum of Least Squares | 0.9922 |
| | | | New Correction Factor | |

### IZS Calibration Data

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 2.9 | 1.5 |
| Auto Span | 54.7 | 52.2 |
| Sample Lines Connected | | YES |

### Percent Change

| | |
|---|---|
| Previous Month's Calibration Correction Factor: | NA |
| Current Correction Factor Before Span Adjust: | 1.0000 |
| Percent Change: | #VALUE! |

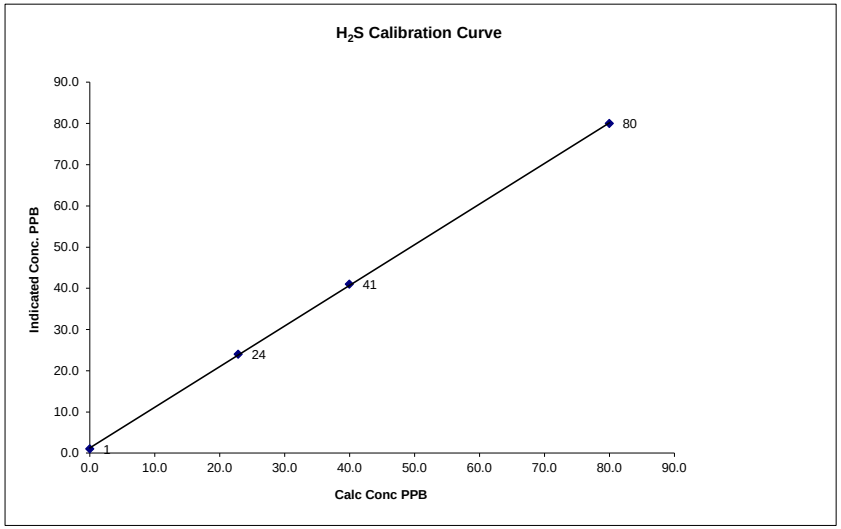
Notes: **NA : Not Applicable**

Calibration Performed by: Ting Xu / Theo McLaren

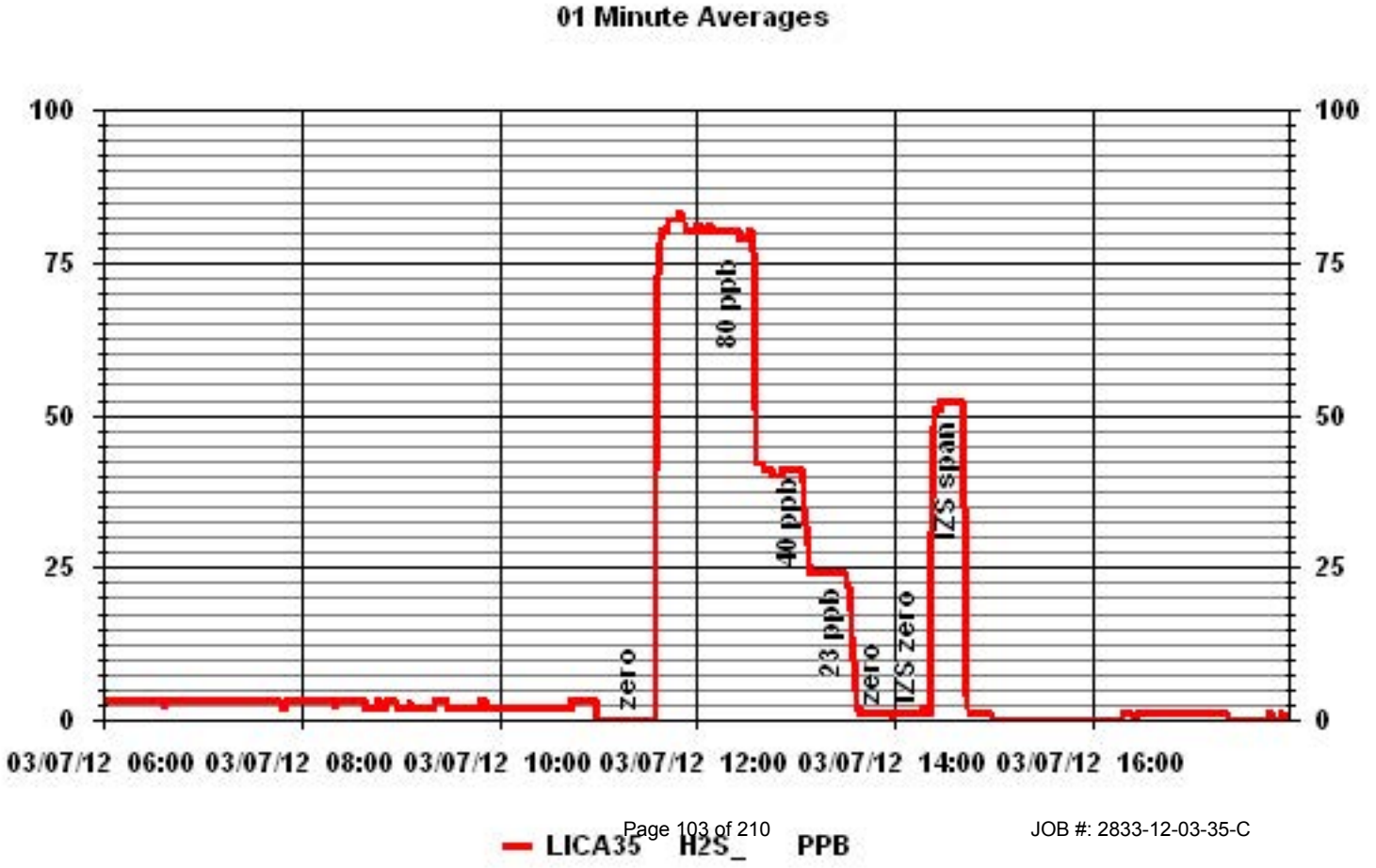
## $H_2S$ Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 7, 2012 | | | | |
| Company | LAKELAND INDUSTRY & COMMUNITY ASSOCIATION | | | | |
| Plant / Location | Portable/ Elk Point Airport | | | | |
| Start Time (MST) | 10:46 | | End Time (MST) | 14:46 | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | | | |
|---|---|---|---|---|---|
| | | | Correlation Coefficient | (≥ 0.995) | 0.999933 |
| | | | Slope | (0.85 to 1.15) | 0.986594 |
| 0 | 1 | | Intercept | (± 3% F.S.) | 1.269506 |
| 23 | 24 | 0.9525 | | | |
| 40 | 41 | 0.9751 | | | |
| 80 | 80 | 1.0000 | | | |




**Notes:**






JOB #: 2833-12-03-35-C

# Particulate Matter 2.5

# TEOM 1405F Audit

| Station | | Audit Transfer Standard | |
|---|---|---|---|
| Date: | March 9, 2012 | Make/Model: | Streamline FTS |
| Station Name: | Lica Portable (CASA # 35) | Serial Number: | Hi 091001, Low 091099 |
| Location: | Elk Point Airport | Cell s/n: | NA |
| Operator: | LICA | Thermometer s/n: | Fisher Brad 15-021B |

| Sampler | | Set-up and current Sampler readings | |
|---|---|---|---|
| Make/Model | Thermo Scientific Series 1405F | F-Main Set Pt (l/min) | 3.00 |
| Unit # | NA | F-Aux Set Pt (l/min) | 13.67 |
| Unit s/n | 1405A208301003 | Filter Load (%) | 42.5% |
| Firmware Ver. | 1.55 | $K_o$ Factor | 15634 |
| Parameter | PM 2.5 (with FDMS) | Temp ($^oC$) | 7.3 |
| | | Press (ATM) | 0.922 |

**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** | 0.003 | Warnings | None |
| Pump Vacuum **<0.40atm** | 0.36 | Pump Gauge (inHg) | -18 |

**Temperature/Pressure**

| | | | |
|---|---|---|---|
| Measured Temp **(± 2 °C)** | 7.1 | **D °C** | 0.2 |
| Measured Press **(± 0.01atm)** | 0.917 | **DATM** | 0.005 |

**Flow Audit**

| | | | |
|---|---|---|---|
| Indicated Main Flow (l/min) | 3.00 | Main Flow Drift **(±10.0%)** | 0.12% |
| Measured Main Flow (l/min) | 2.95 | Flow Adjusted to Measured? | Yes |
| Indicated Bypass Flow (l/min) | 13.67 | Bypass Flow Drift **(±10.0%)** | 1.47% |
| Measured Bypass Flow (l/min) | 13.07 | Flow Adjusted to Measured? | Yes |

**Leak Check**

| | |
|---|---|
| Main **(< 0.15 l/min)** | Base= 0.03 Ref= -0.03 |
| Aux **(< 0.6 l/min)** | Base= 0.00, Ref= 0.00 |

**Instrument Setup**

Flow Control = Active

Report Conditions = Actual

**$K_o$ Factor**

| | |
|---|---|
| Measured | NA |
| $K_o$ Difference **(± 2.5%)** | NA |

**Start Time:** 12:50 **Finish Time:** 14:52

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

**New Filter Loading %:** 20.1%

**Comments:** Using pressure and temperature from Maskwa station as a reference.



**Auditor/s:** Ting Xu

# TEOM 1405F Audit

| Station | | Audit Transfer Standard | |
|---|---|---|---|
| Date: | March 10, 2012 | Make/Model: | Streamline FTS |
| Station Name: | Lica Portable (CASA # 35) | Serial Number: | Hi 091001, Low 091099 |
| Location: | Elk Point Airport | Cell s/n: | NA |
| Operator: | LICA | Thermometer s/n: | Fisher Brad 15-021B |

| Sampler | | Set-up and current Sampler readings | | |
|---|---|---|---|---|
| Make/Model | Thermo Scientific Series 1405F | F-Main Set Pt (l/min) | | 3.00 |
| Unit # | NA | F-Aux Set Pt (l/min) | | 13.67 |
| Unit s/n | 1405A208301003 | Filter Load (%) | 19.2 | 42.5% |
| Firmware Ver. | 1.55 | $K_o$ Factor | | 13125 |
| Parameter | PM 2.5 (with FDMS) | Temp ($^oC$) | | 5.6 |
| | | Press (ATM) | | 0.926 |

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

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

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

## Audit

**Status**

| | | | |
|---|---|---|---|
| Noise **<0.10*u* g** | 0.027 | Warnings | None |
| Pump Vacuum **<0.40atm** | 0.38 | Pump Gauge (inHg) | -17 |

**Temperature/Pressure**

| | | | |
|---|---|---|---|
| Measured Temp **(± 2 °C)** | 5.6 | **D °C** | 0.0 |
| Measured Press **(± 0.01atm)** | 0.923 | **DATM** | 0.003 |

**Flow Audit**

| | | | |
|---|---|---|---|
| Indicated Main Flow (l/min) | 3.00 | Main Flow Drift **(±10.0%)** | 0.49% |
| Measured Main Flow (l/min) | 2.99 | Flow Adjusted to Measured? | Yes |
| Indicated Bypass Flow (l/min) | 13.67 | Bypass Flow Drift **(±10.0%)** | 2.37% |
| Measured Bypass Flow (l/min) | 13.81 | Flow Adjusted to Measured? | Yes |

**Leak Check**

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

**Instrument Setup**

Flow Control = Active

Report Conditions = Actual

**$K_o$ Factor**

| | |
|---|---|
| Measured | NA |
| $K_o$ Difference **(± 2.5%)** | NA |

**Start Time:** 11:42 **Finish Time:** 14:52

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

**New Filter Loading %:** 23.1%

**Comments:** Teom unit was not function well after audit yesterday. Re-did the audit.



**Auditor/s:** Ting Xu

# Nitrogen Dioxide

## NOx - NO- $NO_2$ Calibration Report

### Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 7, 2012 | | Previous Calibration | NA | |
| Company | LICA | | Plant/Location | **Portable/Elk Point Airport** | |
| Start Time (MST) | 10:46 | | End Time (MST) | 17:24 | |
| Reason: | Installation Calibration | | | | |
| Barometric Pressure | 0.931 atm | Station Temperature | 25 Deg C | MFCF | 0 |
| Cal Gas Concentration | NOx 49.7 ppm | NO 49.4 ppm | Cal Gas Expiry date | February 28, 2013 | |
| Cal Gas Cylinder # | LL103831 | | | | |
| DAS Output Voltage | 0 - 1 Volts | | Chart Rec. Output | NA Volts | |

### Equipment Information

| | | | | | |
|---|---|---|---|---|---|
| Analyzer Make / Model: | TAPI 200E | S/N : | 593 | Method: | Chemiluminescent |
| Calibrator Make / Model: | 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 | 473 | ccm | 314 | Deg C | | 467 | ccm | 314 | Deg C |
| Ozone Flow / Vacuum | 78 | ccm | 4.9 | "Hg-A | | 77 | ccm | 4.9 | "Hg-A |
| HVPS / A ZERO | 646 | Volts | 7.1 | MV | | 646 | Volts | 7.2 | 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 | 34.4 | Deg C | 45.3 | Deg C | | 36.5 | Deg C | 45.1 | Deg C |
| Offset | 1.1 | NOx | 0.9 | NO | | 0.7 | NOx | 0.4 | NO |
| Slope | 1.031 | NOx | 1.016 | NO | | 1.069 | NOx | 1.057 | NO |
| $NO_2$ COEF / Conv Efficency | NA | NO2 | 0.996 | | | NA | NO2 | 0.996 | |

### Dilution Calibration Data

| Dilution Air Flow Rate | Source Flow Rate | O3 Set Point | Calculated Concentration | | | Indicated Concentration | | | Correction Factor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | NOx | NO | NO2 | NOx | NO | NO2 | NOx | NO |
| 4994 | 0.0 | NA | 0 | 0 | NA | -1 | -1 | -1 | NA | NA |
| | No Zero Adj | | | | | | | | | |
| 4918 | 75.7 | NA | 753 | 749 | NA | 753 | 749 | 4 | 1.0000 | 1.0000 |
| | No Span Adj. | | | | | | | | | |
| 4953 | 40.3 | NA | 401 | 399 | NA | 398 | 396 | 2 | 1.0053 | 1.0043 |
| 4974 | 20.2 | NA | 201 | 200 | NA | 200 | 198 | 2 | 1.0001 | 1.0041 |
| 4994 | 0.0 | NA | 0 | 0 | NA | -1 | 0 | -1 | 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 | | |
| 4918 | 75.7 | NA | 753 | 749 | NA | 754 | 750 | 4 | NA | NA |
| No Adj Required | | | | | | | | | | |
| 4918 | 75.7 | 600 | 753 | NA | 532 | 750 | 222 | 528 | 1.0057 | 99.24% |
| 4918 | 75.7 | 250 | 753 | NA | 231 | 751 | 523 | 228 | 1.0087 | 98.68% |
| 4918 | 75.7 | 140 | 753 | NA | 132 | 753 | 622 | 131 | 1.0000 | 99.22% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Linearity | | Sum of Least Squares | NOx= | 1.002 | NO= | 1.002 | NO2= | 1.008 |
| OK? | Yes No | Correction Factors: | NOx= | 1.0000 | NO= | 1.0000 | NO2= | 1.0057 |
| | | | | Average Converter Efficiency= | | 99.05% | | |

### IZS Calibration Data

| | Before Calibration | | | | | After Calibration | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auto Zero | NA | NOx | NA | NO2 | | 0.7 | NOx | -0.1 | NO2 |
| Auto Span | NA | NOx | NA | NO2 | | 593 | NOx | 577 | NO2 |
| | | | | | Sample Lines Connected | YES | | | |

| Percent Change from Previous Calibration | NOx | NA | NO | NA | NO2 | NA |
|---|---|---|---|---|---|---|

Notes

**NA : Not Applicable**

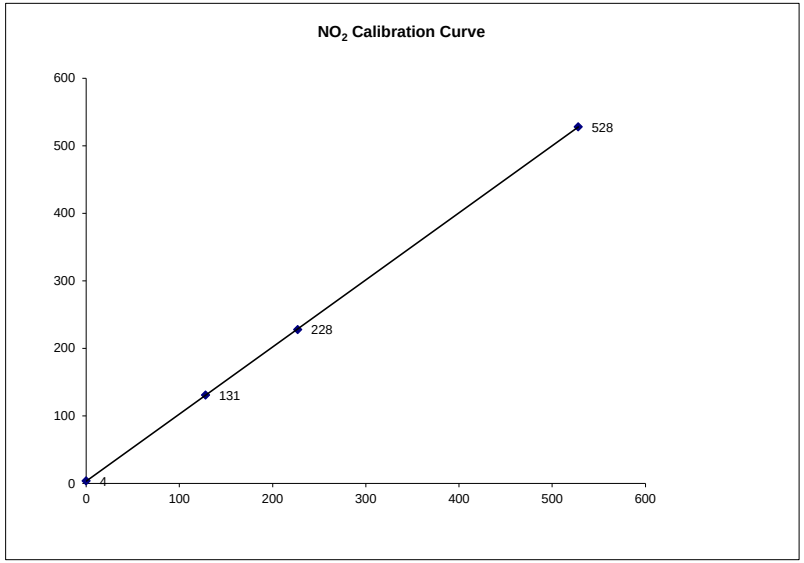
Additional GPT was done for O3 claibration. O3 set point 420, NOx=735, NO=376, NO2=376

Calibration Performed by: Ting Xu / Theo McLaren

## $NO_2$ Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 7, 2012 | | | | |
| Company | **LICA** | | | | |
| Plant / Location | **Portable/Elk Point Airport** | | | | |
| Start Time (MST) | 10:46 | End Time (MST) | 17:24 | | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient (≥ 0.995) | 0.999992 |
|---|---|---|---|---|
| | | | Slope (0.85 to 1.15) | 0.992390 |
| 0 | 4 | N/A | Intercept (± 3% F.S.) | 3.67990 |
| 128 | 131 | 0.9771 | | |
| 227 | 228 | 0.9956 | | |
| 528 | 528 | 1.0000 | | |

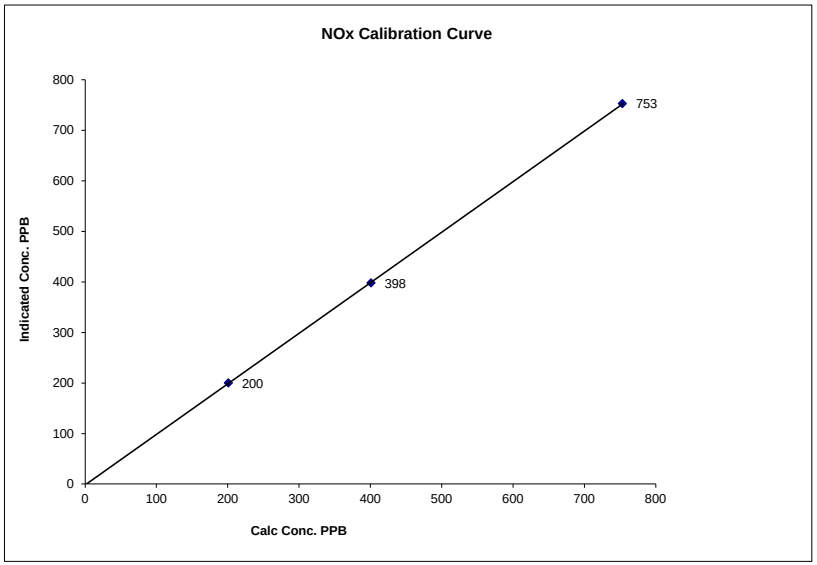



Notes:

## NOx Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 7, 2012 | | | | |
| Company | LICA | | | | |
| Plant / Location | Portable/Elk Point Airport | | | | |
| Start Time (MST) | 10:46 | End Time (MST) | 17:24 | | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient | (≥ 0.995) | 0.999986 |
|---|---|---|---|---|---|
| | | | Slope | (0.85 to 1.15) | 1.000377 |
| 0 | -1 | N/A | Intercept | (± 3% F.S.) | -1.51476 |
| 201 | 200 | 1.0051 | | | |
| 401 | 398 | 1.0078 | | | |
| 753 | 753 | 1.0005 | | | |

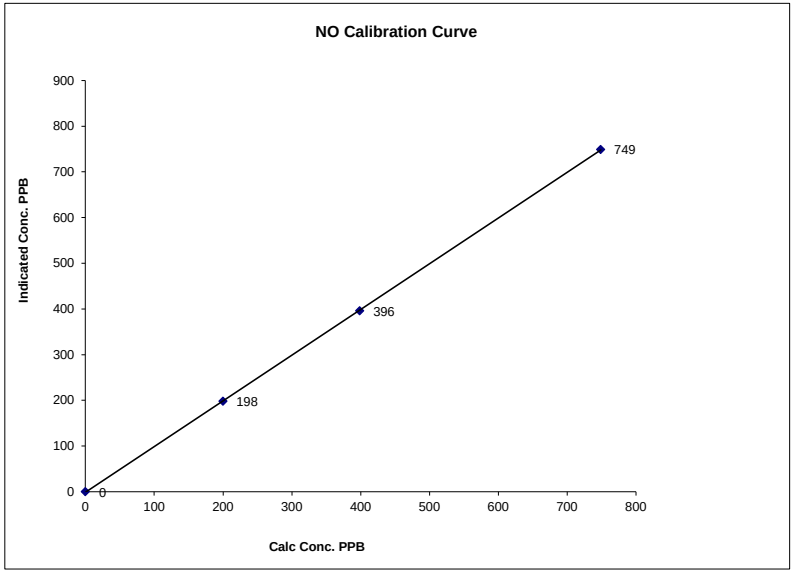



Notes:

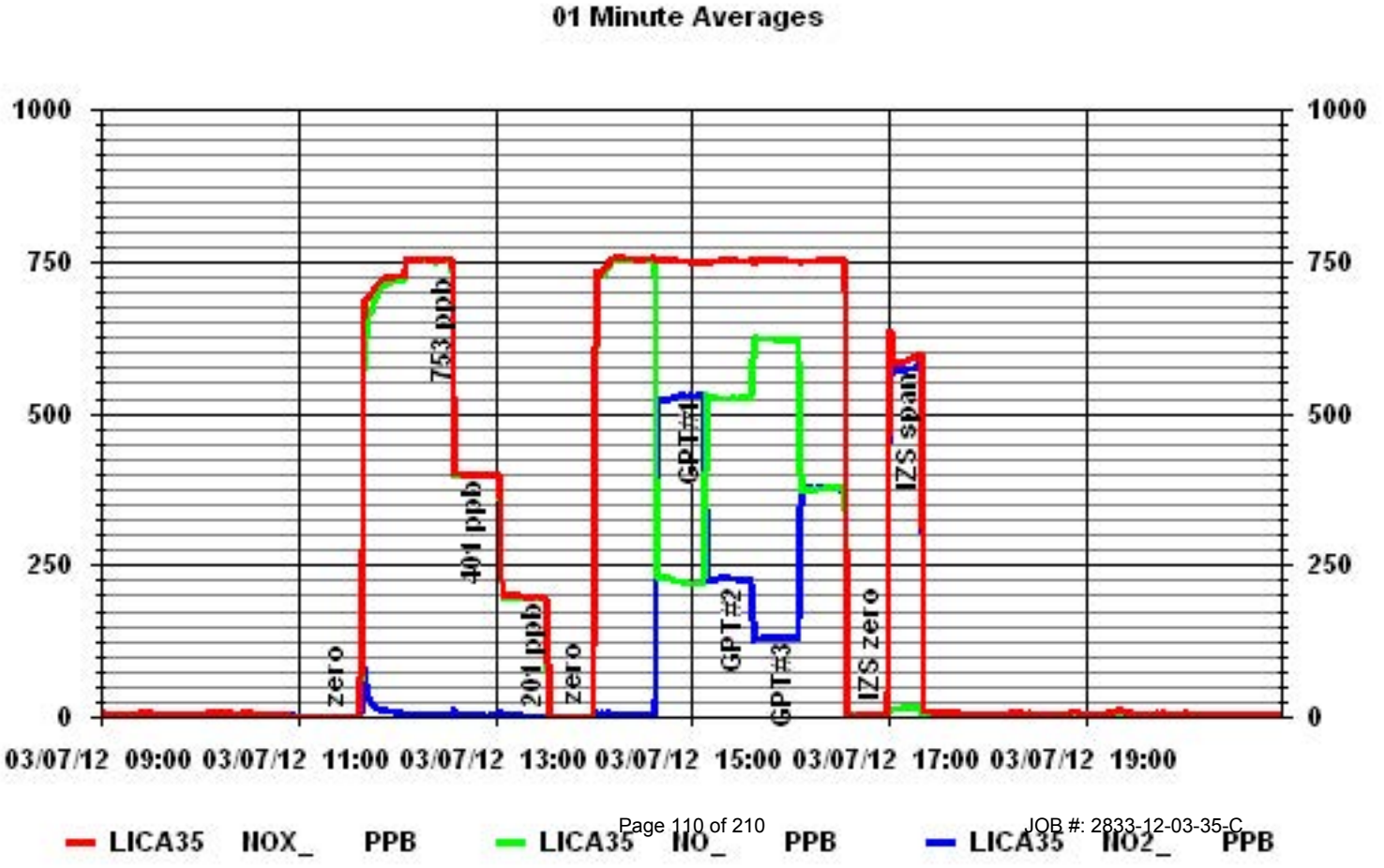
## NO Calibration Curve

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date | March 7, 2012 | | | | |
| Company | LICA | | | | |
| Plant / Location | Portable/Elk Point Airport | | | | |
| Start Time (MST) | 10:46 | End Time (MST) | 17:24 | | |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor | Correlation Coefficient | (≥ 0.995) | 0.999981 |
|---|---|---|---|---|---|
| | | | Slope | (0.85 to 1.15) | 1.004069 |
| 0 | 0 | N/A | Intercept | (± 3% F.S.) | -5.9304 |
| 200 | 198 | 1.0091 | | | |
| 399 | 396 | 1.0068 | | | |
| 749 | 749 | 0.9998 | | | |




Notes:


01 Minute Averages
1000
750
500
250
0
zero
753 ppb
401 ppb
201 ppb
zero
GPT#1
GPT#2
GPT#3
IZS zero
IZS span
03/07/12 09:00
03/07/12 11:00
03/07/12 13:00
03/07/12 15:00
03/07/12 17:00
03/07/12 19:00
LICA35 NOX_ PPB
LICA35 NO_ PPB
LICA35 NO2_ PPB

# Ozone

## $O_3$ Calibration Report

### Station Information

| | | | |
|---|---|---|---|
| Calibration Date | March 8, 2012 | Previous Calibration | NA |
| Company | **Lakeland Industry & Community Association** | | |
| Plant / Location | **Portable / Elk Point Airport** | | |
| Start Time (MST) | 10:24 | End Time (MST) | 14:20 |
| Reason: | | Installation Calibration | |
| Barometric Pressure | 0.941 atm | Station Temperature | 25 Deg C |
| DAS Output Voltage | 0 - 1 Volts | | |

### Equipment Information

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

### Analyzer Settings

| | Before Calibration | | After Calibration | |
|---|---|---|---|---|
| Concentration Range | 0 - 500 ppb | | | |
| Cell A Flow / Cell B Flow | 763 ccm | 767 ccm | 759 ccm | 763 ccm |
| Pressure | 702 mmHg | | 700 mmHg | |
| Bench Lamp | 54.1 Deg C | | 54.1 DegC | |
| O3 Lamp / Box Temp | 68.2 Deg C | 32.1 Deg C | 68.2 Deg C | 31.7 Deg C |
| Offset / Slope | 0 | 0.984 | 0 | 0.974 |

### Calibration Data

| Dilution Flow Rate | Ozone Set Point | Calculated Concentration | Indicated Conc. (DAS) | Correction Factor |
|---|---|---|---|---|
| 4995 | 0 | 0 | 0 | NA |
| | No Zero Adj | | | |
| 4995 | 420 | 374 | 373 | 1.0027 |
| | No Span Adj. | | | |
| 4995 | 250 | 227 | 222 | 1.0225 |
| 4995 | 140 | 128 | 124 | 1.0323 |
| 4995 | 0 | 0 | 0 | NA |
| | | | | |
| | | | Sum of Least Squares | 1.0098 |
| | | | New Correction Factor | 1.0027 |

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | 0.0 | 0.0 |
| Auto Span | 320.0 | 323.0 |
| Sample Lines Connected | | YES |
| Previous Calibration Correction Factor: | | NA |
| Current Correctio Factor Before Span Adjust: | | 1.0027 |
| Percent Change: | | #VALUE! |

Note: **NA : Not Applicable**

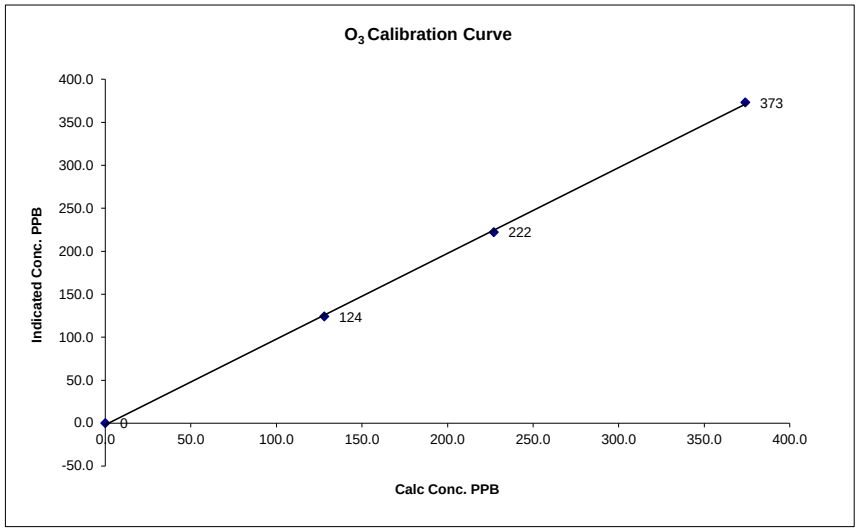
Calibration Performed by: Ting Xu

## $O_3$ Calibration Curve

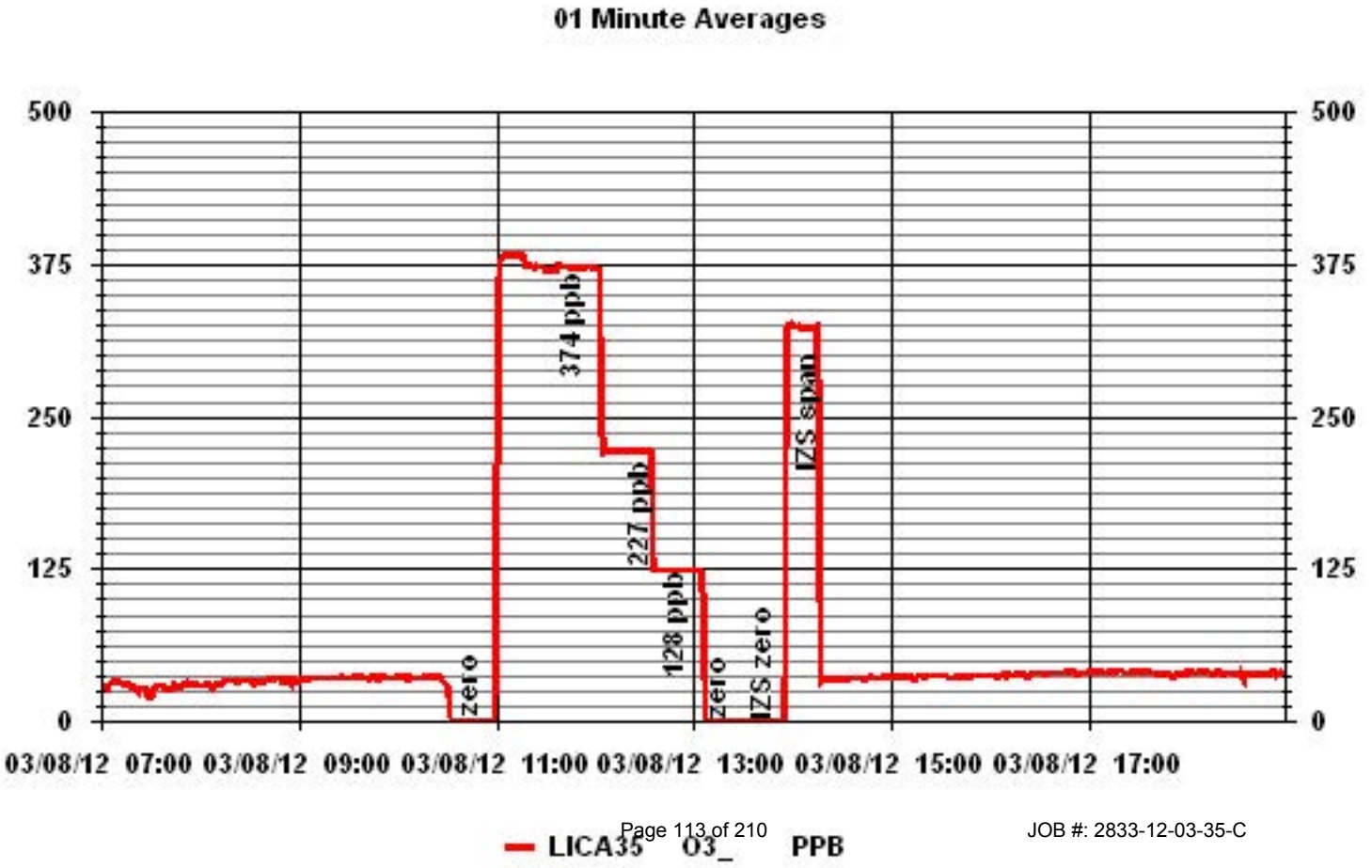
| | | | |
|---|---|---|---|
| Calibration Date | March 8, 2012 | | |
| Company | **Lakeland Industry & Community Association** | | |
| Plant / Location | **Portable / Elk Point Airport** | | |
| Start Time (MST) | 10:24 | End Time (MST) | 14:20 |

| Calculated Conc. ppb | Indicated Response ppb | Correction Factor |
|---|---|---|
| 0 | 0 | n/a |
| 128 | 124 | 1.0323 |
| 227 | 222 | 1.0225 |
| 374 | 373 | 1.0027 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999779 |
| Slope | (0.85 to 1.15) | 0.997351 |
| Intercept | (± 3% F.S.) | -2.017186 |




Notes:






JOB #: 2833-12-03-35-C

# Total Hydrocarbons

## THC Calibration Report

Station Information

| | | | | | |
|---|---|---|---|---|---|
| Calibration Date: | March 7, 2012 | | Previous Calibration | NA | |
| Company: | **Lakeland Industry and Community Association** | | | | |
| Plant / Location: | **ELICA Portable Station / Elk Point Airport** | | | | |
| Start Time (MST) | 14:11 | | End Time (MST) | 18:09 | |
| Reason: | Installation Calibration | | | | |
| Barometric Pressure: | 0.929 | atm | Station Temperature: | 24 | Deg C |
| Calibrator: | API 700 | | S/N: | 831 | |
| Cal Gas Concentration: | CH4 980 PPM | | C3H8 | 304 PPM | |
| | TOTAL CH4 1816.0 PPM | | Gas Cyl. # | LL84144 | Cal Gas Expiry Date: December 3, 2013 |
| DAS make & Model: | ESC 8832 | | S/N : | AO 717 | |
| Chart Recorder: | NA | | S/N: | NA | |
| Output Voltage Range: | 0 - 1 | VDC | Chart Speed: | NA | mm/hr |

**Analyzer Information**

| Make / Model | Thermo 51C | S/N : | 04366-09739 | 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 | 8 | psi | 8 | psi |
| Air Pressure | 21 | psi | 21 | psi |

**Calibration Data**

| Dilution Flow | Source Gas Flow | Calculated Concentration | Indicated Concentration | Correction Factor |
|---|---|---|---|---|
| 3000 | 0.0 | 0.0 | 0.0 | NA |
| | No Zero Adj | | | |
| 3000 | 70.0 | 41.4 | 41.7 | 0.9930 |
| | No Span Adj. | | | |
| 3000 | 35.0 | 20.9 | 20.8 | 1.0068 |
| 3000 | 20.0 | 12.0 | 11.9 | 1.0106 |
| 3000 | 0.0 | 0.0 | 0.0 | NA |
| | | | New Correction Factor: | 0.9930 |

**Percent Change**

| | |
|---|---|
| Previous Calibration Correction Factor: | NA |
| Current Correction Factor Before Span Adjust: | 0.9930 |
| Percent Change: | #VALUE! |

**IZS Calibration Data**

| | Before Calibration | After Calibration |
|---|---|---|
| Auto Zero | -0.5 | 0.0 |
| Auto Span | 32.8 | 32.4 |
| Sample Lines Connected | | **YES** |

Cylinder Pressures

Span 2000 psi Hydrogen 1900 psi Zero Air 35 psi

Notes: **NA : Not Applicable**

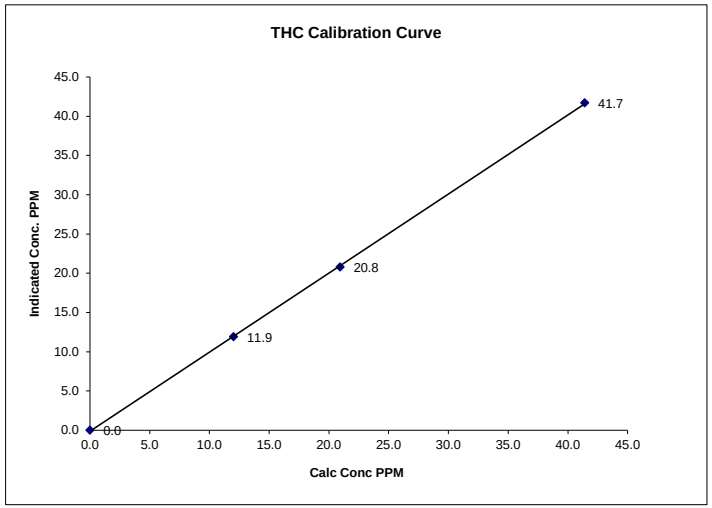
Calibration Performed by: Ting Xu / Theo McLaren

## THC Calibration Curve

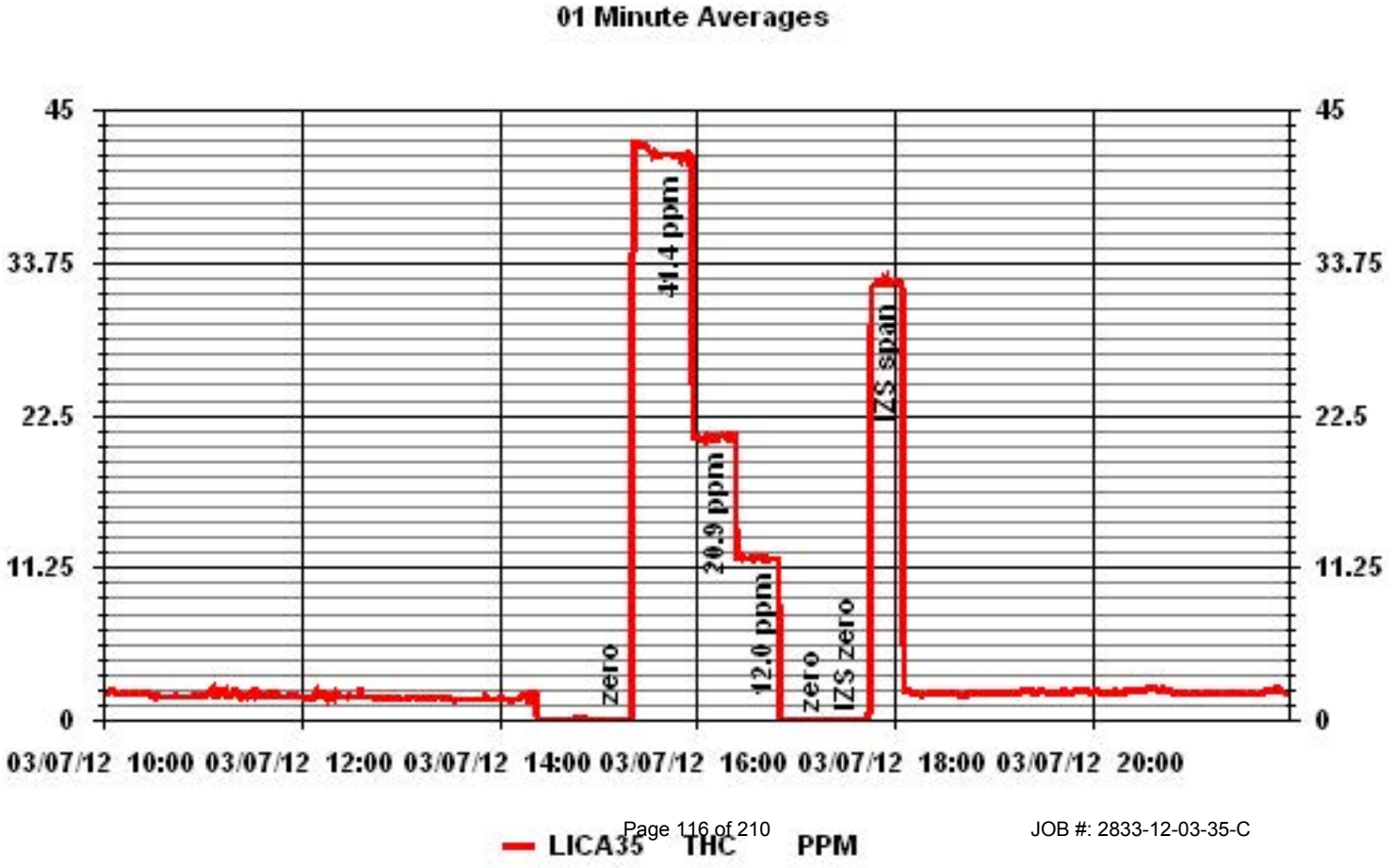
| | | | |
|---|---|---|---|
| Calibration Date | March 7, 2012 | | |
| Company | **Lakeland Industry and Community Association** | | |
| Plant / Location | **ELICA Portable Station / Elk Point Airport** | | |
| Start Time (MST) | 14:11 | End Time (MST) | 18:09 |

| Calculated Conc. ppm | Indicated Response ppm | Correction Factor |
|---|---|---|
| 0.0 | 0.0 | NA |
| 12.0 | 11.9 | 1.0106 |
| 20.9 | 20.8 | 1.0068 |
| 41.4 | 41.7 | 0.9930 |

| | | |
|---|---|---|
| Correlation Coefficient | (≥ 0.995) | 0.999929 |
| Slope | (0.85 to 1.15) | 1.007845 |
| Intercept | (± 3% F.S.) | -0.13987 |




Notes:






JOB #: 2833-12-03-35-C

# Volatile Organics Laboratory Analysis

# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA
Location: 13-16-62-5 W4M
Station ID: Lica 33 (Portable)
Field Sample ID: LICA VOC/PORT/ Mar 10, 12

Sampler s/n: 6200
Canister ID: 7845
Canister Installation Date/Time: Mar 08, 12 @ 13:35 mst
Canister Removal Date/Time: Mar 14, 12 @ 09:30 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 10-Mar-12 | 03/10/2012 0:00 | 03/11/2012 0:00 | 24.0000 |

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

| Canister Information | |
|---|---|
| Initial Canister Vacuum (inHg) | Final Canister Pressure (psig) |
| -29 | 21 |

**Canister valve open prior to sampling?: YES /** NO
**Timer set to 0.00 minutes prior to sampling? YES /** NO
**Canister valve closed prior to disconnection?: YES /** NO

Comments: System leak check prior to sampling. COC # 10793

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

Your C.O.C. #: 10793

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

**Report Date: 2012/03/23**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B238766**
**Received: 2012/03/20, 09:45**

Sample Matrix: AIR
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | 2 | N/A | 2012/03/21 | BRL SOP-00304 | EPA TO-15 |
| Volatile Organics in Air (TO-15) (1) | 2 | N/A | 2012/03/21 | BRL SOP-00304 | EPA TO-15 |

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1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Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

## RESULTS OF ANALYSES OF AIR

| Maxxam ID | | MV8205 | MV8206 | |
|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | 2012/03/10 | |
| COC Number | | 10793 | 10793 | |
| | **Units** | **LICA VOC/CLS/ MAR 10,12 - 113** | **LICA VOC/PORT/ MAR 10,12 - 7845** | **QC Batch** |
| **Volatile Organics** | | | | |
| Pressure on Receipt | psig | 24 | 22 | 2798164 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

## VOLATILE ORGANICS BY GC/MS (AIR)

| | | | | | | |
|---|---|---|---|---|---|---|
| Maxxam ID | | MV8205 | | | | |
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/CLS/ MAR 10,12 - 113** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2798162 |
| Carbon Disulfide | ppbv | 0.58 | 0.50 | 1.82 | 1.56 | 2798162 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2798162 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2798162 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2798162 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.64 | 0.20 | 3.19 | 0.989 | 2798162 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2798162 |
| Chloromethane | ppbv | 0.57 | 0.30 | 1.18 | 0.620 | 2798162 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2798162 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2798162 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2798162 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.30 | 0.20 | 1.69 | 1.12 | 2798162 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2798162 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2798162 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2798162 |
| 2-Propanone | ppbv | 1.33 | 0.80 | 3.17 | 1.90 | 2798162 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2798162 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2798162 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2798162 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2798162 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2798162 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2798162 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2798162 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2798162 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2798162 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2798162 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2798162 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2798162 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2798162 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2798162 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MV8205 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/CLS/ MAR 10,12 - 113** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2798162 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2798162 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2798162 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2798162 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2798162 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2798162 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2798162 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2798162 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2798162 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2798162 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2798162 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2798162 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2798162 |
| Benzene | ppbv | 0.20 | 0.18 | 0.628 | 0.575 | 2798162 |
| Toluene | ppbv | 0.25 | 0.20 | 0.934 | 0.753 | 2798162 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2798162 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2798162 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2798162 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2798162 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2798162 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2798162 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2798162 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2798162 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2798162 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2798162 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2798162 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2798162 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2798162 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2798162 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

## VOLATILE ORGANICS BY GC/MS (AIR)

| | | | | | | |
|---|---|---|---|---|---|---|
| Maxxam ID | | MV8205 | | | | |
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/CLS/ MAR 10,12 - 113** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2798162 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2798162 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 92 | | N/A | N/A | 2798162 |
| D5-Chlorobenzene | % | 86 | | N/A | N/A | 2798162 |
| Difluorobenzene | % | 92 | | N/A | N/A | 2798162 |

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


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MV8206 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/PORT/ MAR 10,12 - 7845** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2798162 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2798162 |
| Propene | ppbv | <1.3 | 1.3 | <2.27 | 2.27 | 2798162 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2798162 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2798162 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.70 | 0.20 | 3.45 | 0.989 | 2798162 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2798162 |
| Chloromethane | ppbv | 0.57 | 0.30 | 1.19 | 0.620 | 2798162 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2798162 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2798162 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2798162 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.29 | 0.20 | 1.64 | 1.12 | 2798162 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2798162 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2798162 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2798162 |
| 2-Propanone | ppbv | 1.18 | 0.80 | 2.79 | 1.90 | 2798162 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2798162 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2798162 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2798162 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2798162 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2798162 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2798162 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2798162 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2798162 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2798162 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2798162 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2798162 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2798162 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2798162 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2798162 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MV8206 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/PORT/ MAR 10,12 - 7845** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2798162 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2798162 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2798162 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2798162 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2798162 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2798162 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2798162 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2798162 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2798162 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2798162 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2798162 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2798162 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2798162 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2798162 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2798162 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2798162 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2798162 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2798162 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2798162 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2798162 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2798162 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2798162 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2798162 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2798162 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2798162 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2798162 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2798162 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2798162 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2798162 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2798162 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

## VOLATILE ORGANICS BY GC/MS (AIR)

| | | | | | | |
|---|---|---|---|---|---|---|
| Maxxam ID | | MV8206 | | | | |
| Sampling Date | | 2012/03/10 | | | | |
| COC Number | | 10793 | | | | |
| | **Units** | **LICA VOC/PORT/ MAR 10,12 - 7845** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2798162 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2798162 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 92 | | N/A | N/A | 2798162 |
| D5-Chlorobenzene | % | 85 | | N/A | N/A | 2798162 |
| Difluorobenzene | % | 92 | | N/A | N/A | 2798162 |

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


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Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

## Test Summary

**Maxxam ID** MV8205 **Collected** 2012/03/10
**Sample ID** LICA VOC/CLS/ MAR 10,12 - 113 **Shipped**
**Matrix** AIR **Received** 2012/03/20

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2798164 | N/A | 2012/03/21 | MELANIE MABINI |
| Volatile Organics in Air (TO-15) | GC/MS | 2798162 | N/A | 2012/03/21 | MELANIE MABINI |

**Maxxam ID** MV8206 **Collected** 2012/03/10
**Sample ID** LICA VOC/PORT/ MAR 10,12 - 7845 **Shipped**
**Matrix** AIR **Received** 2012/03/20

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2798164 | N/A | 2012/03/21 | MELANIE MABINI |
| Volatile Organics in Air (TO-15) | GC/MS | 2798162 | N/A | 2012/03/21 | MELANIE MABINI |


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Maxxam Analytics

Maxxam Job #: B238766
Report Date: 2012/03/23

**GENERAL COMMENTS**

Sample MV8206-01: Increase MDL for propene due to matrix interference on a possible positive.

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


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

# Quality Assurance Report

Maxxam Job Number: GB238766

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2798162 | MM2 | Spiked Blank | Bromochloromethane | 2012/03/21 | | 110 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/21 | | 110 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/21 | | 113 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/21 | | 109 | % | 70 - 130 |
| | | | Carbon Disulfide | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Propene | 2012/03/21 | | 112 | % | 70 - 130 |
| | | | Vinyl Acetate | 2012/03/21 | | 115 | % | 70 - 130 |
| | | | Vinyl Bromide | 2012/03/21 | | 111 | % | 70 - 130 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/21 | | 111 | % | 70 - 130 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/21 | | 125 | % | 70 - 130 |
| | | | Chloromethane | 2012/03/21 | | 114 | % | 70 - 130 |
| | | | Vinyl Chloride | 2012/03/21 | | 110 | % | 70 - 130 |
| | | | Chloroethane | 2012/03/21 | | 105 | % | 70 - 130 |
| | | | 1,3-Butadiene | 2012/03/21 | | 115 | % | 70 - 130 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/21 | | 98 | % | 70 - 130 |
| | | | Trichlorotrifluoroethane | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Ethanol (ethyl alcohol) | 2012/03/21 | | 99 | % | 70 - 130 |
| | | | 2-propanol | 2012/03/21 | | 108 | % | 70 - 130 |
| | | | 2-Propanone | 2012/03/21 | | 111 | % | 70 - 130 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/21 | | 95 | % | 70 - 130 |
| | | | Methyl Isobutyl Ketone | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/21 | | 107 | % | 70 - 130 |
| | | | Ethyl Acetate | 2012/03/21 | | 110 | % | 70 - 130 |
| | | | 1,1-Dichloroethylene | 2012/03/21 | | 102 | % | 70 - 130 |
| | | | cis-1,2-Dichloroethylene | 2012/03/21 | | 103 | % | 70 - 130 |
| | | | trans-1,2-Dichloroethylene | 2012/03/21 | | 107 | % | 70 - 130 |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/21 | | 95 | % | 70 - 130 |
| | | | Chloroform | 2012/03/21 | | 99 | % | 70 - 130 |
| | | | Carbon Tetrachloride | 2012/03/21 | | 102 | % | 70 - 130 |
| | | | 1,1-Dichloroethane | 2012/03/21 | | 99 | % | 70 - 130 |
| | | | 1,2-Dichloroethane | 2012/03/21 | | 102 | % | 70 - 130 |
| | | | Ethylene Dibromide | 2012/03/21 | | 105 | % | 70 - 130 |
| | | | 1,1,1-Trichloroethane | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | 1,1,2-Trichloroethane | 2012/03/21 | | 100 | % | 70 - 130 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/21 | | 103 | % | 70 - 130 |
| | | | cis-1,3-Dichloropropene | 2012/03/21 | | 106 | % | 70 - 130 |
| | | | trans-1,3-Dichloropropene | 2012/03/21 | | 118 | % | 70 - 130 |
| | | | 1,2-Dichloropropane | 2012/03/21 | | 100 | % | 70 - 130 |
| | | | Bromomethane | 2012/03/21 | | 106 | % | 70 - 130 |
| | | | Bromoform | 2012/03/21 | | 112 | % | 70 - 130 |
| | | | Bromodichloromethane | 2012/03/21 | | 106 | % | 70 - 130 |
| | | | Dibromochloromethane | 2012/03/21 | | 107 | % | 70 - 130 |
| | | | Heptane | 2012/03/21 | | 110 | % | 70 - 130 |
| | | | Trichloroethylene | 2012/03/21 | | 97 | % | 70 - 130 |
| | | | Tetrachloroethylene | 2012/03/21 | | 97 | % | 70 - 130 |
| | | | Benzene | 2012/03/21 | | 99 | % | 70 - 130 |
| | | | Toluene | 2012/03/21 | | 102 | % | 70 - 130 |
| | | | Ethylbenzene | 2012/03/21 | | 98 | % | 70 - 130 |
| | | | p+m-Xylene | 2012/03/21 | | 97 | % | 70 - 130 |
| | | | o-Xylene | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Styrene | 2012/03/21 | | 95 | % | 70 - 130 |
| | | | 1,3,5-Trimethylbenzene | 2012/03/21 | | 103 | % | 70 - 130 |
| | | | 1,2,4-Trimethylbenzene | 2012/03/21 | | 104 | % | 70 - 130 |
| | | | 4-ethyltoluene | 2012/03/21 | | 113 | % | 70 - 130 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB238766

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2798162 | MM2 | Spiked Blank | Chlorobenzene | 2012/03/21 | | 96 | % | 70 - 130 |
| | | | Benzyl chloride | 2012/03/21 | | 129 | % | 70 - 130 |
| | | | 1,3-Dichlorobenzene | 2012/03/21 | | 109 | % | 70 - 130 |
| | | | 1,4-Dichlorobenzene | 2012/03/21 | | 113 | % | 70 - 130 |
| | | | 1,2-Dichlorobenzene | 2012/03/21 | | 108 | % | 70 - 130 |
| | | | 1,2,4-Trichlorobenzene | 2012/03/21 | | 114 | % | 70 - 130 |
| | | | Hexachlorobutadiene | 2012/03/21 | | 113 | % | 70 - 130 |
| | | | Hexane | 2012/03/21 | | 101 | % | 70 - 130 |
| | | | Cyclohexane | 2012/03/21 | | 105 | % | 70 - 130 |
| | | | Tetrahydrofuran | 2012/03/21 | | 108 | % | 70 - 130 |
| | | | 1,4-Dioxane | 2012/03/21 | | 97 | % | 70 - 130 |
| | | Method Blank | Bromochloromethane | 2012/03/21 | | 94 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/21 | | 87 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/21 | | 95 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Carbon Disulfide | 2012/03/21 | <0.50 | | ppbv | |
| | | | Propene | 2012/03/21 | <0.30 | | ppbv | |
| | | | Vinyl Acetate | 2012/03/21 | <0.20 | | ppbv | |
| | | | Vinyl Bromide | 2012/03/21 | <0.20 | | ppbv | |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/21 | <0.20 | | ppbv | |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/21 | <0.17 | | ppbv | |
| | | | Chloromethane | 2012/03/21 | <0.30 | | ppbv | |
| | | | Vinyl Chloride | 2012/03/21 | <0.18 | | ppbv | |
| | | | Chloroethane | 2012/03/21 | <0.30 | | ppbv | |
| | | | 1,3-Butadiene | 2012/03/21 | <0.50 | | ppbv | |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/21 | <0.20 | | ppbv | |
| | | | Trichlorotrifluoroethane | 2012/03/21 | <0.15 | | ppbv | |
| | | | Ethanol (ethyl alcohol) | 2012/03/21 | <2.3 | | ppbv | |
| | | | 2-propanol | 2012/03/21 | <3.0 | | ppbv | |
| | | | 2-Propanone | 2012/03/21 | <0.80 | | ppbv | |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/21 | <3.0 | | ppbv | |
| | | | Methyl Isobutyl Ketone | 2012/03/21 | <3.2 | | ppbv | |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/21 | <2.0 | | ppbv | |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/21 | <0.20 | | ppbv | |
| | | | Ethyl Acetate | 2012/03/21 | <2.2 | | ppbv | |
| | | | 1,1-Dichloroethylene | 2012/03/21 | <0.25 | | ppbv | |
| | | | cis-1,2-Dichloroethylene | 2012/03/21 | <0.19 | | ppbv | |
| | | | trans-1,2-Dichloroethylene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/21 | <0.80 | | ppbv | |
| | | | Chloroform | 2012/03/21 | <0.15 | | ppbv | |
| | | | Carbon Tetrachloride | 2012/03/21 | <0.30 | | ppbv | |
| | | | 1,1-Dichloroethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | 1,2-Dichloroethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Ethylene Dibromide | 2012/03/21 | <0.17 | | ppbv | |
| | | | 1,1,1-Trichloroethane | 2012/03/21 | <0.30 | | ppbv | |
| | | | 1,1,2-Trichloroethane | 2012/03/21 | <0.15 | | ppbv | |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | cis-1,3-Dichloropropene | 2012/03/21 | <0.18 | | ppbv | |
| | | | trans-1,3-Dichloropropene | 2012/03/21 | <0.17 | | ppbv | |
| | | | 1,2-Dichloropropane | 2012/03/21 | <0.40 | | ppbv | |
| | | | Bromomethane | 2012/03/21 | <0.18 | | ppbv | |
| | | | Bromoform | 2012/03/21 | <0.20 | | ppbv | |
| | | | Bromodichloromethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Dibromochloromethane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Heptane | 2012/03/21 | <0.30 | | ppbv | |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB238766

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2798162 | MM2 | Method Blank | Trichloroethylene | 2012/03/21 | <0.30 | | ppbv | |
| | | | Tetrachloroethylene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Benzene | 2012/03/21 | <0.18 | | ppbv | |
| | | | Toluene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Ethylbenzene | 2012/03/21 | <0.20 | | ppbv | |
| | | | p+m-Xylene | 2012/03/21 | <0.37 | | ppbv | |
| | | | o-Xylene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Styrene | 2012/03/21 | <0.20 | | ppbv | |
| | | | 1,3,5-Trimethylbenzene | 2012/03/21 | <0.50 | | ppbv | |
| | | | 1,2,4-Trimethylbenzene | 2012/03/21 | <0.50 | | ppbv | |
| | | | 4-ethyltoluene | 2012/03/21 | <2.2 | | ppbv | |
| | | | Chlorobenzene | 2012/03/21 | <0.20 | | ppbv | |
| | | | Benzyl chloride | 2012/03/21 | <1.0 | | ppbv | |
| | | | 1,3-Dichlorobenzene | 2012/03/21 | <0.40 | | ppbv | |
| | | | 1,4-Dichlorobenzene | 2012/03/21 | <0.40 | | ppbv | |
| | | | 1,2-Dichlorobenzene | 2012/03/21 | <0.40 | | ppbv | |
| | | | 1,2,4-Trichlorobenzene | 2012/03/21 | <2.0 | | ppbv | |
| | | | Hexachlorobutadiene | 2012/03/21 | <3.0 | | ppbv | |
| | | | Hexane | 2012/03/21 | <0.30 | | ppbv | |
| | | | Cyclohexane | 2012/03/21 | <0.20 | | ppbv | |
| | | | Tetrahydrofuran | 2012/03/21 | <0.40 | | ppbv | |
| | | | 1,4-Dioxane | 2012/03/21 | <2.0 | | ppbv | |
| | | | Xylene (Total) | 2012/03/21 | <0.60 | | ppbv | |
| | | RPD - Sample/Sample Dup | 2,2,4-Trimethylpentane | 2012/03/21 | NC | | % | 25 |
| | | | Carbon Disulfide | 2012/03/21 | NC | | % | 25 |
| | | | Propene | 2012/03/21 | NC | | % | 25 |
| | | | Vinyl Acetate | 2012/03/21 | NC | | % | 25 |
| | | | Vinyl Bromide | 2012/03/21 | NC | | % | 25 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/21 | NC | | % | 25 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/21 | NC | | % | 25 |
| | | | Chloromethane | 2012/03/21 | NC | | % | 25 |
| | | | Vinyl Chloride | 2012/03/21 | NC | | % | 25 |
| | | | Chloroethane | 2012/03/21 | NC | | % | 25 |
| | | | 1,3-Butadiene | 2012/03/21 | NC | | % | 25 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/21 | NC | | % | 25 |
| | | | Trichlorotrifluoroethane | 2012/03/21 | NC | | % | 25 |
| | | | Ethanol (ethyl alcohol) | 2012/03/21 | 0.6 | | % | 25 |
| | | | 2-propanol | 2012/03/21 | NC | | % | 25 |
| | | | 2-Propanone | 2012/03/21 | 3.1 | | % | 25 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/21 | NC | | % | 25 |
| | | | Methyl Isobutyl Ketone | 2012/03/21 | NC | | % | 25 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/21 | NC | | % | 25 |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/21 | NC | | % | 25 |
| | | | Ethyl Acetate | 2012/03/21 | NC | | % | 25 |
| | | | 1,1-Dichloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | cis-1,2-Dichloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | trans-1,2-Dichloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/21 | NC | | % | 25 |
| | | | Chloroform | 2012/03/21 | NC | | % | 25 |
| | | | Carbon Tetrachloride | 2012/03/21 | NC | | % | 25 |
| | | | 1,1-Dichloroethane | 2012/03/21 | NC | | % | 25 |
| | | | 1,2-Dichloroethane | 2012/03/21 | NC | | % | 25 |
| | | | Ethylene Dibromide | 2012/03/21 | NC | | % | 25 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB238766

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2798162 | MM2 | RPD - Sample/Sample Dup | 1,1,1-Trichloroethane | 2012/03/21 | NC | | % | 25 |
| | | | 1,1,2-Trichloroethane | 2012/03/21 | NC | | % | 25 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/21 | NC | | % | 25 |
| | | | cis-1,3-Dichloropropene | 2012/03/21 | NC | | % | 25 |
| | | | trans-1,3-Dichloropropene | 2012/03/21 | NC | | % | 25 |
| | | | 1,2-Dichloropropane | 2012/03/21 | NC | | % | 25 |
| | | | Bromomethane | 2012/03/21 | NC | | % | 25 |
| | | | Bromoform | 2012/03/21 | NC | | % | 25 |
| | | | Bromodichloromethane | 2012/03/21 | NC | | % | 25 |
| | | | Dibromochloromethane | 2012/03/21 | NC | | % | 25 |
| | | | Heptane | 2012/03/21 | NC | | % | 25 |
| | | | Trichloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | Tetrachloroethylene | 2012/03/21 | NC | | % | 25 |
| | | | Benzene | 2012/03/21 | NC | | % | 25 |
| | | | Toluene | 2012/03/21 | 4.1 | | % | 25 |
| | | | Ethylbenzene | 2012/03/21 | NC | | % | 25 |
| | | | p+m-Xylene | 2012/03/21 | NC | | % | 25 |
| | | | o-Xylene | 2012/03/21 | NC | | % | 25 |
| | | | Styrene | 2012/03/21 | NC | | % | 25 |
| | | | 1,3,5-Trimethylbenzene | 2012/03/21 | NC | | % | 25 |
| | | | 1,2,4-Trimethylbenzene | 2012/03/21 | NC | | % | 25 |
| | | | 4-ethyltoluene | 2012/03/21 | NC | | % | 25 |
| | | | Chlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | Benzyl chloride | 2012/03/21 | NC | | % | 25 |
| | | | 1,3-Dichlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | 1,4-Dichlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | 1,2-Dichlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | 1,2,4-Trichlorobenzene | 2012/03/21 | NC | | % | 25 |
| | | | Hexachlorobutadiene | 2012/03/21 | NC | | % | 25 |
| | | | Hexane | 2012/03/21 | NC | | % | 25 |
| | | | Cyclohexane | 2012/03/21 | NC | | % | 25 |
| | | | Tetrahydrofuran | 2012/03/21 | NC | | % | 25 |
| | | | 1,4-Dioxane | 2012/03/21 | NC | | % | 25 |
| | | | Xylene (Total) | 2012/03/21 | NC | | % | 25 |

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.


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# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA
Location: 13-16-62-5 W4M
Station ID: Lica 33 (Portable)
Field Sample ID: LICA VOC/PORT/ Mar 16, 12

Sampler s/n: 6200
Canister ID: 252
Canister Installation Date/Time: Mar 14, 12 @ 14:35 mst
Canister Removal Date/Time: Mar 20, 12 @ 11:43 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 16-Mar-12 | 03/16/2012 0:00 | 03/17/2012 0:00 | 24.0000 |

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

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

**Canister valve open prior to sampling?: YES /** NO
**Timer set to 0.00 minutes prior to sampling? YES /** NO
**Canister valve closed prior to disconnection?: YES /** NO

Comments: System leak check prior to sampling. COC # 10877

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

Your C.O.C. #: 10877

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

**Report Date: 2012/04/03**

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B242436**
**Received: 2012/03/27, 09:50**

Sample Matrix: AIR
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | 2 | N/A | 2012/03/29 | BRL SOP-00304 | EPA TO-15 |
| Volatile Organics in Air (TO-15) (1) | 2 | N/A | 2012/03/29 | BRL SOP-00304 | EPA TO-15 |

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

## RESULTS OF ANALYSES OF AIR

| Maxxam ID | | MX5110 | MX5111 | |
|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | 2012/03/16 | |
| COC Number | | 10877 | 10877 | |
| | **Units** | **LICAVOC/CLS/ MAR16,12 / 252** | **LICAVOC/PORT/ MAR16,12 / 7822** | **QC Batch** |
| **Volatile Organics** | | | | |
| Pressure on Receipt | psig | 22 | 23 | 2806819 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX5110 | | | MX5111 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | | 2012/03/16 | | | | |
| COC Number | | 10877 | | | 10877 | | | | |
| | **Units** | **LICAVOC/CLS/ MAR16,12 / 252** | **ug/m3** | **DL (ug/m3)** | **LICAVOC/PORT/ MAR16,12 / 7822** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | <0.934 | 0.934 | <0.20 | 0.20 | <0.934 | 0.934 | 2806846 |
| Carbon Disulfide | ppbv | <0.50 | <1.56 | 1.56 | <0.50 | 0.50 | <1.56 | 1.56 | 2806846 |
| Propene | ppbv | <0.30 | <0.516 | 0.516 | <0.30 | 0.30 | <0.516 | 0.516 | 2806846 |
| Vinyl Acetate | ppbv | <0.20 | <0.704 | 0.704 | <0.20 | 0.20 | <0.704 | 0.704 | 2806846 |
| Vinyl Bromide | ppbv | <0.20 | <0.875 | 0.875 | <0.20 | 0.20 | <0.875 | 0.875 | 2806846 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.61 | 3.01 | 0.989 | 0.60 | 0.20 | 2.96 | 0.989 | 2806846 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | <1.19 | 1.19 | <0.17 | 0.17 | <1.19 | 1.19 | 2806846 |
| Chloromethane | ppbv | 0.55 | 1.13 | 0.620 | 0.54 | 0.30 | 1.13 | 0.620 | 2806846 |
| Vinyl Chloride | ppbv | <0.18 | <0.460 | 0.460 | <0.18 | 0.18 | <0.460 | 0.460 | 2806846 |
| Chloroethane | ppbv | <0.30 | <0.792 | 0.792 | <0.30 | 0.30 | <0.792 | 0.792 | 2806846 |
| 1,3-Butadiene | ppbv | <0.50 | <1.11 | 1.11 | <0.50 | 0.50 | <1.11 | 1.11 | 2806846 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.30 | 1.68 | 1.12 | 0.30 | 0.20 | 1.67 | 1.12 | 2806846 |
| Trichlorotrifluoroethane | ppbv | <0.15 | <1.15 | 1.15 | <0.15 | 0.15 | <1.15 | 1.15 | 2806846 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | <4.33 | 4.33 | <2.3 | 2.3 | <4.33 | 4.33 | 2806846 |
| 2-propanol | ppbv | <3.0 | <7.37 | 7.37 | <3.0 | 3.0 | <7.37 | 7.37 | 2806846 |
| 2-Propanone | ppbv | 2.20 | 5.24 | 1.90 | 2.22 | 0.80 | 5.26 | 1.90 | 2806846 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | <8.85 | 8.85 | <3.0 | 3.0 | <8.85 | 8.85 | 2806846 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | <13.1 | 13.1 | <3.2 | 3.2 | <13.1 | 13.1 | 2806846 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | <8.19 | 8.19 | <2.0 | 2.0 | <8.19 | 8.19 | 2806846 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | <0.721 | 0.721 | <0.20 | 0.20 | <0.721 | 0.721 | 2806846 |
| Ethyl Acetate | ppbv | <2.2 | <7.93 | 7.93 | <2.2 | 2.2 | <7.93 | 7.93 | 2806846 |
| 1,1-Dichloroethylene | ppbv | <0.25 | <0.991 | 0.991 | <0.25 | 0.25 | <0.991 | 0.991 | 2806846 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | <0.753 | 0.753 | <0.19 | 0.19 | <0.753 | 0.753 | 2806846 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | <0.793 | 0.793 | <0.20 | 0.20 | <0.793 | 0.793 | 2806846 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | <2.78 | 2.78 | <0.80 | 0.80 | <2.78 | 2.78 | 2806846 |
| Chloroform | ppbv | <0.15 | <0.732 | 0.732 | <0.15 | 0.15 | <0.732 | 0.732 | 2806846 |
| Carbon Tetrachloride | ppbv | <0.30 | <1.89 | 1.89 | <0.30 | 0.30 | <1.89 | 1.89 | 2806846 |
| 1,1-Dichloroethane | ppbv | <0.20 | <0.809 | 0.809 | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| 1,2-Dichloroethane | ppbv | <0.20 | <0.809 | 0.809 | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| Ethylene Dibromide | ppbv | <0.17 | <1.31 | 1.31 | <0.17 | 0.17 | <1.31 | 1.31 | 2806846 |
| 1,1,1-Trichloroethane | ppbv | <0.30 | <1.64 | 1.64 | <0.30 | 0.30 | <1.64 | 1.64 | 2806846 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX5110 | | | MX5111 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | | 2012/03/16 | | | | |
| COC Number | | 10877 | | | 10877 | | | | |
| | **Units** | **LICAVOC/CLS/ MAR16,12 / 252** | **ug/m3** | **DL (ug/m3)** | **LICAVOC/PORT/ MAR16,12 / 7822** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,2-Trichloroethane | ppbv | <0.15 | <0.818 | 0.818 | <0.15 | 0.15 | <0.818 | 0.818 | 2806846 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | <1.37 | 1.37 | <0.20 | 0.20 | <1.37 | 1.37 | 2806846 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | <0.817 | 0.817 | <0.18 | 0.18 | <0.817 | 0.817 | 2806846 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | <0.772 | 0.772 | <0.17 | 0.17 | <0.772 | 0.772 | 2806846 |
| 1,2-Dichloropropane | ppbv | <0.40 | <1.85 | 1.85 | <0.40 | 0.40 | <1.85 | 1.85 | 2806846 |
| Bromomethane | ppbv | <0.18 | <0.699 | 0.699 | <0.18 | 0.18 | <0.699 | 0.699 | 2806846 |
| Bromoform | ppbv | <0.20 | <2.07 | 2.07 | <0.20 | 0.20 | <2.07 | 2.07 | 2806846 |
| Bromodichloromethane | ppbv | <0.20 | <1.34 | 1.34 | <0.20 | 0.20 | <1.34 | 1.34 | 2806846 |
| Dibromochloromethane | ppbv | <0.20 | <1.70 | 1.70 | <0.20 | 0.20 | <1.70 | 1.70 | 2806846 |
| Heptane | ppbv | <0.30 | <1.23 | 1.23 | <0.30 | 0.30 | <1.23 | 1.23 | 2806846 |
| Trichloroethylene | ppbv | <0.30 | <1.61 | 1.61 | <0.30 | 0.30 | <1.61 | 1.61 | 2806846 |
| Tetrachloroethylene | ppbv | <0.20 | <1.36 | 1.36 | <0.20 | 0.20 | <1.36 | 1.36 | 2806846 |
| Benzene | ppbv | <0.18 | <0.575 | 0.575 | 0.19 | 0.18 | 0.617 | 0.575 | 2806846 |
| Toluene | ppbv | <0.20 | <0.753 | 0.753 | 0.20 | 0.20 | 0.754 | 0.753 | 2806846 |
| Ethylbenzene | ppbv | <0.20 | <0.868 | 0.868 | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| p+m-Xylene | ppbv | <0.37 | <1.61 | 1.61 | <0.37 | 0.37 | <1.61 | 1.61 | 2806846 |
| o-Xylene | ppbv | <0.20 | <0.868 | 0.868 | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| Styrene | ppbv | <0.20 | <0.852 | 0.852 | <0.20 | 0.20 | <0.852 | 0.852 | 2806846 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | <2.46 | 2.46 | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | <2.46 | 2.46 | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 4-ethyltoluene | ppbv | <2.2 | <10.8 | 10.8 | <2.2 | 2.2 | <10.8 | 10.8 | 2806846 |
| Chlorobenzene | ppbv | <0.20 | <0.921 | 0.921 | <0.20 | 0.20 | <0.921 | 0.921 | 2806846 |
| Benzyl chloride | ppbv | <1.0 | <5.18 | 5.18 | <1.0 | 1.0 | <5.18 | 5.18 | 2806846 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | <2.40 | 2.40 | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | <2.40 | 2.40 | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | <2.40 | 2.40 | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | <14.8 | 14.8 | <2.0 | 2.0 | <14.8 | 14.8 | 2806846 |
| Hexachlorobutadiene | ppbv | <3.0 | <32.0 | 32.0 | <3.0 | 3.0 | <32.0 | 32.0 | 2806846 |
| Hexane | ppbv | <0.30 | <1.06 | 1.06 | <0.30 | 0.30 | <1.06 | 1.06 | 2806846 |
| Cyclohexane | ppbv | <0.20 | <0.688 | 0.688 | <0.20 | 0.20 | <0.688 | 0.688 | 2806846 |
| Tetrahydrofuran | ppbv | <0.40 | <1.18 | 1.18 | <0.40 | 0.40 | <1.18 | 1.18 | 2806846 |
| 1,4-Dioxane | ppbv | <2.0 | <7.21 | 7.21 | <2.0 | 2.0 | <7.21 | 7.21 | 2806846 |
| Xylene (Total) | ppbv | <0.60 | <2.61 | 2.61 | <0.60 | 0.60 | <2.61 | 2.61 | 2806846 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX5110 | | | MX5111 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | | 2012/03/16 | | | | |
| COC Number | | 10877 | | | 10877 | | | | |
| | **Units** | **LICAVOC/CLS/ MAR16,12 / 252** | **ug/m3** | **DL (ug/m3)** | **LICAVOC/PORT/ MAR16,12 / 7822** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Surrogate Recovery (%)** | | | | | | | | | |
| Bromochloromethane | % | 68 | N/A | N/A | 65 | | N/A | N/A | 2806846 |
| D5-Chlorobenzene | % | 69 | N/A | N/A | 66 | | N/A | N/A | 2806846 |
| Difluorobenzene | % | 68 | N/A | N/A | 65 | | N/A | N/A | 2806846 |

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


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Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

## Test Summary

**Maxxam ID** MX5110 **Collected** 2012/03/16
**Sample ID** LICAVOC/CLS/ MAR16,12 / 252 **Shipped**
**Matrix** AIR **Received** 2012/03/27

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2806819 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2806846 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |

**Maxxam ID** MX5111 **Collected** 2012/03/16
**Sample ID** LICAVOC/PORT/ MAR16,12 / 7822 **Shipped**
**Matrix** AIR **Received** 2012/03/27

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2806819 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2806846 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |


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Maxxam Analytics

Maxxam Job #: B242436
Report Date: 2012/04/03

**GENERAL COMMENTS**

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


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

# Quality Assurance Report

Maxxam Job Number: GB242436

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Spiked Blank | Bromochloromethane | 2012/03/29 | | 89 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/29 | | 91 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/29 | | 90 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Carbon Disulfide | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | Propene | 2012/03/29 | | 91 | % | 70 - 130 |
| | | | Vinyl Acetate | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | Vinyl Bromide | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/29 | | 109 | % | 70 - 130 |
| | | | Chloromethane | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | Vinyl Chloride | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | Chloroethane | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | 1,3-Butadiene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | Trichlorotrifluoroethane | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | Ethanol (ethyl alcohol) | 2012/03/29 | | 86 | % | 70 - 130 |
| | | | 2-propanol | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | 2-Propanone | 2012/03/29 | | 108 | % | 70 - 130 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | Methyl Isobutyl Ketone | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Ethyl Acetate | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | 1,1-Dichloroethylene | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | cis-1,2-Dichloroethylene | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | trans-1,2-Dichloroethylene | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | Chloroform | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Carbon Tetrachloride | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | 1,1-Dichloroethane | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | 1,2-Dichloroethane | 2012/03/29 | | 103 | % | 70 - 130 |
| | | | Ethylene Dibromide | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,1,1-Trichloroethane | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,1,2-Trichloroethane | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | cis-1,3-Dichloropropene | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | trans-1,3-Dichloropropene | 2012/03/29 | | 105 | % | 70 - 130 |
| | | | 1,2-Dichloropropane | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Bromomethane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Bromoform | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | Bromodichloromethane | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | Dibromochloromethane | 2012/03/29 | | 102 | % | 70 - 130 |
| | | | Heptane | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | Trichloroethylene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Tetrachloroethylene | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Benzene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Toluene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Ethylbenzene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | p+m-Xylene | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | o-Xylene | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | Styrene | 2012/03/29 | | 79 | % | 70 - 130 |
| | | | 1,3,5-Trimethylbenzene | 2012/03/29 | | 91 | % | 70 - 130 |
| | | | 1,2,4-Trimethylbenzene | 2012/03/29 | | 90 | % | 70 - 130 |
| | | | 4-ethyltoluene | 2012/03/29 | | 98 | % | 70 - 130 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB242436

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Spiked Blank | Chlorobenzene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Benzyl chloride | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | 1,3-Dichlorobenzene | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | 1,4-Dichlorobenzene | 2012/03/29 | | 90 | % | 70 - 130 |
| | | | 1,2-Dichlorobenzene | 2012/03/29 | | 88 | % | 70 - 130 |
| | | | 1,2,4-Trichlorobenzene | 2012/03/29 | | 102 | % | 70 - 130 |
| | | | Hexachlorobutadiene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Hexane | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Cyclohexane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Tetrahydrofuran | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,4-Dioxane | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | Xylene (Total) | 2012/03/29 | | 93 | % | 70 - 130 |
| | | Method Blank | Bromochloromethane | 2012/03/29 | | 82 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/29 | | 83 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/29 | | 82 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Carbon Disulfide | 2012/03/29 | <0.50 | | ppbv | |
| | | | Propene | 2012/03/29 | <0.30 | | ppbv | |
| | | | Vinyl Acetate | 2012/03/29 | <0.20 | | ppbv | |
| | | | Vinyl Bromide | 2012/03/29 | <0.20 | | ppbv | |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/29 | <0.17 | | ppbv | |
| | | | Chloromethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Vinyl Chloride | 2012/03/29 | <0.18 | | ppbv | |
| | | | Chloroethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,3-Butadiene | 2012/03/29 | <0.50 | | ppbv | |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/29 | <0.20 | | ppbv | |
| | | | Trichlorotrifluoroethane | 2012/03/29 | <0.15 | | ppbv | |
| | | | Ethanol (ethyl alcohol) | 2012/03/29 | <2.3 | | ppbv | |
| | | | 2-propanol | 2012/03/29 | <3.0 | | ppbv | |
| | | | 2-Propanone | 2012/03/29 | <0.80 | | ppbv | |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/29 | <3.0 | | ppbv | |
| | | | Methyl Isobutyl Ketone | 2012/03/29 | <3.2 | | ppbv | |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/29 | <2.0 | | ppbv | |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethyl Acetate | 2012/03/29 | <2.2 | | ppbv | |
| | | | 1,1-Dichloroethylene | 2012/03/29 | <0.25 | | ppbv | |
| | | | cis-1,2-Dichloroethylene | 2012/03/29 | <0.19 | | ppbv | |
| | | | trans-1,2-Dichloroethylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/29 | <0.80 | | ppbv | |
| | | | Chloroform | 2012/03/29 | <0.15 | | ppbv | |
| | | | Carbon Tetrachloride | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,1-Dichloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,2-Dichloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethylene Dibromide | 2012/03/29 | <0.17 | | ppbv | |
| | | | 1,1,1-Trichloroethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,1,2-Trichloroethane | 2012/03/29 | <0.15 | | ppbv | |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | cis-1,3-Dichloropropene | 2012/03/29 | <0.18 | | ppbv | |
| | | | trans-1,3-Dichloropropene | 2012/03/29 | <0.17 | | ppbv | |
| | | | 1,2-Dichloropropane | 2012/03/29 | <0.40 | | ppbv | |
| | | | Bromomethane | 2012/03/29 | <0.18 | | ppbv | |
| | | | Bromoform | 2012/03/29 | <0.20 | | ppbv | |
| | | | Bromodichloromethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Dibromochloromethane | 2012/03/29 | <0.20 | | ppbv | |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB242436

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Method Blank | Heptane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Trichloroethylene | 2012/03/29 | <0.30 | | ppbv | |
| | | | Tetrachloroethylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Benzene | 2012/03/29 | <0.18 | | ppbv | |
| | | | Toluene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethylbenzene | 2012/03/29 | <0.20 | | ppbv | |
| | | | p+m-Xylene | 2012/03/29 | <0.37 | | ppbv | |
| | | | o-Xylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Styrene | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,3,5-Trimethylbenzene | 2012/03/29 | <0.50 | | ppbv | |
| | | | 1,2,4-Trimethylbenzene | 2012/03/29 | <0.50 | | ppbv | |
| | | | 4-ethyltoluene | 2012/03/29 | <2.2 | | ppbv | |
| | | | Chlorobenzene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Benzyl chloride | 2012/03/29 | <1.0 | | ppbv | |
| | | | 1,3-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,4-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,2-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,2,4-Trichlorobenzene | 2012/03/29 | <2.0 | | ppbv | |
| | | | Hexachlorobutadiene | 2012/03/29 | <3.0 | | ppbv | |
| | | | Hexane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Cyclohexane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Tetrahydrofuran | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,4-Dioxane | 2012/03/29 | <2.0 | | ppbv | |
| | | | Xylene (Total) | 2012/03/29 | <0.60 | | ppbv | |
| | | RPD - Sample/Sample Dup | Benzene | 2012/03/29 | 2.5 | | % | 25 |
| | | | Toluene | 2012/03/29 | 1.0 | | % | 25 |
| | | | Ethylbenzene | 2012/03/29 | 1 | | % | 25 |
| | | | p+m-Xylene | 2012/03/29 | 0.4 | | % | 25 |
| | | | o-Xylene | 2012/03/29 | 0.9 | | % | 25 |
| | | | Xylene (Total) | 2012/03/29 | 0.5 | | % | 25 |

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA
Location: 13-16-62-5 W4M
Station ID: Lica 33 (Portable)
Field Sample ID: LICA VOC/PORT/ Mar 22, 12

Sampler s/n: 6200
Canister ID: 302
Canister Installation Date/Time: Mar 20, 12 @ 16:30 mst
Canister Removal Date/Time: Mar 23, 12 @ 10:04 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 22-Mar-12 | 03/22/2012 0:00 | 03/23/2012 0:00 | 24.0000 |

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

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

**Canister valve open prior to sampling?: YES /** NO
**Timer set to 0.00 minutes prior to sampling? YES /** NO
**Canister valve closed prior to disconnection?: YES /** NO

Comments: System leak check prior to sampling. COC # 10842

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

Your C.O.C. #: 10842

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

**Report Date: 2012/04/03**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B243173**
**Received: 2012/03/28, 09:45**

Sample Matrix: AIR
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | 2 | N/A | 2012/03/29 | BRL SOP-00304 | EPA TO-15 |
| Volatile Organics in Air (TO-15) (1) | 2 | N/A | 2012/03/29 | BRL SOP-00304 | EPA TO-15 |

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

Maxxam Analytics

Maxxam Job #: B243173
Report Date: 2012/04/03

## RESULTS OF ANALYSES OF AIR

| Maxxam ID | | MX8248 | MX8249 | |
|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | 2012/03/22 00:00 | |
| COC Number | | 10842 | 10842 | |
| | **Units** | **LICA VOC\CLS\MAR 22,12 / 308** | **LICA VOC\PORT\MAR / 302** | **QC Batch** |
| **Volatile Organics** | | | | |
| Pressure on Receipt | psig | 14 | 13 | 2806819 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B243173
Report Date: 2012/04/03

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8248 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\CLS\MAR 22,12 / 308** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2806846 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2806846 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2806846 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2806846 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2806846 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.60 | 0.20 | 2.97 | 0.989 | 2806846 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2806846 |
| Chloromethane | ppbv | 0.46 | 0.30 | 0.954 | 0.620 | 2806846 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2806846 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2806846 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2806846 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.31 | 0.20 | 1.75 | 1.12 | 2806846 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2806846 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2806846 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2806846 |
| 2-Propanone | ppbv | 1.64 | 0.80 | 3.89 | 1.90 | 2806846 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2806846 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2806846 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2806846 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2806846 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2806846 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2806846 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2806846 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2806846 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2806846 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2806846 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2806846 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2806846 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8248 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\CLS\MAR 22,12 / 308** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2806846 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2806846 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2806846 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2806846 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2806846 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2806846 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2806846 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2806846 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2806846 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2806846 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2806846 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2806846 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2806846 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2806846 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2806846 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2806846 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2806846 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2806846 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2806846 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2806846 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2806846 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2806846 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2806846 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2806846 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2806846 |

QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B243173
Report Date: 2012/04/03

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8248 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\CLS\MAR 22,12 / 308** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2806846 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2806846 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 63 | | N/A | N/A | 2806846 |
| D5-Chlorobenzene | % | 64 | | N/A | N/A | 2806846 |
| Difluorobenzene | % | 63 | | N/A | N/A | 2806846 |

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


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8249 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\PORT\MAR / 302** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2806846 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2806846 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2806846 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2806846 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2806846 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.63 | 0.20 | 3.11 | 0.989 | 2806846 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2806846 |
| Chloromethane | ppbv | 0.52 | 0.30 | 1.06 | 0.620 | 2806846 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2806846 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2806846 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2806846 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.32 | 0.20 | 1.78 | 1.12 | 2806846 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2806846 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2806846 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2806846 |
| 2-Propanone | ppbv | 2.44 | 0.80 | 5.80 | 1.90 | 2806846 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2806846 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2806846 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2806846 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2806846 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2806846 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2806846 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2806846 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2806846 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2806846 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2806846 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2806846 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2806846 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2806846 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8249 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\PORT\MAR / 302** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2806846 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2806846 |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2806846 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2806846 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2806846 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2806846 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2806846 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2806846 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2806846 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2806846 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2806846 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2806846 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2806846 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2806846 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2806846 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2806846 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2806846 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2806846 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2806846 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2806846 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2806846 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2806846 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2806846 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2806846 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2806846 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2806846 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2806846 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2806846 |

QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MX8249 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 00:00 | | | | |
| COC Number | | 10842 | | | | |
| | **Units** | **LICA VOC\PORT\MAR / 302** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2806846 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2806846 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 61 | | N/A | N/A | 2806846 |
| D5-Chlorobenzene | % | 62 | | N/A | N/A | 2806846 |
| Difluorobenzene | % | 61 | | N/A | N/A | 2806846 |

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


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Maxxam Analytics

Maxxam Job #: B243173
Report Date: 2012/04/03

## Test Summary

**Maxxam ID** MX8248 **Collected** 2012/03/22
**Sample ID** LICA VOC\CLS\MAR 22,12 / 308 **Shipped**
**Matrix** AIR **Received** 2012/03/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2806819 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2806846 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |

**Maxxam ID** MX8249 **Collected** 2012/03/22
**Sample ID** LICA VOC\PORT\MAR / 302 **Shipped**
**Matrix** AIR **Received** 2012/03/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2806819 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2806846 | N/A | 2012/03/29 | SPOMENKA SMILJANIC |


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Maxxam Analytics

Maxxam Job #: B243173
Report Date: 2012/04/03

**GENERAL COMMENTS**

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


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

# Quality Assurance Report

Maxxam Job Number: GB243173

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Spiked Blank | Bromochloromethane | 2012/03/29 | | 89 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/29 | | 91 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/29 | | 90 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Carbon Disulfide | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | Propene | 2012/03/29 | | 91 | % | 70 - 130 |
| | | | Vinyl Acetate | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | Vinyl Bromide | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/29 | | 109 | % | 70 - 130 |
| | | | Chloromethane | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | Vinyl Chloride | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | Chloroethane | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | 1,3-Butadiene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | Trichlorotrifluoroethane | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | Ethanol (ethyl alcohol) | 2012/03/29 | | 86 | % | 70 - 130 |
| | | | 2-propanol | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | 2-Propanone | 2012/03/29 | | 108 | % | 70 - 130 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | Methyl Isobutyl Ketone | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Ethyl Acetate | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | 1,1-Dichloroethylene | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | cis-1,2-Dichloroethylene | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | trans-1,2-Dichloroethylene | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | Chloroform | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Carbon Tetrachloride | 2012/03/29 | | 98 | % | 70 - 130 |
| | | | 1,1-Dichloroethane | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | 1,2-Dichloroethane | 2012/03/29 | | 103 | % | 70 - 130 |
| | | | Ethylene Dibromide | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,1,1-Trichloroethane | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,1,2-Trichloroethane | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | cis-1,3-Dichloropropene | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | trans-1,3-Dichloropropene | 2012/03/29 | | 105 | % | 70 - 130 |
| | | | 1,2-Dichloropropane | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Bromomethane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Bromoform | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | Bromodichloromethane | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | Dibromochloromethane | 2012/03/29 | | 102 | % | 70 - 130 |
| | | | Heptane | 2012/03/29 | | 96 | % | 70 - 130 |
| | | | Trichloroethylene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Tetrachloroethylene | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Benzene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Toluene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Ethylbenzene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | p+m-Xylene | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | o-Xylene | 2012/03/29 | | 93 | % | 70 - 130 |
| | | | Styrene | 2012/03/29 | | 79 | % | 70 - 130 |
| | | | 1,3,5-Trimethylbenzene | 2012/03/29 | | 91 | % | 70 - 130 |
| | | | 1,2,4-Trimethylbenzene | 2012/03/29 | | 90 | % | 70 - 130 |
| | | | 4-ethyltoluene | 2012/03/29 | | 98 | % | 70 - 130 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB243173

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Spiked Blank | Chlorobenzene | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Benzyl chloride | 2012/03/29 | | 101 | % | 70 - 130 |
| | | | 1,3-Dichlorobenzene | 2012/03/29 | | 92 | % | 70 - 130 |
| | | | 1,4-Dichlorobenzene | 2012/03/29 | | 90 | % | 70 - 130 |
| | | | 1,2-Dichlorobenzene | 2012/03/29 | | 88 | % | 70 - 130 |
| | | | 1,2,4-Trichlorobenzene | 2012/03/29 | | 102 | % | 70 - 130 |
| | | | Hexachlorobutadiene | 2012/03/29 | | 95 | % | 70 - 130 |
| | | | Hexane | 2012/03/29 | | 97 | % | 70 - 130 |
| | | | Cyclohexane | 2012/03/29 | | 94 | % | 70 - 130 |
| | | | Tetrahydrofuran | 2012/03/29 | | 99 | % | 70 - 130 |
| | | | 1,4-Dioxane | 2012/03/29 | | 100 | % | 70 - 130 |
| | | | Xylene (Total) | 2012/03/29 | | 93 | % | 70 - 130 |
| | | Method Blank | Bromochloromethane | 2012/03/29 | | 82 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/03/29 | | 83 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/03/29 | | 82 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Carbon Disulfide | 2012/03/29 | <0.50 | | ppbv | |
| | | | Propene | 2012/03/29 | <0.30 | | ppbv | |
| | | | Vinyl Acetate | 2012/03/29 | <0.20 | | ppbv | |
| | | | Vinyl Bromide | 2012/03/29 | <0.20 | | ppbv | |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/03/29 | <0.17 | | ppbv | |
| | | | Chloromethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Vinyl Chloride | 2012/03/29 | <0.18 | | ppbv | |
| | | | Chloroethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,3-Butadiene | 2012/03/29 | <0.50 | | ppbv | |
| | | | Trichlorofluoromethane (FREON 11) | 2012/03/29 | <0.20 | | ppbv | |
| | | | Trichlorotrifluoroethane | 2012/03/29 | <0.15 | | ppbv | |
| | | | Ethanol (ethyl alcohol) | 2012/03/29 | <2.3 | | ppbv | |
| | | | 2-propanol | 2012/03/29 | <3.0 | | ppbv | |
| | | | 2-Propanone | 2012/03/29 | <0.80 | | ppbv | |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/03/29 | <3.0 | | ppbv | |
| | | | Methyl Isobutyl Ketone | 2012/03/29 | <3.2 | | ppbv | |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/03/29 | <2.0 | | ppbv | |
| | | | Methyl t-butyl ether (MTBE) | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethyl Acetate | 2012/03/29 | <2.2 | | ppbv | |
| | | | 1,1-Dichloroethylene | 2012/03/29 | <0.25 | | ppbv | |
| | | | cis-1,2-Dichloroethylene | 2012/03/29 | <0.19 | | ppbv | |
| | | | trans-1,2-Dichloroethylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Methylene Chloride(Dichloromethane) | 2012/03/29 | <0.80 | | ppbv | |
| | | | Chloroform | 2012/03/29 | <0.15 | | ppbv | |
| | | | Carbon Tetrachloride | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,1-Dichloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,2-Dichloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethylene Dibromide | 2012/03/29 | <0.17 | | ppbv | |
| | | | 1,1,1-Trichloroethane | 2012/03/29 | <0.30 | | ppbv | |
| | | | 1,1,2-Trichloroethane | 2012/03/29 | <0.15 | | ppbv | |
| | | | 1,1,2,2-Tetrachloroethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | cis-1,3-Dichloropropene | 2012/03/29 | <0.18 | | ppbv | |
| | | | trans-1,3-Dichloropropene | 2012/03/29 | <0.17 | | ppbv | |
| | | | 1,2-Dichloropropane | 2012/03/29 | <0.40 | | ppbv | |
| | | | Bromomethane | 2012/03/29 | <0.18 | | ppbv | |
| | | | Bromoform | 2012/03/29 | <0.20 | | ppbv | |
| | | | Bromodichloromethane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Dibromochloromethane | 2012/03/29 | <0.20 | | ppbv | |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB243173

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2806846 | S_S | Method Blank | Heptane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Trichloroethylene | 2012/03/29 | <0.30 | | ppbv | |
| | | | Tetrachloroethylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Benzene | 2012/03/29 | <0.18 | | ppbv | |
| | | | Toluene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Ethylbenzene | 2012/03/29 | <0.20 | | ppbv | |
| | | | p+m-Xylene | 2012/03/29 | <0.37 | | ppbv | |
| | | | o-Xylene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Styrene | 2012/03/29 | <0.20 | | ppbv | |
| | | | 1,3,5-Trimethylbenzene | 2012/03/29 | <0.50 | | ppbv | |
| | | | 1,2,4-Trimethylbenzene | 2012/03/29 | <0.50 | | ppbv | |
| | | | 4-ethyltoluene | 2012/03/29 | <2.2 | | ppbv | |
| | | | Chlorobenzene | 2012/03/29 | <0.20 | | ppbv | |
| | | | Benzyl chloride | 2012/03/29 | <1.0 | | ppbv | |
| | | | 1,3-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,4-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,2-Dichlorobenzene | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,2,4-Trichlorobenzene | 2012/03/29 | <2.0 | | ppbv | |
| | | | Hexachlorobutadiene | 2012/03/29 | <3.0 | | ppbv | |
| | | | Hexane | 2012/03/29 | <0.30 | | ppbv | |
| | | | Cyclohexane | 2012/03/29 | <0.20 | | ppbv | |
| | | | Tetrahydrofuran | 2012/03/29 | <0.40 | | ppbv | |
| | | | 1,4-Dioxane | 2012/03/29 | <2.0 | | ppbv | |
| | | | Xylene (Total) | 2012/03/29 | <0.60 | | ppbv | |
| | | RPD - Sample/Sample Dup | Benzene | 2012/03/29 | 2.5 | | % | 25 |
| | | | Toluene | 2012/03/29 | 1.0 | | % | 25 |
| | | | Ethylbenzene | 2012/03/29 | 1 | | % | 25 |
| | | | p+m-Xylene | 2012/03/29 | 0.4 | | % | 25 |
| | | | o-Xylene | 2012/03/29 | 0.9 | | % | 25 |
| | | | Xylene (Total) | 2012/03/29 | 0.5 | | % | 25 |

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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# MAXXAM

## Xontech Model 910A VOC Sample Collection Data Sheet

Client: LICA
Location: 13-16-62-5 W4M
Station ID: Lica 33 (Portable)
Field Sample ID: LICA VOC/PORT/ Mar 28, 12

Sampler s/n: 6200
Canister ID: 7820
Canister Installation Date/Time: Mar 23, 12 @ 10:15 mst
Canister Removal Date/Time: Mar 30, 12 @ 10:24 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 28-Mar-12 | 03/28/2012 0:00 | 03/29/2012 0:00 | 24.0000 |

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

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

**Canister valve open prior to sampling?: YES /** NO
**Timer set to 0.00 minutes prior to sampling? YES /** NO
**Canister valve closed prior to disconnection?: YES /** NO

Comments: System leak check prior to sampling. COC # 10683

Technician Signiture: Ting Xu

Success Through Science®

Your C.O.C. #: 10683

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

**Report Date: 2012/04/11**

# CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B247052**
**Received: 2012/04/04, 10:34**

Sample Matrix: AIR
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | 2 | N/A | 2012/04/05 | BRL SOP-00304 | EPA TO-15 |
| Volatile Organics in Air (TO-15) (1) | 2 | N/A | 2012/04/05 | BRL SOP-00304 | EPA TO-15 |

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## RESULTS OF ANALYSES OF AIR

| Maxxam ID | | MZ9328 | MZ9329 | |
|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | 2012/03/28 | |
| COC Number | | 10683 | 10683 | |
| | **Units** | **LICAVOC/CLS/MAR 28,12 - 320** | **LICAVOC/PORT/MAR 28,12 - 7820** | **QC Batch** |
| **Volatile Organics** | | | | |
| Pressure on Receipt | psig | 23 | 22 | 2813383 |

QC Batch = Quality Control Batch


Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9328 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/CLS/MAR 28,12 - 320** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2813406 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2813406 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2813406 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2813406 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2813406 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.61 | 0.20 | 3.00 | 0.989 | 2813406 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2813406 |
| Chloromethane | ppbv | 0.39 | 0.30 | 0.811 | 0.620 | 2813406 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2813406 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2813406 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2813406 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.31 | 0.20 | 1.74 | 1.12 | 2813406 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2813406 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2813406 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2813406 |
| 2-Propanone | ppbv | 1.92 | 0.80 | 4.57 | 1.90 | 2813406 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2813406 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2813406 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2813406 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2813406 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2813406 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2813406 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2813406 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2813406 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2813406 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2813406 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2813406 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2813406 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2813406 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2813406 |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2813406 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2813406 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9328 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/CLS/MAR 28,12 - 320** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2813406 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2813406 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2813406 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2813406 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2813406 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2813406 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2813406 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2813406 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2813406 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2813406 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2813406 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2813406 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2813406 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2813406 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2813406 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2813406 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2813406 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2813406 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2813406 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2813406 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2813406 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2813406 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2813406 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2813406 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2813406 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2813406 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2813406 |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2813406 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2813406 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 92 | | N/A | N/A | 2813406 |

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


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Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9328 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/CLS/MAR 28,12 - 320** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| D5-Chlorobenzene | % | 82 | | N/A | N/A | 2813406 |
| Difluorobenzene | % | 94 | | N/A | N/A | 2813406 |

N/A = Not Applicable
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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9329 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/PORT/MAR 28,12 - 7820** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| **Volatile Organics** | | | | | | |
| 2,2,4-Trimethylpentane | ppbv | <0.20 | 0.20 | <0.934 | 0.934 | 2813406 |
| Carbon Disulfide | ppbv | <0.50 | 0.50 | <1.56 | 1.56 | 2813406 |
| Propene | ppbv | <0.30 | 0.30 | <0.516 | 0.516 | 2813406 |
| Vinyl Acetate | ppbv | <0.20 | 0.20 | <0.704 | 0.704 | 2813406 |
| Vinyl Bromide | ppbv | <0.20 | 0.20 | <0.875 | 0.875 | 2813406 |
| Dichlorodifluoromethane (FREON 12) | ppbv | 0.60 | 0.20 | 2.96 | 0.989 | 2813406 |
| 1,2-Dichlorotetrafluoroethane | ppbv | <0.17 | 0.17 | <1.19 | 1.19 | 2813406 |
| Chloromethane | ppbv | 0.36 | 0.30 | 0.740 | 0.620 | 2813406 |
| Vinyl Chloride | ppbv | <0.18 | 0.18 | <0.460 | 0.460 | 2813406 |
| Chloroethane | ppbv | <0.30 | 0.30 | <0.792 | 0.792 | 2813406 |
| 1,3-Butadiene | ppbv | <0.50 | 0.50 | <1.11 | 1.11 | 2813406 |
| Trichlorofluoromethane (FREON 11) | ppbv | 0.31 | 0.20 | 1.73 | 1.12 | 2813406 |
| Trichlorotrifluoroethane | ppbv | <0.15 | 0.15 | <1.15 | 1.15 | 2813406 |
| Ethanol (ethyl alcohol) | ppbv | <2.3 | 2.3 | <4.33 | 4.33 | 2813406 |
| 2-propanol | ppbv | <3.0 | 3.0 | <7.37 | 7.37 | 2813406 |
| 2-Propanone | ppbv | 1.87 | 0.80 | 4.45 | 1.90 | 2813406 |
| Methyl Ethyl Ketone (2-Butanone) | ppbv | <3.0 | 3.0 | <8.85 | 8.85 | 2813406 |
| Methyl Isobutyl Ketone | ppbv | <3.2 | 3.2 | <13.1 | 13.1 | 2813406 |
| Methyl Butyl Ketone (2-Hexanone) | ppbv | <2.0 | 2.0 | <8.19 | 8.19 | 2813406 |
| Methyl t-butyl ether (MTBE) | ppbv | <0.20 | 0.20 | <0.721 | 0.721 | 2813406 |
| Ethyl Acetate | ppbv | <2.2 | 2.2 | <7.93 | 7.93 | 2813406 |
| 1,1-Dichloroethylene | ppbv | <0.25 | 0.25 | <0.991 | 0.991 | 2813406 |
| cis-1,2-Dichloroethylene | ppbv | <0.19 | 0.19 | <0.753 | 0.753 | 2813406 |
| trans-1,2-Dichloroethylene | ppbv | <0.20 | 0.20 | <0.793 | 0.793 | 2813406 |
| Methylene Chloride(Dichloromethane) | ppbv | <0.80 | 0.80 | <2.78 | 2.78 | 2813406 |
| Chloroform | ppbv | <0.15 | 0.15 | <0.732 | 0.732 | 2813406 |
| Carbon Tetrachloride | ppbv | <0.30 | 0.30 | <1.89 | 1.89 | 2813406 |
| 1,1-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2813406 |
| 1,2-Dichloroethane | ppbv | <0.20 | 0.20 | <0.809 | 0.809 | 2813406 |
| Ethylene Dibromide | ppbv | <0.17 | 0.17 | <1.31 | 1.31 | 2813406 |
| 1,1,1-Trichloroethane | ppbv | <0.30 | 0.30 | <1.64 | 1.64 | 2813406 |
| 1,1,2-Trichloroethane | ppbv | <0.15 | 0.15 | <0.818 | 0.818 | 2813406 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9329 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/PORT/MAR 28,12 - 7820** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| 1,1,2,2-Tetrachloroethane | ppbv | <0.20 | 0.20 | <1.37 | 1.37 | 2813406 |
| cis-1,3-Dichloropropene | ppbv | <0.18 | 0.18 | <0.817 | 0.817 | 2813406 |
| trans-1,3-Dichloropropene | ppbv | <0.17 | 0.17 | <0.772 | 0.772 | 2813406 |
| 1,2-Dichloropropane | ppbv | <0.40 | 0.40 | <1.85 | 1.85 | 2813406 |
| Bromomethane | ppbv | <0.18 | 0.18 | <0.699 | 0.699 | 2813406 |
| Bromoform | ppbv | <0.20 | 0.20 | <2.07 | 2.07 | 2813406 |
| Bromodichloromethane | ppbv | <0.20 | 0.20 | <1.34 | 1.34 | 2813406 |
| Dibromochloromethane | ppbv | <0.20 | 0.20 | <1.70 | 1.70 | 2813406 |
| Heptane | ppbv | <0.30 | 0.30 | <1.23 | 1.23 | 2813406 |
| Trichloroethylene | ppbv | <0.30 | 0.30 | <1.61 | 1.61 | 2813406 |
| Tetrachloroethylene | ppbv | <0.20 | 0.20 | <1.36 | 1.36 | 2813406 |
| Benzene | ppbv | <0.18 | 0.18 | <0.575 | 0.575 | 2813406 |
| Toluene | ppbv | <0.20 | 0.20 | <0.753 | 0.753 | 2813406 |
| Ethylbenzene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2813406 |
| p+m-Xylene | ppbv | <0.37 | 0.37 | <1.61 | 1.61 | 2813406 |
| o-Xylene | ppbv | <0.20 | 0.20 | <0.868 | 0.868 | 2813406 |
| Styrene | ppbv | <0.20 | 0.20 | <0.852 | 0.852 | 2813406 |
| 1,3,5-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2813406 |
| 1,2,4-Trimethylbenzene | ppbv | <0.50 | 0.50 | <2.46 | 2.46 | 2813406 |
| 4-ethyltoluene | ppbv | <2.2 | 2.2 | <10.8 | 10.8 | 2813406 |
| Chlorobenzene | ppbv | <0.20 | 0.20 | <0.921 | 0.921 | 2813406 |
| Benzyl chloride | ppbv | <1.0 | 1.0 | <5.18 | 5.18 | 2813406 |
| 1,3-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,4-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,2-Dichlorobenzene | ppbv | <0.40 | 0.40 | <2.40 | 2.40 | 2813406 |
| 1,2,4-Trichlorobenzene | ppbv | <2.0 | 2.0 | <14.8 | 14.8 | 2813406 |
| Hexachlorobutadiene | ppbv | <3.0 | 3.0 | <32.0 | 32.0 | 2813406 |
| Hexane | ppbv | <0.30 | 0.30 | <1.06 | 1.06 | 2813406 |
| Cyclohexane | ppbv | <0.20 | 0.20 | <0.688 | 0.688 | 2813406 |
| Tetrahydrofuran | ppbv | <0.40 | 0.40 | <1.18 | 1.18 | 2813406 |
| 1,4-Dioxane | ppbv | <2.0 | 2.0 | <7.21 | 7.21 | 2813406 |
| Xylene (Total) | ppbv | <0.60 | 0.60 | <2.61 | 2.61 | 2813406 |
| **Surrogate Recovery (%)** | | | | | | |
| Bromochloromethane | % | 89 | | N/A | N/A | 2813406 |

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


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Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## VOLATILE ORGANICS BY GC/MS (AIR)

| Maxxam ID | | MZ9329 | | | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | | | | |
| COC Number | | 10683 | | | | |
| | **Units** | **LICAVOC/PORT/MAR 28,12 - 7820** | **RDL** | **ug/m3** | **DL (ug/m3)** | **QC Batch** |
| D5-Chlorobenzene | % | 80 | | N/A | N/A | 2813406 |
| Difluorobenzene | % | 91 | | N/A | N/A | 2813406 |

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


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Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

## Test Summary

**Maxxam ID** MZ9328 **Collected** 2012/03/28
**Sample ID** LICAVOC/CLS/MAR 28,12 - 320 **Shipped**
**Matrix** AIR **Received** 2012/04/04

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2813383 | N/A | 2012/04/05 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2813406 | N/A | 2012/04/05 | SPOMENKA SMILJANIC |

**Maxxam ID** MZ9329 **Collected** 2012/03/28
**Sample ID** LICAVOC/PORT/MAR 28,12 - 7820 **Shipped**
**Matrix** AIR **Received** 2012/04/04

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| Canister Pressure (TO-15) | PRES | 2813383 | N/A | 2012/04/05 | SPOMENKA SMILJANIC |
| Volatile Organics in Air (TO-15) | GC/MS | 2813406 | N/A | 2012/04/05 | SPOMENKA SMILJANIC |


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Maxxam Analytics

Maxxam Job #: B247052
Report Date: 2012/04/11

**GENERAL COMMENTS**

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


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

# Quality Assurance Report

Maxxam Job Number: GB247052

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2813406 | S_S | Spiked Blank | Bromochloromethane | 2012/04/05 | | 117 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/04/05 | | 109 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/04/05 | | 120 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/04/05 | | 82 | % | 70 - 130 |
| | | | Carbon Disulfide | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | Propene | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | Vinyl Acetate | 2012/04/05 | | 95 | % | 70 - 130 |
| | | | Vinyl Bromide | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/04/05 | | 103 | % | 70 - 130 |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/04/05 | | 115 | % | 70 - 130 |
| | | | Chloromethane | 2012/04/05 | | 101 | % | 70 - 130 |
| | | | Vinyl Chloride | 2012/04/05 | | 95 | % | 70 - 130 |
| | | | Chloroethane | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | 1,3-Butadiene | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | Trichlorofluoromethane (FREON 11) | 2012/04/05 | | 102 | % | 70 - 130 |
| | | | Trichlorotrifluoroethane | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | Ethanol (ethyl alcohol) | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | 2-propanol | 2012/04/05 | | 88 | % | 70 - 130 |
| | | | 2-Propanone | 2012/04/05 | | 112 | % | 70 - 130 |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/04/05 | | 82 | % | 70 - 130 |
| | | | Methyl Isobutyl Ketone | 2012/04/05 | | 89 | % | 70 - 130 |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | Methyl t-butyl ether (MTBE) | 2012/04/05 | | 97 | % | 70 - 130 |
| | | | Ethyl Acetate | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | 1,1-Dichloroethylene | 2012/04/05 | | 95 | % | 70 - 130 |
| | | | cis-1,2-Dichloroethylene | 2012/04/05 | | 93 | % | 70 - 130 |
| | | | trans-1,2-Dichloroethylene | 2012/04/05 | | 91 | % | 70 - 130 |
| | | | Methylene Chloride(Dichloromethane) | 2012/04/05 | | 83 | % | 70 - 130 |
| | | | Chloroform | 2012/04/05 | | 94 | % | 70 - 130 |
| | | | Carbon Tetrachloride | 2012/04/05 | | 99 | % | 70 - 130 |
| | | | 1,1-Dichloroethane | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | 1,2-Dichloroethane | 2012/04/05 | | 101 | % | 70 - 130 |
| | | | Ethylene Dibromide | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | 1,1,1-Trichloroethane | 2012/04/05 | | 98 | % | 70 - 130 |
| | | | 1,1,2-Trichloroethane | 2012/04/05 | | 86 | % | 70 - 130 |
| | | | 1,1,2,2-Tetrachloroethane | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | cis-1,3-Dichloropropene | 2012/04/05 | | 99 | % | 70 - 130 |
| | | | trans-1,3-Dichloropropene | 2012/04/05 | | 107 | % | 70 - 130 |
| | | | 1,2-Dichloropropane | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | Bromomethane | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | Bromoform | 2012/04/05 | | 105 | % | 70 - 130 |
| | | | Bromodichloromethane | 2012/04/05 | | 102 | % | 70 - 130 |
| | | | Dibromochloromethane | 2012/04/05 | | 100 | % | 70 - 130 |
| | | | Heptane | 2012/04/05 | | 86 | % | 70 - 130 |
| | | | Trichloroethylene | 2012/04/05 | | 80 | % | 70 - 130 |
| | | | Tetrachloroethylene | 2012/04/05 | | 82 | % | 70 - 130 |
| | | | Benzene | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | Toluene | 2012/04/05 | | 87 | % | 70 - 130 |
| | | | Ethylbenzene | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | p+m-Xylene | 2012/04/05 | | 91 | % | 70 - 130 |
| | | | o-Xylene | 2012/04/05 | | 92 | % | 70 - 130 |
| | | | Styrene | 2012/04/05 | | 74 | % | 70 - 130 |
| | | | 1,3,5-Trimethylbenzene | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | 1,2,4-Trimethylbenzene | 2012/04/05 | | 91 | % | 70 - 130 |
| | | | 4-ethyltoluene | 2012/04/05 | | 99 | % | 70 - 130 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB247052

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2813406 | S_S | Spiked Blank | Chlorobenzene | 2012/04/05 | | 82 | % | 70 - 130 |
| | | | Benzyl chloride | 2012/04/05 | | 119 | % | 70 - 130 |
| | | | 1,3-Dichlorobenzene | 2012/04/05 | | 87 | % | 70 - 130 |
| | | | 1,4-Dichlorobenzene | 2012/04/05 | | 88 | % | 70 - 130 |
| | | | 1,2-Dichlorobenzene | 2012/04/05 | | 84 | % | 70 - 130 |
| | | | 1,2,4-Trichlorobenzene | 2012/04/05 | | 94 | % | 70 - 130 |
| | | | Hexachlorobutadiene | 2012/04/05 | | 93 | % | 70 - 130 |
| | | | Hexane | 2012/04/05 | | 91 | % | 70 - 130 |
| | | | Cyclohexane | 2012/04/05 | | 85 | % | 70 - 130 |
| | | | Tetrahydrofuran | 2012/04/05 | | 86 | % | 70 - 130 |
| | | | 1,4-Dioxane | 2012/04/05 | | 90 | % | 70 - 130 |
| | | | Xylene (Total) | 2012/04/05 | | 91 | % | 70 - 130 |
| | | Method Blank | Bromochloromethane | 2012/04/05 | | 87 | % | 60 - 140 |
| | | | D5-Chlorobenzene | 2012/04/05 | | 76 | % | 60 - 140 |
| | | | Difluorobenzene | 2012/04/05 | | 89 | % | 60 - 140 |
| | | | 2,2,4-Trimethylpentane | 2012/04/05 | <0.20 | | ppbv | |
| | | | Carbon Disulfide | 2012/04/05 | <0.50 | | ppbv | |
| | | | Propene | 2012/04/05 | <0.30 | | ppbv | |
| | | | Vinyl Acetate | 2012/04/05 | <0.20 | | ppbv | |
| | | | Vinyl Bromide | 2012/04/05 | <0.20 | | ppbv | |
| | | | Dichlorodifluoromethane (FREON 12) | 2012/04/05 | <0.20 | | ppbv | |
| | | | 1,2-Dichlorotetrafluoroethane | 2012/04/05 | <0.17 | | ppbv | |
| | | | Chloromethane | 2012/04/05 | <0.30 | | ppbv | |
| | | | Vinyl Chloride | 2012/04/05 | <0.18 | | ppbv | |
| | | | Chloroethane | 2012/04/05 | <0.30 | | ppbv | |
| | | | 1,3-Butadiene | 2012/04/05 | <0.50 | | ppbv | |
| | | | Trichlorofluoromethane (FREON 11) | 2012/04/05 | <0.20 | | ppbv | |
| | | | Trichlorotrifluoroethane | 2012/04/05 | <0.15 | | ppbv | |
| | | | Ethanol (ethyl alcohol) | 2012/04/05 | <2.3 | | ppbv | |
| | | | 2-propanol | 2012/04/05 | <3.0 | | ppbv | |
| | | | 2-Propanone | 2012/04/05 | <0.80 | | ppbv | |
| | | | Methyl Ethyl Ketone (2-Butanone) | 2012/04/05 | <3.0 | | ppbv | |
| | | | Methyl Isobutyl Ketone | 2012/04/05 | <3.2 | | ppbv | |
| | | | Methyl Butyl Ketone (2-Hexanone) | 2012/04/05 | <2.0 | | ppbv | |
| | | | Methyl t-butyl ether (MTBE) | 2012/04/05 | <0.20 | | ppbv | |
| | | | Ethyl Acetate | 2012/04/05 | <2.2 | | ppbv | |
| | | | 1,1-Dichloroethylene | 2012/04/05 | <0.25 | | ppbv | |
| | | | cis-1,2-Dichloroethylene | 2012/04/05 | <0.19 | | ppbv | |
| | | | trans-1,2-Dichloroethylene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Methylene Chloride(Dichloromethane) | 2012/04/05 | <0.80 | | ppbv | |
| | | | Chloroform | 2012/04/05 | <0.15 | | ppbv | |
| | | | Carbon Tetrachloride | 2012/04/05 | <0.30 | | ppbv | |
| | | | 1,1-Dichloroethane | 2012/04/05 | <0.20 | | ppbv | |
| | | | 1,2-Dichloroethane | 2012/04/05 | <0.20 | | ppbv | |
| | | | Ethylene Dibromide | 2012/04/05 | <0.17 | | ppbv | |
| | | | 1,1,1-Trichloroethane | 2012/04/05 | <0.30 | | ppbv | |
| | | | 1,1,2-Trichloroethane | 2012/04/05 | <0.15 | | ppbv | |
| | | | 1,1,2,2-Tetrachloroethane | 2012/04/05 | <0.20 | | ppbv | |
| | | | cis-1,3-Dichloropropene | 2012/04/05 | <0.18 | | ppbv | |
| | | | trans-1,3-Dichloropropene | 2012/04/05 | <0.17 | | ppbv | |
| | | | 1,2-Dichloropropane | 2012/04/05 | <0.40 | | ppbv | |
| | | | Bromomethane | 2012/04/05 | <0.18 | | ppbv | |
| | | | Bromoform | 2012/04/05 | <0.20 | | ppbv | |
| | | | Bromodichloromethane | 2012/04/05 | <0.20 | | ppbv | |
| | | | Dibromochloromethane | 2012/04/05 | <0.20 | | ppbv | |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB247052

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2813406 | S_S | Method Blank | Heptane | 2012/04/05 | <0.30 | | ppbv | |
| | | | Trichloroethylene | 2012/04/05 | <0.30 | | ppbv | |
| | | | Tetrachloroethylene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Benzene | 2012/04/05 | <0.18 | | ppbv | |
| | | | Toluene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Ethylbenzene | 2012/04/05 | <0.20 | | ppbv | |
| | | | p+m-Xylene | 2012/04/05 | <0.37 | | ppbv | |
| | | | o-Xylene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Styrene | 2012/04/05 | <0.20 | | ppbv | |
| | | | 1,3,5-Trimethylbenzene | 2012/04/05 | <0.50 | | ppbv | |
| | | | 1,2,4-Trimethylbenzene | 2012/04/05 | <0.50 | | ppbv | |
| | | | 4-ethyltoluene | 2012/04/05 | <2.2 | | ppbv | |
| | | | Chlorobenzene | 2012/04/05 | <0.20 | | ppbv | |
| | | | Benzyl chloride | 2012/04/05 | <1.0 | | ppbv | |
| | | | 1,3-Dichlorobenzene | 2012/04/05 | <0.40 | | ppbv | |
| | | | 1,4-Dichlorobenzene | 2012/04/05 | <0.40 | | ppbv | |
| | | | 1,2-Dichlorobenzene | 2012/04/05 | <0.40 | | ppbv | |
| | | | 1,2,4-Trichlorobenzene | 2012/04/05 | <2.0 | | ppbv | |
| | | | Hexachlorobutadiene | 2012/04/05 | <3.0 | | ppbv | |
| | | | Hexane | 2012/04/05 | <0.30 | | ppbv | |
| | | | Cyclohexane | 2012/04/05 | <0.20 | | ppbv | |
| | | | Tetrahydrofuran | 2012/04/05 | <0.40 | | ppbv | |
| | | | 1,4-Dioxane | 2012/04/05 | <2.0 | | ppbv | |
| | | | Xylene (Total) | 2012/04/05 | <0.60 | | ppbv | |

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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# Polycyclic Aromatic Hydrocarbons Laboratory Analysis

# MAXXAM

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: 13-16-62-5 W4M
Station ID: Lica 33 (Portable)
Field Sample ID: LICA PUF/PORT/Mar 10, 12

Puf+ s/n: 100-1015
Motor s/n: 1139
Installation Date/Time: Mar 08, 2012 @ 13:45 mst
Removal Date/Time: Mar 14, 2012 @ 11:13 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 10-Mar-12 | 03/10/2012 0:00 | 03/11/2012 0:00 | 24.0000 |

| PUF and QFF Information | | | |
|---|---|---|---|
| Date Received | Date Shipped | Puf Expiration Date | QFF Prep Date |
| 07-Mar-12 | 15-Mar-12 | 19-Mar-12 | ???? |

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

| Sampling Data | | | |
|---|---|---|---|
| Average Pressure(mmHg) | AverageFlow (Qstd slpm) | Average Tempurature ( C) | Volume (Vstd $m^3$) |
| 700 | 229 | 2.5 | 330.33 |

**Time set correctly prior to sampling? YES**
**Timer set correctly prior to sampling? YES**
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 10794
GB1K1688 Puff #2
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/PORT/Mar 10 , 12

Technician Signiture: Ting Xu

Success Through Science®

Your C.O.C. #: 10794

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

**Report Date: 2012/03/30**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B238743**
**Received: 2012/03/20, 09:15**

Sample Matrix: PUF AND FILTER
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | 2 | 2012/03/26 | 2012/03/29 | BRL SOP-00201 | CARB429(ARBM1,M2)mod |

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

Maxxam Analytics

Maxxam Job #: B238743
Report Date: 2012/03/30

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

| Maxxam ID | | MV8117 | MV8118 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | 2012/03/10 | | |
| COC Number | | 10794 | 10794 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 10,2012** | **LICA PUFF+QFF/PORT/MAR 10,2012** | **RDL** | **QC Batch** |
| **Semivolatile Organics** | | | | | |
| 1-Methylnaphthalene | ug | 0.25 | 0.26 | 0.10 | 2795265 |
| 1-Methylphenanthrene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| 2-Chloronaphthalene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| 2-Methylanthracene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| 2-Methylnaphthalene | ug | 0.45 | 0.49 | 0.10 | 2795265 |
| 3-Methylcholanthrene | ug | <2.0 | <2.0 | 2.0 | 2795265 |
| 7,12-Dimethylbenzo(a)anthracene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| 9,10-Dimethylanthracene | ug | <0.40 | <0.40 | 0.40 | 2795265 |
| Acenaphthene | ug | 0.096 | <0.050 | 0.050 | 2795265 |
| Acenaphthylene | ug | 0.092 | <0.050 | 0.050 | 2795265 |
| Anthracene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Benzo(a)anthracene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Benzo(a)fluorene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Benzo(a)pyrene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Benzo(b)fluoranthene | ug | 0.062 | <0.050 | 0.050 | 2795265 |
| Benzo(b)fluorene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Benzo(e)pyrene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Benzo(g,h,i)perylene | ug | <0.050 | 0.050 | 0.050 | 2795265 |
| Benzo(k)fluoranthene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Biphenyl | ug | 0.25 | 0.10 | 0.10 | 2795265 |
| Chrysene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Coronene | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Dibenz(a,h)anthracene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| Dibenzo(a,e)pyrene | ug | <0.20 | <0.20 | 0.20 | 2795265 |
| Fluoranthene | ug | 0.118 | <0.050 | 0.050 | 2795265 |
| Fluorene | ug | 0.230 | 0.146 | 0.050 | 2795265 |
| Indeno(1,2,3-cd)pyrene | ug | <0.050 | <0.050 | 0.050 | 2795265 |
| m-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Naphthalene | ug | 0.226 | 0.160 | 0.072 | 2795265 |
| o-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Perylene | ug | <0.10 | <0.10 | 0.10 | 2795265 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B238743
Report Date: 2012/03/30

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

| Maxxam ID | | MV8117 | MV8118 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2012/03/10 | 2012/03/10 | | |
| COC Number | | 10794 | 10794 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 10,2012** | **LICA PUFF+QFF/PORT/MAR 10,2012** | **RDL** | **QC Batch** |
| Phenanthrene | ug | 0.502 | 0.158 | 0.050 | 2795265 |
| p-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| Pyrene | ug | 0.070 | <0.050 | 0.050 | 2795265 |
| Quinoline | ug | <0.40 | <0.40 | 0.40 | 2795265 |
| Tetralin | ug | <0.10 | <0.10 | 0.10 | 2795265 |
| **Surrogate Recovery (%)** | | | | | |
| D10-2-Methylnaphthalene | % | 54 | 80 | | 2795265 |
| D10-Fluoranthene | % | 102 | 92 | | 2795265 |
| D10-Fluorene (FS) | % | 23 (1) | 20 (1) | | 2795265 |
| D10-Phenanthrene | % | 92 | 88 | | 2795265 |
| D12-Benzo(a)anthracene | % | 100 | 96 | | 2795265 |
| D12-Benzo(a)pyrene | % | 96 | 92 | | 2795265 |
| D12-Benzo(b)fluoranthene | % | 94 | 88 | | 2795265 |
| D12-Benzo(ghi)perylene | % | 98 | 96 | | 2795265 |
| D12-Benzo(k)fluoranthene | % | 94 | 94 | | 2795265 |
| D12-Chrysene | % | 90 | 92 | | 2795265 |
| D12-Indeno(1,2,3-cd)pyrene | % | 98 | 94 | | 2795265 |
| D12-Perylene | % | 96 | 94 | | 2795265 |
| D14-Dibenzo(a,h)anthracene | % | 100 | 96 | | 2795265 |
| D14-Terphenyl (FS) | % | 96 | 92 | | 2795265 |
| D8-Acenaphthylene | % | 66 | 84 | | 2795265 |
| D8-Naphthalene | % | 52 | 78 | | 2795265 |

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


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Maxxam Analytics

Maxxam Job #: B238743
Report Date: 2012/03/30

## Test Summary

**Maxxam ID** MV8117 **Collected** 2012/03/10
**Sample ID** LICA PUFF+QFF/CLS/MAR 10,2012 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/20

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2795265 | 2012/03/26 | 2012/03/29 | JIE WU |

**Maxxam ID** MV8118 **Collected** 2012/03/10
**Sample ID** LICA PUFF+QFF/PORT/MAR 10,2012 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/20

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2795265 | 2012/03/26 | 2012/03/29 | JIE WU |


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**GENERAL COMMENTS**

PAHMS-F
Samples received past hold time.

7,12-dimethylbenzo(a)anthracene is above 25% RSD in initial and continuing calibrations. No positive found for this compound.

Acenaphylene is statistically out of control at 65% recovery in the spike and 68 % recovery in spike:dup. Acceptance criteria met for both spike and dup. Data reported and flagged.

Reovery of naphthalene is low in spike.

Not calibrated for benzo(b)anthracene, picene, dibenzo(a,c)anthracene and triphenylene. An estimated mdl for each of these compounds is 0.1ug.

Since dibenzo(a,c)anthracene co-elutes with dibenz(a,h)anthracene and triphenylene with chrysene each would have a value below estimated mdl.

Benzo(b)anthracene elutes after benzo(a)anthracene and chysene. Picene elutes after dibenz(a,h)anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MV8117-01: Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Sample MV8118-01: Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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


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

# Quality Assurance Report

Maxxam Job Number: GB238743

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2795265 | JIW | Spiked Blank | D10-2-Methylnaphthalene | 2012/03/29 | | 68 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/03/29 | | 84 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/03/29 | | 100 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/03/29 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/03/29 | | 94 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/03/29 | | 92 | % | 50 - 150 |
| | | | D12-Indeno(1,2,3-cd)pyrene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Perylene | 2012/03/29 | | 94 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/03/29 | | 72 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/03/29 | | 64 | % | 50 - 150 |
| | | | Acenaphthene | 2012/03/29 | | 68 | % | 60 - 130 |
| | | RPD | Acenaphthene | 2012/03/29 | 0.4 | | % | 50 |
| | | Spiked Blank | Acenaphthylene | 2012/03/29 | | 65 | % | 60 - 130 |
| | | RPD | Acenaphthylene | 2012/03/29 | 4.1 | | % | 50 |
| | | Spiked Blank | Anthracene | 2012/03/29 | | 86 | % | 60 - 130 |
| | | RPD | Anthracene | 2012/03/29 | 12.4 | | % | 50 |
| | | Spiked Blank | Benzo(a)anthracene | 2012/03/29 | | 91 | % | 60 - 130 |
| | | RPD | Benzo(a)anthracene | 2012/03/29 | 1.7 | | % | 50 |
| | | Spiked Blank | Benzo(a)pyrene | 2012/03/29 | | 77 | % | 60 - 130 |
| | | RPD | Benzo(a)pyrene | 2012/03/29 | 1.6 | | % | 50 |
| | | Spiked Blank | Benzo(b)fluoranthene | 2012/03/29 | | 88 | % | 60 - 130 |
| | | RPD | Benzo(b)fluoranthene | 2012/03/29 | 2.3 | | % | 50 |
| | | Spiked Blank | Benzo(g,h,i)perylene | 2012/03/29 | | 82 | % | 60 - 130 |
| | | RPD | Benzo(g,h,i)perylene | 2012/03/29 | 0 | | % | 50 |
| | | Spiked Blank | Benzo(k)fluoranthene | 2012/03/29 | | 89 | % | 60 - 130 |
| | | RPD | Benzo(k)fluoranthene | 2012/03/29 | 1.1 | | % | 50 |
| | | Spiked Blank | Chrysene | 2012/03/29 | | 83 | % | 60 - 130 |
| | | RPD | Chrysene | 2012/03/29 | 2.1 | | % | 50 |
| | | Spiked Blank | Dibenz(a,h)anthracene | 2012/03/29 | | 89 | % | 60 - 130 |
| | | RPD | Dibenz(a,h)anthracene | 2012/03/29 | 3.1 | | % | 50 |
| | | Spiked Blank | Fluoranthene | 2012/03/29 | | 90 | % | 60 - 130 |
| | | RPD | Fluoranthene | 2012/03/29 | 2.0 | | % | 50 |
| | | Spiked Blank | Fluorene | 2012/03/29 | | 71 | % | 60 - 130 |
| | | RPD | Fluorene | 2012/03/29 | 0.4 | | % | 50 |
| | | Spiked Blank | Indeno(1,2,3-cd)pyrene | 2012/03/29 | | 84 | % | 60 - 130 |
| | | RPD | Indeno(1,2,3-cd)pyrene | 2012/03/29 | 0.3 | | % | 50 |
| | | Spiked Blank | Naphthalene | 2012/03/29 | | 60 (1) | % | 60 - 130 |
| | | RPD | Naphthalene | 2012/03/29 | 6.1 | | % | 50 |
| | | Spiked Blank | Phenanthrene | 2012/03/29 | | 76 | % | 60 - 130 |
| | | RPD | Phenanthrene | 2012/03/29 | 2.0 | | % | 50 |
| | | Spiked Blank | Pyrene | 2012/03/29 | | 85 | % | 60 - 130 |
| | | RPD | Pyrene | 2012/03/29 | 0.9 | | % | 50 |
| | | Method Blank | D10-2-Methylnaphthalene | 2012/03/29 | | 76 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/03/29 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/03/29 | | 90 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/03/29 | | 90 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/03/29 | | 88 | % | 50 - 150 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB238743

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2795265 | JIW | Method Blank | D12-Indeno(1,2,3-cd)pyrene | 2012/03/29 | | 96 | % | 50 - 150 |
| | | | D12-Perylene | 2012/03/29 | | 92 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/03/29 | | 98 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/03/29 | | 82 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/03/29 | | 76 | % | 50 - 150 |
| | | | 1-Methylnaphthalene | 2012/03/29 | <0.10 | | ug | |
| | | | 1-Methylphenanthrene | 2012/03/29 | <0.10 | | ug | |
| | | | 2-Chloronaphthalene | 2012/03/29 | <0.10 | | ug | |
| | | | 2-Methylanthracene | 2012/03/29 | <0.10 | | ug | |
| | | | 2-Methylnaphthalene | 2012/03/29 | <0.10 | | ug | |
| | | | 3-Methylcholanthrene | 2012/03/29 | <2.0 | | ug | |
| | | | 7,12-Dimethylbenzo(a)anthracene | 2012/03/29 | <0.10 | | ug | |
| | | | 9,10-Dimethylanthracene | 2012/03/29 | <0.40 | | ug | |
| | | | Acenaphthene | 2012/03/29 | <0.050 | | ug | |
| | | | Acenaphthylene | 2012/03/29 | <0.050 | | ug | |
| | | | Anthracene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(a)anthracene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(a)fluorene | 2012/03/29 | <0.10 | | ug | |
| | | | Benzo(a)pyrene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(b)fluoranthene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(b)fluorene | 2012/03/29 | <0.10 | | ug | |
| | | | Benzo(e)pyrene | 2012/03/29 | <0.10 | | ug | |
| | | | Benzo(g,h,i)perylene | 2012/03/29 | <0.050 | | ug | |
| | | | Benzo(k)fluoranthene | 2012/03/29 | <0.050 | | ug | |
| | | | Biphenyl | 2012/03/29 | <0.10 | | ug | |
| | | | Chrysene | 2012/03/29 | <0.050 | | ug | |
| | | | Coronene | 2012/03/29 | <0.10 | | ug | |
| | | | Dibenz(a,h)anthracene | 2012/03/29 | <0.050 | | ug | |
| | | | Dibenzo(a,e)pyrene | 2012/03/29 | <0.20 | | ug | |
| | | | Fluoranthene | 2012/03/29 | <0.050 | | ug | |
| | | | Fluorene | 2012/03/29 | <0.050 | | ug | |
| | | | Indeno(1,2,3-cd)pyrene | 2012/03/29 | <0.050 | | ug | |
| | | | m-Terphenyl | 2012/03/29 | <0.10 | | ug | |
| | | | Naphthalene | 2012/03/29 | <0.072 | | ug | |
| | | | o-Terphenyl | 2012/03/29 | <0.10 | | ug | |
| | | | Perylene | 2012/03/29 | <0.10 | | ug | |
| | | | Phenanthrene | 2012/03/29 | <0.050 | | ug | |
| | | | p-Terphenyl | 2012/03/29 | <0.10 | | ug | |
| | | | Pyrene | 2012/03/29 | <0.050 | | ug | |
| | | | Quinoline | 2012/03/29 | <0.40 | | ug | |
| | | | Tetralin | 2012/03/29 | <0.10 | | ug | |

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
( 1 ) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.


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# MAXXAM

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: 13-16-62-5 W4M
Station ID: Lica 33 (Portable)
Field Sample ID: LICA PUF/PORT/Mar 16, 12

Puf+ s/n: 100-1015
Motor s/n: 1139
Installation Date/Time: Mar 14, 2012 @ 11:32 mst
Removal Date/Time: Mar 20, 2012 @ 11:47 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 16-Mar-12 | 03/16/2012 0:00 | 03/17/2012 0:00 | 24.0000 |

| PUF and QFF Information | | | |
|---|---|---|---|
| Date Received | Date Shipped | Puf Expiration Date | QFF Prep Date |
| 13-Mar-12 | 19-Mar-12 | 27-Mar-12 | ???? |

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

| Sampling Data | | | |
|---|---|---|---|
| Average Pressure(mmHg) | AverageFlow (Qstd slpm) | Average Tempurature ( C) | Volume (Vstd $m^3$) |
| 694 | 229 | 3.6 | 330.34 |

**Time set correctly prior to sampling? YES**
**Timer set correctly prior to sampling? YES**
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 10878
GB1K1690 Puff #2
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/PORT/Mar 16 , 12

Technician Signiture: Ting Xu

Maxxam

Success Through Science®

Your C.O.C. #: 10878

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

**Report Date: 2012/04/09**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B242512**
**Received: 2012/03/27, 09:00**

Sample Matrix: PUF AND FILTER
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | 2 | 2012/03/29 | 2012/04/03 | BRL SOP-00201 | CARB429(ARBM1,M2)mod |

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

Maxxam Analytics

Maxxam Job #: B242512
Report Date: 2012/04/09

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

| Maxxam ID | | MX5462 | | MX5463 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | 2012/03/16 | | |
| COC Number | | 10878 | | 10878 | | |
| | **Units** | **LICAPUFF/QFF/CLS/MAR16,12** | **RDL** | **LICAPUFF/QFF/PORT/MAR16,12** | **RDL** | **QC Batch** |
| **Semivolatile Organics** | | | | | | |
| 1-Methylnaphthalene | ug | 0.16 | 0.10 | <0.10 | 0.10 | 2805193 |
| 1-Methylphenanthrene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Chloronaphthalene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Methylanthracene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Methylnaphthalene | ug | 0.30 | 0.10 | 0.20 | 0.10 | 2805193 |
| 3-Methylcholanthrene | ug | <2.0 | 2.0 | <2.0 | 2.0 | 2805193 |
| 7,12-Dimethylbenzo(a)anthracene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 9,10-Dimethylanthracene | ug | <0.40 | 0.40 | <0.40 | 0.40 | 2805193 |
| Acenaphthene | ug | <0.057 | 0.057 | <0.050 | 0.050 | 2805193 |
| Acenaphthylene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(a)anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(a)fluorene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(a)pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(b)fluoranthene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(b)fluorene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(e)pyrene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(g,h,i)perylene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(k)fluoranthene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Biphenyl | ug | 0.11 | 0.10 | <0.10 | 0.10 | 2805193 |
| Chrysene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Coronene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Dibenz(a,h)anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Dibenzo(a,e)pyrene | ug | <0.20 | 0.20 | <0.20 | 0.20 | 2805193 |
| Fluoranthene | ug | 0.064 | 0.050 | <0.050 | 0.050 | 2805193 |
| Fluorene | ug | 0.224 | 0.050 | 0.126 | 0.050 | 2805193 |
| Indeno(1,2,3-cd)pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| m-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Naphthalene | ug | 0.182 | 0.072 | 0.114 | 0.072 | 2805193 |
| o-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Perylene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Phenanthrene | ug | 0.340 | 0.050 | 0.162 | 0.050 | 2805193 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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

| Maxxam ID | | MX5462 | | MX5463 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/16 | | 2012/03/16 | | |
| COC Number | | 10878 | | 10878 | | |
| | **Units** | **LICAPUFF/QFF/CLS/MAR16,12** | **RDL** | **LICAPUFF/QFF/PORT/MAR16,12** | **RDL** | **QC Batch** |
| p-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Quinoline | ug | <0.40 | 0.40 | <0.40 | 0.40 | 2805193 |
| Tetralin | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| **Surrogate Recovery (%)** | | | | | | |
| D10-2-Methylnaphthalene | % | 64 | | 82 | | 2805193 |
| D10-Fluoranthene | % | 110 | | 116 | | 2805193 |
| D10-Fluorene (FS) | % | 11 (1) | | 20 (1) | | 2805193 |
| D10-Phenanthrene | % | 96 | | 104 | | 2805193 |
| D12-Benzo(a)anthracene | % | 104 | | 108 | | 2805193 |
| D12-Benzo(a)pyrene | % | 100 | | 106 | | 2805193 |
| D12-Benzo(b)fluoranthene | % | 96 | | 100 | | 2805193 |
| D12-Benzo(ghi)perylene | % | 104 | | 112 | | 2805193 |
| D12-Benzo(k)fluoranthene | % | 94 | | 104 | | 2805193 |
| D12-Chrysene | % | 88 | | 96 | | 2805193 |
| D12-Indeno(1,2,3-cd)pyrene | % | 104 | | 110 | | 2805193 |
| D12-Perylene | % | 98 | | 104 | | 2805193 |
| D14-Dibenzo(a,h)anthracene | % | 110 | | 114 | | 2805193 |
| D14-Terphenyl (FS) | % | 112 | | 118 | | 2805193 |
| D8-Acenaphthylene | % | 78 | | 96 | | 2805193 |
| D8-Naphthalene | % | 58 | | 76 | | 2805193 |

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


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Maxxam Analytics

Maxxam Job #: B242512
Report Date: 2012/04/09

## Test Summary

**Maxxam ID** MX5462 **Collected** 2012/03/16
**Sample ID** LICAPUFF/QFF/CLS/MAR16,12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/27

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2805193 | 2012/03/29 | 2012/04/03 | WENDY ZHAO |

**Maxxam ID** MX5463 **Collected** 2012/03/16
**Sample ID** LICAPUFF/QFF/PORT/MAR16,12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/27

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2805193 | 2012/03/29 | 2012/04/03 | WENDY ZHAO |


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Maxxam Analytics

Maxxam Job #: B242512
Report Date: 2012/04/09

**GENERAL COMMENTS**

PAHMS-F
7,12-Dimethylbenzo(a)anthracene is above 25% RSD in initial calibration. No positive found for this compounds.

Chrysene is statistically out of control at 85.25% recovery in the spike:dup. Spike recovery is in control. Acceptance criteria met for both spike and dup. Data reported and flagged.

Not calibrated for Benzo(b)Anthracene, Picene, Dibenzo(a,c) anthracene or Triphenylene. An estimated mdl for each of these compounds is 0.1ug .
Since Dibenzo(a,c) anthracene co-elutes with Dibenzo(a,h) anthracene and Triphenylene with Chrysene each would have a value below estimated mdl.
Benzo(b)Anthracene elutes after Benzo(a)Anthracene and Chysene. Picene elutes after Dibenzo(a,h) anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MX5462-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Internal Std area response criteria was high in Sample. Rerun with similar results. Original run reported.

Mdl was raised for Acenphthene due to sample matrix interference on a possible possitive.

Sample MX5463-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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


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

# Quality Assurance Report

Maxxam Job Number: GB242512

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2805193 | WZ | Spiked Blank | D10-2-Methylnaphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/03 | | 78 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/03 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/03 | | 90 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/03 | | 70 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | Acenaphthene | 2012/04/03 | | 63 | % | 60 - 130 |
| | | RPD | Acenaphthene | 2012/04/03 | 9.5 | | % | 50 |
| | | Spiked Blank | Acenaphthylene | 2012/04/03 | | 63 | % | 60 - 130 |
| | | RPD | Acenaphthylene | 2012/04/03 | 10.6 | | % | 50 |
| | | Spiked Blank | Anthracene | 2012/04/03 | | 76 | % | 60 - 130 |
| | | RPD | Anthracene | 2012/04/03 | 11.7 | | % | 50 |
| | | Spiked Blank | Benzo(a)anthracene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Benzo(a)anthracene | 2012/04/03 | 13.2 | | % | 50 |
| | | Spiked Blank | Benzo(a)pyrene | 2012/04/03 | | 72 | % | 60 - 130 |
| | | RPD | Benzo(a)pyrene | 2012/04/03 | 14.5 | | % | 50 |
| | | Spiked Blank | Benzo(b)fluoranthene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Benzo(b)fluoranthene | 2012/04/03 | 12.1 | | % | 50 |
| | | Spiked Blank | Benzo(g,h,i)perylene | 2012/04/03 | | 81 | % | 60 - 130 |
| | | RPD | Benzo(g,h,i)perylene | 2012/04/03 | 12.7 | | % | 50 |
| | | Spiked Blank | Benzo(k)fluoranthene | 2012/04/03 | | 89 | % | 60 - 130 |
| | | RPD | Benzo(k)fluoranthene | 2012/04/03 | 10.9 | | % | 50 |
| | | Spiked Blank | Chrysene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Chrysene | 2012/04/03 | 9.5 | | % | 50 |
| | | Spiked Blank | Dibenz(a,h)anthracene | 2012/04/03 | | 82 | % | 60 - 130 |
| | | RPD | Dibenz(a,h)anthracene | 2012/04/03 | 16.7 | | % | 50 |
| | | Spiked Blank | Fluoranthene | 2012/04/03 | | 86 | % | 60 - 130 |
| | | RPD | Fluoranthene | 2012/04/03 | 15.9 | | % | 50 |
| | | Spiked Blank | Fluorene | 2012/04/03 | | 65 | % | 60 - 130 |
| | | RPD | Fluorene | 2012/04/03 | 11.9 | | % | 50 |
| | | Spiked Blank | Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 80 | % | 60 - 130 |
| | | RPD | Indeno(1,2,3-cd)pyrene | 2012/04/03 | 15.7 | | % | 50 |
| | | Spiked Blank | Naphthalene | 2012/04/03 | | 61 | % | 60 - 130 |
| | | RPD | Naphthalene | 2012/04/03 | 4.8 | | % | 50 |
| | | Spiked Blank | Phenanthrene | 2012/04/03 | | 69 | % | 60 - 130 |
| | | RPD | Phenanthrene | 2012/04/03 | 12.6 | | % | 50 |
| | | Spiked Blank | Pyrene | 2012/04/03 | | 75 | % | 60 - 130 |
| | | RPD | Pyrene | 2012/04/03 | 15.6 | | % | 50 |
| | | Method Blank | D10-2-Methylnaphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/03 | | 110 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/03 | | 100 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/03 | | 98 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/03 | | 88 | % | 50 - 150 |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB242512

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2805193 | WZ | Method Blank | D12-Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/03 | | 102 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/03 | | 106 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/03 | | 70 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/03 | | 60 | % | 50 - 150 |
| | | | 1-Methylnaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 1-Methylphenanthrene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Chloronaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Methylanthracene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Methylnaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 3-Methylcholanthrene | 2012/04/03 | <2.0 | | ug | |
| | | | 7,12-Dimethylbenzo(a)anthracene | 2012/04/03 | <0.10 | | ug | |
| | | | 9,10-Dimethylanthracene | 2012/04/03 | <0.40 | | ug | |
| | | | Acenaphthene | 2012/04/03 | <0.050 | | ug | |
| | | | Acenaphthylene | 2012/04/03 | <0.050 | | ug | |
| | | | Anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(a)anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(a)fluorene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(a)pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(b)fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(b)fluorene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(e)pyrene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(g,h,i)perylene | 2012/04/03 | 0.050, RDL=0.050 | | ug | |
| | | | Benzo(k)fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Biphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Chrysene | 2012/04/03 | <0.050 | | ug | |
| | | | Coronene | 2012/04/03 | <0.10 | | ug | |
| | | | Dibenz(a,h)anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Dibenzo(a,e)pyrene | 2012/04/03 | <0.20 | | ug | |
| | | | Fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Fluorene | 2012/04/03 | <0.050 | | ug | |
| | | | Indeno(1,2,3-cd)pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | m-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Naphthalene | 2012/04/03 | <0.072 | | ug | |
| | | | o-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Perylene | 2012/04/03 | <0.10 | | ug | |
| | | | Phenanthrene | 2012/04/03 | <0.050 | | ug | |
| | | | p-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | Quinoline | 2012/04/03 | <0.40 | | ug | |
| | | | Tetralin | 2012/04/03 | <0.10 | | ug | |

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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# MAXXAM

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: 13-16-62-5 W4M
Station ID: Lica 33 (Portable)
Field Sample ID: LICA PUF/PORT/Mar 22, 12

Puf+ s/n: 100-1015
Motor s/n: 1139
Installation Date/Time: Mar 20, 2012 @ 12:03 mst
Removal Date/Time: Mar 23, 2012 @ 10:24 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 22-Mar-12 | 03/22/2012 0:00 | 03/23/2012 0:00 | 24.0000 |

| PUF and QFF Information | | | |
|---|---|---|---|
| Date Received | Date Shipped | Puf Expiration Date | QFF Prep Date |
| 16-Mar-12 | 19-Mar-12 | 28-Mar-12 | ???? |

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

| Sampling Data | | | |
|---|---|---|---|
| Average Pressure(mmHg) | AverageFlow (Qstd slpm) | Average Tempurature ( C) | Volume (Vstd $m^3$) |
| 708 | 229 | -5.6 | 330.34 |

wrjm

**Time set correctly prior to sampling? YES**
**Timer set correctly prior to sampling? YES**
**Sampling data saved to memory card after sampling? YES** `

Comments: COC# 10843
GB234606 Puff #2
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/PORT/Mar 22 , 12

Technician Signiture: Ting Xu

Success Through Science®

Your C.O.C. #: 10843

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

**Report Date: 2012/04/09**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B243302**
**Received: 2012/03/28, 09:30**

Sample Matrix: PUF AND FILTER
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | 2 | 2012/03/29 | 2012/04/03 | BRL SOP-00201 | CARB429(ARBM1,M2)mod |

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

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

| Maxxam ID | | MX8768 | | MX8769 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 | | 2012/03/22 | | |
| COC Number | | 10843 | | 10843 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 22, 12** | **RDL** | **LICA PUFF+QFF/PORT/MAR 22, 12** | **RDL** | **QC Batch** |
| **Semivolatile Organics** | | | | | | |
| 1-Methylnaphthalene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 1-Methylphenanthrene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Chloronaphthalene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Methylanthracene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 2-Methylnaphthalene | ug | 0.18 | 0.10 | <0.10 | 0.10 | 2805193 |
| 3-Methylcholanthrene | ug | <2.0 | 2.0 | <2.0 | 2.0 | 2805193 |
| 7,12-Dimethylbenzo(a)anthracene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| 9,10-Dimethylanthracene | ug | <0.40 | 0.40 | <0.40 | 0.40 | 2805193 |
| Acenaphthene | ug | <0.057 | 0.057 | <0.050 | 0.050 | 2805193 |
| Acenaphthylene | ug | 0.116 | 0.050 | <0.050 | 0.050 | 2805193 |
| Anthracene | ug | 0.060 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(a)anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(a)fluorene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(a)pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(b)fluoranthene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(b)fluorene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(e)pyrene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Benzo(g,h,i)perylene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Benzo(k)fluoranthene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Biphenyl | ug | 0.21 | 0.10 | <0.10 | 0.10 | 2805193 |
| Chrysene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Coronene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Dibenz(a,h)anthracene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| Dibenzo(a,e)pyrene | ug | <0.20 | 0.20 | <0.20 | 0.20 | 2805193 |
| Fluoranthene | ug | 0.186 | 0.050 | <0.050 | 0.050 | 2805193 |
| Fluorene | ug | 0.120 | 0.050 | 0.100 | 0.050 | 2805193 |
| Indeno(1,2,3-cd)pyrene | ug | <0.050 | 0.050 | <0.050 | 0.050 | 2805193 |
| m-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Naphthalene | ug | 0.210 | 0.072 | <0.072 | 0.072 | 2805193 |
| o-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Perylene | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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Maxxam Analytics

Maxxam Job #: B243302
Report Date: 2012/04/09

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

| Maxxam ID | | MX8768 | | MX8769 | | |
|---|---|---|---|---|---|---|
| Sampling Date | | 2012/03/22 | | 2012/03/22 | | |
| COC Number | | 10843 | | 10843 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 22, 12** | **RDL** | **LICA PUFF+QFF/PORT/MAR 22, 12** | **RDL** | **QC Batch** |
| Phenanthrene | ug | 0.608 | 0.050 | 0.110 | 0.050 | 2805193 |
| p-Terphenyl | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| Pyrene | ug | 0.106 | 0.050 | <0.050 | 0.050 | 2805193 |
| Quinoline | ug | <0.40 | 0.40 | <0.40 | 0.40 | 2805193 |
| Tetralin | ug | <0.10 | 0.10 | <0.10 | 0.10 | 2805193 |
| **Surrogate Recovery (%)** | | | | | | |
| D10-2-Methylnaphthalene | % | 74 | | 68 | | 2805193 |
| D10-Fluoranthene | % | 106 | | 98 | | 2805193 |
| D10-Fluorene (FS) | % | 43 (1) | | 36 (1) | | 2805193 |
| D10-Phenanthrene | % | 96 | | 88 | | 2805193 |
| D12-Benzo(a)anthracene | % | 100 | | 98 | | 2805193 |
| D12-Benzo(a)pyrene | % | 104 | | 100 | | 2805193 |
| D12-Benzo(b)fluoranthene | % | 98 | | 96 | | 2805193 |
| D12-Benzo(ghi)perylene | % | 108 | | 102 | | 2805193 |
| D12-Benzo(k)fluoranthene | % | 102 | | 96 | | 2805193 |
| D12-Chrysene | % | 92 | | 96 | | 2805193 |
| D12-Indeno(1,2,3-cd)pyrene | % | 106 | | 102 | | 2805193 |
| D12-Perylene | % | 102 | | 98 | | 2805193 |
| D14-Dibenzo(a,h)anthracene | % | 110 | | 102 | | 2805193 |
| D14-Terphenyl (FS) | % | 107 | | 100 | | 2805193 |
| D8-Acenaphthylene | % | 86 | | 78 | | 2805193 |
| D8-Naphthalene | % | 70 | | 64 | | 2805193 |

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


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Maxxam Analytics

Maxxam Job #: B243302
Report Date: 2012/04/09

## Test Summary

**Maxxam ID** MX8768 **Collected** 2012/03/22
**Sample ID** LICA PUFF+QFF/CLS/MAR 22, 12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2805193 | 2012/03/29 | 2012/04/03 | WENDY ZHAO |

**Maxxam ID** MX8769 **Collected** 2012/03/22
**Sample ID** LICA PUFF+QFF/PORT/MAR 22, 12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/03/28

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2805193 | 2012/03/29 | 2012/04/03 | WENDY ZHAO |


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**GENERAL COMMENTS**

PAHMS-F
7,12-Dimethylbenzo(a)anthracene is above 25% RSD in initial calibration. No positive found for this compounds.

Chrysene is statistically out of control at 85.25% recovery in the spike:dup. Spike recovery is in control. Acceptance criteria met for both spike and dup. Data reported and flagged.

Not calibrated for Benzo(b)Anthracene, Picene, Dibenzo(a,c) anthracene or Triphenylene. An estimated mdl for each of these compounds is 0.1ug .
Since Dibenzo(a,c) anthracene co-elutes with Dibenzo(a,h) anthracene and Triphenylene with Chrysene each would have a value below estimated mdl.
Benzo(b)Anthracene elutes after Benzo(a)Anthracene and Chysene. Picene elutes after Dibenzo(a,h) anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample MX8768-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Mdl was raised for Acenphthene due to sample matrix interference on a possible possitive.

Sample MX8769-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

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


Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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

# Quality Assurance Report

Maxxam Job Number: GB243302

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2805193 | WZ | Spiked Blank | D10-2-Methylnaphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/03 | | 78 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/03 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/03 | | 92 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/03 | | 90 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/03 | | 70 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | Acenaphthene | 2012/04/03 | | 63 | % | 60 - 130 |
| | | RPD | Acenaphthene | 2012/04/03 | 9.5 | | % | 50 |
| | | Spiked Blank | Acenaphthylene | 2012/04/03 | | 63 | % | 60 - 130 |
| | | RPD | Acenaphthylene | 2012/04/03 | 10.6 | | % | 50 |
| | | Spiked Blank | Anthracene | 2012/04/03 | | 76 | % | 60 - 130 |
| | | RPD | Anthracene | 2012/04/03 | 11.7 | | % | 50 |
| | | Spiked Blank | Benzo(a)anthracene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Benzo(a)anthracene | 2012/04/03 | 13.2 | | % | 50 |
| | | Spiked Blank | Benzo(a)pyrene | 2012/04/03 | | 72 | % | 60 - 130 |
| | | RPD | Benzo(a)pyrene | 2012/04/03 | 14.5 | | % | 50 |
| | | Spiked Blank | Benzo(b)fluoranthene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Benzo(b)fluoranthene | 2012/04/03 | 12.1 | | % | 50 |
| | | Spiked Blank | Benzo(g,h,i)perylene | 2012/04/03 | | 81 | % | 60 - 130 |
| | | RPD | Benzo(g,h,i)perylene | 2012/04/03 | 12.7 | | % | 50 |
| | | Spiked Blank | Benzo(k)fluoranthene | 2012/04/03 | | 89 | % | 60 - 130 |
| | | RPD | Benzo(k)fluoranthene | 2012/04/03 | 10.9 | | % | 50 |
| | | Spiked Blank | Chrysene | 2012/04/03 | | 78 | % | 60 - 130 |
| | | RPD | Chrysene | 2012/04/03 | 9.5 | | % | 50 |
| | | Spiked Blank | Dibenz(a,h)anthracene | 2012/04/03 | | 82 | % | 60 - 130 |
| | | RPD | Dibenz(a,h)anthracene | 2012/04/03 | 16.7 | | % | 50 |
| | | Spiked Blank | Fluoranthene | 2012/04/03 | | 86 | % | 60 - 130 |
| | | RPD | Fluoranthene | 2012/04/03 | 15.9 | | % | 50 |
| | | Spiked Blank | Fluorene | 2012/04/03 | | 65 | % | 60 - 130 |
| | | RPD | Fluorene | 2012/04/03 | 11.9 | | % | 50 |
| | | Spiked Blank | Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 80 | % | 60 - 130 |
| | | RPD | Indeno(1,2,3-cd)pyrene | 2012/04/03 | 15.7 | | % | 50 |
| | | Spiked Blank | Naphthalene | 2012/04/03 | | 61 | % | 60 - 130 |
| | | RPD | Naphthalene | 2012/04/03 | 4.8 | | % | 50 |
| | | Spiked Blank | Phenanthrene | 2012/04/03 | | 69 | % | 60 - 130 |
| | | RPD | Phenanthrene | 2012/04/03 | 12.6 | | % | 50 |
| | | Spiked Blank | Pyrene | 2012/04/03 | | 75 | % | 60 - 130 |
| | | RPD | Pyrene | 2012/04/03 | 15.6 | | % | 50 |
| | | Method Blank | D10-2-Methylnaphthalene | 2012/04/03 | | 62 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/03 | | 110 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/03 | | 88 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/03 | | 100 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/03 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/03 | | 98 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/03 | | 88 | % | 50 - 150 |

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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB243302

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2805193 | WZ | Method Blank | D12-Indeno(1,2,3-cd)pyrene | 2012/04/03 | | 104 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/03 | | 102 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/03 | | 106 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/03 | | 70 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/03 | | 60 | % | 50 - 150 |
| | | | 1-Methylnaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 1-Methylphenanthrene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Chloronaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Methylanthracene | 2012/04/03 | <0.10 | | ug | |
| | | | 2-Methylnaphthalene | 2012/04/03 | <0.10 | | ug | |
| | | | 3-Methylcholanthrene | 2012/04/03 | <2.0 | | ug | |
| | | | 7,12-Dimethylbenzo(a)anthracene | 2012/04/03 | <0.10 | | ug | |
| | | | 9,10-Dimethylanthracene | 2012/04/03 | <0.40 | | ug | |
| | | | Acenaphthene | 2012/04/03 | <0.050 | | ug | |
| | | | Acenaphthylene | 2012/04/03 | <0.050 | | ug | |
| | | | Anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(a)anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(a)fluorene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(a)pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(b)fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Benzo(b)fluorene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(e)pyrene | 2012/04/03 | <0.10 | | ug | |
| | | | Benzo(g,h,i)perylene | 2012/04/03 | 0.050, RDL=0.050 | | ug | |
| | | | Benzo(k)fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Biphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Chrysene | 2012/04/03 | <0.050 | | ug | |
| | | | Coronene | 2012/04/03 | <0.10 | | ug | |
| | | | Dibenz(a,h)anthracene | 2012/04/03 | <0.050 | | ug | |
| | | | Dibenzo(a,e)pyrene | 2012/04/03 | <0.20 | | ug | |
| | | | Fluoranthene | 2012/04/03 | <0.050 | | ug | |
| | | | Fluorene | 2012/04/03 | <0.050 | | ug | |
| | | | Indeno(1,2,3-cd)pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | m-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Naphthalene | 2012/04/03 | <0.072 | | ug | |
| | | | o-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Perylene | 2012/04/03 | <0.10 | | ug | |
| | | | Phenanthrene | 2012/04/03 | <0.050 | | ug | |
| | | | p-Terphenyl | 2012/04/03 | <0.10 | | ug | |
| | | | Pyrene | 2012/04/03 | <0.050 | | ug | |
| | | | Quinoline | 2012/04/03 | <0.40 | | ug | |
| | | | Tetralin | 2012/04/03 | <0.10 | | ug | |

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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# MAXXAM

## Tisch Hi-Vol PUF+ Sample Collection Data Sheet

Client: Lica
Location: 13-16-62-5 W4M
Station ID: Lica 33 (Portable)
Field Sample ID: LICA PUF/PORT/Mar 28, 12

Puf+ s/n: 100-1015
Motor s/n: 1139
Installation Date/Time: Mar 23, 2012 @ 10:43 mst
Removal Date/Time: Mar 30, 2012 @ 10:26 mst

| Date and Time Information | | | |
|---|---|---|---|
| Sample Date | Start Time (MST) | End Time (MST) | Elapsed Time (Hours) |
| 28-Mar-12 | 03/28/2012 0:00 | 03/29/2012 0:00 | 24.0000 |

| PUF and QFF Information | | | |
|---|---|---|---|
| Date Received | Date Shipped | Puf Expiration Date | QFF Prep Date |
| 22-Mar-12 | 03-Apr-12 | 04-Apr-12 | ???? |

Set Flow Rate (slpm): 230

Date of Last Calibration: 22-Sep-11

| Sampling Data | | | |
|---|---|---|---|
| Average Pressure(mmHg) | AverageFlow (Qstd slpm) | Average Tempurature ( C) | Volume (Vstd $m^3$) |
| 702 | 229 | 1.1 | 330.32 |

**Time set correctly prior to sampling? YES**
**Timer set correctly prior to sampling? YES**
**Sampling data saved to memory card after sampling? YES**

Comments: COC# 10795
GB234609 Puff #2
Ran with a 102mm Quartz Fiber Filter - Sample ID - LICA QFF/PORT/Mar 28 , 12

Technician Signiture: Ting Xu



JOB #: 2833-12-03-35-C

Maxxam

Success Through Science®

Your C.O.C. #: 10795

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

**Report Date: 2012/04/11**

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B247211**
**Received: 2012/04/04, 09:00**

Sample Matrix: PUF AND FILTER
# Samples Received: 2

| Analyses | Quantity | Date Extracted | Date Analyzed | Laboratory Method | Method Reference |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | 2 | 2012/04/04 | 2012/04/09 | BRL SOP-00201 | CARB429(ARBM1,M2)mod |

Encryption Key

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

THERESA STEPHENSON, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==========

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



Total cover pages: 1

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

| Maxxam ID | | NA0158 | NA0159 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | 2012/03/28 | | |
| COC Number | | 10795 | 10795 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 28,12** | **LICA PUFF+QFF/PORT/MAR 28,12** | **RDL** | **QC Batch** |
| **Semivolatile Organics** | | | | | |
| 1-Methylnaphthalene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 1-Methylphenanthrene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 2-Chloronaphthalene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 2-Methylanthracene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 2-Methylnaphthalene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 3-Methylcholanthrene | ug | <2.0 | <2.0 | 2.0 | 2810843 |
| 7,12-Dimethylbenzo(a)anthracene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| 9,10-Dimethylanthracene | ug | <0.40 | <0.40 | 0.40 | 2810843 |
| Acenaphthene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Acenaphthylene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Anthracene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(a)anthracene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(a)fluorene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Benzo(a)pyrene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(b)fluoranthene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(b)fluorene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Benzo(e)pyrene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Benzo(g,h,i)perylene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Benzo(k)fluoranthene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Biphenyl | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Chrysene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Coronene | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Dibenz(a,h)anthracene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Dibenzo(a,e)pyrene | ug | <0.20 | <0.20 | 0.20 | 2810843 |
| Fluoranthene | ug | 0.068 | <0.050 | 0.050 | 2810843 |
| Fluorene | ug | 0.104 | 0.122 | 0.050 | 2810843 |
| Indeno(1,2,3-cd)pyrene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| m-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Naphthalene | ug | 0.108 | 0.074 | 0.072 | 2810843 |
| o-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Perylene | ug | <0.10 | <0.10 | 0.10 | 2810843 |

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch


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

| Maxxam ID | | NA0158 | NA0159 | | |
|---|---|---|---|---|---|
| Sampling Date | | 2012/03/28 | 2012/03/28 | | |
| COC Number | | 10795 | 10795 | | |
| | **Units** | **LICA PUFF+QFF/CLS/MAR 28,12** | **LICA PUFF+QFF/PORT/MAR 28,12** | **RDL** | **QC Batch** |
| Phenanthrene | ug | 0.248 | 0.132 | 0.050 | 2810843 |
| p-Terphenyl | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| Pyrene | ug | <0.050 | <0.050 | 0.050 | 2810843 |
| Quinoline | ug | <0.40 | <0.40 | 0.40 | 2810843 |
| Tetralin | ug | <0.10 | <0.10 | 0.10 | 2810843 |
| **Surrogate Recovery (%)** | | | | | |
| D10-2-Methylnaphthalene | % | 78 | 76 | | 2810843 |
| D10-Fluoranthene | % | 106 | 108 | | 2810843 |
| D10-Fluorene (FS) | % | 16 (1) | 18 (1) | | 2810843 |
| D10-Phenanthrene | % | 98 | 98 | | 2810843 |
| D12-Benzo(a)anthracene | % | 100 | 102 | | 2810843 |
| D12-Benzo(a)pyrene | % | 92 | 94 | | 2810843 |
| D12-Benzo(b)fluoranthene | % | 92 | 92 | | 2810843 |
| D12-Benzo(ghi)perylene | % | 92 | 92 | | 2810843 |
| D12-Benzo(k)fluoranthene | % | 92 | 90 | | 2810843 |
| D12-Chrysene | % | 82 | 80 | | 2810843 |
| D12-Indeno(1,2,3-cd)pyrene | % | 90 | 90 | | 2810843 |
| D12-Perylene | % | 92 | 92 | | 2810843 |
| D14-Dibenzo(a,h)anthracene | % | 94 | 96 | | 2810843 |
| D14-Terphenyl (FS) | % | 111 | 114 | | 2810843 |
| D8-Acenaphthylene | % | 82 | 88 | | 2810843 |
| D8-Naphthalene | % | 72 | 70 | | 2810843 |

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


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Maxxam Analytics

Maxxam Job #: B247211
Report Date: 2012/04/11

## Test Summary

**Maxxam ID** NA0158 **Collected** 2012/03/28
**Sample ID** LICA PUFF+QFF/CLS/MAR 28,12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/04/04

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2810843 | 2012/04/04 | 2012/04/09 | WENDY ZHAO |

**Maxxam ID** NA0159 **Collected** 2012/03/28
**Sample ID** LICA PUFF+QFF/PORT/MAR 28,12 **Shipped**
**Matrix** PUF AND FILTER **Received** 2012/04/04

| Test Description | Instrumentation | Batch | Extracted | Analyzed | Analyst |
|---|---|---|---|---|---|
| PAH's in Air (CARB429mod) | GC/MS | 2810843 | 2012/04/04 | 2012/04/09 | WENDY ZHAO |


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**GENERAL COMMENTS**

PAHMS-F
7,12-Dimethylbenzo(a)anthracene is above 25% RSD in initial calibration.Coronene and Dibenzo(a,e)pyrene are above 25% RSD in continune calibration .No positives found for these compounds.

Not calibrated for Benzo(b)Anthracene, Picene, Dibenzo(a,c) anthracene or Triphenylene. An estimated mdl for each of these compounds is 0.1ug .
Since Dibenzo(a,c) anthracene co-elutes with Dibenzo(a,h) anthracene and Triphenylene with Chrysene each would have a value below estimated mdl.
Benzo(b)Anthracene elutes after Benzo(a)Anthracene and Chysene. Picene elutes after Dibenzo(a,h) anthracene. Searched for ions specific to these 2 compounds in the appropriate retention time range with no possible positives detected.

Sample NA0158-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Sample NA0159-01: PAHMS-F

Low d10-fluorene field spike recovery. Suspect sample matrix as cause due to acceptable recovery of d14-terphenyl field spike.

Internal Std area response criteria was high in Sample. Rerun with similar results. Original run reported.

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


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

# Quality Assurance Report

Maxxam Job Number: GB247211

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2810843 | WZ | Spiked Blank | D10-2-Methylnaphthalene | 2012/04/09 | | 82 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/09 | | 98 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/09 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/09 | | 94 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/09 | | 98 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/09 | | 98 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/09 | | 90 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/09 | | 86 | % | 50 - 150 |
| | | | D12-Indeno(1,2,3-cd)pyrene | 2012/04/09 | | 88 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/09 | | 96 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/09 | | 88 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/09 | | 80 | % | 50 - 150 |
| | | | Acenaphthene | 2012/04/09 | | 80 | % | 60 - 130 |
| | | RPD | Acenaphthene | 2012/04/09 | 5.1 | | % | 50 |
| | | Spiked Blank | Acenaphthylene | 2012/04/09 | | 81 | % | 60 - 130 |
| | | RPD | Acenaphthylene | 2012/04/09 | 3.1 | | % | 50 |
| | | Spiked Blank | Anthracene | 2012/04/09 | | 85 | % | 60 - 130 |
| | | RPD | Anthracene | 2012/04/09 | 2.9 | | % | 50 |
| | | Spiked Blank | Benzo(a)anthracene | 2012/04/09 | | 84 | % | 60 - 130 |
| | | RPD | Benzo(a)anthracene | 2012/04/09 | 2.7 | | % | 50 |
| | | Spiked Blank | Benzo(a)pyrene | 2012/04/09 | | 74 | % | 60 - 130 |
| | | RPD | Benzo(a)pyrene | 2012/04/09 | 0.3 | | % | 50 |
| | | Spiked Blank | Benzo(b)fluoranthene | 2012/04/09 | | 83 | % | 60 - 130 |
| | | RPD | Benzo(b)fluoranthene | 2012/04/09 | 0.9 | | % | 50 |
| | | Spiked Blank | Benzo(g,h,i)perylene | 2012/04/09 | | 76 | % | 60 - 130 |
| | | RPD | Benzo(g,h,i)perylene | 2012/04/09 | 4.2 | | % | 50 |
| | | Spiked Blank | Benzo(k)fluoranthene | 2012/04/09 | | 90 | % | 60 - 130 |
| | | RPD | Benzo(k)fluoranthene | 2012/04/09 | 6.6 | | % | 50 |
| | | Spiked Blank | Chrysene | 2012/04/09 | | 75 | % | 60 - 130 |
| | | RPD | Chrysene | 2012/04/09 | 6.5 | | % | 50 |
| | | Spiked Blank | Dibenz(a,h)anthracene | 2012/04/09 | | 81 | % | 60 - 130 |
| | | RPD | Dibenz(a,h)anthracene | 2012/04/09 | 5.4 | | % | 50 |
| | | Spiked Blank | Fluoranthene | 2012/04/09 | | 92 | % | 60 - 130 |
| | | RPD | Fluoranthene | 2012/04/09 | 1.9 | | % | 50 |
| | | Spiked Blank | Fluorene | 2012/04/09 | | 82 | % | 60 - 130 |
| | | RPD | Fluorene | 2012/04/09 | 1.5 | | % | 50 |
| | | Spiked Blank | Indeno(1,2,3-cd)pyrene | 2012/04/09 | | 77 | % | 60 - 130 |
| | | RPD | Indeno(1,2,3-cd)pyrene | 2012/04/09 | 4.1 | | % | 50 |
| | | Spiked Blank | Naphthalene | 2012/04/09 | | 79 | % | 60 - 130 |
| | | RPD | Naphthalene | 2012/04/09 | 12.8 | | % | 50 |
| | | Spiked Blank | Phenanthrene | 2012/04/09 | | 84 | % | 60 - 130 |
| | | RPD | Phenanthrene | 2012/04/09 | 0.9 | | % | 50 |
| | | Spiked Blank | Pyrene | 2012/04/09 | | 81 | % | 60 - 130 |
| | | RPD | Pyrene | 2012/04/09 | 2.7 | | % | 50 |
| | | Method Blank | D10-2-Methylnaphthalene | 2012/04/09 | | 84 | % | 50 - 150 |
| | | | D10-Fluoranthene | 2012/04/09 | | 88 | % | 50 - 150 |
| | | | D10-Phenanthrene | 2012/04/09 | | 86 | % | 50 - 150 |
| | | | D12-Benzo(a)anthracene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D12-Benzo(a)pyrene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D12-Benzo(b)fluoranthene | 2012/04/09 | | 90 | % | 50 - 150 |
| | | | D12-Benzo(ghi)perylene | 2012/04/09 | | 84 | % | 50 - 150 |
| | | | D12-Benzo(k)fluoranthene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D12-Chrysene | 2012/04/09 | | 82 | % | 50 - 150 |


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

## Quality Assurance Report (Continued)

Maxxam Job Number: GB247211

| QA/QC Batch Num | Init | QC Type | Parameter | Date Analyzed yyyy/mm/dd | Value | %Recovery | Units | QC Limits |
|---|---|---|---|---|---|---|---|---|
| 2810843 | WZ | Method Blank | D12-Indeno(1,2,3-cd)pyrene | 2012/04/09 | | 82 | % | 50 - 150 |
| | | | D12-Perylene | 2012/04/09 | | 92 | % | 50 - 150 |
| | | | D14-Dibenzo(a,h)anthracene | 2012/04/09 | | 84 | % | 50 - 150 |
| | | | D8-Acenaphthylene | 2012/04/09 | | 86 | % | 50 - 150 |
| | | | D8-Naphthalene | 2012/04/09 | | 82 | % | 50 - 150 |
| | | | 1-Methylnaphthalene | 2012/04/09 | <0.10 | | ug | |
| | | | 1-Methylphenanthrene | 2012/04/09 | <0.10 | | ug | |
| | | | 2-Chloronaphthalene | 2012/04/09 | <0.10 | | ug | |
| | | | 2-Methylanthracene | 2012/04/09 | <0.10 | | ug | |
| | | | 2-Methylnaphthalene | 2012/04/09 | <0.10 | | ug | |
| | | | 3-Methylcholanthrene | 2012/04/09 | <2.0 | | ug | |
| | | | 7,12-Dimethylbenzo(a)anthracene | 2012/04/09 | <0.10 | | ug | |
| | | | 9,10-Dimethylanthracene | 2012/04/09 | <0.40 | | ug | |
| | | | Acenaphthene | 2012/04/09 | <0.050 | | ug | |
| | | | Acenaphthylene | 2012/04/09 | <0.050 | | ug | |
| | | | Anthracene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(a)anthracene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(a)fluorene | 2012/04/09 | <0.10 | | ug | |
| | | | Benzo(a)pyrene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(b)fluoranthene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(b)fluorene | 2012/04/09 | <0.10 | | ug | |
| | | | Benzo(e)pyrene | 2012/04/09 | <0.10 | | ug | |
| | | | Benzo(g,h,i)perylene | 2012/04/09 | <0.050 | | ug | |
| | | | Benzo(k)fluoranthene | 2012/04/09 | 0.050, RDL=0.050 | | ug | |
| | | | Biphenyl | 2012/04/09 | <0.10 | | ug | |
| | | | Chrysene | 2012/04/09 | <0.050 | | ug | |
| | | | Coronene | 2012/04/09 | <0.10 | | ug | |
| | | | Dibenz(a,h)anthracene | 2012/04/09 | <0.050 | | ug | |
| | | | Dibenzo(a,e)pyrene | 2012/04/09 | <0.20 | | ug | |
| | | | Fluoranthene | 2012/04/09 | <0.050 | | ug | |
| | | | Fluorene | 2012/04/09 | <0.050 | | ug | |
| | | | Indeno(1,2,3-cd)pyrene | 2012/04/09 | <0.050 | | ug | |
| | | | m-Terphenyl | 2012/04/09 | <0.10 | | ug | |
| | | | Naphthalene | 2012/04/09 | <0.072 | | ug | |
| | | | o-Terphenyl | 2012/04/09 | <0.10 | | ug | |
| | | | Perylene | 2012/04/09 | <0.10 | | ug | |
| | | | Phenanthrene | 2012/04/09 | <0.050 | | ug | |
| | | | p-Terphenyl | 2012/04/09 | <0.10 | | ug | |
| | | | Pyrene | 2012/04/09 | <0.050 | | ug | |
| | | | Quinoline | 2012/04/09 | <0.40 | | ug | |
| | | | Tetralin | 2012/04/09 | <0.10 | | ug | |

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.


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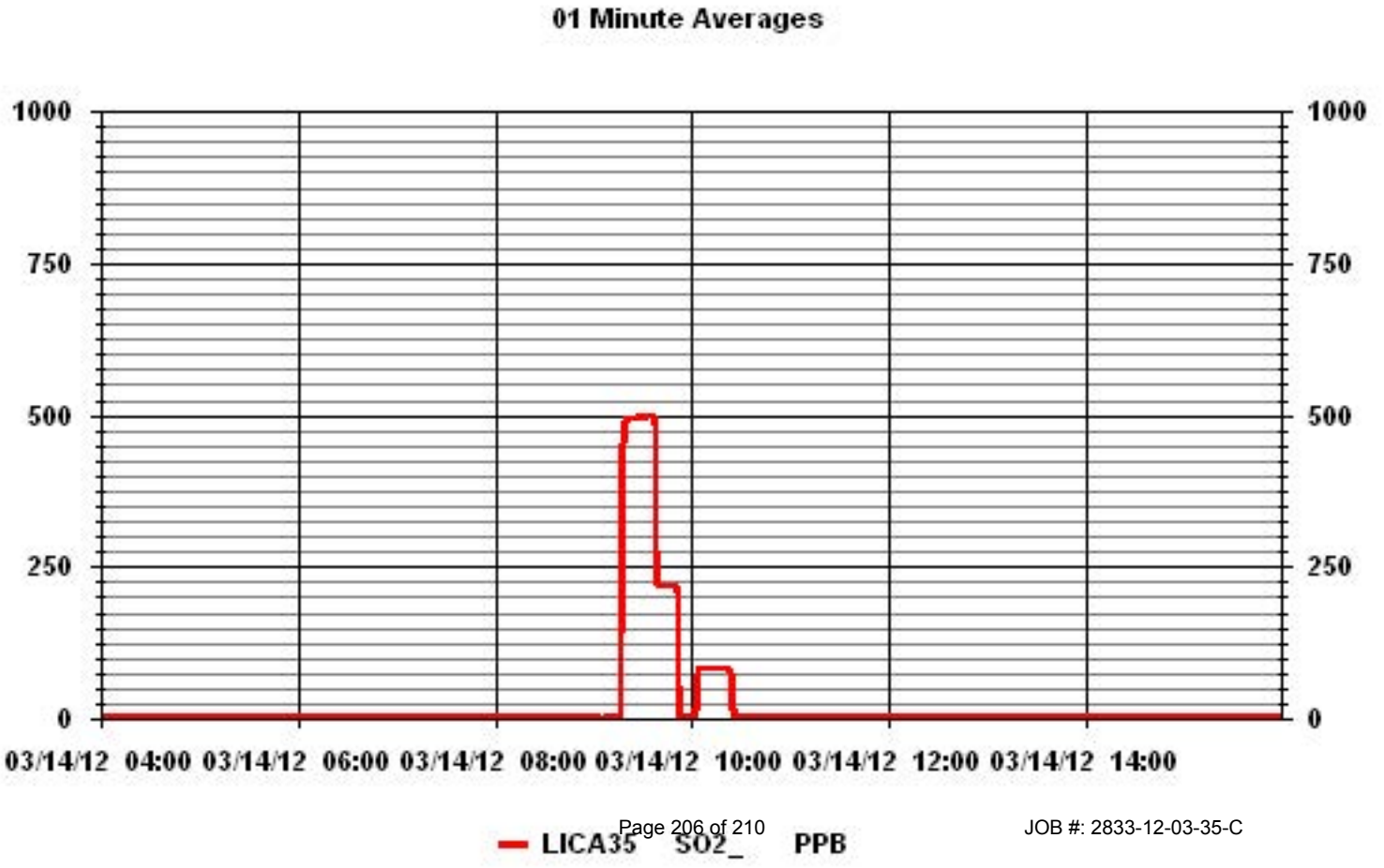
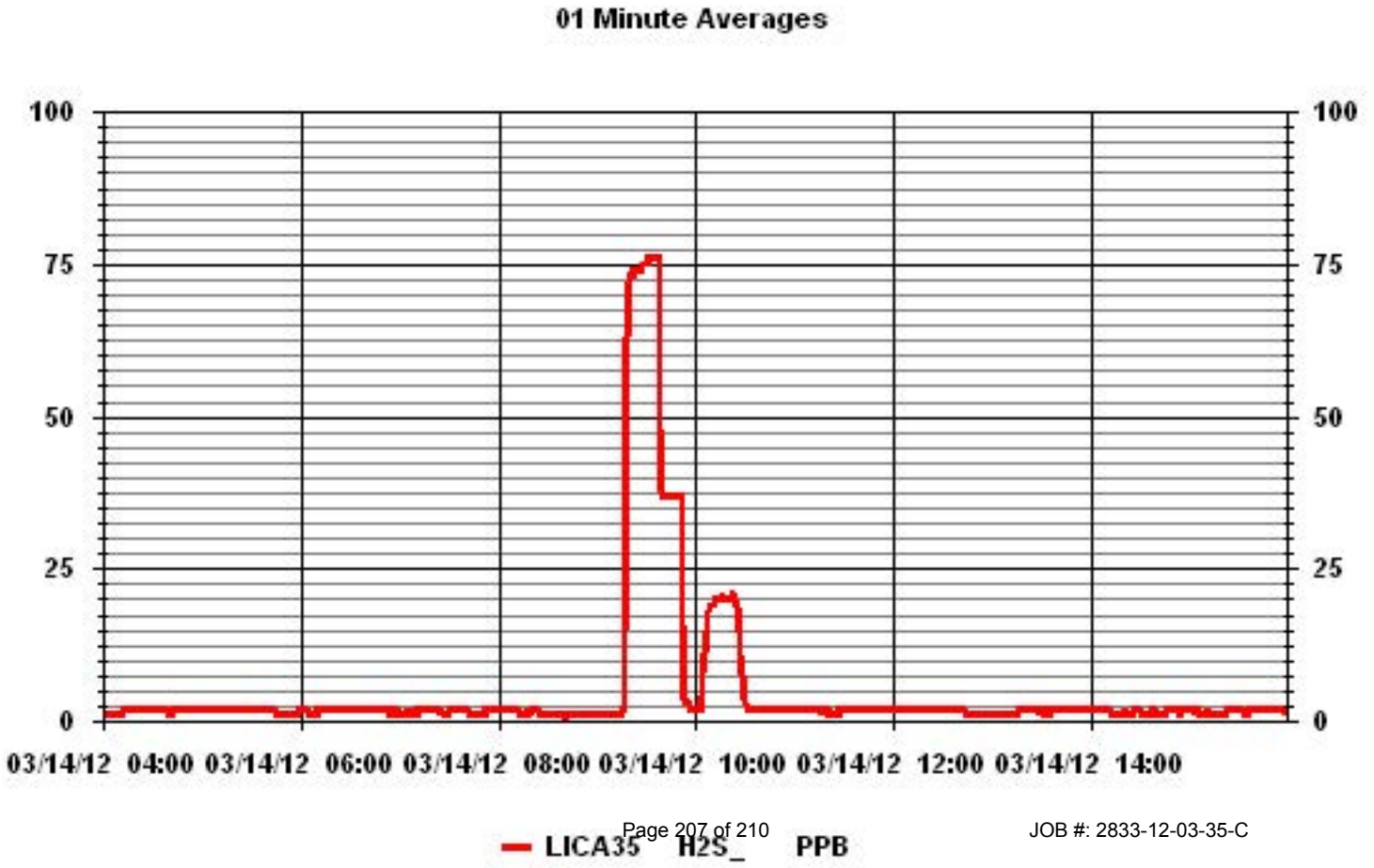
# AE Audit Results



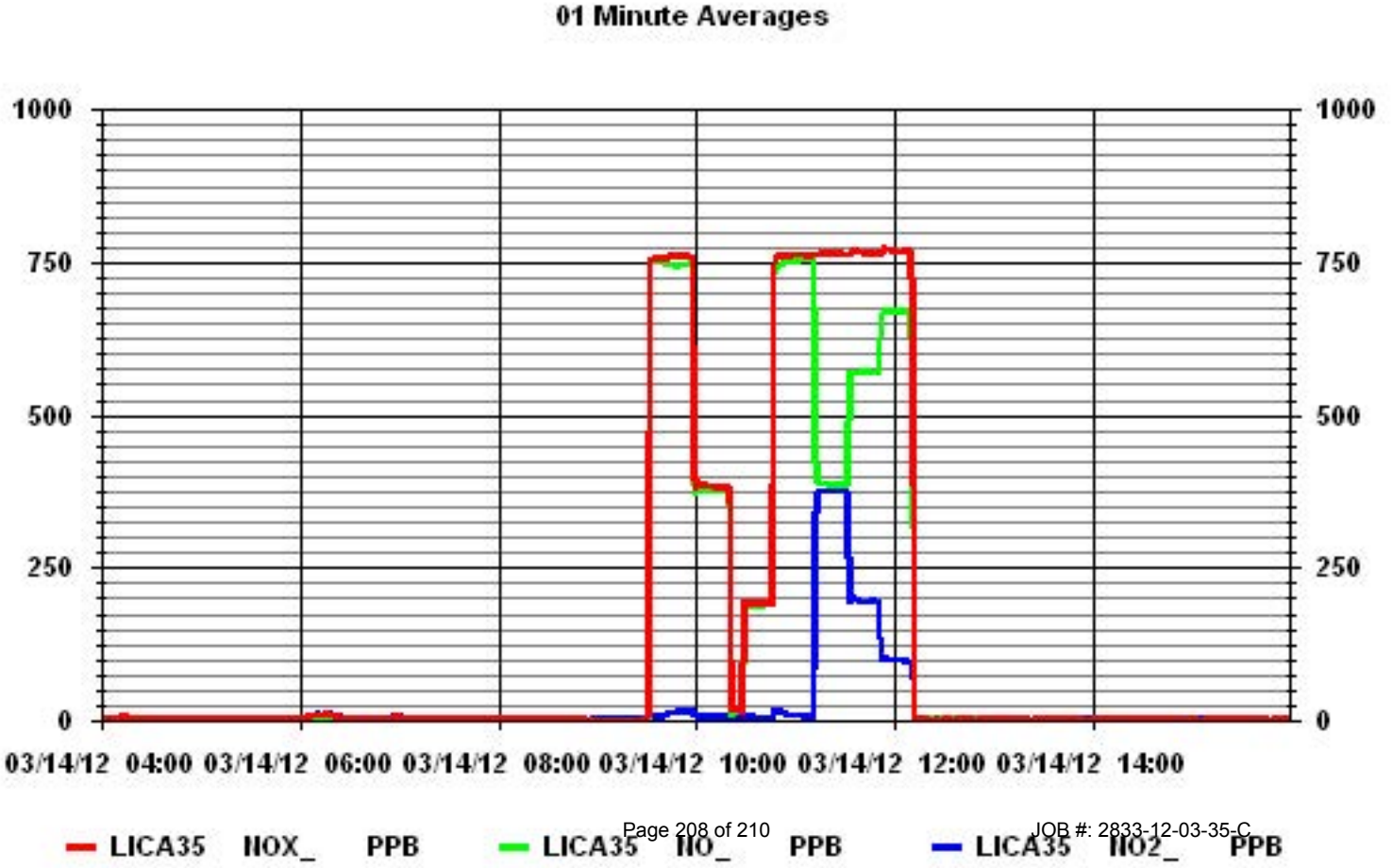



JOB #: 2833-12-03-35-C






JOB #: 2833-12-03-35-C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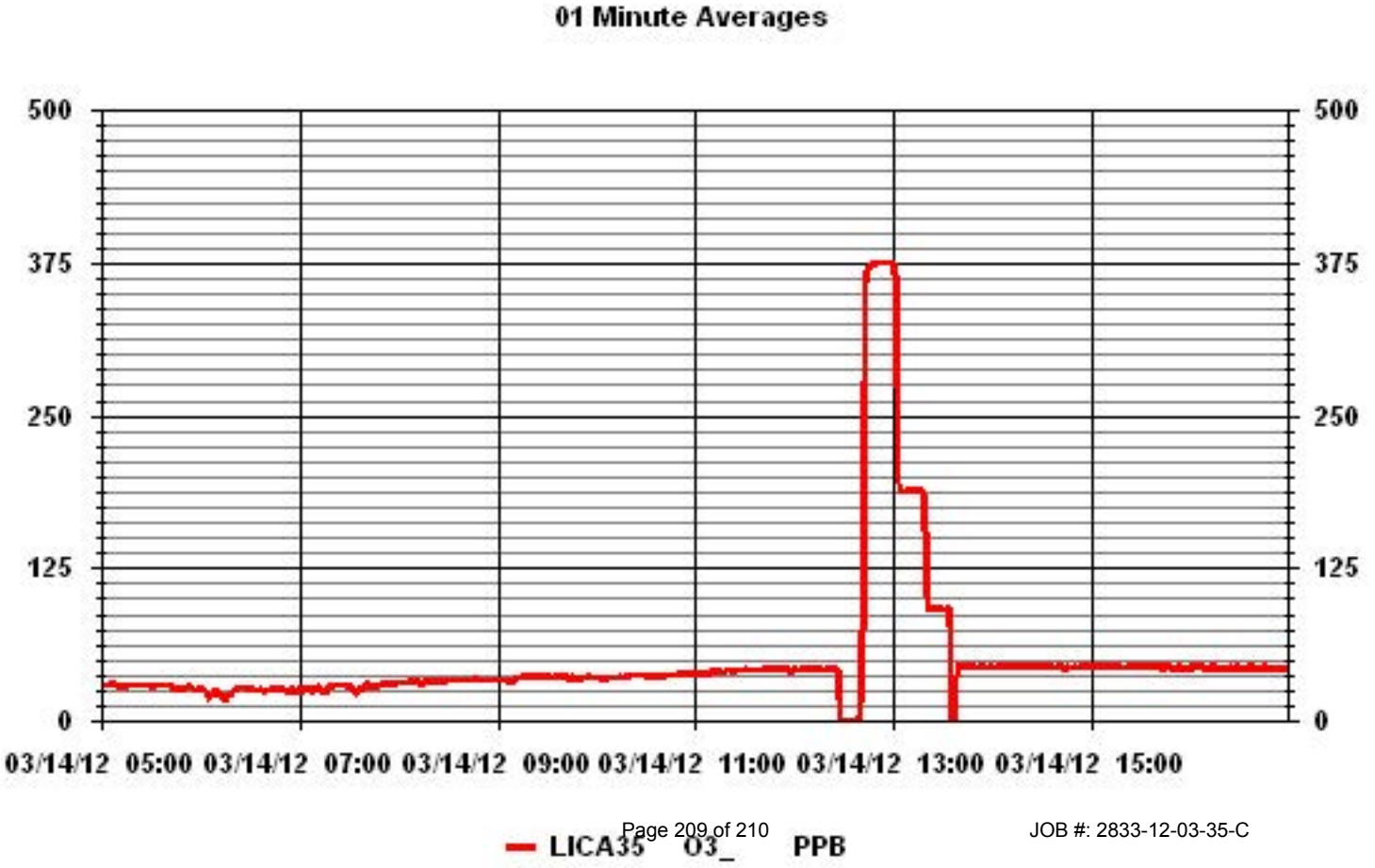
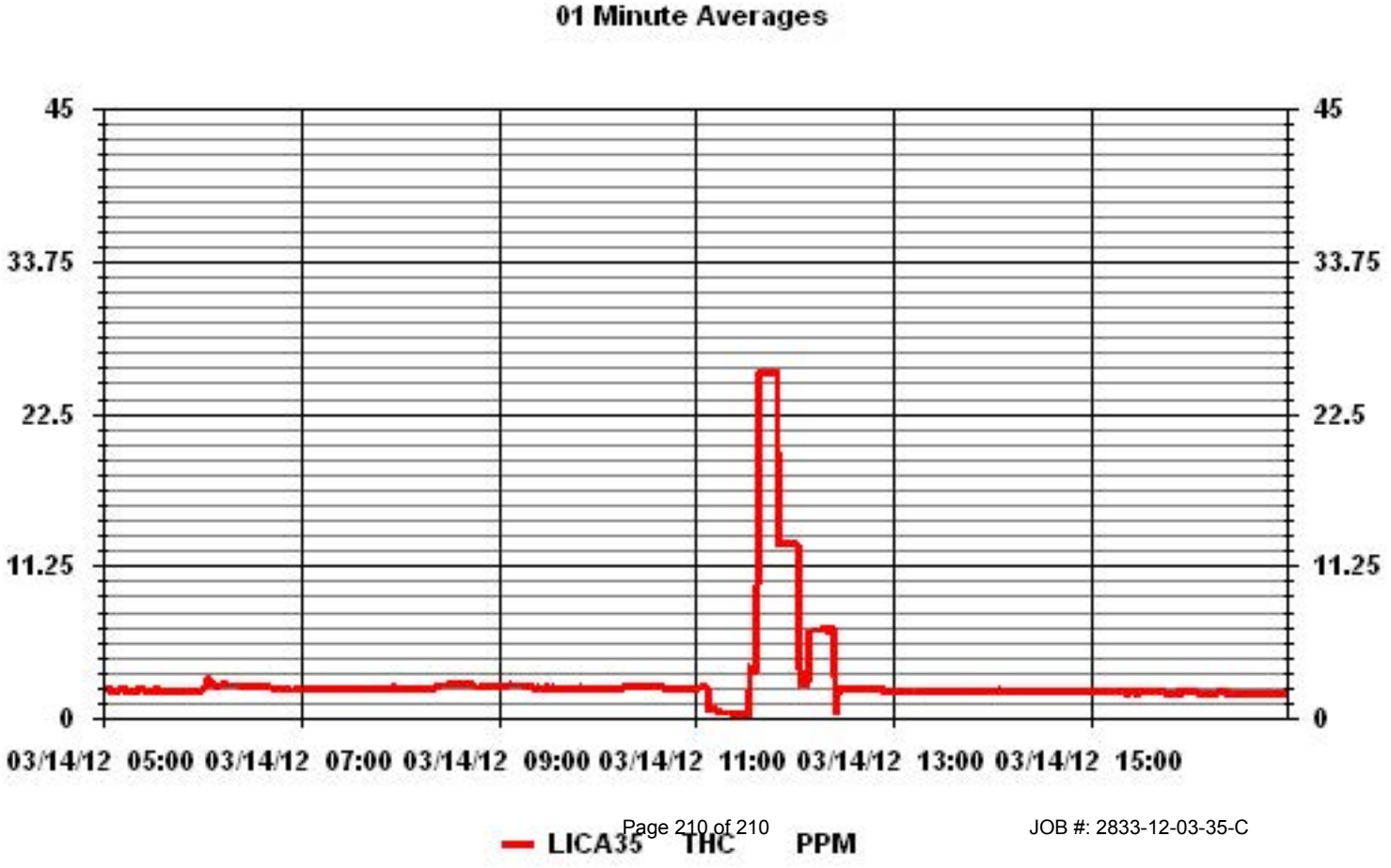
1000
750
500
250
0
03/14/12 04:00
03/14/12 06:00
03/14/12 08:00
03/14/12 10:00
03/14/12 12:00
03/14/12 14:00
LICA35 NOX_ PPB
LICA35 NO_ PPB
LICA35 NO2_ PPB






JOB #: 2833-12-03-35-C



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