

Box 8237 5107W-50th Street Bonnyville, AB T9N 2J5 Phone: (780) 812-2182 Fax: (780) 812-2186 Toll Free: 1-877-737-2182

E-Mail: <u>lica2@lica.ca</u>
Website: http://www.lica.ca

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

July 12, 2015

### **RE:** May 2015 Ambient Air Monitoring Monthly Reports

Attached are the monthly ambient air monitoring reports for the LICA Airshed Zone's Cold Lake South, Maskwa, St. Lina, and Elk Point continuous stations.

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

Respectfully,

Michael Bisaga

Airshed Program Manager Lakeland Industry and Community Association

cc (email): LICA Office



### AMBIENT AIR MONITORING MONTHLY DATA REPORT

### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION COLD LAKE SOUTH SITE

JOB #:2833-2015-05-01- C

**MAY 2015** 

Prepared for:

### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

BOX 8237, 5107W - 50 STREET BONNYVILLE, ALBERTA T9N 2J5

**Attention: MIKE BISAGA** 

DATE:

June 24, 2015

Prepared by:

Wunmi Adekanmbi, M.Sc.

Moderta

Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:

Lily Lin, B.S

Senior Project Manager, Air Services, Maxxam Analytics



### **SUMMARY**

In MAY 2015, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the Cold Lake South Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the project coordinator.

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM 2.5.

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

PM 2.5: Two 24-hr contraventions were recorded this month: concentration of 79 ug/m3 on May 25 and concentration of 67 ug/m3 on May 26. AE Reference numbers 298739 and 298789 respectively.

THC: 12 hours of data were invalidated this month as the data were below the background concentration of 1.5 ppm.

The summary of results is presented on the following pages.

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

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



### **Monthly Continuous Data Summary**

Lakeland Indus	stry & C	ommun	ity Asso	ociation											
Cold Lake Sout	th Site							1-HOUR		24-H0	OPERATIONAL				
PARAMETER	OBJEC	CTIVES	EXCEE	DENCES	MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED	WIND DIRECTION	READING	DAY	(%)		
	1-HR	24-HR	1-HR	24-HR	AVERAGE				(KPH)	(DEGREES)					
SO2 (PPB)	172	48	0	0	0	5	25	17	3.3	NNE	1.2	25	99.9		
TRS (PPB)	-	-	-	-	0	3	12, 13	2, 4	1,1 1	S NE	0.8	25	100.0		
THC (PPM)	-	-	-	-	2,1	3.0	26	6	2,2	w	2.3	25, 28	98.4		
NO2 (PPB)	159	-	0	-	2.3	15.4	<b>1</b> 5	5	1.5	ENE	4.7	25	100,0		
NO (PPB)	-	_	-	-	0.4	0.4 10.9		5	1.3	NNE	1.8	23	100.0		
NOX (PPB)	-	-	-	-	2.7	22.5	15	5	1,5	ENE	5.0	25	100.0		
O3 (PPB)	82	-	0	-	33	65	25	14	4.4	SE	41.4	13	100.0		
PM2.5 (UG/M3)	-	30	-	2	12.3	266.0	25	17	3.3	NNE	78.8	25	98.5		
RELATIVE HUMIDITY (%)	_	-	-	-	52.0	99	31	23	3.6	WSW	88.2	6	100.0		
AMBIENT TEMPERATURE (DEG C)	-	-	-	_	10.0	27.2	22	17	0.5	NW	18.1	24	100.0		
VECTOR WS (KPH)	_	-	-	-	6.0	20.7	5	12	-	E	15.6	5	100.0		
VECTOR WD (DEG)	-	-	-	-	ENE	-	-	-	-	-	-	-	100.0		

NA-NOT AVAILABLE VAR-VARIOUS



### **Exceedence Summary Report**

SO<sub>2</sub> 1- Hour Exceedences

No Exceedences Recorded During the Month

SO<sub>2</sub> 24- Hour Exceedences
No Exceedences Recorded During the Month

H<sub>2</sub>S 1- Hour Exceedences
No Exceedences Recorded During the Month

H<sub>2</sub>S 24- Hour Exceedences No Exceedences Recorded During the Month

NO<sub>2</sub> 1- Hour Exceedences

No Exceedences Recorded During the Month

### PM2.5 24- Hour Exceedences

DATE "	READING (ug/m3)	WS (kph)	WD (deg)
MAY 25	79	3.5	NNW
MAY 26	67	5.5	NE



### **Passive Sampler Summary**

	Sulphur Dioxide (imppb)
Mean	0.3
Minimum	0.1
Maximum	0.5

Note:

Access to stations #12 and #25 was blocked by the air weapons range fire suppression ops.

	Hydrogen Sulphide (in ppb):
Mean	0.12
Minimum	0.08
Maximum	0.19

Note:

Access to stations #12 and #25 was blocked by the air weapons range fire suppression ops.

	Nitrogen Dioxide (in ppb)
Mean	1.0
Minimum	0.2
Maximum	3.2

Note:

Access to station #12 was blocked by the air weapons range fire suppression ops.

	Ozone (in ppb)
Mean	35.88
Minimum	22.91
Maximum	42.35

Note:

Access to station #12 was blocked by the air weapons range fire suppression ops.



### **Volatile Organics (VOCs) Data Summary**

Samble Collected Date	Maximum reading (PPB)	Volatile Organic Compound
MAY 6, 2015	3.10	ACETONE
MAY 12, 2015	15.40	ISOPROPYL ALCOHOL
MAY 18, 2015	4,70	ACETONE
MAY 24, 2015	9.60	ACETONE
MAY 30, 2015	5.80	ACETONE

Note: NA



### Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
MAY 6, 2015	0.08	PHENANTHRENE
MAY 12, 2015	0.13	PHENANTHRENE
MAY 18, 2015	0.08	PHENANTHRENE & RETENE
MAY 24, 2015	0.50	PHENANTHRENE
MAY 30, 2015	0.11	PHENANTHRENE

Note: NA



### **Partisol Sampler Summary**

Sample Collected Date	Concentration (mg)
MAY 6, 2015	0.020
MAY 12, 2015	0.136
MAY 18, 2015	0.091
MAY 24, 2015	0.336
MAY 30, 2015	0.061

Note: NA



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	Total Hydrocarbon
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	Nitric Oxides
	Nitrogen Dioxide
	Ozone
	Particulate Matter 2.5
	Wind Speed
	Wind Direction
	Standard Deviation Wind Direction
	Relative Humidity
Annondivil	Ambient Temperature
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	PAH Results
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	Particulate Matter
	Wind System
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Appendix IV	Analytical Results
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	VOCs Samples
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### 1.0 Discussion

This monthly report consists of data for parameters SO2, TRS, THC, NOx, NO, NO2, O3, PM2.5, WS, WD, RH and Temperature. It also includes results for non-continuous parameters Passives, VOC, PAH and Partisol.

Sample filters for all continuous air monitors are changed before the calibration is started. The sample manifold is cleaned during the site visit on a monthly basis.

Control checks, consisting of zero and span of the analyzer are conducted on a daily basis on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinder) is used for zero checks and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibration is done a minimum of once a month for each continuous air monitor. In addition calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor (greater than 15%).

Hourly data is corrected using daily zero information.

### **SULPHUR DIOXIDE (SO2)**

The routine monthly calibration was performed on May 5. The channel was put into Maintenance mode on May 6 at hour 12 while a flow check was being performed.

### **TOTAL REDUCED SULPHUR (TRS)**

The analyzer was working well throughout the month.

The routine monthly calibration was performed on May 6.



### **TOTAL HYDROCARBONS (THC)**

The routine monthly calibration was performed on May 5. 12 hours of data collected on May 23 from hour 13 to hour 19 and on May 31 from hour 15 to hour 18 were invalidated as the data were below the background concentration of 1.5 ppm.

### **NITROGEN DIOXIDE (NO2)**

The analyzer was working well throughout the month.

The routine monthly calibration was performed on May 5.

### OZONE (O3)

The analyzer was working well throughout the month.

The routine monthly calibration was performed on May 6.

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

Two Teom audits were performed this month: one was completed on May 6, and the other audit was performed on May 21. Both the inlet filter and the FDMS filter were replaced on May 21. Data was corrected using Alberta air quality guideline. If the data was between 0 to -3 ug/m3, the data was corrected to 0 ug/m3. If the data was below -3 ug/m3, the data was invalidated. 11 hours of data were invalidated as the data were below -3 ug/m3 this month.

Two 24-hr contraventions were recorded this month: concentration of 79 ug/m3 on May 25 and concentration of 67 ug/m3 on May 26. AE Reference numbers 298739 and 298789 respectively.

### WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was coming from.

The wind system was working well throughout the month.

### **RELATIVE HUMIDITY (RH)**

The humidity sensor was working well throughout the month.

### AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month.



### **PASSIVE SAMPLES**

The two-month sampling program commenced in April 2015. Samples were collected over the months of April and May. Samples were collected at all designated stations, except stations 12 and 25. Access to stations 12 and 25 was denied due to Fire Suppression Ops at the Cold Lake air weapons range. Results are included in this report.

### **VOC SAMPLES**

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the VOCs were reported as ppb in 2 decimal places.

Samples were collected on May 6, 12, 18, 24 and 30. Results are included in this report.

### **PAH SAMPLES**

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the PAHs were reported as µg in 2 decimal places.

Samples were collected on May 6, 12, 18, 24 and 30. Results are included in this report.

### **PARTISOL SAMPLES**

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the Partisol were reported as mg in 2 decimal places.

Samples were collected on May 6, 12, 18, 24 and 30. Results are included in this report.



### 2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling personnel was Alexander Yakupov.

### 3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM 2.5.

Two 24-hr contraventions were recorded for PM 2.5 this month: concentration of 79 ug/m3 on May 25 and concentration of 67 ug/m3 on May 26. AE Reference numbers 298739 and 298789 respectively.

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

### 4.0 Calculations and Results

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



### 5.0 Methods and Procedures

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

Maxxam AIR SOP-00208: RM Young Monitor Calibration

Maxxam AIR SOP-00210: Ambient TRS Monitoring

Maxxam AIR SOP-00211: Ambient SO2 Monitoring

Maxxam AIR SOP-00212: Ambient O3 Monitoring

Maxxam AIR SOP-00213: Ambient NO/NO2/NOx Monitoring

Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring

Maxxam AIR SOP-00215: Teom Operation

Maxxam AIR SOP-00225: The Collection of VOCs in Ambient Air Using Canister

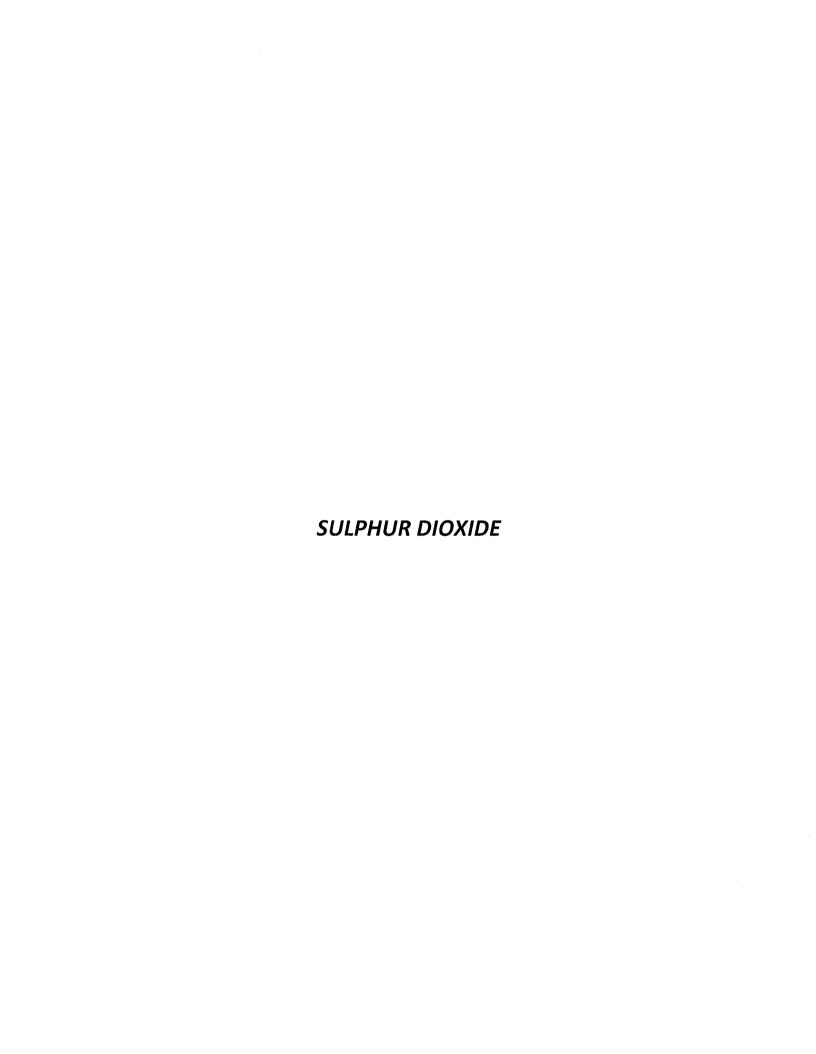
and Xontech

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Sulphur Dioxide - Thermo 43i UV Flourescent Analyzer
Total Reduced Sulphur - Thermo 450i UV Flourescent Analyzer
Total Hydrocarbons - Thermo 51C FID Analyzer
Oxides of Nitrogen - Thermo 42C Chemiluminescent Analyzer
Ozone - Thermo 49i Photometric Analyzer
Particulate Matter (PM2.5) - R&P 1405F Teom Unit
Wind System - Met One Unit
Relative Humidity - Met One Unit
Ambient Temperature - Met One Unit
Datalogger - ESC 8832
Partisol - R&P 2000H Unit

### APPENDIX I CONTINUOUS MONITORING DATA RESULTS





MST

SULPHUR DIOXIDE (SO2) hourly averages in ppb

	RDGS.	54	24	24	54	54	23	75	24	77	74	24	24	74	24	74	24	54	24	24	54	54	54	24	24	74	24	54	54	24	24	54		
24-HOUR	AVG.	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.4	77	8.0	9.0	0.0	0.0	0.0	0.0		
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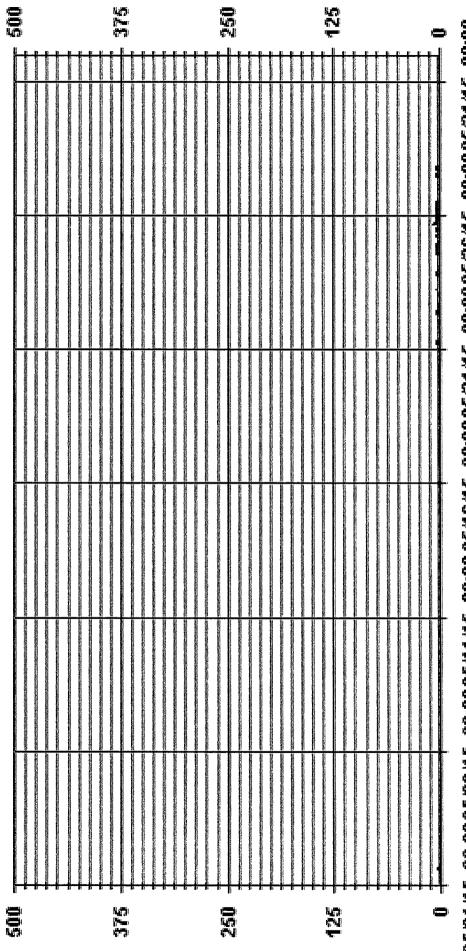
## OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1172 172 PPB 124 HR 248 PPB

### MONTHLY SUMMARY

BPB	0		4GE:	MONTHLY AVERAGE:			0.43	STANDARD DEVIATION:
%	6.66		N UPTIME:	AMD OPERATION UPTIME:		HRS	4	MONTHLY CALIBRATION TIME:
HRS	743 HRS		ME	OPERATIONAL TIME:		HRS	33	IZS CALIBRATION TIME:
		VAR-VARIOUS						
	ង ង	ON DAY(S) ON DAY(S)	17	PPB @ HOUR(S) PPB	PPB PPB	5		MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:
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Of Hour Averages



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**S**02



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01- C

# SULPHUR DIOXIDE MAX instantaneous maximum in ppb

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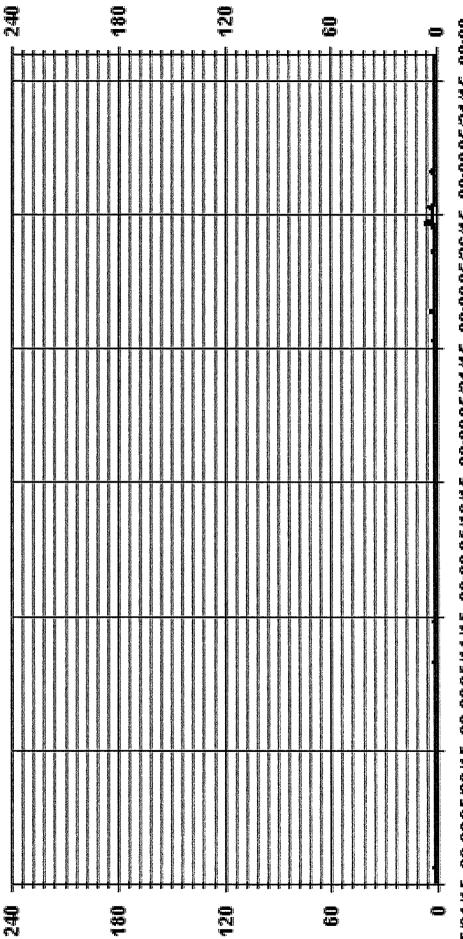
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NUMBER OF NON-ZERO READINGS:	669				
MAXIMUM INSTANTANEOUS VALUE:	7	PPB	@ HOUR(S)	16	ON DAY(S

VAR-VARIOUS

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

SOZMAX

LICA SO2\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 01 Site Name : LICA Parameter : SO2\_ Units : PPB\_

Wind Parameter : WDR Instrument Height : 10 Meters

	Fred	00.00	00.	00.	00.	00.	00.	
	MNW	1.98 100.00	00.	00.	00.	00.	00.	1.98
	MN	3.54	00.	00.	00.	00.	00.	3.54
	WNW	4.24	00.	00.	00.	00.	00.	4.24
	Œ	3.82	00-	00.	00.	00.	00.	3.82
	WSW	4.67	00.	00.	00.	00.	00.	4.67
	SW	3.25	00.	00.	00.	00.	00.	3.25
	SSW	4.81	00.	00.	00.	00.	00.	4.81
	S	3.82	00.	00.	00.	00.	00.	3.82
	SSE	7.64	00.	00.	00.	00.	00.	7.64
Direction	SE	15.15	00.	00.	00.	00.	00.	15.15
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	ы	7.64	00.	00.	00.	00,	00.	7.64
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Total # Operational Hours : 706

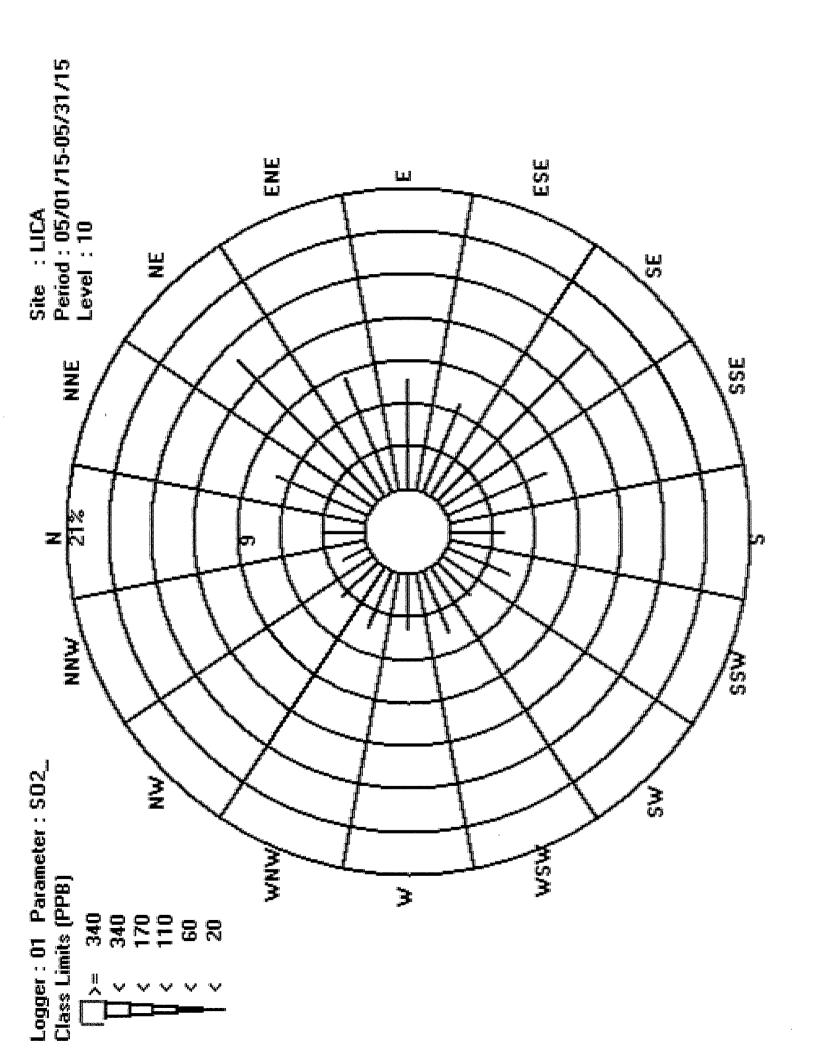
Distribution By Samples

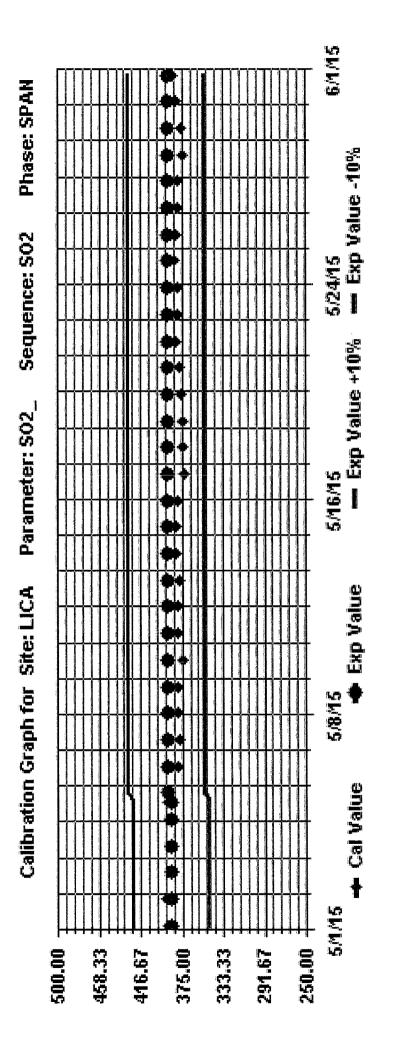
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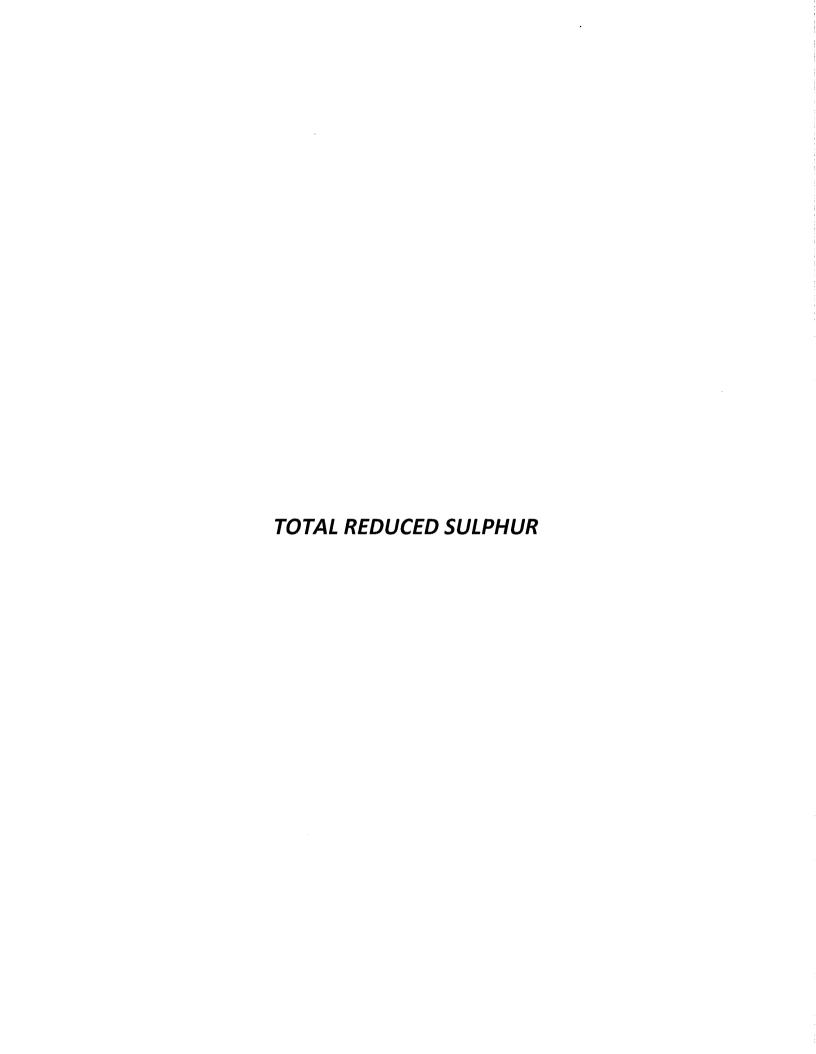
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Calm : .00 %

Total # Operational Hours : 706









# TOTAL REDUCED SULPHUR (TRS) hourly averages in ppb

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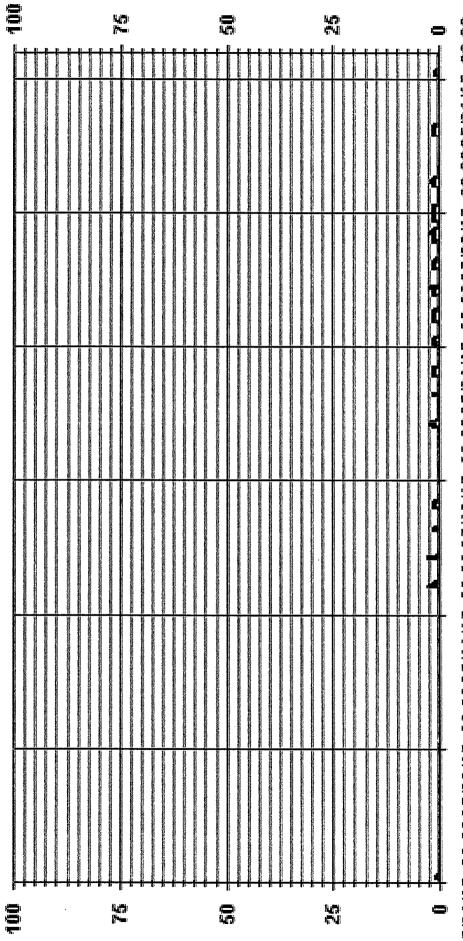
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## MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	IGS:		8					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		3.0	PPB	@ HOUR(S)	2,4	ON DAY(S) ON DAY(S) VAR-VARIOUS	25 25	12 , 13
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	33 S	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	TIME:		744 100.0	HRS %
STANDARD DEVIATION:	0.41			MONTHLY AVERAGE:			0	PPB

Of Hour Averages



05/01/115 00:0005/06/115 00:0005/11/115 00:0005/16/115 00:0005/21/115 00:0005/26/115 00:0005/31/115 00:00



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION Cold Lake South Site - MAY 2015

JOB # 2833-2015-05-01- C

# TOTAL REDUCED SULPHUR MAX instantaneous maximum in ppb

	RDGS.	24	24	24	54	54	24	54	24	24	24	75	24	54	54	24	54	77	77	24	54	54	24	54	24	24	24	24	24		
	24-HOUR AVG.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.6	1.4	1.1	1.2	1.0	1.0	1.6	1.1	13	1.1	1.3	1.5	1.3	1.7	1.6	1.4	1.0		
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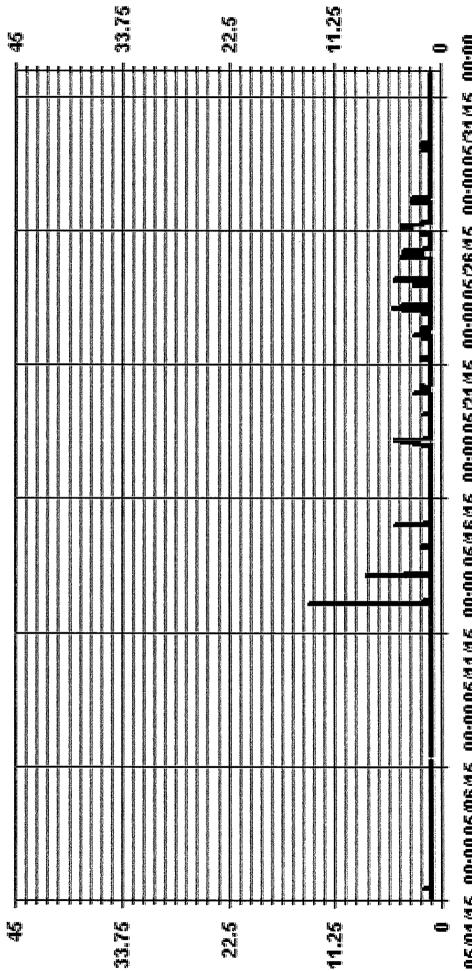
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## MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			206							
MAXIMUM INSTANTANEOUS VALUE:	41		14	PPB	@ HOUR(S)	(2)	7	ON DAY(S)		12
							VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME:	33	HRS		OPERATIC	OPERATIONAL TIME:				744	HRS
MONTHLY CALIBRATION TIME:	Ŋ	HRS								
STANDARD DEVIATION:	0.78									

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

TRSMAX 

LICA. TRS\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 01 Site Name : LICA Parameter : TRS\_ Units : PPB

1.98 1.98 3.54 00. 3.54 Ē 00. 00. 4.24 4.24 00. 00. 00. 3.82 3.82 00. 00. Wind Parameter : WDR Instrument Height : 10 Meters 00. 4.67 4.67 00. 00. 00. 3.25 00 3.25 SW 00. 00. 4.81 4.81 00. 00. % 3.68 3.82 00. .14 00. 7.64 7.64 00. 00. 00. Direction 00. SE 6.65 15.15 00. 00. 6.65 15.15 ESE 00. 00. 00. 8.21 8.21 00 00. 00. ы 8.64 8.64 00. ENE 00. 00. 6.51 13.88 00 00. 14.02 뛿 .14 6.51 00. % 00. 2.97 2.97 00. 00 00. Totals m 50 10 50

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Calm : .00 %

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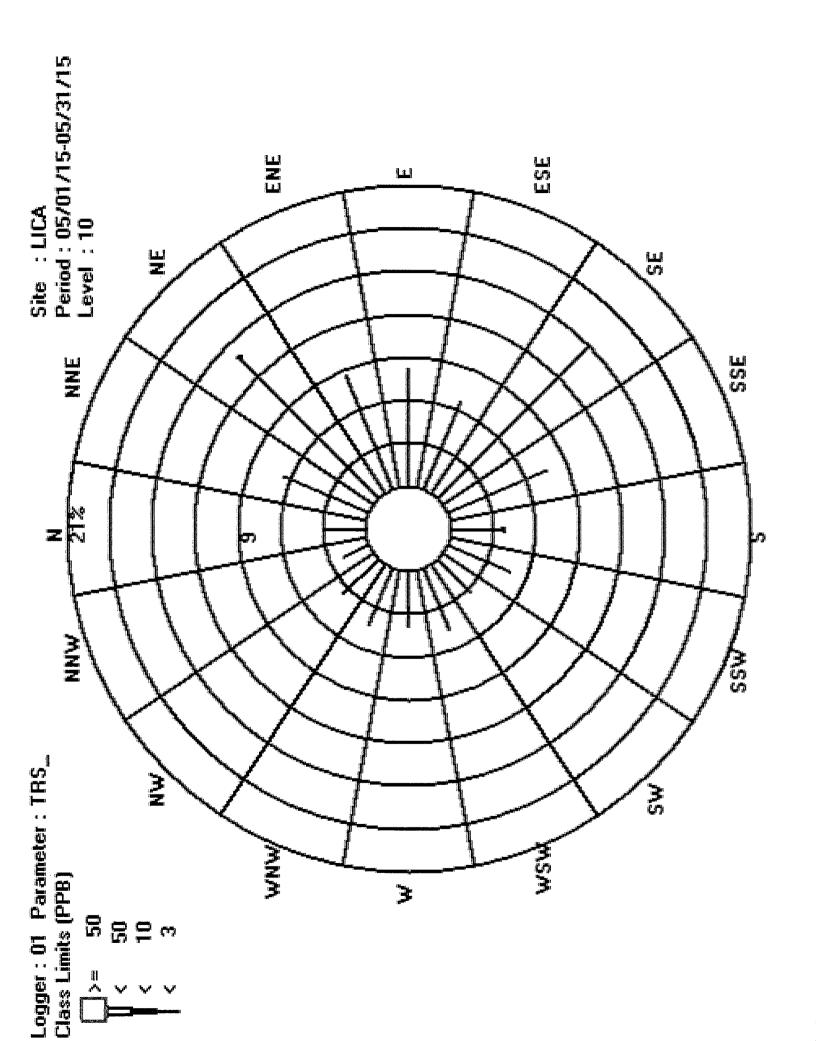
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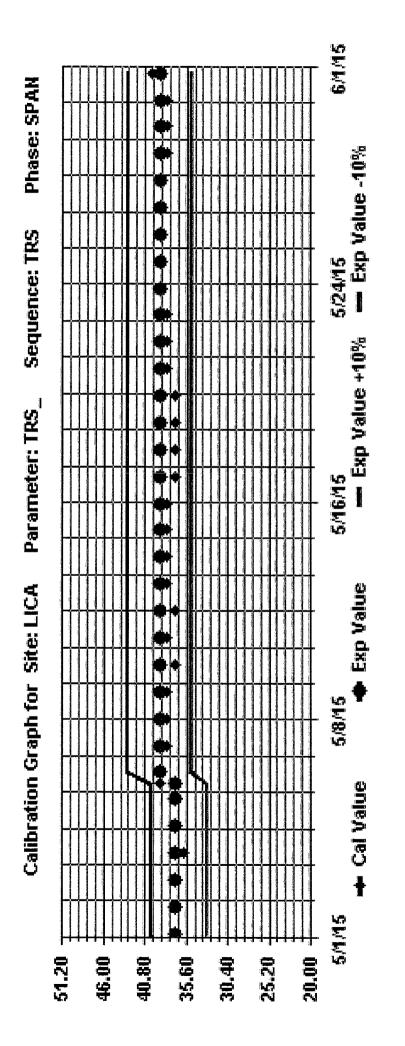
Total # Operational Hours : 706

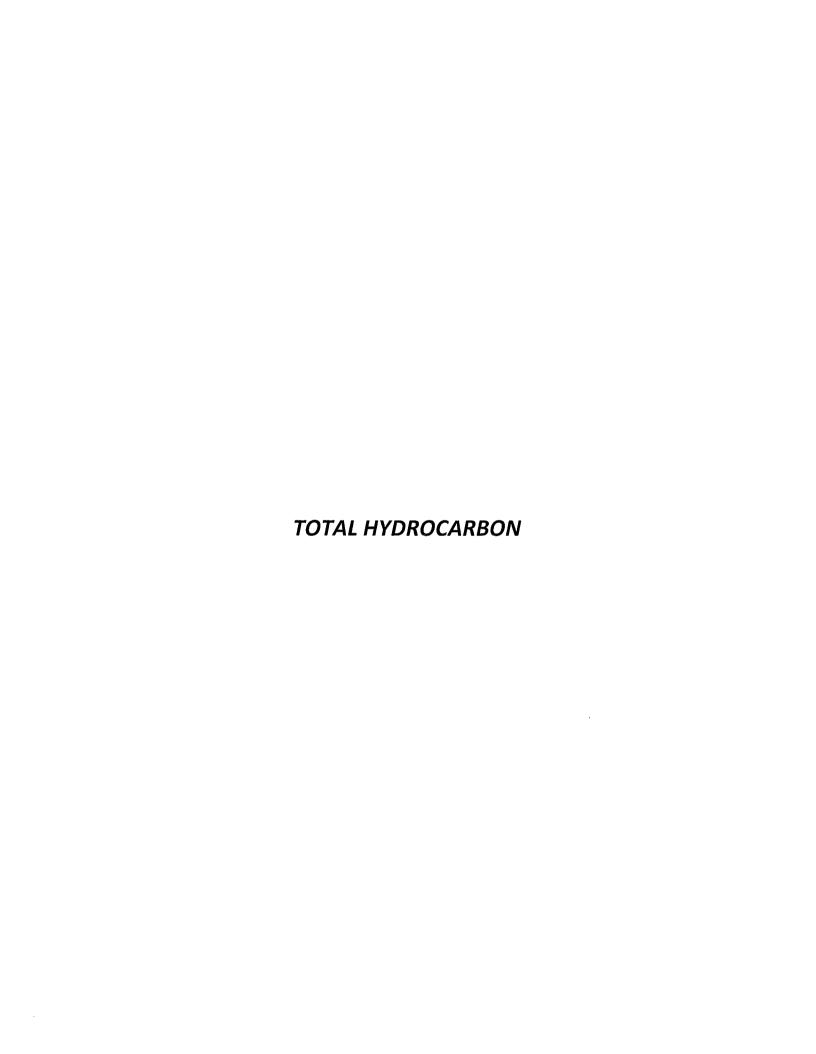
Distribution By Samples

Calm : .00 %

Total # Operational Hours : 706









# TOTAL HYDROCARBONS (THC) hourly averages in ppm

	RDGS.	24	24	24	54	54	54	24	24	24	24	24	54	24	54	74	54	24	54	54	54	54	54	17	54	54	24	24	24	54	54	13		
	24-HOUR AVG.	2.0	2.1	2.1	2.1	1.8	2.0	1.9	2.2	2.1	2.0	2.0	2.1	2.0	2.1	2.2	2.1	2.0	2.1	2.1	2.2	2.2	2.1	1.9	1.9	2.3	2.1	1.9	2.3	2.0	5.0	1.9		
	DAILY MAX.	2.1	2.6	2.5	2.4	1.9	2.1	2.1	5.6	2.2	2.3	2.3	2.4	2.2	2.4	5.6	2.4	2.1	2.2	2.5	2.7	2.7	2.5	2.4	2.2	5.9	3.0	2.3	2.5	2.3	2.2	2.4		
	23.00	2.1	2.3	2.0	s	1.9	1.9	2.0	2.1	2.0	1.9	2.3	5.0	2.1	2.4	2.2	5.0	2.1	2.2	2.2	5.4	2.3	2.1	1.9	2.0	2.5	2.1	s	2.1	2.2	2.0	2.4	2.5	2.1
	22.00	2.1	2.2	2.1	2.0	s	1.9	2.0	2.1	2.0	2.0	2.3	1.9	2.2	2.1	2.2	2.0	2.1	2.1	2.1	2.2	2.3	2:5	1.8	2.0	2.4	2.0	1.7	s	2.2	5.0	2.4	2.4	2.1
	21.00	2.0	2.2	2.1	2.0	1.9	s	2.0	2.2	2.1	2.0	2.2	1.9	5.0	1.9	2.3	2.0	2.1	2.0	2.1	2.1	2.2	2:5	1.8	2.2	2.3	5.0	1.6	2.5	S	2.2	2.3	2.5	2.1
	20:00-	1.9	2.1	2.0	2.0	1.9	2.1	s	2.1	2.0	2.0	2.1	1.9	1.9	1.9	2.3	5.0	5.0	2.1	2.1	5.0	2.1	5.0	1.7	2.1	2.2	1.8	1.5	2.4	1.9	s	2.1	2.4	5.0
	19.00	1.9	2.0	2.0	1.9	1.9	2.1	1.9	s	1.9	1.9	2.1	1.9	1.9	1.9	2.2	2.0	1.9	2.0	2.0	2.0	1.9	1.9	×	2.0	2.2	1.7	s	2.3	1.9	5.0	×	2.3	5.0
	18:00 19:00	1.8	2.0	2.0	1.9	1.8	2.1	1.9	1.9	s	1.9	2.1	1.9	1.9	1.9	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	×	1.9	2.3	1.7	1.5	2.3	1.9	5.0	×	2.3	70
1	17.00		2.0	2.0	1.9	1.8	2.0	1.9	1-8	2.0	s	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.9	×	1.8	2.4	1.7	1.5	2.3	1.9	1.9	×	2.4	1.9
moduly averages in plan	16.00	1	2.0	2.0	13	1.9	2.0	1.9	1.9	2.0	2.0	S	2.0	2.0	13	2.0	2.0	2.0	2.1	2.0	2.0	2.0	1.9	×	1.8	2.1	1.7	1.5	2.3	1.9	1.9	×	2.3	13
8 0 8	15:00		2.0	2.0	1.9	1.9	2.0	1.9	1.9	2.0	2.0	1.9	s	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.0	1.9	×	1.8	2.0	1.7	1.6	2.3	1.9	2.0	×	2.3	13
,	14 00		2.0	2.0	2.0	U	2.0	1.9	2.0	2.1	2.0	1.9	2.1	S	1.9	2.0	1.9	1.9	2.1	2.0	2.1	2.0	1.9	×	18	2.0	1.7	1.6	2.3	1.9	2.0	1.5	2.3	1.9
	13:00		1.9	2.0	2.0	U	2.0	1.9	2.0	2.1	2.0	1.9	2.1	2.0	v	5.0	1.9	1.9	2.1	2.0	2.1	2.0	1.9	×	1.8	2.0	1.8	1.7	2.4	1.9	2.0	1.6	2.4	2.0
	13.00	·		2.0										2.0		S				2.0	2.0	2.1				2.1		1.8			5.0		2.4	2.0
2	12.00	2.0	1.9	2.0	2.0	U	2.0	1.9	2.1	2.1	2.0	1.9	2.1	2.0	2.0	2.0	S	2.0	2.1	2.0	2.0	2.0	1.9	1.6	1.8	2.2	2.0	1.9	2.4				2.4	
	10:00														2.0									17			2.0				2.1		2.4	2.0
2	9:00				2.1	1.8	2.0	1.9	2.3			2.0		2.0							2.2			1.8							. 2.1	1.7	2.4	. 50
2	00:6			2.0	0.7	3 1.8	) 2.0	9 1.9	1 2.4	2 2.1	1 2.1	1 2.0	2.2	0 1.9	1 2.0	1.9	1 2.1				2.3	1 2.4	1 2.3	•	3 1.6				3 2.3		1 2.1	3 1.8	5 2.4	
	0.00		5 2.3			3 1.8	9 2.0	0 1.9		1 2.2	1 2.1		4 2.2	1 2.0	2 2.1						2 S			1 2.0							1 2.1		0 2.5	
	0 6.00	31						1 2.0	4 2.6	2 2.1	3 2.1	1 2.1	4 2.4	2 2:	4 2.2							2 Z									1 2.1			
	1:00 2:00 3:00 4:00 5:00 6:00	1 2.1		3 2.5		8 1.8	9 1.9	0 2	4 2.	2 2.	2 2.	0 2.	3	2 2.	3	5 2.6	9 2.0					7 2.7								3 2.2		9 1.9	9 2.9	
	00 4 C	2							3 2.4						2.3 2.3	2.5 2.5	1 1.9	2.0 2.0				2.6 2.7					2.7 2.	2.2 2.		2.2 2.3		1.8 1.9	2.7 2.9	
	00 00 00 00 00	,				1.8 1.8	1.9 1.9						2.3 2.2	2.1 2.1	2.3 2.	2.4 2.	2.4 2.			2.2 2.2		2.6 2.				5 2.7							2.7 2.	
	9 8	0.	2.3 \$									2.0 2.	2.3 2.	2.1 2	2.2 2.2	25 2	2.3 2.				2.3 2.			2.1 2			<b>S</b> 2					1.9 1	2.7 2	
	0.00 1.00	2.0 2		٠.									2.3 2	2.0 2	2.2 2	2.4 2	2.3 2	2.0 2				2.6 2	2.4 2				5.6		2.0 2		2.1 2	1.9	2.6 2	
_		200				7						rete Servi				38 i			//				(4				Tre Tre						H	
MST	HOUR STAR!	DAY	2	3	4	'n	9	7	œ	6	10	11	12	13	47	15	165	ZT.	18	61	20	.21	. 22	23	24	25	26	727	28	29	30	31	HOURLY MAX	HOURLY AVG

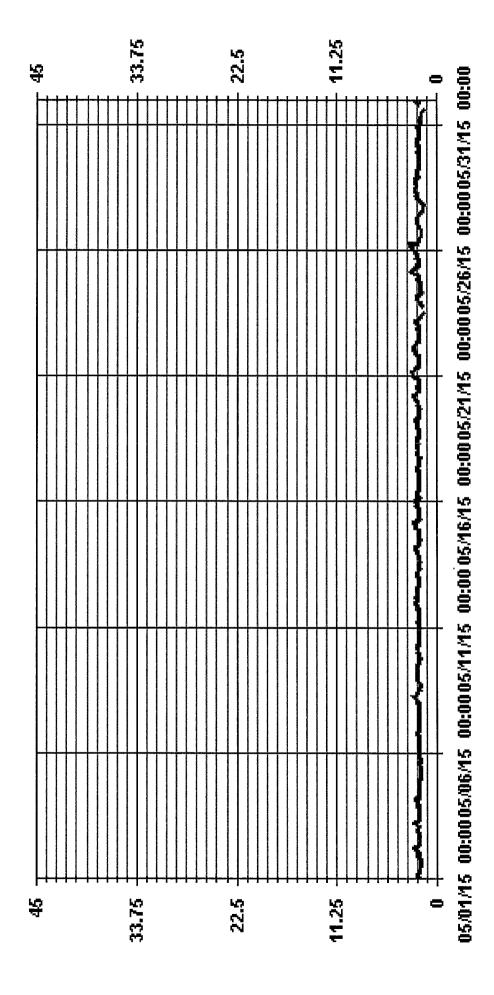
## STATUS FLAG CODES

Q - COUNTY AS SURANCE  R - REGOLER  R - COUNTY CHECK - COUNTY COUNTY  A HOUR AVERAGES FOR MAY 2015  9 10 11 17 23 14 15 16 17 18 19 20 21 22 25 24 25 26 27 28 29  9 10 11 17 23 14 15 16 17 18 19 20 21 22 25 24 25 26 27 26 29	CCLIBRATION  MAINTENANCE  E DAILYZEOOSPANCHECK###################################	2.5 1.5 1.2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 22 24 25 28 27 28 29 30 31
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## MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	iS:		695					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		3.0		PPM @ HOUR(S) PPM	φ	ON DAY(S) ON DAY(S) VAR-VARIOUS	7 7	26 25 , 28
IZS CALIBRATION TIME: MONTHLY CALBRATION TIME:	33	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	IME:		732 98.4	HRS %
STANDARD DEVIATION:	0.21			MONTHLY AVERAGE:			2.1	2.1 PPM

01 Hour Averages



- LICA THC PPM



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01- C

TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

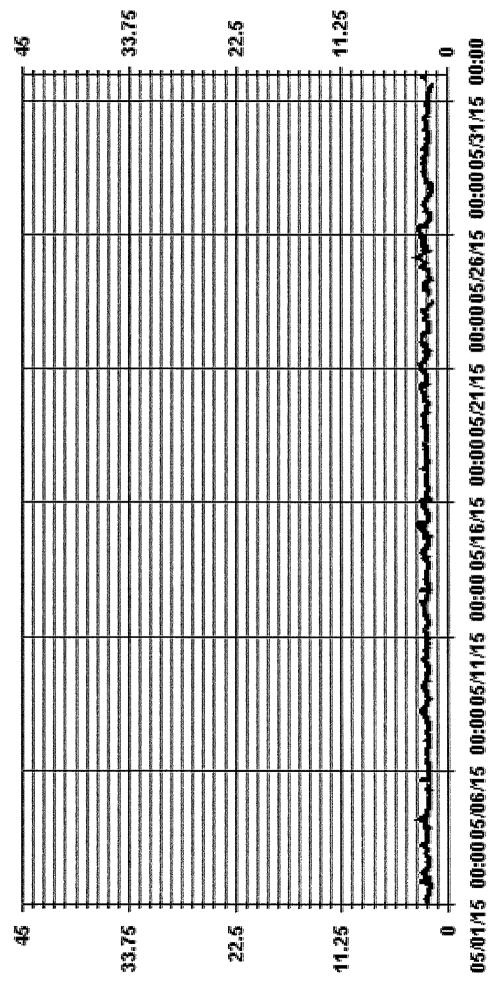
MST											[ ]	_					1								
HOUR START: HOUR END:	0:00 1 1:00 2	1.00 2.00 2:00 3:00	2:00 3 3:00 4:	3.00 4.00 4.00 5.00	4:00 5:00 6:00 5:00 6:00 7:00	6:00	7:00	00:8 00:6	9:00	10:00	11:00 12:00	12:00 13:00 13:00 14:00	25000	14:00 15:00 15:00 16:00	30 16.00 30 17.00	0 17:00	00.81 0	19:00	20:00	21:00	22:00	23.00	DAILY 2	24-HOUR AVG.	RDGS.
DAY T				į .	2.3	2.3		2.1	2.1		2.1					Į.	1	ı	2.1	3.0	2.2		3.0	2.1	24
.2	2.1	2.5 S	S 2	2.5 2.7		2.7	2.5	2.2	2.2	2.0	2.0	2.1	2.0 2.	2.1 2.1	1 2.0	2.0	2.1	2.2	2.2	2.3	2.4	2.4	2.8	2.3	74
e						• •		2.1	2.1	2.1	2.1							2.2	2.1	2.3	2.3		2.7	2.2	24
4						2.2		2.2	2.2	2.1	2.1							2.0	2.0	2.0	2.1		3.0	2.2	24
<b>5</b> 7						•		2.1	1.9	1.9	o						1.9	2.0	2.0	2.0	s		2.9	2.0	24
9		2.0 2.0		2.1 2.0	0.7	7	2.1	2.1	2.1	2.1	2.1			2.2 2.1	1 2.1	2.1	2.1	2.1	2.2	S	2.0		2.2	2.1	24
7					3 2.2	2.1		2.0	2.1	2.2	2.2						2.0	2.0	s	2.1	2.1	2.1	2.3	2.1	54
ø		2.3 2.3		2.6 2.5	3.0	7		2.5	2.5	2.4	2.2	2.1						s	2.2	2.2	2.2	2.2	3.0	2.3	54
o				2.4 2.7	7 2.3	7	2.3	2.3	2.1	2.2	2.2			2.1 2.1		2.0	S	2.0	2.1	2.2	2.1	2.3	2.7	2.2	24
10		2.2 2.3		2.4 2.5	5 2.5	2.2	2.1	2.2	2.1	2.2	2.2	2.4	2.4 2.	2.1 2.2	2 2.2		2.0	2.1	2.2	2.1	2.2	2.0	2.5	2.2	24
17				2.1 2.2	2.3	2.3		2.1	2.1	2.2	2.1						2.2	2.4	2.3	2.4	2.4	2.5	2.5	2.2	24
7					5 2.6	7		2.3	2.2	2.2	2.3			2.2 S			3.0	2.0	2.1	5.0	2.0	2.0	3.0	2.3	54
13				2.2 2.4		7		2.1	2.1	2.1	2.2							2.1	2.2	2.2	2.4	2.2	2.4	2.2	54
7						2	2.2	2.2	2.1	2.1	2.1			2.0 2.0			2.5	2.1	2.1	2.1	2.5		2.7	2.3	24
Ŋ	2.6	2.8 2.0	2.6 2	2.9 2.7		7		2.0	2.1	2.0	2.1	S		.0 2.1	1 2.1	2.1		2.3	5.6	2.5	5.6		3.3	2.4	24
97						2.2		2.2	2.2	2.3	s			2.0 2.1			2.1	2.1	2.1	2.1	2.1		2.7	2.2	54
17						7		2.2	2.2	S	2.1							2.1	2.2	2.2	2.2	2.2	2.5	2.1	54
18						7		2.2	s	2.2	2.3			2.2 2.2				2.2	2.4	2.2	2.3		2.4	2.2	54
<u></u>						7		s	2.3	2.1	2.2							2.3	2.3	2.4	2.4		2.6	2.3	74
8				2.6 2.6	3.2	2.8	s	2.5	2.3	5.9	2.1			2.2 2.2				2.1	2.2	2.4	2.4		2.9	2.4	24
ฆ		2.8 2.				s	2.5	2.5	2.4	2.1	2.1	2.1			1 2.5		2.1	2.1	2.4	2.3	5.6		2.9	2.4	24
22					S	2.6	2.5	2.5	2.3	2.1	2.0							2.2	2.4	2.5	2.4	2.3	2.7	2.3	24
23				2.6 5	2.6	2.2		2.0	1.9	1.8	1.7			×				×	2.0	2.1	2.0		2.6	2.1	17
77					1 2.3	2.1		1.7	1.8	1.8	1.9	1.9						2.8	2.8	2.7	2.5		2.8	2.2	24
25				2.9 3.2	2.9	7	2.7	2.5	2.2	2.5	2.3							2.5	2.4	2.7	5.6	2.7	3.2	2.6	54
26				2.9 2.9	3.0	m	3.0	2.2	2.2	2.1	2.1	2.0		1.8 1.8	3 1.9		1.8	1.8	2.1	2.4	2.3	٠.	3.1	2.3	24
22				2.3 2.3	3 2.4	7		2.2	2.2	2.1	2.0			1.8 1.7			1.9	s	1.6	1.7	1.8	S	2.5	2.0	24
. 28			.2 2	.3 2.4			2.3	2.4	2.5	2.5	2.4			2.4 2.4				2.5	5.6	5.6	s	2.3	2.6	2.4	24
29									2.2	2.2	2.0		2.0 2.	2.1 2.1		2.0		2.1	2.0	S	2.4		2.7	2.2	24
90		2.1 2.2		2.2 2.2			2.3	2.3	2.3	2.1	2.2	2.2		2.0 2.0	0 2.0		2.0	2.2	s	2.3	2.1	5.0	2.3	2.1	24
31		1.9 1.9	į		2.1	1.9		1	1.8	1.8	1.8			1.6 X				×	2.4	2.6	5.6	5.6	2.6	2.0	13
HOURLY MAX	2.7	2.8 2.8	2.8 2	2.9 3.2			3.0	2.5	2.5	2.9	2.4	2.4	2.4 2.	2.4 2.5	5 2.9	2.5	3.0	2.8	2.8	3.0	2.6	2.7			
HOURLY AVG						2.4	2.3	2.2	2.2	2.1	2.1							2.2	2.2	2.3	2.3	2.3			

#### STATUS FLAG CODES

 O QUALITY ASSURANCE.  K. A. MACHINE MALEUNCTION  O - OPERATORE RAGE  K COLLECTION ERROR  K COLLECTION FRROR	
C. COLIBRATION YMAINTENANCE \$ -DAILY ZERO/SPANCHECK PPOWTER-SAILUNE GOUT-FOR REPAIR	

NUMBER OF NON-ZERO READINGS:	3S:		695							
MAXIMUM INSTANTANEOUS VALUE:	LUE:		3.3		PPM @ HOUR(S)	_	r.	ON DAY(S)		51
							VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME:	33	HRS		OPERATIC	OPERATIONAL TIME:				732	HRS
MONTHLY CALIBRATION TIME:	4	HRS								
STANDARD DEVIATION:	0.26									
			I						I	I

Of Hour Averages



LICA THC / WD Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WD Instrument Beight : 10 Meters

	Freq	99.85	.14	00.	00.	
	NNW	2.01	00.	00.	00.	2.01
	WN	3.45	00.	00.	00.	3.45
	WNW	4.31	00.	00.	%	4.31
	¥	3.74	.14	00.	00.	3.88
	WSW	4.74	00.	00.	%	4.74
	SW	3.30	00.	00.	00.	3.30
	SSW	4.89	00.	00.	00.	4.89
	Ø	3.88	00.	00.	%	3.88
	SSE	7.62	00.	00.	00.	7.62
Direction	SE	14.96	00.	00.	00.	14.96
Di	ESE	6.76	00.	00.	00.	6.76
	ы	7.76	00.	00.	00.	7.76
	ENE	8.77	00.	00	00.	8.77
	呂	13.81	00.	00	00.	13.81
	NNE	6.76	00.	00.	00.	6.76
	z	3.02	00.	00.	00.	3.02
	Limit	3.0	10.0	50.0	50.0	Totals
		٧	٧	٧	X	

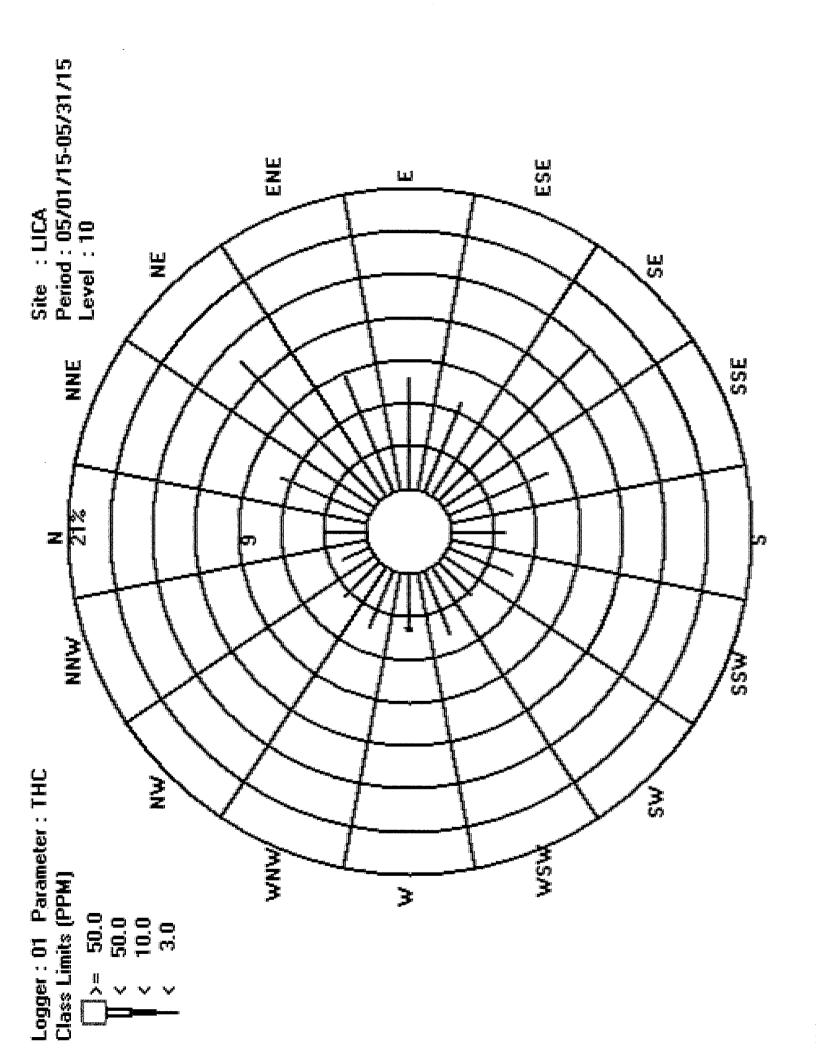
Calm : .00 %

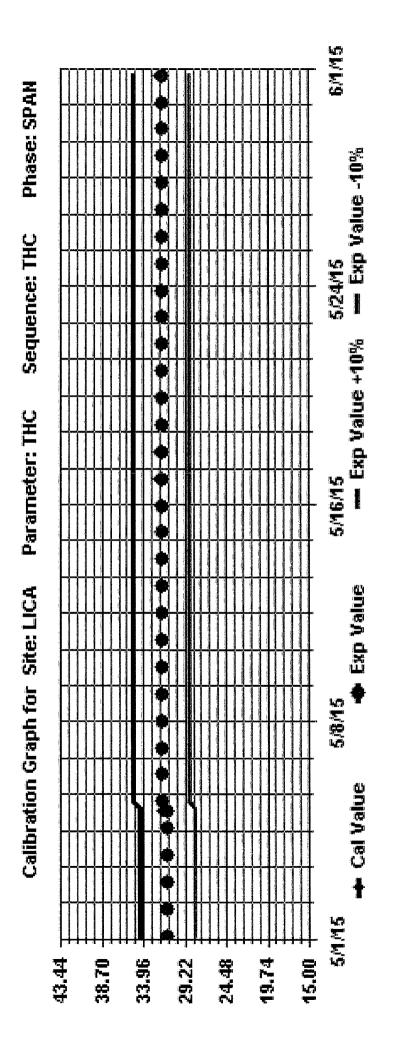
Total # Operational Hours : 695

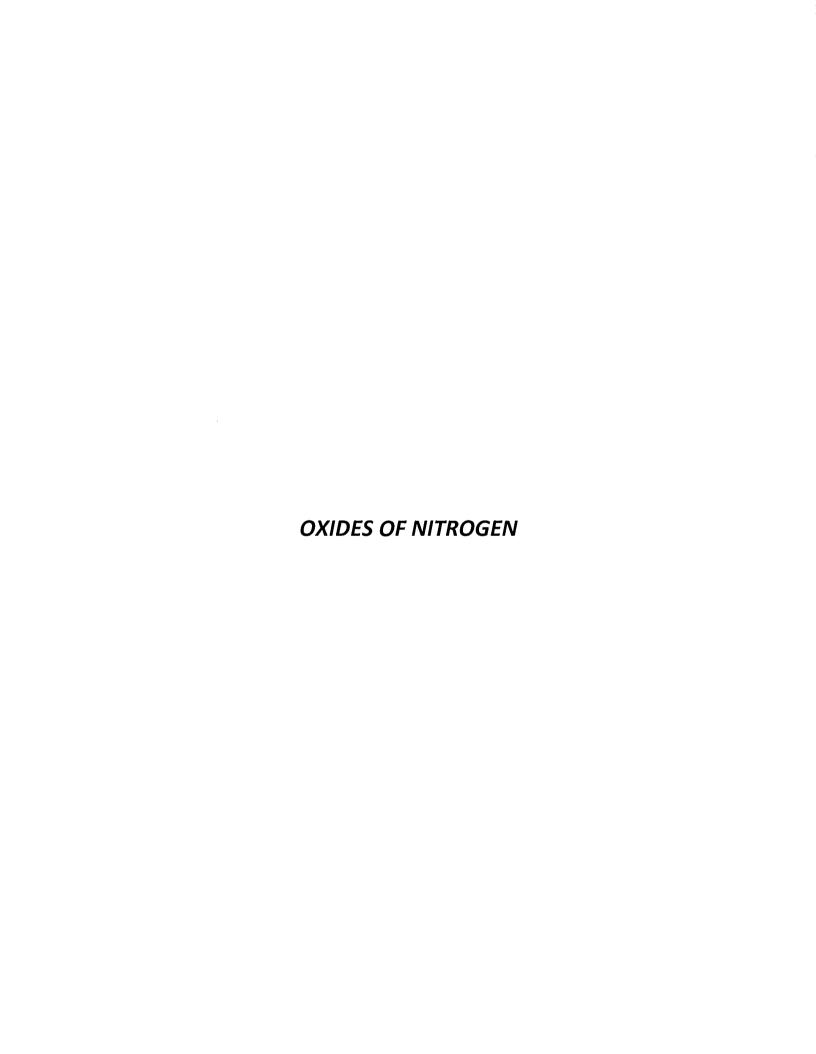
Distribution By Samples

	Freq	694	н			
	MNW	14				14
	WW	24				24
	WNW	30				30
	B	26	н			27
	WSW	33				33
	SW	23				23
	SSW	34				34
	w	27				27
	SSE	53				53
Direction	SE	104				104
Dir	ESE	47				47
	μì	54				54
	ENE	19				19
	Ä	96				96
	NNE	47				47
	z	21				21
	Limit	3.0	10.0	50.0	50.0	Totals
		٧	٧	٧	X	

Calm : .00 %









OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST

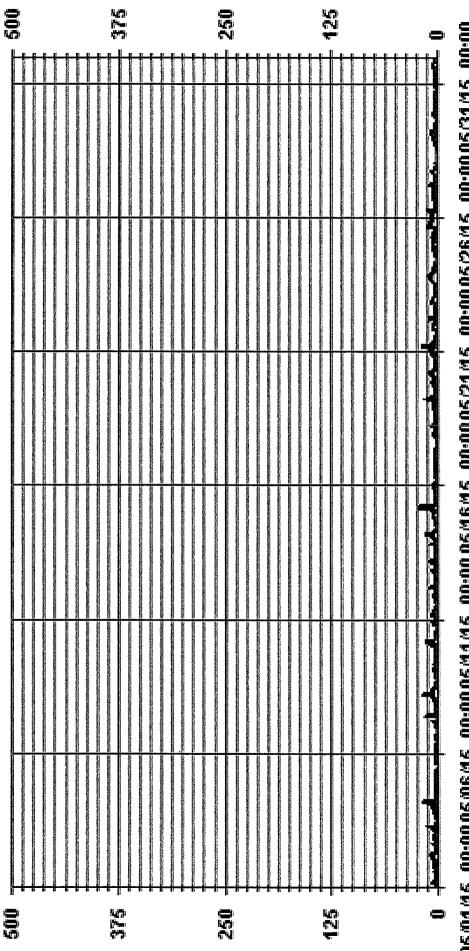
RDGS.	24	24	24	24	24	24	54	24	24	24	54	24	24	24	77	54	54	75	75	54	24	75	24	54	54	54	54	24	54	54	24	
AVG.	3.2	3.1	2.4	3.5	13	8.0	2.3	4.2	2.0	3.3	2.2	2.7	2.6	3.6	3.9	1.2	1.3	1.9	3.3	3.5	3.8	3.1	4.3	2.1	2.0	3.6	3.1	0.8	2.2	1.4	2.3	
MAX	6.4	8.7	8.6	19.1	2.2	1.5	10.6	19.0	4.0	13.9	6.9	9.7	9.5	14.9	22.5	4.0	4.2	6.0	10.0	10.5	15.9	8.2	9.4	3.9	12.0	8.8	9.5	3.6	7.1	5.6	4.1	
23:00 0:00	3.2	4.9	1.6	S	0.5	8.0	2.4	1.7	1.7	1.0	4.2	1.1	2.4	4.4	3.0	8.0	4.2	2.5	3.3	6.2	4.4	5.6	5.1	3.5	5.6	1.7	s	3.6	2.9	1.0	1.5	62
23:00	3.4	3.7	2.7	0.8	s	0.5	17	1.4	1.6	5.5	3.7	0.7	5.8	3.9	3.0	8.0	2.9	3.2	3.1	4.4	4.3	5.0	7.9	3.9	6.0	2.5	1.6	s	2.8	1.9	2.1	79
22:00	4.0	3.6	2.6	1.0	0.7	s	2.5	1.6	2.0	4.2	3.2	1.8	4.9	3.7	3.6	0.7	3.3	3.4	5.3	6.0	3.6	4.8	9.4	3.4	8.0	4.7	2.2	1.9	Ŋ	5.6	2.6	۷δ
21:00	4.7	3.8	1.2	1.5	0.7	0.3	s	2.5	2.3	1.9	3.6	5.4	6.5	3.3	2.4	0.7	1.8	1.9	5.9	2.7	4.0	5.2	8.9	2.7	7.9	4.4	3.4	2.4	2.2	s	2.5	o
20:00	3.7	1.8	3.2	2.3	1.1	9.0	2.7	s	2.9	1.6	1.3	3.7	1.4	2.0	2.1	1.0	0.7	1.1	4.2	1.2	1.0	1.7	8.4	2.7	7.5	4.5	4.9	1.3	1.8	0.7	s	V
19:00	2.8	1.2	1.8	1.7	1.3	9.0	1.0	9.0	s	1.2	1.1	1.9	1.0	1.5	1.8	0.7	0.5	6.0	2.7	1.0	0.4	1.1	7.6	2.0	8.3	5.9	5.9	0.7	9.0	0.5	4.1	01
18:00	2.0	8.0	1.3	1.7	1.3	9.0	1.0	6.0	1.0	s	1.0	1.8	1.4	0.8	1.6	9.0	0,4	0.7	1.5	1.1	0.4	1.2	6.4	1.8	12.0	3.1	4.6	0.7	0.5	0.5	4.0	120
17:00	2.9	6.0	0.7	1.3	U	9.0	0.8	1.2	0.8	0.8	s	1.8	1.4	1.0	1.4	0.7	0.4	0.7	1.2	1.0	9.0	1.1	5.9	1.7	5.9	3.0	3.5	0.8	0.4	9.0	4.0	ď
16:00	2.8	4.0	8.0	1.0	U	0.7	8.0	6.0	0.7	0.5	8.0	S	2.6	1.2	1.3	6.0	0.4	9.0	1.0	1.2	0.7	1.0	4.8	1.7	2.5	2.0	5.6	0.4	9.0	0.7	3.1	81
15:00	2.3	1.1	9.0	1.9	U	9.0	0.7	1.5	0.8	0.5	1.0	0.8	s	1.1	1.6	9.0	0.4	0.7	6.0	1.2	9.0	13	4.0	1.0	2.3	1.3	1.7	0.5	9.0	6.0	2.2	0 7
14:00	2.0	1.7	9.0	2.0	U	8.0	0.7	2.0	0.7	9.0	9.0	9.0	1.4	s	1.4	0.5	0.3	8.0	1.1	1.8	8.0	1.0	3.0	1.0	2.2	1.3	1.4	0.4	9.0	6.0	1.9	c
13:00	1.9	1.0	1.0	1.0	J	13	5.6	1.0	0.8	0.8	0.7	2.0	6.0	6.0	S	9.0	0.3	0.8	1.2	6.0	6.0	6.0	2.1	9.0	2.2	13	1.4	0.4	0.5	1.0	2.3	r A
12:00	1.7	0.7	1.2	1.9	J	0.7	8.6	2.5	1.0	9.0	1.2	0.8	1,4	1.2	1.5	s	0.4	1.2	1.5	1.2	1.0	1.0	1.3	9.0	2.4	1.0	1.1	0.4	0.5	6.0	2.9	9 8
11:00	1.6	8.0	1.9	2.4	1.6	0.7	10.6	5.8	0.8	0.7	2.1	1.2	6.0	1.5	1.3	1.1	s	1.1	1.5	1.2	0.9	2.0	1.1	1.0	4.4	1.2	1.2	0.5	8.0	1.0	2.3	10.5
10:00	2.0	8.0	1.9	2.5	1.2	1.0	1.8	9.9	1.5	6.0	3.8	2.5	1.4	1.6	1.3	0.8	9.0	v	5.6	3.3	2.9	2.9	1.1	1.4	3.4	1.7	1.5	0.4	1.2	1.2	2.5	9 9
00:6	2.6	1.9	2.2	2.4	1.2	0.8	8.0	4.6	4.0	1.3	1.7	3.3	1.2	2.1	1.5	0.5	0.5	1.6	s	4.5	5.7	4.1	6.0	1.4	4.8	2.2	1.9	0.5	1.6	1.9	2.0	57
8:00	4.2	5.3	4.2	3.2	2.2	172	9.0	4.6	2.9	1.2	2.4	2.0	2.3	2.6	3.3	9.0	9.0	2.3	6.8	s	3.8	4.0	1.2	1.8	5.1	3.6	2.1	0.7	3.3	2.2	2.0	89
7:00	6.0	8.2	8.6	3.7	1.9	1.3	1.6	12.8	2.4	4.7	2.7	6.0	5.6	8.9	5.3	0.4	0.7	6.0	10.0	10.5	s	8.2	1.5	1.3	5.7	8.8	9.5	0.5	4.9	2.5	2.0	12.8
9:00	6.1	8.7	5.8	19.1	2.1	1.0	4.4	19.0	3.4	13.9	6.9	9.7	9.5	14.9	22.5	0.5	1.4	3.3	5.8	8.3	15.9	s	3.3	2.7	4.8	6.9	5.8	0.4	7.1	2.1	1.7	22 5
5:00 6:00 7:00	6.4	5.0	3.6	11.4	1.5	1.1	2.5	8.8	3.9	11.5	2.7	2.3	6.4	7.7	9.6	0.8	1.9	2.4	4.9	6.7	8.1	3.4	s	2.8	3.5	5.9	2.8	0.4	6.5	1.9	1.7	11.5
4:00		5.2	2.4	5.0	1.2	0.8	9.0	5.3	3.4	9.3	1.7	2.3	3.3	8.8	7.0	3.3	2.6	5.6	3,3	5.4	7.3	4.0	3.5	s	3.4	6.4	1.8	0.4	3.0	1.1	1.5	0 2
2:00 3:00 4:00	3.0	s	2.5	4.3	1.0	9.0	9.0	3.6	2.4	4.5	2.0	1.9	2.0	5.6	2.0	3.6	3.2	1.8	2.7	3.8	6.3	3.5	4.2	3.2	s	5.9	3.0	0.5	3.6	1.6	1.5	6.2
2:00	2.4	5.6	s	5.6	1.0	0.5	0.7	4.6	2.2	5.5	1.9	1.7	1.5	4.0	3.9	4.0	1.9	1.9	2.8	4.0	7.0	3.7	4.0	3.2	4.2	s	3.5	0.5	2.1	1.7	13	7.0
1.00	2.9	2.8	3.9	v	1.1	0.5	10	4.2	2.1	2.9	1.1	5.8	1.2	2.9	4.0	3.5	1.4	2.9	3.1	3.4	6.8	4.4	4.2	3,5	4.0	6.7	s	6.0	3.2	1.7	11	84
HOUREND 7.1:00 3:00 3:00 4:00	DAYs T	.2	m	7	5	9	7	<b>œ</b>	o,	10	1	12	13	74	15	16	17	18	19	20		.22	23	24	. 25	76	72	28	- 59	30	31	VAMA YIGHOU

#### STATUS FLAG CODES

C. CALIBRAJION C. CALIBRAJION C. CALIBRAJION S. P. POWEN-FAILURE C. OUT-FOR REPAIR ZA HOUR AVERAGES FOR MAY 2015  24 HOUR AVERAGES FOR MAY 2015  25 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 18 20 21 22 28 28 28 39 31

NUMBER OF NON-ZERO READINGS:	55:		705					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		22.5 5.0	PPB PPB	@ HOUR(5)	ιŋ	ON DAY(S) ON DAY(S) VAR-VARIOUS	15 25	10.10
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	33	HRS HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	ij		744	%
STANDARD DEVIATION:	2.57			MONTHLY AVERAGE:			2.7	PPB

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

¥ Q X



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01- C

# OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

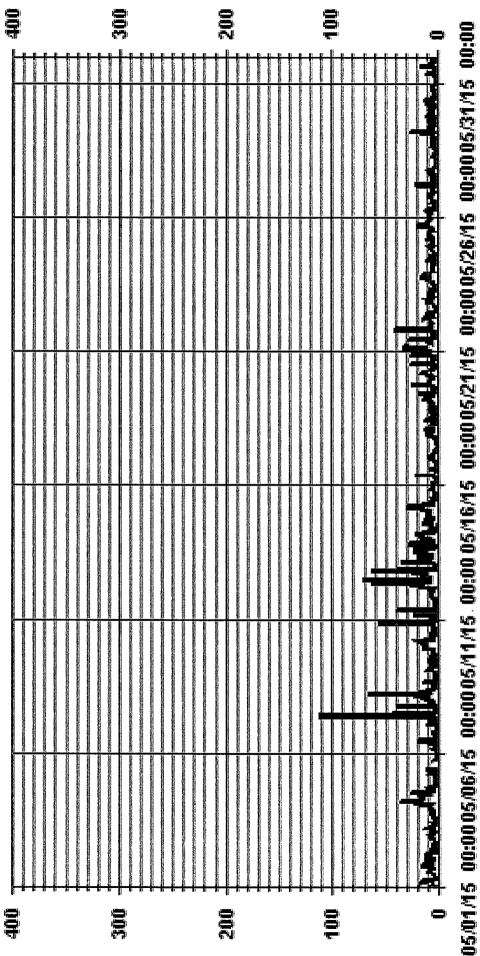
	5:00 6:00 7:00 8:00 6:00 7:00 8:00 9:00	5:00 6:00 7:00 8:00 0:00 7:00 8:00 8:00 8:00 8	5:00 6:00 7:00 8:00 6:00 7:00 8:00 9:00	6:00 7:00 8:00 7:00 8:00 9:00	7:00 8:00 8:00 9:00	00:6		g 8	11:00						15:00	17.00	18:00	19:00 20:00	11.5			ECTAMBER 2	7	~
8.5 4.5 6.5 S 16.7 11.2 17.2 5.7 3.2 2.7 3 7 5.7 5. 5 11.2 8.3 11.2 11.2 11.2 11.2 11.2 11.2 11.2 11	S 16.7 11.2 17.2 5.7 3.2 2.7 11.2 8.2 11.2 11.2 7.7 3.7 3.7	16.7 11.2 17.2 5.7 3.2 2.7 82 11.2 11.2 77 87 87	11.2 17.2 5.7 3.2 2.7	7.2 5.7 3.2 2.7	5.7 3.2 2.7	3.2 2.7	2.7 7.c			3.7	4.7	5.7	11.7	8.7	7.7	4.7	5.2	5.2	16.1	8.2	8.7 4.2	2 17.2	7.5	
S 3.2 4.2 7.6 12.1 11.1 7.2 5.1 3.1	3.2 4.2 7.6 12.1 11.1 7.2 5.1 3.1	7.6 12.1 11.1 7.2 5.1 3.1	12.1 11.1 7.2 5.1 3.1	11.1 7.2 5.1 3.1	7.2 5.1 3.1	5.1 3.1	3.1							9.9	3.7	5.7	6.2	6.6	3.1					54
8.7 7.2 17.1 22.6 36.1 20.7 13.7 17.7 13.1	7.2 17.1 22.6 36.1 20.7 13.7 17.7 13.1	22.6 36.1 20.7 13.7 17.7 13.1	36.1 20.7 13.7 17.7 13.1	20.7 13.7 17.7 13.1	13.7 17.7 13.1	17.7 13.1	13.1							3.2	6.7	7.2	9.2	6.7	3.2					
2.7 2.2 2.2 2.2 3.7 7.1 5.2 3.1 2.6	2.2 2.2 2.2 3.7 7.1 5.2 3.1 2.6	2.2 3.7 7.1 5.2 3.1 2.6	3.7 7.1 5.2 3.1 2.6	7.1 5.2 3.1 2.6	5.2 3.1 2.6	3.1 2.6	5.6		٠.					S	S	S	4.7	1.7	2.1					
1.5 2.1 2.5 4.6 1.6 2.1 3.6 3.5 9.0	2.1 2.5 4.6 1.6 2.1 3.6 3.5 9.0	4.6 1.6 2.1 3.6 3.5 9.0	1.6 2.1 3.6 3.5 9.0	2.1 3.6 3.5 9.0	3.6 3.5 9.0	3.5 9.0	9.0							1.5	2.0	1.5	1.5	9.9	1.5					
0.9 0.9 8.9 8.4 3.4 0.9 1.9 9.9	0.9 8.9 8.4 3.4 0.9 1.9 9.9	8.9 8.4 3.4 0.9 1.9 9.9	8.4 3.4 0.9 1.9 9.9	3.4 0.9 1.9 9.9	0.9 1.9 9.9	1.9 9.9	6.6		~					4.0	2.9	1.9	1.9	37.4	s					
12.9 6.9 15.9 23.4 31.4 65.4 19.4 5.4 11.4	6.9 15.9 23.4 31.4 65.4 19.4 5.4 11.4	23.4 31.4 65.4 19.4 5.4 11.4	31.4 65.4 19.4 5.4 11.4	65.4 19.4 5.4 11.4	19.4 5.4 11.4	5.4 11.4	11.4							1.4	14.9	1.4	1.4	S	3.5					
2.9 4.4 8.9 6.9 5.5 2.9 3.4 7.4 4.4	4.4 8.9 6.9 5.5 2.9 3.4 7.4 4.4	6.9 5.5 2.9 3.4 7.4 4.4	5.5 2.9 3.4 7.4 4.4	2.9 3.4 7.4 4.4	3.4 7.4 4.4	7.4 4.4	4.4							1.4	4.4	1.9	s	2.0	4.0					
14,9 11,4 16,4 17,9 19,9 15,4 2,4 6,0 6,0	11.4 16.4 17.9 19.9 15.4 2.4 6.0 6.0	17.9 19.9 15.4 2.4 6.0 6.0	19.9 15.4 2.4 6.0 6.0	15.4 2.4 6.0 6.0	2.4 6.0 6.0	6.0 6.0	6.0							6.0	5.5	S	6.0	2.0	6.9					
8.4 4.0 3.4 8.4 23.4 4.0 2.9 2.4 39.4	4.0 3.4 8.4 23.4 4.0 2.9 2.4 39.4	8.4 23.4 4.0 2.9 2.4 39.4	23.4 4.0 2.9 2.4 39.4	4.0 2.9 2.4 39.4	2.9 2.4 39.4	2.4 39.4	39.4		LO					1.9	s	4.0	2.4	4.9	4.9					
4.9 6.9 5.5 4.0 17.9 11.9 24.9 24.9 62.9	6.9 5.5 4.0 17.9 11.9 24.9 24.9 62.9	4.0 17.9 11.9 24.9 24.9 62.9	17.9 11.9 24.9 24.9 62.9	11.9 24.9 24.9 62.9	24.9 24.9 62.9	24.9 62.9	67.9		4					s	11.9	16.4	21.9	24.4	62.4					
2.9 3.4 5.4 33.9 20.9 6.9 20.4 4.4 12.4	3.4 5.4 33.9 20.9 6.9 20.4 4.4 12.4	33.9 20.9 6.9 20.4 4.4 12.4	20.9 6.9 20.4 4.4 12.4	6.9 20.4 4.4 12.4	20.4 4.4 12.4	4.4 12.4	12.4		×t.					21.0	6.5	3.5	1.5	3.0	27.5					
11.5 15.0 15.5 18.0 21.5 16.5 4.0 3.0 4.0	15.0 15.5 18.0 21.5 16.5 4.0 3.0 4.0	18.0 21.5 16.5 4.0 3.0 4.0	21.5 16.5 4.0 3.0 4.0	16.5 4.0 3.0 4.0	4.0 3.0 4.0	3.0 4.0	4.0		LΩ					14.0	8.5	6.1	13.0	3.0	9.9					
5.0 11.5 15.5 16.5 29.0 24.5 16.0 2.0 4.0	11.5 15.5 16.5 29.0 24.5 16.0 2.0 4.0	16.5 29.0 24.5 16.0 2.0 4.0	29.0 24.5 16.0 2.0 4.0	24.5 16.0 2.0 4.0	16.0 2.0 4.0	2.0 4.0	4.0		0	4.0				3.0	2.0	2.0	2.5	3.0	4.4					
5.5 6.0 5.0 1.5 1.0 0.9 0.9 2.9 5.4	6.0 5.0 1.5 1.0 0.9 0.9 2.9 5.4	1.5 1.0 0.9 0.9 2.9 5.4	1.0 0.9 0.9 2.9 5.4	0.9 0.9 2.9 5.4	0.9 2.9 5.4	2.9 5.4	5.4		4	S				7.5	1.5	3.0	1.5	2.0	2.0					
4.0 10.0 8.0 5.1 4.0 1.5 3.0 1.5	10.0 8.0 5.1 4.0 1.5 3.0 1.5 3.0	5.1 4.0 1.5 3.0 1.5 3.0	4.0 1.5 3.0 1.5 3.0	1.5 3.0 1.5 3.0	3.0 1.5 3.0	1.5 3.0	3.0							0.4	0.4	1.4	1.4	1.5	4.4					
4.4 4.9 12.9 6.9 5.5 7.9 3.9 2.0 S	4.9 12.9 6.9 5.5 7.9 3.9 2.0 S	6.9 5.5 7.9 3.9 2.0 S	5.5 7.9 3.9 2.0 <b>S</b>	7.9 3.9 2.0 S	3.9 2.0 S	2.0 \$	S		0					1.0	1.0	1.0	2.0	6.0	6.0					
4.5 4.1 6.6 7.5 7.5 14.0 10.5 <b>S</b> 5.5	4.1 6.6 7.5 7.5 14.0 10.5 <b>S</b> 5.5	7.5 7.5 14.0 10.5 <b>S</b> 5.5	7.5 14.0 10.5 <b>S</b> 5.5	14.0 10.5 S 5.5	10.5 <b>S</b> 5.5	<b>S</b> 5.5	5.5		m					6.9	2.4	3.4	10.4	24.4	10.9					
6.0 4.5 7.4 10.4 14.9 13.9 <b>S</b> 6.5 4.9	4.5 7.4 10.4 14.9 13.9 S 6.5 4.9	10.4 14.9 13.9 <b>S</b> 6.5 4.9	14.9 13.9 S 6.5 4.9	13.9 S 6.5 4.9	S 6.5 4.9	6.5 4.9	4.9							6.9	2.4	5.9	1.9	2.4	5.4					
7.9 10.4 10.4 33.4 28.4 <b>S</b> 5.6 7.5 4.0	10.4 10.4 33.4 28.4 <b>S</b> 5.6 7.5 4.0	33.4 28.4 <b>S</b> 5.6 7.5 4.0	28.4 <b>S</b> 5.6 7.5 4.0	<b>S</b> 5.6 7.5 4.0	5.6 7.5 4.0	7.5 4.0	4.0							2.6	2.1	1,1	1.1	4.1	40.5					
6.5 5.1 6.5 6.5 \$ 12.9 5.5 6.9 6.9	5.1 6.5 6.5 <b>S</b> 12.9 5.5 6.9 6.9	6.5 <b>S</b> 12.9 5.5 6.9 6.9	S 12.9 5.5 6.9 6.9	12.9 5.5 6.9 6.9	5.5 6.9 6.9	6.9 6.9	6.9							1.5	2.0	2.5	3.0	4.5	11.5					
4.5 7.0 5.0 <b>S</b> 7.9 2.9 4.5 7.0 3.0	7.0 5.0 <b>S</b> 7.9 2.9 4.5 7.0 3.0	S 7.9 2.9 4.5 7.0 3.0	7.9 2.9 4.5 7.0 3.0	2.9 4.5 7.0 3.0	4.5 7.0 3.0	7.0 3.0	3.0							6.5	7.0	9.5	9.0	16.5	10.0					
5.5 5.0 <b>S</b> 4.0 4.0 2.5 6.0 3.0 3.5	5.0 <b>S</b> 4.0 4.0 2.5 6.0 3.0 3.5	4.0 4.0 2.5 6.0 3.0 3.5	4.0 2.5 6.0 3.0 3.5	2.5 6.0 3.0 3.5	6.0 3.0 3.5	3.0 3.5	3.5							4.5	2.5	3.0	4.0	0.9	5.5					
5.0 S 5.0 5.5 10.5 8.0 6.0 7.5 8.0	S 5.0 5.5 10.5 8.0 6.0 7.5 8.0	5.5 10.5 8.0 6.0 7.5 8.0	10.5 8.0 6.0 7.5 8.0	8.0 6.0 7.5 8.0	6.0 7.5 8.0	7.5 8.0	8.0							9.0	17.5	17.5	10.5	10.0	11.5					
S 9.0 8.5 7.0 9.0 11.0 10.0 3.0 2.5	8.5 7.0 9.0 11.0 10.0 3.0 2.5	7.0 9.0 11.0 10.0 3.0 2.5	9.0 11.0 10.0 3.0 2.5	11.0 10.0 3.0 2.5	10.0 3.0 2.5	3.0 2.5	2.5							3.5	2.0	2.0	2.0	8.0	8.5					
6.0 4.4 3.0 7.5 18.5 20.9 4.5 2.5 2.0	3.0 7.5 18.5 20.9 4.5 2.5 2.0	7.5 18.5 20.9 4.5 2.5 2.0	18.5 20.9 4.5 2.5 2.0	20.9 4.5 2.5 2.0	4.5 2.5 2.0	2.5 2.0	2.0							6.5	4.0	5.5	8.0	6.5	5.0					
1.0 0.5 0.5 0.9 1.0 1.0 6.5 1.9 0.9	0.5 0.9 1.0 1.0 6.5 1.9 0.9	0.9 1.0 1.0 6.5 1.9 0.9	1.0 1.0 6.5 1.9 0.9	1.0 6.5 1.9 0.9	6.5 1.9 0.9	1.9 0.9	6.0							1.4	2.0	3.5	2.4	5.5	6.0					
3.5 6.0 4.5 16.9 25.9 10.9 5.4 4.9 10.4	16.9 25.9 10.9 5.4 4.9 10.4	16.9 25.9 10.9 5.4 4.9 10.4	25.9 10.9 5.4 4.9 10.4	10.9 5.4 4.9 10.4	5.4 4.9 10.4	4.9 10.4	10.4							10.4	6.0	6.0	5.9	11.4	4.4					
4.4 6.4 2.9 3.9 3.0 3.5 11.9 7.9 12.9	3.9 3.0 3.5 11.9 7.9 12.9	3.9 3.0 3.5 11.9 7.9 12.9	3.0 3.5 11.9 7.9 12.9	3.5 11.9 7.9 12.9	11.9 7.9 12.9	7.9 12.9	12.9							5.0	1.4	1.4	6.0	5.4	s					
2.0 2.5 2.0 2.5 3.0 2.5 11.5	2.0 2.5 2.0 2.5 3.0 2.5 11.5	2.5 2.0 2.5 3.0 2.5 11.5	2.0 2.5 3.0 2.5 11.5	2.5 3.0 2.5 11.5	3.0 2.5 11.5	2.5 11.5	11.5		4					4.0	16.0	4.5	6.5	S	3.5					
33.9 36.1 65.4 24.9 24.9 62.9	15.0 17.1 33.9 36.1 65.4 24.9 24.9 62.9	33.9 36.1 65.4 24.9 24.9 62.9	36.1 65.4 24.9 24.9 62.9	65.4 24.9 24.9 62.9	24.9 24.9 62.9	24.9 62.9	67.9	, ,	112.9	_				21.0	17.5	17.5	21.9	37.4	62.4	56.4		ام		
5.9 7.6 10.6 13.2 11.2 7.5 5.4 9.1	5.9 7.6 10.6 13.2 11.2 7.5 5.4 9.1	10.6 13.2 11.2 7.5 5.4 9.1	13.2 11.2 7.5 5.4 9.1	11.2 7.5 5.4 9.1	7.5 5.4 9.1	5.4 9.1	9.1		o,					5.2	5.2	4.4	5.1	8.0	6.6			7		

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NUMBER OF NON-ZERO READINGS:			704						
MAXIMUM INSTANTANEOUS VALUE:	üi		112.9	9 PPB	@ HOUR(S)	10	ON DAY(5)		7
						VAR-V	VAR-VARIOUS		
IZS CALIBRATION TIME:	40	HRS		OPERATIC	OPERATIONAL TIME:			744	HRS
MONTHLY CALIBRATION TIME:	0	HRS							
STANDARD DEVIATION:	9.08								

Of Hour Averages



HOYMAX

LICA NOX\_ / WD Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : NOX
Units : PPE

Wind Parameter : WD Instrument Height : 10 Meters

00. 00. 00. NNW Freq 1.98 100.00 00. 00. 00. 1.98 3.54 00. 00. 3.54 £ 00. 4.25 4.25 WNW 8. 00. 00. 3.82 00. 3.82 00. 00. 4.68 4.68 00. 00. WSW 00. 3.26 3.26 00. æ 00 00. 4.82 00. 4.82 SSW 00. 00. 3.82 3.82 00. 00. 00. ß 7.65 7.65 SSE 00. 00. 90. Direction SE 6.66 15.17 6.66 15.17 00. 00. 00. ESE 00. 00. 00. 7.65 7.65 00. 00. 00. 8.36 8.36 00. E 00 00. 岂 7.23 14.04 00. 00. 0. 7.23 14.04 EE 00 00. 00. 2.97 2.97 00. 0. 00. z Totals 50.0 Limit < 210.0 >= 210.0 < 110.0

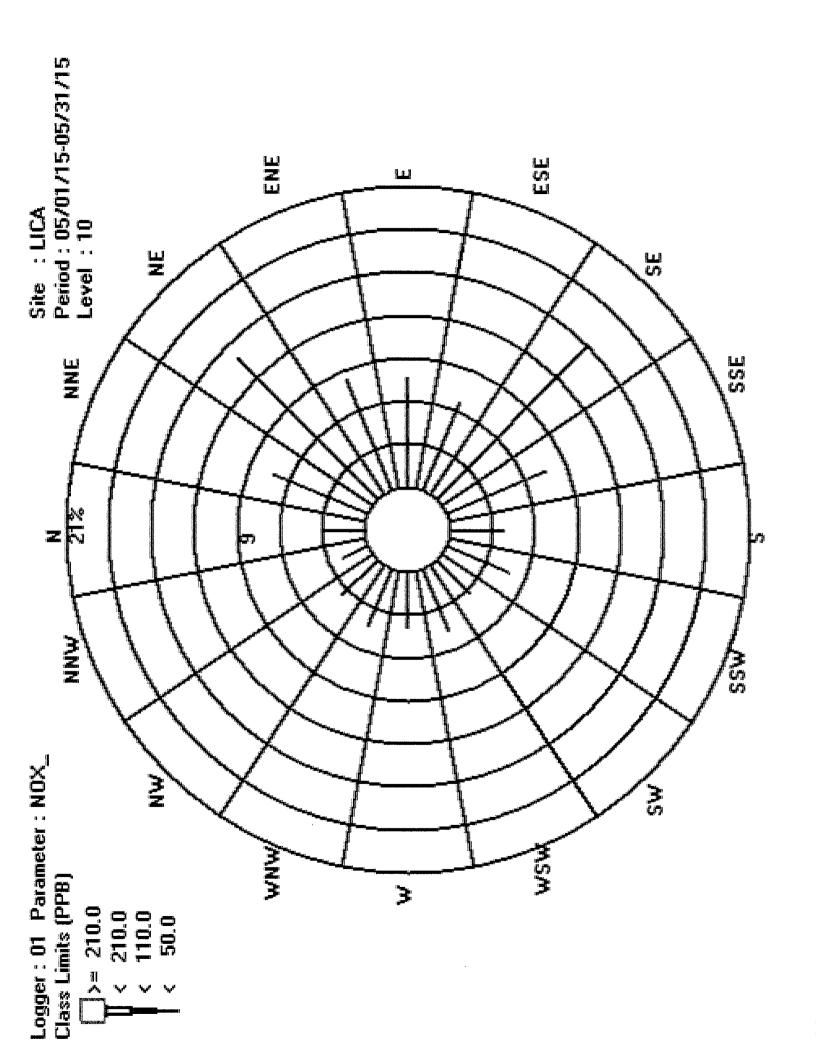
Total # Operational Hours: 705

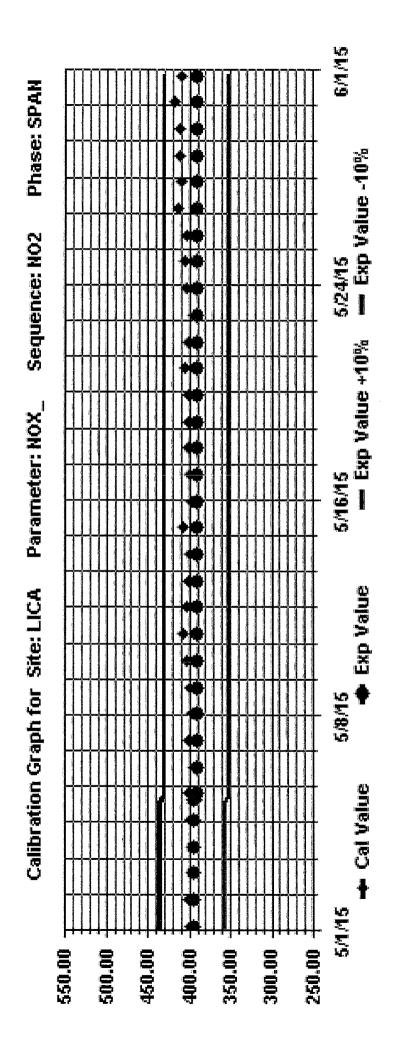
Calm : .00 %

Distribution By Samples

Fred 705 NNW 14 25 图 30 WNW 30 27 WSW 33 33 SW 23 23 SSW 34 27 Ø 27 SSE 54 54 Direction SE 107 107 ESE 47 54 ш 54 ENE 29 59 Έ 66 R 51 51 21 z 21 Totals 50.0 Limit < 110.0 < 210.0 >= 210.0 ٧

Calm : .00 %









### NITRIC OXIDE (NO) hourly averages in ppb

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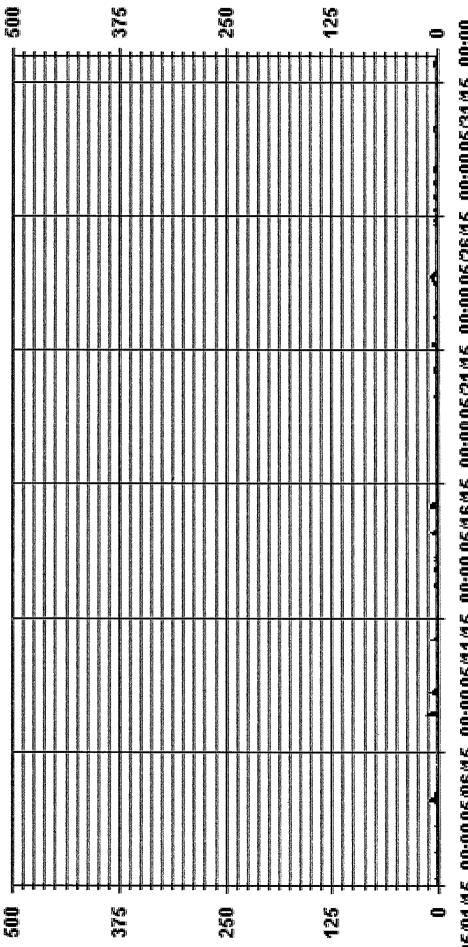
1:00 DAY 1 1:0	2:00	3.00	4.00	2:00	4:00 5:00 6:00 7:	7.00	8:00	00:6	10:00	11:00 12	12:00 13	13:00 14:00	10 - 15.0	0 16:00	17.00	18:00	19:00	20:00	21:00	22:00	23:00 0	0:00 MAX	C AVG.	RDGS.
																1	1							
		0.0	s	6.0	9.0	1.1	8.0	0.3				0.1 0.1			0.2	0.1	0.0	0.0	0.0	0.0		.0 1.1		24
	1 0.1	S	0.3	0.0	0.7	1.3	1.1	0.3	0.0		0.0	0.0 0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1 1.3	, 0.2	24
		0.1	0.1	0.3	1.4	2.9	1.4	0.7	0.5	0.4				_	0.0	0.2	0.3	0.0	0.0	0.0				24
S		0.2	0.8	4.3	10.9	1.0	1.8	1.1			_			_	0.2	0.2	0.1	0.1	0.0	0.0		''		24
		0.1	0.0	0.1	0.2	0.3	0.5	0.2		0.3		<b>ວ</b> ວ			U	0.1	0.2	0.0	0.0	0.0		0.0 0.5		24
9		0.0	0.1	0.2	0.1	0.1	0.1	0.0		0.0	_			_	0.0	0.0	0.0	0.1	0.0	s	_			
0.0		0.0	0.0	0.1	0.4	0.0	0.0	0.0		8.3	6.0 3		1 0.1		0.1	0.1	0.0	0.7	s	0.0	0.0	0.0 8.3		
7 Y		0.0	9.0	13	5.9	3.3	0.7	8.0	8.0	1.1	0.5 0		0.2		0.1	0.0	0.0	s	0.0	0.0	0.0			
		0.0	0.1	0.0	0.1	0.2	9.0	1.0	0.4	0.0					0.0	0.0	s	0.0	0.0	0.0	0.0	0.0 1.0		
(() 105		0.1	9.0	1.2	3.8	1.0	0.2	0.3	0.1	0.1					0.1	s	0.0	0.0	0.0	6.0	0.1	0.0 3.8		
		0.0	0.0	0.2	1.0	0.4	0.4	0.4	1.3	0.4					s	0.0	0.0	0.0	0.0	0.0		0.0 1.3		
		0.0	0.0	0.0	1.3	0.9	1.1	6.0					1 0.1		0.4	9.0	0.4	1.5	14	0.8		0.0		
		0.0	0.0	0.8	1.1	0.3	1.6	0.1							0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0		
14 0.0		0.2	0.2	0.4	4.0	1.5	0.4	0.2	0.0		0.0	0.0		0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0 4.0	0.3	24
		0.1	0.3	0.7	7.1	1.1	0.7	0.1							0.0	0.0	0.0	0.0	0.0	0.0	0.0			
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.1					0.1	0.0	0.0	0.2	0.0	0.0		0.0 0.2		
77.45 22.42 27.012		0.7	0.3	0.4	0.4	0.2	0.1	0.0							0.0	0.0	0.0	0.0	0.0	0.0				
Viet Ned		0.0	0.1	0.0	0.5	1.4	0.4	0.4							0.0	0.0	0.0	0.0	0.0	0.0		0.0		
igilij Egy		0.0	0.0	0.2	1.0	2.7	1.4	S								0.0	0.1	0.3	0.0	0.0				
		0.0	0.1	0.5	2.3	3.3	S	9.0		_						0.0	0.0	0.0	0.0	0.3				
		0.0	0.2	1.3	5.1	s	0.7	1.1	0.4							0.0	0.0	0.0	0.4	0.0				
		0.0	0.0	0.2	s	1.9	9.0	9.6	0.4		0.2 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	S	0.2	0.0	0.1	0.0								4.9	5.4	5.3	4.3	3.0				
		0.1	s	0.2	0.4	0.0	0.3	0.1								0.0	0.1	0.0	0.0	0.0		0.0		
		S	0.0	0.2	0.5	0.7	0.5	0.4					1 0.0			0.5	0.5	0.4	0.8	9.0	0.2	.2 0.8		
		0.2	0.8	13	2.9	2.1	9.0	0.1	0.0				_			1.5	1.4	1.1	1.0	0.3				
		0.0	0.0	0.4	1.7	2.9	0.4	0.3	0.0			0.0	0.0		1.5	2.6	3.7	2.9	1.8	0.7		S		
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	s			
		0.2	0.1	2.1	2.6	1.6	6.0	0.5	9.0	0.1 (	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	s	0.0	.0 2.6		
		0.0	0.0	0.0	0.5	0.4	0.5	0.5	0.0	0.0	_	0.0	_	0.0	0.0	0.0	0.0	0.0	s	0.0		.0	0.1	
		0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.4	0.4	0.3 0		2 0.7	ļ	2.2	2.5	2.4	s	0.0	0.0		0.0	9.0	
HOURLY MAX 1		0.7	8.0	4.3	10.9	3.3	1.8	1.1	1.5	8.3	9	3.4 2.2	2 3.3	3.8	4.4	4.9	5.4	5.3	4.3	m	1.7	0.7		
HOURLY AVG 0		0.1	0.2	9.0	1.9	1.1	9.0	0.4							0.4	0.5	0.5	0.4	0.3	0.2		o.		



SOLATIVI ENANCE  X - TRECOLETION  - POWER PRUDIES  O - OPERATION FRROR  - OUTFORREPAIR  K - COLLECTION ERROR  K - COLLECTION ERROR	24 HOUR AVERAGES FOR MAY 2015	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 20 24 25 28 27 28 29 30 31
Maintenance Daily Zero/spa Power Failure Out for Repair		
INT LYZ WER		0.0
A P O O		
	1 1	

NUMBER OF NON-ZERO READINGS:	GS:		352					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		10.9	PPB PPB	@ ноur(s)	ις	ON DAY(S) ON DAY(S) VAR-VARIOUS	23	
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	33	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	TIME		744	% HRS
STANDARD DEVIATION:	0.98			MONTHLY AVERAGE:		:	0.4	PPB

of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

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Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01- C

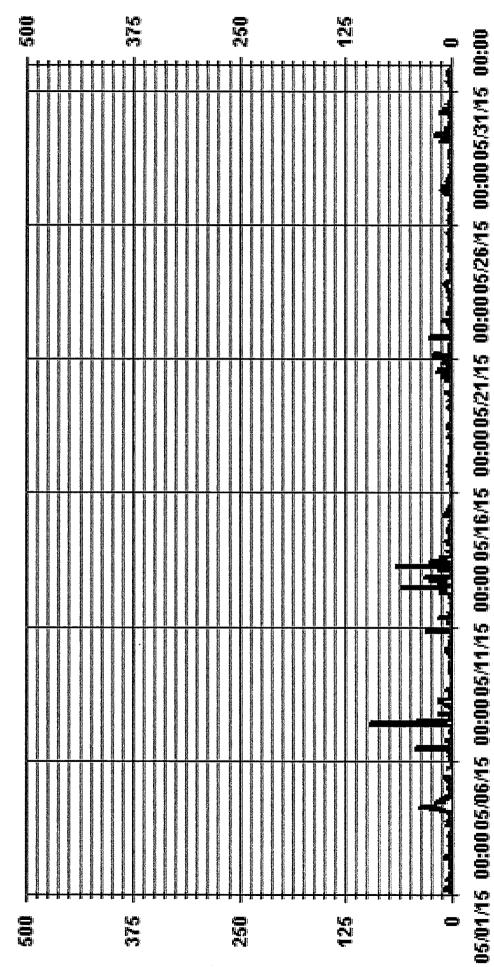
# NITRIC OXIDE MAX instantaneous maximum in ppb

	RDGS.	24	24	54	24	24	24	24	24	74	24	24	24	74	24	74	24	24	24	24	24	24	74	24	74	74	24	24	24	24	74	54		
24_HO119	AVG.	2.2	1.5	2.0	10.3	2.3	3.1	10.6	3.6	6.0	3.2	1.7	10.9	7.6	2.2	1.9	1.0	17	1.4	1.5	3.9	3.7	1.6	2.8	1.0	1.2	1.6	2.8	8.0	3.4	2.0	1.2		
VIAC	MAX.	9.0	9.0	7.4	38.5	8.4	42.4	96.0	14.4	1.9	30.9	15.4	60.4	6.99	6.9	11.0	3.4	6.0	6.5	8.4	18.4	27.0	12.5	8.0	3.0	3.5	4.5	11.5	1.9	19.9	14.4	6.5		
22-00-23-00	0:00	0.5	2.5	1.5	S	0.4	0.0	6.0	0.5	1.4	0.5	0.5	0.0	0.5	9.0	0.4	1.4	0.4	0.4	0.4	0.4	0.0	0.5	1.5	0.0	1.0	0.5	s	0.4	0.4	0.4	0.0	2.5	9.0
22:00	23:00	2.0	1.0	1.0	3.4	s	0.0	0.4	0.0	1.4	0.5	0.5	0.4	0.4	1.5	0.4	6.0	0.4	0.4	0.5	0.5	0.4	0.5	2.5	0.5	0.5	0.0	0.5	s	0.0	0.0	0.0	3.4	0.7
21.00	22:00	1.5	0.5	0.5	1.0	4.0	s	6.0	0.0	0.5	30.9	0.4	33.9	4.0	0.5	0.4	0.4	1.9	0.0	0.5	12.4	0.4	0.5	2.0	1.5	1.5	1.0	1.5	0.4	s	0.4	0.0	33.9	3.4
20.00	21:00	2.4	3.0	0.4	1.0	0.0	0.4	s	0.4	0.4	0.4	0.4	19.4	3.4	0.5	0.4	6.0	0.4	0.4	0.4	0.4	27.0	0.5	2.0	0.5	2.0	1.5	2.5	1.4	2.9	s	0.0	27.0	2.7
19.00	20:00	0.5	0.5	1.4	1.0	0.5	8.9	14.9	s	0.4	0.4	0.4	26.4	0.0	0.5	0.0	2.9	0.0	0.0	8.4	0.0	0.5	0.5	8.0	0.5	0.5	1.5	4.0	1.4	3.4	1.4	s	26.4	3.1
18.00	19:00	0.5	0.9	4.5	1.5	4.0	0.4	0.5	0.4	s	1.4	0.4	16.4	0.4	3.5	0.0	0.4	0.4	0.4	2.4	0.0	0.5	4.5	5.5	0.5	1.0	2.5	4.0	0.4	2.9	0.4	3.5	16.4	2.1
17.00	18:00	1.5	6.0	1.5	2.5	U	1.4	0.5	0.4	6.0	s	0.4	18.4	0.4	3.0	0.5	1.9	0.4	0.4	1.9	2.4	0.5	0.5	6.5	0.5	3.5	2.5	3.5	0.4	0.4	6.0	3.0	18.4	2.1
16:00		15	0.4	1.5	6.5	U	6.0	1.9	7.4	6.0	2.4	s	7.4	2.4	2.0	0.5	6.0	0.4	0.4	0.4	0.5	1.0	0.5	2.0	0.5	0.5	2.0	2.0	1.9	0.4	6.0	6.5	7.4	2.1
15:00		1.0	1.9	7.4	4.0	U	9.4	1.4	0.5	0.4	0,4	0.4	s	11.4	5.5	1.5	6.0	0.4	0.4	1.4	16.4	1.0	0.0	4.5	0.5	0.5	1.0	5.0	6.0	6.9	6.0	2.0	16.4	2.7
12.00	15:00	8.0	0.4	0.4	12.0	U	6.0	1.9	1.9	1.9	6.0	0.9	3.9	s	1.0	1.5	0.4	0.5	4.9	0.4	5.4	0.9	0.5	3.5	0.5	2.5	0.5	2.5	1.9	1.9	0.4	1.5	12.0	2.2
12-00	14.00	15	0.4	0.4	11.9	U	1.9	5.9	0.5	6.0	6.0	2.9	3.9	7.9	S	0.5	0.4	0.4	1.4	0.4	18.4	6.0	0.5	3.5	2.5	1.5	3.5	0.5	1.9	1.4	3.9	1.0	18.4	2.8
12-00	13:00	1.5	0.5	0.4	6.9	U	42.4	42.9	0.5	6.0	2.4	0.4	60.4	12.4	0.9	S	0.9	0.4	0.4	6.0	0.5	1.9	0.5	1.5	0.5	0.5	1.5	1.0	0.4	0.9	6.0	0.5	60.4	6.4
17.00	12:00	2.5	0.5	0.4	18.5	U	0.9	61.9	1.4	1.4	0.4	0.4	7.9	26.4	0.5	1.0	s	1.4	4.9	2.9	2.4	2.9	12.5	1.0	1.0	1.0	0.9	11.5	0.4	1.4	1.9	1.5	61.9	5.9
10.00	3	0.5	9.0	1.4	18.5	8.4	1.4	96.0	1.9	1.4	2.9	2.4	11.4	1.4	4.4	2.0	1.9	s	0.9	0.4	0.4	2.4	3.5	1.0	3.0	1.5	1.0	0.5	0.9	1.4	0.4	1.0	96.0	6.2
00-6		0.5	0.5	1.4	19.5	0.9	3.4	5.9	2.4	1.9	1.9	15.4	4.9	13.9	0.4	1.0	3.4	0.9	S	1.4	12.4	6.0	1.4	1.0	3.0	1.5	0.5	0.5	0.4	19.9	6.0	3.5	19.9	4.2
8.00	9:00	0.9	1.0	2.4	17.0	0.9	1.9	0.4	0.9	1.4	1.4	0.9	14.9	3.4	0.4	0.5	0.9	0.9	0.5	s	1.4	1.9	1.9	0.5	0.5	1.0	0.5	0.5	0.9	2.9	6.9	0.5	17.0	
7-00	8:00		1.5		,					6.0			10.9		0.9							3.4			2.0	1.0		1.5	0.9	1.9	5.5	0.5	6.99	6.0
9.00		9.0	2.0	4.4																					0.5	1.5	3.0	9.0	0.5		0.9	0.5	13.9	3.6
	6:00	3.5	1.5														0.0						S		1.0			6.9	0.0	11.4	14.4	0.5	27.4	5.3
2000	5:00	3.0	0.5	2.9	13.4	0.5	2.5	2.4	8.9	0.4	5.9	2.4	0.4	15.4	4.4	2.5	0.5	2.4	1.4	0.9	1.9	21.9	0.9	S	0.5	1.0	2.5	2.5	1.9	11.9	0.4	0.5	21.9	3.9
8363	4:00	s		0.5																								0.4		0.4	0.4	0.0	6.9	1.7
2.00				2.0																								0.4			1.4		6.0	
1:00	3.5			s																													6.0	•
00.0		3.0	1.5	15	S	10	0.4	0.0	6.0	0.4	6.0	0.4	0.9	0.4	0.4	0.6	0.5	3.4	1.7	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	S	0.0	0.9	0.9	0.5	3.4	0.8
HOURSTAR	HOUREND	DAY 1	2	œ	7	S	9	,	80	o	1.0	1	12	13	14	15	16	77	18	19	20	21	22	23	24	25	26	27	28	29	30	31	HOURLY MAX	HOURLY AVG

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NUMBER OF NON-ZERO READINGS:			299							
MAXIMUM INSTANTANEOUS VALUE:			96.0	96.0 PPB	@ HOUR(S)	UR(S)	10	ON DAY(S)		7
							VAR-VARIOUS	lous		
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	33	HRS		OPERATIONAL TIME:	VAL TI	ΛĒ			744	HRS
STANDARD DEVIATION: 7.	7.20									

Of Hour Averages



HOMAX

LICA NO \_/ WD Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 01 Site Name : LICA Parameter : No Units : PPB

Wind Parameter : WD Instrument Height : 10 Meters

1.98 100.00 NNW 00. 00. 1.98 00. 3.54 M 00. 00. 3.54 00. 00. 4.25 WNW 00. 4.25 00. 3.82 3.82 00. 00. 00. 4.68 00. 4.68 00. 00. 3.26 00. 8 3.26 00. S 4.82 00. 00. 00. 4.82 SSW 3.82 00. 3.82 00. 00. w 7.65 00. 00-7.65 SSE 00. Direction SE 00. 15.17 6.66 15.17 00. 0. ESE 00. 99.9 00. 00. 7.65 00. 00. 00. 7.65 8.36 ENE 00. 8.36 00. 00. 띩 00. 00. 14.04 7.23 14.04 00. 00. 00. 8. 7.23 SE 2.97 00. 00. 2.97 00. z Limit Totals 50.0 110.0 < 210.0 >= 210.0

Freq

00. 00. 00.

Calm : .00 %

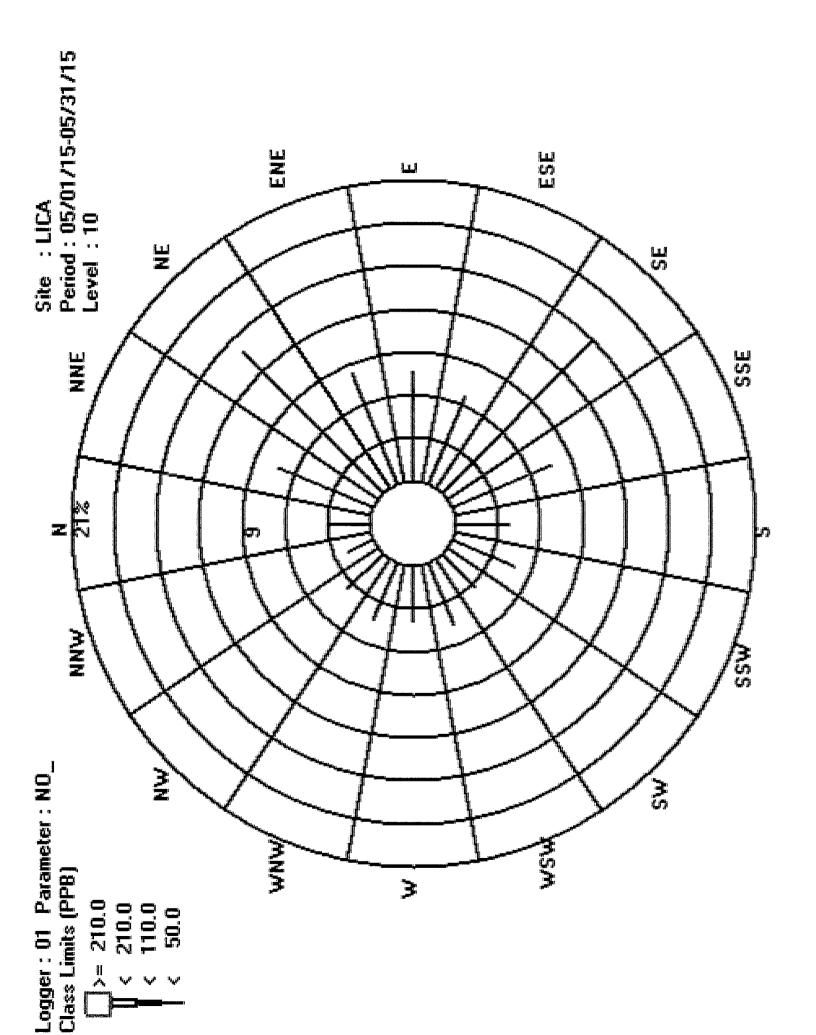
Total # Operational Hours : 705

Distribution By Samples

Direction

Freq	705				
NNW	14				14
MN	25				25
WNW	30				30
耳	27				27
WSW	33				33
SW	23				23
SSW	34				34
w	27				27
SSE	54				54
SE	107				107
ESE	47				47
ы	54				54
ENE	g G				59
Ä	66				66
NNE	51				51
z	21				21
Limit	50.0	110.0	210.0		Totals
	٧	٧	٧	X	

Calm : .00 %





JOB # 2833-2015-05-01- C



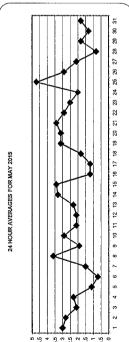
NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST

RDGS.	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	54	24	24	24	24	24	24	54	54	24	24	24	24	24	24		
24-HOUR AVG.	3.0	2.8	2.1	2.3	1.1	0.7	1.5	3.6	1.9	2.9	2.1	2.1	2.3	3.3	3.4	1.2	1.2	1.8	3.1	3.1	3.4	2.9	2.5	2.0	4.7	5.9	2.1	8.0	1.8	1.3	1.8		
DAILY MAX.	6.1	8.0	5.7	8.2	1.9	1.4	4.0	13.1	9.6	10.3	5.9	8.4	8.4	10.9	15.4	4.0	4.2	4.6	7.3	7.2	10.8	6.3	6.4	9.6	11.5	6.7	6.3	3.6	4.5	5.6	5.6		
23:00	3.2	4.8	1.5	s	0.5	8.0	2.4	1.7	1.7	1.0	4.2	1.1	2.4	4.4	3.0	8.0	4.2	2.5	3.3	6.2	4.4	5.6	4.4	3.5	5.4	1.7	s	3.6	2.9	1.0	1.5	6.2	m
22.00	3.4	3.5	2.6	8.0	s	0.5	1.2	1.4	1.6	5.4	3.7	0.7	2.8	8. 8.	3.0	8.0	5.9	3.2	3.1	4.4	4.3	5.0	6.2	3.9	5.8	5.5	1,4	s	2.8	1.9	2.1	6.2	m
21.00	4.0	3.6	2.6	70	0.7	s	2.5	1.6	2.0	3.3	3.2	1.0	4.9	3.6	3.6	0.7	3.3	3.4	5.3	5.7	3.6	4.8	6.4	3.4	7.4	4.4	1.5	1.9	s	2.6	2.6	7.4	m
20:00	4.7	3.7	1.2	1.5	0.7	0.3	s	2.5	2.3	1.9	3.6	4.0	6.3	3.3	2.4	0.7	1.8	1.9	5.9	2.7	3.6	5.2	4.6	2.7	7.1	3.4	1.6	. 2.4	2.2	s	2.5	7.1	m
19:00	3.7	1.8	3.2	2.2	1:1	0.5	5.0	S	2.9	1.6	1.3	2.2	1.4	2.0	2.1	8.0	0.7	11	3.9	1.2	1.0	1.7	3.1	2.7	7.1	3.4	5.0	1.2	1.7	0.7	S	7.1	7
18:00 19:00	7.8	1.2	1.5	1.6	11	9.0	1.0	9.0	s	1.2	1.1	1.5	1.0	1.4	1.8	0.7	0.5	6.0	2.6	1.0	6.0	1.0	2.2	1.9	7.8	1.5	2.2	9.0	9.0	0.5	1.7	7.8	Н
16:00 17:00 17:00 18:00	1.9	0.8	1.1	1.5	1.2	9.0	6.0	6.0	1.0	s	1.0	1.2	1.4	0.7	1.6	9.0	0.4	0.7	1.5	1.1	0.4	1.2	1.5	1.8	11.5	1.6	2.0	9.0	0.5	0.5	1.5	11.5	Н
17:00	2.7	6.0	0.7	1.1	ပ	9.0	0.7	1.1	0.8	0.7	s	1.4	1.3	6.0	1.4	9.0	0.4	0.7	1.2	1.0	9.0	1.1	1.5	1.7	5.8	1.9	2.0	0.7	0.4	9.0	1.8	5.8	Н
13:00 14:00 15:00 14:00 15:00 16:00	2.7	3.4	0.7	6.0	U	0.7	0.8	6.0	0.7	0.5	0.8	s	2.1	1.0	1.3	0.8	0.4	9.0	1.0	6.0	0.7	1.0	1.0	1.7	2.4	1.4	1.9	0.4	0.5	0.7	1.6	3.4	Н
14.00	2.0	1.1	9.0	1.2	ပ	9.0	9.0	1.3	0.8	0.5	1.0	0.7	s	1.0	1.6	0.5	0.4	0.7	0.9	1.1	9.0	1.3	0.7	1.0	2.3	1.2	1.7	0.4	0.5	<del>ර</del> ට	1.5	2.3	Н
87	13	1.7	9.0	1.5	ပ	0.7	9.0	2.0	0.7	9.0	9.0	0.5	1.1	s	1.4	0.5	0.3	0.8	1.1	1.3	0.8	1.0	0.8	1.0	2.1	1.2	1.4	0.4	9.0	0.7	1.7	2.1	Н
12:00 12:00 12:00 13:00	1.8	1.0	1.0	0.5	ပ	0.5	2.2	70	0.8	0.8	0.7	0.7	0.7	6.0	s	9.0	0.3	0.8	1.2	6.0	0.9	0.9	0.8	9.0	2.2	1.3	1.4	0.4	0.5	1.0	2.0	2.2	Н
3.33	1.5	0.7	1.0	6.0	U	0.7	2.6	2.0	0.9	9.0	1.2	9.0	0.7	1.2	17	s	0.4	17	15	17	10	0.8	0.8	9.0	2.3	1.0	170	0.4	0.5	0.9	2.6	2.6	Н
10:00	1.4	0.7	1.5	1.2	1.3	0.7	2.3	4.7	0.8	9.0	1.7	0.8	0.8	1.5	1.1	1.0	S	1.1	1.4	1.2	0.8	1.8	1.1	0.9	3.9	1.2	1.2	0.5	0.7	1.0	1.9	4.7	Н
9:00	1.8	8.0	1.4	1.0	1.2	0.9	1.4	5.8	1.1	0.8	2.5	2.2	0.9	1.6	1.2	0.7	9.0	s	2.2	2.7	2.5	2.5	1.0	1.1	3.2	1.7	1.5	0.4	9.0	1.2	2.1	5.8	7
00:8 00:6	2.3	1.6	1.5	1.3	1.0	0.8	0.8	3.8	3.0	1.0	1.3	2.4	11	1.9	1.4	0.5	0.5	1.2	s	3.9	4.6	3.5	0.9	1.3	4.4	2.1	1.6	0.5	1.1	1.4	1.9	4.6	7
7:00	3.4	4.2	2.8	1.4	1.7	1.4	9.0	3,9	2.3	1.0	2.0	3.9	0.7	2.2	2.6	9.0	0.5	1.9	5.4	s	3.1	3.4	1.1	1.5	4.6	3.0	1.7	0.7	2.4	1.7	1.9	5.4	7
6:00	4.9	6.9	5.7	2.7	1.6	1.2	1.6	9.5	2.2	3.7	2.3	5.1	2.3	5.3	4.2	0.4	0.5	4.6	7.3	7.2	s	6.3	1.5	1.3	5.0	6.7	6.3	0.5	3.3	2.1	1.8	5.6	4
5:00	5.5	8.0	4.4	8.2	1.9	6.0	4.0	13.1	3.3	10.1	5.9	8.4	8.4	10.9	15.4	0.5	1.0	2.8	4.8	6.0	10.8	s	3.1	2.3	4.3	4.0	4.1	0.4	4.5	1.6	1.7	15.4	v
4:00	6.1	5.0	3.3	7.1	1.4	6.0	2.4	7.5	3.9	10.3	2.5	2.3	5.6	7.3	8.9	0.8	1.5	2.4	4.7	6.2	6.8	3.2	s	2.6	3.3	4.6	2.4	0.4	4.4	9.5	1.7	10.3	4
3:00	S	4,9	2.3	4.2	1.2	0.7	9.0	4.7	3.3	8.7	1.7	2.3	3.3	8.6	6.7	3.3	2.3	2.5	3.3	5.3	7.1	4.0	3.5	s	3.4	5.6	1.8	0.4	2.9	1.1	1.5	8.7	'n
2:00	3.0	s	2.4	4.1	0.9	9.0	0.6	3.6	2.4	4.4	2.0	1.9	2.0	5.4	4.9	3.6	2.5	1.8	2.7	3.8	6.3	3.5	4.2	3.1	S	5.7	3.0	0.5	3.4	1.6	1.5	6.3	'n
1:00	2.4						0.7										1.7				7.0			3.1	•		3.5		2.1	1.7		7.0	
0:00	19	2.7	3.9	S	٦; اد	 5.	ដ	4.2	2.1	29	; ;;;	2.8	17	2.9	3.9	3.5	11	2.9	3.1	3.4	6.8	4.4	4.2	3.4	3.7	6.5	S	6.0	3.1	17	디	6.8	n
HOUNTSTART 0:00 1:00 2:00 3:00 4:00 5:00 6:00 HOUNTEND 1:00 2:00 3:00 4:00 5:00 6:00 7:00	DAY.	2	3	4	2	9	大学は	œ	o	10	身	12	13	14	15	16	17	18	13	20	27	22	23		25	.26	Z	28	29	90	31	HOURLY MAX	HOURLY AVG

#### STATUS FLAG CODES

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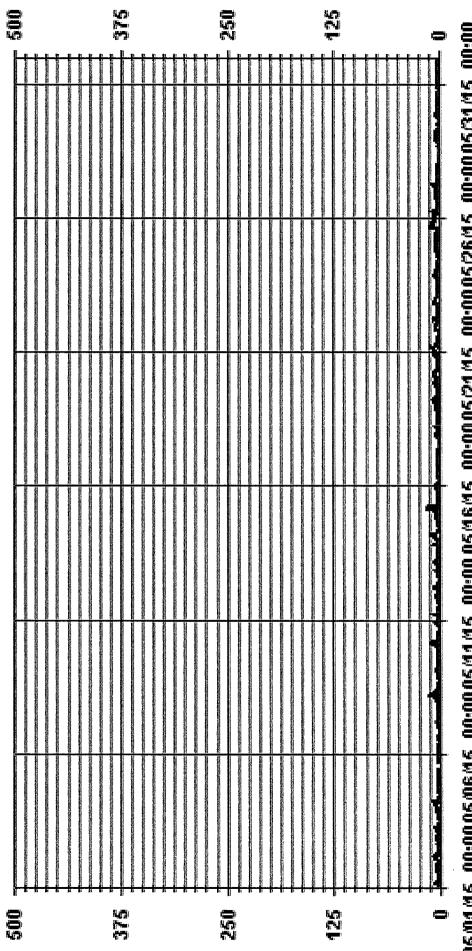


### OBJECTIVE LIMIT:

### ALBERTA ENVIRONMENT: 1-HR 1597 PPB

NUMBER OF LIHR EXCEPTIONCES:	Š		0					
NUMBER OF NON-ZERO READINGS:	IGS:		705					•
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		15.4	PPB PPB	@ HOUR(S)	Ŋ	ON DAY(S) ON DAY(S)	15	
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	33	H HS		OPERATIONAL TIME: AMD OPERATION UPTIME:	AE: UPTIME:	COORDANA AND COORD	744 100.0	HRS %
STANDARD DEVIATION:	1.99			MONTHLY AVERAGE:	ij		2.3 PPB	PPB

of Hour Averages



05:01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

KOZ K



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01- C

# NITROGEN DIOXIDE MAX instantaneous maximum in ppb

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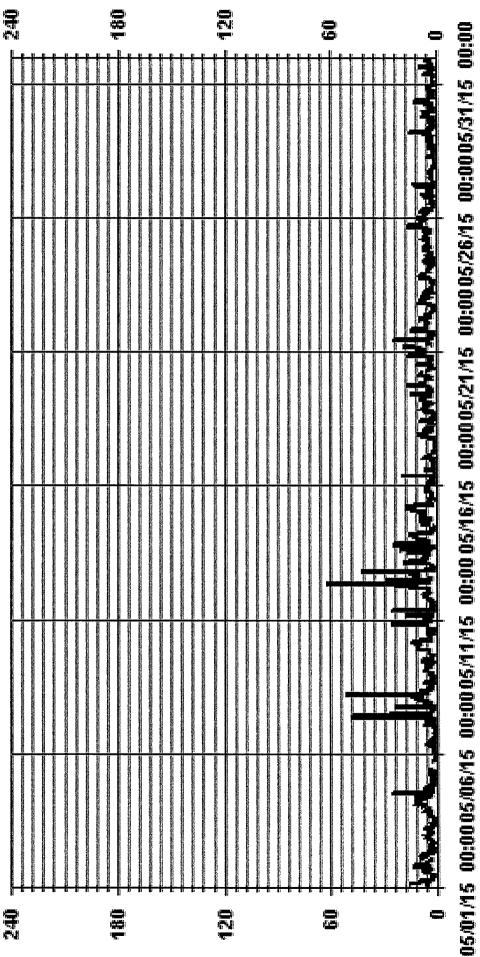
HOURSTARE	0.00	1.00	2.00	3.00 4	00		6:00	7:00 8	8:00	9.00 10.00	00 11-(	10. 12.0	00 13:00	0 14:00	7 15:00	16.00	17.00	18.00	19.00	20.00	21:00	22.00	23.00	DAILY	24-HOUR	
138	1:00	2:00	3:00	1:00 2:00 3:00 4:00 5:00 6:00	9 00:				3.77		11:00 12:00	30 13:(	30 14:00	0 15.00	0 16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	0:00	MAX.	AVG.	RDGS.
DAY.	6.0		6.0	S 14	14.4 9		11.0		2.5 2	4 2.						6.0	4.0	4.5	4.5	13.4	7.4	6.9	4.0	14.4	5.9	24
. 2	0.9		s			10.1					3.1 1.1	1 1.6	5 2.0	3.0		2.0	2.5	2.5	3.6	5.6	4.1	4.6	6.5	10.1	4.6	24
en.	5.1			3.5 5	5.4 6		7 6.9									2.4	4.0	4.0	5.4	2.4	6.4	5.5	4.5	6.9	3.6	54
4	s	8.1							10.6							3.6	5.6	8.1	5.6	5.6	1.6	2.0	s	25.5	7.7	54
'n	3.1					3.1										v	U	5.6	1.5	1.5	1.0	s	1.0	4.0	2.2	54
9	0.5																1.0	1.0	2.0	1.0	S	1.0	1.5	6.5	1.9	24
7	2.0																2.0	1.5	22.5	s	7.0	2.0	4.5	48.5	8.5	54
00	7.0																1.0	1.5	s	3.4	5.9	4	1.9	51.5	8.0	54
6	3.4																1.4	s	4.5	4.0	4.0	12.0	9.0	12.0	4.8	54
10	10.5																S	5.0	5.0	7.0	26.0	9.5	3.0	26.0	7.3	54
11	3.0																3.5	5.0	4.5	2.0	6.5	6.0	7.0	26.0	5.3	54
12	6.0								_								13.5	16.0	13.0	43.0	8.0	1.5	1.5	62.0	13.4	54
13	2.0																3.5	1.5	3.0	24.5	8.0	6.0	3.0	24.5	7.8	54
774	5.5																3.5	10.0	2.5	0.9	6.5	9.5	5.5	15.5	7.0	54
13	9.5																2.1	2.6	3.1	4.5	7.0	5.5	4.6	18.0	6.8	24
16	4.6	5.6	5.1			1.1	1.0		2.0 4	4.0 18	18.5 S	1.0	0 1.0	0.1.0	6.5	1.0	2.0	1.0	2.0	1.0	1.0	1.5	2.5	18.5	3.1	24
70	3.5																1.0	1.5	1.6	4.5	9.0	6.0	10.5	10.5	3.0	24
18	7.0																1.0	5.0	6.0	6.0	8.0	6.5	4.5	9.5	4.3	24
13	7.5																3.6	8.6	16.6	11.1	7.6	7.1	9.9	16.6	6.5	24
- 20	4.6																4.9	1.9	1.9	5.4	16.4	7.4	8.4	16.4	5,9	24
77	7.9															1.6	1.1	9.0	4.1	14.5	8.5	6.0	5.6	24.5	7.4	24
22	6.5	0.9							5.0 5								2.6	2.1	4.6	11.1	8.1	6.5	9.6	11.1	5.0	24
23	6.1									2.6 2.					2.6		3.1	3.6	10.1	6.1	9.1	8.6	6.1	10.1	4.5	54
24	4.6		4.6											0 2.0			2.5	3.5	9.0	2.0	6.4	8.0	4.5	8.0	4.1	54
25	5.0		s	4.5 5													16.0	9.5	9.0	10.0	9.5	7.5	6.5	17.0	7.2	54
26	5.5	s	7.0	7.0 5													3.1	5.6	6.6	7.1	7.6	3.6	3.1	9.5	4.7	54
22	s		3.9	2.9 5										0 2.0			2.5	4.0	2.5	2.5	2.5	2.0	s	12.0	3.7	54
28	1.7		0.7	0.6													3.1	2.1	4.1	4.6	3.1	s	5.0	6.2	2.2	54
29	5.0		5.5	4.5	5.0 1												1.0	2.5	8.5	4.1	S	5.0	6.0	15.5	4.5	54
9	2.5	3.5	5.0	2.5 3	3.5									0 1.5			1.5	1.0	4.0	S	5.4	3,4	1.9	12.5	3.7	54
	1.5	1.5	1.5						2.0 8			3.0			2.0	9.5	2.0	3.0	S	4.0	5.5	5.5	4.0	9.5	3.3	24
HOURLY MAX	10.5		11.5	14.0 15	19.0		51.5 1			62.0 48	48.5 34.		.0 25.5	5 8.6			16.0	16.0	22.5	43.0	26.0	12.0	10.5			
HOURLY AVG	5.1	4.8	5.2														3.4	3.7	5.8	7.6	7.0	5.4	4.9			

#### STATUS FLAG CODES

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NUMBER OF NON-ZERO READINGS:	35:		704							
MAXIMUM INSTANTANEOUS VALUE:	:ne:		62	PPB	@ HOUR(S)	UR(S)	б	ON DAY(S)		13
							VAR-V,	VAR-VARIOUS		
IZS CALIBRATION TIME:	33	HRS		OPERATIONAL TIME:	ONAL TI	ME			744	HRS
MONTHLY CALIBRATION TIME:	7	HRS								
STANDARD DEVIATION:	5.65									

Of Hour Averages



HOZMAX

 $\label{eq:loss_loss} \mbox{LICA} \mbox{NO2}\_\mbox{/ WD Joint Frequency Distribution (Percent)}$ 

May 2015

Distribution By % Of Samples

Logger Id : 01 Site Name : LICA Parameter : NO2 Units : PPB

Wind Parameter : WD Instrument Height : 10 Meters

Direction

Freq 00. 00. 00. 1.98 100.00 NNM 00. 00. 00. 1.98 3.54 00. 3.54 K 00. 00. 4.25 WNW 00. 4.25 00. 00. 3.82 3.82 00. 00. 00. 4.68 4.68 00. 00. WSW 00. 3.26 3.26 SW 00. 00. 00. 4.82 00. 00. 4.82 SSW 00. 3.82 3.82 00. 00. 00. Ø 7.65 7.65 SSE 00. 00. 00. SE 15.17 % 00. 00. 6.66 15.17 99.9 ESE 00. 00. 00. 7.65 7.65 00. 00. 00. ы 8.36 8.36 ENE 00. 00. 00. 14.04 00. 벌 00. 00. 7.23 14.04 7.23 NA EAS 00. 00. 00. 2.97 2.97 00. % 00. z Totals Limit 50.0 < 110.0 >= 210.0 < 210.0

Calm : .00 %

Total # Operational Hours : 705

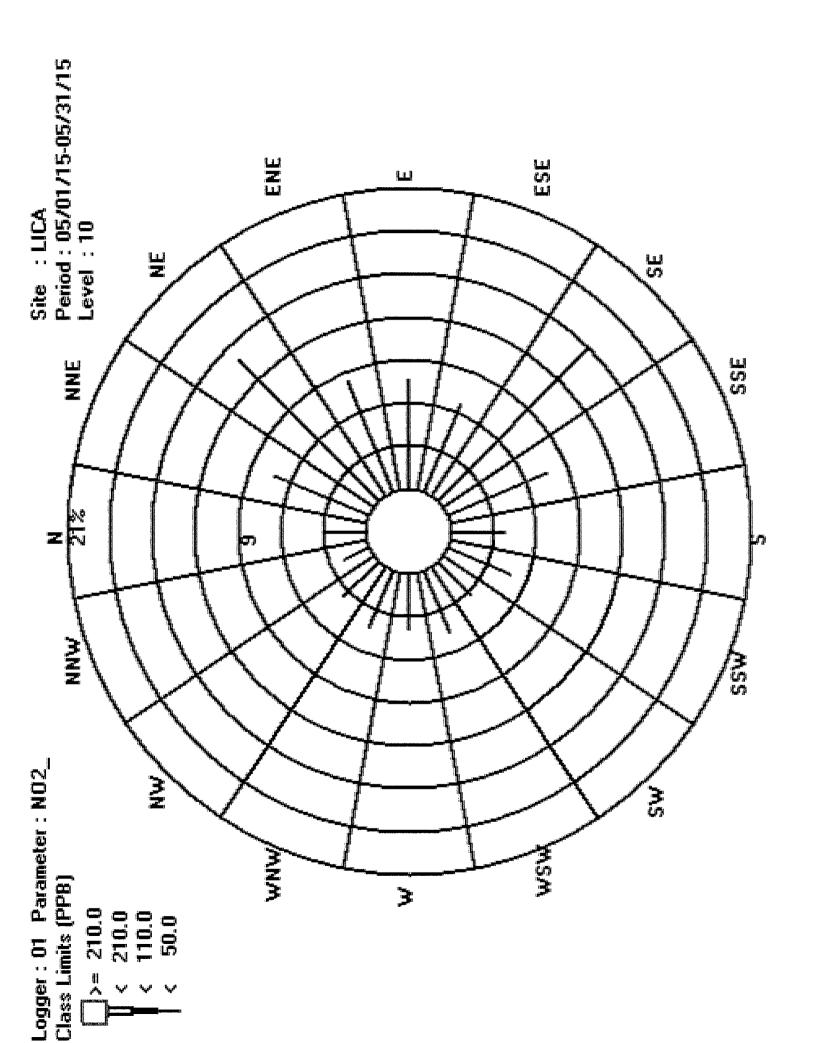
Distribution By Samples

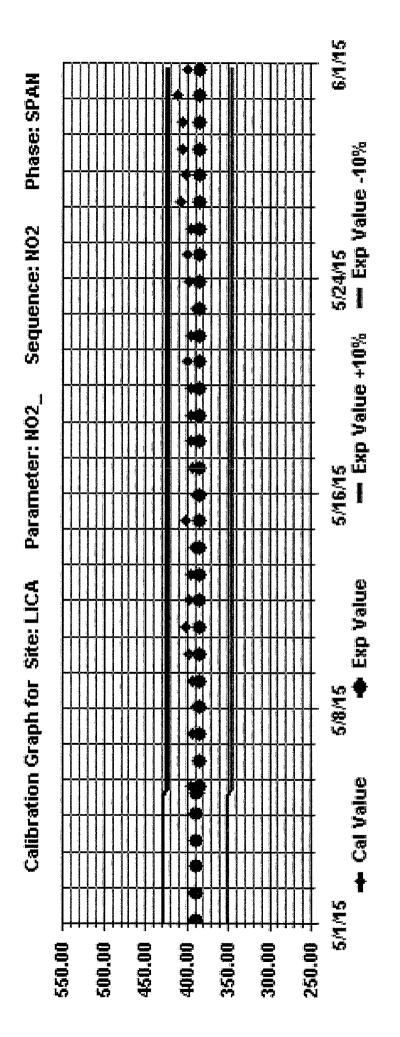
Direction

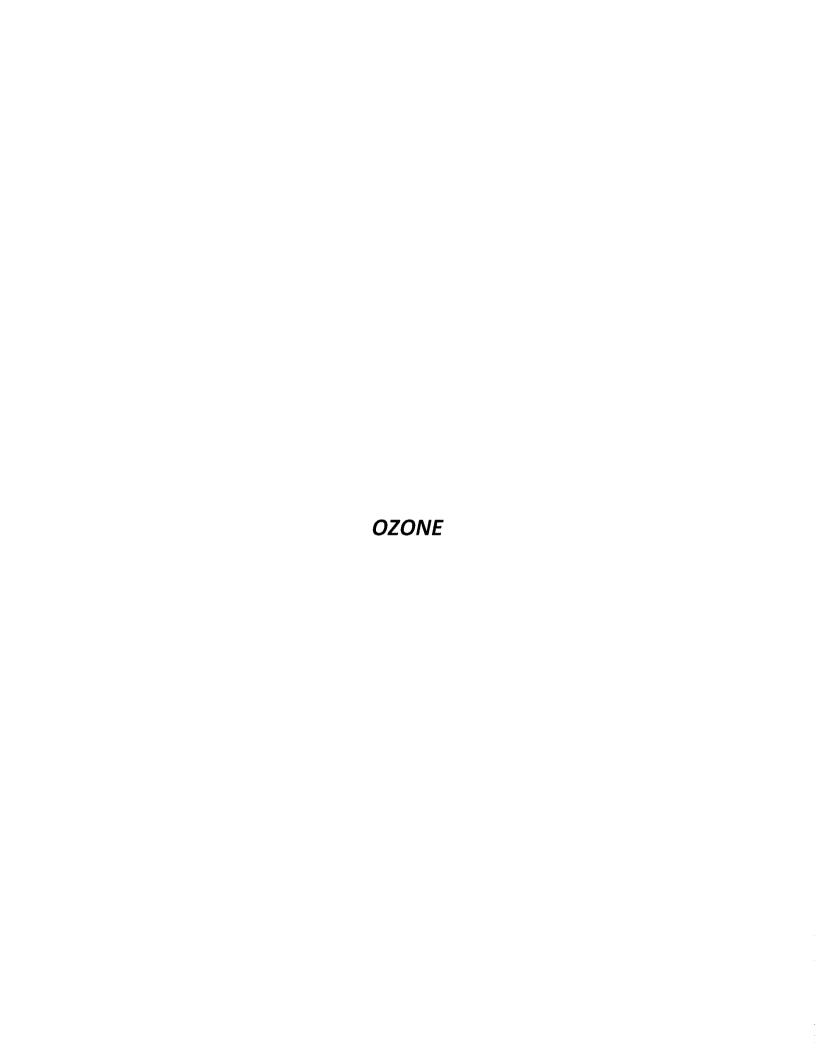
Freq	705				
MNN	14				14
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WNW	30				30
注	27				27
WSW	33				33
SW	23				23
SSW	34				34
Ø	27				27
SSE	54				54
SE	107				107
ESE	47				47
ы	54				54
ENE	59				59
Ħ	66				66
NNE	51				51
×	21				21
Limit	50.0	110.0	210.0	210.0	Totals

v v v Å

Calm : .00 %







Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01- C

OZONE (03) hourly averages in ppb

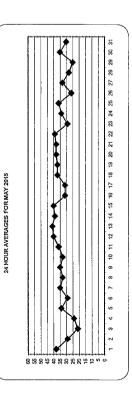
MST

Maxxam A Bureau Veritas Group Company

RDGS.	24	24	24	74	74	24	24	24	54	54	54	24	24	24	24	54	54	54	54	54	54	24	24	24	24	24	74	54	24	54	24		
24-HOUR AVG.	37.5	29.1	21.3	24.3	34.3	28.9	35.3	33.2	34.9	33.4	36.3	40.2	414	39.0	40.1	30.6	31.0	36.8	37.3	37.9	38.4	39.0	28.7	33.5	35.8	26.4	32.7	27.9	24.8	35.3	29.6		
DAILY MAX.	51	45	31	40	8	33	46	46	43	46	51	49	25	55	8	33	46	23	26	28	9	99	40	23	92	42	49	32	41	47	40		
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18:00 19:00	47	8	53	36	36	78	42	46	s	45	51	48	25	22	23	31	46	25	24	26	27	9	37	45	32	41	46	31	41	47	37	9	43.9
17:00	48	37	8	99	37	53	43	46	43	s	20	49	51	25	54	32	46	25	26	22	23	9	37	20	43	42	47	31	33	45	40	9	44.8
16:00	48	33	31	33	37	53	4	45	43	46	s	49	25	51	22	33	4	23	26	28	09	09	36	52	22	42	48	31	88	45	40	99	45.4
15:00	48	32	53	88	33	53	46	45	42	46	47	s	52	20	29	30	41	23	22	27	23	29	36	23	61	45	48	31	37	4	39	61	45.0
15:00	49	4	78	40	38	8	46	45	41	42	46	49	s	52	8	31	33	23	24	28	28	57	37	20	92	42	45	31	36	43	39	92	44.8
14:00	49	33	78	40	37	30	45	41	33	45	47	48	20	s.	22	33	37	23	25	26	28	22	40	48	63	42	4	31	36	43	33	63	44.2
13:00	20	44	78	56	37	31	4	4	38	4	46	47	20	51	S	88	32	20	23	22	57	26	8	45	63	40	43	32	32	42	54	63	42.9
12.00	51	45	27	23	37	U	42	38	36	4	45	47	20	20	51	s	32	48	21	54	26	25	37	4	61	32	4	32	31	41	78	61	47.3
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#### STATUS FLAG CODES

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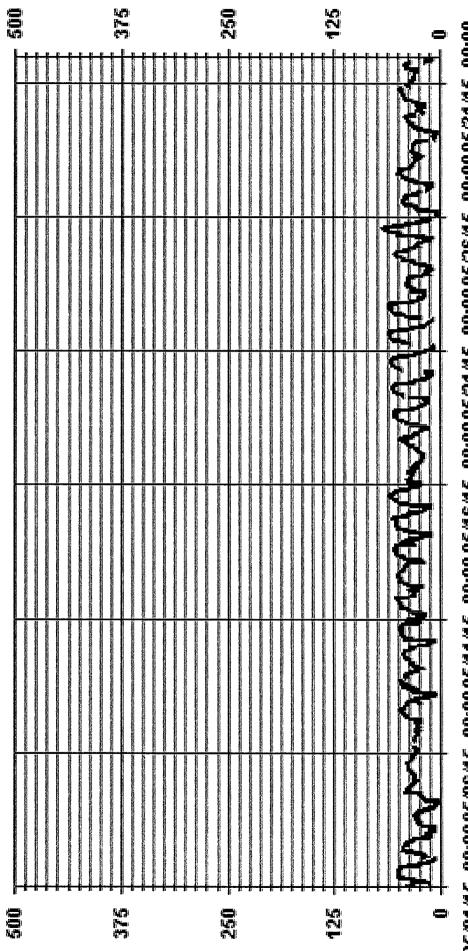


### OBJECTIVE LIMIT:

### ALBERTA ENVIRONMENT: 1.HR 82 82 RPB

NUMBER OF 1-HR-EXCEEDENCES (77)	38:		0					
NUMBER OF NON-ZERO READINGS:	VGS:		706					
MAXIMUM 1-HR AVERAGE:		65	PPB	@ HOUR(S)	14	ON DAY(S)	25	
MAXIMUM 24-HR AVERAGE:		41.4	PPB			ON DAY(S) VAR-VARIOUS	13	
IZS CALIBRATION TIME:	33	HRS		OPERATIONAL TIME:	ΑË		744	HRS
MONTHLY CALIBRATION TIME:	Ŋ	HRS		AMD OPERATION UPTIME:	UPTIME:		100.0	%
STANDARD DEVIATION:	13.19			MONTHLY AVERAGE:	GE:		33	PPB

of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01-C

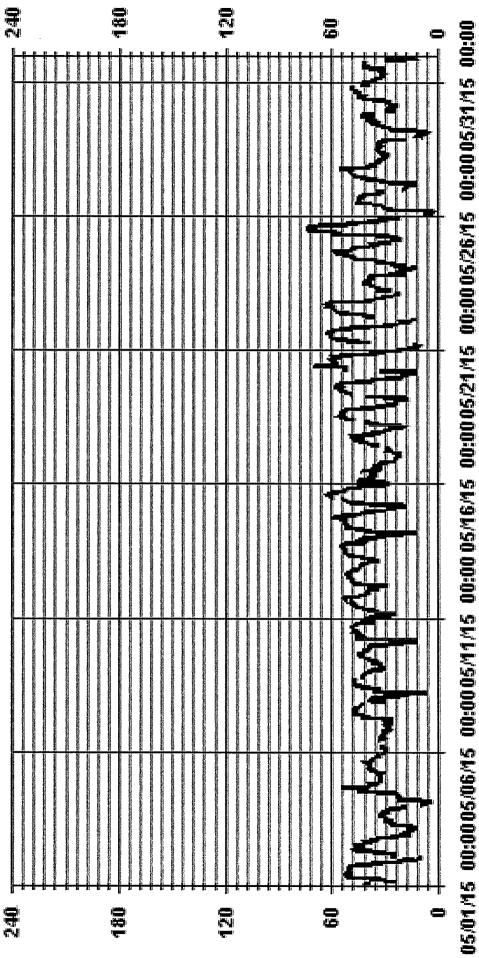
## OZONE MAX instantaneous maximum in ppb

	24-HOUR	AVG.	42.0	32.6	24.5	27.5	35.5	30.2	38.6	37.1	37.6	38.0	41.3	44.2	45.9	43.6	44.7	33.6	33.9	40.7	41.3	42.8	424	43.4	32.0	38.5	44.9	30.6	36.3	30.3	27.8	37.6	32.5		
	DAILY	MAX.	52	47	33	24	41	33	47	47	4	49	23	51	73	28	62	45	48	26	27	70	62	63	45	28	ድ	45	22	32	45	48	41		
	23:00	0:00	27	19	18	S	32	53	33	41	38	41	93	43	4	42	37	23	33	8	31	31	56	90	22	37	23	31	S	10	8	45	15	44	30.9
	22:00	23:00	42	15	77	33	s	78	37	41	38	36	41	4	45	4	4	54	37	33	36	35	32	36	21	36	77	33	32	S	54	45	14	44	32.8
	21:00	22:00	32	23	28	34	33	s	30	45	33	35	45	45	41	47	\$	25	37	36	38	33	39	38	18	33	59	32	33	18	s	33	19	47	34.5
	20:00	10.0	88	78	30	88	33	31	s	42	9	41	45	46	45	55	25	23	43	4	47	49	20	45	8	47	8	33	41	ଯ	37	s	28	22	39.4
	19:00	20:00	47	8	27	37	36	58	45	s	45	46	25	49	23	28	23	32	48	25	24	26	26	23	36	47	40	41	22	32	42	48	S	29	44.9
	18:00	19:00	20	35	31	33	37	53	4	47	s	47	23	20	72	28	72	32	47	23	26	29	29	63	88	20	46	43	20	33	45	48	41	62	46.2
	17:00	18:00	20	33	31	24	88	30	45	47	4	s	25	21	23	55	22	32	84	24	22	28	61	63	38	23	25	4	49	33	40	47	41	63	47.3
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NUMBER OF NON-ZERO READINGS:			902						
MAXIMUM INSTANTANEOUS VALUE:			73	PPB	@ HOUR(S)	13, 14	ON DAY(S)		25, 25
						VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME:  MONTHLY CALIBRATION TIME:  STANDARD DEVIATION:  12	33   5   12.67	HRS		OPERATIC	OPERATIONAL TIME:			744	HRS



OSMAX LICA

## LICA O3\_ / WD Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 01
Site Name : LICA
Parameter : 03
Units : PPB

M WNW Wind Parameter : WD Instrument Height : 10 Meters 3 WSW SΜ SSW Ø SSE Direction S ESE ENE NE z Limit 50

Fred 12.03 8. 8. 1.98 87.96 00. 00. 00. 1.98 2.69 00. 00. 3.54 .84 3.54 4.24 .70 00. 00. 3.82 3.54 .28 00. 00. 4.10 00. 4.67 . 56 00. 3.25 1.98 1.27 00. 00. 2.97 1.84 00. 00. 4.81 3.82 3.25 .56 00. % 60.9 1.55 00. 7.64 % 1.69 15.15 6.37 13.45 00. 00. 6.65 .28 00. 00. 8.21 00-00. 00. 8.21 7.93 00. .70 00. 8.64 6.37 13.03 00. 00. 14.02 66. % 6.51 .14 00. 2.40 00. 2.97 .56 00.

Calm : .00 %

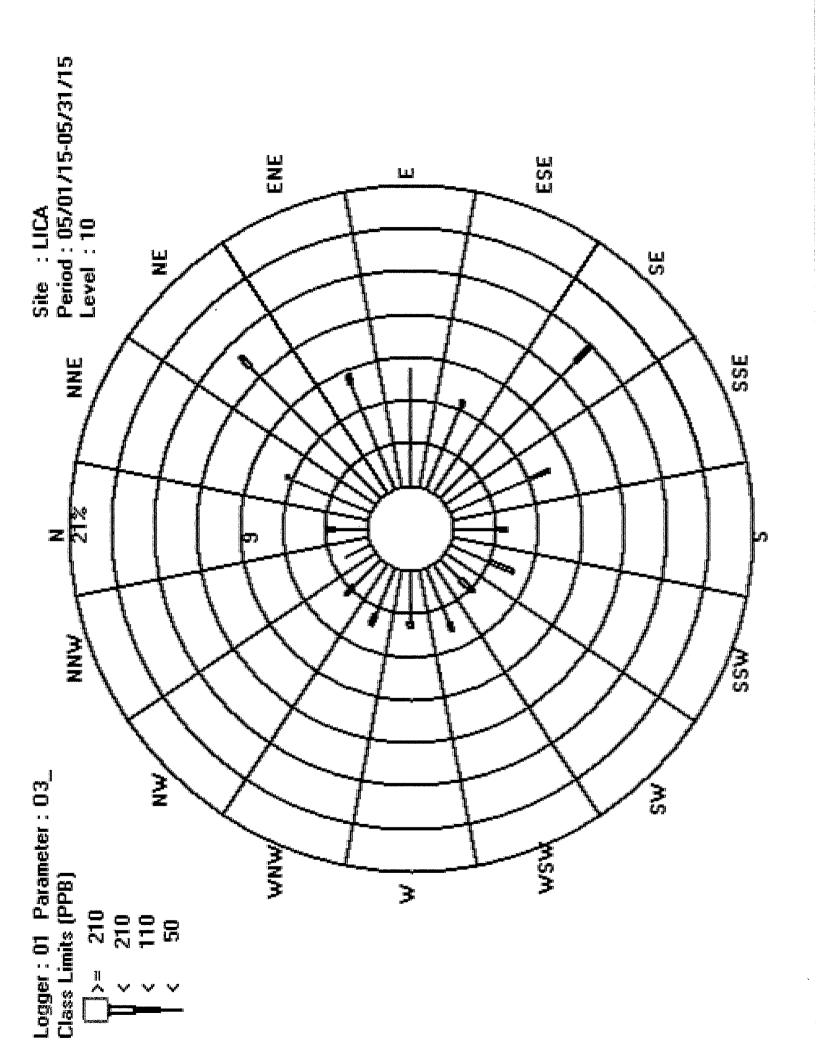
Totals

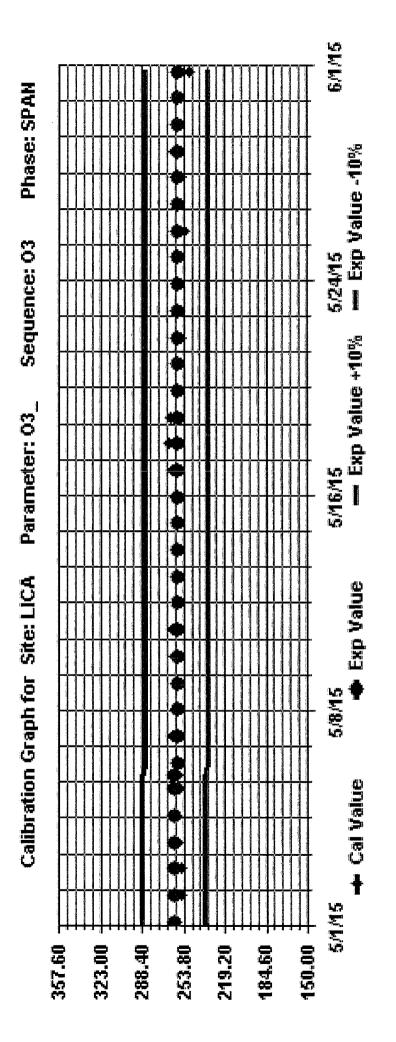
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110 210 Total # Operational Hours: 706

Distribution By Samples

Calm : .00 %









Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01- C

# PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

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RDGS.	24	22	22	22	24	24	24	24	24	24	24	24	24	24	24	24	23	23	24	24	24	23	24	24	24	22	24	24	24	24	24	
AVG.	3.8	5.1	3.3	4.2	5.5	4.3	4.7	5.9	9.3	7.2	7.8	10.4	10.3	14.5	11.1	5.5	4.7	7.1	7.2	12.0	6'6	12.6	13.6	18.1	78.8	67.4	13.6	5.5	5.6	6.2	7.9	
MAX.	16	13	13	12	12	15	14	11	21	14	17	22	19	56	21	21	10	14	15	56	19	73	26	33	566	199	41	14	11	14	21	
0:00	4	Ŋ	2	Ŋ	თ	Ŋ	e	10	7	4	10	13	∞	თ	9	9	თ	0	9	56	œ	18	12	24	205	Ŋ	m	0	9	1	6	
23:00	4	×	9	2	9	0	ø	Ŋ	11	თ	13	14	∞	10	6	9	0	×	m	23	11	20	14	25	205	4	7	2	œ	13	7	I
22:00	∞	Ŋ	×	2	7	1	ø	11	11	14	σ	œ	14	24	16	7	œ	თ	m	17	15	თ	19	21	183	0	∞	2	4	σ	0	
21:00	0	0	cn	œ	Ø	e	ø	თ	13	7	9	21	19	56	7	œ	œ	13	14	19	13	00	10	25	188	2	18	9	9	2	0	l
20:00	4	П	0	9	m	4	7	œ	15	14	17	13	12	24	9	S	Ŋ	10	12	13	0	ĸ	თ	13	183	×	12	Ŋ	1	Ŋ	Ŋ	
19:00		0	0	7	7	0	m	m	17	თ	9	Ŋ	17	13	14	0	7	m	10	œ	0	0	5	14	197	×	11	ø	7	9	4	
18.00	Į.	7	0	Ø	7	4	5	7	21	13	0	m	13	S	21	0	×	m	7	₩	Н	4	Ŋ	31	997	0	19	₩	œ	0	0	
17:00		7	0	0	0	7	0	4	16	4	12	m	0	9	13	0	7	9	Ŋ	7	U	9	17	27	22	17	7	5	П	7	15	İ
16:00	7	ø	0	×	0	e	თ	4	10	œ	∞	13	10	11	11	11	7	12	m	7	11	7	7	32	17	15	27	თ	∞	Ŋ	9	
0 15:00	16	თ	0	ιV	Ŋ	4	7	9	7	7	9	13	∞	თ	16	2	2	Н	0	17	7	Ŋ	0	16	88	16	24	0	∞	0	œ	
0 14:00			0																													l
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8:00 - 9:00	ļ	m	3 12																													ı
7:00 8:	4	m	5	0	4	4 7		10	8 13																				4 7			
6:00 7:	ı,	00	00	1	11		2	00	14																							
5:00 6	1	×																											7			
4:00 5	0	4	m	m	S	15	m	10							18												4	m	7	9	∞	
3:00	₽	7	۲-1	0	1	7	9	Ŋ	9																		9	4	9	5	13	
2:00	0	7	Ŋ	2	9	7	0	7	Ŋ	თ	9	Ŋ	თ	13	Ŋ	21	4	7	9	1	12	14	26	13	77	192	7	7	Ŋ	თ	თ	
1:00	0	9	0	ത	0	თ	4	S	ø	10	5	15	œ	16	œ	18	4	10	m	12	19	10	19	12	24	199	11	Ŋ	0	თ	4	
HOUREND	DAY.	2.50	8	ą.	S	.9	7	80	6	·0F	14	12	13	14	15	16	17	118	19.	20	.21	22	23	24	25	. 26	27	28		30.	31	Company of the Compan

COUNTRIANCE

A. RECOVERY.

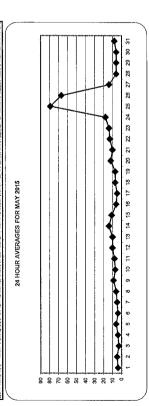
A. RECOVERY.

S. DAILY ZERO/SPANZHECK

P. POWER PAIR TE.

O. OPERATIONER SOR

COLECTION SERVIN. STATUS FLAG CODES



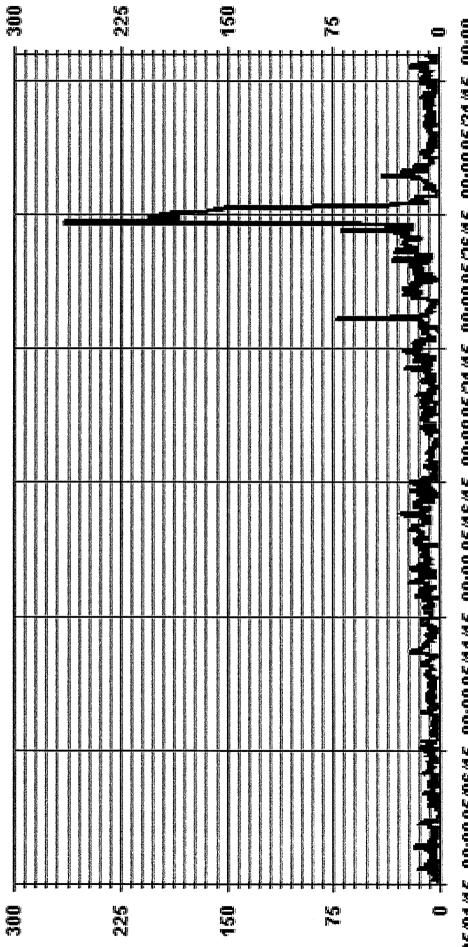
### OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 24HR 30 UB/m3

#### MONTHLY SUMMARY

NUMBER OF 24 HR EXCEEDENCES			2					
NUMBER OF NON-ZERO READINGS:	<i>ii</i> i		699					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		266 78.8	266 ug/m3 78.8 ug/m3	266 ug/m3 @ HOUR(5) 78.8 ug/m3	17	ON DAY(S) ON DAY(S)	25	
MONTHLY CALIBRATION TIME:	7	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	: TIME:		733 98.5	% HRS
STANDARD DEVIATION:	26.10			MONTHLY AVERAGE:			12.3	12.3 ug/m3

of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

LICA PM2 / WD Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WD Instrument Height : 10 Meters

Direction

Freq	96.30	1.36	.27	.13	1.77	.13		
NNW	2.05	00.	00.	00.	00.	00.	2.05	
WN	3.28	00.	00.	00.	00.	00.	3.28	
WNW	3.96	00.	00.	00.	.13	00.	4.10	
×	3.28	00.	00.	00.	.54	00.	3.83	
WSW	5.06	.13	00.	00.	00.	00.	5.19	
SW	3.00	00.	00.	00.	.13	00.	3.14	
SSW	4.24	00.	00.	00.	.41	00.	4.65	
w	3.83	00.	00.	00.	.13	00.	3.96	
SSE	7.52	.13	.13	00.	00.	00.	7.79	
SS	14.50	.13	00.	00.	.13	00.	14.77	
ESE	6.56	00.	00.	00.	.13	00.	6.70	
ы	8.07	.13	00.	00.	00.	00.	8.20	
ENE	8.07	.27	00.	00.	00.	00.	8.34	
NE E	13.40	.27	00.	00.	.13	00.	13.81	
NNE	6.70	.13	00.	.13	00.	.13	7.11	
z	2.73	.13	.13	00.	00.	00.	3.00	
Limit	30	09	80	120	240	240	Totals	
	V	V	V	V	v	ļ.		

Calm : .00 %

Total # Operational Hours : 731

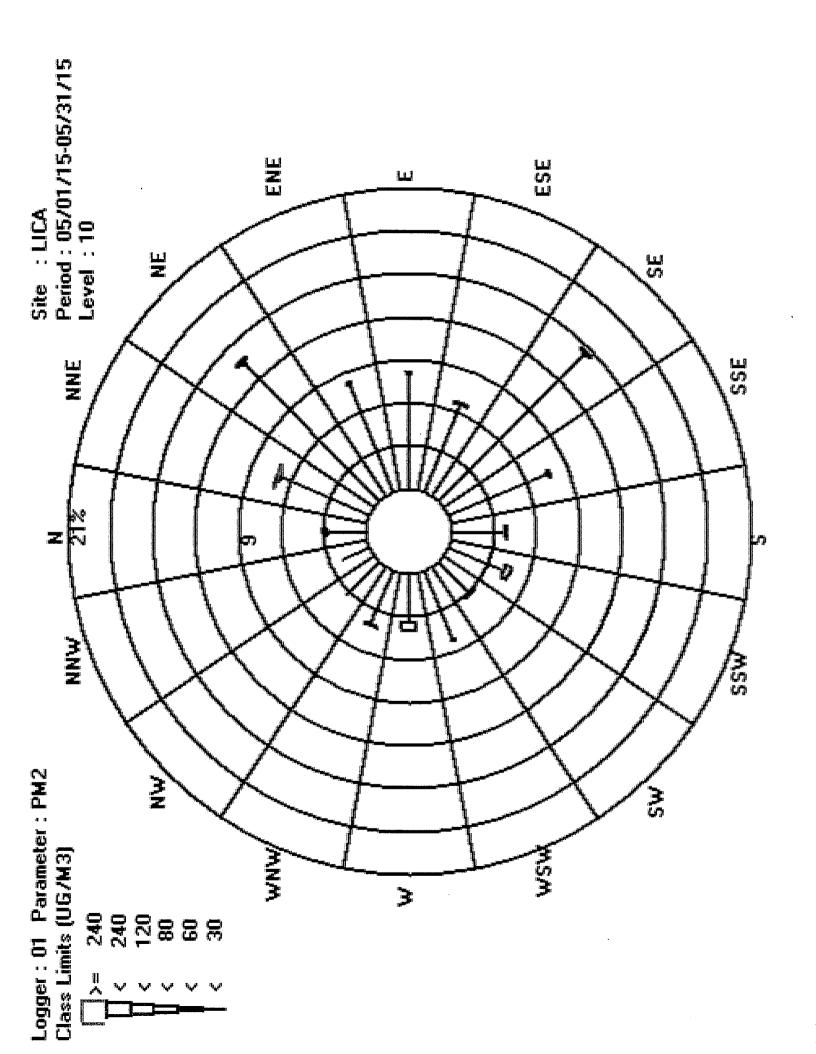
### Distribution By Samples

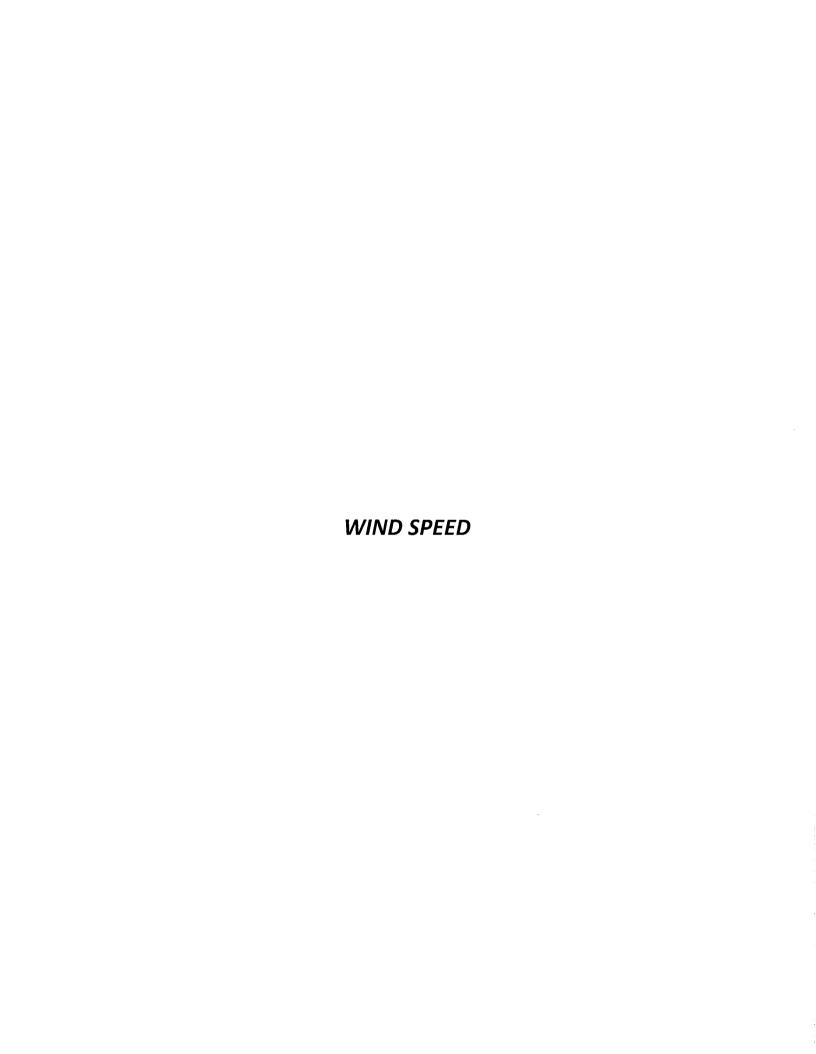
Direction

Freq	704	10	8	н	13	1	
NNW	15						15
NW	24						24
WNW	59				н		30
×	24				4		28
WSW	37	н					38
SW	22				н		23
SSW	31				m		34
w	28				н		29
SSE	55	п	п				57
SE	106	н			н		108
ESE	48				н		49
M	е О	rl					09
ENE	50	2					61
R	86	2			н		101
NNE	49	н		гI		ı	52
z	20	н	н				22
Limit	30	09	80	120	240	240	Totals
	٧	٧	٧	٧	٧	X	

Calm : .00 %

Total # Operational Hours : 731





JOB # 2833-2015-05-01- C

24-HOUR



## WIND SPEED (WS) hourly averages in km/hr

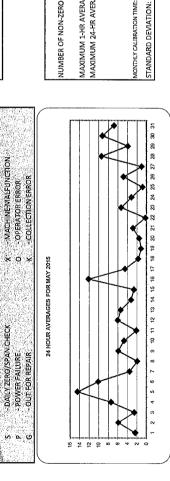
MST																								
00:00	HOUR START 0:00 1:00 2:00	2:00	3.00	4:00	5:00	009	7.00	8:00	9:00	10:00	11.00	麗沙	27525	14:00	15.00	1333	100	<b>原源</b>	19:00	150	21:00	22:00:_2	23.00	DAILY
5.4	4.4	2, F	500	20	0.00	3.	6.7	7 6	90 8 80 8	9	<b>6</b> 2	7.0		2.5	9	Ŋ.			12	\$	(A)	35	, 0	MAX
0.7	0.7	2.6	4.8	3.3	2.4	3.6	6.4	8.2	10.9	11.8	12.3	13.2	7.4	6.6	3 9	17.6	13.6	5.0	1 1	6.1	7.0 7.0	1 2	4.5	17.6
4.9	3.6	3.0	2.5	3.0	2.2	3.1	8.3	5.4	4.1	1.5	8.5	10.4	8.0						0.7	6.9	0.5		9	10.4
1.2	1.3	0.7	9.0	0.7	1.3	6.5	6.6	8.5	7.9	8.0	11.0	12.8	12.4						10.9	12.1	12.6		8.3	13.2
5.3	12.9	11.0	13.8	15.8	12.8	16.9	18.1	20.1	20.0	20.2	20.4	20.7	18.3						13.4	14.9	14.0		14.5	20.7
13.6	13.3	12.6	11.8	11.3	11.4	10.3	12.1	13.3	12.4	11.9	11.8	11.2	11.3						6.4	8.9	6.7		8.7	13.6
6.7	7.1	6.0	5.3	5.0	5.4	5.7	6.9	6.2	9.9	8.0	7.4	6.8	5.8						3.7	8.0	1.4	4.1	4.4	8.0
1.9	9.0	0.7	0.3	0.3	0.3	1.3	2.2	3.9	2.9	9.9	5.6	6.0	12.8						4.9	4.0	4.6		5.2	12.8
3.7	2.8	1.8	5.8	1.0	2.4	4.0	6.3	9.4	14.2	15.4	17.2	15.8	17.1						6.0	4.9	4.8		3.5	17.2
2.8	1.5	0.4	2.0	6.0	1.1	5.2	6.3	8.8	9.3	9.1	10.2	10.4	9.6						3.1	1.0	1.3		9.6	10.4
4.9	2.4	1.1	0.2	0.8	3.8	4.0	4.5	2.5	5.1	2.3	2.5	4.6	8.9						3.3	1.5	1.7		2.0	12.1
4.0	4.2	1.1	1.6	1.3	9.0	1.8	1.6	4.5	11.2	12.0	11.5	8.5	8.6						7.8	7.3	8.2		9.1	12.0
7.7	5.8	4.3	113	1.0	2.8	8.0	8.5	10.7	9.1	6.6	6.6	8.5	7.8						1.9	0.7	1.8		L.5	10.7
1.3	0.7	1.1	1.3	1:1	0.3	1.9	3.2	4.5	5.9	3.7	7.9	6.4	8.4						5.7	1.7	3.3		3.5	8.4
6.0	0.3	0.5	9.0	1.2	1.5	4.2	4.7	6.5	6.3	12.5	8.6	8.2	6.7						4.6	2.9	8.0		7.4	12.5
1.0	9.0	1.2	5.7	10.5	15.0	16.3	11.9	12.5	14.1	14.1	18.8	19.1	19.2						15.8	12.3	9.4		3.4	19.8
5.6	4.0	5.3	5.2	6.7	8.0	11.3	7.6	6.3	8.4	7.5	8.0	5.9	4.0						4.9	6.0	1.2		1.2	11.3
1.6	1.1	6.0	1.4	0.5	1.1	1.4	6.0	4.6	1.9	3.0	2.8	6.1	4.0						5.9	6.0	6.0		1.1	6.8
0.4	0.1	0.1	0.7	0.5	9.0	0.4	2.5	4.2	4.4	5.6	6. 6.	2,8	8.2						2.8	1.1	9.0		6.0	8.2
0.7	0.5	0.8	1.0	0.3	0.2	1.0	0.8	3.9	3.3	3.2	3.2	4.1	9.9						1.7	1.2	0.4		7.0	6.6
0.4	0.8	0.4	6.0	9.0	1.2	0.5	4.2	4.2	5. 5.5	7.3	9.2	7.7	7.6						2.3	1.8	0.7		7.0	9.5
0.4	0.3	0.2	0.5	0.4	0.4	0.8	2.3	2.0	1.6	4.3	5.6	2.7	2.9						1.8	0.7	8.0		3.3	8.6
1.7	1.5	0.2	9.0	0.4	1.4	7.0	9.4	10.1	8.7	8.8	9.4	10.4	11.8						1.8	8.0	6.0		9.6	13.8
0.4	0.4	1.0	1.0	1.8	1.2	2.2	3.6	3.7	3.9	9.9	8.3	7.6	4.8						1.8	8.0	0.3		7.7	8.3
11	1.1	6.0	1.3	1.5	9.0	1.3	3.3	5.5	4.9	5.5	6.8	8.4	8.6						8.0	0.3			.7	13.0
2.2	0.4	0.2	0.2	0.4	6.0	2.2	8.6	11.4	10.1	8.0	7.9	9.2	11.2						3.8	1.1			7.7	12.3
9.0	1.9	1.3	6.0	9.0	0.3	4.1	5.6	7.9	8.0	7.2	5.9	5.2	5.8						5.7	16.5			9.3	16.5
10.7	15.1	13.6	13.2	12.7	15.0	16.4	13.3	14.4	14.7	12.7	13.8	12.4	12.3						6.3	0.4			5.4	16.4
0.4	0.3	6.0	0.3	9.0	0.5	2.0	3.2	2.7	3.4	5.6	10.6	10.5	9.0						4.9	1.5			3.7	10.6
6.4	5.6	2.9	1.9	3.5	9.1	10.4	10.9	11.5	11.9	13.7	12.4	13.3	13.1						9.0	3.6			4.2	14.2
12.2	9.2	10.8	9.7	8.1	10.6	15.7	9.5	4.7	5.0	7.0	9.9	0.7	13.2	14.6		Ì			1.3	1.2			3.6	15.7
13.6	15.1	13.6	13.8	15.8	15.0	16.9	18.1	20.1	20.0	20.2	20.4	20.7	19.2	19.8	19.3		15.6		15.8	16.5	14.0	14.7	4.5	
3.6	3.4	2.9	3.1	3.1	3.7	5.6	6.5	7.6	7.8	8.4	9.2	9.0	9.5	9.4					4.8	3.9			6.3	

5.1 10.2 1

LAST CALIBRATION DECLINATION:
CONTROL OF THE STATE OF THE STA

STATUS FLAG CODES

April 1, 2015 MAGNETIC DECLINATION 19 DEGREE EAST



			Σ	MONTHLY SUMMARY			
UMBER OF NON-ZERO READINGS:			744				
AAXIMUM 1-HR AVERAGE: AAXIMUM 24-HR AVERAGE:		20.7	A A	КРН @ HOUR(S) КРН	12	ON DAY(5) ON DAY(S) VAR-VARIOUS	iv iv
ONTHLY CALIBRATION TIME:	0	HR5		OPERATIONAL TIME: AMD OPERATION UPTIME:	: PTIME:		744 100.0

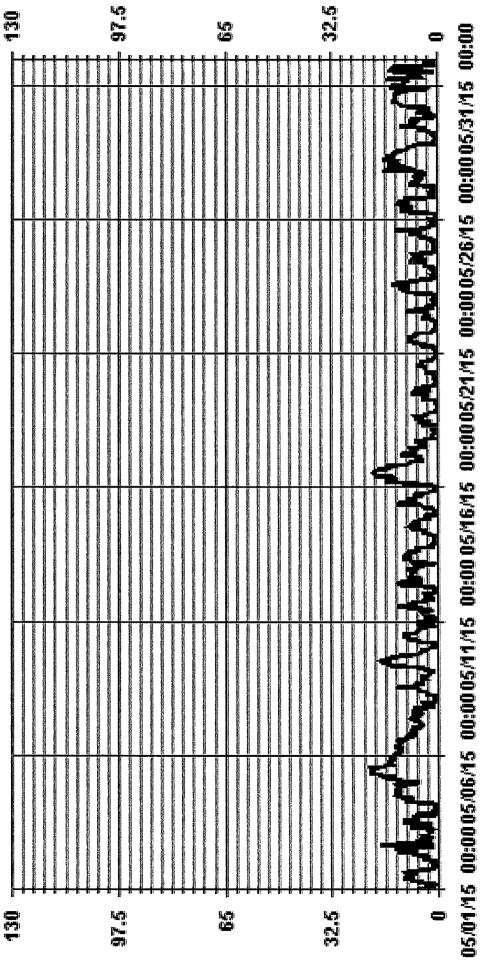
HRS KPH

6.0

MONTHLY AVERAGE:

4.71

Of Hour Averages



I.

**MSP** 



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01- C

# VECTOR WIND SPEED MAX instantaneous maximum in km/hr

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-	•
×	4
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RDGS.	24	24	24	24	24	24	24	74	24	54	74	24	24	24	54	74	54	74	74	24	24	24	24	24	74	54	54	24	74	74	24		
24-HOUR AVG.	10.2	13.1	10.4	13.6	24.5	16.8	11.0	9.3	15.2	10.7	9.6	13.0	11.9	9.7	10.4	20.0	11.0	7.9	6.9	7.8	9.7	8.1	10.2	7.9	9.4	10.4	12.1	17.8	9.2	15.9	15.1		
DAILY MAX.	23.5	29.5	18.0	22.7	34.9	24.4	18.2	28.5	27.7	19.1	18.5	22.0	21.1	23.7	20.6	29.3	17.6	18.5	15.4	18.7	22.3	16.6	21.0	17.4	27.6	20.1	26.2	28.0	17.8	27.1	26.6		
23.00	4.1	6.3	4.3	10.6	24.6	11.6	7.8	9.3	6.5	10.0	3.6	13.6	5.4	5.8	4.3	12.0	2.2	1.8	2.7	2.4	3.5	7.8	3.2	3.4	7.5	2.8	14.6	2.2	8.0	19.0	5.7	24.6	7.3
22.00	3.6	5.7	3.8	18.9	24.5	10.4	6.3	8.0	7.7	6.2	9.9	13.1	3.1	5.2	4.2	13.6	2.0	2.0	3.9	2.5	5.3	3.2	2.9	8.2	2.5	4.6	12.4	4.3	2.3	13.4	4.7	24.5	6.9
21:00	2.9	5.0	3.4	19.6	18.7	11.2	3.6	7.9	6.2	3.4	5.8	13.7	4.7	5.8	3.9	14.2	1.7	2.7	2.9	3.8	2.3	3.5	2.8	4.4	3.3	4.4	17.8	2.4	4.6	4.8	10.1	19.6	6.5
20:00	3.3	9.6	15.4	19.8	22.0	13.3	3.4	6.4	7.3	5.6	5.8	13.8	2.2	3.4	8.0	19.8	2.3	3.3	3.6	3.7	3.3	4.3	3.1	4.4	2.9	3.3	26.2	6.3	5.4	6.2	4.4	26.2	7.7
19:00	4.8	11.1	10.0	16.3	16.7	12.1	7.7	7.4	11.1	7.2	6.1	12.0	7.3	11.3	9.0	24.2	8.6	6.4	6.0	5.8	6.2	3.3	5.7	5.9	3.3	8,5	24.2	10.9	8.5	15.2	13.9	24.2	6.6
18:00	7.3	6.6	10.2	22.7	20.6	11.8	12.4	12.3	14.3	11.0	9.2	12.8	12.0	14.2	11.4	19.9	13.3	7.9	8.9	8.9	15.0	8.6	10.0	11.5	5.2	16.1	15.0	14.8	13.1	18.6	14.6	22.7	12.7
17:00	10.8	28.4	13.8	21.1	19.9	13.2	14.0	10.9	17.6	12,6	13.9	17.7	13.8	14.2	11.8	23.9	17.0	13.5	11.5	13.1	14.0	10.0	12.7	12.0	15.8	14.0	8.2	18.5	14.9	20.6	21.7	28.4	15.3
16:00	21.1	29.5	12.0	16.0	23.8	15.1	15.8	13.9	23.4	18.7	15.0	15.7	14.9	16.3	13.2	29.3	11.1	14.9	9.4	18.7	14.9	15.1	15.0	13.0	27.6	13.1	13.3	18.2	13.6	20.9	18.1	29.5	17.1
15:00	12.6	6.6	14.0	16.9	25.7	17.4	12.9	15.3	21.6	18.1	18.1	14.8	15.4	14.6	16.7	26.5	13.7	16.6	10.2	14.5	22.2	14.2	21.0	14.4	26.8	18.3	14.3	16.3	14.5	22.5	26.6		17.2
14:00	15.5	24.8	18.0	18.1	26.0	21.2	12.7	13.1	25.6	18.7	18.5	19.5	20.6	19.9	19.0	28.6	12.9	13.8	13.0	15.8	22.3	15.1	20.9	11.4	12.2	18.6	11.6	19.0	15.2	21.5	21.5	28.6	18.2
13:00	14.6	16.1	16.5	18.4	28.6	18.4	14.1	28.5	27.4	18.4	15.4	19.8	19.1	17.5	15.8	29.1	16.1	13.1	15.4	18.5	19.7	16.6	19,3	12.5	19.4	20.1	15.0	18.5	17.6	22.8	22.5		18.9
12:00	19.5	27.1	17.9	19.1	34.9	17.3	16.2	14.4	25.6	18.1	13.1	22.0	19.9	17.0	19.1	27.3	13.5	15.5	15.3	13.2	19.4	14.0	16.6	17.4	15.2	16.6	14.9	21.5	17.8	24.5	9.1	· ·	18.5
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10:00	23.5	23.6	15.5	12.2	30.6	18.2	18.2	10.7	22.3	17.2	12.0	21.4	20.9	12.0	19.9	23.6	13.9		12.4		15.0	12.4	14.0	13.6	10.8	15.0	16.1	19.9	12.6	23.2	12.9		
9:00	16.6	16.5	10.1	12.5	34.7	19.6	10.1	11.1	22.7	17.1	11.9	18.9	16.7	10.5	19.6	24.8	15.0	11.4	11.0	10.4	13.5	9.7	14.5	8.4	10.5	17.6	16.1	22.2	16.2	20.5	11.4		15.5
00:8	15.7	17.5	12.6	14.9	29.0	18.1	12.0	10.1	17.8	14.9	9.5	16.2	18.0	9.8	17.8	22.6	12.6	9.3			9.7	8.4	14.0	8.0	9.5	19.8	15.7	26.9	13.2	19.1	14.8		14.7
7:00	11.8	13.2	14.2	14.7	29.9	18.7	10.3	10.5	12.5	12.6	13.3	6.6	14.5	8.4	10.8	20.8	14.1					7.4		7.0		15.1			7.6	17.7	3 20.5	29.9	
6:00		7.2	7.6	11.1	28.0	16.0	8.6	4.0	8.1	11.2	8.8	4.7	15.5	6.5	8.9	25.8	17.6			3.3		4.1	12.3					24.6	7.5	16.4	24.8		10.4
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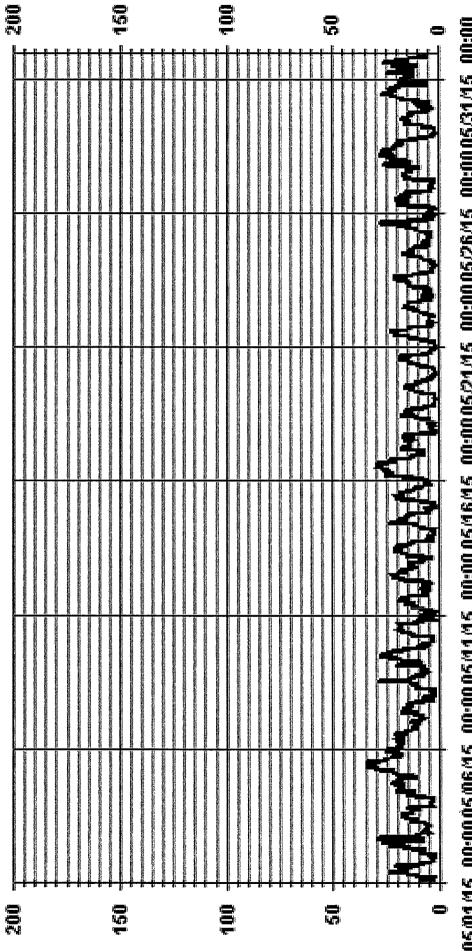
#### STATUS FLAG CODES

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#### MONTHLY SUMMARY

		3	MONTH SOMEON				
MAXIMUM INSTANTANEOUS VALUE:	34.9	KPH	34.9 KPH @ HOUR(5)	12	ON DAY(S)		īŪ
				VAR-	VAR-VARIOUS		
		OPERATI	OPERATIONAL TIME:			744 HRS	HRS

of Hour Averages



05/01/M5 00:0005/06/M5 00:0005/M1/M5 00:0005/M6/M5 00:0005/21/M5 00:0005/26/M5 00:0005/31/M5 00:00

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THE PARTY

LICA WFD Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WD Instrument Height : 10 Meters

Direction

Fred	51.61	31.31	12.90	.67	00.	00.	
NNW	.67	. 94	00.	00.	00.	00.	1.61
NW	2.28	. 94	.13	00.	00.	00.	3.36
WNW	2.28	1.34	.26	00.	00.	00.	3.89
Ж	2.82	.67	.13	00.	00.	00.	3.62
WSW	4.56	.67	.13	00.	00.	00.	5.37
SW	2.28	. 80	00.	00.	00.	00.	3.09
SSW	3.76	.67	00.	00.	00.	00.	4.43
w	2.82	.80	00.	00.	00.	00.	3.62
SSE	5.91	1.34	.13	00.	00.	00.	7.39
SS	6.58	5.37	2.15	00.	00.	00.	14.11
ESE	4.43	1.74	00.	00.	00.	00.	6.18
ÞІ	4.43	1.61	1.34	.67	00.	00.	8.06
ENE	3.49	3.62	.80	00.	00.	00.	7.93
Ä	3.09	6.85	3.89	00.	00.	00.	13.84
NNE	1.20	2.41	3.49	00.	00.	00.	7.12
z	.94	1.47	.40	00.	00.	00.	2.82
Limit	6.0	12.0	20.0	29.0	39.0	39.0	Totals
	٧	V	٧	V	٧	X.	

Calm : 3.49 %

Total # Operational Hours : 744

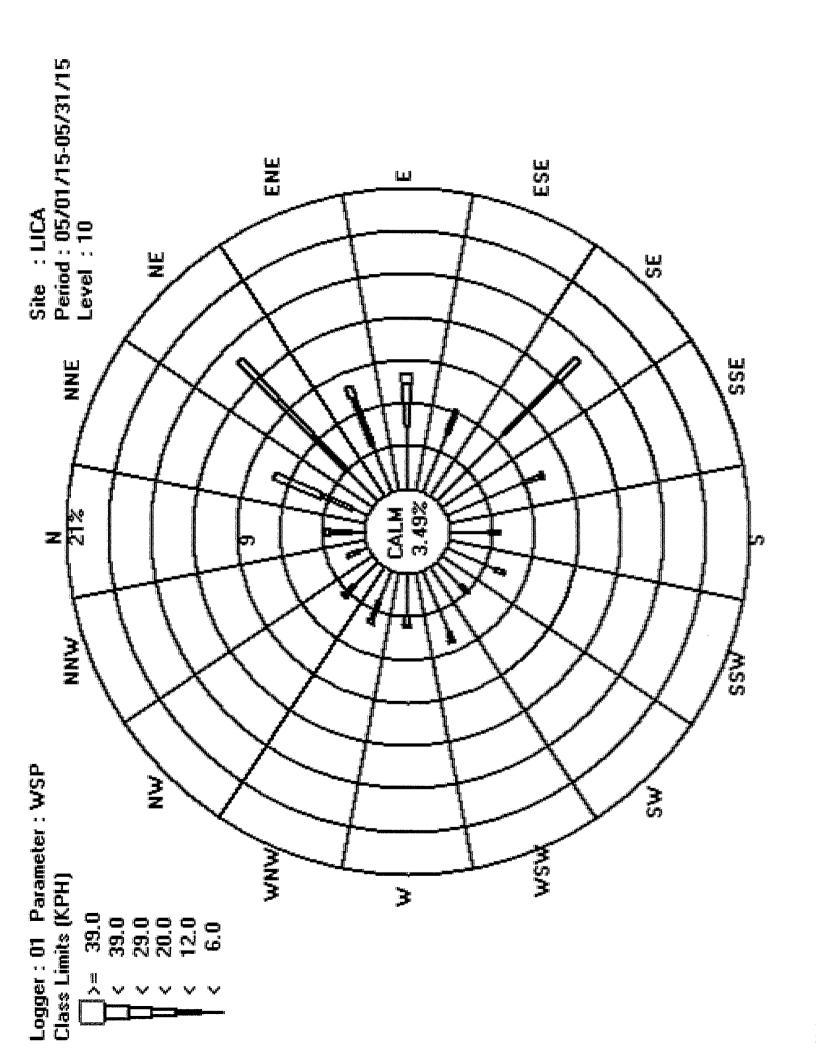
Distribution By Samples

Direction

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Limit	0.9	12.0	20.0	29.0	39.0	39.0	Totals
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Calm : 3.49 %

Total # Operational Hours : 744







## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - MAY 2015 JOB # 2833-2015-05-01- C

## WIND DIRECTION (WD) hourly averages

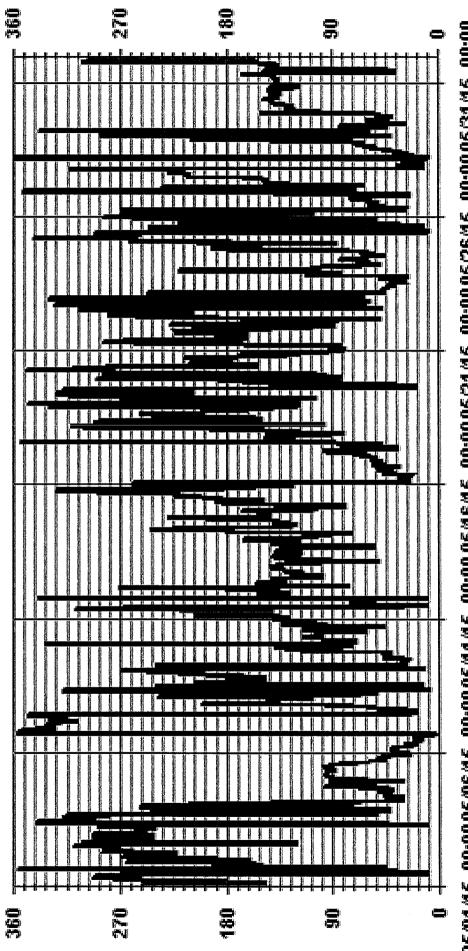
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LAST CALIBRATION:	April 1, 2015
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	O HRS	OPERATIONAL TIME:	744	HRS
STANDARD DEVIATION: 90	86.06	AMD OPERATION UPTIME:	100.0	%
		MONTHLY AVERAGE:	ENE	



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### Cold Lake South Site - MAY 2015 LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

JOB # 2833-2015-05-01- C

# STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

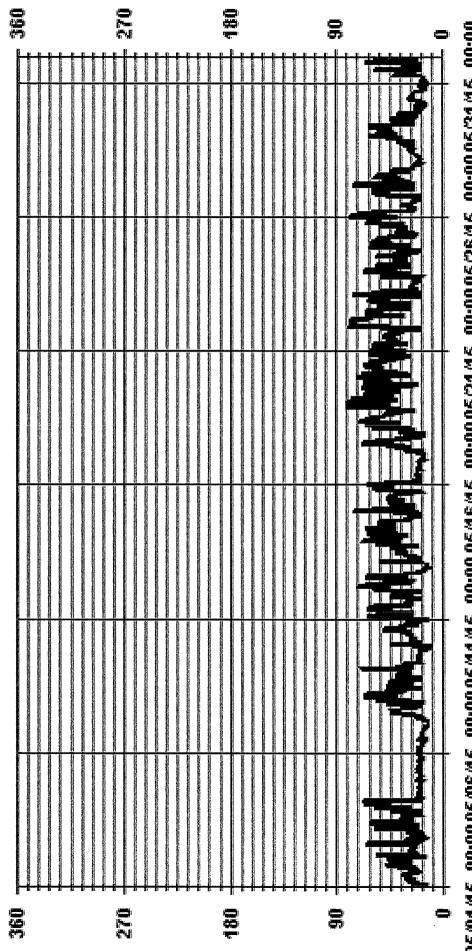
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CALIBRATIONS -MAINTENANCE -DAILY ZERO/SPANCHECK -POWER FAILURE -OUT FOR REPAIR	
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April 1, 2015	
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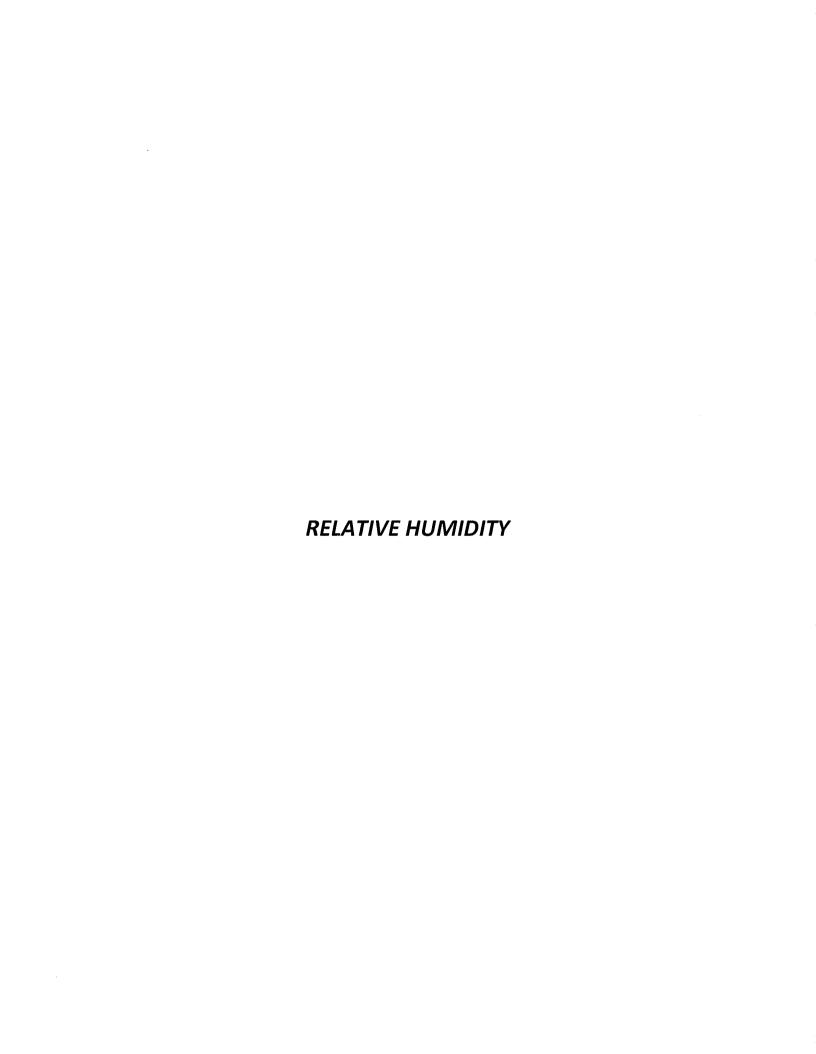
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OPERATIONAL TIME:	
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Of Hour Averages



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STOWNER





## RELATIVE HUMIDITY (RH) hourly averages in %

MST

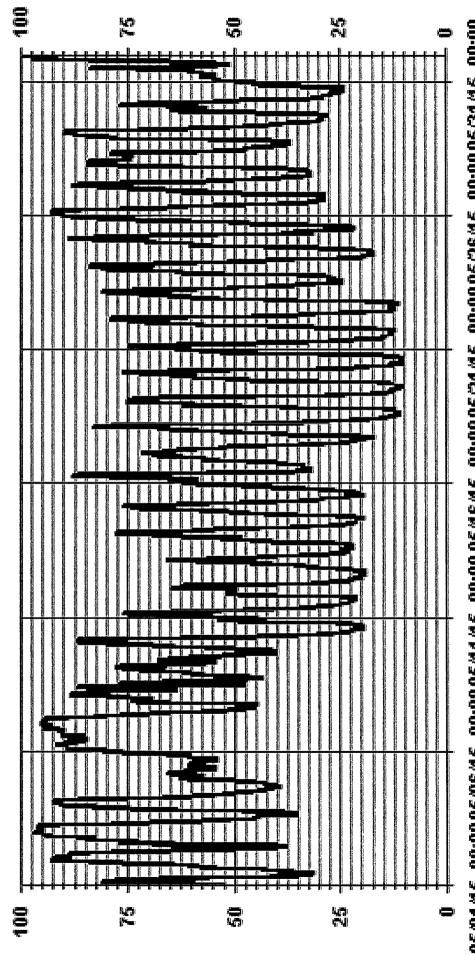
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24-HOUR	AVG.	59.4	74.9	67.5	59.9	5.09	88.2	70.9	67.6	60.2	45.0	41.4	33.4	37.0	42.2	42.3	53.6	4.4	36.1	35.3	34.4	35.8	37.2	48.9	45.4	55.7	26.7	26.6	61.5	52.6	41.6	65.8		
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#### STATUS FLAG CODES

JOHN COLOR C			4 25 26 27 28 29 30 31
R - RECOVEN  R - MECOVEN  X - MACHINEMALFONCTION  Q - OPERATOR-ERROR  KCOLLECTION-ERROR	24 HOUR AVERAGES FOR MAY 2015		10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
C. CALBOATTON YMAINTENANCE S DAILY ZERO/SPANCHECK PPOWER FAILURE G OUT FOR REPAIR	24 HOUR AVE	8 2 2 2 2 8 8	0 1 2 3 4 5 6 7 8 9 10 11 17

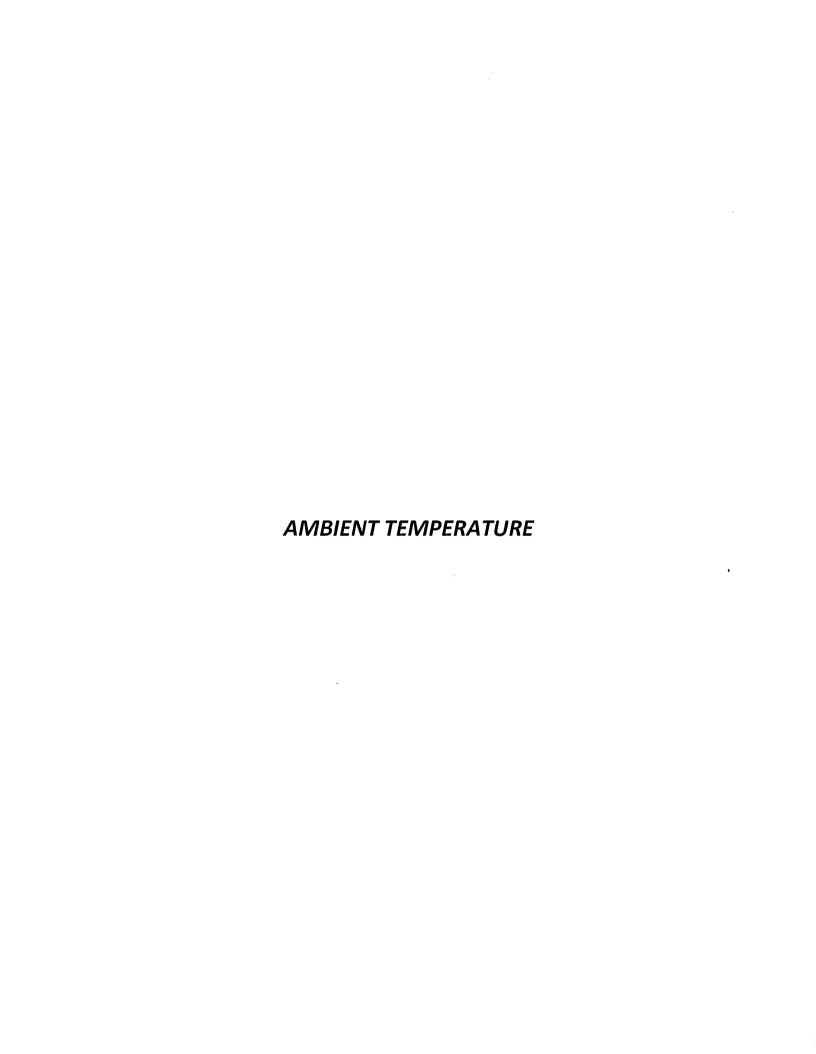
#### MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE:		8	%	% @ HOUR(5)	23	ON DAY(S)	31		
MAXIMUM 24-HR AVERAGE:		88.2	%			ON DAY(S) VAR-VARIOUS	Q		
				OPERATIONAL TIME:			744	H <sub>S</sub> S	
				AMD OPERATION UPTIME:	IME			%	
STANDARD DEVIATION:	23.76			MONTHLY AVERAGE:			52 %	%	



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

Ξ





# AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

#### MST

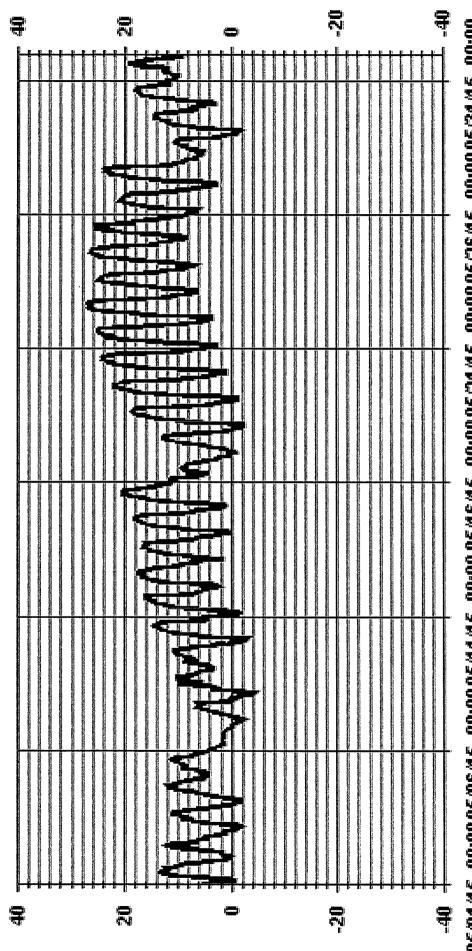
RDGS.	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	54	24	24	24	24	24	54	24	74	54	24	24	74		
24-HOUR AVG.	7.1	5.0	5.2	5.7	7.5	1.6	1.9	4.1	7.0	7.2	8.7	11.5	10.5	10.9	12.8	7.5	5.5	9.5	12.3	14.8	15.9	17.6	16.4	18.1	16.7	14.6	14.5	7.2	8.2	12,4	13.1		
DAILY MAX.	13.7	12.1	11.2	12.1	11.2	4.3	6.4	10.2	10.8	14.3	16.1	17.5	16.5	18.1	20.3	11.7	12.8	18.4	21.9	24.1	25.1	27.2	24.9	26.3	25.7	21.2	23.9	10.7	14.5	17.9	19.0		
23:00	11	1.4	1.9	5.2	5.1	-0.3	0.3	5.8	3.0	5.7	5.5	6.8	6.7	7.0	12.1	2.1	9.0	3.4	5.6	7.5	8.4	11.5	10.8	13.7	9.4	7.7	9.6	1.0	9.9	12.7	9.3	13.7	6.1
22:00	1.8	0.5	2.3	7.5	5.9	-0.1	-0.4	6.2	4.2	3.8	6.1	6,6	5.8	8.1	13.2	2.8	1.8	5.2	7.1	9.2	10.1	13.3	12.1	13.7	10.1	10.4	10.4	2.1	6.0	11.7	9.4	13.7	6.8
21.00	3.4	2.2	4.4	9.1	6.2	0.1	0.1	7.0	6.1	4.9	7.2	11.4	7.1	9.0	14.5	3.5	3.9	7.5	9.6	11.8	12.8	16.1	13.6	15.8	11.5	10.6	11.3	3.7	7.2	11.8	10.9	16.1	8.2
20:00	5.7	3.4	9.9	9.7	7.2	0.4	2.4	7.4	7.9	8.0	10.1	13.0	10.0	12.1	16.1	4.4	7.4	11.4	13.9	16.1	16.8	19.5	16.7	19.3	13.9	13.6	13.7	7.6	10.2	14.1	13.4	19.5	10.7
19:00	8.9	4.3	8.0	10.3	8.0	6.0	4.9	8.8	6.6	12.2	15.0	15.0	14.2	15.8	17.2	5,9	11.3	16.5	19.1	21.9	22.6	23.5	21.0	23.0	16.8	17.6	19.1	6.6	13.0	16.1	14.6	23.5	13.7
18:00	9.3	5.4	9.3	11.4	9.6	1.2	6.2	10.2	10.7	13.7	16.1	16.4	16.0	17.4	18.4	7.4	12.5	18.2	20.6	23.6	24.5	26.1	23.2	25.3	18.6	19.1	22.6	10.5	13.8	17.2	16.5	26.1	15.2
17:00	10.1	4.4	10.1	12.1	10.9	175	5.9	10.1	10.8	14.1	16.0	17.1	15.8	18.0	19.4	8.1	12.8	18.4	21.3	24.1	25.0	27.2	23.9	26.0	18.2	19.9	23.7	10.7	14.4	17.8	18.3	27.2	15.7
16:00	11.0	6.3	11.2	11.9	11.2	1.3	6.1	9.6	10.6	13.8	15.8	17.4	16.3	18.1	20.3	8.4	12.7	18.4	21.9	24.1	25.1	26.4	24.0	26.2	21.9	20.0	23.7	10.4	14.5	17.9	19.0	26.4	16.0
15:00		6.5	10.4	11.8	10.6	1.3	6.4	8.1	10.2	14.3	15.4	17.5	16.3	18.0	20.3	8	12.2	18.2	21.9	24.0	24.6	26.2	24.5	26.3	23.1	20.1	23.9	6.9	14.3	17.9	19.0	26.3	15.9
14:00	2	8.4	9.5	10.7	10.0	1.6	5.6	7.5	9.4	13.9	14.9	16.7	16.5	17.5	20.3	9.2	11.4	18.1	21.9	24.0	24.6	26.2	24.6	26.3	25.7	20.8	23.2	9.3	13.9	17.4	18.1	26.3	15.8
13:00	0	7.7	9.3	10.2	9.7	1.5	5.5	5.1	8.8	13.3	14.2	16.8	15.6	17.0	19.3	9.4	10.4	17.6	20.9	23.5	24.2	26.6	24.9	26.1	25.6	21.1	22.7	8.4	13.2	17.5	16.9	26.6	15.3
12:00		11.7	8.8	9.0	9.0	1.6	4.4	10.1	8.2	13.0	13.9	16.7	15.4	16.4	18.6	9.0	9.0	16.1	20.1	23.2	23.8	26.1	24.1	25.4	25.5	21.2	22.0	8.1	12.4	17.0	12.4	26.1	15.0
11:00		12.1	9.0	6.9	8.8	1.7	3,3	7.0	7.3	12.1	12.7	16.0	14.7	15.9	17.4	8.2	7.5	15.1	19.3	22.2	22.7	25.3	22.4	24.8	25.0	20.2	20.7	7.7	11.6	16.4	11.6	25.3	14.2
10.00	,	11.3	7.4	5.8	8.7	1.6	2.2	3.5	6.9	11.0	11.7	15.5	13.8	14.9	16.0	6.3	6.0	14.3	18.4	21.4	22.9	24.3	20.0	23.9	22.9		19.3	9.9	11.6	15.4	12.7		13.2
9:00		10.9	7.2	5.2	9.2	1.5	1.3	3.2	7.2	9.4	10.4	14.8	12.8	13.7	15.0	4.6	4.5	12.7	16.8	20.1	21.4		17.5	21.2	23.2		17.3	6.5	10.9	14.6	12.8		12.2
8:00		9.3	5.6	3.9	8.1	1.4	0.5	9,6	9.1	7.8	8.7	13.5	11.2	11.9	13.8	4.7	3.6	10.5	14.3	17.8	19.0	19.0	15.2	18.9	20.5	16.9	15.4	5.3	9.5			20.5	10.8
7:00		6.1	4.2	2.4	6.8	1.4	0.0	13	8.1	6.0		11.6	9.1	9.4	11.1	5.2	2.1	8.6	12.0	15.4		17.1	13.9	16.1	16.9		13.0	5.5	8.2	10.3			9.0
6:00	1						-0.7	-0.1		3.6							0.9	5.2	9.0	10.0	12.6	''	''	13.6	13.0	•			6.5		11.4		6.9
5:00		2.1	-1.2	9.0	4.6	2.0	-1.7	-2.8	4.2	0.1	0.7	3.2	3.7	2.3	4.3	8.8	0.4	0.4	2.0	4.0	5.8	7.9	8.5	10.5	9.1	8.5	5.3	5.7	3.0	6.5	10.0	10.5	3.8
4:00	6.0	1.2	-1.8	-2.0	4.3	2.4	-2.2	4.1	3.9	-2.7	-1.8	2.4	1.1	0.1	0.8	10.7	-0.6	-2.7	-1.2	0.7	2.3	3.3	6.2	7.5	7.9	6.4	2.4	6.5	-1.1	3.3	9.5	10.7	2.0
3:00		1.9	-1.4	-2.0	4.4	2.9	-1.6	ψ, 8,	3.9	-2.4	-1.2	2.1	3.2	0.8	1.2	11.7							6.7								10.4	11.7	2.4
2:00		0.2	-0.7	-1.5	5.0	3.6	-1.0	-3.0	2.9	-2.0	-0.1	3.0	5.5	2.0	2.0	10.9	-0.1	4.5	-0.4	2.0	3.7	4.5	7.6	7.3	10.2	7.3	3.9	7.2	-1.3	5.0		10.9	
1:00	1	0.0																														11.3	
0:00	5.3	0.3	13	0.1	5.0	4.3	Q.3	89 9	5.1	0.8	4.9	4.7	7.9	5.9	4.9	11.6	1.2	-0.4	2.0	4.3	6.1	6.7	10.3	9.0	12.1	9.0	6.0	9.0	-0.1	7.2	11.7	12.1	5.0
HOUR END	DAY.		'n	4		9	4	Ø	ø.	9	Д	12	<b>T</b> 3	#	15	16	72	90	19	20	21	22	23	24	25	26	27	. 28	59	30	31	HOURLY MAX	HOURLY AVG

#### STATUS FLAG CODES

CALENATION  ANALYSEVANCE  - BAILY ZERO/SPAN CHECK  - POWER-PAILUNE  - OUTFORREPAIR  K. COLLECTION ERROR	24 HOUR AVERAGES FOR MAY 2015	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 18 20 21 22 23 24 25 25 27 28 28 39 31
ក្≻ស្ថល	8 2 2 2 2 2 2 2 2	0 0 1 2

#### MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:		4.1	ပူ	°C @ HOUR(S)	4	ON DAY(S)	~	60
MAXIMUM 1-HR AVERAGE:		27.2	ပူ	@ HOUR(S)	17	ON DAY(S)	22	2
MAXIMUM 24-HR AVERAGE:		18.1	ပူ			ON DAY(S)	24	
						VAR-VARIOUS		
				OPERATIONAL TIME:	臣		744	HRS
				AMD OPERATION UPTIME:	UPTIME:		100.0	%
STANDARD DEVIATION:	7.25			MONTHLY AVERAGE:	3E:		10.0	ပ္



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

#### APPENDIX II NON-CONTINUOUS MONITORING DATA RESULTS



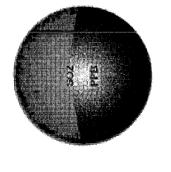
April - May 2015 Raading 0.3 0.1 0.5 #18, #23 #8, #14.8 #27 33 29 3 8 12 36 0.4 0.9 20 0.6 20 0.6 56 0.3 0.3 52 27 1.0 0.3 1.9 8 55 E 5 8 25 0.3 0.5 . <u>6</u> Lakeland Industry & Community Association 88 88 17 LICA - Suiphur Dioxide Passives 0.1 0.8 0.8 16 317E 18 0.3 0.1 . 12 17 0.6 0.4 0.4 0.8 4 2014 15 0.4 0.8 . ti ŭ 0.1 0.9 0.9 £ 0.7 0.4 0.6 9 -0.3 0.0 0.0 0.6 9 0.4 0.7 8 1.1 3.2 3.2 Note: Access to #12 and #25 was blocked by the air weapons range fire suppression 6 0.5 1.5 1.5 5 0.5 0.2 1.0 4.0 0.0 0.9 3. 0.1 0.8 ~ \$ \$ \$ 0.0 4.0 20 1.2 9.0 9 9.0 Mean Minimum Maximum Ðdd

Passive Summary Results for April-May 2015

# Lakeland Industry & Community Association SO<sub>2</sub> Passive Bubble Map

### APRIL - MAY 2015

#### DUPLICATE 0.5 PPB 0.2 PPB 844 Z 0 **3** 3 ≨ ≨ 7 er Z \$ 3 \$ MISSING MISSING MISSING 0.5 998 02 PPB 0.2 PPB 0.2 PPB 0.3 PPB 0.4 PPB PASSIVE STATIONS 0.2 PPB 0.2 PPB 0.4 PPB 0.2 PPB 0.3 PPB O.S PPE C2 PPE 0.2 PPB 0.3 PPB 0.1 PPB 0.2 PPB 0.2 PPE 0.1 PPB 0.2 PPB 0.3 PPB 0.5 PPB 24 – Fort George 25 – Burnf Lake 26 – Mahikan 27 – Mahikeses 28 – Town of Bonnyville 29 - Cold Lake South 2 32 - St. Lina 36 - Elk Point 23 - Medley-Martineau 5 - Telegraph Creek 22 - Cold Lake South 8 - Muriel-Kehewin 18 - Fishing Lake 12 - Foster Creek 17 - Clear Range 19 - Beaverdam 2 - Sand River 5 -- Lake Eliza 16 - Frog Lake 11 - Wolf Lake 13 - Primrose 4 - Flat Lake 10 - La Corey 15 - Ardmore 14 - Maskwa 3 - Therien 9 - Dupre

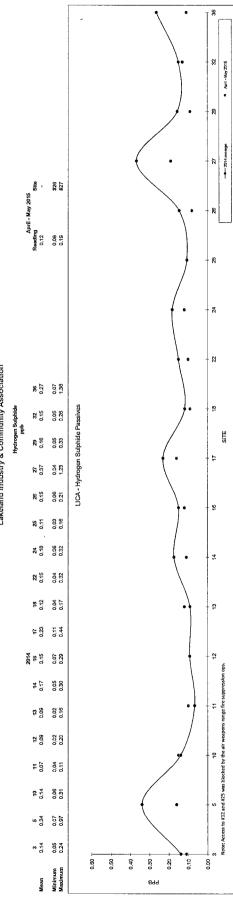


#### Summary

Minimum : 0.1 PPB — Fishing Lake and Medley-Martineau Maximum: 0.5 PPB — Muriel-Kehewin, Maskwa and Mahkeses Averago: 0.3 PPB "Includes Duplicates



Passive Summary Results for April-May 2015
Lakeland Industry & Community Association



### STATE OF Õ R 8W4 Lakeland Industry & Community Association

S

0.11 PPB

MISSING 0.12 PPB

12 - Foster Creek

13 - Primrose

14 - Maskwa

11 - Wolf Lake

44 Ž

0.12 PPB 0.16 PPB

0.09 PPB

18 - Fishing Lake

17 - Clear Range

16 - Frog Lake

0.11 PPB

**444444** 

 22 - Cold Lake South
 0.10 PPB

 24 - Fort George
 0.12 PPB

 25 - Burnt Lake
 0.12 PPB

 26 - Mahihkan
 0.08 PPB

 27 - Mahkeses
 0.19 PPB

 29 - Cold Lake South 2 0.09 PPB

 32 - St. Lina
 0.13 PPB

 36 - Eik Point
 0.11 PPB

DUPLICATE

0.15 PPB 0.11PPB

> 5 - Lake Eliza 10 - La Corey

3 - Therten

0.15 PPB

PASSIVE STATIONS

H2S Passive Bubble Map

APRIL - MAY 2015

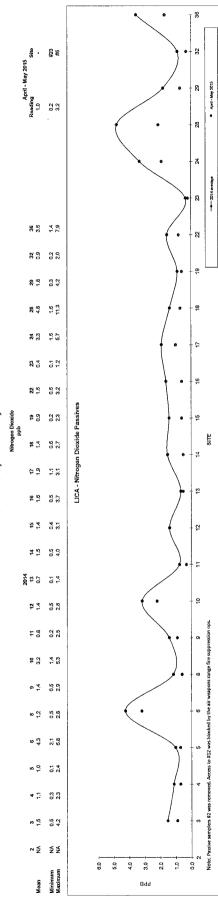
#### Summary

Minimum: 0.08 PPB - Mahihkan

Maximum: 0.19 PPB - Mahkeses

Average: 0.12 PPB (includes Duplicates)

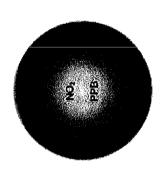
Passive Summary Results for April-May 2015
Lakeland Industry & Community Association



# Lakeland Industry & Community Association NO2 Passive Bubble Map

## **APRIL - MAY 2015**

#### DUPLICATE 3.1 PPB 0.6 PPB \*\*\*\*\*\*\*\*\*\*\* 0.3 PPB MISSING 0.5 PPB 0.5 PPB 0.6 PPB 1.0 PPB 0.7 PPB 0.6 PPB 0.8 PPB 0.2 PPB MISSING O.7 PPB 3.2 PPB 0.9 PPB 2.2 PPB 0.7 PPB 0.5 PPB 2.1 PPB 0.7 PPB 1.9 PPB PASSIVE STATIONS 24 – Fort George 28 – Town of Bonnyville 29 – Cold Lake South 2 32 – St. Lina 36 – Elk Point 19 – Beaverdam 22 – Cold Lake South 23 – Medley-Martineau 6 – Telegraph Creek 8 - Muriel-Kehewin 12 - Foster Creek 18 - Fishing Lake 17 - Clear Range 14 – Maskwa 15 – Ardmore 16 – Frog Lake 2 - Sand River 5 - Lake Eliza 11 - Wolf Lake 4 - Flat Lake 10 - La Corey 13 - Primrose 3 - Therien audno - s



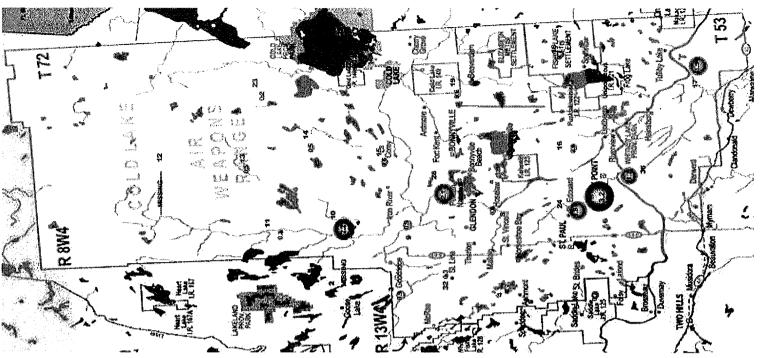


Minimum: 0.2 PPB - Modley-Martineau

Maximum: 3.2 PPB - Talegraph Creek

Average: 1.5 PPB Includes Duplicates





April - May 2016 Reselling 35.86 22.91 42.35 32 April - May 2015 - 83 88 - 24 ន 36 27.3 13.1 34.2 - 8 31.3 40.6 8.06 - ē 24.8 15.4 36.7 28 24.5 18.2 31.3 8 Passive Summary Results for April-May 2015 Lakeland Industry & Community Association 24 25.9 17.8 39.0 4 23.8 4.4 39.2 4.4 2.8 9 22.7 16.4 32.4 19 29.1 40.7 5 LICA - Ozone Passives 18 24.0 14.9 33.6 4 17 28.8 19.9 38.0 5 16 28.7 18.1 43.7 15 26.0 16.5 36.8 얻 27.0 21.0 34.8 # 2014 13 27.8 18.6 40.2 12 25.5 16.4 35.2 6 11 26.8 13.9 51.2 0.0 2 3 4 5 6 8 9 9 Nobe: Pleacher samplers 12 was removed. Acces to #12 was blocked by the air weapons ranger fire suppres 10 24.3 14.5 37.6 9 27.1 17.8 42.3 8 28.6 20.1 41.5 6 25.6 17.0 37.9 5 28,2 19,9 38.0 4 30.4 20.0 45.6 3 27,3 18,7 40.5 844 0. 20.0 - 0.04 0.09 20.0 Mean Minimum Maximum

## Lakeland Industry & Community Association O<sub>3</sub> Passive Bubble Map

## **APRIL - MAY 2015**

### PASSIVE STATIONS

DUPLICATE

ď	Ź	2
34.53 770	39.14 PPB	00.000000000000000000000000000000000000
3 - Therien	4 - Flat Lake	o - Lake min

- I henen - Flat Lake - Lake Eliza - Telegraph Creek	36.38 PPB 36.38 PPB 33.89 PPB 33.89 PPB	NA NA SETS PPE
---	--	----------------

8 – Muriel-Kehewin 9 – Dupre

10 - La Corey

12 - Foster Creek 11 - Wolf Lake

13 - Primrose 14 - Maskwa

Z

37.19 PPB 33,45 PPB 39.30 PPB 42.65 PPB

MISSING

16 – Frog Lake 15 - Ardmore

42.23 PPB 18 - Fishing Lake 17 - Clear Range

22 - Cold Lake South 19 - Beavendam

36.80 PPB

29.36 PPB 28,57 PPB 33.45 PPB

30.34 PPB

23 - Medley-Martineau 24 - Fort George

28 - Town of Bonnyville 29 - Cold Lake South 2

32 – St. Lina 36 – Elk Point

4444444444444 40.47 PPB 33,03 PPB 42.15 PPB





41.76 PPB

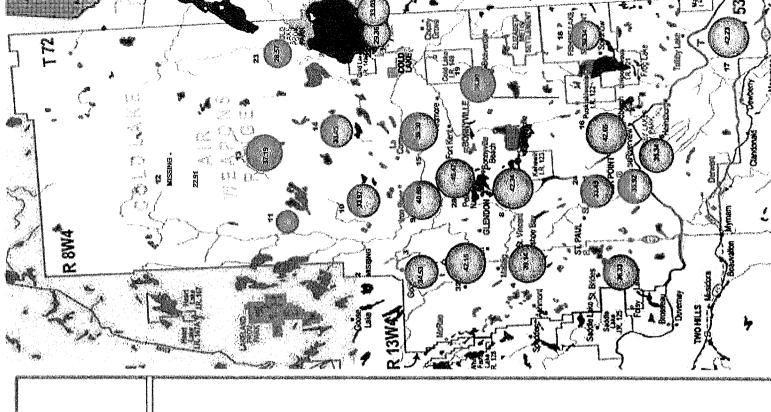
40.08 PPB

33,97 PPB 22.94 PPB



Minimum: 22.91 PPB - Wolf Lake

Maximum: 42.35 PPB - Frog Lake Average: 35.88 PPB "Includes Duplicates



# Passive Sampler Data Sheet for \_\_\_

APRIL - MAY 2015

LICA

Charles	NOTES	Samplers were removed			See "Duplicates" (+1)	See "Duplicates" (+3)	See "Duplicates" (+3)				See "Duplicates" (+1) / Fire Suppression Ops	See "Duplicates" (+1)										Fire Suppression Ops													
	TIME	ŇĀ	17:30	12:06	12:49	14:37	10:51	19:53	14:50	15:45	NA	12:28	11:18	20:46	18:03	15:37	17:06	18:44	08:37	08:53	13:51	NA	11:45	10:50	19:39	08:37	18:20	13:31		12:49	14:37	10:51	NA	12:28	
END	DATE	NA	May 27, 2015	May 28, 2015	May 28, 2015	May 28, 2015	May 28, 2015	May 27, 2015	May 27, 2015	May 27, 2015	No Access	May 27, 2015	May 27, 2015	May 27, 2015	May 28, 2015	May 28, 2015	May 28, 2015	May 28, 2015	May 28, 2015	May 27, 2015	May 28, 2015	No Access	May 27, 2015	May 27, 2015	May 27, 2015	May 28, 2015	May 27, 2015	May 28, 2015	PLICATES	May 28, 2015	May 28, 2015	May 28, 2015	Access Denied	May 27, 2015	
	TIME	NA	14:26	11:33	12:43	17:52	10:19	12:06	15:45	ċ	17:36	12:01	18:07	10:34	14:36	16:55	15:28	13:43	08:42	09:13	18:35	18:58	11:12	10:45	11:41	08:44	18:47	13:25	DO	12:43	17:52	10:19	17:36	12:01	
START	DATE	NA	March 30, 2015	April 01, 2015	April 01, 2015	March 31, 2015	April 01, 2015	March 30, 2015	March 30, 2015	Nov 2015	Feb 27, 2015	March 31, 2015	March 30, 2015	March 31, 2015	March 31, 2015	March 31, 2015	March 31, 2015	March 31, 2015	March 30, 2015	March 31, 2015	March 31, 2015	Feb 27, 2015	March 31, 2015	March 31, 2015	March 30, 2015	March 30, 2015	March 31, 2015	March 30, 2015		April 01, 2015	March 31, 2015	April 01, 2015	Feb 27, 2015	March 31, 2015	
		03	03	$0_3$	0³	03	0³	$O_3$	$O_3$	$O_3$	03	o	03	$O_{3}$	0,	0,	O³	03	03	03	03		-	-	03	03	0,	0,		1	O³	$0_{\mathfrak{s}}$	l	-	
GA MDI ED	LER	24/3/	$NO_2$	$NO_2$	$NO_2$	$NO_2$	$NO_2$	NO2	NO2	NO <sub>2</sub>	$NO_2$	NO2	NO <sub>2</sub>	$ $ NO $_2$	$ NO_2 $	$ NO_2 $	NO	$ $ NO $_2$	NO	$ $ NO $_2$	$ $ NO $_2$	1			$ $ NO $_2$	$ $ NO $_2$	$ $ NO $_2$	NO		1	NO2	$ $ NO $_2$	1		
CAMA	SAIM	$ SO_2 NO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$SO_2$	$\mathrm{so}_{z}$	$\mathrm{SO}_2$	$SO_2$	$\mathrm{SO}_2$	$SO_2$	$SO_2$	$SO_2$	$\mathrm{SO}_2$	$SO_2$	$SO_2$	$SO_2$		802	S02	805	1	Beckedige	
			$  H_2S$	İ	H <sub>2</sub> S		ł		$  H_2S  $	$H_2S$	$H_2S$	H <sub>2</sub> S	$H_2S$	I	$H_2S$	H <sub>2</sub> S	$H_2S$	1	$H_2S$		$H_2S$	$H_2S$	$H_2S$	$H_2S$	].	$H_2S$	$H_2S$	$H_2S$		I	1	1	H <sub>2</sub> S	$  H_2S$	
£	<b>A</b>	2	3	4	'n	9	8	6	10	11	12	13	14	15	16	17	18	19	22	23	24	25	76	27	28	29	32	36		w	9	8	12	13	



Sample ID: 15050100-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/May 6, 2015

# Maxxam

AIR FCD-01320/2

VOC Sample Collection Data Sheet

Sampler S/N: Canister Canister Installation Date/Til Canister Removal Date/Tir Field Sample ID: LICA/VCC/ CLS/May 6, 2015 LICA 01 LICA 872 Client: Location: Station ID:

S/N:		5	2019	₹	oerta Innova	Aiberta Innovates - Technology Futures	3y Futures
ŗ Ö			1964	1		1	
ime:	May 01	0	2015	3)	13.	20	
ime:	May	111	Sione	@	05:85	5	
	δ					ı	
			.,,			Г	

	Date and Time Information	nformation	
Sample Date	Start Time	End Time	Elapsed Time
	(MST)	(MST)	(Hours)
8100 B 0015	00:00	00:00	610
5107 1 0 Bus	May 6, 2015	May 7,2015	7 %

gs.	Pump Pressure Setting (psig)	24
Flow Settings	Pot Set Pt.	6.52
	Meter Reading (sccm)	10.0

Canister Information	ormation
Initial Canister	Final Canister
Vacuum (inHg)	Pressure (psig)
28.8	23.8

N

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

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Pov 900'
by Alex Vakupor
Alex
10%
in .
Sample in - by Alex Vakupou
Technician Signiture:

Date: May 11, 2015



6, 2015

Date:

MAY 1964

PARAMETERS	GONGENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadlene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.03
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.05
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.03
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.03
Acetone	3,1
Acrolein	< 0.3
Benzene	0.07
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.58
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.74
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.02
. Dibromochloromethane	< 0.01
Ethanol	1.3
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.33
HEOH-TT	0.55



Date:

MAY 6, 2015

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.10
Freon-114	0.03
Freon-12	0.70
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.06
Isopentane	0.04
Isoprene .	0.02
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.01
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.09
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.03
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.03
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15050198-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/May 12, 2015

# Maxxam

RECEIVED MAY 19 2015

AIR FCD-01320/2

VOC Sample Collection Data Sheet

Canist Canister Field Sample ID: Liey | voc/ ces/ recy 12, 2015 LICA LICA 570 Client: Location: Station ID:

Sampler S/N:		4.919	
canister ID:		4143	
r Installation Date/Time:	May	11,2015	$\sim$
ster Removal Date/Time:	May	5102 51	

2919

09:37

	Date and Time Information	nformation	
Sample Date	Start Time	End Time	Elapsed Time
	(MST)	(MST)	(Hours)
2000	00:00	00:00	0 2 0
المنتوم الله المحداث	14cm 12, 2015	Alay 13, 8015	X 4. 0
	7		

	Flow Settings	S
leter Reading	Pot Set Pt.	Meter Reading   Pot Set Pt.   Pump Pressure
(sccm)		Setting (psig)
0.01	6.52	24

Canister Information	ormation
Initial Canister	Final Canister
Vacuum (inHg)	Pressure (psig)
29.8	22.1

ON X Canister valve open prior to sampling?: (YES) NO Timer set to 0.00 minutes prior to sampling? (YES Canister valve closed prior to disconnection?

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THE PARTY OF THE P	Technician Signiture:	in - by Alex Vakepou
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Date May 15,2015



2015

Date:

MAY 12,

Canister ID: 1149

Freon-11

Canister ID:	1149
PARAMETERS (	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachioroethar	
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	
1,2,4-Trichlorobenzene	
1,2,4-Trimethylbenzene	
1,2-Dibromoethane	< 0.02
1,2-Dishonloethane	< 0.03
1,2-Dichloroethane	0.18
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
•	
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	0.05
1-Pentene	< 0.01
2,2,4-Trimethylpentane	
2,2-Dimethylbutane	1,99
2,3,4-Trimethylpentane	
2,3-Dimethylbutane	5.02
2,3-Dimethylpentane	2.68
2,4-Dimethylpentane	< 0.01
2-Methylheptane	1.10
2-Methylhexane	3.37
2-Methylpentane	1.76
3-Methylheptane	0.32
3-Methylhexane	5.82
3-Methylpentane	7.54
Acetone	15.3
Acrolein	< 0.3
Benzene	2.70
Benzyl chloride	< 0.4
Bromodichloromethane	
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	1.09
Carbon tetrachloride	0.10
Chlorobenzene	0.04
Chloroethane	0.12
Chloroform	< 0.02
Chloromethane	0.79
cis-1,2-Dichloroethene	
cis-1,3-Dichloropropend	e < 0.04
cis-2-Butene	0.04
cis-2-Pentene	< 0.02
Cyclohexane	5.58
Cyclopentane	1.54
Dibromochloromethan	e < 0.01
Ethanol	1.6
Ethyl acetate	< 0.4
Ethylbenzene	0.07
Froon 11	0.20

0.29



Date:

MAY 12, 2015

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.03
Freon-12	0.61
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.55
Isopentane	10.5
Isoprene	0.03
Isopropyl alcohol	15.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.16
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl othyl letone	< 0.50 7.0
Methyl ethyl ketone Methyl isobutyl ketone	7.0 < 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	3.93
Methylcyclopentane	4,41
Methylene chloride	< 0.3
n-Butane	0.59
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	8.80
n-Hexane	5.25
n-Nonane	0.05
n-Octane	0.65
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.01
o-Xylene	0.11
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran — .	< 0.4
Toluene	1.22
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene trans-2-Pentene	< 0.01 0.08
trans-2-Pentene Trichloroethylene	0.08 < 0.04
Vinyl acetate	< 0.04 < 0.4
Vinyl acetate  Vinyl chloride	< 0.4 < 0.02
vinyi cilionae	₹ 0.02

Sample ID: 15050298-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/May 18, 2015

## Maxxam

# VOC Sample Collection Data Sheet

Alberta Innovates - Technology Futures MAY 2 5 2015

		09:03	17:12	
		(B)	0	
£919	511 to	, 2015	SIRY	
19	1.	15	21	
		hon	MRY	
Sampler S/N:	Canister ID:	Canister Installation Date/Time:	الالالالالالالالالالالالالالالالالالال	
LICA	872	LICA Of	10/01,5/ Play 18,20h	
Client:	Location:	Station ID:	Field Sample ID: LICA/VOO/CLS/PA	

Date and Time Information	Iformation	
Start Time	End Time	Elapsed Time
(MST)	(MST)	(Hours)
00:00	00:00	
May 18, 2015 May 19, 2015	May 19, 2015	24.0
C: 22 '01 Kon	ריטאיף לשאו	

2015

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May

Sample Date

ump Pressure Setting (psig) 2

formation	Final Canister	Pressure (psig)	4.22.9
Canister Information	Initial Canister	Vacuum (inHg)	26.3

Canister valve closed prior to disconnection? Canister valve open prior to sampling?: (YES) Timer set to 0.00 minutes prior to sampling?

Comments:

	AMARAMA ANTONIO POR PARAMA ANTONIO			***************************************	
Samp	Sample in -	. u,'	be	Alex	by Alex Yokupov
Jank	Pample	out -	16	Alex	Sample out - by Alex Yokupor

Date: May 21, 2018



Date:

MAY

18, 2015

PARAMETERS 4	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
•	< 0.4
1,4-Dioxane	
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.02
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.05
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.09
3-Methylheptane	< 0.02
3-Methylhexane	0.02
3-Methylpentane	0.05
Acetone	4.7
Acrolein	< 0.3
Benzene	0,16
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	< 0.01
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.74
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.5
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.32



Date:

MAY 17119 18, 2015

PÄRAMETERS	CONCENTRATION (PPB)
Freon-113	0.10
Freon-114	0.03
Freon-12	0.69
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.27
Isopentane	0.48
Isoprene	0.04
Isopropyl alcohol	0.9
Isopropylbenzene	< 0.01
m,p-Xylene	0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	0.04
Methylene chloride	< 0.3
n-Butane	0.87
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.07
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene o-Xylene	< 0.01
•	0.01
p-Diethylbenzene p-Ethyltoluene	< 0.04 < 0.07
Styrene	< 0.07
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.07
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.04
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.02
Vinyl acetate	< 0.4
Vinyl acetate Vinyl chloride	< 0.02
, i dinortua	- 0102

Sample ID: 15050316-001

Customer ID: LICA

Cust Samp ID: LICANOC/CLS/May 24, 2015

## Maxxam

VOC Sample Collection Data Sheet

4.919	2653	14ay 21, 2015 @ 17:14	Mey 25, 2015 (2, 05:192
Sampler S/N:	Canister ID:	Canister Installation Date/Time:	Actay 2 4, 2013 Canister Removal Date/Time:
LICA	575	LICA O'	2
Client:	Location:	Station ID:	Field Sample ID: LCH/ VOC/ CL3

	Date and Time Information	nformation	
Sample Date	Start Time	End Time	Elapsed Time
	(MST)	(MST)	(Hours)
410. 011 0015	00.00	00:00	,
14d x4, 2013	100 14, 2015	you's a Kon	84.0

	Flow Settings	st
Meter Reading	Pot Set Pt.	Pump Pressure
(sccm)		Setting (psig)
0.01	8.53	45

Canister Information	ormation
Initial Canister	Final Canister
Vacuum (inHg)	Pressure (psig)
25.6	45.P

366°

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



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by Alex Valutor by Alex Volupou Sample our -Sample in -Technician Signiture:

olo out - by Alex Yokupov Date: May 25, 2015



Date:

MAY 24, 2015

Canister ID: 2658

Freon-11

PARAMETERS	GONGENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	0.05
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.02
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.13
3-Methylheptane	< 0.02
3-Methylhexane	0.04 0.10
3-Methylpentane Acetone	9.6
Acrolein	< 0.3
Benzene	0.15
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.43
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.79
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.04
cis-2-Pentene	< 0.02
Cyclonexane	0.03
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	3.8
Ethyl acetate	< 0.4
Ethylbenzene	0.03

0.30



Date:

MAY 24, 2015

2658

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PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.03
Freon-12	0.65
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.49
Isopentane	0.84
Isoprene	0.68
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.10
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.7
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.05
Methylcyclopentane	0.07
Methylene chloride	0.7
n-Butane	1.92
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	4.46
n-Nonane	0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.02
o-Xylene	0.05
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.16
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	0.06
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15060054-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/May 30, 2015

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JUN 05 205

## Maxxam

# VOC Sample Collection Data Sheet

		44.60	19:34
		@	<b>3</b>
£919	44	(S) xox (B)	2012
	15	57	1
		May	Tuñe
Sampler S/N:	Canister ID:	Canister Installation Date/Time:	/ has 30,2015 Canister Removal Date/Time:
LICA	872	LICA Ø/	Field Sample ID: 1184/VOC/CLS/ May 30,20
Client:	Location:	Station ID:	Field Sample ID:

	Flow Settings	sí
Meter Reading	Pot Set Pt.	Pot Set Pt.   Pump Pressure
(sccm)		Setting (psig)
0'01	6.52	he

Canister Information	formation
Initial Canister	Final Canister
Vacuum (inHg)	Pressure (psig)
28.6	25.0

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

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		18:31
		(b)
by Alex Vakupov	by Alex Yakupov	Date: June 1, 2015 @ 19:31
Hex	Alex	, 0,
, sg	63	Dat
in –	oa 1	
Sample in	Sample out	
Technician Signiture:		



Date:

MAY 30, 2015

1517

PARAMETER	CONCENTRATION (PPR)

1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.18
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.01
2-Methylhexane	< 0.01
2-Methylpentane	< 0.01
3-Methylheptane	< 0.02
3-Methylhexane	0.02
3-Methylpentane	0.02
Acetone	5.8
Acrolein	1.9
Benzene	0.08
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.32
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	0.04
Chloroform	0.02
Chloromethane	0.75
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	2.2
Ethyl acetate	< 0.4
Ethylbenzene	0.03
Freon-11	0.27



Date:

MAY 30, 2015

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.03
Freon-12	0.61
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.36
Isopentane	0.13
Isoprene	0.18
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.07
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	1.2
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.03
Methylcyclopentane	0.02
Methylene chloride	< 0.3
n-Butane	0.22
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.06
n-Hexane	0.06
n-Nonane n-Octane	< 0.01
n-Pentane	< 0.02 < 0.1
n-Propylbenzene	
n-Undecane	< 0.05 < 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.03
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.16
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02
,	· <del>- ·</del>



Sample ID: 15050100-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/May 6, 2015

Priority: Normal

# Maxxam

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   Alberta Innovates - Technology Entrino	sammarico reallingly runtes		1.13	5:22	
on Data Sheet	76-09	1130	May01, 2015 @ 14:13	May 11, 2015 @ 05:22	>
i-Vol PUF+ Sample Collection Data Sheet	Puf+ S/N:	Motor S/N:	Installation Date/Time:	6 2015 Removal Date/Time:	
N-iH	LICA	572	LICA 01	Field Sample ID: LICA/PUF/CLS/May 6	
	Client:	Location:	Station ID:	Field Sample ID:	•

	Date and Time Information	nformation	
Sample Date	Start Time	End Time	Elapsed Time
	(MST)	(MST)	(Hours)
May 6 9015	00:00	00:00	0 46
10010 Pari	May 6, 2015	Nay 7, 2015	
	Þ	ځ	

QFF Prep

Puf Expiration

Date

Date Shipped

Date Received

NA

NA

XX

PUF and QFF Information

Date

44

	Sampling Data	g Data	
Average	AverageFlow	Average	Volume
Pressure(mmHg) (Qstd slpm)   Tempurature (C) (Vstd m <sup>3</sup> )	(Qstd slpm)	Tempurature (C)	(Vstd m³)
112	223	2.3°C	23.497

01-8ep-11

Date of Last Calibration:

230

Set Flow Rate (slpm):

Time set correctly prior to sampling? YES/NO
Timer set correctly prior to sampling? YES/NO
Sampling data saved to memory card after sampling? YES (NO

				,	
				by flex Yakupov	by Alex Yakeepor
				Hlex	Alex V
				4	9. ZD
				· W!	gut,
				Sumple in.	Sample out
Comments:		AND THE TWO IN THE TWO	The state of the s	Technician Signiture:	

Date: May 11, 2015



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date:

MAY

6, 2015

PUF S/N: TE09

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.03
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.02
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.02
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.08
Pyrene	0.02
Retene	0.02

AIR FCD-01321/2

# Maxxam

Sample ID: 15050198-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/May 12, 2015

RECEIVED MAY 1 9 2015

# Hi-Vol PUF+ Sample Collection Data Sheet

12:2013 Field Sample ID: LIEH/PUF/CLS/ May LICA 0 LICA かいと Client: Location: Station ID:

11-31 13. 12021 スピン Installation Date/Time: Removal Date/Time: Puf+ S/N: Motor S/N:

05:26 64:60 (g)(g) 2015 202

	<b>PUF</b> and QFF Information	Information	
1000 C	Date	Puf Expiration	QFF Prep
Dale Received	Shipped	Date	Date
NA	NA	W.A	14

Date and Time Information	e Start Time End Time Elapsed Time	(MST) (MST) (Hours)	60.00 00.00	1 May 12, 2015 May 13, 2015 24.0
	Sample Date		3101 01	14 1 x 1 x 1 2010

	Sampling Data	ig Data	
Average	AverageFlow	Average	Volume
Pressure(mmHg)	(Qstd slpm)	Pressure(mmHg) $\mid$ (Ostd slpm) $\mid$ Tempurature ( C) $\mid$ (Vstd $ m m^3$ )	(Vstd m <sup>3</sup> )
3/2	229	12.3°C	330.15

2008

-10

Date of Last Calibration:

330

Set Flow Rate (slpm):

Sampling data saved to memory card after sampling? YES (NO Timer set correctly prior to sampling (YES) NO Time set correctly prior to sampling (YES)/NO

				Alox Yokupor	Alex Yohnspor
				120	2,0
				Sample in - by flox Yokupor	Sample out - by Alex Yokespor
Comments:		AND AND AND AND AND AND AND AND AND AND		Technician Signifure:	And the second s

メング Ş

Dote: May 15, 2015



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date:

MAY 12, 2015

TE11

PUF S/N:

## PARAMETERS CONCENTRATION (UG)

1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.03
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.02
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.02
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.13
Pyrene	0.03
Retene	0.02

Sample ID: 15050298-002

Cust Samp ID: LICA/PUF/CLS/May 18, 2015 Customer ID: LICA

Alberta Innovates - Technology Futures MRYFS-90331/2

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Field Sample ID: //CA / PUF / CLS / May 18, 2015 Location: Client: Station ID:

75-04 Kan May Puf+ S/N: Installation Date/Time: Removal Date/Time: Motor S/N:

PUF and QFF Information

2015

2015

Elapsed Time 24,0 (Hours) May 19, 2015 **End Time** 00:00 (MST) Date and Time Information 00:00 Nay (P, 2015 Start Time (MST) 11ay 18, 2015 Sample Date

QFF Prep NA Date Puf Expiration Date 1.13 Shipped Date 14 Date Received とず

Set Flow Rate (slpm):

Date of Last Calibration: O1- SePt-11

330.19 (Vstd m<sup>3</sup>) Volume (Ostd slpm) | Tempurature (C) 11.00 Average Sampling Data AverageFlow 228 Pressure(mmHg) Average 722

Sampling data saved to memory card after sampling? YES(NO) Time set correctly prior to sampling? (YES) NO Timer set correctly prior to sampling (YES) NO

Comments:

Alex Yokupor Alex Youupa Technician Signiture:

Date , May 21, 2015 @ 16:55



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date:

MAY

18, 2015

PUF S/N: TE04

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.01
2-Methylnaphthalene	0.02
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	< 0.01
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.01
Perylene	< 0.01
Phenanthrene	0.08
Pyrene	0.02
Retene	0.08

Sample ID: 15050316-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/May 24, 2015

## Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

		Inst	Ř
LICA	573	LICA 0/	Field Sample ID: LICH/ PULF/ PLS / May 24, 2015
Client:	Location:	Station ID:	Field Sample ID: 270

3402	1138	play 21, 2015	STOY SE TON
Puf+ S/N:	Motor S/N:	nstallation Date/Time:	Removal Date/Time:

2005

		)	
1	May 25, 201	May 24, 2015	1 510% 12% Pmn1
046	00:00	00:00	11011 94 ani
(Hours)	(MST)	(MST)	
Elapsed Time	End Time	Start Time	Sample Date
	ıformation	Date and Time Information	
	£		

	QFF Prep	Date	att
Information	Puf Expiration	Date	NA
<b>PUF and QFF Information</b>	Date	Shipped	RN
	Date Received	במוכ זיכיכיו בי	X/A

	•	
6.00	うかん	
	Set Flow Rate (sipm):	1

01- Sept-11

Date of Last Calibration:

	Sampling Data	ig Data	
Average	AverageFlow	Average	Volume
Pressure(mmHg)	(Qstd slpm)	Pressure(mmHg) $  (Qstd slpm)   Tempurature ( C)   (Vstd m^3)$	(Vstd m³)
712	573	9.61	330.21

Sampling data saved to memory card after sampling? YES (NO) Timer set correctly prior to sampling 2 YES/ NO Time set correctly prior to sampling? YESLAND



Comments:

Sample out - by Alex Yakupov Date: May 25, 2015 Sample in - by Alex Vakupor

Technician Signiture:



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date:

MAY 24, 2015

PUF S/N: 9702

## PARAMETERS GONGENTRATION (UG)

1-Methylnaphthalene	0.09
2-Methylnaphthalene	0.15
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.10
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.04
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.03
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	0.02
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,I)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.09
Fluorene	0.15
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.12
Perylene	< 0.01
Phenanthrene	0.50
Pyrene	0.07
Retene	0.16

Sample ID: 15060054-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/May 30, 2015

JUN 109-20182112

# Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

<		LICA @ / Installat	Field Sample ID: LICA/PUF/CL3 / May 30,20/5 Remo
: LICA	570 :	: TIC	- LICA/PUF/CL.
Client:	Location:	Station ID:	Field Sample ID:

	1138	May	Jano 1
Puf+ S/N:	Motor S/N:	stallation Date/Time:	Removal Date/Time:

19:14

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2015 2015

	<b>PUF</b> and QFF Information	Information	
Dotto Dosping	Date	Puf Expiration	QFF Prep
חשוב שברפואפת	Shipped	Date	Date
NA	WH	NH	NH

	Date and Time Information	nformation	
Sample Date	Start Time	End Time	Elapsed Time
-	(MST)	(MST)	(Hours)
27 0015	8:00	00:00	0110
May 57, X015	May 30, 2015	Nay 31, 2015	

230	
Set Flow Rate (slpm):	

01- Sept- 11

Date of Last Calibration:

	Sampling Data	ig Data	
Average	AverageFlow	Average	Volume
Pressure(mmHg)	(Qstd slpm)	Pressure(mmHg) (Qstd slpm)   Tempurature ( C) (Vstd m³)	(Vstd m³)
51E	229	12.90	330.20

Sampling data saved to memory card after sampling? YES (NO) Time set correctly prior to sampling? YESY NO Timer set correctly prior to sampling? YES) NO

Comments:	
THE REAL PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF T	
:	
Technician Signiture:	Sample in - by HIER TARGETON
	Somple out - by Alex Yakapov

Date: June 1, 2015



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: PUF S/N: MAY

9801

30, 2015

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.01
2-Methylnaphthalene	0.03
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.02
Benzo(c)phenanthrene	0.09
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.11
Pyrene	0.03
Retene	0.04





## **Partisol Sampler Results**

Date		Filter NO.	Consentration (mg)
MAY	6	P4131547	0.020
MAY	12	P4131703	0.136
MAY	18	P4143634	0.091
MAY	24	P4143633	0.336
MAY	30	P4143632	0.061

Customer ID: LICA

Cust Samp ID: LICA Filter #P4131547

Partisol Sample Data Sheet

Priority: Normal

Date Sampled: May 6, 2017

Location:

CLS

Parameter:

TSP

PM10

Filter #:

LICA P413 1547

Start Time

**End Time** 

00:00

**Status** 

OK

Std Vol

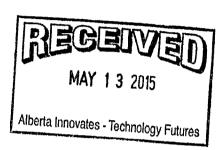
23,497

Valid Time

23:20

**Total Time** 

24



PM2.5

AIR FCD-01318/2

Comments: Weather Conditions, etc.

Technician Signature:

Alex Yakupov

Date: May 11, 2015

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1

0:00

4) Enter Dur

24:00:00

5) Enter Beg D 6) Enter End D dd-Aug

Note: Beginning & End

7) "Stop/Run"

dd-Aug

Date should be same date

Cust Samp ID: LICA P4131703

Partisol Sample Data Sheet

Priority: Normal

AIR FCD-01318/2

Date Sampled:	May 12	2015		MAY 19 21
Location:	CLS			المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة ال المراجعة المراجعة ال
Parameter:	TSP	PM10	PM2.5	
Filter #:	LICA P413 17	03		
Start Time	00:00 May	12, 2015		
End Time	00:00 May	13, 2015		
Status	OK	NECTORALA IN		
Std Vol	23,600			
Valid Time	24:00		•	
Total Time	24			
Comments: We	ather Conditions	s, etc.		
			****	

Programming

1) Make sure system is in "Stop Mode"

Technician Signature:

- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1

0:00

4) Enter Dur

24:00:00

5) Enter Beg D

dd-Aug

Note: Beginning & End

6) Enter End D

dd-Aug

Date should be same date

Alex Vakupor Pate: May 15, 2015

7) "Stop/Run"

Sample ID: 15050300-001

Customer ID: LICA

**irtisol Sample Data Sheet** 

Cust Samp ID: LICA P4143634

Priority: Normal

Date	Sampled:	May	18	, 2015

Location:

Parameter:

**TSP** 

PM10

PM2.5

MAY 2 5 2015

Alberta Innovates - Technology Futures

Filter #:

LICA P414 36 34

**Start Time** 

**End Time** 

Status

OK

Std Vol

23.900

Valid Time

23.59

**Total Time** 

24

Comments:	Weather Co	nditions,	etc.		
*3164-1		·			
-					
			7-1		**************************************
# - H				·	
			**************************************		
**************************************		<del></del>			

Technician Signature:

Alex Vakupor

Date: May 21, 2015

## Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1

0:00

4) Enter Dur

24:00:00

5) Enter Beg D 6) Enter End D

dd-Aug

Note: Beginning & End Date should be same date

7) "Stop/Run"

dd-Aug

Sample ID: 15050315-001

Customer ID: LICA

Cust Samp ID: LICA P4143633

## Partisol Sample Data Sheet

Priority: Normal



Alberta Innovates - Technology Futures

PM2.5

Date Sampled: _	May 24, 2015		
Location:	CLS	***************************************	
Parameter:	TSP	PM10	

Filter #: LICA P414 36 33

**Start Time** May 24,2015 May 25, 2015 **End Time Status** OK 22. 97P Std Vol 24:00 Valid Time 24 **Total Time** 

Comments: We	Comments: Weather Conditions, etc.						
5-41-10-10-10-10-10-10-10-10-10-10-10-10-10		· · · · · · · · · · · · · · · · · · ·	***************************************				
				***************************************	***************************************		
		****					
		****			NAME OF THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER O		

Alex Yakupev Date: May 25, 2015

## Programming

1) Make sure system is in "Stop Mode"

Technician Signature:

- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1

0:00

4) Enter Dur

24:00:00

5) Enter Beg D 6) Enter End D

dd-Aug

Note: Beginning & End

7) "Stop/Run"

dd-Aug

Date should be same date

Customer ID: LICA

Cust Samp ID: LICA P4143632

## artisol Sample Data Sheet

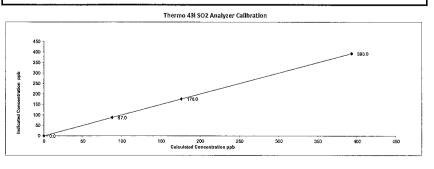
Priority: Normal

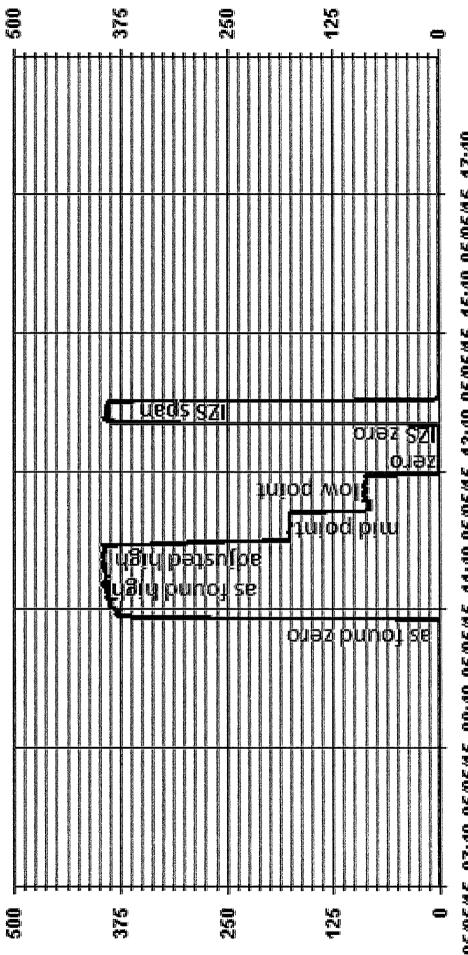
Date Sampled:	May 30	, 2015				
Location:	CLS	******			z /	71.5
Parameter:	TSP	PM10		PM2.5	otes	
Filter #:	LICA P41	<u>'436</u> 32		The state of the s		
Start Time	00:00 A	1 ay 30 , 2	2015			
End Time	00:00 A	May 31,	2015			
Status	OK					
Std Vol	23.69	30				
Valid Time	24:00	) 				
Total Time	24					
Comments: We						
Technician Sign	nature:		Alev Yo	,	: Iune	- - ! 1, 2015
Programming 1) Make sure syster 2) "ESC" to Time So 3) Enter Beg 1 4) Enter Dur 5) Enter Beg D 6) Enter End D 7) "Stop/Run"	creen then <sup>i</sup> 'Progr 24: d		Note: I Date s	Beginning & End	dateRE(	<u>CEIVED</u> N 0 5 2015

## APPENDIX III ANALYZER CALIBRATION RESULTS



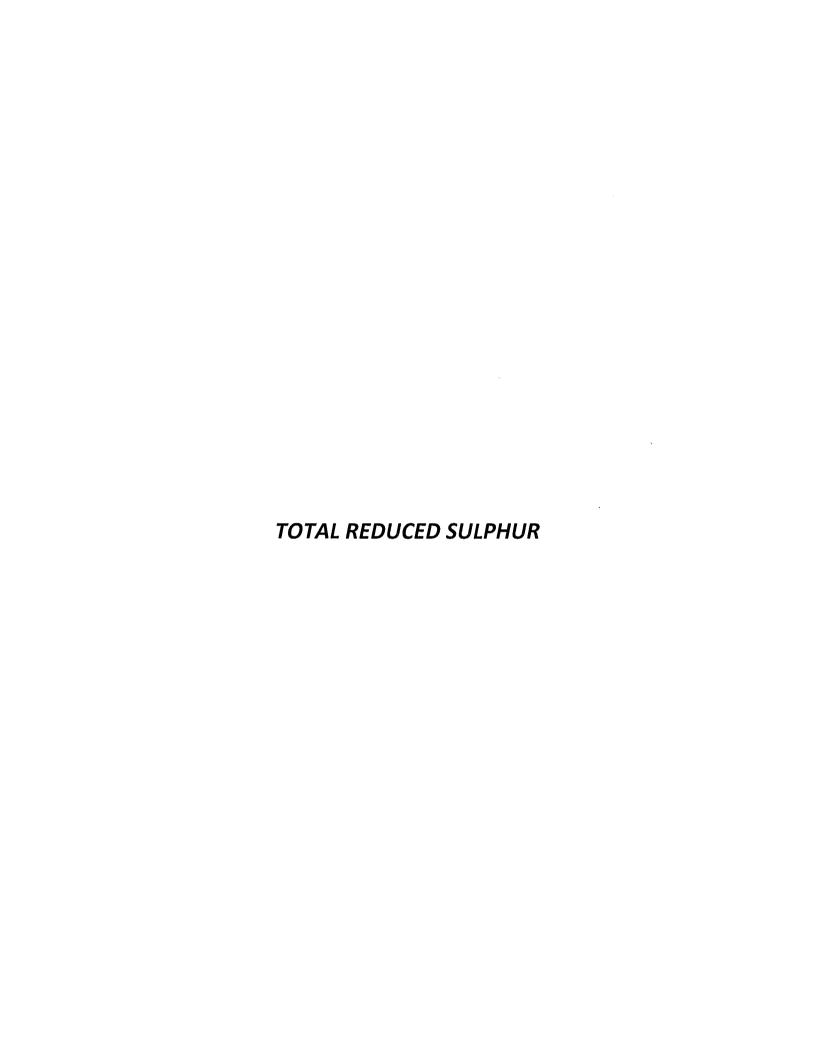
Company   Com	Date:	5-	May-15		Start	Start/End Time (mst): 11:		1 / 14:46	
Performance   19	Company:	-			Cali	bration Purpose:		Ionthly	-
Application pate is, \$778,700;   500   50	•			-					_
Analyser   Serial Number	•	Alex		-			26		-
Secial Number   806522421   Sequence   500   Sequence	Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :	-	302	-	Cai	das Expiry Date:	20	-Widi+17	•
Last Calibration Date:	Analyzer:								
New CF.   1.001									
As found:   BKG:   7.0   BKG:   7.0									
BKG; 7.0   BKG; 7.0   COPF; L1113   COPF; L1115   COPF;	Previous Cal High Point C.F.:		1,00.		. New C.F.:	1.004			
COFF   1.113			As four	nd:		As left:			
MOTHERBOARD:   3.3   3		BKG:			BKG:				
SO				3					
15.0	MOTHERBOARD:								
24.0   23.9									
NTERFACE BOARD:   PASH   FLASH   710									
FLASH:   710									
3.3   3.3	INTERFACE BOARD:	PMT:	-632,	ō		-632.0			
S.O.   S.O.		FLASH:			FLASH:				
15.0									
1-15.0									
24.0   23.7									
INTERNAL   30.2									
PERM OVEN GAS:   45.0   PERM OVEN GAS:   45.0   PERM OVEN HEATER:   44.20   PERM OVEN HEATER:   44.20   PERM OVEN HEATER:   44.20   PERM OVEN HEATER:   44.20   PERM OVEN HEATER:   44.20   PERM OVEN HEATER:   44.20   PERM OVEN HEATER:   675.6   PERSSURE:   675.6	1		30.1			30.2			
PERM OVEN HEATER   44.20   PRESSURE: 675.6   SAMPHE FLOW: 0.352   SAMPHE SET: 0.330.3   SAMPHE FLOW: 0.352   SAMPHE SET: 0.330.3   SAMPHE FLOW: 0.350.0   O. 0   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.350.0   O. 0   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.350.0   O. 0   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.350.0   O. 0   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.350.0   O. 0   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.350.0   O. 0   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.350.0   O. 0   SAMPHE FLOW: 0.350.0   O. 0   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.352   SAMPHE FLOW: 0.350.0   O. 0   SAMPHE FLOW: 0.352   SAMP	(	CHAMBER:			CHAMBER:	45.0			
PRESSURE   675.6   SAMPLE FLOW: 0.352   SAMPLE FL									
SAMPLE FLOW;   0.352   LAMP INTENSITY:   76 %   CONVERTER: NA   CONVERTE: NA   CONVERTE: NA									
LAMP INTENSITY:   76 %   CONVERTER   NA   CONVERTER   ST   NA   CONVERTER   ST   NA   Internal Span   390.3									
CONVERTER SET   NA   CONVERTER SET   NA   Internal Span: 390.3   390.3									
Calibrator:   NA			NA			NA NA			
Calibrator   Flow Mater   D's   NA	CONVE	RTER SET:			CONVERTER SET:				
Flow Mater ID's: NA   Serial #: Environone   Serial #: 4760   high   5000   40   500	Inte	rnal Span:	385,5	5	Internal Span:	390,3			
Flow Mater ID's: NA   Serial #: Environone   Serial #: 4760   high   5000   40   500	Callbrator	-				Calibrator Flor	u Targete		
Serial #: 4760   A760			NA		point				total (cc/min)
Cal Gas CylInder   1.0. #   LL42475   50.3   mild   5000   20   5020	Make & Model:	Env	irononcs	-				0	
Solution   Solution				_	high				
Calibrator Flow Rates {cc/min}         Calculated Concentration: Indicated Concentration: Correction Factors:           Point         Diluter         Cal Gas         Total (ppb)         (ppb)         Correction Factors:           as found zero         4994         D.0         4994         O         0.0         NA           adjusted zero         NA         393.3         392.0         1.003           as found high         4955         39.05         4994         393.3         393.0         1.001           amid         4978         17.48         4995         176.0         176.0         1.000           low         4985         8.73         4994         87.9         87.0         1.011           calibrator zero         4994         0.00         4994         0         0.0         NA           Linear Regression/Calibration Results:           Linear Regres				-	· · · · · · · · · · · · · · · · · · ·				
Calibrator Flow Rates (cc/mln)   Calculated Concentration:   Indicated Concentration:   Correction Factors:	Cal Gas Conc, (ppm):		50.3	-	low	5000		10	5010
Point   Diluent   Cal Gas   Total   (ppb)   (ppb)	Calibration:			.,					
Point   Diluent   Cal Gas   Total   (ppb)   (ppb)									
As found zero		_					ntration:	Correc	tion Factors:
Adjusted zero									NIA.
As found high		4994		4994	U	0.0			NA
Adjusted high   4955   39.05   4994   393.3   393.0   1.001     mild   4978   17.48   4995   176.0   176.0   1.000     low   4985   8.73   4994   0   0   0.0   NA     Calibrator zero   4994   0.00   4994   0   0.0   NA     Linear Regression/Calibration Results:	· · · · · · · · · · · · · · · · · · ·	4955		4994	393,3	392.0			1.003
iow		4955	39.05	4994	393,3	393,0			1,001
calibrator zero         4994         0.00         4994         0         0.0         NA           Average C.F.=         1.004           Linear Regression/Calibration Results:           Limits Pass/Fall?           Correlation Coeffecient = 1.000	mld				176.0				
Linear Regression/Calibration Results:   Linear Regression/Calibration Results:   LiMiTS   Pass/Fail   7									
Linear Regression/Calibration Results:   LiMiTs   Pass/Fall ?	calibrator zero	4994	0,00	4994	. 0		770 C F =		
Correlation Coeffecient						Avei	age C.F.~		1.004
Correlation Coeffecient =   1,000   > or = 0,995   PAS5     Slope =   1,000   0,85-1.15   PAS5     b (Intercept as % of full scale) =   0,065%   ± 3 % F.S.   PASS     % change in C.F. from last cal   -0,23%   ± 15%   PASS     Converter Effeciency Check for H <sub>2</sub> S/TRS application:   **run converter effeciency test immediately following zero adjust **    SO <sub>2</sub> High Point gas concentration:   NA   Time gas run (mst):   NA     Zero corrrected analyzer response:   NA				Linear R	egression/Callbration Result	5;			
Slope = 1.000 0.85-1.15 PASS b (Intercept as % of full scale) = 0.06% ± 3% F.S. PASS % change in C.F. from last cal -0.23% ± 15% PASS  Converter Effeciency Check for H <sub>2</sub> S/TRS application:  **run converter effeciency test immediately following zero adjust**  SO <sub>2</sub> High Point gas concentration: NA Time gas run (mst): NA  Zero corrrected analyzer response: NA						LIMITS	Pass/Fall	?	
b (Intercept as % of full scale)=  % change in C.F. from last cal  -0.23%  * 15%  PASS  Converter Effeciency Check for H <sub>1</sub> S/TRS application:  **run converter effeciency test immediately following zero adjust**  SO <sub>2</sub> High Point gas concentration:  NA  Time gas run (mst): NA  Zero corrrected analyzer response:  NA		C	orrelation Coe						
% change in C.F. from last cal									
Converter Effeciency Check for H <sub>2</sub> s/TRS application:  **run converter effeciency test immediately following zero adjust**  SO <sub>2</sub> High Point gas concentration:  NA Time gas run (mst):  Zero corrrected analyzer response:  NA						•			
**run converter effeciency test immediately following zero adjust**  SO <sub>2</sub> High Point gas concentration:  NA  Time gas run (mst): NA  Zero corrrected analyzer response:  NA		70 -11-1-15-			-0123/2	. 11070	1 733		
SO <sub>2</sub> High Point gas concentration:  NA  Time gas run (mst): NA  Zero corrrected analyzer response:  NA			Con	verter Eff	eciency Check for H <sub>2</sub> S/TRS ap	plication:			
SO <sub>2</sub> High Point gas concentration:  NA  Time gas run (mst): NA  Zero corrrected analyzer response:  NA									
Zero corrrected analyzer response: NA				rter effec	iency test immediately follov	wing zero adjust*	•		
Zero corrrected analyzer response: NA			**run conve						
	SO. High Point gar concentration	tlon			Time are run (met):	NΔ			
Comments:	SO₂ High Point gas concentral	tion:			Time gas run (mst):	NA			
Comments:		•	NA		Time gas run (mst):	NA			
	Zero corrrected analyzer resp	•	NA		Time gas run (mst):	NA			





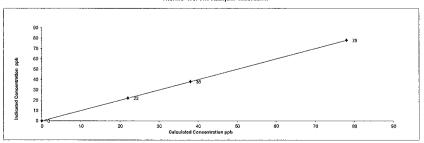
05/05/15 07:40 05/05/15 09:40 05/05/15 11:40 05/05/15 13:40 05/05/15 15:40 05/05/15 17:40

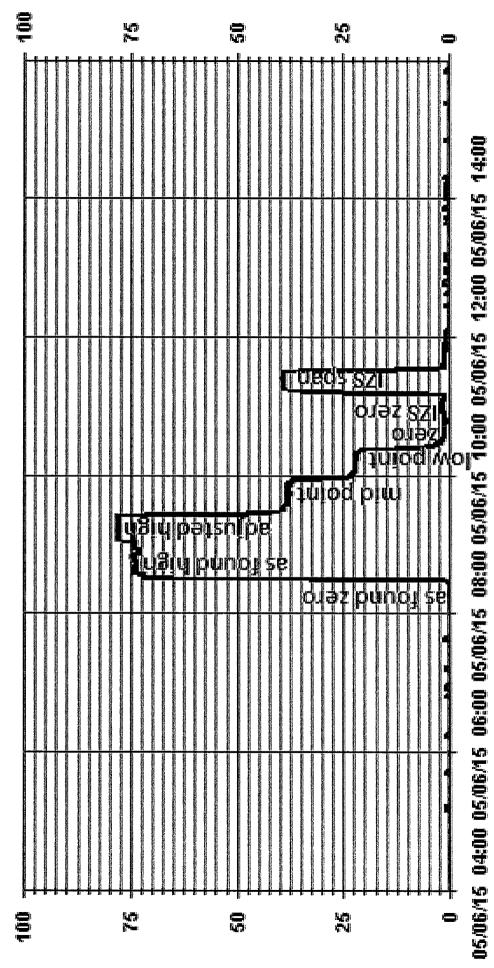
502



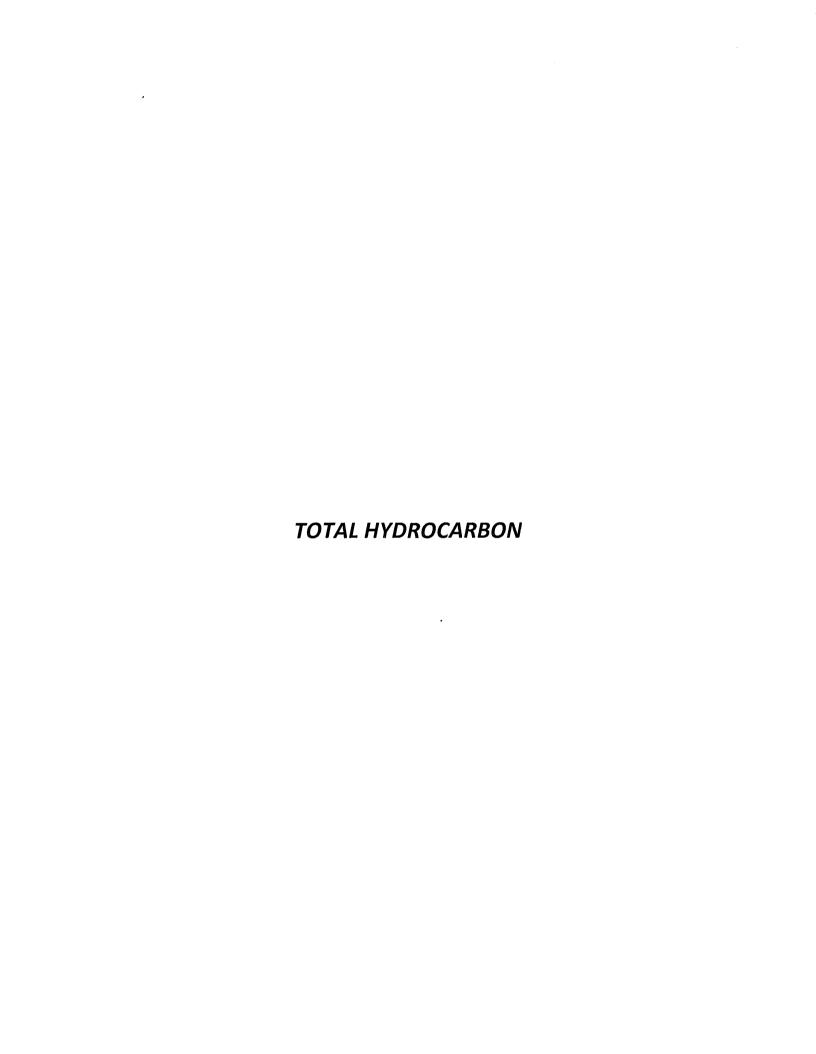
Date:	6-1	/lay-15		Start	/End Time (mst):	7:3:	1 / 11:35	
Company:		LICA	-		bration Purpose;		lonthly	-
Station Name/Location:		ake South	_		r Make & Model:	Therm	o CDN -101	-
Performed by:		Yakupov TRS	-		onverter Serial #:   Gas Expiry Date:	15	501 5-Jul-17	-
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :		INJ	-	Cai	das Expiry Date.			-
Analyzer: Seriai Number:		812728		D	100			
Last Calibration Date:	-	6-Apr-		Range ppb: As Found C.F.	•			
Previous Cal High Point C.F.:	-	1,000		New C.F.:				
	_							
	BKG:	As four 12.8		BKG:	As left: 13.5			
	COEF:	0.992		COEF:	0.973			
MOTHERBOARD:	3.3	3,3		3.3	3,3			
	5,0	5.0		5.0	5.0			
	15.0	15.0		15.0				
	24.0 -3.3	23.9		24.0 -3.3				
INTERFACE BOARD:	PMT:	-650,		PMT:	-650.5			
	FLASH:	743		FLASH:	743			
	3.3	3,2		3,3	3.2			
	5.0	5.0		5.0				
	15.0	14.7 -15.0		15.0	-15,0			
	-15.0 24.0	23,4		-15.0 24.0	23.4			
IN	ITERNAL:	31,8		INTERNAL:	31.2			
	HAMBER:	45.2		CHAMBER:	45.1			
CONVERTE		325,4		CONVERTER TEMP:	325.7			
	RTER SET:	325		CONVERTER SET:	325			
	VEN GAS: _ VEN HTR:	44.99		PERM OVEN GAS: PERM OVEN HTR:	45,0 44,38			
	RESSURE:	652.6		PRESSURE:	651.4			
	LE FLOW:	0.500	5	SAMPLE FLOW:	0.508			
	ITENSITY:	92%		LAMP INTENSITY:	91%			
Inter	nal Span: _	36.68	3	Internal Span:	39,02			
Calibrator:					Calibrator Flo	w Targets	;	
Flow Meter ID's:		NA	_	point	diluent (cc/min)	cal ga	as (cc/min)	total (cc/min)
Make & Model:		700	-	zero	5000		0	5000
Serial #; _ Cal Gas Cylinder I.D. # ;		830 36837	-	high mid	5000 5000		39 19	5039 5019
Cal Gas Conc. (ppm):		10.0	-	low	5000		11	5011
Calibration:			-					
Calibrator Flor	w Rates In	c/min)		Calculated Concentration:	Indicated Conce	ntration	Correct	tion Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)			
			4999	•	0,0			NA
as found zero	4999	0,0	4555	0				
as found zero adjusted zero		NA			75.0			4.014
as found zero adjusted zero as found high	4958	NA 39.00	4997	78.0	75.0 78.0			1.041
as found zero adjusted zero as found high adjusted high	4958 4958	NA	4997 4997	78.0 78.0	75.0 78.0 38.0			1.041 1.001 1.000
as found zero adjusted zero as found high	4958	NA 39.00 39,00	4997	78.0	78.0			1.001
as found zero adjusted zero as found high adjusted high mid	4958 4958 4979	NA 39,00 39,00 19.00	4997 4997 4998	78.0 78.0 38.0	78.0 38.0 22.0 0.0			1.001 1.000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low	4958 4958 4979 4990	NA 39,00 39,00 19.00 11.00	4997 4997 4998 5001	78.0 78.0 38.0 22.0	78.0 38.0 22.0 0.0	age C,F.=		1.001 1,000 1.000
as found zero adjusted zero as found high adjusted high mid low	4958 4958 4979 4990	NA 39,00 39,00 19.00 11.00	4997 4997 4998 5001 4999	78.0 78.0 38.0 22.0	78.0 38.0 22.0 0.0 Aver	age C,F.=		1.001 1,000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low	4958 4958 4979 4990 4999	NA 39,00 39,00 19.00 11.00 0.00	4997 4997 4998 5001 4999	78.0 78.0 38.0 22.0 0	78.0 38.0 22.0 0.0 Aver	Pass/Fail		1.001 1,000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low	4958 4958 4979 4990 4999	NA 39,00 39,00 19.00 11.00	4997 4997 4998 5001 4999 Linear R	78.0 78.0 38.0 22.0 0 egression/Callbration Result	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995	Pass/Fail PASS		1.001 1.000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low	4958 4958 4979 4990 4999	NA 39.00 39.00 19.00 11.00 0.00	4997 4998 5001 4999 Linear R	78.0 78.0 38.0 22.0 0 egression/Calibration Result 1.000 1.000	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995 0.85-1.15	Pass/Fail PASS PASS		1.001 1.000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low calibrator zero	4958 4958 4979 4990 4999	NA 39,00 39,00 19.00 11.00 0.00	4997 4998 5001 4999 Linear R ffecient = Slope = ull scale)=	78.0 78.0 38.0 22.0 0 egression/Calibration Result 1.000 1.000	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995	Pass/Fail PASS		1.001 1.000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low calibrator zero	4958 4958 4979 4990 4999	NA 39,00 39,00 19,00 11,00 0,00 orrelation Coe	4997 4997 4998 5001 4999 Linear R ffecient = Slope = st cal	78.0 78.0 38.0 22.0 0 egression/Calibration Result 1.000 1.000 0.00% -4.06%	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fail PASS PASS PASS		1.001 1.000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low calibrator zero	4958 4958 4979 4990 4999	NA 39,00 39,00 19,00 11,00 0,00 orrelation Coe	4997 4997 4998 5001 4999 Linear R ffecient = Slope = st cal	78.0 78.0 38.0 22.0 0 egression/Calibration Result 1.000 1.000 0.000%	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fail PASS PASS PASS		1.001 1.000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low calibrator zero	4958 4958 4979 4990 4999	NA 39,00 39,00 19,00 11,00 0,00  orrelation Coe cept as % of fe in C.F. from la	4997 4998 5001 4999 Linear R ffecient = Slope = ull scale)= st cal	78.0 78.0 38.0 22.0 0 egression/Calibration Result 1.000 1.000 0.00% -4.06%	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% opplication:	Pass/Fail PASS PASS PASS PASS		1.001 1,000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low calibrator zero	4958 4958 4979 4990 4999 Co b (Inter- % change	NA 39,00 39,00 19,00 11,00 0,00  orrelation Coe cept as % of fe in C.F. from la	4997 4998 5001 4999 Linear R ffecient = Slope = ull scale)= st cal	78.0 78.0 38.0 22.0 0 egression/Callbration Result 1.000 1.000 0.009% -4.069%	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% optication:	Pass/Fail PASS PASS PASS PASS		1.001 1,000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low calibrator zero	4958 4958 4979 4990 4999 Cc b (Inter- % change	NA 39,00 39,00 19,00 11,00 0,00  orrelation Coe cept as % of ft in C.F. from la  Con	4997 4998 5001 4999 Linear R ffecient = Slope = ull scale)= st cal	78.0 78.0 38.0 22.0 0 egression/Calibration Result 1.000 1.000 0.00% -4.06% eclency Check for H <sub>2</sub> S/TRS agelency test Immediately follow	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% optication:	Pass/Fail PASS PASS PASS PASS		1.001 1,000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low calibrator zero	4958 4958 4979 4990 4999 Cc b (Inter- % change	NA 39,00 19,00 11,00 0,00  orrelation Coe coept as % of ft in C.F. from la Con  **run conve	4997 4998 5001 4999 Linear R ffecient = Slope = ull scale)= st cal	78.0 78.0 38.0 22.0 0 egression/Calibration Result 1.000 1.000 0.00% -4.06% eclency Check for H <sub>2</sub> S/TRS agelency test Immediately follow	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% optication:	Pass/Fail PASS PASS PASS PASS		1.001 1,000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low calibrator zero	4958 4958 4979 4990 4999 Cc b (Inter- % change	NA 39,00 19,00 11,00 0,00  orrelation Coe coept as % of ft in C.F. from la Con  **run conve	4997 4998 5001 4999 Linear R ffecient = Slope = ull scale)= st cal	78.0 78.0 38.0 22.0 0 egression/Calibration Result 1.000 1.000 0.00% -4.06% eclency Check for H <sub>2</sub> S/TRS agelency test Immediately follow	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% optication:	Pass/Fail PASS PASS PASS PASS		1.001 1,000 1.000 NA
as found zero adjusted zero as found high adjusted high mid low calibrator zero	4958 4958 4979 4990 4999 Co b (Inter- % change on:	NA 39,00 19,00 11,00 0,00  overlation Coe cept as % of fu fu C.F. from la Con  **run conve	4997 4998 5001 4999 Linear R ffecient = Slope = ull scale)= st cal	78.0 78.0 38.0 22.0 0 egression/Calibration Result 1.000 1.000 0.00% -4.06% eclency Check for H <sub>2</sub> S/TRS agelency test Immediately follow	78.0 38.0 22.0 0.0 Aver s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% optication:	Pass/Fail PASS PASS PASS PASS		1.001 1,000 1.000 NA

Thermo 450i TRS Analyzer Calibration





- LICA TRS\_ PPB



#### Maxxam Thermo 51C THC Analyzer Calibration Start Time (mst): 5-May-15 End Time (mst): Company: LICA 14:51 Cold Lake South Monthly Calibration Calibration Purpose: Station Name/Location: Performed by: Alex Yakupov Cal Gas Expiry Date: 12-Aug-17 Analyzer: 427408718 Range ppm: As Found C.F. 50 Serial Number: 1.018 Last Calibration Date: 6-Apr-15 Previous Cal High Point C.F.: 1,004 New C.F.: 1.002 As left: As found: 1700 1700 H<sub>2</sub> cylinder (psl): H<sub>2</sub> cylinder (psi): H2 cylinder reg set (psi): 23 H<sub>2</sub> cylinder reg set (psi): 23 Span Cylinder (psl): Span Cylinder Reg Set (psl): 700 Span Cylinder (psi): 700 30 Span Cylinder Reg Set (psi): 30 Zero Air Gen Pressure: 33 Zero Air Gen Pressure: 33 measurement alarms: None measurement alarms: None service alarms: service alarms: None FID status: 1345 1432 rng: rng: try: 182.8 183.3 flm: 125.3 125.2 183 Oven Readings: Flame: 182 Flame: 125 125 125 Filter: 125 Base: Base: Pump: 06.51 Pump: 06.51 Voltages: 14.8 +15 +15 14.8 -15.1 -15.1 -15 -15 31.16 31.81 Internal Span: Internal Span:

Flow Meter ID's:		NA
Make & Model:	Α	PI 700
Serlal #:		830
Cal Gas Cylinder I.D. #:	L	33674
CH₄/C₃H <sub>8</sub> Cylinder Conc. (ppm):	601.4	202.0
CH <sub>4</sub> as propane/total CH <sub>4</sub> equivilants (ppm):	555.5	1156.9

Calibrator Flow Targets:			
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	2000	0	2000
high	1935	65	2000
mid	1969	31	2000
low	1984	16	2000

### Calibration:

Calibrator:

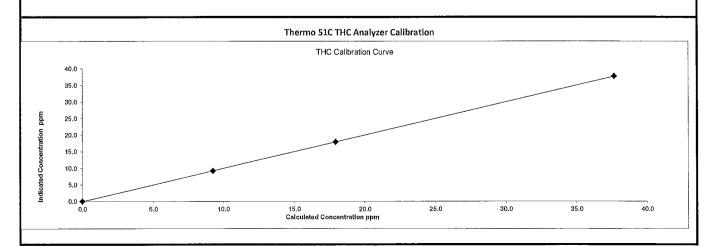
Calibrator Flow F	tates (cc/min)			Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	2000	0.00	2000	0	-0.10	NA
adjusted zero	2000	0.00	2000	0	0.00	NA
as found high	1932	65.00	1997	37.66	37.00	1.018
adjusted high	1932	65.00	1997	37.66	37.70	0.999
mid	1969	31.00	2000	17.93	17.90	1.002
low	1984	16.00	2000	9.26	9.20	1.006
calibrator zero	2000	0.00	2000	0	0.00	NA
					Average C.F.=	1.002

### Linear Regression/Calibration Results:

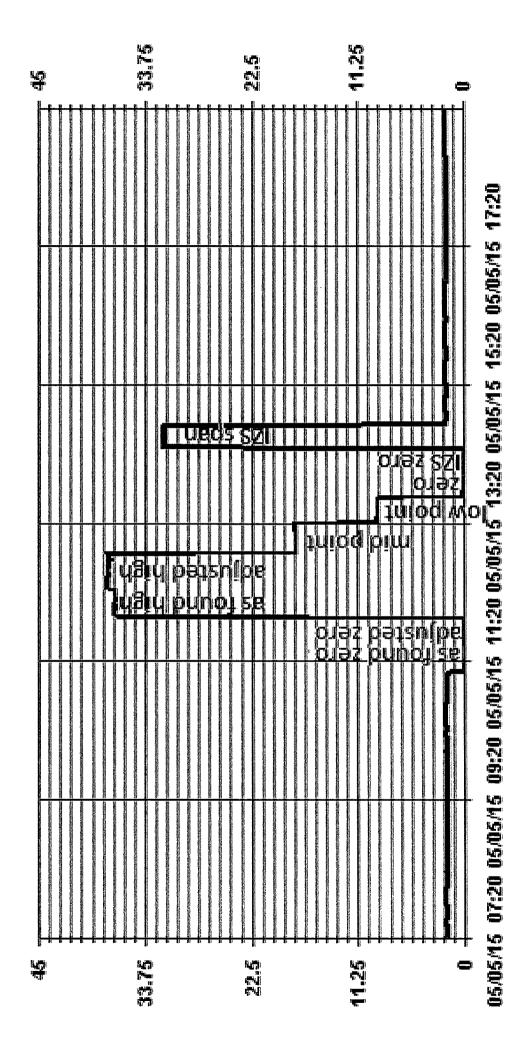
		LIMITS	Pass/Fail?
Correlation Coeffecient =	1.000	> or = 0.995	PASS
Slope =	1.002	0.85-1.15	PASS
b (Intercept as % of full scale)=	-0.076%	± 3% F.S.	PASS
% change in C.F. from last cal	-1.36%	± 15%	PASS

### Comments:

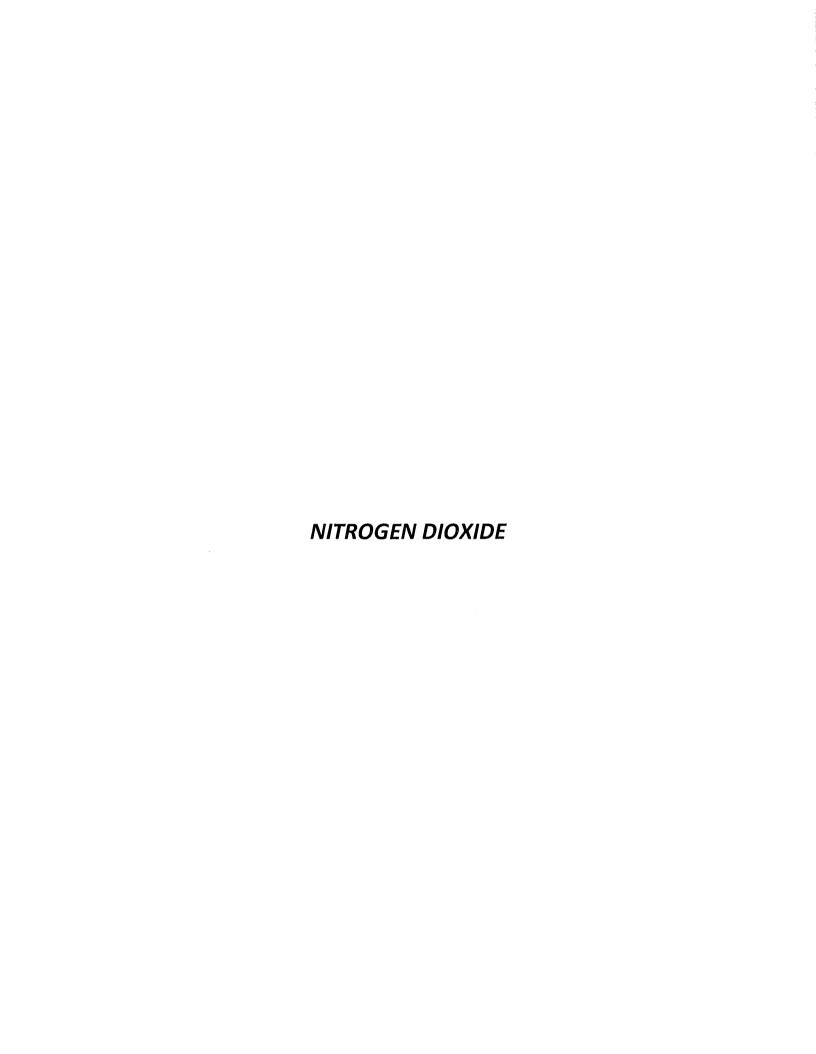
Sample filter changed.



Of Minute Averages



- LICA THC PPM



Ма	XXam	
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### Thermo 42C NOx Analyzer Calibration

Date: Company: Station Name/Location: Performed by:

5-May-15	
LICA	
Cold Lake South	
Aley Vakupov	

Start Time (mst):	11:01
End Time (mst):	17:13
Calibration Purpose:	Monthly
Cal Gas Explry Date:	26-Mar-17

Correction Factors:

 Analyzer Serial Number:
 427408716

 Last Calibration Date:
 6-Apr-15

 Range ppb:
 500

As found C.F.		
NO=	1.014	
NOx=	1.014	
No.	1.004	

 $\begin{aligned} \text{Previous Cal High Point C.F.:} \\ \text{NO=} & 1.001 \\ \text{NOx=} & 1.001 \\ \text{NO}_2 = & 1.003 \end{aligned}$ 

	As found:	
NO Bkg ppb:	4.7	
NOx Bkg ppb:	4.9	
NO Coef:	0.940	
NOx Coef:	1.015	
NO <sub>2</sub> Coef:	1,003	
PMT:	-850	
+15:	15.1	
+5:	5.0	
+15:	15,1	
-15:	-15.1	
Battery:	3.2	
Internal:	29.2	
Chamber:	49.9	
Cooler:	-2.4	
Converter:	317	
Converter Set:	319	
Pressure:	186.0	
Sample Flow:	0.543	
Ozonator Flow:	OK	
Internal Span:	395.5/6.4/389	

	As left:	
NO Bkg ppb:	4.7	
NOx Bkg ppb:	4,9	
NO Coef:	0.951	
NOx Coef:	1.016	
NO <sub>2</sub> Coef:	1.003	
PMT:	- 850	
+15:	15.1	
+5:	5.0	
+15:	15,1	
-15:	- 15.1	
Battery:	3.2	
Internal:	29.0	
Chamber:	49.6	
Cooler:	- 2.5	
Converter:	317	
Converter Set:	319	
Pressure:	186.4	
Sample Flow:	0.542	
Ozonator Flow:	OK	
Internal Span:	390.7/6.7/384	

#### Callbrator Flow Targets:

Make & Model:	Environics 6100
Serial #:	4760
Cal Gas Cylinder I.D. #:	LL42475
NO Cylinder Conc. (ppm):	48.5
NOx Cylinder Conc. (ppm):	48.5

Г	point	diluent (cc/min)	cal gas (cc/min)	O <sub>3</sub> setting (v or ppb)	total (cc/min)
_	zero	4995	0	0	4995
Г	high	4916	40	205.00	4956
Γ	mid	4957	20	125,00	4977
Г	low	4975	10	40.00	4985

### Calibration:

Calibra	ator Flow Rate	es (cc/min)		Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)	$\mathcal{N}$	$\mathcal{N}$
as found zero	4994	0.0	4994	0	0	0.0	0.0	NA	NA
adjusted zero		NA							
as found high	4955	39.05	4994	379.2	379.2	374	374	1.014	1.014
adjusted high	4955	39.05	4994	379.2	379.2	379	379	1.001	1.001
mid	4978	17.48	4995	169.7	169.7	169	169	1.004	1,004
low	4985	8.73	4994	84.8	84.8	84	84	1.009	1,009
calibrator zero	4994	0,00	4994	0	0	0.0	0.0	NA	NA
	·			· · · · · · · · · · · · · · · · · · ·			Average C.F.=	1.005	1.005

Calibra	Calibrator Flow Rates (cc/min)				Indicated NO	Indicated NOx	Indicated NO₂	NO drop	NO <sub>2</sub> increase	NO <sub>2</sub> C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(dqq)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4955	39,05	4994	0.0	378.0	378.0	0.0	0.0	0.0	$\sim$
as found NO <sub>2</sub>	4955	39.1	4994	205.0	124.0	378.0	253.0	254.0	253.0	1.004
adjusted NO <sub>2</sub>	4955	39.1	4994	205.0	124.0	378.0	253.0	254.0	253.0	1.004
gpt mid	4955	39.1	4994	125.0	228.0	378,0	150.0	150.0	150.0	1.000
gpt low	4955	39,05	4994	40.0	324.0	378,0	54.0	54.0	54.0	1.000
								Av	erage NO2 C.F.=	1.001

Linear Regression/Calibration Results:

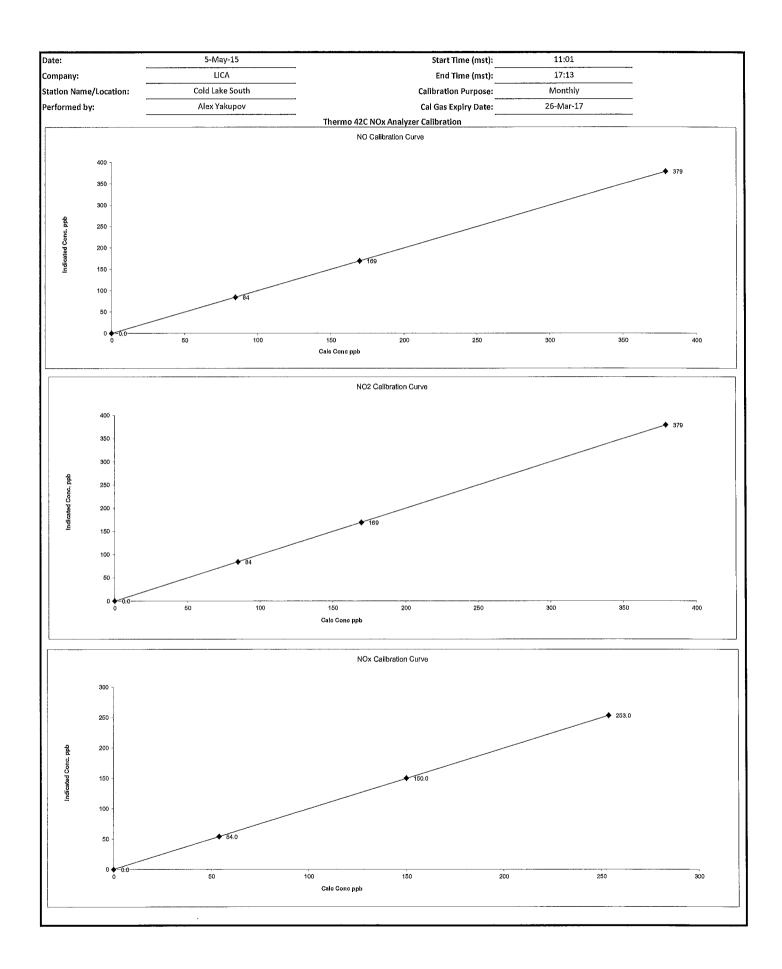
_	Linear Hogres	sion, canaration is	CDUI. CO.
	NO	NOx	NO₂
Correlation Coeffecient =	1.000	1.000	1.000
Slope =	1.000	1.000	0.996
b (Intercept as % of full scale)=	-0.09%	-0.09%	0.04%
% change in C.F. from last cal=	-1.30%	-1.30%	-0.09%
NO2 converter effeciency		$\geq$	99.9%

LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. +/-15% >85%

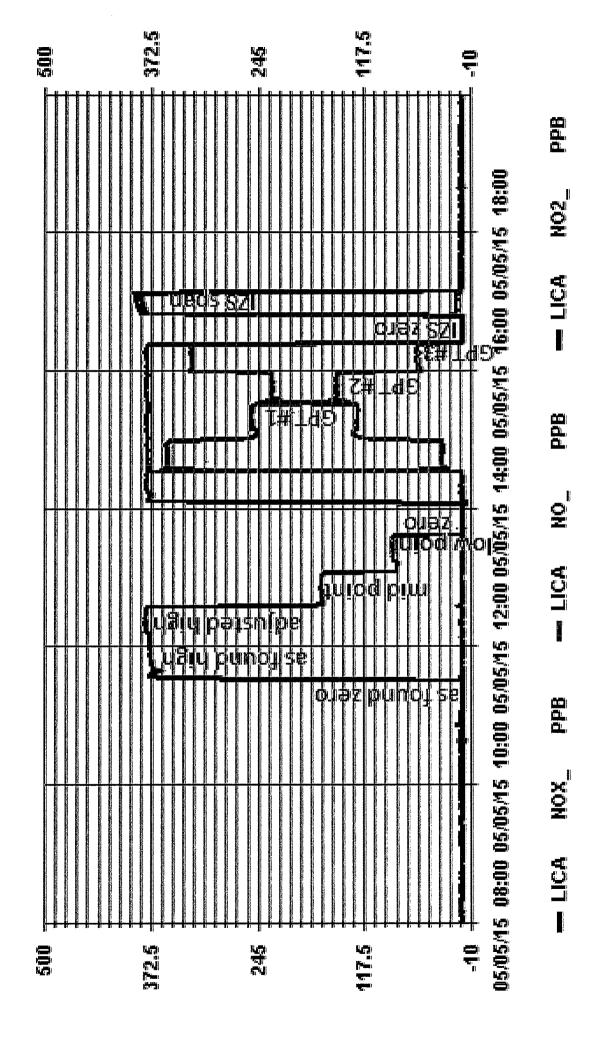
#### Comments

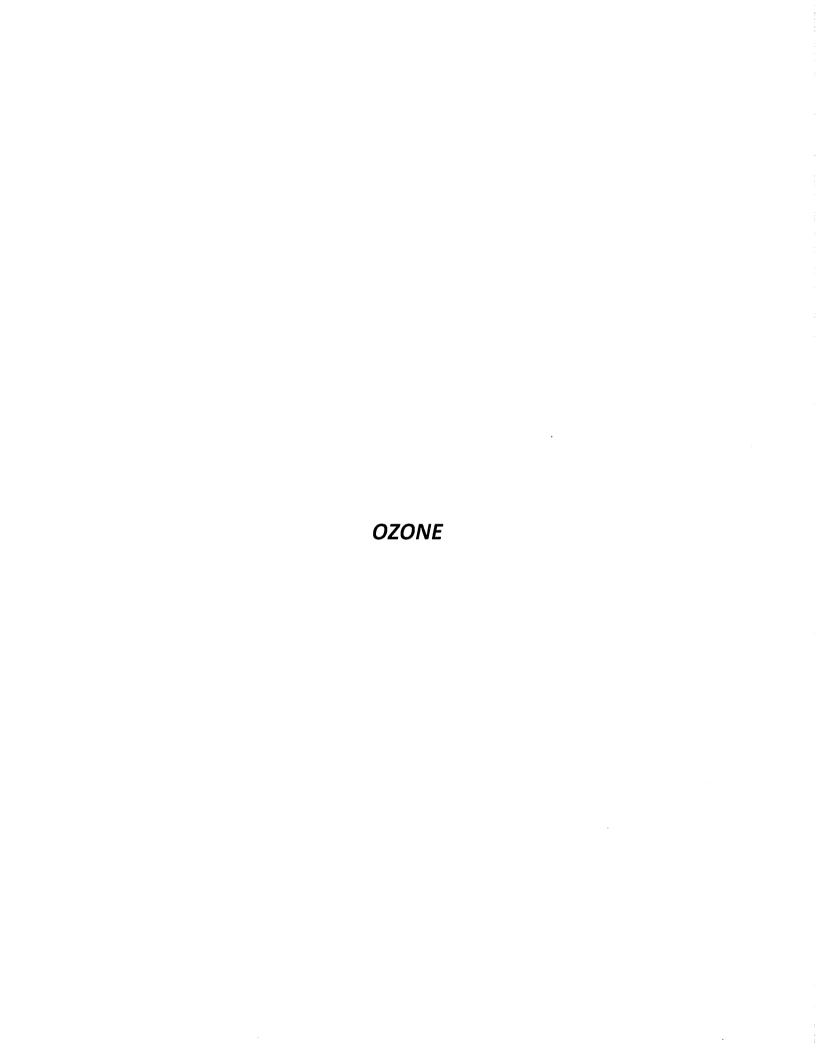
No ZERO adjustment made. Filter changed. Low point starts from 13:15. Additional point taken (14:38 - 14:57) to provide for High O3 cal target (Ind. NO=24, Ind. Nox=377, Ind. No2=352, NO drop= 353, NO2 increase= 352, NO2 C.F = 1.003) => O3 concentration = 310 ppb; As Found NO2 starts from 15:10

NO2 adjustment not made. Values copied from GPT as-found for calculation only.

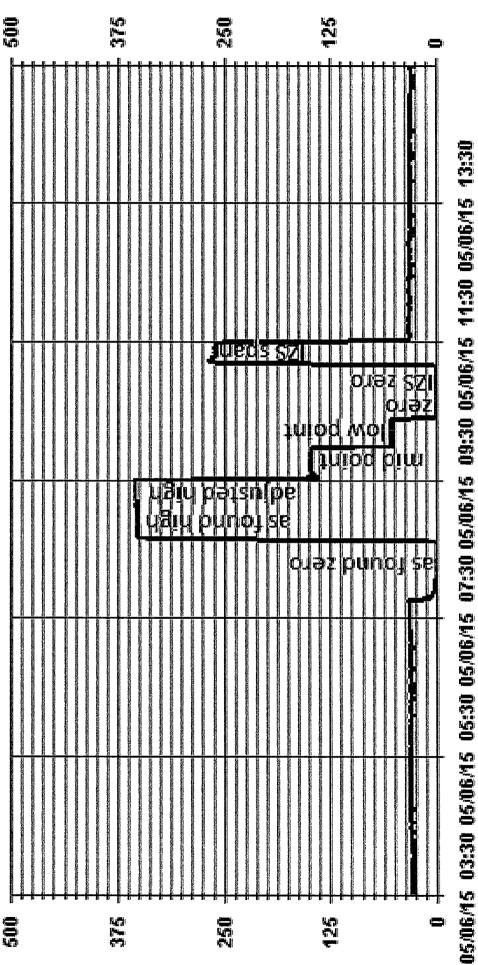


od Minute Averages





いつみんび	m T	hermo	49i C	)₃ Analyzer Cali	ibration	
			_			
ate: ompany:		lCA	-		Start Time (mst): End Time (mst):	7:31 11:35
ompany: tation Name/Location:		ake South	-	Cali		nthly Callbration
erformed by:		Yakupov	-		G.P.T. Date:	5-May-15
nalyzer:						
erial Number:	_	700419		Range ppm:		=
ast Calibration Date:	_	7-Apr-		As Found C.F.		•
revious Cal High Point C.	F.: _	1,00	0	New C.F.:	1.011	•
		^e fou	•-		A - India	
	O Dbgs	As fou		O Blan	As left:	
	O <sub>3</sub> Bkg: _	0.2		O <sub>3</sub> Bkg:	0.2	•
lotherboard:	O <sub>3</sub> Coef: 3.3	3.3		O <sub>3</sub> Coef: 3.3	3,3	•
otnerposiu.	3,3 15.0	15,1		3.3 15.0	3.3 15.1	•
	24.0	23.9		15.0 24.0	23,9	•
	-3.3	-3.2		-3.3	-3.2	•
terface Board:	-3.3 3.3	3.2		-3.3 3.3	3.2	
terrace see	5.0	4.9		5.0	4.9	•
	15.0	14.8	В	15.0	14,8	-
	-15.0	-14,		-15.0	-14.8	
	Photo Lamp	8.7		Photo Lamp	8.7	-
	24.0	23.7		24.0	23.7	•
	O <sub>3</sub> Lamp	9.0		O <sub>3</sub> Lamp	9.0	•
	Bench:	27,9		Bench:	27.2	-
	Bench Lamp:	53.4		Bench Lamp:	53.4	<u>.</u>
	O <sub>3</sub> Lamp:	67,3		O <sub>3</sub> Lamp:	67,3	• -
	Pressure:	699.		Pressure:	700.5	<del>,</del> -
	Cell A ipm:	0.70		Cell A Ipm:	0.710	•
	Cell B lpm:	0.74		Cell B lpm:	0.749	•
	O <sub>3</sub> ppb:	1.5		O <sub>3</sub> ppb:	-0.2	-
	Cell A ppb: _	-12.0 15.0		Cell A ppb:	-12,0 11.6	
	Cell B ppb:	15.0 5931		Cell B ppb:	11,6 59308	
	Cell A int: _ Cell B int:	5931 5754		Cell A Int:	59308 57510	
1	Cell B int:  Internal Span:	262.		Cell B int: Internal Span:	259	-
	Memai Jpa			Historian again.	<b>L</b> .V.,	=
alibrator:					Calibrator Flow Targets:	
	·			point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)
	del: Enviror	nics 6100	,	zero	4995	0
Make & Moo			-			
Seria	al #:4	760	-	high	4995	310
Seria NOx Gas Cylinder I.D.	al#: 4 .#: 1L4	12475	-	hìgh mid	4995	125
Seria	al#: 4 .#: 1L4		-	high		
Seria NOx Gas Cylinder I.D.	al#: 4 .#: 1L4	12475	-	hìgh mid	4995	125
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allbration:	al#: 4 .#: 1L4	12475 18.5	-	high mid Iow	4995	125
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allbration:	al #: 4 . # : LL4 m): 4	12475 18.5	Total	hìgh mid	4995 4995	125 40
NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allbration: Callbrato Point as found zero	al #: 4 . # : LL4 m): 4	12475 18.5 .c/min) Cal Gas 0.0	Total 4994	high mid low Calculated Concentration:	4995 4995 Indicated Concentration:	125 40
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration: Callibrato Point as found zero adjusted zero	al #: 4 . #: 1L4 m): 4  por Flow Rates (c Diluent 4994	12475 18.5 18.5 18.5 18.5 18.5 18.5 18.5 18.	4994	high mid low  Calculated Concentration: (ppb) 0,0	4995 4995 Indicated Concentration: (ppb) 0.0	125 40  Correction Factors:
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high	al #: 4 . #: LL4 m): 4  or Flow Rates (c  Diluent 4994 4994	12475 18.5 18.5 18.5 18.5 18.5 18.5 18.5 18.	4994 5304	high mid low  Calculated Concentration: (ppb) 0.0 353.0	4995 4995 Indicated Concentration: (ppb) 0.0	125 40  Correction Factors: NA 1.003
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high	al #: 4 #: 1.14 m): 4  or Flow Rates (c) Diluent 4994 4994 4994	12475 18.5 2c/min) Cal Gas 0.0 NA 310.00 310.00	4994 5304 5304	high mid low  Calculated Concentration: (ppb) 0,0 353.0 353.0	4995 4995 Indicated Concentration: (ppb) 0.0 352.0 353.0	125 40 Correction Factors:  NA  1.003 1.000
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Calibrato Point as found zero adjusted zero as found high adjusted high mid	al #: 4 #: 1.14 m): 4  or Flow Rates (c  Diluent 4994 4994 4994 4994	12475 18.5 Cal Gas 0.0 NA 310.00 310.00	5304 5304 5119	high mid low  Calculated Concentration: (ppb) 0.0  353.0 353.0 150.0	4995 4995 Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0	125 40 Correction Factors: NA 1.003 1.000 1.014
NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato  Point as found zero adjusted zero as found high adjusted high ind low	al #: 4 #: LL4 m): 4  or Flow Rates (c    Diluent     4994     4994     4994     4994     4994     4994     4994	12475 18.5 Cc/min) Cal Gas 0.0 NA 310.00 310.00 125.00 40.00	5304 5304 5304 5119 5034	high mid low   Calculated Concentration: (ppb) 0.0  353.0  353.0  150.0  54.0	4995 4995 Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0	125 40 Correction Factors: NA 1.003 1.000 1.014 1.019
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero	al #: 4 #: LL4 m): 4  or Flow Rates (c  Diluent 4994 4994 4994 4994 4994 4994	12475 18.5 Cc/min) Cal Gas 0.0 NA 310.00 310.00 125.00 40.00 0.00	5304 5304 5119 5034 4994	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0	4995 4995 4995 Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0	125 40 Correction Factorss NA 1.003 1.000 1.014 1.019
NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato  Point as found zero adjusted zero as found high adjusted high ind low	al #: 4 #: LL4 m): 4  or Flow Rates (c  Diluent 4994 4994 4994 4994 4994 4994	12475 18.5 Cc/min) Cal Gas 0.0 NA 310.00 310.00 125.00 40.00 0.00	5304 5304 5119 5034 4994	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0	4995 4995 Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0	125 40 Correction Factors: NA 1.003 1.000 1.014 1.019
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero	al #: 4 #: LL4 m): 4  or Flow Rates (c  Diluent 4994 4994 4994 4994 4994 4994	12475 18.5 Cc/min) Cal Gas 0.0 NA 310.00 310.00 125.00 40.00 0.00	5304 5304 5119 5034 4994 I in to calcu	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0	4995 4995 Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.=	125 40 Correction Factors: NA 1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero	al #: 4 #: LL4 m): 4  por Flow Rates (cc Diluent 4994 4994 4994 4994 4994 4994 4994 49	12475 18.5 Cal Gas 0.0 NA 310.00 310.00 125.00 40.00 0.00 from NOx cal	5304 5304 5319 5034 4994 In to calcu	high mid low  Calculated Concentration: (ppb) 0,0 353.0 353.0 150.0 54.0 0.0 lated concentration**	4995 4995  Indicated Concentrations (ppb) 0.0  352.0 353.0 148.0 53.0 0.0 Average C.F.=	125 40 Correction Factors: NA 1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero	al #: 4 #: LL4 m): 4  por Flow Rates (cc Diluent 4994 4994 4994 4994 4994 4994 4994 49	12475 18.5 Cc/min) Cal Gas 0.0 NA 310.00 310.00 125.00 40.00 0.00	5304 5304 5319 5034 4994 In to calcu Linear Re	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration**	4995 4995  Indicated Concentration: (ppb) 0.0  352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS	125 40 Correction Factors: NA 1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero	#: 44 #: 114 #: 14	12475 18.5  Cal Gas 0.0  NA 310.00 310.00 40.00 0.00 from NOx cal	5304 5304 5119 5034 4994 In to calcu Linear Re effecient = Slope =	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001	4995 4995  Indicated Concentration: (ppb) 0.0  352.0 353.0 148.0 53.0 0.0  Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS	125 40 Correction Factors: NA 1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero	or Flow Rates (c  Diluent  4994  4994  4994  4994  4994  4994  4994  600  400  4	12475 18.5  Cal Gas 0.0  NA 310.00 310.00 125.00 40.00 0.00 from NOx cal	5304 5304 5119 5034 4994 In to calcu Linear Re effecient = Slope = full scale)	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero	or Flow Rates (c  Diluent  4994  4994  4994  4994  4994  4994  4994  600  400  4	12475 18.5  Cal Gas 0.0  NA 310.00 310.00 40.00 0.00 from NOx cal	5304 5304 5119 5034 4994 In to calcu Linear Re effecient = Slope = full scale)	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001	4995 4995  Indicated Concentration: (ppb) 0.0  352.0 353.0 148.0 53.0 0.0  Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Calibrato Point as found zero adjusted zero as found high adjusted high mid low calibrator zero *copy and paste flows an	or Flow Rates (c  Diluent  4994  4994  4994  4994  4994  4994  4994  600  400  4	12475 18.5  Cal Gas 0.0  NA 310.00 310.00 125.00 40.00 0.00 from NOx cal	5304 5304 5119 5034 4994 In to calcu Linear Re effecient = Slope = full scale)	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero	or Flow Rates (c  Diluent  4994  4994  4994  4994  4994  4994  4994  600  400  4	12475 18.5  Cal Gas 0.0  NA 310.00 310.00 125.00 40.00 0.00 from NOx cal	5304 5304 5119 5034 4994 In to calcu Linear Re effecient = Slope = full scale)	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high mild low callibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	5304 5304 5119 5034 4994 In to calcu Linear Re effecient = Slope = full scale)	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Calibrato Point as found zero adjusted zero as found high adjusted high mid low calibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	5304 5304 5119 5034 4994 In to calcu Linear Re effecient = Slope = full scale)	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allbration:  Calibrato Point as found zero adjusted zero as found high mid low calibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	5304 5304 5119 5034 4994 In to calcu Linear Re effecient = Slope = full scale)	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allbration:  Calibrato Point as found zero adjusted zero as found high mid low calibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5304 5119 5034 4994 Linear Reeffecient = Slope = full scale)= st cal	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175% 0%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allbration:  Calibrato Point as found zero adjusted zero as found high mid low calibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5304 5119 5034 4994 Linear Reeffecient = Slope = full scale)= st cal	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.=  LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria NOx Gas Cylinder I.D. NOx Cylinder Conc. (ppr allbration:  Calibrato Point as found zero adjusted zero as found high mid low calibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5319 5034 4994 In to calcu Linear Re effecient = Slope = full scale)= st cal	high mid low    Calculated Concentration: (ppb)	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5319 5034 4994 In to calcu Linear Re effecient = Slope = full scale)= st cal	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175% 0%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. Nox Cylinder Conc. (ppr allibration:  Calibrato Point as found zero adjusted zero as found high adjusted high mild low calibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5319 5034 4994 In to calcu Linear Re effecient = Slope = full scale)= st cal	high mid low    Calculated Concentration: (ppb)	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40  Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibrato Point as found zero adjusted zero as found high adjusted high mid low callibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5319 5034 4994 In to calcu Linear Re effecient = Slope = full scale)= st cal	high mid low    Calculated Concentration: (ppb)	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40 Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. Nox Cylinder Conc. (ppr allibration:  Calibrato Point as found zero adjusted zero as found high adjusted high mild low calibrator zero *copy and paste flows an	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5319 5034 4994 In to calcu Linear Re effecient = Slope = full scale)= st cal	high mid low    Calculated Concentration: (ppb)	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40  Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibration:  Callibration:  Seria Sound zero adjusted zero as found high adjusted high mid low callibrator zero *copy and paste flows an  omments:  liter changed. No Zero ad  ago 2  ago 3  ago 3  ago 3  ago 3  ago 3  ago 3  ago 4	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5319 5034 4994 In to calcu Linear Re effecient = Slope = full scale)= st cal	high mid low    Calculated Concentration: (ppb)	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40  Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibration:  Callibration:  Seria Sound zero adjusted zero as found high adjusted high mid low callibrator zero *copy and paste flows an  omments:  liter changed. No Zero ad  ago 2  ago 3  ago 3  ago 3  ago 3  ago 3  ago 3  ago 4	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5319 5034 4994 In to calcu Linear Re effecient = Slope = full scale)= st cal	high mid low    Calculated Concentration: (ppb)	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40  Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibration:  Callibration:  Seria Sound zero adjusted zero as found high adjusted high mid low callibrator zero *copy and paste flows an  omments:  liter changed. No Zero ad  ago 2  ago 3  ago 3  ago 3  ago 3  ago 3  ago 3  ago 4	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5304 5119 5034 4994 Linear Reeffecient = Slope = full scale) = st cal	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175% 0%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40  Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibration:  Callibration:  Seria Sound zero adjusted zero as found high adjusted high mid low callibrator zero *copy and paste flows an  omments:  liter changed. No Zero ad  ago 2  ago 3  ago 3  ago 3  ago 3  ago 3  ago 3  ago 4	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5319 5034 4994 In to calcu Linear Re effecient = Slope = full scale)= st cal	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175% 0%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40  Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibration:  Callibration:  Seria Sound zero adjusted zero as found high adjusted high mid low callibrator zero  *copy and paste flows an  omments:  liter changed. No Zero ad  ag ag ag ag ag ag ag ag ag ag ag ag ag	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5304 5119 5034 4994 Linear Reeffecient = Slope = full scale) = st cal	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175% 0%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40  Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibration:  Callibration:  Seria Sound zero adjusted zero as found high adjusted high mid low callibrator zero  *copy and paste flows an  omments:  liter changed. No Zero ad  as a sound high adjusted high mid low callibrator zero  callibrator zero	#: 44 #: 114 #: 14 #: 14 m): 4  por Flow Rates (cc	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5304 5119 5034 4994 Linear Reeffecient = Slope = full scale) = st cal	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175% 0%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40  Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011
Seria Nox Gas Cylinder I.D. NOx Cylinder Conc. (ppr allibration:  Callibration:  Callibration:  Seria Sound zero adjusted zero as found high adjusted high mid low callibrator zero  *copy and paste flows an  omments:  alliter changed. No Zero ad  allibration zero  copy and paste flows an  omments:	# : 4 # : 1.14 # : 1.	12475 18.5  Cal Gas 0.0  NA 310.00 125.00 40.00 0.00 from NOx cal	4994 5304 5304 5119 5034 4994 Linear Reeffecient = Slope = full scale) = st cal	high mid low  Calculated Concentration: (ppb) 0.0 353.0 353.0 150.0 54.0 0.0 lated concentration** egression/Calibration Results 1.000 1.001 -0.175% 0%	4995 4995  Indicated Concentration: (ppb) 0.0 352.0 353.0 148.0 53.0 0.0 Average C.F.= : LIMITS Pass/Fa > or = 0.995 PASS 0.85-1.15 PASS ± 3% F.S. PASS	125 40  Correction Factors  NA  1.003 1.000 1.014 1.019 NA 1.011



5



FDMS external filter changed

Comments:

FDMS external filter changed and particulate sampling filter changed

1405F Ko factor:

% difference:

Measured K<sub>o</sub> factor:

14578

14753.2000

1.20





Mot One Instruments 1600 NW Washington Blvd. Grants Pass, Oregon 97526 Telephone 541-471-7111 Faesimile 541-471-7116 Regional Service 3206 Main St. Sulte 106 Rowlett, Texas 75088 Telephone 972-412-4715 Facsimile 972-412-4716

### Sonic Wind Sensor Certificate of Calibration

	Sensor Model No: 50.5H Sonic				O 2.7	Sensor	Serial No: _	
	***************************************			P	.O. No:		_Sales Order	
	alibratio	on By:	K	evin Rick	S		ition Date:	04-01-15
Quality	Contro	I Inspected	Ву:	A   2		Insp	ection Date:	APR 0 3 2015
New Ur	nit	Repair	/Adjust 🖸		Re-Calibrat	ion X	As Foun	d
Unit W	ithin To	lerance as F					in Tolerance	as Left X
				The state of the s	on Equipme			· · · · · · · · · · · · · · · · · · ·
	quipmen		lanufactur		Model No.		Serial No.	Cal. Due
Digital	Multime	oter 1	Agilent/HP		34401A		4Y41039534	4/11/2015
Digital	Digital Multimeter 2 Agilent/HP				34401A	Ţ	JS36094551	8/26/2015
	Frequency Counter Agilent/HP				53131A	N	4Y40009285	5/22/2015
Standard Sensor MOI				010C-1		P22383	7/11/2017	
Temperature Probe MOI				9	20005/PC83	40	E3402	9/03/2015
				<u> </u>				
Test 1: A	yerage Wi	ind Tunnel Sp	eed:	3,08	Meters p	er Second F	'irmwareVersio	on: 3194-01 R2.62
WD	wD	WD	WD	ws	WS	WS	ws	
Setting	Output	Indication	Error	Standard		Indication		Output Type:
(Deg)	(Volts)	(Deg)	(+/- 3 Deg)	(m/s)	(Volts)	(m/s)	(+/20 m/s)	
30	.084	30,3	.3	3,06	.059	2.96	1	0 to 1 volt X
60	.165	59,3	<b>7</b>	3.07	,059	2.94	13	0 to 2.5 volt
120	.334	120.2	.2	3,08	.059	2.94	-,14	0 to 5 volt
150	.415	149.5	-, 5	3,07	.059	2.94	<del>-</del> .13	RS-232 X
210	.583	210	0	3,08	.059	2.95	12	SDI-12
240	,668	240.3	.3	3,08	.06	2.98	<b>-</b> .1	RS-422
300	.834	300,4	.4	3.07	.06	3.02	<b>-</b> .04	RS-485
330	.916	329.8	2	3.09	.059	2.97	<b>⊶,12</b>	
Test 2: A	verage W	ind Tunnel Sp	eed:	11.85	Meters	per Second	Output R	Range; 0-50 m/s
WD	WD	WD	WD	ws	ws	ws	WS	
Setting	Output	Indication	Error	Standard	Output	Indication	Error	Test Items;
(Deg)	(Volts)	(Deg)	(+/- 3 Deg)	(m/s)	(Volts)	(m/s)	(+/- ,24 m/s)	
30	.081	29.3	7	11,79	.235	11.76	04	Array Alignment
60	.165	59.5	5	11,85	.237	11.87	01،	Jumper Config
120	.331	119.1	<del></del> ,9	11.85	,236	11.81	03	Firmware Config
150	.415	149.3	<b></b> 7	11.88	.236	11.8	~.08	Zero Calibration
210	.582	209.5	-,5	11.81	.236	11.79	02	Low Speed Test OK
240	.666	239.9	~.1	11.88	,235	11.73	16	High Speed Test OK
300	.833	299.7	<b>-,</b> 3	11.87	.235	11.73	13	Sensor Function
330	.915	329.6	<b>~.4</b>	11.84	.238	11.9	.06	Physical Inspection
standard	s used for	this calibratio	n have accur	acies equal	to or greater	than the inst	ruments tested	. These standards are
ecord and	l traceable	e to NIST to th	ie extent allov	wed by the	institute's cali	bration facil	lity. Unless othe	erwise stated hereon, al

instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A. Calibration performed by direct comparison to the above standard following test procedure: 50.5-6100 Rev E





## Calibrator Performance Audit Oxides Of Nitrogen

File No. 2014-260A

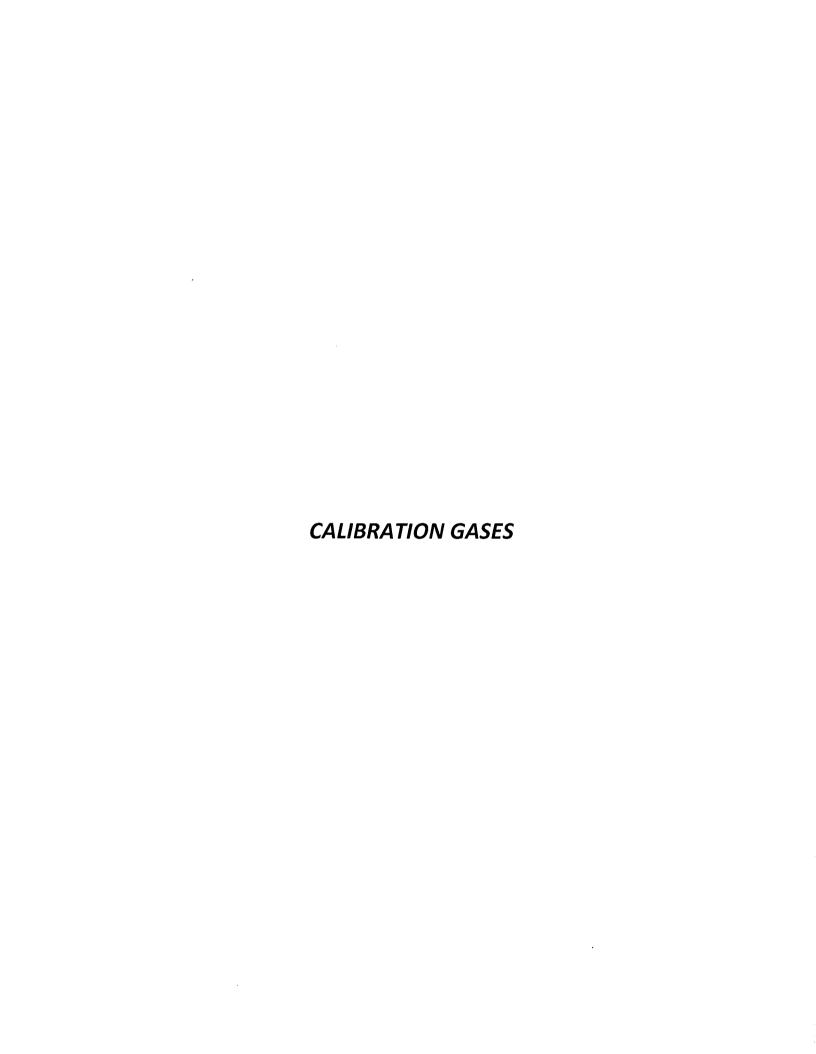
Company	Max	xam	•		Operator:	Limi	n Li	
Malce	Calibrator Model		ics 6100			leasurement Model		.I/A
1	Number		60	•	1	Number	*******	<u>√/A</u> √/A
	ication Date		·	-		ture (°C)		√A √A
		LL42		•		c Pressure		V/A
NO/NOX Co		48.5	*****	<b>-</b> -	Buiomour		<u>'</u>	<b>1</b> // <b>1</b>
Dil	ution Flow (s	scem)		-	<u>L</u>			100
Pt. #1	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		5000	Pt. #3	5000			
I	as Flow (scc							
Pt. #1	80	Pt. #2	40	Pt. #3	20	Gas flows not a	vallable from o	display.
Callbrator I	flow (seem)	Calculated	Conc.(ppm)	Indi	cated Conc.(1	(mac	% Difference	e vs Audit Gas
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
4980	0,0	0.000	0,000	0.000	0,000	0,000	Limit	± 10%
4993	0,0	0.799	0.799	0.840	-0.001	0.839	5%	5%
4994	0.0	0.399	0.399	0.420	-0.001	0.419	5%	5%
4991	0.0	0,200	0.200	0,211	0.000	0,211	5%	5%
				Absolute A	verage Perce	nt Difference	5%	5%
	NO Correlation= m (Siope)= pt % of FS)=	1,0000 1,0511 0,0400	≥ 0 0.90	<u>MTS</u> .990 -1.10 6 F.S.		NOx Correlation= m (Slope)= ept % of FS)=	1.0000 1.0496 0.0400	
Flow	O <sub>3</sub> Conc	NO De	crease	NO	NO2	NOX	% Diff, V	's Audit gas
Flow 4993	O <sub>3</sub> Conc 0.000	NO De 0.0	<del></del>	NO 0.823	NO2 -0.001	NOX 0.822	% Diff, V NO <sub>2</sub>	s Audit gas
			00					
4993	0.000	0.0	00 30	0.823	-0.001	0.822	$NO_2$	% Diff, Limi
4993 4993	0.000 0.480	0.0 0.5	00 30 69	0.823 0.293 0.554 0.727	-0.001 0.530 0.269 0.097	0.822 0.823 0.823 0.824	NO <sub>2</sub> 0 0 0	% Diff, Limit ± 10%
4993 4993 4993 4993	0.000 0.480 0.240 0.090	0.0 0.5 0.2 0.0	00 30 69 96	0.823 0.293 0.554 0.727	-0.001 0.530 0.269	0.822 0.823 0.823 0.824	NO <sub>2</sub> 0 0	% Diff, Limit ± 10% ± 10%
4993 4993 4993 4993	0.000 0.480 0.240	0.0 0.5 0.2 0.0	00 30 69 96	0.823 0.293 0.554 0.727 Absolute A	-0.001 0.530 0.269 0.097 verage Percer	0.822 0.823 0.823 0.824	NO <sub>2</sub> 0 0 0 0	% Diff, Limit ± 10% ± 10% ± 10% ± 10%
4993 4993 4993 4993 LINEAR I	0.000 0.480 0.240 0.090	0.0 0.5 0.2 0.0	00 30 69 96 SIS <u>LIM</u> ≥ 0	0.823 0.293 0.554 0.727 Absolute A	-0.001 0.530 0.269 0.097 verage Percer	0.822 0.823 0.823 0.824 nt Difference	NO <sub>2</sub> 0 0 0 0	% Diff, Limit ± 10% ± 10% ± 10% ± 10%
4993 4993 4993 4993 LINEAR I	0.000 0.480 0.240 0.090 REGRESSIO NO <sub>2</sub> Correlation= m (Slope)= pt % of FS)=	0.0 0.5 0.2 0.0 <b>DN ANALY</b> ; 1.0000 1.0006	00 30 69 96 SIS <u>LIM</u> ≥ 0	0.823 0.293 0.554 0.727 Absolute A y= HTTS .995 -1.10	-0.001 0.530 0.269 0.097 verage Percer	0.822 0.823 0.823 0.824 at Difference	NO <sub>2</sub> 0 0 0 0 ration, y=Indicat	% Diff, Limit ± 10% ± 10% ± 10% ± 10%
4993 4993 4993 4993 LINEAR I	0.000 0.480 0.240 0.090 REGRESSIO NO <sub>2</sub> Correlation= m (Slope)= pt % of FS)=	0.0 0.5 0.2 0.0 <b>DN ANALY</b> ; 1.0000 1.0006 -0.0132 <b>tandards</b>	00 30 69 96 SIS <u>LIM</u> ≥ 0	0.823 0.293 0.554 0.727 Absolute A y= HTTS .995 -1.10	-0.001 0.530 0.269 0.097 verage Percer	0.822 0.823 0.823 0.824 at Difference celculated concent	NO <sub>2</sub> 0 0 0 0 retion, y=Indicat	% Diff, Limi ± 10% ± 10% ± 10% ± 10%  ± 10%
4993 4993 4993 <b>LINEAR I</b> b (Interce	0.000 0.480 0.240 0.090  REGRESSIO  NO <sub>2</sub> Correlation= m (Slope)= pt % of FS)=	0.0 0.5 0.2 0.0 <b>DN ANALY</b> ; 1.0000 1.0006 -0.0132 <b>tandards</b>	00 30 69 96 SIS <u>LIM</u> ≥ 0 0.90 ± 3%	0.823 0.293 0.554 0.727 Absolute A y= HTTS .995 -1.10	-0.001 0.530 0.269 0.097 verage Percei	0.822 0.823 0.823 0.824 at Difference	NO <sub>2</sub> 0 0 0 retion, y=Indicate	% Diff, Limi ± 10% ± 10% ± 10% ± 10%
4993 4993 4993 4993 <b>LINEAR I</b> b (Interce	0.000 0.480 0.240 0.090  REGRESSIO  NO2 Correlation= m (Slope)= pt % of FS)=  AENV S Audit Ca	0.0 0.5 0.2 0.0 0.0 0.0 1.0000 1.0006 -0.0132 tandards librator	00 30 69 96 SIS <u>LIM</u> ≥ 0 0.90 ± 3%	0.823 0.293 0.554 0.727 Absolute A y= HTTS .995 -1.10	-0.001 0.530 0.269 0.097 verage Percei	0.822 0.823 0.823 0.824 at Difference calculated concent	NO <sub>2</sub> 0 0 0 ration, y=Indicated and yzer AML	# Diff. Limi # 10% # 10% # 10% # 10% # 10% # 10%
4993 4993 4993 4993 <b>LINEAR I</b> b (Interce	0.000 0.480 0.240 0.090  REGRESSIO NO2 Correlation= m (Slope)= pt % of FS)=  AENV S Audit Ca Make/Model	0.0 0.5 0.2 0.0 <b>DN ANALY</b> 1.0000 1.0006 -0.0132 <b>tandards</b> <b>librator</b> Teco	00 30 69 96 SIS <u>LIM</u> ≥ 0 0.90 ± 3%	0.823 0.293 0.554 0.727 Absolute A y= HTTS .995 -1.10	-0.001 0.530 0.269 0.097 verage Percei	0.822 0.823 0.823 0.824 at Difference calculated concentrated NO <sub>X</sub> Ar Make/Model	NO <sub>2</sub> 0 0 0 ration, y=Indicate  allyzer  AML December	# Diff. Limi # 10% # 10% # 10% # 10% # 10% # 10% # 10%  ded concentration,
4993 4993 4993 4993 LINEAR I	0.000 0.480 0.240 0.090  REGRESSIO NO2 Correlation= m (Slope)= pt % of FS)=  AENV S Audit Ca Make/Model	0.0 0.5 0.2 0.0 <b>DN ANALY</b> 1.0000 1.0006 -0.0132 <b>tandards</b> <b>librator</b> Teco	00 30 69 96 SIS <u>LIM</u> ≥ 0 0.90 ± 3%	0.823 0.293 0.554 0.727 Absolute A y= HTTS .995 -1.10	-0.001 0.530 0.269 0.097 verage Percei	0.822 0.823 0.823 0.824 at Difference calculated concent  NO <sub>X</sub> Ar Make/Model AMU Number illbration Date	NO <sub>2</sub> 0 0 0 ration, y=Indicate  allyzer  AML December	% Diff, Limit ± 10% ± 10% ± 10% ± 10%  ted concentration)  co 42i J 1868 er 15, 2014
4993 4993 4993 4993 LINEAR I	0.000 0.480 0.240 0.090  REGRESSIC NO2 Correlation= m (Slope)= pt % of FS)=  AENV S Audit Ca Make/Model MU Number	0.0 0.5 0.2 0.0 <b>DN ANALY</b> 1.0000 1.0006 -0.0132 <b>tandards</b> <b>librator</b> Teco	00 30 69 96 SIS LIM ≥ 0 0.90 ± 3%	0.823 0.293 0.554 0.727 Absolute A y= HTTS .995 -1.10	-0.001 0.530 0.269 0.097 verage Percei	0.822 0.823 0.823 0.824 at Difference calculated concent  NO <sub>X</sub> Ar Make/Model AMU Number illbration Date	NO <sub>2</sub> 0 0 0 retion, y=Indicate  allyzer  AML December	% Diff, Limi ± 10% ± 10% ± 10% ± 10%  ted concentration)  co 42i J 1868 er 15, 2014



## Calibrator Performance Audit Sulphur Dioxide (by Cylinder Dilution)

File No. 2014-258A

Company: Max	xxam	-	Operator:	Llmiı	n Li		
Calibrator			Flow Meas	urement l	Device:		
Make/Model	AP	1 700	Make/Mo	del	N/	/A	
Serial Number	8	330	Serial Nun	nber	N/	/A	
Last Verification Date	Oct	2013	Temperature	e (°C)	N/	/A	
SO <sub>2</sub> Cylinder Conc.	5	0.3	Barometric P	, ,	N/		
SO <sub>2</sub> Cylinder S/N	<del></del>	2475					
		······································					
Flow Measure	nents						
Pt. No. 1 79.5	Pt. No. 2	39.8	Pt. No. 3	19,9			
Calibrator Flow	Calc	ulated	Indicate	d	% Dif	ference	
(sccm)		ation (ppm)	Concentration		vs Audit Gas		
Zero Air		000	0.000	(ppin)	VS Flucit Gas	70 Ditt. Lillit	
4918		800	0.798		0%	1.400/	
		400			-1%	± 10%	
4960		······································		0.398		± 10%	
4977	<u> </u>	Absolute	0.200 Average Percent I	Vifforonco	0% ± 10% 0% ± 10%		
SO <sub>2</sub> Correlation= m (Slope)=	1.0000 0.9971	$\frac{\text{LIMITS}}{\geq 0.995}$	mx+b (where x=calcula		inorij y maioaroc		
b (Intercept % of FS)=		$0.90-1.10 \pm 3\%$ F.S.					
b (Intercept % of FS)=				SO <sub>2</sub> Ana	alyzer		
b (Intercept % of FS)=	0.0000		Make/Mo	_	-	43C	
b (Intercept % of FS)=  AENV	0.0000 Standards		Make/Mo Serial/AMU N	del	Teco	43C 1623	
b (Intercept % of FS)=  AENV  Audit Calibrator	0.0000 <b>Standards</b> R&R M	± 3% F.S.	Serial/AMU N Last Calibratio	del Jumber on Date	Teco AMU		
b (Intercept % of FS)=  AENV  Audit Calibrator  Make/Model	0.0000 <b>Standards</b> R&R M	± <b>3% F.S.</b>	Serial/AMU N	del Jumber on Date	Teco AMU Dec	1623	
b (Intercept % of FS)=  AENV  Audit Calibrator  Make/Model	0.0000  Standards  R&R N  AMU  H2S gas was	± 3% F.S.  MFC 201 J 1690	Serial/AMU N Last Calibratio Full Scale ( nrough the calibrato	del Jumber on Date ppm)	Teco AMU Dec	1623 15/14 .0	
b (Intercept % of FS)=  AENV  Audit Calibrator  Make/Model  Serial/AMU Number  COMMENTS:	O.0000  Standards  R&R M  AMU  H2S gas was calibrator. SC	± 3% F.S.  MFC 201 J 1690  slow to move the D2 moves through	Serial/AMU N Last Calibration Full Scale ( nrough the calibraton gh quickly.	del Number on Date ppm) r. Check fo	Teco AMU Dec 1 or contamnation	1623 15/14 .0	
b (Intercept % of FS)=  AENV  Audit Calibrator  Make/Model  Serial/AMU Number	O.0000  Standards  R&R M  AMU  H2S gas was calibrator. SC	± 3% F.S.  MFC 201 J 1690  slow to move th	Serial/AMU N Last Calibratio Full Scale ( nrough the calibrato	del Number on Date ppm)  r. Check fo	Teco AMU Dec	1623 15/14 .0 on inside	



Form No. Version No. F-GAS-002 1.1



## Calibration Gas Audit

Company:	Max	xam	Oper	rator's Name: Lin	nin Li
Cylinder#:	LL42475	Concentration PPM:	50.3	Tolerance(%) 1	Certified By: Air Liquide
Reference (	Calibrator a	nd Gas:		Flow Measurement	Device:
M	ake/Model:	R&R MFC 201		Make/Model:	Bios DC2
Ser.	al Number:	AMU 1690		Serial Number:	AMU 1659
Last Verific	eation Date:	December 15, 2014	•		22,5 C
	-	SO2 Conc.	98,57		701 mmhg
Cylin		CAL016720			
Reference A	Analyzer:			<u> </u>	
M	ake/Model:	Teco 43C	Serial/A	AMU Number:1623	-
nstrument S	lettings:	Zero: 7.7	Span:	1.018 Range;	1.0
Last Calibra	tion:	Date: Dec15/14	C.F.	1.000 Done By:	Al Clark
Calibrator Flo	Gas	Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
5000 5114	0.0 52.1	0.000 0.502	0,01019	98,157	49.3
5093	22.3	0.214	0.00438	228.386	48.9
5073	10,9	0.105	0.00215	465.413	48.9
			Avera	ge Cylinder Concentration:	49.0
Pe Meets Mar	rcent variance ufacturor Tolor	tration PPM: 50.3  from Stated: 2.6  ance, Use manufacturers stated r Tolerance, Use manufacturer		] COMMENTS:	
		r Tolerance. Ose manufacturer cturer Tolerance. <b>DO NOT U</b> S	l	1	* THO WALL TO SEE THE SECOND S
	uiside Manuia	nurer reference. DO NOT US	sk this cylinder	<u></u>	
× 370 C					
	_Auditor: r Signature:/	Al Clark		Date: Decemb	er 16, 2014

Form No. Version No. F-GAS-002



### Calibration Gas Audit

File No. 2014-251CGA

- · -	Max	xam	Oper	ator's Name: Li	min Li
Cylinder#:_	LL36837	Concentration PPM:	10.0	Tolerance(%) 2	_Certified By: _Air Liquid
Reference C	Calibrator a	nd Gas:		Flow Measuremen	t Device:
M	ake/Model:	R&R MFC 201		Make/Model	Bios DC2
Seri	al Number:	AMU 1690			: AMU 1659
Last Verific	ation Date:	December 15, 2014	•		: 23.0 C
	-	H2S Conc.	•	1	702 mmhg
Cylino	-	CAL015106			
Reference A	analyzer;				
Ma	ake/Model:	Teco 45C	Serial/A	MU Number: 1624	
Instrument S				1.160 Range	
Last Calibrat	tion:	Date:Dec15/14	C.F.	1,000 Done By	: Al Clark
					THE COURT
Calibrator Flo	ws (scem) Gas	Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
		Indicated	Gas Flow/	Concentration	Cylinder
Dilution 5000 5099	Gas 0.0 38.5	Indicated Concentration (PPM) 0,0000 0.0754	Gas Flow/ Dilution Flow 0.00755	Concentration Factor	Cylinder
Dilution           5000           5099           5092	Gas 0.0 38.5 18.0	Indicated Concentration (PPM) 0,0000 0,0754 0,0349	Gas Flow/ Dilution Flow  0.00755 0.00353	Concentration Factor 132,442 282,889	Cylinder Concentration 10.0 9.9
Dilution 5000 5099	Gas 0.0 38.5	Indicated Concentration (PPM) 0,0000 0.0754	Gas Flow/ Dilution Flow  0.00755 0.00353 0.00182	Concentration Factor 132,442 282,889 550.652	Cylinder Concentration 10.0 9.9 9.8
5000 5099 5092 5066 Previous St	Gas 0.0 38.5 18.0 9.2 tated Concen	Indicated Concentration (PPM) 0,0000 0,0754 0,0349 0,0178  tration PPM: 10.0	Gas Flow/ Dilution Flow  0.00755 0.00353 0.00182	Concentration Factor 132,442 282,889	Cylinder Concentration 10.0 9.9 9.8
Dilution   5000   5099   5092   5066   Previous St	Gas 0.0 38.5 18.0 9.2 tated Concen	Indicated Concentration (PPM) 0.0000 0.0754 0.0349 0.0178	Gas Flow/ Dilution Flow  0.00755 0.00353 0.00182	Concentration Factor 132,442 282,889 550.652	Cylinder Concentration 10.0 9.9 9.8
Dilution   5000   5099   5092   5066   Previous St	Gas 0.0 38.5 18.0 9.2 tated Concentrated variance	Indicated Concentration (PPM) 0,0000 0,0754 0,0349 0,0178  tration PPM: 10.0	Gas Flow/ Dilution Flow  0.00755 0.00353 0.00182 Average	Concentration Factor  132,442 282,889 550,652 ge Cylinder Concentration	Cylinder Concentration 10.0 9.9 9.8
Dilution 5000 5099 5092 5066  Previous St	Gas 0.0 38.5 18.0 9.2 tated Concentrated variance	Indicated Concentration (PPM) 0,0000 0,0754 0,0349 0,0178  Atration PPM: 10,0  From Stated: 1.1  Tance, Use manufacturers stated	Gas Flow/ Dilution Flow  0.00755 0.00353 0.00182 Average	Concentration Factor 132,442 282,889 550.652	Cylinder Concentration 10.0 9.9 9.8
Dilution 5000 5099 5092 5066  Previous St  Pere Meets Manu <=5% Outside	Gas  0.0  38.5  18.0  9.2  tated Concentrated Variance recent variance ufacturer Tolera	Indicated Concentration (PPM)  0.0000 0.0754 0.0349 0.0178  Atration PPM: 10.0  from Stated: 1.1  ance, Use manufacturers stated r Tolerance, Use manufacturers	Gas Flow/ Dilution Flow  0.00755 0.00353 0.00182 Averaged for concentration X s concentration	Concentration Factor  132,442 282,889 550,652 ge Cylinder Concentration	Cylinder Concentration 10.0 9.9 9.8
Dilution 5000 5099 5092 5066  Previous St  Pere Meets Manu <=5% Outside	Gas  0.0  38.5  18.0  9.2  tated Concentrated Variance recent variance ufacturer Tolera	Indicated Concentration (PPM) 0,0000 0,0754 0,0349 0,0178  Atration PPM: 10,0  From Stated: 1.1  Tance, Use manufacturers stated	Gas Flow/ Dilution Flow  0.00755 0.00353 0.00182 Averaged for concentration X s concentration	Concentration Factor  132,442 282,889 550,652 ge Cylinder Concentration  COMMENTS:	Cylinder Concentration 10.0 9.9 9.8



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Product Loypaich No. 2582.4 085.02 Product Pan No. NI MESCOP2P4AQ

### GERTIFICATIE OF ANALYSIS

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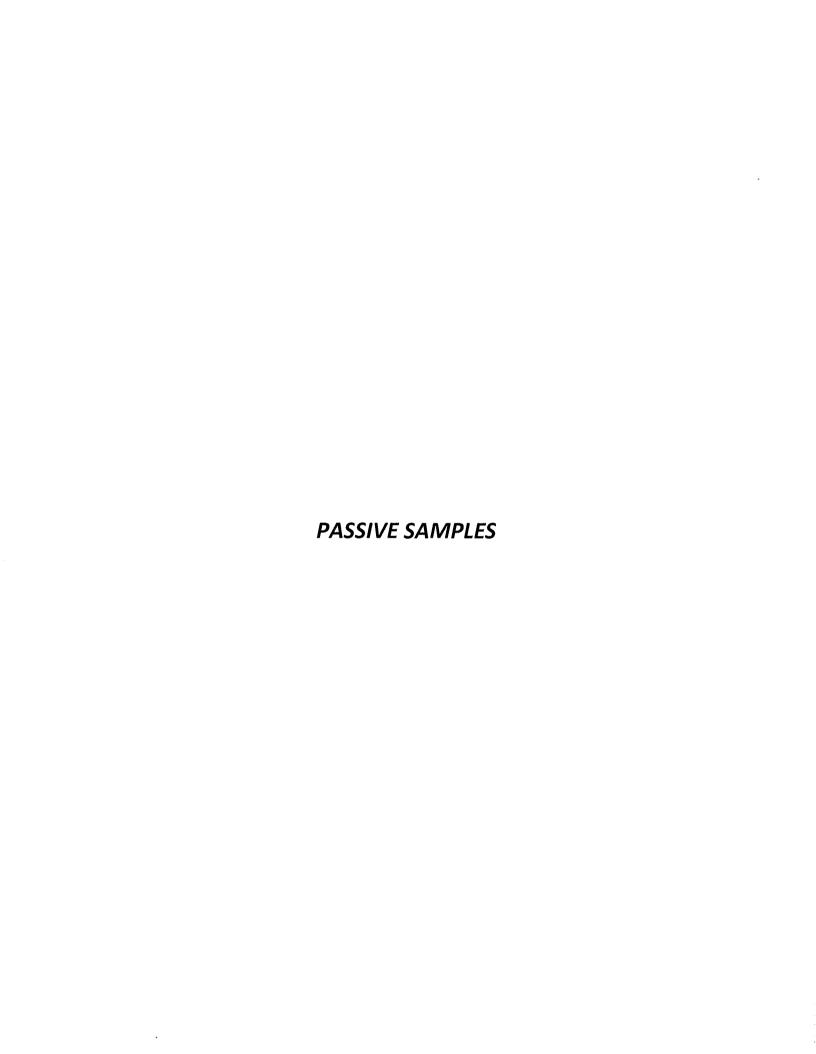
Form No. Version No F-GAS-003



### Calibration Gas Audit

Company:	Ma	xxam		Operators nan	ne: Limi	n Ll		
Cylinder #:	LL42475	Conc (PPM)	48.5/48.5	Tolerance (%)	1 Certified By:	Alr Liq	uide	
Reference	Calibrator	and Gas:			Flow Measurem	ent Device:		
Make	/Model	Teco '	146i	_	Make/Model	Bios DC2		
Serial	Number	AMU 1	809		Serial Number	AMU 1	AMU 1659	
Last Verifi	ication Date	December	15, 2014			23.0 C		
		NO Conc.		48.79		702 mi		
	Gas Type NO Cylinder Number CA			-		roz minig		
Reference Analyzer:  Make/Model  Instrument Settings  Last Calibration:		Teco 42i Zero: 4.3 Date: Dec15/14		Span: 1.017		U Number: 1868 Range: 1.0 Done By: Al Clar		
Calibrator F1	ows (seem)	Indicated Co	nc, (ppm)	Gas Flow/	Concentration	Cylinder Cor	ncentration	
Dilution	Gas	NO	NOX	Dilution Flow	Factor	NO	NOX	
5000	0.0	0.000	0.000				><	
4983	82.8	0.830	0.832	0.01662	60.181	50.0	50,1	
4998	40.9	0.414	0.415	0.00818	122,200	50.6	50.7	
4981	20,3	0.206	0.206	0.00408	245,369	50.5	50.5	
			<u>NO</u>	Average Cylind	er Concentration:	50.4	50.4	
Previous	Stated Conce	ntration PPM:	48.5		48.5			
Po	ercent varianc	e from Stated:	3.8		4.0			
Су	linder gas t	olerances bas	sed on NO	only				
-	_			ted concentration	COMMENTS:			
<=5% Outsi	de Manufactur	er Tolerance. Use	e manufaotur	ers concentration	X Contains 50,3 ppr	n of SO2.		
	Outside Manuf	acturer Tolerance	. <u>DO NOT I</u>	USE this cylinder				
	> 5% Outside Manufacturer Tolerance.							
> 5%	Auditor: or Signature;	· · · · · · · · · · · · · · · · · · ·	rk	Da	te: December	16, 2014		

# APPENDIX IV ANALYTICAL RESULTS





Your Project #: 2015/03/30 - 2015/05/27

Site Location: LICA

### **Attention: MICHAEL BISAGA**

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

Report Date: 2015/06/08

Report #: R1972156 Version: 1 - Final

### **CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B545300** Received: 2015/06/01, 11:51

Sample Matrix: Air # Samples Received: 30

		Date	Date		
Analyses Qu	uantity	Extracted	Analyzed	Laboratory Method	Analytical Method
H2S Passive Analysis (1)	19	2015/06/04	2015/06/08	PTC SOP-00150	Tang.Passive H2S in
NO2 Passive Analysis (1)	18	2015/06/04	2015/06/08	PTC SOP-00148	Passive NO2 in ATM
NO2 Passive Analysis (1)	7	2015/06/05	2015/06/08	PTC SOP-00148	Passive NO2 in ATM
O3 Passive Analysis (1)	25	2015/06/04	2015/06/08	PTC SOP-00197	EPA 300 R2.1
SO2 Passive Analysis (1)	29	2015/06/03	2015/06/08	PTC SOP-00149	Tang Passive SO2 in

<sup>\*</sup> RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Levi

Levi Manchak

**Encryption Key** 

Manchak

Manchak

08 Jun 2015 12:19:47 -06:00

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.

<sup>(1)</sup> The detection limit is based on a 30 day sampling period.



LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

Client Project #: 2015/03/30 - 2015/05/27

Site Location: LICA Sampler Initials: WA

### **RESULTS OF CHEMICAL ANALYSES OF AIR**

Maxxam ID		MI8741	M18742	MI8743	MI8744	MI8745	MI8746	MI8747		
Sampling Date		2015/03/30	2015/04/01	2015/04/01	2015/03/31	2015/04/01	2015/03/30	2015/03/30		
		14:26	11:33	12:43	17:52	10:19	12:06	15:45		
Control of the Contro	Units	3	4	5	6	8	9	10	RDL	QC Batch
Passive Monitoring										
Calculated H2S	ppb	0.11		0.16				0.15	0.02	7923635
Calculated NO2	ppb	0.9	0.7	0.7	3.2	0.5	0.9	2.2	0.1	7923172
Calculated O3	ppb	34.53	39.14	36.33	33.89	42.92	40.08	33.97	0.1	7922810
Calculated SO2	ppb	0.2	0.2	0.2	0.4	0.4	0.2	0.2	0.1	7921614
RDL = Reportable Detection L	imit									I

	MI8748	MI8749	MI8750	MI8751	MI8752	MI8753		_		
	2014/10/30	2015/02/27	2015/03/31	2015/03/30	2015/03/31	2015/03/31				
	12:17	17:36	12:01	18:07	10:34	14:36				
Units	11	12	13	14	15	16	RDL	QC Batch		
Passive Monitoring										
ppb	0.10	MISSING	0.12	0.11		0.12	0.02	7923635		
ppb	0.3	MISSING	0.5	0.5	0.6	0.6	0.1	7923172		
	22.04	MUCCINIC	27.10	22.45	20.20	42.65	0.1	7922810		
ppb	22.91	MISSING	37.19	33.45	39.30	42.65	0.1	7927910		
	ppb	2014/10/30   12:17   Units   11   ppb   0.10	2014/10/30   2015/02/27   12:17   17:36     11   12	2014/10/30   2015/02/27   2015/03/31   12:17   17:36   12:01     13	2014/10/30   2015/02/27   2015/03/31   2015/03/30   12:17   17:36   12:01   18:07       Units   11   12   13   14     ppb   0.10   MISSING   0.12   0.11	2014/10/30   2015/02/27   2015/03/31   2015/03/30   12:17   17:36   12:01   18:07   10:34       Units   11   12   13   14   15     ppb   0.10   MISSING   0.12   0.11	2014/10/30   2015/02/27   2015/03/31   2015/03/30   2015/03/31   2015/03/31   12:17   17:36   12:01   18:07   10:34   14:36   14:36   15   16   16   16   16   16   16   1	2014/10/30   2015/02/27   2015/03/31   2015/03/30   2015/03/31   2015/03/31   12:17   17:36   12:01   18:07   10:34   14:36       Units   11   12   13   14   15   16   RDL     ppb   0.10   MISSING   0.12   0.11   0.12   0.02		

Maxxam ID		MI8754	MI8755	MI8756		M18757	M18758			
Sampling Date		2015/03/31 16:55	2015/03/31 15:28	2015/03/31 09:13		2015/03/30 08:42	2015/03/31 13:43			
	Units	17	18	19	QC Batch	22	23	RDL	QC Batch	
Passive Monitoring										
Calculated H2S	ppb	0.16	0.09		7923635	0.10		0.02	7923635	
Calculated NO2	ppb	1.0	0.7	0.6	7923172	0.8	0.2	0.1	7923172	
Calculated O3	ppb	42.23	30.34	36.80	7922820	29.36	28.57	0.1	7922820	
Calculated SO2	ppb	0.3	0.1	0.2	7921614	0.2	0.1	0.1	7921619	
RDL = Reportable Dete <b>c</b> tion L	imit							·		

Maxxam ID⊴		MI8759	MI8760	MI8761	MI8762	MI8763	MI8764	MI8765		
Sampling Date		2015/03/31 18:35	2015/02/27 18:58	2015/03/31 11:12	2015/03/31 10:45	2015/03/30 11:41	2015/03/30 08:44	2015/03/31 18:47		
	Units	24	25	26	27	28	29	32	RDL	QC Batch
Passive Monitoring										
Calculated H2S	ppb	0.12	MISSING	0.08	0.19		0.09	0.13	0.02	7923635
Calculated NO2	ppb	1.9				2.1	0.7	0.3	0.1	7924562
Calculated O3	ppb	33.45				40.47	33.03	42.15	0.1	7922820
Calculated SO2	ppb	0.2	MISSING	0.3	0.5	0.4	0.2	0.2	0.1	7921619
RDL = Reportable Detection Li	mit									



LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

Client Project #: 2015/03/30 - 2015/05/27

Site Location: LICA Sampler Initials: WA

### **RESULTS OF CHEMICAL ANALYSES OF AIR**

Maxxam ID		M18766	MI8769	MI8770	MI8771	MI8772				
Sampling Date		2015/03/30	2015/03/30	2015/03/30	2015/03/30	2015/03/30				
		13:25	14:26	14:26	14:26	14:26				
	Units	36	5 DUP	6 DUP	8 DUP	13 DUP	RDL	QC Batch		
Passive Monitoring										
Calculated H2S	ppb	0.11				0.11	0.02	7923635		
Calculated NO2	ppb	1.7		3.1	0.6		0.1	7924562		
Calculated O3	ppb	35.92		36.79	41.76		0.1	7922820		
Calculated SO2	ppb	0.2	0.2	0.2	0.5		0.1	7921619		
RDL = Reportable Detection L			,		1	<u> </u>		1,0210.		



LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

Client Project #: 2015/03/30 - 2015/05/27

Site Location: LICA Sampler Initials: WA

### **GENERAL COMMENTS**

Sample MI8749-01: Site Inaccessible; notes on field sheet indicate 'Access Denied.'

Sample MI8760-01: Site Inaccessible; notes on field sheet indicate 'Access Denied.'

Results relate only to the items tested.



LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

Client Project #: 2015/03/30 - 2015/05/27

Site Location: LICA Sampler Initials: WA

### **QUALITY ASSURANCE REPORT**

QA/QC		<u> </u>		Date				
Batch	Init	QC Type	Parameter	Analyzed	Value	Recovery	Units	QC Limits
7921614	SS6	Spiked Blank	Calculated SO2	2015/06/03		99	%	90 - 110
7921614	SS6	Method Blank	Calculated SO2	2015/06/03	< 0.1		ppb	
7921619	SS6	Spiked Blank	Calculated SO2	2015/06/03		100	%	90 - 110
7921619	SS6	Method Blank	Calculated SO2	2015/06/03	< 0.1		ppb	
7922810	OZ	Spiked Blank	Calculated O3	2015/06/04		99	%	90 - 110
7922810	OZ	Method Blank	Calculated O3	2015/06/04	< 0.1		ppb	
7922820	OZ	Spiked Blank	Calculated O3	2015/06/04		98	%	90 - 110
7922820	OZ	Method Blank	Calculated O3	2015/06/04	<0.1		ppb	
7923172	SS6	Spiked Blank	Calculated NO2	2015/06/04		101	%	90 - 110
7923172	SS6	Method Blank	Calculated NO2	2015/06/04	< 0.1		ppb	
7923635	SSZ	Spiked Blank	Calculated H2S	2015/06/04		101	%	90 - 110
7924562	SS6	Spiked Blank	Calculated NO2	2015/06/05		100	%	90 - 110
7924562	SS6	Method Blank	Calculated NO2	2015/06/05	< 0.1		ppb	

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

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



LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION

Client Project #: 2015/03/30 - 2015/05/27

Site Location: LICA Sampler Initials: WA

### **VALIDATION SIGNATURE PAGE**

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

Linda Lin, Supervisor, Centre for Passive Sampling Technology

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





780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID: 15050100-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 6, 2015

**CANISTER ID:** 

1964

**DESCRIPTION:** CLS

**DATE SAMPLED:** 06-May-15 0:00

DATE RECEIVED: 13-May-15

**REPORT CREATED: REPORT VERSION:** 

03-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	14-May-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8 ppbv	0.8	AC-058	14-May-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	14-May-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	14-May-15
1,2-Dichloroethane	1	0.02 ppbv	0.01	AC-058	14-May-15
1,2-Dichloropropane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	14-May-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
2,2,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May <b>-</b> 15
2,2-Dimethylbutane	1	0.03 ppbv	0.01	AC-058	14-May-15
2,3,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
2,3-Dimethylbutane	1	0.05 ppbv	0.02	AC-058	14-May-15
2,3-Dimethylpentane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15

### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



PO Bag 4000 Vegreville, Alberta Canada T9C 1T4

780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 2 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AΒ T9N 2J5 LABORATORY SAMPLE ID: 15050100-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 6, 2015

**CANISTER ID:** 

1964

**DESCRIPTION:** CLS

**DATE SAMPLED:** 06-May-15 0:00

DATE RECEIVED: 13-May-15

**REPORT CREATED: REPORT VERSION:**  03-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May- <b>1</b> 5
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
2-Methylpentane	1	0.03 ppbv	0.01	AC-058	14-May-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
3-Methylhexane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
3-Methylpentane	l	0.03 ppbv	0.01	AC-058	14-May-15
Acetone		3.1 ppbv	0.4	AC-058	14-May-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	14-May-15
Benzene	l	0.07 ppbv	0.01	AC-058	14-May-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	<b>14-May-1</b> 5
Carbon disulfide		0.58 ppbv	0.01	AC-058	14-May-15
Carbon tetrachloride	I	0.10 ppbv	0.01	AC-058	14-May-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Chloroform	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Chloromethane		0.74 ppbv	0.02	AC-058	14-May-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May <b>-</b> 15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
cis-2-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Cyclohexane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Cyclopentane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
Dibromochloromethane	K, ⊤, ∪	< 0.01 ppbv	0.01	AC-058	14-May-15

### Qualifiers

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- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 3 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AB

T9N 2J5

LABORATORY SAMPLE ID:

15050100-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 6, 2015

**CANISTER ID:** 

1964

DESCRIPTION: CLS

**DATE SAMPLED:** 06-May-15

0:00

**DATE RECEIVED:** 

13-May-15

REPORT CREATED: **REPORT VERSION:** 

03-Jun-15 Version 01

Qualifier **Parameter Result Units** MDL Method **Analysis Date** Ethanol 1.3 ppbv 0.3 AC-058 14-May-15 Ethyl acetate < 0.4 ppbv K, T, U 0.4 AC-058 14-May-15

Ethylbenzene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
Freon-11		0.33 ppbv	0.02	AC-058	14-May-15
Freon-113	1	0.10 ppbv	0.01	AC-058	14-May-15
Freon-114	1	0.03 ppbv	0.02	AC-058	14-May-15
Freon-12		0.70 ppbv	0.02	AC-058	14-May-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50 ppbv	0.5	AC-058	14-May-15
Isobutane	1	0.06 ppbv	0.02	AC-058	14-May-15
Isopentane	1	0.04 ppbv	0.03	AC-058	14-May-15
Isoprene	1	0.02 ppbv	0.01	AC-058	14-May-15
Isopropyl alcohol	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Isopropylbenzene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
m,p-Xylene	K, T, U	< 0.03 ppbv	0.03	AC-058	14-May-15
m-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
m-Ethyltoluene	K, T, U	< 0.08 ppbv	0.08	AC-058	14-May-15
Methyl butyl ketone	K, T, U	< 0.50 ppbv	0.5	AC-058	14-May-15
Methyl ethyl ketone	K, T, U	< 0.3 ppbv	0.3	AC-058	14-May-15
Methyl isobutyl ketone	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Methyl methacrylate	K, T, U	< 0.07 ppbv	0.07	AC-058	14-May-15
Methyl tert butyl ether	K, T, U	< 0.03 ppbv	0.03	AC-058	14-May-15
Methylcyclohexane		0.01 ppbv	0.01	AC-058	14-May-15
Methylcyclopentane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Methylene chloride	K, T, U	< 0.3 ppbv	0.3	AC-058	14-May-15
n-Butane		0.09 ppbv	0.03	AC-058	14-May-15
n-Decane	K, T, U	< 0.06 ppbv	0.06	AC-058	14-May-15

### **Qualifiers**

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Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 4 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St Bonnyville

T9N 2J5 AΒ

**LABORATORY SAMPLE ID:** 15050100-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 6, 2015

**CANISTER ID:** 

1964

**DESCRIPTION:** CLS

**DATE SAMPLED:** 06-May-15 0:00

DATE RECEIVED: 13-May-15

REPORT CREATED: **REPORT VERSION:** 

03-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
n-Heptane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
n-Hexane	1	0.03 ppbv	0.01	AC-058	14-May-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May <b>-1</b> 5
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	14-May-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	14-May-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	14-May-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	14-May-15
n-Nonane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
o-Ethyltoluene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
o-Xylene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May <b>-</b> 15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	14-May-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Toluene	1	0.03 ppbv	0.01	AC-058	14-May-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15

#### **Qualifiers**

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

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780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AΒ

T9N 2J5

**LABORATORY SAMPLE ID:** 15050198-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 12, 2015

**CANISTER ID:** 

1149

**DESCRIPTION:** CLS

**DATE SAMPLED:** 12-May-15 0:00

DATE RECEIVED: 19-May-15

REPORT CREATED:

05-Jun-15

**REPORT VERSION:** Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27 <b>-</b> May-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8 ppbv	0.8	AC-058	27-May-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dichloroethane	I	0.18 ppbv	0.01	AC-058	27-May-15
1,2-Dichloropropane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1-Hexene	1	0.05 ppbv	0.02	AC-058	27-May-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2-Dimethylbutane		1.99 ppbv	0.01	AC-058	27-May-15
2,3,4-Trimethylpentane	1	0.10 ppbv	0.01	AC-058	27-May-15
2,3-Dimethylbutane		5.02 ppbv	0.02	AC-058	27-May-15
2,3-Dimethylpentane		2.68 ppbv	0.02	AC-058	27-May-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15

### **Oualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 2 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AB

T9N 2J5

LABORATORY SAMPLE ID: 15050198-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 12, 2015

**CANISTER ID:** 

1149

DESCRIPTION: CLS

DATE SAMPLED: 12-May-15 0:00

**DATE RECEIVED:** 19-May-15

**REPORT CREATED: REPORT VERSION:** 

05-Jun-15

Version 01

Parameter	Qualifier	Result Units	s MDL	Method	Analysis Date
2-Methylheptane	•	1.10 ppbv		AC-058	27-May-15
2-Methylhexane		3.37 ppbv		AC-058	27-May-15
2-Methylpentane		1.76 ppbv		AC-058	, 27-May-15
3-Methylheptane		0.32 ppbv	0.02	AC-058	27-May-15
3-Methylhexane		5.82 ppbv		AC-058	27-May-15
3-Methylpentane		7.54 ppbv	0.01	AC-058	27-May-15
Acetone		15.3 ppbv	0.4	AC-058	27-May-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-15
Benzene		2.70 ppbv	0.01	AC-058	27-May-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
Carbon disulfide		1.09 ppbv	0.01	AC-058	27-May-15
Carbon tetrachloride	1	0.10 ppbv	0.01	AC-058	27-May-15
Chlorobenzene	1	0.04 ppbv	0.02	AC-058	27-May-15
Chloroethane	1	0.12 ppbv	0.02	AC-058	27-May-15
Chloroform	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloromethane		0.79 ppb\	0.02	AC-058	27-May-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
cis-2-Butene	1	0.04 ppbv	0.02	AC-058	27-May-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Cyclohexane		5.58 ppb\	0.02	AC-058	27-May-15
Cyclopentane		1.54 ppbv	0.01	AC-058	27-May-15
Dibromochloromethane	K, T, U	< 0.01 ppb	0.01	AC-058	27-May-15

### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 3 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

**INVOICE TO:** 

Charmaine Code

780 812-2182

T2E 6P8

PO Box 8237 5107W-50 St Bonnyville

AB T9N 2J5

LABORATORY SAMPLE ID: 15050198-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 12, 2015

CANISTER ID:

1149

**DESCRIPTION:** CLS

**DATE SAMPLED:** 12-May-15 0:00

**DATE RECEIVED:** 19-May-15

REPORT CREATED:

**REPORT VERSION:** 

05-Jun-15

Version 01

Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol	<b>4</b>		ppbv	0.3	AC-058	27-May-15
Ethyl acetate	K, T, U	< 0.4		0.4	AC-058	27-May-15
Ethylbenzene	.,,,,,		ppbv	0.01	AC-058	27-May-15
Freon-11	i		ppbv	0.02	AC-058	27-May-15
Freon-113	·		ppbv	0.01	AC-058	27-May-15
Freon-114	i		ppbv	0.02	AC-058	27-May-15
Freon-12	·		ppb∨	0.02	AC-058	27-May-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50		0.5	AC-058	27-May-15
Isobutane	.,, ., .		ppbv	0.02	AC-058	27-May-15
Isopentane			ppbv	0.03	AC-058	27-May-15
Isoprene	1		ppbv	0.01	AC-058	27-May-15
Isopropyl alcohol			ppbv	0.4	AC-058	27-May-15
Isopropylbenzene	K, T, U	< 0.01		0.01	AC-058	27-May-15
m,p-Xylene	ĺ		ppbv	0.03	AC-058	27-May-15
m-Diethylbenzene	K, T, U	< 0.04		0.04	AC-058	, 27-May-15
m-Ethyltoluene	K, T, U	< 0.08		0.08	AC-058	, 27-May-15
Methyl butyl ketone	K, T, U	< 0.50	• •	0.5	AC-058	27-May-15
Methyl ethyl ketone		7.0	ppbv	0.3	AC-058	27-May-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	27-May-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-15
Methylcyclohexane		3.93	ppbv	0.01	AC-058	27-May-15
Methylcyclopentane		4.41	ppbv	0.02	AC-058	27-May-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-15
n-Butane		0.59	ppbv	0.03	AC-058	27-May-15
n-Decane	К, Т, U	< 0.06	ppbv	0.06	AC-058	27-May-15

### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 4 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St

Bonnyville

AB T9N 2J5

LABORATORY SAMPLE ID: 15050198-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 12, 2015

**CANISTER ID:** 

1149

**DESCRIPTION:** CLS

**DATE SAMPLED:** 12-May-15 0:00

DATE RECEIVED: 19-May-15

REPORT CREATED: REPORT VERSION:

05-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
n-Heptane		8.80 ppbv	0.01	AC-058	27-May-15
n-Hexane		5.25 ppbv	0.01	AC-058	27-May-15
n-Octane		0.65 ppbv	0.02	AC-058	27 <b>-</b> May-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	27-May-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May <b>-</b> 15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
n-Nonane	1	0.05 ppbv	0.01	AC-058	27-May-15
o-Ethyltoluene	1	0.01 ppbv	0.01	AC-058	27-May-15
o-Xylene	1	0.11 ppbv	0.01	AC-058	27-May-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	27-May-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Toluene		1.22 ppbv	0.01	AC-058	27-May-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-2-Pentene	1	0.08 ppbv	0.02	AC-058	27-May-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15

#### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

**T**2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AB T9N 2J5

**LABORATORY SAMPLE ID:** 15050298-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 18, 2015

CANISTER ID:

17119

0:00

**DESCRIPTION:** CLS

**DATE SAMPLED:** 18-May-15

DATE RECEIVED: 25-May-15

REPORT CREATED:

**REPORT VERSION:** 

05-Jun-15

Version 01

			4		
Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May- <b>1</b> 5
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May- <b>1</b> 5
1,2,4-Trichlorobenzene	K, T, U	< 0.8 ppbv	0.8	AC-058	27-May-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dichloroethane	1	0.02 ppbv	0.01	AC-058	27-May-15
1,2-Dichloropropane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May- <b>1</b> 5
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May- <b>1</b> 5
1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May <b>-1</b> 5
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May- <b>1</b> 5
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May <b>-1</b> 5
2,2-Dimethylbutane	1	0.02 ppbv	0.01	AC-058	27-May-15
2,3,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,3-Dimethylbutane	1	0.05 ppbv	0.02	AC-058	27-May-15
2,3-Dimethylpentane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27 <b>-</b> May-15

### **Oualifiers**

K Off-scale low. Actual value is known to be less than the value given

T Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 2 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AB T9N 2J5

**LABORATORY SAMPLE ID:** 15050298-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 18, 2015

CANISTER ID:

17119

**DESCRIPTION:** CLS

**DATE SAMPLED:** 18-May-15 0:00

DATE RECEIVED: 25-May-15

REPORT CREATED: REPORT VERSION:

05-Jun-15

Version 01

Parameter	Qualifier	Result Unit	s MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2-Methylpentane	1	0.09 ppbv	0.01	AC-058	27-May-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
3-Methylhexane	1	0.02 ppbv	0.02	AC-058	27-May-15
3-Methylpentane	1	0.05 ppbv	0.01	AC-058	27-May-15
Acetone		4.7 ppbv	0.4	AC-058	27-May-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-15
Benzene	1	0.16 ppbv	0.01	AC-058	27-May-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
Carbon disulfide	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
Carbon tetrachloride	1	0.10 ppbv	0.01	AC-058	27-May-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloroform	1	0.03 ppbv	0.02	AC-058	27-May-15
Chloromethane		0.74 ppbv	0.02	AC-058	27-May-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
cis-2-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Cyclohexane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Cyclopentane	K, T, U	< 0.01 ppb	0.01	AC-058	27-May-15
Dibromochloromethane	K, T, U	< 0.01 ppb	0.01	AC-058	27-May-15

### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 3 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

780 812-2182

5107W-50 St Bonnyville

AB T9N 2J5

LABORATORY SAMPLE ID: 15050298-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 18, 2015

CANISTER ID:

17119

**DESCRIPTION:** CLS

**DATE SAMPLED:** 18-May-15 0:00

**DATE RECEIVED:** 25-May-15

REPORT CREATED: REPORT VERSION:

05-Jun-15

Version 01

Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		1.5	ppbv	0.3	AC-058	27-May-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Ethylbenzene	1	0.01	ppbv	0.01	AC-058	27-May-15
Freon-11		0.32	ppbv	0.02	AC-058	27-May-15
Freon-113	1	0.10	ppbv	0.01	AC-058	27-May-15
Freon-114	1	0.03	ppbv	0.02	AC-058	27-May-15
Freon-12		0.69	ppbv	0.02	AC-058	27-May-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
Isobutane	1	0.27	ppbv	0.02	AC-058	27 <b>-</b> May-15
Isopentane		0.48	ppbv	0.03	AC-058	27-May-15
Isoprene	1	0.04	ppbv	0.01	AC-058	27-May-15
Isopropyl alcohol		0.9	ppbv	0.4	AC-058	27-May-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-15
m,p-Xylene	1	0.03	ppbv	0.03	AC-058	27-May-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	27-May-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	27-May-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-15
Methylcyclohexane	1	0.02	ppbv	0.01	AC-058	27-May-15
Methylcyclopentane	1	0.04	ppbv	0.02	AC-058	27-May-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-15
n-Butane		0.87	ppbv	0.03	AC-058	27-May-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	27-May-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 4 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

0227

5107W-50 St Bonnyville

AB T9N 2J5

LABORATORY SAMPLE ID: 15050298-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 18, 2015

CANISTER ID:

17119

**DESCRIPTION:** CLS

**DATE SAMPLED:** 18-May-15 0:00

**DATE RECEIVED:** 25-May-15

REPORT CREATED:

05-Jun-15

**REPORT VERSION:** Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
n-Heptane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
n-Hexane	1	0.07 ppbv	0.01	AC-058	27-May-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	27-May-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
n-Nonane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
o-Ethyltoluene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
o-Xylene	1	0.01 ppbv	0.01	AC-058	27-May-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	27-May-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Toluene	I	0.07 ppbv	0.01	AC-058	27-May <b>-</b> 15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 6

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050316-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 24, 2015

**CANISTER ID:** 

2658

**DESCRIPTION:** CLS

**DATE SAMPLED:** 24-May-15

0:00

DATE RECEIVED: 26-May-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** Version 01

					<del> </del>
Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May <b>-</b> 15
1,2,4-Trichlorobenzene	K, T, U	< 0.8 ppbv	0.8	AC-058	27-May-15
1,2,4-Trimethylbenzene	1	0.05 ppbv	0.03	AC-058	27-May-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dichloroethane	Ī	0.02 ppbv	0.01	AC-058	27-May-15
1,2-Dichloropropane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
1,3,5-Trimethylbenzene	1	0.02 ppbv	0.02	AC-058	27-May-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,3-Dichlorobenzen <b>e</b>	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2-Dimethylbutane	1	0.02 ppbv	0.01	AC-058	27-May-15
2,3,4-Trimethylpentane	1	0.02 ppbv	0.01	AC-058	27-May-15
2,3-Dimethylbutane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
2,3-Dimethylpentane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15

#### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 2 of 6

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

780 812-2182

5107W-50 St Bonnyville

AB T9N 2J5

LABORATORY SAMPLE ID: 15050316-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 24, 2015

**CANISTER ID:** 

2658

**DESCRIPTION:** CLS

**DATE SAMPLED:** 24-May-15 0:00

**DATE RECEIVED:** 26-May-15 **REPORT CREATED:** 19-Jun-15

**REPORT VERSION:** Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, <b>U</b>	< 0.01 ppbv	0.01	AC-058	27-May-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2-Methylpentane	1	0.13 ppbv	0.01	AC-058	27-May-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	27 <b>-</b> May-15
3-Methylhexane	I	0.04 ppbv	0.02	AC-058	27-May-15
3-Methylpentane	I	0.10 ppbv	0.01	AC-058	27-May-15
Acetone		9.6 ppbv	0.4	AC-058	27-May-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	27 <b>-</b> May-15
Benzene	1	0.15 ppbv	0.01	AC-058	<b>27-May-1</b> 5
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	. 0.02	AC-058	27-May-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
Carbon disulfide		0.43 ppbv	0.01	AC-058	27-May-15
Carbon tetrachloride	1	0.10 ppbv	0.01	AC-058	27-May-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloroform	1	0.03 ppbv	0.02	AC-058	27 <b>-</b> May-15
Chloromethane		0.79 ppbv	0.02	AC-058	27-May-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
cis-2-Butene	1	0.04 ppbv	0.02	AC-058	27-May-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Cyclohexane	1	0.03 ppbv	0.02	AC-058	27-May-15
Cyclopentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
Dibromochloromethane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15

#### Qualifiers

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780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 3 of 6

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

ΑB T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

T9N 2J5 AB

LABORATORY SAMPLE ID:

15050316-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 24, 2015

**CANISTER ID:** 

2658

DESCRIPTION: CLS

DATE SAMPLED: 24-May-15

0:00

DATE RECEIVED: 26-May-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** Version 01

Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		3.8	ppbv	0.3	AC-058	27-May-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Ethylbenzene	I	0.03	ppbv	0.01	AC-058	27-May-15
Freon-11		0.30	ppbv	0.02	AC-058	27-May-15
Freon-113	I	0.09	ppbv	0.01	AC-058	27-May-15
Freon-114	1	0.03	ppbv	0.02	AC-058	27-May-15
Freon-12		0.65	ppb∨	0.02	AC-058	27-May-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
Isobutane		0.49	ppbv	0.02	AC-058	27-May-15
Isopentane		0.84	ppbv	0.03	AC-058	27-May-15
Isoprene		0.68	ppbv	0.01	AC-058	27-May-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-15
m,p-Xylene	1	0.10	ppbv	0.03	AC-058	27-May-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	27-May-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
Methyl ethyl ketone		0.7	ppbv	0.3	AC-058	27-May-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	27 <b>-</b> May-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-15
Methylcyclohexane	1	0.05	ppbv	0.01	AC-058	27-May-15
Methylcyclopentane	I	0.07	ppbv	0.02	AC-058	27-May-15
Methylene chloride		0.7	ppbv	0.3	AC-058	27-May-15
n-Butane		1.92	ppbv	0.03	AC-058	27-May-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	27-May-15

#### **Qualifiers**

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## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 4 of 6

**RESULTS TO:** 

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Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AΒ

T9N 2J5

LABORATORY SAMPLE ID:

15050316-001

MATRIX: Ambient Air

CLIENT SAMPLE ID:

LICA/VOC/CLS/May 24, 2015

**CANISTER ID:** 

2658

DESCRIPTION: CLS

**DATE SAMPLED:** 24-May-15

0:00

**DATE RECEIVED:** 26-May-15

REPORT CREATED: **REPORT VERSION:**  19-Jun-15

Version 01

Qualifier **Parameter** Result Units MDL Method **Analysis Date** n-Dodecane K, T, U < 0.4 ppbv 0.4 AC-058 27-May-15 n-Heptane K, T, U < 0.01 ppbv 0.01 AC-058 27-May-15 n-Hexane 4.46 ppbv 0.01 AC-058 27-May-15 n-Octane K, T, U < 0.02 ppbv 0.02 AC-058 27-May-15 n-Pentane K, T, U < 0.1 ppbv 0.1 AC-058 27-May-15 n-Pronylhenzene ит п < 0.05 nnhy  $\Lambda \Lambda \Gamma$ **VC UEO** 27 May 15

n-Propylbenzene	K, I, U	< 0.05 ppbv	0.05	AC-058	27-May-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
n-Nonane	I	0.01 ppbv	0.01	AC-058	27-May-15
o-Ethyltoluene	I	0.02 ppbv	0.01	AC-058	27-May-15
o-Xylene	I	0.05 ppbv	0.01	AC-058	27-May-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	27-May-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Toluene	I	0.16 ppbv	0.01	AC-058	27-May-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-2-Pentene	1	0.06 ppbv	0.02	AC-058	27-May-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15

#### **Qualifiers**

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## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237 780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AΒ

T9N 2J5

LABORATORY SAMPLE ID:

15060054-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 30, 2015

**CANISTER ID:** 

1517

**DESCRIPTION:** CLS

- --

**DATE SAMPLED:** 30-May-15 0:00

DATE RECEIVED: 05-Jun-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** 

Version 01

ParameterQualifierResult Units1,1,1-TrichloroethaneK, T, U< 0.02 ppbv1,1,2,2-TetrachloroethaneK, T, U< 0.02 ppbv1,1,2-TrichloroethaneK, T, U< 0.02 ppbv1,1-DichloroethaneK, T, U< 0.02 ppbv1,1-DichloroethyleneK, T, U< 0.04 ppbv1,2,3-TrimethylbenzeneK, T, U< 0.05 ppbv1,2,4-TrichlorobenzeneK, T, U< 0.8 ppbv1,2,4-TrimethylbenzeneK, T, U< 0.03 ppbv	MDL 0.02 0.02 0.02 0.02 0.04 0.05	Method AC-058 AC-058 AC-058 AC-058	Analysis Date 06-Jun-15 06-Jun-15 06-Jun-15 06-Jun-15
1,1,2,2-TetrachloroethaneK, T, U< 0.02 ppbv1,1,2-TrichloroethaneK, T, U< 0.02 ppbv1,1-DichloroethaneK, T, U< 0.02 ppbv1,1-DichloroethyleneK, T, U< 0.04 ppbv1,2,3-TrimethylbenzeneK, T, U< 0.05 ppbv1,2,4-TrichlorobenzeneK, T, U< 0.8 ppbv	0.02 0.02 0.02 0.04	AC-058 AC-058 AC-058	06-Jun-15 06-Jun-15
1,1,2-TrichloroethaneK, T, U< 0.02 ppbv1,1-DichloroethaneK, T, U< 0.02 ppbv	0.02 0.02 0.04	AC-058 AC-058	06-Jun-15
1,1-DichloroethaneK, T, U< 0.02 ppbv1,1-DichloroethyleneK, T, U< 0.04 ppbv	0.02 0.04	AC-058	
1,1-DichloroethyleneK, T, U< 0.04 ppbv1,2,3-TrimethylbenzeneK, T, U< 0.05 ppbv	0.04		06-Jun-15
1,2,3-TrimethylbenzeneK, T, U< 0.05 ppbv1,2,4-TrichlorobenzeneK, T, U< 0.8 ppbv		AC-058	
1,2,4-Trichlorobenzene K, T, U < 0.8 ppbv	0.05		06-Jun-15
• • • • • • • • • • • • • • • • • • • •	0.03	AC-058	06-Jun-15
1.2.4.Trimethylhenzene K.T.U. < 0.03. pphy	0.8	AC-058	06-Jun-15
1,2,4-11methybenzene k, 1, 0 \ \ 0.03 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	0.03	AC-058	06-Jun-15
1,2-Dibromoethane K, T, U < 0.02 ppbv	0.02	AC-058	06-Jun-15
1,2-Dichlorobenzene K, T, U < 0.03 ppbv	0.03	AC-058	06-Jun-15
1,2-Dichloroethane I 0.02 ppbv	0.01	AC-058	06-Jun-15
1,2-Dichloropropane I 0.01 ppbv	0.01	AC-058	06-Jun-15
1,3,5-Trimethylbenzene K, T, U < 0.02 ppbv	0.02	AC-058	06-Jun-15
1,3-Butadiene K, T, U < 0.02 ppbv	0.02	AC-058	06-Jun-15
1,3-Dichlorobenzene K, T, U < 0.3 ppbv	0.3	AC-058	06-Jun-15
1,4-Dichlorobenzene K, T, U < 0.4 ppbv	0.4	AC-058	06-Jun-15
1,4-Dioxane K, T, U < 0.4 ppbv	0.4	AC-058	06-Jun-15
1-Butene I 0.18 ppbv	0.02	AC-058	06-Jun-15
1-Hexene K, T, U < 0.02 ppbv	0.02	AC-058	06-Jun-15
1-Pentene K, T, U < 0.01 ppbv	0.01	AC-058	06-Jun-15
2,2,4-Trimethylpentane K, T, U < 0.01 ppbv	0.01	AC-058	06-Jun-15
2,2-Dimethylbutane I 0.01 ppbv	0.01	AC-058	06-Jun-15
2,3,4-Trimethylpentane K, T, U < 0.01 ppbv	0.01	AC-058	06-Jun-15
2,3-Dimethylbutane K, T, U < 0.02 ppbv	0.02	AC-058	06-Jun-15
2,3-Dimethylpentane K, T, U < 0.02 ppbv	0.02	AC-058	06-Jun-15
2,4-Dimethylpentane K, T, U < 0.01 ppbv	0.01	AC-058	06-Jun-15

#### **Qualiflers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
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Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 2 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

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4000, 19 St NE

Calgary

AΒ

T2E 6P8

INVOICE TO:

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15060054-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 30, 2015

**CANISTER ID:** 

1517

DESCRIPTION: CLS

DATE SAMPLED: 30-May-15

0:00

DATE RECEIVED: 05-Jun-15

**REPORT CREATED: REPORT VERSION:** 

19-Jun-15

Version 01

Parameter	Qualifier	Result Uni	its MDL	Method	Analysis Date
2-Methylheptane	I	0.01 ppb	bv 0.01	AC-058	06-Jun-15
2-Methylhexane	K, T, U	< 0.01 ppb	bv 0.01	AC-058	06-Jun-15
2-Methylpentane	K, T, U	< 0.01 ppb	bv 0.01	AC-058	06-Jun-15
3-Methylheptane	K, T, U	< 0.02 ppb	bv 0.02	AC-058	06-Jun <b>-1</b> 5
3-Methylhexane	1	0.02 ppb	bv 0.02	AC-058	06-Jun-15
3-Methylpentane	1	0.02 ppb	bv 0.01	AC-058	06-Jun-15
Acetone		5.8 ppb	bv 0.4	AC-058	06-Jun-15
Acrolein		1.9 ppb	bv 0.3	AC-058	06-Jun-15
Benzene	1	0.08 ppb	bv 0.01	AC-058	06-Jun-15
Benzyl chloride	K, T, U	< 0.4 ppb	bv 0.4	AC-058	06-Jun-15
Bromodichloromethane	K, T, U	< 0.02 ppb	bv 0.02	AC-058	06-Jun-15
Bromoform	K, T, U	< 0.02 ppb	bv 0.02	AC-058	06-Jun-15
Bromomethane	K, T, U	< 0.01 ppb	bv 0.01	AC-058	06-Jun-15
Carbon disulfide		0.32 ppb	bv 0.01	AC-058	06-Jun-15
Carbon tetrachloride	1	0.10 ppb	bv 0.01	AC-058	06-Jun-15
Chlorobenzene	K, T, U	< 0.02 ppb	bv 0.02	AC-058	06-Jun-15
Chloroethane	1	0.04 ppb	bv 0.02	AC-058	06-Jun-15
Chloroform	I	0.02 ppb	bv 0.02	AC-058	06-Jun-15
Chloromethane		0.75 ppb	bv 0.02	AC-058	06-Jun-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppb	bv 0.01	AC-058	06-Jun-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppb	bv 0.04	AC-058	06-Jun-15
cis-2-Butene	K, T, U	< 0.02 ppb	bv 0.02	AC-058	06-Jun-15
cis-2-Pentene	K, T, U	< 0.02 ppb	bv 0.02	AC-058	06-Jun-15
Cyclohexane	1	0.02 ppk	bv 0.02	AC-058	06-Jun-15
Cyclopentane	K, T, U	< 0.01 ppb	bv 0.01	AC-058	06-Jun-15
Dibromochloromethane	K, T, U	< 0.01 ppk	bv 0.01	AC-058	06-Jun-15

#### Qualifiers

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

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## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 3 of 12

**RESULTS TO:** 

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4000, 19 St NE

Calgary

AB

T2E 6P8

INVOICE TO:

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15060054-001

0:00

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 30, 2015

**CANISTER ID:** 

1517

CLS DESCRIPTION:

DATE SAMPLED: 30-May-15

DATE RECEIVED: 05-Jun-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result	Unite	MDL	Method	Analysis Date
Ethanol	Quantier		ppbv	0.3	AC-058	06-Jun-15
Ethyl acetate	итп					
•	K, T, U	< 0.4		0.4	AC-058	06-Jun-15
Ethylbenzene	l		ppbv	0.01	AC-058	06-Jun-15
Freon-11	. I		ppbv	0.02	AC-058	06-Jun-15
Freon-113			ppbv	0.01	AC-058	06-Jun-15
Freon-114	l		ppbv	0.02	AC-058	06-Jun-15
Freon-12			ppbv	0.02	AC-058	06-Jun-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50		0.5	AC-058	06-Jun-15
Isobutane		0.36	ppbv	0.02	AC-058	06-Jun-15
Isopentane	1	0.13	ppbv	0.03	AC-058	06-Jun-15
Isoprene	, 1	0.18	ppbv	0.01	AC-058	06-Jun-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	06-Jun-15
lsopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	06-Jun-15
m,p-Xylene	1	0.07	ppbv	0.03	AC-058	06-Jun-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	06-Jun-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	06-Jun-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	06-Jun-15
Methyl ethyl ketone		1.2	ppbv	0.3	AC-058	06-Jun-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	06-Jun-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	06-Jun-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	06-Jun-15
Methylcyclohexane	1	0.03	ppbv	0.01	AC-058	06-Jun-15
Methylcyclopentane	1		ppbv	0.02	AC-058	06-Jun-15
Methylene chloride	K, T, U	< 0.3		0.3	AC-058	06-Jun-15
n-Butane	1		ppbv	0.03	AC-058	06-Jun-15
n-Decane	K, T, U	< 0.06	• •	0.06	AC-058	06-Jun-15

#### Qualifiers

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

Compound was analyzed for but not detected

The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 4 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AΒ

T9N 2J5

**LABORATORY SAMPLE ID:** 

15060054-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/CLS/May 30, 2015

**CANISTER ID:** 

1517

**DESCRIPTION:** CLS

DATE SAMPLED: 30-May-15

0:00

DATE RECEIVED: 05-Jun-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jun-15
n-Heptane	1	0.06 ppbv	0.01	AC-058	06-Jun-15
n-Hexane	1	0.06 ppbv	0.01	AC-058	06-Jun-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	06-Jun-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jun-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	06-Jun-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	06-Jun-15
n-Nonane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
o-Ethyltoluene	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
o-Xylene	I	0.03 ppbv	0.01	AC-058	06-Jun-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	06-Jun-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jun-15
Toluene	1	0.16 ppbv	0.01	AC-058	06-Jun-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jun-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15

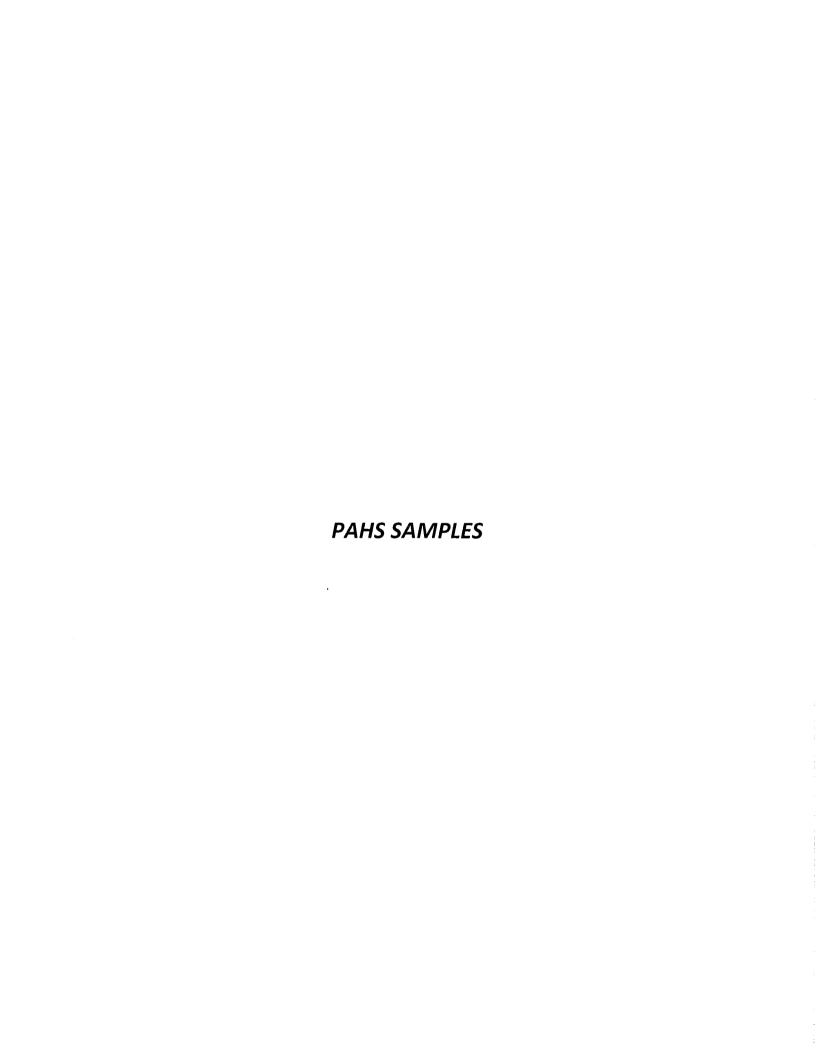
### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455





780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 5 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AΒ T9N 2J5 LABORATORY SAMPLE ID: 15050100-002

MATRIX: Air Filter

**CLIENT SAMPLE ID:** LICA/PUF/CLS/May 6, 2015

**CANISTER ID:** 

TE-09

**DESCRIPTION:** CLS

**DATE SAMPLED:** 06-May-15 0:00

**DATE RECEIVED:** 13-May-15

REPORT CREATED: **REPORT VERSION:** 

03-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene	4,000,000	0.02 ug/filter	0.01	NA-017	28-May-15
2-Methylnaphthalene		0.03 ug/filter	0.01	NA-017	28-May-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Acenaphthene	.,, ., e	0.02 ug/filter	0.01	NA-017	28-May-15
Acenaphthylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Acridine	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Anthracene	.,, ., .	0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Chrysene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Fluoranthene	., ., .	0.02 ug/filter	0.01	NA-017	28-May-15
Fluorene		0.03 ug/filter	0.01	NA-017	28-May-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Naphthalene	, . , .	0.03 ug/filter	0.01	NA-017	28-May-15
Perylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Phenanthrene	, ., 5	0.08 ug/filter	0.01	NA-017	28-May-15
Pyrene		0.02 ug/filter	0.01	NA-017	28-May-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 6 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050100-002

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/CLS/May 6, 2015

CANISTER ID:

TE-09

**DESCRIPTION:** CLS

**DATE SAMPLED:** 06-May-15

0:00

DATE RECEIVED: 13-May-15

**REPORT CREATED: REPORT VERSION:** 

03-Jun-15

Version 01

**Parameter** 

Retene

Qualifier

**Result Units** 

MDL Method

**Analysis Date** 

0.02 ug/filter

0.01 NA-017

28-May-15

### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 5 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

510/W-50 S Bonnyville

AB

T9N 2J5

**LABORATORY SAMPLE ID:** 15050198-002

MATRIX: Air Filter

CLIENT SAMPLE ID:

LICA/PUF/CLS/May 12, 2015

**CANISTER ID:** 

TE-11

**DESCRIPTION:** CLS

**DATE SAMPLED:** 12-May-15 0:00

**DATE RECEIVED:** 19-May-15

REPORT CREATED: REPORT VERSION:

05-Jun-15

Version 01

Davanata	0 :6:	Danile Units	DAD!	0.0 - 1 1	
Parameter	Qualifier	Result Units	MDL		Analysis Date
1-Methylnaphthalene		0.02 ug/filter	0.01	NA-017	28-May-15
2-Methylnaphthalene		0.03 ug/filter	0.01	NA-017	28-May-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Acenaphthene		0.02 ug/filter	0.01	NA-017	28-May-15
Acenaphthylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Acridine	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(b,j,k)fluoranthene		0.02 ug/filter	0.01	NA-017	28-May-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Chrysene		0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo (ah) anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Fluoranthene		0.03 ug/filter	0.01	NA-017	28-May-15
Fluorene		0.04 ug/filter	0.01	NA-017	28-May-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Naphthalene		0.03 ug/filter	0.01	NA-017	28-May-15
Perylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Phenanthrene		0.13 ug/filter	0.01	NA-017	28-May-15
Pyrene		0.03 ug/filter	0.01	NA-017	28-May-15

### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- 1 The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager
On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 6 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St Bonnyville

AΒ

T9N 2J5

**LABORATORY SAMPLE ID:** 15050198-002

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/CLS/May 12, 2015

**CANISTER ID:** 

TE-11

DESCRIPTION: CLS

DATE SAMPLED: 12-May-15 0:00

DATE RECEIVED: 19-May-15

REPORT CREATED: **REPORT VERSION:** 

05-Jun-15

Version 01

**Parameter** 

Retene

Qualifier

**Result Units** 

MDL Method

**Analysis Date** 28-May-15

0.02 ug/filter 0.01 NA-017

### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 5 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

**LABORATORY SAMPLE ID:** 

15050298-002

MATRIX: Air Filter

CLIENT SAMPLE ID:

LICA/PUF/CLS/May 18, 2015

**CANISTER ID:** 

TE-04

DESCRIPTION:

DATE SAMPLED: 18-May-15

0:00

DATE RECEIVED:

25-May-15

CLS

**REPORT CREATED: REPORT VERSION:** 

05-Jun-15

Version 01

Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.01	ug/filter	0.01	NA-017	29-May-15
2-Methylnaphthalene		0.02	ug/filter	0.01	NA-017	29-May-15
3-Methylcholanthrene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Acenaphthene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Acenaphthylene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Acridine	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Anthracene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Benzo(a)anthracene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Benzo(a)pyrene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Benzo(c)phenanthrene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29 <b>-</b> May-15
Benzo(e)pyrene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Benzo(ghi)perylene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Chrysene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Dibenzo (ah) anthracene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May <b>-</b> 15
Fluoranthene		0.03	ug/filter	0.01	NA-017	29-May-15
Fluorene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Naphthalene		0.01	ug/filter	0.01	NA-017	29-May-15
Perylene	K, T, U	< 0.01	ug/filter	0.01	NA-017	29-May-15
Phenanthrene		0.08	ug/filter	0.01	NA-017	29-May-15
Pyrene		0.02	ug/filter	0.01	NA-017	29-May-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 6 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St Bonnyville

ΑB T9N 2J5 LABORATORY SAMPLE ID:

15050298-002

0:00

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/CLS/May 18, 2015

**CANISTER ID:** 

TE-04

DESCRIPTION: CLS

DATE SAMPLED: 18-May-15

DATE RECEIVED: 25-May-15

**REPORT CREATED:** 

**REPORT VERSION:** 

05-Jun-15

Version 01

**Parameter** 

Qualifier

**Result Units** 

MDL Method **Analysis Date** 

Retene

0.08 ug/filter

0.01 NA-017

29-May-15

## Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 5 of 6

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AΒ T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

ΑB T9N 2J5 LABORATORY SAMPLE ID:

15050316-002

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/CLS/May 24, 2015

**CANISTER ID:** 

9702

**DESCRIPTION:** CLS

**DATE SAMPLED:** 24-May-15

0:00

DATE RECEIVED: 26-May-15

**REPORT CREATED: REPORT VERSION:** 

19-Jun-15

Version 01

	·				
Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.09 ug/Filter	0.01	NA-017	12-Jun-15
2-Methylnaphthalene		0.15 ug/Filter	0.01	NA-017	12-Jun-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
7,12-Dimethylbenz(a) anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acenaphthene		0.10 ug/Filter	0.01	NA-017	12-Jun-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Anthracene		0.04 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(b,j,k)fluoranthene		0.03 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Chrysene		0.02 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,l)pyrene	· K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Fluoranthene		0.09 ug/Filter	0.01	NA-017	12-Jun-15
Fluorene		0.15 ug/Filter	0.01	NA-017	12-Jun-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Naphthalene		0.12 ug/Filter	0.01	NA-017	12-Jun-15
Perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Phenanthrene		0.50 ug/Filter	0.01	NA-017	12-Jun-15
Pyrene		0.07 ug/Filter	0.01	NA-017	12-Jun-15

#### **Qualifiers**

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit



780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 6 of 6

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237 5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050316-002

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/CLS/May 24, 2015

**CANISTER ID:** 

9702

**DESCRIPTION:** CLS

**DATE SAMPLED:** 24-May-15

0:00

DATE RECEIVED: 26-May-15

19-Jun-15

**REPORT CREATED:** REPORT VERSION:

Version 01

**Parameter** 

Retene

Qualifier

Result Units

MDL Method

**Analysis Date** 

0.16 ug/Filter

0.01 NA-017

12-Jun-15

## Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 5 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AB T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

T9N 2J5 ΑB

LABORATORY SAMPLE ID:

15060054-002

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/CLS/May 30, 2015

**CANISTER ID:** 

1801

DESCRIPTION: CLS

DATE SAMPLED: 30-May-15

0:00

DATE RECEIVED: 05-Jun-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.01 ug/Filter	0.01	NA-017	12-Jun-15
2-Methylnaphthalene		0.03 ug/Filter	0.01	NA-017	12-Jun-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
7,12-Dimethylbenz(a) anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acenaphthene		0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(a) anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(b,j,k)fluoranthene		0.02 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(c)phenanthrene		0.09 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Chrysene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,i)pyrene	K, T, ∪	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Fluoranthene		0.03 ug/Filter	0.01	NA-017	12-Jun-15
Fluorene		0.03 ug/Filter	0.01	NA-017	12-Jun-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Naphthalene		0.02 ug/Filter	0.01	NA-017	12-Jun-15
Perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Phenanthrene		0.11 ug/Filter	0.01	NA-017	12-Jun-15
Pyrene		0.03 ug/Filter	0.01	NA-017	12-Jun-15

## Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 6 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

ΑB T2E 6P8

INVOICE TO:

Charmaine Code PO Box 8237

780 812-2182

5107W-50 St Bonnyville

ΑB T9N 2J5 LABORATORY SAMPLE ID: 15060054-002

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/CLS/May 30, 2015

0:00

**CANISTER ID:** 

1801

DESCRIPTION: CLS

**DATE SAMPLED:** 30-May-15

DATE RECEIVED: 05-Jun-15

**REPORT CREATED: REPORT VERSION:** 

19-Jun-15

Version 01

**Parameter** 

Qualifier

**Result Units** 

MDL Method

**Analysis Date** 

Retene

0.04 ug/Filter

0.01 NA-017

12-Jun-15

**Qualifiers** 

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

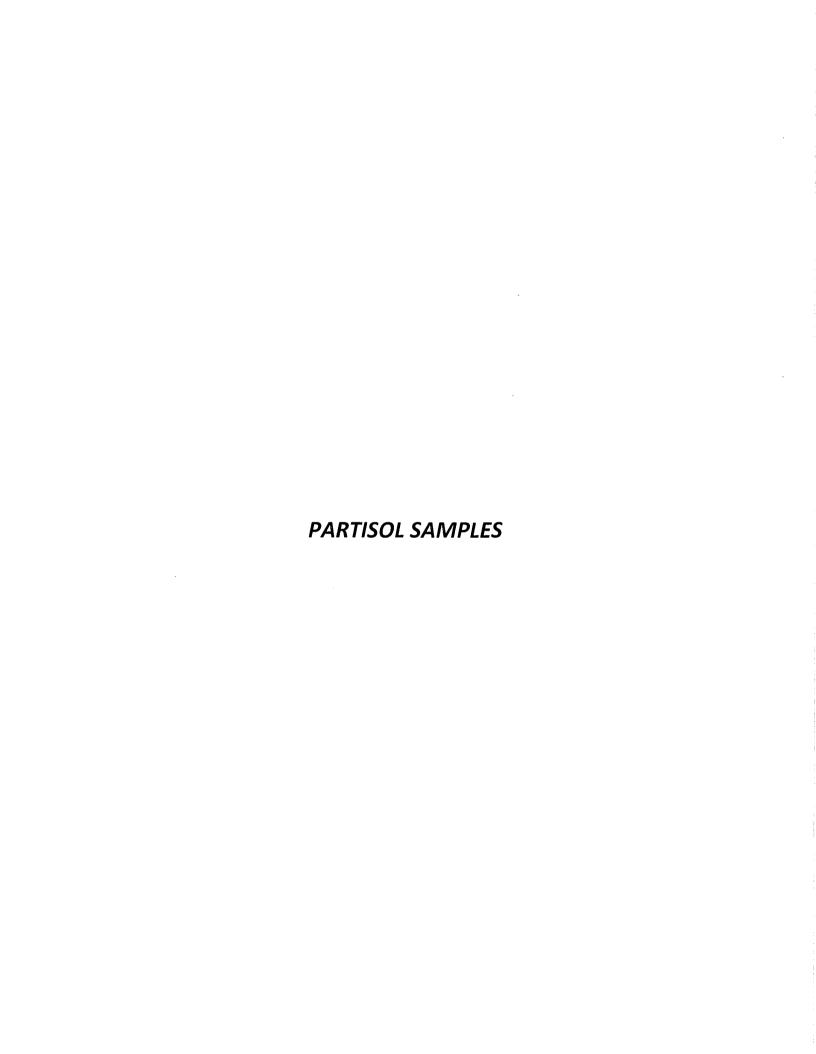
U Compound was analyzed for but not detected

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455





780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 1

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Mike Bisaga PO Box 8237

5107W-50 St Bonnyville

AB

T9N 2J5

LABORATORY SAMPLE ID:

15050099-001

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA Filter # P4131547

**CANISTER ID:** 

**DESCRIPTION:** CLS

**DATE SAMPLED:** 06-May-15 0:00

**DATE RECEIVED:** 13-May-15

REPORT CREATED:

27-May-15

REPORT VERSION:

Version 01

ParameterQualifierResult UnitsMDLMethodAnalysis DateParticulate Weight0.020 mg0.004AC-02919-May-15

Qualifiers

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 1

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Mike Bisaga PO Box 8237

5107W-50 St Bonnyville

AΒ

T9N 2J5

**LABORATORY SAMPLE ID:** 

15050200-001

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA P4131703

**CANISTER ID:** 

DESCRIPTION: CLS

**DATE SAMPLED:** 12-May-15 0:00

DATE RECEIVED: 19-May-15

**REPORT CREATED:** 

27-May-15

**REPORT VERSION:** 

Version 01

**Parameter** 

Qualifier

**Result Units** 

MDL Method **Analysis Date** 

Particulate Weight

0.136 mg

0.004 AC-029 25-May-15

**Qualifiers** 

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 1

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Mike Bisaga PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050300-001

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA P4143634

**CANISTER ID:** 

**DESCRIPTION:** 

CLS

18-May-15 0:00

DATE SAMPLED: DATE RECEIVED:

- NA 4-

RECEIVED: 25-May

25-May-15

REPORT CREATED: REPORT VERSION:

17-Jun-15 Version 01

**Parameter** 

Particulate Weight

Qualifier

**Result Units** 0.091 mg

MDL Method

**Analysis Date** 

0.004 AC-029

27-May-15

Qualifiers

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 1

**RESULTS TO:** 

Adewunmi Adekanmbi

**Lakeland Industry and Community Assn** 

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Mike Bisaga

PO Box 8237 5107W-50 St

Bonnyville

AΒ

T9N 2J5

LABORATORY SAMPLE ID:

15050315-001

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA P4143633

**CANISTER ID:** 

**DESCRIPTION:** CLS

**DATE SAMPLED:** 24-May-15 0:00

**DATE RECEIVED:** 26-May-15

**REPORT CREATED:** 

17-Jun-15

**REPORT VERSION:** 

Version 01

ParameterQualifierResult UnitsMDLMethodAnalysis DateParticulate Weight0.336 mg0.004AC-02927-May-15

**Qualifiers** 

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



PO Bag 4000 Vegreville, Alberta Canada T9C 1T4 (780) 632-8211

780 812-2182

#### **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 1

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Mike Bisaga PO Box 8237

5107W-50 St Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15060053-001

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA P4143632

**CANISTER ID:** 

DESCRIPTION: CLS

DATE SAMPLED: 30-May-15 0:00

DATE RECEIVED: 05-Jun-15

REPORT CREATED: 10-Jun-15

**REPORT VERSION:** Version 01

**Parameter** Qualifier **Result Units** MDL Method **Analysis Date** Particulate Weight 0.061 mg 0.004 AC-029 09-Jun-15

**Qualifiers** 

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

### APPENDIX V CHAIN OF CUSTODY



Client: Lakeland Industry & Community Association

Site: Cold Lake South Site

#### **Maxxam Analytics - Air Services Group Project Chain of Custody**

**Project #:** 2833-2015-05-01- C

Site: Cold L	ake South Site	Contact: Mike Bis	aga
QA Check Complete	moderna	Date	17-June -2015
QA Check Review	us-dw-ber	Date	17- June - 2015
Report Complete	usdahl	Date	24 - June - 2015
Report Reviewed	E. Tangang	Date _	26-Jun-15
Report Shipped		Date	
Notes			



#### AMBIENT AIR MONITORING MONTHLY DATA REPORT LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

MASKWA SITE

JOB #:2833-2015-05-30- C

**MAY 2015** 

Prepared for:

#### **LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

BOX 8237, 5107W - 50 STREET BONNYVILLE, ALBERTA T9N 2J5

**Attention: MIKE BISAGA** 

DATE:

June 2, 2015

Prepared by:

Wunmi Adekanmbi, M.Sc.

Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:

Lily Lin, B.Sc

Senior Project Manager, Air Services, Maxxam Analytics



#### **SUMMARY**

In MAY 2015, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the Maskwa Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the project coordinator.

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006.

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

The summary of results is presented on the following pages.

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

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



#### **Monthly Continuous Data Summary**

Lakeland Indu	stry & C	ommun	ity Asso	ociation				N	AXIMUM V	ALUES			
Maskwa Site						-		1-HOUR	****		24-H0	OUR	OPERATIONAL TIME
PARAMETER	OBJEC	CTIVES	EXCEE	DENCES	MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED	WIND DIRECTION	READING	DAY	(%)
	1-HR	24-HR	1-HR	24-HR	AVERAGE				(KPH)	(DEGREES)			
SO2 (PPB)	172	48	0	0	1	9	2	7	7.1	NW	2.2	2	100.0
H2S (PPB)	10	3	0	0	0	4	29, 31	21, 3	3.5 3.9	SE ESE	0,5	VAR	100.0
THC (PPM)	-	-	-	-	2,1	2.7	27	20	18.9	NNE	2.2	VAR	100.0
NO2 (PPB)	159	-	0	-	1.6	15.2	27	20	18.9	NNE	5.3	25	100.0
NO (PPB)	-	-	-		0.2	4.9	2, 2	7, 23	7.1 4.9	NW NW	0.9	2	100.0
NOX (PPB)	-	-	-	-	1.7	17.7	2	23	4.9	NW	5.7	25	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	52.2	93	26, 31	VAR	VAR	VAR	85.6	6	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	ı	946	959	17, 18	VAR	VAR	VAR	957	17	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	10.0	28.2	25	13	1	NNW	18.2	24	100.0
PRECIPITATION (MM)	-	-	-	-	0.0	3.3	31	10	4.2	ESE	0.5	31	100.0
VECTOR WS (KPH)	-	-	-	-	5,6	19.2	16	5	-	NNE	12.6	16	100.0
VECTOR WD (DEG)	-	-	-	-	ENE	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS



#### **Exceedence Summary Report**

SO<sub>2</sub> 1- Hour Exceedences

No Exceedences Recorded During the Month

SO<sub>2</sub> 24- Hour Exceedences

No Exceedences Recorded During the Month

H<sub>2</sub>S 1- Hour Exceedences
No Exceedences Recorded During the Month

H<sub>2</sub>S 24- Hour Exceedences No Exceedences Recorded During the Month

 ${
m NO_2}~$  1- Hour Exceedences No Exceedences Recorded During the Month



#### **TABLE OF CONTENTS**

<u>Title</u>	<u>Page</u>
1.0 Discussion	3
2.0 Project Personnel	5
3.0 Plant Monthly Required AMD	Summary 5
4.0 Calculations and Results	5
5.0 Methods and Procedures	5
Appendix I	Continuous Monitoring Data Results
Appendix I	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Oxides of Nitrogen
	Nitric Oxides
	Nitrogen Dioxide
	Wind Speed
	Wind Direction
	Standard Deviation Wind Direction
	Relative Humidity
	Barometric Pressure
•	Ambient Temperature Precipitation
Appendix II	Analyman Calilanatian Danulta
	Sulphur Dioxide
	Hydrogen Sulphide
	Total Hydrocarbon
	Nitrogen Dioxide
	Wind System
	Calibrators
	Calibration Gases
Appendix III	Chain of Custody



#### 1.0 Discussion

This monthly report consists of data for parameters SO2, H2S, THC, NOx, NO, NO2, WS, WD, RH, BP, Precipitation and Temperature.

Sample filters for all continuous air monitors are changed before the calibration is started. The sample manifold is cleaned during the site visit on a monthly basis.

Control checks, consisting of zero and span of the analyzer are conducted on a daily basis on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinder) is used for zero checks and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibration is done a minimum of once a month for each continuous air monitor. In addition calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor (greater than 15%).

Hourly data is corrected using daily zero information.

Trailer inspection was performed on May 8.

#### **SULPHUR DIOXIDE (SO2)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 8.

#### **HYDROGEN SULPHIDE (H2S)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 8.



#### **TOTAL HYDROCARBONS (THC)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 8.

#### **NITROGEN DIOXIDE (NO2)**

The analyzer was working well throughout the month.

The routine monthly calibration was performed on May 8.

#### WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was coming from.

The wind system was working well throughout the month.

#### **RELATIVE HUMIDITY (RH)**

The humidity sensor was working well throughout the month.

#### **BAROMETRIC PRESSURE (BP)**

The pressure sensor was working well throughout the month.

#### **PRECIPITATION**

Both the rain gauge system and heating system were working well throughout the month.

#### **AMBIENT TEMPERATURE (TPX)**

The temperature sensor was working well throughout the month.



#### 2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling personel was Alexander Yakupov.

#### 3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006.

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

#### 4.0 Calculations and Results

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

#### 5.0 Methods and Procedures

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

Maxxam AIR SOP-00209: Ambient H2S Monitoring Maxxam AIR SOP-00211: Ambient SO2 Monitoring

Maxxam AIR SOP-00213: Ambient NO/NO2/NOx Monitoring Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring

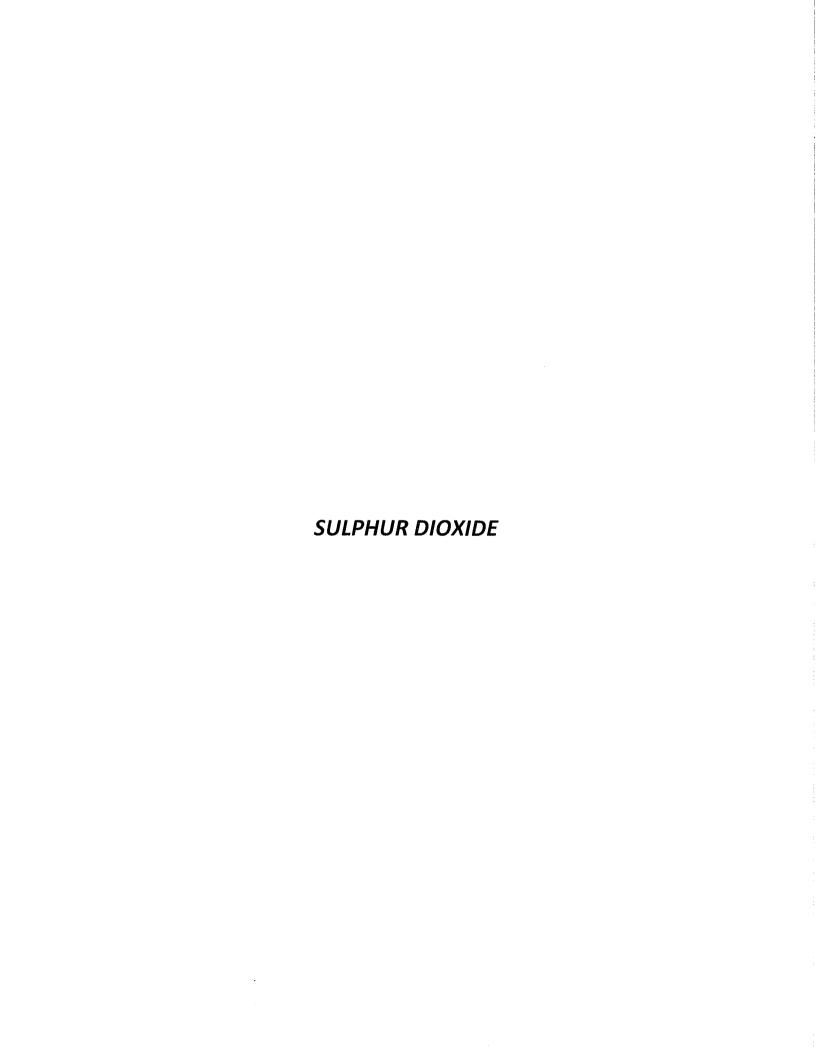
Maxxam AIR SOP-00242: Precipitation Collector Installation /Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

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

### APPENDIX I CONTINUOUS MONITORING DATA RESULTS



JOB # 2833-2015-05-30- C



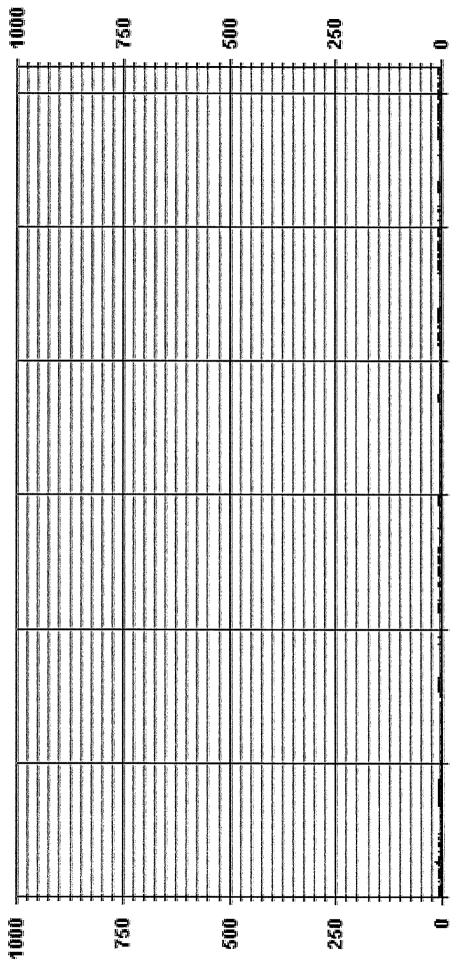
SULPHUR DIOXIDE (SO2) hourly averages in ppb

HOUR END 1:00 : 2:00						The second secon	はないのできたとう	さん くんか かいしんしょう 大きのできる				The second second	Contract of the second	The state of the s	かり ちゅうれいれんかん		v.	2		後の日本の日本	3			24-HOUR
	2.00	3:00 4:00 5:00 6:00 7:	4:00	5:00	. 6:00	≈ 7:00°	\$:00	00:6	000	11:00	12:00 13:00	3:00 34	14:00 15:00 16:00 17:00 18:00	00 16:0	0 17.00	18:00	19:00	20:00		21:00 22:00	23:00	00:00	MAX.	AVG. RDGS.
0	0	н	7	г	H	7	1	0	7	7	m	н	2 S	4	7	Н	н	т	н	н	н	ᆏ	4	1.3
<del>,  </del>	Н	н	н	7	5	Ŋ	6	m	m	7	2	7	s o	m	т	m	7	1	0	0	0	4	6	2.2
	1	Н	н	7	4	Н	0	0	m	7	н	s	1 0	Н	0	0	0	0	0	0	0	0	4	8.0
0	0	0	0	0	0	0	0	0	0	0	s	7	1 1	T	1	1	1	1	7	П	1	1	1	0.5
-	1	н	7	1	н	Н	1	н	н	s	0	0	0 0	0	0	0	0	0	0	0	0	0	7	0.4
0	0	0	0	0	0	0	0	0	s	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0	0.0
0	0	0	0	0	0	0	0	v	0	0	0	0	0 0	0	0	0	0	0	0	0	0	0		0.0
0	0	0	0	0	0	0	S	Н	U	U	J	Ü	1 0	н	7	Н	Н	7	⊣	Н	7	₽	7	9.0
-	7	7	7	Ţ	₽	s	0	0	0	0	0	0	0 0	0	0	0	0	0	0	0	0	0		0.3
0	0	0	0	0	s	0	1	7	1	2	1	1	0 0	1	0	1	1	0	0	0	0	0		.5
0	0	0	0	s	0	0	0	0	0	0	1	7	1 2	1	1	1	Н	1	Н	н	Т	7		0.7
H	1	m	s	7	0	0	0	0	0	0	0	0	0 0	2	7	7	7	0	0	0	0	0		9.0
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	OBJE	NCN	N O N	MAXI
STATUS FLAG CODES	C CALIBRATION O: QUALITY ASSUBANCE 7 NAINTEDANCE 8 RECOVERY 5 DAILS ZENO SPAN CHECK 7 JAMCHINE INTELLINE 6 POWNER SAIL INTELLINE 7 OF PRACTICE REPORTS 7 O	G. OUTFORREPAIR K. COLLECTION ERNOR	24 HOUR AVERAGES FOR MAY 2015	0 0 0 0
1	- Augustation and the second	www.		

OBJECTIVE LIMIT:		A	LBERTA	ALBERTA ENVIRONMENT: 1-HR. 1/2% PPB	HR. 172		24-HR 48	PBB
			Σ	MONTHLY SUMMARY				
NUMBER OF 1-HR EXCEEDENCES: NUMBER OF 24-HR EXCEEDENCES:			0 0					we is
NUMBER OF NON-ZERO READINGS:			319					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		9 2.2	PPB PPB	@ HOUR(S)	7	ON DAY(S) ON DAY(S) VAR-VARIOUS	N N	
1ZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	32	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	: TIME:		744 100.0	HRS %
STANDARD DEVIATION:	0.86			MONTHLY AVERAGE:			+	PPB

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

- LICA30 SO2\_



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

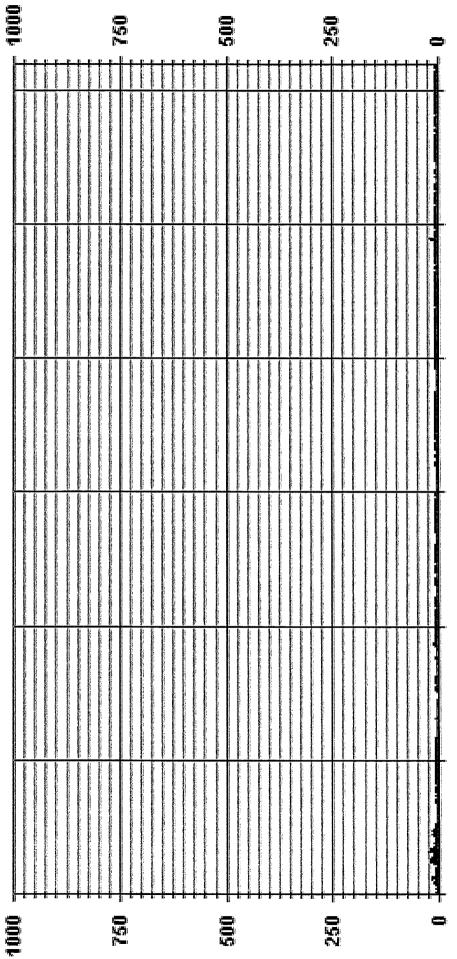
# SULPHUR DIOXIDE MAX instantaneous maximum in ppb

	24-HOUR AVG.	2.8	6.0	2.9	8.0	1.3	1.0	0.2	1.2	1.0	2.1	1.5	1.4	2.2	0.7	11	0.0	11	10	0.8	0.4	1.0	1.3	1.0	1.8	2.4	1.4	1.4	0.7	13	2.2	2.5		
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	18:00	1	4	0	7	7	1	0	7	0	4	1	Ŋ	Ŋ	Н	7	0	m	7	7	s	1	1	1	7	7	7	7	7	1	7	4	2	1.7
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יוופנפוונפוופספט ווופעוווומווו זון אל וו	13:00	ъ	s	9	Н	Н	Н	0	U	0	₽	7	0	m	Н	Н	0	7	↔	⊣	₽	₽	₽	1	7	s	m	1	1	7	1	2	9	1.5
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STATUS FLAG CODES	- CALIBRATION O - OLIALITY ASSURANCE  WAINTENANCE  PARL'ESTOSPAN CHECK  "A MACHINEMALEUNCTION  POWER-GALURE  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER  OLITEOR PER PROPER PROPER PER PER PROPER PER PER PER PER PER PER PER PER PER
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NUMBER OF NON-ZERO READINGS:	38:		573							
MAXIMUM INSTANTANEOUS VALUE:	IUE:		15	PPB	@ HOUR(S)	VAR	ON DAY(S)			2
						VAR-V	VAR-VARIOUS			
IZS CALIBRATION TIME:	32	HRS		OPERATIO	OPERATIONAL TIME:			744	HSS	
MONTHLY CAUBRATION TIME:	5	HRS								
STANDARD DEVIATION:	1.87									

of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

- LICA30 SO2MAX PPB

LICA30 SO2\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 30 Site Name : LICA30 Parameter : SO2\_

		ы	0	0	0	0	0	0	
		Freq	100.00	00.	00.	00.	00.	00.	
		MNN	1.69	00.	00.	00.	00.	00.	1.69
		WN	1.83	00.	00-	00.	00.	00.	1.83
		WINIW	1.97	00.	00.	00.	00.	00.	1.97
Meters		×	1.97	00.	00.	00.	00.	00.	1.97
: WDR		WSW	1.97	00.	00.	00.	00.	00.	1.97
neter t Heigh		SW	7.76	00.	00.	00.	00.	00.	7.76
Wind Parameter : WDR Instrument Height : 10 Meters		SSW	11.44	00.	00.	00.	00.	00.	11.44
W: In		w	9.60	00.	00.	00.	00.	00.	9.60
		SSE	7.06	00.	00.	00.	00.	00.	7.06
	Direction	SE	7.62	00.	00.	00.	00.	00.	7.62
	Dir	ESE	7.34	00.	00.	00.	00.	00.	7.34
		ш	4.37	00.	00.	00.	00.	00.	4.37
		ENE	7.90	00.	00.	00.	00.	00.	7.90
		员	11.44	00.	00.	00.	90.	00.	11.44
SO2 PPB		NNE	11.44	00.	00.	00.	00.	00.	11.44
eter:		z	4.51	00.	00.	00.	00.	00.	4.51
Param Units		Limit	20	09	110	170	340	340	Totals
		.,	٧	٧	<b>v</b>	٧	٧	X	

Calm : .00 %

Total # Operational Hours : 708

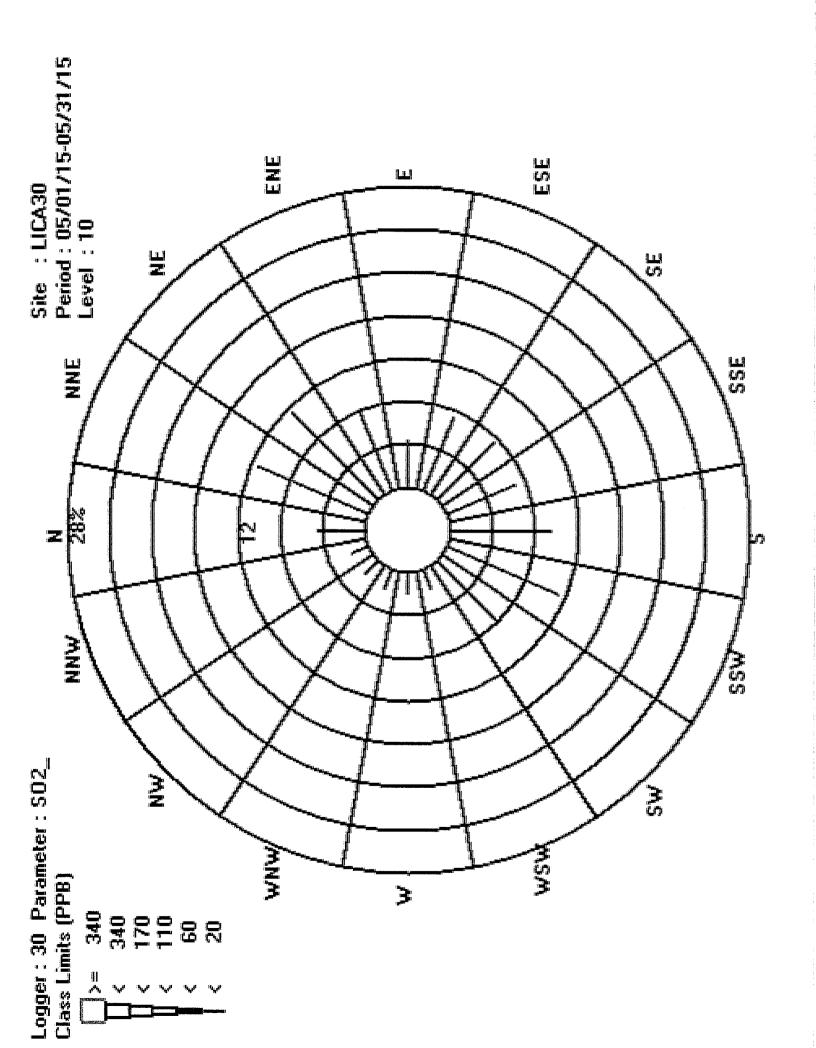
Distribution By Samples

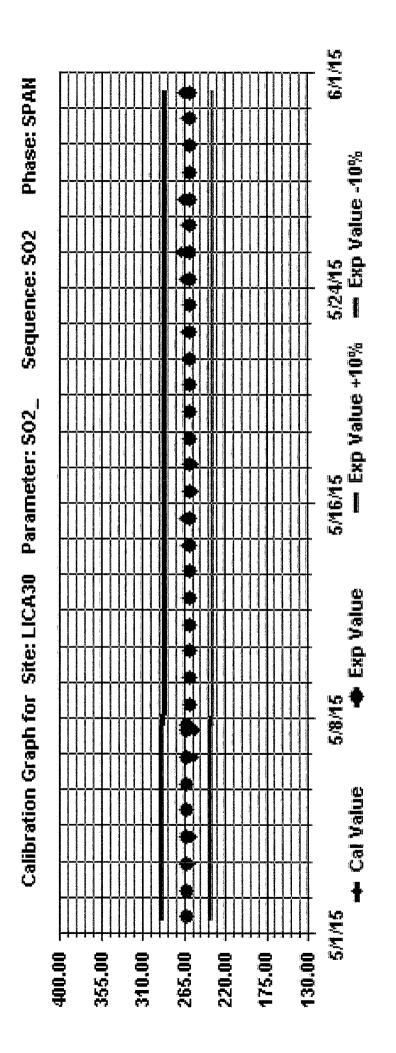
Direction

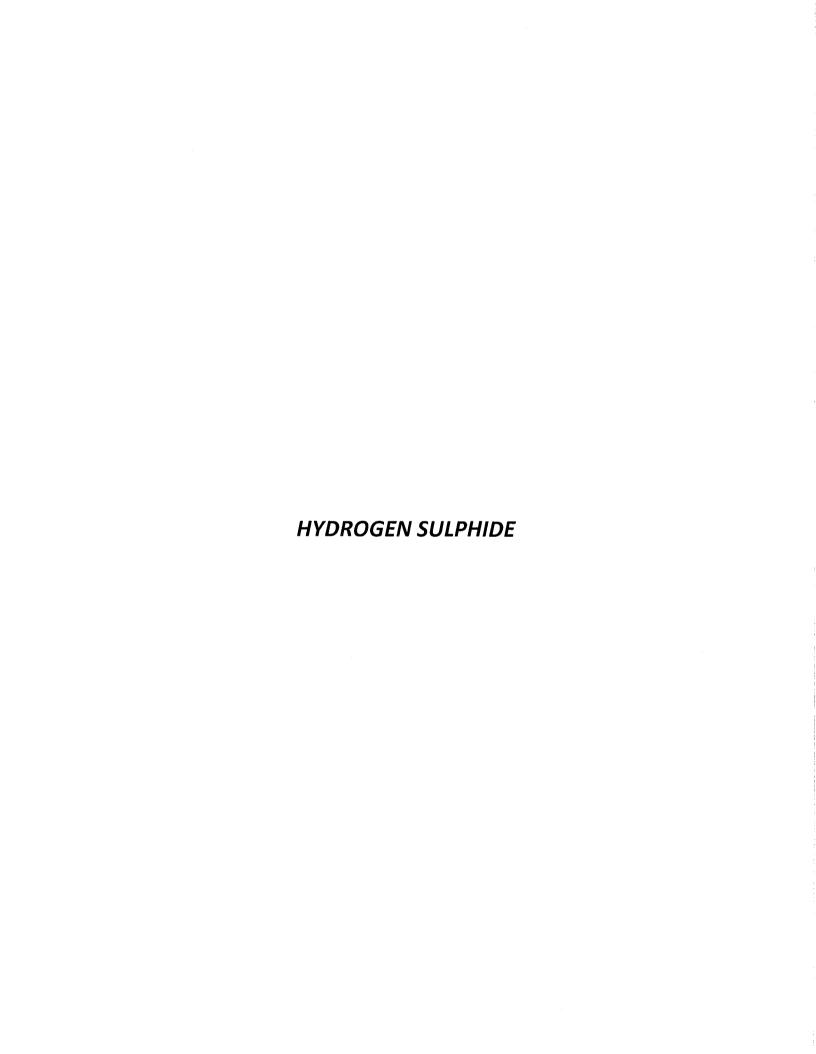
Fred	708						
MNN	12						12
WM	13						13
WNW	14						14
<b>j</b> ≰	14						14
WSW	14						14
SW	55						55
SSW	81						81
w	89						89
SSE	20						50
SE	54						54
ESE	52						52
ы	31						31
ENE	56						56
Ħ	81						81
NNE	81						81
z	32						32
Limit	20	09	110	170	340	340	Totals
	٧	٧	٧	٧	٧	X	

Calm : .00 %

Total # Operational Hours : 708







## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

# HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST											i		: }	6		Σ Ε ?	2								
HOUR START	100		2:00 3:00 4:00 5:00 6:	90 4.	00 5	00	00.0	7-00 8	00	0 10	00 11	00 12:0	0 13.00	14,00	15:00	16:00	17:00	18:00	19-00	0:00	1:00 2	23.0	0 DAILY	24-HOUR	
DAY	7.0	2.00	2,00	C	nn nn	A STORES	00.	s:nn:s	OT NO	DOS TE	005×4-2	JO 13.0	0 14:00	15:00	16:00	DO.	18:00	T9:00	20:00	7.00	2-002	3:00:-0.0	MAX.	AVG.	RDGS.
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m	0	0	0		0	0	0							0	0	0	0	0	0	0				0.0	54
4	0	0	0		1	1	0							0	0	0	0	0	0	0				0.2	54
Ŋ	0	0	0		0	0	0							0	0	0	0	0	0	0				0.0	24
ø	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	54
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Ç	0	0	0			s	0							0	0	0	0	0	0	0				0.0	75
7	0	0	0			0	0							0	0	0	0	0	0	0				0.0	24
12	0	0	0			0	0							0	0	0	0	0	0	0				0.0	24
Ŋ	0	0	s			0	0							0	0	0	0	0	0	0				0.0	54
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12	s	0	0			0	0							0	Н	0	0	0	0	0				0.0	54
15	0	0	0			0	0							0	0	0	0	0	0	0				0.0	54
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18	0	0	0			0	0							0	0	0	0	0	0	s				0.0	24
<b>១</b>	0	0	0			0	0							0	0	0	0	0	s	0				0.0	24
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26	0	0	0			0	0							0	Н	Н	0	0	0	7				0.2	24
27	Н	1	0		1	1	0							0	0	0	0	0	0	0				0.3	24
28	0	0	0		0	0	0							0	0	0	0	0	0	0			1	0.0	24
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ဓ	-	7	₽		0	0	0							0	0	0	0	0	0				7	0.3	24
31	7	0	2		2	1	1							0	0	1	0	0	0	0			4	0.5	54
HOURLY MAX	7	2		4	2	1	1							0	7	1	0	0	1	3			l		
HOURLY AVG	0.3	0.2	_		.2	7.7	0.1	_		_				0.0	0.1	0.1	0.0	0:0	0.0	0.2	_				

## STATUS FLAG CODES

G CCLIBRATION Q QUALITY ASSURANCE Y MAINTENANCE R RECOVERN S DAILY ZERO/SPAN-CHECK X MACHINE MALE-UNCTION- P POWER FAILURE G OUT FOR REPAIR K COLLECTION ERROR:	24 HOUR AVERAGES FOR MAY 2015

Liste					
Y MANN INANANA. S "AREOVERY" P "POWER FAILURE O OPENJORERIÓR G - OUT FOR REPAIR K COLLECTION ERROR.	24 HOUR AVERAGES FORMAY 2015	90	00 N- 60	0.40	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 18 28 21 22 22 23 23 23 23 23 23 23 23 23 23 23
С 97 H O		5 0	∞ <b>-</b> €	) 10 4 kg	· 0 - 0

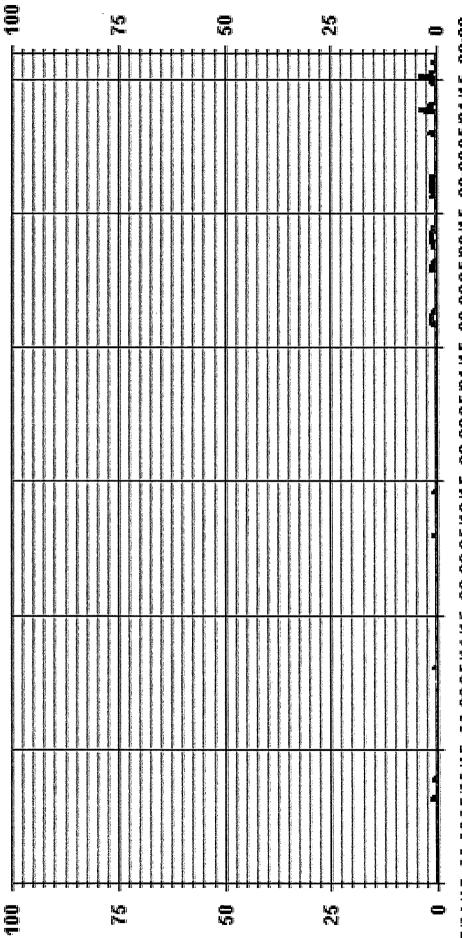
## OBJECTIVE LIMIT:

# ALBERTA ENVIRONMENT: 1.44R 22.1022 PPB 224-4R 23.3162 PPB

### MONTHLY SUMMARY

NUMBER OF 11-HR EXCEEDENCES. NUMBER OF 24-HR EXCEEDENCES:		ICES: 0	0.0						
NUMBER OF NON-ZERO READINGS:			65						
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		4 0.5	9 PB 9 PB	PPB @ HOUR(S) PPB	21,3	ON DAY(S) ON DAY(S) VAR-VARIOUS	29 VAR	29 ,31 /AR	
IZS CALIBRATION TIME: MONTHLY CAUBRATION TIME:	8 4	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	i: PTIME:		744 100.0	HRS %	
TACHER DO CONTRACTOR	0			TO A GTY A VILLE ACA			9	0	_

Of Hour Averages



05,01/15 00:0005,06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

HZS

- LICA30



Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

# HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

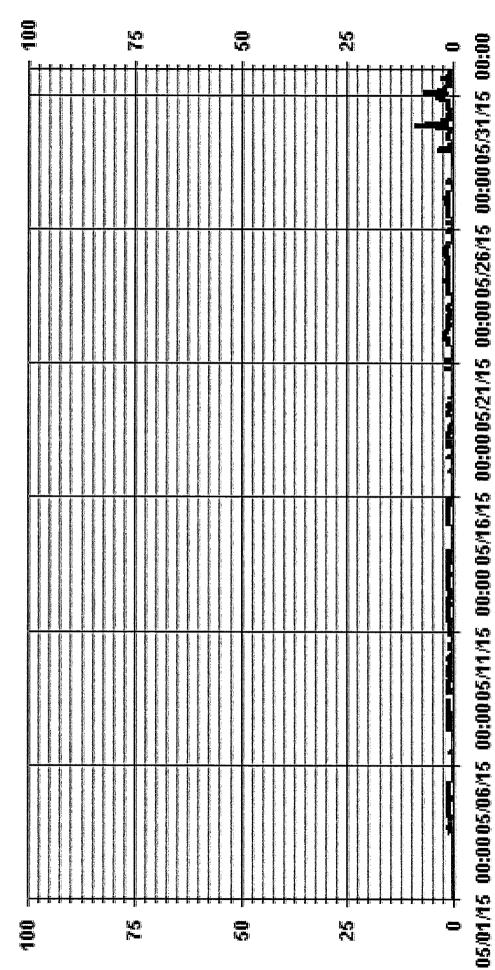
	1 1 2 2 2	7	) 100 100 100 100 100 100 100 100 100 10			-	5 1		5	<b>S</b>	וואלפוונפו												
1:00 2:00 3:00 4:00 5:00 5:00 7:	0 3:00 1 4:00		4:00 5:00	5:00	6:00 7:00	7:00. 8:00	8:00 9:00	9:00, 1 10:00 1	10:00 1 11:00 1	11.00 12: 12:00 13:	12:00 13:00 13:00 14:00	0, 14:00 0 15:00	15.00 16.00	16:00	17.00 18.00	18:00 19:00	19:00 2 20:00 2	20:00 21:00 21:00 22:00	4	22:00 23:00 23:00 :0:00	DAILY MAX.	24-HOUR AVG.	RDGS.
0	0		0	0	0	0	0	0	0			s	0	0	0	0	0				0	0.0	24
0 0 0	0		0	0	0	0	0	0	0	0	0 S	0	0	0	0	0	0	0	0	0	0	0.0	24
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1 1 1	П		Н	1	1	Н	1	Ţ	s			0	0	0	0	0	0				Н	0.4	54
	0		0	0	0	0	0	S	0			0	0	0	0	0	0	0 0			н	0.0	24
0 0	0		0	0	0	0	s	Ţ	T.			Н	ч	7	0	7	0	1 1			Н	0.3	54
1 1 1	Н		н	1	н	s	1	Ŧ	н			ပ	ں	U	0	1	7	0 1	. 1		н	6.0	54
1 1 1	1		H	0	s	0	1	0	7			7	0	0	Н	1	0	0 1			Н	9.0	54
0	1		0	S	0	0		۲,				0	0	0	0	0				0	Н	0.3	54
0	П		S	0	0	н	0	0				Н	Н	ч	H	н					₽	0.7	54
0	υ,		н	ч	н	н	0	н				0	Н	1	н	н					н	0.7	24
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0		0	0	0	0	0	0	0				0	0	0	0	0					7	0.2	75
0		Н	H	0	Н	⊣	Н	1				0	1	0	Н	0					Н	0.5	24
H		ч	П	н	Н	0	н	0				0	0	0	0	1					Н	0.4	24
0		0	0	0	0	0	0	0				0	0	0	0	s					7	0.1	54
	_	_	7	0	0	0	0	0	0			0	0	0	s	₩					2	0.4	24
2		~	7	н	7	н	н	н				н	н	s	0	0					7	1.0	54
н		_	ч	0	0	0	0	0				0	s	7	1	н					н	0.5	54
		7	ч	Т	н	7	н	1				S	7	H	1	н					7	1.1	54
1 2		7	7	7	ч	7	7	1				0	0	0	0	0					7	6.0	54
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1 1		H	2	7	н	7	⊣	7				0	0	0	0	0					7	0.7	54
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3 2		н	0	Ţ	Ħ	1	s	1				ч	+	1	ч	7					4	1.3	74
9		7	4	2	2	s	1	2				1	0	3	2	0					7	1.7	24
3 6		~	4	2	2	2	2	2		1 1		₽	ч	m	2	п	2	4	7	m			
0.7		9	0.8	0.5	9.0	0.5	0.5	9.0			_	0.4	0.4	0.4	0.5	0.5							

VIION	STATUS FLAG CODES	ס י מתאדונאי
員	STATU	No.
		TIC

## MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			329						
MAXIMUM INSTANTANEOUS VALUE:	نن		თ	РРВ	@ HOUR(S)	21	ON DAY(S)		29
						VAR-V	VAR-VARIOUS		
IZS CALIBRATION TIME:	32	HRS		OPERATIC	OPERATIONAL TIME:			744	HRS
MONTHLY CALIBRATION TIME:	'n	HRS							
STANDARD DEVIATION:	0.84								

of Hour Averages



- LICA30 H2SMAX

LICA30 HZS\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 30 Site Name : LICA30 Parameter : H2S\_ Units : PPB\_

Wind Parameter : WDR Instrument Height : 10 Meters

99.57 00. .42 00. NNW 1.69 00. 00. 00. 1.69 1.83 1.83 00. M 00. 00. 1.97 WNW 1.97 00. 00. 00. 1.97 00. 1.97 00. 00. 1.97 1.97 WSW 00. 00. % 7.76 7.76 00. N. 00. 00. SSW 00. 00. 00. 9.88 11.29 9.88 11.29 00. 00. % 6.92 SSE 6.92 00. 00. 00. 7.48 7.76 Direction . 28 SE 00. 00. 7.20 1.4 7.34 ESE 00. 00. 4.37 4.37 00. 00. 00. ы 7.90 7.90 00. 00. 00. 11.29 Έ 11.44 11.29 00. 00. 00. 4.51 11.44 00. 00. 00. 4.51 00. 00. 00. z Totals Limit 10 20 50

Calm : .00 %

X

٧ ٧ Total # Operational Hours: 708

Distribution By Samples

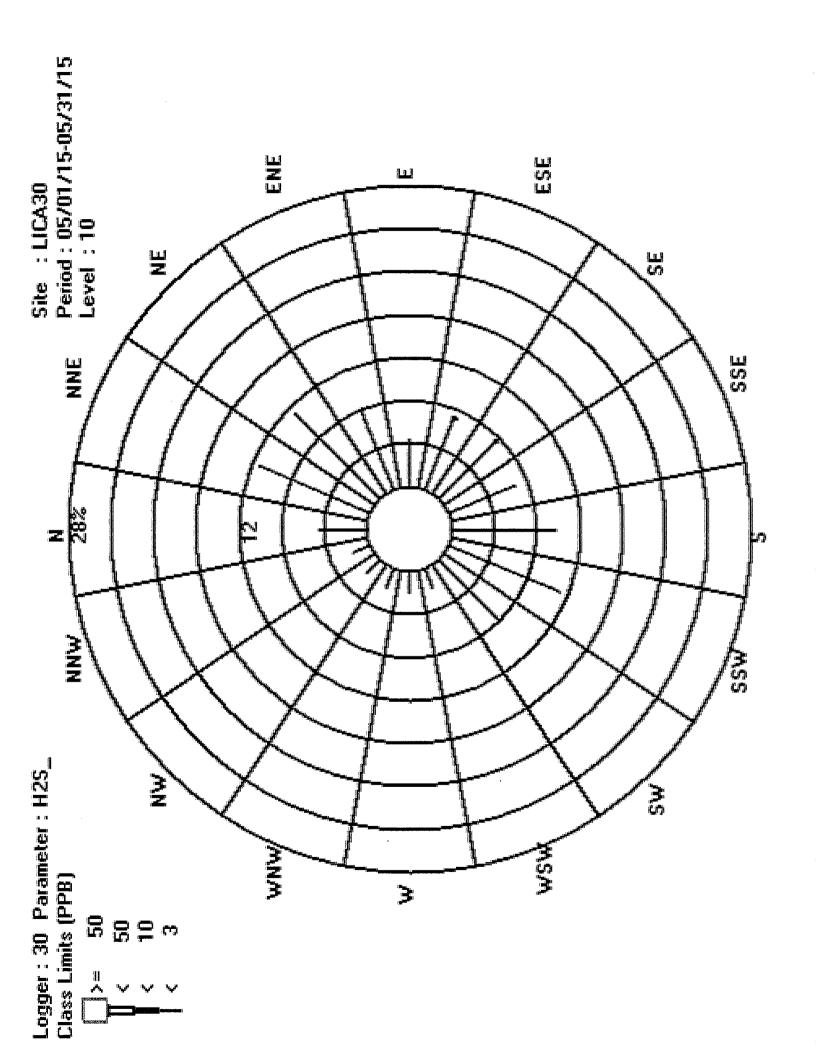
Direction

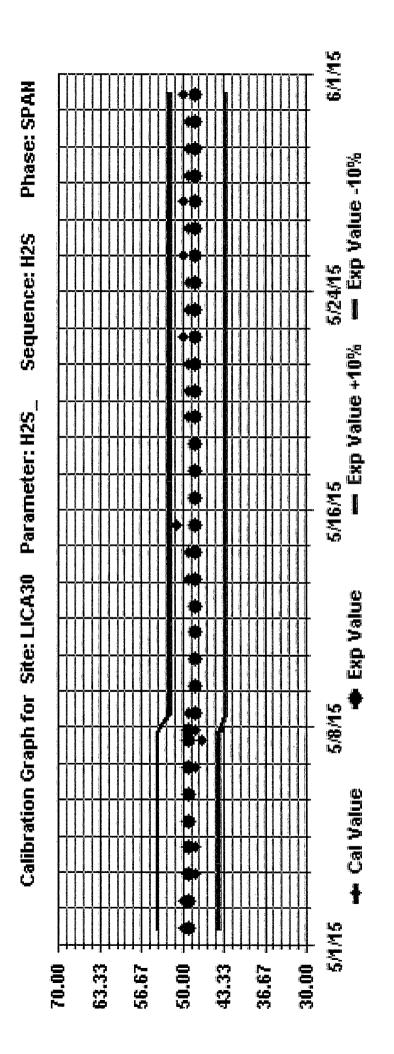
Freq	705	m			
NNW	12				12
WN	13				13
WNW	14				14
M	14				14
WSW	14				14
SW	55				55
SSW	80				80
Ø	70				70
SSE	49				49
SE	53	7			55
ESE	51	н			52
ы	31				31
ENE	56				56
S	80				80
NINE	81				81
z	32				32
Limit	m	10	50	20	Totals

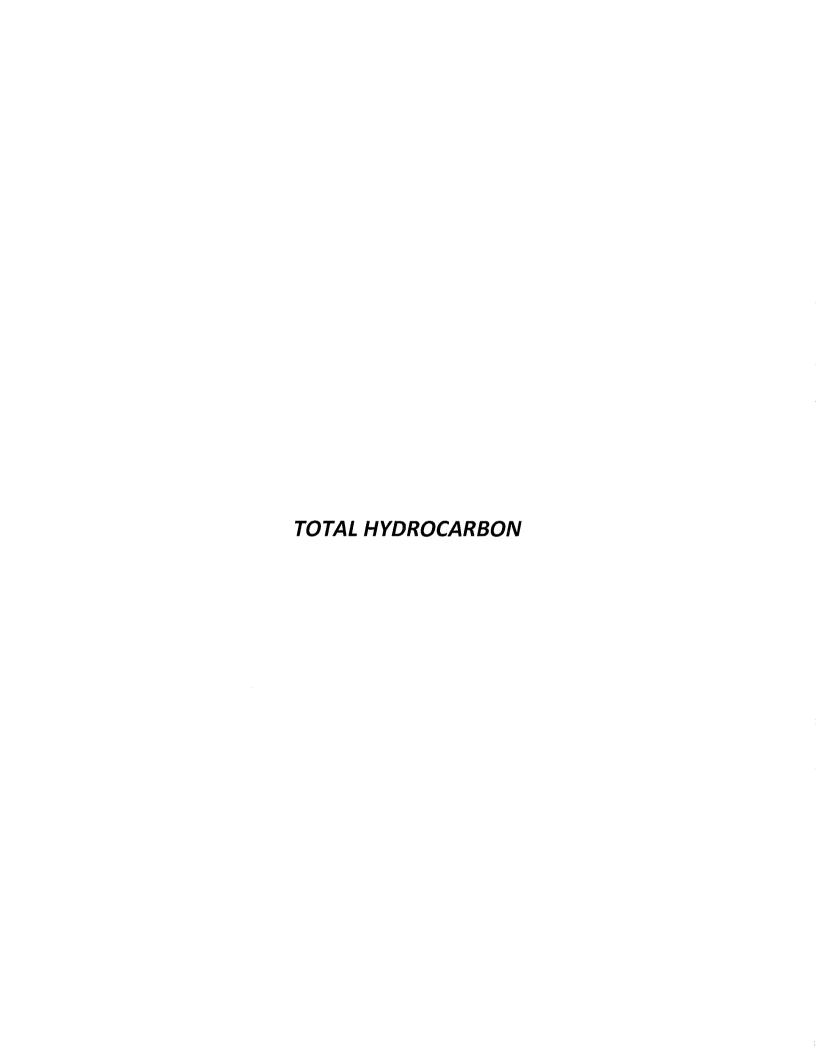
v v X

Calm : .00 %

Total # Operational Hours: 708









TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST

24-HOUR AVG. RDGS.			1 24																														
			2.1																														
MAX.	2.5	2.3	2.5	2.3	2.1	2.1	2.2	2.6	2.2	2.1	24	2.4	2.2	2.3	2.3	2.1	2.1	2.3	2.5	2.5	2.4	2.3	2.3	2.3	2.5	2.6	2.7	2.2				ı	
0-0-0			2.2			2.1																									2.0		
023:0	2.1	2.1	2.2	2.1	2.0	2.1	2.1	2.2	2.1	2.1	2.2			2.1	2.1	s	2.1	2.2	2.2	2.2	22	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.2	2.1
7. 22.0			2.1		2.0		2.1		2.1							2.1																2.2	
21.0			2.1																													2.7	2.1
20:00	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	S	2.1	2.0	2.1	2.0	2.0	2.2	2.0	2.4	2.1	2.0	2.0	2.0	2.4	2.1
19:00			2.1									2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	s	2.0	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.2	2.1
18:00	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	S	2.1	2.0	2.0	2.2	2.1	2.0	2.1	2.1	2.0	2.0	2.2	2.1
17.00	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	S	20	2.0	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.2	2.1
16:00	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.0	S	2.0	2.0	2.2	2.1	2.1	2.1	2.0	2.0	2.2	2.1
15:00	v	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.0	s	2.0	2.3	2.1	2.1	2.0	2.0	2.0	2.3	2.1
14:00	2.0	s	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.0	s	2.2	2.1	2.1	2.1	2.0	2.0	2.2	2.1
13:00	2.0	2.0	s	2.1	2.0	2.1	2.1	Ç	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	s	2.0	2.1	2.1	2.0	2.0	2.2	2.1
12:00	2.0	2.0	2.1	s	2.0	2.1	2.1	U	2.0	2.1	2.2	2.1	2.0	2.1	2.1	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	s	2.1	2.1	2.0	2.0	2.2	2.1
TT:00	2.0	2.0	2.1	2.1	s	2.0	2.1	U	2.1	2.1	2.2	2.1	2.0	2.1	2.1	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.1	s	2.1	2.0	2.0	2.2	2.1
10:00	2.1	2.0	2.1	2.1	2.0	s	2.1	Ų	2.0	2.1	2.3	2.2	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.0	2.0	2.2	2.1	2.1	2.1	s	2.1	2.0	2.3	2.1
00:6	2.1	2.0	2.1	2.1	2.0	2.0	s	2.4	2.1	2.1	2.3	2.2	2.1	2.1	2.1	2.0	2.1	2.2	2.1	2.3	2.2	2.2	2.0	2.0	2.3	2.1	2.1	2.1	2.1	s	2.1	2.4	2.1
8:00	2.3	2.1	2.1	2.1	2.1	2.0	2.1	s	2.1	2.1	2.4	2.3	2.1	2.2	2.2	2.0	2.1	2.2	2.2	2.3	2.3	2.3	2.0	2.0	2.3	2.3	2.1	2.1	2.1	2.1	S	2.4	2.2
7.00	2.5	2.1	2.1	2.1	2.1	2.0	2.1	2.6	s	2.1	2.4	2.4	2.1	2.3	2.3	2.0	2.1	2.2	2.5	2.4	2.4	2.3	2.1	2.1	2.4	2.6	2.2	2.1	2.1	2.2	2.0	2.6	2.2
.00:9	2.5	2.1	2.2	2.2	2.1	2.0	2.1	2.5	22	s	2.2	2.3	2.1	2.3	2.3	2.0	2.1	2.2	2.5	2.5	2.4	2.3	2.1	2.2	2.5	2.4	2.2	2.1	2.2	2.1	2.1	2.5	2.2
5.00	2.4	2.2	2.2	2.3	2.1	2.0	2.1	2.5	2.1	2.1	s	2.3	2.2	2.3	2.3	2.0	2.1	2.2	2.4	2.5	2.4	2.3	2.2	2.2	2.5	2.3	2.2	2.1	2.2	2.1	2.1	2.5	2.2
4:00	2.3	2.3	2.2	2.3	2.1	2.0	2.1	2.4	2.1	2.1	2.1	s	2.1	2.3	2.3	2.0	2.1	2.1	2.4	2.4	2.4	2.2	2.3	2.2	2.4	2.3	2.1	2.1	2.2	2.1	2.1	2.4	2.2
3:00	2.2	2.3	2.2	2.2	2.1	2.0	2.1	2.4	2.1	2.1	2.1	2.2	s	2.3	2.3	2.0	2.1	2.1	2.4	2.4	2.4	2.2	2.3	2.2	2.3	2.3	2.1	2.2	2.2	2.1	2.1	2.4	2.2
2:00	2.1	2.2	2.5	2.2	2.1	2.0	2.1	2.2	2.2	2.1	2.1	2.3	2.1	s	2.2	2.0	2.1	2.2	2.3	2.3	2.4	2.2	2.2	2.2	2.3	2.2	2.1	2.2	2.2	2.1	2.0	25	2.2
1:00 2:00 3:00 4:00 5:00 6:00		2.1	2.2	2.2	2.1	20	2.1	2.2	77	2.1	27	23	2.1	77	S	27	2.1	2.2	23	23	2.4	2.2	2.1	2.1	2.2	2.2			2.2	2.1	2.0	2.4	2.2
ē	DAY	2	C	4	'n	ý	7.	œ	<b>o</b>	90		12	8	174	15	16	17	18	. 19	20	21	22	23	.24	25	26	27	28		30	31	HOURLY MAX	HOURLY AVG

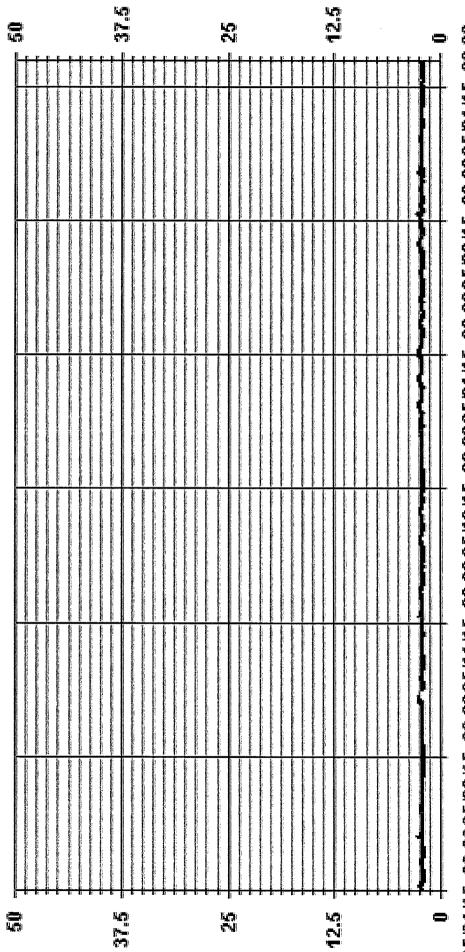
## STATUS FLAG CODES

C. CALLIA MANAGEMENTOS S DALLYZERO/SPAN-CHECK X MACHINEMALEUMCTION P POWER PAILURE O ODERATOR ERROR G OUTFOR REPAIR K COLLECTION-ERROR	24 HOUR AVERAGES FOR MAY 2015		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 20 24 25 36 27 28 28 39 31
		2.5 2 1.5 4	970

## MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			708					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		2.7	M M M	@ HOUR(S)	70	ON DAY(S) ON DAY(S) VAR-VARIOUS	27 VAR	N 00
IZS CALIBRATION TIME: MONTHLY CAUBRATION TIME:	32	HRS HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	1E: UPTIME:		744 100.0	HRS
STANDARD DEVIATION:	0.11			MONTHLY AVERAGE:	ij		2.1	2.1 PPM

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

PP

HC



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - MAY 2015 10B # 2833-2015-05-30- C

TOTAL HYDROCARBONS MAX

instantaneous maximum in ppm

24-HOUR 22:00 23:00 20:00 21:00 21:00 22:00 17:00 18:00 19:00 T6:00 14:00 15:00 15:00 16:00 13:00 10:00 11:00 12:00 12:00 12:00 13:00 9:00 8:00 7.00 6:00 2:00 3:00 4:00 5:00 1:00 00:0 HOURSTART HOURLY MAX HOURLY AVG 

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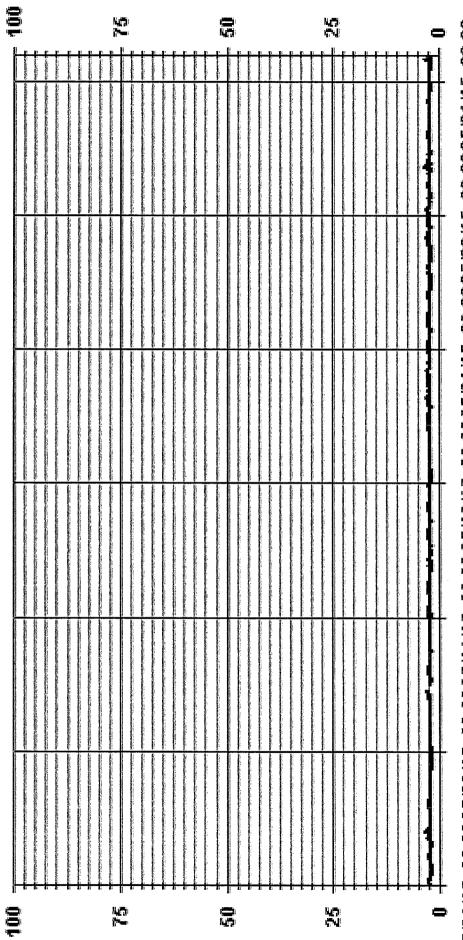
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MACHINEMALEUNCTION - DAILYZERO/SPAN'CHECK - POWER FAILURE MAINTENANCE OUT FOR REPAIR ט א א יע

MONTHLY SUMMARY	907

									The state of the s
HRS	14			ONAL TIME:	OPERATI		HRS	32	IZS CALIBRATION TIME:
		ARIOUS	VAR-V.						
m		ON DAY(S)	н	@ HOUR(S)		3.7		IS VALUE:	MAXIMUM INSTANTANEOUS VALUE:
						3			ייים וויים ו
						708		DINIGO.	NI IN THE DE MON ZEBO BEADINGS:
	e H RS	3 744 HRS	DAY(S) 744	44	S) 1 ON DAY(S)  VAR-VARIOUS  744	PPM @ HOUR(S) 1 ON DAY(S)  VAR-VARIOUS  OPERATIONAL TIME:  744	s) 1 ON DAY(S) VAR-VARIOUS 744	708 3.7 PPM @ HOUR(S) 1 ON DAY(S)  VAR-VARIOUS HRS OPERATIONAL TIME: 744 HRS	708

of Hour Averages



05/01/M5 00:0005/06/M5 00:0005/M1/M5 00:0005/M6/M5 00:0005/21/M5 00:0005/26/M5 00:0005/31/M5 00:00

- LICA30 THCMAX PPM

## LICA30 THC / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

1.97 1.97 00. 00. 00. 7.76 7.76 SW 00. 00. 00. SSW 00. 00. 9.60 11.44 00. 9.60 11.44 00. 00. 00. 7.06 7.06 SSE 00. 00. 00. 00. Direction 7.62 7.62 SE 00. 00. 7.34 7.34 ESE 00. 00. 00. 4.37 4.37 00. 00. 00. ы 7.90 7.90 ENE 00. 00. 00. 包 4.51 11.44 11.44 00. 00. 00. 11.44 00. 4.51 11.44 NNE 00. 00. 00. 00. 00. Totals Limit 3.0 10.0 50.0 > 50.0

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00. 00.

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00. 00. 00.

00. %

00. 00.

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1.69

1.83

1.97

1.97

1.69 100.00

1.83

1.97 00.

1.97 00.

MNN

E

WNW

Calm : .00 %

Total # Operational Hours : 708

Distribution By Samples

MSM 14 SW 55 SSW 81 Ŋ 89 SSE 20 Direction SE ESE 52 M 31 ENE 26 뙲 SKE 81 32

> Limit 3.0

Freq

NNN

ž 13

WNW

708

17

12

13

14

14

14

55

81

89

50.0 50.0

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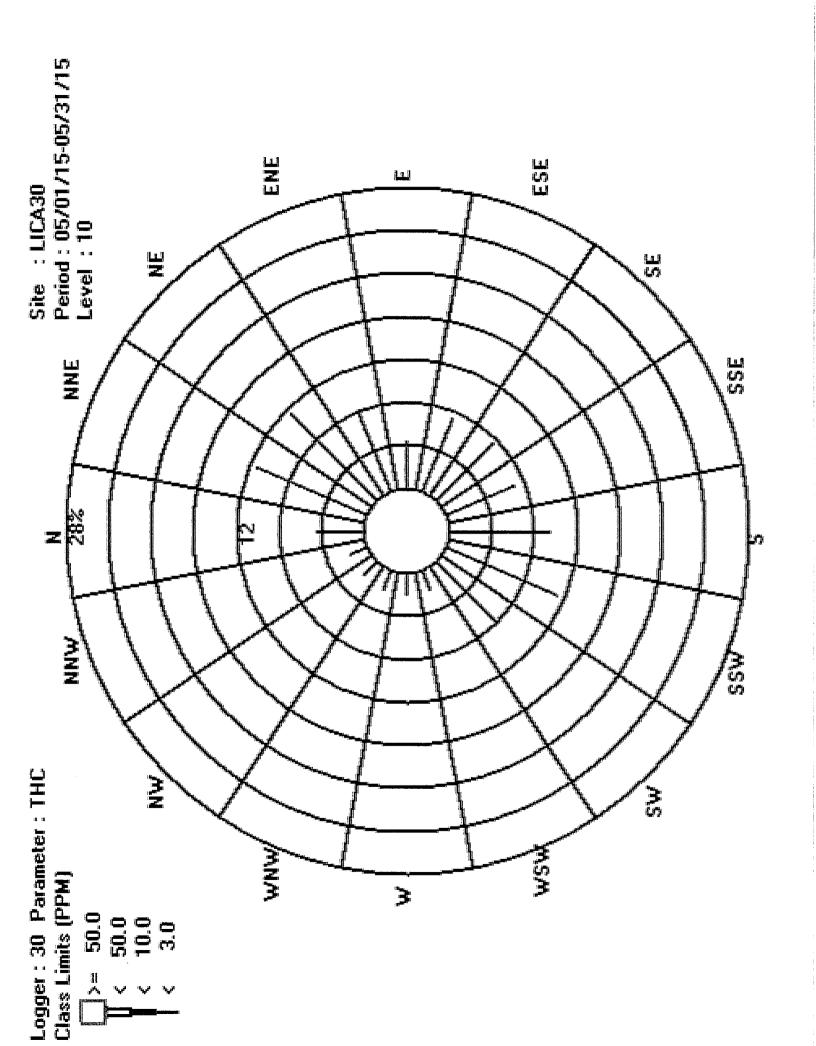
10.0

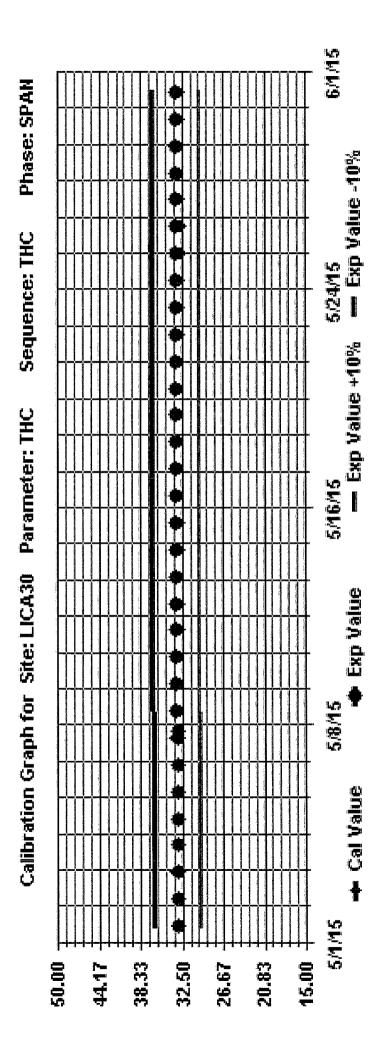
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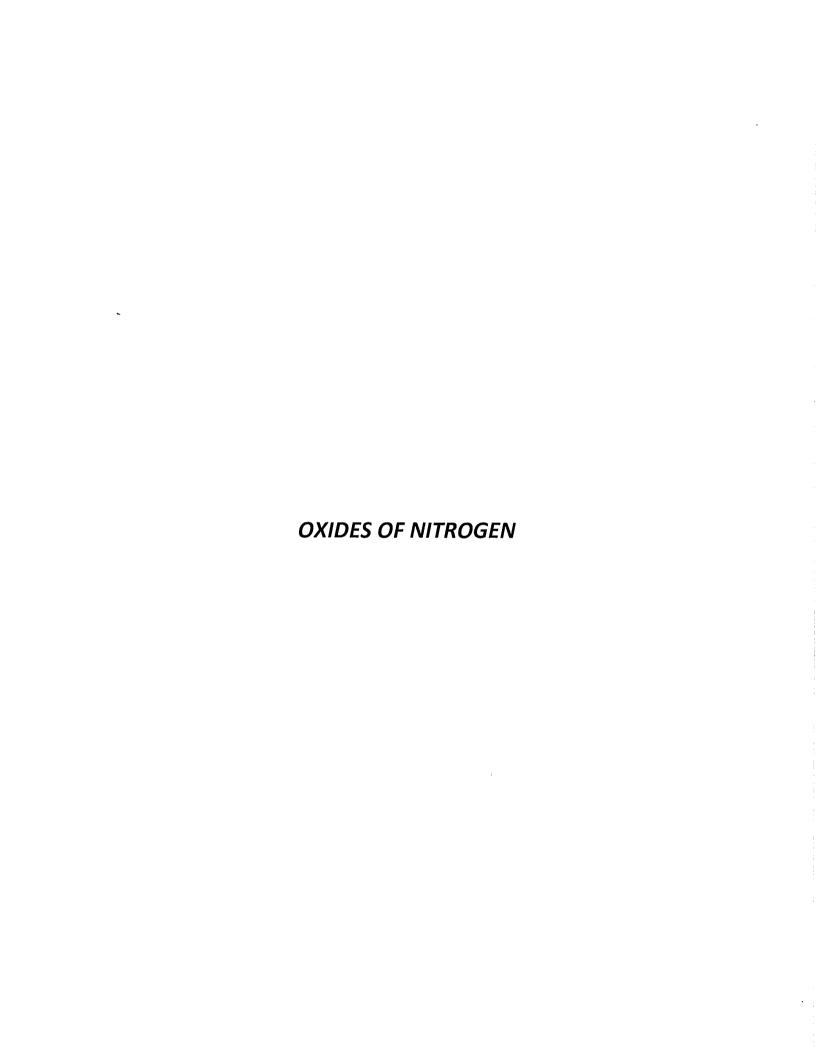
Calm : .00 %

Totals

Total # Operational Hours : 708









# OXIDES OF NITROGEN (NOx) hourly averages in ppb

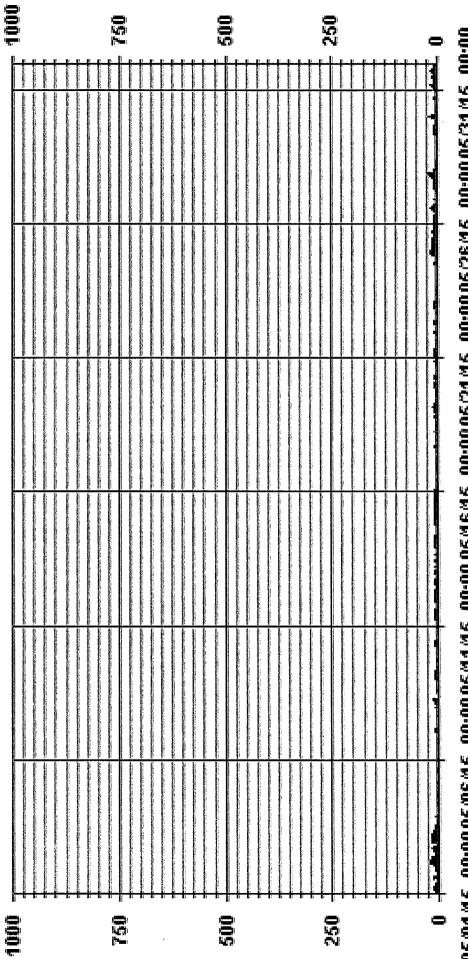
	4		j	1		
9:00 10:00° 11:00 12:00 13:00 14:00 16:00 11:00 12:00 13:00 14:00 15:00		7:00 8:00 8:00 9:00	5:00 6:00 7:00 8:00 6:00 7:00 8:00 9:00	5:00 6:00 7:00 8:00 6:00 7:00 8:00 9:00	5:00 6:00 7:00 8:00 6:00 7:00 8:00 9:00	5:00 7:00 8:00 7:00 8:00 9:00
3.0 3.8 0.0 1.2		4.7 0.0	4.7	9.5 4.7	4.8 5.2 8.8 9.5 4.7	3.3 4.8 5.2 8.8 9.5 4.7
S			5 14.6	6.6 15.6 <b>S</b> 14.6	6.6 15.6 <b>S</b> 14.6	8.4 6.6 15.6 <b>S</b> 14.6
2.8 2.0 <b>S</b> 2.6			1.4	8.0 15.0 2.6 1.4	4.2 8.0 15.0 2.6 1.4	6.6 4.2 8.0 15.0 2.6 1.4
0.0 S 0.4 0.2		0.0 0.0	0.0	0.6 0.1 0.0 0.0	0.1 0.0 0.0	0.5 0.6 0.6 0.1 0.0 0.0
S 0.6 0.4 0.4			0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0
0.6 0.7 0.5 0.3			0.0 0.0	0.1 0.0 0.0 0.0	0.1 0.1 0.0 0.0 0.0	0.1 0.1 0.1 0.0 0.0 0.0
1.4 0.8 0.5 0.8			1.0 0.8	1.8 .1.5 1.0 0.8	1.6 1.8 .1.5 1.0 0.8	1.8 1.6 1.8 .1.5 1.0 0.8
ပ ပ		<b>S</b> 10.6	6.2 S	4.6 6.5 6.2 S	3.4 4.6 6.5 6.2 S	2.8 3.4 4.6 6.5 6.2 <b>S</b>
0.5 0.5 0.4 0.5			<b>S</b> 3.8	4.9 6.8 <b>S</b> 3.8	6.1 4.9 6.8 <b>S</b> 3.8	4.1 6.1 4.9 6.8 \$ 3.8
2.5 1.9 0.6			3.0	0.4 \$ 1.1 3.0	0.5 0.4 <b>S</b> 1.1 3.0	0.5 0.4 <b>S</b> 1.1 3.0
2.4 3.5 2.8			3.7 2.7	<b>S</b> 1.9 3.7 2.7	0.4 \$ 1.9 3.7 2.7	0.3 0.4 \$ 1.9 3.7 2.7
0.7 0.4 0.5 0.2			3.9 3.5	3.1 3.6 3.9 3.5	<b>S</b> 3.1 3.6 3.9 3.5	2.8 \$ 3.1 3.6 3.9 3.5
2.3 1.4 1.3 1.0			1.4 1.0	0.9 1.1 1.4 1.0	1.3 0.9 1.1 1.4 1.0	S 1.3 0.9 1.1 1.4 1.0
1.1 1.0 0.9 0.6		S 1.4	3.3 \$	2.2 2.0 3.3 \$	2.5 2.2 2.0 3.3 S	2.7 2.5 2.2 2.0 3.3 \$
1.4 1.4 1.2			2.7 S	1.9 2.9 2.7 S	2.1 1.9 2.9 2.7 \$	1.9 2.1 1.9 2.9 2.7 S
0.2 0.2 0.0 0.0			9.0 6.0	0.5 0.8 0.9 0.6	1.2 0.5 0.8 0.9 0.6	1.2 1.2 0.5 0.8 0.9 0.6
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 0.0 0.0	0.0 0.0 0.0 0.0 0.0
		1.1 1.0	1.0 1.1	0.4 0.7 1.0 1.1	0.4 0.4 0.7 1.0 1.1	1.3 0.4 0.4 0.7 1.0 1.1
7.0 7.0 7.0 6.0			4.6 S	1.6 6.8 4.6 S	1.9 1.6 6.8 4.6 S	1.1 1.9 1.6 6.8 4.6 S
0.5 0.5 0.8 0.4			4.1 4.9	1.0 0.9 4.1 4.9	1.9 1.0 0.9 4.1 4.9	2.3 1.9 1.0 0.9 4.1 4.9
8.0			3.7	1.8 1.5 1.5 3.7	1.8 1.5 1.5 3.7	1.4 1.8 1.5 1.5 3.7
1.7 0.5 0.4 0.7			0.9 3.6	1.0 0.7 0.9 3.6	0.9 1.0 0.7 0.9 3.6	1.1 0.9 1.0 0.7 0.9 3.6
0.1 0.2 0.1		0.2 0.2	0.3 0.2	1.6 0.7 0.3 0.2	1.7 1.6 0.7 0.3 0.2	2.1 1.7 1.6 0.7 0.3 0.2
0.1 0.8 1.1 1.1			0.4 0.3	0.5 1.0 0.4 0.3	0.6 0.5 1.0 0.4 0.3	0.8 0.6 0.5 1.0 0.4 0.3
3.5 6.6 1.9 S			7.3 6.6	5.8 6.6 7.3 6.6	6.9 5.8 6.6 7.3 6.6	8.0 6.9 5.8 6.6 7.3 6.6
0.6 1.1 S 7.7		2.7 1.5	3.9 2.7	1.3 4.9 3.9 2.7	3.0 1.3 4.9 3.9 2.7	3.6 3.0 1.3 4.9 3.9 2.7
1.0 \$ 1.3 1.4		1.3 1.6	1.3	0.6 0.8 0.7 1.3	1.0 0.6 0.8 0.7 1.3	0.6 1.0 0.6 0.8 0.7 1.3
<b>S</b> 0.6 0.4 0.2		0.3 0.3		0.3 0.3 0.2	0.3 0.3 0.2	1.0 0.3 0.3 0.3 0.2
1.8 1.7 1.6 1.5		Ĭ	1.7	0.1 0.1 0.2 1.7 (	0.1 0.1 0.1 0.2 1.7 (	0.0 0.1 0.1 0.1 0.2 1.7 (
1.2 1.1 0.8 0.8			s	0.7 1.4 S S	1.0 0.7 1.4 S S	1.5 1.0 0.7 1.4 S S
2.5		<b>S</b> 2.1	1.9 \$	10.0 1.5 1.9 S	1.5 1.9 \$	1.8 7.1 10.0 1.5 1.9 S
4.6 7.7 2.8			9.5 14.6	10.0 15.6 9.5 14.6	8.4 10.0 15.6 9.5 14.6	8.4 10.0 15.6 9.5 14.6
1.4 1.6 0.9 1.1			2.3 2.5	2.3 3.2 2.3 2.5	2.2 2.3 3.2 2.3 2.5	2.0 2.2 2.3 3.2 2.3 2.5

C CALIBRATION Q - CUALITY ASSURANCE  Y - MAINTENANCE  R - RECOVERY  A AACHINEMALEUNCION  P - PROMER FAILURE  G - OPERATORERIOR  G - OUTFORRERAIR  K - GOLLECTION ERROR	24 HOUR AVERAGES FORMAY 2015	*			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 20 24 25 26 27 28 29 20 31	
שֿבּאי≺ט			+ ,	5 2	0 1 2	

STATUS FLAG CODES

			ΜÕ	MONTHLY SUMMARY				
NUMBER OF NON-ZERO READINGS:			629					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		5.7	PPB 8	@ HOUR(S)	23	ON DAY(S) ON DAY(S) VAR-VARIOUS	25	01.10
IZS CALIBRATION TIME: MONTHLY CALBRATION TIME:	38	HRS HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	E: PTIME:		744 100.0	% HRS
STANDARD DEVIATION:	2.36			MONTHLY AVERAGE:	üi		1.7	PPB

of Hour Averages



05,01/15 00:0005,06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

PPB

E X

— LICA30



Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

# OXIDES OF NITROGEN MAX instantaneous maximum in ppb

	0:00	0 1:00	- A-	S S	0.4	5:00	9:00	7:00	8.00	0 6	10:00	11:00 1	200 (13	00 15:00	0 16:00	17:00	18:00	19:00	20:00	21.00	22:00 2	23:00		24-HOUR	
6.         7.4         8.0         1.0         1.0         6.0         6.5         1.5         1.5         6.0         6.5         1.5         1.5         1.0	- I	2.Q	. I	0 40	3 5:00	9:00		8:00		10:00	11.00	2:00:1	3:00 14	00 16:00	0.71 0	18:00			0.833		- 1		MAX.	AVG.	RDGS.
								9.4	0.0	6.3	15.3			•		1.3	1.8	1.5	1.4	17			42.1	6.9	24
147. 170 8.0 2.25 8.15 8.4 4. 15. 1.2 1.2 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5								s	25.9	11.2	4.5					33.3	10.6	4.2	1.1	2.0			36.1	14.8	74
0.9         1.1         1.1         0.1 <th></th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>16.2</td> <td>1.2</td> <td>16.9</td> <td>13.0</td> <td></td> <td></td> <td></td> <td></td> <td>6.0</td> <td>6.0</td> <td>1.0</td> <td>1.4</td> <td>2.1</td> <td></td> <td></td> <td>31.5</td> <td>9.3</td> <td>74</td>								16.2	1.2	16.9	13.0					6.0	6.0	1.0	1.4	2.1			31.5	9.3	74
0.0         0.1 <th></th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.3</td> <td>0.2</td> <td>0.3</td> <td>0.3</td> <td></td> <td></td> <td></td> <td></td> <td>0.3</td> <td>0.5</td> <td>0.3</td> <td>0.5</td> <td>0.1</td> <td></td> <td></td> <td>1.3</td> <td>0.7</td> <td>54</td>								0.3	0.2	0.3	0.3					0.3	0.5	0.3	0.5	0.1			1.3	0.7	54
2.0                 2.0                 2.0                 2.0                 2.0                 2.0                2.0                 2.0                 2.0                 2.0                 2.0                 2.0                 2.0                 2.0                 2.0                2.0                 2.0                 2.0                 2.0                 2.0                 2.0                 2.0                 2.0                 2.0                 2.0                 2.0                2.0                  2.0                 2.0                 2.0 </td <th></th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.1</td> <td>0.2</td> <td>0.1</td> <td>s</td> <td></td> <td></td> <td></td> <td></td> <td>6.0</td> <td>9.0</td> <td>9.0</td> <td>0.5</td> <td>0.5</td> <td></td> <td></td> <td>1.3</td> <td>0.5</td> <td>54</td>								0.1	0.2	0.1	s					6.0	9.0	9.0	0.5	0.5			1.3	0.5	54
13         27         25         27         23         28         13         23         23         28         13         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         25         24         23         24         25         24         23         24         25         24         23         24         24         23         24         24         24         23         24<								0.5	6.0	s	1.7					1.1	1.1	0.7	0.5	0.5			1.7	6.0	54
2         3         5         5         5         2         2         6         C								1.9	S	2.3	2.8					10	1.0	6.0	8.0	8.0			3.4	1.8	54
1.1         8.1         6.6         13.8         5         9.6         1.1         1.0								s	23.6	ပ	U					0.4	0.4	0.2	3.0	6.0			23.6	4.7	54
14         0.8         5         14         1.2         9         8.2         4.4         2.3         1.5         3.6         6.7         0.5         6.0         0.9         0.5         1.1         3.8         2.4         4.3         6.9         4.7         4.8         2.3         4.3         4.3         6.9         6.0         0.5         6.0         0.5         4.1         2.7         3.5         3.9         4.7         4.8         2.4         4.3         4.9         8.0         0.5	-							9.6	4.2	1.7	1.0					0.7	0.7	9.0	9.6	8.6			21.1	4.3	54
10         0.8         6.9         8.9         8.9         4.1         2.7         3.5         4.9         4.9         4.9         4.9         3.9         4.9         4.0         4.0         4.0         6.0         9.0         6.0         1.0         1.0         0.0         6.0         9.0         1.0	_							6.2	11.2	11.2	9.0					4.3	6.9	6.7	0.5	9.0			11.2	3.8	54
3.9         4.2         5.         4.0         1.0         6.1         4.1         3.3         1.9         1.5         6.6         3.4         1.0         6.0         9.1         1.0         6.1         4.1         3.3         1.9         1.2         1.0         1.0         1.0         6.1         4.1         3.5         1.0         1.0         6.1         4.1         5								4.1	2.7	3.5	9.6					1.6	11	1.3	1.4	2.0			4.8	2.7	54
27         5         21         16         19         23         16         12 </td <th></th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>4.1</td> <td>3.3</td> <td>1.9</td> <td>1.5</td> <td></td> <td></td> <td></td> <td></td> <td>8.4</td> <td>8.4</td> <td>0.8</td> <td>0.5</td> <td>0.5</td> <td></td> <td></td> <td>10.6</td> <td>3.7</td> <td>54</td>								4.1	3.3	1.9	1.5					8.4	8.4	0.8	0.5	0.5			10.6	3.7	54
S         3.2         3.1         3.0         2.7         4.1         S         5         1.9         1.9         1.0         1.0         1.0         1.7         2.0         2.0         1.7         1.7         2.0         1.7         1.7         2.0         1.7         1.7         1.7         1.0         1.0         1.0         1.0         0.0         0.0         0.0         0.0         1.0         0.0         1.0         0.0								1.6	1.2	1.2	9.9					3.1	6.0	3.5	0.5	1.3			6.6	2.7	24
23         5         6         7         8         4         8         6         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         2         4         2         2         4         5         4         5         4         5         4         5         4         5         4         5         4         5         4         5         4         5         4         4         8         6								v	s	1.9	1.7					0.7	1.7	5.0	2.0	2.0			4.1	2.1	24
14. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.								v	4.3	2.4	2.1					5.0	2.8	1.8	1.8	4.4			4.4	2.6	24
0.3         0.4         0.4         0.2         1.4         4.8         4.3         2.0         0.4         5         1.2         0.8         1.2         0.3         1.1         3.2         1.2         1.3         1.3         1.0								1.2	2.0	1.4	8.0					9.0	9.0	0.4	0.4	0.4			2.6	1.1	74
15 24 11 11 32 17 14 18 15 15 15 15 15 10 11 13 10 11 10 10 11 10 10 11 10 10 11 10 10								4.1	0.4	0.1	0.1					4.8	4.3	2.0	0.4	s			4.8	1.2	54
17 19 27 20 298 5 5 3 0 26 17 13 13 13 13 19 25 09 12 13 5 16 20 32 16 20 32 16 298 32  70 34 29 15 15 123 128 38 20 12 10 10 20 12 24 22 10 10 5 16 15 19 19 19 19 19 13 33  15 19 20 24 21 15 12 30 63 31 28 32 18 19 10 14 11 14 15 15 19 12 13 16 49 19 14 12 13 16 49 34  18 29 25 26 13 08 07 08 06 05 07 06 07 06 07 06 07 07 07 07 07 07 07 07 07 07 07 07 07								1.7	1.8	1.5	6.0					11	0.9	1.0	s	1.8			3.2	1.4	54
7.0         3.4         2.9         1.5         1.5         1.2         1.0         2.0         1.2         1.0         2.0         1.0         2.0         1.0         5         1.6         1.5         1.9         1.9         1.9         1.0								s	3.0	5.6	1.7					17	13	S	1.6	2.0			29.8	3.2	54
15 19 20 24 21 37 62 31 23 17 14 14 14 13 15 11 5 11 13 15 15 10 14 15 15 10 1								12.8	3.8	5.0	1.2					1.0	s	1.6	1.5	1.9			12.8	3.3	54
16 15 13 18 18 12 20 63 32 23 32 19 10 14 10 12 5 19 12 13 16 49 37 34 63 22 32 32 13 18 18 12 20 63 32 32 19 10 14 10 12 5 19 12 13 16 49 37 34 63 22 32 34 29 25 25 25 13 08 0.5 0.6 0.6 0.7 0.6 0.4 0.3 5 12 10 0.9 14 16 1.2 0.9 14 16 1.2 14 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3								6.2	3.1	2.3	1.7					S	1.7	1.3	1.5	1.0			6.2	2.0	74
3.6         2.9         2.5         2.6         1.3         0.8         0.6         0.6         0.7         0.6         0.4         0.3         5         1.2         1.0         0.9         1.4         1.6         2.0         2.0         1.9         3.6         1.5           1.4         1.3         1.2         1.0         0.8         2.0         8.9         1.2         2.9         3.3         2.4         2.0         2.3         1.2         2.9         8.6         7.6         6.0         2.1         1.5         2.2         3.3         2.4         2.0         2.3         1.2         1.2         1.4         1.2         1.4         1.7         1.5         1.5         1.2         2.9         8.6         7.6         6.0         2.0								6.3	3.2	2.3	3.2					1.9	1.2	1.3	1.6	4.9			6.3	2.2	75
14         13         12         10         17         10         08         20         89         12         29         33         24         20         23         19         13         123         126         135         35         35         36         33         24         20         23         34         36         92         86         76         60         54         60         216         135         135         35           24         56         51         10         104         94         42         107         178         25         24         26         99         86         76         60         54         60         54         60         54         60         216         233         23         23         23         23         23         23         23         24         27         10         13         12         20         20         24         22         20								0.7	8.0	9.0	9.0					10	6.0	1.4	1.6	2.0			3.6	1.5	54
13.7 9.2 8.1 7.9 7.8 10.0 10.4 9.4 4.2 10.7 17.8 2.5 5 3.4 3.6 9.2 9.9 8.6 7.6 6.0 5.4 6.0 216 21.6 8.9  2.4 5.6 5.1 1.9 13.3 7.1 3.9 2.0 1.4 1.3 2.0 5 10.4 14.4 11.2 8.1 7.3 1.7 1.2 1.4 1.7 1.5 4.4 2.9.1 5.7  2.3 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 2.0 5 10.4 14.4 11.2 8.1 7.3 1.7 1.2 1.4 1.7 1.5 2.0 2.0 2.4 2.2 1.9 1.7 1.8 20.3 29.1 5.4 3.4 1.4 29.1 4.1  2.8 0.6 0.6 0.6 0.9 0.6 1.0 3.3 1.8 5 2.8 3.1 3.4 2.5 2.9 1.9 2.7 7.6 1.2 1.1 1.1 1.9 1.2 1.2 2.0 2.0 1.4 2.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1				3 1.2	10			8.0	2.0	8.9	1.2					2.0	2.3	1.9	1.3	12.3			13.5	3.5	54
24         5.6         5.1         19         13.3         7.1         3.9         2.0         14         1.3         2.0         5         104         144         11.2         8.1         7.1         1.0         1.0         14         11.2         1.0         1.0         14         11.2         1.0	$\sim$							10.4	9.4	4.2	10.7					ტ ტ	8.6	7.6	6.0	5.4			21.6	დ.	54
14 10 16 12 14 16 18 18 23 14 25 \$ 2.0 2.0 24 22 19 17 18 203 291 54 34 14 291 4.1 23 15 13 0.9 13 0.8 12 12 2.0 \$ 1.0 0.9 0.8 0.7 0.6 0.6 0.8 1.1 1.3 0.7 0.7 1.6 3.5 1.2 0.8 0.6 0.6 0.9 0.6 1.0 3.3 1.8 \$ 2.8 3.1 3.4 2.5 2.9 1.9 2.7 7.6 1.2 1.1 1.1 1.9 1.2 1.2 7.6 2.0 14.5 3.0 2.3 1.2 3.2 5 \$ 3.5 1.9 1.7 1.5 1.3 1.7 1.4 2.9 7.4 3.0 1.3 1.3 1.3 1.3 1.4 1.7 3.5 14.5 3.1 13.1 13.2 13.5 12.5 12.5 15.5 15.9 15.3 13.1 11.3 14.4 21.5 3.8 10.6 20.3 29.1 12.3 12.5 3.8 14.5 3.1 15.1 15.1 25 31.5 12.3 2.5 16.9 15.3 19.3 13.1 11.3 14.4 21.5 3.8 10.6 20.3 29.1 12.3 12.5 32.8 14.5 3.8 4.0 6.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	ന							3.9	5.0	1.4	1.3					7.3	1.7	1.2	1.4	17			22.3	5.7	74
23 15 13 0.9 13 0.8 12 12 2.0 \$ 1.0 0.9 0.8 0.7 0.6 0.6 0.5 1.1 13 0.7 0.7 16 3.5 1.2 1.2 0.8 1.0 0.9 0.8 0.7 0.6 0.6 0.9 1.1 13 0.7 0.7 16 3.5 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2				) 1.6	5 1.2			1.8	2.3	1.4	2.5					1.7	1.8	20.3	29.1	5.4			29.1	4.1	54
0.8 0.6 0.6 0.9 0.6 1.0 3.3 1.8 \$ 2.8 3.1 3.4 2.5 2.9 1.9 2.7 7.6 1.2 1.1 1.1 1.9 1.2 1.2 7.6 2.0 14.5 3.0 2.3 1.2 3.2 5 5 3.5 1.9 1.7 1.5 1.3 1.7 1.4 2.9 7.4 3.0 1.3 1.3 1.3 1.4 17.2 3.5 1.8 3.2 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5				1.5	3 0.9	13		1.2	1.2	2.0	s					9.0	0.3	1.1	1.3	0.7			3.5	1.2	74
14.5         3.0         2.3         1.9         1.7         1.5         1.3         1.4         2.9         7.4         3.0         1.3         1.3         1.4         17.2         3.5           1.8         3.2         13.6         16.9         16.9         17.4         17.1         3.8         8.0         13.4         2.9         1.4         19.3         4.6         5.2         2.2         1.6         10.3         4.6         1.3         8.6         8.0         3.4         2.9         3.0         1.4         19.3         4.6         13.3         4.6         13.3         4.1         3.0         4.6         13.3         4.1         3.0         4.2         3.0         4.4         13.3         11.3         14.4         13.3         4.1         3.0         4.2         3.2         3.2         4.2         3.0         4.2         3.0         4.2         3.2         4.2         3.5         4.2         3.5         4.2         3.5         4.2         3.5         5.0         3.8         4.1         2.6         2.5         2.5         3.8         4.1         3.0         4.2         3.2         3.5         4.4         2.6         2.5         2.5	~			5 0.E	6.0			3.3	1.8	s	2.8					7.6	1.2	1.1	1.1	1.9			7.6	2.0	74
1.8     3.2     13.9     18.8     2.1     2.6     5.2     2.6     10.4     19.3     4.6     5.2     2.2     1.6     4.6     14.3     8.6     8.0     3.4     2.9     3.0     14.     19.3     6.1       14,5     21.1     15.1     22.5     31.5     15.3     19.3     13.1     11.3     14.4     42.1     30.4     33.3     10.6     20.3     29.1     12.3     12.6     32.8       3.7     4.4     2.6     2.5     2.5     3.8     4.1     2.8     2.6     2.5     3.8	~							s	s	3.5	1.9					7.4	3.0	1.3	1.3	1.3			17.2	3.5	74
14.5 21.1 15.1 22.5 31.5 12.3 16.2 25.9 16.9 15.3 19.3 13.1 11.3 14.4 42.1 30.4 33.3 10.6 20.3 29.1 12.3 12.6 32 3.7 3.8 3.7 3.8 3.7 4.4 2.6 2.5 2.5 5.0 3.8 4.1 2.8 2.6 2.6 2.5 2.5 2.5	CD.			•				s	2.9	2.6	10.4				1	14.3	8.6	8.0	3.4	2.9		1	19.3	6.1	54
37 38 3.0 3.8 4.1 2.8 2.6 2.5 2.5 3.0 3.8 4.1 2.8 2.6 2.5 2.5 3.0 3.8 4.1 2.8 2.6 2.6 2.5 2.5	I۳			١.		31.5	12.3	16.2	25.9	16.9	15.3					33.3	10.6	20.3	29.1	12.3		32.8			
						6.4	9	4.5	4.2	3.5	3.7					4.1	2.8	5.6	5.6	2.5		3.8			

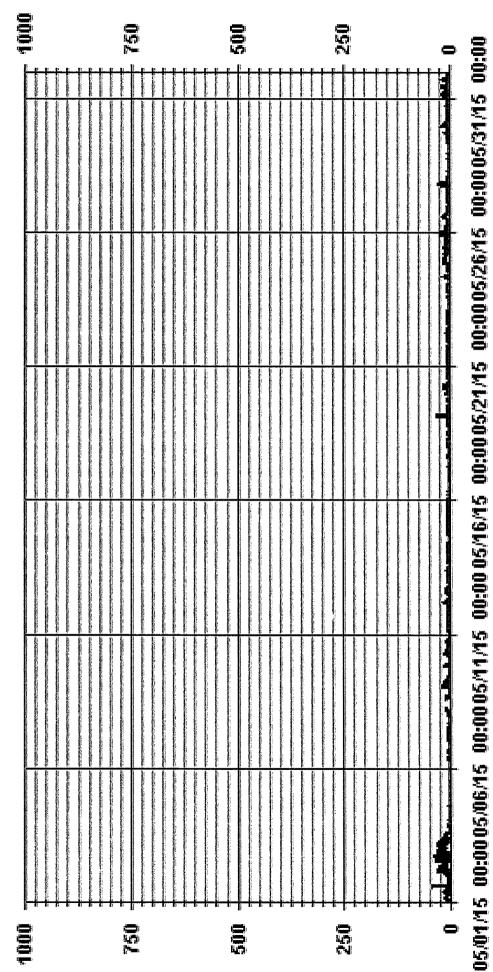
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### MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			695						
MAXIMUM INSTANTANEOUS VALUE:			42.1	PPB	@ HOUR(S)	Ħ	ON DAY(S)		۲.
						VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME: MONTHLY CAUBRATION TIME: STANDARD DEVIATION:	41 HRS 7 HRS 5.19	HRS HRS		OPERATIC	OPERATIONAL TIME:	:		744	HRS

Of Hour Averages



# - LICA30 NOXMAX PPB

LICA30 NOX\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

00. 00. 00. NNW Freq 1.71 100.00 00. 8. 1.71 00. 1.85 1.85 Ŋ 00. 00. 00. 1.85 WNW 1.85 00. 00. 0. 2.00 00. 2.00 Wind Parameter : WDR Instrument Height : 10 Meters 00. 00. × 1.85 00. 1.85 00. 00. 7.85 SW 0. 00. 0. 7.85 11.28 9.57 11.28 SSW 0. 00. 0. 9.57 00. 8. 0 ß 6.85 0. 6.85 SSE 00. 0. Direction 7.57 SE 0. 00, 00. 7.57 ESE 7.42 8. 7.42 8 % 4.42 4.42 00. 8 8 8.00 8 8.00 ENE 0. 00. 00. 11.57 ž 4.57 11.57 11.57 00. 00. 11.57 00. 8. N. E. 00, 4.57 0 00 % z Totals Limit 50.0 110.0 < 210.0 > 210.0 ٧

Calm : .00 %

Total # Operational Hours: 700

Distribution By Samples

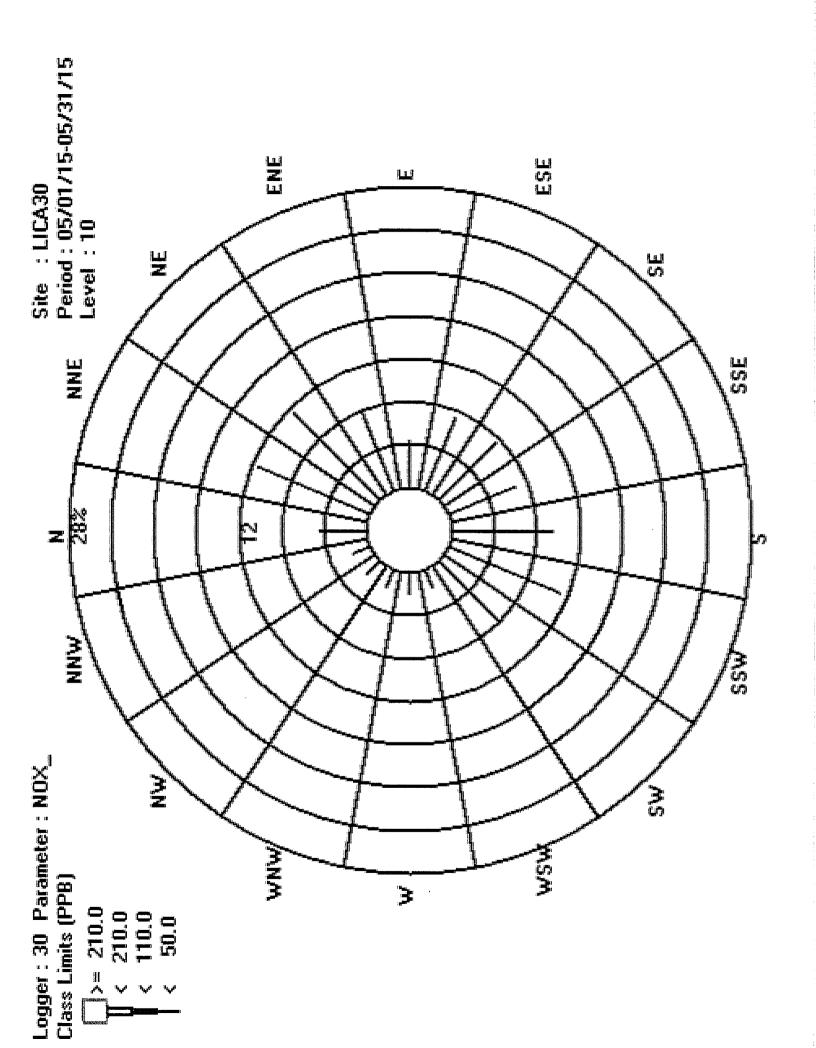
Freq

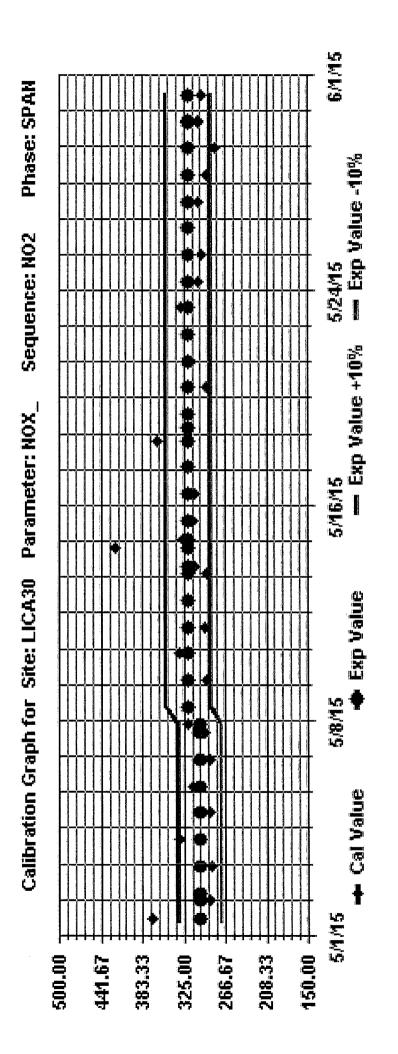
700

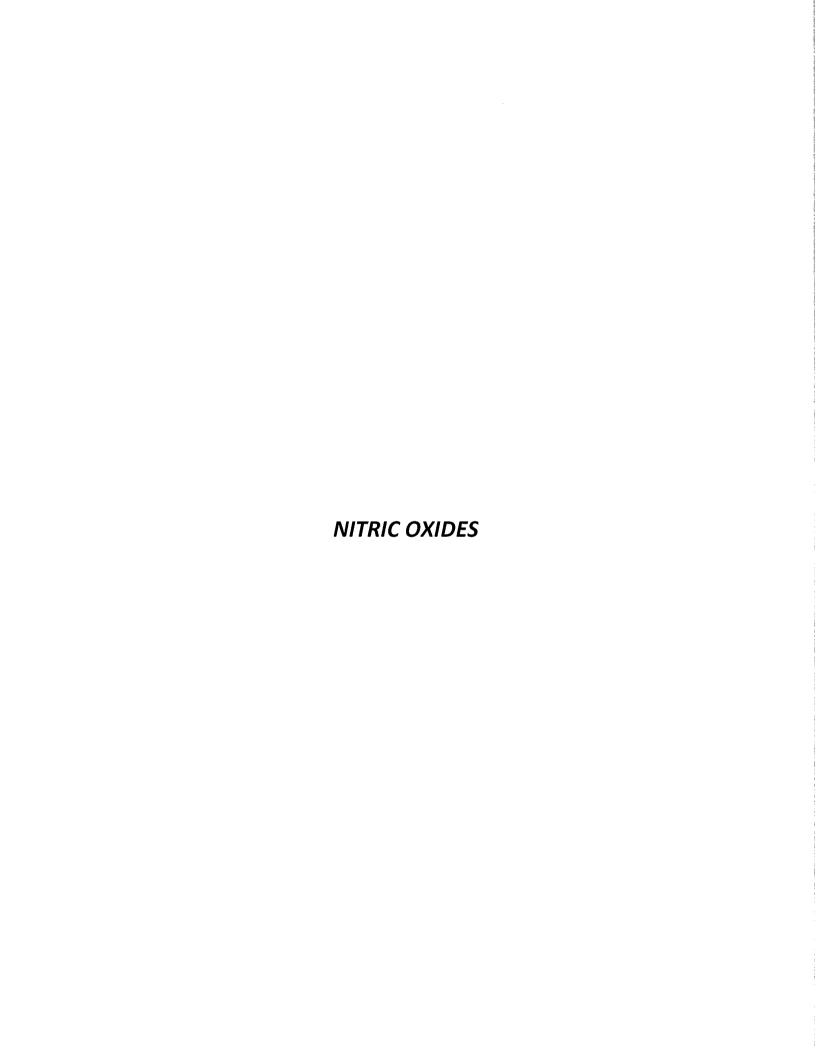
NNW 77 12 13 E 13 13 13 14 13 55 SSW 79 4 67 Ø 67 48 SSE 48 Direction 23 SE ESE 22 52 31 ы 26 ENE 56 뛼 81 NNE 81 32 z 32 Totals 210.0 Limit 50.0 110.0 < 210.0 v X

Calm : .00 %

Total # Operational Hours : 700







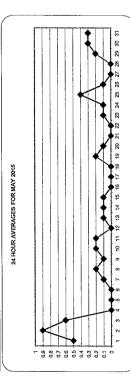
JOB # 2833-2015-05-30- C



### NITRIC OXIDE (NO) hourly averages in ppb

	RDGS.	24	54	24	54	24	24	24	54	54	24	54	74	54	24	24	74	24	24	24	24	24	24	24	24	24	24	24	54	24	24	24		
	24-HOUR AVG.	0.5	6.0	9.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.4	0.1	0.0	0.0	0.2	0.3	0.3		
	MAX	2.2	4.9	9.6	0.0	0.1	0.0	0.5	2.3	6.0	1.3	6.0	0.1	0.5	9.0	0.5	0.1	0.1	0.2	2.4	1.0	0.7	9.0	0.5	8.0	6.0	8.0	0.1	0.2	0.7	8.0	1.8		
100	0:00	0.0	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	s	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.5	0.0	9.0	0.0	0.0	0.2	0.1	0.3	0.0	4.9	0.2
	23:00. 23:00.	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	s	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.2	0.0	0.0	0.2	0.1	0.4	0.0	0.5	0.1
	22:00 22:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.4	0.0	0.0	0.0	0.3	0.5	0.0	0.5	0.1
	20:00 21:00	0.0	0.0	0.0	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	s	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.0	0.0	0.2	0.5	0.0	0.5	0.1
	20-00	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.2	0.3	0.0	0.3	0.0
	17:00 18:00 18:00 19:00	0.4	6.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	s	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.2	0.3	0.0	6.0	0.1
	17:00 18:00	0.4	3.3	0.2	0.0	0.1	0.0	0.1	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	s	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.4	0.5	3.3	0.2
3	17:00 17:00	9.0	1.2	0.3	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.2	0.1
6	16:00	2.2	5.6	0.5	0.0	0.1	0.0	0.4	1.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	2.6	0.2
	15:00	s	9.0	0.3	0.0	0.1	0.0	0.3	U	0.0	0.0	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	s	0.1	0.2	0.0	0.0	0.5	0.3	0.0	9.0	0.1
200	15:00 14:00	5'0	s	9.0	0.0	0.1	0.0	0.4	U	0.4	0.0	0.1	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	s	0.1	0.0	0.0	0.4	0.0	0.2	9.0	0.1
	12:00 13:00 14:00	0.0	0.0	s	0.0	0.0	0.0	0.2	U	0.4	0.2	0.4	0.0	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	s	0.0	0.1	0.4	0.0	0.0	0.4	0.1
	12:00 12:00		0.0	9.0	s	0.1	0.0	0.4	U	0.2	0.4	6.0	0.0	0.5	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	s	0.1	0.4	0.4	1.8	1.8	0.3
200	10:00 11:00	1.1	0.0	1.1	0.0	s	0.0	0.5	U	0.0	1.3	9.0	0.0	0.3	0.4	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	s	0.5	0.3	0.5	1.3	0.3
i e	9:00 10:00	0.7	0.0	2.8	0.0	0.0	S	0.4	U	0.0	0.5	0.5	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	8.0	0.4	0.0	0.0	0.0	s	8.0	0.0	2.8	0.3
9	900-6	0.0	0.0	0.0	0.0	0.0	0.0	s	2.3	0.3	9.0	0.1	0.0	0.0	0.4	0.5	0.1	0.0	0.1	0.5	0.2	0.2	0.2	0.0	0.0	6.0	0.2	0.1	0.0	0.4	s	0.0	2.3	0.2
1	00.7 8:00	1.4	4.9	0.3	0.0	0.0	0.0	0.0	s	6.0	0.3	0.3	0.0	0.0	s	s	0.0	0.0	0.2	s	1.0	0.7	9.0	0.0	0.0	0.5	0.3	0.0	0.0	0.7	s	s	4.9	0.5
4	7:00	1.6	s	0.4	0.0	0.0	0.0	0.0	0.3	s	0.1	0.5	0.0	0.0	9.0	0.5	0.0	0.0	0.2	1.4	0.8	0.2	0.0	0.0	0.0	0.7	0.3	0.0	0.0	0.1	s	9.0	1.6	0.3
1	) 5:00 5:0 ) 6:00 7:0	l	1.9	4.6	0.0	0.0	0.0	0.0	0.0	0.3	s	0.2	0.0	0.0	0.2	0.3	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.7	0.8	0.0	0.0	0.0	0.1	0.4	4.6	0.4
	5:00 5:00	0.2	0.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	6.0	1.3	0.1
	3:00 0:00	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	9.0	9.0	0.1
À	3:00	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.5	0.5	0.1
	2:00 2:00	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	s	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.2	0.0	0.0	0.0	0.0	9.0	9.0	0.1
100000	8 6	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0				5 Y.	/ T. W			0.1																0.7	0.1
MST	HOUR START 0:00 T:00 Z:00 3:00 4:00 HOUR END T:00 2:00 3:00 4:00 5:00	DAY 1	7	m	4	'S	ø	L	œ	6	9	П	12	13	14	15	16	17	138	61	70	21	. 22	23	24	25	26	27	28:	. 29	8	뚪	HOURLY MAX	HOURLY AVG

# STATUS FLAG CODES C -CALIBRATION Q - QUALITY ASSURANCE Y - MAINTENANCE S - DAILY ZERO SFAN CHECK P - POWER FALLURE G - OUTFOR REPAIR K - COLLECTION ERROR

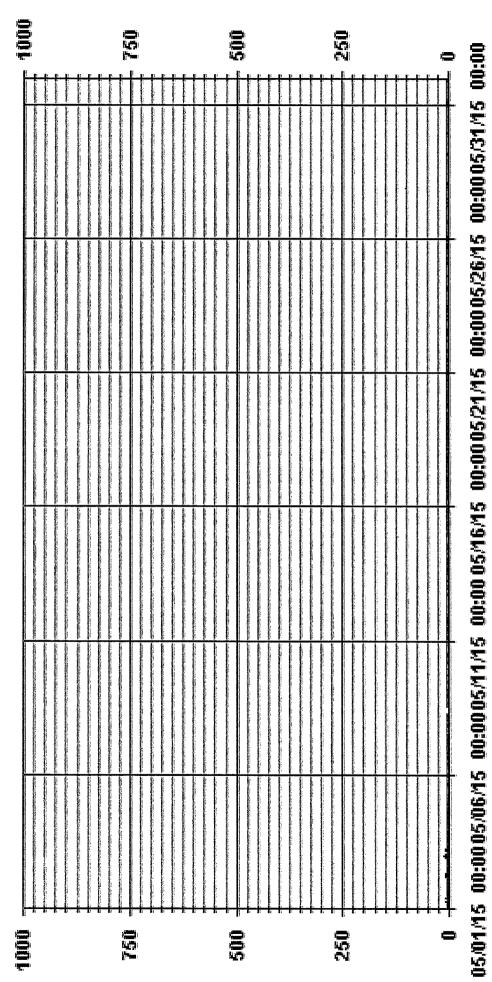


			MO	MONTHLY SUMMARY			
NUMBER OF NON-ZERO READINGS:	<i>i</i>		230				
MAXIMUM 24-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		6.0 6.0	PPB PPB	PPB @ HOUR(S) PPB	7,23	ON DAY(S) ON DAY(S) VAR-VARIOUS	7 7
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	98	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	TIME:		744
STANDARD DEVIATION:	0.46			MONTHLY AVERAGE:			0.2

, 7

HRS % PPB

of hour Averages



웆 - LICA30



Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

# NITRIC OXIDE MAX instantaneous maximum in ppb

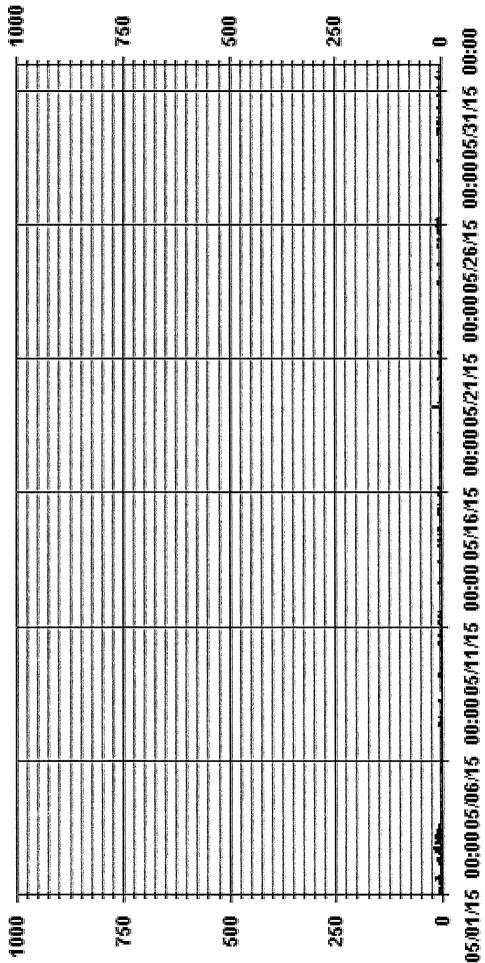
140   150	1,00 1,00 1,00 0,00 0,00 0,00 0,00 0,00	200 2500 2500 2500 2500 2500 2500 2500	!		要な金融等	2 40 1	10:00	12:00	12:00 1	3.00 14:0 4.00 15:0	00 15:0	16:00	Be sale 6 68	2.0	NA LES	1.959	1.6	2:00 23:00		24-HOUR	
1.   1.   1.   1.   1.   1.   2.   2.	11.1 2.2 3.2 3.0 3.0 3.0 3.0 5.0 6.0 6.0		1.8 7.0 7.0 14.1 0.4 0.0 0.5 0.8 1.1 4.6 <b>s</b>									3	1.0	14	7.75	φ.	٠.	3:00		į	RDGS.
66         14         70         5         80         17         63         82         17         63         83         29         17         10 </th <th>0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0</th> <th></th> <th>7.0 14.1 0.4 0.0 0.5 0.8 1.1 4.6 S</th> <th></th> <th></th> <th></th> <th>4.4</th> <th>4.2</th> <th></th> <th></th> <th></th> <th>2 1.5</th> <th>1.0</th> <th>1.0</th> <th>1.0</th> <th></th> <th></th> <th></th> <th>ļ</th> <th>2.1</th> <th>24</th>	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		7.0 14.1 0.4 0.0 0.5 0.8 1.1 4.6 S				4.4	4.2				2 1.5	1.0	1.0	1.0				ļ	2.1	24
15         28         0.8         6.4         4.4         1.0         1.0         2.5         4.8         3.9         2.0         1.0         0.0	1.6 2.8 0.4 0.5 0.0 0.0 0.5 0.5 0.8 0.9 0.5 0.5 0.8 0.9 0.8 0.9 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9		14.1 0.4 0.0 0.5 0.8 1.1 4.6 S				0.3	3.8					12.8	1.9	9.0					3.9	54
0.0         0.0 <td>0.5 0.4 0.0 0.0 0.0 0.7 0.5 0.8 0.9 0.8 0.9 0.8 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9</td> <td></td> <td>0.0 0.0 0.5 0.8 1.1 4.6 <b>S</b></td> <td></td> <td></td> <td></td> <td>7.0</td> <td>4.5</td> <td></td> <td></td> <td></td> <td></td> <td>0.7</td> <td>9.0</td> <td>8.0</td> <td></td> <td></td> <td></td> <td></td> <td>3.4</td> <td>24</td>	0.5 0.4 0.0 0.0 0.0 0.7 0.5 0.8 0.9 0.8 0.9 0.8 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9		0.0 0.0 0.5 0.8 1.1 4.6 <b>S</b>				7.0	4.5					0.7	9.0	8.0					3.4	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 0.7 0.5 0.8 0.3 0.0 0.8 0.8 0.9 0.8 0.8 0.4 0.5 0.8 0.9 0.8 0.9 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9		0.0 0.5 0.8 1.1 8 8				0.4	s					0.0	0.0	0.0				9.0	0.2	54
0.7         0.5         0.6 <td>0.7 0.5 0.6 0.8 0.3 0.0 2.6 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9</td> <td></td> <td>0.5 0.8 1.1 4.6 <b>s</b></td> <td></td> <td></td> <td></td> <td>s</td> <td>9.0</td> <td></td> <td></td> <td></td> <td></td> <td>9.0</td> <td>0.4</td> <td>9.0</td> <td></td> <td></td> <td></td> <td>0.7</td> <td>0.3</td> <td>54</td>	0.7 0.5 0.6 0.8 0.3 0.0 2.6 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9		0.5 0.8 1.1 4.6 <b>s</b>				s	9.0					9.0	0.4	9.0				0.7	0.3	54
6.6         6.8         6.9         6.8         6.9         6.8         7         1.2         1.0         0.8         1.0         0.0	0.6 0.8 0.3 0.0 0.0 0.9 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9		0.8 1.1 4.6 <b>S</b> 1.2				0.8	8.0					6.0	8.0	9.0				0.9	0.7	74
0.5         0.3         0.7         0.6         1.1         5         7.3         C         C         C         C         1.0         0.0	0.5 0.3 0.3 0.9 0.8 0.9 0.8 0.9 0.5 0.9 0.5 0.9 0.5 0.9 0.5 0.9 0.5 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9		1.1 4.6 S 1.2				1.2	1.0					0.7	0.7	0.5				1.3	0.8	54
0.0         5.6         0.0         4.6         5.         3.2         1.3         0.9         1.0         1.1         0.0         4.6         5.         3.2         1.3         0.9         1.0         1.0         0.0         0.0         4.6         9.0         1.0         1.0         0.0         0.0         4.6         9.0         1.0         1.0         0.0         0.0         0.0         9.0         1.0         1.0         1.0         0.0	0.0 2.6 0.9 0.8 0.4 0.5 0.9		4.6 s 1.2				ပ	ပ					0.0	0.0	0.0				7.3	6.0	54
0.9         0.8         0.8         0.9         0.9         0.9         1.1         1.2         1.5         1.3         3.0         2.9         1.9         1.0         1.2         1.5         3.1         3.0         2.9         1.9         1.0         1.2         1.5         3.1         3.0         2.9         1.3         1.2         1.3         1.5         1.0         1.8         1.3         1.3         1.5         1.0 <td>0.9 0.8 0.4 0.5 0.8 0.9</td> <td></td> <td>s 1.2</td> <td></td> <td></td> <td></td> <td>0.8</td> <td>6.0</td> <td></td> <td></td> <td></td> <td></td> <td>6.0</td> <td>0.5</td> <td>0.4</td> <td></td> <td>).6</td> <td>6.0 6.0</td> <td></td> <td>1.0</td> <td>54</td>	0.9 0.8 0.4 0.5 0.8 0.9		s 1.2				0.8	6.0					6.0	0.5	0.4		).6	6.0 6.0		1.0	54
0.4         0.5 <td>0.4 0.5 0.9</td> <td></td> <td>1.2</td> <td></td> <td></td> <td></td> <td>3.0</td> <td>5.9</td> <td></td> <td></td> <td></td> <td></td> <td>1.2</td> <td>1.5</td> <td>6.0</td> <td></td> <td></td> <td></td> <td></td> <td>1.3</td> <td>54</td>	0.4 0.5 0.9		1.2				3.0	5.9					1.2	1.5	6.0					1.3	54
0.8         5         0.5         0.4         0.5         0.7         0.6         0.3         0.2         0.5         1.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.5         0.6         0.5         0.6         1.6         1.2         1.8         0.5         0.5         0.6         0.5         0.6         1.6         1.2         1.8         0.6         1.6         1.2         1.8         0.6         1.6         1.2         1.8         0.6         1.6         1.2         1.8         1.0         0.0         0.2         0.7         1.2         1.0         0.2         0.7         0.0         0.7         0.7         0.7         0.0         0.7         0.7         0.7         0.0         0.7         0.8         0.7         0.0         0.7         0.8         0.7         0.0         0.7         0.8         0.9         0.7         0.0         0.7         0.0         0.7         0.8         0.3         0.3         0.7         0.8         0.9         0.7         0.9         0.7         0.0         0.7         0.9         0.7         0.0         0.7         0.0         0.9	0.8 0.9						1.7	1.7					8.0	1.0	9.0					1.0	54
9.3         5         6.6         6.5         6.6         6.7         6.6         6.6         6.6         6.7         6.6         6.7         6.7         6.6         6.7			1.7				0.2	0.3					1.2	6.0	0.2					0.7	54
\$         \$	0.3 S		9.0				1.6	1.2					8.0	8.0	0.7					0.7	54
10 0.8 0.8 0.7 1.2 1.3 5 1.5 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1	5 1.3		11				1.3	1.0					1.2	11	6.0					1.0	54
10 0.9 11 11 11 11 11 11 11 11 11 11 11 11 11	1.0 0.8		1.2				1.2	1.1					11	8.0	8.0					1.0	24
0.6         0.7         0.5         0.7         0.7         0.5         0.7         0.7         0.5         0.7         0.7         0.5         0.7         0.7         0.5         0.7         0.7         0.6         0.5         0.4         0.8         0.7         0.7         0.6         0.5         0.4         0.3         0.7         0.6         0.7         0.6         0.8         0.7         0.6         0.7         0.6         0.8         0.9         0.8         0.6         0.9         0.8         0.9         0.8         0.9         0.9         0.8         0.9 <td>1.0 0.9</td> <td></td> <td>1.0</td> <td></td> <td></td> <td></td> <td>9.0</td> <td>6.0</td> <td></td> <td></td> <td></td> <td></td> <td>9.0</td> <td>0.7</td> <td>0.7</td> <td></td> <td></td> <td></td> <td></td> <td>8.0</td> <td>54</td>	1.0 0.9		1.0				9.0	6.0					9.0	0.7	0.7					8.0	54
0.8         0.9         0.7         0.9 <td>0.6 0.7</td> <td></td> <td>6.0</td> <td></td> <td></td> <td></td> <td>9.0</td> <td>0.5</td> <td></td> <td></td> <td></td> <td></td> <td>1.3</td> <td>0.7</td> <td>0.7</td> <td></td> <td></td> <td></td> <td></td> <td>0.7</td> <td>73</td>	0.6 0.7		6.0				9.0	0.5					1.3	0.7	0.7					0.7	73
0.8         0.9 <td>8.0 8.0</td> <td></td> <td>6.0</td> <td></td> <td></td> <td></td> <td>9.0</td> <td>0.5</td> <td></td> <td></td> <td></td> <td></td> <td>9.0</td> <td>0.4</td> <td>8.0</td> <td></td> <td></td> <td></td> <td></td> <td>0.7</td> <td>54</td>	8.0 8.0		6.0				9.0	0.5					9.0	0.4	8.0					0.7	54
0.7         0.8         0.5         0.7         0.8         0.5         0.6         0.8         0.5         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.6         0.7         0.6         0.6         0.6         0.7         0.6         0.6         0.7         0.6         0.6         0.7         0.6         0.6         0.7         0.6         0.6         0.7         0.6         0.7         0.6         0.7         0.7         0.7         0.6         0.7         0.7         0.7         0.7         0.7         0.6         0.7 <td>0.8 0.8</td> <td></td> <td>14.7</td> <td></td> <td></td> <td></td> <td>1.0</td> <td>0.7</td> <td></td> <td></td> <td></td> <td></td> <td>6.0</td> <td>6.0</td> <td>s</td> <td></td> <td></td> <td></td> <td>·</td> <td>1.5</td> <td>54</td>	0.8 0.8		14.7				1.0	0.7					6.0	6.0	s				·	1.5	54
0.7         0.5         0.9         0.8         0.1         0.7         0.6         0.9 <td>0.7 0.9</td> <td></td> <td>8.0</td> <td></td> <td></td> <td></td> <td>9.0</td> <td>0.4</td> <td></td> <td></td> <td></td> <td></td> <td>0.8</td> <td>s</td> <td>8.0</td> <td></td> <td></td> <td></td> <td></td> <td>0.9</td> <td>54</td>	0.7 0.9		8.0				9.0	0.4					0.8	s	8.0					0.9	54
0.8 0.9 0.5 0.7 0.6 0.0 10 18 0.9 0.7 0.9 0.9 0.9 0.9 0.0 0.0 0.0 0.0 0.0 0.0	0.7 0.5		1.1				9.0	0.7					S	8.0	6.0					0.8	54
0.5 0.7 0.9 0.7 0.0 0.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0	6.0 8.0		9.0				6.0	6.0					1.0	6.0	6.0					0.8	54
0.9 0.7 0.6 0.6 1.0 0.7 0.7 0.9 3.0 0.7 10 10 10 10 5 0.8 0.6 0.6 0.6 0.6 0.6 0.9 10 0.9 0.7 3.0 3.0 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0	0.5 0.7		0.7				0.7	0.7					0.8	0.8	1.1					0.8	54
08 09 08 16 16 16 20 14 15 10 22 38 0.7 \$ 11 0.9 11 10 14 11 12 11 12 11 17 7 77 77 18 0.9 10 10 10 10 10 10 10 10 10 10 10 10 10	0.9 0.7		1.0				0.7	1.0					0.5	9.0	9.0					0.9	74
0.9 1.0 1.0 1.0 5.3 1.9 1.2 0.8 0.7 0.8 0.6 5 0.9 0.9 1.0 0.9 0.7 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	6.0 8.0		1.6				2.2	3.8					1.0	1.4	1.1					1.6	54
04 0.6 0.6 0.4 0.4 0.4 0.7 0.9 11 0.9 11 5 10 0.9 0.8 0.8 0.5 0.6 0.6 0.6 0.8 0.8 0.8 0.8 0.8 0.1 11 11 11 11 0.9 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8	0.9 1.0		5.3				8.0	9.0					0.7	0.8	6.0					1.4	54
0.6 0.5 0.6 0.5 0.6 0.5 0.6 0.7 11 <b>S</b> 1.0 1.0 0.8 0.9 0.9 0.7 11 0.8 0.9 0.7 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.4 0.6		0.4				1.1	s					9.0	9.0	0.8					0.7	74
0.8 0.6 0.8 0.8 0.8 10 1.9 1.6 <b>S</b> 1.5 1.4 1.3 1.6 1.6 1.2 1.2 2.5 1.1 1.1 1.1 1.3 1.0 0.9 2.5 1.3 0.8 1.0 0.8 1.0 0.9 0.8 1.5 1.0 1.0 1.0 1.0 0.9 2.5 1.0 0.8 1.0 0.9 0.8 1.0 0.9 0.8 1.0 0.0 1.0 1.0 1.0 1.0 0.9 2.0 1.0 0.9 1.0 0.9 1.0 0.9 1.0 0.9 0.8 1.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	0.6 0.5		9.0				s	1.0					1.1	8.0	6.0					0.8	54
13 0.8 10 0.8 11 <b>5 5 5</b> 15 11 0.9 11 0.9 10 0.9 0.8 15 10 10 10 10 10 0.9 20 11 0.9 10 0.9 0.8 15 10 10 10 10 10 0.9 20 10 0.9 11 <b>5 0.5</b> 0.7 2.9 6.4 1.5 14 0.4 0.2 0.7 15 15 0.7 0.3 0.2 0.3 0.3 6.4 1.6 2.8 1.9 1.4 1.7 1.5 1.0 8.0 9.2 7.0 6.4 2.9 4.8 3.9 13.2 9.0 12.8 1.9 11 1.2 1.5 1.5 1.3 8	9.0		8.0	1.0			1.5	1.4					2.5	1.1	1.1					1.2	54
10 0.9 14 1.8 0.9 1.1 <b>S</b> 0.5 0.7 2.9 6.4 1.5 1.4 0.4 0.2 0.7 1.5 1.5 0.7 0.3 0.2 0.3 0.3 6.4 1.6 2.8 1.4 1.4 1.4 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	1.3 0.8		1.1	s			11	6.0					1.5	1.0	1.0	1.0				1:1	74
16 28 14 64 14,7 3,2 10.0 8,0 9,2 7,0 6,4 2,9 4,8 3,9 13,2 9,0 12,8 1,9 1,1 1,2 1,5 1,2 1,0 7,0,9 0,8 1,0 2,3 1,1 1,7 1,5 1,4 1,4 1,6 1,0 1,0 0,9 1,7 1,1 1,3 0,8 0,7 0,7 0,7 0,7	1.0	4 1.8	6.0				2.9	6.4					1.5	1.5	0.7					1.2	24
0.7 0.9 0.8 1.0 2.3 1.1 1.7 1.5 1.4 1.4 1.6 1.0 1.0 0.9 1.7 1.1 1.3 0.8 0.7 0.7 0.7 0.7	1.6 2.8		14.7				7.0	6.4					12.8	1.9	1.1						
	0.7 0.9		2.3				1,4	1.6					1.3	0.8	0.7						

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NUMBER OF NON-ZERO READINGS:			663							
MAXIMUM INSTANTANEOUS VALUE:	ني		14.7	PPB	@ HOUR(S)	(2)	w	ON DAY(S)		19
							VAR-V	VAR-VARIOUS		
IZS CALIBRATION TIME:	41	HRS		OPERATIO	OPERATIONAL TIME:				744	HRS
MONTHLY CALIBRATION TIME:	7	HRS								
STANDARD DEVIATION:	1.57									

MONTHLY SUMMARY

Of Hour Averages



- LICA30 HOWAX

LICA30 NO\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 30 Site Name : LLCA30 Parameter : NO Units : PPB

NNW Freq 1.71 100.00 00. 00, 1.71 00. 1.85 00. ž 00. 00. 1.85 00. 1.85 1.85 MNM 00. 00. 2.00 00. 2.00 00. 00. Wind Parameter : WDR Instrument Height : 10 Meters 1.85 00. 00. 1.85 MSM 00. 7.85 00. 7.85 SW 00. 00. 9.57 11.28 00. SSW 00. 00. 9.57 11.28 00. 00 00. 6.85 6.85 SSE 00. % 00. Direction SE 00. 00. 00. 7.57 7.42 7.57 00. ESE 7.42 00. 00. 4.42 00. 4.42 00. 00. ы 00. 8.00 ENE 8.00 00. 00. 11.57 00. 爿 4.57 11.57 11.57 00. 00. 4.57 11.57 00. 00. NNE 00. 00. 00. 00. z Totals 50.0 Limit < 110.0 < 210.0 >= 210.0

00. %

00.

Calm : .00 %

Total # Operational Hours : 700

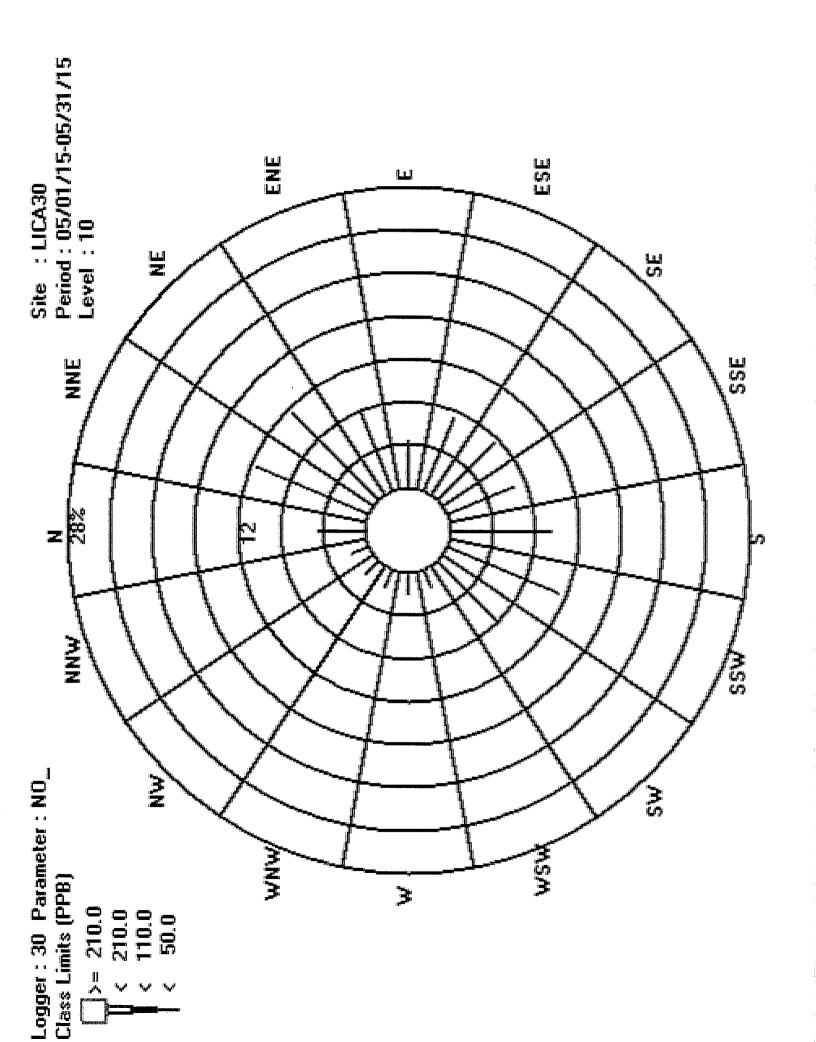
Distribution By Samples

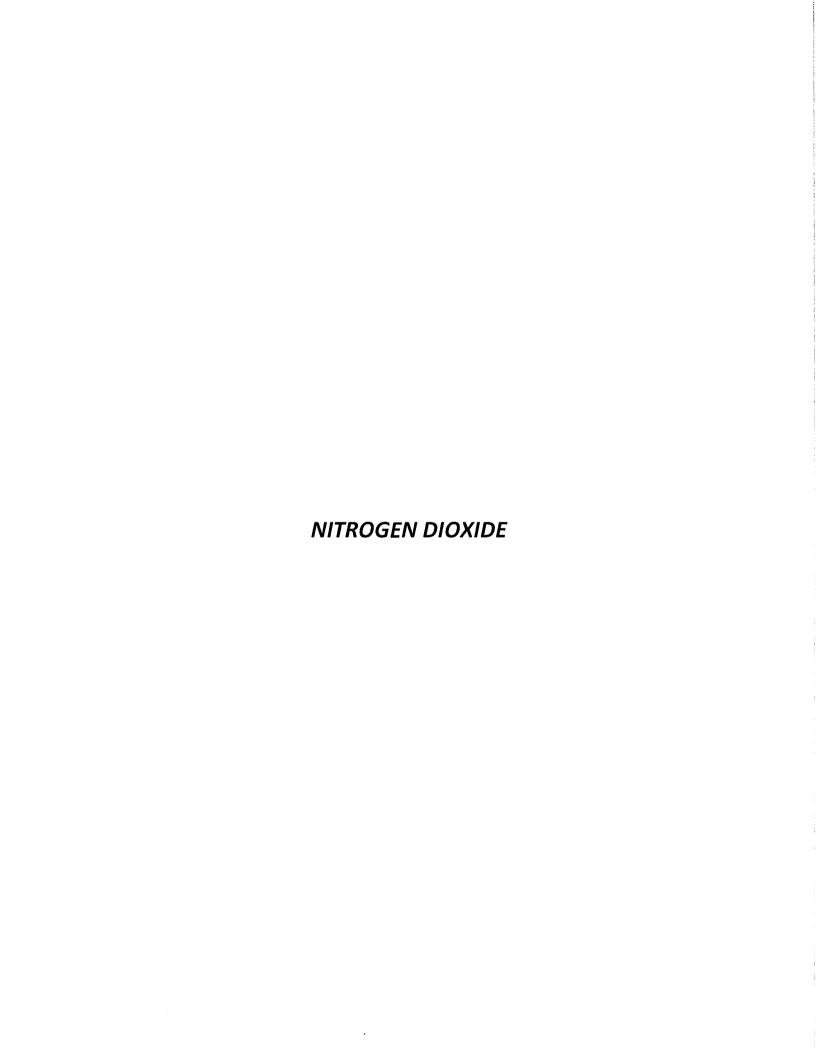
Direction

Freq	700				
NNW	12				12
NW	13				13
WINW	13				13
×	14				14
WSW	13				13
SW	55				55
SSW	79				79
ω	67				67
SSE	48				48
SE	53				53
ESE	52				52
Ø	31				31
ENE	56				56
Ä	81				81
NNE	81				81
z	32				32
Limit	50.0	110.0	210.0	210.0	Totals
	٧	٧	٧	X	

Calm : .00 %

Total # Operational Hours: 700







Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

## NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST											2	MITAGOLIN DIOMIDE (1902)		irouriy averages iii pp	V CI ASK	ص ⊒	3.									
HOUR STARE 0	000	0.00 1:00 2:00 3:00 4:00 5:00 6:	2:00	3:00 4	4.00	5:00	000	7.00	8:00	3:00 T	10:00	11:00 12:00	5	13:00 14:00	0.25.00	16:00	17-00	18:00	19:00	20:00	21.00	22:00	08000.0		24-HOUR	
	3	2007	200	20	3	900	3		è	33		<i>i</i>	.00.	31		38 I	TOTAL	77.00	20.02	Z 1.00	*22.00	73:00	2000 C	NIAX	AVG.	KDGS.
	0.0	0.0			5.0	8.2	7.9							s	6.2	2.2	0.4	0.7	0.5	0.7	1.1	1.4	1.2	8.2	2.3	24
2	1.3				6.3	13.7	s	5.7	5.0	3.9	1.6	4.1 2.3	s S		4 9	4.3	6.3	4.3	1.3	0.3	8.0	2,9	12.8	13.7	4.7	24
8	4.5				6.7	10.4	2.2									0.3	0.2	0.4	0.3	0.4	1.3	1.0		10.4	2.5	24
J	0.5	0.4			9.6	0.1	0.0									0.2	0.0	0.0	0.0	0.0	0.0	0.0		9.0	0.2	24
9	0.0		0.0		0.0	0.0	0.0									0.2	0.2	0.1	0.1	0.1	0.0	0.1		0.5	0.1	24
9	0.2				0.1	0.0	0.0									0.5	0.5	0.5	0.0	0.0	0.1	0.0		0.7	0.2	24
	0.1		1.8		1.8	1.5	1.0	8.0						0.5		9.0	0.4	0.3	0.5	0.1	0.1	0.7	1.7	1.8	0.7	24
	1.5				4.6	6.5	5.9									5.8	0.0	0.0	0.0	1.1	0.3	9.0		8.3	2.4	24
	1.2				4.9	6.5	s									0.3	0.2	0.1	0.1	6.0	1.5	0.5		6.5	15	24
	0.3	8.0		0.5	9,4	s	1.0									0.8	1.2	2.4	1.2	0.1	0.0	0.2		3.7	1.2	24
Mi Or	0.1				s	1.7	3.2									1,3	6.0	0.8	0.7	0.7	11	13		3.2	1.5	24
	2.2				3.1	3.6	3,9									6. 6.	3.8	2.7	0.2	0.0	0.1	0.2		3.9	1.9	24
T	1.6	2.1	s		6.0	1.1	1.4									1.2	1.5	1.8	1.2	0.1	0.4	1.4		2.1	1.1	24
	1.7				2.1	1.8	2.7									0.3	0.1	0.5	1.4	1.4	1.4	8.0		2.7	1.2	24
	s				1.9	5.6	2.2				1.3					1.1	1.5	1.3	1.2	1.1	5.6	2.3		5.6	1.7	24
	1.7				5.4	8.0	6.0									0.0	0.1	0.1	0.0	0.0	0.0	s		1.7	0.5	24
	0.0				0.0	0.0	0.0			0.0		0.0 0.0				0.4	1.9	1.4	0.0	0.0	s	0.4		1.9	0.2	24
erog Se s	0.1				0.4	0.7	0.8									0.5	0.5	0.4	0.5	s	6.0	1.0		1.4	0.7	24
	1.2				1.5	4.4	3.2		1.3	1.5						0.5	9.0	0.7	s	0.8	6.0	1.1		4.4	17	24
	3.1			1.9	1.0	6.0	3.3	3.9			0.5	0.5 0.8				0.4	0.4	s	6.0	8.0	1.0	1.3		4.2	1.4	24
2 - V	0.8				1.8	1.5	1.3									9.0	s	6.0	0.7	0.7	0.5	8.0		3.0	1.1	24
3. ) 3-d 3-d	1.3				1.0	0.7	6.0	3.0		1.8						S	1.0	0.7	0.8	6.0	3.1	2.2		3.1	13	24
er.	2.6	2.7		1.7	1.6	0.7	0.3									0.5	0.4	0.3	0.4	6.0	6.0	0.8		2.7	0.7	24
	0.2				0.5	1.0	0.4	0.3								0.9	0.8	1.0	9.0	0.3	8.0	11.1		12.2	2.0	54
	8.6	10.7	7.9	6.9	5.5	5.9	9.9	6.1		3.0	3.3	•				4.1	6.7	9.9	6.5	4.9	4.1	4.1		10.7	5.3	24
	3.8	1.5	3.3	2.5	1.3	4.1	3.6	2.4	1.3		0.6			11.0	7.9	7.3	5.6	0.8	0.7	8.0	8.0	1.0		11.0	3.1	24
	1.1	6.0	9.0	1.0	9.0	8.0	0.7	1.3	1.5	1.0	1.0	\$ 1.3			1.6	1.2	1.1	1.3	11.3	15.2	3.6	1.8	0.7	15.2	2.3	24
	2.0	1.4	1.0	0.3	0.3	0.3	0.2	0.3		0.5	s	0.5 0.3		0.7	0.2	0.2	0.1	0.0	0.0	0.2	0.1	0.1		2.0	0.4	24
29	0.5	0.2	0.0	0.1	0.1	0.1	0.1	1.0			1.3	1.3 1.2		1.4	0.8	1.0	1.4	0.4	0.4	0.3	0.5	0.5	0.5	1.4	9.0	24
	8.6		1.5	1.0	0.7	1.3	s			1.4	6.0	0.7 0.8				0.8	3.3	0.5	0.5	0.3	0.2	0.5	9.0	8.6	1.6	54
31 C	6.0	0.7	1.3	6.5	9.1		1.3	S		1.8			0 2.3	1.5	1.0	2.2	9.0	5.0	3.8	2.4	1.4	1.8		9.1	2.9	24
	8.6	10.7	7.9	8.3	9.1		7.9				3.5	5.9 2.4				7.3	9.0	6.6	11.3	15.2	8.0	11.1	12.8			
HOURLY AVG	7				7	m	7									1	7	1	H	H	T	н	7			

Adampenance     Adampenance     Daly Zero/Spancheck     A wachine Majeunction     Power Failure     O OPERATOR ERROR     OUT FOR REPAIR     X - COLLECTION ERROR	24 HOUR AVERAGES FOR MAY 2015	
W.St	.1	

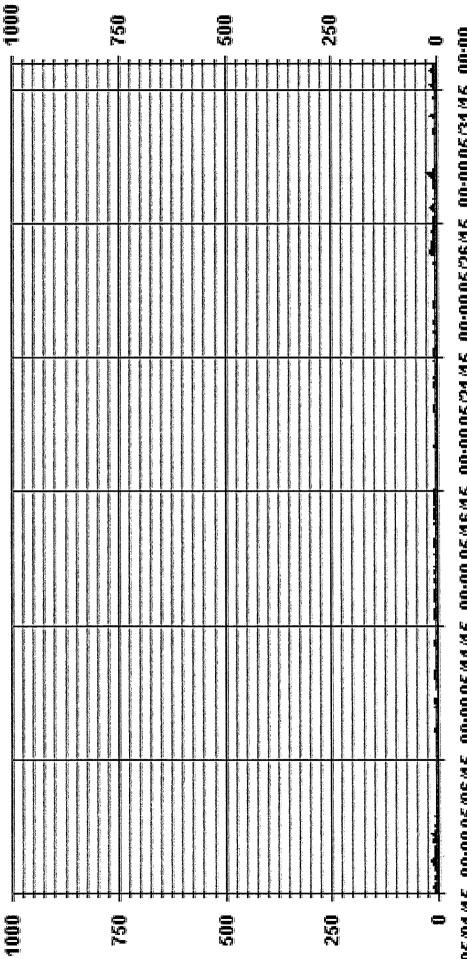
## ALBERTA ENVIRONMENT: 1-HR 159 PPB.

OBJECTIVE LIMIT:

			S	MONTHLY SUMMARY				
NUMBER OF 1-HR EXCEEDENCES.	S		0					
NUMBER OF NON-ZERO READINGS:	<b>G</b> 5:		628					
MAXIMUM 1-HR AVERAGE:		15.2		PPB @ HOUR(S)	20	ON DAY(S)	27	
MAXIMUM 24-HR AVERAGE:		5.3	PPB			ON DAY(S) VAR-VARIOUS	25	
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	38	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	IE: JPTIME:		744 100.0	HRS %
STANDARD DEVIATION:	2.11			MONTHLY AVERAGE:	ij		1.6	PPB

NUMBER OF NON-ZERO READINGS:				
	979			
MAXIMUM 1-HR AVERAGE: 15.2 MAXIMUM 24-HR AVERAGE: 5.3	PPB @ HOUR(S) PPB	20	ON DAY(S) ON DAY(S) VAR-VARIOUS	27 25
IZS CALIBRATION TIME: 38 HRS	OPERATIONAL TIME:	OPERATIONAL TIME:		744

O'l Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

H02\_

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Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

# NITROGEN DIOXIDE MAX instantaneous maximum in ppb

HOUREND GOOD ILOD 2000 3400 4000 5500 5000 5000 100 100 100 100 100 1				Care Charles	11.00	43.00						- 3						
0.8         1.3         7.0         7.9         8.8         10.5           2.1         4.3         8.8         14.0         11.5         23.4           16.5         12.4         14.6         8.3         16.0         17.2           1.1         0.9         1.4         1.2         1.1         0.9           0.3         0.5         0.3         0.3         0.4         0.3           0.7         0.6         0.4         0.5         0.4         0.3           0.7         0.6         0.4         0.5         0.4         0.3           0.5         0.5         0.2         2.5         1.7         1.7           3.1         3.1         19.1         9.2         2.5         1.7           3.1         3.1         19.1         9.2         5.8         7.1           3.1         3.1         19.1         9.2         5.8         7.1           3.2         4.0         4.0         5         4.0         5         3.3         3.3         3.3         3.3         3.2         3.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2	6:00	7:00 8:00-8:00-8:00-8:00-9:00	9:00	10.00 11.00	12:00	13:00	14:00 15:00	00 15:00 00 16:00	0 16:00 0 17:00	17:00.	18:00	19:00	20:00	21:00 2	22:00 23:00 23:00 0:00	) DAILY MAX	24-HOUR AVG.	RDGS.
2.1         4.3         8.8         14.0         11.5         23.4           16.5         12.4         14.6         8.3         16.0         17.2           1.1         0.9         1.4         1.2         1.1         0.9           0.7         0.6         0.4         0.3         0.4         0.3           0.5         0.9         2.5         2.2         2.5         1.1         0.9           1.0         2.5         3.9         5.2         5.2         1.7         0.3           1.1         3.1         1.9         9.2         2.5         5.8         1.1         0.8         1.1         0.8         1.1         0.8         1.1         0.8         1.1         0.8         1.1         0.8         1.1         0.8         1.1         0.8         1.2         1.1         0.8         0.8         1.2         0.8         0.8         1.1         0.8	9.5	l		Ι.	10.9			1	1	1.1	1.3	1.2	1.3	ı	1.8 1.7	``	6.1	24
165         124         146         83         160         17.           11         0.9         14         1.2         1.1         0.9           0.3         0.5         0.3         0.3         0.4         0.9           0.5         0.9         2.5         2.2         2.5         0.9           0.5         0.9         2.5         2.2         2.5         1.1         0.9           1.0         1.3         0.3         1.2         1.5         0.3         0.4         0.9           1.0         1.3         0.3         1.1         9.2         2.5         1.7         0.8         1.1         0.8         1.1         0.8         1.1         0.8         1.1         0.8         1.1         0.8         2.0         1.1         0.8         2.0         1.2         1.1         0.8         2.0         1.1         1.1         1.1         1.2         1	s	\$ 16.5	5 8.2	3.2	14.2	0.6	S 1.4	1 25.3	3 21.5	20.6	9.5	3.8	1.1	1.8	9.6 19.4	25.3	10.9	24
11. 09 14 12 11 09 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3.4			5.7	4.7					1.0	6.0	6.0	1.5	1.9			6.2	54
0.3 0.5 0.3 0.3 0.4 0.3 0.4 0.3 0.7 0.5 0.5 0.4 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.5			0.3	s					0.5	0.3	0.3	0.3	0.2			9.0	54
0.7 0.6 0.4 0.5 0.5 0.4 0.5 0.5 0.4 0.5 0.5 0.9 0.5 0.5 0.9 0.5 0.5 0.9 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	0.2			s	1.2				0.8	6.0	0.7	0.4	0.5	0.5			9.0	54
0.5         0.9         2.5         3.9         2.2         2.5         1.7           2.6         2.5         3.9         5.2         5.8         7.1           3.1         3.1         19.1         9.2         7.6         9.8           0.7         1.1         0.9         1.1         5         9.8           2.9         4.0         4.0         5         4.0         9.1           2.5         2.9         5         2.0         1.4         1.7           2.4         5         2.8         2.8         2.6         2.2           2.4         5         3.3         3.3         3.7         4.2           2.0         1.9         1.5         3.3         3.7         4.2           2.0         1.9         1.5         3.3         3.7         4.2           2.0         1.9         1.5         3.9         3.7         4.2           2.0         1.9         1.5         3.9         3.5         3.7         4.2           3.0         1.5         3.3         3.5         3.7         4.2         3.2           4.0         1.9         1.9         1.9	0.4			1.1	1.4					9.0	0.7	0.2	0.2	0.2			0.7	54
2.6         2.5         3.9         5.2         5.8         7.1           3.1         3.1         19.1         9.2         7.6         9.8           1.0         1.1         0.8         1.0         9.8         7.1         9.8           2.9         4.0         4.0         5         4.0         9.1         1.7         9.3         3.3         3.2         3.3         3.2         3.2         3.3         3.2         3.2         3.2         2.0         1.4         1.7         1.7         1.7         1.2         2.2	1.6			2.1	1.2	~	1.9 1.5			1.0	6.0	6.0	8.0	8.0			1.5	54
3.1 3.1 19.1 9.2 7.6 9.8 10.0 13.0 0.8 5.0 10.7 11.0 0.8 5.0 10.0 10.8 5.0 10.0 10.8 5.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	7.3			Û	Ų					1.4	1.3	1.3	4.0	2.1			4.5	54
110 113 08 110 08 \$ \$ 0.07 11. 0.09 1.1 \$ 0.00 1.2 \$ 0.00 1.1 \$ 0.00 1.1 \$ 0.00 1.0 \$ 0.	S			6.0	1.0				9.0	9.0	9.0	0.7	9.4	9.6	0.9 1.0		4.0	54
0.7         1.1         0.9         1.1         \$ 3.3           2.9         4.0         4.0         \$ 4.0         \$ 1.1           2.5         2.9         4.0         \$ 4.0         \$ 1.2           2.4         \$ 2.8         2.8         2.6         2.2           2.0         1.2         1.2         2.2         2.2           2.0         1.3         1.3         3.7         4.2           2.0         1.3         1.8         0.9         1.5           0.3         0.5         0.3         0.4         0.4         0.4           0.6         1.3         2.1         0.9         0.9         2.5           1.3         1.5         1.6         4.7         2.8         1.3           1.1         1.4         1.7         1.8         2.2         1.7	1.5			6.4	5.6	3.5	1.9 1.2			3.8	6.4	6.4	9.0				3.1	54
2.9         4.0         4.0         5         4.0         9.1           2.5         2.9         5         2.0         1.4         1.7           2.4         5         2.8         2.8         2.6         2.2           5         3.2         3.3         3.3         3.7         4.2           2.0         1.9         1.5         1.8         0.9         1.5           0.3         0.5         0.3         0.4         0.4         0.4           0.6         1.3         2.1         0.9         0.9         2.5           1.3         1.5         1.9         2.4         2.0         1.5.3           1.1         1.4         1.7         1.8         2.7         1.7	3.7			2.8	3.3	3.4				1.2	1.0	1.0	6.0		2.6 2.9	3.7	2.2	54
2.5         2.9         \$         2.0         1.4         1.7           2.4         \$         2.8         2.8         2.6         2.2           \$         3.2         3.3         3.5         3.7         4.2           \$         1.9         1.5         1.8         0.9         1.5         1.5           \$         0.6         1.3         2.1         0.9         0.9         2.5           \$         1.3         1.5         1.9         2.4         2.0         1.5           \$         1.1         1.4         1.7         1.8         2.7         1.7	5.4			1.3	6.0					7.3	7.3	0.7	0.5				3.3	54
24         S         28         28         26         22           5         32         33         35         37         42           03         19         15         18         09         15           03         03         03         04         04         04         04           06         13         21         09         09         25           18         15         19         24         20         153           11         14         17         18         22         17	1.9			4.8	5.6					2.6	5.7	3.3	9.0				2.4	54
\$ 3.2         3.3         3.5         3.7         4.2           20         1.9         1.5         1.8         0.9         1.5           0.3         0.5         0.3         0.4         0.4         0.4           0.6         1.3         2.1         0.9         0.9         2.5           1.8         1.5         1.9         2.4         2.0         15.3           1.1         1.4         1.7         1.8         2.2         1.7	3.3			1.5	1.6					0.8	1.7	2.2	2.2				2.0	24
20 1.9 1.5 1.8 0.9 1.5 0.3 0.3 0.5 0.3 0.4 0.4 0.4 0.4 0.6 1.3 2.1 0.9 0.9 2.5 1.8 1.5 1.9 2.4 2.0 15.3 1.1 1.4 1.7 1.8 2.2 1.5	4.6			1.5	1.7	2.2				1.7	2.2	1.4	1.5				2.5	24
0.3 0.5 0.3 0.4 0.4 0.4 0.4 0.6 1.3 2.1 0.9 0.9 2.5 1.8 1.5 1.9 2.4 2.0 1.5.3 1.1 1.4 1.7 1.8 2.2 1.7	1.5			9.0	0.4					0.4	0.4	0.4	0.4				0.9	24
0.6 1.3 2.1 0.9 0.9 2.5 1.8 1.5 1.9 2.4 2.0 15.3 9.1 8.2 4.6 4.1 2.8 2.8 1.1 1.4 1.7 18 2.2 1.7	0.2			0.0	0.2					4.0	4.1	2.0	0.4				1.0	54
1.8     1.5     1.9     2.4     2.0     15.3       9.1     8.2     4.6     4.1     2.8     2.8       11     1.4     1.7     1.8     2.2     1.7	1.2			6.0	6.0					6.0	6.0	6.0	S				1.2	54
9.1 8.2 4.6 4.1 2.8 2.8 1.1 1.1 1.4 1.7 1.8 2.2 1.7	s			1.3	1.0					6.0	6.0	S	2.7				2.5	54
11 14 17 18 22 17	10.2	10.6 4.3		2.3	2.1	2.6			2.1	2.5	s	1.3	1.2				3.8	54
	2.9			1.4	1.1					s	1.3	1.1	1.6				1.7	54
1.6 1.4 1.5 1.1 1.6 1.1	1.4			2.7	1.4					1.4	1:1	1.2	1.6				1.9	74
3.3 3.5 2.7 2.4 2.2 1.4	6.0			0.5	9.0		1.3 0.3	S		1.1	1.0	1,4	1.6	2.1	2.0 2.0	3,5	1.4	24
1.5 1.5 1.4 1.6 1.2 1.5	1.0			1.4	2.8					2.1	2.4	2.2	1.4				3.5	54
11.5 13.6 9.0 8.0 6.9 7.4	8.8			9.1	14.3	2.7				9.7	8.0	7.3	6.0				8.1	74
15.2 2.4 5.7 5.0 2.1 8.2	5.3			1.3	2.0			•		7.2	1.6	1.2	1.1				5.0	54
3,4 1.4 0.9 1.4 1.0 1.3	11		1.3	1.6	s					1.5	1.8	20.2	28.6				3.9	54
3.4 2.4 1.6 1.4 1.0 0.9	0.8			S	0.7		7.0 8.0		9.0	0.4	0.4	6.0	1.2		0.5 1.3	3.4	11	24
1.0 0.7 0.6 0.6 0.7 0.5	0.7			1.7	1.9	2.5				5.4	6.0	0.7	0.7				1.4	74
15.6 13.6 2.7 1.9 0.9 2.6	s			1.5	1.3					6.1	2.7	17	1.0				3.0	54
1.5 1.5 3.1 13.3 17.5 1.9	2.1	5 2.9	2.5	7.7	13.2	1	3.9 1.9			13.5	8.7	7.6	3.6	3.3	3.3 1.6		5.4	24
	10.2			12.7	14.3	9.0	3.9 14.0	0 29.7	21.5	20.6	9.2	20.2	28.6		12.9 19.4			
3.2 3.7 3.6 3.7 4.8	3.0			2.8	3.4					3.4	2.5	2.5	5.6					

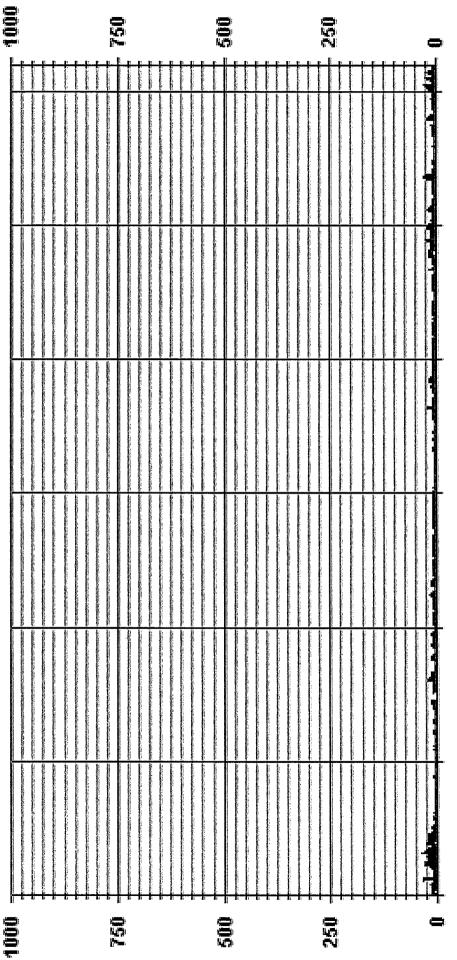
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### MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			969						
MAXIMUM INSTANTANEOUS VALUE:			29.7	PPB	@ HOUR(S)	15	ON DAY(S)		₩
						VAR-V	VAR-VARIOUS		
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME: STANDARD DEVIATION:	41 7 3.96	HRS		OPERATIC	OPERATIONAL TIME:			744	HRS

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

- LICA30 NO2MAX PPB

LICA30 NO2\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Fred

1.71 100.00 NNW

00. 00.

> 00. 00 1.71

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00.

1.85 E 00. 00. 00. 1.85 1.85 8. 1.85 WNW 0. 0. 2.00 2.00 00. 00. % Wind Parameter : WDR Instrument Height : 10 Meters 1.85 1.85 00. 00. 00. 7.85 0. 7.85 SW 00. 00. 9.57 11.28 9.57 11.28 SSW 00. 0. 8 00. 00 0. Ø 6.85 6.85 00. 8 00. SSE 7.57 Direction 00. SE 7.42 7.57 00. 00. ESE 7.42 00. 00. % 4.42 4.42 8. 00. 00. ы ENE 8.00 00. 8.00 00. 00. 4.57 11.57 11.57 Ä 00. 00. 00. 11.57 11.57 00. NA EN 0. % 4.57 00. 00. 00. z Totals Limit 50.0 < 110.0 >= 210.0 < 210.0

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Calm : .00 %

Total # Operational Hours : 700

Distribution By Samples

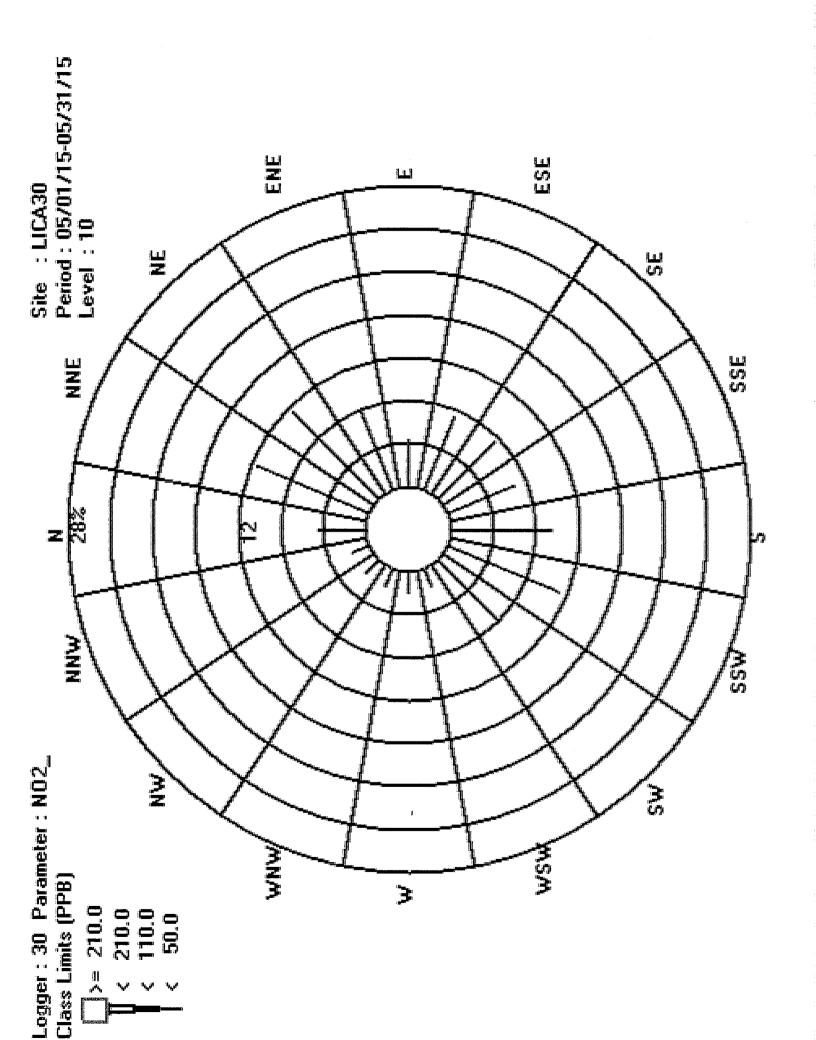
Direction

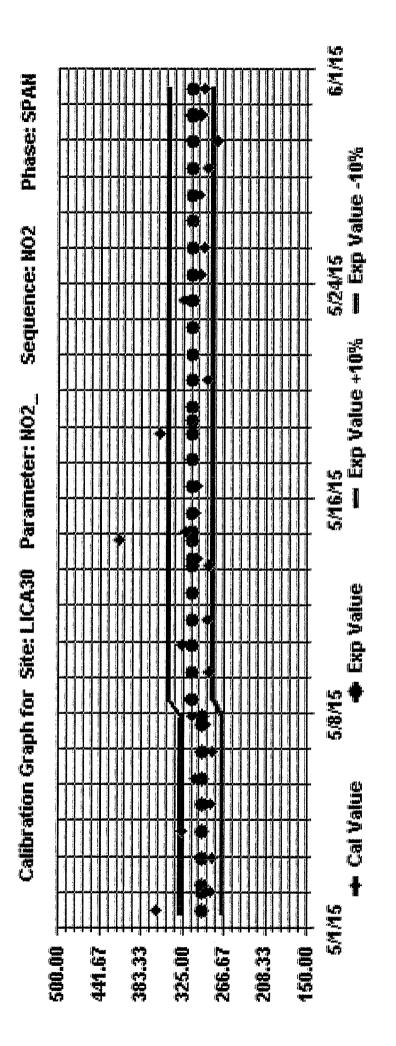
Freq	700				
MNN	12				12
NW	13				13
WNW	13				13
м	14				14
WSW	13				13
SW	55				55
SSW	79				79
w	67				67
SSE	48				48
SE	53				53
ESE	52				52
ы	31				31
ENE	26				56
Ä	18				81
NNE	81				81
z	32				32
Limit	50.0	110.0	210.0	210.0	Totals

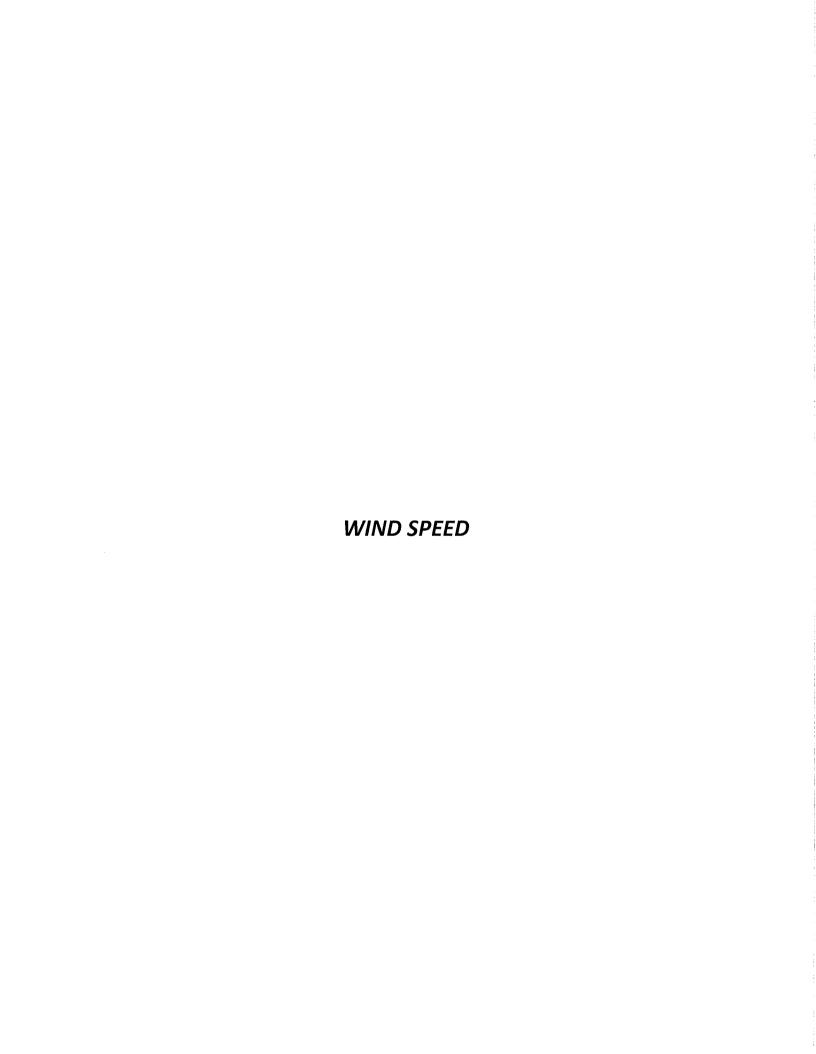
Calm : .00 %

v v

Total # Operational Hours : 700









## WIND SPEED (WS) hourly averages in km/hr

	R RDGS.	24	24	24	74	24	54	24	54	24	24	24	24	24	24	74	24	24	24	24	74	24	24	24	24	24	54	24	24	24	24	<b>54</b>		
	24-HOUR AVG.	4.8	5.7	4.5	7.0	11.5	10.0	4.5	5.3	7.5	4.5	4.0	6.5	5.5	4.9	5.4	12.6	5.2	3.9	2.8	3.5	4.8	3.2	5.8	3.3	2.8	5.5	6.5	9.0	3.2	5.5	4.0		
	DAILY MAX.	8. 9.	8.6	7.9	10.5	16.3	16.3	6.9	8.0	14.4	8.7	7.6	10.0	8.1	7.9	10.5	19.2	9.2	8.1	5.8	8.3	12.0	6.9	11.5	8.3	7.7	13.1	18.9	15.4	5.8	0.6	9.9		
	23:00	2.7	6.4	1.7	9.4	15.5	4.1	5.1	6.8	5.6	6.7	6.4	8.3	7.1	6.4	1.5	2.5	5.2	2.9	0.7	6.0	8.0	2.6	2.4	4.8	2.2	0.3	13.6	1.6	3.1	5,6	2.3	15.5	4.6
	22:00	1.1	5.3	0.5	8.6	16.3	4.0	3.1	7.7	5.7	3.1	2.2	7.9	5.9	4.8	9.0	6.2	4.3	3.0	0.5	0.5	0.3	1.9	1.6	1.4	1.4	1.3	12.4	6.0	4.0	4.4	3.9	16.3	4.1
	21.59	3.3	1.8	3.0	8.8	13.6	4.4	2.9	8.0	5.4	1.8	2.3	7.5	4.2	4.6	1.1	7.1	3.6	2.7	1.4	1.9	3.7	1.6	2.1	2.5	2.7	1.4	12.3	2.2	3.5	4.0	2.2	13.6	4.1
	20:00	3.9	3.6	4.0	8.1	14.9	4.9	3.8	9.9	3.0	1.9	3.3	6.4	3.9	3.3	0.5	8.8	3.0	2.7	2.5	3.6	3.8	2.2	1.1	1.2	2.4	2.5	18.9	2.0	3.4	4.1	1.4	18.9	4.4
	19:00	4.1	4.3	2.5	6.0	15.7	5.1	3.6	5.3	4.5	2.9	9,6	6.4	3.3	6.2	2.7	12.6	3.6	4.7	3.4	3.3	3.8	3.0	1.3	3.6	0.7	3.3	11.8	4.7	3.7	6.1	2.2	15.7	4.8
	18:00	5.1	4.7	5.1	8.9	16.3	4.2	3.6	7.3	7.9	3.8	2.8	7.9	5.7	7.9	2.7	14.1	4.8	5.6	4.7	5.7	6.4	6.3	2.6	3.6	2.8	4.6	4.0	5.5	3.5	7.2	1.6	16.3	2.8
	1 IZ-00	4.2	4.2	5.4	10.3	14.4					5.2						13.2			5.5	5.6	7.5	6.5	4.8	6.2	9.0	6.3	4.7	7.2	29	6.9	4.2	14.4	6.4
	16:00 16:59			3.7		12.8			6.0									7.1	7.0				5.9	5.9	1.8	7.7		2.0	6.8	3.9	7.2		15.1	
	0. 15:00 9. 15:50					•	5.9		7.8							5.8			7.8		9.9				9.6		11.9	9.0			7.6		18.9	
	13:00 14:00 15:00 13:59 14:59 15:59								4.4															9.5				8.7					16.1	
	0- 130 9- 135					8.7	5 10.0	5.5				3.2									7.0				4.2	1.0	10.9	8.6		3.8	9.0		16.8	
: }	11:00: 12:00- 11:59: 12:59	6.2	6.2	7.7	10.4	9 9.2	•	5.0	1.2			3.7					18.6					12.0				3.9	9.0		5 9.1				18.6	
	30 11.6	7.7	7.2	6.4	8.6	3 12.9	4 10.7	3.9				1.4			1 4.2						7.3							7.1	0 13.6	1.8	7.9		7 18.0	
;	0 10:00 9 10:59			9 7.0		9 13.3	2 11.4										9 17.7		7 4.9		5 6.4					1.2	3 12.6	5 7.4			6.8		9 17.7	
	8:00 9:00 8:59 9:59	7 8.6		7 7.9		9 13.9	.2 12.2	5.4		.2 10.2				4 7.6			8 15.9								4.6	3 0.4	5 9.8	5 7.5	4 13.4		1 7.4		8 15.9	
	37,753	5 7.	1 6.8	1 5.7	6 10.5	.4 13.9	.1 13.2			VI	6 7.3			7 7.4		4 10.5						3 5.6				6 4.3		5 7.5			8 7.1	1	.7 16.8	
	30 = 7.00 59 - 7.59	8 4.5		5.0 6.	7 9.6	9.9 11.4	.6 14.1									0 7.4									4 3.7	1 4.6	8 7.1	1 6.5	.9 13.6		4 5.8		15.6 14.7	
	3 5:00 6:00 9 5:59 6:59	6.	5.	3.5 5.	5.0 8	7.1 9.	14.4 12.6	Z.	4.2 3.4					3.6 4.5				.2 7.1			0.4 0.8		.0 1.2		2.0 3.4	.6 4.1		1.6 1.1	9.8 11.9		2.9 4.	6.4 5.	19.2 15	
	S S	6	.1 5	8.	9			4.5 4									15.0 19			0.6				5.5 6.		0.6 2.		0.8	10.1	1.0 3.7	1.5 2.		15.0 19	
	3:00 4:00 3:59 4:59	3.7 3	4.1 5	2 2	.0				5.4 4															2.3 5			0.4						15.1	
•	59 3	5.1	9.1	2.8 2					6.1 5									2.6 2							1.3	6	0 8.	1.0 0	11.7 12	1.2 0	1.8 0		15.5 1	
	2 00 2	3.7 4	3.5 4						2.9													0.7				1.4 2	1.4 C	1.8	13.6 1:		2.6 1		15.4	
	0:00 1:00 2:00 3:00 4:00 0:59 1:59 2:59 4:59	4.3	2.2	4.7	1.6	8.1		5.3		7.6								2.3			0.6						2.5	0.8	13.7 1	0.7				4.1
H	TART C			<u>.</u> Z.	. 7	(4)																						_		_	_			
MST	HOUR START HOUR END	DAY 1	2	m	4	3	φ		80.	6	10	Ħ	12	13	14	15	19	17	18	13	20	21	22	23	24	53	26	27	28	53	30	31		HOURLY AVG

March 4, 2014	MAGNETIC DECLINATION 19 DEGREE EAST	
LAST CALIBRATION:	DECLINATION:	

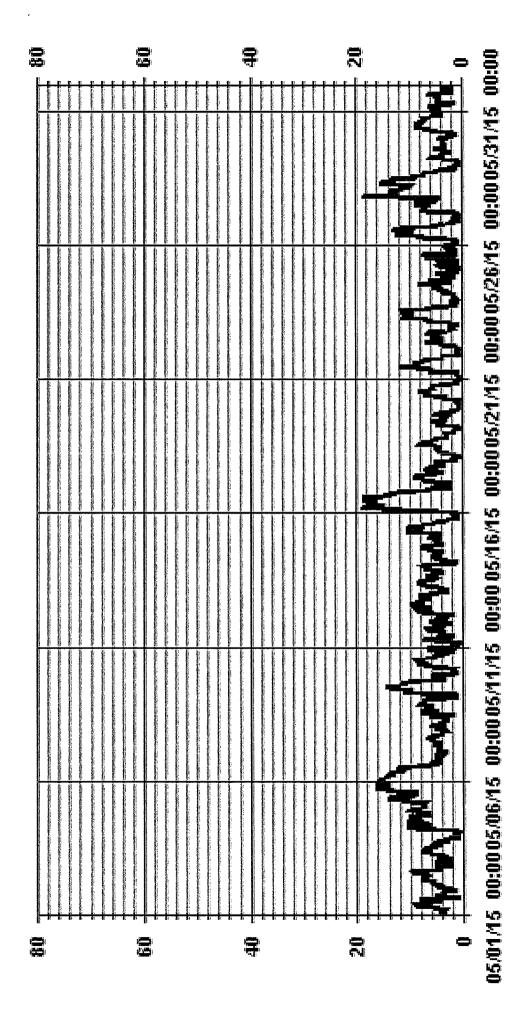
STATUS FLAG CODES

# C - CALIBRATION Q QUALITY ASSURANCE NAMINIEUMNICE S - DALIY ENDOYER CONTROLL S - DALIY ENDOYER AND CONTROLL S - DOUGH FOR REPAIR O - OPERATOR ERROR 24 HOUR AVERAGES FOR MAY 2015 12 3 4 5 5 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 28 28 20 35 11 S - CALIBRATION MAXIMULIN MAXIMULIN S - CALIBRATION O - OPERATOR ERROR A - COLIECTION ERROR MAXIMULIN MAXIMULIN S - CALIBRATION MAXIMULIN S - CALIBRATION MAXIMULIN S - CALIBRATION MAXIMULIN S - CALIBRATION S - CALIBRATION MAXIMULIN S - CALIBRATION S - CALIBRATION S - CALIBRATION MAXIMULIN S - CALIBRATION

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NUMBER OF NON-ZERO READINGS:			744						
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		19.2 12.6	КРН КРН	КРН @ HOUR(S) КРН	rλ	ON DAY(S) ON DAY(S) VAR-VARIOUS	16 16		
MONTHLY CALIBRATION TIME:	0	HRS .		OPERATIONAL TIME: AMD OPERATION UPTIME:	TIME		744 100.0	HRS %	
STANDARD DEVIATION:	3.75			MONTHLY AVERAGE:			5.6 KPH	KPH	

of hour Averages



- LICA30 WSP KPH



Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

# VECTOR WIND SPEED MAX instantaneous maximum in km/hr

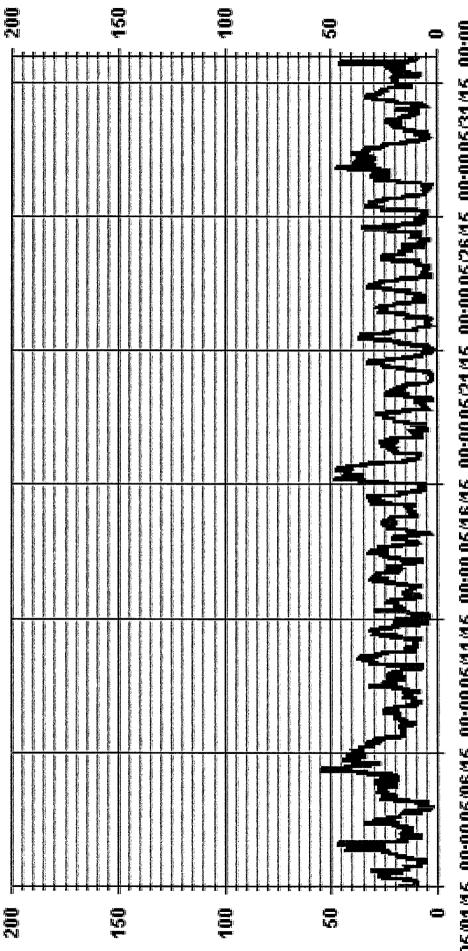
MST								, , ,	VECTOR WIND SPEED WIFE	ָבְּרְ בְּיִבְּיִבְּיִבְּיִבְּיִבְּיִבְּיִבְּיִ	֭֭֭֭֡֝֝֟֝֟֝֟֝֟		IIIstalli	mstafftaffeous maximum in Killy in	IIIavii			_							
HOUR START 0:00 HOUREND 1:00	0:00	7:00 5:00	1:00 2:00 3:00 2:00 3:00 4:00	3:00	4:00 :	5:00 6:00 6:00 7:00	Na.	7.00 8	8:00 9:00	9:00 IC	10:00 11	11:00 12 12:00 13:	12:00 13:0 13:00 14:0	13:00 14:00 14:00 15:00	15:00	16:00	17:00 18:00 18:00 19:00		19:00	20:00 21 21:00 22	21:00 22 22:00 23	22:00 23:00 23:00 0:00	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY 1	17.9	11.8	10.2		l	10.0	l		22.0 25		l				31.0	12.4	15.3	15.5	8.9	7.1 9		ı	31.0	15.6	24
2	6.7	14.6	10.9		18.9		22.5	23.1 2		24.0 4		41.3 24	24.2 36.7	7 28.4	46.8	31.1	19.4	13.7	17.0		6.9	15.8 16.9		22.3	24
m	16.1	16.2	_	11.8			18.8		17.7 35	35.0 2	29.1 27		30.7 21.9		16.9	17.9	17.2	14.6	7.1	16.8 9				17.3	24
4	6.3	3.9					20.5				•			•	26.4	26.9	24.4	22.9	18.1					20.0	54
ιń	26.2	17.5		19.9			32.6	•	,		•				28.0	36.3	36.3	44.8	42.4				55.3	34.3	24
.φ	37.0	39.2					29.8								17.7	14.6	16.4	16.7	15.0	•		17.0 16.8	39.8	26.3	54
4	18.1	15.0			17.1		17.7		20.1						24.9	21.4	19.9	15.3	10.1					16.4	24
<b>80</b>	10.2	11.3					11.6	7.9							25.1	19.6	19.0	23.6	14.6	21.4 19		24.2 20.2		17.9	54
6	20.6	16.4		9.3		6.9	6.9		27.7 3:	31.7 2			32.8 37.4		28.8	29.1	26.9	23.4	14.0	9.2 13	13.9	15.5 13.1		21.4	54
10	10.0	8.6					6.7		22.4 18						27.7	22.3	22.0	18.5	8.5	3.2 5	5.4 10	10.7 20.5		17.1	54
11	19.4	9.1					14.1								24.7	20.3	20.7	16.8	11.3					15.1	54
17	15.7	10.7					9.6					22.3 31			26.6	29.9	26.8	25.5	18.8	17.7 19		20.5 23.6		20.3	54
13	17.0	12.2					17.0	23.1 2	25.3 22	22.5 2	27.3 33		31.7 28.4		25.7	26.2	18.8	19.4	10.2	8.9		14.8 15.9	32.6	18.5	54
71	15.3	21.4					10.2		15.0 20			20.5 20			26.4	22.7	19.8	23.1						16.4	24
15	10.4	13.3					10.5								17.6	15.9	16.6	9.5	10.2	5.4 6				16.8	54
16	6.8	5.2					39.6								43.3	45.0	43.1							32.6	74
72	7.8	8.6					19.9	21.0 2			23.8 26	26.6 23	23.4 20.5	5 19.9	26.9	25.1	22.9	19.0	10.4	6.2 7	7.5 10	10.0 11.3	26.9	16.6	74
18	12.0	7.8					5.0								22.8	28.8	24,4		12.2					14.3	74
19	6.7	5. 8.					8.7		14.8 14	14.4					15.6	19.1	17.1		8.7					11.8	74
20	2.3	2.3	2.3			3.2	6.1					25.1 26			29.2	21.8	22.3	17.3	11.6			.6 5.6		13.7	74
21	3.4	4.1					12.0	17.9 1	16.6 20	20.7					36.2	56.6	7.2.7	21.1	12.4		9.3 4			16.5	54
22	3.7	4.2					3.6								27.5	26.4	20.7	19.6	12.4				27.9	13.7	74
23	5.8	6.1					19.9								20.1	18.3	15.4	6.3	3.4			5.6 7.4		15.7	54
24	4.7	3.6					8.6		10.0		20.5 26				15.9	16.1	18.3	13.7	10.6					13.4	74
25	8.1	6.8					11.8		12.4 6						35.4	26.4	17.2	8.0	6.3					13.4	54
26	9.1	7.6				3.4	8.7		24.2 35				28.5 31.8		26.1	23.2	16.4				6.1 5			16.4	74
27	6.1	5.4					7.1	17.9 1					21.8 31.4		25.5	22.8	21.8	25.4	41.8			28.2 33.7		21.1	54
28	39.6	33.0					37.8	31.3 3	38.0 40			32.6 32.1	.1 34.8	3 26.9	25.2	26.3	23.3	18.3	14.4	8.2 5.			40.0	26.4	54
53	5.6	2.3	10.7	8.4			15.7		16.1 20		21.1		19.9 23.3		19.6	18.5	16.8	12.2	10.2					13.6	74
30	19.4	13.3					17.9	19.4 2	24.0 27	27.1 31	30.4 32	,	•	•	27.1	25.3	27.1	23.1	23.1			13.5 19.0		20.4	75
31	18.8	20.3				21.2	19.3	8.6	7.2 1.	`'	D.9 20	20.7 15	15.9 14.4	4 24.0	23.1	24.4	17.2	45.9					45.9	17.7	54
HOURLY MAX	39.6	39.2	39.8	36.7	36.7		39.6	38.0 4	44.0 55	55.3 4	49.2 44	44.2 41	41.8 41.2	ľ	46.8	45.0	43.1	45.9		47.5 33		42.6 33.7			
HOURLY AVG	13.2	11.6					15.6								26.3	23.8	21.5	20.1	14.8		11.8				

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SIAIUS FLAG CODES	-CALIERATION O - OLUALITY ASSURANCE - MAINTENÂNCE - PAILY ZERÓ SPAN CHECK - N - MACHINEMÁLFUNCTION - POWER SAILUNE - OUT FOR REPAIR - OUT FOR REPAIR

### MONTHLY SUMMARY

		MOINTER SOMMON	NO MINISTRA				
MAXIMUM INSTANTANEOUS VALUE:	55.3	KPH	55.3 KPH @ HOUR(S)	Ø	ON DAY(S)		ī
				VAR-V/	VAR-VARIOUS		
		OPERATIO	OPERATIONAL TIME:			744 HRS	HRS



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

KPH

- LICA30 WSMAX

LICA30 WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

	MNN	1.07	.67	00.	00.	00.	00.	1.74
	MN	.94	1.20	00.	00.	00.	00.	2.15
	WNW	1.07	.80	00.	00.	00.	00	1.88
	W	1.88	00.	00.	00.	00.	00.	1.88
	WSW	2.01	.13	00.	00.	00.	00-	2.15
	SW	6.58	.80	00.	00.	00.	00.	7.39
	SSW	7.66	4.03	00.	00.	00.	00.	11.69
	ဖ	5.77	4.03	.13	00.	00.	00.	9.94
	SSE	4.16	2.82	00.	00.	00.	00.	6.98
Direction	SE	5.51	2.01	00.	00.	00.	00.	7.52
Di	ESE	4.97	2.28	00.	00.	00.	00.	7.25
	ы	3.22	.80	.40	00.	00.	00.	4.43
	ENE	5.91	1.47	.26	00.	00.	00.	7.66
	Ħ	3.36	5.37	2.55	00.	00.	00.	11.29
	NINE	3.09	4.16	4.30	00.	00.	00.	11,55
	z	3.49	. 94	00.	00.	00.	00.	4.43
	Limit	0.9	12.0	20.0	29.0	39.0	39.0	Totals
		٧	٧	٧	٧	٧	X	

31.58 7.66

Freq 60.75 0. 0. 0.

Calm : .00 %

Total # Operational Hours: 744

Distribution By Samples

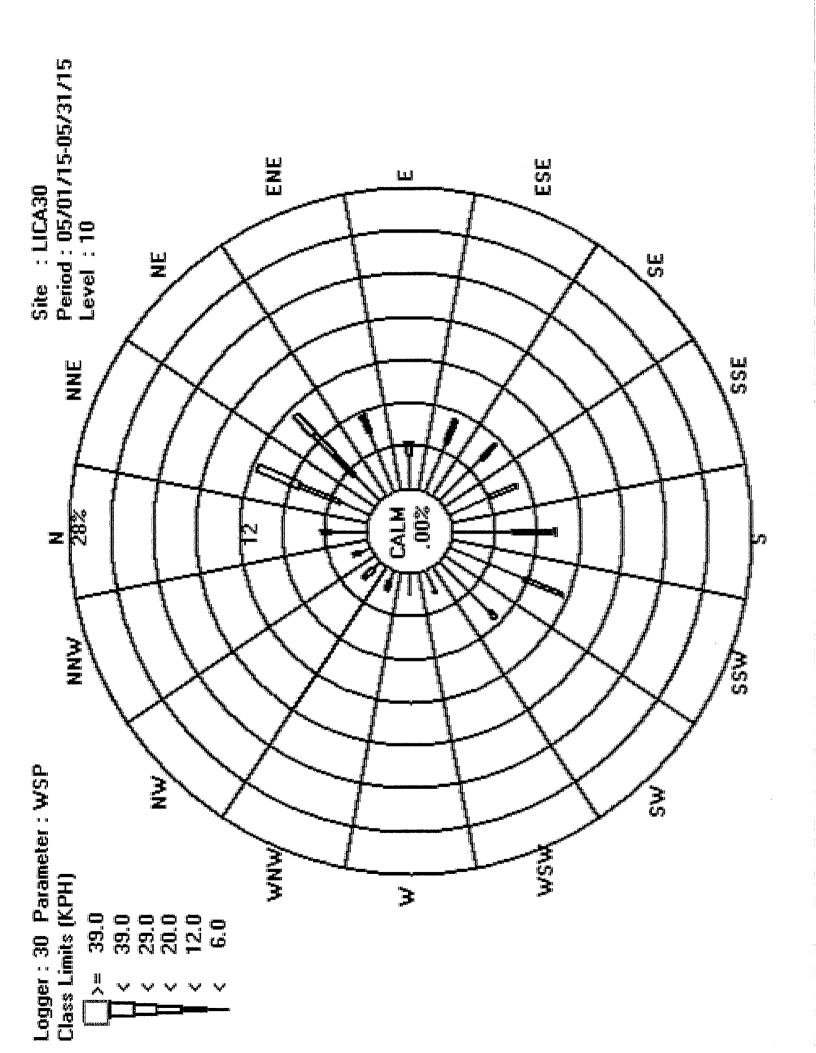
Fred

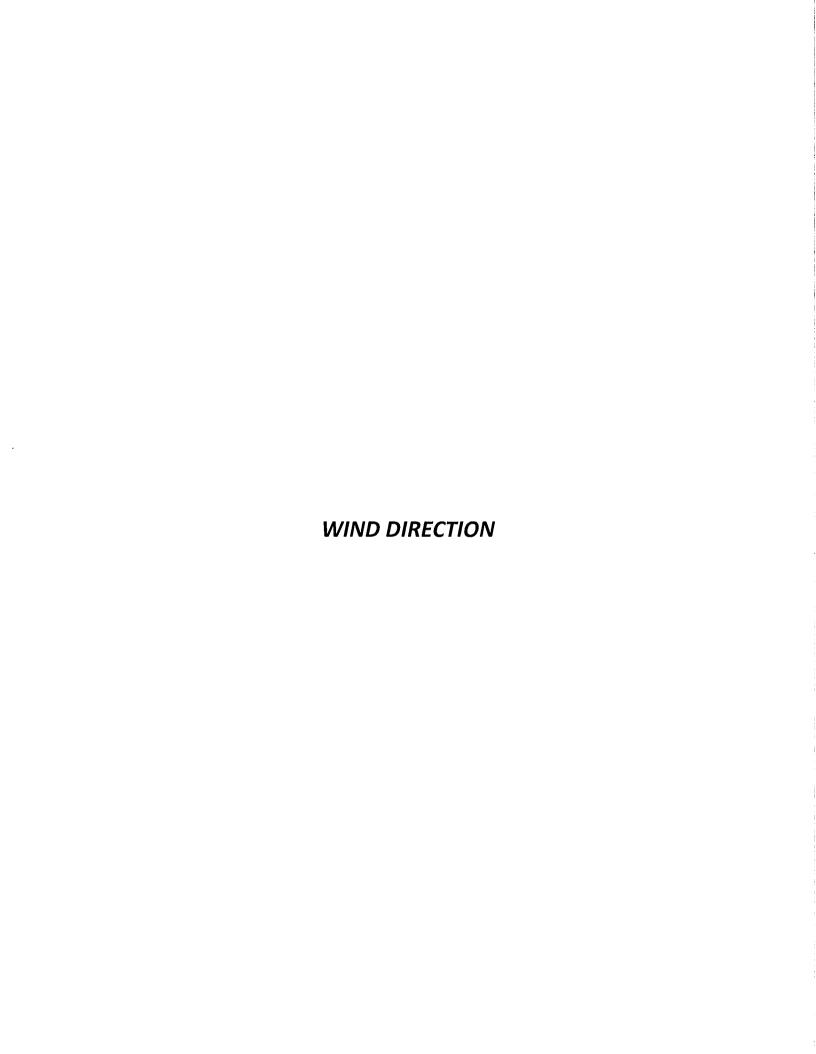
452 235

	NNW	ω	Ŋ					13
	WN	7	თ					16
	WNW	ω	ø					14
	×	14						14
	WSW	15	1					16
	SW	49	w					55
	SSW	57	30					87
	Ø	43	30	г				74
	SSE	31	21					52
Direction	SE	41	15					56
Dir	ESE	37	17					54
	ы	24	ø	m				33
	ENE	44	11	8				57
	Ä	25	40	19				84
	NNE	23	31	32				86
	z	26	7					33
	Limit	6.0	12.0	20.0	29.0	0.68	39.0	Totals
		٧	٧	٧	٧	٧	X	

Calm : .00 %

Total # Operational Hours : 744







Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

y averages
hour
(MD)
NOL
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MIND

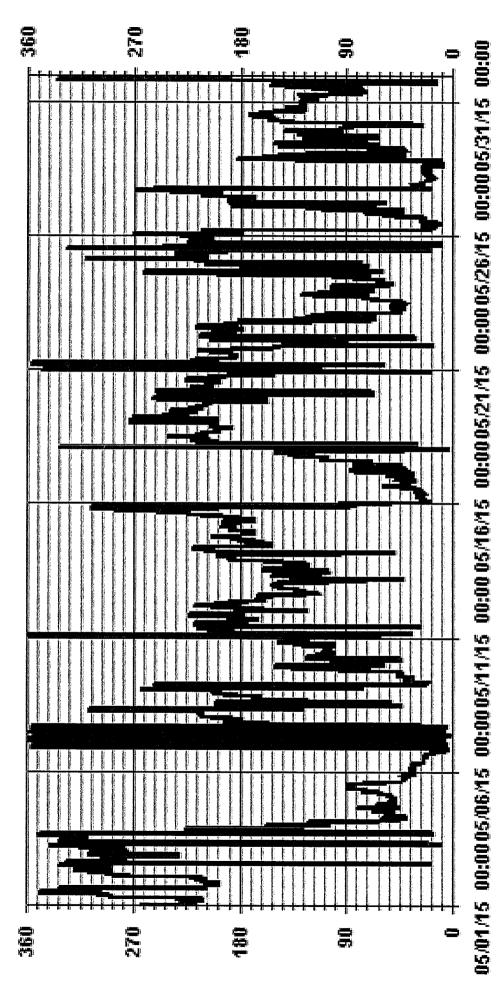
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March 4, 2014	MAGNETIC DECLINATION 19 DEGREE EAST	
LAST CALIBRATION:	DECLINATION:	

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	744	HRS
STANDARD DEVIATION:	90.11	AMD OPERATION UPTIME:	100.0	%
****		MONTHLY AVERAGE:	ENE	



- LICA30

OEG





Maskwa Site - MAY 2015 JOB # 2833-2015-05-30- C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

### MST

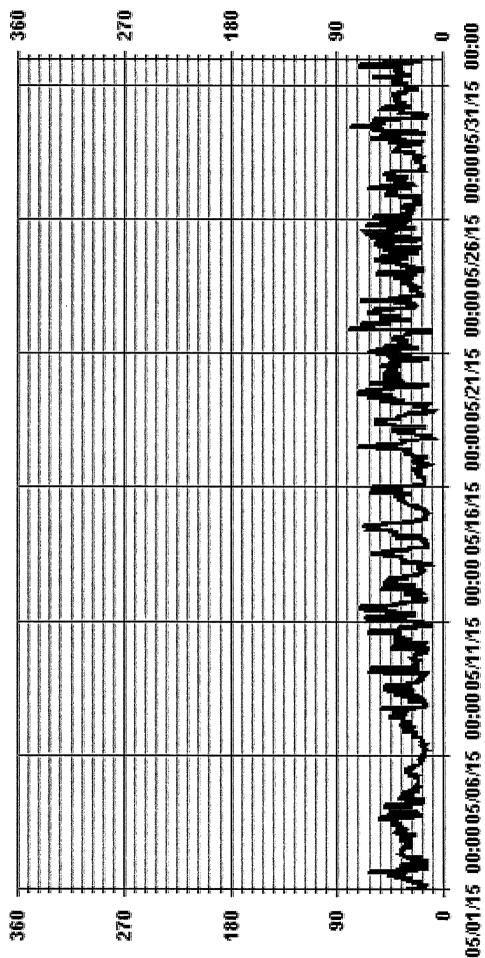
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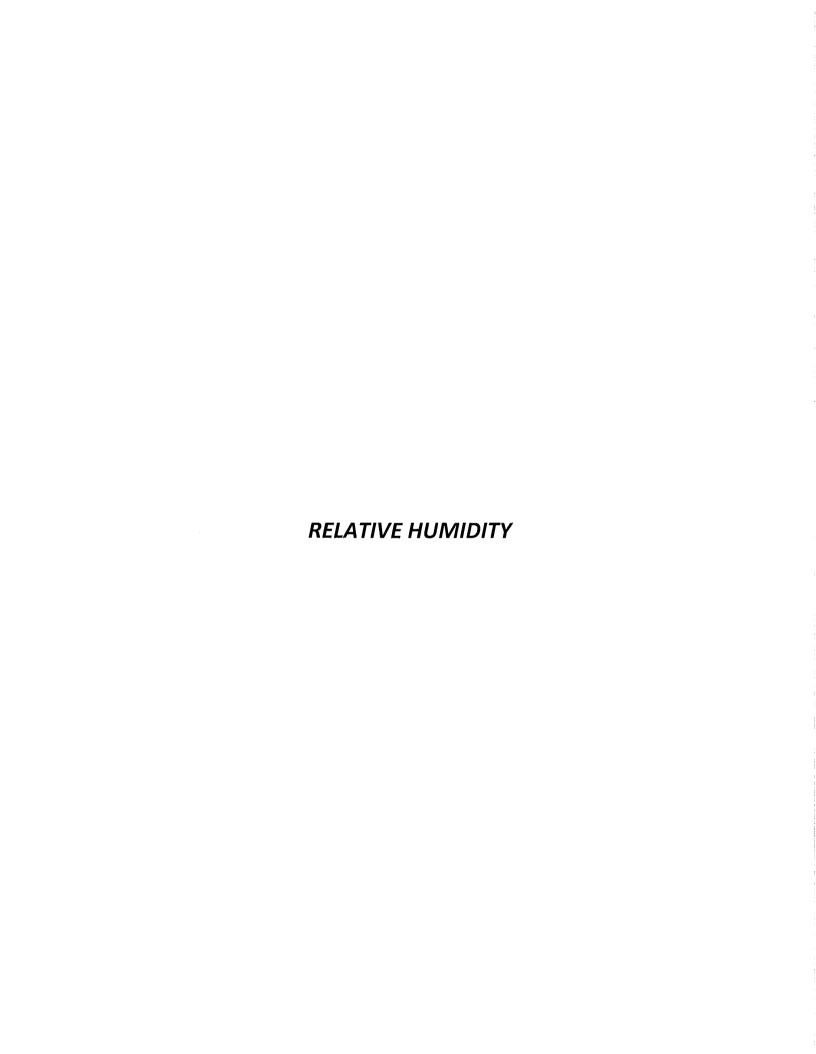
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Of Hour Averages



- LICA30 STOWDIR DEG



JOB # 2833-2015-05-30- C

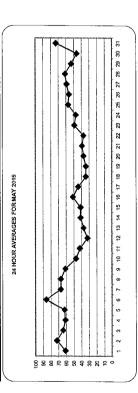


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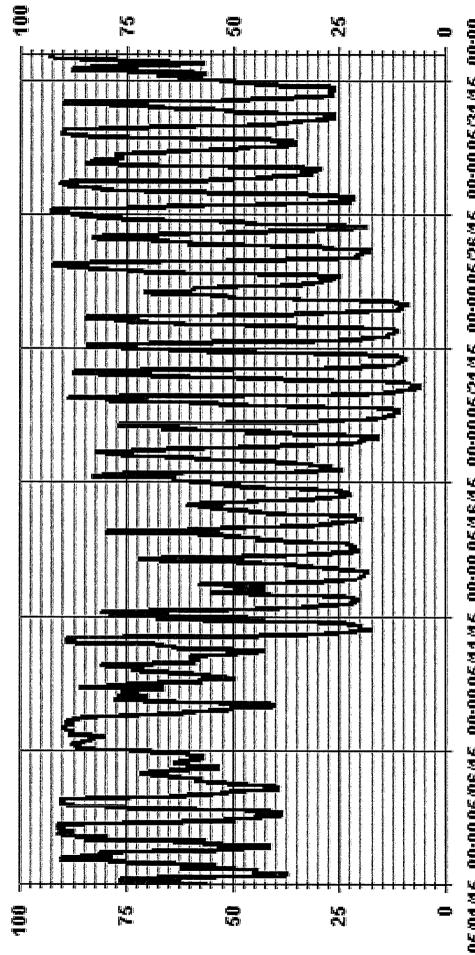
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78 81 81 76 69 54 48	81 76 69 54 48	76 69 54 48	69 54 48	54 48	48		46	41	51	27							8	91			71.9	24
90 91 91 91 85 76	91 91 85 76	91 85 76	85 76	76		23	25	49	25	43							28	75			64.4	24
90 90 85 74 65	90 85 74 65	85 74 65	74 65	65		51	22	53	51	47							26	29			61.4	24
69 71 71 70 65 60	71 70 65 60	70 65 60	92 99	9		99	23	55	9	61							8	61			62.1	24
87 86 86 87 88 86	86 87 88 86	87 88 86	98 88	98		33	83	8	83	81							83	90			85.6	24
89 89 88 86 82 77	88 86 82 77	86 82 77	82 77	77		72	89	62	29	26							63	71			67.0	24
74 75 76 74 72 67 66	76 74 72 67 66	74 72 67 66	. 72 67 66	99 /9	99		98	8	89	75							27	23			6.99	24
73 75 80 81 69 59	80 81 69 59	81 69 59	69 29	59		59	28	28	23	8							63	2			61.4	24
89 89 87 76 44	89 87 76 44	87 76 44	76 44	44		33	8	52	23	77							42	27			47.4	24
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58 69 80 73 61 53 47	80 73 61 53 47	73 61 53 47	61 53 47	53 47	47		33	31	30	23							37	42			41.3	54
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73 82 83 81 68 60	83 81 68 60	81 68 60	98	8		22	45	31	74	77							76	82			56.5	24
92 92 <b>93</b> 92 <b>75</b> 66	93 92 75 66	92 75 66	75 66			7.5	42	38	78	22							26	71			56.2	24
89 90 91 89 72 56	91 89 72 56	89 72 56	72 56			55	42	41	35	31							67	11			58.8	24
76 76 77 77 78 74	77 78 74	77 78 74	78 74			92	9	26	49	46							9	74			61.0	54
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## STATUS FLAG CODES Q - QUALITY ASSURANCE R - RECOVERY X - WACHINE MAJEUNCTION Q - OPERATIONE RROR L - R - COLLECTION ERROR C - CALIBRATION Y. - MAINTENANCE S. - DALLY ZERO/SPAN CHECK p. - POWER FAILURE G - - OUTFOR REPAIR



## MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:	93 85.6	% %	@ HOUR(S)	VAR	ON DAY(S) ON DAY(S) VAR-VARIOUS	26 6	26 , 31 6
			OPERATIONAL TIME: AMD OPERATION UPTIME:	IME:		744 + 100.0 9	HRS %
STANDARD DEVIATION:	24.14		MONTHLY AVERAGE:			52	%



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

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E

- LICA30



JOB # 2833-2015-05-30- C

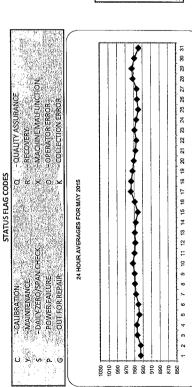


# s in millibar

hourly averages
(BP)
BAROMETRIC PRESSURE

4         4	0:00 1:00 2:00 3:00 4:00 1:00 2:00 3:00 4:00 5:00	0 2:00 3:00 4:0 0 3:00 4:00 5:0	3. 3:00 4:0 7. 4:00 5:0	5:0	0.0	5:00 6:00 6:00 7:00	見ながはる解	7.00 8:00 8:00 9:00	0 9:00 0 10:00	11.00 00.00	12.00	12:00	13:00 1 14:00 1	14:00° 15 15:00° 16	15:00 16:00 16:00 17:00	00 17:00 00 18:00	00 18:00 00 19:00	19-00	20:00	21.00	22:00 23	23:00 DAILY 0:00 MAX.	LY 24-HOUR X. AVG.	NUR 5. RDGS.
435         945         945         945         945         945         945         945         945         945         945         945         945         945         945         945         945         944 <td>936 936 936 936 936 937 937</td> <td>936 936 936 936 936 937 937</td> <td>936 936 936 937 937</td> <td>936 936 937 937</td> <td>936 937 937</td> <td>937 937</td> <td>937</td> <td></td> <td></td> <td>937</td> <td>936</td> <td>936</td> <td>-</td> <td></td> <td></td> <td>-</td> <td>-</td> <td>-</td> <td>933</td> <td>932</td> <td></td> <td></td> <td></td> <td></td>	936 936 936 936 936 937 937	936 936 936 936 936 937 937	936 936 936 937 937	936 936 937 937	936 937 937	937 937	937			937	936	936	-			-	-	-	933	932				
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947         948         948         949 <td>939 939 939 941 941 942 943 944</td> <td>939 939 941 941 942 943 944</td> <td>939 941 941 942 943 944</td> <td>941 942 943 944</td> <td>942 943 944</td> <td>943 944</td> <td>44</td> <td></td> <td>4 1</td> <td>945</td> <td>945</td> <td>945</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>944</td> <td>944</td> <td></td> <td></td> <td></td> <td></td>	939 939 939 941 941 942 943 944	939 939 941 941 942 943 944	939 941 941 942 943 944	941 942 943 944	942 943 944	943 944	44		4 1	945	945	945							944	944				
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945         945         945         945         944         943         943         943         943         943         943         943         944         944         944         943         943         943         943         943         943         943         943         943         943         944         944         944         943         944         943         944         943         944         943         944         943         944 <td>946 946 946</td> <td>946 946 946 947 948</td> <td>946 946 947 948</td> <td>946 947 948</td> <td>947 948</td> <td>948</td> <td></td> <td>00</td> <td>948</td> <td></td> <td>947</td> <td>947</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>943</td> <td>943</td> <td></td> <td></td> <td></td> <td></td>	946 946 946	946 946 946 947 948	946 946 947 948	946 947 948	947 948	948		00	948		947	947							943	943				
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940         940         939         939         939         939         939         939         939         939         939         939         940         939         939         939         940         940         941         943         943         943         943         943         943         943         943         943         944 <td>946 946 945 945</td> <td>946 945 945 946 946 946</td> <td>945 945 946 946 946</td> <td>946 946 946</td> <td>946 946</td> <td>946</td> <td></td> <td>7</td> <td>947</td> <td>946</td> <td>942</td> <td>945</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>941</td> <td>941</td> <td></td> <td></td> <td></td> <td></td>	946 946 945 945	946 945 945 946 946 946	945 945 946 946 946	946 946 946	946 946	946		7	947	946	942	945							941	941				
943         944         944         943         943         943         943         943         943         943         943         943         943         944 <td>656 656 656 656</td> <td>656 656 656 656 656</td> <td>939 939 939 939</td> <td>939 939 939</td> <td>939 939</td> <td>939</td> <td></td> <td>o.</td> <td>940</td> <td>940</td> <td>940</td> <td>626</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>938</td> <td>938</td> <td></td> <td></td> <td></td> <td></td>	656 656 656 656	656 656 656 656 656	939 939 939 939	939 939 939	939 939	939		o.	940	940	940	626							938	938				
944         942         943         940         940         941         942         943         943         944         944         944         944         943           953         954	656 656 656	939 939 940 941 942	939 939 940 941 942	940 941 942	941 942	942	-	2	943		943	944			-				943	943				
953         954 <td>943 943 943 944 944 944 944</td> <td>943 943 943 944 944 944 944</td> <td>943 943 944 944 944 944</td> <td>944 944 944</td> <td>944 944 944</td> <td>944 944</td> <td>944</td> <td></td> <td>944</td> <td>944</td> <td>944</td> <td>943</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>942</td> <td>943</td> <td></td> <td></td> <td></td> <td></td>	943 943 943 944 944 944 944	943 943 943 944 944 944 944	943 943 944 944 944 944	944 944 944	944 944 944	944 944	944		944	944	944	943							942	943				
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939         938         937         937         936         935         935         935         935         937         938 <td>951 950 949 949 950 950 950</td> <td>950 949 949 950 950 950 950</td> <td>949 949 950 950 950 950</td> <td>950 950 950 950</td> <td>950 950 950</td> <td>950 950</td> <td>920</td> <td></td> <td>950</td> <td>950</td> <td>949</td> <td>949</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>944</td> <td>944</td> <td></td> <td></td> <td></td> <td></td>	951 950 949 949 950 950 950	950 949 949 950 950 950 950	949 949 950 950 950 950	950 950 950 950	950 950 950	950 950	920		950	950	949	949							944	944				
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	945 945 946 946 947	945 945 946 946 947	945 945 946 946 947	946 946 947	946 947	947	-	7	947		947	947				-			945	945		45		

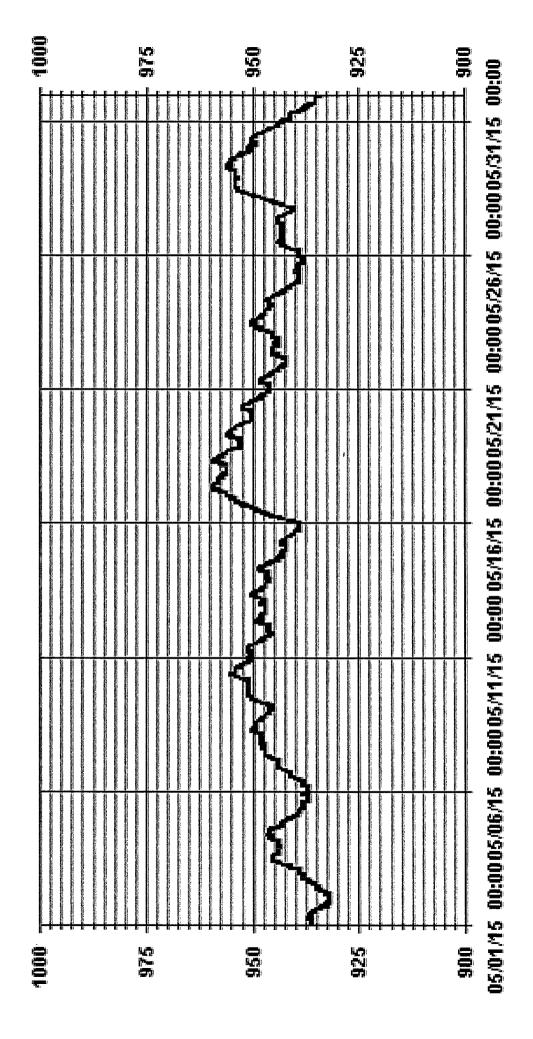
## STATUS FLAG CODES



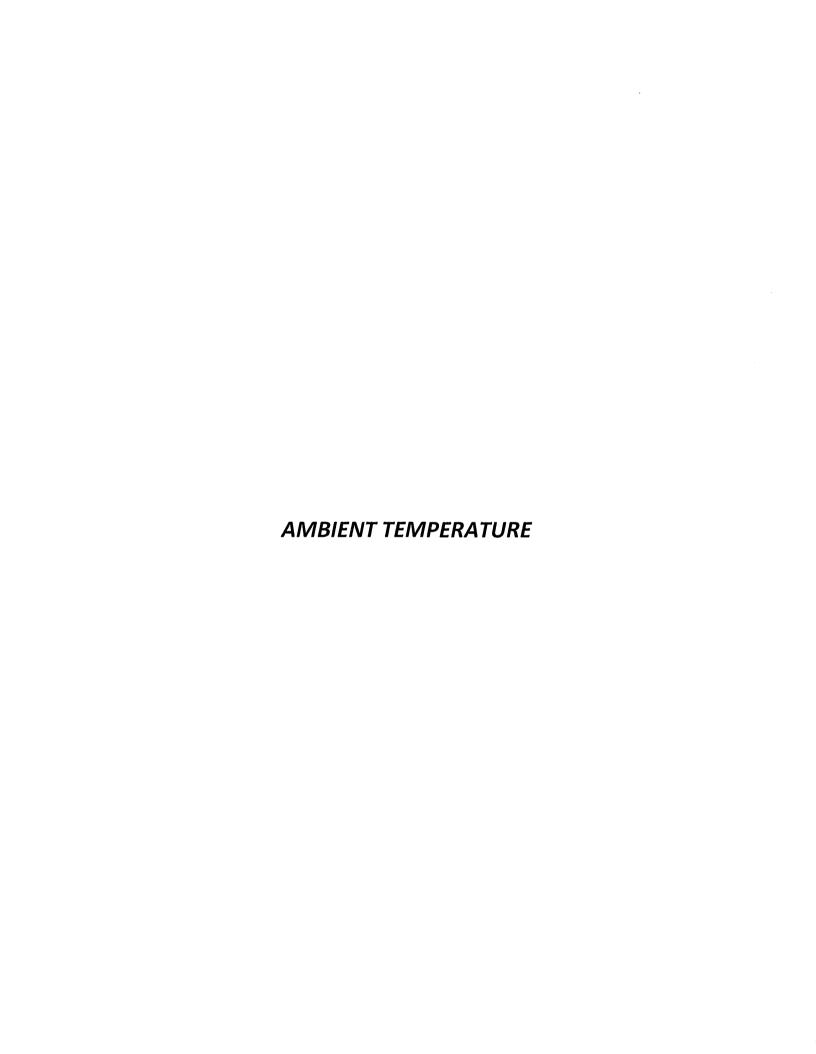
## MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:	959	Z Z	@ ноur(s)	VAR	ON DAY(S) ON DAY(S) VAR-VARIOUS	17	17,18
			OPERATIONAL TIME: AMD OPERATION UPTIME:	1E: UPTIME:		744	HRS
STANDARD DEVIATION:	5.99		MONTHLY AVERAGE:	3E:		946 MB	MB

Of Hour Averages



- LICA30 BP MB



JOB # 2833-2015-05-30- C



# AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

	RDGS	24	24	24	24	74	24	24	54	24	24	24	24	24	54	24	54	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
	24-HOUR AVG.	7.2	5.5	5.4	5.0	6.4	1.1	2.4	4.6	6.8	6.8	9.0	12.1	10.8	11.7	13.4	7.3	5.1	9.3	12.6	14.5	15.4	17.4	16.4	18.2	16.7	14.7	14.1	8.9	7.9	12.2	11.8		
	DAILY	13.3	12.8	11.6	12.2	10.0	4.5	7.6	10.6	11.1	15.1	17.6	19.1	17.8	19.3	20.1	11.3	13.5	18.7	22.4	24.6	25.2	27.8	24.8	27.7	28.2	22.6	24.9	12.3	16.2	19.8	19.7		
	23:00	0.3	2.0	0.4	4.8	5.5	9,0	0.0	4.1	2.9	3.6	5.9	8.4	8.0	8,5	11.7	-2.1	2.2	3.0	4.2	5.5	6.5	11.1	8.7	12.6	10.1	4.7	8.8	-1.1	4.7	11.1	8.4	12.6	5.3
	22:00	1.5	1.4	2.7	5.6	6.3	9.0	4.8	5.1	3.4	0.3	5.1	9.4	7.6	9.5	11.9	-0.2	21	3.6	6.1	7.4	8.0	12.6	10.1	12.5	11.6	6.1	9.5	0.0	6.2	8.6	8.7	12.6	2.8
	21:00		1.1	3.6	5.9	9.9	6.0	-0.1	6.5	3.7	2.6	6.9	10.4	7.0	8.7	13.0	1.2	2.8	5.9	8.3	10.5	11.5	15.6	11.7	15.7	11.2	7.9	10.6	2.2	6.5	10.2	8.3	15.7	7.1
	18:00 19:00 20:00 ZI:00	:	2.6	5.0	8.9	7.0	0.0	1.6	7.1	4.1	5.4	8.8	11.1	9.1	10.0	14.0	3,4	5.5	9.4	12.5	14.5	15.1	17.0	14.4	18.5	13.0	11.6	12.3	5.5	8.0	12.0	10.2	18.5	9.1
	19:00	.1	4.0	7.1	8.0	7.8	0.3	4.2	8.0	7.9	10.4	12.7	13.5	12.3	14.5	15.8	5,4	8.6	14.8	18.0	19.6	20.6	22.6	19.0	22.2	15.9	15.3	17.0	9.6	11.8	15.2	12.3	22.6	12.4
	18:00		6.5	8.7	9.6	9.1	0.5	7.2	9.6	10.0	13.7	15.5	16.2	15.8	17.3	17.1	7.2	12.9	17.4	20.8	22.8	23.7	26.1	22.9	24.1	18.4	18.5	23.6	11.3	14.9	17.9	13.5	26.1	15.0
	17:00	7	4.7	9.5	11.1	9.3	9.0	7.6	10.6	10.7	14.7	16.7	17.7	16.1	18.4	18.2	8.5	13.5	18.3	21.6	23.8	24.6	26.8	24.1	25.7	18.9	19.8	24.9	11.9	15.2	19.1	16.6	26.8	15.8
0	11:00 12:00 13:00 14:00 15:00 16:00 17:00 17:00 18:00	9	4.0	10.4	12.2	9.4	6.0	7.6	10.3	11.1	15.1	16.8	18.5	17.6	18.8	18.3	9.8	13.5	18.4	22.4	24.4	25.2	27.7	24.8	27.4	19.4	20.5	24.8	12.3	15.9	19.8	19.5	27.7	16.4
	15.00	1	8.9	10.5	12.1	8,9	0.8	6.7	8.8	10.9	15.1	17.6		17.5	19.2	18.9				22.4		25.2	27.8			23.7	20.9	24.3	11.6	16.2	19.2	19.7	27.8	16.6
	14.00	3	8.4	11.6	12.0	8.5	1.1	6.4	9.4	10.2	14.9	17.5	19.1	17.8	19.3	20.1	10.8	13.4	18.3	22.4	24.6		27.7	23.8	26.6	25.8	21.1	23.4	11.5	15.5	19.1	19.3	27.7	16.7
	13:00		10.7	6.6	11.1	8.3	1.6	6.1	8.3	9.3	14.9	17.2	18.5	17.1	18.3	19.0	10.6	12.3	18.7	22.0	24.2	24.9	27.6	23.7	27.6	28.2	21.5	23.5	10.5	15.2	18.9	15.7	28.2	16.4
· -	12:00	6	9.3	10.8	9.4	8.7	1.5	5.7	5.4	8.5	14.6	15.9	18.8	16.9	17.4	19.1	10.4	11.4	17.5	21.2	23.9	24.2	27.2	24.0	27.2	27.1	22.6	23.3	9.1	13.6	19.4	12.2	27.2	15.8
	12:00.	11.5	10.9		7.0	8.6	1.4	5.5	8.0	9.0	13.7	15.5	18.4	16.1	16.4	18.1	10.1	9.6	16.9	20.2	22.9		26.7		27.1	26.6	21.8	22.1	7.8	13.2	18.2	10.7	27.1	15.2
	8:00 9:00 10:00 9:00 10:00 11:00	13.3	12.8	9.2	6.2	9.6	1.2	5.0	4.5	9.1	12.7		17.4	15.7	16.1	17.2	8.9	7.9	15.2	19.1	22.0		25.0		26.7	24.1	20.7	20.3	6.0	12.6	17.5	9.3		14.3
	9:00	11.4		8.4	5.5	10.0	1.1	3.1	2.4	9.0	11.4		15.8	14.7	14.9	15.6	5.5	5.8		18.9	21.4		23.7		25.3	21.2	20.1	18.4	5.3	12.4	•			13.1
	8:00	10.9	10.8	6.6	3.6	8.0	0.7	2.1	4.5	8.9	9.4		13.2		12.6			4.1		16.5	19.7		20.4		21.8	17.6	18.5	16.1	4.9	10.5	14.0			11.4
	7.00				2.6	6.4	0.7	0.9			7.1					11.9					16.4		17.5		17.2	14.8	16.6	13.6	4.7	8.1	11.9		17.5	
	5:00 6:00	4.1	4.7	2.2																							Ħ		4.4		9.4	11.3		
	5.00	1.6	5.6		-1.7	1.9																						3.6	4.3			9.9	10.0	3.2
	4:00	1.1	1.1	-0.9	-3.2	1.1	1.6	-2.2	-1.0	2.5	4.6	-3.3	3.1	-0.5	0.0	5.5	9.5	4.8	4.1	-1.9	-0.5	0.9	2.0	8.5	5.2	8.9	7.3	9.0	5.0	5.3	-0.7	7.8	9.5	1.3
	3.00	1.7	1.6	-0.8																				6.7						-3.6	-0-4	9.0	11.2	1.8
			2.5	0.0	-2.7	1.5	2.3																	7.3						-3.1	1.7		11.2	
	2.00	1	0.8		•		3.2																	8.2						-2.7			11.3	
	0:00		0.4	1.5	-1.3	3.8	4.5	6.0				4.9	7.5	7.1	7.0	7.0	11.3	-3.5	-1.2	2.3	2.8	4.1	5.3	9.8	7.5	12.0	10.4	3.6	8.0	-2.2	5.4	10.9	12.0	—
MST	HOUR START	DAY	7	ത	4	ęω	9	7	œ	σ	10	T.	12	13	14	15	16	17	<u>18</u>	19	70	21	22	Ŋ	24	23	26	72	28	.29	ଛ	31	HOURLY MAX	HOURLY AVG

## MONTHLY SUMMARY

- MACHINE MALEUNCTION - OPERATOR ERROR

- MAINTENANCE - DAILY ZERO/SPAN CHECK - POWERFAILURE

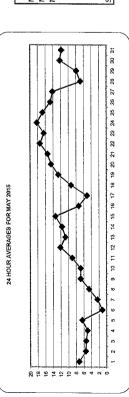
OUT FOR REPAIR

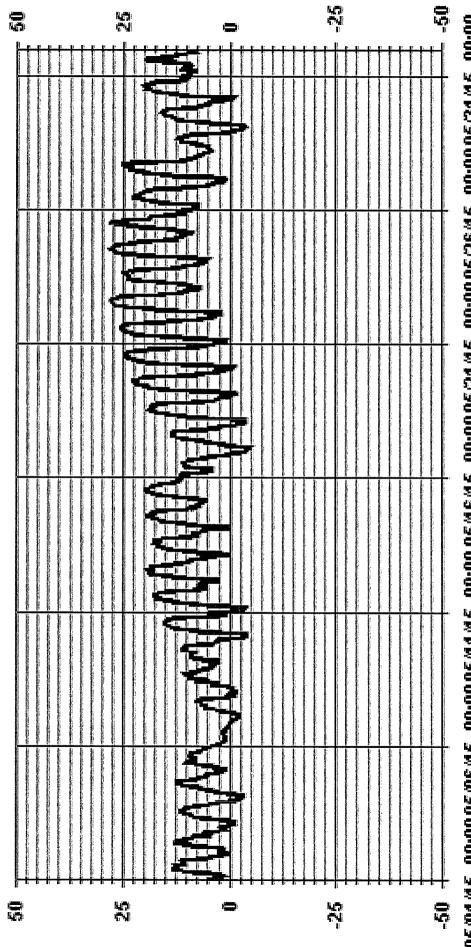
- COLLECTION ERROR

Q -QUALITY ASSURANCE R - RECOVERY

STATUS FLAG CODES

MINIMUM 1-HR AVERAGE:	4.8		°C @ HOUR(S)	4	ON DAY(5)	17	
MAXIMUM 1-HR AVERAGE:	28.2	ς 2	@ HOUR(S)	13	ON DAY(S)	25	
MAXIMUM 24-HR AVERAGE:	18.2	ς υ			ON DAY(S)	24	
					VAR-VARIOUS		
			OPERATIONAL TIME:	ME:		744	HRS
			AMD OPERATION UPTIME:	V UPTIME:		100.0	%
STANDARD DEVIATION:	7.71		MONTHLY AVERAGE:	4GE:		10.0 ℃	ပူ

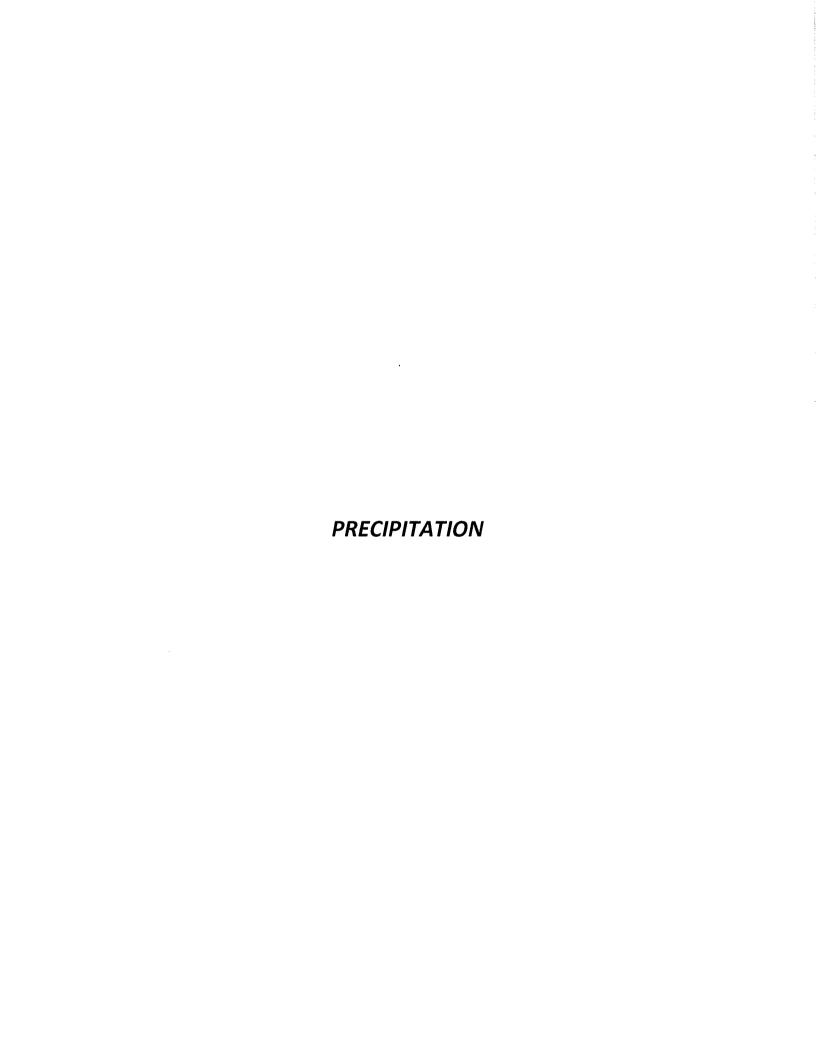




05/01/15 00:00 05/06/15 00:00 05/11/15 00:00 05/16/15 00:00 05/21/15 00:00 05/26/15 00:00 05/31/15 00:00

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## hourly averages (mm)

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HOUR START	0:00	0:00 1:00 0:59 1:59	2:00 3:00 4:00 2:59 3:59 4:59	90 55	.00 S:	5:00 6: 5:59 6:	9 S	7.00 8:0 7.59 8:1	8.00 9.00 8.59 9.59	10.00	11:00	12:00	13:00	14.00	15:00 16:00 15:59 16:59	00 17:00 59 17:59	30 18:00 59 18:59	0.21.00	20:00	21:00	22:00 23:00 22:59 23:59	00 DAILY 59 MAX	.y 24-HOUR K. AVG.		RDGS.
DAY	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				<b>-</b>
2	0.0	0.0	0.0	0.0	0.0		0.0	0.0 0.0	0.0	0.0	0.2	0.1	0.5	0.1				0.0	0.0	0.0		0 1.0	0.1		54
္ကက		0.0					0 0.1	.0 0.			0.0	0.0	0.0	0.0					0.0	0.0	0.0 0.0				4
4	0.0	0.0				0.0					0.0	0.0	0.0	0.0					0.0	0.0					4
'n	0.0	0.0									0.0	0.0	0.0	0.0	_		_		0.0	0.0					4
ú	0.0	14									0.0	0.0	0.0	0.1					9.0	9.0					4
7	0.5	0.2						0.1 0.0			0.0	0.0	0.0	0.0					0.0	0.0					4
00	0.0	0.0						0.0 0.5			0.1	1.1	0.0	0.0					0.0	0.0					4
6	0.0	0.0						0.0 0.0			0.0	0.0	0.0	0.0					0.0	0.0					4
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	0.0	0.0 0.0				4
11	0.0	0.0						0.0 0.0	0.0		0.0	0.0	0.0	0.0	0.0 0.0			0.0	0.0	0.0					24
12	0.0	0.0						0.0 0.0	.0 0.0		0.0	0.0	0.0	0.0	0.0 0.0	0.0		0.0	0.0	0.0	0.0 0.0				24
13	0.0	0.0				0.0		0.0 0.0			0.0	0.0	0.0	0.0	0.0 0.0				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					24
15	0.0	0.0						0.0 0.0	0.0		0.0	0.0	0.0	0.0					0.0	0.0					24
16	0.0	0.0						0.0 0.0	0.0		0.0	0.0	0.0	0.0					0.0	0.0		0 0.4			24
17	0.0	0.0						0.0 0.0	0.0		0.0	0.0	0.0	0.0	0.0				0.0	0.0					24
81	0.0	0.0						0.0 0.0			0.0	0.0	0.0	0.0					0.0	0.0					54
19	0.0	0.0						0.0 0.0			0.0	0.0	0.0	0.0					0.0	0.0					4
.20	0.0	0.0						0.0 0.0			0.0	0.0	0.0	0.0					0.0	0.0		0.0		0.0	4
21	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					4
23	0.0	0.0				0.0		0.0 0.0			0.0	0.0	0.0	0.0					0.0	0.0					4
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					4
25	0.0	0.0	0.0			0.0		0.0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0			0.0	0.0	0.0	0.0 0.0			0.0	4
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				0.0	0.0	0.0 0.0				4
27	0.0	0.0	0.0			0.0	0 0.	0.0	0.0		0.0	0.0	0.0	0.0					0.1	0.8		0.9			4
78	0.0	0.0	0.0	0.0		0.0		0.0 0.0	0.0		0.0	0.0	0.0	0.0					0.0	0.0	0.0 0.0				4
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	0.0			0.0		4
8	0.0	0.0	0.0			0.0		0.0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0		0.0		0.0	0.0					74
k K	0.0	0.0					0 0.	1.7	7 1.4	3.3	1.1	9.0	0.0	0.0					0.0	0.0		ı	0.5	5 24	4
HOURLY MAX	970	1.4	0.3 0.	0.1 0.	0.1 0.	0.1 0.	0.4 0.	0.1 1.7	7 1.4	3.3	1.1	1.1	0.5	0.1	0.2 1.2	2 0.4	1 3.1	6.0	9.0	0.8	0.6 0.	0.3			
HOURLY AVG	0.0	0.1						_			0.0	0.1	0.0	0.0					0.0	0.0		0.0			

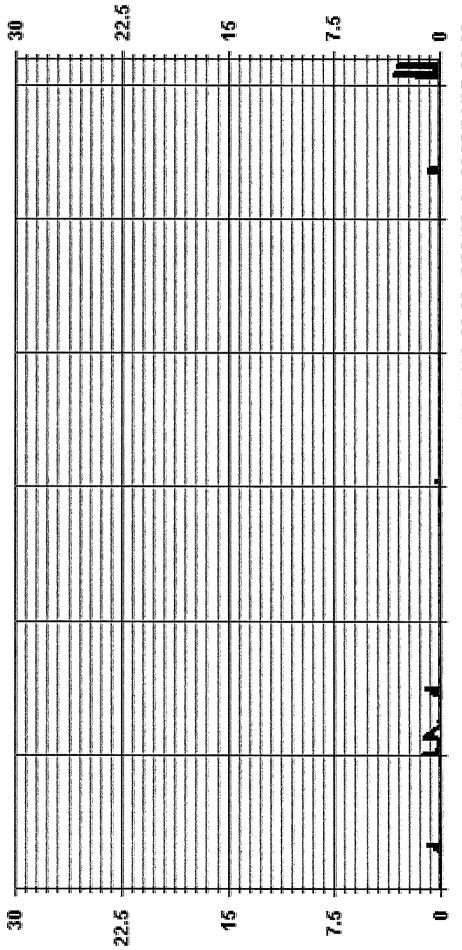
## STATUS FLAG CODES

C -CALIBRATION	24 HOUR AVERAGES FOR MAY 2015  05  04  05  05  06  07  07  07  07  07  07  07  07  07
E 4 4 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	

## MONTHLY SUMMARY

MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE: MONTHLY TOTAL 27.1	M	3.3	M M M	@ HOUR(S)	10	ON DAY(S) ON DAY(S) VAR-VARIOUS	31 31	
			- `	OPERATIONAL TIME: AMD OPERATION UPTIME:	E: JPTIME:		744 100.0	% HRS
STANDARD DEVIATION:	0.23		_	MONTHLY AVERAGE:	نن		0.0	ΣM

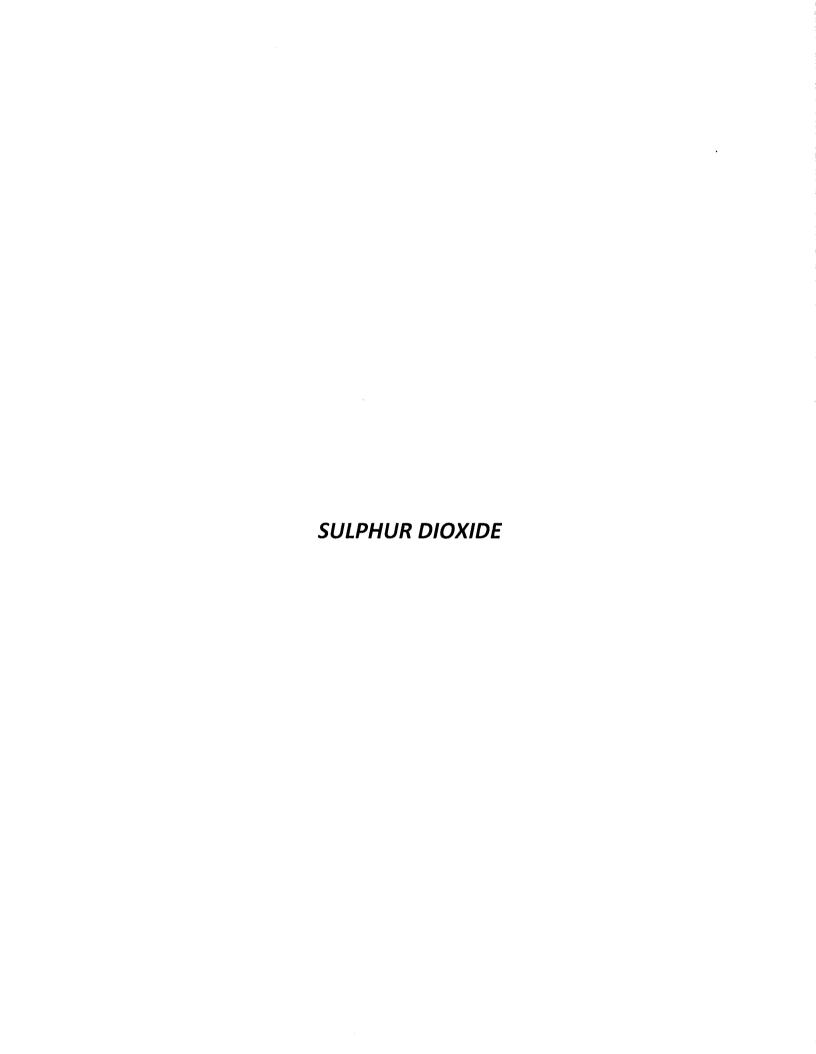
Of Hour Averages



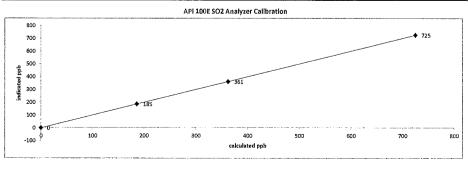
05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

- LICA30 PRECIP MM

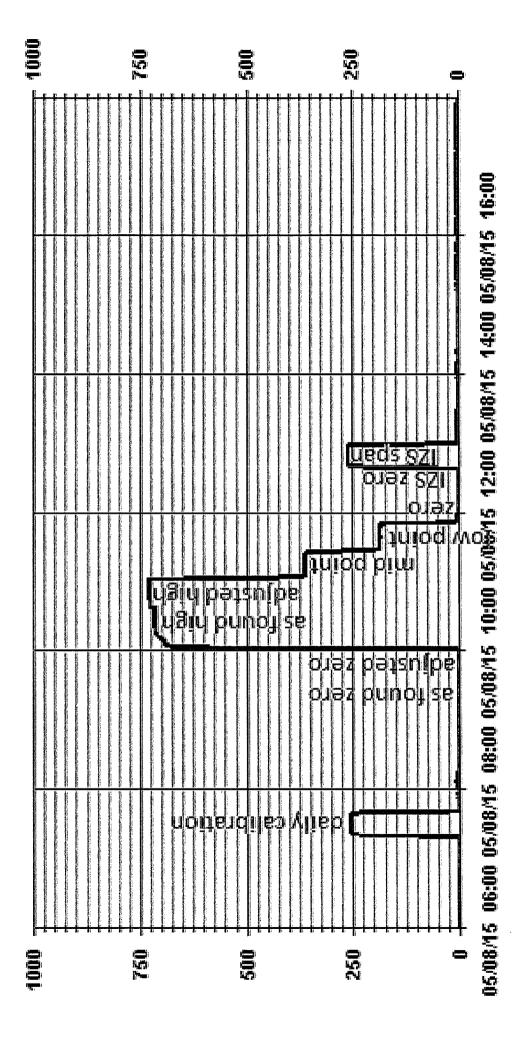
### APPENDIX II ANALYZER CALIBRATION RESULTS



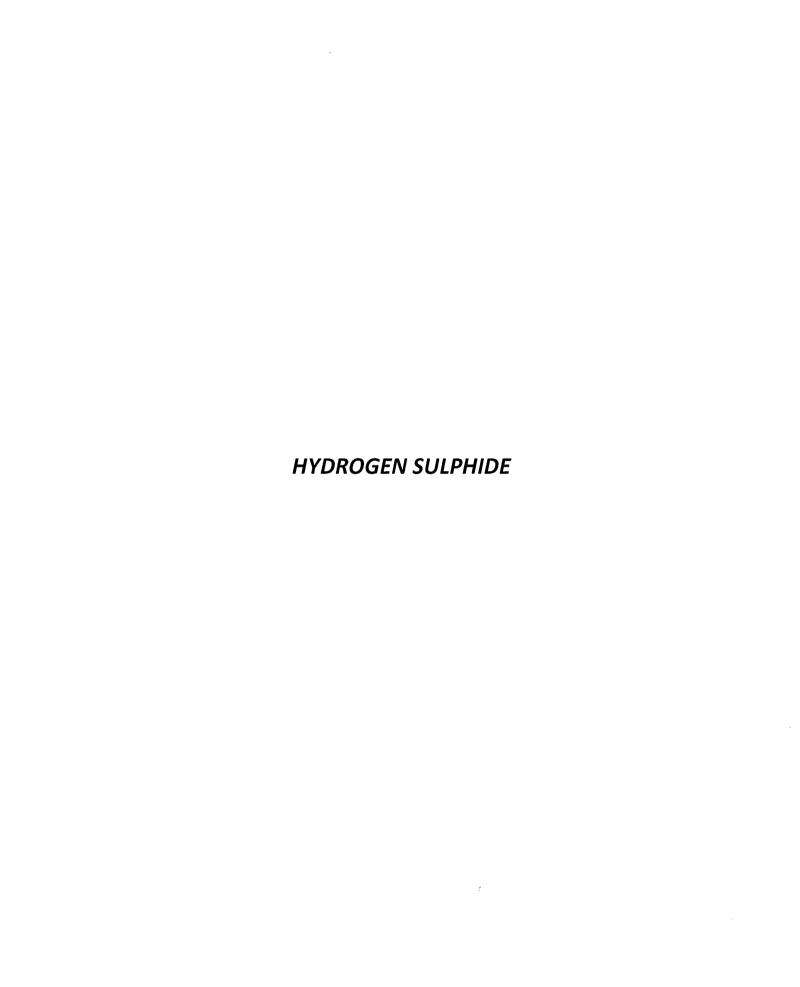
Date:	8-	May-15	_	Start	t/End Time (mst):	9:02 / 13:05	_
Company:		LICA	-	Cali	ibration Purpose:	Monthly Calibration	_
Station Name/Location:		laskwa Yakupov	-		r Make & Model: onverter Serial #:	NA NA	
Performed by: Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :	Alex	SO2	-		onverter Seriai #:   Gas Expiry Date:	NA 12-Aug-17	-
			<u>.</u>				-
Analyzer: Serial Number:		508		Range ppb:	1000		
Last Calibration Date:		23-Apr		As Found C.F.	1.013		
Previous Cal High Point C.F.:		1,00	)	New C.F.:	1.004		
		As four	nd:		As left:		
	SLOPE:	0,99		SLOPE:	1,007		
	OFFSET:	124.	9	OFFSET:	123.3		
	HVPS:	495		HVP5:	495		
	ELL TEMP:	50,0 28,6		RCELL TEMP:	50.0 29.9		
	BOX TE <b>M</b> P: IMT TE <b>M</b> P:	7.7		BOX TEMP: PMT TEMP:	7.7		
	IZS TEMP:	45.0		IZS TEMP:	45,0	•	
	TEST:	NA		TEST:	NA NA		
	STABIL:	0.0 24.8		STABIL:	0,1		
	PRES: SAMP FL:	587		PRES: SAMP FL:	24.7 587		
	PMT:	105.6		PMT:	109.0	<del></del>	
N	ORM PMT:	123,		NORM PMT:	125.2		
	UV LAMP:	2961.		UV LAMP:	2961,8		
LAI	MP RATIO: STR. LGT	92.4 62,2		LAMP RATIO: STR, LGT	92.4 62.1		
	DRK PMT:	11.6		DRK PMT:	12.2	<del></del>	
	DRK LMP:	-1.8		DRK LMP:	-1.8		
Inte	rnal Span:	262.	1	Internal Span:	259,4		
Calibrator:					Calibrator Flov	v Targets:	
Flow Meter ID's:		NA	_	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
Make & Model:		onics 6100		zero	4995	0	4995
Serial #: Cal Gas Cylinder I.D. # :		4760 42475	•	high mid	4916 4957	78 38	4994 4995
Cal Gas Conc. (ppm):		50.3	-	low	4975	19	4994
			-	, , , , , , , , , , , , , , , , , , , ,			
Calibration:				<del></del>			
Calibration:	ow Rates (	cc/min)		Calculated Concentration:	Indicated Concer	ntration: Corre	tion Factors:
Calibrator Fl Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	ntration: Corre	
Calibrator Fl Point as found zero	Diluent 4994	Cal Gas 0.0	4994	(ppb) 0	(ppb) -1.0	ntration: Corre	NA
Calibrator Fi Point as found zero adjusted zero	0fluent 4994 4994	Cal Gas 0.0 0.0	4994 4994	(ppb) 0 0	(ppb) -1,0 0.0	ntration: Corre	NA NA
Calibrator Fl Point as found zero	Diluent 4994	Cal Gas 0.0	4994	(ppb) 0	(ppb) -1.0	ntration: Corre	NA
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid	4994 4994 4994 4922 4922 4958	Cal Gas 0.0 0.0 71.98 71.98 35.98	4994 4994 4993 4993 4994	(ppb) 0 0 725.1 725.1 362.4	(ppb) -1.0 0.0 716.0 725.0 361.0	ntration: Corre	NA NA 1.013 1.000 1.004
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4922 4922 4958 4975	Cal Gas 0.0 0.0 71.98 71.98 35.98 18.50	4994 4994 4993 4993 4994 4994	(ppb) 0 0 725.1 725.1 362.4 186.4	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0	ntration: Corre	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid	4994 4994 4994 4922 4922 4958	Cal Gas 0.0 0.0 71.98 71.98 35.98	4994 4994 4993 4993 4994	(ppb) 0 0 725.1 725.1 362.4	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0 0.0	ntration: Corre	NA NA 1.013 1.000 1.004
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4922 4922 4958 4975	Cal Gas 0.0 0.0 71.98 71.98 35.98 18.50	4994 4994 4993 4993 4994 4994 4994	(ppb) 0 0 725.1 725.1 362.4 186.4 0	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0 0.0 Avera		NA NA 1.013 1.000 1.004 1.007
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4922 4922 4958 4975	Cal Gas 0.0 0.0 71.98 71.98 35.98 18.50	4994 4994 4993 4993 4994 4994 4994	(ppb) 0 0 725.1 725.1 362.4 186.4	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0 0.0 Avera	sge C.F.=	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4922 4922 4958 4975 4994	Cal Gas 0.0 0.0 71.98 71.98 35.98 18.50	4994 4993 4993 4994 4994 4994	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0	(ppb) -1,0 0.0 716,0 725,0 361,0 185,0 0.0 Avera	age C.F.=	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4922 4922 4958 4975 4994	Cal Gas 0.0 0.0 71.98 71.98 35.98 18.50 0.00	4994 4993 4993 4994 4994 4994	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0 0.0 Avera	sge C.F.=	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4992 4922 4928 4975 4994	Cal Gas 0.0 0.0 71.98 71.98 35.98 18.50 0.00	4994 4993 4993 4994 4994 4994 Linear F Slope = sll scale)=	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0 segression/Calibration Results 1.000 1.000 0.08%	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S.	Pass/Fail ? PASS PASS PASS	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4992 4922 4928 4975 4994	Cal Gas  0.0  0.0  71.98  71.98  35.98  18.50  0.00	4994 4993 4993 4994 4994 4994 Linear F Slope = sll scale)=	(ppb) 0 0 725.1 725.1 362.4 186.4 0 stegression/Calibration Results 1,000 1,000	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0 0.0 Avera	age C.F.=  Pass/Fall ?  PASS PASS	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4992 4922 4928 4975 4994	Cal Gas  0.0  0.0  71.98  71.98  35.98  18.50  0.00  orrelation Coe	4994 4993 4993 4994 4994 4994 Linear F Slope = stl scale)= st cal	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0 segression/Calibration Results 1.000 1.000 0.08%	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fail ? PASS PASS PASS	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4992 4922 4928 4975 4994	Cal Gas  0.0  0.0  71.98  71.98  35.98  18.50  0.00  orrelation Coe recept as % of full in C.F. from last	4994 4993 4993 4994 4994 4994 Linear F ffecient = Slope = slill scale)= st cal	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0 segression/Calibration Results 1.000 1.000 0.08% -1.27%	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0 0.0 Avera  S: LIMITS > or = 0.995 5.1.15 ± 3% F.S. ± 15% pplication:	Pass/Fail ? PASS PASS PASS PASS	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid Iow	Diluent 4994 4994 4992 4922 4928 4975 4994	Cal Gas  0.0  0.0  71.98  71.98  35.98  18.50  0.00  orrelation Coe recept as % of full in C.F. from last	4994 4993 4993 4994 4994 4994 Linear F ffecient = Slope = slill scale)= st cal	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0 stegression/Callibration Results 1.000 1.000 0.08% -1.27%	(ppb) -1.0 0.0 716.0 725.0 361.0 185.0 0.0 Avera  S: LIMITS > or = 0.995 5.1.15 ± 3% F.S. ± 15% pplication:	Pass/Fail ? PASS PASS PASS PASS	NA NA 1.013 1.000 1.004 1.007
Point as found zero adjusted zero as found high adjusted high mid low	994 4994 4992 4922 4922 4958 4975 4975 C	Cal Gas  0.0  0.0  71.98  71.98  35.98  18.50  0.00  orrelation Coe recept as % of full in C.F. from last	4994 4993 4993 4994 4994 4994 Linear F ffecient = Slope = slill scale)= st cal	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0 segression/Calibration Results 1.000 1.000 0.08% -1.27%	(ppb) -1.0 0.0 716.0 725.0 361.0 0.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication:	Pass/Fail ? PASS PASS PASS PASS	NA NA 1.013 1.000 1.004 1.007
Calibrator Fl.  Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	994 4994 4992 4922 4922 4958 4975 4994	Cal Gas  0.0  0.0  71.98  71.98  35.98  18.50  0.00  orrelation Coe recept as % of full in C.F. from last	4994 4993 4993 4994 4994 4994 Linear F Slope = slil scale)= st cal	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0 tegression/Callibration Results 1.000 1.000 0.08% -1.27%	(ppb) -1.0 0.0 716.0 725.0 361.0 0.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication:	Pass/Fail ? PASS PASS PASS PASS	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi  Point  as found zero  adjusted zero  as found high  adjusted high  mid  Iow  calibrator zero	994 4994 4992 4922 4922 4958 4975 4994	Cal Gas  0.0  0.0  71.98  71.98  35.98  18.50  0.00  orrelation Coe recept as % of full in C.F. from late  Con  **run conve	4994 4993 4993 4994 4994 4994 Linear F Slope = slil scale)= st cal	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0 tegression/Callibration Results 1.000 1.000 0.08% -1.27%	(ppb) -1.0 0.0 716.0 725.0 361.0 0.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication:	Pass/Fail ? PASS PASS PASS PASS	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi  Point  as found zero  adjusted zero  as found high  adjusted high  mid  low  calibrator zero	994 4994 4992 4922 4922 4958 4975 4994	Cal Gas  0.0  0.0  71.98  71.98  35.98  18.50  0.00  orrelation Coe recept as % of full in C.F. from late  Con  **run conve	4994 4993 4993 4994 4994 4994 Linear F Slope = slil scale)= st cal	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0 tegression/Callibration Results 1.000 1.000 0.08% -1.27%	(ppb) -1.0 0.0 716.0 725.0 361.0 0.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication:	Pass/Fail ? PASS PASS PASS PASS	NA NA 1.013 1.000 1.004 1.007
Calibrator Fi  Point  as found zero  adjusted zero  as found high  adjusted high  mid  low  calibrator zero	994 4994 4992 4922 4922 4958 4975 4994	Cal Gas  0.0  0.0  71.98  71.98  35.98  18.50  0.00  orrelation Coe recept as % of full in C.F. from late  Con  **run conve	4994 4993 4993 4994 4994 4994 Linear F Slope = slil scale)= st cal	(ppb) 0 0 725.1 725.1 362.4 186.4 0 0 tegression/Callibration Results 1.000 1.000 0.08% -1.27%	(ppb) -1.0 0.0 716.0 725.0 361.0 0.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication:	Pass/Fail ? PASS PASS PASS PASS	NA NA 1.013 1.000 1.004 1.007



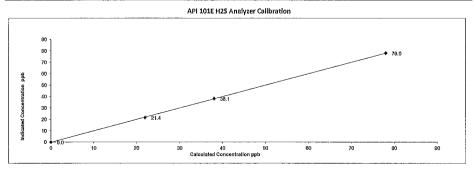
of Minute Averages



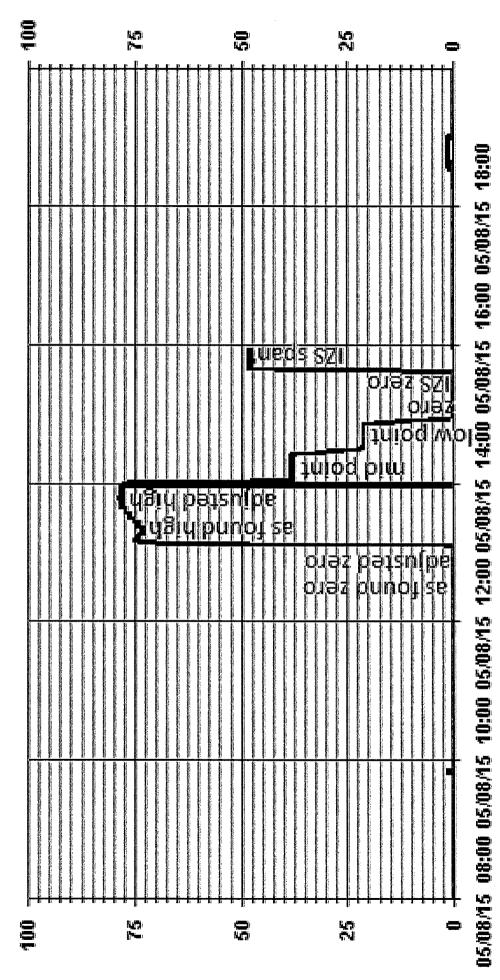
- LICA30 SO2\_ PPB



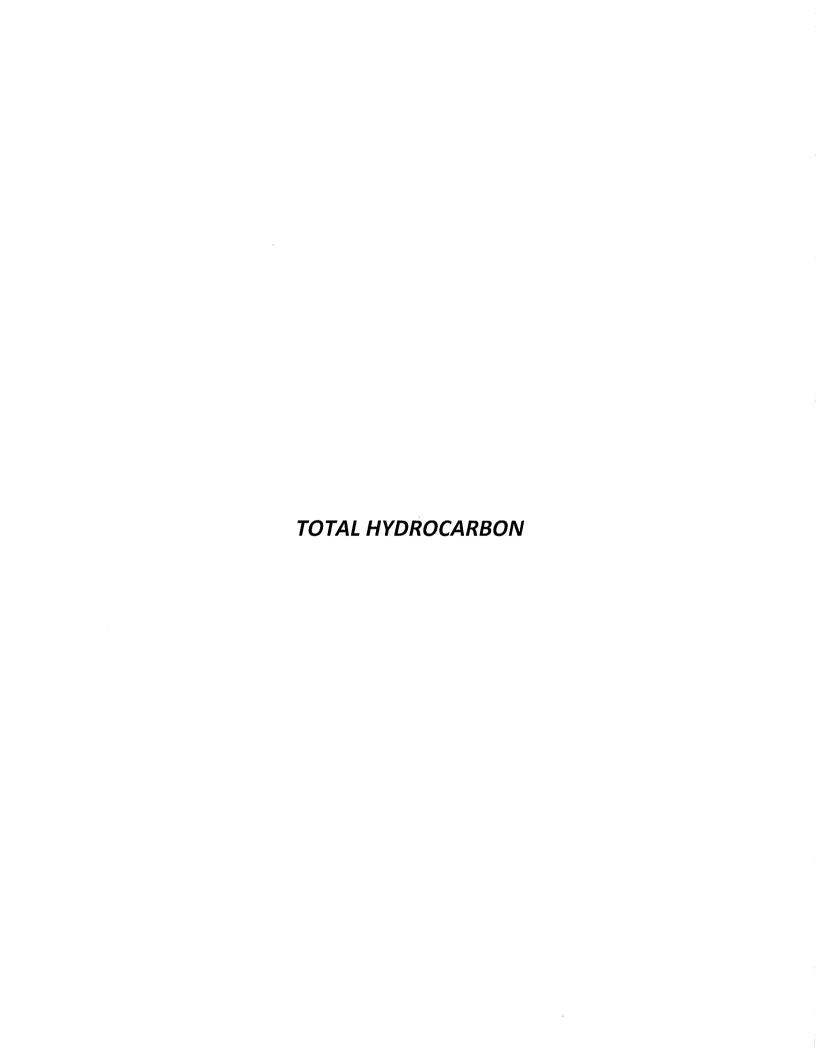
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Company:		LICA			Ibration Purpose:	Monthly Calibrat	ion
Station Name/Location:		1askwa	-		r Make & Model:	Internal	
Performed by:	Alex	Yakupov H2S	-		onverter Serial #:	NA 15-Jul-17	
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :		п23	-	Cai	Gas Expiry Date:	15-Juj-17	
Analyzer:		··					
Serial Number:		511		Range ppb:			
Last Calibration Date:		23-Apr-		As Found C.F.	1.019		
Previous Cal High Point C.F.:		1.000	,	. New C.F.:	1.009		
		As four	nd:		As left:		
	SLOPE:	0.848		SLOPE:	0.867		
	OFFSET:	48.8		OFFSET:	49.0		
D.C.	HVPS: :LL TEMP:	50,0		HVPS: RCELL TEMP:	616 50.0		
	OX TEMP:	29.8		BOX TEMP:	31.1		
	MT TEMP:	7.9		PMT TEMP:	7.8	<del></del>	
	ZS TEMP:	45,0		IZS TEMP:	45.0		
	TE5T:	315.0	)	TEST:	315.1		
	STABIL:	0.0		. STABIL:	0.1		
	PRES: 5AMP FL:	29.4		PRES: SAMP FL:	29.3 659		
	PMT:	77.5		. PMT;	78.2		
NO	RM PMT:	49.4		NORM PMT:	47.7		
	JV LAMP:	2738.	0	UV LAMP:	2735,0		
LAN	1P RATIO:	88.0		LAMP RATIO:	87.9		
	STR. LGT	20.7		STR, LGT	21.2		
	ORK PMT: DRK LMP:	31,6 5.6		DRK PMT: DRK LMP:	34.2 5.6		
	nal Span:	49,05	;	Internal Span:	47.6		
						•	
Calibrator:					Calibrator Flov		
Flow Meter ID's:		NA PI 700	-	point	diluent (cc/min)	cal gas (cc/min	
Make & Model: Serial #:	<i>-</i>	830	-	zero high	5000 4959	39	5000 4998
Cal Gas Cylinder I.D. #:	L	.36837	-	mid	4979	19	4998
Cal Gas Conc. (ppm):		10,0		low	4990	11	5001
- W V							
Calibration:							
Callbrator Flo	w Rates (	cc/min)		Calculated Concentration:	Indicated Concer	tration: Co	rrection Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)		
as found zero	5000	0.0	5000	0	0.1		NA NA
adjusted zero as found high	5000 4958	0.0 39.00	5000 4997	0 78.0	0.0 76.6		NA 1.019
adjusted high	4958	39.00	4997	78.0	78.0		1.001
mid	4979	19.00	4998	38.0	38.1		0.998
	4989	11.00	5000	22.0	21.4		1.028
low		0.00	5000		-0.2		NA 1 000
low calibrator zero	5000	0.00		0			1,009
-	5000	0.00		U	Avera	ige C.r.=	
-	5000	0.00	Linear F	egression/Calibration Results		ige C.r.=	
-	5000	0.00	Linear F		5:	Pass/Fail ?	
-		orrelation Coel	ffeclent =	egression/Calibration Results	s: LIMITS > or = 0.995	Pass/Fail ? PASS	
-	c	orrelation Coe	ffeclent = Slope =	egression/Calibration Results 1,000 0.998	s: LIMITS > or = 0.995 0.85-1.15	Pass/Fail ? PASS PASS	
calibrator zero	C b (Inte	orrelation Coel	ffecient = Slope = Ill scale)=	egression/Calibration Results 1,000 0,998 0,20%	LIMITS > or = 0.995 0.85-1.15 ± 3% F.S.	Pass/Fail ? PASS PASS PASS	
calibrator zero	C b (Inte	orrelation Coe	ffecient = Slope = Ill scale)=	egression/Calibration Results 1,000 0.998	s: LIMITS > or = 0.995 0.85-1.15	Pass/Fail ? PASS PASS	
calibrator zero	C b (Inte	orrelation Coel rcept as % of fu in C.F. from las	ffecient = Slope = Ill scale)= et cal	egression/Calibration Results 1,000 0,998 0,20%	LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fail ? PASS PASS PASS	
calibrator zero	C b (Inte	orrelation Coel rcept as % of fu In C.F. from las Com	ffecient = Slope = Ill scale)= It cal verter Eff	1.000 0.998 0.20% -1.89% eclency Check for H <sub>2</sub> S/TRS ap	LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fail ? PASS PASS PASS	
calibrator zero	C b (Inte	orrelation Coel rcept as % of fu In C.F. from las Com	ffecient = Slope = Ill scale)= It cal verter Eff	1.000 0.998 0.20% -1.89%	LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fail ? PASS PASS PASS	
calibrator zero	C b (Inte % change	orrelation Coel rcept as % of fu In C.F. from las Com	ffecient = Slope = Ill scale)= It cal verter Eff	1.000 0.998 0.20% -1.89% eclency Check for H <sub>2</sub> S/TRS ap	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication: ving zero adjust**	Pass/Fail ? PASS PASS PASS	
callibrator zero  SO <sub>2</sub> High Point gas concentrati	b (Inte % change on:	orrelation Coel rcept as % of fu In C.F. from las Con **run conve	ffecient = Slope = Ill scale)= It cal verter Eff	1.000 1.000 0.998 0.20% -1.89% eclency Check for H <sub>2</sub> S/TRS ap	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication: ving zero adjust**	Pass/Fail ? PASS PASS PASS	
callibrator zero  SO <sub>2</sub> High Point gas concentrati	b (Inte % change on:	orrelation Coel rcept as % of fu in C.F. from las Com **run conve	ffecient = Slope = Ill scale)= It cal verter Eff	1.000 1.000 0.998 0.20% -1.89% eclency Check for H <sub>2</sub> S/TRS ap	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication: ving zero adjust**	Pass/Fail ? PASS PASS PASS	
callibrator zero  SO <sub>2</sub> High Point gas concentration	b (Inte % change on:	orrelation Coel rcept as % of fu In C.F. from las Con **run conve	ffecient = Slope = Ill scale)= It cal verter Eff	1.000 1.000 0.998 0.20% -1.89% eclency Check for H <sub>2</sub> S/TRS ap	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication: ving zero adjust**	Pass/Fail ? PASS PASS PASS	
callibrator zero  SO <sub>2</sub> High Point gas concentration	b (Inte % change on:	orrelation Coel rcept as % of fu In C.F. from las Con **run conve	ffecient = Slope = Ill scale)= It cal verter Eff	1.000 1.000 0.998 0.20% -1.89% eclency Check for H <sub>2</sub> S/TRS ap	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication: ving zero adjust**	Pass/Fail ? PASS PASS PASS	
calibrator zero	b (Inte % change on:	orrelation Coel rcept as % of fu In C.F. from las Con **run conve	ffecient = Slope = Ill scale)= It cal verter Eff	1.000 1.000 0.998 0.20% -1.89% eclency Check for H <sub>2</sub> S/TRS ap	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% plication: ving zero adjust**	Pass/Fail ? PASS PASS PASS	



Of Minute Averages



- LICA30 H2S\_ PPB



#### (am Thermo 51C THC Analyzer Calibration

Company: Station Name/Location: Performed by:

8-May-15 LICA Maskwa Alex Yakupov

Start Time (mst): End Time (mst): 12:56 Calibration Purpose: Monthly Calibration Cal Gas Expiry Date: 26-Mar-17

> 0.990 1.003

	H <sub>2</sub> cylinder (psi):	As found: 100
Previous Cal High Point C.F.:		1,000
Last Calibration Date:		23-Apr-15
Serial Number:		436609738
Analyzer:		

	As found:
H <sub>2</sub> cylinder (psi):	100
H <sub>2</sub> cylinder reg set (psi):	25
Span Cylinder (psi):	750
Span Cylinder Reg Set (psi):	25
Zero Air Gen Pressure:	35
measurement alarms:	None
service alarms:	None
cnt:	896
rng:	1
try:	5

flm: det:

Flame:

Filter: Base: Pump:

830

LL33674

202.0

1156.9

180.6

125.6

180

New C.F.:	1.003
	As left:
H <sub>2</sub> cylinder (psi):	2000
H <sub>2</sub> cylinder reg set (psi):	25
Span Cylinder (psi):	750
Span Cylinder Reg Set (psi):	25
Zero Air Gen Pressure:	35
measurement alarms:	None
service alarms:	
cnt:	912
rng:	1
try:	5
flm:	
det:	125.6
Flame:	
Filter:	125
Base:	125
Pump:	07,52
+5	4.9

Internal Span:

Range ppm: As Found C.F.

Oven Readings:

FID status:

Voltages:

Calibrator:

125 125 07.51 4.9 +15 14.8 -15.0 33,09 Internal Span: NA API 700 Flow Meter ID's: Make & Model:

Serlal #:

Cal Gas Cylinder I.D. # : CH<sub>4</sub>/C<sub>3</sub>H<sub>8</sub> Cylinder Conc. (ppm): 601.4

CH<sub>4</sub> as propane/total CH<sub>4</sub> equivilants (ppm):

	Calibrator Flov	w Targets:	
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
zero	2000	0	2000
high	1935	65	2000
mid	1969	31	2000
low	1984	16	2000

-15.0

Calibration:

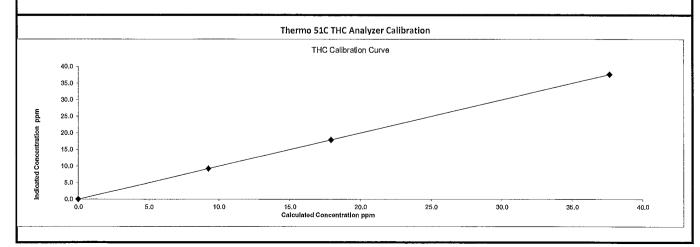
Callel atol 1 less	Rates (cc/min)			Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	1999	0.00	1999	0	0,04	NA
adjusted zero	1999	0.00	1999	0	0.01	NA
as found high	1932	65.00	1997	37.66	38.05	0.990
adjusted high	1932	65.00	1997	37.66	37.66	1.000
mid	1969	31.00	2000	17.93	17.92	1.001
low	1983	16.00	1999	9.26	9.21	1.007
calibrator zero	1999	0.00	1999	0	0.01	NA

#### Linear Regression/Calibration Results:

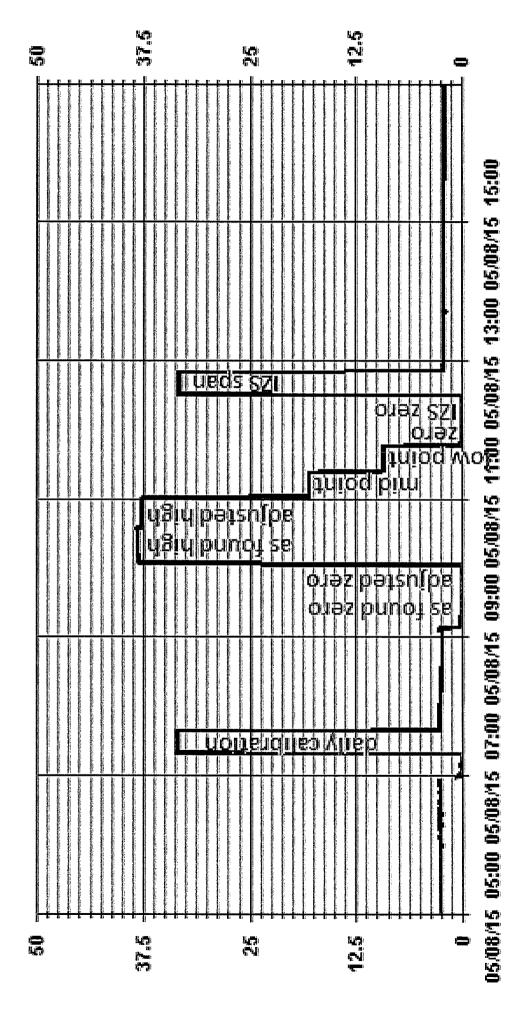
		LIMITS	Pass/Fail?
Correlation Coeffecient =	1.000	> or = 0.995	PASS
Slope =	1.000	0.85-1.15	PASS
b (Intercept as % of full scale)=	-0.032%	± 3% F.S.	PASS
% change in C.F. from last cal	1.01%	± 15%	PASS

#### Comments:

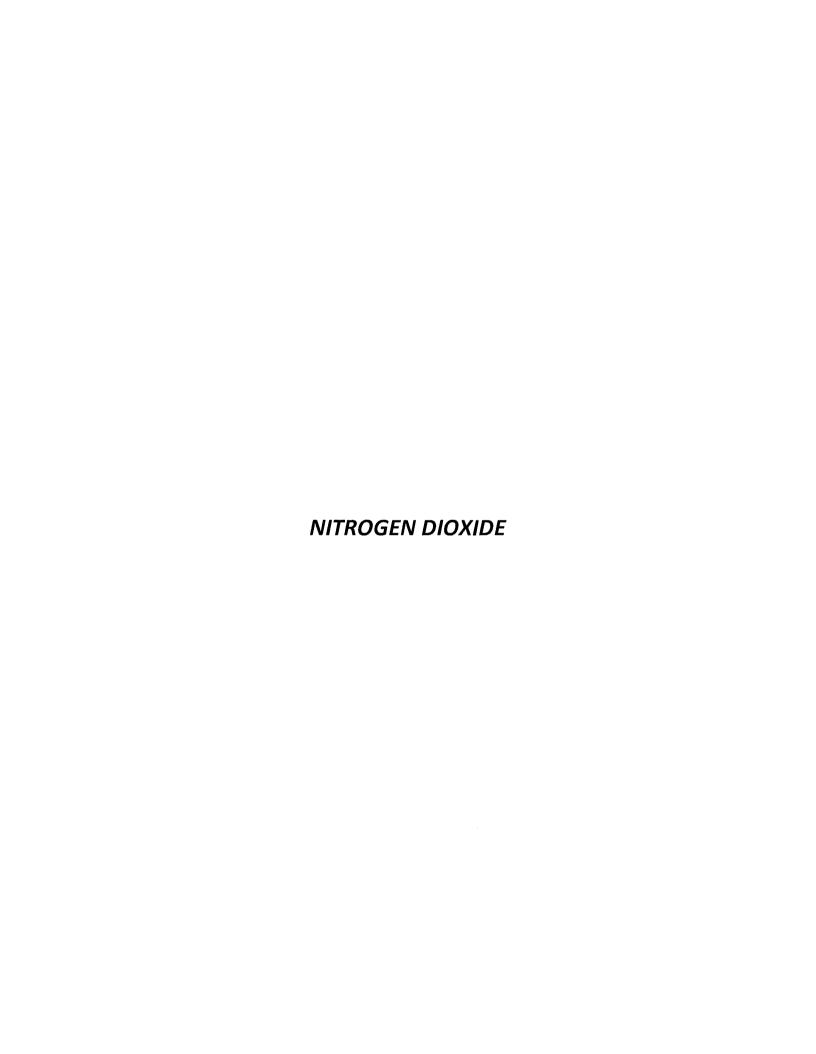
Sample filter changed. New H2 cylinder connected

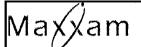


of Minute Averages



- LICA30 THC PPM





#### **API 200E NOx Analyzer Calibration**

Company: Station Name/Location: Performed by:

8-May-15	
LICA	
Maskwa	
Alex Yakupov	

Start Time (mst):	9:02	
End Time (mst):	15:11	
Calibration Purpose:	Monthly Calibration	
Cal Gas Expiry Date:	12-Aug-17	

Correction Factors:

 Analyzer Serial Number:
 593

 Last Calibration Date:
 23-Apr-15

 Range ppb:
 1000

As four	d C.F.	Previous Cal High P	oint C.F.:
NO=	1.015	NO=_	1.000
NOx=	1.007	NOx=	1.000
NO <sub>2</sub> =	1.002	NO₂=	1.004

As found: 0.969 NOx 5LOPE: NOx OFF5: 2.4 0.975 NO SLOPE: NO OFFS: -0.9 126.7 TEST: SAMP FLW: 495 78 OZONE FL: 13.1 PMT: NORM PMT: 1.6 AZERO: 7.5 634 HVPS: RCELL TEMP: 50.0 BOX TEMP: 31.1 PMT TEMP: 6.7 50.2 IZS TEMP: 314.1 MOLY TEMP: RCEL: 7.1 27.2 SAMP: 302.2/4.8/297.4 Internal Span:

	As left:	
NOx SLOPE:	0.979	
NOx OFFS:	2.8	
NO SLOPE:	0.988	
NO OFFS:	-0.8	
TEST:	126.7	
SAMP FLW:	495	
OZONE FL:	78	
PMT:	10.3	
NORM PMT:	1.6	
AZERO:	7.5	
HVPS:	634	
RCELL TEMP:	50.1	
BOX TEMP:	32.5	
PMT TEMP:	6.8	
IZS TEMP:	50.4	
MOLY TEMP:	315.5	
RCEL:	7.0	
SAMP:	27.1	
nternal Span:	318.5/4.9/313.4	

#### Calibrator Flow Targets:

 Make & Model:
 Environics 6100

 Serial #:
 4760

 Cal Gas Cylinder I.D. # :
 LL42475

 NO Cylinder Conc. (ppm):
 48.5

 NOX Cylinder Conc. (ppm):
 48.5

point	diluent (cc/min)	cal gas (cc/min)	O <sub>3</sub> setting (v or ppb)	total (cc/min)
zero	4995	0	0	4995
high	4916	78	380.00	4994
mid	4957	38	210.00	4995
low	4975	19	85.00	4994

#### Calibration:

Calibra	tor Flow Rate	es (cc/min)		Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)	> <	
as found zero	4994	0.0	4994	0	0	1.0	0.0	NA	NA
adjusted zero	4994	0.0	4994	0	0	1.0	0.0	NA	NA
as found high	4922	71.98	4993	699.1	699.1	690	694	1.015	1.007
adjusted high	4922	71.98	4993	699.1	699.1	699	699	1.002	1.000
mid	4958	35.98	4994	349.4	349.4	350	350	1.001	0.998
low	4975	18.SO	4994	179.7	179.7	179	179	1.009	1.004
calibrator zero	4994	0.00	4994	0	0	1.0	0.0	NA	NA
<u> </u>							Average C.F.≃	1.004	1.001

Calibra	ator Flow Rate	es (cc/mln)		Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO <sub>2</sub>	NO drop	NO <sub>2</sub> Increase	NO <sub>2</sub> C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4922	71.98	4994	0.0	706.0	700.0	-6.0	1.0	-1.0	$\searrow$
as found NO <sub>2</sub>	4922	72.0	4994	380.0	248.0	700.0	451.0	458.0	457.0	1.002
adjusted NO₂	4922	72.0	4994	380.0	248.0	700.0	451.0	458.0	457.0	1.002
gpt mid	4922	72.0	4994	210.0	451.0	700.0	249.0	255.0	255.0	1.000
gpt low	4922	71.98	4994	85.0	608.0	701.0	92.0	98.0	98.0	1.000
		•						Δv	erage NO CE-	1.001

Linear Regression/Calibration Results:

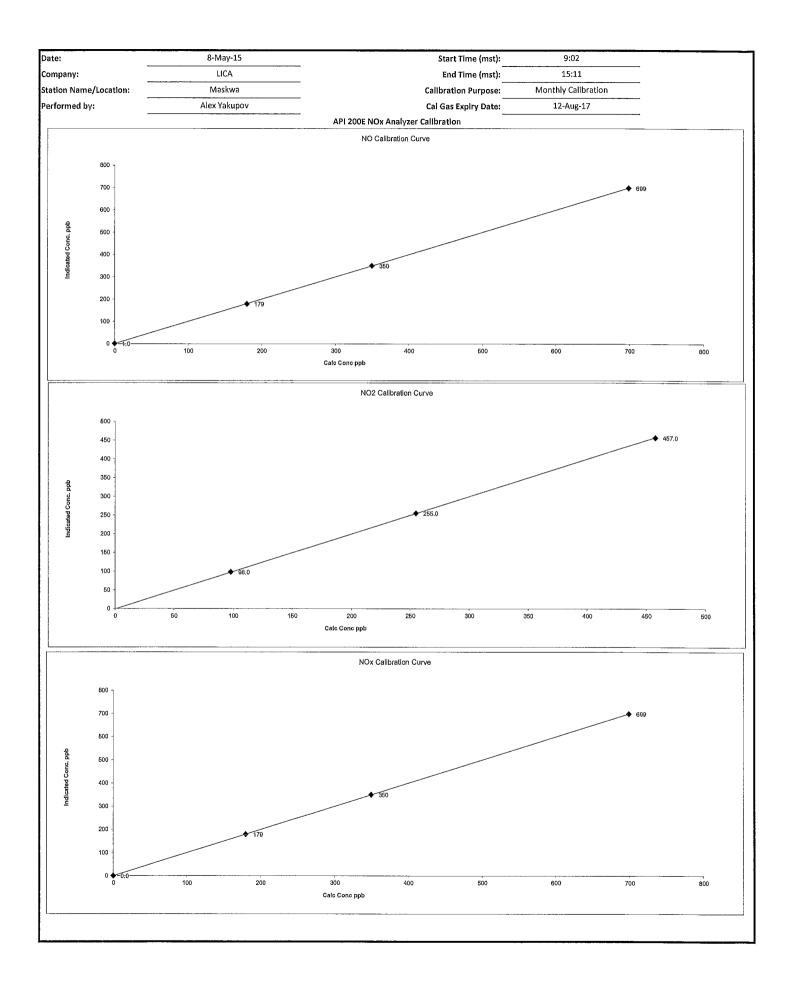
	NO	NOx	NO <sub>2</sub>
Correlation Coeffecient =	1.000	1.000	1.000
Slope =	0.999	1.000	1.001
b (Intercept as % of full scale)≍	0.05%	-0.01%	-0.10%
% change in C.F. from last cal=	-1.47%	-0.74%	0.18%
NO2 converter effectency		X	99.9%

LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. +/-15% >85%

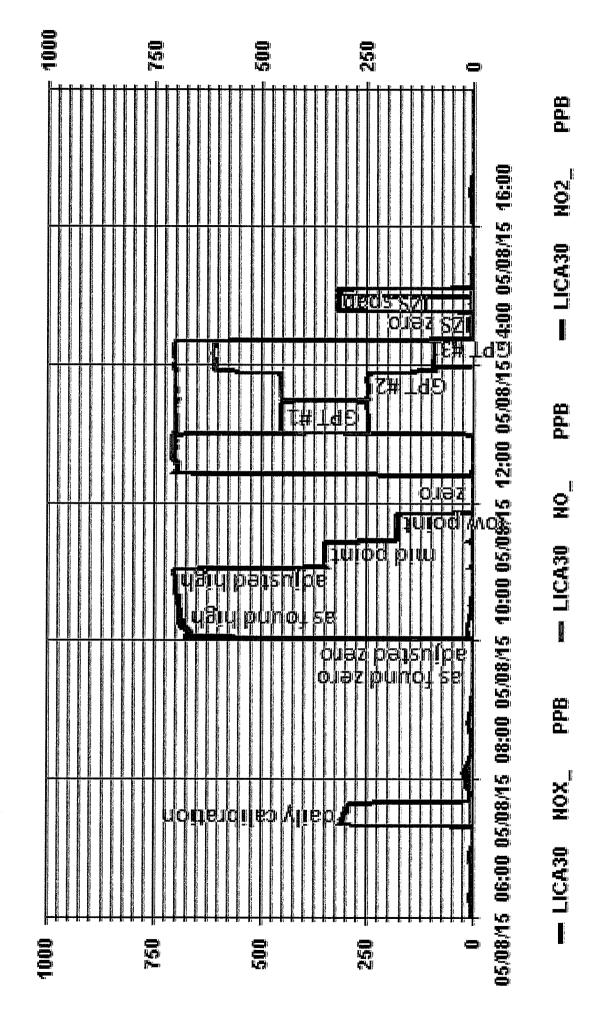
#### Comments:

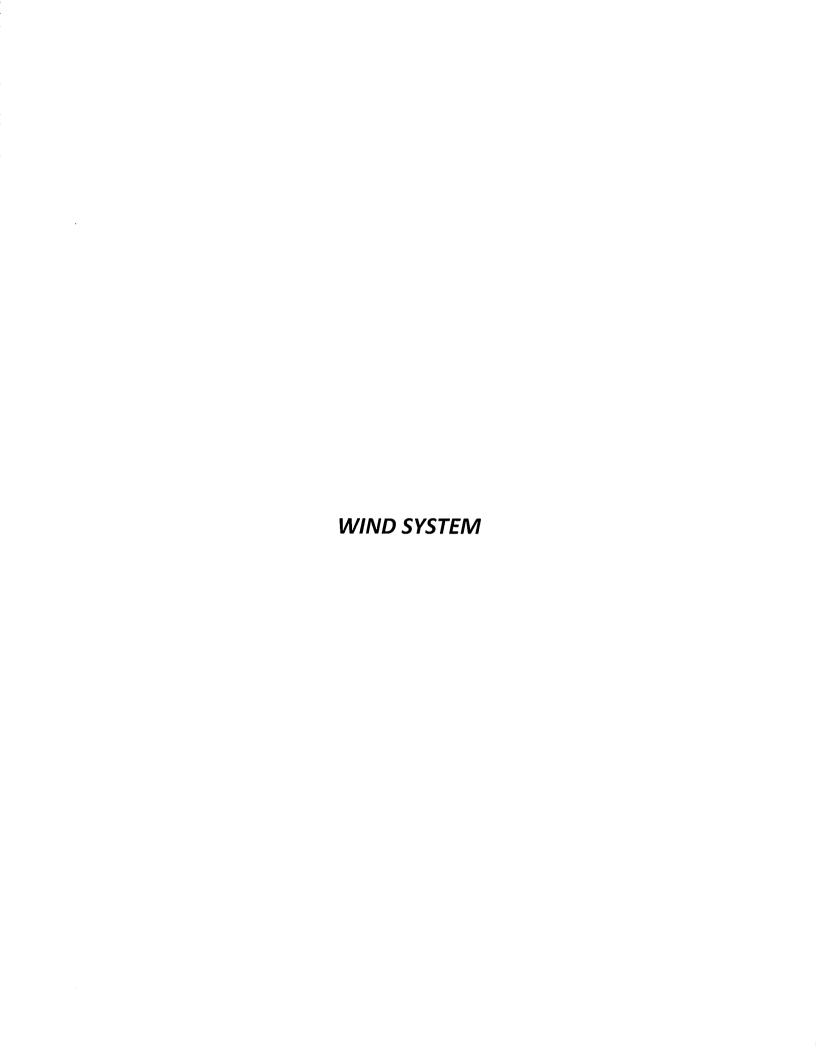
Sample filter changed.

No NO2 adjustment made. Values copied from as found NO2 for calculation only.



of Minute Averages





#### Met One Instruments Inc. Certificate of Calibration

	419	W	40			9	-	100	12.			. 40		14	33		-0			6.				. 12	1.		·			0.0			íe.			١.		. 3		0				
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Model No.: 50.5H

Manufacturer: Met One Instruments Inc.

Serial No.: H10703

Sales Order No. | | | |

Customer

Maxxam Analytics

Tested per P.O. No.: 35-54786

Instrument Condition Within Tolerance: Corrective Action: No Adjustment()

As Found () As Left (X)

Adjust (X) Repair ()

Preventative Maintenance ()
Quality Control Manual Revision: September 16, 2013 MP42201Rev. G
All Work Performed per Customers Purchase Order Requirements

Calibration Document No. 50.5-6100

Date (As Found): n/a

Date (As Left Test):

3/4/2014

Calibrated by. Dat Fund

Date: 3/4/14

Test Equipment Used for Calibration of Instruments

	CARREST PARTIES TO LIVE LYUIDIR	HIL DOOD IO OF	SINU BUNDIO DE MES	M OHEO HE	e and enterprise and the contract	1,321 1450, 2 12 2 12 2 12 2
	Description Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Accuracy
篇4.	Digital Multimeter keithley	197A	490833	3/8/2013	3/8/2014	+/02% of input
l	Hewlett Counter Packard	5245L	71616181	3/8/2013	3/8/2014	+/- 0.0001%
8 8	Sardard Cup) Mel One	170,41	3309	4/24/2012	4/24/2017	<.15mph

Environmental Data: Temperature 65 to 80 DegF

Vibration none

Humidity 20 to 70 %

Radiation none

The standards used for calibration have accuracies equal to or greater than the instruments tested. These standards are on record and are traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated hereon, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system compiles with MIL-STD-45662A (8/1/88) instruments accuracy meets the requirements of Regulatory Guide 1.23 (2/72). Compliant with ISO 9001/2008 requirements.

A C I have seed an inc

Caston.

Date: 3/10/14





#### Calibrator Performance Audit Sulphur Dioxide (by Cylinder Dilution)

File No. 2014-258A

Company: Max	xam	-	Operator:	Limi	n Lì	
Calibrator	:		Flow Mea	surement I	Device:	
Make/Model	APi	1 700	Make/M	odel	N	/A
Serial Number	8	30	Serial Nu	mber	N.	/A
Last Verification Date	Oct	2013	Temperatur	re (°C)	N.	/A
SO <sub>2</sub> Cylinder Conc.	50	0.3	Barometric I	Pressure	N.	/A
SO <sub>2</sub> Cylinder S/N	LL4	2475				
Flow Measurer	nents					
Pt. No. 1 79.5	Pt. No. 2	39.8	Pt. No. 3	19.9		
Calibrator Flow	Colo	ulated	Indicat	od	0/ D:f	ference
(sccm)		ation (ppm)	Concentratio		vs Audit Gas	
Zero Air		000	0.000		vs Audit Gas	70 Diff. Lillift
4918		800	0.798		0%	1.400/
4910		400 400	0.798		-1%	± 10%
4977		200	0.200		0%	± 10%
4977	0.2		Average Percent		0%	± 10% ± 10%
SO <sub>2</sub> Correlation= m (Slope)= b (Intercept % of FS)=	1.0000 0.9971 0.0000	LIMITS $\geq 0.995$ 0.90-1.10 ± 3% F.S.	¤mx+b (where x=calcu	анна сопсыпи	uion, y⊶inaicaiec	i concentration)
AENV	Standards			SO <sub>2</sub> Ana	alyzer	
Audit Calibrator			Make/Mo		Teco	****
Make/Model		IFC 201	Serial/AMU			1623
Serial/AMU Number	AMU	1690	Last Calibrat			15/14
			Full Scale	(ppm)	1	.0
COMMENTS:		slow to move the slow to move the slow to moves throu	nrough the calibrate gh quickly.	or. Check fo	r contamnatio	on inside
Auditor:	AI C	Clark	Date:	December	16, 2014	
Operator Signature:			Location: Ma			•



#### Calibrator Performance Audit Oxides Of Nitrogen

File No. 2014-260A

<del></del>				······································			<del></del>	
Company	/ Max	kxam			Operator:	Lim	in Li	**************************************
Serial Last Verif NO Cyl	Calibrator e/Model Number ication Date linder S/N	Environi 47 Decemb LL42	60 per 2013 2475	-	Make, Serial I Tempera	Icasurement /Model Number ature (°C) ic Pressure		N/A N/A N/A N/A
NO/NOX Co		48.5	48.5	•				
Pt. #1	ution Flow (s 5000 Gas Flow (see	Pt. #2	5000	Pt. #3	5000	•		
Pt. #1	•	Pt. #2	40	Pt. #3	20	Gas flows not a	vallable from	display.
Callbrator I	Flow (seem)	Calculated (	Cone.(ppm)	Indi	cated Conc.(1	nm)	% Difference	e vs Audit Gas
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
4980	0.0	0.000	0.000	0.000	0.000	0.000		± 10%
4993	0.0	0.799	0.799	0.840	-0.001	0.839	5%	5%
4994	0.0	0.399	0,399	0.420	-0.001	0.419	5%	5%
4991	0.0	0.200	0.200	0.211	0.000	0.211	5%	5%
				Absolute A	verage Perce	nt Difference	5%	5%
	NO Correlation= m (Slope)= ept % of FS)=	1.0000 1.0511 0.0400	≥ 0.90	<u>MTS</u> .990 -1.10 6 F.S.		NOx Correlation= m (Slope)= cept % of FS)=	1.0000 1.0496 0.0400	
Flow	O <sub>3</sub> Conc	NO De	crease	NO	NO2	NOX	% Diff, V	's Audit gas
4993	0.000	0.0		0.823	-0.001	0.822	$NO_2$	% Diff. Limit
4993	0.480	0,5		0.293	0.530	0.823	0	± 10%
4993 4993	0.240 0.090	0.20		0.554	0.269	0.823	0	± 10%
4993	0.090	0,0	30	0.727	0.097	0.824 nt Difference	0	± 10%
LINEAR I	REGRESSIO	ON ANALYS	SIS			·····		± 10% ted concentration)
•	NO <sub>2</sub> Correlation= m (Slope)= pt % of FS)=	1.0000 1.0006 -0.0132	≥ 0. 0.90	HTS .995 -1.10 5 F.S.			-	<b>,</b>
		tandards				NO <sub>x</sub> Aı	ıalyzer	
	Audit Ca Make/Model		1.461		a .t.t/	Make/Model		00 421
	MU Number	Teco AMU <sup>^</sup>				AMU Number libration Date		J 1868 er 15, 2014
					Fu	ll Scale (ppm)		1.0
CO	MMENTS:		***************************************		· · · · · · · · · · · · · · · · · · ·		<b>i.</b>	
	Auditor:	Al Cl	ark		Date:	December	17, 2014	
Operato	r Signature:	Jely-C	Dane		Location:	Mointyre Cente	***************************************	_



Form No. Version No.

F-GAS-002 1.1



### Calibration Gas Audit Single Component Cylinder Gas

File No. 2014-257COA

Serial Nu Last Verification Gas Cylinder N  Reference Analy	rator and Model: imber: i Date; i Type: itumber: //zer: Model: gs:	d Gas: R&R MFC AMU 169	201 %0 , 2014 Conc. 20	98.57 Scrial/A	Flow Mea Ma Seria	surement De ke/Model: il Number: Temp.°C: B.P	ertified By: Alr Liquide evice: Bios DC2 AMU 1659 22.5 C 701 mmhg
Make/N Serial Nu Last Verification Gas Cylinder N Reference Analy Make/N	Model: inber: in Date; in Type: introduced in	R&R MFC AMU 169 December 15 SO2 CAL0167:	2014 Conc. 20	Scrial/A	Ma Seria	ke/Model: il Number: Temp.°C: B.P	Bios DC2 AMU 1659 22.5 C
Serial Nu Last Verification Gas Cylinder N  Reference Analy Make/I	nmber: n Date; n Type: fumber: //Zer: Model: gs;	AMU 169 December 15 SO2 CAL01672	2014 Conc. 20	Scrial/A	Seria	l Number: Temp.°C: B.P	AMU 1659 22.5 C
Last Verification Gas Cylinder N Reference Analy Make/I	n Date:	December 15 SO2 CAL0167:	, 2014 Conc. 20	Scrial/A		Temp.°C: B.P.	22.5 C
Gas Cylinder N  Reference Analy  Make/I  instrument Setting	Type:	SO2 CAL0167: Teco 430	Cone	Scrial/A		В.Р.	
Cylinder N  Reference Analy  Make/I  nstrument Settin	rumber:	CAL0167:	20 C	Scrial/A	.MU Number:		701 mmhg
Reference Analy Make/I Instrument Settin	/zer: Model: gs;	Тесо 430	C		.MU Number:	1623	
Make/Instrument Settin	Mođel: gs;				.MU Number:	1623	
nstrument Settin	gs;				MU Number:	1623	
	_	Zero;	7.7				
Last Calibration:			· · · · · · · · · · · · · · · · · · ·	Span:	1.018	Range:	1.0
		Date:D	Dec15/14	C.F.	1.000	Done By:	Al Clark
7 111		~ 11		G . E. /	0	ation	Cyrlindan
Calibrator Flows (s Dilution C		Indicate Concentration	1	Gas Flow/ Dilution Flow	Concentra Facto		Cylinder Concentration
	0.0	0.000	. (* - 111)				
	2.1	0,502		0.01019	98,15	7	49.3
5093 2	2.3	0.214		0.00438	228.38	36	48.9
5073 1	0.9	0.105		0.00215	465.41 ge Cylinder Con		48.9 <b>49.0</b>
	variance f	rom Stated:	2.6		7		
Meets Manufactu				سيسيا سيسيسي	COMMENTS: _		
> 5% Outside	e Manufact	urer Toleranco. $\underline{\Gamma}$	OO NOT US	SE this cylinder			4,89
A	uditor: _	Al Clar	<u> </u>		Date: _	December	16, 2014
Operator Sig	nature://	E. Om/	Pinte.		Location:	Mointyre Cent	er Edmonton



#### Calibration Gas Audit Single Component Cylinder Gas

File No. 2014-251CGA

	Max	kam	Oper	ator's Name: Limi	1 Ll
Cylinder #:	LL36837	Concentration PPM;	10.0	Tolerance(%) 2	Certified By: Air Liquid
Reference C	alibrator a	nd Gas:	, , , , , , , , , , , , , , , , , , , ,	Flow Measurement 1	Device:
Ma	ake/Model:	R&R MFC 201		Make/Model: _	Bios DC2
Seria	al Number:	AMU 1690		Serial Number:	AMU 1659
		December 15, 2014		Temp.°C:	23.0 C
		H2S Conc.	20,43	B.P.	702 mmhg
	•	CAL015106	- All All All All All All All All All Al		
Reference A	-		9 2 3		
		Teco 45C		AMU Number: 1624	
		Zero: 6.4		1.160 Range:	
Last Calibrat	tion:	Date:Dec15/14	C.F.	1.000 Done By:	Al Clark
		- Lander - L		1	CA The A
Calibrator Flo	ows (scem) Gas	Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
<del></del>				Factor	<del>-</del>
Dilution 5000 5099	Gas 0.0 38,5	Concentration (PPM) 0,0000 0.0754	Dilution Flow 0.00755	Factor 132.442	Concentration 10.0
Dilution 5000 5099 5092	Gas 0.0 38,5 18.0	Concentration (PPM) 0,0000 0,0754 0,0349	0.00755 0.00353	132.442 282.889	Concentration 10.0 9.9
Dilution 5000 5099	Gas 0.0 38,5	Concentration (PPM) 0,0000 0.0754	0.00755 0.00353 0.00182	Factor 132.442	10.0 9.9 9.8
5000 5099 5092 5066 Previous S Per Meets Man <=5% Outside	Gas 0.0 38.5 18.0 9.2 Stated Concerreent variance	Concentration (PPM) 0,0000 0,0754 0,0349	Dilution Flow  0.00755  0.00353  0.00182  Avera  d concentration X  rs concentration	132.442 282.889 550.652	10.0 9.9 9.8
Dilution	Gas 0.0 38.5 18.0 9.2 Stated Concerreent variance	Concentration (PPM)  0,0000  0.0754  0.0349  0.0178  Attration PPM: 10.0  e from Stated: 1.1  rance, Use manufacturers state or Tolerance, Use manufacturer state acturer Tolerance, DO NOT Use	Dilution Flow  0.00755  0.00353  0.00182  Avera  d concentration X  rs concentration	Tactor  132.442 282.889 550.652 age Cylinder Concentration;  COMMENTS:	10.0 9.9 9.8



Fransk Canido, bit Procest Carletto, Inc. 9501-36th Street Edmonato, AB, TOB 2X5 Tel: 780-449-9778 Fax: 780-449-5302

03/27/2014

WAXXAW ANADYT US INCONS gritz with et (20) Aleki (e) yaz Azimi jaya kiz

> ani are reerman.

**2582 4 085 02** Product Part No. NIMERRIEZEZAC

#### CERTIFICATE OF ANALYSIS Primary Standard

Melijana. Propalje Villogen

Rickussiscu Concestration 800 Cypen Sentrospini BELITEE

Cerified Mileon 2020pm Balance

Arie Prince 

Areigies 

Anelytical Instruments, Mettier-Toledo Analytical Balance-ID2sx/USA--Hewlett-Packard (Agillant)-6890---GC-FID

Cylinder Style. AQ Cylinder Fresk in @70F 2200 psig Cylinder Volume : 82,0 ft3 Válve Otriet Corjnection: CGA-350 Cylinder No(5): LL33874

Filing Method Gravimetric Date et Fill Contellon Dale

ingir (tang) Marangan

Form No. Version No F-GAS-003 1.1



#### Calibration Gas Audit

Company	. Ma	xxam		Operators nar	ne: Limir	n Li	
					1 Certified By:		uide
Reference	Calibrator	and Gas:			Flow Measureme	ent Device:	
Make	/Model	Teco 1	1461		Make/Model	Blos D	)C2
Serial	Number	AMU 1	809	_	Serial Number	AMU 1	659
Last Verif		December '		-	Temp.°C	23.0	
		NO	7.7. 7	- 48.79	_	702 mi	
				40.70	ъ.,	702111	iiig
Суппае	I Mullioei	CAL017	1092				
D - C	A a Y						
<b>Reference</b> Make	-	Teco 4	<b>42</b> i		Serial/AMU	J Number:	1868
Instrument	Settings	Zero:	4.3	Spa	an:1.017	Range:	1.0
Last Calibr	<del>-</del>	Date:	Deo15/14		.F. 1.000	-	
	· · · · · · · · · · · · · · · · · · ·						
Calibrator F	lows (scem)	Indicated Cor	nc. (ppm)	Gas Flow/	Concentration	Cylinder Cor	ncentration
Dilution	Gas	NO	NOX	Dilution Flow	Factor	NO	NOX
5000	0,0	0.000	0.000				$\geq \leq$
4983	82.8	0.830	0.832	0.01662	60.181 ·	50.0	50.1
4998	40.9	0,414	0.415	0.00818	122,200	50,6	50,7
4981	20.3	0,206	0.206	0.00408	245,369	50.5	50.5
				Average Cynng	ler Concentration:	50.4	50.4
			<u>NO</u>		$\underline{\mathbf{NOx}}$		
Previous	Stated Concer	ntration PPM: _	48.5		48,5		
P	ercent variance	e from Stated:_	3,8		4.0		
Су	linder gas to	olerances bas	sed on NO	only			
-	_			ted concentration	COMMENTS:		
Meets Ma	ide Manufacture	or Toloranco. Use	manufaotur	ers concentration	X Contains 50,3 ppr	n of SO2.	
				HOTE ALL			
<=5% Outs	Outside Manufa	acturer Tolerance	i. <u>DO NOT U</u>	<u>usir</u> this cylinder	1		
<=5% Outs	Auditor:	acturer Tolerance Al Clai	rk	us cylinder Da	te; December	16. 2014	**************************************

## APPENDIX III CHAIN OF CUSTODY



### Maxxam Analytics - Air Services Group Project Chain of Custody

Client: Lakelar Site: Maskw	nd Industry & Community Association va Site	Project #: 2833-20 Contact: Mike Bi	
QA Check Complete	woolmha	Date	01 - June - 2015
QA Check Review	ingelmha	Date	01-June-2015
Report Complete	modmha	Date	02-June-2015
Report Reviewed	E. Tangang	Date	02- Jun-2015
Report Shipped		Date	
Notes			·



#### AMBIENT AIR MONITORING MONTHLY DATA REPORT

### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION ST. LINA SITE

JOB #:2833-2015-05-31- C

**MAY 2015** 

Prepared for:

#### **LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

BOX 8237, 5107W - 50 STREET BONNYVILLE, ALBERTA T9N 2J5

**Attention: MIKE BISAGA** 

DATE:

June 4, 2015

Prepared by:

Wunmi Adekanmbi, M.Sc.

Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:

Lily Lin, B.Sc.

Senior Project Manager, Air Services, Maxxam Analytics



#### **SUMMARY**

In MAY 2015, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the St. Lina Site at Lakeland Industry & Community Association, near Bonnyville, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the project coordinator.

There was one 24-HR contravention for PM2.5 recorded this month: concentration of 42 ug/m3 on May 23. AE Ref # 298624.

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

All parameters: Hourly maximum data collected on May 6 at hour 11 were invalidated as the analyzer was recovering from a small power outage.

H2S: The API 101E S/N: 722 was replaced with API 101E S/N: 509 for maintenance purposes. 20 hours of data collected between May 13 hour 13 and May 14 hour 8 are not valid as the analyzer was being allowed time to stabilize before installation calibration.

THC: Hourly and hourly maximum data collected on May 6 at hour 11 were invalidated as the analyzer was recovering from a small power outage.

PM 2.5: 17 hours of data were discarded due to a malfunction. 9 hours of data were invalidated as the data were below –3 ug/m3 this month.

Precipitation: Three hours of data collected on May 24 hour 12 and on May 27 hour 13 and hour 14 were invalidated due to spikes. Reason unknown.

The summary of results is presented on the following pages.

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

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



#### **Monthly Continuous Data Summary**

Lakeland Indu	stry & C	ommun	ity Asso	ociation				īV	AXIMUM V	ALUES			
St. Lina Site								1-HOUR			24-H	OUR	OPERATIONAL TIME
PARAMETER	OBJEC	CTIVES	EXCEEI	DENCES 24-HR	MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	(%)
SO2 (PPB)	172	48	0	0	0	1	VAR	VAR	VAR	VAR	0.4	25	100.0
H2S (PPB)	10	3	0	0	0	2	VAR	VAR	VAR	VAR	0.8	26	97.3
THC (PPM)	-	-	-	_	2.0	2.8	23	7	9.3	NE	2.2	VAR	99.9
NO2 (PPB)	159	-	0	_	1.1	10.3	23	7	9.3	NE	3.2	23	99.6
NO (PPB)	-	-	-	-	0.2	1.9	4	10	14.4	ENE	0.3	VAR	99.6
NOX (PPB)	-	-	-	-	1.3	11.7	23	7	9.3	NE	3.4	23	99.6
O3 (PPB)	82	_	0	-	44	74	25	16	7.7	w	56.2	22	100.0
PM2.5 (UG/M3)	-	30	-	1	7.9	169.0	23	8	8.2	NE	42.3	23	96.5
RELATIVE HUMIDITY (%)	-	-	-		46.1	90	4	VAR	VAR	VAR	85.2	6	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	935	947	17, 18	VAR	VAR	VAR	945	17	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	11.4	27.8	24	15	2,1	SW	20.4	24	100.0
PRECIPITATION (MM)	-	-	-	-	0.1	12.7	31	7	12.5	E	0.9	31	99.5
VECTOR WS (KPH)	-	-	-	-	9.9	32.5	5	8	-	ENE	23.9	5	100.0
VECTOR WD (DEG)	-	-	-	-	ESE	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS



#### **Exceedence Summary Report**

SO<sub>2</sub> 1- Hour Exceedences

No Exceedences Recorded During the Month

SO<sub>2</sub> 24- Hour Exceedences

No Exceedences Recorded During the Month

H<sub>2</sub>S 1- Hour Exceedences
No Exceedences Recorded During the Month

H<sub>2</sub>S 24- Hour Exceedences No Exceedences Recorded During the Month

NO<sub>2</sub> 1- Hour Exceedences

No Exceedences Recorded During the Month

PM2.5 24- Hour Exceedences

DATE	READING (ug/m3)	WS (kph)	WD (deg)
MAY 23	42	7.4	NE



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4.0 Calculations and Results	6
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	Total Hydrocarbon
	Oxides of Nitrogen
	Nitric Oxides
	Nitrogen Dioxide
	Ozone
	Particulate Matter 2.5
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#### 1.0 Discussion

This monthly report consists of data for parameters SO2, H2S, THC, NOx, NO, NO2, O3, PM2.5, WS, WD, RH, BP, Precipitation and Temperature.

Sample filters for all continuous air monitors are changed before the calibration is started. The sample manifold is cleaned during the site visit on a monthly basis.

Control checks, consisting of zero and span of the analyzer are conducted on a daily basis on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinder) is used for zero checks and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibration is done a minimum of once a month for each continuous air monitor. In addition calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor (greater than 15%).

Hourly data is corrected using daily zero information.

Trailer inspection was performed on May 13.

#### **SULPHUR DIOXIDE (SO2)**

The routine monthly calibration was performed on May 13. The analyzer started spanning low on May 15 due to a depleted perm tube. The perm tube was changed on May 22 following an as found points check. Time was allowed for the new perm tube to stabilize. The expected span value was adjusted on May 29. Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.



#### **HYDROGEN SULPHIDE (H2S)**

A removal calibration was performed on the Maxxam-supplied API 101E, S/N: 722, analyzer on May 13 and the LICA-owned, API 101E, S/N: 509, was installed. The analyzer was allowed time to stabilize. An installation calibration was performed on May 14. 20 hours of data were invalidated due to this event. The analyzer was returned to site after routine maintenance at Maxxam shop. Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.

#### **TOTAL HYDROCARBONS (THC)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 12. Hourly and hourly maximum data collected on May 6 at hour 11 were invalidated as the analyzer was recovering from a small power outage.

#### NITROGEN DIOXIDE (NO2)

The channel was put into Maintenance mode on May 12 between hour 10 and hour 12 while reference calibration points for Ozone calibration was being performed. The routine monthly calibration was performed on May 13. After the calibration, the zero response was not as stable as expected. The calibration was repeated on May 14. The result was good. As the zero result was still within the acceptable range, no data was discarded. Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.

#### OZONE (O3)

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 12. A zero air maintenance was performed prior to the calibration. Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.

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

Two Teom audits were performed this month: one was completed on May 14, and the other audit was performed on May 22. Both the inlet filter and the FDMS filter were replaced on May 22. The dryer was also replaced on May 22 in order to enhance the unit's functionality. The Teom unit malfunctioned on May 31. Maintenance was performed on June 1 and the issue was fixed. 17 hours of data were discarded due to this issue. Data was corrected using Alberta air quality guideline. If the data was between 0 to -3 ug/m3, the data was corrected to 0 ug/m3. If the data was below -3ug/m3, the data was invalidated. 9 hours of data were invalidated as the data were below -3 ug/m3 this month.

One 24-hr contravention was recorded this month. Concentration of 42 ug/m3 on May 23. Reference #: 298624.

#### WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was coming from.

The wind system was working well throughout the month. Hourly maximum data collected on May 6 at hour 11 was invalidated as the analyzer was recovering from a small power outage.



#### **RELATIVE HUMIDITY (RH)**

The humidity sensor was working well throughout the month.

#### **BAROMETRIC PRESSURE (BP)**

The pressure sensor was working well throughout the month.

#### **PRECIPITATION**

Three hours of data collected on May 24 hour 12 and on May 27 hour 13 and hour 14 were invalidated due to spikes. Reason unknown. The system was verified on May 25 and no issues were identified.

#### AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month.



#### 2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling personel was Alexander Yakupov.

#### 3.0 Plant Monthly Required AMD Summary

There was one 24-HR contravention for PM2.5 recorded this month: concentration of 42 ug/m3 on May 23. AE Ref # 298624.

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

#### 4.0 Calculations and Results

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



#### 5.0 Methods and Procedures

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

Maxxam AIR SOP-00209: Ambient H2S Monitoring

Maxxam AIR SOP-00211: Ambient SO2 Monitoring

Maxxam AIR SOP-00212: Ambient O3 Monitoring

Maxxam AIR SOP-00213: Ambient NO/NO2/NOx Monitoring

Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring

Maxxam AIR SOP-00215: Teom Operation

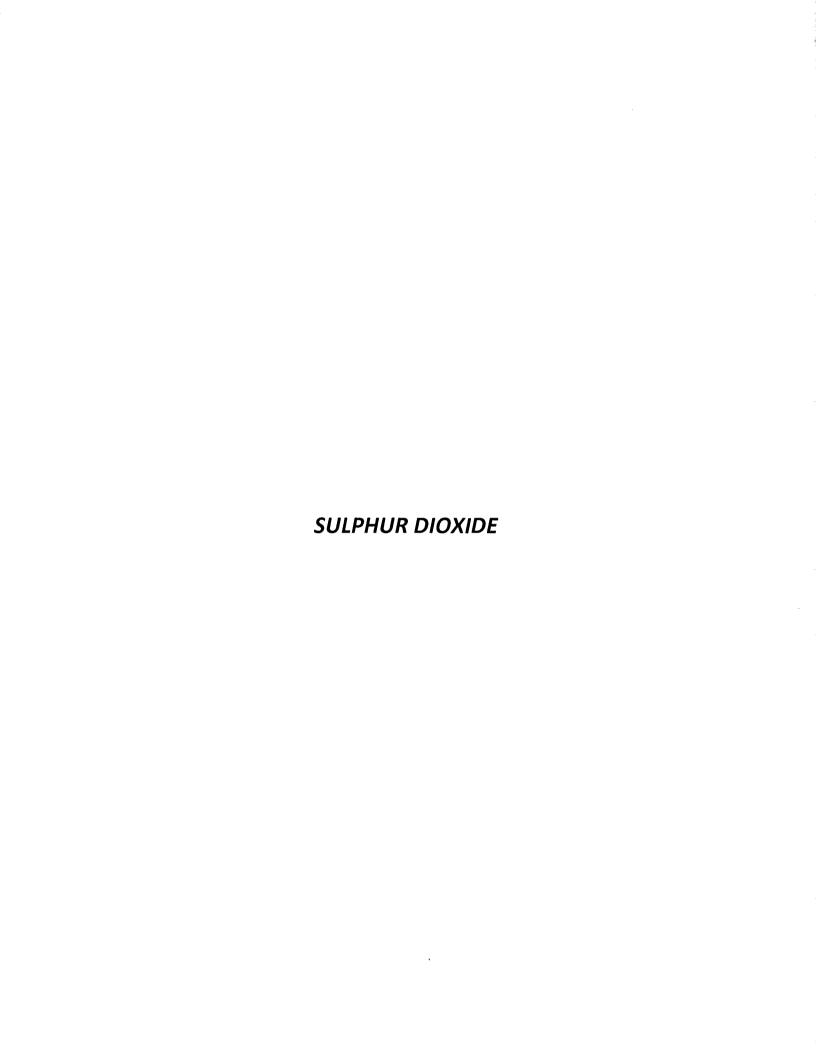
Maxxam AIR SOP-00242: Precipitation Collector Installation / Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Sulphur Dioxide - API 100E UV Flourescent Analyzer
Hydrogen Sulphide - API 101E UV Flourescent Analyzer
Total Hydrocarbons - Thermo 51C FID Analyzer
Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
Ozone - Thermo 49i Photometric Analyzer
Particulate Matter (PM2.5) - R&P 1405F Teom Unit
Wind System - Met One Unit
Relative Humidity - Met One Unit
Barometric Pressure - Met One Unit
Ambient Temperature - Met One Unit
Precipitation - Met One Unit
Datalogger - ESC 8832

## APPENDIX I CONTINUOUS MONITORING DATA RESULTS





# SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

i d	KDGS.	24	75	25	54	24	54	77	24	24	24	24	24	75	24	24	24	24	24	24	24	24	54	24	54	24	24	24	24	\$	24	24		
24-HOUR	AVG.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0		
DAILY	MAX.	7	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	7	0	1	1	1	0	0	0	0	0	0		
23:00	On n	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	Γ.	0.0
22:00	73.00	0	0	0	0	0	s	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	1	0.0
21.00	72.00	0	0	0	0	0	0	s	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
20:00	77.00	0	0	0	0	0	0	0	s	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
19:00	Zoron	0	0	0	0	0	0	0	0	s	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
18:00	73.00	ч	0	0	0	0	0	0	0	0	s	0	0	0	0	0	s	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0.1
17:00	On other	н	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	s	0	0	0	0	0	1	0	0	0	0	0	0	0	0	ч	0.1
16:00	9	0	0	0	0	0	0	0	0	0	0	1	s	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	П	0.0
15:00	00.01	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	s	0	0	U	0	1	0	0	0	0	0	0	0	1	0.0
14:00	OCT -	н	0	0	0	0	0	0	0	0	0	0	0	н	0	0	0	0	0	0	s	0	U	0	0	0	0	0	0	0	0	0	1	0.1
13:00		ч	0	0	0	0	0	0	0	0	0	0	0	U	0	0	0	0	0	0	0	S	U	Ţ	0	0	0	0	0	0	0	0	₽	0.1
12:00	O'CT	ч	0	0	0	0	0	0	0	0	0	0	0	U	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	П	0.0
11.00		0	0	0	0	0	0	0	0	0	0	0	0	U	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0.0
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C =CALIBRATION C -QUALITY ASSURANCE R RECOVERY C - AMAINTENANCE R RECOVERY C - AMAINTENANCE R RECOVERY C - COULECTION ERROR C - OUT FOR REPAIR K - COLLECTION ERROR C - COULECTION ERROR R - COLLECTION  COL	X X HOUR AVERAGES FOR MAY 2015	0.0	0 0 0 0	3 O N	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 25 24 25 26 27 26 29 30 31	

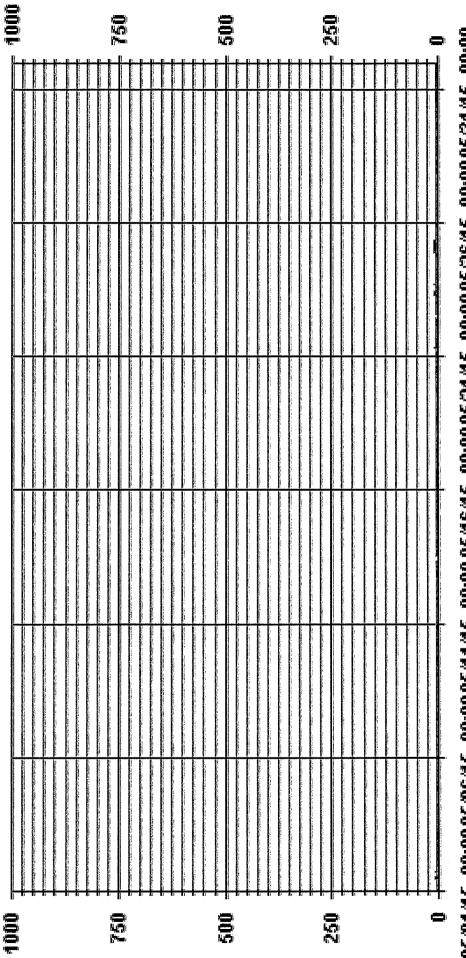
# OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 8-1272 PPB 25-HR 488 PPB

## MONTHLY SUMMARY

NUMBER OF 144R EXCEEDENCES:			0 0					
NUMBER OF NON-ZERO READINGS:			31					
MAXIMUM 1-HR AVERAGE:		₩	PPB	PPB @ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 24-HR AVERAGE:		0.4	PPB			ON DAY(S) VAR-VARIOUS	22	
IZS CALIBRATION TIME:	38	HRS		OPERATIONAL TIME:	ME		744	HRS
MONTHLY CALIBRATION TIME:	œ	HRS		AMD OPERATION UPTIME:	I UPTIME:		100.0	%
STANDARD DEVIATION:	0.21			MONTHLY AVERAGE:	AGE:		0	PPB

ði Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

PPB

**SO2**\_



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

SULPHUR DIOXIDE MAX instantaneous maximum in ppb

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RDGS.	24	24	24	24	24	23	24	24	24	24	24	74	54	24	24	24	24	24	24	24	24	24	24	24	24	24	54	54	24	24	24		
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17:00	2	0	0	0	↔	ч	0	0	0	0	S	7	0	∺	ч	0	S	7	7	1	1	ч	ч	ч	~	ч	4	0	П	Н	1	7	0.7
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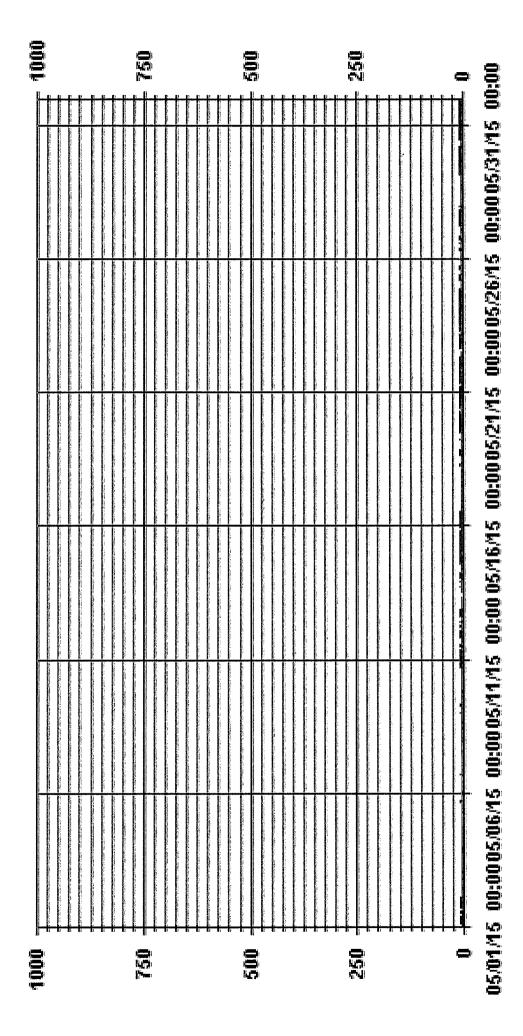
## STATUS FLAG CODES

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# MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			380						
MAXIMUM INSTANTANEOUS VALUE:			m	PPB	@ HOUR(S)	6,8	ON DAY(S)		27
						VAR-VARIOUS	SIOUS		
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME: STANDARD DEVIATION:	38 10 0.57	HRS		OPERATIC	OPERATIONAL TIME:			743	HRS

Of Hour Averages



- LICA31 SO2MAX PPB

LICA31 SO2\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 31 Site Name : LICA31 Parameter : SO2 Units : PPB

Wind Parameter : WDR Instrument Height : 10 Meters

4.01 100.00 4.01 3.72 3.72 MM 00. 8. 8. 00. 00. 3.29 3.29 WNW 00. 0. 00. 00. % 4.15 4.15 90. 00. 8 00. 0, 1.71 00, 1.71 8. 00 8. 4.15 4.15 00. 80. S 00. 00. 0. 6.16 6.16 00. 8 SSW 00. 00. 0. 5.30 8.59 10.88 13.46 8.59 10.88 13.46 00. 0. 00. 00. 8 SSE 0. 0. 00. % 8. Direction SE 00, 00. 80, 00. 00. 5.30 ESE 8 00. 00. 0. 0. 8.30 8.30 0. 0. 0. 0. 8 ធ 8.59 8.59 00. 8 00. ENE 00. 00. 6.44 6.44 Ή 8 00. 8. 00. 0. NNE 6.01 6.01 00, 00. 0. 8 00. 5.15 Calm : .00 % 5.15 00. 00. 00. 00. 00. × Totals Limit 340 20 9

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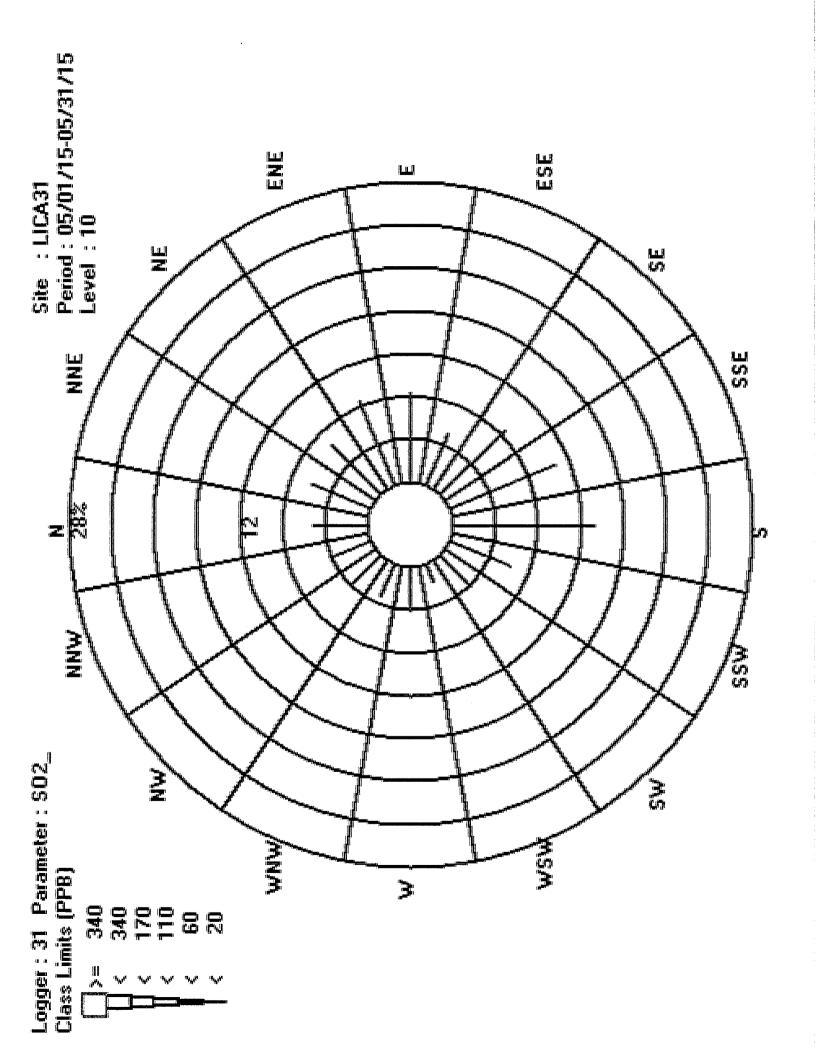
٧ ٧ Total # Operational Hours : 698

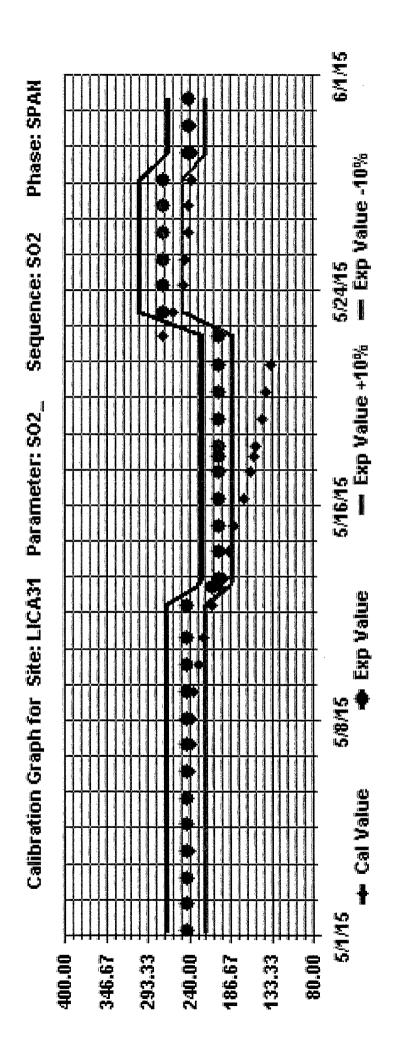
Distribution By Samples

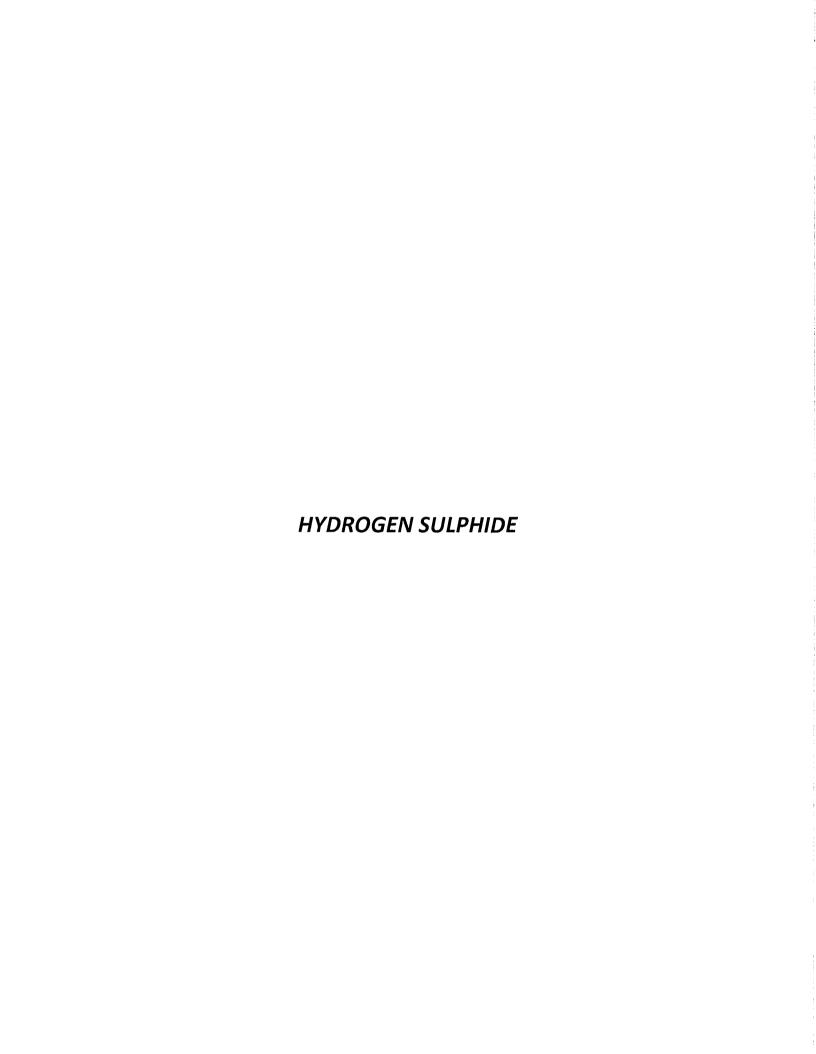
	Fred	869						
	NNW	28						28
	WM	56						26
	WINW	23						23
	¥	29						29
	WSW	12						12
	SW	29						29
	SSW	43						43
	Ø	94						94
	SSE	76						92
Ulrection	SE	09						9
ATC.	ESE	37						37
	ы	28						28
	ENE	09						09
	Ħ	45						4.5
	NA	42						42
	z	36						36
	Limit	20	9	110	170	340	340	Totals
	H	<b>v</b>	<b>v</b>	<b>v</b>	٧	<b>v</b>	X	н

Calm : .00 %

Total # Operational Hours : 698







JOB # 2833-2015-05-31- C



# HYDROGEN SULPHIDE (H2S) hourly averages in ppb

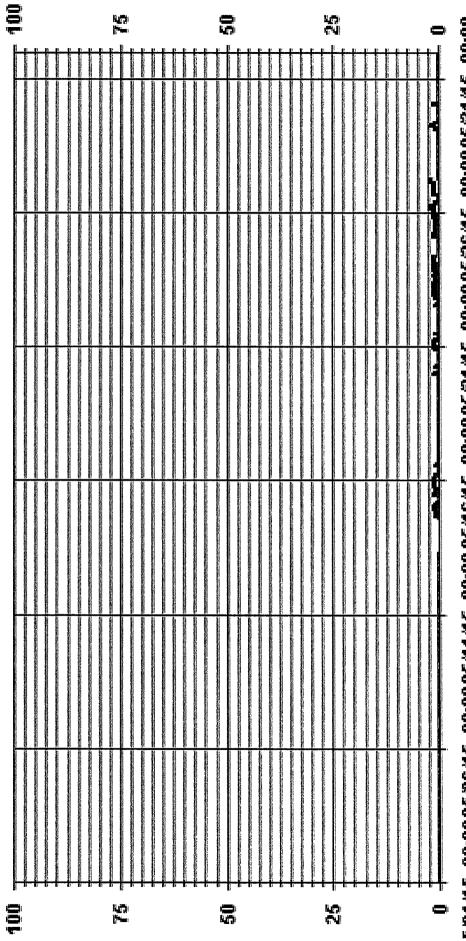
MST																						The Continued and	190			
HOUR START HOUR END	0:00	2:00	2.00	3.00 4.00 5.00 4.00 5.00 6.00	9 00	9 00	000	3 00.2	.00 .00 .00	00 10 (	0 11.0	0 12.0	0 13.00	14:00	15:00 16:00	16:00	17.00	18:00	19:00	20-00	22:00	22:00 2	o ≥	DAILY 24	24-HOUR AVG.	DGS.
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'n	s	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	24
7	0	0	0		0	0	0							0	0	0	0	0	0	0	s			0	0.0	54
æ	0	0	0		0	0	0							0	0	0	0	0	0	s	0			0	0.0	54
On	0	0	0		0	0	0							0	0	0	0	0	s	0	0			0	0.0	54
10	0	0	0		0	0	0							0	0	0	0	s	0	0	0			0	0.0	54
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STATUS FLAG CODES -CALIBRATION -CALIBRATION -CALIBRATION -CALIBRATOR -CALIBRAT
N (0)

			MO	MONTHLY SUMMARY	>			
NUMBER OF 24-HR-EXCEEDENCES			0 0					
NUMBER OF NON-ZERO READINGS:	S.		26					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		2 0.8	9 P B B B B B B B B B B B B B B B B B B	@ HOUR(S)	VAR	ON DAY(S) ON DAY(S) VAR-VARIOUS	VAR 26	~ 10
IZS CALIBRATION TIME: MONTHLY CAUBRATION TIME:	31	HRS HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	IME: N UPTIME:		724 97.3	HRS
STANDARD DEVIATION:	0.39			MONTHLY AVERAGE:	AGE:		0	PPB

ALBERTA ENVIRONMENT: 15HR-3 TO PPB. 24HR 3 PPB

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

H28

- LICA34



MaxXam

HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

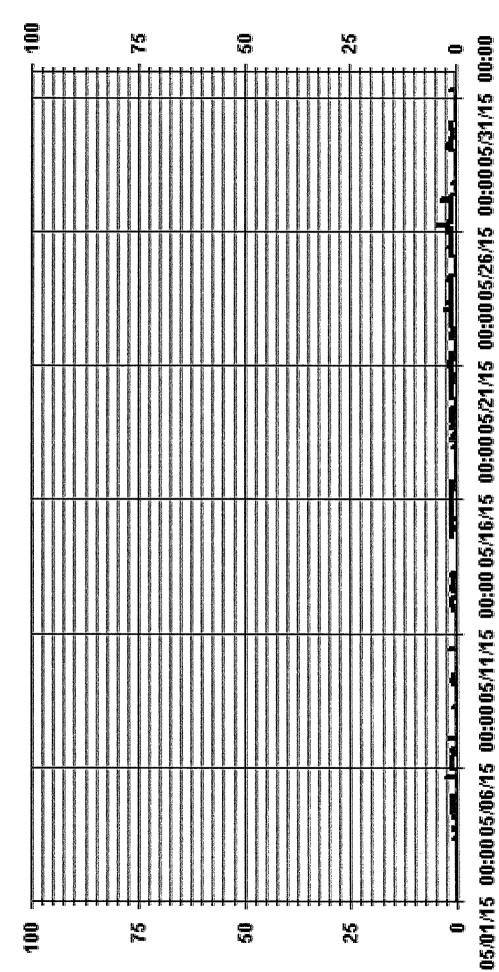
HOUR AVG. RDGS.			0.1 24					0.0 24					0.4 13	0.9 15									1.2 24										
54	o o	o'	o.	0	0.1	0.7	0.1	o.	0.2	0.1	o.	o.	0	o	₹i	0	o,	o	o	o.	o.	o.	τi	o.	Ö	7	0	0	0.7	0	o.		
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8:00 9:00			0	0	0		0	0	<del>-</del>	0	0	H		`	0			0	0		0			2		s		0				2	
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00:5	0	0	0	0	0	1	0	0	+	0	0	+	7	>	н	н	0	0	0	1	+	4	4	7	⊣	7	m	0	s	0	0	m	
5.00	s	0	0	1	0	H	0	0	0	0	0	7	0	>-	H	₽	0	0	⊣	Ţ	2	1	1	1	H	2	m	0	2	s	0	æ	0.7
3:00	0	s	0	0	0	1	7	0	1	0	0	1	H	>	1	7	0	0	H	1	H	1	m	H	1	7	+	0	₽		s	æ	80
2:00	0	0	s	0	0	1	0	0	0	0	0	<b>1</b> ~1	0	<b>&gt;</b>	1	7	0	0	0	Н	7	1	1	⊣	0	₩	н	0	П	Н	0	1	0.4
1:00 2:00		0	0	s	0	H	0	0	0	0	0	0	0	>-	₽	H	0	0	τ	⊣	Ŕ	0	₽	1	0	7	Н	0	0	+	0	2	0.4
HONENTARI (£00 1:00 2:00 3:00 4:00 5:00 HOUNEND 1:00 2:00 3:00 4:00 5:00 6:00	0	0	0	0	s	4	0	0	0	0	0	0	1	>-	1	Н	0	₩	₩	1	H	0	1	П	0	7	1	0	0	ы	0	2	ני
HOUR START OF DO HOUR END 1.00																			: 3		, ii	- 1 - 1 - 1 - 1		GI.	17. 17.	7,						MAX	Sive
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NUMBER OF NON-ZERO READINGS:	es:		272							
MAXIMUM INSTANTANEOUS VALUE:	TUE		4	PPB	@ HOUR(S)	(G	7	ON DAY(S)		56
							VAR-V	VAR-VARIOUS		
IZS CALIBRATION TIME:	31	31 HRS		OPERATI	OPERATIONAL TIME:				723	HRS
MONTHLY CALIBRATION TIME:	11	11 HRS								
STANDARD DEVIATION:	09'0									

MONTHLY SUMMARY

Of Hour Averages



H25MAX ■ LICA31

LICA31 H2S\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

00. 00. 00. NNW Freq 4.25 100.00 4.25 00. 00. 00. 3.81 00. E 00. % 3.81 WNW 3.37 00. 00. 3.37 00. 00. 4.39 4.39 00. 00. WSW 1.75 00. 1.75 00. 00. 4.25 4.25 00. 00. SW 00. 00. 6.59 4.98 7.47 11.14 12.60 6.59 SSW 00. 00. % 00. 00. 7.47 11.14 12.60 κ 00. SSE 0. 00. Direction 00. 00. 00. SS 4.98 ESE 00. 00. 00. 8.50 00. 8.50 00. % ω 8.79 00. 00. 8.79 ENE 00. 00. 6.59 6.59 벋 00. 00. 6.15 6.15 00. NNE 00. 00. 5.27 00. 5.27 00. 00. z Totals 20 50 10 X, ٧

Calm : .00 %

Total # Operational Hours : 682

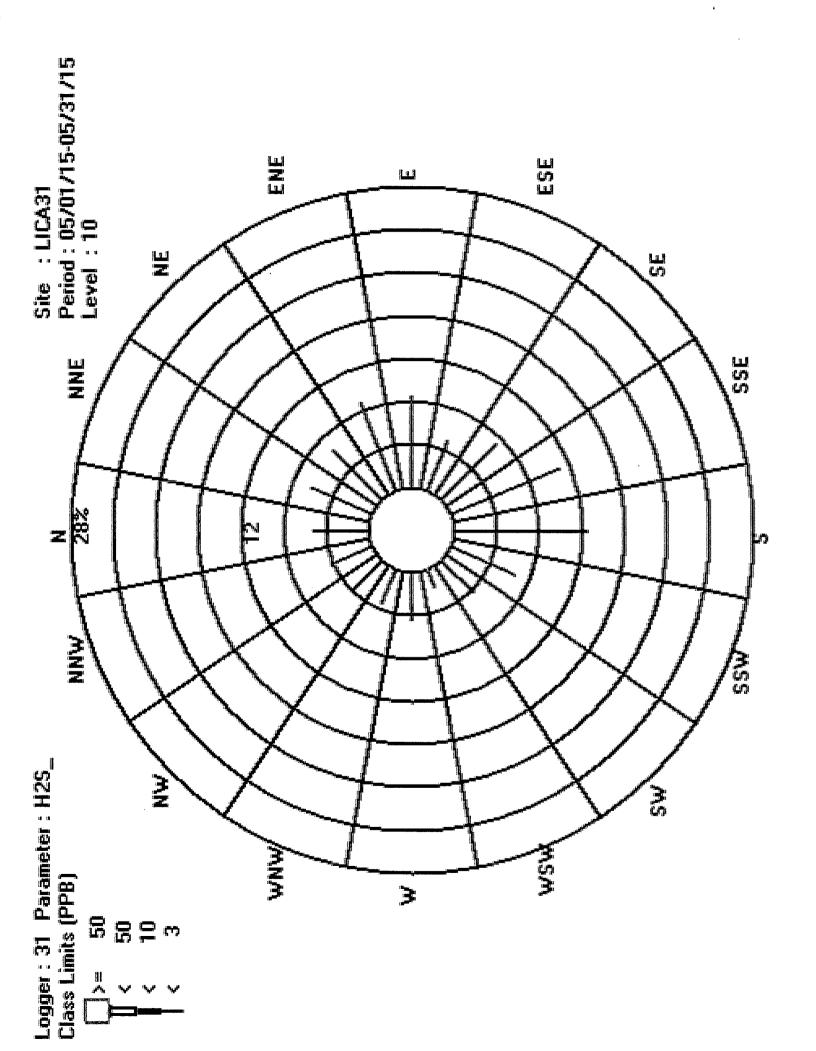
Distribution By Samples

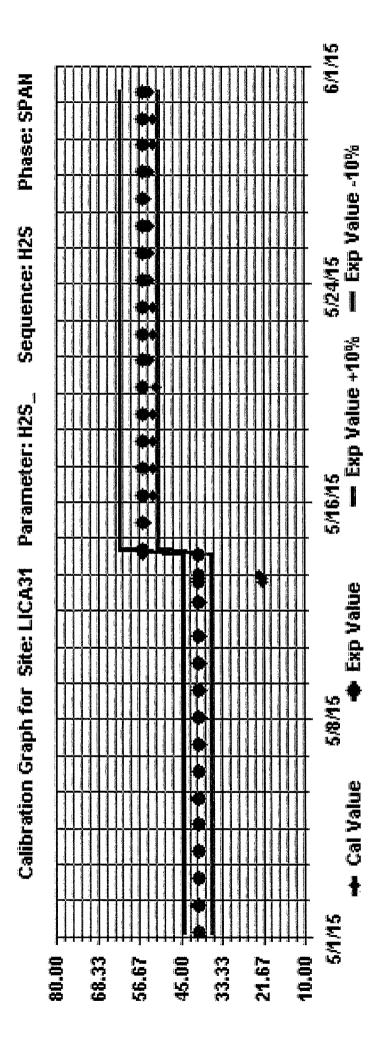
Direction

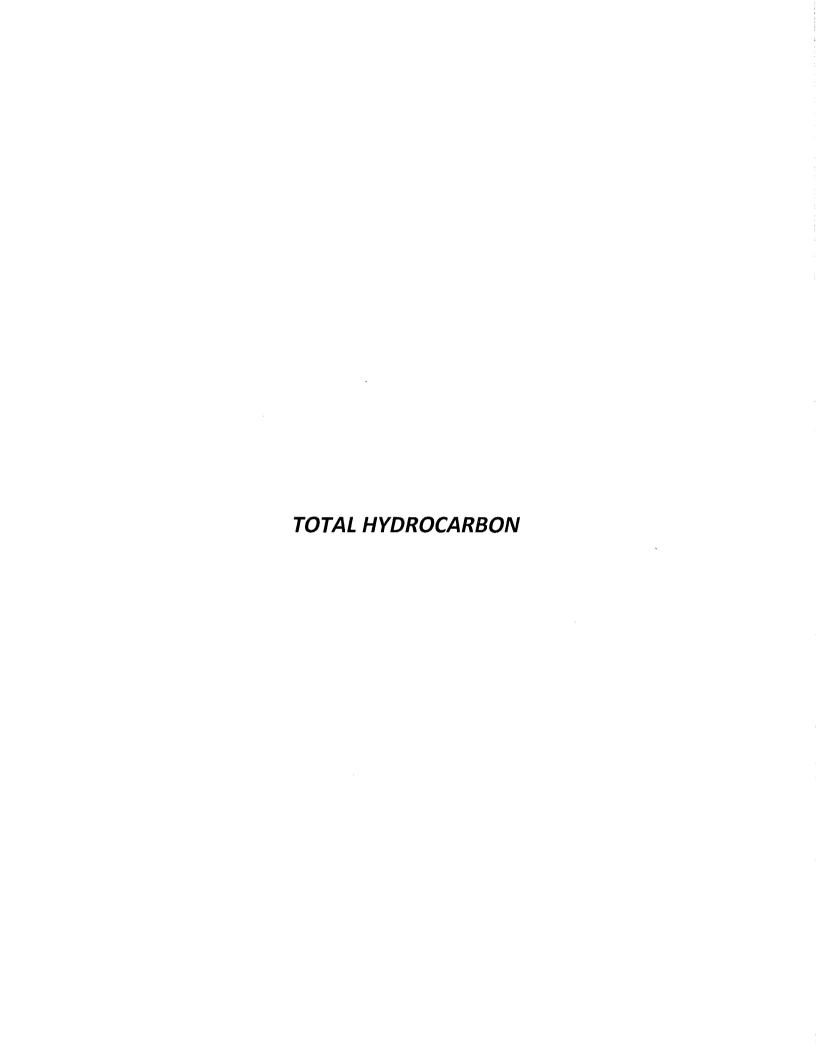
Fred	682				
NNW	59				29
NW	56				26
WNW	23				23
Œ	30				30
WSW	12				12
SW	29				29
SSW	45				45
w	98				98
SSE	94				92
SE	51				51
ESE	34				34
ы	28				28
ENE	09				9
Æ	45				45
NNE	42				42
z	36				36
Limit	m	10	20	50	Totals
	٧	V	٧	Ķ	

Calm : .00 %

Total # Operational Hours : 682







TOTAL HYDROCARBONS (THC) hourly averages in ppm

### MST

MaxXam

RDGS.	24	24	24	54	24	23	24	24	24	24	24	24	54	54	54	24	24	24	24	24	24	24	74	74	54	24	24	24	24	77	24		
24-HOUR AVG.	2.0	2.0	2.0	2.1	2.0	1.9	1.9	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.1	2.2	2.1	2.0	2.0	2.0	2.1	2.2	5.0	5.0	2.1	2.0	2.1	2.2	2.1	2.1		
DAILY	2.1	2.0	2.1	2.4	2.1	5.0	2.1	2.1	2.3	2.1	2.2	2.3	2.2	2.1	2.1	2.2	2.4	2.4	2.0	2.0	2.0	2.5	2.8	2.4	2.4	2.2	2.2	2.2	2.4	2.4	2.7		
23:00	2.0	2.0	2.0	5.0	s	1.8	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.1	2.0	2.2	2.1	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.4	2.1	2.1	2.2	2.2	2.1	2.0	2.4	5.0
22:00	1.9	2.0	2.0	2.0	2.0	s	2.1	2.1	2.0	2.0	2.0	s	2.0	5.0	17	2.1	2.1	1.9	5.0	1.9	1.9	2.0	2.0	2.0	2.1	2.0	2.1	2.2	2.1	2.0	2.2	2.2	2.0
22.00	1.9	2.0	2.0	2.0	2.0	2.0	s	2.1	2.0	2.0	2.1	2.1	s	2.0	1.9	2.1	2.1	1.9	2.0	1.9	2.0	2.0	2.0	1.9	2.0	2.1	2.0	2.2	2.1	2.1	2.0	2.2	5.0
20:00	2.0	2.0	2.0	2.0	2.0	2.0	2.0	S	2.0	2.1	2.1	2.1	2.0	s	1.9	2.1	2.2	1.9	2.0	1.9	2.0	2.0	2.0	1.9	2.1	2.0	1.9	2.2	2.1	2.0	2.4	2.4	5.0
19.00	2.0	2.0	2.1	2.0	2.0	1.9	2.0	2.0	S	2.1	2.1	2.1	2.0	1.9	s	2.1	2.1	1.9	2.0	2.0	2.0	2.5	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.7	2.7	2.1
19:00	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.2	s	2.0	2.1	2.0	1.9	2.0	s	2.1	1.9	2.0	119	2.0	2.2	2.0	2.0	2.0	1.9	1.9	2.1	2.1	2.1	2.0	2.2	2.0
17.00	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.2	2.0	s	2.1	2.0	2.0	1.9	2.1	S	1.9	2.0	1.9	2.0	2.0	2.0	1.9	2.0	2.0	1.9	2.1	2.1	2.1	2.0	2.2	2.0
16:00	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.1	2.2	2.0	1.9	2.1	2.0	2.0	2.0	2.2	2.1	s	2.0	1.9	2.0	2.0	2.0	1.9	2.0	2.0	1.9	2.1	2.1	2.0	2.0	2.2	2.0
15.00	1.9	2.0	2.0	2.1	1.9	2.0	1.9	2.0	2.2	2.0	1.9	2.1	2.1	2.0	2.0	2.1	2.1	2.1	S	1.9	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.1	2.1	2.0	2.0	2.2	2.0
14.00	2.0	5.0	2.0	2.1	2.0	1.9	1.9	2.0	2.2	2.0	1.9	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	S	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.0
13.00	1.9	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.2	2.0	2.0	U	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	S	2.0					2.0	2.1	2.1	2.1	2.2	2.2	2.0
7. 12.00	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.2	2.0	2.0	U	2.1	2.1	2.0	2.1	2.1	2.0		2.0	1.9	s	2.1	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.0
0 11:00	2.0	2.0	2.0	2.1	2.0	<u>«</u>	1.9	2.0									2.1					, ,			2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.0
0 10.0	2.0	1 2.0	2.0	2.4	. 2.1	1.9	1.9										2.1			2.0	1.9	2.0	2.6			2.0			. 2.1			2.6	2.1
0. 9-00 0. 10-0	2.0		0.7	2.2				1 2.1													1.9								2.1			5 2.5	1.2.1
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0.7 . 00	1 2.	0 2.0	0 2.1	1 2.	1 2.	9	9 1.9	1 2	2 2	1 2.	1 2.0	1 2.	2 2.	0 2.1	0 2.0	0 2.1	3 2.	3 2.	9 1.9	.0	0 1.9	1 2.	6 2.8	4 2.3	0 2.0	1 2.2	2 S	.2.1		.3 2.	2 2.	6 2.1	1 2.
00 6(	1 2.	.0 2.	.0 2.	.0 2.	.0	.9	.9	.1 2.	.1 2.	.1 2.	.1 2.	.2 2.	2.2 2.	2.0 2.	.0	.0 2.	.4 2.	.4 2.	2.0 1.	.0 2.	.0 2.	.1 2.	.3 2.	.4 2.	2.0 2.	.2 2.	.2 2.	0.	<b>S</b> 2.	7	.2 2.2		.1 2
00 5:	2 2	1.9 2	.0	2.0 2	2.1 2	1.9 1	e: 1	2.1 2	.1 2	.1 2	.1 2.1	.3			.0 2	.0	.3	4 2		2 0.	.0 2	.1 2	.0	.0								2.4 2	1. 2
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00 3	2.1 2	2.0		2.0 2	.,			2.1 2															2.0 2				•					2.3 2	
00 ~ 2	2.0		_		2.0 2			2.1												2.0		2.1				2.2			2.2				
0:00 . 1 1:00 . 2	2.0			2.0				2.1																								2.4	
Hourstant 0000 1000 200 3:00 4:00 5:00 6:00 77 Hourstant	DAY 1	2	É	4	2	9	1		X.	75. 41.0			15g				31 j			(1) (5)			A S		( . A () A . 3	a 10 0157 2478	/37		.59		919 21 32	. TAX	HOURLY AVG

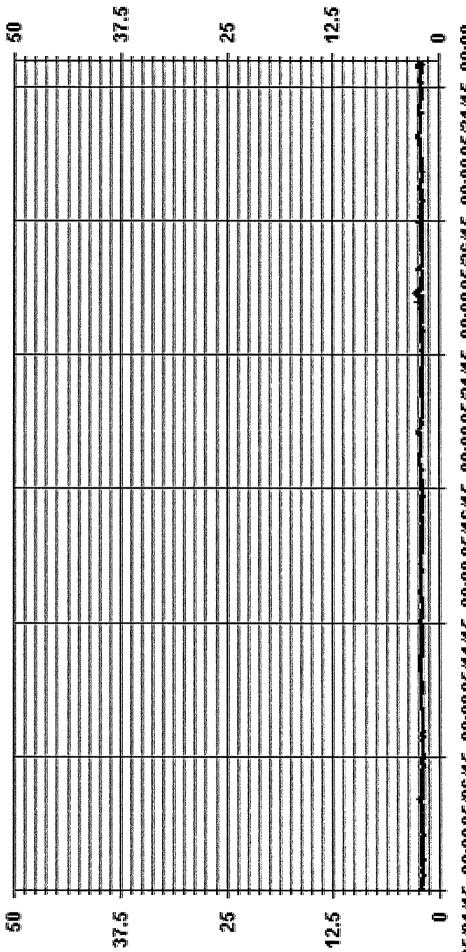
## STATUS FLAG CODES

5 2 2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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## MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	IGS:		707					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		2.2		PPM @ HOUR(S) PPM	7	ON DAY(S) ON DAY(S) VAR-VARIOUS	23 VAR	4 B
IZS CALIBRATION TIME: Monthly Caubration time:	32	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	IME		743 99.9	HRS
STANDARD DEVIATION:	0.12			MONTHLY AVERAGE:			2.0	2.0 PPM

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00



MaxXam A Bureau Verlas Group Company

St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

maximum in ppm

⊏
instantaneous
MAX
TOTAL HYDROCARBONS

8.90 1000 1000 1000 1000 1000 1000 1000 1	00 13:00 14:00 1 00 14:00 15:00	15:00 15:00	17:00 18	300 19-00	20:00 2	1:00 22:0 2:00 23:0	0 23:00	DAILY 24	24-HOUR RDGS.
20	The second secon	TOTO TAKEN	18:00 15	3.00 Z0.00	21.00 2	The state of the s	The second secon		
20         20<	2.0								
20         20<	5 2.1 2.0	2.0 2.0	2.0 2	2.0 2.0	2.1	2.1 2.1	. 2.1	2.5	2.0 24
22         21         24         33         30         25         29         27           26         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         23         24         23 </td <td>2.0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5.0</td> <td></td>	2.0							5.0	
26         24         23         23         24         23         24         23         24         23         24         23         24         25         26         13         19         19         19         18         19         18         19         19         18         19         18         19         18         19         18         19         18         19         18         19<	2.3							3.2	
19         19<	2.2	2.0 2.0						2.6	
1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 2.2 2.2 2.2 2.2 2.3 2.3 2.3 2.3 2.3 2.3	2.0	2.0 2.0						2.0	1.9 23
22         22         22         21         21         21         21         22         22         22         22         22         22         22         22         22         22         22         22         22         23<	1.9	2.0 2.0					. 2.1	2.4	
22         24         22         23         23         23         23         25         25         27         20<	2.1							2.2	2.1 24
24         25         24         25         21         22         21         22         21         22         22         22         22         22         22         20<	2.2							2.6	2.3 24
22 2.2 2.1 2.1 2.0 2.0 2.0 2.0 2.0 2.2 2.2 2.2 2.2 2.2	2.1	2.1 2.1						2.5	2.2 2.4
24         2.2         2.2         2.1         C         C           2.2         2.2         2.1         2.0	2.0							2.2	
22         22         22         21         21         22         22         21         21         21         22         22         21         21         21         22<	U							9.2	
21         21         20<	2.1							2.2	
21         21         20<	2.2							2.2	
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         2.2	2.1	2.0 2.0	2.0 2					2.2	2.1 24
24         24         23         23         25         25         23           25         25         24         23         23         22         22         23           20         20         20         20         20         19         20         20           20         20         20         20         19         20         20           20         21         20         20         19         20         20           22         21         20         20         20         20         20         20           22         21         21         20         20         20         20         20           23         24         30         30         30         27         24         20           23         20         21         20         20         20         20         20           23         20         21         20         20         20         20         20           23         20         21         20         20         20         20         20           23         23         24         23         22         22	2.1							2.3	
25         25         24         22         21         21         21         21         21         22         22         22         23         24         23         24<	2.2							2.7	
2.0         2.0         2.0         2.0         1.9         2.0         2.0           2.0         2.0         2.0         2.0         2.0         2.0         2.0           2.0         2.1         2.0         2.0         2.0         2.0         2.0           2.2         2.1         2.1         2.1         2.1         2.0         2.0           2.2         4.6         3.0         3.0         3.0         2.7         2.8         5           2.0         2.6         2.4         2.0         2.0         2.0         2.0         2.0           2.3         2.6         2.0         2.0         2.0         2.0         2.0         2.0           4.1         3.6         2.6         3.0         5         2.0         2.0         2.1           2.3         2.2         5         2.3         2.2         2.2         2.2         2.2           2.1         2.1         5         2.0         2.0         2.0         2.1         2.2           2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2           2.3         2.4         2.3	2.1							2.5	
20         20         21         20<	2.1							2.1	
20         2.1         2.1         2.0         2.0         1.9         2.0         2.0           22         2.1         2.1         2.1         2.1         2.1         2.0         2.0           2.0         2.6         3.0         3.0         3.0         2.7         2.8         5           2.3         2.0         2.1         2.0         2.0         2.0         2.0         2.0           4.1         3.6         2.6         3.0         5         2.0         2.0         2.1           2.3         2.3         2.2         5         2.3         2.2         2.2         2.2           2.1         3.6         3.0         5         2.0         2.0         2.1         2.2           2.1         3.5         2.4         2.3         2.2         2.2         2.2         2.2         2.2           2.1         2.1         5         2.4         2.3         2.2         2.1         2.1         2.1           2.2         2.2         2.2         2.2         2.1         2.1         2.1         2.1           2.2         2.3         2.4         2.3         2.2         2.2         <	2.0							2.1	
22     21     21     21     21     24     20       22     46     30     30     30     27     28     \$       23     26     26     24     22     21     \$     24       23     20     21     20     20     \$     24     24       4.1     36     26     30     \$     20     20     21       23     23     26     30     \$     20     21     22       21     2     2     2     2     2     22       21     2     2     2     2     2     2       22     2     2     2     2     2     2       23     2     2     2     2     2     2       24     2     2     2     2     2     2       22     2     2     2     2     2     2       22     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 <td>s</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2.1</td> <td>2.0 24</td>	s							2.1	2.0 24
22         46         30         30         30         27         28         \$           20         26         26         24         22         21         5         20           23         26         26         24         22         21         5         20           41         36         26         30         5         20         20         21           23         23         26         30         23         22         22         22           21         21         5         20         20         21         22           22         24         23         22         21         21         21           25         26         22         22         21         21         21           27         23         24         23         22         22         21         21           27         23         24         23         22         22         21         23	2.3							7.7	
20         26         26         24         22         2.1         \$         20           23         20         21         20         20         5         24         24           4.1         36         21         20         5         20         20         21         24           23         23         22         3         23         22         22         22         22         22         22         22         22         22         22         22         22         22         23         23         23         23         23         23         22         22         22         22         22         22         22         22         22         23	2.0							2.7	
23     20     21     20     20     5     24     24       41     36     26     30     5     20     20     21       23     23     22     3     2     2     2     2       21     3     2     3     2     2     2     2       21     4     23     2     2     2     2     2       25     5     2     2     2     2     2     2       22     23     2     2     2     2     2     2       22     23     2     2     2     2     2     2	2.1							2.7	
4.1         3.6         2.6         3.0         \$         2.0         2.0         2.1           2.3         2.3         2.2         \$         2.3         2.2         2.2         2.2           2.1         2.1         5         2.0         2.0         2.1         2.1         2.2           2.5         5         2.4         2.3         2.2         2.1         2.1         2.1           2.2         2.5         2.2         2.2         2.2         2.1         2.1         2.1           2.2         2.3         2.4         2.3         2.2         2.2         2.1         2.1           2.2         2.3         2.4         2.3         2.2         2.2         2.1         2.3	2.2							4.9	
23 23 22 5 23 22 22 22 22 22 22 22 22 22 22 22 22	2.2							4.6	
2.1         2.1         5         2.0         2.0         2.1         2.1         2.2           2.5         5         2.4         2.3         2.2         2.1         2.1         2.1           5         2.6         2.5         2.2         2.2         2.1         2.1         2.1           2.2         2.5         2.2         2.2         2.1         2.1         2.1           2.2         2.3         2.4         2.3         2.2         2.2         2.1         2.3	2.0							4.7	2.3 2
25 <b>S</b> 24 23 22 2.1 2.1 2.1 2.1 2.1 2.1 2.2 2.6 2.5 2.2 2.2 2.1 2.1 2.1 2.1 2.2 2.3 2.4 2.3 2.2 2.2 2.1 2.3 2.3 2.4 2.3 2.2 2.2 2.1 2.3 2.3 2.4 2.3 2.2 2.2 2.1 2.3 2.3 2.4 2.3 2.2 2.2 2.1 2.3 2.3 2.4 2.3 2.2 2.2 2.1 2.3 2.3 2.4 2.3 2.2 2.2 2.1 2.3 2.3 2.3 2.4 2.3 2.2 2.2 2.1 2.3 2.3 2.4 2.3 2.3 2.4 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3	2.4	2.3 2.4		2.6 2.3				2.6	
S         2.6         2.5         2.2         2.2         2.1         2.1         2.1         2.1           2.2         2.3         2.4         2.3         2.2         2.2         2.1         2.3	2.2	2.2 2.1	2.1 2			2.2 2.2		2.5	2.2 2.2
2.2 2.3 2.4 2.3 2.2 2.2 2.1 2.3	2.1	2.1 2.1		2.1 2.1			. 2.1	2.6	2.2
	2.2	2.1 2.2		` 1				12.3	2.8 2
1 4.1 4.6 3.0 3.2 3.0 2.7 2.9 2.7	2.4	2.4 3.0	3.0	3.3 12.3	4.5	3.4 3.7	4.9		
12 22 12 22 22 21 22 21	2.1		22 2	20 20	22	22 22	22		

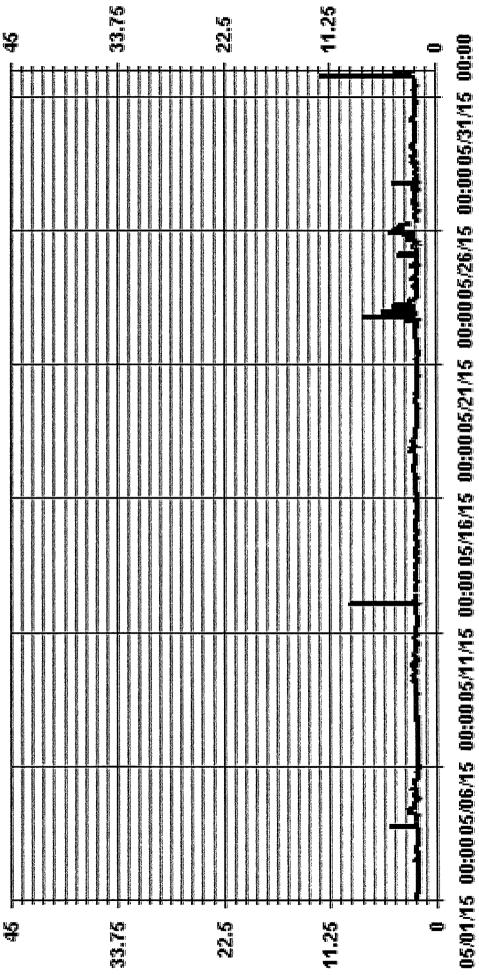
## STATUS FLAG CODES

COO OW I SOLVIE	C COLIERATION C C COLIERATION C C COLIERATION C C COLIERATION C COLIERATION C COLIERATION C COLIERATION C COLIERATION C COLIERATION C COLIERATION C COLIERATION C COLIERATION C COLIERATION C COLIERATION C C COLIERATION C C COLIERATION C C C C C C C C C C C C C C C C C C C	

## MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			706						
MAXIMUM INSTANTANEOUS VALUE:	ü		12.3	Mad	@ HOUR(S)	19	ON DAY(S)		31
						VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME: MONTHLY CALBRATION TIME: STANDARD DEVIATION;	32 HRS 5 HRS 0.63	HRS	-	OPERATIC	OPERATIONAL TIME:		•	743	HRS

Of Hour Averages



- LICA31 THCMAX

LICA31 THC / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

	Freq	00.00	00.	00.	00.		
	NNW	3.96 100.00	00.	00.	00.	3.96	
	MN	3.67	00.	00.	00.	3.67	
	WNW	3.25	00.	00.	00.	3,25	
	<b>Z</b>	4.24	00.	00.	00.	4.24	
	WSW	1.69	%	%	00.	1.69	
	SW	4.10	00.	00.	00-	4.10	
	SSW	6.36	00.	00.	00.	6.36	
	w	13.43	00.	00.	00.	13.43	
	SSE	10.60	00.	00.	00.	10.60	
Direction	S	9.19	8,	00.	00.	9.19	
Di	ESE	5.37	00.	00.	00.	5.37	
	ы	8.20	00.	00.	00.	8.20	
	ENE	8.48	00.	00.	00.	8.48	
	呂	6.36	00.	00.	00.	6.36	
	NNE	5.94	00.	00.	00.	5.94	
	z	5.09	00.	00.	00.	5.09	
	Limit	3.0	10.0	50.0	50.0	Totals	
		٧	٧	<b>v</b>	X		

Calm : .00 %

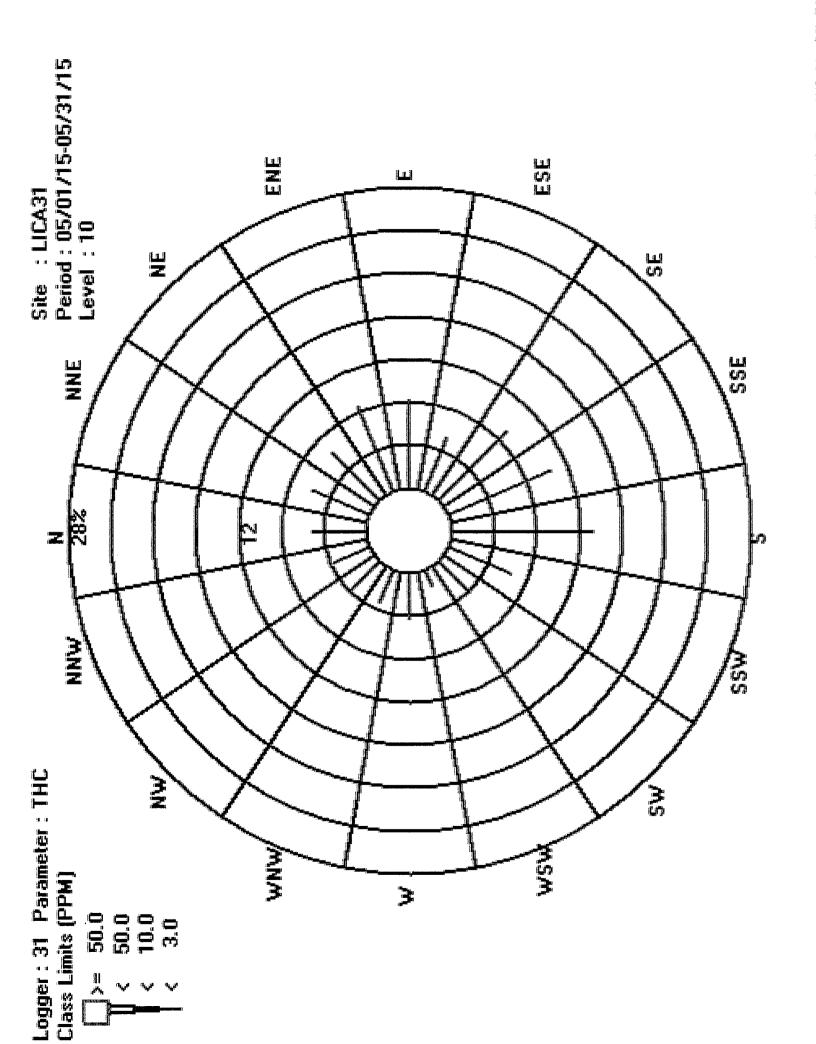
Total # Operational Hours : 707

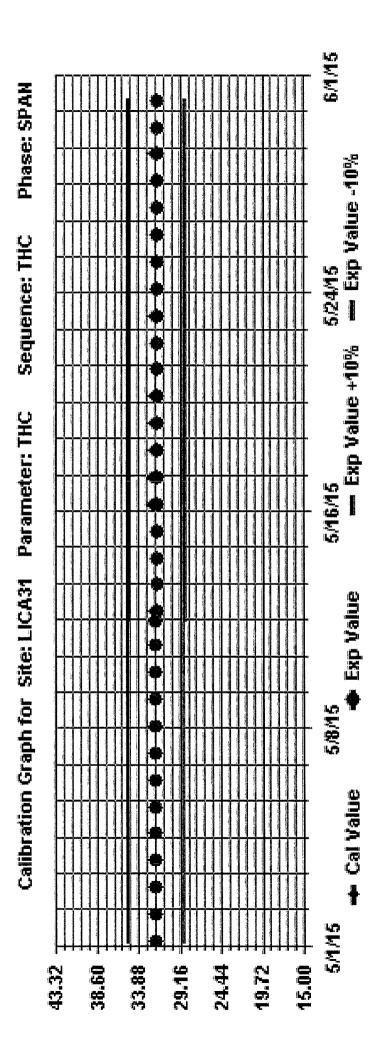
Distribution By Samples

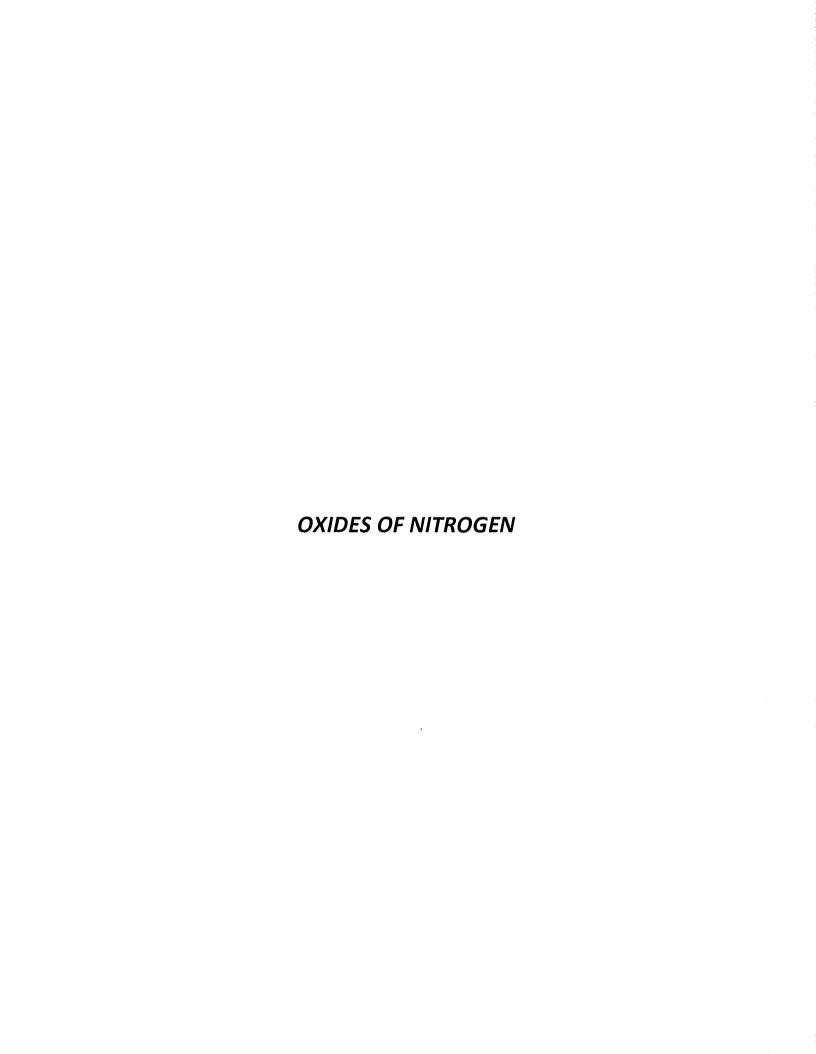
	Freq	707				
	NNW	28				28
	MN	56				56
	WNW	23				23
	Z	30				30
	WSW	12				12
	SW	29				29
	SSW	45				45
	w	95				95
	SSE	75				75
Direction	SE	65				65
Dire	ESE	38				88
	ы	28				28
	ENE	09				09
	Ħ	45				45
	NNE	42				42
	z	36				36
	iami t	3.0	10.0	50.0	50.0	Totals
	H	<b>v</b>	V	V	X.	£1

Calm : .00 %

Total # Operational Hours : 707







NDUSTRY & COMMUNITY ASSOCIATION St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

# OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST

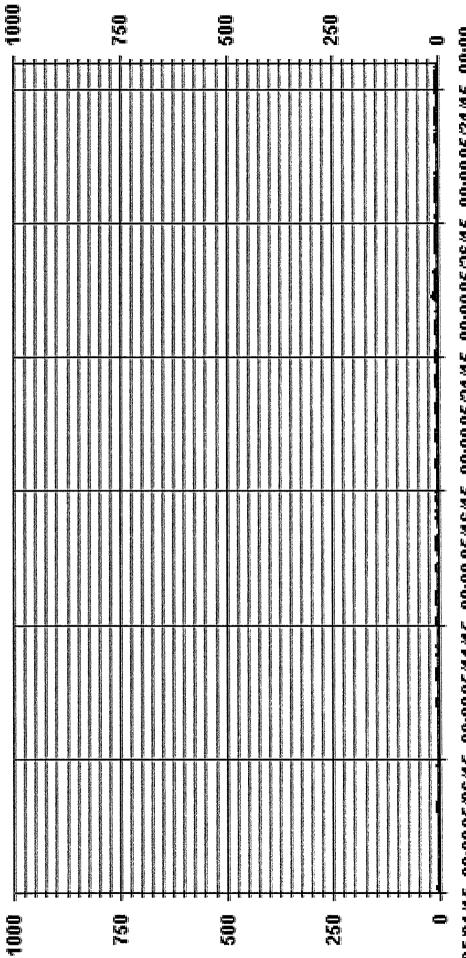
Maxxam A Bureau Vorleas Group Company



35	24 HOUR AVERAGES FOR MAY 2015
2.5	25

NUMBER OF NON-ZERO READINGS:	IGS:		658					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		3.4	PPB PPB	@ HOUR(S)	7	ON DAY(S) ON DAY(S) VAR-VARIOUS	23	m m
IZS CALIBRATION TIME: Monthly Calibration Time:	32 16	HR5 HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	IIME:		741 99.6	%
STANDARD DEVIATION:	1.21			MONTHLY AVERAGE:			13	PPB

of Hour Averages



05,01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

HOX

**—** LICA34



MST

### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

### AND INDUSTRY & COMMUNITY ASSOCIATION STRE - MA

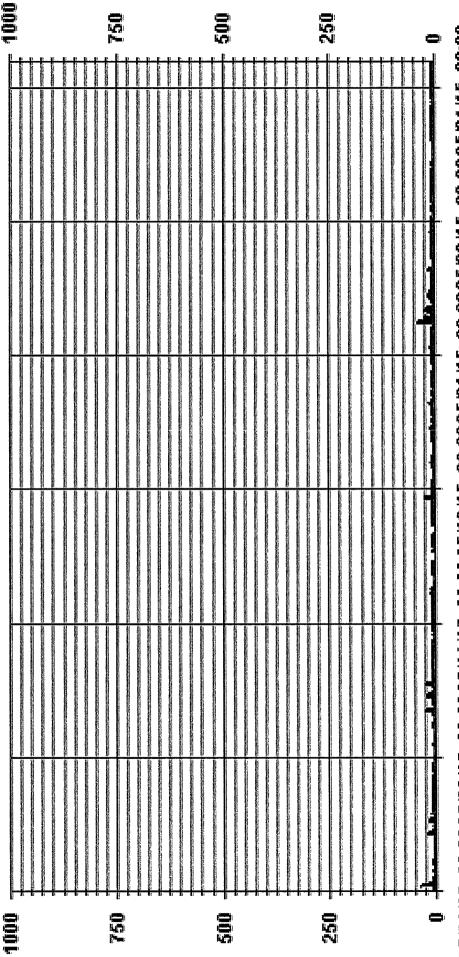
# OXIDES OF NITROGEN MAX instantaneous maximum in ppb

RDGS.	24	. 24	54	54	54	23	54	24	24	24	54	20	54	54	74	24	24	74	54	54	54	24	54	24	24	24	24	24	74	24	24		
24-HOUR AVG.	3.6	1.1	3.1	2.3	1.5	1.1	2.4	4.5	2.4	1.5	2.0	2.9	2.1	2.1	3.3	1.6	2.3	2.5	2.3	2.1	2.4	8.2	4.8	3.0	3.2	2.3	3.3	6.0	2.5	2.4	3.2		
DAILY MAX.	31.7	3.0	21.8	6.7	2.8	2.4	24.5	25.3	2.7	2.8	3,3	5.8	2.8	4.0	25.9	4.1	5.5	8.9	9.0	4.5	7.1	41.3	14.5	12.2	7.2	4.2	5.5	2.0	6.1	5.6	5.6		
23:00	6.0	8.0	1.5	1.2	Ŋ	1.1	2.0	2.7	1.8	2.3	1.8	1.8	2.3	2.4	1.6	4.1	2.1	2.0	2.2	2.1	1.9	17	2.9	5.6	2.8	2.1	3.4	1.1	3.1	5.9	2.6	4.1	2.1
22.00	0.8	0.5	6.2	1.8	9.0	s	17	2.5	2.5	1.5	1.6	s	2.2	1.7	1.8	1.6	3.2	1.8	17	1.6	1.8	2.2	2.9	2.3	4.9	2.5	3.7	1.0	2.8	1.7	2.2	6.2	2.2
21.00	0.7	6.0	17	1.5	1.0	1.8	s	1.9	2.0	1.4	1.6	74	s	18	1.8	1.9	5.6	3.2	1.7	2.0	1.9	1.1	2.8	1.7	2.5	3.8	3.5	1,4	5.9	78	2.5	3.8	1.9
20:00 21:00	6.0	6.0	6.0	1.5	2.8	2.4	1.6	s	1.8	1.1	1.7	1.5	1.8	s	2.0	1.8	1.5	13	1.4	1.8	1.3	2.8	2.9	1.4	2.2	4.1	1.8	1.0	2.1	1.8	2.6	4.1	1.8
19:00 20:00	2.6	9.0	8.0	1.5	2.8	1.3	1.2	2.4	S	1.2	2.7	11	2.2	1.7	S	1.4	6.0	1.0	2.8	1.1	1.5	15.5	2.9	1.1	1.8	4.0	1.6	9.0	1.8	1.6	17	15.5	2.2
18:00	4.4	9.0	3.5	1.2	1.8	1.4	24.5	25.3	1.2	s	1.4	6.0	11	1.8	4.3	s	1.0	1.3	1.4	1.3	1.1	6.7	3.1	1.4	2.0	1.9	5.5	1.0	1.6	1.3	2.1	25.3	3.7
17:00	1.7	8.0	2.2	1.2	1.5	0.8	6.0	2.1	1.5	0.7	s	2.0	1.4	ပ	25.9	6.0	s	2.5	1.6	1.3	2.1	22.6	3.0	1.4	1.8	2.8	3.6	8.0	17	1.2	2.3	25.9	3.3
16.00	1.1	6.0	17.4	1.2	1.5	0.7	1.0	13	1.5	6.0	15	9.0	J	J	5.6	8.0	6.0	s	1.5	1.8	2.1	15.3	2.5	1.7	2.0	0.8	4.3	8.0	1.5	1.0	2.3	17.4	2.7
15.00	1.3	0.7	0.7	1.4	1.4	0.8	1.0	1.6	1.5	1.1	1.2	6.0	U	U	1.8	8.0	6.0	1.7	s	1.3	1.7	3.9	2.3	1.5	2.3	1.5	5.3	1.5	1.5	1.0	2.3	5.3	1.6
14.90	3.2	6.0	0.5	1.4	1.5	9.0	1.2	3.3	1.6	1.1	1.6	0.8	J	J	3.1	1.0	6.0	1.2	2.1	s	2.9	2.2	2.3	6.0	7.2	2.1	2.5	0.5	1.4	1.0	2.4	7.2	1.8
13:00 14:00	3.1	1.1	2.8	1.5	1.4	1.4	1.0	1.5	1.4	0.8	1.1	<b>&gt;</b>	ပ	ပ	2.3	0.7	0.7	1.1	2.5	1.1	s	2.3	3.7	1.6	2.5	2.1	2.5	0.4	1.4	6.0	2.9	3.7	1.7
12:00	1.8	6.0	6.0	1.4	1.0	2.3	0.7	1.2	1.6	6.0	1.1	>	U	ပ	1.8	0.7	6.0	1.0	4.	1.6	1.6	s	4.5	6.0	3.7	1.9	4.2	0.7	1.7	1.2	3.8	4.5	1.7
11.00	6.0	6.0	1.8	2.9	1.0	ď	1.0	2.3	1.9	6.0	11	>	J	ပ	1.7	1.0	6.0	1.7	6.0	1.4	1.3	20.3	s	1.1	2.2	1.3	5.9	1.2	1.7	1.0	3.8	20.3	2.3
10:00	1.2	6.0	1.7	6.7	1.4	1.4	8.0	1.3	5.7	1.2	2.3	>	J	J	1.6	1.4	0.4	1.3	1.5	2.2	4.1	20.2	7.7	s	4.2	1.2	3.4	0.4	1.4	1.2	3.5	20.2	3.0
9:00	2.0	6.0	0.7	5.6	1.3	2.0	8.0	2.9	3.8	1.2	1.7	4.0	U	U	5.6	1.2	6.0	2.1	1.5	2.1	2.9	3.3	7.3	3.1	s	2.1	4.3	0.4	1.7	2.1	4.1	7.3	2.5
8:00	8.6	1.5	1.3	5.9	1.2	0.4	11	16.0	3.5	1.7	2.2	5.5	2.0	2.3	1.5	1.2	0.7	2.8	2.7	2.9	7.1	4.3	12.5	4.8	5.2	s	3.7	0.4	2.3	3.3	4.5	16.0	3.7
7-00	5.6	3.0	1.5	2.1	1.2	6.0	1.2	16.6	3.0	2.6	2.2	5.7	2.2	2.1	3.1	1.0	1.7	8.9	4.4	2.7	3.6	5.4	13.4	6.4	4.2	2.4	s	0.5	4.2	3.3	4.1	16.6	3.9
6:00 7:00	3.0	1.5	1.0	3.4	1.5	0.4	1.4	5.0	3.1	2.8	3.3	5.2	2.8	4.0	2.0	1.4	3.4	3.7	3.1	4.5	3.3	413	14.5	11.2	5.7	3.4	3.9	s	6.0	4.8	3.6	41.3	5.1
5:00	31.7	1.5	1.3	1.8	1.5	0.4	3.1	2.6	2.7	2.6	3.1	4.1	2.8	2.5	2.0	1.2	5.5	4.5	9.0	4.1	3.3	5.3	8.6	12.2	33	2.2	5.9	1.0	s	5.2	5.6	31.7	4.6
5.00	v	1.3	21.8	2.7	1.5	0.7	4.5	2.1	2.4	2.2	2.5	5.7	2.1	2.3	1.5	1.5	4.5	4.6	2.7	2.7	2.5	3.0	2.0	2.9	3.3	1.3	2.8	1.0	6.1	s	3.8	21.8	3.4
3.00	2.0	s	6.0	1.9	1.3	0.7	1.0	2.0	2.0	1.4	2.5	5.8	2.1	2.1	1.7	1.6	4.2	4.0	1.8	2.2	1.9	2.5	1.4	2.1	5.6	1.2	2.3	1.3	2.8	5.6	s	5.8	2.2
2.00	15	1.5	s	2.9	1.5	6.0	1.0	2.4	2.4	1.5	5.6	2.8	2.0	1.6	2.0	1.8	4.8	2.3	1.8	2.3	1.9	2.5	2.0	1.8	2.5	1.6	2.8	9.0	2.5	4.3	3.7	4.8	2.2
T.00	1.0	1.5	0.5	s	1.7	0.5	0.8	2.1	2.3	1.1	2.8	2.5	2.3	1.6	1.8	4.0	5.5	3.8	1.9	2.0	1.9	2.5	1.8	2.1	2.4	1.9	2.1	1.1	2.2	2.8	3.6	5.5	2.1
0.00	2.3	1.8	9.0	2.5	s	8.0	1.6	2.1	3.4	1.2	3.0	2.2	2.0	1.8	2.3	3.5	5.3	2.5	1.6	2.3	1.7	2.5	2.5	2.8	2.2	4.2	1.8	2.0	2.1	3.7	3.5	5.3	2.4
HOUR STARK 0.00, E-80 2.000 3.500 4.00 5.00 HOUR END 1.00 2.00 3.00 4.00 5.00 6.00	DAY	2	m	4	Ŋ	ø	Z	60	Ø	OH.	11	12	13	7	5	16	7	18	13	82	21	22	23	24	25	26	27	28	53	93	31	HOURLY MAX	HOURLY AVG

CALIBRATION  MAINTENANCE  R RECOVERY  SAILYZERO/SYANCHEEK  POVERIALIUME  O OPERATOR ERROI			•
BRATTON  INTERNANCE  R  INTERNANCE  K  KERALUKE  O  O  O  O  O  O  O  O  O  O  O  O  O		<b>医</b>	
BRATTON  INTERNANCE  R  INTERNANCE  K  KERALUKE  O  O  O  O  O  O  O  O  O  O  O  O  O		コ線響学がデ	
BRATTON  INTERNANCE  R  INTERNANCE  R  INTERNANCEREE  K  KERNALUKE  O  O  O  O  O  O  O  O  O  O  O  O  O		の機能は、回	
BRATTON  INTERNANCE  R  INTERNANCE  R  INTERNANCEREE  K  KERNALUKE  O  O  O  O  O  O  O  O  O  O  O  O  O		O	
BRATTON  INTERNANCE  R  INTERNANCE  R  INTERNANCEREE  K  KERNALUKE  O  O  O  O  O  O  O  O  O  O  O  O  O		- A H C	
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BRATTON  INTERNANCE  R  INTERNANCE  R  INTERNANCEREE  K  KERNALUKE  O  O  O  O  O  O  O  O  O  O  O  O  O		E 35 = 4	
BRATTON  INTERNANCE  R  INTERNANCE  R  INTERNANCEREE  K  KERNALUKE  O  O  O  O  O  O  O  O  O  O  O  O  O		CO TO CO	
BRATTON  INTERNANCE  R  INTERNANCE  R  INTERNANCEREE  K  KERNALUKE  O  O  O  O  O  O  O  O  O  O  O  O  O		7 O 2 m	١
BRATTON  INTERNANCE  R  INTERNANCE  R  INTERNANCEREE  K  KERNALUKE  O  O  O  O  O  O  O  O  O  O  O  O  O		P. W. S. P.	į
BRATION CONTROL COLOR CO		0 2 0	ç
IBRATION INTENANCE Exzenolspan Cheek Versanune		Market Street	i
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IBRATION INTENANCE Exzenolspan Cheek Versanune	₹	$\alpha \times \alpha$	
IBRATION INTENANCE Exzenolspan Cheek Versanune	:	2.00	
IBRATION INTENANCE Exzenolspan Cheek Versanune	31	1000	
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IBRATION INTENANCE Exzenolspan Cheek Versanune	ξ	44 March	
IBRATION INTENANCE Exzenolspan Cheek Versanune	4	Shirt	
IBRATION INTENANCE Exzenolspan Cheek Versanune	-	3.500 Miles	
IBRATION INTENANCE Exzenolspan Cheek Versanune	7	数 美黎	
IBRATION INTENANCE Exzenolspan Cheek Versanune	_	2.000 Miles	
IBRATION INTENANCE Exzenolspan Cheek Versanune	7	Section 1	
IBRATION INTENANCE Exzenolspan Cheek Versanune	2	18 Mary 1997	
IBRATION INTENANCE Exzenolspan Cheek Versanune	2	\$0000000	9
IBRATION INTENANCE INZERO/SPA VER FAILURE		\$8089357EL	
IBRATION INTENANCE INZERO/SPA VER FAILURE		機能能数と	
IBRATION INTENANCE INZERO/SPA VER FAILURE			
IBRATION INTENANCE INZERO/SPA VER FAILURE		<b>深深深</b>	ġ
IBRATION INTENANCE INZERO/SPA VER FAILURE		<b>建发现条件</b>	
IBRATION INTENANCE INZERO/SPA VER FAILURE		No. of the State o	
IBRATIOI INTENAN IYZERO/ VER FAIL		CARL ZA	
IBRATIOI INTENAN IYZERO/ VER FAIL		A-M	
IBRATIOI INTENAN IYZERO/ VER FAIL		<b>新发生的作品等</b>	
一名《本文》 第二次 第二次 第二次 第二次 第二次 第二次 第二次 第二次		内のは家のまじ	٠
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一名《本文》 第二次 第二次 第二次 第二次 第二次 第二次 第二次 第二次		是他们《田》出	
一名《本文》 第二次 第二次 第二次 第二次 第二次 第二次 第二次 第二次			
MAI		めとなる。	
2 × 8 ×			ķ
		A Z KANO	
Treasure Manager		U 2 0 0	Š
		TO A PERMANENT	į

	ļ		MO	MONTHLY SUMMARY	MMARY				
NUMBER OF NON-ZERO READINGS:			069						
MAXIMUM INSTANTANEOUS VALUE:			41.3	PPB	@ HOUR(S)	ω	ON DAY(S)		Ħ
						VAR-V	VAR-VARIOUS		
IZS CALIBRATION TIME:	32	HRS		OPERATIO	OPERATIONAL TIME:			739	HRS
MONTHLY CALIBRATION TIME:	17	HRS							
STANDARD DEVIATION: 3	3.42								

of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

- LICA31 NOXMAX PPB

LICA31 NOX\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

Freq

4.18 100.00 MNN

00. 00. 00.

00. 00. 00. 4.18

MZ 3,75 00. 00, 00. 3.75 3,31 00. 3,31 WNW 00. 00. 00. 4.32 4.32 00. 00. 1.73 1.73 00. 00. 00. 4.18 4.18 00. 00. SW 00. 6.49 00. 6.49 00. SSW 00. 00. 5.19 7.50 10.82 13.70 00. 00. 10.82 13.70 Ŋ 00. SSE 00. 00. 7.50 Direction 00. 00. SE 00. 5.19 ESE 00. 00. 00. 8.36 8.36 00. 00. 00. ſď 8.65 8.65 ENE 00. 00. 00. 6.49 6.49 얼 00. 00. 00. 90.9 90.9 00. NA E 00. 00. 5.19 5.19 00. 00. 00. Totals 50.0 Limit >= 210.0 < 110.0 < 210.0

Calm : .00 %

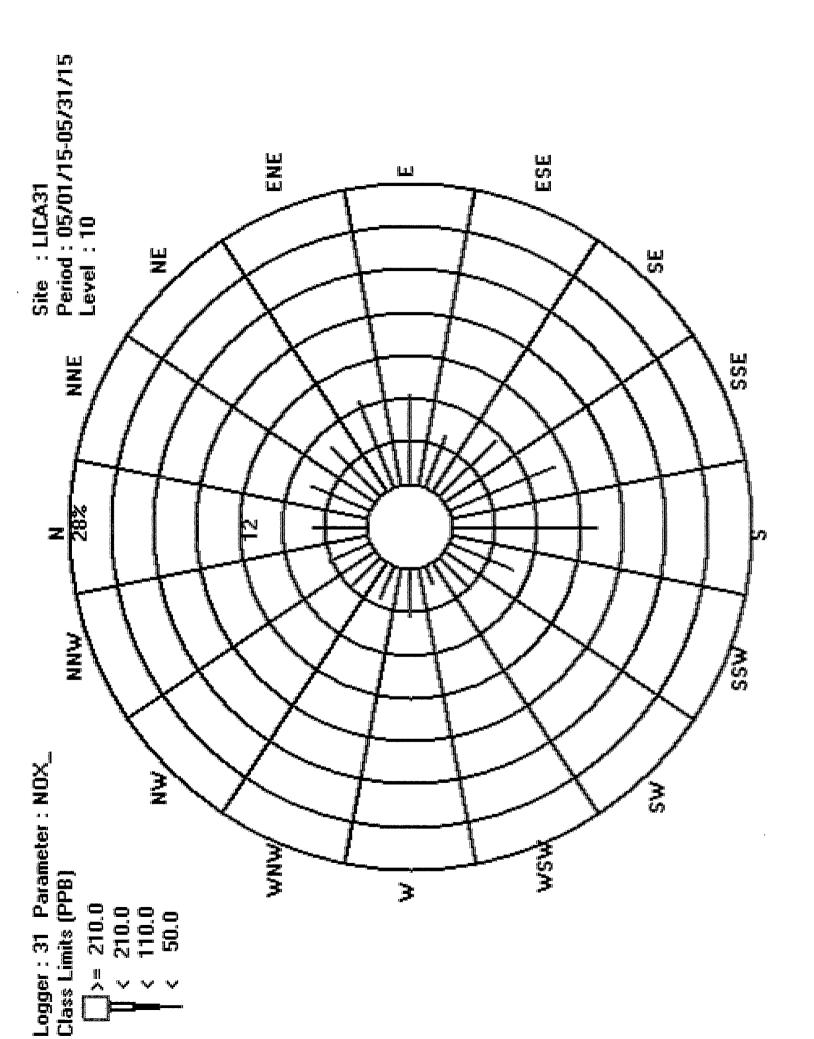
Total # Operational Hours : 693

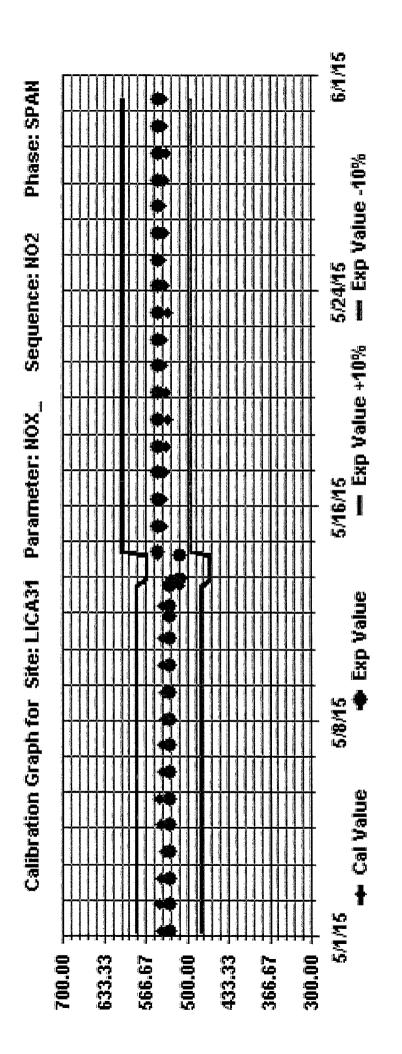
Distribution By Samples

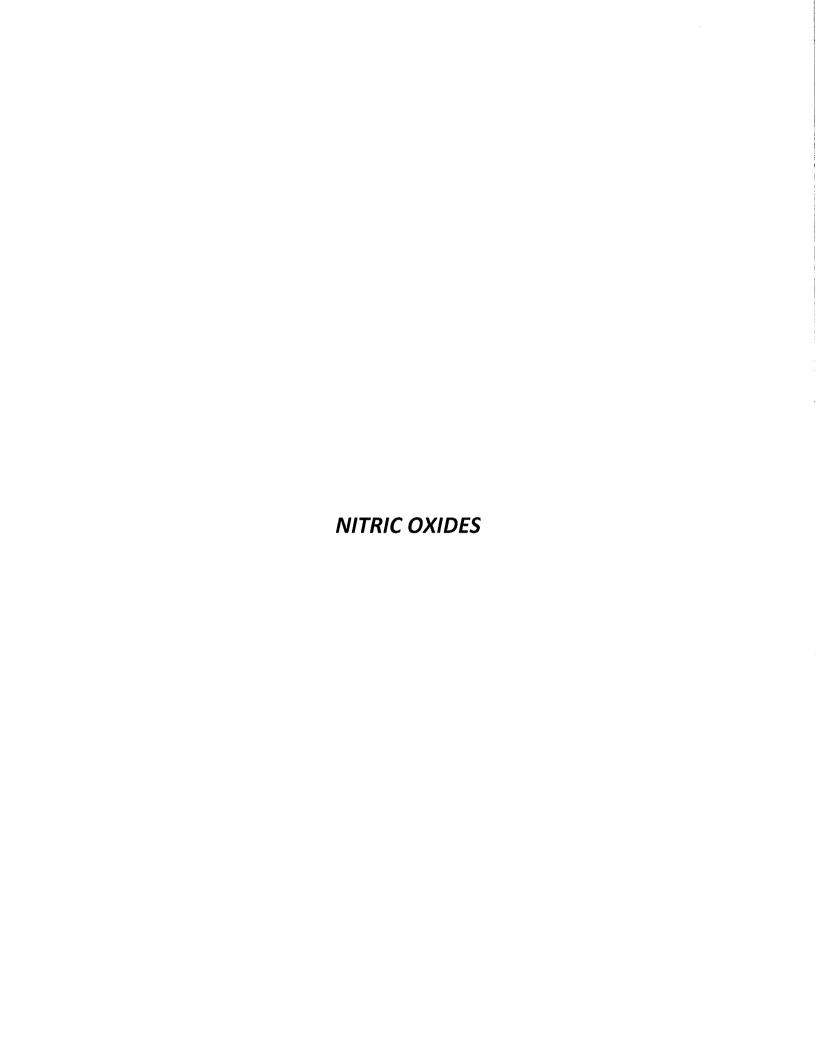
Direction

Freq	693				
NNM	29				59
MN	26				56
WINW	23				23
×	30				30
WSW	12				12
SW	29				29
SSW	45				45
w	95				95
SSE	75				75
SE	52				52
ESE	36				36
ы	58				58
ENE	9				09
吳	45				45
NIME	42				42
z	36				36
Limit	50.0				Totals
	٧	V	V	X	

Calm : .00 %









ges in ppb

ly average:
hour
2
NITRIC OXIDE

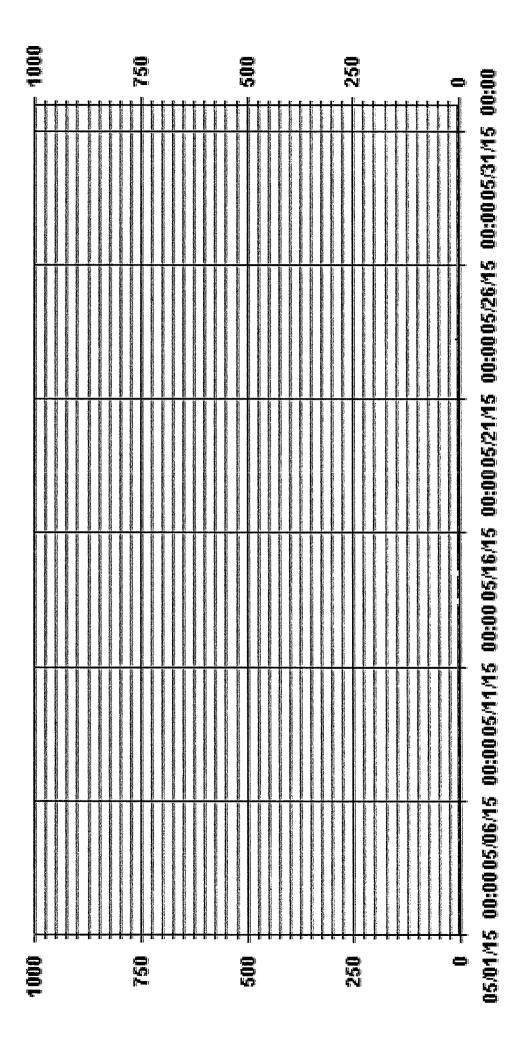
MST											אווווייב כעום וייב	10		nount averages in ppr	ei age	ī. E	2									
HOUR START	0.00	0:00 1:00 2:00 3:00 4:00 5:00	2.00	3:00	4.00	5.00	6.00	7.00	8:00	9:00	10:00	11:00	12.00	13:00 - 1	[4:00	5.00	6:00	7.00	8:00 15	.00 Z(	24	00 22	00 23	OO DAILY	77	8 2
DAY	3	2:00	0.00	70. <b>+</b>	2000	0.00	Co.C.	000	2000	OO TOTAL	TTT	27.200	OO CT		200.00	0000	000	70000	2002	000	77	200	000	TIME SERVICE		ŀ
4	0.0	0.0	0.0	0.0	s	9.0	0.4	0.5	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.2	0.2	0.2		.3	.2 0					24
2	0.0	0.1	0.2	s	0.3	0.2	0.3	0.4	0.3	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.2 0	0.0 0.1	1 0.4	0.1	24
m	0.0	0.0	s	0.3	9.0	0.3	0.2	0.4	0.4	0.2	0.3	0.2	0.1	0.2	0.0	0.0	0.4	0.5		9	0.0					24
4	0.2	s	0.3	0.2	0.2	0.2	0.3	0.3	0.4	1:1	1.9	0.5	0.1	0.3	0.3	0.3	0.2	0.3			0 1.0					54
'n	v	0.3	0.2	0.2	0.1	0.1	0.3	0.2	0.3	0.3	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.2		7.	.2 0					24
Θ	0.3	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.3	0.1	0.0	0.0	0.0	0.0		0.	0.0			3 0.4		54
7	0.3	0.5	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.0	0.1	0.1	0.2	0.3	0.1	0.4	0.1		) E'	~					24
<b>6</b> 0	0.4	0.4	0.3	0.0	0.3	0.2	0.8	0.7	0.7	0.4	0.2	0.2	0.0	0.2	0.2	0.3	0.2	0.3								24
o	0.3	0.3	0.4	0.0	0.4	0.2	0.2	0.4	0.8	0.7	1.0	0.4	0.1	0.2	0.3	0.3	0.4	0.3			0.3 0.					24
70		0.2	0.4	0.3	0.2	0.3	0.5	0.4	0.2	0.3	0.3	0.0	0.2	0.2	0.2	0.2	0.2	0.2					0.4 0.			24
1		0.1	0.2	0.1	0.2	0.1	0.5	0.5	0.5	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.2	s		_						24
17		0.0	0.2	0.2	0.4	0.2	0.5	0.8	0.8	0.4	>	>	>	0.0	0.0	0.2	0.0	0.3								21
13		0.2	0.2	0.1	0.1	0.3	0.3	0.3	0.3	U	U	U	U	U	J	Ü	0.0	0.1			_					24
14		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	U	ပ	J	U	U	J	Ü	U	J	0.3							24
15		0.0	0.1	0.2	0.0	0.2	0.2	0.3	0.2	0.1	0.1	0.3	0.2	0.0	0.2	0.0	0.5	9.0		_	0.1 0					24
16		0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.0	0.1	0.2	0.0	0.1	0.1		_	0.0	0.2 0		2 0.2		54
À		0.0	0.1	0.1	0.2	6.0	0.7	0.4	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	s								24
18		0.2	0.1	0.2	0.3	0.5	0.7	9.0	0.3	0.3	0.1	0.1	0.0	0.0	0.0	0.1	s	0.4								54
19		0.1	0.1	0.0	0.2	0.5	0.4	9.0	0.4	0.1	0.3	0.1	0.2	0.2	0.1	s	0.2	0.3			0.0			0.6		54
8		0.0	0.0	0.1	0.1	0.2	0.4	0.4	0.2	0.2	0.1	0.1	0.2	0.1	s	0.4	0.2	0.2	0.2	7	1.2 0					24
21		0.0	0.0	0.1	0.0	0.4	0.4	0.3	0.7	0.3	0.3	0.2	0.1	s	0.4	0.3	0.2	0.2		0.	0 0.0					54
2		0.1	0.0	0.2	0.1	0.3	1.4	0.9	9.0	0.5	9.0	0.2	s	0.3	0.3	0.3	0.4	0.4		 E.	.2 0					54
23		0.2	0.0	0.1	0.1	0.4	1.5	1.4	0.4	0.3	0.2	s	0.2	0.1	0.1	0.1	0.1	0.1			0.0					54
24		0.2	0.1	0.1	0.0	0.9	1.2	0.8	9.0	0.2	S	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.2 0	-	0 1.1			1 1.2		24 \
25	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.5	S	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.2		7	1.1					54
26	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.2	s	0.1	0.1	0.3	0.4	0.2	0.4	0.3	0.2	0.2		7	0 1.1	-	0.0 0.0			54
27	0.0	0.0	0.0	0.1	0.0	0.0	0.5	s	0.8	0.5	0.3	0.1	0.2	0.3	0.3	0.3	0.1	0.3		0.	0 1.1	0.0	.1 0.	0.3 0.8		54
28	0.4	0.2	0.0	0.3	0.1	0.2	s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.	.2 0	-				77
29	0.3	0.3	0.2	0.1	0.3	s	1.5	1.0	0.5	0.2	0.1	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.0		0 1.1	0.3 0		0 1.5		74
90	0.3	0.1	0.2	0.2	s	0.7	0.8	0.9	0.8	0.4	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	7	0 0.0	-	0.0			24
31		0.1	0.1	s	0.2	0.4	0.2	0.0	0.2	9.0	0.3	9.0	0.7	0.4	0.2	0.2	0.2	0.1						1 0.7		24
HOURLY MAX	0.4	0.4	0.4	0.3	9.0	0.9	1.5	1.4	0.8	11	1.9	9.0	0.7	0.4	0.4	0.4	0.5	9.0	0.8	0.4	0.3	0.3 0	0.4	0.4		
HOURLY AVG	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2				-	_	7		

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C CALIBRATION Q Q COULT ASSUMANCE.  Y MAINTENANCE R RECOVERN S DAILY TEROSFSANICHECK X. MACHINESTRAEUKCHON. P POWER-BAILURE O OPERATOR ERROR G OUT FOR REPAIR K. + COLLECTION ERROR	24 HOUR AVERAGES FOR MAY 2015	0.25 0.15 0.10 0.10 0.12 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 15 20 21 22 22 24 25 27 28 23 39 31

			2	WONTHET SOMINARY				
NUMBER OF NON-ZERO READINGS:	3S:		549					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		0.3	PPB	@ HOUR(S)	10	ON DAY(S) ON DAY(S) VAR-VARIOUS	4 VAR	<b></b>
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	32 16	HRS HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	:: PTIME:		741 99.6	HRS
STANDARD DEVIATION:	0.22			MONTHLY AVERAGE:	ن		0.2	PPB

Of Hour Averages



- LICA31 NO\_ PPB

JOB # 2833-2015-05-31- C



## NITRIC OXIDE MAX instantaneous maximum in ppb

MST

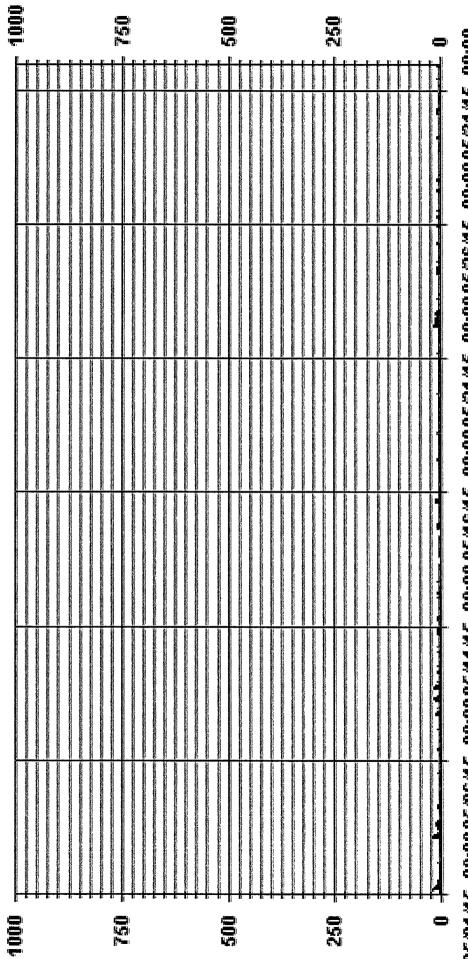
	RDGS.	24	24	24	24	24	23	24	24	24	24	54	20	54	74	74	54	24	54	24	75	54	74	74	74	24	54	75	74	54	54	24		
24-HOUR	AVG.	1.8	8.0	2.4	1.0	0.7	6.0	1.3	2.4	1.0	6.0	6.0	1.0	0.7	9.0	1.3	0.7	0.8	6.0	6.0	0.8	6.0	3.0	0.9	1.0	1.0	8.0	0.9	0.8	0.9	0.9	1.0		
DAILY	MAX.	16.0	1.5	19.8	3.0	1.0	1.6	11.2	14.0	2.0	1.2	1.2	1.7	1.1	1.0	12.1	1.0	1.5	2.2	2.7	1,4	2.4	17.2	5.6	1.9	2.2	1.4	2.1	17	2.3	1.5	1.7		
23:00	0:00	0.7	8.0	1.0	9.0	s	6.0	1.2	1.0	8.0	1.0	0.7	1.0	0.5	0.7	0.8	0.8	0.8	9.0	9.0	0.7	9.0	9.0	0.7	0.7	1.0	0.8	0.9	0.8	9.0	0.7	1.2	1.2	8.0
22-00	23.00	6.0	9.0	3.1	9.0	9.0	s	0.8	1.1	1.0	1.0	0.8	S	9.0	0.7	0.7	0.7	0.8	0.8	0.7	0.7	0.4	0.4	9.0	9.0	1.3	0.5	9.0	1.1	9.0	0.4	1.1	3.1	0.8
. 21.00	22:00	9.0	0.8	0.7	0.7	9.0	0.8	s	1.0	8.0	1.0	0.9	0.7	s	0.8	0.7	0.7	0.7	1.0	0.7	0.7	0.7	9.0	0.5	0.8	0.9	0.8	9.0	0.8	1.1	0.5	1.1	11	8.0
20:00	21:00	0.8	9.0	0.7	0.8	9.0	1.6	0.8	s	6.0	1.0	8.0	0.8	9.0	s	9.0	9.0	0.7	0.7	0.5	0.7	0.4	6.0	0.5	0.8	9.0	0.5	0.8	6.0	0.8	0.5	0.8	1.6	0.7
19:00	20:00	1.4	0.7	0.7	0.8	9.0	0.8	6.0	9.0	s	1.1	0.8	6.0	0.2	1.0	s	1.0	9.0	0.7	0.8	0.7	0.7	1.6	0.8	0.8	0.8	0.8	9.0	0.8	0.8	0.8	0.7	1.6	0.8
18:00	19-00	0.8	9.0	1.5	9.0	0.7	1.0	11.2	14.0	8.0	s	17	1.0	0.4	1.0	1.0	s	0.7	1.0	1.0	0.7	0.7	2.0	0.5	0.8	0.9	1.0	1.1	0.8	0.7	1.2	1.0	14.0	1.7
17.00	18:00	6.0	0.8	1.3	0.9	9.0	0.8	0.8	1.0	0.8	0.8	s	1.1	9.0	ပ	12.1	1.0	s	1.4	1.0	1.0	0.7	12.9	0.7	1.1	0.8	0.9	1.1	0.8	0.8	0.8	0.7	12.9	1.7
16.00	17:00	0.7	9.0	11.9	0.7	6.0	0.8	1.0	0.8	0.9	0.8	1.0	0.8	ပ	ပ	2.2	9.0	0.7	s	0.8	0.8	0.7	4.8	0.8	1.0	6.0	9.0	1.0	0.8	0.7	0.7	0.8	11.9	1.4
15:00	16:00	0.8	9.0	0.9	0.8	0.7	0.9	8.0	1.0	6.0	7.0	0.7	1.5	U	U	9.0	9.0	0.8	0.9	s	1.0	6.0	1.5	0.7	1.0	0.9	0.9	2.1	1.2	0.7	0.8	0.8	2.1	o. 0
14:00	15:00	1.9	0.7	0.7	0.7	1.0	0.7	6.0	2.6	1.0	0.9	6.0	1.0	U	U	0.9	6.0	9.0	0.7	1.2	s	1.7	1.2	0.7	0.9	2.2	1.1	1.0	0.7	9.0	0.7	0.8	2.6	1.0
13:00	14:00	2.0	1.0	1.2	0.8	1.0	6.0	0.7	1.0	1.0	0.7	9.0	>	U	U	1.0	0.7	9.0	9.0	1.4	9.0	s	1.2	0.7	0.9	6.0	1.0	0.8	9.0	0.7	0.8	0.9	2.0	6.0
12.00	13:00	1.3	0.8	1.0	0.8	9.0	1.2	0.8	0.8	0.8	0.7	0.7	>	U	U	0.7	9.0	9.0	0.5	0.7	1.0	0.7	S	6.0	1.1	1.4	1.4	1.3	6.0	0.9	1.0	1.6	1.6	0.0
11:00	12:00	0.8	0.8	1.8	1.1	0.7	ĸ	0.7	1.2	1.1	0.4	0.8	>	ပ	ပ	0.9	0.7	0.7	0.8	9.0	9.0	1.0	7.4	S	1.1	0.8	0.8	0.9	0.8	1.0	0.8	1.7	7.4	1.2
10:00	$\sim 11.00$	0.7	8.0	1.7	3.0	0.7	1.0	9.0	0.7	2.0	0.7	1.2	>	ပ	ပ	0.7	6.0	0.5	0.7	6.0	6.0	1.8	7.6	0.8	s	1.5	0.7	6.0	0.7	0.7	0.7	0.9	7.6	1.3
00-6	10:00	1.2	0.8	0.8	2.6	6.0	1.0	9.0	1.0	1.4	0.9	1.0	1.1	ပ	ပ	0.8	9.0	0.7	0.9	0.7	0.7	0.8	1.2	0.8	0.8	s	0.8	1.5	0.7	0.7	1.1	1.5	2.6	1.0
8.00	9:00	5.8	1.2	1.2	1.2	0.9	0.7	0.9	10.9	1.3	1.0	1.0	1.7	1.1	9.0	0.9	9.0	0.7	1.2	1.1	6.0	2.4	1.5	1.3	1.2	1.3	s	1.5	0.7	1.0	1.3	0.8	10.9	1.6
7.90	- 8:00	1.9	1.5	1.0	1.1	0.7	0.7	0.8	8.2	1.1	1.2	1.1				1.3		1.1	2.2	2.1	1.0	1.3	1.9	2.4	1.5	1.0	1.0			1.5			8.2	
9-9	7:00	1.0	1.0	0.7	1.0	0.8	0.6	0.8	2.2	1.0	1.1	11	1.3	0.9	9.0	0.8	6.0	1.3	1.3	1.1	1.4	1.1	17.2	2.6	1,9	1.3	7.0	1.0	s	2.3	1.4	0.8	17.2	1.7
5:00	6:00	16.0	1.0	0.8	6.0	0.8	0.8	1.4	0.9	0.7	0.8	0.7	0.7	0.8	0.5	0.7	0.6	1.5	1.2	2.7	0.7	1.1	1.2	1.0	1.8	0.8	9.0	0.5	0.8	S	1.5	1.7	-	1.5
4:00	5:00	S	0.9	19.8		0.7	0.7	1.6		1.0	0.8		0.9		0.4		0.7		1.0		0.7	0.8	0.7	0.7	9.0	0.8	0.5	0.5	0.7	1.2	s	0.8	19.8	
3.00	4:00	0.4	s	1.0	6.0	0.7	9.0	0.9	0.7	0.4	1.0	0.8				0.7		0.7	0.8		0.7	0.7	6.0	9.0	0.8	9.0	0.7	0.5		0.7		s		
2.00	3:00	0.2	0.8	S	6.0	0.7	0.9	0.8	0.8	1.0		0.7		0.7	0.4	0.7	9.0	0.5	0.7	9.0	0.4	0.6	0.6	0.6	0.7	9.0	0.7	9.0	9.0	0.8		0.8	1.0	
1. T-00	7:00	0.1		9.0					0.8										0.8	0.6			0.8		0.9	0.7				0.8			6.0	
00-0	1:00	0.1	9.0	9.0	0.8	S	6.0	1.0	1.0	10	0.8	10	0.8	0.7	0.4	0.7	0.8	0.8	0.7	0.7	9.0	0.7	0.9	0.7	0.7	9.0	0.8	0.6	0.9	0.8	1.0	0.7	10	0.7
HOURSTARK 0:00 1:00 2:00 3:00 4:00	HOUR END	DAY 1	.2	8	7		. 9	7	8	6	10	Ħ	12	13	14	15	16	17	138	Đ	8	21	22	23	24	52	26	22	28	29	30	31	HOURLY MAX	HOURLY AVG

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STATUS FLAG CODES  C — CALIBRATION  Y MAINTENNACE  S — DALI'ZERO'SEQU'CHECK  P — POWER RATIUSE  C — OPERATOR ERROR  G — OUT FOR REPAIR  K — COLLECTION ERROR  K — COLLECTION ERROR
--

NUMBER OF NON-ZERO READINGS:			069							
MAXIMUM INSTANTANEOUS VALUE:			19.8	PPB	@ HOUR(S)	6	4	ON DAY(S)		m
							VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME:	32 H	HRS		OPERATIC	OPERATIONAL TIME:				739	HRS
MONTHLY CALIBRATION TIME: 1	17 HRS	SS								
STANDARD DEVIATION: 1.6	1.64									

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

HOMBX

LICA31
NO\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

NO Wind Parameter : WDR Instrument Height : 10 Meters

Fred 00. 00. 00. 4.18 100.00 NNW 00. 00. 00. 4.18 3.75 Š 8. 3.75 00. 00. 3.31 WNW 00. 3.31 00. 00. 4.32 00. 4.32 00. 00. 1.73 % 1.73 0. 00. 4.18 4.18 00. S 00. 00. 6.49 00. 00. 6.49 SSW 00. 13.70 13.70 00. 00. 00. Ø 10.82 10.82 00. SSE 00. 00. 7.50 Direction 7.50 SE 00. 00. 00. ESE 5.19 00. 5.19 00. 00. 8.36 8.36 00. 00. 00. 8.65 8.65 ENE 00. 00. 00. 6.49 00. 6.49 벌 00. 00. 90-9 00. 90.9 NNE 00. 00. 5.19 5.19 00. 00. 00. z Totals Limit 50.0 110.0 < 210.0 >= 210.0

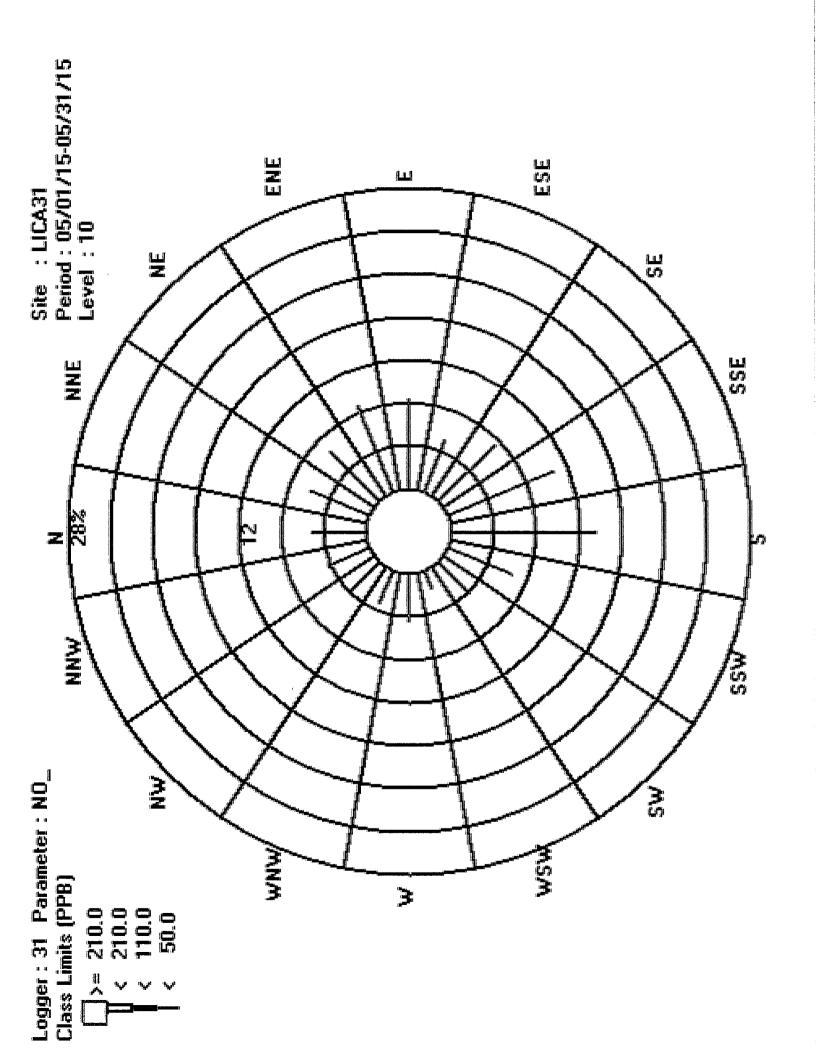
Calm : .00 %

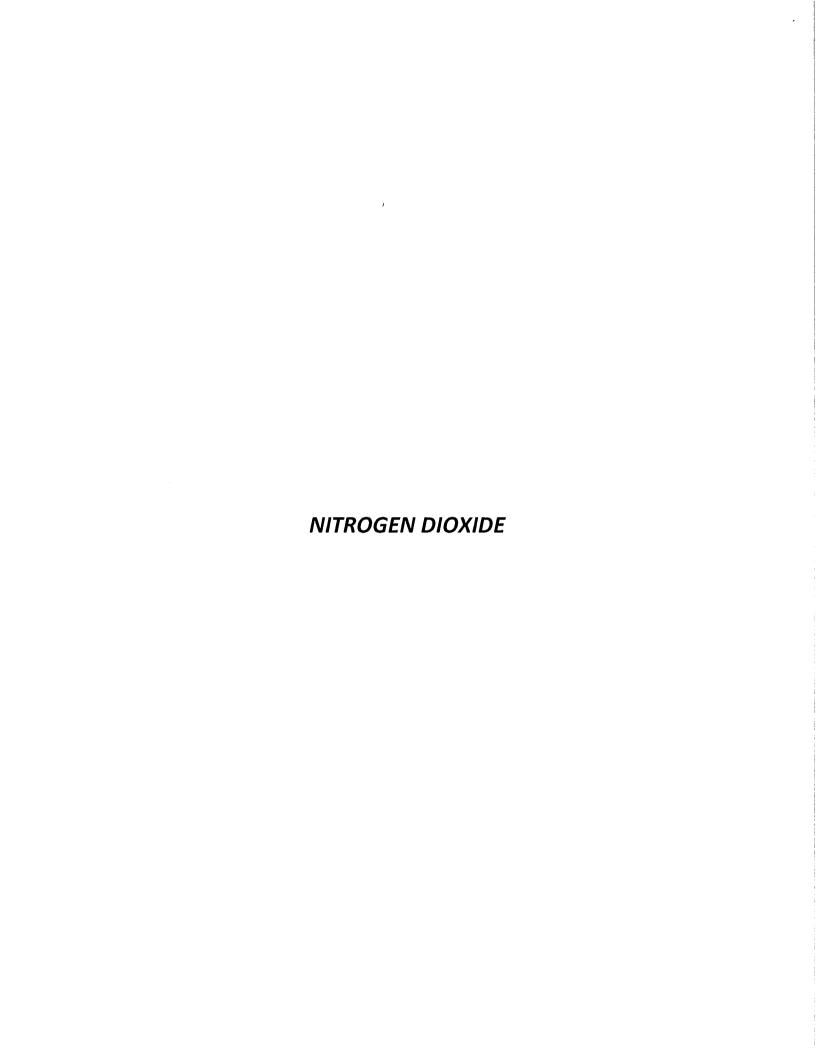
Total # Operational Hours : 693

Distribution By Samples

Fred 693 NINW 29 ž 26 WNW 23 23 30 12 12 SW 29 29 45 SSW 45 95 Ø 95 75 SSE 75 Direction SE 52 52 ESE 36 28 28 9 ENE 45 Ä SE 42 42 36 z 36 Totals Limit 50.0 210.0 110.0 >= 210.0

Calm : .00 %





JOB # 2833-2015-05-31- C

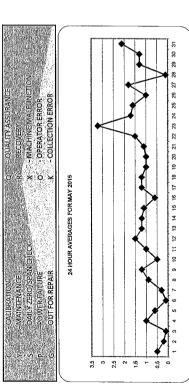


### NITROGEN DIOXIDE (NO2) hourly averages in ppb

#### MST

HOUR START 0:00 1:00 5:00 3:00 4:00 5:00 HOUR END 1:00 2:00 6:00	0:00	1:00 2:00	2:00 3:00 3:00 4:00	3.00	4:00 5:00 1 5:00 6:00	5:00	5:00	7.00 - 8	.00 9:	00 10. 00 11	00 11: 00 12:	00 124 00 134	00 13.0 00 14.0	0 15.00	15:00	16:00	17:00 18:00	18:00 19:00	19:00	20.00	21.00 22.00	22:00. 23:00	23:00	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY.	0.8	0.4		1.2	S	1.8	1.3	0.9	1.3 0.							0.3	0.4	0.9	0.3	0.1	0.0	0.1	0.2	1.8	5.0	24
1 (4		6.0	0.7	s	0.3	0.3	0.3	0.5 C	1.1 0.	0.0 0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	6.0	0.2	24
m		0.0			0.3	0.3	0.2	0.3 (	0.1							0.0	0.1	0.2	0.0	0.2	0.1	9.0	0.5	9.0	0.1	77
4	1.6	s			1.4	1.1	1.5	1.1	13 1							0 5	0.4	0.5	9.0	0.7	8.0	6.0	0.4	3.0	1.0	54
ر.		0.7		0.6	0.7	0.7	0.5	0.4 C	0.4							0.5	0.7	6.0	1.0	1.5	0.3	0.1	s	1.5	9.0	54
φ		0.0				0.0	0.0	0.1	.0 0.0							0.0	0.0	0.2	0.2	0.3	0.0	s	0.2	0.4	0.1	54
7		0.2	0.0		9.0	9.0		0.2 C	0.1							0.1	0.2	6.0	0.3	9.0	s	0.3	6.0	6.0	0.3	54
œ		1.0		1.2	1.1	1.5		1.6 1								0.3	0.3	0.7	0.8	s	6.0	1.3	1.4	1.9	6.0	54
თ		1.4			1.3	1.8										0.4	0.4	0.3	s	0.5	1.2	1.4	8.0	5.6	1.2	54
10	0.4	0.3		0.4	1.0	1.7		_	0.6 0.							0.1	0.1	s	0.2	0.3	0.5	0.4	1.2	1.7	0.5	54
뒤	2.2	1.9			1.7	2.2		1.0 0	.7 0.							0.5	s	0.4	1.0	0.7	6.0	8.0	6.0	2.2	1.0	54
12		1.7	2.0		4.3	3.3										0.0	0.0	0.0	0.1	0.4	0.4	s	8.0	4.3	1.5	21
<u>m</u>	1.0	1.2	1.2		1.3	1.6										1.0	0.8	0.7	7.0	1.0	s	1.7	1.6	1.7	1.2	54
14	1.2	1.2	1.1	1.1	1.7	1.7		~	1.6	ں ن		Ü				U	U	0.7	6.0	s	6.0	8.0	1.2	1.9	1.2	54
15		1.4	1.2		6.0	1.0										1.7	2.2	2.1	s	1.2	1.0	6.0	0.7	2.2	1.1	54
16	1.2	2.2	1.1		0.6	0.4										0.2	0.1	s	0.5	8.0	8.0	6.0	1.6	2.2	9.0	24
17	3.3	4.2	4.1		2.7	3.5										0.2	s	0.2	0.2	0.5	13	1.7	1.3	4.2	1.2	54
18	1.4	2.3	1.6		3.4	3.3										s	0.5	0.5	0.2	0.5	1,4	1.0	1.2	3.4	1.2	54
19	1.1	1.1	11		1.3	2.7										0.5	0.4	0.4	1.1	8.0	6.0	1.1	1.4	2.7	1.0	54
8	1.5	1.4	1.6		1.9	2.5		1.5 1	1.5 0.							0.5	0.3	0.4	0.4	8.0	1.1	6.0	1.1	2.5	1.0	54
72	1.1	1.2	1.2		1.7	2.1										0.4	0.5	0.4	8.0	8.0	1.3	1.2	1.2	2.1	1.1	54
2	15	1.7	1.8	1.6	2.3	2.8										0.5	9.0	1.1	2.3	0.7	0.4	8.0	0.7	4.5	1.5	54
23	1.0	0.7	6.0		. 6.0	4.4	.,	10.3 7								1.7	2.2	2.4	2.2	2.1	2.2	2.1	2.2	10.3	3.2	54
5⊄	1.7	1.2	1.2	1.5	1.9	8.2										0.4	0.3	0.3	0.4	0.7	1.0	1.5	1.8	8.2	17	54
52	1.5	1.6	1.7	2.0	2.3	2.5									1.1	6.0	0.8	1.0	6.0	1.2	1.7	1.8 8.	1.6	3.0	1.6	54
26	1.5	1.2	6.0	0.6	0.7	1.2										0.0	0.3	0.4	1.0	3.2	2.7	1,8	1,4	3.2	1.0	24
22	1.2	1.5	2.1	1.5	1.6	2.3			2.2 2.							1.4	1.6	1.7	6.0	11	2.5	2.8	2.0	2.8	1.8	24
82	9.0	0.1	0.0	0.1	0.3	0.1		_								0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2	9.0	0.1	54
ຄ	1.0	1.2	1.5	1.6	2.2	s										0.8	0.9	1.0	1.1	1.4	1.6	2.0	2.4	3.4	1.3	54
န		2.1		4.2	s	3.8			1.5 0.						0.2	0.3	0.4	0.5	0.7	1.1	1.1	70	1.6	4.2	1.3	24
31		2.9	3.0	S	2.8	3.1		3.2 3								1.4	1.6	1.2	0.8	1.2	1.1	0.8	0.8	3.5	2.1	24
HOURLY MAX	3.3	4.2	4.1	4.2	4.3	8.2		.0.3	.4 5.	5.8 6.1	1 2.	3.6	6 2.4	1.7	1.7	1.7	2.2	2.4	2.3	3.2	2.7	2.8	2.4			
HOURLY AVG	ŋ	ч	Н	7	7	7		2	1			1	7	Н	0	н	Н	П	н	н	н	н	₩			

#### STATUS FLAG CODES

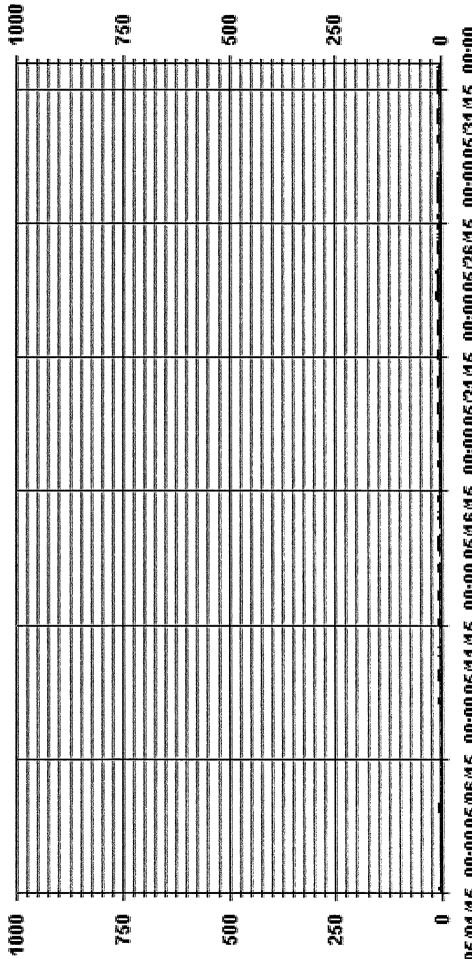


### OBJECTIVE LIMIT:

### ALBERTA ENVIRONMENT: ALBR 2.159 PRB

NUMBER OF NON-ZERO READINGS:	3S:		623					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		10.3 3.2	PPB PPB	PPB @ HOUR(S) PPB	7	ON DAY(S) ON DAY(S) VAR-VARIOUS	23	
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	32 16	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	:: PTIME:		741 99.6	HRS
STANDARD DEVIATION:	1.10			MONTHLY AVERAGE:	41		1.1	PPB

of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

E S



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

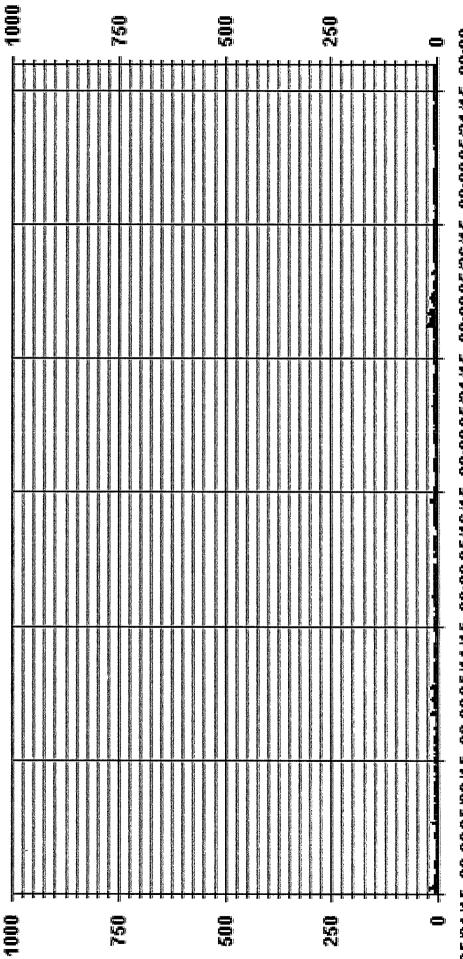
# NITROGEN DIOXIDE MAX instantaneous maximum in ppb

	RDGS.	;	4 5	77	54	54	77	23	54	54	54	54	74	20	24	24	24	24	24	54	54	24	24	54	24	24	24	24	54	54	54	54	24		
	24-HOUR AVG.	,	7.p	D: T	1.6	1.7	1.2	1.2	1.7	3.1	2.0	1.2	1.7	2.9	2.2	2.3	2.7	1.4	2.0	2.2	2.1	1.8	2.0	6.0	3.7	2.0	2.7	1.8	2.9	1.0	2.2	2.2	2.5		
	DAILY MAX.	ļ	17.4	2.1	7.1	4.1	2,4	2.2	13.7	14.1	4.2	2.4	3.1	5.9	2.9	3.5	14.0	4.1	5.5	4.8	7.0	3.8	4.9	24.9	12.3	9.4	5.4	3.9	5.2	1.9	5.5	5,4	4.1		
ALEGA-1954	23.00 0:00	,	J.O	8.0	115	1.1	s	8.0	2.1	2.1	1.7	2.0	1.7	1.8	5.6	2.5	1.3	4.1	1.9	2.3	2.0	1.6	2.0	1.3	1.2	2.5	2.5	2.0	3,3	13	3.3	2.6	1.5	4.1	1.9
de al constitue de la constitu	22:00 23:00:	0	D 0	٠ <u>.</u>	3.7	1.5	9.0	s	1.5	2.1	2.2	1.0	1.6	s	2.6	17	1.2	1.6	5.9	5.0	1.7	1,4	1.8	2.3	1.3	2.3	3.9	2.2	9.6	1.0	2.7	1.7	1.2	3.9	1.9
Sec. Contraction c	21:00= 22:00=	ď	× 0	8.0	1.0	1.3	6.0	1.9	s	1.6	1.9	1.3	1.6	2.0	s	1.7	1.4	1.9	2.2	3.4	1.4	1.6	2.1	1.1	1.4	1.9	2.3	3.1	3.5	1.6	2.4	1.9	1.3	3.5	1.8
dem Guil essay	. 20.00 .21.00	0	D 0	6.0	1.2	1.0	2.4	1.6	1.5	s	1.3	8.0	1.6	2.2	2.0	s	1.8	1.9	1.1	1.5	1.4	1.5	1.6	2.3	13	1.2	2.1	3.9	2.1	1.1	5.0	1.7	2.1	3.9	1.7
ogen-ch-age	19:00 20:00	,	χ, i	6.5	6.0	1.0	23	1.2	1.1	2.5	s	9.0	2.3	1.6	2.9	1.8	S	1.2	0.8	1.2	2.5	6.0	1.8	14.1	1.3	13	1.5	3.5	2.1	0.8	1.6	1.6	1.3	14.1	5.0
Section Company	18.00	,	4.1	0.7	2.6	1.0	1.6	1.5	13.7	14.1	1.1	s	1.1	1.4	1.6	1.5	4.1	S	0.5	1.4	6.0	1.2	1.1	2.0	1.8	1.2	1.9	1.2	5.2	1.0	1.5	1.4	1.6	14.1	2.7
de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la	17-00 18:00	,	T.4	6.0	1.4	6.0	1.4	1.2	1.0	2.0	1.2	0.7	s	2.2	1.6	U	14.0	0.3	s	1.7	1,4	6.0	2.1	15.5	1.5	1.1	1.5	2.0	3.2	6.0	1.6	1.1	1.9	15.5	2.4
	16:00 17:00	,	η.	1.0	7.1	1.1	1.2	1.0	1.1	1.2	1.1	6.0	6.0	1.3	ပ	ပ	4.0	9.0	0.7	S	1.3	1.7	2.0	11.0	1.1	1.1	1.6	0.7	3.6	9.0	1.3	1.2	1.6	11.0	1.9
September 200	. 15:00 . 16:00	,	1.3	0.5	0.7	1:1	1.4	0.8	6.0	1.4	1.3	6.0	1.1	1.4	U	U	2.2	0.5	0.5	1.4	s	6.0	1.2	2.8	0.7	1.2	1.9	6.0	3.8	1.0	1.5	6.0	1.9	3.8	1.3
Prof. Science Co.	14.00	ď	7.0	0.8	0.7	1.1	6.0	6.0	6.0	2.5	1.2	0.7	7.0	1.4	U	v	2.7	0.4	0.7	1.1	1.9	s	1.7	1.3	0.7	0.7	5.4	1.1	2.2	9.0	1.2	1:1	1.9	5.4	1.4
9.00	13:00	,	J	0.5	2.7	1.1	1.1	1.3	6.0	1.4	1.0	0.7	0.8	>-	U	U	2.0	0.4	0.7	0.9	1.7	1.0	s	1.6	2.0	1.2	1.9	1.1	2.2	0.8	1.3	6'0	2.3	2.7	1.3
See March Control	12:00	,	1.3	8.0	9.0	1.3	6.0	2.2	1.0	1.2	1.3	0.8	0.7	>	J	ပ	1.8	0.5	0.5	1.0	1.5	1.1	1.4	s	2.8	0.7	2.9	1.0	3.6	0.7	1.3	1.0	2.3	3.6	1.3
200	11:00 12:00		6.0 6.0	1.0	0.7	1.9	1.1	œ	6.0	1.6	19	1.0	0.8	>	U	U	1.6	0.8	0.7	1.0	1.2	1.1	1.1	13.2	s	0.7	1.7	6.0	2.6	1.1	1.5	1.0	2.6	13.2	1.7
Andrews in contrast of	10.00	,	1.2	0.7	1.0	4.1	1.0	1.4	1.0	1.4	4.2	1.1	1,4	>	v	U	1.7	6.0	0.4	1.0	1.3	1.5	2.4	12.7	7.5	S	3.3	6.0	3.1	9.0	1.3	1.2	2.7	12.7	2.3
	9.00 10.00	,	ς; :	0.7	0.8	3.5	1.0	1.4	0.7	2.5	2.5	1.1	1.2	3.3	U	U	2.4	0.8	0.7	1.6	1.4	1.6	2.5	2.7	7.2	1.6	s	1.6	3.2	0.7	1.2	1.5	3.3	7.2	1.9
	8:00	ı	9 9	1.0	1.1	2.2	0.9	1.0	0.9	5.6	2.5	1.3	1.8	4.2	1.8	2.3	1.6	0.9	0.5	1.8	2.4	2.5	4.9	3.5	11.5	2.7	4.2	s	3.0	9.0	1.8	2.5	3.7	11.5	2.7
	7.00 8.00	,	λ. Σ. τ	1.8	13	1.7	0.9	1.1	1.0	10.1	2.3	1.7	1.5	4.4	2.0	2.3	2.4	0.9	1.1	4.8	3.0	2.2	2.8	4.3	11.9	3.9	3.7	1.8	s	9.0	3.0	2.5	3.5	11.9	3.0
	6:00 7:00		× (	1.2	1.1	2.7	1.2	1.0	1.3	3.6	3.0	2.2	3.1	4.5	2.6	3.5	2.1	1.3	2.5	2.9	2.9	3.2	2.5	24.9	12.3	8.2	4.9	2.8	3.0	s	4.6	4.0	3.0	24.9	4.0
6.00-402,00	5.00	,	17.4	1.2	1.1	1.6	1.4	0.8	2.0	2.5	2.4	2.4	2.9	4.1	2.6	3.1	2.3	1.1	4.9	4.1	7.0	3.8	2.7	4.9	8.1	9.4	2.8	2.1	2.7	1.1	S	4.4		17.4	
and the second	4:00	,	n ;	1.0	4.1	2.4	1.2	1.0	3.1	2.2	2.1	1.9	2.3	5.7			2.0	1.5	4.2	4.1	2.8	2.5	2.3	2.9	1.7	1.5	2.9	1.2	2.4	1.4	5.5	S		5.7	
Control of the Contro	3.00	;			0.8				0.8	2.3		1.5			2.1	2.6	2.0	1.2			2.0	2.3	1.9	2.2	1.4	0.7	2.5	1.1	2.2	1.1	3.1			5.9	
Strolledon (minute)	2.00 3.00	,	1				1.3	1.0				1.1	2.1	2.6		2.1	2.2	1.8		2.4	2.2	2.2	1.7	2.4	1.8	0.4	2.4		2.5	1.2	2.9	4.1	3.9	4.9	
	1.00 2:00 3:00 4:00 5:00 6:00	,	. 13		_		1.3	1.0			2.2		2.7	2.3		2.1	2.2	3.6		3.7	2.0	1.9	1.7	2.5	1.6	0.3	2.3	1.6	1,7	1.2	2.4	2.8	3.5	5.5	
A CONTRACTOR	1.00		7.7	23	0.6	2.6	S	7	7	1.8	2.9	1.2	2.7	2.4	20	2.4	2.5	3.1	4.8	2.6	2.1	2.2	17	2.4	2.3	6.0	2.2	3.8	1.6	1.9	2.3	9.33	3.5	4.8	
MST	HOUR START HOUR END	DAY		7	m	4	Ŋ	9	7	8	o	ទ	П	12	13	7	15	16	17	18	Ð	20	21	. 22	23	27	23	26	27	78	62	30	31	HOURLY MAX	HOURLY AVG
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25 A 7 A 7 A 7 A 7 A 7 A 7 A 7 A 7 A 7 A
CASE LETTERS

NUMBER OF NON-ZERO READINGS:	ës:		069							
MAXIMUM INSTANTANEOUS VALUE:	TOE		24.9	PPB	@ HOUR(S)	(S	ω	ON DAY(S)		23
							VAR-V	VAR-VARIOUS		
IZS CALIBRATION TIME:	32	HRS		OPERATIO	OPERATIONAL TIME:				739	HRS
MONTHLY CAUBRATION TIME:	17	HRS								
STANDARD DEVIATION:	2.14									

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

NOZMAK

- LICA31

 ${\tt LICA31} \\ {\tt NO2}\_ / \ {\tt WDR} \ {\tt Joint} \ {\tt Frequency} \ {\tt Distribution} \ ({\tt Percent})$ 

May 2015

Distribution By % Of Samples

Logger Id : 31 Site Name : LICA31 Parameter : NO2 Units : PPB

NNW Freq 4.18 100.00 00. 00. 4.18 00. 3.75 M 00. 00. 3.75 00. 3.31 00. 3.31 WNW 00. 00. 4.32 00. 00. 4.32 Wind Parameter : WDR Instrument Height : 10 Meters 00. 1.73 1.73 00. 00. 00. 4.18 00. 4.18 SW 00. 00. 6.49 00. 00. 6.49 SSW 00. 00. 00. 13.70 7.50 10.82 13.70 00. Ø 10.82 00. SSE 00. 00. Direction 00. 7.50 SS 00. 00. 5.19 ESE 5.19 00. 00. 00. 8.36 8.36 00. 00. 00. м 00. 8.65 00. 8.65 ENE 00. 6.49 뛵 00. 00. 00. 6.49 90.9 00. 90.9 NA 00. 00. 5.19 00. 5.19 00. 00. 50.0 Totals Limit < 110.0 >= 210.0 < 210.0

00. 00.

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Calm : .00 %

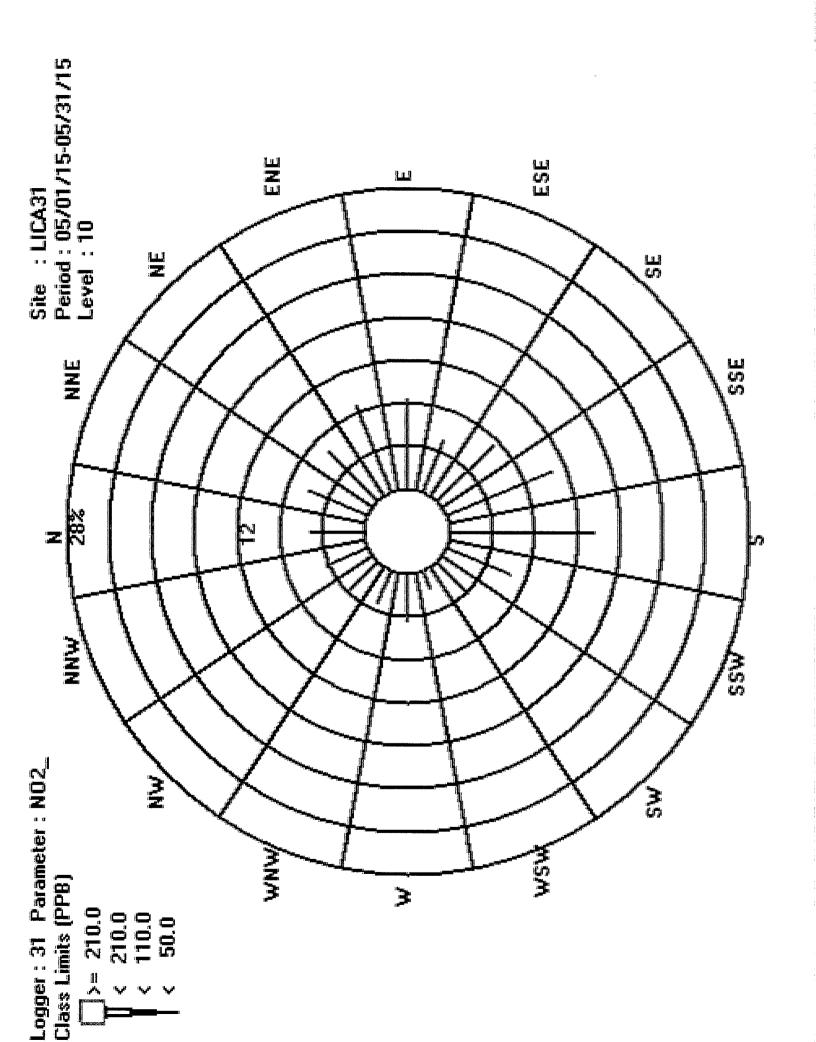
Total # Operational Hours: 693

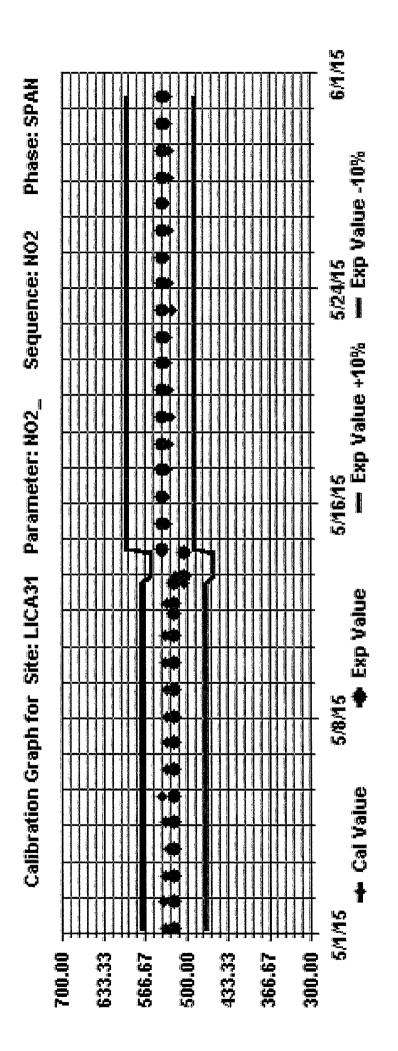
Distribution By Samples

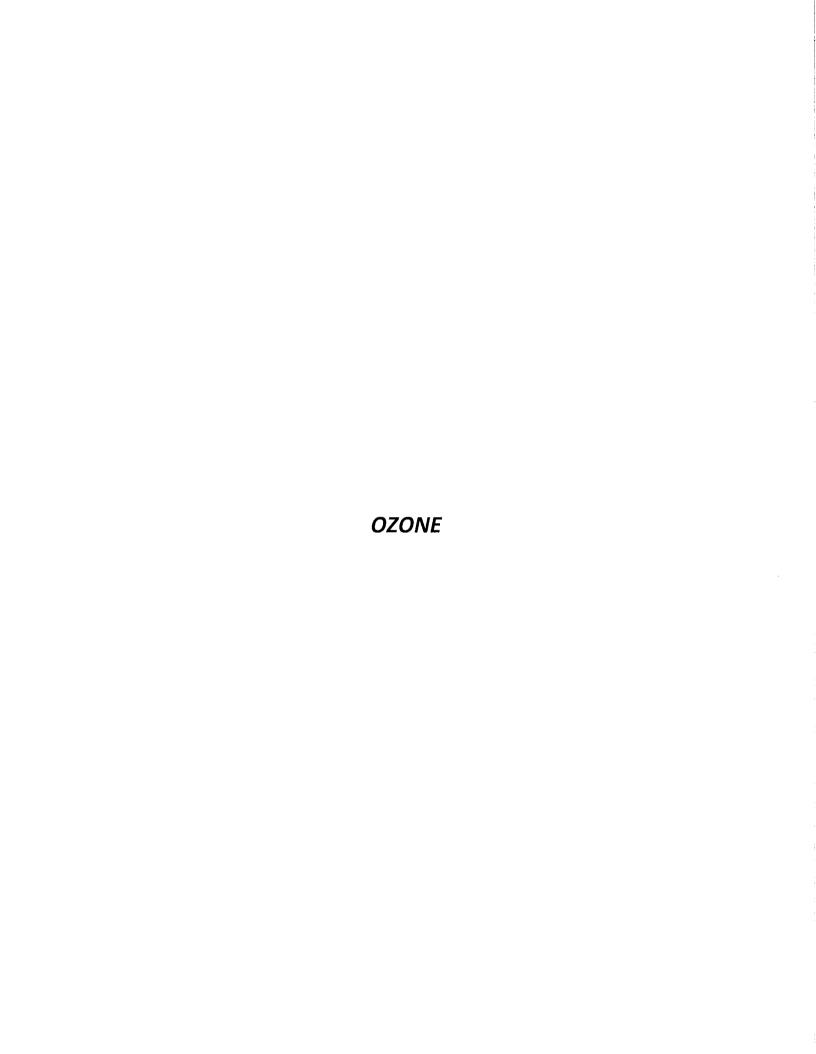
Direction

Ped.	, ,	693				
		29				29
MN		26				26
WNW		23				23
B		30				30
WSW		12				12
MS		. 59				29
MS.	i	45				45
v.		95 4				92
						75
		75				
C.	3	25				52
17. 17.	Ì	36				36
p.	1	28				28
EN EN		9				9
ž	1	45				45
E E		42				42
2	5	36				36
÷	,	0.03	110.0	0.0	0.0	Totals
F	i					Ξ
		٧	٧	<b>V</b>	٨	

Calm : .00 %







JOB # 2833-2015-05-31- C

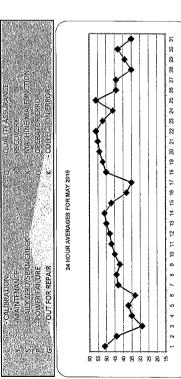


OZONE (03) hourly averages in ppb

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2

RDGS.	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	54	24	54	24	24	24	24	24	24	24	24	24	24	54	24	54		
24-HOUR AVG.	50.6	43.8	29.5	35.2	36.5	32.8	43.2	43.7	41.9	45.3	47.4	48.3	49.6	50.6	46.8	38.0	34.6	50.1	52.4	53.5	54.6	2.95	52.2	46.4	55.9	44.4	43.7	34.9	38.7	45.8	34,8		
DAILY ;	55	48	36	45	41	32	49	25	52	20	56	28	8	8	26	84	47	28	8	29	8	89	8	62	75	26	9	42	49	52	49		
23:00 0:00	49	36	59	×	s	33	4	40	41	45	55	47	48	49	47	54	45	48	55	51	53	8	37	26	49	40	33	35	40	4	33	28	43.5
22:00	52	37	8	37	33	s	47	4	41	47	99	s	48	21	47	27	4	20	22	52	26	2	38	23	84	42	8	33	41	4	33	29	44.3
21:00 22:00	53	37	32	37	33	33	s	45	4	46	55	20	s	23	45	53	4	51	28	52	8	89	33	24	23	46	37	33	43	45	36	89	45.2
20.00	53	38	31	38	32	33	46	s	43	46	26	23	23	s	43	33	47	23	28	23	61	99	45	22	49	23	40	32	4	46	40	99	46.3
19:00 20:00	54	43	33	40	36	33	47	49	s	49	22	22	26	26	s	37	47	22	23	26	61	83	48	22	6	26	24	33	46	20	49	63	49.4
18:00 19:00	55	43	33	41	38	32	48	51	47	S	26	28	28	57	43	s	46	26	9	28	83	99	23	8	23	26	52	42	49	52	46	99	51.0
, 17:00 18:00	55	42	36	4	33	8	49	52	49	20	s	U	29	9	42	36	s	28	29	82	62	67	8	62	67	72	22	42	49	52	49	<i>L</i> 9	51.5
16.00 17.00	55	45	8	45	40	35	48	49	48	20	22	U	29	90	46	38	47	s	28	29	61	67	<b>5</b> 5	62	7	25	9	41	6	51	48	74	51.3
15:00 1 16:00		4																															50.4
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TART	DAY 1	2	m	4	'n	Ф	- 2	<b>∞</b>	O	10	# #	12	a	4.	<b>:</b>	97	17	82	<b>.</b>	20	21	22	23	77	22	26	72	28	29	æ	к	HOURLY MAX	HOURLY AVG

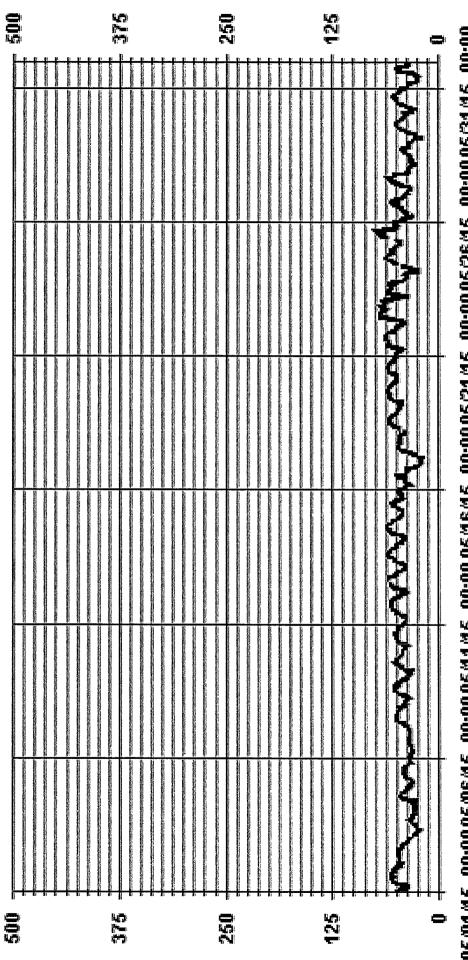
### STATUS FLAG CODES



#### OBJECTIVE LIMIT:

### ALBERTA ENVIRONMENT: T-HR

			2	MONITEL SOMMART					
NUMBER OF 1-4R EXCEEDENCE	ý		0						
NUMBER OF NON-ZERO READINGS:	VG5:		669						
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		74 56.2	PPB	@ HOUR(S)	16	ON DAY(S) ON DAY(S)	25		
IZS CALIBRATION TIME:	39	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	E: JPTIME:	VAR-VARIOUS	744	HRS %	
STANDARD DEVIATION:	10.07			MONTHLY AVERAGE:	ڹڹ		4	PPB	



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

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### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

OZONE MAX instantaneous maximum in ppb

MST

RDGS.	24	24	24	24	24	23	24	24	24	54	54	54	54	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
24-HOUR AVG.	52.4	45.3	31.1	37.4	37.6	34.1	44.8	45.3	43.8	46.7	48.7	50.9	50.5	52.0	48.8	40.9	36.3	51.5	53.7	54.8	56.3	58.3	56.2	48.9	59.4	47.4	46.5	37.0	40.7	44.4	37.6		
DAILY 24 MAX.		49																															
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00 23																															34 3		•
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17.00	57	43	38	46	41	36	51	23	20	51	s	U	9	62	46	37	s	59	61	29	63	69	62	2	74	26	29	4	51	25	52	74	53.4
16.00	57	4	35	46	41	36	51	20	49	51	22	U	9	62	51	40	48	s	9	9	62	s	28	2	82	22	63	4	51	25	51	78	52.6
15.00	57	47	35	46	41	36	49	25	25	51	22	U	61	61	24	4	49	9	s	9	61	S	22	62	75	49	19	45	51	21	49	75	52.4
-14.00 15.00	56	48	31	46	41	36	49	25	23	20	24	U	s	9	22	45	49	29	28	S	61	s	22	29	71	51	29	41	20	20	43	71	51.3
13:00 14:00	56	47	31	45	42	8	49	51	52	49	23	U	s	23	23	25	47	28	29	9	S	29	28	55	2	47	22	40	48	20	32	20	50.9
12 00 13 00	56	48	28	45	42	뙀	21	49	49	20	52	U	28	28	28	25	4	27	28	9	61	s	29	24	72	46	23	36	46	20	28	72	50.1
11.00	56	49	28	33	45	~	20	20	47	20	51	57	54	57	23	45	41	26	57	9	62	70	s	20	2	43	25	32	43	48	27	70	49.7
10:00	55	48	53	32	42	32	52	48	46	49	48	22	23	26	55	4	36	25	29	59	62	2	67	s	99	41	47	35	41	47	28	67	48.1
00.6- 10:01	55	47	26	33	40	32	47	46	4	48	47	55	52	23	51	41	32	20	54	28	62	26	99	43	S	40	42	8	33	43	27	99	45.4
30.6																															25		
0 7.0	8 49	3 47	7 25	. 32	38	32	, 42	37	5 41	47	42	S	47	4	1 47	8	. 26	S	. 46	49		4	. 25				S				26	55	6 40.4
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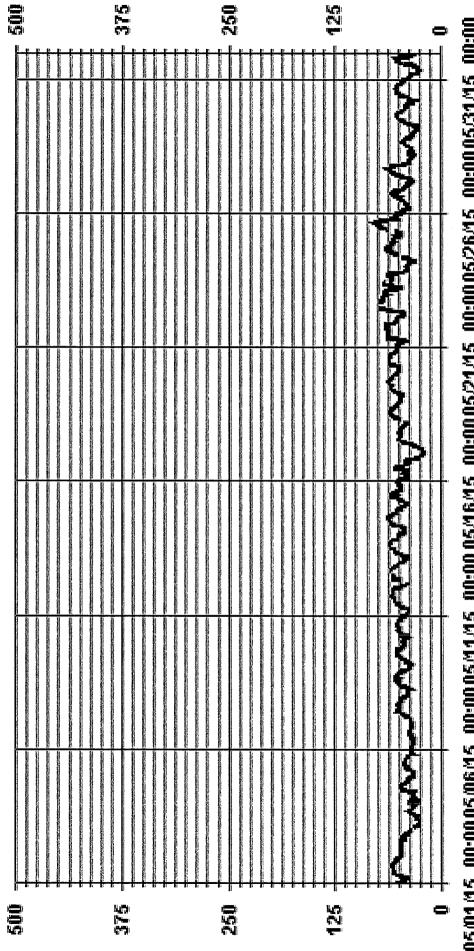
POWER FAILURE

- OUTEON: FOLLOWER OR

- COLLECTION FROR.

NUMBER OF NON-ZERO READINGS:		695							
MAXIMUM INSTANTANEOUS VALUE:		78	8	@ HOUR(S)	ıs.	16	ON DAY(S)		23
						VAR-VARIOUS	RIOUS		
42	HRS		OPERATIO	OPERATIONAL TIME:				743	HRS
MONTHLY CALIBRATION TIME: 6	HS.								
STANDARD DEVIATION: 10.14									

of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

O3MAX

LICA31 03\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 31
Site Name : LiCA31
Parameter : 03
Units : PPB

ter: 03 Wind Parameter: WDR: PPB Instrument Height: 10 Meters

00-70,38 29.61 NNW 3.00 1.00 00. 4.00 00. KN 3.00 .71 00. 00. 3.71 2.71 00. 3.29 WNW .57 00. 2.86 1.43 % 4.29 % .57 1.14 00. 1.71 00. 4.14 2.71 1.43 00. SH 00. 4.00 00. 6.15 2.14 SSW 00. 8.01 5.29 00. 13.30 00. Ø 6.29 4.14 10.44 00. SSE 00. 5.86 Direction 00. SE 3.86 3.14 9.01 00. 1.57 ESE 00. 5.43 % 7.43 00. .85 00. 8.29 ы ENE 7.58 1.00 00. 8.58 00. 5.29 뜊 1.14 00. 00. 6.43 5.15 00. SE 00. 6.00 4.72 5.15 00. 00. .42 Totals Limit 210 20 110 Ķ ٧

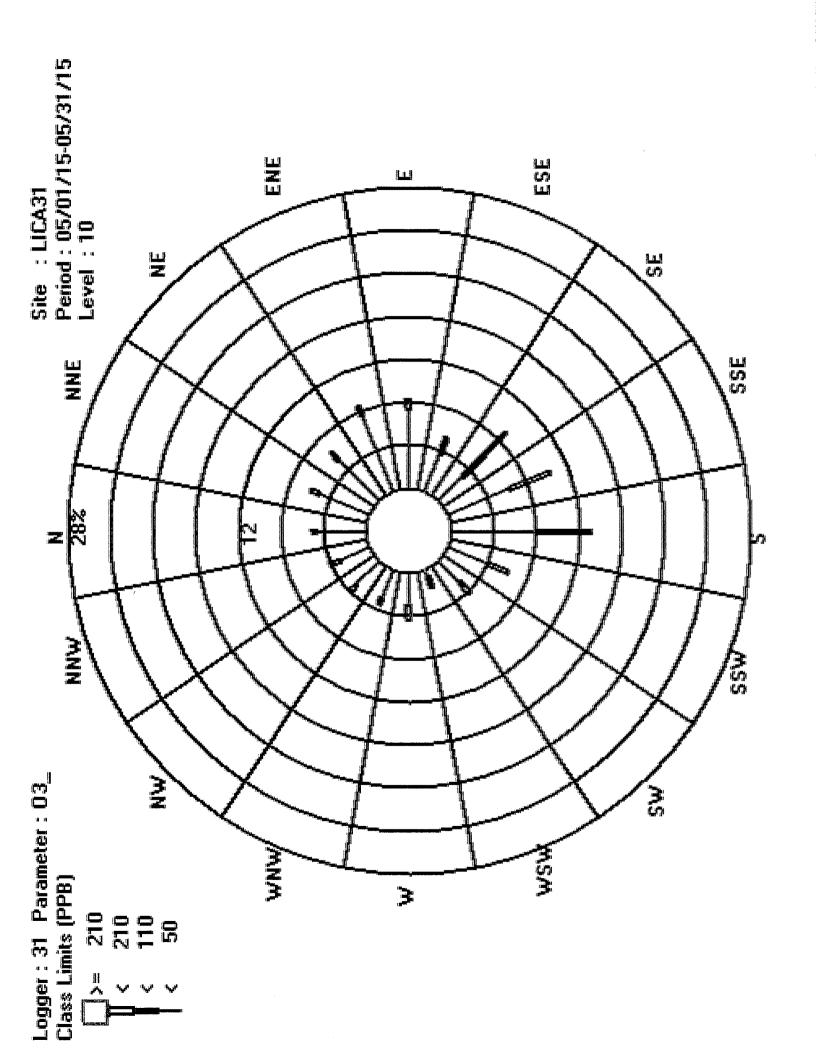
Calm : .00 %

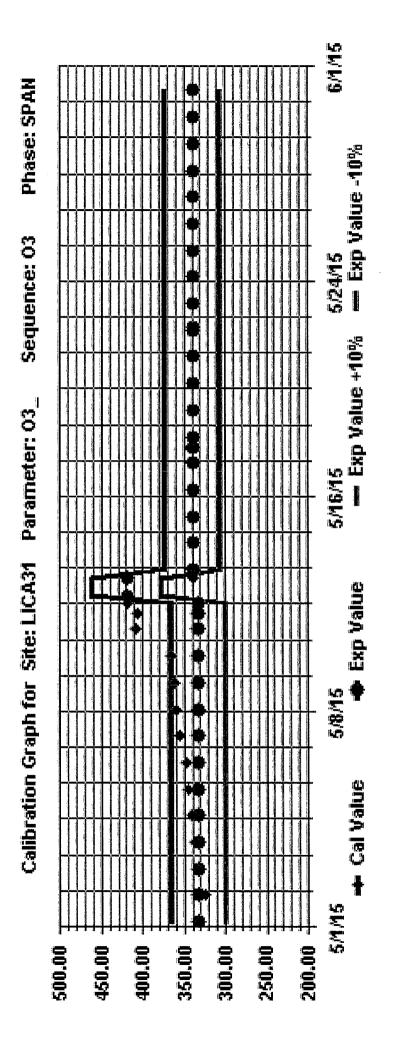
Total # Operational Hours : 699

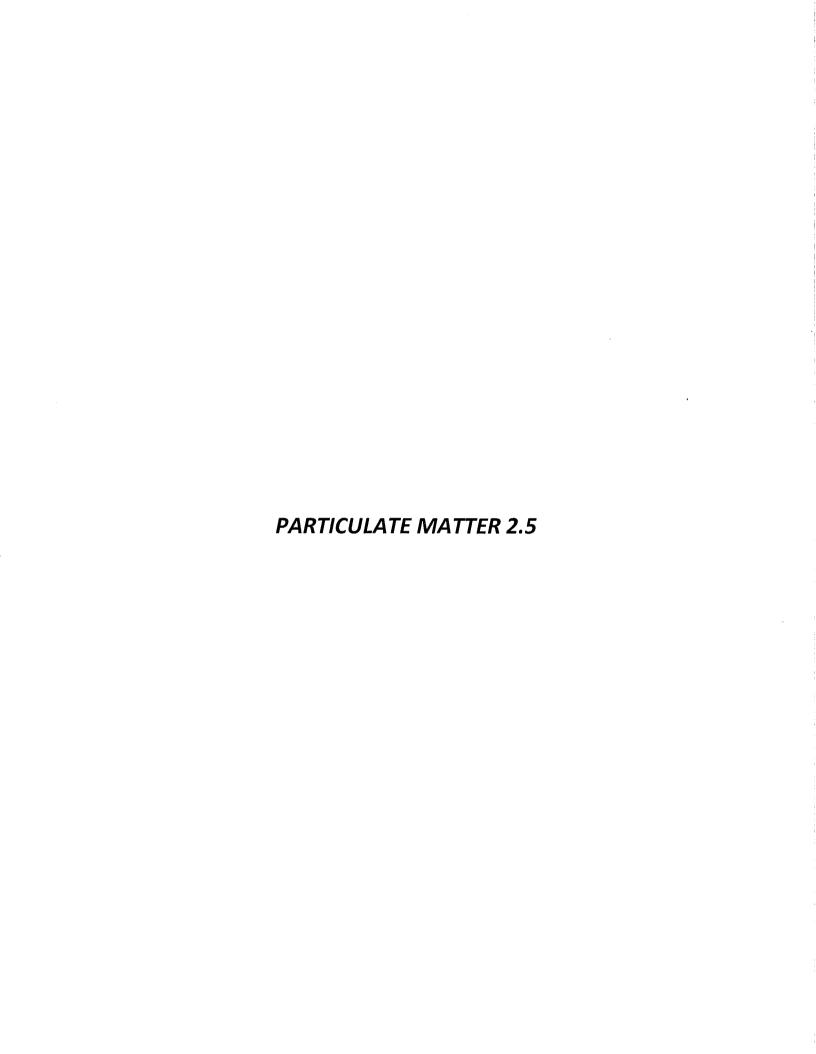
Distribution By Samples

	Freq	492	207			
	MNW	21	7			28
	MN	21	ιŋ			56
	WNW	19	4			23
	Œ	20	10			30
	WSW	4	00			12
	SW	19	10			59
	SSW	28	15			43
	Ø	56	37			66
	SSE	44	59			73
Direction	SE	22	41			63
Lia	ESE	27	11			88
	ы	52	9			Ω Θ
	ENE	53	7			09
	Ħ	37	00			45
	NNE	36	9			42
	z	33	m			36
	Limit	20	110	210	210	Totals
		٧	٧	٧	X	

Calm : .00 %









St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

# PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

#### MST

RDGS.	24	23	23	77	24	23	24	23	21	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	54	24	24	24	7	
AVG.		3.5	3.0	3.6	4.9	4.0	3.6	6.9	4.2	3.9	2.0	13.7	8.0	8.3	9.0	8.9	5.3	6.4	4.7	5.7	6.9	5.9	42.3	12.1	10.8	19.5	14.2	3.4	4.6	3.6	3.9	
MAX	თ	10	σ	∞	10	Ø	10	13	6	12	6	88	12	16	15	14	15	12	12	11	18	10	169	17	15	95	33	18	თ	ø	9	
0.00	4	7	ч	ø	Ŋ	0	10	10	2	6	9	12	12	10	12	ø	9	10	11	2	10	4	14	12	13	23	38	۴	2	∞	×	38
23:00	73	m	7	7	9	×	7	σ	7	4	2	10	2	00	œ	m	4	11	œ	11	σ	7	15	13	13	78	31	0	3	ø	×	31
22:00	5	0	7	m	œ	0	ø	11	۴	2	6	10	11	11	œ	2	2	4	σ	4	18	S	18	12	11	73	33	7	e	ø	×	73
24.00	П	٣	m	m	Ŋ	7	m	7	ø	ю	თ	10	10	11	12	4	7	12	4	2	15	4	25	14	17	95	16	ч	4	9	×	95
20-00	н	1	0	0	0	7	0	e	m	9	φ	12	4	11	17	7	2	7	0	0	σ	ø	33	12	11	14	14	m	e	4	×	33
19-00	4	0	ω	0	٣	6	2	5	0	0	4	15	17	თ	00	4	Ŋ	m	7	6	н	4	49	11	10	4	12	5	e	9	×	49
18:00	5	00	Н	×	4	S	m	×	0	0	0	0	5	2	6	7	e	7	н	ø	ਜ	Ŋ	41	13	10	4	14	2	e	П	×	41
17:00	0	4	×	0	0	4	7	4	×	7	0	5	∞	7	13	П	φ	0	9	4	Ŋ	6	18	12	10	4	13	0	9	m	×	18
16:00	0	0	œ	×	ω	9	0	0	0	Н	9	m	17	9	∞	m	4	9	0	0	2	4	16	13	თ	7	16	Н	ᆏ	e	×	16
15:00	2	П	0	0	5	5	00	5	×	2	0	10	∞	7	9	4	æ	φ	Ŋ	0	6	m	17	6	4	6	15	0	9	Ŋ	×	17
0 14:00	0	2	0	4	σ	m	7	m	0	0	m	∞	σ	ပ	m	m	Ŋ	4	7	Ŋ	1	m	22	13	10	თ	14	2	0	0	×	22
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5:00 6	2	9	0	1	3	7																	∞							0		89
4:00 5	Ŋ	0	0	9	9	7		6															თ								9	42 (
3:00	6	2	2	7	7	∞																	∞							4	2	21
2:00	∞	10	6	4	4	2	9	6	∞	10	9	19	2	13	6	13	12	9	თ	4	6	10	6	10	14	13	11	6	∞	0	2	13
1:00	4	4	00	2	4	1	0	13	6	9	6	16	19	16	9	14	9	11	Ŋ	00	თ	10	2	Ħ	15	17	11	18	∞	72	m	18
END	<b>.</b>						e j					٠.,	~										-					~				. MAX
HOUREND 1:00 2:00	g ⊓	7	m	4	'n	ø	7	8	O	10	7	17	2	14	Ħ	16	Ţ	1.8	15	20	2	7	23	24	25	26	27	28	25	3	31	HOURLY MAX

### STATUS FLAG CODES

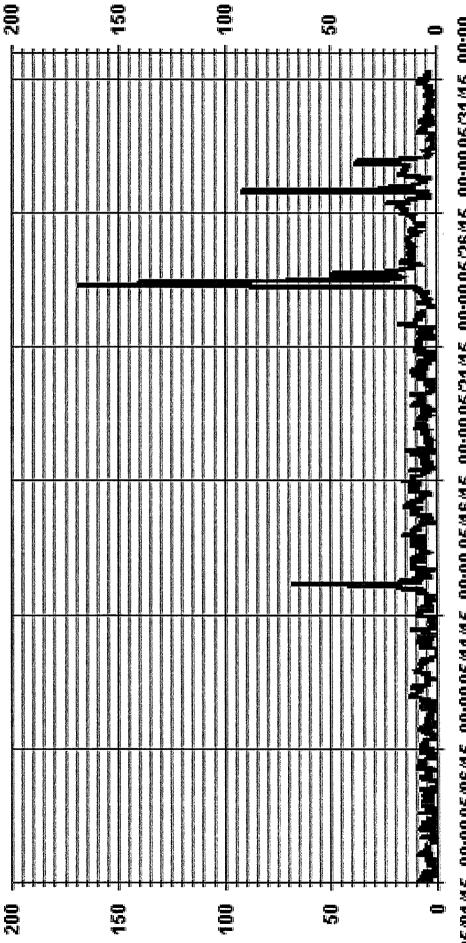
2 2 4 5 8 7 9 9 0 40 41 42 42 44 45 48 45 90 40 40 50 50 50 50 50 50 50 50 50 50 50 50 50	0
	10
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	25
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24 HOUR AVERAGES FOR MAY 2015	
94 UNID ANTERAGES END MAY 9045	
OUT FOR REPAIR KCOLLECTION ERROR	0-
BOWERFAIIURE O OPERATOR ERROR	d.
- DAIRYZERO/SPANIGHECK;	
-WANNTENANCE	¥-
CALIBRATION:	0-0

### OBJECTIVE LIMIT:

Mark I	
373	
315	
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NUMBER OF 24-BR EXCEEDENCES			1						
NUMBER OF NON-ZERO READINGS:			644						
MAXIMUM 1-HR AVERAGE:		169.0	ug/m3	169.0 ug/m3 @ HOUR(S)	00	ON DAY(S)	23		
MAXIMUM 24-HR AVERAGE:		42.3	42.3 ug/m3			ON DAY(S) VAR-VARIOUS	23		
MONTHLY CALIBRATION TIME:	4	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	TIME:		718 96.5	HRS	
STANDARD DEVIATION-	12.67			MONTHLY AVERAGE:			7.9	7.9 us/m3	

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

LICA31
PM2 / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 31 Site Name : LICA31 Parameter : PM2

		Fred	97.75	86.	.42	.42	.42	00.	
		WNIN	4.06	00.	00.	00.	00.	00.	4.06
		WM	3.64	00.	00.	00.	00.	00.	3.64
		WNW	3.08	00.	00.	00.	00.	00.	3.08
WDR 10 Meters		¥	3.78	.00	00.	00.	00	00.	3.78
: WDR		WSW	1.82	00.	00.	00.	00.	00.	1.82
eter Height		SW	3.50	00.	00.	00.	00.	00.	3.50
Wind Parameter Instrument Height :		SSW	6.16	.14	00.	00.	00.	00.	6.30
Win		Ø	13.72	00.	.14	00.	00.	00.	13.86
		SSE	11.20	00.	00.	00.	00.	00.	11.20
	Direction	SE	9.38	00.	00.	00.	00.	00.	9.38
	Dir	ESE	5.74	00.	00.	00.	00.	00.	5.74
		ш	7.56	00.	00.	00.	00.	00.	7.56
		ENE	8.26	.14	.28	.14	00.	00.	8.82
		S	5.18	.28	00.	.28	.42	00.	6.16
: PM2 : UG/M3		NNE	5.60	.42	00.	00.	00.	00.	6.02
ster		z	5.04	00.	00.	00.	00.	00.	5.04
Parame Units		Limit	30	09	80	120	240	240	Totals

Total # Operational Hours : 714

Calm : .00 %

v v X

v v v

Distribution By Samples

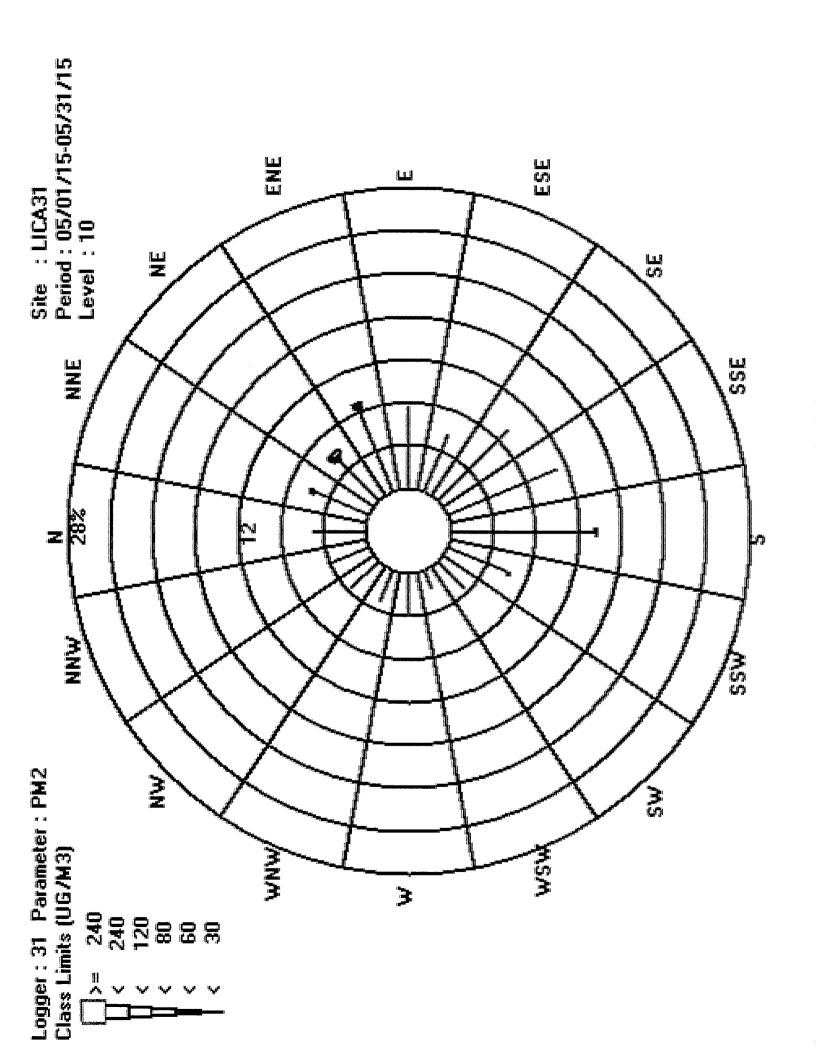
Freq

869

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Calm : .00 %







WIND SPEED (WS) hourly averages in km/hr

MST

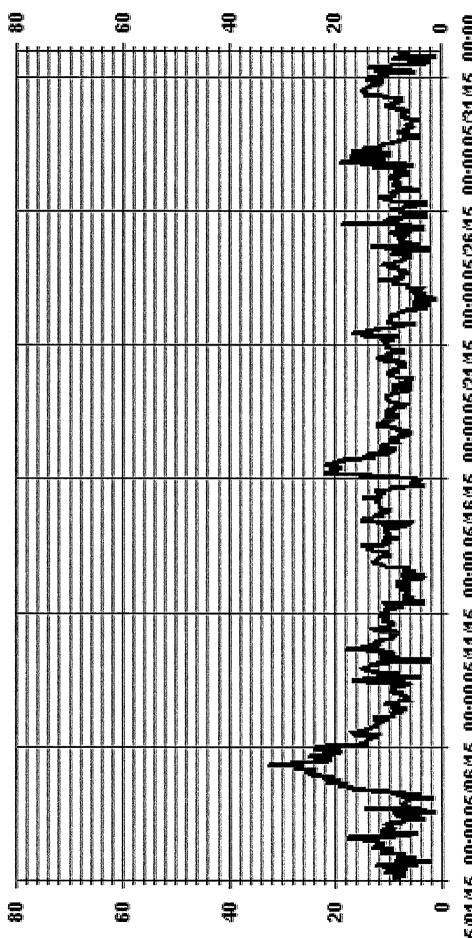
RDGS.	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	54	24	24	24	24	24	24	74	24		
24-HOUR AVG.	7.7	10.8	7.2	14.4	23.9	14.6	8.5	10.3	11.1	10.3	7.7	7.5	11.2	10.6	9.7	16.4	8.8	9.5	8.0	6.8	10.7	5.1	7.4	7.2	7.6	7.6	9.4	10.2	8.9	11.7	7.7		
DAILY ;	12.5	17.8	14.5	24.3	32.5	23.7	12.8	16.9	18.1	13.0	10.6	12.8	15.0	15.2	14.7	22.2	11.4	12.2	10.4	12.1	16.7	9.6	11.7	13.2	18.8	11.7	19.0	17.2	10.3	14.6	14.0		
23:00	8.5	9.4	7.0	24.3	23.7	10.6	7.5	14.1	12.1	11.7	7.5	12.2	9.4	11.5	4.1	11.0	8.4	8.8	6.6	10.1	8.6	4.8	10.2	7.5	6.7	8.4	13.5	8.1	10.3	14.2	6.0	24.3	10.4
22:00.	8.0	6.6	7.1	22.4	20.8	11.5	7.0	14.8	12.7	10.3	7.9	12.8	10.3	11.3	4.2	14.2	9.5	9.7	9.6	10.2	9.7	2.8	9.7	9.9	7.4	7.5	10.4	7.3	9.4	13.0	6.9	22.4	10.2
21:00	4.8	11.6	6.4	19.8	19.5	12.0	7.1	14.4	11.3	11.0	8.9	12.7	10.5	10.7	5.3	13.0	8.4	8.9	9.5	9.4	10.2	4.1	8.2	7.9	3.2	6.3	16.4	6.1	8.6	11.1	7.4	19.8	8.6
20:00	5.4	8.6	7.1	21.9	19.2	12.4	5.7	13.1	12.0	10.1	6.3	11.3	10.0	9.3	0.9	12.9	7.4	7.8	9.8	7,9	9.0	4.3	7.8	5.4	2.5	5.5	19.0	4.6	8.6	11.0	8.9	21.9	9.3
19:00 19:59	6.8	4.3	6.7	20.5	19.4	11.5	6.2	12.0	14.1	10.2	6.5	11.2	8.0	10.2	5.0	15.3	و. و.	8.9	6.4	8.9	4.8	2.5	7.0	6.4	4.7	4.0	15.3	3.8	6.7	11.3	0.7	20.5	8.5
18:00 18:59	1.6	6.1	7.7	19.0	20.5	13.1	6.1	7.6	13.5	10.6	6.5	10.5	10.0	11.9	3.2	18.4	5.3	7.1	4.9	8.8	7.0	1.4	9.9	4.0	7.4	8.4	6.4	5.8	5.9	11.8	4.2	20.5	8.4
17:00	6.0	8.7	14.5	21.1	22.6	13.5	8.3	10.8	15.3	11.2	7.1	7.1	11.1	11.1	6.9	18.4	6.5	9.0	7.0	9.5	9.0	7.0	6.4	13.2	10.3	9.0	4.9	6.7	7.6	13.3	9.1	22.6	10.2
16:00	5.0	9.1	3.8	21.6	25.1	14.4	7.7	10.2	18.1	10.3	6.3	6.1	9.5	11.2	9.7	19.7	8.2	8.5	5.2	10.4	8.9	3.2	7,9	10.4	7.7	9.6	7.7	7.6	7.2	13.5	6.3	25.1	10.0
15:00	4.9	17.8	2.9	18.0	23.8	13.9	10.8	3.5	14.3	9.2	7.3	5.8	10.3	12.8	8.6	20.5	7.7	9.4	7.0	9.7	11.5	5.1	7.0	2.1	10.8	8.8	12.7	8.5	6.3	13.5	4.2	23.8	10.0
14:00 14:59	12.5	16.2	6.0	17.6	21.7	16.0	9.5	9.3	10.6	9.1	6.5	5.3	11.1	13.0	12.4	21.2	7.5	10.6	7.8	8.9	12.9	4.4	7.0	5.6	9.5	8.6	7.5	9.0	7.3	14.4	1.7	21.7	10.1
13:00	11.1	14.8	6.2	19.5	20.5	13.8	9.4	15.1	11.8	8.6	5.0	4.8	15.0	13.2	10.2	21.9	9.7	8.6	5.2	12.1	14.6	2.4	7.5	4.4	18.8	11.7	8.7	9.9	7.3	14.6	2.9	21.9	11.0
12:00	7.2	14.1	8.6	17.8	21.5	16.4	7.8	16.9	8.8	10.2	7.2	5.7	14.1	14.9	12.2	19.8	8.8	9.1	9.0	11.7	15.7	2.4	9.3	6.4	8.6	10.5	7.5	10.8	6.0	13.9	6.4	21.5	10.9
. 11.00	6.4	11.8	8.4	16.7	24.4	16.1	6.2	14.3	9.4	12.1	5.4	7.7	12.8	15.2	11.5	19.3	9.1	8.9	8.9	10.7	16.7	5.2	11.7	8.6	5.5	10.5	7.8	11.6	6.9	14.5	9.5	24.4	11.1
10:00	6.9	12.4	6.8	14.4	26.7	12.2	8.0	9.9	10.8	13.0	3.0	4.0	14.2	12.1	11.5	18.7	8.8	10.6	6.3	7.8	15.2	2.7	7.8	9.6	4.8	9.1	5.8	11.5	3.9	14.2	9.7	26.7	10.0
9:00	9.4	10.6	9.6	13.3	28.7	12.4	8.4	6.3	11.5	12.6	10.6	4.2	12.9	6.1	11.2	20.5	8.5	8.1	5.5	8.5	14.4	2.7	9.0	6.5	3.0	9.6	6.2	11.1	5.4	14.6	14.0	28.7	10.0
8:59	10.7	12.1	3.0	9.6	32.5	13.8	7.6	6.9	8.0	11.9	10.4	3.6	12.9	6.3	14.7	20.3	10.0	9.1	6.3	6.5	7.8	4.7	8.2	5.4	7.9	3.3	7.6	14.8	5.7	12.3	9.5	32.5	8.6
7:00	8.5	10.5	5.1	6.5	26.0	13.6	7.8	8.8	3.1	8.3	9.5	3.8	11.2	6.2	13.5	21.2	10.7	9.3	7.2	7.3	9.2	6.9	9.3	5,9	8.4	2.4	9.7	15.0	9.0	10.9	12.5	26.0	9.5
6:00	6.8		7.1																				6.3									27.8	
5:00	8.2	11.2	7.6	8.6	27.3	14.5	9.0	8.7	5.3	8.6	8.8	7.6	9.9	8.0	11.2	19.2	10.7	9.6	9.4	7.4	10.5	8.0	5.6	7.6	10.0	4.9	7.6	12.8	5.1	7.8	4.9	27.3	9.5
1.00 2.00 3.00 4.00 5.00 1.50 (2.59 3.59 4.59 5.59 (3.59 4.59 5.59 6.59 5.59 6.59 5.59 6.59 6.59 6			10.0																										6.1	8.0	11.9	23.5	9.9
3.59	8.8	10.8	10.5	7.0	23.9	15.8	12.8	9.0	12.6	9.1	10.4	6.4	9.9	9.9	11.8	12.9	8.5	11.3	10.4	9.0	10.6	9.6	3.9	8.5	6.6	6.9	8,6	9.7	5.7	7.0	10.4	23.9	9.9
2:00	8.8	11.6	10.1																							9.4	8.5	12.8	6.2	8.1	10.3	25.7	10.1
1.00			10.3																				5.9					17.2	6.8	9.5	11.1	. 25.0	
0:00	8.5	6.8	10.1	6.8	24.6	23.7	12.1	7.1	13.6	10.8	10.6	6.0	12.2	10.0	11.6	5.4	11.2	9.7	10.0	8.6	6.6	9.6	5.2	10.8	7.9	7.8	9.3	12.8	7.4	9.8	12.8	24.6	10.4
HOUR END:	DA¥ T	2	8	4	5	9	7	∞	6	10	ij	12	13	14	15	16	17	18	<u>1</u>	20	23	7	23	24	52	26	22	28	29	30	31	HOURLY MAX	HOURLY AVG

S9 S3	
FLAG	
S	
STATUS	

-Power	BRO/SPAN/CHECK  X. MACHINE O "OPERATOR ERROR  R REPAIR  K COLLECTION ERROR	24 HOUR AVERAGES FOR MAY 2015	•
	- DAILY ZERO/SPANCHECK - POWER FAILURE - OUT FOR REPAIR	24 HOUR AVERAGES	*

August 28, 2014	MAGNETIC DECLINATION 19 DEGREE EAS	
LAST CALIBRATION:	DECLINATION:	

NUMBER OF NON-ZERO READINGS:			744					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		32.5	КРН Н	КРН @ НО <b>U</b> R(S) КРН	<b>∞</b>	ON DAY(S) ON DAY(S) VAR-VARIOUS	u, u,	
MONTHLY CALIBRATION TIME:	0	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	IIME:		744 100.0	HRS %
STANDARD DEVIATION:	4.59			MONTHLY AVERAGE:			9.9 KPH	КРН



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

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ds.s.



St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

VECTOR WIND SPEED MAX instantaneous maximum in km/hr

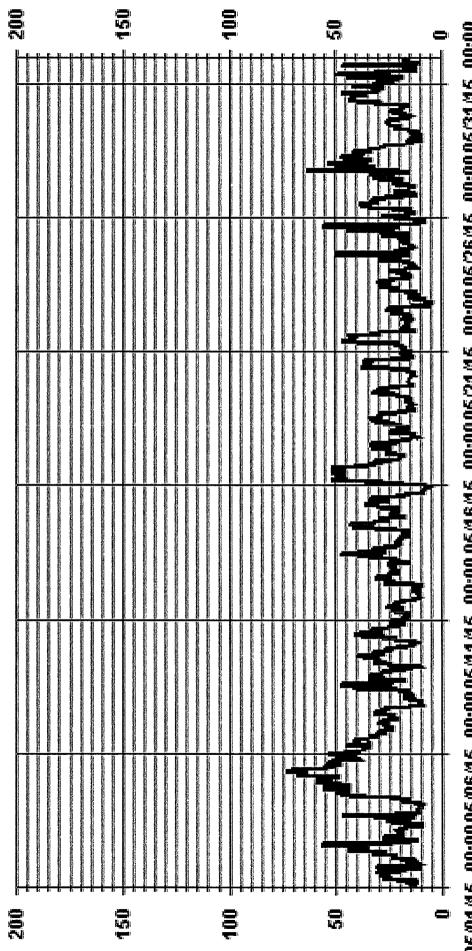
#### MST

#	1:00 2:00	0:00 1:00 2:00 3:00 4:00 5:00 1:00 2:00 3:00 4:00 5:00 6:00	3:00	5:00	5.00 6:00	7:00	7:00 8:00	00.8	10:00	11:00	12:00 1	13:00 14	4:00	5:00 - 16	15:00 16 16:00 17	16:00 17 17:00 18	7.00 18 60 19	18.00 19.00 19.00 20.00	00 20.00	22.0	0 23:00	23:00 0:00	MAX.	AVG.	RDGS.
	13.1	13.8	15.1	14.0	13.5	11.4	21.2	28.1	25.0	25.5	. 6.72	29.6	27.4 3	31.1 20	20.4 16	16.7 18	18.2 9.	.2 31.	11.	8 10.3	3 11.6		31.1	18.9	24
	14.9		24.1	21.0	22.7	33.2	26.0	28.3	44.4	34.6	41.4	37.8 4	44.4	11.4 5	56.6 24	24.2 22	•	16.2 10.5	.5 23.6			7.71	56.6	27.9	54
_	20.5		19.9	21.0	19.0	16.8	14.4	8.3	17.3	20.0	24.0		•	15.0 1	13.1 32	32.4 47	.,	•	•	8 11.4	• •	• •	47.0	19.0	54
	9.7		12.0	11.4	15.7	18.7	14.4	20.1	24.7	35.3	43.2 4	47.3 4	18.3 4	48.4 43	43.4 49	49.1 56	56.1 44	44.7 42.9	.9 52.6	6 47.	1 55.6	5 59.4	59.4	34.1	54
~	51.7	29.6	48.4	49.9	62.6	68.2	62.4	73.6	71.8	63.9	55.2	55.0 5	50.2 4	47.5 49	49.5 54	54.3 49	19.5 52	52.0 39.4	.4 40.0	0 49.2	2 42.9	9 46.2	73.6	54.1	54
_	47.0	42.3	38.7	36.9	36.9	36.9	33.4	45.2	33.4	34.9	~	40.9	38.8		32.5 33	33.1 30	30.1 30	30.1 25.9	.9 27.5		1 27.5	5 23.0	53.7	35.4	23
~	26.8	25.3	27.9	30.4	25.9	27.3	26.4	20.5	22.3	22.3		25.4 3	32.0 2	•	28.5 27	27.8 25	25.2 16	16.4 14.7		1 9.7		•	32.0	22.5	54
9	14.7	15.1	17.7	14.8	13.1	16.9	17.4	16.9	19.9	20.9	40.1	41.6 3	37.1 4	47.4 23	23.9 22	22.9 27	27.2 16	16.5 26.5	.5 33,4	4 33.5	5 34.8	8 27.1	47.4	24.6	54
ø	28.5	23.4		17.8	14.2	11.0	11.9	23.3	25.5	32.3	29.2	29.4 3	31.4 3	36.9	35.1 40	40.6 33		26.7 33.3	.3 25.8	8 26.3	3 27.2	2 23.2	40.6	26.7	54
۲.	16.4	13.6	13.6	12.5	14.3	22.6	20.8	28.0	26.3	37.7	41.5	31.2 3	38.8 2	27.2 33	33,4 25	29.0 25		24.9 20.8	.8 16,7		9 18.9	9 24.8	41.5	24.2	54
w.	16.2	18.9		15.5	14.2	16.7	21.3	21.7	24.0	17.6	21.1	26.3 2	22.7 2	22.4 22	22.2 20	20.3 17	17.5 14	14.3 12.3	.3 10.6		2 10.8	3 10.5	26.3	17.7	54
0.	12.1		10.7	13.3	13.1	10.1	8.4	12.4	27.5	21.6	23.4	24.7 2	23.1 3	31.4 27	27.6 25	25.0 23	23.3 25	25.2 20.6	.6 21.5			9 21.9	31.4	19.6	24
7	23.2	25.4		16.4	19.5	20.8	24.8	27.6		39.7	47.6	37.3 3	37.8 2	26.0 3:	31.0 32	32.9 28		21.7 20.8		3 21.7		3 20.4	47.6	26.5	54
κi	20.3		16.0	16.6	14.0	18.6	16.3	16.0	20.7	31.6	41.7	38.0 3	36.2 4	43.9 3.	32.5 31	31.7 27	27.8 24				2 23.0			24.9	54
7	21.1			20.4	28.9	30.5	34.0	36.0	31.7		24.6		33.4 3	31.4 2:	21.9 17	17.6 15		7.7 9.7		7.9		6.3		21.7	54
Ŋ	7.5				43.6	51.6	46.3	47.6	48.5		44.9	52.1 4		51.5 47	47.1 47			42.1 35.3	.3 31.1					38.2	74
αį	20.3			17.3	21.0	26.0	24.7	26.5	23.2	33.1	25.7	27.2 2		33.8 23	23.1 23	23.5 19	19.6 15	15.6 14.1	.1 11.1				33.8	21.3	54
۲.	24.5			16.0	15.6	18.0		27.0			27.2	32.3 3	32.9 2		29.9						1 14.8	3 13.4	32.9	22.5	54
4	13.4			13.8	16.0	16.1	15.6	17.2			29.9	32.7 2			29.9					2 15.4			32.7	19.2	54
7	15.0			13.2	11.7	14.8	15.4	15.7	23.4	25.3	37.8	34.1 3	35.8 3	36.9	32.6 37		32.3 24	24.4 15.4					37.8	22.0	54
œ.	13.2	17.6		19.3	19.1	20.0	20.9	21.0			44.2 4									0 18.5			46.6	26.6	54
9	14.1			15.2	14.7	18.5	16.7	13.1	15.7	•	23.6	18.6	.,	26.0 23	23.5 24		14.4 6.				8.5		26.0	14.9	54
12.0	12.0		10.4	13.9	11.1	17.4	24.8	22.9	22.3	.,	29.8	24.9 2					•	•				5 20.5	30.1	19.7	24
9	24.6			11.5	11.9	14.1	13.9	15.2	18.3		28.0	21.9 1		20.1 1/2	14.2 48		•						50.2	20.5	54
m,	16.3			19.6	18.0	15.0	20.9	27.7	14.6	18.8	28.8							25.1 11.3	.3 10.6	9.9			56.3	20.6	54
4	19.2	27.7		15.0	11.6	15.9	13.7	23.1	32.8		36.5	37.5 3			28.8 30		• •						38.9	23.8	54
9	14.3	15.4		11.9	14.9	21.1	23.1	19.8	20.0	17.2	29.3	30.6	32.1 2	,	33.6 22	22.3 14	14.4 18	_	.7 50.6	•		5 36.4	63.7	26.3	54
36.0	53.2	42.9	36.1	32.6	41.3	46.3	47.7	38.6	37.2	37.7	423	32.4 3	34.8 3	•	29.4 27	27.2 26	26.1 17	17.3 14.7			10.8	•	53.2	31.5	54
wi	10.3	8.4	9.7	11.2	10.3	14.7	15.6	21.9	20.0	18.3	23.9	23.9 2	25.3 2	25.7 25	5.3 25	25.1 15	19.8	.8 14.7	.7 16.3			•		18.1	54
24.8	20.8	18.4	17.8	15.8	16.3	30.9	27.8	31.8	39.7	43.2	40.6	42.3 4	42.5 3	37.7 35	35.1 46	46.9 33	33.6 29	29.9 29.6	.6 28.3	3 28.1	-	1 32.9		31.5	54
9	29.8		30.2	28.8	19.7	17.5	44.6	28.4	49.3	32.1	24.3	18.9	10.8 1	13.1 17	17.7	18.3 46						1 17.4	49.3	24.0	54
54.8	53.2	29.6	48.4	49.9	62.6	68.2	62.4	73.6	71.8	63.9		55.0 5	50.2 5	-	ľ	-			-	ľ	ľ		ı		
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STATUS FLAG CODES	C

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			743 HRS
			743
	ON DAY(S)	ns	
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	73.6 KPH @ HOUR(S)		OPERATIONAL TIME:
	KPH		OPERATI
	73.6		
	MAXIMUM INSTANTANEOUS VALUE:		

of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

Hd¥

- LICA31 WSMAX

### LICA31 WSP / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

1.74 1.34 3.49 M .40 00. 00. 00. 2.15 3.22 WNW .53 .53 00. 00. 00. 4.16 2.41 1.20 .53 00. % 00. 00. 1.34 .26 1.74 .13 00. 00. 1.34 2.15 4.03 SW .53 00. 00. 00. 1.20 4.56 6.31 SSW .53 00. 00. 00. 9.13 10.75 13.44 1.74 00. 00. 1.34 00. 7.66 10.34 Ŋ .67 2.41 SSE 00. 00. 00. 6.58 2.15 Direction SE .40 00. 00. 00. 5.64 .40 4.56 ESE .67 % 00. 00. 7.93 5.51 1.20 1.20 00. 00. 00. ы 1.07 ENE 3.89 1.34 8.73 2.28 .13 00. .67 6.18 Ä 3.09 1.07 1.34 00. 00. 6.04 1.88 2.55 NA. .67 . 94 00. 00. 2.82 1.34 .13 00. 00. Totals 4.97 .67 Limit 6.0 12.0 20.0 29.0 39.0 39.0

13.70

62.90 .94 18.41

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NNW .94 4.70

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Calm : .13 %

Total # Operational Hours : 744

Distribution By Samples

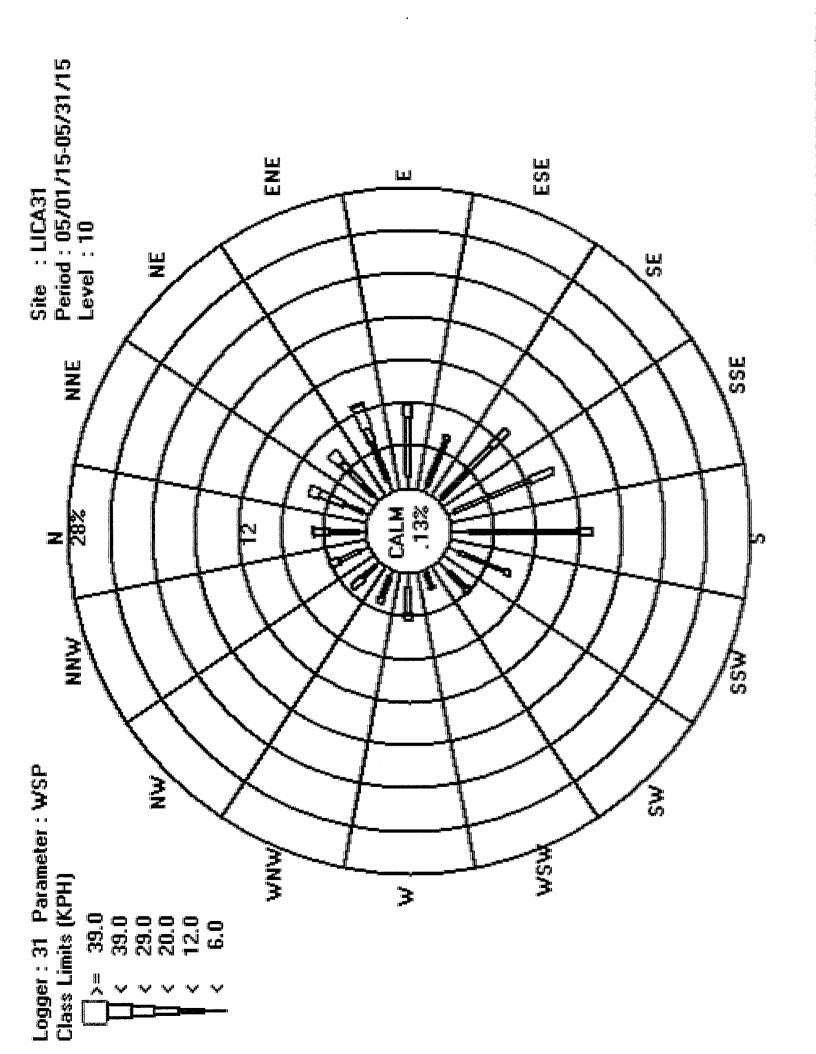
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Calm : .13 %

Total # Operational Hours : 744







St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

WIND DIRECTION (WD) hourly averages

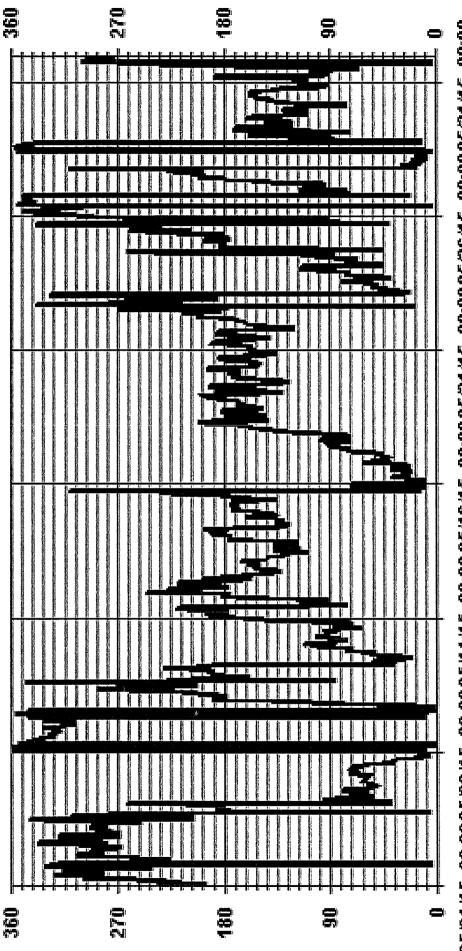
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	22.00	WSW	×	s	ENE	z	NNW	SE	s	ш	SE	s	SSE	SSE	SE	z	Ä	ш	SSE	SE	SS	SE	S	ENE	s	WSW	ш	NNE	ш	ESE	ш	WNW
	22.00	N.	ΝN	s	ENE	z	Ν	ESE	s	ENE	ESE	s	SSE	띯	띯	NNE	밁	ENE	SSE	SE	SE	S	SW	ENE	S	s	ENE	NNE	ш	ESE	ш	≯
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101 (01 0000)	MAGNETIC DECLINATION 19 DEGREE EAST	
. No leading to	CLINATION:	

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	744	HRS
STANDARD DEVIATION:	92.01		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	ESE	



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

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St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

					STA	NDAR	יאם כ	ATION	IMIM I	J DIRE	NOIE	STANDARD DEVIATION WIND DIRECTION (STDWD)	2	o Irly	Word of	hourly eversage in degrees	garooc		JOE	JOB # 2833-2015-05-31-	3-201	5-05-3	1-C
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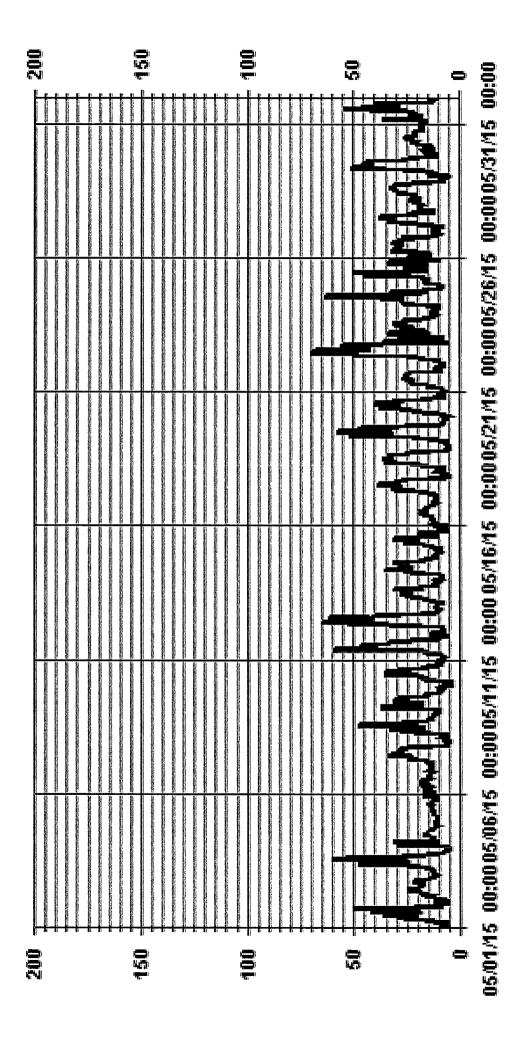
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CALIBRATION - MAINTENANCE - DAILY ZERO/SPAN - POWER FAILURE - OUT FOR REPAIR
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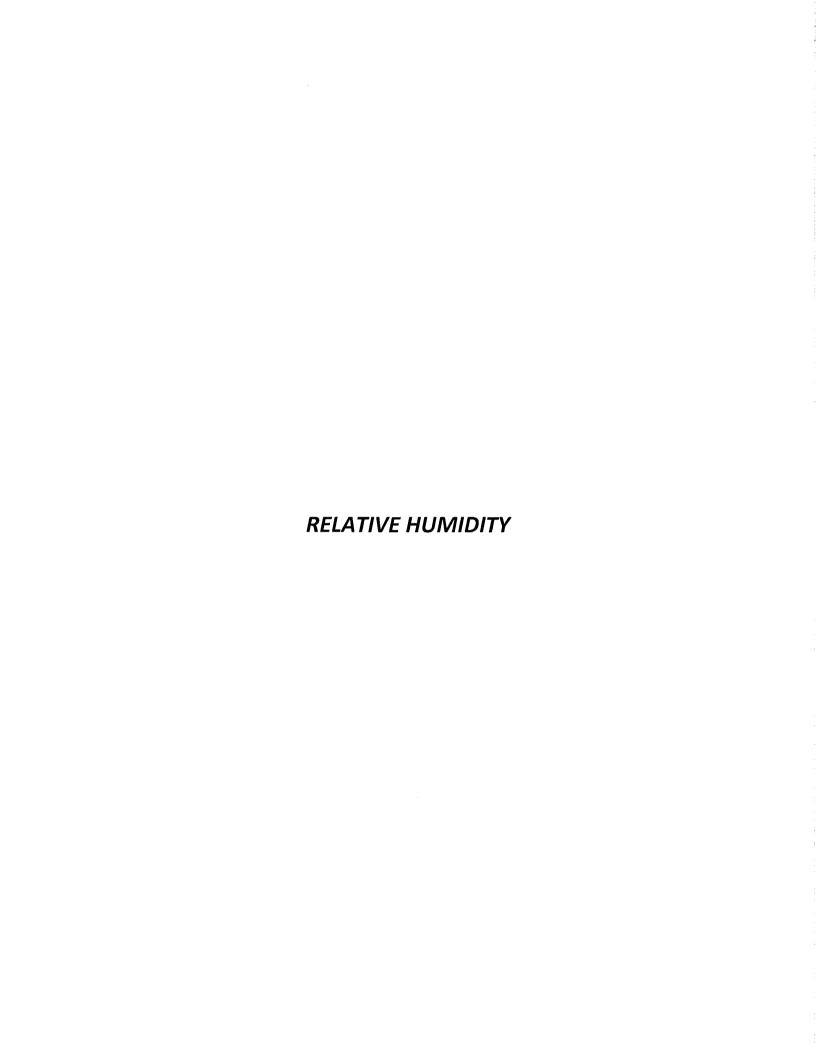
August 28, 2014	
LAST CALIBRATION:	

HRS
744
OPERATIONAL TIME:
HRS
0
CALIBRATION TIME:

of Hour Averages



- LICA31 STDWDIR DEG



JOB # 2833-2015-05-31- C

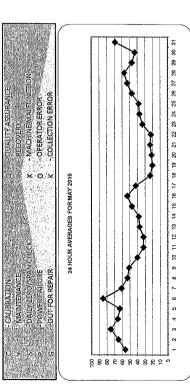


RELATIVE HUMIDITY (RH) hourly averages in %

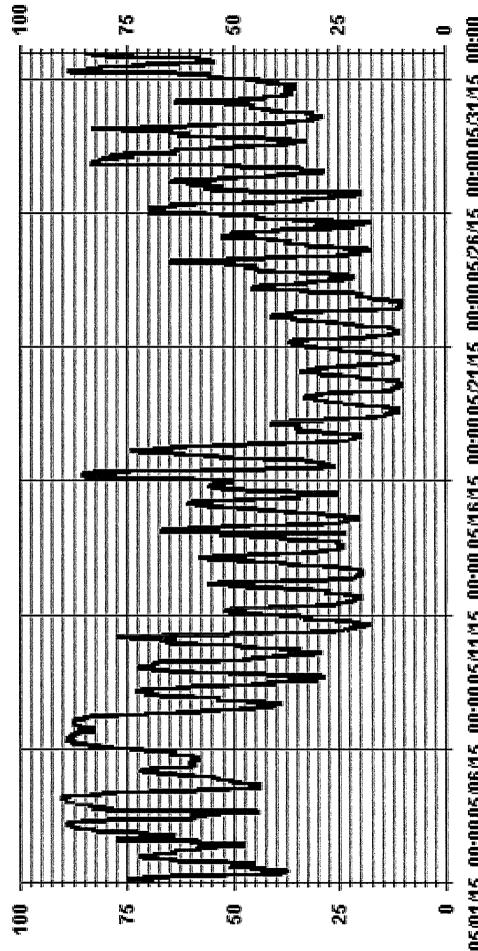
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DAILY	MAY.	75	82	88	90	72	83	87	73	72	11	25	26	28	29	19	85	74	41	33	34	37	41	47	65	23	20	83	81	83	2	88		
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3:00	90.4	75	69	88	90	2	81	82	2	69	74	51	51	26	99	29	11	22	38	33	*	33	37	%	52	25	99	61	75	76	28	26	6	61.4
2:00	00.0	7	89	87	88	89	8	87	22	71	67	47	49	51	23	26	29	29	34	31	32	发	36	32	49	4	99	9	73	69	25	22	8	57.4
1.00	- Z200	74	69	98	88	83	78	87	71	72	63	43	47	49	23	25	23	2	32	30	30	33	35	77	4	45	2	22	11	59	46	25	88	56.4
0.00		6	7	83	68	29	74	87	6	72	9	33	88	45	49	49	22		32	78	62	8	ا ع	8	47	Ж	29	25	81	29	45	47	8	54.0
HOUR START	DAY	T		£	4	5	9	2	8	Ó	10	Ţ	12	Η	14	15	16	17	138	19	20	21	22	23	24	25	<b>56</b>	77	28	29	æ	31	HOURLY MAX	HOURLY AVG

### STATUS FLAG CODES

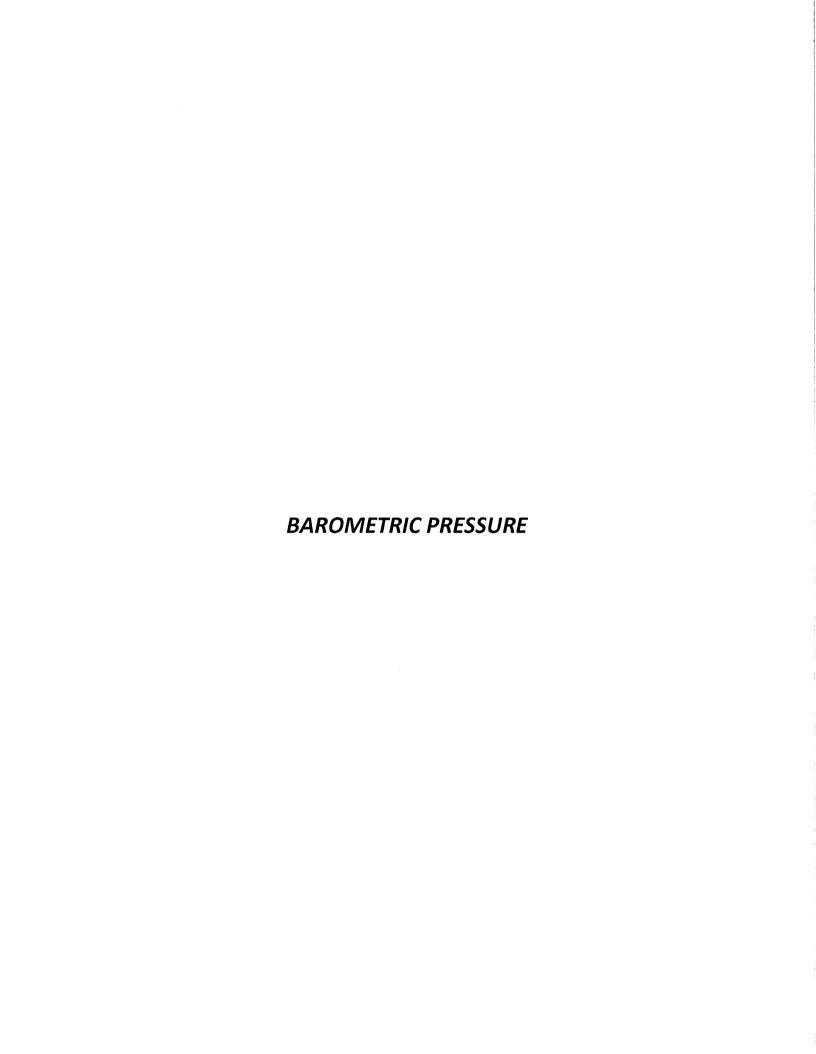


MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:	90 85.2	% @ HOUR(S) %	VAR	ON DAY(S) ON DAY(S) VAR-VARIOUS	4 0	
		OPERATIONAL TIME: AMD OPERATION UPTIME:	E: JPTIME:		744 100.0	HRS
STANDARD DEVIATION:	21.40	MONTHLY AVERAGE:	ü		46	%



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

24 N Ξ





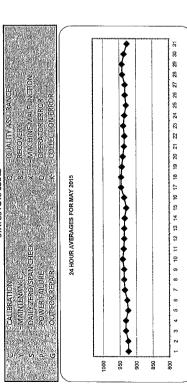
### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

## BAROMETRIC PRESSURE (BP) hourly averages in millibar

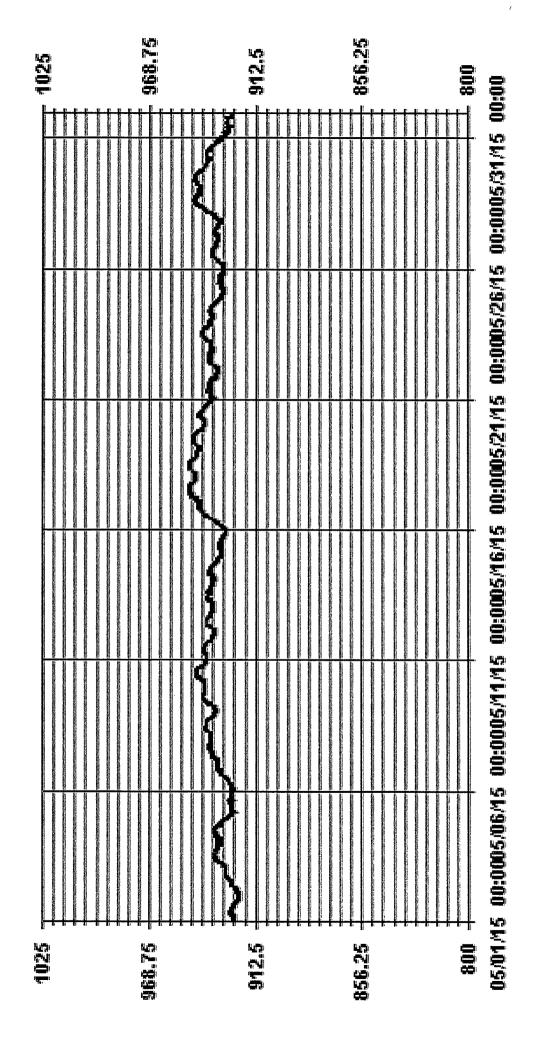
MST

RDGS.	24	24	24	24	24	54	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
AVG.	924	925	932	932	925	928	935	937	937	941	938	936	936	935	930	936	945	945	943	940	936	935	938	935	930	933	933	941	942	936	927		
MAX	926	928	934	934	928	932	937	939	940	943	940	938	938	937	931	942	947	947	945	942	938	937	941	937	932	935	934	945	945	939	931		
00:0	921	928	931	928	925	932	936	934	939	939	935	935	935	931	928	942	9 <del>4</del>	943	940	936	933	935	937	930	929	933	933	942	939	931	925	944	934
73.00	921	928	932	929	925	932	936												940						929		932	942	940	932	925		
0 22:0		3 928		_																		5 935										5 945	
0 21:0	-	3 928	-	•	-	-	-															936									3 926		
00 - 20:0		8 928																				7 937				5 935					7 928		
00 T9	-	927 928			-																	37 937									927 927		
.00 - 18	-	926 93		•	-	•																137 937		35 934				945 944			927 92		
5.00 17		926 9				_																937 9						945 9		•	928 9		Ī
5.00 16		926			-																						-				928		
4.00		925																				937							944	828	227	947	037
13:00	925	925	934	934	925	928	936	938	939	943	940	938	938	936	931	937	947	947	945	941	937	937	941	936	931	935	934	943	944	938	927	947	936
12:00	926	925	934	934	925	927	935	939	939	943	940	938	938	937	931	936	947	947	945	942	937	937	941	937	932	935	934	943	944	938	976	947	027
11:00	926	925	933	934	925	927	935	939	938	943	940	938	938	937	931	935	947	947	945	942	938	936	940	937	931	934	934	942	945	938	927	947	960
10:00	926	924	933	933	925	976	935	939	937	942	940	938	938	937	931	934	946	742	945	942	938	936	940	937	930	933	934	941	945	938	926	947	960
00.6	926	923	932	933	925	926	935	938	937	942	939	937	937	937	931	933	946	947	945	941	938	935	939	936	930	932	933	940	944	938	926	947	960
8:00	925	923	931	933	925	926	934	937	935	941	939	936	937	936	931	932	946	946	944	941	937	934	938	936	930	932	933	939	943	938	927	946	000
7.00		922			925									935								933									928		700
5:00		922																														944	
5.00																															3 928	١.	
1.00 2.00 3.00 4.00 5.00 6.00		1 921																														944	
3.00																															0 929		
12	15 92	21 921																													31 930	l	
D II	92	92	92	93	928	92	96	66	86	6	86	66	86	-66	8	99	96	96	943	96	-66	8	86	86	6	92	66	6	98	8	931	┝	_
HOUREND	DAY	2	'n	4	5			8	100		Ħ	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	ਲ	HOURLY MAX	

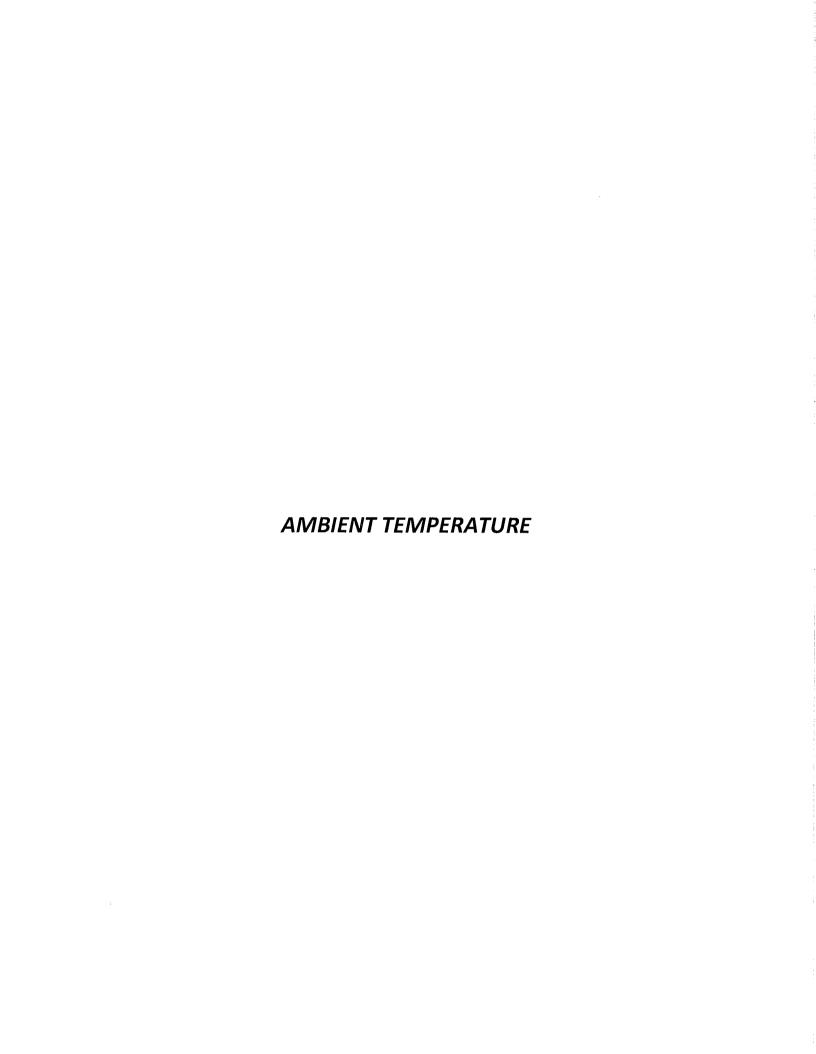
#### STATUS FLAG CODES



MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:	947 945	MB MB	@ HOUR(S)	VAR	ON DAY(S) ON DAY(S) VAR-VARIOUS	17	17 , 18 17 , 18
			OPERATIONAL TIME: AMD OPERATION UPTIME:	PTIME		744 HRS 100.0 %	HRS
STANDARD DEVIATION: 5.	5.98		MONTHLY AVERAGE:			935 MB	MB



- LICA31 BP MB





St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

# AMBIENT TEMPERATURE (TPX) hourly averages in Degrees Celsius

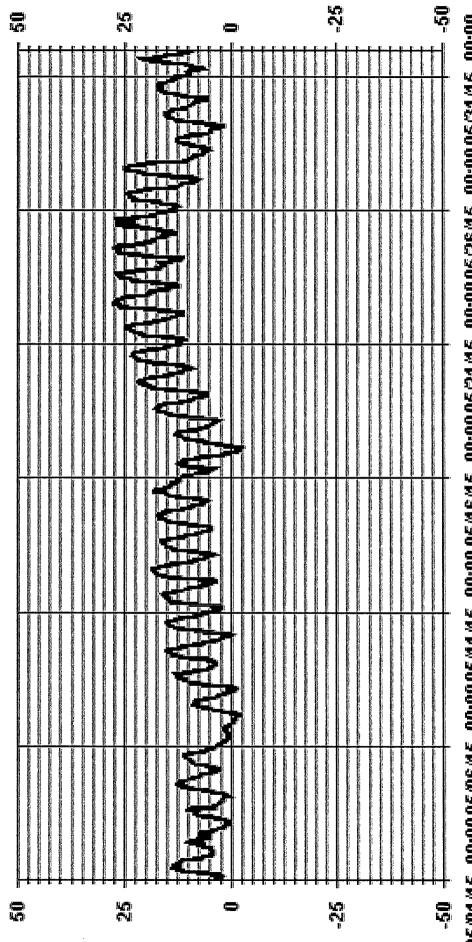
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### STATUS FLAG CODES

COLLECTION SCORES FOR MAY 2015  24 HOUR AVERAGES FOR MAY 2015  24 HOUR AVERAGES FOR MAY 2015
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MINIMUM 1-HR AVERAGE:	-2.5	ပ္	-2.5 °C @ HOUR(5)	4	ON DAY(S)	17	
MAXIMUM 1-HR AVERAGE:	27.8	ပ္	@ HOUR(S)	13	ON DAY(S)	24	
MAXIMUM 24-HR AVERAGE:	20.4	ပ္			ON DAY(5)	24	
					VAR-VARIOUS		
			OPERATIONAL TIME:	VIE:		744 H	HRS
			AMD OPERATION UPTIME:	UPTIME		100.0	%
STANDARD DEVIATION:	6.83		MONTHLY AVERAGE:	:JE:		11.4 °C	t)

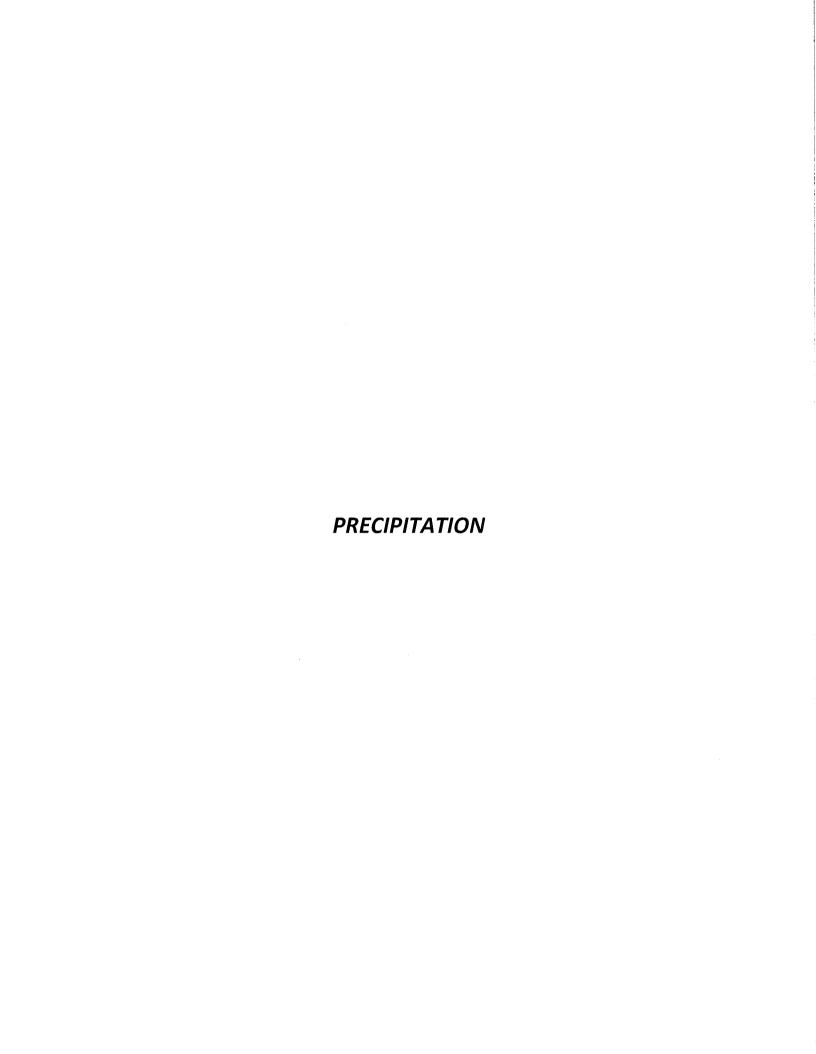
Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:00 05/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

160

**—** LICA34



St. Lina Site - MAY 2015 JOB # 2833-2015-05-31- C

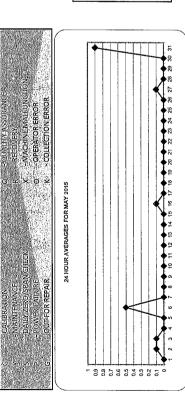
### PRECIPITATION hourly averages (mm)

MST

Maxxam

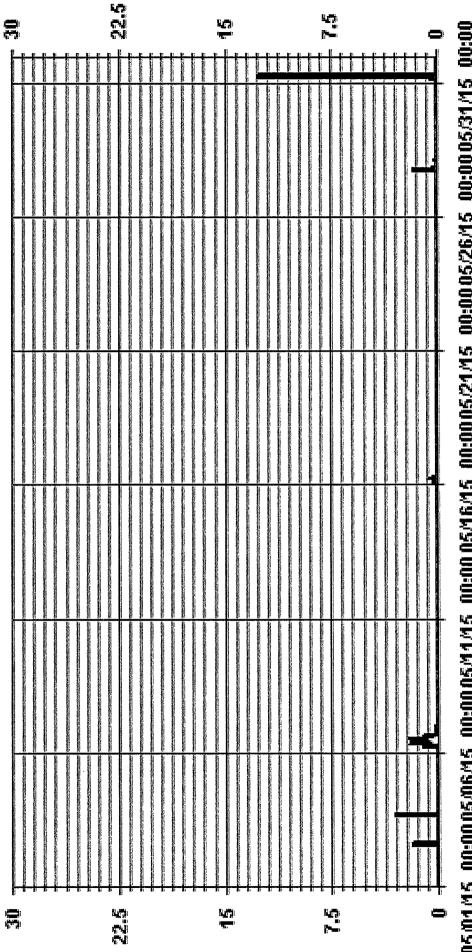
RDGS.	24	24	24	54	24	24	24	24	54	54	54	54	24	24	24	54	24	24	24	24	24	24	24	73	23	54	22	24	54	24	54		
24-HOUR AVG.	0.0	0.1	0.1	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.9		
DAILY MAX.	0.0	1.9	3.1	0.0	0.0	1.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.1	0.0	0.0	12.7		
23:00 23:59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22:00	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	0.0	0.0	0.0	0.0	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
21:00 21:59	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	0.0	0.0	0.0	0.0	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
20:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5	0.0
19:00 19:59	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	1.7	0.1
18.00 18.59	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
17:00	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.1
16.00 16.59	0.0	0.2	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
15:00 15:59	0.0	1.9	0.0	0.0	0.0	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.1
14:00	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	0.0	0.0	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
13.00 13.59	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	×	0.0	0.0	0.0	0.0	6.0	0.0
12.00 12.59	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	×	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.1
11:00	0.0	0.0	0.0	0.0	0.0	1.7	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17	0.1
10:00	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.1
9.50	0.0	0.0	0.0	0.0	0.0	0.5	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
8:00	0.0	0.0	0.0	0.0	0.0	0.7	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	0.0	0.0	0.0	0.0	1.8	1.8	0.1
7.00	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7	12.7	0.5
6:00	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	0.5	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	6.5	6.5	0.2
5:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0
4.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
3:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	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	0.4	0.0
2.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.00	0.0	0.0				0.0																			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	00	0.0	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
HOUR START HOUR END	DAY 1	2	. 3	4.	5	9	Z	60	Ø	01	Ħ	12	£1	14	15	16	12	18	ģ	20	z	22	23	27	52	26	22	- 28	29	30	31	HOURLY MAX	HOURLY AVG

### STATUS FLAG CODES



MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE: MONTHLY TOTAL	MM	12.7	MM	@ HOUR(S)	7	ON DAY(S) ON DAY(S) VAR-VARIOUS	31	
			- 1	OPERATIONAL TIME: AMD OPERATION UPTIME:	E: PTIME:		740	% HRS
STANDARD DEVIATION:	0.56		_	MONTHLY AVERAGE:	زن		0.1	Σ

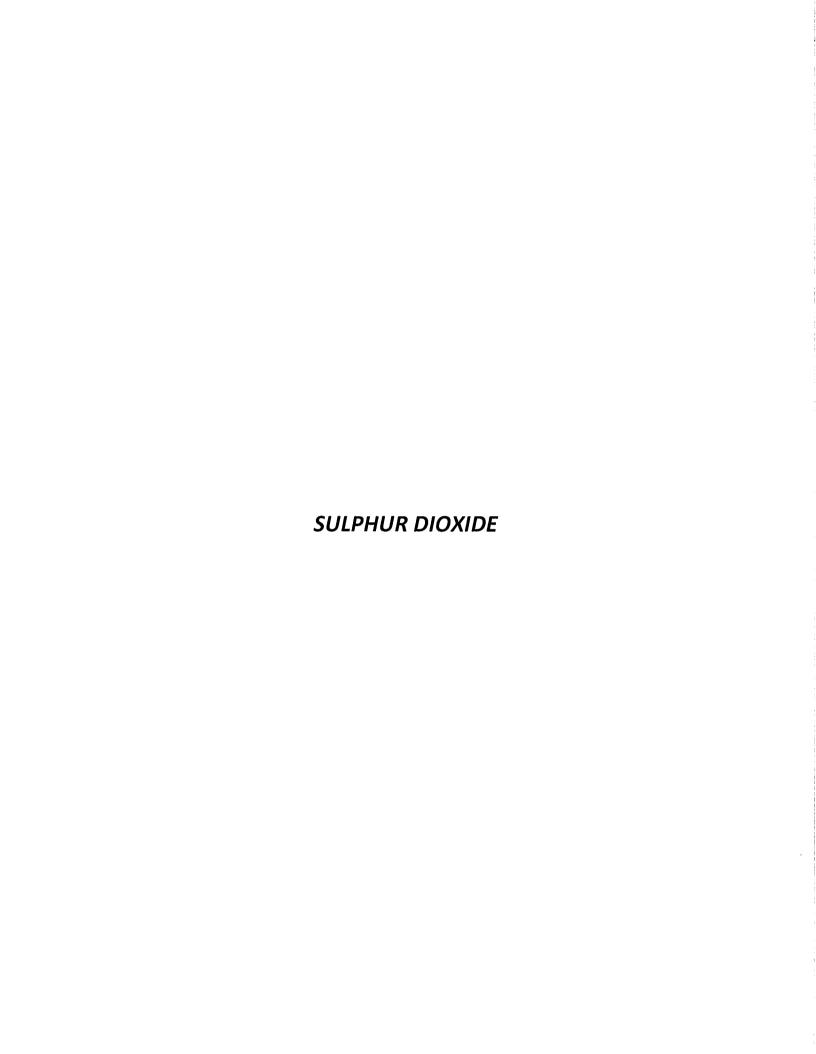
Of Hour Averages



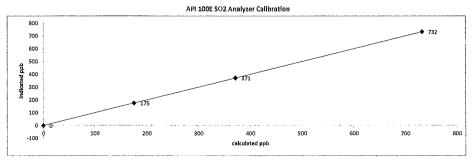
05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

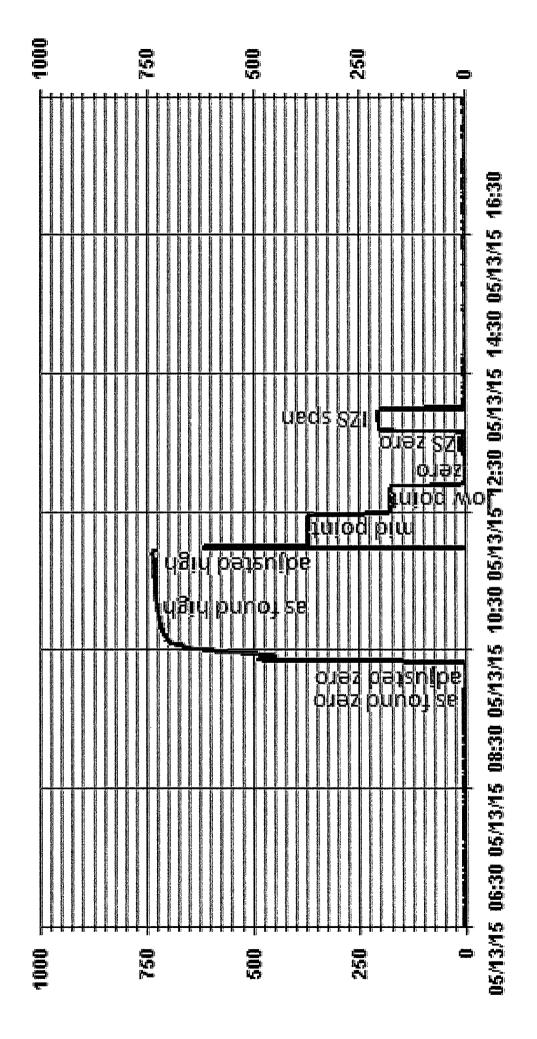
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#### APPENDIX II ANALYZER CALIBRATION RESULTS



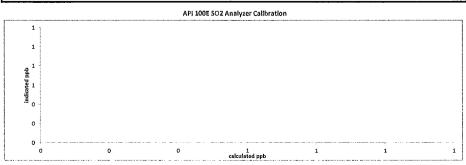
Date:		May-15	_		/End Time (mst):		/ 14:07	
Company:		LICA t,Lina	-		bration Purpose: r Make & Model:		/ Calibration NA	-
Station Name/Location: Performed by:		Yakupov	-		onverter Serial #:		NA NA	•
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :		SO2	-		Gas Explry Date:	12-	Mar-19	
Analyzer:								
Serial Number: Last Calibration Date:		468 13-Apr	.15	Range ppb: As Found C.F.				
Previous Cal High Point C.F.:		1.000		New C.F.:				
		As four	ad:		As left:			
	SLOPE:	0.950		SLOPE:	0.956			
	OFFSET:	62,3		OFFSET:	64,5			
	HVPS:	532		HVPS:	532			
	CELL TEMP:	50.0 31.0		RCELL TEMP:	50,0 28,4			
	BOX TEMP: PMT TEMP:	7.9		BOX TEMP: PMT TEMP:	7,8			
	IZS TEMP:	40.0		IZS TEMP;	40			
	TEST:	NA		TEST:	NA			
	STABIL:	0,1		STABIL:	0.1			
	PRES:	24,3		PRES:	24.3			
	SAMP FL:	580 60.7		SAMP FL:	582 61,1			
N	PMT: ORM PMT:	64.4		PMT: NORM PMT:	64.4			
14	UV LAMP:	2077.		. UV LAMP:	2080,3			
LA	MP RATIO:	84		LAMP RATIO:	84.1			
	STR. LGT	29.6		STR, LGT	30,9			
	DRK PMT:	18,1		DRK PMT:	18,1			
	DRK LMP:	3,6		DRK LMP:	3.6			
Inte	ernal Span:	210		Internal Span:	203			
Calibrator:					Calibrator Flov			
Flow Meter ID's		NA	_	point	diluent (cc/min)	cal ga	is (cc/mln)	total (cc/min)
Make & Model		onics 6100	-	zero	4995		0	4995
# Serial # Cal Gas Cylinder I.D.		4760 //002073	-	high mid	4916 4957		78 38	4994 4995
Cal Gas Conc. (ppm)		49.5	-	low	4975		19	4994
								•
			-					
Calibration: Calibrator F			-	Calculated Concentration:	Indicated Concer	ntration:	Correct	tion Factors:
Calibration: Calibrator F Point	Diluent	Cal Gas	Total	Calculated Concentration:	(ppb)	ntration:	Correct	
Calibration:  Calibrator F  Point  as found zero	Diluent 4994	Cal Gas 0.0	4994	Calculated Concentration: (ppb) 0	(ppb) 1.0	ntration:	Correct	NA
Calibration:  Calibrator Fl Point as found zero adjusted zero	Diluent 4994 4994	Cal Gas 0.0 0.0	4994 4994	Calculated Concentration: (ppb) 0 0	(ppb) 1.0 0.0	ntration:		NA NA
Calibration:  Calibrator F  Point  as found zero	Diluent 4994	Cal Gas 0.0	4994	Calculated Concentration: (ppb) 0	(ppb) 1.0	ntration:		NA
Calibration:  Calibrator Fl PoInt as found zero adjusted zero as found high	Diluent 4994 4994 4922	Cal Gas 0.0 0.0 73.92	4994 4994 4996	Calculated Concentration: (ppb) 0 0 732.4	(ppb) 1.0 0.0 728.0 732.0 371.0	ntration:		NA NA 1.006 1,001 1.000
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	4994 4994 4922 4922 4958 4977	Cal Gas 0.0 0.0 73.92 73.92 37.45 17.74	4994 4994 4996 4996 4995 4995	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0	ntration:		NA NA 1.006 1.001 1.000
Calibration:  Calibrator Fl Point as found zero adjusted zero as found high adjusted high mid	4994 4994 4994 4922 4922 4958	Cal Gas 0.0 0.0 73.92 73.92 37.45	4994 4994 4996 4996 4995	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0			NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	4994 4994 4922 4922 4958 4977	Cal Gas 0.0 0.0 73.92 73.92 37.45 17.74	4994 4994 4996 4996 4995 4995	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0	ntration:		NA NA 1.006 1.001 1.000
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	4994 4994 4922 4922 4958 4977	Cal Gas 0.0 0.0 73.92 73.92 37.45 17.74	4994 4994 4996 4996 4995 4995 4994	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Average	age C.F.=		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4922 4922 4958 4977 4994	Cal Gas 0.0 0.0 73.92 73.92 37.45 17.74 0.00	4994 4994 4996 4996 4995 4995 4994	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8 0	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera	age C.F.≔		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4922 4922 4958 4977 4994	Cal Gas 0.0 0.0 73.92 73.92 37.45 17.74	4994 4994 4996 4996 4995 4995 4994 Linear F	Calculated Concentration: (ppb) 0 0 732.4 732.4 737.1 175.8 0  tegression/Calibration Results	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera	Pass/Fail		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4992 4922 4928 4958 4977 4994	Cal Gas 0.0 0.0 73.92 73.92 37.45 17.74 0.00	4994 4994 4996 4996 4995 4995 4994 Linear F	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8 0  stegression/Calibration Results 1.000 1,000	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera	Pass/Fail PAS5 PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4992 4922 4922 4928 4958 4977 4994	Cal Gas 0.0 0.0 73.92 73.92 37.45 17.74 0.00	4994 4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope =	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8 0  stegression/Calibration Results 1.000 1,000	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera	Pass/Fail		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4992 4922 4922 4928 4958 4977 4994	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coe	4994 4996 4996 4995 4995 4994 Linear F ffeclent = Slope = st cal	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8 0 egression/Callibration Results 1.000 1.000 0.03% -0.61%	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4992 4922 4922 4928 4958 4977 4994	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coe	4994 4996 4996 4995 4995 4994 Linear F ffeclent = Slope = st cal	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8 0  degression/Calibration Results 1.000 1.000 0.03%	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4992 4922 4922 4928 4958 4977 4994	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coercept as % of film C.F. from la	4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope = ull scale)= st cal	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8 0 egression/Callibration Results 1.000 1.000 0.03% -0.61%	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avers  \$\$\$\$ \$\$\$ LIMITS \$\$ or = 0.995 \$	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator Fl Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	Diluent 4994 4994 4992 4922 4958 4977 4994	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coe  recept as % of fi in C.F. from la  Con  **run conve	4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope = ull scale)= st cal	Calculated Concentration: (ppb)  0  0 732.4  732.4  371.1  175.8  0  tegression/Callibration Results  1.000  1.000  0.03%  -0.61%  Feciency Check for H <sub>2</sub> S/TRS ap	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication: ving zero adjust**	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator Fl Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	Diluent 4994 4994 4992 4992 4958 4977 4994  C b (Inte % change	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coercept as % of frin C.F. from la	4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope = ull scale)= st cal	Calculated Concentration: (ppb) 0 0 732.4 732.4 371.1 175.8 0  tegression/Calibration Results 1.000 1.000 0.03% -0.61%	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication: ving zero adjust**	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator F  Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4992 4992 4958 4977 4994  C b (Inte % change	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coe  recept as % of fi in C.F. from la  Con  **run conve	4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope = ull scale)= st cal	Calculated Concentration: (ppb)  0  0 732.4  732.4  371.1  175.8  0  tegression/Callibration Results  1.000  1.000  0.03%  -0.61%  Feciency Check for H <sub>2</sub> S/TRS ap	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication: ving zero adjust**	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator Fl Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	Diluent 4994 4994 4992 4992 4958 4977 4994  C b (Inte % change	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coercept as % of frin C.F. from la	4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope = ull scale)= st cal	Calculated Concentration: (ppb)  0  0 732.4  732.4  371.1  175.8  0  tegression/Callibration Results  1.000  1.000  0.03%  -0.61%  Feciency Check for H <sub>2</sub> S/TRS ap	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication: ving zero adjust**	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	Diluent 4994 4994 4992 4992 4958 4977 4994  C b (Inte % change	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coercept as % of frin C.F. from la	4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope = ull scale)= st cal	Calculated Concentration: (ppb)  0  0 732.4  732.4  371.1  175.8  0  tegression/Callibration Results  1.000  1.000  0.03%  -0.61%  Feciency Check for H <sub>2</sub> S/TRS ap	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication: ving zero adjust**	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator Fl PoInt as found zero adjusted zero as found high adjusted high mid low calibrator zero  SO <sub>2</sub> High Point gas concentra Zero corrrected analyzer resp	Diluent 4994 4994 4992 4992 4958 4977 4994  C b (Inte % change	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coercept as % of frin C.F. from la	4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope = ull scale)= st cal	Calculated Concentration: (ppb)  0  0 732.4  732.4  371.1  175.8  0  tegression/Callibration Results  1.000  1.000  0.03%  -0.61%  Feciency Check for H <sub>2</sub> S/TRS ap	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication: ving zero adjust**	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator Fl PoInt as found zero adjusted zero as found high adjusted high mid low calibrator zero  SO <sub>2</sub> High Point gas concentra Zero corrrected analyzer resp	Diluent 4994 4994 4992 4992 4958 4977 4994  C b (Inte % change	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coercept as % of frin C.F. from la	4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope = ull scale)= st cal	Calculated Concentration: (ppb)  0  0 732.4  732.4  371.1  175.8  0  tegression/Callibration Results  1.000  1.000  0.03%  -0.61%  Feciency Check for H <sub>2</sub> S/TRS ap	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication: ving zero adjust**	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA
Calibration:  Calibrator Fi Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	Diluent 4994 4994 4992 4992 4958 4977 4994  C b (Inte % change	Cal Gas  0.0  0.0  73.92  73.92  37.45  17.74  0.00  orrelation Coercept as % of frin C.F. from la	4994 4996 4996 4995 4995 4994 Linear F ffecient = Slope = ull scale)= st cal	Calculated Concentration: (ppb)  0  0 732.4  732.4  371.1  175.8  0  tegression/Callibration Results  1.000  1.000  0.03%  -0.61%  Feciency Check for H <sub>2</sub> S/TRS ap	(ppb) 1.0 0.0 728.0 732.0 371.0 175.0 0.0 Avera  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication: ving zero adjust**	Pass/Fail PAS5 PASS PASS		NA NA 1.006 1.001 1.000 1.005 NA



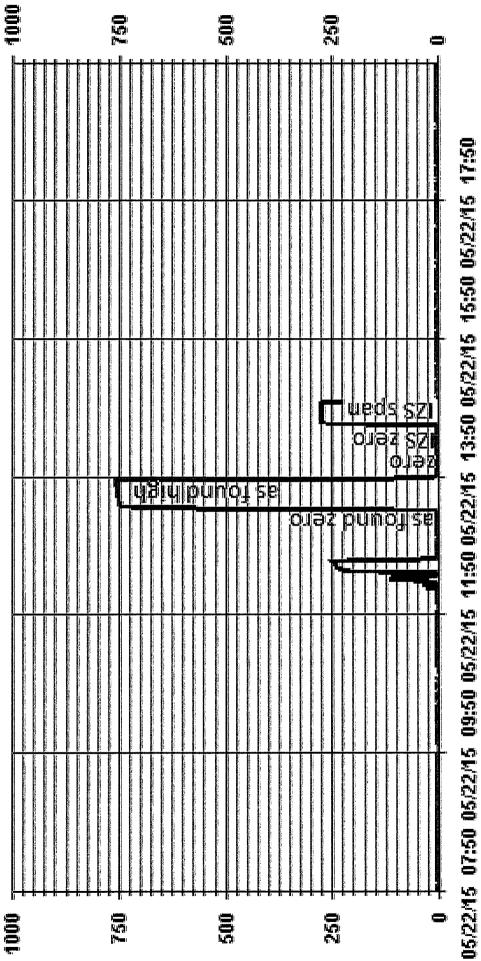


- LICA31 SO2\_ PPB

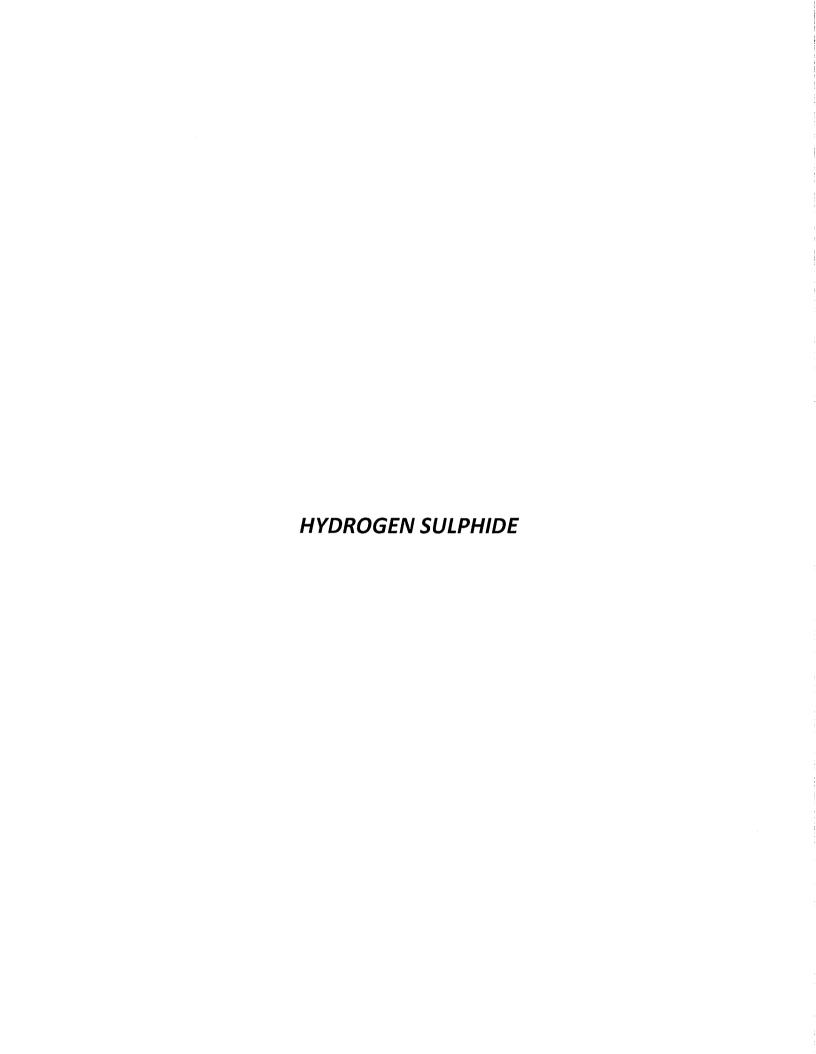
Date: 2	2-May-15	_	Start	/End Time (mst):	12:11	/ 15:01	
Company:	LICA	-		bration Purpose:		ound	•
Station Name/Location: Performed by:  Al	St.Lina ex Yakupov	-		r Make & Model: onverter Serlal #:		IA IA	•
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :	SO2	-		Gas Expiry Date:		1ar-19	
Analyzer:							
Serial Number:	468	l	Range ppb:	1000			
ast Calibration Date:	13-May		As Found C.F.	1.000			
Previous Cal High Point C.F.:	1.00	1	New C.F.:	NA			
	As fou			As left:			
SLOP			SLOPE;	0.956 64.5			
OFFSE <sup>*</sup> HVP:			OFFSET: HVPS:	533			
RCELL TEMI			RCELL TEMP:	50.0			
BOX TEMI		2	BOX TEMP:	28.2			
PMT TEMI			PMT TEMP:	7.8			
1ZS TEMI		)	IZS TEMP:	40.0			
TES			TEST:	NA			
5TABI			STABIL:	0.1			
PRE. SAMP F	-		PRES: SAMP FL:	24.2 580			
PM			PMT:	63.7			
NORM PM			NORM PMT:	65,5			
UV LAMI		.3	UV LAMP:	2062,9			
LAMP RATIO			LAMP RATIO:	83.5			
STR. LG			STR, LGT	30.9			
DRK PM			DRK PMT:	18.8			
DRK LMi Internal Spai			DRK LMP: Internal Span:	275			
niteritai spai		<u>'</u>	- Internal Spani.				
Calibrator:				Calibrator Flo			
Flow Meter ID's:	NA SAGO	_	point	diluent (cc/min)		(cc/min)	total (cc/min)
Make & Model: Env Serial #:	1760 4760	_	zero	4995 49 <b>1</b> 6		0 78	4995 4994
	M002073	-	hlgh mid	4957		38	4995
Cal Gas Conc. (ppm):	49.5	_	low	4975		19	4994
- III							
Calibration:							
Calibrator Flow Rates			Calculated Concentration:	Indicated Conce	ntration:	Correc	tion Factors:
Point Diluen as found zero 4994	Cal Gas	Total 4994	(ppb)	(ppb) 0.9			NA
adjusted zero 4554	NA NA	4554	· · · · · · · · · · · · · · · · · · ·				110
as found high 4919	75.67	4995	749.9	750.0			1.000
adjusted high	NA						
mid	NA						
low calibrator zero 4994	NA 0.00	4004		0.5			NA
	0,00	4994	0		age C.F.=		INA
odnistator Edio 155 1					_		
dampidos Ecro				Aven			
SAME PARTY IN THE		Linear F	Regression/Calibration Results	s:			
				s: LIMITS	Pass/Fall ?		
	Correlation Cos	effeclent =		s: LIMITS > or = 0.99S	Pass/Fail ?		
		effeclent = 5lope =		s: LIMITS > or = 0.99S 0.85-1.15	Pass/Fail ?		
b (In	Correlation Coe tercept as % of f ge in C.F. from la	effecient = 5lope = ull scale)=		s: LIMITS > or = 0.99S	Pass/Fall ?		
b (In	tercept as % of f e in C,F. from la	effecient = Slope = (ull scale)= st cal	0.11%	LIMITS > or = 0.99S 0.85-1.15 ± 3% F.S. ± 15%	·		
b (In	tercept as % of f e in C,F. from la	effecient = Slope = (ull scale)= st cal		LIMITS > or = 0.99S 0.85-1.15 ± 3% F.S. ± 15%	·		
b (In	tercept as % of f se in C.F. from la Cor	effecient = Slope = ull scale)= st cal overter Ef	0.11%	LIMITS > or = 0.99S 0.85-1.15 ± 3% F.S. ± 15%	PASS		
b (In % chang	tercept as % of f le in C.F. from la Con **run conv	effecient = Slope = full scale)= st cal nverter Effe erter effe	0.11% feciency Check for H <sub>z</sub> S/TRS ap ciency test immediately follow	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication:	PASS		
b (In % chang	tercept as % of f se in C.F. from la Cor	effecient = Slope = full scale)= st cal nverter Effe erter effe	0.11% feclency Check for H <sub>2</sub> S/TRS ap	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication:	PASS		
b (In % chang SO <sub>2</sub> High Point gas concentration:	tercept as % of f le in C.F. from la Con **run conv	effecient = Slope = ull scale)= st cal overter Efe	0.11% feciency Check for H <sub>z</sub> S/TRS ap ciency test immediately follow	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication:	PASS		
b (In	tercept as % of f te in C,F. from la Con **run conv	effecient = Slope = ull scale)= st cal overter Efe	0.11% feciency Check for H <sub>z</sub> S/TRS ap ciency test immediately follow	s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% pplication:	PASS		



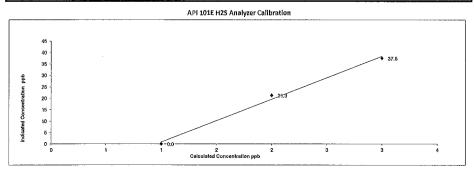
of Minute Averages



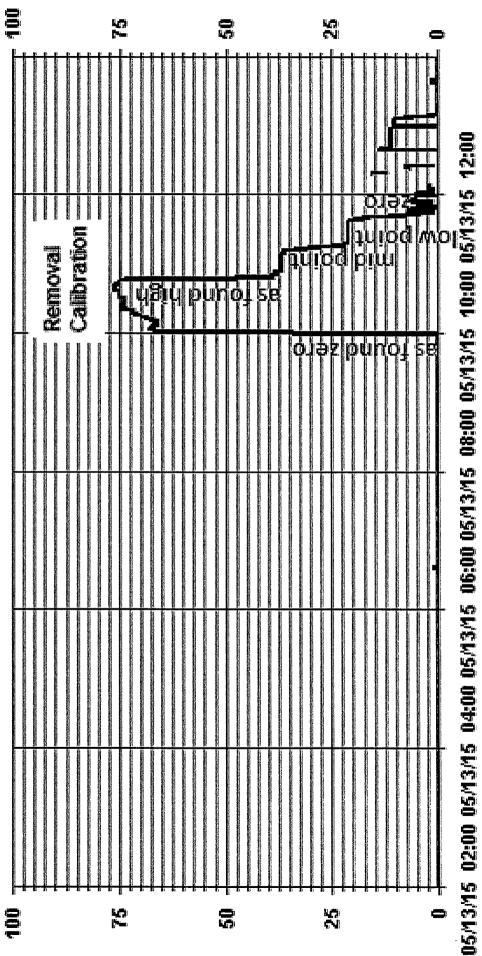
PPB 502 - LICA31



Date:	13	-May-15	_	Start	t/End Time (mst):	9:10 - 11:45	
Company:		LICA	_		ibration Purpose:	Removal Calibration	<del>-</del>
Station Name/Location: Performed by:		St.Lina «Yakupov	-		r Make & Model: onverter Serial #:	Internal NA	_
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :		H2S	-		Gas Expiry Date:	15-Jul-17	<del>-</del> -
Analyzer:		722		Panas nahi	100		
Serial Number: Last Calibration Date:		14-Apr		Range ppb: As Found C.F.		<u> </u>	
Previous Cal High Point C.F.:		1.00	ι	New C.F.:			
		As fou	nd:		As left:		
	SLOPE:	1.02		SLOPE:	NA NA		
	OFFSET:	60.1		OFFSET:	NA NA	<del></del>	
RCE	HVPS: :LL TEMP:	50.0		HVPS: RCELL TEMP:	NA NA		
	OX TEMP:	31.4		BOX TEMP:	NA		
	VIT TEMP:	8,2		PMT TEMP:	NA NA	<del></del>	
	ZS TEMP: TEST:	45.0 3150		1ZS TEMP: TEST:	NA NA		
	STABIL:	0.1	-	STABIL:	NA NA	<del></del>	
	PRES:	25.2		PRES:	NA		
	SAMP FL:	74.8		SAMP FL:	NA NA		
NO	PMT: RM PMT:	59.2		PMT: NORM PMT:	NA NA		
	JV LAMP:	2408.		UV LAMP:	NA	<del></del>	
LAN	1P RATIO:	96.2		LAMP RATIO:	NA		
	STR, LGT ORK PMT:	30.7 25.1		STR. LGT DRK PMT:	NA NA	<del></del>	
	DRK LMP:	3.2		DRK LMP:	NA NA		
	nal Span:	39.8		Internal Span:	NA		
Calibrator:					Calibrator Flov	u Torgote:	
Flow Meter ID's:		NA		point	diluent (cc/mln)	cal gas (cc/min)	total (cc/min)
Make & Model:	A	PI 700		zero	5000	0	5000
Serial #:		830 L36837		high	4959 4980	39 19	4998 4999
Cal Gas Cylinder I.D. # : Cal Gas Conc. (ppm):		10.0	•	mid low	4990	11	5001
			•				
Calibration:							
Calibrator Flo	w Rates (	cc/min)		Calculated Concentration:	Indicated Concer	ntration: Correc	tion Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)		
as found zero adjusted zero	5000	0.0 NA	5000	0	0.0		NA
as found high	4958	39.00	4997	78.0	75.3		1.037
adjusted high		NA					
mid low	4979 4990	19.00 11.00	4998 5001	38.0 22.0	37.5 21.3		1.014
calibrator zero	4330	NA NA	3001	22,0			1.033
					Avera	ge C.F.=	1.028
			Linear R	tegression/Calibration Results	:		
				can control canalation repaire		Pass/Fail ?	
	C	orrelation Coe	fecient =	1,000	> or = 0.995	PASS	
	h //		Slope =		0.85-1,15	PASS	
		rcept as % of fo In C.F. from las		0.12% NA	± 3% F.S. ± 15%	PASS NA	
		Con	verter Eff	eclency Check for H <sub>2</sub> S/TRS ap	plication:		
		**run conve	rter effe	lency test immediately follow	ving zero adjust**		
					NA		
SO. High Point was concentration	on!	NA		Time gas run (mst)			
_		NA NA		Time gas run (mst):			
SO <sub>2</sub> High Point gas concentrati Zero corrrected analyzer respo		NA NA		Time gas run (mst):			
_				Time gas run (mst):			

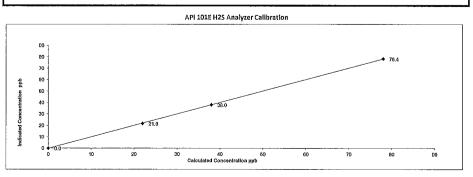


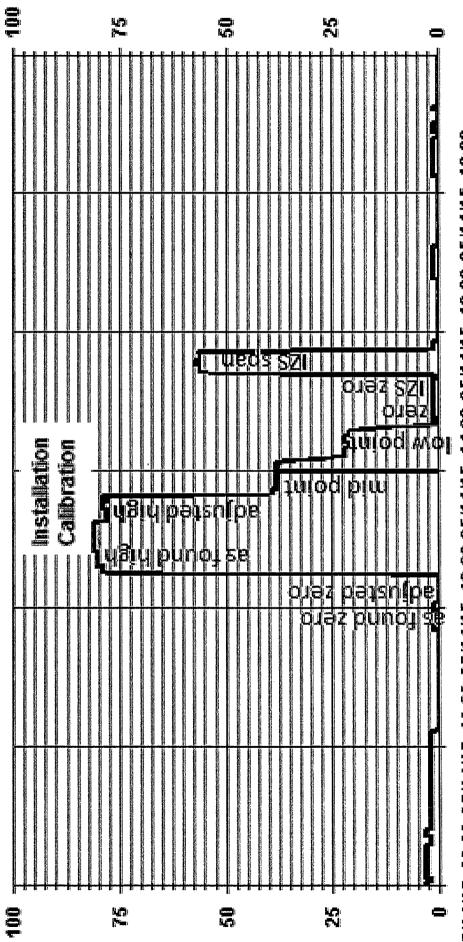
Of Minute Averages



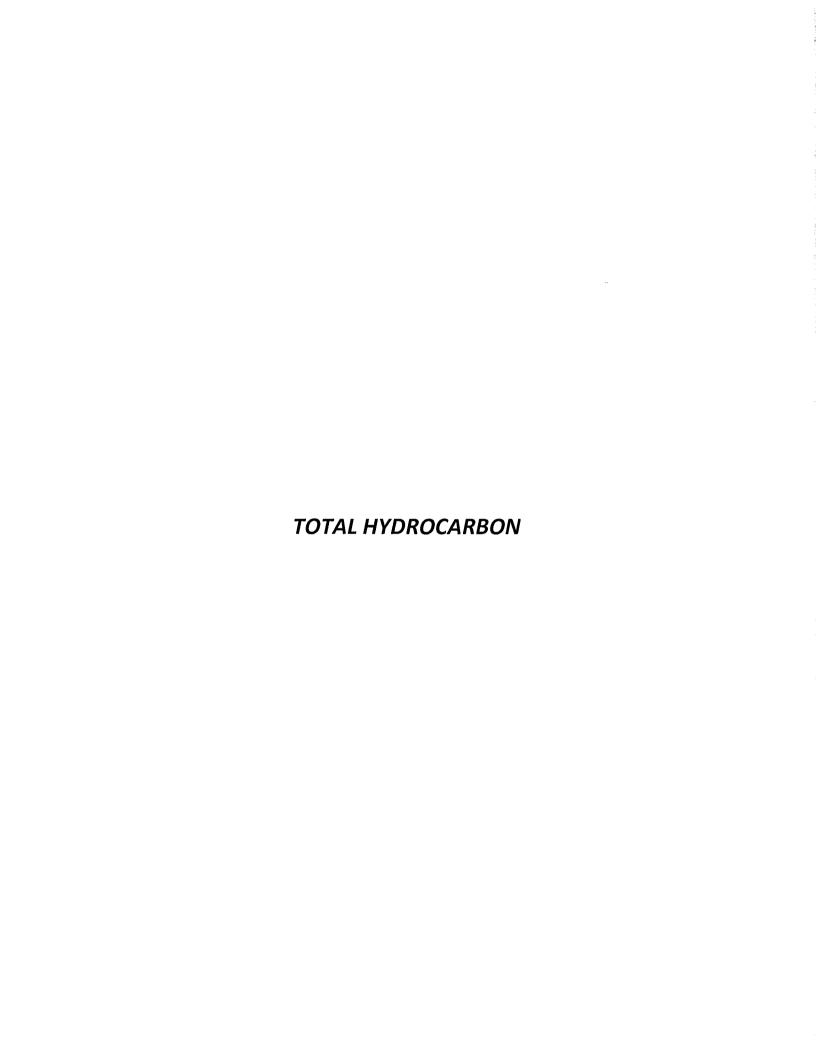
H28

Date:	14-	-May-15	_	Start	t/End Time (mst):	9:3	9 / 15:48	_
Company:		LICA	_		ibration Purpose:			_
Station Name/Location:		St.Lina	_		r Make & Model:	lr	nternal	_
Performed by:	Alex	Yakupov	-		onverter Serial #:		NA Lul 17	-
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :		H2S	_	Cai	l Gas Expiry Date:	15	Jul-17	_
Analyzer:								
Serial Number:		509		Range ppb:	100			
Last Calibration Date:		13-May	/-15	As Found C.F.				
Previous Cal High Point C.F.:		1.00	0	New C.F.:				
		As fou			As left:			
	SLOPE:			SLOPE:				
	OFFSET: HVPS:	28.8		OFFSET:	32.9 488			
pr	ELL TEMP:	50,0		HVPS: RCELL TEMP:	\$0.0			
	SOX TEMP:	32,2		BOX TEMP;				
	MT TEMP:	7.9		PMT TEMP:	7.9	·····		
	IZS TEMP:	35.0	)	IZS TEMP:	48.0			
	TEST:	314.	0	TEST:	314.5			
	STABIL:	0,0		STABIL:	0.1			
	PRES:	20.7		PRES:	20.6			
	SAMP FL:	507		SAMP FL:	S06			
- 14	PMT:			PMT:				
	ORM PMT:	32.8 3294.		NORM PMT:	33.7 3300.2			
	UV LAMP: MP RATIO:	99,3		UV LAMP: LAMP RATIO:	99.4			
LAI	STR. LGT			STR. LGT	17.8			
	DRK PMT:	18.1		DRK PMT:	17.7			
	DRK LMP:	1.1		DRK LMP:				
Inte	rnal Span:	39,8	3	Internal Span:	56.3			
Calibrator:		NA			Calibrator Flo			T
Flow Meter ID's: Make & Model:		PI 700	-	point	diluent (cc/min) 5000	carga	is (cc/min) 0	total (cc/min)
Serial #:		830	-	zero high	4959		39	5000 4998
Cal Gas Cylinder I.D. # :		36837	-	mld	4939		19	4999
Cal Gas Conc. (ppm):		10.0	-	low	4990		11	5001
Calibration:								
Calibrator Flo	nu Patos (r	cc/min)		Calculated Concentration:	Indicated Conce	ntration:	Correc	tion Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	ittation.	Correc	don't actors.
as found zero	5000	0,0	5000	0	0.8			NA
adjusted zero	5000	0.0	5000	0	0.0			NA
as found high	4958	39,00	4997	78.0	80.1			0.974
and the season of the best	4958	39.00	4997	78.0	78.4			0,996
adjusted high		10.00	4999	38.0	38,0			1,000
mld	4980	19.00						1.019
mid low	4989	11.00	5000	22.0	21.6	-		NA
mld			5000 5000	22.0 0	0.2	200 C E =		1 005
mid low	4989	11.00	_		0.2	age C.F.≔		1,005
mid low	4989	11.00	5000		0.2 Aver	age C.F.=		1,005
mid low	4989	11.00	5000	0	0.2 Aver s: LIMITS	age C.F.=		1,005
mid low	4989 5000	11.00	5000 Linear R	0 egression/Calibration Results 1.000	0.2 Aver s: LIMITS > or = 0.995	Pass/Fail PASS		1,005
mid low	4989 5000	11,00 0.00	5000  Linear R  ffecient = Slope =	0 egression/Calibration Results 1.000 0.994	0.2 Aver S: LIMITS > or = 0.995 0.85-1.15	Pass/Fail PASS PASS		1.005
mid low	4989 5000 Co	11,00 0.00  orrelation Coercept as % of fu	5000  Linear R  ffecient = Slope = ull scale)=	0 egression/Calibration Results 1.000 0.994 0.23%	0.2 Aver s: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S.	Pass/Fail PASS PASS PASS		1.005
mid low	4989 5000 Co	11,00 0.00	5000  Linear R  ffecient = Slope = ull scale)=	0 egression/Calibration Results 1.000 0.994	0.2 Aver S: LIMITS > or = 0.995 0.85-1.15	Pass/Fail PASS PASS		1.005
mid low	4989 5000 Co	11,00 0.00  orrelation Coercept as % of full in C.F. from last	5000  Linear R  ffecient = Slope = ull scale)= st cal	0 egression/Calibration Results 1.000 0.994 0.23%	0.2 Aver  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fail PASS PASS PASS		1.005
mid low	4989 5000 Co	0.00 0.00 0.00 orrelation Coe rcept as % of fu	5000   Linear R   ffecient =   Slope =   ull scale) =   st cal	0  1.000  0.994  0.23%  2.56%  eclency Check for H <sub>2</sub> S/TRS ap	0.2  Aver  S:  LIMITS  > or = 0.995  0.85-1.15  ± 3% F.S. ± 15%  plication:	Pass/Fait PASS PASS PASS PASS		1.005
mid low	4989 5000 Co	0.00 0.00 0.00 orrelation Coe rcept as % of fu	5000   Linear R   ffecient =   Slope =   ull scale) =   st cal	0 egression/Calibration Results 1.000 0.994 0.23% 2.56%	0.2  Aver  S:  LIMITS  > or = 0.995  0.85-1.15  ± 3% F.S. ± 15%  plication:	Pass/Fait PASS PASS PASS PASS		1.005
mid Iow calibrator zero	4989 5000 Co b (Inter % change	11.00 0.00  orrelation Coe recept as % of full C.F. from las	5000   Linear R   ffecient =   Slope =   ull scale) =   st cal	0  1.000  0.994  0.23%  2.56%  eclency Check for H <sub>2</sub> S/TRS ap	0.2  Aver  S:  LIMITS  > or = 0.995  0.85-1.15  ± 3% F.S. ± 15%  pplication:  ving zero adjust**	Pass/Fait PASS PASS PASS PASS		1.005
mid Iow calibrator zero	4989 5000 Co b (Inter % change	0.00 0.00 0.00 orrelation Coe rcept as % of fu	5000   Linear R   ffecient =   Slope =   ull scale) =   st cal	0  1.000  0.994  0.23%  2.56%  eclency Check for H <sub>2</sub> S/TRS ap	0.2  Aver  S:  LIMITS  > or = 0.995  0.85-1.15  ± 3% F.S. ± 15%  pplication:  ving zero adjust**	Pass/Fait PASS PASS PASS PASS		1.005
mId  low calibrator zero  SO <sub>2</sub> High Point gas concentrati	4989 5000 Co b (Inter % change	11.00 0.00  orrelation Coe recept as % of full C.F. from las Con **run conve	Sooo Linear R ffecient = Slope = ull scale)= st cal verter Effecter	0  1.000  0.994  0.23%  2.56%  eclency Check for H <sub>2</sub> S/TRS ap	0.2  Aver  S:  LIMITS  > or = 0.995  0.85-1.15  ± 3% F.S. ± 15%  pplication:  ving zero adjust**	Pass/Fait PASS PASS PASS PASS		1.005
mid Iow calibrator zero	4989 5000 Co b (Inter % change	11.00 0.00  orrelation Coe recept as % of full C.F. from las	Sooo Linear R ffecient = Slope = ull scale)= st cal verter Effecter	0  1.000  0.994  0.23%  2.56%  eclency Check for H <sub>2</sub> S/TRS ap	0.2  Aver  S:  LIMITS  > or = 0.995  0.85-1.15  ± 3% F.S. ± 15%  pplication:  ving zero adjust**	Pass/Fait PASS PASS PASS PASS		1.005
mid low calibrator zero	4989 5000 Co b (Inter % change	11.00 0.00  orrelation Coe recept as % of full C.F. from las Con **run conve	Sooo Linear R ffecient = Slope = ull scale)= st cal verter Effecter	0  1.000  0.994  0.23%  2.56%  eclency Check for H <sub>2</sub> S/TRS ap	0.2  Aver  S:  LIMITS  > or = 0.995  0.85-1.15  ± 3% F.S. ± 15%  pplication:  ving zero adjust**	Pass/Fait PASS PASS PASS PASS		1,005





05/14/15 08:00 05/14/15 10:00 05/14/15 12:00 05/14/15 14:00 05/14/15 16:00 05/14/15 18:00



## Maxxam Thermo 51C THC Analyzer Calibration

 Date:
 12-May-15

 Company:
 LICA

 Station Name/Location:
 St. Lina

 Performed by:
 Alex Yakupov

 Start Time (mst):
 10:13

 End Time (mst):
 14:10

 Calibration Purpose:
 Monthly Calibration

 Cal Gas Expiry Date:
 12-Aug-17

Analyzer:		436609739	D	FO
Serial Number:			Range ppm:	50
Last Calibration Date:		13-Apr-15	As Found C.F	0.999
Previous Cal High Point C.	F.:	1,001	New C.F.:	1.003
		As found:		As left:
	H <sub>2</sub> cylinder (psi):	300	H <sub>2</sub> cylinder (psi):	2100
	H <sub>2</sub> cylinder reg set (psi):	32	H <sub>2</sub> cylinder reg set (psi):	32
	Span Cylinder (psi):	750	Span Cylinder (psl):	750
	Span Cylinder Reg Set (psi):	45	Span Cylinder Reg Set (psi):	45
	Zero Air Gen Pressure:	42	Zero Air Gen Pressure:	42
	measurement alarms:	None	measurement alarms:	None
	service alarms:	None	service alarms:	None
FID status:	cnt:	2209	cnt:	2205
	rng:	1	rng:	1
	try:	1	try:	
	flm:	207,1	flm:	206.6
	det:	125.6	det:	125.7
Oven Readings:	Flame:	207	Flame:	206
	Filter:	125	Filter:	125
	Base:	125	Base:	125
	Pump:	06.78	Pump:	06.82
Voltages:	+5	4.9	+5	4.9
	+15	14.9	+15	14.9
	-15	-15.0	-15	-15.0
	Internal Span:	31.89	Internal Span:	31.82

Calibrator:

Flow Meter ID's: NA

Make & Model: API 700

Serial #: 830

Cal Gas Cylinder I.D. #: LL33674

CH<sub>4</sub>/C<sub>3</sub>H<sub>8</sub> Cylinder Conc. (ppm): 601.4 202.0

CH<sub>4</sub> as propane/total CH<sub>4</sub> equivilants (ppm): 555.5 1156.9

	Calibrator Flow Targets:									
point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)							
zero	2000	0	2000							
high	1935	65	2000							
mid	1969	31	2000							
low	1984	16	2000							

## Calibration:

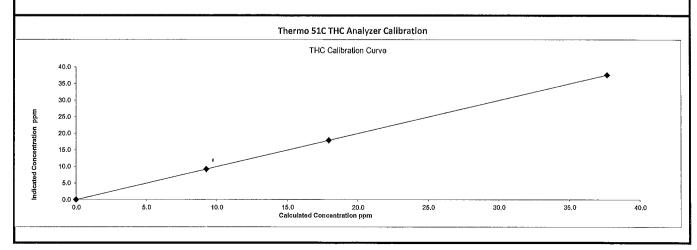
Calibrator Flov	v Rates (cc/min)			Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	1999	0.00	1999	0	0.10	NA
adjusted zero	1999	0.00	1999	0	0.00	NA
as found high	1931	65.00	1996	37.67	37.70	0.999
adjusted high	1931	65.00	1996	37.67	37.60	1,002
mid	1969	31.00	2000	17.93	17.90	1.002
low	1983	16.00	1999	9.26	9.20	1.007
calibrator zero	1999	0.00	1999	0	0.00	NA
					Average C F =	1.003

## Linear Regression/Calibration Results:

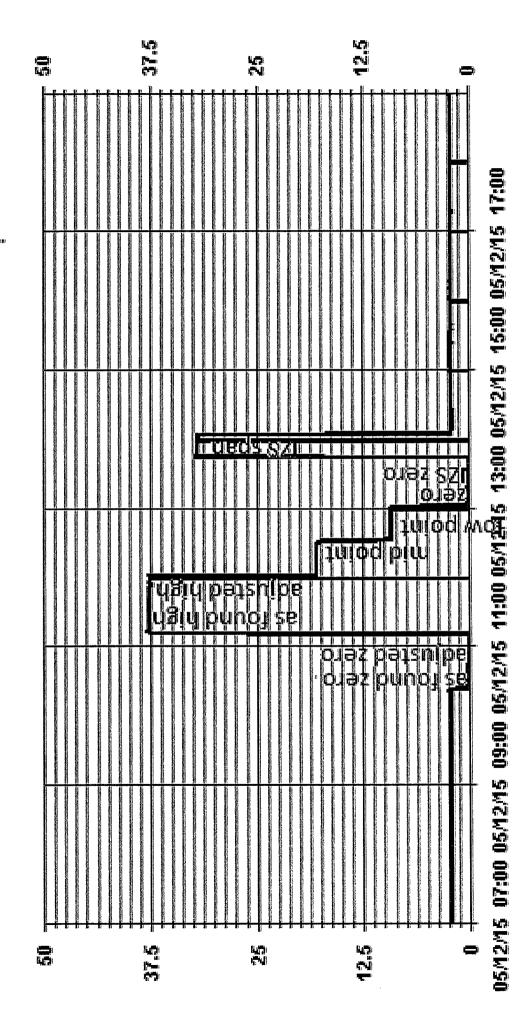
		LIMITS	Pass/Fail
Correlation Coeffecient =	1.000	> or = 0.995	PASS
Slope =	0,999	0.85-1.15	PASS
b (Intercept as % of full scale)=	-0.032%	± 3% F.S.	PASS
% change in C.F. from last cal	0.17%	± 15%	PASS

#### Comments

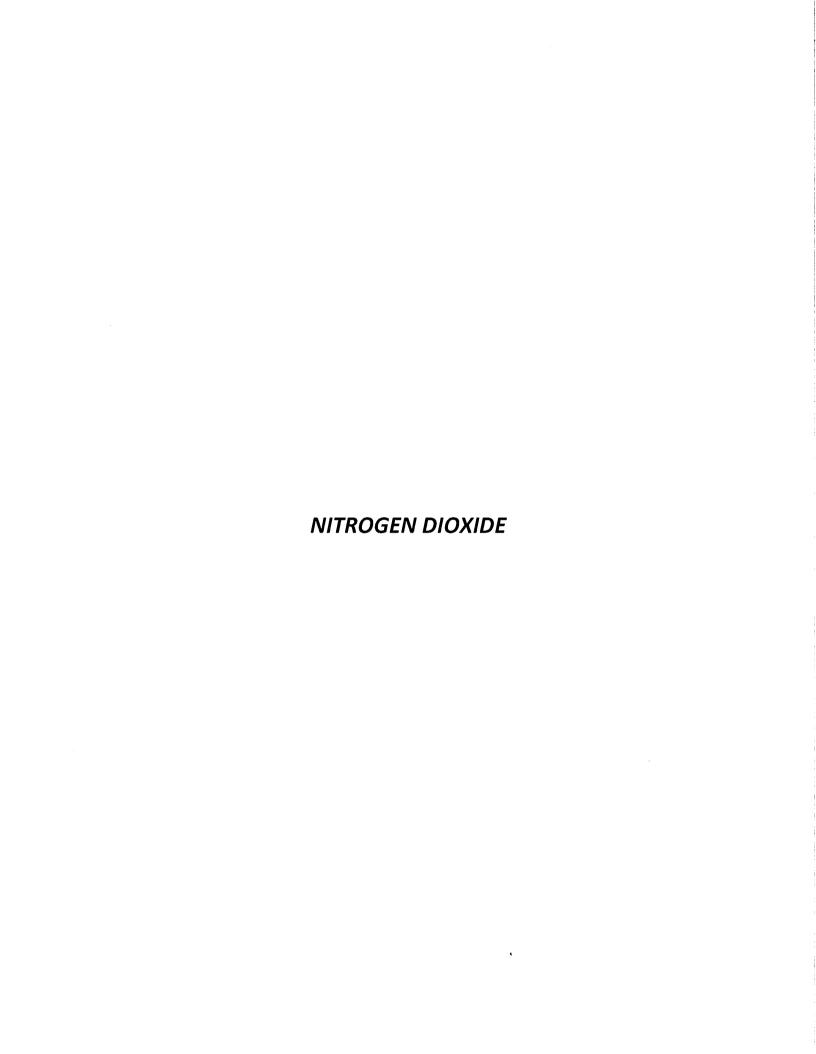
Sample filter changed. New H2 Cylinder connected

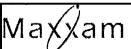


Of Minute Averages



- LICA31 THC PPM





## **API 200E NOx Analyzer Calibration**

Date: Company: Station Name/Location:

Performed by:

13-May-15 LICA St.Lina Alex Yakupov

Start Time (mst):	9:10
End Time (mst):	16:07
Calibration Purpose:	Monthly Calibration *
Cal Gas Expiry Date:	12-Mar-19

### **Correction Factors:**

 Analyzer Serial Number:
 594

 Last Calibration Date:
 13-Apr-15

 Range ppb:
 1000

As found C.F. Previous Cal High Point C.F.:

NO=	0.985	NO=	1.000
NOx=	0.979	NOx=	0.999
NO<sub>2</sub>=	1.002	NO<sub>2</sub>=	1.000

#### As found: NOx SLOPE: 0.980 1.9 NOx OFFS: NO SLOPE: 0.888 -0.8 NO OFFS: TEST: 456 SAMP FLW: OZONE FL: 78 PMT: 24.8 NORM PMT: 1.7 AZERO: 16.5 HVPS: 771 RCELL TEMP: 50.0 31.7 BOX TEMP: PMT TEMP: 6.7 IZS TEMP: 45.4 MOLY TEMP: 314.1 6.6 RCEL: SAMP: 27.0 527.8/7.8/519.8 Internal Span:

	As left:
NOx SLOPE:	0.879
NOx OFFS:	8.5
NO SLOPE:	0.876
NO OFFS:	0.1
TEST:	NA
SAMP FLW:	456
OZONE FL:	78
PMT:	14.8
NORM PMT:	1.1
AZERO:	16.2
HVPS:	771
RCELL TEMP:	50.1
BOX TEMP:	29.5
PMT TEMP:	6.6
IZS TEMP:	45.3
MOLY TEMP:	315.4
RCEL:	6.6
SAMP:	26.5
Internal Span:	512.8/7.3/505.6

## Calibrator Flow Targets:

 Make & Model:
 Environics 6100

 Serial #:
 4760

 Cal Gas Cylinder I.D. #:
 BML002073

 NO Cylinder Conc. (ppm):
 50.6

 NOX Cylinder Conc. (ppm):
 50.6

ſ	point	diluent (cc/min)	cal gas (cc/min)	O <sub>3</sub> setting (v or ppb)	total (cc/min)
	zero	4995	0	0	4995
ſ	high	4916	78	400.00	4994
Γ	mid	4957	38	230.00	4995
ſ	low	4975	19	75.00	4994

### Calibration:

Calibra	tor Flow Rat	es (cc/min)		Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Polnt	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)	$\sim$	$\mathcal{N}$
as found zero	4994	0.0	4994	0	0	0.0	8.0	NA	NA
adjusted zero	4994	0.0	4994	0	0	0.0	0.0	NA	NA
as found high	4922	73.92	4996	748.7	748.7	760	765	0.985	0.979
adjusted high	4922	73.92	4996	748.7	748.7	749	749	1,000	1.000
mid	4958	37.45	4995	379.3	379.3	379	379	1.001	1.001
low	4977	17.74	4995	179.7	179.7	180	180	0.998	0.998
calibrator zero	4994	0.00	4994	0	0	0.0	-2.0	NA	NA
						•	Average C.F.=	1.000	1.000

Calibr	ator Flow Rate	s (cc/min)		Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO <sub>2</sub>	NO drop	NO <sub>2</sub> increase	NO <sub>2</sub> C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4922	73.93	4996	0.0	746.0	746.0	-2.0	0.0	0.0	$\bigvee$
as found NO <sub>2</sub>	4922	73.9	4996	400.0	259.0	744.0	484.0	487.0	486.0	1.002
adjusted NO₂	4922	73.9	4996	400.0	259.0	744.0	484.0	487.0	486.0	1.002
gpt mid	4922	73.9	4996	230.0	466.0	745.0	278.0	280.0	280.0	1.000
gpt low	4922	73.93	4996	75.0	658.0	744.0	86.0	88.0	88.0	1.000
								Av	erage NO. C.F.=	1.001

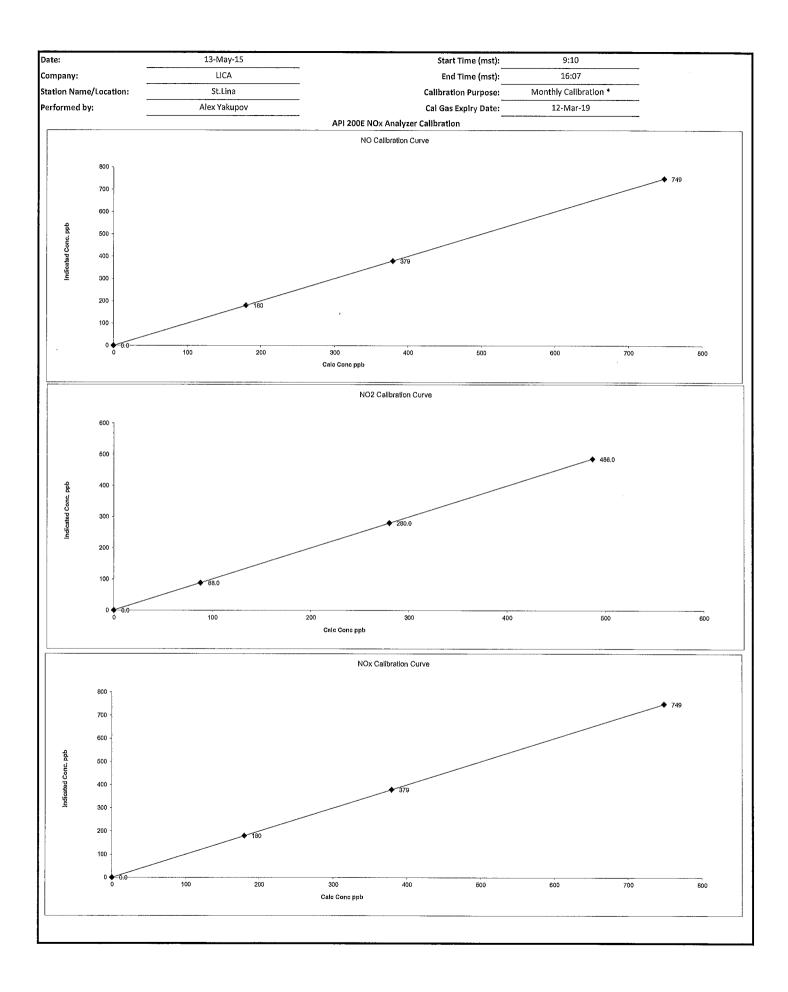
Linear Regression/Calibration Results:

NOx **Correlation Coeffecient** 1,000 1,000 1.000 Slope : 1.000 1.000 0.998 b (Intercept as % of full scale): 0.00% 0.00% 0.02% % change in C.F. from last cal: 1.49% 2.03% -0.21% 99.9% NO2 converter effeciency

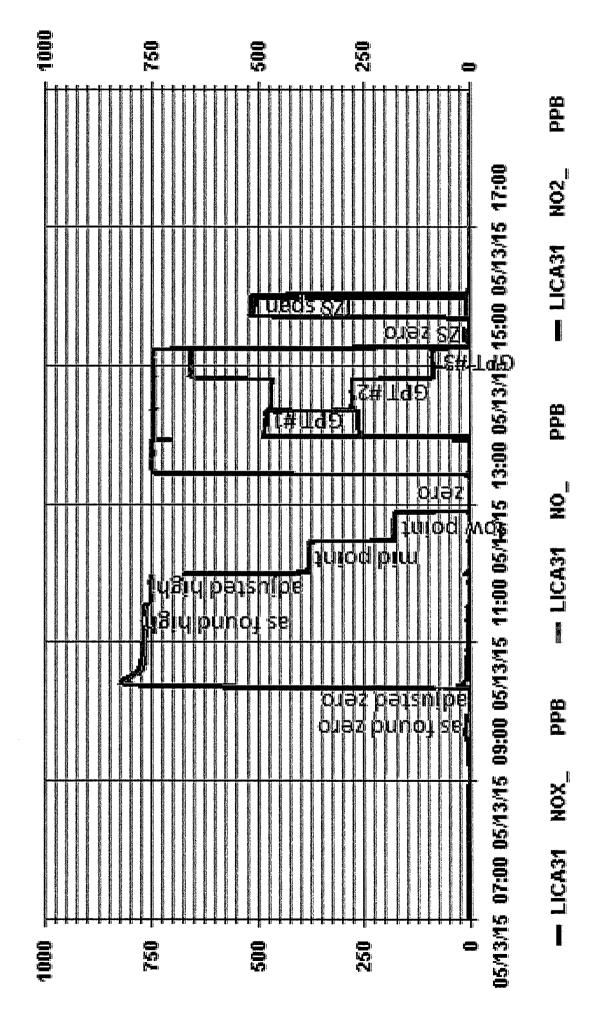
LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. +/-15% >85%

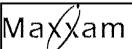
#### Comments:

Sample filter changed. No adjustments made for NO2. Data copied for calculation purposes only. \* Due to unstable Zero response re-calibration in to be done on May 14, 2014 \*



Of Minute Averages





## API 200E NOx Analyzer Calibration

Date:
Company:
Station Name/Location:
Performed by:

14-May-15 LICA St.Lina Alex Yakupov 
 Start Time (mst):
 9:39

 End Time (mst):
 17:48

 Calibration Purpose:
 Re-Calibration

 Cal Gas Expiry Date:
 12-Mar-19

 Analyzer Serial Number:
 594

 Last Calibration Date:
 13-May-15

 Range ppb:
 1000

 Correction Factors:

 As found C.F.
 Previous Cal High Point C.F.:

 NO=
 1.018
 NO=
 1.000

 NOx=
 1.025
 NOx=
 1.000

 NO2=
 1.000
 NO2=
 1.002

As found: 0.897 NOx SLOPE: 8.5 NOx OFFS: NO SLOPE: 0.876 0.1 NO OFFS: TEST: NA SAMP FLW: 455 OZONE FL: 78 15.9 PMT: NORM PMT: 24.1 16.8 AZERO: HVPS: 771 50.1 RCELL TEMP: BOX TEMP: 31.7 6.7 PMT TEMP: IZS TEMP: 45.3 316.7 MOLY TEMP: 6.6 RCEL: 26.5 SAMP: 512.8/7.3/505.6 Internal Span:

As left: NOx SLOPE: 0.897 0.5 NOx OFFS: NO SLOPE: 0.891 -0.6 NO OFFS: TEST: NA 455 5AMP FLW: OZONE FL: 78 16.4 PMT: NORM PMT: -1.0 16.6 AZERO: HVPS: 771 50.0 RCELL TEMP: 29.5 BOX TEMP: 6.7 PMT TEMP: 45.3 IZS TEMP: MOLY TEMP: 316.6 6.6 RCEL: SAMP: 26.4 548.4/7.0/541 Internal Span:

#### Calibrator Flow Targets:

 Make & Model:
 Environics 6100

 Serial #:
 4760

 Cal Gas Cylinder I.D. #:
 BML002073

 NO Cylinder Conc. (ppm):
 50.6

 NOx Cylinder Conc. (ppm):
 50.6

[	point	diluent (cc/min)	cal gas (cc/min)	O <sub>3</sub> setting (v or ppb)	total (cc/min)
	zero	4995	0	0	4995
	high	4916	78	400.00	4994
	mid	4957	38	230.00	4995
[	low	4975	19	75.00	4994

### Calibration:

Calibra	itor Flow Rat	es (cc/min)		Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)	><	
as found zero	4994	0.0	4994	0	0	0.0	-3.0	NA	NA
adjusted zero	4994	0.0	4994	0	0	0.0	0.0	NA	NA
as found high	4921	73.95	4995	749.1	749.1	736	731	1.018	1.025
adjusted high	4921	73.95	4995	749.1	749.1	750	750	0.999	0.999
mid	4958	37.45	4995	379.3	379.3	379	379	1.001	1.001
low	4975	18.71	4994	189.6	189.6	189	190	1.003	0.998
calibrator zero	4994	0.00	4994	0	0	0.0	0.0	NA	NA
							Average C.F.=	1.001	0.999

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO <sub>2</sub>	NO drop	NO <sub>2</sub> increase	NO <sub>2</sub> C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4921	73.96	4995	0.0	751.0	754.0	2.0	0.0	0.0	> <
as found NO <sub>2</sub>	4921	74.0	4995	400.0	275.0	754.0	478.0	476.0	476.0	1.000
adjusted NO₂	4921	74.0	4995	400.0	275.0	754.0	478.0	476.0	476.0	1,000
gpt mid	4921	74.0	4995	230.0	477.0	755.0	277.0	274.0	275.0	0.996
gpt low	4921	73.96	4995	75.0	667.0	756.0	88.0	84.0	86.0	0.977
Average NO <sub>2</sub> C.F.=								0.991		

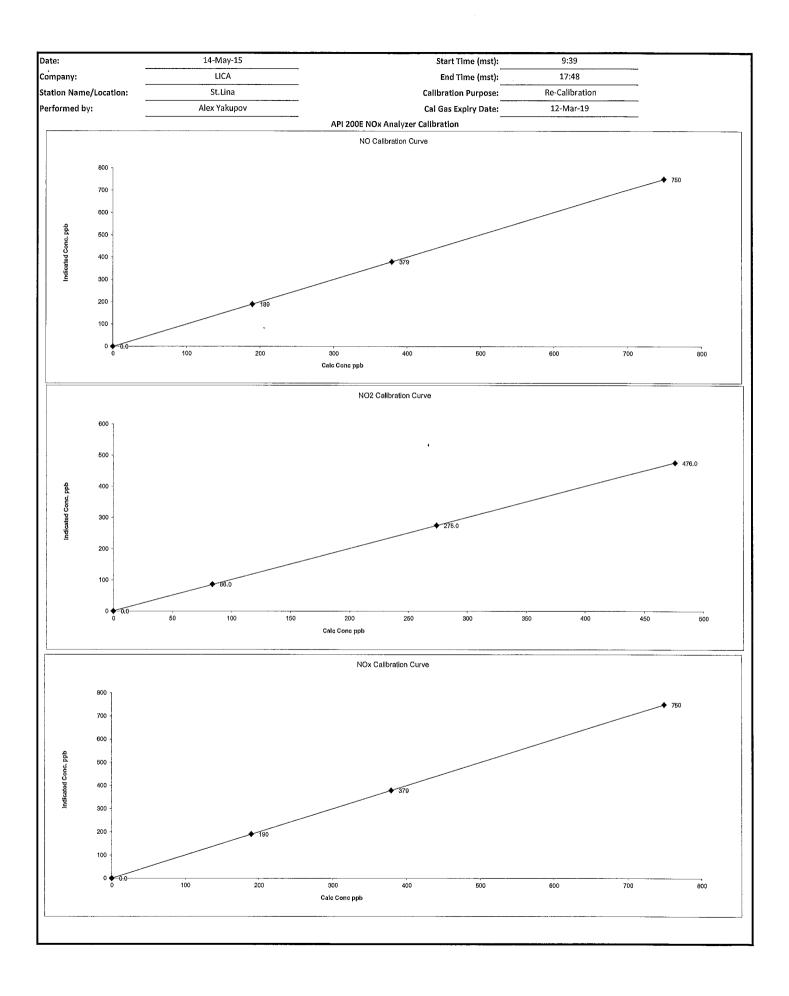
Linear Regression/Calibration Results:

NO	NOx	NO <sub>2</sub>
1.000	1.000	1.000
1.001	1.001	0.999
-0.05%	-0.01%	0.10%
-1.78%	<b>-2.</b> 47%	0.20%
	X	100.9%
	1.000 1.001 -0.05%	1.000         1.000           1.001         1.001           -0.05%         -0.01%

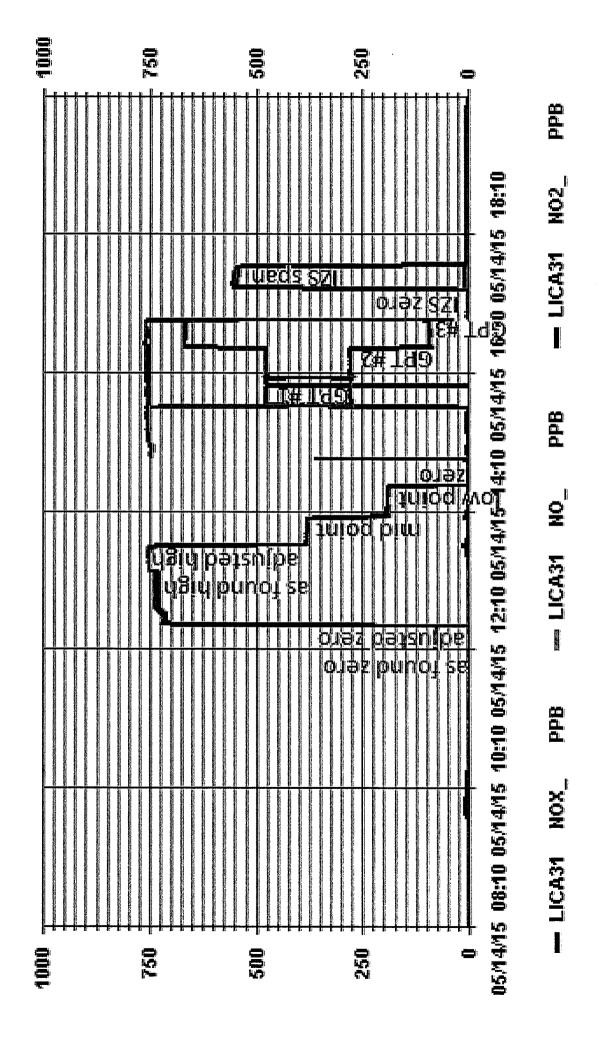
LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. +/-15% >85%

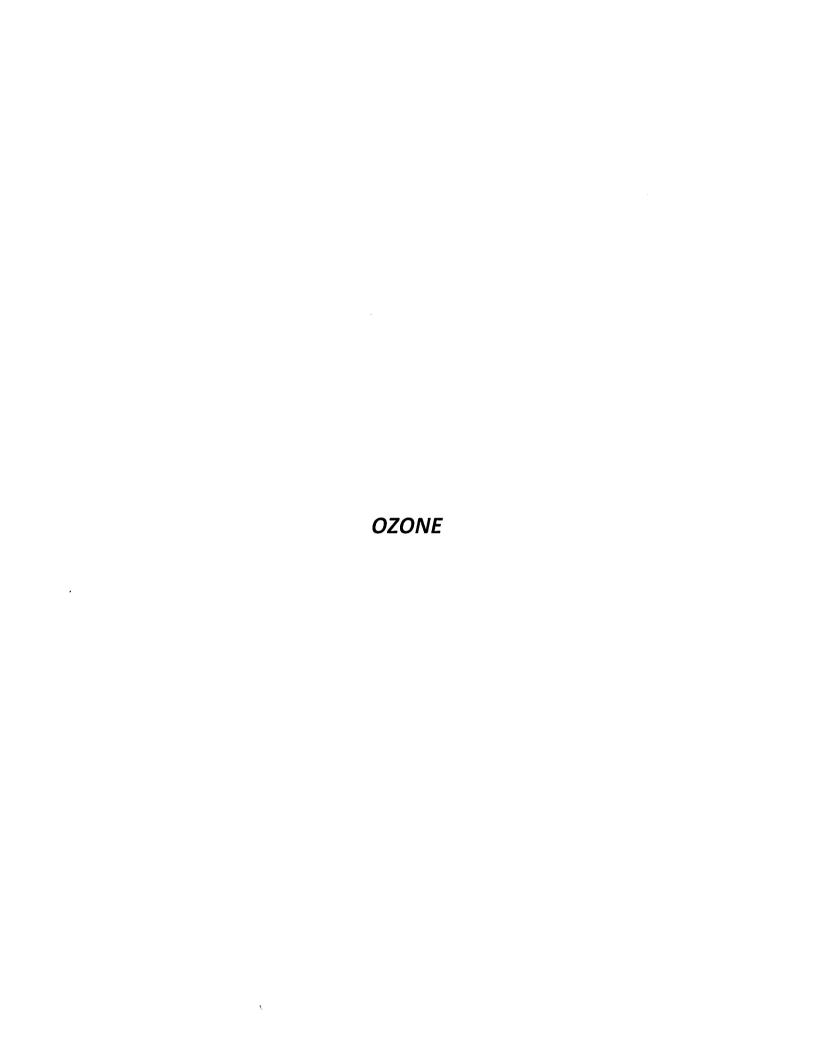
## Comments:

No adjustments made for NO2. Data copied for calculation purposes only. Calibration stopped for Zero Air Supply maintenance at 10:30 Re-calibration re-started at 11:45 ("As Found" Zero)



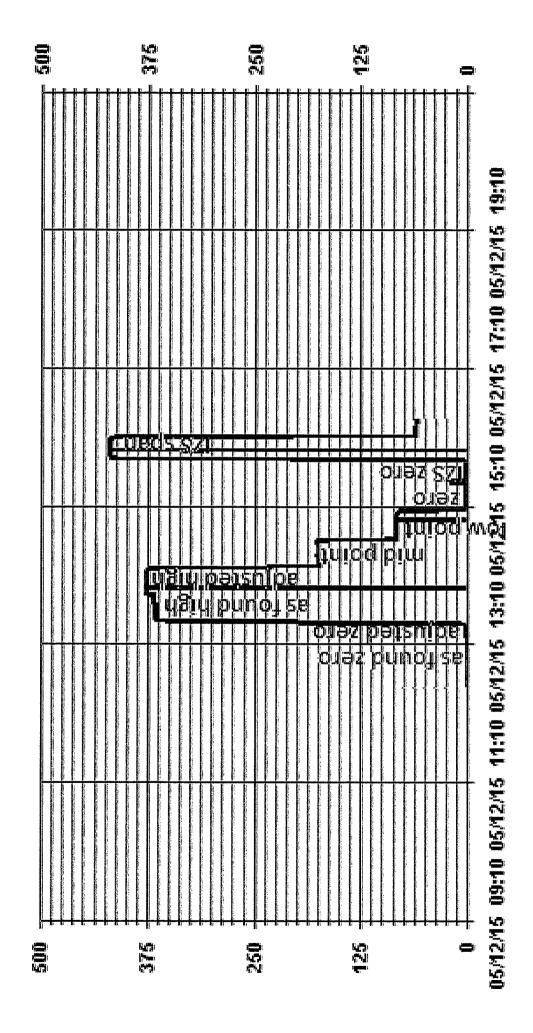
Of Minute Averages



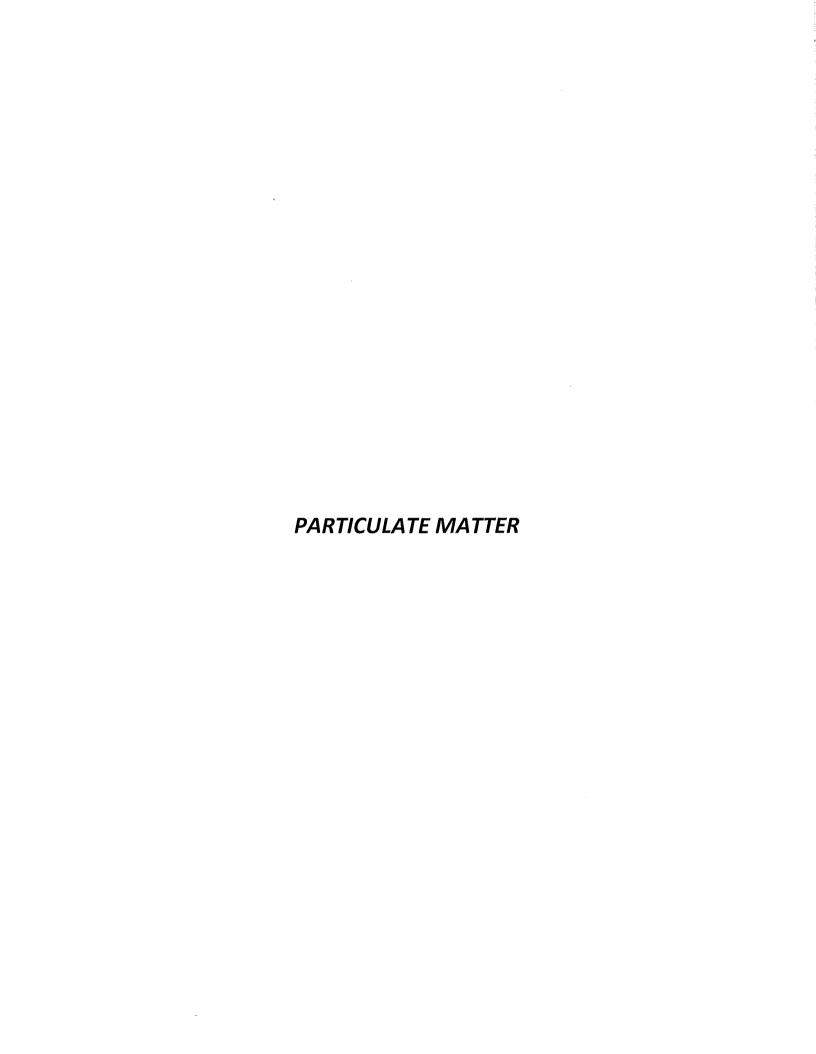


Date   12	Company: SLUAn   Callbration Purpose   SLUAn   Callbration Purpose   Monthly   Callbration Purpose   Monthly   Callbration Purpose   Callbration Purpos	:37 Calibration
Station Amerikacetoins   Ask Trisagour   Ask	Station Amen (Location) Performed by:    All Norwing	Calibration
All	Namiper:	
Marker   1002240071   Range pem   500	Nanityser:     1002240371     Range ppm:     500	
Section   Sect	As founds   1002240371	
ast Call Previous Call high Point C.F.:   1.000   New C.F.:   0.0865    As found:   As found:   As felt:   As left:    O, Bidg:   0.2   O, Bidg:   0.14   O, Bidg:   1.14    O, Cord:   0.569   O, Cord:   0.0959    J. 5.0   14.5   15.0   14.8    P. 4.0   23.7   24.0   23.7    - 4.0   23.7   24.0   23.7    - 4.0   23.7   24.0   23.7    - 5.0   4.3   3.3   3.3    J. 5.0   4.5   3.3   3.3    J. 5.0   4.5   3.3   3.3    J. 5.0   4.5   3.5   4.5    I. 5.0   14.7   15.0   14.7    I. 5.0   14.7   15.0   14.7    I. 5.0   14.7   15.0   14.7    I. 5.0   14.7   15.0   15.0    Photo Lamp   3.4   Photo Lamp   9.4    Quamp   3.3   Optamp   8.3    Bench:   27.8   Bench:   27.7    Bench Lamps   53.6   Bench:   27.7    Bench Lamps   53.6   Bench:   27.7    Pressure   684.1   Pressure   684.1    Pressure   684.1   Pressure   684.1    Pressure   684.1   Pressure   684.1    Cell & Nom   0.730   Cell & Spin   0.9    Cell & Internal Span:   332.1    Cell & Internal Span:   332.1    Cell & Internal Span:   332.1    Nox Gas Cylinder I.D. #:   0.9    Cell & Internal Span:   332.1    Nox Or Gas Cylinder I.D. #:   0.9    Call Branch   73.00    Cell & Internal Span:   333.8    Nox Or Gas Cylinder I.D. #:   0.9    Call Branch   73.00    Call Branch   73.00    Call Branch   73.00    Call Branch   73.00    Call Branch   73.00    Call Carried   73.00    Call Car	15-Apr-15	
As left:   As left:	As found:   As found:   As left:   As found:   As left:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As found:   As left:   As	
O <sub>2</sub> (See ) 0.2	O <sub>3</sub> Big:   -0.2	
O , Serg.   0,2   0,180g.   0,2   0,180g.   0,148   0,100f.   0,095   0,00f.   0,0	O <sub>3</sub> Big:	
Matherhoard:   3.3   3.3   3.3   3.3   3.3   3.4	Motherboard:   3.3   3	
15.0	15.0	
14	1,000   1,00	
Mark & Model:   Environics 500   Envir	Marke & Model:   Environics 6100   Serial #:   4760   Marke & Model:   5000   Marke & Model:   5000   Marke & Model:   5000   Marke & Model:   5000   Mark	
S.O.   4.9   S.O.   4.9   S.O.   4.9   S.O.   4.9   S.O.   14.7   S.O.   14.50   S.O.   14.7   S.O.   14.50   S.O.   14.7   S.O.   14.50   S.O.   14.7   S.O.   14.50   S.O.   14.7   S.O.   14.50   S.O.   14.7   S.O.   14.7   S.O.   14.7   S.O.   14.7   S.O.   14.7   S.O.   14.7   S.O.   14.7   S.O.   14.7   S.O.	S.0	
15.0	15.0	
15.0	15.0	
24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.4   24.0   23.7   24.0   24.1   24.0	24.0	
O_1 Lamp	Bench:   27.8   Bench:   27.	
Bench   27.8   Bench   27.7	Bench   27.8   Bench   27.7   Bench   14.5   Benc	
Bench Lamp;   53.6   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   67.8   O, Lamp;   0.724   O, Lamp;   0.724   O, Lamp;   0.724   O, Lamp;   0.724   O, Lamp;   0.724   O, Lamp;   0.724   O, Lamp;   0.724   O, Lamp;   0.724   O, Lamp;   0.9	Bench Lamp:   53.6   Bench Lamp:   53.6	
Pressure:   684.1	Pressure:   684.1	
Cell A lpm:   0.724   Cell A lpm:   0.730   Cell A lpm:   0.724   O, ppb:   1.24   Cell A ppb:   2.4   Cell A ppb:   1.4   Cell A ppb:   0.9   Cell A lnt:   61387   Cell A lnt:   61387   Cell A lnt:   73133   Internal Span:   338.8   Internal Span:   Internal Span:   338.8   Internal Span:	Cell A lpm:	
Cell 8 lpm:   0.724   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   1.4   O, ppb:   0.9   O, ppb:   0.0   O, ppb	Cell B   pm:   0.724	
Cell A ppb:   2.4   Cell A ppb:   0.5   Cell A lnt:   61387   Cell A lnt:   61387   Cell B lnt:   73102   Cell B lnt:   73133   Internal Span:   332.1   Internal Span:   332.1   Internal Span:   332.1   Internal Span:   333.8   Internal Span:   333.8   Internal Span:   333.8   Internal Span:   332.1   Internal Span:   333.8   Internal Span:   332.1   Internal Span:   333.8   Internal Span:   333.8   Internal Span:   332.1   Internal Span:   333.8   Internal Span:	Cell A ppb:   2.4   Cell A ppb:   1.4     Cell A ppb:   0.9     Cell B ppb:   0.9     Cell A lnt:   61387   Cell B lnt:   73102   Cell B lnt:   73133   Cell B lnt:   73133   Cell B lnt:	
Cell B ppb:   0.9   Cell A Int:   61416   Cell B Int:   73102   Cell A Int:   61416   Cell B Int:   73103   Internal Span:   332.1   Internal Span:   338.8   Internal Sp	Cell B ppb:	
Cell A Int:   G1387	Cell A Int:   61387	
Cell Bint:	Cell B Int:	
Allibrator:	Make & Model:	
Doint   Lotal flow (cc/min)   O <sub>3</sub> setting (v or pph)	Doint   Color   Color   Color   Color	
Description   Correction   Co	Make & Model:	
Serial #: 4760   high   5000   305     NOx Gas Cylinder I.D. #: BLM002073   mild   5000   140     NOx Cylinder Conc. (ppm): 50.6   low   5000   70     Town   Tow	Serial #:	etting (v or ppb)
Nox Gas Cylinder (D. # : BLM002073   mid   5000   140	NOx Gas Cylinder L.D. # : BLM002073   mid   5000	
Nox Cylinder Conc. (ppm):   50.6   low   5000   70	Calibration:   Calibrator Flow Rates (cc/min)   Calculated Concentration:   Indicated Concentration:   Calculated	
Calibrator Flow Rates (cc/min)   Calculated Concentration:   Indicated Concentration:   Point   Diluent   Cal Cas   Total   (Ppb)   (Ppb)   (Ppb)	Calibrator Flow Rates (cc/min)   Calculated Concentration:   Indicated Concentration:   C	
Calibrator Flow Rates (cc/min)   Calculated Concentration:   Indicated Concentration:   Point   Diluent   Cal Cas   Total   (Ppb)   (Ppb)   (Ppb)	Calibrator Flow Rates (cc/min)   Calculated Concentration:   Indicated Concentration:   C	
Point Diluent Cal Gas Total (ppb) (ppb) (ppb)  as found zero 4995 0.0 4995 0.0 0.0 0.0 0.0 NA adjusted zero 4995 0.0 4995 0.0 0.0 0.0 NA as found high 4995 305.00 5300 377.0 367.0 1.027 adjusted high 4995 305.00 5300 377.0 377.0 1.000 mid 4995 10.00 5135 173.0 174.0 0.994 low 4995 70.00 5065 80.0 83.0 0.964 calibrator zero 4995 0.00 4995 0.0 1.0 NA *copy and paste flows and NO decrease from NOx cal in to calculated concentration** Average C.F.= 0.986  *Correlation Coeffecient = 1.000 > or = 0.995 PASS Slope = 0.997 0.85-1.15 PASS b (intercept as % of full scale) = 0.286% ±3% F.S. PASS % change in C.F. from last cal -3% ±15% PASS *Comments:  *Thermo 491 O3 Analyzer Calibration  *Correlation Curve**  *Thermo 491 O3 Analyzer Calibration  *Thermo 491 O3 Analyzer Calibration  *Thermo 491 O3 Analyzer Calibration  *Thermo 491 O3 Analyzer Calibration  *Thermo 491 O3 Analyzer Calibration  *Thermo 491 O3 Analyzer Calibrat	Point	
as found zero	as found zero 4995 0.0 4995 0.0 -3.0 adjusted zero 4995 0.0 4995 0.0 0.0 0.0 as found high 4995 305.00 5300 377.0 367.0 367.0 adjusted high 4995 305.00 5300 377.0 377.0 377.0 mid 4995 140.00 5135 173.0 174.0 low 4995 70.00 5065 80.0 83.0 calibrator zero 4995 0.00 4995 0.0 1.0 **copy and paste flows and NO decrease from NOx cal in to calculated concentration** Average C.F.=    Correlation Coeffecient = 1.000	orrection Factor
as found high 4995 305.00 \$300 377.0 367.0 1.027 adjusted high 4995 305.00 \$300 377.0 377.0 1.000  mid 4995 140.00 \$135 173.0 174.0 0.994 low 4995 70.00 \$065 80.0 83.0 0.964 calibrator zero 4995 0.00 4995 0.0 1.0 NA *copy and paste flows and NO decrease from NOx cal in to calculated concentration** Average C.F.= 0.986  Linear Regression/Calibration Results:  Average C.F.= 0.995  D. 20.995  as found high 4995 305.00 5300 377.0 367.0  adjusted high 4995 305.00 5300 377.0 377.0  mid 4995 140.00 5135 173.0 174.0  low 4995 70.00 5065 80.0 83.0  calibrator zero 4995 0.00 4995 0.0 1.0  *copy and paste flows and NO decrease from NOx cal in to calculated concentration** Average C.F.=  Linear Regression/Calibration Results:  Limits Pass/Fail?  Correlation Coeffecient = 1.000 > or = 0.995 PASS  Slope = 0.997 0.85-1.15 PASS  b (intercept as % of full scale) = 0.286% ± 3% F.S. PASS  % change in C.F. from last cal -3% ± 15% PASS	NA	
adjusted high   4995   305.00   5300   377.0   377.0   1.000     mid	Adjusted high   A995   305.00   5300   377.0   377.0	NA
mid   4995	Mid   4995   140.00   5135   173.0   174.0	
Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration Results:   Linear Regression   Calibration   Linear Regression   Linear Regression   Calibration   Linear Regression   Calibration   Linear Regression   Linear	Limits   Pass/Fail   Pass   Limits   Pass/Fail   Pass   Limits   Pass/Fail   Pass	
*copy and paste flows and NO decrease from NOx cal in to calculated concentration**    Linear Regression/Calibration Results:   LIMITS   Pass/Fall ?	*copy and paste flows and NO decrease from NOx cal in to calculated concentration **    Linear Regression/Calibration Results:   LIMITS   Pass/Fail ?	
Correlation Coeffecient =   1,000   > or = 0.995   PASS	Linear Regression/Calibration Results:   LIMITS   Pass/Fall ?	
Correlation Coeffecient =   1,000   > or = 0.995   PASS	Correlation Coeffecient =   1.000   > or = 0.995   PASS	0,986
Correlation Coeffecient =   1,000   > or = 0,995   PASS     Slope =   0,997   0,85-1,15   PASS     b (Intercept as % of full scale) =   0,286%   ± 3% F.S.   PASS     % change in C.F. from last cal   -3%   ± 15%   PASS     When the state of the state	Correlation Coeffecient =   1,000   > or = 0.995   PASS	
Slope =   0.997   0.85-1,15   PASS	Slope =   0.997   0.85-1.15   PASS	
b (Intercept as % of full scale)= 0.286%	b (Intercept as % of full scale)=	
Thermo 49i O3 Analyzer Calibration  O <sub>3</sub> Calibration Curve	Comments:	
Thermo 49I O3 Analyzer Calibration  O <sub>2</sub> Calibration Curve		
Thermo 49I O3 Analyzer Calibration  O <sub>3</sub> Calibration Curve		
Thermo 49l O3 Analyzer Calibration  O <sub>2</sub> Calibration Curvo	ilter changed .	
O <sub>3</sub> Calibration Curvo  400 360 300 300 200 200 174.0		
O <sub>3</sub> Calibration Curvo  400 350 350 300 96 250 474.0		
O <sub>3</sub> Calibration Curvo  400 350 350 300 96 250 474.0		
O <sub>3</sub> Calibration Curvo  400 350 350 300 96 250 474.0	Thermo 491 O3 Analyzer Calibration	
400 350 300 300 200 150 174.0		
350 - 377.0 300 - 250 - 250 - 150 - 150 - 100 -		
300		
250 - 250 -		377.0
T74.0		377.0
8 200 174.0 1774.0 1774.0 1774.0	ž 250   g	377.0
gg 150 1 10	774.0	377.0
5 100 1	150	→ 377.0
50 -	₩5.0	<b>→</b> 377.0

150 Cale Conc ppb



■ LICA31 03\_ PPB



#### Page 10 of 13 R & P 1405F TEOM PM 2.5 Analyzer Calibration 14-May-15 PM 2.5 Parameter: LICA Alex Yakupov Company: Performed by: St Lina Start/End Time (mst): 13:01 - 13:44 Station Name/Location: Previous Audit Date: 28-Apr-15 1st Audit **Calibration Purpose:** 1400A Information and Status: 1405A208301003 As Found Filter Loading %: 27.36 Serial Number: 13125.0 As Left Filter Loading %: 27.76 Ko Factor: 19.04 0.005 Ambient Temperature °C: As Found Noise: 0.000 0.923 As Left Noise: Ambient Pressure atm: 3.00 0.37 Main Flow Reading Ipm: Pump Vacuum: 13.67 Warnings: None Aux Flow Reading Ipm: Reference Standards: Flow: Pressure: Temperature: Dwyer Fisher Fisher Make: 475 Mark III FB61291 FB61291 Model: NΑ 130168457 130168457 Serial Number: 18-Mar-15 NA 18-Mar-15 **Calibration Date:** As found leak check: Reference Base Zero Zero actual 0.00 -0.150.00 PM 2.5 Flow -0.15limit 0.15 0.15 0.00 -0.66 0.00 actual **Bypass Flow** -0.66 0.60 0.60 As left leak check (same as above if as found passes): Base Reference 0.00 -0.15 actual 0.00 PM 2.5 Flow -0.15 0.15 0.15 limit 0.00 0.00 -0.66 actual **Bypass Flow** -0.66 As found temperature and pressure: tolerance +/- 2.0°C tolerance +/- 0.01 atm 1405F temperature °C: 1405F pressure atm: reference temperature °C: 18.6 reference pressure: 0.924 difference °C: difference: -0.001 As left temperature and pressure (same as above if as found adequate): tolerance +/- 2.0°C tolerance +/- 0.01 atm 1405F temperature °C: 1405F pressure atm: reference temperature °C: reference pressure: difference °C: difference: 0.000 As found flows: main flow tolerance 3.00 lpm +/- 0.20 lpm total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm/+/- 7% 1405F main flow lpm: 1400A total/aux flow lpm: reference main flow lpm: 3.06 reference total/aux flow lpm: 16.86 difference lpm: difference lpm: 0.19 0.06 As left flows (same as above if as found adequate): main flow tolerance 3.00 lpm +/- 0.20 lpm total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm/+/- 7% 1405F main flow lpm: \_ 1400A total/aux flow lpm: 16.67 reference main flow lpm: reference total/aux flow lpm: difference lpm: difference lpm: 0.06 K<sub>o</sub> Audit: Last Ko audit date: 20-Mar-15 1405F Ko factor: 13125.0

Comments:

External filter part # 10-002387-0100 has been changed

Measured K<sub>o</sub> factor:

% difference:

13213.2000

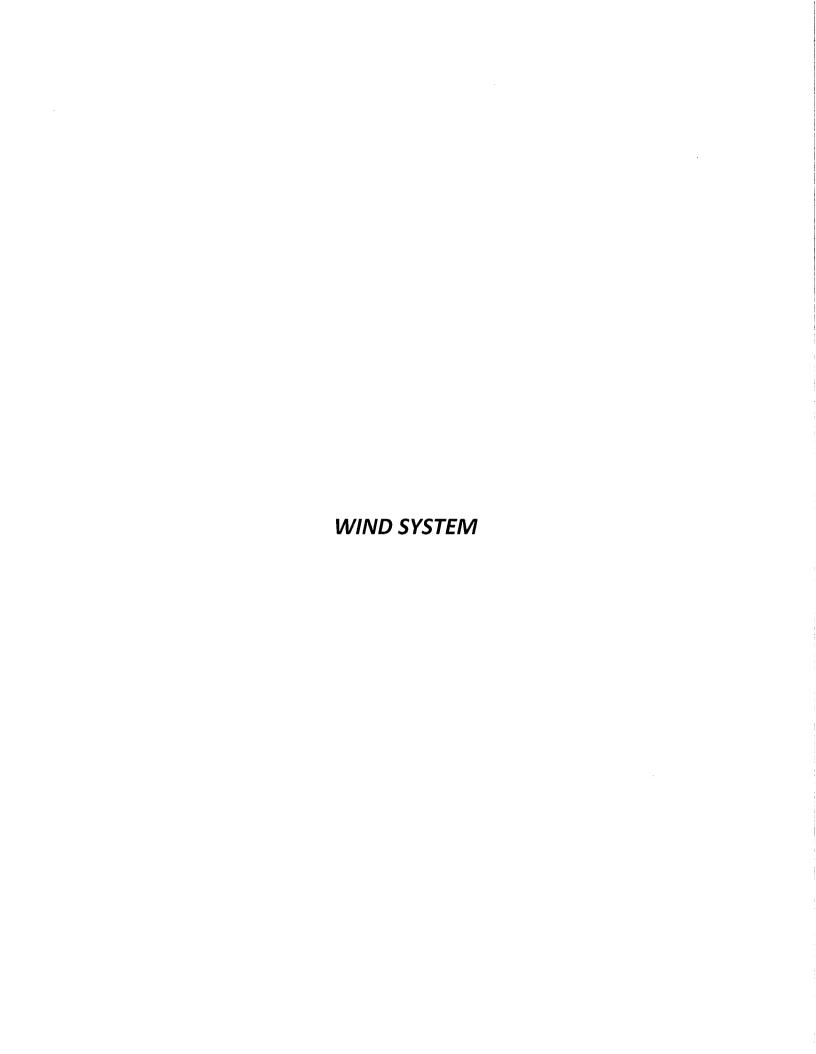
0.67



# D-00055/1 Page 2 of 2 Maxxam R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	22-Ma	y-15			Parameter:	PM 2.5		
Company:	LIC	Α	-		Performed by:	Alex Yakupov		
Station Name/Location:	St Li	na	_	Sta	rt/End Time (mst):	09:12 - 12:35		
Previous Audit Date:	14-Ma	y-15	_	Ca	alibration Purpose:	2nd Audit		
400A Information and Status:				•				
Serial Number:	1405A208		-	Filter Loading %: _	27.36	,		
Ko Factor:	1312		-	Filter Loading %: _		21.65		
Ambient Temperature °C:	25.2		-	As Found Noise:	0.004			
Ambient Pressure atm:	0.91		_	As Left Noise:	0.000			
Main Flow Reading Ipm:	3.0		-	Pump Vacuum:	0,37			
Aux Flow Reading Ipm: eference Standards:	13.6	o /		Warnings:	None			
eierence Standards:	Flov		Droc	sure:	Tomporaturo			
Make:	Dwy		•	her	<b>Temperature</b> Fisher	•		
Model:	475 Ma			1291	FB61291			
Serial Number:	NA NA			68457	130168457	-		
Calibration Date:	NA	\	18-N	1ar-15	18-Mar-15			
As found leak check:						·		
		Base	Zero	Reference	Zero			
PM 2.5 Flow	actual	0.00	-0.15	0.00	-0.15			
	limit	0.15	$>\!\!<$	0.15	$\geq$			
Bypass Flow	actual	0.00	-0.66	0.00	-0.66			
	limit	0.60		0.60	$\geq$			
s left leak check (same as above if as	found passes):			f				
	a atual	Base	Zero	Reference	Zero			
PM 2.5 Flow	actual limit	0.00	-0.15	0.00	-0.15			
Pour en Eleve	actual	0.00	-0.66	0.00	0.66			
Bypass Flow	limit	0.60	-0.00	0.60	-0.66			
As found temperature and pressure:								
tolerance +	·/- 2.0°C			tolerance -	+/- 0.01 atm			
1405F temperature °C:	25.3		140	5F pressure atm:	0.919			
reference temperature °C:	23.5			erence pressure:	0.923			
difference °C:	-1.8			difference :	-0.004			
As left temperature and pressure (sam	e as above if as fo	und adequate):						
tolerance +	·/- 2.0°C			tolerance	+/- 0,01 atm			
1405F temperature °C:	23.5		140	5F pressure atm: _	0.923			
reference temperature °C:	23.5		refe	erence pressure:_	0.923			
difference °C:	0.0			difference :	0.000			
As found flows:	0.00							
main flow tolerance 3.00 lpm +/- 1405F main flow lpm:	3.00				w tolerance 16.67/13.67			
					otal/aux flow lpm:	16.67		
reference main flow ipm: difference ipm:	0.09			reterence t	otal/aux flow lpm: difference lpm:	0.29		
As left flows (same as above if as found					amerence ipini	0,29		
main flow tolerance 3.00 lpm +/-				total/aux flo	ow tolerance 16.67/13.67	lpm +/- 1.00 lpm/+/- 7		
1405F main flow lpm:	3.00			•	otal/aux flow lpm:	16.67		
reference main flow lpm:	3.06				otal/aux flow lpm:	16.80		
difference lpm:	0.06			. 310101106	difference lpm:	0.13		
ζ <sub>ο</sub> Audit:								
Last K <sub>o</sub> audit date:	20-Mar-15							
1405F K <sub>o</sub> factor:	13125.0							
Measured K <sub>o</sub> factor:	13213.2000							
% difference:	0.67							

External filter part # 10-002387-0100 has been changed and Particulate Sampling filter changhed. 09:12- 11:35 Dryer replacement / post instalation maintenance and leak troubleshooting. 11:40 - 12:35 - TEOM Audit #2





## Met One Instruments

3206 Main St., Suite 105 Regional Service Center Rowlell, TX, 75088

## Wind Turnel Calibration Data Sheet 50.5-6100

MISTELEUP Mödel No.

170,41

Senal No.

MIST Sensor Model No.

50.1B

Serial No.

1263

Average wind speed this lest in imps

Section 1		(Alies)	4 115 (NEW 1913 BAN 1985 1981	945 tm/ 
36.5 0.007 48.0 0.311 198.0 0.311 198.0 0.32 210.0 0.92 210.0 0.655 200.0 0.617	200 0 580 1 191 0 1913 1 2004 0 2004 0 2004 0	4 107 9 108 1 129 4 129 5 118 5 118	0.221 11.19 0.227 11.33 0.221 11.66 0.222 11.19 0.223 11.19 0.224 11.19 0.224 11.19	0,16 -6.02 -0.18 -0.69 -0.11 -0.02

				HE GUARA Vota	William Indian	MS (m) ++ 0 20 M/S
	26	ie.7	2.10	0.012	2.00	A:10
		-15	1.76	· · · · · · · · · · · · · · · · · · ·	2.14	0.06
		i di	2.21	0.042	1.04	
		10:11	2.22		2.07	0.15
		i deli i	2.20	0.042	212	-0.20
			2.71		2.10	0.13
1 2 340 5		e e	222	9,043	2.58	4.04
		'e <b>60</b> - :	2.21	0.043	2.17	- 10,04

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7 12 9 2 2 3 3 4 7

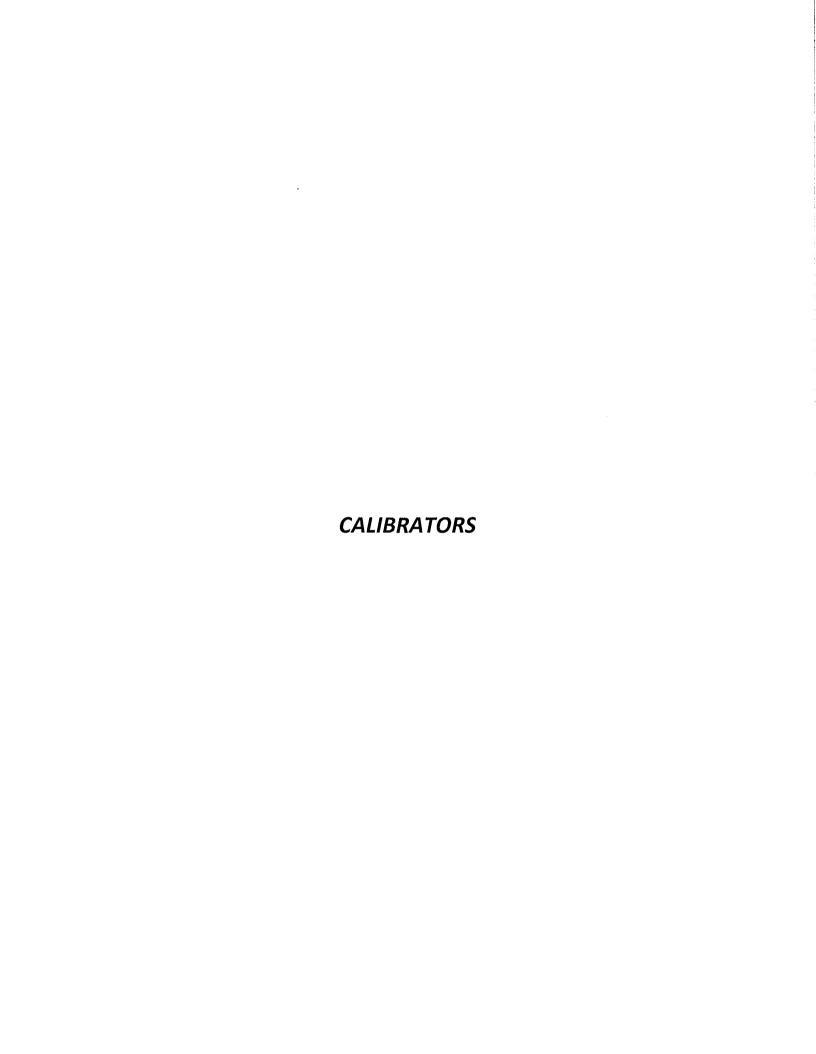
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Sanke Oillen Rende Garagonia (1967)

ice production by

412685

Burn Photen





## Calibrator Performance Audit Oxides Of Nitrogen

File No. 2014-260A

Company	Max	«xam			Operator	Lim	in Li	
	Calibrator			****	<u> </u>			
Make	/Model	Environi	cs 6100		Make	/Model	١	N/A
Serial	Number	47	60	•	Serial	Number	1	V/A
		Decemb	er 2013	- 4	Temper	ature (°C)	١	N/A
NO Cyl	inder S/N	LL42	2475	•	Barometr	ic Pressure		V/A
NO/NOX Co	oncentration	48.5/	48.5	•				
	ution Flow (s	,					•	
	5000		5000	Pt. #3	5000	_		
	as Flow (sco			75. 110				
Pt. #1	80	Pt. #2	40	Pt. #3	20	Gas flows not a	vailable from o	display.
Calibrator F	Flow (sccm)	Calculated (	Conc.(ppm)	Indi	cated Conc.(	ppm)	% Differenc	e vs Audit Gas
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
4980	0.0	0.000	0.000	0.000	0.000	0.000	Limit	± 10%
4993	0.0	0.799	0.799	0.840	-0.001	0.839	5%	5%
4994	0.0	0.399	0,399	0.420	-0.001	0.419	5%	5%
4991	0.0	0,200	0.200	0.211	0.000	0.211	5%	5%
				Absolute A	verage Perce	nt Difference	5%	5%
m (Slope)= 1.0511 <b>0.90</b>				.990 -1.10 6 F.S.	b (Inter	Correlation= m (Slope)= cept % of FS)=		
Flow	O <sub>3</sub> Conc	NO De	crease	NO	NO2	NOX	% Diff. V	s Audit gas
4993	0.000	0,0	00	0.823	-0.001	0.822	$NO_2$	% Diff. Limi
4993	0,480	0,5	30	0.293	0,530	0.823	0	± 10%
4993	0.240	0,2	69	0.554	0,269	0.823	0	± 10%
4993	0.090	0,0	96	0.727	0.097	0,824	0	± 10%
				Absolute A	verage Perce	nt Difference	0	± 10%
LINEAR I	REGRESSI	ON ANALYS	SIS	y=	mx+b (where x=	calculated concen	tration, y=Indica	ted concentration,
	$\underline{NO_2}$		LIM	<u>IITS</u>				
	Correlation=	1.0000		.995				
	m (Slope)=	1.0006		-1.10				
b (Interce	pt % of FS)=	-0.0132	± 3%	o F.S.				
	AENV S	Standards				NO <sub>x</sub> A	ıalyzar	
	Audit Ca					Make/Model	•	co 42i
	Make/Model	Teco	146i		Serial	AMU Number		J 1868
	MU Number	AMU				alibration Date		er 15, 2014
	•				Fu	ıll Scale (ppm)		1.0
CC	MMENTS:							
	Auditor:	Al CI	ark		Date:	Decembe	r 17, 2014	
Onerato	r Signature:	13,00	0,0			McIntyre Cent		_
Operato	. 51811111110.	CHAPA-	Merky mai		Tocanon;	wichityre Cent	or Editionion	_

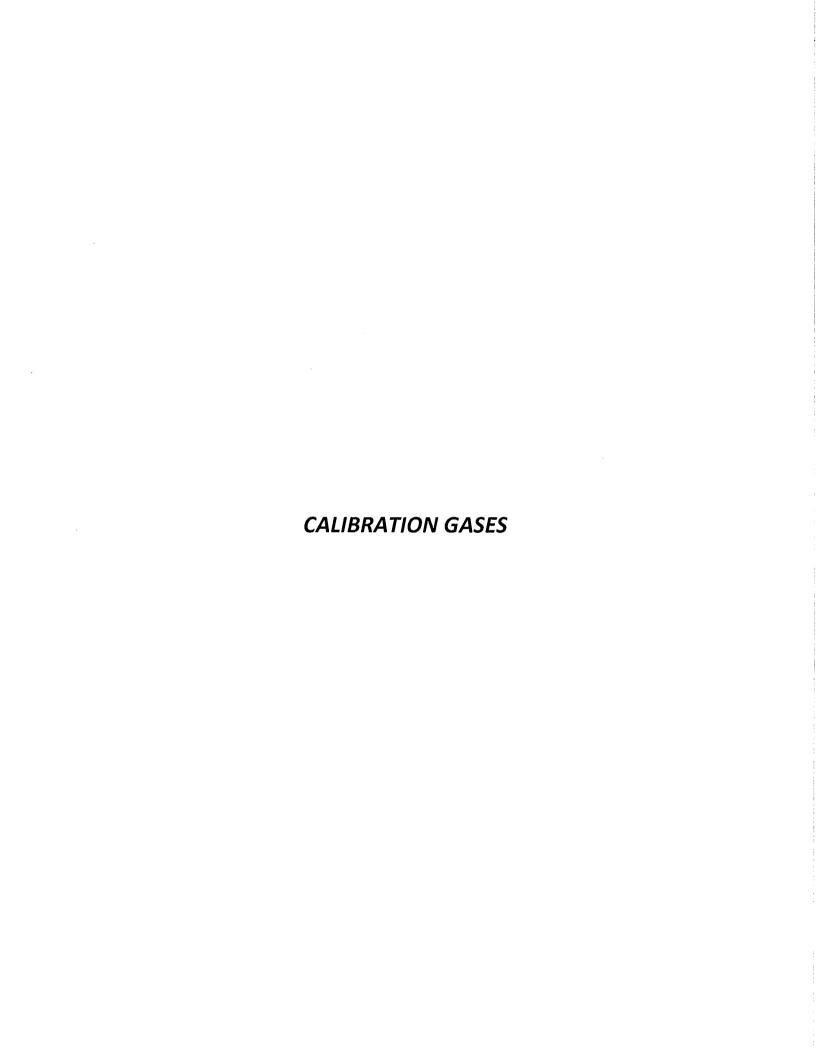


## Calibrator Performance Audit

Sulphur Dioxide (by Cylinder Dilution)

File No. 2014-258A

Company: Max	xam		Operator:	Limin Li	•				
Calibrator	15	, , , , , , , , , , , , , , , , , , ,	Flow Measurem	ent Device:	,				
Make/Model	AF	700 וי	Make/Model	Make/Model N/A					
Serial Number		330	Serial Number		N/A				
Last Verification Date	Oct	2013	Temperature (°C)		. N/A				
SO <sub>2</sub> Cylinder Conc.	ε	50.3	Barometric Pressur	······································	!/A				
SO <sub>2</sub> Cylinder S/N	LL4	12475			<del></del>				
Flow Measurer	nents								
Pt. No. 1 79.5	Pt. No. 2	39.8	Pt. No. 3 19.9	·					
Calibrator Flow	Calc	culated	Indicated	% Dit	fference				
(sccm)		ation (ppm)	Concentration (ppm		% Diff. Limit				
Zero Air		000	0.000	1) Vo Audit Gas	70 DIL. Lillit				
4918			0.798	0%	± 400/				
4960		400	0.398	-1%	± 10%				
4977		200	0,200	0%	± 10%				
40,7	U,		Average Percent Differe		± 10% ± 10%				
	LIN	EAR REGRE	SSION ANALYSIS						
90			mx+b (where x=calculated con	centration, y≕indicated	d concentration)				
$\underline{SO_2}$	4.0000	LIMITS							
Correlation=	1.0000	≥ 0.995							
m (Slope)=	0.9971	0.90-1.10							
b (Intercept % of FS)=	0.0000	$\pm 3\%$ F.S.							
AENV	Standards		$SO_2$	Analyzer					
<b>Audit Calibrator</b>			Make/Model		43C				
Make/Model	R&R N	/IFC 201	Serial/AMU Numbe		AMU 1623				
Serial/AMU Number	AML	J 1690	Last Calibration Dat		15/14				
			Full Scale (ppm)	1	.0				
-		slow to move th	nrough the calibrator. Che	ck for contamnati	on inside				
Auditor:	Al (	Clark	Date: Decer	mber 16, 2014					
Operator Signature:			beaut	<del></del>	Location: McIntyre Center Edmonton				



Form No. Version No. F-GAS-002 1.1

Alberta Bovernment

## Calibration Gas Audit Single Component Cylinder Gas

company;	Max	xam	Oper	ator's Name: Lir	nin Ll
Cylinder#:	BLM002073	Concentration PPM:	49.5	Tolerance(%) 2	Certified By: Air Liquide
Reference (	Calibrator a	nd Gas:		Flow Measurement	Device:
M	lake/Model:	R&R MFC 201		Make/Model	Bios DC2
Ser	ial Number:	AMU 1690			AMU 1659
		March 31, 2015			22,5 C
	-	SO2 Conc.	98,57		690 mmhg
Cylin		CAL016720		~ 1	- Goo Harring
	Iake/Model:	Teco 43C		MU Number: 1623	_
Instrument Settings: 2			Span:	1.028 Range	1.0
ast Calibra	ition:	Date: Mar 31/15	C.F.	1.000 Done By	Al Clark
Calibrator Flo	ows (scem) Gas	Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
5000	0.0	0,000			
4976	82.6	0.801	0.01660	60.242	48.3
4993	41.0	0,396	0,00821	121.780	48.2
4977	20.2	0.193	0.00406	246.386 ge Cylinder Concentration	47.6 48.0
		tration PPM: 49.5	·	•	,
Pe	rcent variance	termination with the second se	1 concentration	COMMENTS:	
Pe Meets Man	rcent variance ufacturer Toler	from Stated: 3.0	<u></u>	COMMENTS:	
Pe Meets Man < =5% Outsid	roent variance ufacturer Toler le Manufacturer	from Stated: 3.0 ance. Use manufacturers stated	s concentration X	COMMENTS:	
Pe Meets Man < =5% Outsid	roent variance ufacturer Toler le Manufacturer	from Stated: 3.0 ance. Use manufacturers stated: Tolerance, Use manufacturers	s concentration X		31, 2015

Alberta

## Calibration Gas Audit Single Component Cylinder Gas

File No. 2014-251CGA

Gas Type:         H2S         Conc.         20.43         B.P.         702 mmhg           Cylinder Number:         CAL015106           Reference Analyzer:           Make/Model:         Teco 45C         Serial/AMU Number:         1624           Instrument Settings:         Zero:         6.4         Span:         1.160         Range:         0.1           Last Calibration:         Date:         Dec15/14         C.F.         1.000         Done By:         Al Clark	Reference Calibrator and Gas:   Flow Measurement Device:	Company: _	Maxx	am	Operator's Name: Limin Li						
Make/Model:         R&R MFC 201         Make/Model:         Blos DC2           Serial Number:         AMU 1690         Serial Number:         AMU 1659           Last Verification Date:         December 15, 2014         Temp.°C:         23.0 °C           Gas Type:         H28         Conc.         20.43         B.P.         702 mmhg           Reference Analyzer:           Make/Model:         Tecc 45°C         Serial/AMU Number:         1624           Instrument Settings:         Zero:         6.4         Span:         1.160         Range:         0.1           Last Calibration:         Date:         Dec15/14         C.F.         1.000         Done By:         Al Clark           Calibrator Flows (seem)         Indicated         Gas Flow/         Concentration         Cylinder           Dilution         Gas         Concentration (PPM)         Dilution Flow         Factor         Concentration           5000         0.0         0.0000         Concentration         Concentration         Concentration           5092         38.5         0.0754         0.00755         132.442         10.0           5092         18.0         0.0349         0.0353         282.889         9.9	Make/Model:         R&R MFC 201         Make/Model:         Blos DO           Serial Number:         AMU 1690         Serial Number:         AMU 16           Last Verification Date:         December 15, 2014         Temp.°C:         23.0 C           Gas Type:         H28         Conc.         20.43         B.P.         702 mm           Cylinder Number:         CAL015106           Reference Analyzer:           Make/Model:         Teco 45C         Serial/AMU Number:         1624           nstrument Settings:         Zero:         6.4         Span:         1.160         Range:         0.1           Last Calibration:         Date:         Dec15/14         C.F.         1.000         Done By:         AI Cla           Calibrator Flows (seem)         Indicated         Gas Flow/         Concentration         Cylinder Concentration         Cylinder Concentration         Cylinder Concentration           5000         0.0         0.0000         O.0000         Factor         Concentration           5092         18.0         0.0349         0.00353         282.889         9.9           5068         9.2         0.0178         0.00182         550.652         9.8           Average Cylinder	Cylinder #:	LL36837	Concentration PPM:	10,0	Tolerance(%) 2	_Certified By: _Air Liquid				
Serial Number: AMU 1690   Serial Number: AMU 1659	Serial Number:	Reference C	alibrator a	nd Gas:		Flow Measuremen	t Device:				
Serial Number:   AMU 1690   Serial Number:   AMU 1659	Serial Number:   AMU 1690   Serial Number:   AMU 1680   AMU 1690   AMU 1690   Temp. °C:   23.0 °C:   23.0 °C:   20.43   B.P.   702 mm   Cylinder Number:   CAL015106   CAL015106   CAL015106   B.P.   702 mm   Cylinder Number:   CAL015106   CAL015	Ma	ke/Model: _	R&R MFC 201		Make/Model	l: Bios DC2				
Last Verification Date:   December 15, 2014   Temp. °C:   23.0 C	Last Verification Date:					Serial Number	:: AMU 1659				
Gas Type:         H28         Conc.         20,43         B.P.         702 mmhg           Cylinder Number:         CAL015106           Reference Analyzer:           Make/Model:         Teco 45C         Serial/AMU Number:         1624           Instrument Settings:         Zero:         6.4         Span:         1.160         Range:         0.1           Last Calibration:         Date:         Dec15/14         C.F.         1.000         Done By:         Al Clark           Calibrator Flows (seem)         Indicated         Gas Flow/Dilution Flow         Concentration         Cylinder           Dolution         Gas         Concentration (PPM)         Dilution Flow         Factor         Concentration           5000         0.0         0.0000         O.0000         O.000	Cylinder Number:   CAL015106					Temp.°C	23.0 C				
Cylinder Number:   CAL015106     CAL015106     CAL015106     CAL015106     CAL015106     CAL015106     CAL015106     CAL015106     CAL015106   CAL015106   CAL015107   CAL01	Reference Analyzer:   Make/Model: Taco 45C   Serial/AMU Number: 1624				20,43	B,F	), 702 mmhg				
Make/Model:         Teco 45C         Serial/AMU Number:         1624           Instrument Settings:         Zero:         6.4         Span:         1.160         Range:         0.1           Last Calibration:         Date:         Dec15/14         C.F.         1.000         Done By:         Al Clark           Calibrator Flows (seem)         Indicated         Gas Flow/         Concentration         Cylinder Concentration           Dilution         Gas         Concentration (PPM)         Dilution Flow         Factor         Concentration           5000         0.0         0.0000	Make/Model:         Teco 45C         Serial/AMU Number:         1624           Instrument Settings:         Zero:         6.4         Span:         1.160         Range:         0.1           Last Calibration:         Date:         Dec15/14         C.F.         1.000         Done By:         Al Cla           Calibrator Flows (scem)         Indicated         Gas Flow/         Concentration         Cylind           Dilution         Gas         Concentration (PPM)         Dilution Flow         Factor         Concentration           5000         0.0         0.0000										
Calibration   Date   Dec15/14   C.F.   1.000   Done By:   Al Clark	Calibration   Date   Dec15/14   C.F.   1.000   Done By:   Al Class   Calibration   Date   Dec15/14   C.F.   1.000   Done By:   Al Class   Calibrator Flows (seem)   Indicated   Gas Flow/   Concentration   Cylind   Concentration   Concent		•								
Calibration:         Date:         Dec15/14         C.F.         1.000         Done By:         Al Clark           Calibrator Flows (seem)         Indicated         Gas Flow/         Concentration         Cylinder Concentration           Dilution         Gas         Concentration (PPM)         Dilution Flow         Factor         Concentration           5000         0.0         0.0000	Calibration:         Date:         Dec15/14         C.F.         1.000         Done By:         Al Class           Calibrator Flows (seem)         Indicated         Gas Flow/Dilution Flow         Concentration         Cylind Flow           5000         0.0         0.0000         Factor         Concentration Concentration           5099         38.5         0.0754         0.00755         132.442         10.0           5092         18.0         0.0349         0.00353         282.889         9.9           5086         9.2         0.0178         0.00182         560.652         9.8           Average Cylinder Concentration:         9.9           Previous Stated Concentration PPM:         10.0           Percent variance from Stated:         1.1           Meets Manufacturer Tolerance. Use manufacturers stated concentration         X         COMMENTS:           < =5% Outside Manufacturer Tolerance. Use manufacturers concentration										
Calibrator Flows (seem)         Indicated Concentration (PPM)         Gas Flow/ Dilution Flow Factor         Concentration Concentration           5000         0.0         0.0000         0.00755         132.442         10.0           5092         18.0         0.0349         0.00353         282.889         9.9           5066         9.2         0.0178         0.00182         550.652         9.8           Average Cylinder Concentration:         9.9	Calibrator Flows (seem)   Indicated   Gas Flow/   Concentration   Cylind	Instrument Se	ettings:	Zero: 6.4		.,					
Dilution         Gas         Concentration (PPM)         Dilution Flow         Factor         Concentration           5000         0.0         0.0000	Dilution   Gas   Concentration (PPM)   Dilution Flow   Factor   Concentration	Last Calibrat	ion;	Date: <u>Dec15/14</u>	C.F.	1,000 Done By	y: Al Clark				
5000         0.0         0.0000         0.00754         0.00755         132.442         10.0           5092         18.0         0.0349         0.00353         282.889         9.9           5066         9.2         0.0178         0.00182         550.652         9.8           Average Cylinder Concentration:         9.9	5000         0.0         0.0000         132.442         10.0           5099         38.5         0.0754         0.00755         132.442         10.0           5092         18.0         0.0349         0.00353         282.889         9.9           5066         9.2         0.0178         0.00182         560.652         9.8           Average Cylinder Concentration:         9.9           Previous Stated Concentration PPM:	· · · · · · · · · · · · · · · · · · ·		****			· •				
5092         18.0         0.0349         0.00363         282.889         9.9           5066         9.2         0.0178         0.00182         550.652         9.8           Average Cylinder Concentration:         9.9	5092   18.0   0.0349   0.00353   282.889   9.9     5066   9.2   0.0178   0.00182   560.652   9.8     Average Cylinder Concentration:   9.9     Previous Stated Concentration PPM:   10.0     Percent variance from Stated:   1.1     Meets Manufacturer Tolerance, Use manufacturers stated concentration   X   COMMENTS:     <=5% Outside Manufacturer Tolerance, Use manufacturers concentration   COMMENTS:	-									
5066         9.2         0.0178         0.00182         550.652         9.8           Average Cylinder Concentration:         9.9	5066 9.2 0.0178 0.00182 560.652 9.8  Average Cylinder Concentration: 9.9  Previous Stated Concentration PPM: 10.0  Percent variance from Stated: 1.1  Meets Manufacturer Tolerance. Use manufacturers stated concentration X COMMENTS:  <=5% Outside Manufacturer Tolerance. Use manufacturers concentration	5099	38.5	0.0754	0.00755	132.442	10,0				
Average Cylinder Concentration: 9.9	Average Cylinder Concentration:  9.9  Previous Stated Concentration PPM: 10.0  Percent variance from Stated: 1.1  Meets Manufacturer Tolerance. Use manufacturers stated concentration X COMMENTS:  <=5% Outside Manufacturer Tolerance. Use manufacturers concentration	5092	18.0	0.0349	0.00353	282.889					
	Previous Stated Concentration PPM: 10.0  Percent variance from Stated: 1.1  Meets Manufacturer Tolerance. Use manufacturers stated concentration X COMMENTS: <=5% Outside Manufacturer Tolerance. Use manufacturers concentration	5066	9,2	0.0178							
Percent variance from Stated: 1.1	Meets Manufacturer Tolerance, Use manufacturers stated concentration X COMMENTS:  <=5% Outside Manufacturer Tolerance, Use manufacturers concentration	Dilution   5000   5099   5092   5066   Previous S	Gas 0.0 38.5 18.0 9.2 tated Concer	Concentration (PPM)  0.0000  0.0754  0.0349  0.0178  attration PPM: 10.0	0.00755 0.00353 0.00182	132.442 282.889 550.652	10.0 9.9 9.8				
	<=5% Outside Manufacturer Tolerance. Use manufacturers concentration	34 . 34	6 (			COMMENTE.					
V COMPERITE.	hay a mini to make the same of	Meets Man			——————————————————————————————————————	COMMENTS:	· · · · · · · · · · · · · · · · · · ·				
Harmoni Paris Carlos Ca	> 5% Outside Manufacturer Tolerance. DO NOT USE this cylinder!	****									
<=5% Outside Manufacturer Tolerance. Use manufacturers concentration			14		SR thus cylinder!	1					
Harmoni Paris Carlos Ca	Auditor: Al Clark Date: December 16, 2014		utside Manufa	icturer Tolerance, DO NOT U	22 mis of missi						



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## CERTIFICATE OF ANALYSIS Primary Standard

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Gravimetric 03/23/2014 03/26/2017

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Mettler-Toledo Analytical Balance-ID2ax/USA---Hewlett-Packard (Agilent)-8890---GC-FID

Cylinder Style Cylinder Pressure (\$70° Cylinder Volume Valve Outlet Connection (40) 2200 - Alg 220 - Mig ega ati

AVECES ACTOR ESTABLISHED TO

Test de Hiryan M

Form No. Version No F-GAS-003 1.1



## Calibration Gas Audit

Company,	Max	oxam	,	Operators nar	ne: Limir	ı Li	
				Tolerance (%)_	2 Certified By:	Air Liq	uide
Reference (	Calibrator a	ınd Gas:	<del>liga digita digita digita</del>		Flow Measureme	ent Device:	
Make/	'Model	Teco 1	1461		Make/Model	Bios Ç	C2
Serial 1		AMU 1			Serial Number		
Last Verifi	cation Date	March 31	, 2015		Temp.°C	22.5	
		NO	, ,	48.79	Ī	690 mi	•
	-	CAL018			•	And the state of t	
Reference &	•	Teco ·	<b>42</b> i		Serial/AMU	J Number:	1868
Instrument S	Settings -	Zero;	4.2	Sp	an: 1.008	_	
Last Calibra	• =	•	Mar 31/15	• •	.F. 1.000	-	
Calibrator Flo		Indicated Cor	· · · · · · · · · · · · · · · · · · ·	Gas Flow/	Concentration	Cylinder Cor	
Dilution 5000	Gas 0.0	0.000	0.000	Dilution Flow	Factor	NO	NOX
4976	82.6	0.855	0.848	0.01660	60.242	51,5	51.1
4993	41.0	0.427	0.421	0.00821	121.780	52.0	51,3
	20.2	0.213	0.209	0.00406	246.386	52.5	51,5
4977				Average Cylind	ler Concentration:	52.0	51.3
4977							
4977			<u>NO</u>		<u>NOx</u>		
	Stated Concer	ntration PPM: _			<u>NOx</u> 50.6		
Previous s	Stated Concer proent variance	_			<del></del>		
Previous S Pe Cyl Meets Mar	ercent variance linder gas to nufacturer Tolei	e from Stated: _ Dierances bas rance. Use manu	50.6  2.8  sed on NO facturers stat	ted concentration	50.6  1.4  COMMENTS:		
Previous S Pe Cyl Mects Mar <=5% Outside	ercent variance linder gas to aufacturer Toles de Manufacture	e from Stated: _ olerances bas rance. Use manu or Tolerance, Use	2.8 sed on NO facturers state manufacture	ted concentration ers concentration	50.6	n SO2 in cylinder	
Previous S Pe Cyl Meets Mar <=5% Outside	ercent variance linder gas to aufacturer Toles de Manufacture	e from Stated: _ olerances bas rance. Use manu or Tolerance, Use	50.6  2.8  Sed on NO facturers state manufacture c. DO NOT U	ted concentration	50.6  1.4  COMMENTS:  X Contains 49,5 ppn	n SO2 in cylinder	

## APPENDIX III CHAIN OF CUSTODY



Client: Lakeland Industry & Community Association

## Maxxam Analytics - Air Services Group Project Chain of Custody

Project #: 2833-2015-05-31- C

Site: St. Lin.	a Site	Contact: Mike Bis	aga
QA Check Complete	insodopla	Date	3-June-2015
QA Check Review	modmble	Date	3-June-2015
Report Complete	wolmba	Date	4 - June - 2015
Report Reviewed	E. Tangang	Date	06-Jun-2015
Report Shipped		Date	
Notes			



## AMBIENT AIR MONITORING MONTHLY DATA REPORT

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION ELK POINT AIRPORT SITE

JOB #:196-2015-05-93- C

**MAY 2015** 

Prepared for:

## **LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

BOX 8237, 5107W - 50 STREET BONNYVILLE, ALBERTA T9N 2J5

**Attention: MIKE BISAGA** 

DATE:

June 24, 2015

Prepared by:

Wunmi Adekanmbi, M.Sc.

Project Manager Assistant, Source Testing, Maxxam Analytics

Reviewed by:

Lily Lin, B.Sc

Senior Project Manager, Air Services, Maxxam Analytics



## **SUMMARY**

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

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM 2.5.

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

PM 2.5: Two 24-hr contraventions were recorded this month: concentration of 31 ug/m3 on May 25 and concentration of 41 ug/m3 on May 26. AE Reference numbers 298738 and 298790 respectively.

All Parameters: Hourly maximum data collected on May 5 at hour 3 were invalidated as the analyzers were recovering from a power outage.

H2S: Maxxam-owned Thermo 450i analyzer was replaced with LICA-owned API 101E analyzer. 18 hours of data are invalid during the time the analyzer was stabilizing.

The summary of results is presented on the following pages.

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

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



## **Monthly Continuous Data Summary**

Lakeland Indu	stry & C	ommun	ity Asso	ciation			MAXIMUM VALUES						ODERATIONAL
Elk Point Airpo	rt Site					· · ·		1-HOUR			24-H0	OUR	OPERATIONAL TIME
PARAMETER	T	CTIVES	EXCEE	DENCES	MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED	WIND DIRECTION	READING	DAY	(%)
	1-HR	24-HR	1-HR	24-HR	AVERAGE				(KPH)	(DEGREES)			
SO2 (PPB)	172	48	0	0	0	2	2, 3	23,0	9.3 11.2	w w	0.9	3	100.0
H2S (PPB)	10	3	0	0	0	2	VAR	VAR	VAR	VAR	1.0	20	97.6
THC (PPM)	-	-	-	-	2.4	7.2	23	6	2.6	WNW	3.0	VAR	99.9
CH4 (PPM)	-	-	-	-	2.4	7.0	23	6	2.6	WNW	3.0	VAR	99.9
NMHC (PPM)	-	-	-	-	0.01	0.30	27	21	31.2	N	0.04	26	99.9
NO2 (PPB)	159	_	0	-	6.0	34.4	23	2	4.1	wnw	15.1	19	100.0
NO (PPB)	-	-	-	-	1.5	57.7	23	6	2.6	WNW	8.3	23	100.0
NOX (PPB)	-	_	-	-	7.4	85.5	23	6	2.6	WNW	18.2	19	100.0
O3 (PPB)	82	_	0	-	37	70	25	16	10	NW	47.7	25	100.0
PM2.5 (UG/M3)	-	30	-	2	8.2	269.0	27	21	31.2	N	41.4	26	99.5
VECTOR WS (KPH)	-	-	-	-	10.3	33.9	2	16	-	NW	21.9	5	100.0
VECTOR WD (DEG)	-	-	-	-	ENE	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS



## **Exceedence Summary Report**

SO<sub>2</sub> 1- Hour Exceedences
No Exceedences Recorded During the Month

SO<sub>2</sub> 24- Hour Exceedences
No Exceedences Recorded During the Month

H<sub>2</sub>S 1- Hour Exceedences
No Exceedences Recorded During the Month

H<sub>2</sub>S 24- Hour Exceedences No Exceedences Recorded During the Month

NO<sub>2</sub> 1- Hour Exceedences

No Exceedences Recorded During the Month

## PM2.5 24- Hour Exceedences

DATE	READING (ug/m3)	WS (kph)	WD (deg)
MAY 25	31	8.3	wsw
MAY 26	41	10.6	N



## Volatile Organics (VOCs) Data Summary

Sample Collected Date	Maximum/reading (PPB)	Volatile Organic Compound
MAY 6, 2015	2.60	ACETONE
MAY 12, 2015	6.90	ETHANOL
MAY 18, 2015	7.60	ACETONE
MAY 24, 2015	7.20	ACETONE
MAY 30, 2015	3.10	ACETONE

Note: NA



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	i Semi-Volatile Organic
MAY 6, 2015	0.05	PHENANTHRENE
MAY 12, 2015	0.10	2-METHYLNAPHTHALENE
MAY 18, 2015	0.16	2-METHYLNAPHTHALENE
MAY 24, 2015	0.10	PHENANTHRENE
MAY 30, 2015	0.06	PHENANTHRENE

Note: NA



## Volatile Organics (VOCs) Data Summary - NMHC Canister System

Sample Collected Date	Maximum reading (PPB)	Võlatile Organic Compound
MAY 22, 2015	46.9	ACETONE

Note: NA



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### 1.0 Discussion

This monthly report consists of data for parameters SO2, H2S, THC, CH4, NMHC, NOx, NO, NO2, O3, PM2.5, WS and WD. It also includes results for non-continuous parameters VOC, PAH and NMHC canister.

Sample filters for all continuous air monitors are changed before the calibration is started. The sample manifold is cleaned during the site visit on a monthly basis.

Control checks, consisting of zero and span of the analyzer are conducted on a daily basis on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinder) is used for zero checks and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibration is done a minimum of once a month for each continuous air monitor. In addition calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Hourly/minute data have been reviewed based on daily zero/span results and multi-points calibration results. Data may be considered as invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor (greater than 15%).

Hourly data is corrected using daily zero information.

Trailer inspection was conducted on May 22.

## **SULPHUR DIOXIDE (SO2)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 19. Hourly maximum data collected on May 5 at hour 3 was invalidated as the analyzer was recovering from a power outage.



## **HYDROGEN SULPHIDE (H2S)**

The Maxxam-owned Thermo 450i analyzer was replaced with the LICA-owned API 101E analyzer that was brought to Maxxam shop for maintenance. The Thermo 450i removal calibration was performed on May 20 and the API 101E was installed. The analyzer was allowed time to stabilize overnight and the installation calibration was performed on May 21. The analyzer drifted outside acceptance limits after the calibration on May 21. An as found points check was performed on May 22. The result was within acceptance limits. 18 hours of data are not valid during the time the analyzer was stabilizing. Hourly maximum data collected on May 5 at hour 3 was invalidated as the analyzer was recovering from a power outage.

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

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 19. Hourly data collected on May 5 at hour 4 and hourly maximum data collected on May 5 at hour 3 and hour 4 were invalidated as the analyzer was recovering from a power outage.

## **NITROGEN DIOXIDE (NO2)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 19. Hourly maximum data collected on May 5 at hour 3 was invalidated as the analyzer was recovering from a power outage.

### OZONE (O3)

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 20. Hourly maximum data collected on May 5 at hour 3 was invalidated as the analyzer was recovering from a power outage.

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

Two Teom audits were performed this month: one was completed on May 4, and the other audit was performed on May 19. The inlet filter, the FDMS filter and the dryer were replaced on May 19. Data was corrected using Alberta air quality guideline. If the data was between 0 to -3 ug/m3, the data was corrected to 0 ug/m3. If the data was below -3 ug/m3, the data was invalidated. 4 hours of data were invalidated as the data were below -3 ug/m3 this month.

Two 24-hr contraventions were recorded this month: concentration of 31 ug/m3 on May 25 and concentration of 41 ug/m3 on May 26. AE Reference numbers 298738 and 298790 respectively.

### WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was coming from.

The wind system was working well throughout the month. Hourly maximum data collected on May 5 at hour 3 was invalidated as the analyzer was recovering from a power outage.





### **VOC SAMPLES**

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the VOCs were reported as ppb in 2 decimal places.

Samples were collected on May 6, 12, 18, 24 and 30. They were sent to the lab for analysis. Results are included in this report.

### **PAH SAMPLES**

The sampler was programmed to run for 24 hours, and, every 6 days per sample cycle. The values for the PAHs were reported as µg in 2 decimal places.

Samples were collected on May 6, 12, 18, 24 and 30. They were sent to the lab for analysis. Results are included in this report.

### NMHC CANISTER SAMPLES

The sampler is triggered when the 5-minute average concentration of NMHC is above 0.30ppm. One canister was collected this month: concentration of 0.3 ppm on May 22 at 6:25.



### 2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling personnel was Alexander Yakupov.

## 3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD1989 and AMD2006, except PM 2.5.

Two 24-hr contraventions were recorded for PM 2.5 this month: concentration of 31 ug/m3 on May 25 and concentration of 41 ug/m3 on May 26. AE Reference numbers 298738 and 298790 respectively.

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

### 4.0 Calculations and Results

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



### 5.0 Methods and Procedures

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

Maxxam AIR SOP-00001 - Methane, Non-Methane Hydrocarbon Analyzer

Monitoring

Maxxam AIR SOP-00208: RM Young Monitor Calibration

Maxxam AIR SOP-00209: Ambient H2S Monitoring

Maxxam AIR SOP-00211: Ambient SO2 Monitoring

Maxxam AIR SOP-00212: Ambient O3 Monitoring

Maxxam AIR SOP-00213: Ambient NO/NO2/NOx Monitoring

Maxxam AIR SOP-00215: Teom Operation

Maxxam AIR SOP-00225: The Collection of VOCs in Ambient Air Using Canister

and Xontech

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Sulphur Dioxide - API 100E UV Flourescent Analyzer
Hydrogen Sulphide - Thermo 450i and API 101E UV Flourescent Analyzers
Total Hydrocarbons - Thermo 55i FID Analyzer
Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
Ozone - Thermo 49i Photometric Analyzer
Particulate Matter (PM2.5) - R&P 1405F Teom Unit
Wind System - RM Young Unit
Datalogger - ESC 8832

## APPENDIX I CONTINUOUS MONITORING DATA RESULTS



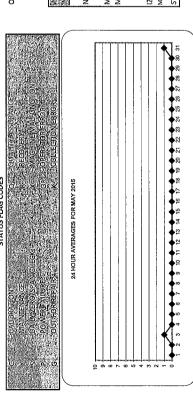


## SULPHUR DIOXIDE (SO2) hourly averages in ppb

MIST

RDGS.	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	54	24	24	24	24	24	24
AVG.	ō	Ö	0.9	ö	ö	ö	ö	ö	õ	ö	õ	ö	ö	ō	ö	ō	ö	ō	Ö	ö	ö	ö	o	ō	ö	ö	0	ö	ō	ö	ö
MAX	0	7	7	0	0	0	0	Н	0	0	0	0	0	0	0	0	0	0	Н	0	0	0	1	0	0	0	1	0	0	0	1
0:00	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0	0
23.00	s	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0
22:00	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0
21.00	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0
20:00	0	0	₩	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0
19:00	0	0	Н	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0
18:00	0	0	7	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0
17:00	0	0	Н	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0
16:00	0	0	Н	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	U	0	0	0	0	0	0	0	0	0	0	0	s
15:00	0	0	1	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	U	0	0	0	0	0	0	0	0	0	0	0	7
14.00	0	0	1	0	0	0	0	0	0	s	0	0	0	0	0	0	0	0	U	0	0	0	0	0	0	0	0	0	0	0	Н
13:00	0	0	1	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0	U	0	0	0	0	0	0	0	0	0	0	0	₽
12,00	0	0	1	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	U	0	0	0	0	0	0	0	0	0	0	0	₽
11:00	0	0	Н	0	0	0	0	Н	0	0	0	0	s	0	0	0	0	0	U	0	0	0	0	0	0	0	0	0	0	0	н
10.00	0	0	1	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	н
00:6	0	0	1	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	Н
8.00	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	s	0	0	0	0	0	0	0	0	0	0	0	₽
7.00	0	0	T	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	7	0	0	0	7	0	0	0	0	0	0	0	Н
6:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	0	0	1
5.00%	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	s	0	0	0	0	0	0	0	0	0	0	Н
4.00	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0	0	7
3.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	1	0	0	0	0	0	0	0	1
2.00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0	0	0
1:00	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s	0	0	0	0	0	0	0	0
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## STATUS FLAG CODES

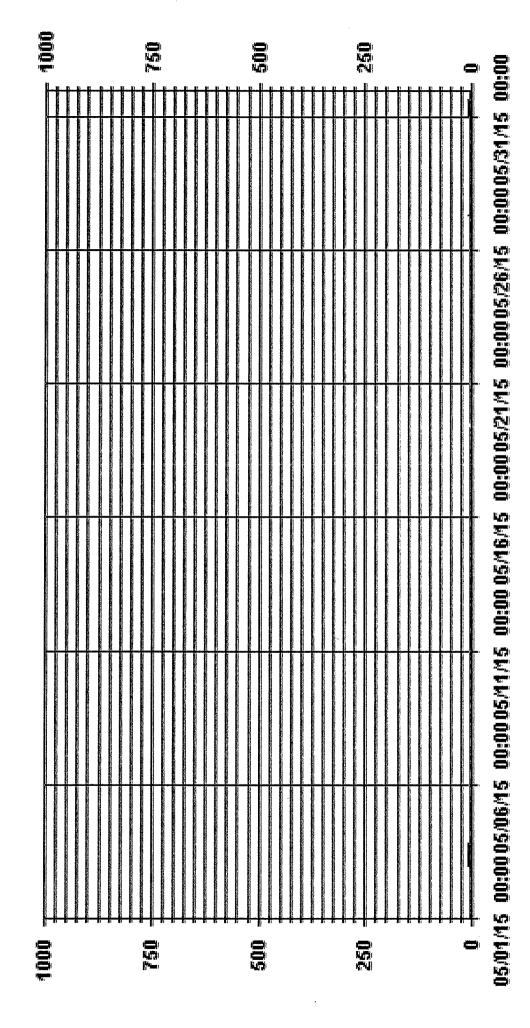


OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: E HER TOTAL PEBRICOGRAPHICA PEBRICOGRAPHICA PER TOTAL P

NUMBER OF 24-HR EXGEEDENCE	S		0					
NUMBER OF NON-ZERO READINGS:	.: 6S:		41					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		2 0.9	PPB PPB	PPB @ HOUR(S) PPB	23,0	ON DAY(S) ON DAY(S) VAR-VARIOUS	0 W	2 E E, E
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	¥ 0	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	: TIME:		744 100.0	HRS %
STANDARD DEVIATION:	0.25			MONTHLY AVERAGE:			0	PPB

ût Hour Averages



- LICA35 SO2\_ PPB



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION FILP point dirnort Site - MAY 2015

Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C

SULPHUR DIOXIDE MAX instantaneous maximum in ppb

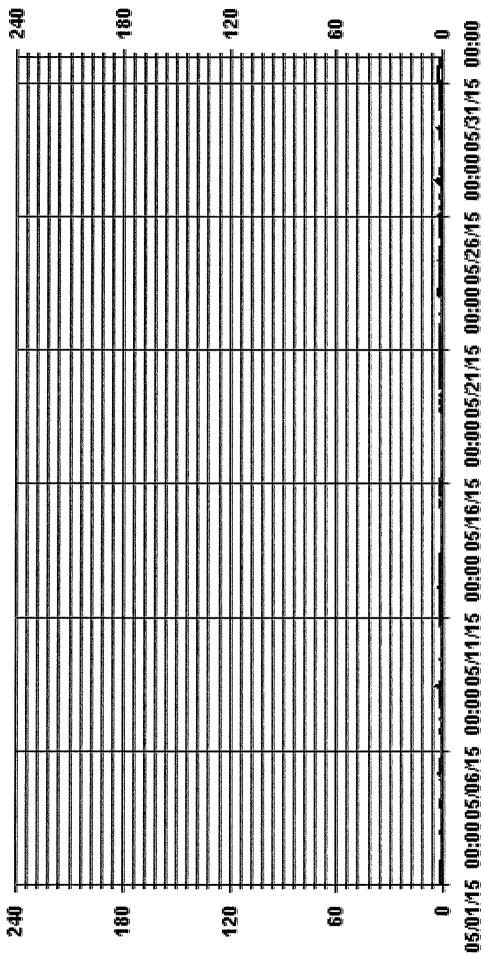
MST

RDGS.	24	54	54	54	ន	24	24	24	24	54	54	24	54	54	54	54	24	54	54	24	54	24	24	24	74	54	24	54	24	54	54		
24-HOUR AVG.	6.0	0.0	0.1	0.2	0.7	0.1	0.3	0.8	0.1	0.3	170	1.0	0.4	0.0	0.7	0.3	0.0	0.1	1.0	6.0	1.0	0.1	1.1	1.0	0.5	0.5	9.0	0.0	0.3	6.0	1.6		
MAX.	1	7	H	H	2	7	1	m	1	1	1	7	1	0	Ţ	1	0	Ţ	7	7	H	7	7	7	7	7	m	7	7	1	7		
00:00	0	₽	H	+	0	0	H	0	0	1	7	₽	0	0	1	0	0	0	1	T	Ţ	0	s	0	1	0	0	г	0	1	1	1	,
23:00	s	0	0	0	0	0	Н	0	0	7	₽	Н	0	0	1	0	0	0	7	7	Н	0	Н	s	0	0	0	0	0	7	1	1	
22 00	1	s	0	0	0	0	H	0	0	7	H	+1	0	0	0	0	0	0	+	7	+	0	н	Н	s	0	Н	0	0	⊣	H	7	
21.00	Ţ	0	s	0	0	1	1	0	0	Н	7	H	0	0	H	0	0	7	+	H	H	0	7	Н	7	s	7	0	0	H	H	7	
20.00	1	0	0	s	0	1	ч	0	0	0	1	ч	0	0	Ţ	0	0	0	1	1	7	0	1	1	1	7	s	0	0	1	1	1	
19:00	1	0	0	0	s	Н	H	0	0	Н	ч	Н	0	0	-	0	0	1	Н	н	ч	0	1	ч	0	7	1	s	0	7	7	1	
18.00	Ţ	0	0	0	7	s	Н	0	0	Н	н	H	0	0	∺	0	0	0	н	н	ч	0	H	н	0	ч	0	0	s	1	1	1	
17:00	7	0	0	0	Н	0	s	0	0	0	Н	7	0	0	∺	0	0	0	H	H	H	0	ч	ч	ч	0	1	0	0	s	1	1	
16:00	1	0	0	0	H	0	0	s	0	0	н	П	0	0	1	0	0	0	U	н	П	0	ч	Н	ч	0	1	0	0	1	s	1	
15:00	н	0	0	0	ч	0	0	T	s	0	н	۲	0	0	1	0	0	0	U	۲	1	0	1	۲	۲	0	0	0	0	1	2	2	
14:00	н	0	0	0	7	0	0	ч	0	s	ч	1	0	0	0	0	0	0	ں	H	Н	0	П	H	Н	0	0	0	0	7	2	7	
13:00	н	0	0	0	Н	0	0	н	0	0	s	1	0	0	0	0	0	0	U	7	H	0	1	ч	ч	0	0	0	0	1	2	2	
12:00	н	0	0	0	H	0	0	7	1	0	7	s	0	0	Н	0	0	0	U	н	Н	0	П	H	0	0	0	0	0	н	2	2	
11:00	н	0	0	0	ч	0	0	m	Ħ	0	7	7	s	0	0	0	0	0	U	н	ч	Н	П	1	П	7	H	0	0	0	7	e	
10:00	н	0	0	0	П	0	0	1	0	0	1	1	7	s	Н	0	0	0	0	0	н	н	П	2	1	н	W	0	0	н	2	m	
9.00	H	0	0	0	1	0	0	1	0	0	1	7	1	0	s	0	0	0	H	0	1	0	Ţ	1	0	7	2	0	7	ч	7	7	
8:00	Н	0	0	0	∺	0	0	н	0	0	П	Н	Н	0	Н	s	0	0	s	П	П	0	7	7	0	H	2	0	H	H	2	7	
7.90	1	0	0	Н	Н	0	0	ч	0	0	1	7	н	0	⊣	0	s	0	s	н	н	0	2	+	н	0	н	0	0	н	2	7	
90.9	1	0	0	7	1	0	7	ч	0	0	1	~	7	0	H	н	0	s	7	T	0	0	Н	Н	0	0	0	0	0	H	7	2	
5:00	H	0	0	0	7	0	0	П	0	0	П	7	7	0	-	7	0	0	S	Н	7	0	T	H	0	0	0	0	0	H	2	2	
4.00	н	0	0	ч	æ	0	0	Н	0	0	П	Н	H	0	0	Н	0	0	Н	S	-	0	1	7	0	Н	0	0	7				
3.00	H	0	0	0	0	0	0	₽	0	0	П	7	1	0	0	H	0	0	H	н	S	0	7	H	0	н	0	0	7	Н	2	2	
2.00	0	0	7	٦	0	0	0	↔	0	0	Н	7	7	0	0	7	0	0	7	H	1	S	₩	1	0	7	0	0	0	1	1	2	
1-90	0	0	H	0	0	0	0	ন জুক	0	0		다 201	77 O	<b>0</b>	0	г П	0	0		H	<b>~</b>	rl	S	-H	0	H	0	0	ri Terr	0	1	1	_
HOUREND	DAY			<b>,</b>	5	9	4	8	6	10	TI.	- 12	. 13	14	12.	16	-71	13	19	. 20	21	. 22	. 23	24	. 25	26	27	28	. 53	30	. 31	HOURLY MAX	

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OUTSTAND STAND			ć						
INDINIBER OF INDIN-ZERO READINGS:			247						
MAXIMUM INSTANTANEOUS VALUE:			m	ВВ	@ HOUR(S)	10,9	ON DAY(S)		8, 27
						VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME:	8	HRS		OPERATIC	OPERATIONAL TIME:			743	HRS
MONTHLY CALIBRATION TIME:	9	ES.							
STANDARD DEVIATION:	0.58								

Of Hour Averages



SO2MAX - UCA35

## LICA-BIK SO2\_ / WDR Joint Frequency Distribution (Percent)

May 2015

## Distribution By % Of Samples

Logger Id : 35 Site Name : LICA-ELK Parameter : SO2 Units : PPB

Wind Parameter : WDR Instrument Height : 10 Meters	
Parameter: SO2	
Parameter : Units :	

Direction

N NNE NE ENE	NE ENE			м	ESE	SE	SSE	Ø	SSW	SW	WSW	¥	WNW	NW	NNW	Freq
6.25 6.53 4.11 9.09 11.36 14.91 6.67	4.11 9.09 11.36 14.91	11.36 14.91	14.91		6.67	_	7.52	4.11	2.13	2.13	3.12	4.54	6.10	6.25	5.11	100.00
00. 00. 00. 00. 00. 00.	00. 00. 00. 00.	00. 00.	00.		Õ.	0	00.	00.	00.	00.	00.	00.	00.	00.	00.	00.
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6.25 6.53 4.11 9.09 11.36 14.91 6.67	4.11 9.09 11.36 14.91	11.36 14.91	14.91		6.67		7.52	4.11	2.13	2.13	3.12	4.54	6.10	6.25	5.11	
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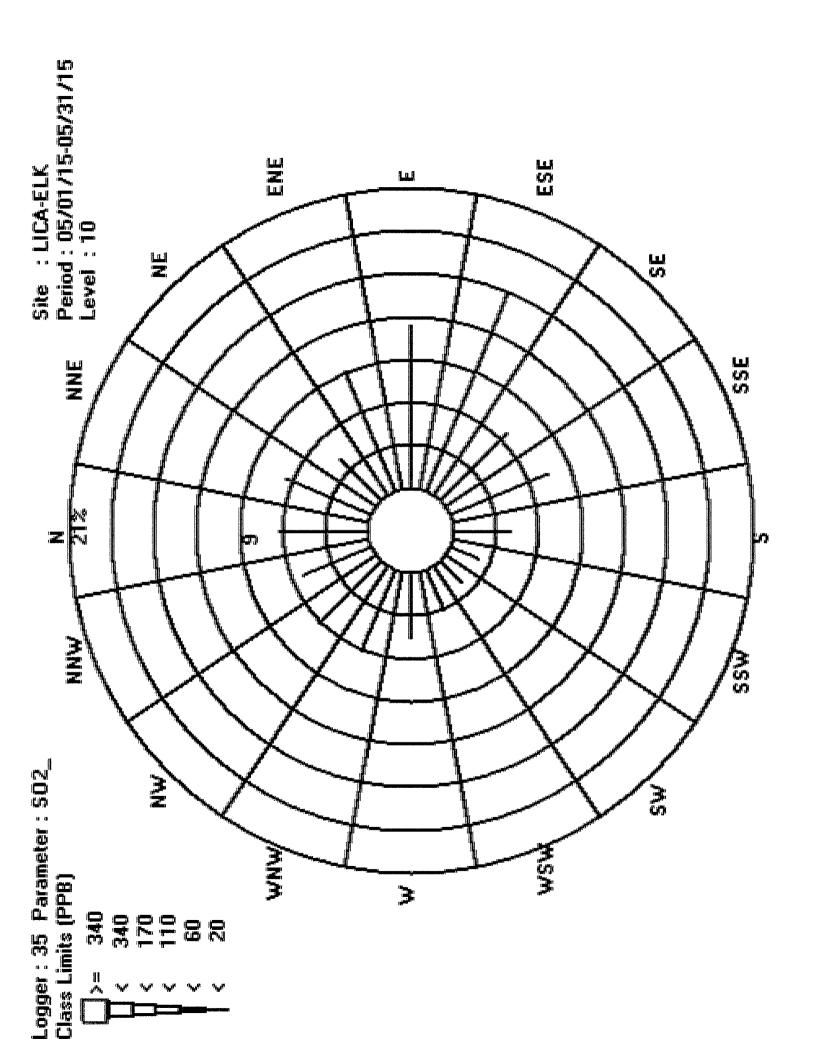
Total # Operational Hours : 704

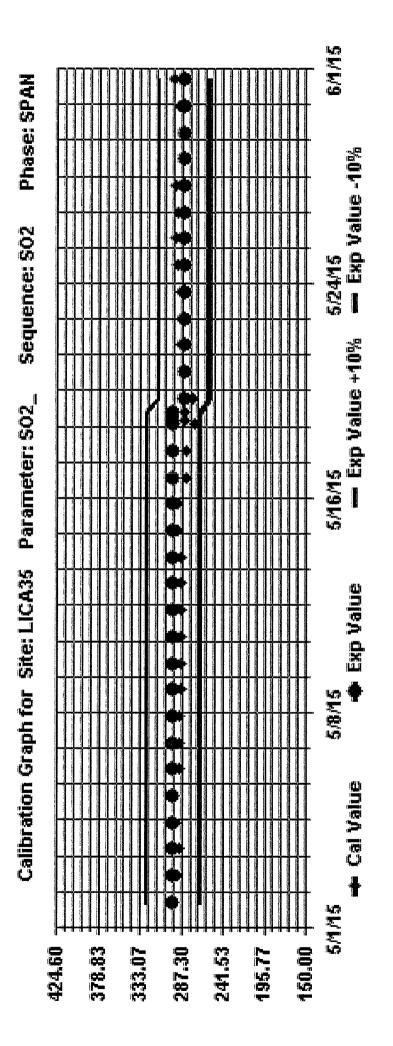
Distribution By Samples

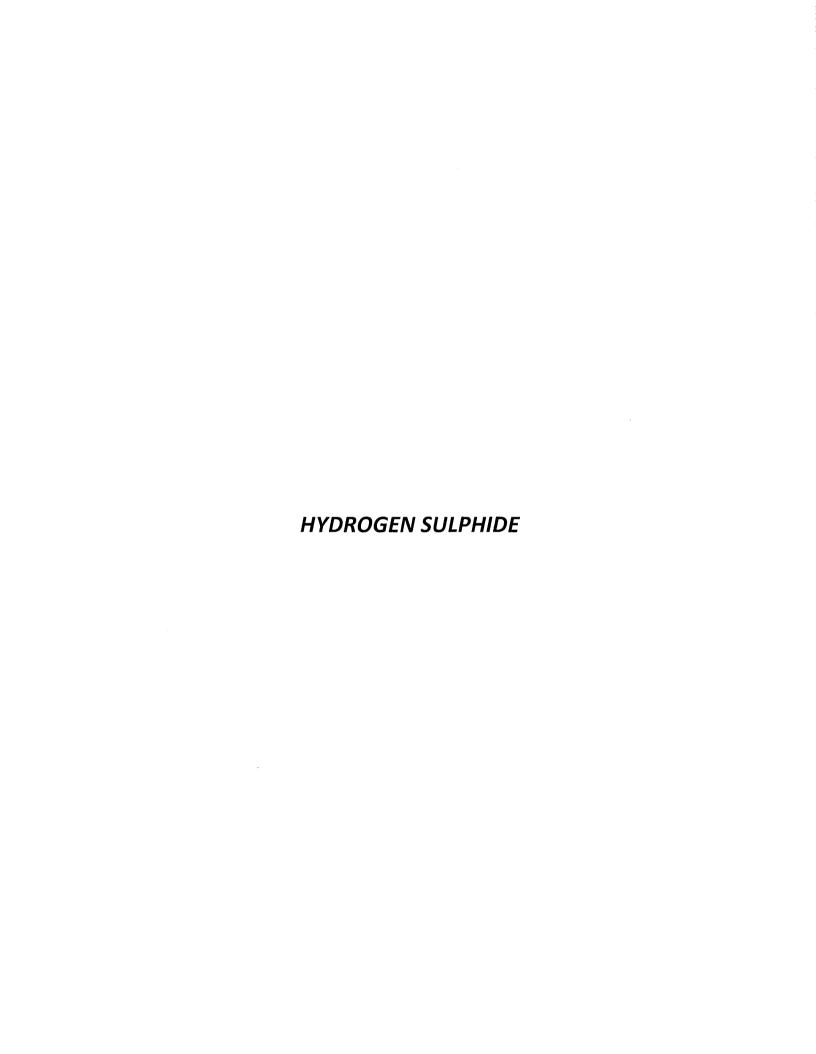
	Freq	704						
	MNN	36						36
	WN	44						44
	WNW	43						43
	迷	32						32
	WSW	22						22
	SW	15						15
	SSW	15						15
	Ø	53						29
	SSE	53						53
DALEC LOS	SE	47						47
177	ESE	105						105
	ы	80						. 80
	ENE	64						64
	Ä	59						29
	NNE	46						46
	z	44						44
	Limit	20	9	110	170	340	340	Totals
		<b>v</b>	<b>v</b>	<b>v</b>	<b>v</b>	<b>v</b>	Д	

Calm : .00 %

Total # Operational Hours : 704





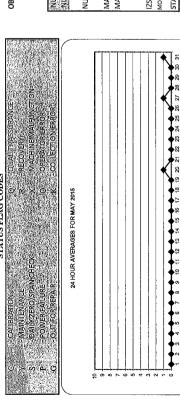


## JOB # 196-2015-05-93- C LAKELAND INDUSTRY & COMMUNITY ASSOCIATION Elk Point Airport Site - MAY 2015

# HYDROGEN SULPHIDE (H2S) hourly averages in ppb

24-HOUR DAILY 8-00 : 9-00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 18:00 10:00 10:00 11:00 12:00 13:00 14:00 15:00 15:00 15:00 18:00 18:00 18:00 20:00 HOURSTART 1000 T.00 2.00 3.00 4.00 5.00 6.00 7.00 HOURSTON 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 HOURLY AVG

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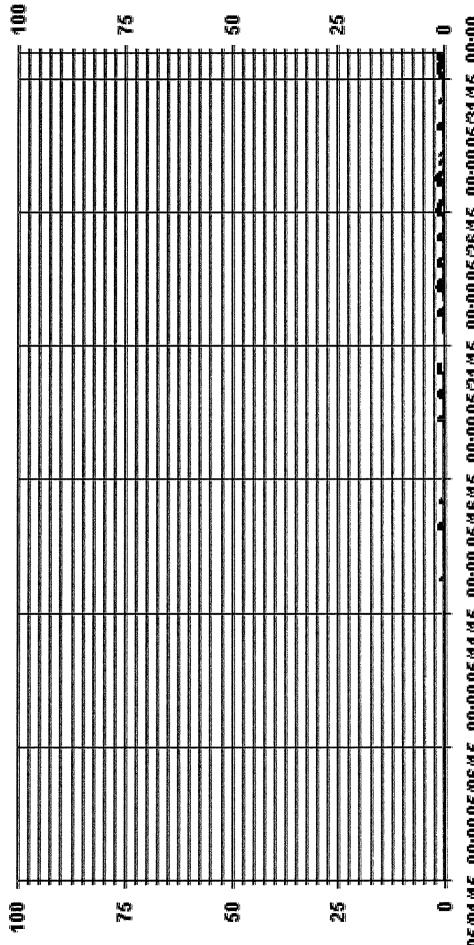


## OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: THR 10 PPB 24HR 31 PPB

NUMBER OF 24-HR EXCEEDENCES			o o					
NUMBER OF NON-ZERO READINGS:	.::		78					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		2 1.0	PPB PPB	PPB @ HOUR(S) PPB	VAR	ON DAY(S) ON DAY(S) VAR-VARIOUS	VAR 20	~ 0
IZS CALIBRATION TIME:	8 8	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	ME: A UPTIME:		726 97.6	HRS
STANDARD DEVIATION:	0.34			MONTHLY AVERAGE:	4GE:		0	0 PPB

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

- LICA35



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C

HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST

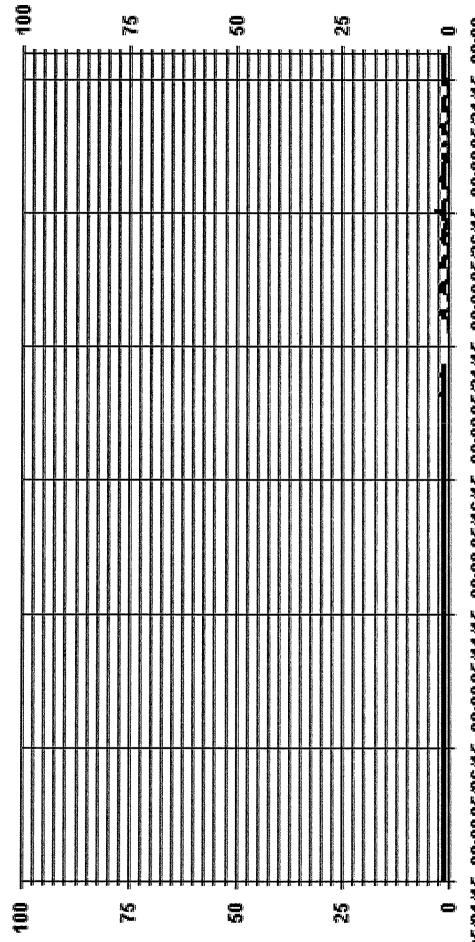
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NUMBER OF NON-ZERO READINGS:			572							
MAXIMUM INSTANTANEOUS VALUE:			m	PPB	@ HOUR(S)	2		ON DAY(S)		26
						•*	VAR-VARIOUS	ous		
IZS CALIBRATION TIME: MONTHLY CALBRATION TIME: STANDARD DEVIATION:	40 HRS 12 HRS 0.42	HRS HRS		OPERATIC	OPERATIONAL TIME:				726	HRS

Oi Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

HZSWILK

- LICASS

## LICA-EIK H2S\_ / WDR Joint Frequency Distribution (Percent)

May 2015

## Distribution By % Of Samples

Logger Id : 35 Site Name : LICA-ELK Parameter : H2S\_ Units : PPB\_

Wind Parameter : WDR Instrument Height : 10 Meters

	Freq	00.00	00.	00.	00.	
	NNW	5.30 1	00.	00.	00.	5.30
	MM	6.34	00.	00	00.	6.34
	WNW	6.34	00-	00.	0.	6.34
	×	4.71	00.	0.	0.	4.71
	WSW	3.09	00.	00.	9.	3.09
	SW	2.21	00.	00.	00.	2.21
	SSW	1.62	00.	00.	00.	1.62
	Ø	3.98	0.	00.	00.	3.98
	SSE	6.48	00.	00.	00.	6.48
rection	SE	6.93	0.	0.	00.	6.93
Di	ESE	14.89	00.	8.	8.	14.89
	ы		00.	00.	00-	11.94
	ENE	8.84	00.	00.	00.	8.84
	R	4.27	00.	00.	00.	4.27
	NNE	6.78	00.	00.	00.	6.78
	z	6.19	8.	00.	00.	6.19
	Limit	m	10	20	50	Totals
		٧	٧	٧	X	
	Direction	Direction N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW	Direction  N NNE NE ENE E ESE SE S SSW SW WSW W WNW NW NNW C6.19 6.78 4.27 8.84 11.94 14.89 6.93 6.48 3.98 1.62 2.21 3.09 4.71 6.34 6.34 5.30 10	N NNE NE ENE E ESE SS SSW SW WSW W NNW NW NNW NNW	N NNE NNE NE ENE E ES SS SS SS SS NS NS NS NS NS NS NS NS NS	Limit N NNE 6.78 ENE ENE ES SS SS SS SS NG WGW WGW WGW WGW NNE NNE NNE NNE NNE NNE NNE NNE NNE NN

Calm : .00 %

Total # Operational Hours : 678

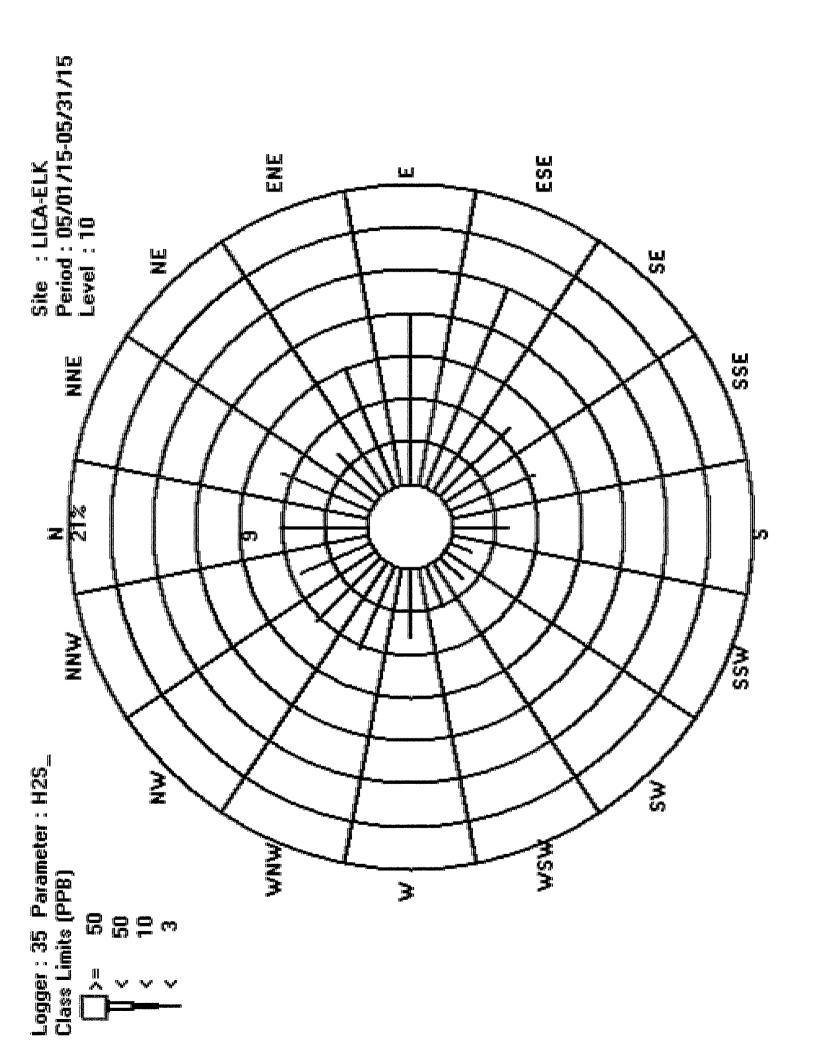
Distribution By Samples

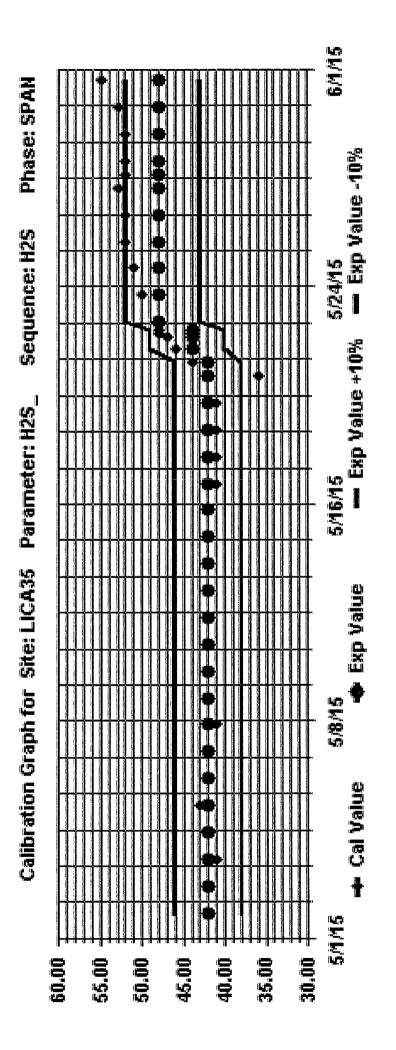
Direction

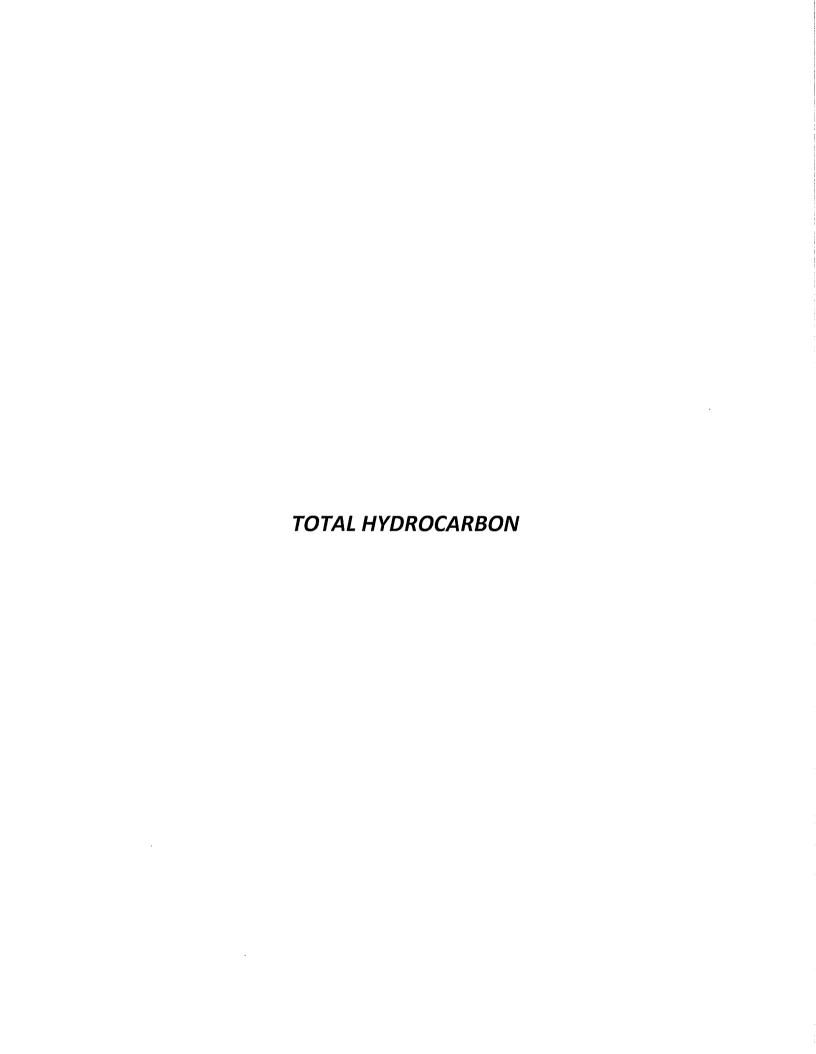
טי					
Freq	678				
NNW	36				36
NW	43				43
WNW	43				43
<b>≱</b>	32				32
WSW	21				21
SW	15				12
SSW	11				11
Ø	27				27
SSE	44				44
SE	47				47
ESE	101				101
ы	81				81
ENE	09				09
B	59				53
NAE	46				46
z	42				42
Limit	m	10	20	20	Totals
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Calm : .00 %

Total # Operational Hours : 678







JOB # 196-2015-05-93- C



MST

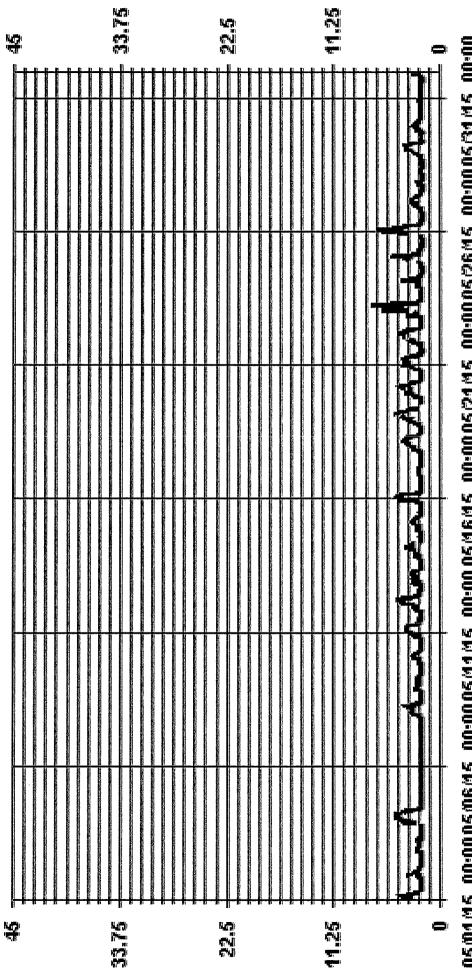
# TOTAL HYDROCARBONS (THC) hourly averages in ppm



					2 01
OUNTED MANUEL  AND MANUEL MANUEL  DAMINATION  POWER PAILURE  OUTFORREDAR  COLLECTION FROM	24 HOUR AVERAGES FOR MAY 2016				1 2 3 4 5 6 7 8 9 10 11 12 18 14 15 16 17 18 19 20 21 22 22 24 25 25 27 28 29 39 31
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NUMBER OF NON-ZERO READINGS:	IGS:		706					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		3.0	PPM PPM	PPM @ HOUR(S) PPM	ω	ON DAY(5) ON DAY(5) VAR-VARIOUS	23 VAR	m «
IZS CALIBRATION TIME: MONTHLY CALBRATION TIME:	32	HRS HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	TIME		743 99.9	H %
STANDARD DEVIATION:	0.76			MONTHLY AVERAGE:			2.4	2.4 PPM

od Hour Averages



05/01/115 00:0005/06/15 00:0005/11/115 00:0005/16/15 00:0005/21/115 00:0005/26/15 00:0005/31/115 00:00

**THC55** - LICA35



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - MAY 2015

JOB # 196-2015-05-93- C

MST

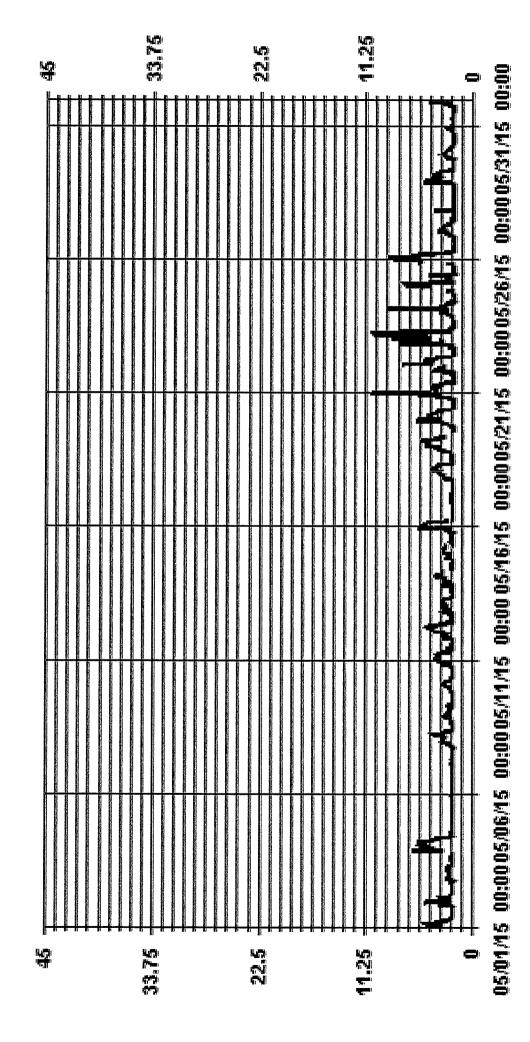
# TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

	RDGS.	24	54	74	74	22	24	54	24	24	24	24	24	24	24	54	54	54	74	24	74	74	54	54	24	24	24	77	24	24	24	54		
24-HOUR	AVG.	2.9	2.4	2.6	3.3	2.1	2.1	2.2	2.7	2.3	2.5	2.9	3.1	2.6	2.7	2.5	2.8	2.3	3.0	3.6	3.2	3.3	3.4	3.9	2.9	3.2	3.4	2.5	2.2	2.8	2.2	2.3		
DAILY	MAX	4.9	3.6	6.4	5.8	2.1	2.1	3.2	4.1	2.8	3.5	4.0	4.9	3.3	3.8	3.9	5.7	3.0	4.2	5.3	6.0	10.7	7.8	10.4	9.1	7.1	9.0	4.0	5.2	4.4	3.1	4.6		
,23.00	0:00	4.7	2.5	4.8	2.1	2.1	2.1	3.2	23	2.5	3.5	3.0	3.0	2.7	2.3	3.9	2.2	3.0	3.9	5.0	5.8	3.1	3.4	Ŋ	5.2	5.2	5.6	1.9	4.1	3.3	2.2	3.2	5.8	3.3
22.00	. 23:00	s	2.6	6.4	2.1	2.1	2.1	2.7	2.9	2.3	3.1	3.1	2.6	2.5	2.5	3.0	2.2	3.0	3.6	3.3	3.3	3.8	3.1	2.4	S	5.6	2.5	2.0	5.2	3.1	2.6	4.6	6.4	3.1
21.00	22.00	3.4	s	3.2	2.1	2.1	2.1	2.3	2.8	2.3	3.1	2.7	2.7	2.9	2.7	2.4	2.2	3.0	3.3	3.2	3.8	4.0	7.8	2.1	2.5	s	2.2	2.4	2.3	2.8	2.3	3.2	7.8	2.9
	21:00	2.2	2.7	s	2.1	2.1	2.1	2.2	2.4	2.2	2.3	2.8	2.9	3.3	2.8	2.4	2.1	2.9	2.9	2.5	2.4	3.1	3.0	2.0	2.5	2.6	s	4.0	2.2	2.7	2.1	2.3	4.0	2.5
19.00	20:00		2.3				2.1	2.1	2.3	2.1	2.2	2.1	2.5	2.2	2.2	2.1	2.1	2.2	2.3	2.3	2.4					2.1							2.6	
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7.00.7	8:00:8	2.7	2.2			2.1	2.1	2.1	3.5	2.6	2.3	3.5				2.9															2.1			
6:00	7:00:-	3.5	2.3	2.5		2.1		2.1			2.6							s			4.4										2.3			
5.00	6:00	4.1	2.4	2.4	4.8	2.1	2.1	2.1	3.9	2.5	2.9	3.6	4.6	3.1	3.8	3.1	3.1			5.3			6.4	10.3	3.2	2.4	4.2	3.1	1.9	4.0	2.3	2.1	10.3	
	1.76	4.9	2.3	2.6	4.8	~	2.1	2.1	3.3	2.4	3.1	3.6	4.3	3.1	3.8	3.1	4.9	2.2	4.2	s	4.8	4.0	4.9	4.6	9.1	2.3	5.8	3.1	1.9	3.8	2.5	2.1	9.1	3.6
3:00 4:00	4:00	4.7	3.2	2.5	5.1	۳	2.1	2.1	3.0	2.4	3.1	3.7	4.3	2.9	3.8	3.0	4.9	2.2	4.1	4.5	s	3.9	4.2	6.3	2.9	4.9	6.7	3.0	1.9	3.7	2.5	2.1	6.7	3.6
2.00	3:00	3.6	3.0	2.3	5.4	2.1	2.1	2.1	3.1	2.4	3.1	3.9	3.9	3.0	3.1	3.0	5.2	2.2	3.5	5.0	3.8	s	7.2	8.6	2.4	7.1	0.6	3.7	13	4.4	2.8	2.1	9.0	3.8
1.00	2:00	3.1	2.8	2.3	5.1	2.1	2.1	2.1	3.2	2.6	5.8	4.0	3.4	3.3	5.9	3.0	2.0	2.2	3.6	4.8	4.0	4.6	s	4.7	3.6	6.9	8.4	3.3	1.9	3.5	2.9	2.2	8.4	3.5
0:00 1:00	1:00	4.6	3.6	2.5	4.5	2.1	2.1	2.1	3.3	2.8	2.4	3.6	2.8	2.9	2.9	2.3	5.7	2.2	3.4	3.8	6.0	10.7	3.1	s	3.0	4.5	6.9	3.0	5.0	3.7	3.1	2.2	10.7	3.6
HOURSTART	100	DAY.	2	'n	4.	'n	ė	, Z	<b>00</b>	ō	10.	Ţ	12	13	14	. 15	16	17	.18	19	20	. 21	22	. 23	24			27	. 28	29	30	. 31	HOURLY MAX	HOURLY AVG



NUMBER OF NON-ZERO READINGS:			704						
MAXIMUM INSTANTANEOUS VALUE:	.11		10.7	PPM	@ HOUR(S)	0	ON DAY(S)		77
						VAR-V	VAR-VARIOUS		
IZS CALIBRATION TIME:	32	HRS		ОРЕКАПС	OPERATIONAL TIME:			742	HRS
MONTHLY CAUBRATION TIME:	φ	HRS							
STANDARD DEVIATION:	1.20								

Od Hour Averages



- LICA35 THC55MAX PPM

LICA35 THC55 / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

Direction

Freq	82.01	17.98	00.	00		
NNW	4.81	.28	00.	00.	5.09	
MN	4.81	1.41	00.	00.	6.23	
WNW	3.68	2.40	00.	00.	60.9	
×	3.82	.70	00.	00.	4.53	
WSW	2.69	.42	00.	00.	3.11	
SW	1.69	.42	00.	00.	2.12	
SSW	1.84	.28	00-	00.	2.12	
w	3.96	.28	00.	00.	4.24	
SSE	7.36	.14	00.	00.	7.50	
SE	6.23	.56	00.	00.	6.79	
ESE	10.90	3.96	00	.00	14.87	
M	6.79	4.53	00	00.	,11.33	
ENE	7.36	1.69	00.	00.	90.6	
B	3.96	.14	00.	00.	4.10	
NAE	6.37	.14	.00	00.	6.51	
z	5.66	.56	00.	00.	6.23	
Limi t	3.0	10.0	50.0	50.0	Totals	
	٧	٧	٧	X		

Calm : .00 %

Total # Operational Hours : 706

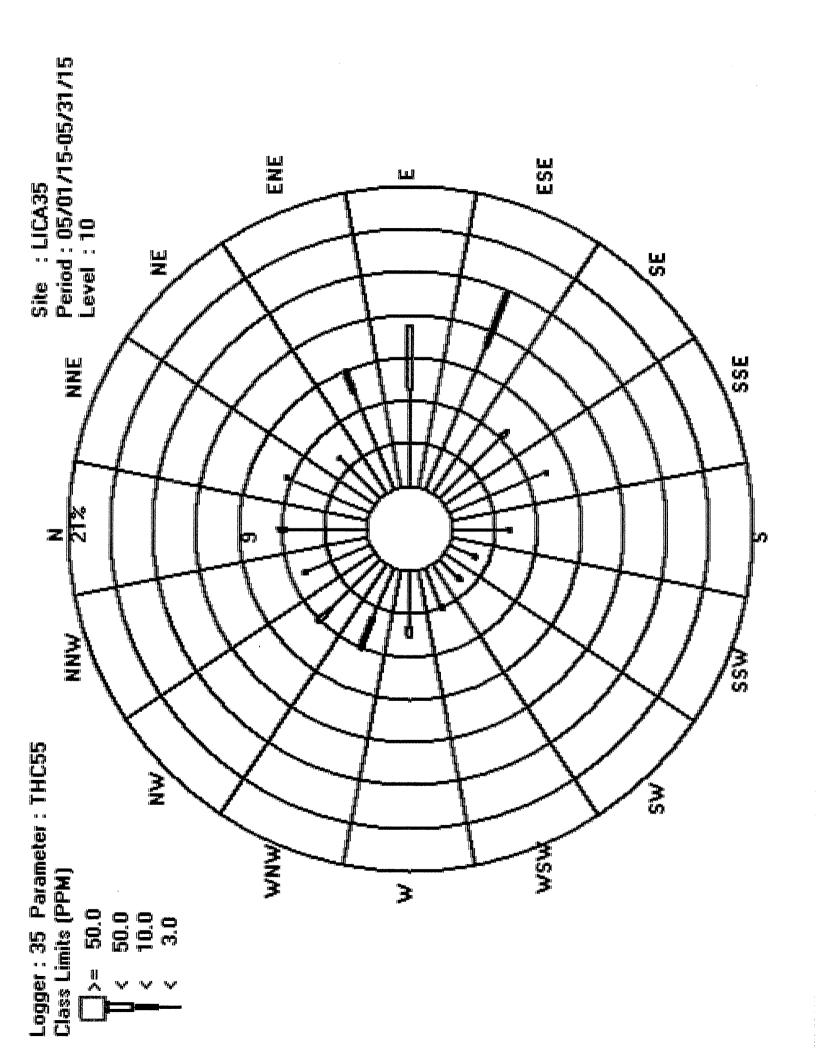
Distribution By Samples

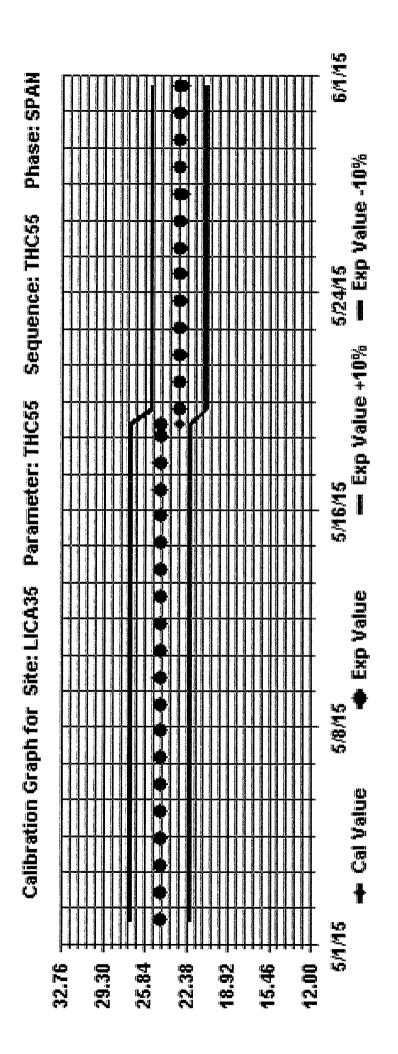
Direction

Fred	579	127			
MNN	34	8			36
M	34	10			44
WNW	26	17			43
×	27	ιΩ			32
WSW	19	m			22
MS.	12	m			15
SSW	13	8			15
v)	58	8			30
SSE	52	-			53
SE	44	4			48
ESE	77	88			105
Þ	48	32			80
ENE	52	12			79
Ä	78	н			29
NNE	45	н			46
z	40	4			44
Limit	3.0	10.0	50.0	50.0	Totals
	٧	<b>v</b>	٧	,	

Calm : .00 %

Total # Operational Hours : 706







MaxXam A Bursau Veritas Group Company

METHANE (CH4) hourly averages in ppm

MST

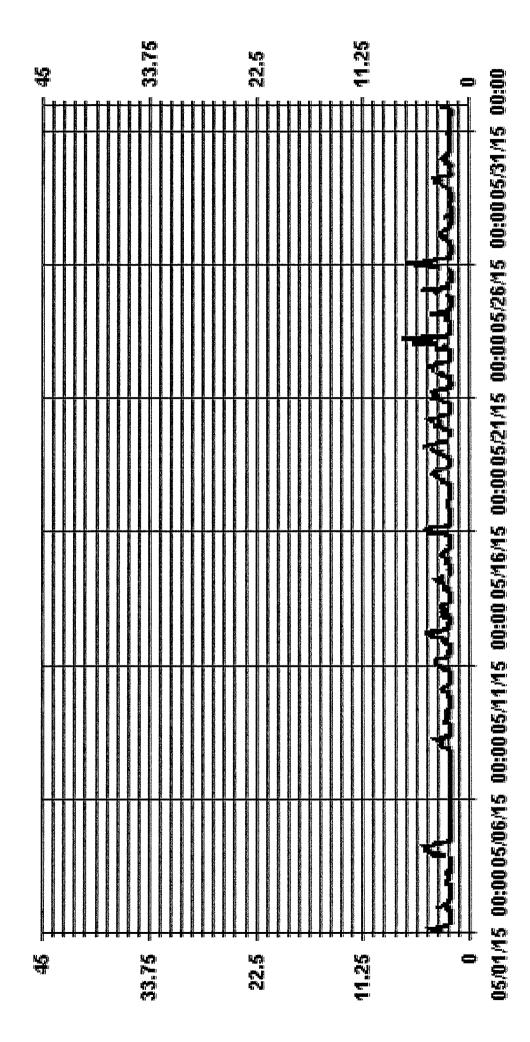
RDGS.	24	24	24	24	23	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
24-HOUR AVG.	2.5	2.2	2.3	3.0	2.0	2.0	2.1	2.5	2.2	2.3	5.6	2.8	2.4	2.5	2.3	2.5	2.2	2.7	3.0	27	2.7	2.7	3.0	2:2	2.4	2.7	2.2	1.9	2.5	2.1	2.0		
DAILY MAX.	4.2	3.1	3.6	4.8	2.0	2.0	2.9	3.6	5.6	3.0	3.6	4.6	3.0	3.5	3.1	4.5	2.8	4.0	4.7	4.2	4.0	4.5	2.0	4.0	5.0	9.9	3.0	2.7	3.7	2.7	2.9		
23.00	3.3	2.3	3.5	2.0	2.0	2.0	2.9	2.2	2.2	3.0	2.8	2.7	2.4	2.2	3.1	2.1	2.8	3.4	3.7	3.0	2.8	5.6	s	3.3	4.3	2.3	1.9	2.7	5.9	2.1	2.6	4.3	2.7
22.00	s	2.5	3.6	5.0	2.0	2.0	2.4	2.5	2.2	2.8	2.7	2.3	2.3	2.3	2.5	2.1	2.7	3.2	5.9	3.0	3.1	2.7	2.2	s	3.3	2.2	1.8	2.4	5.6	2.2	5.9	3.6	2.5
21.00	2.4	v	2.7	2.0	2.0	2.0	2.1	2.5	2.1	2.7	2.5	2.4	5.6	2.5	2.2	2.1	2.7	2.8	2.7	2.7	2.9	3.5	2.0	2.2	v	2.0	1.9	2.1	2.5	2.2	2.2	3.5	2.4
20:00: 21:00 21:00: 22:00	2.1	2.3	s	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.4	2.6	5.6	2.4	5.0	5.0	2.4	2.5	2.2	2.2	2.4	2.2	1.9	2.1	2.0	s	2.4	1.9	2.4	50	2.0	2.6	2.2
19:00	2.0	2.0	5.0	s	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.0	5.0	2.1	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	s	1.9	2.0	20	1.9	2.1	2.0
18:00	2.0	5.0	2.0	2.0	s	2.0	5.0	5.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.0	2.1	1.9	1.9	1.9	13	1.9	1.8	1.9	1.9	1.9	s	19	1.9	1.9	2.1	2.0
17:00	2.0	2.0	2.0	5.0	5.0	S	2.0	5.0	2.0	5.0	2.0	2.0	2.0	2.0	5.0	5.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.9	v	1.9	1.8	2.0	1.9
16.00 17.00	07	2.0	2.0	2.0	2.0	2.0	s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.9	s	1.8	2.0	1.9
15:00	2.0	2.0	5.0	5.0	2.0	2.0	2.0	s	2.0	2.0	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	178	1.9	1.9	1.9	s	2.1	2.0
14 00. 15:00	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	s	2.0	2.1	2.1	2.0	2.1	2.0	5.0	2.0	2.0	U	1.9	1.8	1.9	1.9	1.8	1.8	1.8	1.9	1.9	5.0	1.9	1.9	2.1	2.0
13.00	2.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	s	2.1	2.1	5.0	5.0	2.1	2.0	2.0	2.0	U	1.9	1.9	1.9	1.9	1.8	1.9	1.8	1.9	1.9	1.9	1.9	1.9	2.1	2.0
12:00	1	5.0	2.0	2.1	2.0	2.0	2.0	5.0	2.0	2.0	s	2.1	2.0	5.0	2.1	2.0	2.0	2.1	U	1.9	1.9	1.9	1.9	18	1.9	1.8	13	1.8	1.9	1.9	1.9	2.1	2.0
11:00	2.0	2.0	2.0	2.1	2.0	2.0	2.0	20	20	2.0	2.1	s	2.0	2.0	2.0	2.0	2.0	2.1	U	1.9	1.9	1.9	2.0	1.9	1.8	13	1.9	1.8	2.0	1.9	1.9	2.1	2.0
10:00		2.0	2.1	2.2	2.0	2.0	5.0	2.0	2.0	2.0	2.2	2.1	s	2.1	2.1	5.0	2.0	2.1	U	2.1	1.9	1.9	2.2	1.9	1.9	1.9	2.0	1.9	2.0	1.9	1.9	2.2	2.0
9:00:	2.1	2.0	2.0	3.0	2.0	2.0	2.0	2.2	2.2	2.1	2.2	2.4	2.1	s	2.1	2.0	2.0	2.3	2.6	2.6	2.5	2.1	2.3	5.0	2.0	1.9	2.2	1.9	1.9	1.9	2.0	3.0	2.2
8:00	2.3	2.0	2.2	8. 13. 13.	2.0	2.0	5.0	2.7	2.4	2.2	2.4	3.0	2.3	2.9	s	2.0	2.0	3.0	3.4	3.2	3.3	2.9	2.3	2.3	2.1	1.9	2.4	13	2.0	2.0	2.0	3.8	2.4
7:00 8:00	2.4	2.1	2.4	4.0	2.0	2.0	2.0	3.2	2.4	2.2	2.8	4.2	2.7	3.1	2.6	s	2.0	3.6	3.7	3.5	3.5	3.6	5.1	2.4	2.3	2.0	2.6	1.9	3.0	2.0	2.0	5.1	2.8
6.00	w.	2.2	2.4	4.7	2.0	2.0	2.0	3.6	2.2	2.4	3.5	4.6	3.0	3.0	7.8	2.1	S	3.7	4.3	4.0	3.8	3,9	2.0	2.9	2.2	25	2.9	1.9	3.4	2.1	2.0	7.0	3.1
4:00 5:00 5:00 6:00	3.6	2.2	2.2	4.5	2.0	2.0	2.0	3.4	2.3	2.7	3.5	4.2	2.9	3.5	2.9	2.8	2.1	s	4.7	4.2	3.7	4.5	5.1	2.7	2.1	3.3	3.0	1.9	3.7	2.2	2.0	5.1	3.1
5:00	4.2	2.2	2.4	4.5	œ	2.0	2.0	3.1	2.3	5.9	3.5	4.1	2.9	3.3	2.9	3.9	2.1	4.0	s	3.9	3.6	3.9	3.7	4.0	2.1	3.9	2.9	1.9	3.6	2.2	2.0	4.5	3.1
3:00	4.0	2.5	2.3	4.4	2.0	2.0	2.0	2.9	2.2	2.9	3.5	3.9	2.7	3.2	2.9	4.3	2.1	3.6	3.8	s	3.4	3.7	5.1	2.2	3.1	4.9	78	1.8	3.3	2.3	5.0	5.1	3.1
2:00 3:00 3:00 4:00	3.2	2.7	2.2	4.8	2.0	2.0	2.0	3.0	2.3	2.8	3.6	3.7	2.8	2.8	7.8	4.5	2.1	3.3	3.9	3.2	s	3.7	6.0	2.2	2.0	9.9	2.6	1.8	3.6	2.4	2.0	9.9	3.2
1.00	2.8	2.5	2.2	4.4	2.0	2.0	2.0	2.9	2.3	2.6	3.5	3.0	2.9	2.6	2.5	3.9	2.2	3.3	3.8	2.9	3.5	v	3.6	2.3	3.7	5.8	2.8	1.8	3.0	5.6	2.1	5.8	2.9
0.00	3.2	3.1	2.3	4.0	2.0	2.0	5.0	3.1	5.6	2.2	3.2	2.7	2.7	5.6	2.2	4.4	2.2	3.1	3.2	3.4	4.0	5.8	S	2.3	3.2	5.0	2.6	1.8	5.9	2.7	2.1	2.0	2.9
HOURSTART	DAY -	2	m	4	S	9	Z	00	ō	. OT	母	.12	13	44	-15	16	17	18	419	20	. 21	. 22	23	.24	52	26		28:	. 29	30	31	HOURLY MAX	HOURLY AVG

## STATUS FLAG CODES

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MAINTENANCE DAIRY ZERO/SP POWER FAILUR			9
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NUMBER OF NON-ZERO READINGS:	VGS:		706					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		3.0	MPM PPM	PPM @ HOUR(S) PPM	ω	ON DAY(S) ON DAY(S) · VAR-VARIOUS	23 VAR	m ~
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	32	HRS HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	IIME		743 99.9	HRS %
STANDARD DEVIATION:	0.74			MONTHLY AVERAGE:			2.4	2.4 PPM

ði Hour Averages



- LICA35 METHANE PPM



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - MAY 2015

JOB # 196-2015-05-93- C

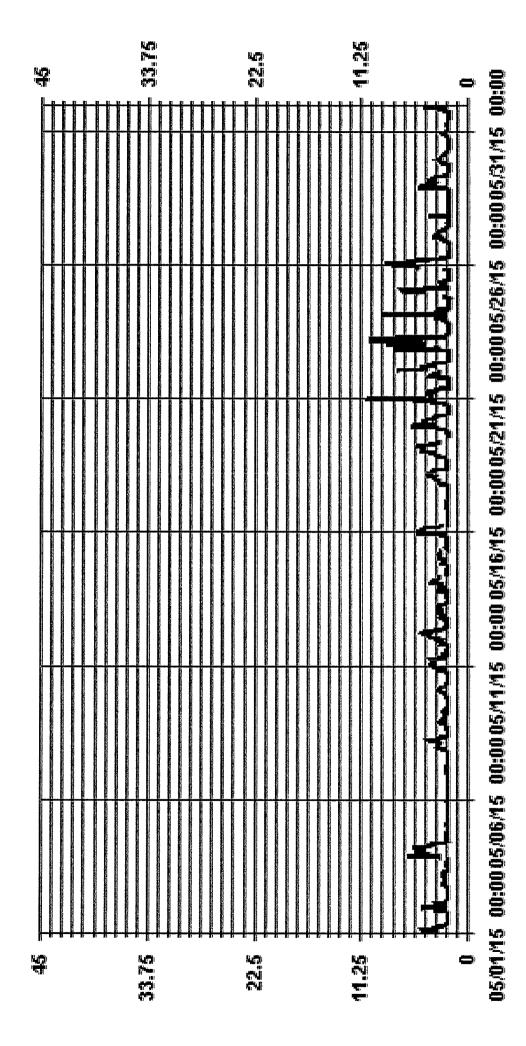
# METHANE MAX instantaneous maximum in ppm

1.1.         2.1. <th< th=""></th<>
2.1         2.1         2.1         2.1         2.2         2.1         2.2         2.1         2.2         2.1         2.2         2.1         2.2         2.1         2.2         2.1         2.2         2.1         2.2         2.1         2.2
21         21<
22         23         23         23         23         24         21         22<
2.1         2.1
2.1         2.2         2.2
20         21         22         22         23         24         28         29         23         40         27         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         21         22<
2.1         2.1         2.1         2.2         2.2         2.3         2.4         2.8         2.9         2.3         4.1         2.7           2.1         2.1         5         2.2         2.2         2.2         2.3         2.3         2.3         2.4         1.0         2.7
21         21         21         21         21         21         21         21         21         21         21         21         22         23         23         23         25         27         23           21         22         22         22         22         22         22         22         22         22         22         22         22         22         22         22         22         22         22         22 </td
2.1         S         2.1         2.1         2.1         2.2         2.3         3.1         3.5         3.5         2.5           2.6         S         2.1         2.1         2.1         2.1         2.1         2.2         2.3         3.1         3.5         3.5         3.5         2.5           2.1         2.1         2.2         2.1         2.1         2.1         2.1         2.2         2.2         3.3         3.2         3.5         3.0         3.5         3.0         2.5           2.1         2.1         2.1         2.1         2.1         2.1         2.2         2.2         3.3         3.0         2.5         2.9         3.0         2.5         2.9         3.0         2.5         2.9         3.0         2.5         2.9         3.0         2.5         2.9         3.0         2.5         2.9         3.0         2.5         2.9         3.2
26         S         22         21         22 </td
S         2.2         2.2         2.1         2.1         2.1         2.5         2.3         2.7         2.7         3.0         4.9         3.1           2.1         2.1         2.1         2.1         2.1         2.1         2.2         3.3         3.0         2.5         2.7         3.3         3.0           2.1         2.1         2.1         2.1         2.1         2.1         2.2         2.2         3.3         3.0         2.5         2.7         3.3         2.6           2.1         2.1         2.1         2.1         2.2         2.2         2.3         2.3         2.5         2.7         3.3         3.6         3.6         3.7         3.8         3.6         3.6         3.7         3.7         3.2
21         21         21         21         22         33         30         25         33         30         25         33         26           21         21         21         21         21         21         21         22         22         23         33         30         25         23         33         30         25         23         32         21         21         21         21         21         21         21         21         21         21         21         21         21         22 </td
2.1         2.2         2.2         2.1         2.1         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.3         2.3         2.3         3.3         3.3         3.3         3.7         3.7         3.7         3.7         3.7         2.7         2.2
2.1 2.2 2.1 2.1 2.1 2.1 2.2 2.3 2.3 2.3 3.7 3.7 2.5 2.1 2.1 2.1 2.1 2.2 2.3 2.9 3.7 3.7 2.5 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1
2.1         2.1
21         21         21         21         21         21         21         21         22         29         30         30         30         30         23           22         22         23         24         23         35         35         39         30         30         23           2         2         2         2         2         2         2         2         35         35         35         35         35           2         2         2         2         2         2         2         3         35
2.2         2.2         2.1         2.1         2.1         2.2         2.3         2.3         3.5
C         C
20         20         20         19         19         20         24         24         38         33         57         60         32           19         19         19         20         20         22         21         38         33         57         60         33           20         20         20         20         20         22         21         4         38         31         407         33           21         20         20         20         20         20         21         24         5         107         33           21         20         20         20         20         20         20         20         20         20         20         33           21         20         20         20         20         20         20         21         20
19         19         19         20         20         22         22         31         40         38         31         107         33           20         20         20         20         22         22         31         34         33         33           21         20         20         20         20         20         29         78         31         34         78         33           21         20         20         20         20         20         20         20         31         34         78         33           21         20         19         19         19         19         19         20         20         22         25         25         25         92         33           20         20         21         19         19         19         19         20         20         24         5         5         92         33           20         21         20         20         20         20         20         20         20         20         20         20         20         20         20         20         20         20         20         20
20         20         20         20         29         78         3.1         34         78         3.3           21         20         20         20         20         20         20         78         3.1         34         78         3.3           21         20         20         19         19         19         19         19         19         20         20         25         5         5         92         28         3.3           20         20         21         20         20         20         24         5         69         3.8         3.3           20         22         21         19         19         19         19         19         20         20         22         25         26         88         3.3           20         22         20         20         20         20         20         22         26         88         3.3           20         20         20         20         20         20         20         20         88         3.3           20         20         20         20         20         20         20         20         88<
21         20         20         19         19         19         19         19         20         20         21         24         \$         102         38           21         19         19         19         21         21         21         22         25         5         5         28         38           19         20         21         19         20         20         20         20         22         25         5         28         33           20         20         21         20         20         20         20         22         25         26         88         33           20         20         20         20         20         20         22         25         26         88         33           20         20         20         20         20         20         20         22         25         26         88         33           20         20         20         20         20         21         21         19         40         25           20         20         20         20         20         22         23         24         41
2.1         1.9         1.9         1.9         2.1         1.9         2.1         2.5         5.5         5.5         9.2         2.8           1.9         1.9         1.9         1.9         1.9         1.9         1.9         2.0         2.4         5         5.4         5.1         6.9         3.1           2.0         1.9         1.9         1.9         1.9         2.0         2.1         2.2         2.5         2.6         8.8         3.3           2.0         2.0         2.0         2.1         2.1         1.9         1.9         4.0         2.1         1.9         4.0         2.5           1.0         1.9         1.9         1.9         2.0         2.1         2.1         1.9         4.0         2.5           2.0         2.0         2.0         2.1         2.2         2.2         2.2         4.1         5.2         2.2           2.0         2.0         2.0         2.0         2.1         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2         2.2
19 20 21 19 20 19 19 20 20 24 \$ 54 51 69 31 20 20 24 5 1 89 54 81 81 81 81 81 81 81 81 81 81 81 81 81
20         19         19         19         19         19         19         19         19         20         \$         22         25         25         26         88         33           20         20         20         20         20         19         19         19         19         19         20         21         20         21         19         19         19         19         19         19         19         19         19         19         19         19         10         10         10         10         10         20
20         22         19         19         19         20         21         \$         40         21         19         19         20         21         \$         40         21         19         19         20         21         22         23         21         19         19         22         23         23         41         52         22           20         20         21         20         21         22         23         23         44         52         22           19         19         19         20         20         21         22         23         26         23         31         28         28           21         20         20         21         26         23         31         46         32         46         23           26         23         23         26         23         23         24         46         37         46         23           26         23         23         22         22         23         26         40         78         64         57
1.9 1.9 1.9 1.9 1.9 1.9 1.9 5 1.9 2.2 2.3 5.2 4.1 5.2 2.2 2.2 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2
2.0         2.0         2.1         2.0         2.0         2.0         2.1         2.2         2.7         2.8         3.1         3.3         4.4         2.8           1.9         1.9         1.9         2.0         2.0         2.1         2.2         2.3         2.6         2.2         3.1         2.2           2.1         2.0         2.0         2.1         2.2         2.3         2.6         2.2         3.1         2.2           2.1         2.0         2.0         2.1         2.6         2.3         3.1         4.6         3.2         4.6         2.3           2.6         2.3         2.2         2.2         2.2         2.3         2.6         4.0         7.8         6.4         5.7
1.9 1.9 1.9 1.9 2.0 <b>S</b> 2.0 2.0 2.1 2.2 2.3 2.6 2.2 3.1 2.2 2.3 2.6 2.2 3.1 2.2 2.1 2.0 2.0 2.0 2.1 2.6 2.3 3.1 4.6 3.2 4.6 2.3 2.6 2.3 2.3 2.3 2.3 2.2 2.2 2.2 2.3 2.6 4.0 7.8 6.4 5.7
2.1 2.0 2.0 2.0 <b>S</b> 1.9 2.0 2.1 2.6 2.3 3.1 4.6 3.2 4.6 2.3 2.6 2.3 2.3 2.3 2.2 2.2 2.2 2.3 2.6 4.0 7.8 6.4 5.7
2.6 2.3 2.3 2.2 2.2 2.2 2.2 2.3 2.6 4.0 7.8 6.4

## STATUS FLAG CODES

NUMBER OF NON-ZERO READINGS:		704							
MAXIMUM INSTANTANEOUS VALUE:		10.7		PPM @ HOUR(S)	R(S)	0	ON DAY(S)		21
						VAR-VARIOUS	ROUS		
IZS CALIBRATION TIME: 32 MONTHLY CAUBRATION TIME: 6 STANDARD DEVIATION: 1.17	HRS HRS		OPERATI	OPERATIONAL TIME:	ü			742	HRS

ût Hour Averages



- LICA35 MATHMAX PPM

## LICA35 METHANE / WDR Joint Frequency Distribution (Percent)

### May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

Direction

1.69 % .42 1.84 00. .28 3.96 .28 00. Ø 7.36 00. SSE .14 6.23 00. SE .56 ESE 3.96 0. 6.79 10.90 4.53 8. 7.36 1.69 % ENE 3.96 00. Z .14

6.37

5.66 .56

.14

SA

z

Limit 3.0 10.0 50.0 50.0

Freq 82.01 17.98 8. 8

E

4.81 MNN

> 4.81 1.41

> 3.68 2.40

3.82

2.69

WSW

.70 00. 00.

.42

.28

00. 00.

> 00. 6.23

00.

00. 8

00.

80. 3.11

00.

5.09

60.9

4.53

2.12

00. 2.12 4.24 0. 7.50 00. 6.19 00. 14.87 00. 11.33 00. 90.6 00, 4.10 0 % 6.51 8. 6.23 00. 00.

° 00° Calm ..

Totals

X

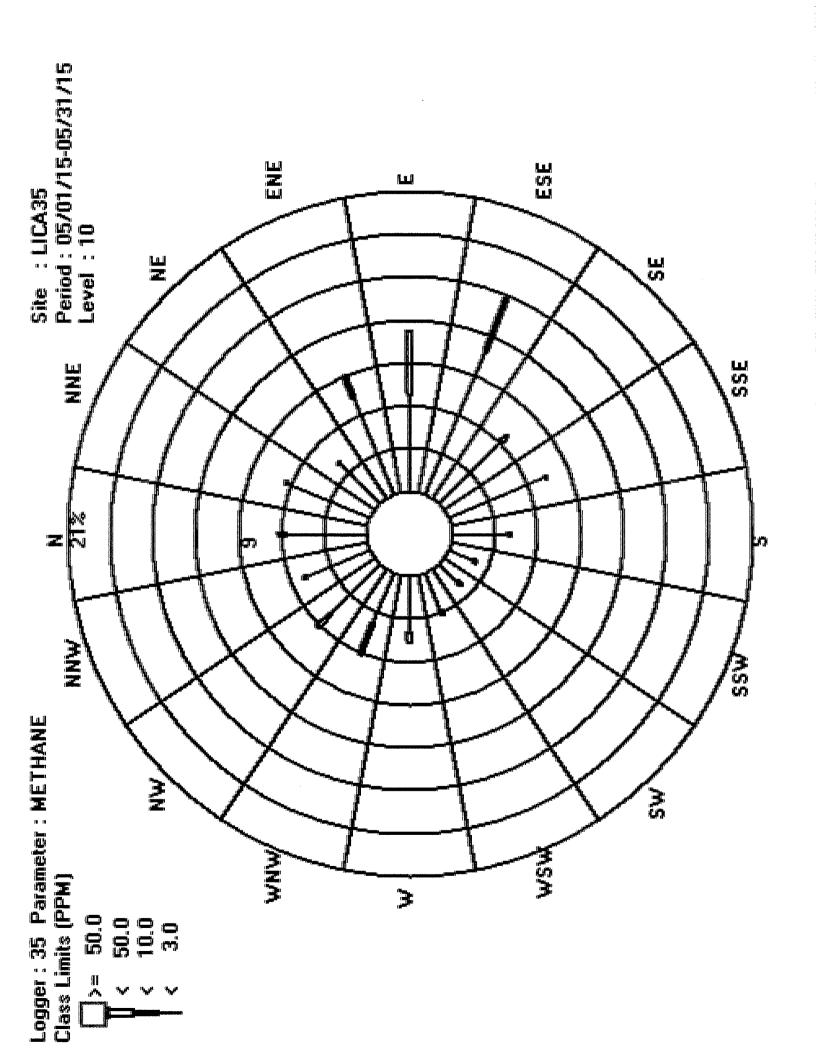
Total # Operational Hours : 706

Distribution By Samples

Fred

127 579

**%** 00°



Phase: SPAN **Exp Value -10%** Sequence: THCSS 5/24/15 - Exp Value +10% Parameter: METHANE 5/16/15 Calibration Graph for Site: LICA35 💠 Exp Value 📤 Cal Value 5.00 15.00 13.33 10.00 8.23 6.67



#### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C

# NON-METHANE HYDROCARBONS (NMHC) hourly averages in ppm

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'n	
↸	

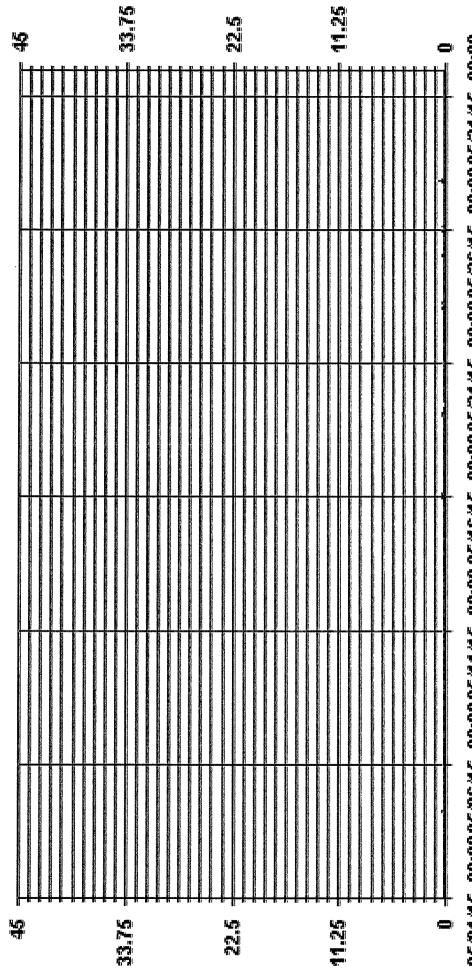
RDGS.	24	54	24	24	23	24	24	54	24	24	24	24	24	24	54	54	24	24	24	24	24	24	24	24	24	24	24	24	24	24	54	
24-HOUR AVG.	0.00	0.00	0.00	0.01	0.00	0.00	0.00	00'0	00'0	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.01	0.03	0.04	0.02	0.00	0.00	0.00	0.00	
DAILY	0.10	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.10	0.10	0.10	0.00	0.00	0.10	0.00	0.10	0.10	0.20	0.10	0.20	0.20	0.30	0.00	0.10	0.00	0.00	
23.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00'0	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.20	0.00	0.00	0.00	0.00	0.00	00.00	0.20
22.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.10	0.00	0.10	0.00	0.00	0.00	0.00	0.10
21:00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0:30	0.00	0.00	0.00	0.00	0.30
20:00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00.00	0.00	0.00	0.00	0.00	0.10	s	0.00	0.00	0.00	0.00	0.00	0.10
19:00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00.0	0.00	0.00	0.00	0.00	0.00	0.00	00.00	s	0.00	0.00	0.00	0.00	0.00
18:00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	s	0.00	0.00	0.00	0.10
17.00 18.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00
16:00 17:00	0.00	0.00	0.00	0.00	0.00	0.00	s	00'0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	00.00
15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.0
14:00 15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	U	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	U	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12:00 13:00	0.00	0.00	0.00	00'0	00'0	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	00.0	0.00	0.00	0.00	0.00	U	0.00	0.00	0.00	0.00	0.00	0.00	00.0	0.00	0.00	0.00	0.00	0.00	0.00
11.00 12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	U	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10:00	0.00	0.00	00'0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	00.00	0.00	00.00	0.00	0.00	v	0.00	0.00	0.00	0.00	0.00	0.10	00.00	0.00	0.00	00.00	00.00	0.00	0.10
9:00	0.00	0.00	00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8:00 00:6	0.00	0.00	0.00	0.00	0.00	0.00	00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.10	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.20
6:00 7:00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	00.00	s	0.00	0.00	0.00	0.00	0.10	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
5:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
4:00 5:00	0.00	0.00	0.00	0.00	œ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.10
3:00 4: <b>00</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.10	s	0.00	0.00	0.10	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.20
2:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.10	0.00	s	0.00	0.10	0.00	0.10	0.10	0.00	0.00	0.10	0.00	0.00	0.10
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.10	s	0.00	0.00	0.10	0.20	0.00	0.00	0.00	0.00	0.00	0.20
0:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	v	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.20
HOUR START: 0:00 HOUR END 1:00	DAY.	2	e S	đ	'n	9	1	∞	ō,	10	11	12	13	2	15	16	17	18	19	20	21		23	24	25			28	29:	30	31	HOURLY MAX
HOU							14.7				, i			1) (1) (3) (1)	26) (4)											140						HOH

#### STATUS FLAG CODES

#ENDANGE  "RECOVERN ZERO/SPANCHECK "X. "MANCHIVE/MALEUNCHION: "O "OPERATION: "COLLECTION/BRROR"  24 HOUR AVERAGES FORMAY 2015  24 HOUR AVERAGES FORMAY 2015  6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 28 30 33
MAINTENANCE DAILY/ZERO/SPAN POWERF-NIUWE COUTE-OR REPAIR 24 25 25 26 27 28 29 29 20 20 20 20 20 20 20 20 20 20 20 20 20

			2	MONTHE SOMMAN				
NUMBER OF NON-ZERO READINGS:	NGS:		37					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		0.30	PPM PPM	PPM @ HOUR(S) PPM	21	ON DAY(S) ON DAY(S) VAR-VARIOUS	27 26	<b>~</b> 10
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	32	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	:: PTIME:		743 99.9	HRS %
STANDARD DEVIATION:	0.03			MONTHLY AVERAGE:	üi		0.01	0.01 PPM

Of Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

Maa

**—** LICA35



### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION Elk Point Airport Site - MAY 2015

JOB # 196-2015-05-93- C

# NON-METHANE HYDROCARBONS MAX instantaneous maximum in ppm

MST

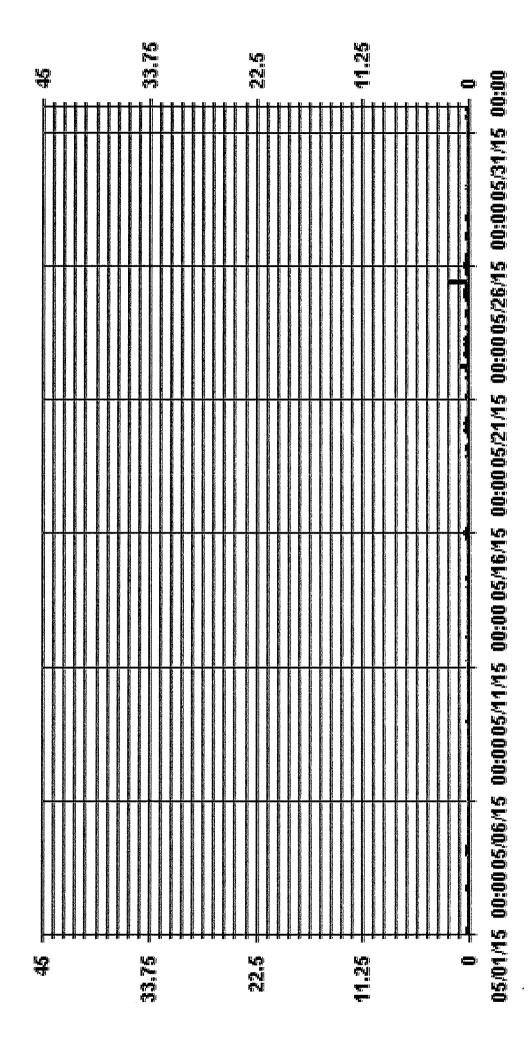
UR i. RDGS.							1 24																									
24-HOUR AVG.	90:0	0.02	0.01	90.0	0.00	0.00	0.01	0.00	0.01	0.00													0.12				0.0			0.0	0.0	
DAILY MAX	0.19	0.19	0.11	0.26	0.08	0.00	0.12	0.09	0.13	0.06	0.13	0.20	0.00	0.15	0.33	0.32	0.00	0.18	0.38	0.35	0.14	0.99	0.37	0.49	2.18	0.39	0.32	0.16	0.16	0.00	0.22	
23:00	0.10	0.00	0.11	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.21	90.0	0.03	0.12	S	0.49	0.36	0.00	0.00	0.07	0.00	0.00	0.12	0.49
22.00	s	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.13	0.00	0.00	0.18	0.16	0.00	0.00	0.09	0.09	S	0.29	0.00	0.13	0.16	0.00	0.00	0.12	0.29
21.00	0.12	s	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.16	0.38	0.00	0.02	0.20	0.00	0.09	s	0.00	0.32	0.00	0.00	0.00	0.14	0.38
20:00	0.00	0.19	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.02	0.26	0.00	0.14	0.17	0.00	0.21	0.19	s	0.25	0.00	0.00	0.00	0.00	0.26
19:00 20:00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.16	0.00	S	0.00	0.00	0.00	0.09	0.16
18:00	0.11	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.14	0.13	0.16	0.08	0.01	S	0.00	0.00	0.00	0.53
17.00	0.00	0.18	0.00	0.00	0.08	s	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.20	0.15	0.00	0.00	s	0.00	0.00	0.20
16:00 17:00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.06
15:00 16:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	U	0.00	0.00	0.07	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.10
14.00 15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ပ	0.00	0.00	0.11	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22
13:00 14:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ပ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	000
12:00 13:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	U	0.00	0.00	0.00	0.10	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
11.00 12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	ပ	0.00	0.00	0.00	0.00	0.13	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.13
10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.01	0.00	0.00	0.00	0.00	U	0.00	0.00	0.00	0.09	0.00	2.18	0.13	0.00	0.00	0.00	0.00	0.00	2.18
9:00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.13	0.12	0.00	0.00	0.00	0.00	0.13
8:00 9:00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	S	0.00	0.00	0.00	0.10	0.26	0.14	0.14	0.00	0.24	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.26
7:00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.05	0.00	0.12	0.00		0.00	0.00	0.14	0.17	0.07	0.39		0.30	0.10	0.15	0.00	0.00	0.00	0.00	0.00	0.39
6:00 7:00	0.14	0.00	0.00	0.08	0.00	0.00	0.00	0.09	0.00	0.00	0.13	0.03	0.00	0.00	0.00	0.00	s	0.00	0.02	0.00	0.00	0.99	0.37	0.10	0.14	0.11	0.10	0.00	0.00	0.00	0.00	0.99
5:00	0.19	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.20	0.00	s	0.21	0.21	0.08	0.13	0.21	0.18	0.00	0.19	0.12	0.00	0.06	00.0	0.00	0.21
4.00 5:00	0.13	0.00	0.00	0.04	œ	0.00	0.00	0.00	0.00	90.0	0.00	0.13	0.00	0.08	0.04	0.32	0.00	0.00	S	0.35	0.13	0.16	0.17	0.13	0.00	0.25	0.14	0.00	0.00	0.00	0.00	0.35
3.00	0.14	0.00	0.00	0.26	œ	0.00	0.00	0.00	0.00	0.00	0.10	0.20	0.00	0.00	0.00	0.25	0.00	0.00	0.19	s	0.13	0.09	0.27	0.00	0.32	0.39	0.00	0.00	0.00	0.00	0.00	0.39
2.00	0.16	0.01	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.27	0.00	0.00	0.00	0.20	s	0.00	0.32	0.06	0.28	0.37	0.00	0.00	0.04	0.00	0.00	0.37
1.00	0.13	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.12	0.00	0.18	0.00	0.00	0.09	0.00	0.12	S	0.17	0.00	0.23	0.38	0.18	0.00	0.11	0.00	00.00	0.38
0.00	0.08	0.13	0.00	0.15	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.11	0.00	0.26	0.0	0.00	0.00	0.12	0.11	0.0	v	0.00	0.24	0.33	0.00	0.09	0.16	0.0	0.0	0 33
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NUMBER OF NON-ZERO READINGS:		18	182							
MAXIMUM INSTANTANEOUS VALUE:		2.3	2.18	Σ	@ HOUR(S)	S)	10	ON DAY(S)		52
							VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME: 32 MONTHLY CALIBRATION TIME: 6 STANDARD DEVIATION: 0.12	2 HRS	10 LO	6	ERATIO	OPERATIONAL TIME:				742	HRS

ði Hour Averages



- LICA35 NMHCMAX PPM

LICA35 NAMC / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

	Fred	99.85	.14	00.	00.	00.	00.	
	NNW	5.09	00.	00.	00.	00.	00.	5.09
	NW	6.23	00.	00.	00.	%	00.	6.23
	WNW	6.09	00.	00-	00.	00.	00.	60.9
	×	4.53	0.	00.	00.	00.	00.	4.53
	WSW	3.11	.00	00.	00.	00.	%	3.11
	SW	2.12	00.	00.	00.	00.	00.	2.12
	SSW	2.12	00.	00.	00.	00.	00.	2.12
	w	4.24	00.	00.	00.	00.	00.	4.24
	SSE	7.50	00.	00.	00.	00.	00.	7.50
Direction	SE	6.79	00.	00.	00.	00.	00.	6.79
Di	3 3 3	14.87	00.	00.	00.	00.	00-	14.87
	ы	11.33	00.	00.	00.	00.	00.	11.33
	ENE	90.6	00.	00.	00.	00.	00.	9.06
	SE	4.10	00.	00.	00,	00.	00.	4.10
	NNE	6.51	00.	00.	00.	00.	00.	6.51
	z	60.9	.14	00.	00.	00.	00.	6.23
	Limit	4.	ເບ	1.0	2.0	4.0	4.0	Totals
		٧	<b>v</b>	٧	<b>v</b>	٧	X	

00.

Total # Operational Hours: 706

Calm : .00 %

Distribution By Samples

Fred

NIN

705

36

44

43

32

22

15

15

30

53

48

105

80

64

29

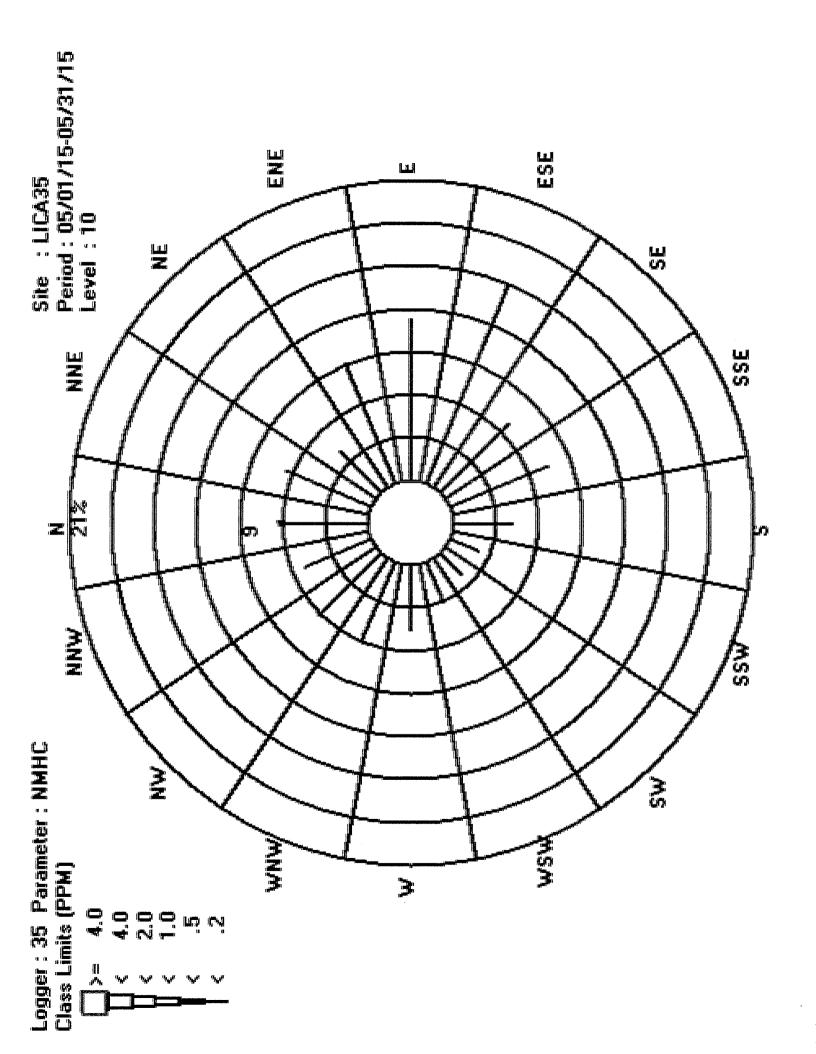
46

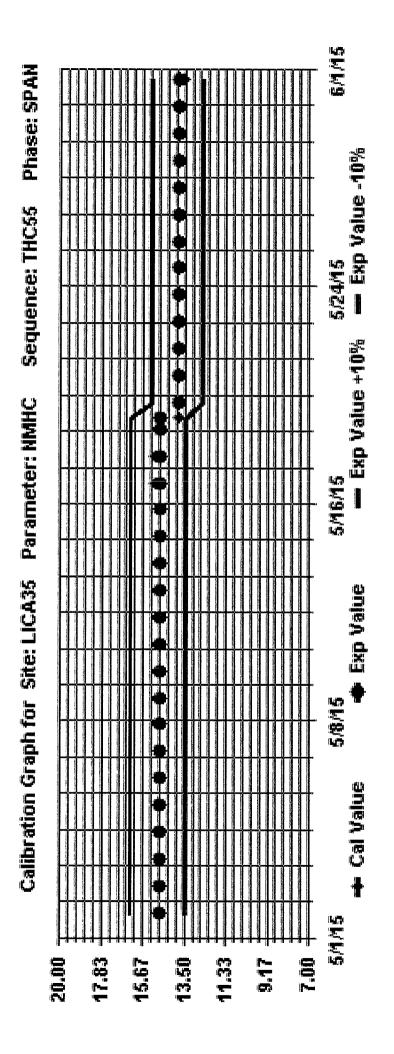
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Totals

MN WSW SW SSW 38 SSE Direction SE ESE 105 ENE Ä ME 46 43 z Limit 'n 1.0 2.0 4.0 4.0 4 . .

Calm : .00 %





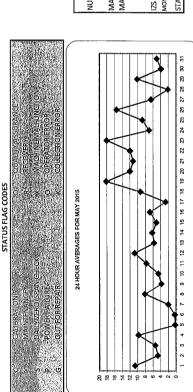


JOB #196-2015-05-93- C



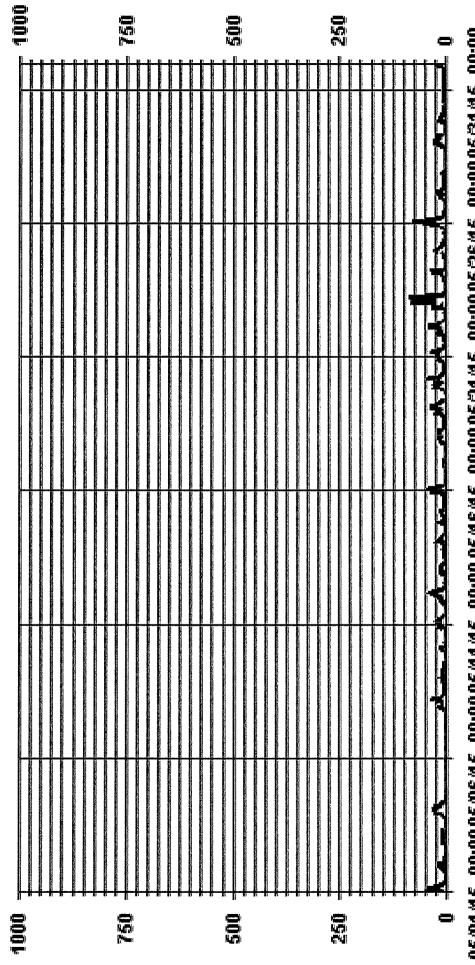
## OXIDES OF NITROGEN (NOx) hourly averages in ppb

10.7 4.7 4.7 4.7 4.6 6.8 8.1 10.8 8.1 11.0 1 45.2 47.5 15:00 17:00 18:00 19:00 21:00 20:00 21:00 22:00 23:00 17:00 18:00 19:00 20:00 21:00 20:00 20:00 \$ 99.3 | 113.4 | 113.4 | 113.4 | 113.4 | 113.4 | 113.4 | 113.4 | 113.4 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 | 113.6 0.00 1100 220 350 400 500 600 750 697 70 80 900 100 100 120 120 130 14.00 150 150 14.00 150 14.00 150 150 150 1 00.00 0.5 0.1 10.9 13.2 13.9 12.0 12.3 6.0 1.4 S 9.0 10.5 52.8 52.8 17.9 0.4 6.2 6.2 6.2 4.3 53.4 1.4 18.3 33.9 43.4 1.4 21.6 2.3 13.1 14.3 13.4 20.7 23 18.1 18.1 24.8 18.2 13.7



NUMBER OF NON-ZERO READINGS:	GS:		684				
MAXIMUM 24-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		85.5 18.2	PPB PPB	@ HOUR(S) 6	ON DAY(S) ON DAY(S) VAR-VARIOUS	2, 21	13 19
IZS CALIBRATION TIME: MONTHLY CALIBRATION TIME:	32	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:		744 100.0	HRS %
STANDARD DEVIATION:	10.79			MONTHLY AVERAGE:		7.4	PPB

ði Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:00 05/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

HOX

- LICA35



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C

# OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

RDGS	24	24	24	24	ຊ	54	77	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	74	24	74	74	24	74		
24-HOUR AVG.	17.1	10.1	13.1	15.9	6.0	1.1	5.5	14.0	6.2	11.1	19.4	18.1	6.6	12.2	8,9	10.9	6.9	15.0	34.2	21.2	18.8	21.0	27.9	15.4	20.8	26.7	10.6	9.9	21.3	7.2	8.1		
DAILY	64.2	43.9	112.4	66.1	1.6	1.5	53.5	74.1	16.3	44.1	81.2	70.5	25.3	82.0	31.3	67.4	53.3	58.1	68.0	102.1	61.7	87.7	133.2	20.7	149.4	122.2	31.7	52.0	102.6	20.3	26.1		
23.00	23.7	13.2	112.4	9.0	1.6	0.8	25.9	5.4	2.8	31.0	17.9	22.3	7.0	3.2	31.3	2.7	28.0	30.6	35.9	26.4	24.5	19.6	s	33.6	41.7	59.5	2.0	52.0	26.0	5.1	26.1	112.4	23.8
22:00 73:00	s	12.6	30.8	9.0	1.3	6.0	53.5	19.7	172	19.5	13.0	23.5	5.2	6.0	22.9	2.0	20.2	58.1	34.7	23.1	30.4	31.1	20.1	s	47.7	10.8	3.4	15.7	40.0	9.0	21.9	58.1	20.0
21.00	40.9	s	20.5	6.0	17	9.0	18.3	12.4	1.4	34.5	8.5	7.6	9.1	7.3	13.0	2.8	53.3	19.3	59.6	18.4	31.6	87.7	3.1	18.2	s	8.5	12.9	6.4	52.0	11.8	25.6	87.7	20.3
20:00	6.8	24.1	s	113	1.1	1.2	3,3	6.3	13	15.6	36.5	12.6	12.1	29.1	4.1	1.1	17.5	10.9	63.8	9.0	12.7	22.5	3.1	6.8	21.8	S	16.4	5.9	16.0	12.0	10.7	63.8	13.3
19:00	1.7	25.7	4.7	s	1.2	1.1	2.1	4.3	6.0	1.4	61.3	6.0	8.2	15.9	2.5	6.0	12.5	10.2	20.2	11.5	12.5	10.9	1.6	5.5	4.5	3.0	s	1.4	12.8	3.5	11.8	61.3	9.0
18.00	2.5	8.0	2.6	1.0	S	1.2	1.5	3.7	6.0	1.0	1.4	4.4	4.8	7.1	5.0	0.9	2.4	7.8	4.2	10.6	13.3	10.5	1.7	1.2	3.3	4.3	5.7	s	2.7	2.8	11.5	13.3	4.2
18.00																															3.5	9.9	2.6
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5:00			13.6																												6.0		
4.00	63.6	8.4	16.9	30.2	0.7	1.4	1.3	35.0	13.3	44:1	43.1	52.1	20.2	25.4	17.1	17.9	2.3	20.1	s	102.1	61.3	48.8	35.6	59.5	8.6	48.5	29.5	1.7	29.1	18.5	4.5	102.1	28.7
3.00	64.2	22.9	14,4	52.8	~	1.0	1.7	21.0	10.3	25.0	81.2	41.2	18.4	82.0	9.1	37.8	2.3	23.4	0.89	s	24.5	9.09	77.6	21.7	19.5	91.2	31.7	1.7	31.0	14.3	5.7	91.2	33.0
2.00	28.4	43.9	10.0	29.9	0.7	1.1	1.8	12.5	8.6	25.8	22.8	26.0	15.2	11.7	8.6	67.4	2.4	18.2	31.4	28.7	s	20.8	133.2	22.5	27.7	97.1	14.0	1.6	32.5	12.4	4.7	133.2	25.4
1.00	20.1	18.3	10.2	66.1	6.0	1.3	11	14.8	11.7	9.1	17.8	32.3	22.5	8.6	8.1	37.4	3.4	20.0	24.7	20.9	29.9	s	56.1	11.9	36.5	122.2	17.1	1.4	34.5	16.8	4.6	122.2	22.7
0.00	32.9	24.4	10.2	30.0	0.8	1.3	1.6	11.3	16.1	7.3	18.3	17.5	25.1	7.7	3.5	56.5	3.3	34.6	32.9	42.9	24.6	18.4	S	10.5	31.6	100.1	17.5	1.8	50.4	20.3	4.9	100.1	21.9
HOUR START HOUR END.	. Day	2	8	4	9	9	7.	8	6	10	17	2.72	T3	14:	15	16	17	18	- 19	. 20	. 21	22	23.1	24		-26		28	. 29	30	.31	HOURLY MAX	HOURLY AVG

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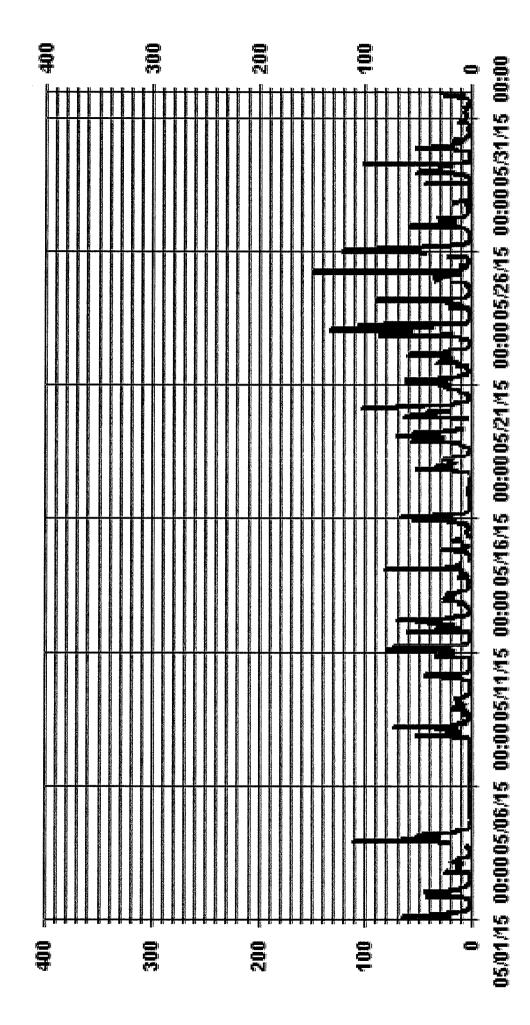
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NUMBER OF NON-ZERO READINGS:	GS:		703							
MAXIMUM INSTANTANEOUS VALUE:	ALUE:		149.4	ррв	PPB @ HOUR(S)	JR(S)	φ	ON DAY(S)		52
							VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME:	32	HRS		OPERATIONAL TIME:	ONAL TIN	ij			743	HRS
MONTHLY CALIBRATION TIME:	∞	HRS								
STANDARD DEVIATION:	20.14									

Of Hour Averages



- LICA35 NOXMAX PPB

LICA-FIK NOX\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 35 Site Name : LICA-ELK Parameter : NOX\_ Units : PPB\_

Fred 98.86 1.13 00. 00. NNW 5.11 0. 8. % 5.11 5.96 MN .28 8. 00. 6.25 5.53 00. 6.10 00. .56 4.26 00. 4.54 Wind Parameter : WDR Instrument Height : 10 Meters .28 00. 3.12 00. 3.12 00. 00. 2.13 00. 2.13 0. 00. 2.13 00. 00. 2.13 SSW 8. 3.97 3.97 00. 00. 8 Ø 7.38 SSE 00 00. 00. 7.38 Direction 6.81 00-SE 80. 6.81 00. ESE 14.91 9.09 11.50 14.91 00, 00. 0. 11.50 00. 00. 8. ы 60.6 ENE 00. 00. 00 00. 4.11 4.11 Ä 00. 00. 6.53 % 6.53 8. NNE % 6.25 8 % 8 6.25 z Totals Limit 50.0 < 110.0 < 210.0 >= 210.0

**\*** 00. Calm : Total # Operational Hours: 704

Distribution By Samples

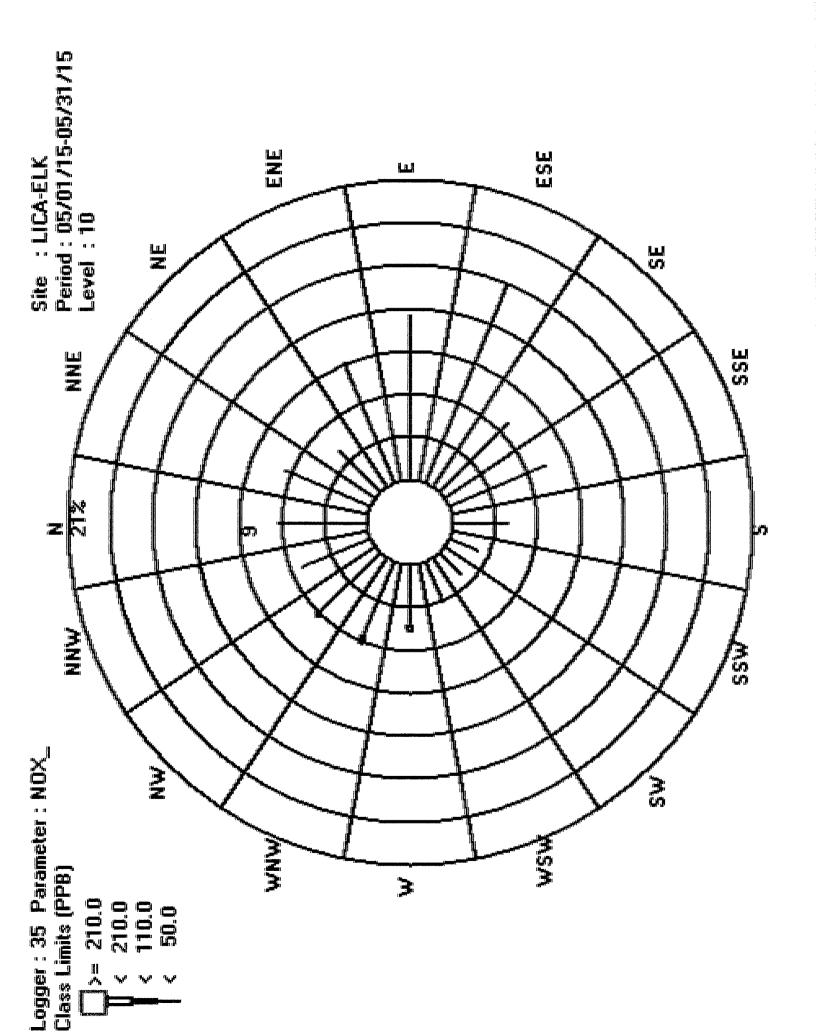
NNN MZ 44 5 0 43 WNW 33 WSW 22 15 SW 15 12 SSW 12 28 Ø 28 SSE 22 22 Direction 48 SE 105 ESE 105 81 64 ENE 64 29 벌 46 NNE 44 z Totals 50.0 Limit 110.0 >= 210.0 < 210.0 ٧

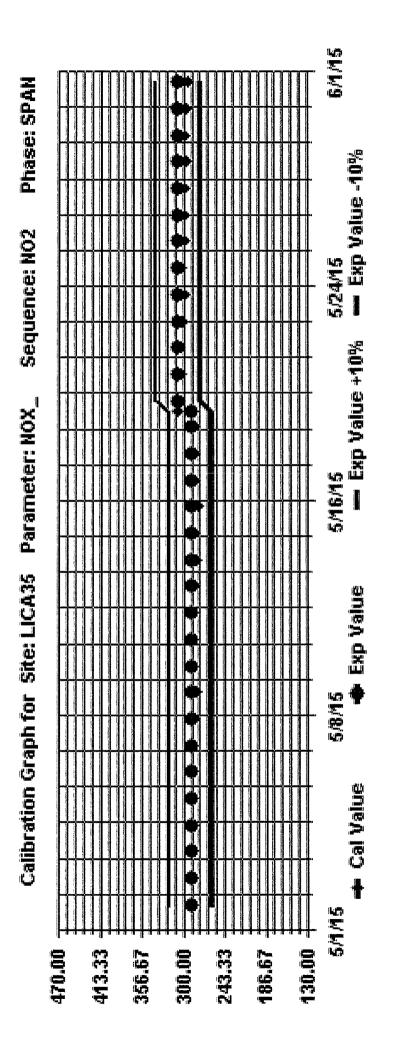
Fred

969

36

% OO. Calm :





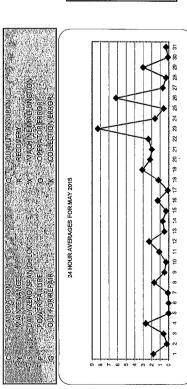




NITRIC OXIDE (NO) hourly averages in ppb

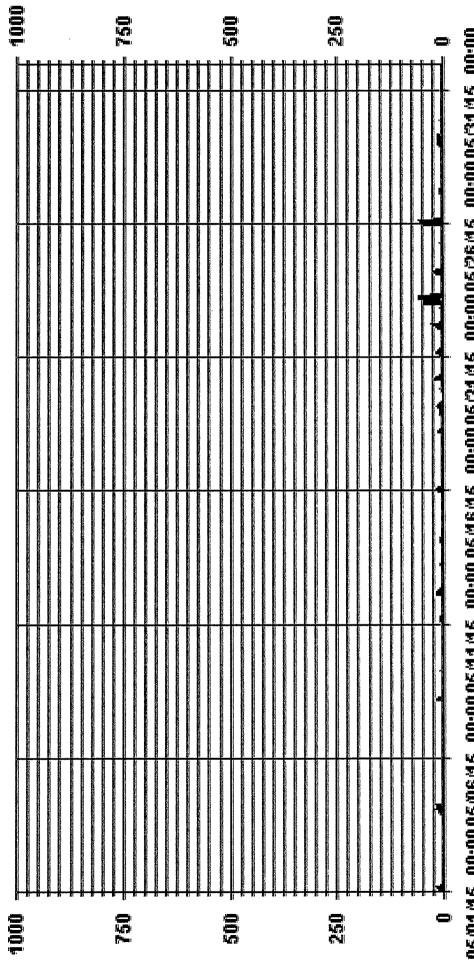
	RDGS.	24	54	74	54	24	24	24	24	24	24	74	24	24	24	24	24	24	77	74	24	24	24	24	24	24	24	24	24	24	24	24		
	24-HOUR AVG.	1.8	0.2	9.0	2.7	0.0	0.0	0.1	1.7	0.5	0.3	11	2.3	0.5	0.7	0.3	1.3	0.1	17	3.1	2.2	2.0	2.4	8.3	1.6	9.0	6.2	0.7	0.3	3.0	0.1	0.3		
	DAILY ;	13.5	8.0	6.3	13.7	0.0	0.2	1.7	14.9	2.6	1.0	6.3	13.2	2.6	3.9	2.8	15.1	0.5	9.9	12.7	18.6	16.5	15.8	27.7	16.0	3.8	45.8	5.4	5.4	12.4	0.4	1.0		
	23:00	0.4	0.1	6.3	0.0	0.0	0.0	0.3	0.2	0.0	1.0	0.4	0.7	0.0	0.0	9.0	0.2	0.3	1.3	0.4	0.0	0.3	0.2	s	0.7	3.8	1.4	0.0	5.4	0.3	0.0	0.7	6.3	0.8
	22.00	l	0.2	6.0	0.0	0.0	0.0	1.7	0.5	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.3	0.0	3.9	0.1	0.0	0.3	0:0	0.0	s	1.2	0.0	0.0	0.3	1.2	0.0	1.0	3.9	0.4
	21.00	0.3	s	0.2	0.0	0.0	0.0	0.2	0.3	0.0	9.0	0.1	0.2	0.0	0.0	0.0	0.3	0.0	0.2	1.4	0.0	0.5	3.0	0.0	0.0	S	0.1	0.0	0.1	1.2	0.1	0.3	3.0	0.3
	20:00	0:0	0.2	s	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.4	0.2	0.0	0.2	0.0	0.2	0.1	0.1	1.6	0.0	0.3	0.0	0.0	0.0	0.1	s	0.1	0.0	0.0	0.2	0.0	1.6	0.1
	19:00	0.0	0.3	0.0	s	0.0	0.0	0.0	0.3	0.0	0.1	9.0	0.1	0.0	0.4	0.0	0.2	0.0	0.1	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	s	0.0	0.0	0.0	0.0	9.0	0.1
,	18:00	0.0	0.0	0.0	0.0	s	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.2	0.0	0.1	0.0	0.0	0.7	0.0	0.0	0.0	0.1	0.0	0.0	s	0.0	0.1	0.0	0.7	0.1
	17.00	0.0	0.0	0.0	0.0	0.0	s	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.2	U	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	0.4	0.0	0.5	0.1
add	16:00	0.0	0.0	0.0	0.0	0.0	0.0	s	0.3	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	U	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	0.0	0.4	0.0
ges in	15 00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	s	0.0	0.1	0.2	0.3	0.0	0.0	0.0	0.1	0.0	0.1	U	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.3	0.0
avera	14:00	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.2	S	0.2	0.1	0.2	0.0	0.0	0.0	0.4	0.0	0.1	U	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.1
nouriy averages in ppo	0 13:00 0 14:00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	S	0.1	0.0	0.0	0.0							0.1						0.0	11	0.0	0.0	0.3	1.1	0.1
	0 12:00 0 13:00		0.0			0.0	0.0				0.0											0.3									0.0	0.2	0.4	0.1
NITRIC OXIDE (NO)	00 11:00 00 12:00		0.0																													_	9.0	_
ב ה	0 10:00 0 11:00	ŀ	1 0.0				0.0															5 0.2											6.0	
Z	00: 9:00 00: 10:00		0.0	_		_	_	0.0	5 0.9	9									3.5 0.0			7 1.5	3.6 0.1	4 0.				5 0.9	0.0	6 0.4	2 0.0	5 0.	3 1.5	0.0
	7.00 8.00 8.00 9.00		0.3 0.				_	_	.7 2.	.4 2.	_		. ,		.2 2.1			_	,	•				.3 0.			.1 0.0	.8 1.	.o.	2.4 0.	.s.	.9	31.3 4.	1.
	00 00 8		0.7 0																			7.5 5											57.7 31	
	60 7		0.2		•																													
	4.00 5.00 5.00 6:00		0.0																															
	3:00 4:00		0.2																															
	2.00 3.00		8.0																															
	1.00		0.2	0.0	3.9	0.0	0.0	0.0	0.8	0.2	0.0	0.2	0.8	9.0	0.0	0.0	6.0	0.2	0.0	0.3	0.0	0.2	S	3.7	0.1	1.6	42.1	0.3	0.0	5.9	0.0	0.0	42.1	2.1
	0.00	6.0	0.3	0.0	5.6	0.0	0.0	0.0	0.3	0.5	0.0	0.2	0.2	6.0	0.0	0.0	8.1	0.4	0.4	1.3	1.9	0.4	0.2	s	0.0	7.0	19.4	0.1	0.0	8.5	0.2	0.1	19.4	1.6
MST	HOUR START HOUR END	Day	2	S	4	2			. 8	ó	010	14	12	13	774	15:	16	27	18.			72	22	£2.	77,	25.	. 97	27	28	29	30	31	HOURLY MAX	HOURLY AVG
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#### STATUS FLAG CODES



			2	INICIN LELT SOMIMART				
NUMBER OF NON-ZERO READINGS:	<b>G</b> 2:		386					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		57.7 8.3	PPB PPB	PPB @ HOUR(S) PPB	ø	ON DAY(S) ON DAY(S) VAR-VARIOUS	13 13	
IZS CALIBRATION TIME: MONTHLY CALBRATION TIME:	32	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	TIME		744 100.0	HRS
STANDARD DEVIATION:	4.77			MONTHLY AVERAGE:			1.5	1.5 PPB

ði Hour Averagés



05/01/M5 00:0005/06/15 00:0005/11/M5 00:00 05/M6/M5 00:0005/21/M5 00:0005/26/M5 00:00 05/31/M5 00:00

- LICA35

JOB # 196-2015-05-93- C



## NITRIC OXIDE MAX instantaneous maximum in ppb

MST

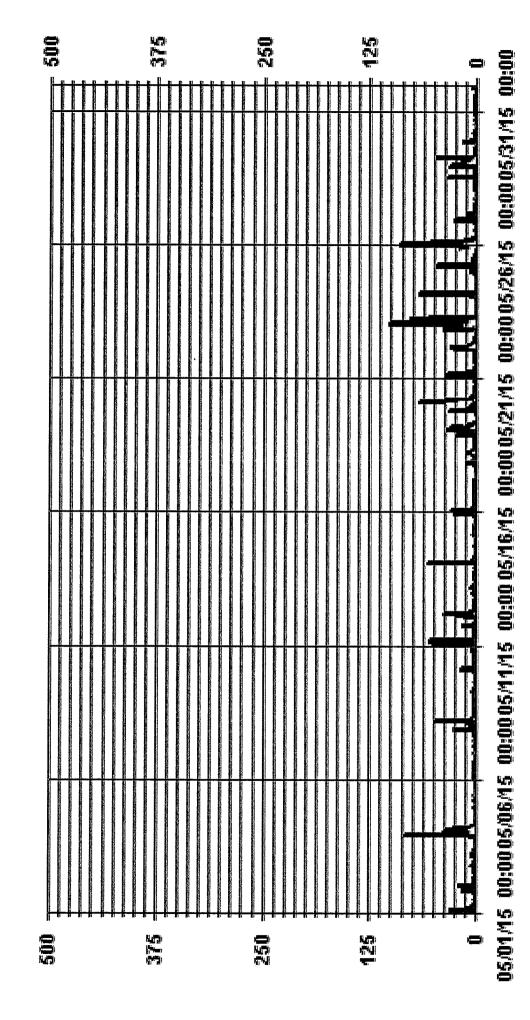
	RDGS.	24	54	24	54	23	24	54	54	54	24	54	54	54	24	54	54	24	24	24	54	24	24	54	54	54	74	24	54	54	54	24		
24-HOUR	AVG.	5.2	2.1	5.4	7.6	0.5	9.0	1.8	4.9	13	2.5	7.3	2.7	1.7	4.0	1.3	3.9	1.3	3.6	11.0	7.2	<b>S</b> .6	6.9	16.1	6.3	4.9	14.8	2.2	3.4	9.0	6.0	1.4		
DAILY		30.7	21.5	85.1	38.3	0.7	8.0	25.9	49.2	4.6	17.4	54.8	40.1	7.5	58.0	4.0	31.6	12.2	25.1	32.4	64.8	37.6	38.4	102.6	67.3	46.9	6.06	12.1	34.3	47.8	3.1	3.8 8.		
23-00	00:00	2.2	11	85.1	0.5	0.7	0.4	2.7	1.2	0.5	4.2	1.2	2.2	0.5	0.4	3.2	6.0	1.9	8.7	2.9	1.8	6.0	1.4	S	2.2	6.8	27.4	0.3	29.9	3.6	0.7	2.3	85.1	6.7
22.00	23.00	s	1.6	9.1	0.3	0.4	0.3	25.9	5.6	0.4	6.0	8.0	2.6	0.5	0.5	2.3	6.0	0.7	25.1	2.3	0.5	1.7	1.1	9.0	s	18.8	0.7	0.5	1.3	10.7	0.7	3.4	25.9	4.0
21-00	22:00: %	13.4	s	2.0	0.2	0.5	0.3	1.6	1.3	0.4	5.3	0.7	8.0	0.3	9.0	8.0	6.0	12.2	1.5	14.4	0.3	1.7	38.4	0.1	0.4	s	6.0	9.0	0.7	16.0	0.9	3.8	38.4	4.2
20:00	21.00	0.5	4.3	s	0.5	9.0	0.4	0.7	8.0	0.5	8.0	3.4	1.5	0.5	1.7	0.2	0.7	3.1	1.4	32.4	0.2	1:1	6.0	0.4	0.2	6.0	S	1.0	8.0	6.0	1.2	0.5	32.4	2.1
19:00	20:00	0.7	5.3	0.5	s	0.5	9.0	0.7	1.0	0.7	8.0	16.2	6.0	1.9	15	0.4	8.0	0.7	1.1	1.3	1.0	1.7	1.2	0.7	0.3	0.5	0.2	s	0.5	6.0	9.0	1.6	16.2	1.5
18-00	00.61	9.0	0.3	0.3	0.2	s	9.0	6.0	8.0	0.4	9.0	0.7	6.0	1.0	1.1	0.4	6.0	0.4	1.2	6.0	15	2.2	0.4	0.4	0.5	0.7	0.3	8.0	s	0.3	0.8	9.0	2.2	0.7
17.00	18.00	0.2	0.5	0.5	0.2	0.3	s	1.3	1.5	9.0	0.7	0.7	9.0	6.0	0.4	0.4	6.0	0.4	1.3	J	1.0	1.4	0.5	0.5	0.3	0.7	0.2	9.0	9.0	S	1.3	0.4	1.5	0.7
16.00	17.00	9.0	9.0	13	0.2	0.4	0.5	S	2.1	9.0	9.0	0.8	0.8	1.0	0.4	0.4	9.0	0.5	9.0	J	0.5	1.3	0.7	0.3	0.4	0.7	0.2	1.1	9.0	0.7	s	0.5	2.1	0.7
15:00	16:00	0.4	8.0	4.0	0.4	0.3	0.7	0.3	s	0.5	0.7	1.1	1.0	0.5	0.5	9.0	0.8	0.3	6.0	ပ	1.0	1.2	9.0	0.4	0.4	9.0	0.7	9.0	0.3	9.0	0.3	s	1.2	9.0
14-00	15.00	0.8	9.0	9.0	0.5	0.3	0.7	0.5	1.0	s	1.0	0.7	6.0	9.0	0.3	6.0	1.1	0.4	0.7	J	1.3	1.3	9.0	0.3	0.2	0.8	9.0	9.0	1.3	9.0	9.0	0.8	1.3	0.7
13.00	14.00	9.0	9.0	0.4	0.7	0.3	9.0	9.0	0.8	9.0	S	0.8	1.0	0.7	0.4	1.2	1.0	0.5	1.0	U	9.0	0.7	0.5	0.3	0.4	1:1	0.5	0.7	34.3	0.6	9.0	6.0	34.3	1.8
12.00		0.4	6.0	9.0	0.5	0.5	0.7	9.0	0.9	0.7	0.7	s	6.0	0.7	0.4	1.4	1.1	0.3	0.7	J	9.0	1.3	9.0	0.4	0.2	5.7	9.0	9.0	0.7	0.5	0.2	1.0	5.7	0.8
0.11.00	12.00	0.7	0.3	9.0	0.5	0.5	0.8	9.0	1.2	1.0	0.6	0.5	s	9.0	0.4	1.0	0.8	0.4	11	U	11	1.2	6.0	0.1	0.2	9.0	0.4	0.9	0.7	1.1	0.2	1.8	1.8	0.7
10.01	11.00	0.7	0.6	1.4	0.8	0.5	0.7	0.5	1.9	1.1	6.0							0.5				11				1.8	0.4	1.2	0.7	1.0	0.5	1.3	1.9	6.0
006	10:00			1.1																				1									3.4	
8.00	00·6			3.0														0.7				7 4.9								8 4.2			9 7.0	
0.70	0 8.0			1 4.3																										8 47.	3 1.0		7 57.9	
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NUMBER OF NON-ZERO READINGS:			703						
MAXIMUM INSTANTANEOUS VALUE:	ij		102.6	102.6 PPB	@ HOUR(S)	2	ON DAY(S)		23
						VAR-	VAR-VARIOUS		
IZS CALIBRATION TIME:	32	HRS		OPERATIC	OPERATIONAL TIME:			743	HRS
MONTHLY CALIBRATION TIME:	œ	HRS							
STANDARD DEVIATION:	11.72								

Of Hour Averages



- LICA35 NOMAX PPB

LICA-EIK NO. / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 35 Site Name : LICA-ELK Parameter : NO Units : PPB

Wind Parameter : WDR Instrument Height : 10 Meters

4.54 00. 4.54 00. % 3.12 3.12 00. 00. % 2.13 % 00. 2.13 SW 00. 2.13 00. 8. 2.13 0. SSW 3.97 00. % 00. 3.97 ß 7.38 SSE 9 00. 00. 7.38 Direction 6.81 0. 00. SE 9.09 11.50 14.91 6.81 % ESE 00. % % 9.09 11.50 14.91 00. 00. 00. M 00-8. 0. 4.11 4.11 00. 00. Ħ 90. 6.53 6.53 8 00. SKE 00. 6.25 6.25 00. % 00. z Totals Limit 50.0 < 110.0 < 210.0 >= 210.0

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NNW

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WNW

Calm : .00 %

Total # Operational Hours : 704

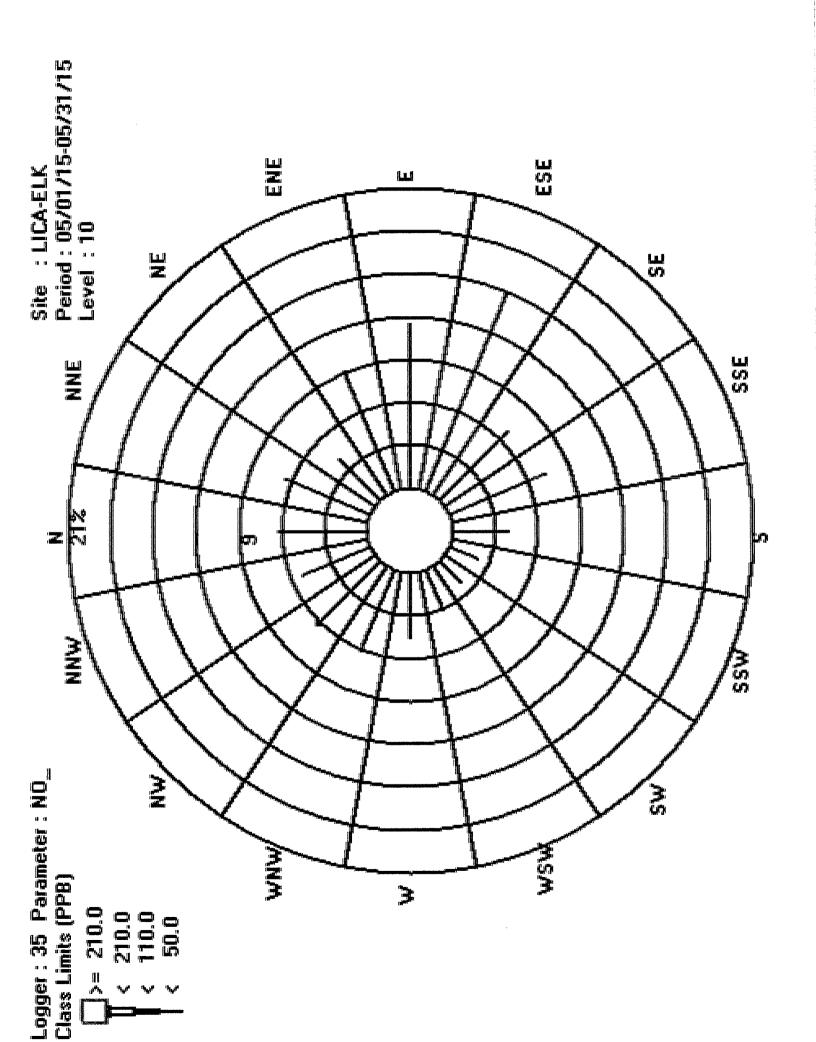
Distribution By Samples

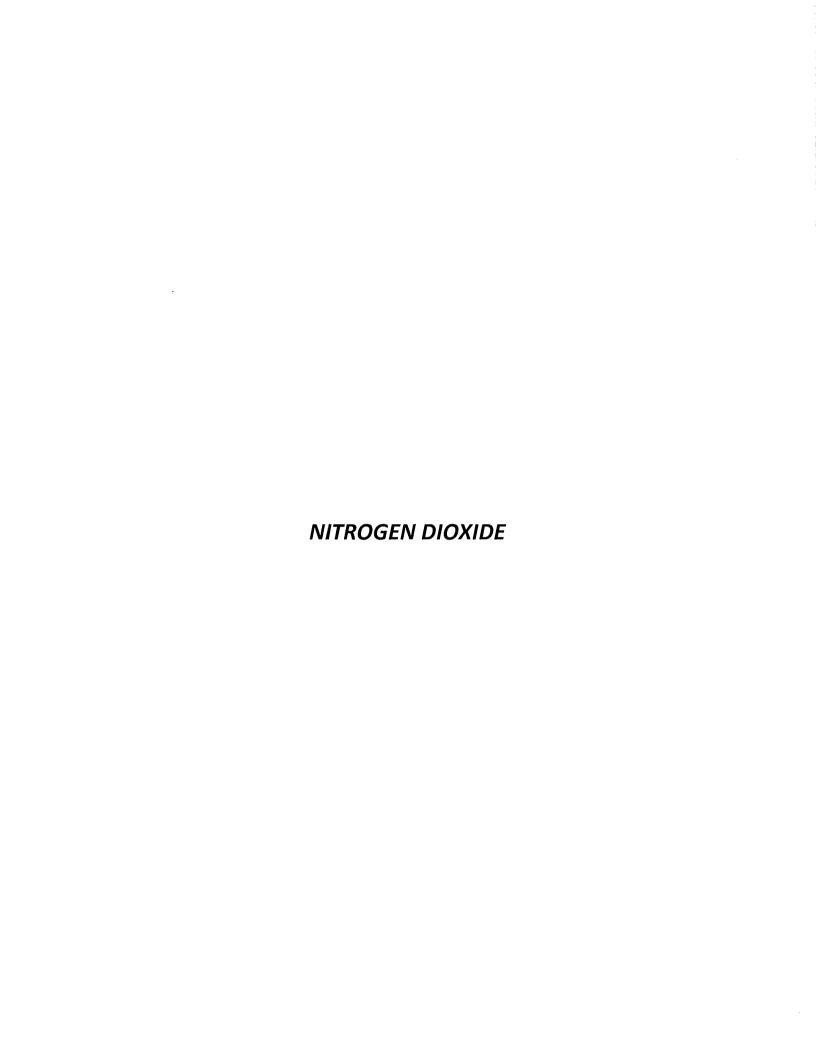
Freq

703

	NNW	36				36	
	WM	43	н			44	
	WNW	43 4				43	
	įς Σ	32 4				32	
	WSW	22				22	
	SW	15				15	
	SSW	15				15	
	Ø	28				28	
	SSE	52				52	
Direction	SE	48				48	
17.7	ESE	105				105	
	<b>[11]</b>	81				81	
	ENE	64				64	
	E	29				59	
	NNE	46				46	
	z	44				44	
	Limit	50.0	110.0	210.0	210.0	Totals	
		٧	٧				

Calm : .00 %





JOB #196-2015-05-93- C



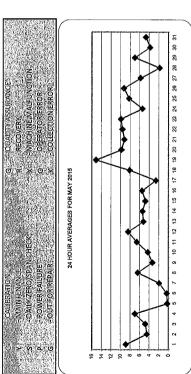
MST

NITROGEN DIOXIDE (NO2) hourly averages in ppb

Ē

24-HOUR AVG. RDGS.	ı		4.8 24																											3.8 24		
DAILY	31.7	16.7	18.4	22.1	0.6	0.6	14.4	21.5	10.9	20.2	17.4	25.4	12.7	16.1	21.5	28.3	15.9	22.9	28.0	25.7	217	30.3	34.4	23.5	32.3	33.9	16.1	14.4	16.8	12.8	18.9	
23.00	17.6	7.4	18.4	0.1	9.0	0.3	12.0	3.3	0.7	20.2	11.8	12.7	3.6	119	21.5	1.6	15.9	17.6	27.0	16.7	15.4	10.7	s	23.5	32.3	11.7	1.2	14.4	12.5	3.8	18.9	22.2
22:00	s	9.1	12.5	0.0	0.5	0.2	14.4	6.0	0.7	11.1	8.0	4.5	3.6	3.3	9.7	8.0	12.6	22.9	22.7	19.1	19.1	14.4	7.2	s	17.3	7.7	1.8	9.5	13.3	5.1	15.6	2
21:00	6 6	s	10.2	0.0	0.5	0.0	5.6	7.3	0.5	14.2	4.7	4.5	5.7	4.8	4.4	6.0	11.7	11.7	24.4	13.1	16.4	30.3	1.8	7.9	s	5.3	6.9	3.2	14.5	6.7	11.7	5
20:00	2.8	9.0	s	9.0	0.4	0.3	2.3	3.1	0.5	4.0	9.2	7.5	7.4	13.3	1.9	0.4	8.3	9.9	113	4.8	8.1	11.0	2.0	3.5	9.7	s	7.2	2.4	9.5	4.6	6.2	
19:00	11	3.6	0.7	s	0.5	0.3	6.0	2.3	0.2	0.7	4.9	2.5	3.1	8.7	1.4	0.1	1.7	5.2	4.4	4.2	3.3	4.3	6.0	2.3	3.6	2.0	S	0.3	5.0	2.0	3.4	1
18:00	1,1	0.1	0.8	0.4	s	0.3	9.0	1.9	0.2	0.3	9.0	1.9	2.9	2.4	2.5	0.0	0.4	2.8	2.0	3.1	4.4	1.7	0.7	0.5	1.6	3.2	2.0	v	1.4	14	3.6	
17:00	0.6	0.1	0.8	9.0	0.0	s	9.0	2.0	0.2	0.3	9.0	0.8	1.6	0.7	2.2	0.0	0.1	1.5	U	2.6	2.2	13	6.0	1.3	11	1.7	1.5	9.0	s	1.2	1.3	•
16.00 17.00	0.5	0.2	1.0	0.7	0.2	0.2	s	2.1	0.3	0.1	0.5	6.0	1.7	6.0	1.7	0.0	0.2	13	U	1.3	1.5	1.2	0.9	1.1	1.1	0.0	1.6	0.7	0.4	s	1.4	,
15:00	0.4	9.0	0.3	0.7	0.2	0.3	0.3	s	0.1	0.3	0.7	6.0	1.4	0.7	1.5	0.0	0.0	1.5	U	1.6	1.3	6.0	0.7	0.3	13	0.4	1.6	0.3	0.4	1.1	s	,
14:00	1.0	0.4	0.3	0.8	0.2	0.5	0.3	1.5	s	0.3	8.0	6.0	172	0.5	17	0.0	0.1	1.1	U	1.7	0.7	1.0	9.0	0.2	1.3	9.0	1.6	9.0	0.3	1.1	1.8	,
13:00	6.0	0.7	0.5	9.0	0.2	9.0	0.2	1.5	1.2	s	6.0	6.0	13	0.4	2.1	0.0	0.0	1.4	U	1.3	0.8	0.9	6.0	0.2	24	9.0	1.9	1.4	0.5	1.1	1.7	ŀ
12.00 13.00	0.8	0.5	0.2	1.0	0.1	0.4	0.3	1.2	17	0.2	s	8.0	1.2	0.4	2.2	0.0	0.0	1.1	U	1.3	1.2	1.0	13	0.1	1.3	1.0	1.6	9.0	0.5	1.1	2.1	
11.00	먑	0.3	0.0	1.2	0.0	0.4	0.2	2.9	172	0.1	0.7	s	1.1	0.5	1.8	0.2	0.0	1.3	U	1.6	1.4	1.3	1.1	0.4	1.1	1.1	1.8	9.0	6.0	6.0	2.2	9
10:00	1.0	9.0	1.1	2.1	0.0	0.3	0.4	3.0	2.1	0.5	17	6.0	s	8.0	13	0.1	0.0	1.4	U	2.3	1.3	1,4	2.7	0.4	2.8	172	2.7	0.8	70	1.2	5.9	١
9:00 10:00	2.1	0.7	1.2	5.7	0.1	0.0	0.4	2.2	3.4	1.0	1.8	3.1	1.4	s	1.4	0.1	0.0	2.5	4.0	5.8	4.5	3.3	3.4	1.3	2.0	13	3.7	0.5	0.7	1.5	5.4	۱
8:00	6.0	1.0	3.8	10.3	0.3	0.4	0.7	7.0	5,9	1.3	3.2	9.9	3.1	6.2	s	0.3	0.1	7.4	8.9	10.2	8.3	8.7	3.7	5.9	4.2	2.0	4.3	0.5	1.4	2.3	3.1	,
7:00	7.2	2.6	7.3	11.6	0.3	0.4	10	6.6	8.3	1.3	4.8	13.1	5.4	7.7	5.0	S	0.3	10.7	11.1	12.8	10.8	12.4	22.3	3.8	8.0	3.7	5.8	0.8	11.2	2.7	3.6	000
6:00	13.3	4.4	7.7	16.3	0.3	0.2	0.7	10.1	7.2	2.5	10.0	15.2	9.0	8.7	9.5	6.0	S	12.4	15.1	17.6	14.2	13.7	27.8	10.0	9.0	8.7	8.1	0.5	8.4	3.3	3.9	010
5.00	l	9.6	6.7	15.2	0.2	0.3	0.7	21.5	7.6	5.8	13.1	20.3	9.7	12.8	9.4	6.0	6.0	S	20.0	24.3	21.7	20.9	24.4	16.1	6.7	13.7	17.8	1.0	7.2	6.4	4.2	
4.00 5:00	31.7	4.9	8.9	14.3	0.0	0.5	9.0	20.3	6.7	9.4	16.6	25.4	12.7	14.9	9.1	14.4	1.2	14.1	S	25.7	18.9	25.2	23.6	17.1	4.7	23.6	13.0	8.0	10.4	7.0	3.5	1 10
3:00 4:00	29.9	8.7	8.0	17.4	0.0	0.3	9.0	11.7	5.8	10.6	17.4	25.2	9.3	16.1	7.7	24.3	1.0	17.7	28.0	s	18.3	27.8	28.4	8.8	10.1	29.4	16.1	0.4	14.1	6.2	4.2	000
2.00 3.00	20.9	16.7	7.0	19.7	0.0	0.3	0.5	9.4	5.6	6.6	14.2	17.7	10.2	7.1	7.1	28.3	1.1	14.2	17.1	17.6	s	14.8	34.4	8.4	17.3	28.9	9.6	0.7	14.5	7.1	3.3	, ,,,
1.00 2:00	14.5	9.7	9.9	20.6	0.0	0.5	0.4	7.7	2.2	7.2	12.6	16.4	10.5	6.5	4.4	20.7	2.1	13.1	14.0	13.4	20.5	s	27.0	7.3	21.4	32.3	11.3	0.8	16.8	8.2	3.6	22.2
0:00	16.1	16.4	6.0	22.1	0.1	0.4	0.7	9.5	10.9	1.6	13.4	11.2	12.6	5.5	2.3	27.3	1.9	17.7	16.8	22.9	17.8	13.5	S	6.4	25.1	33.9	12.4	0.7	16.8	12.8	3.4	
HOUR START HOUR END	DAY.	2	m	7	ý	9	7	<b>00</b>	Ö.	OT	17		13	14	15	16	100	18	-19		21	22	. 23	24	. 25	26	27	28	82	30	31	A STATE OF THE STA

#### STATUS FLAG CODES



#### OBJECTIVE LIMIT:

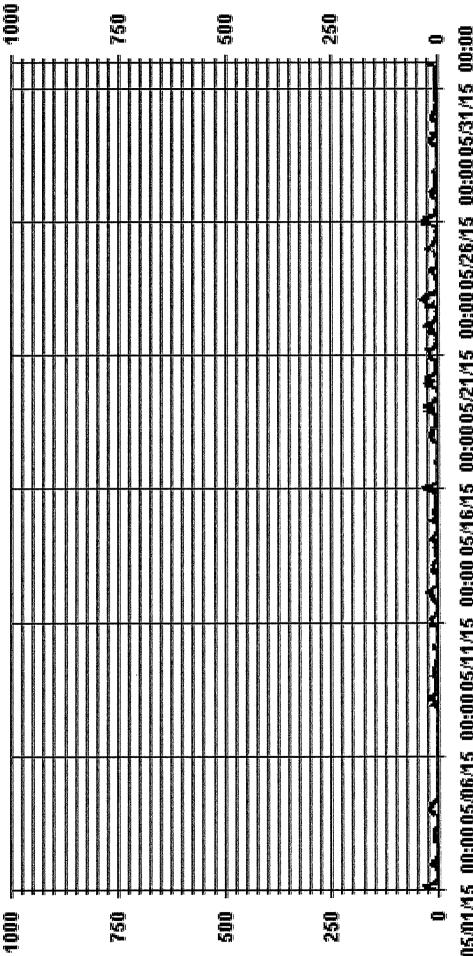
### ALBERTA ENVIRONMENT: 139 TES

#### MONTHLY SUMMARY

NUMBERGRITHRIZGEBENCES

NUMBER OF NON-ZERO READINGS:	35:		678					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		34.4	PPB PPB	@ HOUR(S)	7	ON DAY(S) ON DAY(S)	23	m m
IZS CALIBRATION TIME:	33	HRS		OPERATIONAL TIME:		VAR-VARIOUS	744	_
MONTHLY CALBRATION TIME: STANDARD DEVIATION:	7.26	HRS		AMD OPERATION UPTIME: MONTHLY AVERAGE:	TIME:		100.0	PPB %

od Hour Averages



05/01/15 00:0005/06/15 00:0005/11/15 00:00 05/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

**Bdd** 

H02

**—** LICA35



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

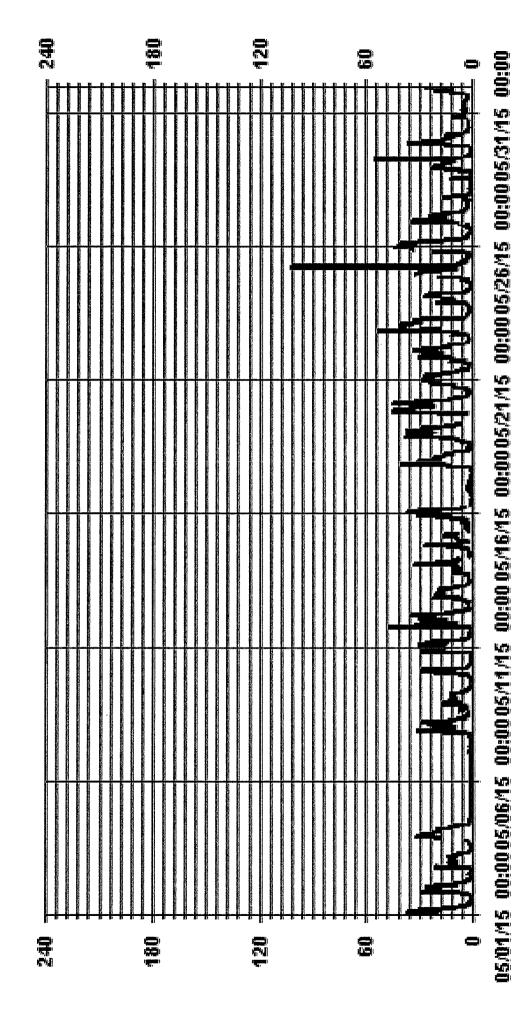
Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C

NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST								-	S S	NII KOGEN DIOAIDE	ומאסו	MAX		instantaneous maximum in ppo	eons n	Jaxim	E	adc								
HOURSTART. HOUREND!	0:00	2.00	2:00 3:00	3.00 4.00	5.00	5:00 6:	6:00	7.00	,00.6 00.8	9:00	10.00	11.00	12:00	13:00 1 14:00 1	14.00 1 15.00 1	15:00 16:00 17	16:00 1: 17:00 18	17,00, 18 18,00 19	18:00 19 19:00 20	00 20	20:00 21	21.00 22 22.00 23	22:00 23:00	DAILY MAX.	24-HOUR AVG.	RDGS.
·DAY.	29.7	19.1	28.6	37.6	34.2	31.1	18.7		8.6	4.3	1.8	1.8							l					ı	13.0	24
7	22.7	17.7	26.3	22.8	8.3	11.1	6.2		1.8	1.6	1.2	1.3	1.2												8.7	74
'n	8.6	9.7	10.2	13.1	13.7	10.5	11.0	9.6	8.9	2.0	1.9	6.0	0.7	6.0	1.1	1.2	2.2	1.6	2.4 4	4.5	S 18	18.9 21	21.6 32.3	32.3	8.1	24
Ą	24.4	29.5	22.9	21.6	17.4	19.7	19.7		11.7	8.2	2.8	1.6	1.5												9.0	24
2	1.0	1.1	8.0	s	1.0	1.0	1.3		1.2	6.0	6.0	8.0	8.0												1.0	54
Φ	1.3	1.1	1.0	1.1	1.2	0.8	0.8		1.2	0.7	0.7	1.0	11												10	54
7	1.6	1.3	1.8	1.7	1.6	1.7	1.3		1.7	1.2	1.1	1.1	1.0												4.4	24
œ	11.2	11.0	11.9	19.6	25.6	29.5	15.6		10.0	3.4	5.7	4.4	2.5												10.0	24
140	15.0	11.3	89 E.	6.6	11.6	12.0	9.7		7.7	5.4	3.5	2.2	1.9												5.4	24
10	7.8	9,3	20.9	21.6	29.2	14.7	3.6		2.3	1.7	1.4	6.0	8.0												9,4	24
Ą	18.5	17.4	21.0	31.1	27.3	24.2	13.8		4.1	2.6	2.0	1.2	s												13.0	24
12	16.8	29.4	24.7	31.0	28.9	35.4	20.7		11.5	5.4	5.0	s	13												13.3	75
13	21.8	19.4	14.9	16.8	18.3	18.2	11.9		4.2	2.5	s	1.7	2.3												8,5	54
14.	7.9	8.6	11.6	34.0	21.7	18.4	12.9		8.0	s	1.9	1.4	1.5												6.3	74
	3.9	8.2	9.0	9.3	15.2	16.4	12.3		s	2.1	2.1	3.4	4.0												8.2	24
16:	31.5	29.6	37.1	31.1	17.6	7.6	5.1		0.8	0.5	0.7	8.0	0.5												7.6	24
17	2.8	3.0	1.7	1.9	1.9	1.8	s		0.5	0.5	0.5	0.4	0.4												5.9	24
18	31.7	19.8	18.0	22.3	16.4	s	15.3		10.7	4.9	2.0	2.0	1.6												12.1	24
19	24.8	23.3	25.4	35.9	s	28.5	18.5		10.4	7.2	U	U	ပ												24.4	24
20	35.8	20.9	26.6	s	44.5	33.3	22.6		11.7	7.5	3.9	5.6	2.8												14.7	54
21.	22.6	27.9	s	22.2	27.0	26.7	18.9		10.2	7.8	2.9	5.6	5.6												13.8	24
.22	17.7	s	20.1	34.0	29.2	26.8	18.3		13.2	4.9	2.7	2.8	2.0												15.0	74
23	s	38.2	41.9	33.4	28.3	31.7	33.6		5.3	4.5	3.6	2.5	2.4												13.4	24
24*	10.3	11.4	17.4	18.2	27.3	25.8	21.6		4.8	2.5	1.2	1.3	17												9.7	24
.25	29.7	29.9	26.4	18.6	8.2	11.4	102.8		6.3	7.3	4.7	2.3	6.1											•	16.8	54
. 55	42.5	45.0	33.1	41.9	31.4	17.3	16.2		3.2	2.3	2.4	2.3	1.9												13.5	54
27	17.5	16.4	13.8	25.0	23.5	18.8	11.7		5.5	4.7	4.1	5.6	3.0												9.1	54
28	1.7	1.4	1.2	1.3	1.6	1.9	1.2		11	6.0	1.4	1.2	11												3,8	54
59	21.8	19.4	16.6	16.4	13.2	9.4	11.2		6.2	1.6	2.0	1.7	1.4												13.0	54
8	18.3	16.0	12.2	13.1	16.0	6.5	5.1		3.1	2.7	2.6	2.0	2.2												6.7	24
3T	4.7	4.6	4.2	5.3	4.2	5.1	4.7		5.0	3.3	5.7	4.2	3.4												7.5	54
HOURLY MAX	42.5	42.0	41.9	41.9	44.5	35.4	102.8		13.2	8.2	5.7	4.4	6.1				ŀ							I_		
HOURLY AVG	16.9	16.6	17.0	20.4	18.2	16.6	15.5		6.1	3.5	2.4	1.9	1.9													

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			δM	MONTHLY SUMMARY	MMARY				
NUMBER OF NON-ZERO READINGS:	GS:		703						
MAXIMUM INSTANTANEOUS VALUE:	ALUE:		102.8	102.8 PPB	@ HOUR(S)	ø	ON DAY(S)		25
						VAR-V	VAR-VARIOUS		
IZS CALIBRATION TIME:	33	HRS		OPERATIO	OPERATIONAL TIME:			744	HRS
MONTHLY CALIBRATION TIME:	∞	HRS							
STANDARD DEVIATION:	11.25								



- LICA35 NO2MAX PPB

### LICA-BIK NOZ\_ / WDR Joint Frequency Distribution (Percent)

May 2015

### Distribution By % Of Samples

Logger Id : 35 Site Name : LICA-ELK Parameter : MO2

		NW	6.25	00.	00.	00.	6.25
Parameter : NO2  Third Parameter : ND2  Units : PPB  Instrument Height : 10 Meters		WNW	6.10	00.	00.	00.	6.10
		红	4.54	00.	00.	00.	4.54
		WSW	3.12	00.	00.	00	3.12
	Direction	RS	2.13	00.	00.	00.	2.13
		SSW	2.13	00.	00.	00.	2.13
		Ø	3.97	00.	00.	00.	7.38 3.97
		SSE	7.38	00.	00.	00.	7.38
		SE	6.81	00.	00.	00.	6.81
		ESE	11.50 14.91	00.	00.	00.	9.09 11.50 14.91 6.81
		м	11.50	00.	00.	00.	11.50
		ENE	60.6	00.	00.	00.	60.6
		Ä	4.11	00.	00.	00.	4.11
		NA	6.53	00.	00.	00.	6.53
		z	6.25	00.	00.	00.	6.25
		Limit	50.0	110.0	210.0	210.0	Totals
			٧	v	···	ļ.	

00.

00.

NNW Freq 5.11 100.00 o. o.

.00 0.

Calm : .00 %

Total # Operational Hours: 704

Distribution By Samples

	WNW			
4	Ħ	32		
	WSW	22		
	SW	15		
	SSW			
	w	28		
		52		
Jirection	SE	48		
DIE DIE	ESE	105		
	ы	81		
	ENE	64		
	Z	29.		
	NA	46		
	z	44		
	Limit	50.0		

< 110.0

Fred

704

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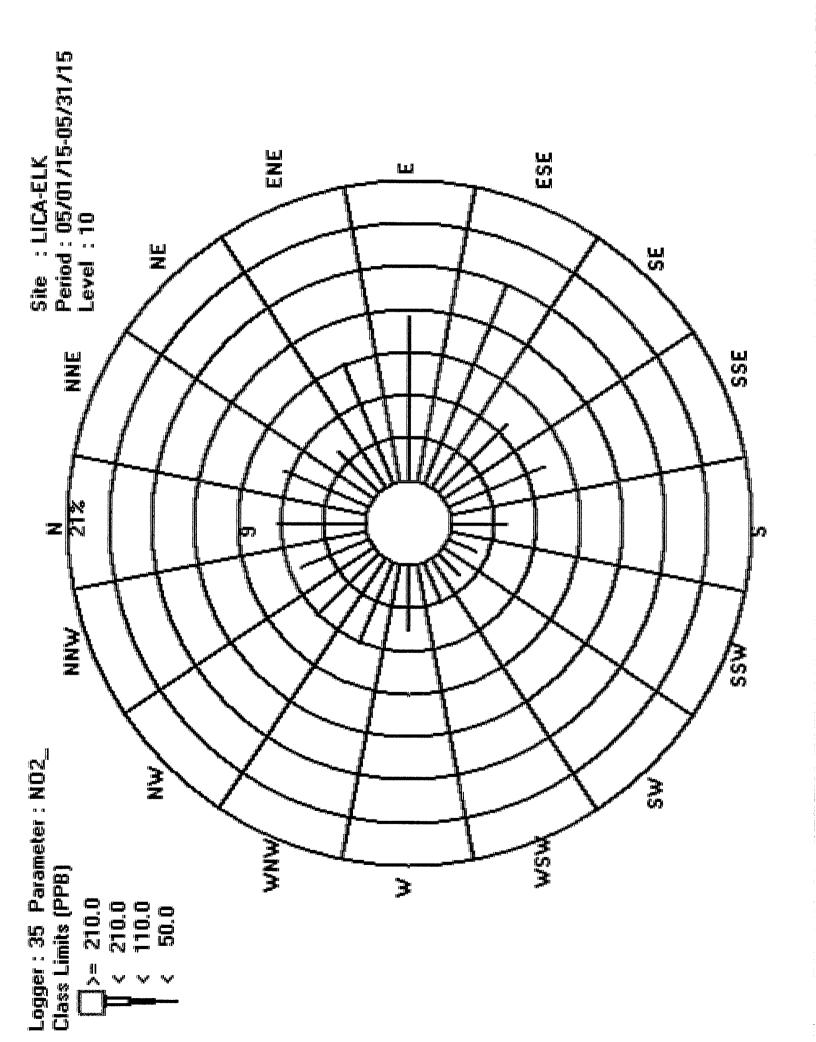
15

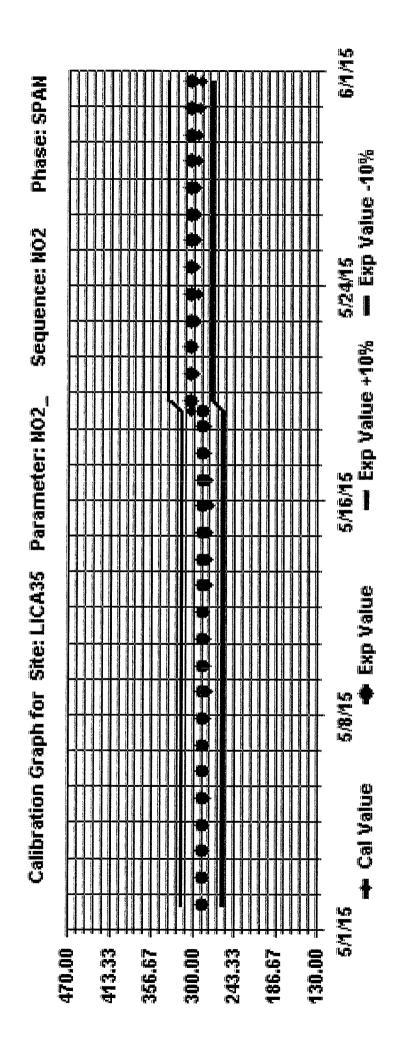
28

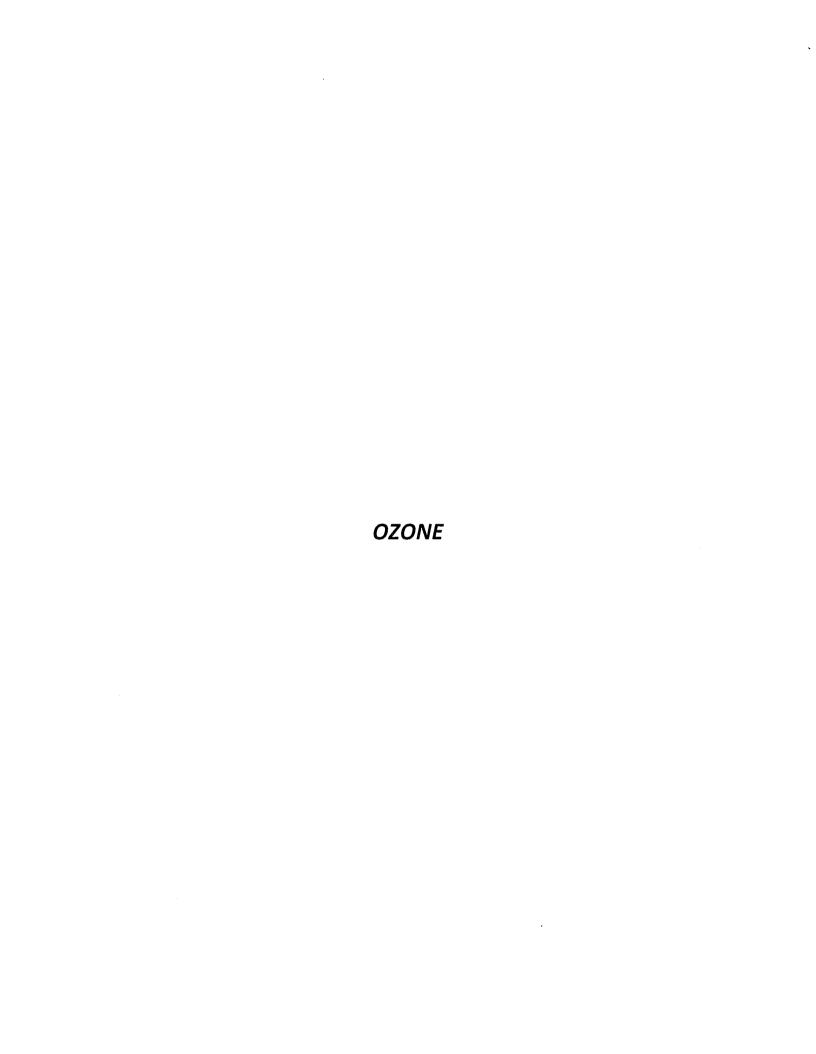
NNW 36

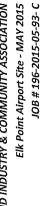
NW 44

Calm : .00 %









## OZONE (03) hourly averages in ppb

Maxxam A Burreau Veritas Group Company

7.000 8.90 9.00 10:00 12:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 22:00 22:00 73:00 8:00 18:00 10:00 11:00 12:00 23:00 12: 68 52.8 66 51.0 63 16.0 55. 88 7.7 MST

STATUS FLAG CODES

ላ ይ ር

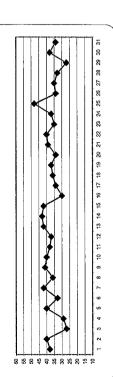
24 HOUR AVERAGES FOR MAY 2015

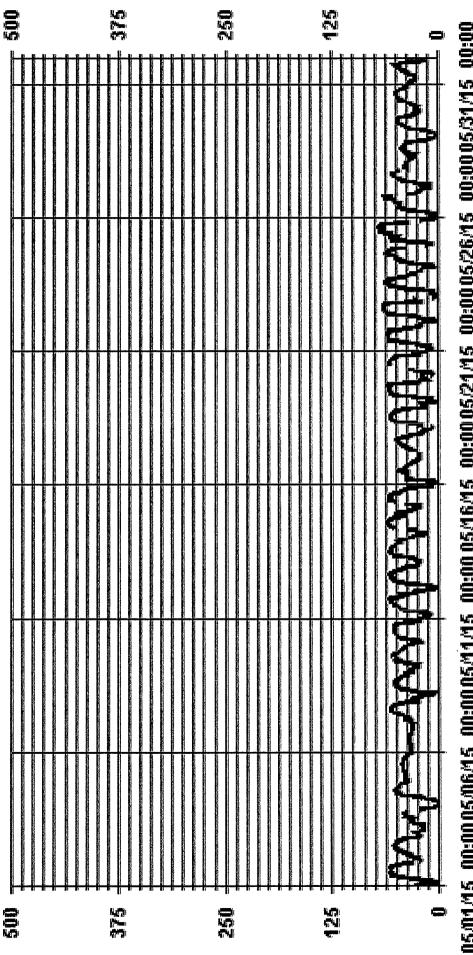
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1子HR 82 PPB

A.

			2	MONTHLT SUMMART				
NUMBER OF THREXCEEDENCE	S		0					
NUMBER OF NON-ZERO READINGS:	GS:		706					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		70 47.7	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	PPB @ HOUR(S) PPB	16	ON DAY(S) ON DAY(S) VAR-VARIOUS	22 23	
IZS CALIBRATION TIME:	32	85 E		OPERATIONAL TIME: AMD OPERATION UPTIME:	F. PTIME:		744	% HRS
- NOTEAN DO GRANATA	15.07			MONTHI V AVERAGE.	ú		27 008	000





05,01/15 00:0005,06/15 00:0005/1/1/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/31/15 00:00

PPB

Ö

**—** LICA35

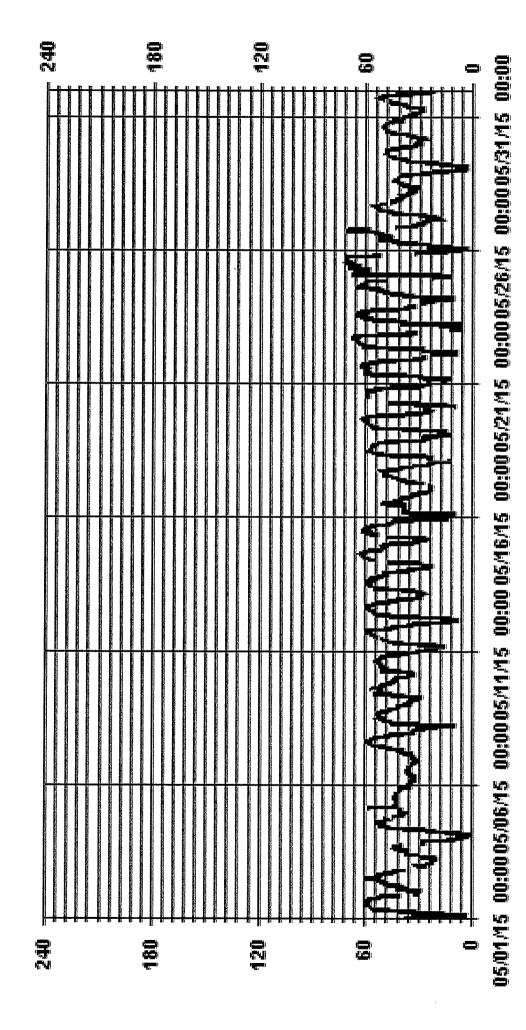
## OZONE MAX instantaneous maximum in ppb

Maxxam
A Burrau Voritas Group Company
MST

	RDGS.	24	24	24	24	23	54	54	24	24	24	24	24	24	24	54	54	54	54	54	54	54	54	24	24	24	24	54	54	24	54	54		
24-HOUR	AVG.	43.0	43.7	30.9	32.1	41.9	34.0	44.8	40.4	43.5	44.7	42.0	40.8	45.8	47.0	46.0	34.9	36.9	41.3	42.8	39.9	43.9	45.3	40.7	42.7	55.7	39.0	39.3	36.0	31.1	40.2	37.7		
DAILY	MAX.	28	8	4	54	57	36	59	23	26	24	29	29	29	63	61	51	51	28	62	29	62	63	65	99	2	71	26	4	49	51	23		
23.00	00.0	31	30	15	88	35	32	32	41	43	30	37	8	49	20	23	26	34	25	25	28	গ্ন	36	s	73	51	32	4	14	32	33	72	20	31.3
22.00	23:00	s	56	27	8	40	꿆	33	41	43	37	43	43	49	49	섫	껉	33	27	53	31	35	31	33	s	31	33	41	54	*	40	22	49	35.2
21:00	22 00	41	s	27	42	40	32	47	43	4	41	46	47	47	49	45	发	40	42	33	47	4	32	37	20	s	45	4	31	33 23	40	32	20	40.9
20.00	21:00	52	38	s	4	40	33	20	46	46	49	20	47	51	51	46	33	42	20	53	25	24	24	33	29	53	s	46	32	45	46	4	59	46.5
19:00	20.00	24	43	4	s	41	33	24	48	49	20	57	53	72	25	47	36	49	24	9	26	29	69	45	9	22	29	s	9	47	84	49	65	50.3
18.00	19:00	57	45	41	49	s	8	26	25	20	25	29	22	26	23	6	9	51	22	61	29	8	6	28	62	22	71	20	s	49	49	52	72	54.2
17.00	18 000	28	20	4	48	42	s	57	53	25	23	29	29	22	62	53	40	22	26	62	23	62	29	63	63	7	67	23	42	s	20	23	71	55.4
16.00	17.00	23	51	42	20	45	35	s	53	23	24	57	29	26	63	28	45	64	26	61	29	62	63	63	2	7	22	26	43	84	s	21	71	54.3
15.00	16:00	28	23	43	75	43	35	23	s	26	54	26	29	28	61	9	45	49	22	29	29	9	99	65	99	71	23	22	4	49	51	s	71	55.1
14.00	15:00	28	23	41	25	43	36	27	25	s	25	55	28	23	62	61	47	47	27	23	29	29	Ю	В	28	2	20	54	4	48	20	47	70	53.9
13.00	14.00	28	9	36	51	43	36	57	52	51	s	24	22	29	61	61	51	45	27	29	U	9	2	62	23	69	47	23	42	47	49	46	69	53.1
12 00	13:00	58	25	36	21	42	36	26	23	53	51	s	26	27	9	29	48	45	28	28	U	9	83	83	53	11	46	21	41	45	48	41	71	52.0
11.00	12:00	57	22	36	48	42	32	25	49	72	21	21	S	22	28	90	88	41	26	57	U	9	61	61	20	2	46	48	33	43	48	33	70	50.3
10:00	11.00	26	22	36	46	42	36	48	49	22	20	20	53	s	55	27	38	40	23	26	U	90	61	26	47	89	25	45	36	40	46	37	89	48.9
00.6	10:00	55	20	93	33	45	8	45	46	45	49	47	53	27	s	22	38	37	24	23	C	27	22	43	46	62	25	4	30	37	43	36	62	45.8
8:00	00:6	46	49	78	56	42	%	33	45	38	20	4	46	47	46	S	33	32	46	4	46	37	47	4	33	20	42	31	35	36	37	ຊ	70	40.9
2.00	8:00	41	47	8	8	43	32	33	30	78	20	33	ଯ	33	ଯ	47	s	88	26	က	31	31	27	41	33	28	45	26	36	77	32	78	28	34.4
6:00	7 00	31	40	21	15	45	32	40	22	30	40	31	123	32	78	8	39	S	23	20	31	83	ଯ	ιΩ	23	62	31	22	3	19	32	78	62	29.3
2.00	900	51	33	22	'n	41	32	38	თ	32	8	8	11	83	23	56	36	74	s	<b>£</b> 1	14	77	13	12	10	63	54	8	怒	11	78	30	63	24.1
4.00	5:00											13																						
3:00	0 4:00											20																						
0 2.00	3:00											24																						
0 1.0	0 20											- 23																					47	
	1.00	37	31	31	17	4	33	32	33	ਲ	43	30	X	31	43	48	E1	72	77	52	24	24	77	s	ຄ	77	9	82	39	7	82	39		78.8
HOURSTAR	HOUREND	T		6.3	4	Ş	9.	2.5	8	6	10	11	12	13.	14.1	, e15	16	17	18	6T .	.20	.70		.23	,24		26	. 22	1.28	767	30	31	HOURLY MAX	HOURLY AVG

NUMBER OF NON-ZERO READINGS:			706							
MAXIMUM INSTANTANEOUS VALUE:	نن		72	PPB	@ HOUR(S)	R(S)	18	ON DAY(S)		25
							VAR-VARIOUS	RIOUS		
IZS CALIBRATION TIME:	32	HRS		OPERATIONAL TIME:	NAL TIM	ü			743	HRS
MONTHLY CALIBRATION TIME:	w	HRS								
STANDARD DEVIATION:	14.83									

ði Hour Averages



- LICA35 03MAX PPB

LICA-EIK
03\_ / WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

Logger Id : 35 Site Name : LICA-ELK Parameter : 03 Units : PPB

Freq 75.24 24.75 00. 00. MNN 4.24 00. % 84 5.09 MM 5.09 1.13 00. 00. 6.22 4.52 1.55 MAN. 00. 0. 6.08 3.96 4.52 .56 % 00. Wind Parameter : WDR Instrument Height : 10 Meters 2.26 00. 3.11 WSW .84 8. 1.41 .70 % 00. 2.12 1.13 00. 2.12 SSW 66 00. 3.53 4.24 .70 00 00. Ø 3.96 3.39 7.35 SSE 8 8 Direction 6.93 S 4.80 2.12 0. 00. 8.06 10.46 12.30 2.54 ESE 00. 14.85 8 11.45 66. 8. 8 ы 9.05 66. 80. 8 2.97 1.13 4.10 ¥ 00. 00. 4.95 1.55 6.50 % Ä 00. 1.69 6.22 4.52 00. 8 z Totals Limit 20 110 210 210

Calm : .00 %

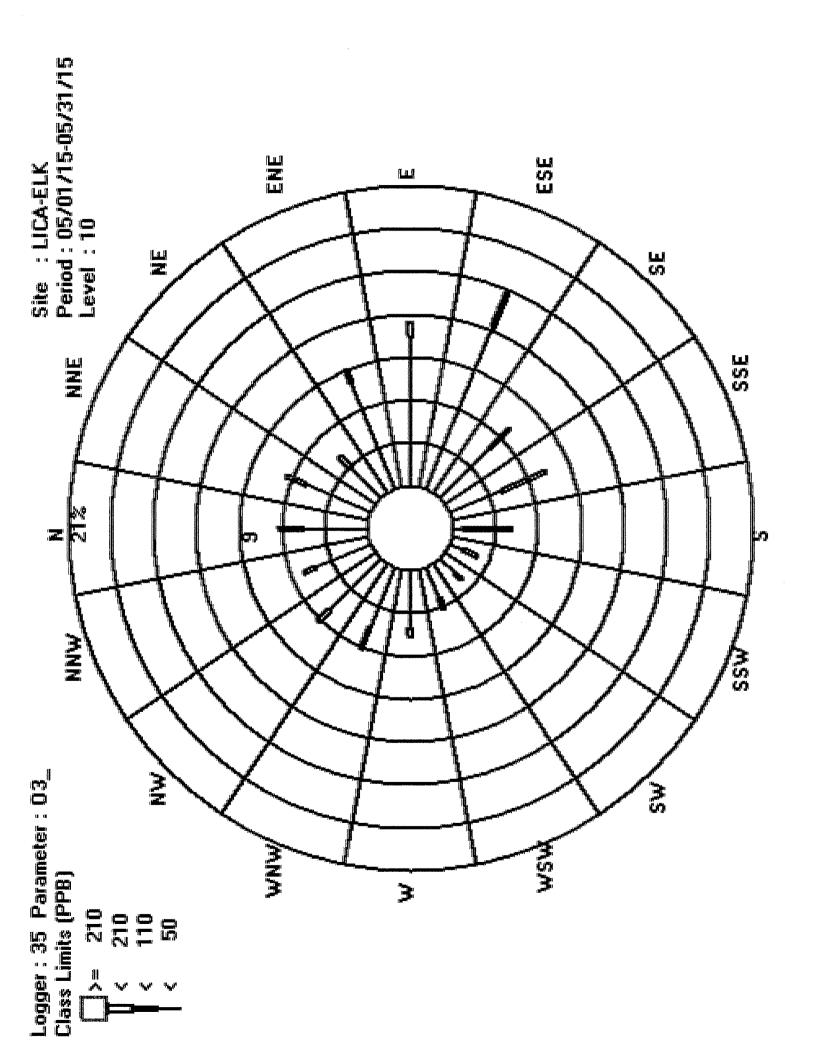
X

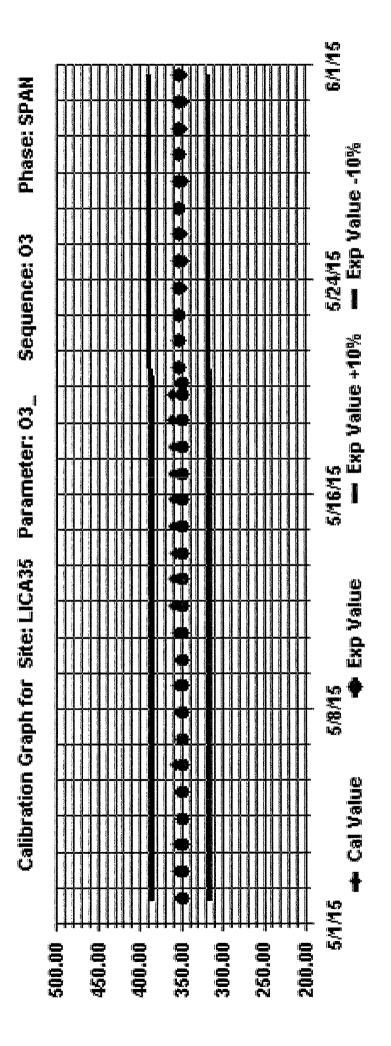
٧ ٧ Total # Operational Hours : 707

Distribution By Samples

Calm : .00 %

Total # Operational Hours: 707









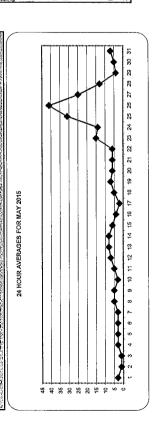
Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C

# PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST

216
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0 5 3
1 4 X
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7 5
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11 9
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28 20

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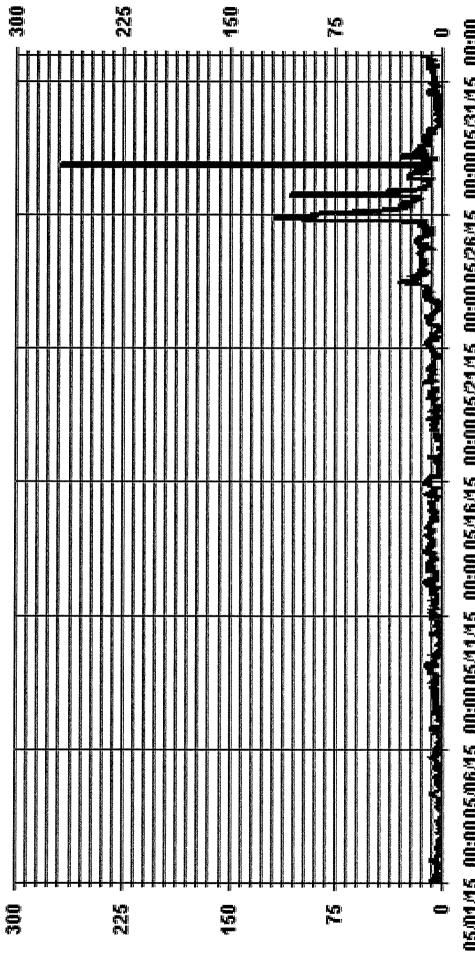
## ALBERTA ENVIRONMENT: 2444R 30 VE/m3

OBJECTIVE LIMIT:

### MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCE	\$3		7					
NUMBER OF NON-ZERO READINGS:	es:		999					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		269 41.4	269 ug/m3 41.4 ug/m3	269 ug/m3 @ ноик(s) 41.4 ug/m3	21	ON DAY(S) ON DAY(S)	2 <b>7</b> 26	<b>L</b> 10
MONTHLY CALIBRATION TIME:	Ŋ	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	E: PTIME:	VAR-VARIOUS	740 99.5	HRS
STANDARD DEVIATION:	15.37			MONTHLY AVERAGE:	ئن		8.2	8.2 ug/m3

of Hour Averages



05/01/M5 00:0005/06/M5 00:0005/M1/M5 00:00 05/M6/M5 00:0005/21/M5 00:0005/26/M5 00:0005/31/M5 00:00

PMZ

- LICASS

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

Distribution By % Of Samples May 2015

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

Wind Parameter : WDR Instrument Height : 10 Meters

	Freq	97.41	. 95	.40	1.08	00.	.13		
	NINW F		.00	00.	.00	00.	00.	33	
		5.03						5.03	
	M	5.85	00.	8.	.00	00.	8.	5.85	
	WNW	5.30	.27	.13	.27	00.	%	5.98	
	×	4.08	00.	.13	.27	00.	8.	4.48	
	WSW	3.12	00.	%	00.	%	%	3.12	
	SW	2.31	00.	00.	%	%	%	2.31	
	SSW	2.04	00'	00.	.13	00.	00.	2.17	
	Ø	4.08	00.	00.	00.	00.	00.	4.08	
	SSE	7.34	0.	00.	.13	0.	0.	7.48	
Direction	SE	7.21	00.	00.	00.	00.	00.	7.21	
ΞŪ	ESE	14.82	00.	%	00.	00.	00.	14.82	
	μ	11.15	00.	00.	00.	00.	00.	11.15	
	ENE	8.84	.27	%	.13	00.	00-	9.25	
	R	3.67	.13	.13	.13	00.	00.	4.08	
	NNE	6.39	.13	00.	00.	00.	00	6.53	
	z	6.12	.13	00.	00.	%	.13	6.39	* 00.
	Limit	30	9	80	120	240	240	Totals	calm :
		٧	٧	٧	٧	٧	X		

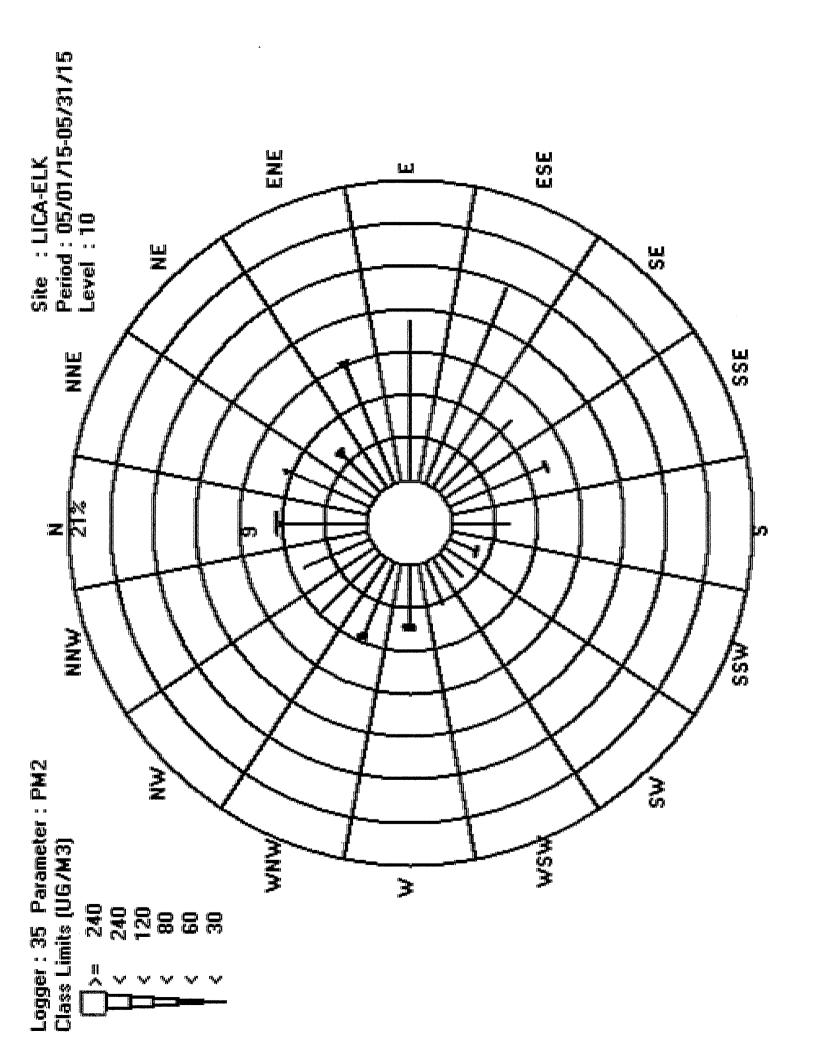
Distribution By Samples

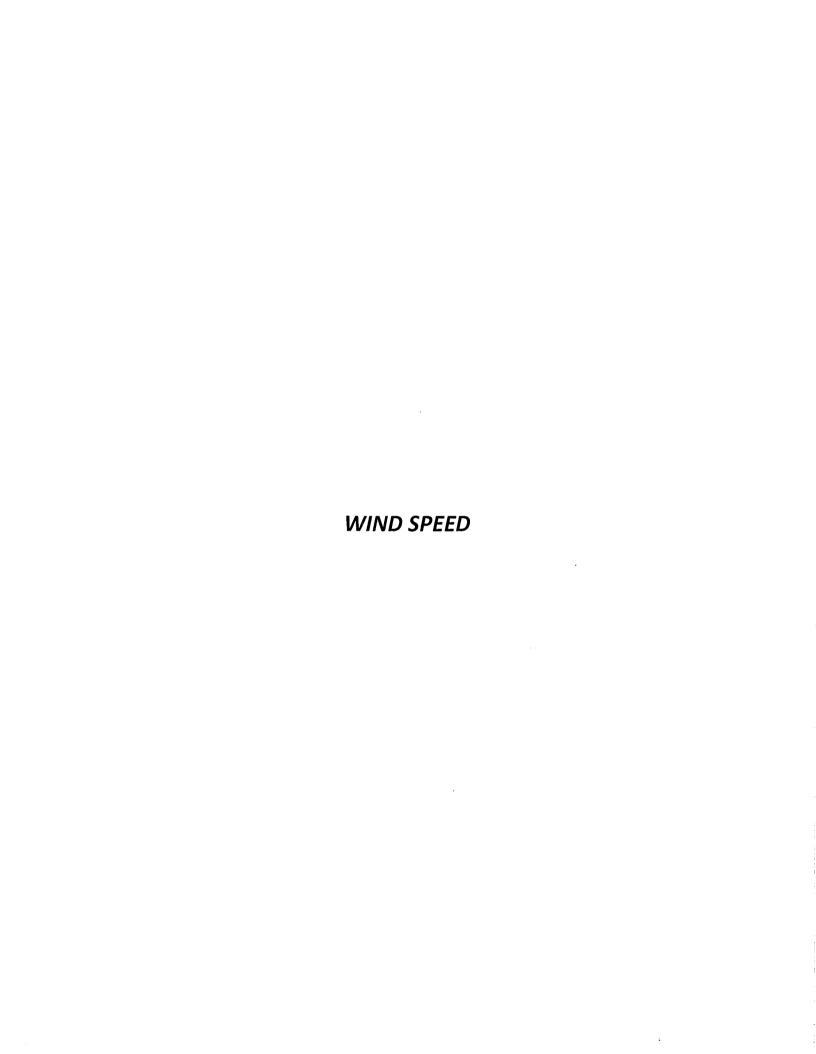
Total # Operational Hours : 735

	Freq	716	7	m	ω		н	
	WIN	37						37
	WN	43						43
	WNW	39	7	П	7			44
	Þ	30		н	2			33
	WSW	23						23
	SW	17						17
	SSW	15			н			16
	w	30						30
	SSE	54			н			55
direction	S	53						53
Dire	ESE	109						109
	μ	82						82
	ENE	65	7		н			68
	Ä	27	н	н	н			30
	NNE	47	н					48
	z	45	т				т	47
	Limi t	30	9	80	120	240	240	Totals
	ц	<b>v</b>	٧	<b>v</b>	٧	<b>v</b>	Д	H
							•	

Calm : .00 %

Total # Operational Hours : 735





IDUS IKY & CUMMUNI IY ASSUCIA IION Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C

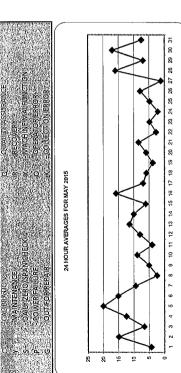
## WIND SPEED (WS) hourly averages in km/hr

MST

Maxxam A Bureau Veritas Group Company

	RDGS.	24	24	, 24	77	24	24	74	74	24	24	74	74	74	74	74	74	24	24	24	77	74	24	74	74	74	74	74	75	77	77	74		
24-HOUR	AVG.	5.4	16.1	7.7	12.7	21.9	15.9	11.1	7.3	10.4	9.3	5.2	8.3	11.9	10.9	10.2	16.7	7.8	7.3	4.6	7.5	9.7	4.6	6.5	4.8	8.3	10.6	8.6	16.7	7.4	17.5	14.6		
DAILY	MAX.	15.2	33.9	13.8	24.6	30.2	18.8	19.0	13.7	21.9	18.4	9.6	14.6	18.4	19.0	18.3	30.0	10.6	12.0	0.6	14.6	23.6	8.3	14.1	18.5	18.4	17.7	31.2	24.1	12.1	23.5	25.9		
23:00	23:59	8.3	9.3	6.0	24.6	15.9	17.4	8.4	13.7	9.5	5.3	2.3	13.5	11.4	12.8	3.3	7.9	5.7	1.8	0.5	1.4	1.2	7.0	2.0	0.7	4.1	5.9	14.6	0.5	8.0	19.5	8.6	24.6	8.0
22.00	22.59	3.6	8.3	5.1	23.9	15.5	16.1	5.9	12.2	13.9	3.6	3.0	11.9	12.5	11.3	2.0	10.8	4.5	3.5	0.5	5.6	4.5	5.8	4.5	9.0	5.3	5.0	16.9	1.5	8.1	14.9	8.3	23.9	8.0
21.00	21.59	2.7	8.7	6.7	21.6	16.9	15.8	1.2	7.1	15.3	4.4	9.6	12.1	10.9	9.4	2.3	11.4	6.4	5,9	3.2	5.2	6.5	0.7	8.6	3.0	8.0	4.7	31.2	5.7	10.8	14,9	3.3	31.2	8.7
20:00	20:59	5.6	7.7	6.2	19.9	17.4	15.9	4.0	8.8	12.5	8.9	7.0	10.0	9.0	89.	3.3	13.0	7.2	7.6	6.7	7.4	8.2	3.2	5.6	3,3	28	5.7	18.2	7.5	11.2	14.7	9.5	19.9	8.7
19:00	19.59	10.2	14.0	9.7	19.9	17.2	15.1	7.6	11.0	11.2	13.0	3.2	11.9	8.6	11.1	9.5	19.0	8.9	6.9	6.4	7.4	7.6	3.6	6.7	6.8	5.2	11.6	3.4	7.5	11.5	20.6	8.7	20.6	10.1
18:00	18:59	8.1	15.7	9.4	22.6	19.3	15.2	9.6	124	16.0	15.0	6.5	10.7	16.2	13.9	11.1	23.5	7.9	10.4	7.0	12.5	11.9	8.0	10.1	10.8	8.2	15.1	7.5	11.0	10.8	22.3	25.9	25.9	12.8
17:00	17.59	4.7	17.4	7.6	22.2	21.2	14.1	13.2	13.4	15.8	11.5	5.2	10.1	14.5	12.8	14.9	24.9	% %	10.2	6.5	12.8	14.3	5.2	8.9	1.4	8.1	15.0	11.8	13.9	7.7	23.5	11.0	24.9	12.3
1,000	16.59	11.2	33.9	2.1	21.3	20.4	17.0	8.1	3.7	17.7	10.7	5.6	8.5	16.2	13.3	6.6	27.9	9.6	11.0	7.4	12.8	15.5	8.3	7.4	18.5	10.0	15.4	11.6	15.4	8.3	19.3	8.0	33.9	13.1
	15:59	15.2	26.8	3.2	18.3	20.5	14.9	8.8	9.1	19.1	12.1	5.6	9.5	15.1	14.6	10.8	28.0	7.6	10.9	4.6	14.6	16.0	3.0	9.1	6.4	12.8	16.5	8.3	16.8	9.0	18.6	1.6	28.0	12.4
14.00	14:59	7.9	25.4	13.8	16.7	19.4	14.8	11.9	6.4	21.9	10.3	4.3	6.5	16.4	15.7	13.9	27.3	9.7	11.5	9.0	13.3	15.6	4.1	8.1	9.1	18.4	17.2	9.1	17.9	9.1	18.7	8.7	27.3	13.3
2	13.59	4.0	33.1	5.1	17.3	15.9	13.9	10.1	9.1	18.9	13.4	6.1	11.8	14.1	19.0	16.3	30.0	10.6	11.5	7.4	14.4	18.6	5.5	11.9	7.8	18.4	16.4	9.4	20.3	8.5	18.6	13.3	33.1	13.9
10,235	12.59	3.7	26.3	8.2	16.2	20.3	15.7	10.2	8.1	15.4	13.1	6.4	11.5	18.4	17.2	15.8	25.7	8.7	11.8	6.4	13.9	19.3	6.5	14.1	4.7	13.7	14.5	7.4	21.3	8.9	22.9	16.4	26.3	13.6
	11.59	5.1	21.3	12.2	15.2	23.5	14.2	8.6	8.6	7.0	18.4	3.6	13.6	17.5	18.9	18.1	22.1	8.1	12.0	7.6	12.0	23.6	8.3	11.5	9.1	7.1	16.2	11.9	21.5	8.2	23.3	13.4	23.6	13.6
10:00	10.59	6.0	20.3	5.1	13.9	23.8	14.2	13.8	12.1	4.3	18.3	4.1	14.6	17.9	16.2	16.1	22.6	6.7	10.2	7.5	8.0	20.6	6.8	7.1	10.4	5.3	17.7	13.6	20.9	5.9	21.9	8.1	23.8	12.7
	9:59	5.2	19.9	2.0	9.2	30.2	16.8	14.5	9.2	3.1	11.2	2.8	7.6	15.8	9.5	16.7	19.4	7.7	7.9	3.5	3.9	8.6	5.7	7.7	5.1	6.9	16.1	13.3	22.3	7.8	22.2	19.8	30.2	11.4
8.00	353	2.3	18.8	6.1	5.7	29.2	18.8	13.1	4.1	2.3	9.4	4.1	5.4			18.3		9.3	2.8	2.3	2.6	6.4	2.2	2.9	4.0	11.3	10.6	13.5	24.1	12.1	22.4	6.7	29.2	
7:00		3.4		7.8		29.5	17.9				9.7				5.3			10.1	4.2	3.8	4.8	5.3	4.0	3.0	3.7	4.3	5.0	10.5	22.2	9.8	21.1	19.8	29.5	
9	629																				6.0												25.6	
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	0.59	7.5	5.5	11.2	9.0	23.3	16.9	19.0	6.3	4.7	7.1	5.4	1.8	12.6	9.9	14.4	5.6	6.3	9.9	0.9	4.6	11	1.0	4.8	2.4	0.8	6.1	5.3	20.4	33	8.3	18.6	23.3	_
HOUR START	HOUREND	<b>3</b> -1		e.	Ħ	. 3	9	7	. 82	6	10	1	12	13	14	15	36	7.7	18	46	20	21		23	24				28	. 29	30	31	HOURLY MAX	HOURLY AVG

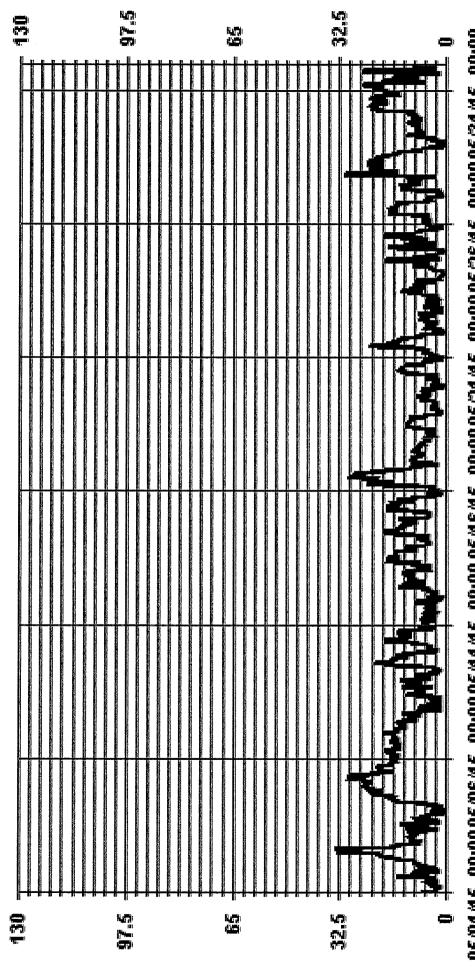
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February 21, 2014	MAGNETIC DECLINATION 19 DEGREE EAST
LAST CALIBRATION:	DECLINATION:

### MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			744					
MAXIMUM 1-HR AVERAGE: MAXIMUM 24-HR AVERAGE:		33.9	Х Н Н	@ ноuռ(s)	16	ON DAY(S) ON DAY(S) VAR-VARIOUS	5 <b>7</b>	
MONTHLY CALIBRATION TIME:	0	HRS		OPERATIONAL TIME: AMD OPERATION UPTIME:	TIME:		744 100.0	HRS %
STANDARD DEVIATION:	6.63			MONTHLY AVERAGE:			10.3	КРН



05/01/15 00:0005/06/15 00:0005/11/15 00:0005/16/15 00:0005/21/15 00:0005/26/15 00:0005/26/15 00:0005/31/15 00:00

- LICA35



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C

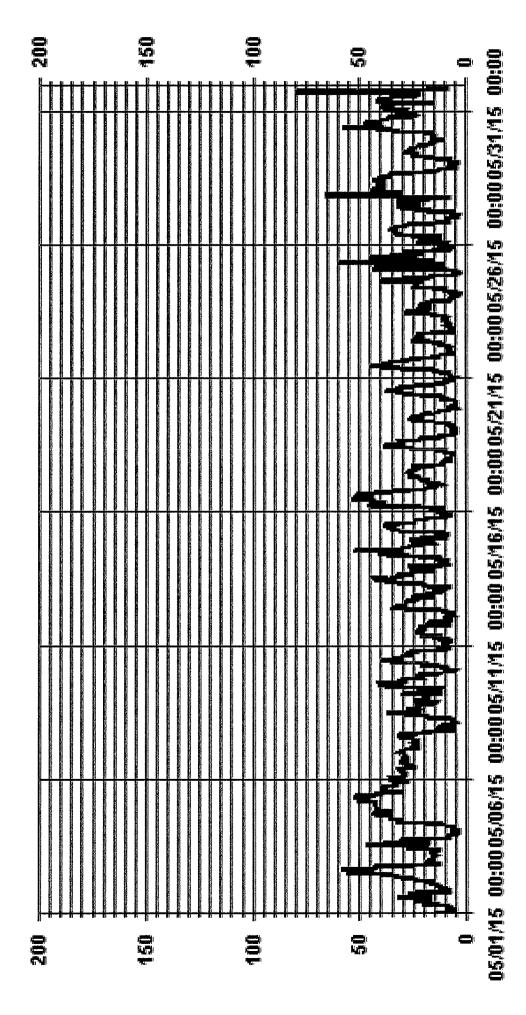
VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

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5.7	6.9	9.6			8.9 12	12.6 20		19.4	24.7	15.7	26.0	32.4	25.8	16.0	27.1	24.7 6	5 10	10.5 8.3	1 13.2	32.4	15.3	24
15.7	17.5	15.4				30.0 31.3	.3 33.6	40.1	42.8	56.3	44.0	43.9	58.3	41.4		_	11.9 14	14.1 15.5	•	58.3	28.7	54
000	15.8	14.2		13.5		15.2 11	11.9 17.6	7.72	21.3	21.4	47.2	39.8	16.7	22.4						47.2	19.0	24
0	9.9	6.9					19.5 32.7	29.0	31.2	35.3	35.2	36.0	36.0	42.7	,	33.7 37	.0 40	40.0 41.5	5 41.9	44.1	24.7	24
42.5	œ	45.8			51.0 51	51.2 52.7	.7 42.4	43.6	39.4	28.7	36.2	39.0	38.5	39.4	39.1	33.4 33	33.8 32		6 30.1	52.7	40.1	. 23
34.7	29.1	28.3		•	29.6 30	30.5 31.3	.3 28.8	23.1	27.1	26.3	28.3	28.9	31.4	26.7	28.6	28.1 30	30.0	27.7 29.0	0 29.8	34.7	29.3	54
29.3	28.6	23.7			23.2 22	22.9 24	24.9 23.9	21.7	25.0	25.6	31.3	28.7	32.0	23.4	20.9	16.7	8.3 5	5.0 7.6	5 12.7	32.0	72.7	24
8.3	4.9	5.3		5.1	7.2 17	ध 9.71	19.5 29.1	. 26.8	37.4	23.2	20.7	27.9	22.5	23.2	23.2	22.5 15	15.2 14	•		37.4	17.8	24
19.4	16.3	20.6	30.7			12.6 12.0	.0 22.7	, 28.7	37.6	40.3	40.7	36.3	33.1	27.7	30.6		21.7 24	24.0 22.8		40.7	23.9	24
	7.6	10.2				19.6 28.9	.9 35.5	40.4	35.3	33.7	30.9	26.4	26.5	28.9	26.9	22.5 14	14,4 9	9.6 6.7		40.4	19.9	24
	11.3	6.5					.8 21.7	19.9		21.8	18.8	22.6	18.2	22.5	17.3		18.9 17	17.8 11.2	2 7.5	24.2	14.9	24
	6.3	7.1								28.4	28.3	27.6	27.7	23.7	25.1	22.7 15	15.3 25	.6 19.9		35.3	19.5	24
	8.4	8.6			19.8 20			42.3		36.3	32.9	29.2	33.1	24.8	26.0 1	19.8 14	14.1	18.0 24.4		43.0	23.3	54
	8.2	8.4								37.2	52.6	30.1	30.2		26.1 1	19.6 14				52.6	23.2	24
	6.3	7.4		14.9			.2 32.0			38.3	31.2	24.4	24.1	24.3	20.5 1	18.3 8.	8.5	9.9 5.8		38.3	21.5	54
	10.4	17.3		·			•			52.2	49.1	48.0	52.1		43.4	35.7 26				52.2	33.4	54
	17.1	19.2								27.3	26.1	23.7	24.6			12.5 11		10.7 6.4		27.7	18.8	54
	7.3	6.2								28.1	30.2	30.8	31.4				11.2 11.7			38.3	17.2	54
	7.3	5,3								23.8	24.3	22.1	20.5		13.7					26.8	12.8	54
	<b>6</b> .4	5.3						29.5		38.0	34.2	32.9	31.9				10.5 11.7			38.0	17.3	54
	7.4	8,3					•			40.4	36.7	35.2	31.6	27.0		17.1				44.9	20.3	54
	8 5	7.6								21.2	19.6	21.0	23.1	17.2	5.6		7.8 5.3	3 7.7		25.5	13.3	54
	8.8	9.1		9.3			•			23.7	23.2	22.5	17.2	16.3					3 7.0	7.72	15.0	54
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	43.8	33.7					•		•	45.6	36.3	26.1	22.4		30.0			7.4 11.9		59.8	22.6	54
9.9 15.6	27.8	15.9		•			.0 32.8	33.6		34.4	36.3	32.8	33.1		28.0 2		14.8 8.	6.8	9 8.2	36.3	21.9	74
	. 6.6	6.1		•		23.7 26.9	9 30.0	32.2	20.6	25.7	26.2	25.3	32.4	23.7	17.1	6.5 64		65.1 42.9	•	65.1	23.4	54
42.7 44.6	42.9	40.3		,	39.8 41		5 43.9	•	•	40.5	36.0	35.6	35.4		20.7	14.0 12	12.5 9.	9.8 3.9	4.8	44.6	32.3	54
	6.5	7.1			19.8 25	25.2 24.3	.3 21.4	29.9	26.5	26.8	26.4	24.6	23.4	20.8	21.8 1	17.6 15	15.4 14	14.5 12.0	0 10.0	29.9	17.1	54
	14.9	14.9	19.5		34.8 41	41.6 38.2	.2 57.8	48.4	42.7	41.7	47.6	39.3	40.3	37.2	36.8 3	34.8 25	25.2 23	23.6 24.6	6 32.6	57.8	32.1	54
	36.5	40.5	37.6	38.3	24.2	14.2 36.3	.3 42.1	35.0	34.7	34.7	23.2	22.4	22.2	23.3	79.6 4	44.3 17	17.3 7.	7.5 17.3	3 17.1	79.6	31.5	54
42.7 44.6	43.8	42.8	45.0	50.4	51.0 59			ľ	52.2	56.3	52.6	48.0	58.3	44.3	ľ	ł	.9 65.1	.1 42.9				
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1 2	STATUS FLAG CODES	HECKE OUTUBER NE STORY OUTUBER NE STORY OUTUBER
2 4.8	-,	N VGE SPANGHEGK

UVPULJYANSOURANCE EN ECOVERN MCHINEMMIEUNGTON		MON	THLY SU	MONTHLY SUMMARY	
OLI ECTION ERROR	MAXIMUM INSTANTANEOUS VALUE:	79.6	KPH	79.6 KPH @ HOUR(S)	87
					,



- LICA35 WSMAX KPH

## LICA-ELK WDR Joint Frequency Distribution (Percent)

May 2015

Distribution By % Of Samples

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

Wind Parameter : WDR Instrument Height : 10 Meters

Direction

Fred	31.85	33.73	24.86	8.60	.94	00.	
NNW	.94	1.20	2.82	.13	00.	00.	5.10
NW	2.28	1.20	2.15	.13	.13	00.	5.91
WNW	2.82	1.61	.80	.53	.13	00	5.91
¥	1.47	2.55	.40	.13	00.	00.	4.56
WSW	.80	2.15	.13	00.	00.	00.	3.09
SW	.80	.94	.53	%	00.	%	2.28
SSW	1.20	.53	.40	%	00.	00.	2.15
w	1.20	1.61	1.61	00.	00.	00.	4.43
SSE	1.07	4.03	2.15	.26	00.	0.	7.52
SE	1.61	2.28	2.28	.94	00.	00.	7.12
ESE	3.89	6.31	3.49	76.	00.	%	14.65
M	5.51	3.22	1.74	.40	.26	00.	11.15
ENE	4.56	2.01	.80	1.74	.13	00.	9.27
Ä	1.47	1.47	.67	.40	00.	00.	4.03
NNE	1.20	1.20	2.41	1.47	.13	00.	6.45
z	. 94	1.34	2.41	1.47	.13	00.	6.31
Limit	0.9	12.0	20.0	29.0	39.0	39.0	Totals
, ,	٧	٧	٧	٧	٧	X	

Calm : .00 %

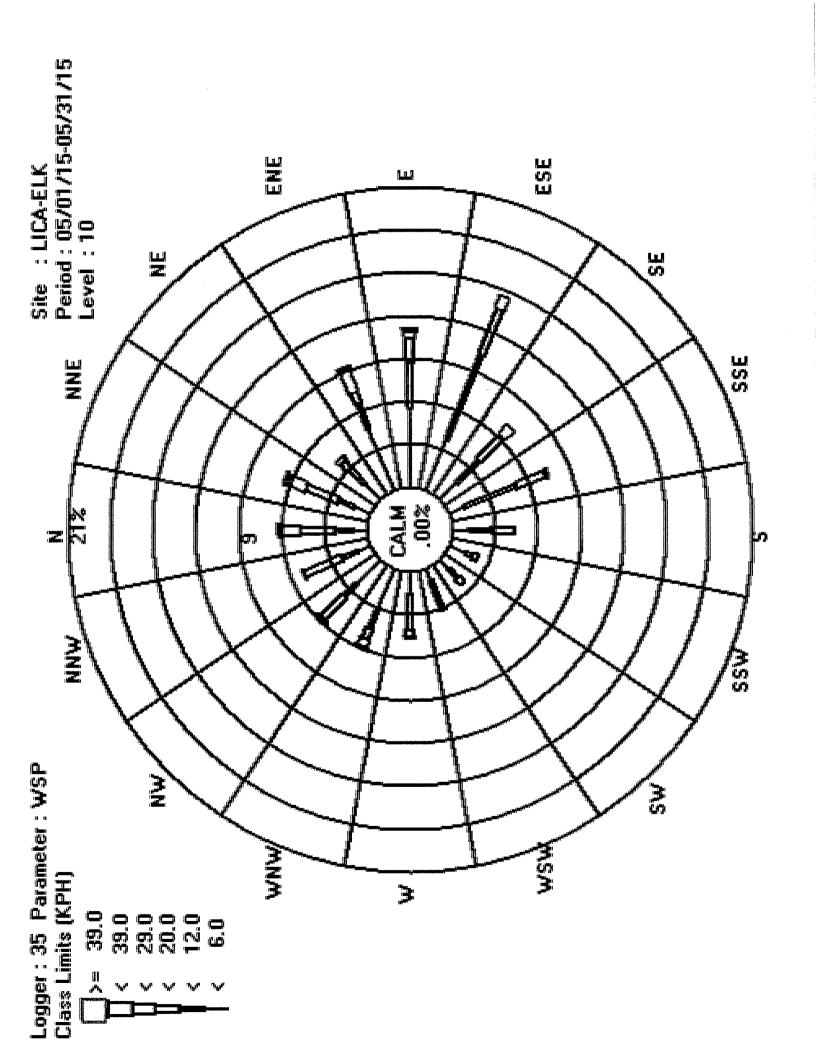
Total # Operational Hours : 744

Distribution By Samples

	Freq	237	251	185	64	7		
	WNW	7	o	21	н			38
	NW	17	o	16	н	н		44
	WNW	21	12	9	4	п		44
	区	11	19	m	н			34
	WSW	9	16	н				23
	SW	9	7	4				17
	SSW	Ø	4	m				16
	w	on	12	12				33
	SSE	ω	30	16	8			56
Direction	SE	12	17	17	7			53
Dir	ESE	59	47	56	7			109
	ы	41	13 24 13 24 13		81		83	
	ENE	34	15	9	13	н		69
	E	11	11	Ŋ	m			30
	NNE	o,	o,	18	11	н		48
	z	7	10	18	11	н		47
	Limit	0.9	12.0	20.0	29.0	39.0	39.0	Totals
		٧	٧	٧	٧	٧	\	

Calm : .00 %

Total # Operational Hours : 744







MST

## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C

## WIND DIRECTION (WD) hourly averages

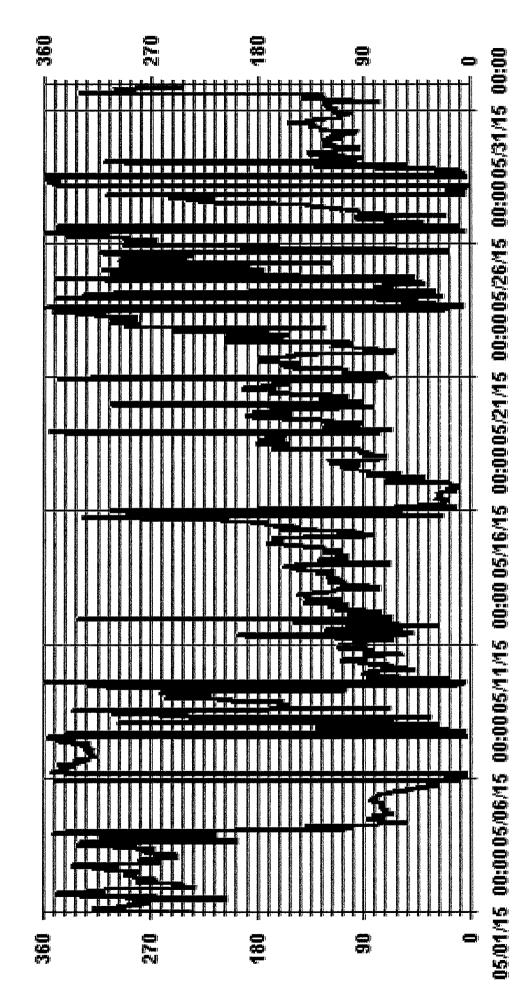
	RDGS.	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	74	54	24	24	54	54	24	24	24	24	54	54	24	24	24	54
24-HOUR AVG	QUADRANT	WNW	WNW	×	ENE	ENE	MNN	MNN	s	NNE	ш	ш	ESE	ESE	SE	SSE	NNE	ш	SE	SE	SSE	SSE	SSE	z	ENE	WSW	z	ш	z	ESE	ESE	SE
23:00	00:00	WSW	*	z	ENE	z	ΜN	S	SSW	ш	ESE	NNW	ESE	SSE	SSE	SSW	NNE	ш	MNN	WNW	NNN	ENE	WNW	z	*	*	ш	NNE	R	ESE	ESE	*
22:00	23:00	NS.	≷	SSW	ENE	z	ΝŽ	SE	SSW	ш	ш	몽	SE	SSE	SSE	SSE	NNE	ENE	ENE	ш	ENE	ENE	WNW	ENE	s	WNW	ENE	NNE	SE	ESE	ESE	WSW
21:00:	22:00	ΝN	≯	SW	ENE	NNE	ΝN	밁	SSE	ш	ESE	SSE	SE	SSE	SSE	ENE	NNE	ESE	SSE	ESE	SE	SE	SW	ENE	WNW	SSW	ENE	z	ENE	ESE	ш	WSW
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19.00	20:00	ΝN	WNW	ΜN	ENE	뵘	Ν	z	SSE	ENE	ш	ESE	SE	SE	S	MNN	NNE	ш	SSE	SSE	SSE	SSE	SSE	NNE	SE	ENE	핅	SW	NNE	ESE	ESE	WNW
18:00	19:00	ΝN	MNN	≯	ENE	NNE	ΜN	NNE	SSE	NNE	ш	ENE	SE	SE	SSE	WNW	NNE	ш	s	SSE	SSE	s	WSW	핅	밀	NNE	밁	SW	z	ESE	ESE	WNW
17.00	18:00	z	Ν×	WSW	ENE	뵘	MNN	NNE	SSE	NNE	ш	NNE	ESE	ESE	SE	≯	NNE	ESE	SSE	s	s	s	SSW	뵘	z	NNE	R	WSW	NNE	ESE	ESE	≥
16.00	17.00	NNW	Ν×	SSW	ENE	밁	Ν	MNW	SSE	NNE	ENE	ENE	ESE	SE	SE	SSW	NNE	ESE	s	SSE	SSE	s	s	z	SSW	ΜN	z	WSW	z	ESE	ESE	MNW
15:00	16:00	MNN	WNW	MNN	ш	N	MNN	MNN	ENE	z	ENE	岁	ESE	ESE	ESE	SSW	NNE	ESE	s	s	s	s	s	z	Ν	ΜN	z	SW	z	ESE	SE	≯
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### STATUS FLAG CODES

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February 21, 2014	MAGNETIC DECLINATION 19 DEGREE EAST	
LAST CALIBRATION:	DECLINATION:	

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	744	HRS
STANDARD DEVIATION:	101.91	AMD OPERATION UPTIME:	100.0	%
		MONTHLY AVERAGE:	ËNE	



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## Elk Point Airport Site - MAY 2015 JOB # 196-2015-05-93- C LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

# STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

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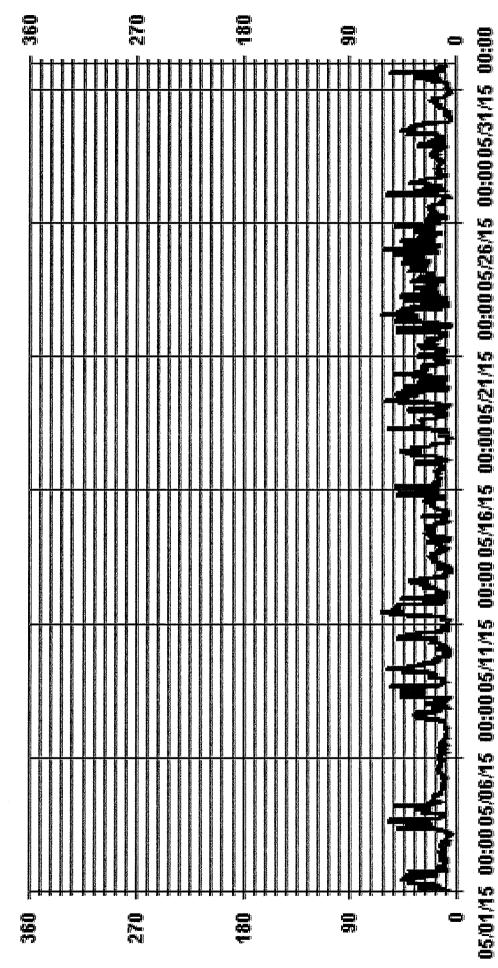
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- LICA35 STDWDIR DEG

### APPENDIX II NON-CONTINUOUS MONITORING DATA RESULTS



Sample ID: 15050100-003

Customer ID: LICA

Cust Samp ID: LICAV/OC/EP/May 6, 2015

Priority: Normal

### Maxxam

VOC Sample Collection Data Sheet

Alberta Innovates - Technology Futures 9 @ 6200 2015 270% 2654 Ken May Canister Installation Date/Time: Sampler S/N: Canister Removal Date/Time: Canister ID: May HIMPOST LICA 35 LICA EPI ELK Point Field Sample ID: LICA / VOC) Location: Station ID: Client:

	Date and Time Information	nformation	
Sample Date	Start Time	End Time	Elapsed Time
	(MST)	(MST)	(Hours)
JIGG J MIN	00:00	85:00	6110
~ ~ · o A .	May 6, 2015	May 7, 2015	) ; ;

	Flow Settings	S
Meter Reading	Pot Set Pt.	Meter Reading   Pot Set Pt.   Pump Pressure
(sccm)		Setting (psig)
10.0	4.94	24

Canister Information	ormation
Initial Canister	Final Canister
Vacuum (inHg)	Pressure (psig)
2. G. B	19.2

Timer set to 0.00 minutes prior to sampling? (YES Canister valve open prior to sampling?: (ES) Canister valve closed prior to disconnection?(

Comments:

		Parinto in - by Alex Valuera
		Alex
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		2.
		0/4/20
		Technician Signifure:



Date:

Freon-11

MAY 6, 2015

Canister ID:

2654

PARAMETERS	SGONGENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.04
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.04
2,2-Dimethylbutane	0.03
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.07
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.04
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.03
Acetone	2.6
Acrolein	< 0.3
Benzene	0.08
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	< 0.01
Carbon tetrachloride	0.13
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.06
Chloromethane	0.85
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	0.6
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
	0.22

0.33



Date:

MAY 6, 2015

2654

Canister ID:

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.11
Freon-114	0.03
Freon-12	0.71
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.07
Isopentane	0.20
Isoprene	0.03
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	0.03
Methylene chloride	< 0.3
n-Butane	0.24
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.04
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.02
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	0.5
Vinyl chloride	< 0.02

Sample ID: 15050198-003

Customer ID: LICA

Cust Samp ID: LICANOC/EP/May 12, 2015

### Maxxam

AIR FCD-01320/2

RECEIVED

VOC Sample Collection Data Sheet

3 6200 5643 Ś 404 Sampler S/N: Canister Installation Date/Time: Canister Removal Date/Time: Canister ID: LOCS May 12 4,500 13 LICA Point Field Sample ID: Lich / Voc, ELK Client: Location: Station ID:

	Date and Time Information	nformation	
Sample Date	Start Time	End Time	Elapsed Time
	(MST)	(MST)	(Hours)
100000	00:00	00,00	4 75
त्यु १.४. ४७००	1404 11, 20G	1404 H, 206 May 13, 2015	27.78

Ron

	Flow Settings	2
Meter Reading Pot Set Pt.	Pot Set Pt.	Pump Pressure
(sccm)		Setting (psig)
0.01	46.4	13 %

Callister mitorination	Ollianoll
Initial Canister	Final Canister
Vacuum (inHg)	Pressure (psig)
800	19.4

Canister valve open prior to sampling?: (YES\_ Timer set to 0.00 minutes prior to sampling? Canister valve closed prior to disconnection?

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Sample	Sample
schnician Signit	

Date: May 15, 2015



Date:

MAY 12, 2015

Canister ID: \$5673

CONCENTRATION (PPB)

1,1,1-Trichloroethane	0,03
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	0.03
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.05
1,2-Dichloropropane	0.03
1,3,5-Trimethylbenzene	0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4 '
1-Butene	< 0.02
1-Hexene	0.04
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.08
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.16
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	0.02
2-Methylhexane	< 0.01
2-Methylpentane	0.11
3-Methylheptane	< 0.02
3-Methylhexane	0.04
3-Methylpentane	0.09
Acetone	4.3
Acrolein	0.7
Benzene	0.17
Benzyl chloride	< 0.4
Bromodichloromethane	0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.09
Carbon tetrachloride	0.12
Chlorobenzene	0.03
Chloroethane	< 0.02
Chloroform	0.04
Chloromethane	< 0.02
cis-1,2-Dichloroethene	0.02
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane Cyclopentane	0.11 < 0.01
Cyclopentane  Dibromochloromethane	0.02
Ethanol	6.9
Ethyl acetate	< 0.4
Ethylbenzene	0.04
Freon-11	0.32
1100II-TT	0.32



Date:

MAY 12, 2015

Canister ID: \$5673

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.11
Freon-114	< 0.02
Freon-12	< 0.02
Hexachloro-1,3-butadiene	< 0.50
Isobutane	< 0.02
Isopentane	0.33
Isoprene	0.03
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.08
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.5
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.16
Methylcyclopentane	0.09
Methylene chloride	< 0.3
n-Butane	< 0.03
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.18
n-Nonane	0.02
n-Octane	0.03
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.01
o-Xylene	0.04
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.14
trans-1,2-Dichloroethylene	0.02
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	0.02
Trichloroethylene Vinul peotate	0.05
Vinyl actate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15050298-003

Customer ID: LICA

Cust Samp ID: LICANOC/EP/May 18, 2015

## Maxxam

MAY 2 5 2015
Alberta Innovates - Technology Futures

VOC Sample Collection Data Sheet

5 100 5680 Nast なさ Sampler S/N: Canister Installation Date/Time: Canister Removal Date/Time: Canister ID: A.COS. LICA Field Sample ID: 1/2A/ ECK Location: Client: Station ID:

	Elapsed Time	(Hours)	0110	٨٠,٧
nformation	End Time	(MST)	06:00	May 19, 2017
Date and Time Information	Start Time	(MST)	00:00	Hay 10, 2015
	Sample Date		200 di 11019	2000/200

	Flow Settings	ls.
Meter Reading	Pot Set Pt.	Pump Pressure
(sccm)		Setting (psig)
0'01	48'4	48

tion	Final Canister	Pressure (psig)	19.1
Canister Information	Initial Canister   Fina	Vacuum (inHg)   Pres	28.6

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) NC

	A CONTRACTOR OF THE PROPERTY O		
Comments:			

echnician Signiture:	Sample	- "	No.	Alex Yokupov
	gample	064.	B.	Alex Yahuyoov

Dato: May 19, 2015



Date: MAY 18, 2015

Canister ID: \$5680

Freon-11

Canister ID. 33060	
PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	0.04
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.06
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	0.13
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.11
3-Methylheptane	< 0.02
3-Methylhexane	0.05
3-Methylpentane	0.06
Acetone	7.6
Acrolein	< 0.3
Benzene	0.09
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.63
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.75
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.11
cis-2-Pentene	0.03
Cyclonentane	0.08 < 0.01
Cyclopentane	
Dibromochloromethane	< 0.01
Ethanol Standard	0.9
Ethyl acetate	< 0.4
Ethylbenzene	0.12

0.31



Date:

MAY 18, 2015

Canister ID:

S5680

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.10
Freon-114	0.03
Freon-12	0.68
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.43
Isopentane	0.34
Isoprene	< 0.01
Isopropyl alcohol	0.5
Isopropylbenzene	< 0.01
m,p-Xylene	0.13
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	1.7
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether Methylcyclohexane	< 0.03 0.16
Methylcyclopentane	0.16
Methylene chloride	< 0.3
n-Butane	0.65
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.09
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.02
o-Xylene	0.06
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.58
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 15050334-002

Customer ID: LICA

Cust Samp ID: LICAV/OC/EP/May 24, 2015

Maxxam

Alberta Innovates - Technology Futures

VOC Sample Collection Data Sheet

6200	H20	May 19 ,20,	Med 15 20
Sampler S/N:	Canister ID:	Canister Installation Date/Time:	Field Sample ID: ハイイックc/ ニク/ ハロッ タゲ このパ Canister Removal Date/Time:
LICA	ocation: EIK POINT AIRPORT	LICA 35	11(4/voc/ EPI Max 24,2013
Client:	Location:	Station ID:	Field Sample ID:

Flow Settings	eading   Pot Set Pt.   Pump Pressure	m)   Setting (psig)	.0 4.94 24
	Meter Reading	(sccm)	10.0

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	Date and Time Information	nformation	
Sample Date	Start Time	End Time	Elapsed Time
	(MST)	(MST)	(Hours)
May De Dall	00:00	80:00	
(1) x / x C(1)	May 24, 2015	play 24, 2015 May 85, 2015	X % C

·	~	·	
formation	Final Canister	Pressure (psig)	7:51
Canister Information	Initial Canister	Vacuum (inHg)	23.6

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

Comments:

Technician Signifure:	Sample	"	19	Alex	Valinos	
	Sample	4007	2.	Alex	1 ~	
	`		ĺ,	Q	Date: May 25, 2015	



#### **Volatile Organics Data Results**

Date:

MAY 24, 2015

H2825

Canister ID:

Canister ID;	NZ623
PÁRAMETÉRS	CONCENTRATION (PPB)
Company of the second s	HID MATERIAL DESIGNATION (No. 1200-000) CONTROL CONTRO
1,1,1-Trichloroethane	
1,1,2,2-Tetrachioroetha	
1,1,2-Trichloroethane	
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	
1,2,3-Trimethylbenzen	
1,2,4-Trichlorobenzene	
1,2,4-Trimethylbenzen	
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	0.01
1,3,5-Trimethylbenzen	
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentan	
2,2-Dimethylbutane	0.03
2,3,4-Trimethylpentan	
2,3-Dimethylbutane	0,12
2,3-Dimethylpentane	0.13
2,4-Dimethylpentane	0.08
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.05
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.03
Acetone	7.2
Acrolein	< 0.3
Benzene	0.08
Benzyl chloride	< 0.4
Bromodichloromethan	
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.70
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.83
cis-1,2-Dichloroethene	
cis-1,3-Dichloropropen	
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.03
Cyclopentane	< 0.01
Dibromochloromethan	
Ethanol	2.1
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.30



### **Volatile Organics Data Results**

Date:

MAY 24, 2015

Canister ID:

H2825

PARAMÉTERS	GONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.02
Freon-12	0.65
Hexachloro-1,3-butadiene	~ < 0.50
Isobutane	0.22
Isopentane	0.55
Isoprene	0.32
Isopropyl alcohol	0.7
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.5
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.06
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.68
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.07
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04 < 0.4
Tetrahydrofuran	< 0.4 0.10
Toluene	< 0.01
trans-1,2-Dichloroethylene	< 0.01 < 0.04
trans-1,3-Dichloropropylene	< 0.04 < 0.01
trans-2-Butene trans-2-Pentene	< 0.01 < 0.02
	< 0.02 < 0.04
Trichloroethylene	
Vinyl actate	< 0.4 < 0.02
Vinyl chloride	< U.UZ

Sample ID: 15060054-003

Customer ID: LICA

Cust Samp ID: LICA/VOC/EP/May 30, 2015

RECESSION OF 2015

## Maxxam

VOC Sample Collection Data Sheet

6200	1 & C.25 S	Canister Installation Date/Time: ハタッム スのじ (ショイタ: とく	1 pp / nay 30 20 20 canister Removal Date/Time: Juhn 01, 2015 @ 16:09
Sampler S/N:	Canister ID:	Canister Installation Date/Time:	المرير Canister Removal Date/Time:
LICA	ocation: Elu Polnt Airport	LICA 35	LICA ( voc) EP / May 30.2
Client:	Location:	Station ID:	Field Sample ID: LICA / voc/

	Date and Time Information	nformation	
Sample Date	Start Time	End Time	Elapsed Time
	(MST)	(MST)	(Hours)
100 We 11018	බත:ගත	00:00	9 7 9
27 Co P 21	May 30, 0015	May 31, 2015	24.0

	Flow Settings	S
Meter Reading	Pot Set Pt.	Meter Reading   Pot Set Pt.   Pump Pressure
(sccm)		Setting (psig)
0:01	46.4	24

Canister Information	ormation
Initial Canister	Final Canister
Vacuum (inHg)	Pressure (psig)
0.5%	18.3

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 / N

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	Sourpio in by Alex Volupon	Sample out by Alex Yompou
	Technician Signiture:	70°

Date: June or, 2015



### **Volatile Organics Data Results**

Date:

MAY 30, 2015

Canister ID: S5684

Freon-11

Canister ib:	33084
of PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroetha	
1,1,2-Trichloroethane	
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	
1,2,3-Trimethylbenzer	
1,2,4-Trichlorobenzen	
1,2,4-Trimethylbenzer	
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	
1,2-Dichlorogethane	0.02
1,2-Dichloropropane	
1,3,5-Trimethylbenzer 1,3-Butadiene	< 0.02
•	
1,3-Dichlorobenzene	
1,4-Dichlorobenzene	
1,4-Dioxane	< 0.4 < 0.02
1-Butene	
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentar	
2,2-Dimethylbutane	
2,3,4-Trimethylpentar	
2,3-Dimethylbutane	
2,3-Dimethylpentane	
2,4-Dimethylpentane	
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.06
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.05
Acetone	3.1
Acrolein	< 0.3
Benzene	0.09
Benzyl chloride	< 0.4
Bromodichloromethan	ne < 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.56
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.84
cis-1,2-Dichloroethen	e < 0.01
cis-1,3-Dichloroproper	ne < 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.04
Cyclopentane	< 0.01
Dibromochlorometha	
Ethanol	0.7
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Larymenzene	UIUZ

0.27



### **Volatile Organics Data Results**

Date:

MAY 30, 2015

\$5684

Canister ID:

PARAMÉTERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.02
Freon-12	0.60
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0,17
Isopentane	0.12
Isoprene	0.07
Isoprene Isopropyl alcohol	< 0.4
	< 0.01
isopropylbenzene m,p-Xylene	0.03
m,p-xylene m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
·	< 0.50
Methyl butyl ketone	< 0.3
Methyl ethyl ketone	< 0.4
Methyl isobutyl ketone	< 0.07
Methyl methacrylate	
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.07
Methγlcyclopentane	0.04
Methylene chloride	< 0.3
n-Butane	0.22
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane 	0.03
n-Hexane 	0.14
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane 	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.02
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.04
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02



Sample ID: 15050100-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/May 6, 2015

Priority: Normal

## Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Alberta Innovates - Technology Futures

MAY 13 2015

2015 Tuey 6 AIRDOR LICA P) C1× 8:00 Field Sample ID: 1104/Puf/ Location: Client: Station ID:

Removal Date/Time: Puf+ S/N: Installation Date/Time: Motor S/N:

|--|

Elapsed Time

End Time

Start Time

Sample Date

(MST) 00:00

(MST)

Date and Time Information

24.0 (Hours)

May 7,2016

Nay 6, 2015

Nay 6,2015

AverageFlow (Qstd slpm)		
(Ostd slpm)	Average	Volume
	Tempurature ( C) $  (Vstd m^3)  $	(Vstd m³)
198	2.2.6	428

Sep

X 2 -

Date of Last Calibration:

230

Set Flow Rate (slpm):

Sampling data saved to memory card after sampling? YES/NO Time set correctly prior to sampling XES/NO Timer set correctly prior to sampling YES/NO

1 DELUS the 07 1223 date 200 Comments:

nerna A TOUN Catrolled beein has 12/2

Alex Yakupor Sample in -Sample out -Technician Signiture:

\*

day 11, 2015 Tokufor Date;



Date:

MAY 6, 2015

PUF S/N:

TE06

PARAMETERS	CÓNCENTRATION (UĞ)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.03
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pγrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.02
Fluorene	0.02
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.05
Pyrene	0.02
Retene	0.01

Sample ID: 15050198-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/May 12, 2015

Priority: Normal

## Maxxam

MECEIVED	MAY 1 9 2015

AIR FCD-01321/2

Hi-Vol PUF+ Sample Collection Data Sheet

Hirport LICA 35 LICA Point ECK Location: Station ID: Client:

EP/ May 11, 2015 Field Sample ID: Led / PUE

Date and Time Information

Elapsed Time (Hours) 24.0

End Time (MST)

Start Time

Sample Date

(MST) 00:00

2015

81 CX 13,

May 12, 2015

2015

14ay 12,

00:00

Puf+ S/N:

50.31 2015 2015 12.ac nay Removal Date/Time: Installation Date/Time: Motor S/N:

QFF Prep Date Puf Expiration Date PUF and QFF Information Chinned Date Date Received

		ounbhed	סמוב	3
19	H	WA	MM	4.4

	Sampling Data	ig Data	
Average	AverageFlow	Average	Volume
Pressure(mmHg)	(Qstd slpm)	Pressure(mmHg) (Qstd slpm) Tempurature (C) (Vstd m³)	(Vstd m³)
116	229	9.50	330.19

sept

22.

Date of Last Calibration:

230

Set Flow Rate (slpm):

Sampling data saved to memory card after sampling? YES /(NO Timer set correctly prior to sampling? (ES) NO Time set correctly prior to sampling (YES) NO

Comments:

16a, 15, 2015
ther Vakuport Her Vakuport Darte
Sauple in - by Alex Vakupor Sample out by Alex Vakupor
Technician Signiture:



Date:

MAY 12, 2015

TE05

PUF S/N:

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.05
2-Methylnaphthalene	0.10
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthγlene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.02
Fluorene	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.05
Perylene	< 0.01
Phenanthrene	0.07
Pyrene	0.02
Retene	0.01

Sample ID: 15050298-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/May 18, 2015

Priority: Normal

Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

Puf+ S/N:

J) Alay AIrPOLL JCA 35 LICA ELK Point Field Sample ID: 21¢4/Pu£ Location: Client: Station ID:

Nay Installation Date/Time: Removal Date/Time: Motor S/N:

11:38 **@/@** 2015 21.00 10-31 3

	PUF and QFF Information	Information	
- C - + - C	Date	Puf Expiration	QFF Prep
Date Received	Shipped	Date	Date
NA	MA	js N	47

Elapsed Time

End Time

Start Time

Sample Date

(MST)

Date and Time Information

24.0 (Hours)

May 18,2019

May 18, 2015

May 18, 2015

00:00

00:00 (MST)

	Sampling Data	ig Data	
Average	AverageFlow	Average	Volume
Pressure(mmHg)	(Ostd slpm)	Pressure(mmHg) (Ostd slpm)  Tempurature ( C) (Vstd m³)	(Vstd m³)
816	228	3.0.8	330.20
			Philippine Committee of the Committee of

22- Sept -

Date of Last Calibration:

230

Set Flow Rate (slpm):

Sampling data saved to memory card after sampling? YES (NO Timer set correctly prior to sampling? YES NO Time set correctly prior to sampling (YES) NO

Comments:				
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	2015
	8
	14as 19,
Vakupor	Vohupov Oato
Allex	Alex
ģγ	dos
- m	OUT .
Sample in	Sample cert-by
Technician Signiture:	
Tec	



Date:

MAY 18, 2015

PUF S/N: TE01

PARAMÉTERS CONCENTRATION (UG)

1-Methylnaphthalene	0.09
2-Methylnaphthalene	0.16
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.02
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghl)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.02
Fluorene	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.09
Perylene	< 0.01
Phenanthrene	0.09
Pyrene	0.02
Retene	0.02

Sample ID: 15050334-003

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/May 24, 2015

Priority: Normal

# Maxxam

Hi-Vol PUF+ Sample Collection Data Sheet

2015 D CX AIRPORT 116A POINT Field Sample ID: LICAL PUE アイス Location: Client: Station ID:

May May Installation Date/Time: Removal Date/Time: Motor S/N:

P13-01 1139

Puf+ S/N:

Alberta Innovates - Technology Futures 14.36 13:33  $\mathcal{O}|\mathcal{O}|$ 

20 05

Date and Time Information	Start Time End Time Elapsed Time	(MST) (MST) (Hours)	046 00:00 00:00	May 24, 2015 Reay 45, 2015 6.
Date an	Sample Date Start	SM)		( May 24, 2013 / Hay 21

		PUF and QFF Information	Information	,
Time	Data Deceived	Date	Puf Expiration	QFF Prep
s)	המום וופרפועפת	Shipped	Date	Date
0	NA	WW	1,74	1/4
		,		

230	
Set Flow Rate (slpm):	

Date of Last Calibration: 22 - Sept -

	Volume	) (Vstd m³)	330.20
ig Data	Average	Tempurature ( C	P. £!
Sampling Data	AverageFlow	(Qstd slpm)	229
	Average	Pressure(mmHg) (Ostd slpm) Tempurature ( C) (Vstd $m^3$ )	502

Sampling data saved to memory card after sampling? YES (NO Timer set correctly prior to sampling (YES) NO Time set correctly prior to sampling? (YES)/ NO

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And the second s	May 25, 2015
YOKU DOV	Yokupa Date
Hiox	Alex
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'n	7,000
Sample	gamble
Technician Signiture:	



Date:

MAY 24, 2015

PUF S/N: P1301

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.05
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.02
Benzo(c)phenanthrene	0.04
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.02
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.04
Perylene	< 0.01
Phenanthrene	0.10
Pyrene	0.02
Retene	0.02

Sample ID: 15060054-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/EP/May 30, 2015

Priority: Normal

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JUN 05 2015

Hi-Vol PUF+ Sample Collection Data Sheet

Maxxam	

AIRPOIT 21CA 35 Location:  $\frac{\mathcal{E}(k \ \rho o / w T)}{\mathcal{L}(C)}$  Station ID: 7117 Client:

Puf+ S/N: Motor S/N:

Lite

A13-02

May Field Sample ID: LICA (PUF) EP

202

(g)2018 505 There or å S day Installation Date/Time: Removal Date/Time:

13.36  $\mathscr{G}$ 

	Date and Time Information	nformation	
Sample Date	Start-Time	End Time	Elapsed Time
•	(MST)	(MST)	(Hours)
	80,8	00:00	0 110
May 30, 2013	May 30,2015	May 31, 2613 "	84.0

Date Received Shipped Date On Date			nii Qi ili wa a qi i	
Shipped Date	Date Danierod	Date	Puf Expiration	QFF Prep
NA WA	Date Received	Shipped	Date	Date
_	KK	N.A	K.A.	44

Average AverageFlow			
	Flow	Average	Volume
Pressure(mmHg) (Qstd slpm)   Tempurature ( C) (Vstd m²)	Ipm) T	empurature (C)	(Vstd m³)
711 22.9	87	12.7°	330.16

Date of Last Calibration: A2 - Sept

230

Set Flow Rate (slpm):

Sampling data saved to memory card after sampling? YES NO Time set correctly prior to sampling? (YES) NO Timer set correctly prior to sampling? (YES) NO

			Sample 111 - by Hex Youupoir
		`	E
			in r
			Sample
Comments:			Technician Signiture:

	Alex Jakupov	Partie: June 01, 2015
	187	7
	Jer. K	
	Seulple out - by	
oldnitare:		



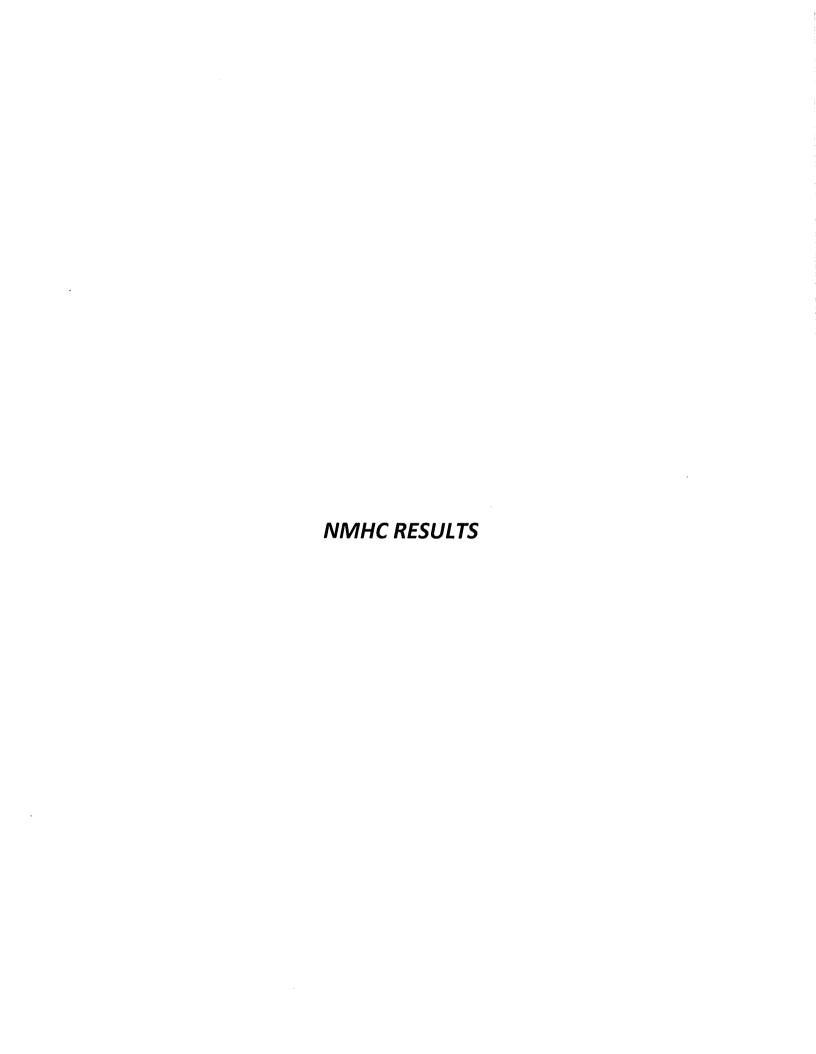
Date:

MAY 30, 2015

A1302

PUF S/N:

PARAMETERS	CONGENTRATION (
B. B. B. B. B. B. B. B. B. B. B. B. B. B	Section and Control of the Section Control of the C
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.04
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,J,k)fluoranthene	0.01
Benzo(c)phenanthrene	0.02
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.02
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.06
Pyrene	0.02
Retene	0.04



Sample ID: 15050334-001

Cust Samp ID: LICANOC/ELK/May 22, 2015 Customer ID: LICA

Maxxam Analytics Inc.

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Alberta Innovates - Technology Futures

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Ca

16:10	[-]
Canister ID: $\frac{1}{\text{Canister ID:}}$ Canister ID: $\frac{g 56  \text{H}7}{\text{Canister Installation Date/Time:}}$ $\frac{g 56  \text{H}7}{\text{May 22, 2015}}$ (MST) $\frac{(0)}{(0)}$ /3:03	
Canister ID: Canister Installation Date/Time:	(T.
Client: LICA Location: ELK Point Airport Station ID: Lica 35 Field Sample ID: LICA VOC/ ELK / May &	Date and Time Information Sample Date and time (MST) (A) ひらこえの

Canister In	Canister Information
Initial Canister	Final Canister
Vacuum (inHg)	Pressure (psig)
d'87 -	150 /-

- 4"Ha Canister is passed the Use by date, - see email, ok to NO.

Canister valve open after to connection?: (YES

Canister valve closed prior to disconnection? YES

Comments:

	SI
Sample in - by Alex Yakupor	by Alex Valupor
Alex	Alex
Ž,	S.
in .	out .
Sample	Sample out
Technician Signiture:	



### Volatile Organics Data Results (NMHC Canister System)

Date:

MAY 22, 2015

S5647

Canister ID:

PÁRÁMETERS	CONGENTRATION (PPB)
7/00/01/01/01	
1,1,1-Trichloroethane	0.03
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	0.03
1,1-Dichloroethylene	< 0.05
1,2,3-Trimethylbenzene	< 0.06
1,2,4-Trichlorobenzene	< 1.0
1,2,4-Trimethylbenzene	0.11
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.04
1,2-Dichloroethane	0.05
1,2-Dichloropropane	0.05
1,3,5-Trimethylbenzene	0.10
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.4
1,4-Dichlorobenzene	< 0.5
1,4-Dioxane	< 0.5
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	3.36
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.62
2,3-Dimethylbutane	0.52
2,3-Dimethylpentane	2.18
2,4-Dimethylpentane	0.74
2-Methylheptane	0.05
2-Methylhexane	< 0.01
2-Methylpentane	0.32
3-Methylheptane	0.06
3-Methylhexane	0.12
3-Methylpentane	0.25
Acetone	46.9
Acrolein	< 0.4
Benzene	0.23
Benzyl chloride	< 0.5
Bromodichloromethane	0.04
Bromoform	0.03
Bromomethane	< 0.01
Carbon disulfide	0.30
Carbon tetrachloride	0.12
Chlorobenzene	0.05
Chloroethane	< 0.02
Chloroform	0.05
Chloromethane	< 0.02
cis-1,2-Dichloroethene	0.02
cis-1,3-Dichloropropene	< 0.05
cis-2-Butene	< 0.02
cis-2-Pentene	0.03
Cyclohexane	0.21
Cyclopentane	< 0.01
Dibromochloromethane	0.04
Ethanol	3.7
	0.9
Ethyl acetate	0.12
Ethylbenzene	0.12
Freon-11	0.34



### Volatile Organics Data Results (NMHC Canister System)

Date:

MAY 22, 2015

Canister ID:

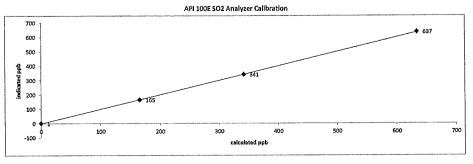
\$5647

PARAMETERS . A	CONCENTRATION (PPB)
Freon-113	0.13
Freon-114	< 0.02
Freon-12	< 0.02
Hexachloro-1,3-butadiene	< 0.60
Isobutane	< 0.02
lsopentan <del>e</del>	1.10
Isoprene	0.13
Isopropyl alcohol	< 0.5
Isopropylbenzene	< 0.01
m,p-Xylene	0.29
m-Diethylbenzene	< 0.05
m-Ethyltoluene	< 0.10
Methyl butyl ketone	< 0.60
Methyl ethyl ketone	2.1
Methyl isobutyl ketone	< 0.5
Methyl methacrylate	< 0.08
Methyl tert butyl ether	< 0.04
Methylcyclohexane	0.36
Methylcyclopentane	< 0.02
Methylene chloride	0.4
n-Butane	< 0.04
n-Decane	0.14
n-Dodecane	< 0.5
n-Heptane	0.29
n-Hexane	0.51
n-Nonane	0.07
n-Octane	0.08 < 0.1
n-Pentane	< 0.16
n-Propylbenzene	< 0.6
n-Undecane	< 0.6
Naphthalene	0.03
o-Ethyltoluene	0.03
o-Xylene p-Diethylbenzene	< 0.05
p-Ethyltoluene	< 0.08
Styrene	< 0.05
Tetrachloroethylene	1.18
Tetrahydrofuran	< 0.5
Toluene	2.16
trans-1,2-Dichloroethylene	0.03
trans-1,3-Dichloropropylene	0.05
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.05
Vinyl acetate	5.9
Vinyl chloride	< 0.02

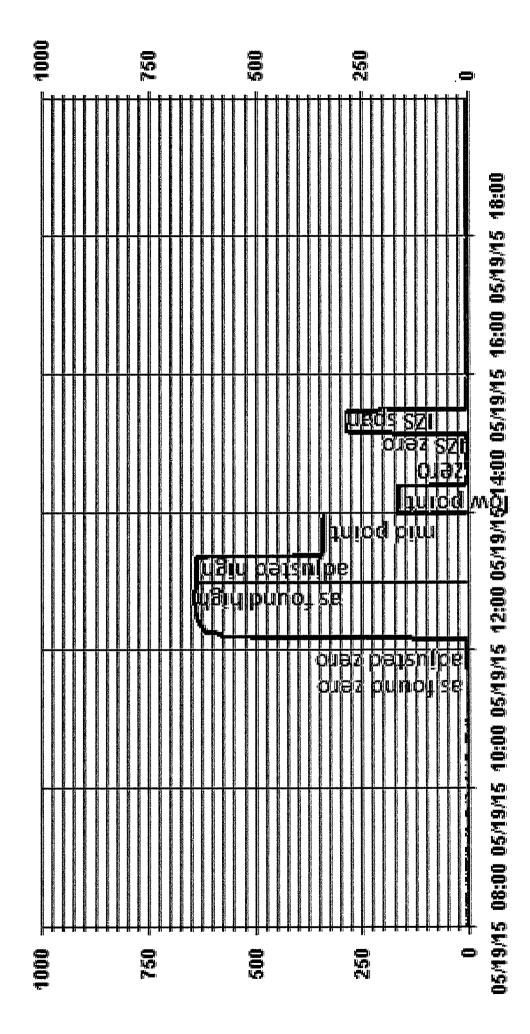
## APPENDIX III ANALYZER CALIBRATION RESULTS



Maxxar	Il	API 10	OE SC	02 Analyzer Ca	libration			
Date:	19-1	May-15		Start/	/End Time (mst): _	10:41	/ 15:35	
Company:		LICA		Calib	bration Purpose:	Moi	nthly	
Station Name/Location: Performed by:		Yakupov			r Make & Model: _ onverter Serial #:		NA NA	
Performed by: Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :		SO2	•		Gas Explry Date:		Лаг-19	
Analyzer:			<u>,</u>					
Serial Number:	-	467		Range ppb:	1000			
Last Calibration Date: Previous Cal High Point C.F.;		8-Apr-1 0,999		As Found C.F. New C.F.:	0,990 1,001			
. , evious cai nign Politt Cit.;	-	0,555		New Citii				ĺ
	n	As four		<b>.</b>	As left:			
	SLOPE: OFFSET:	0,967 118.8		5LOPE: OFFSET:	0,958 118,0			
	HVPS:	524		HVPS:	524			
	RCELL TEMP: 50.0			RCELL TEMP:	50.0			
	OX TEMP:	33,2 8,1		BOX TEMP: PMT TEMP:	33,4 8,1			
	MT TEMP: IZS TEMP:	45,0		IZS TEMP:	45,0			
	TEST:	NA		TEST:	NA			
	STABIL:	0,1 25,1		STABIL:	0.1 25.0			
	PRES: SAMP FL:	25.1 623		PRES: SAMP FL:	25.0 622			
	PMT:	124.1		PMT:	126.0			
	ORM PMT:	117.0		NORM PMT:	117.6			
	UV LAMP: MP RATIO:	3126. 113.6		UV LAMP: LAMP RATIO:	3125,8 113.7			
LAI	MP RATIO:	57.4		STR. LGT	\$6,5			
DRK PMT:		15.0		DRK PMT:	15,6			
	DRK LMP:	2.8 296.7	7	DRK LMP: Internal Span:	2.8 284.4			
Inte	ernal Span:	296,		Internal Span:	204,4			
Calibrator:					Calibrator Flow		· look-1-1	
Flow Meter ID's: Make & Model:		NA onics 6100	-	point zero	diluent (cc/min) 5000	cal gas	s (cc/min)	total (cc/min) 5000
Make & Model: Serial #:		4760	-	high	5000		64	5064
Cal Gas Cylinder I.D. #:	BLN	/1002073	_	mid	5000		35	5035
Cal Gas Conc. (ppm):		49.5	-	low	5000	l	17	5017
Calibration:					<del> ··· -·· </del>			<u></u>
Campration:				Indiante d Comme		tration: Correction Factor		
Calibrator El	ow Rates !	cc/min)		Calculated Concentrations	Indicated Concer	ntration:		
Calibrator Fl Point	ow Rates ( Diluent	cc/min) Cal Gas	Total	Calculated Concentration: (ppb)	(ppb)	ntration:		
Point as found zero	Diluent 4994	Cal Gas 0.0	4994	(ppb)	(ppb) 0.0	ntration:		NA NA
Point as found zero adjusted zero	Diluent 4994 4994	Cal Gas 0.0 0.0	4994 4994	(ppb) O O	(ppb) 0.0 0.0	ntration:		NA NA 0.990
Point as found zero	Diluent 4994	Cal Gas 0.0	4994	(ppb)	(ppb) 0.0	ntration:		NA 0,990 0,996
Point as found zero adjusted zero as found high adjusted high mid	4994 4994 4994 4930 4930 4961	Cal Gas 0.0 0.0 63.99 63.99 34.46	4994 4994 4994 4994 4995	(ppb) 0 0 634.3 634.3 341.5	(ppb) 0.0 0.0 641.0 637.0 341.0	ntration:		NA 0.990 0.996 1.001
Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4930 4930 4961 4977	Cal Gas 0.0 0.0 63.99 63.99 34.46 16.72	4994 4994 4994 4994 4995 4994	(ppb) 0 0 634.3 634.3 341.5	(ppb) 0.0 0.0 641.0 637.0 341.0	ntration:		NA 0.990 0.996 1.001 1.005
Point as found zero adjusted zero as found high adjusted high mid	4994 4994 4994 4930 4930 4961	Cal Gas 0.0 0.0 63.99 63.99 34.46	4994 4994 4994 4994 4995	(ppb) 0 0 634.3 634.3 341.5	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0	age C.F.=		NA 0.990 0.996 1.001
Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4930 4930 4961 4977	Cal Gas 0.0 0.0 63.99 63.99 34.46 16.72	4994 4994 4994 4994 4995 4994	(ppb) 0 0 634.3 634.3 341.5 105.7	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver			NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4930 4930 4961 4977	Cal Gas 0.0 0.0 63.99 63.99 34.46 16.72	4994 4994 4994 4994 4995 4994	(ppb) 0 0 634.3 634.3 341.5	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver			NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4930 4930 4961 4977 4994	Cal Gas 0.0 0.0 63.99 63.99 34.46 16.72	4994 4994 4994 4994 4995 4994 4994	(ppb) 0 0 634.3 634.3 341.5 165.7 0	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.	age C.F.=		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4930 4930 4961 4977 4994	Cal Gas 0.0 0.0 63.99 63.99 34.46 16.72 0.00	4994 4994 4994 4995 4994 4995 Linear R	(ppb) 0 0 634.3 634.3 341.5 165.7 0 tegression/Calibration Result:	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  s: LIMITS > or = 0.995 0.85-1.15	Pass/Fall PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4930 4930 4930 4961 4977 4994	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coerrect as % of f	4994 4994 4994 4995 4994 4994 Linear F	(ppb) 0 0 634.3 634.3 341.5 165.7 0  tegression/Calibration Result: 1.000 0.997 0.03%	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver  S: UMITS > or = 0.995 0.85-1.15 ± 3% F.S.	Pass/Fall PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4930 4930 4930 4961 4977 4994	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coefficient as % of fin C.F. from la	4994 4994 4994 4995 4994 4994 Linear R effecient = Slope = 'ull scale)= sst cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0 0 degression/Calibration Result: 1.000 0.997 0.03% 0.95%	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  \$: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fall PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4930 4930 4930 4961 4977 4994	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coefficient as % of fin C.F. from la	4994 4994 4994 4995 4994 4994 Linear R effecient = Slope = 'ull scale)= sst cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0  tegression/Calibration Result: 1.000 0.997 0.03%	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  \$: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15%	Pass/Fall PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low	Diluent 4994 4994 4930 4930 4930 4961 4977 4994	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coefficients & Soft In C.F. from Ia	4994 4994 4994 4995 4994 4995 Linear R effecient = Slope = full scale)= sst cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0 0 degression/Calibration Result: 1.000 0.997 0.03% 0.95%	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  S: UMITS > or = 0.995 0.85-1.15 ± 33% F.S. ± 15%  pplication:	Pass/Fall PASS PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	994 4994 4993 4930 4930 4961 4977 4994	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coerrecpt as % of fin C.F. from la	4994 4994 4994 4995 4994 4995 4994 Linear F effecient = Slope = full scale)= ist cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0 Regression/Calibration Results 1.000 0.997 0.03% 0.95% feciency Check for H <sub>2</sub> S/TRS ag	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% oplication: wing zero adjust**	Pass/Fall PASS PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low	994 4994 4993 4930 4930 4961 4977 4994	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coefficients & Soft In C.F. from Ia	4994 4994 4994 4995 4994 4995 4994 Linear F effecient = Slope = full scale)= ist cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0 tegression/Calibration Result: 1.000 0.997 0.03% 0.95%	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% oplication: wing zero adjust**	Pass/Fall PASS PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	Diluent 4994 4994 4990 4990 4990 4990 4990 60 60 60 60 60 60 60 60 60 60 60 60 60	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coerrecpt as % of fin C.F. from la	4994 4994 4994 4995 4994 4995 Linear R effecient = Slope = full scale)= sst cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0 Regression/Calibration Results 1.000 0.997 0.03% 0.95% feciency Check for H <sub>2</sub> S/TRS ag	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% oplication: wing zero adjust**	Pass/Fall PASS PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	Diluent 4994 4994 4990 4990 4990 4990 4990 60 60 60 60 60 60 60 60 60 60 60 60 60	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coefficient S % of fin C.F. from la	4994 4994 4994 4995 4994 4995 Linear R effecient = Slope = full scale)= sst cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0 Regression/Calibration Results 1.000 0.997 0.03% 0.95% feciency Check for H <sub>2</sub> S/TRS ag	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% oplication: wing zero adjust**	Pass/Fall PASS PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	Diluent 4994 4994 4990 4990 4990 4990 4990 60 60 60 60 60 60 60 60 60 60 60 60 60	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coefficient S % of fin C.F. from la	4994 4994 4994 4995 4994 4995 Linear R effecient = Slope = full scale)= sst cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0 Regression/Calibration Results 1.000 0.997 0.03% 0.95% feciency Check for H <sub>2</sub> S/TRS ag	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% oplication: wing zero adjust**	Pass/Fall PASS PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low calibrator zero  SO <sub>2</sub> High Point gas concentra Zero corrrected analyzer resp	Diluent 4994 4994 4990 4990 4990 4990 4990 60 60 60 60 60 60 60 60 60 60 60 60 60	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coefficient S % of fin C.F. from la	4994 4994 4994 4995 4994 4995 Linear R effecient = Slope = full scale)= sst cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0 Regression/Calibration Results 1.000 0.997 0.03% 0.95% feciency Check for H <sub>2</sub> S/TRS ag	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% oplication: wing zero adjust**	Pass/Fall PASS PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA
Point as found zero adjusted zero as found high adjusted high mid low calibrator zero	Diluent 4994 4994 4990 4990 4990 4990 4990 60 60 60 60 60 60 60 60 60 60 60 60 60	Cal Gas  0.0  0.0  63.99  63.99  34.46  16.72  0.00  Correlation Coefficient S % of fin C.F. from la	4994 4994 4994 4995 4994 4995 Linear R effecient = Slope = full scale)= sst cal	(ppb) 0 0 634.3 634.3 341.5 165.7 0 Regression/Calibration Results 1.000 0.997 0.03% 0.95% feciency Check for H <sub>2</sub> S/TRS ag	(ppb) 0.0 0.0 641.0 637.0 341.0 165.0 0.0 Aver.  S: LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. ± 15% oplication: wing zero adjust**	Pass/Fall PASS PASS PASS PASS PASS		NA 0.990 0.996 1.001 1.005 NA



Of Minute Averages

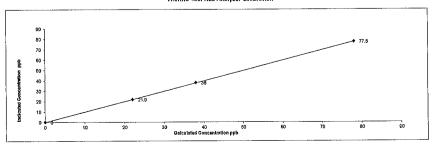


LICA35 SO2\_ PPB

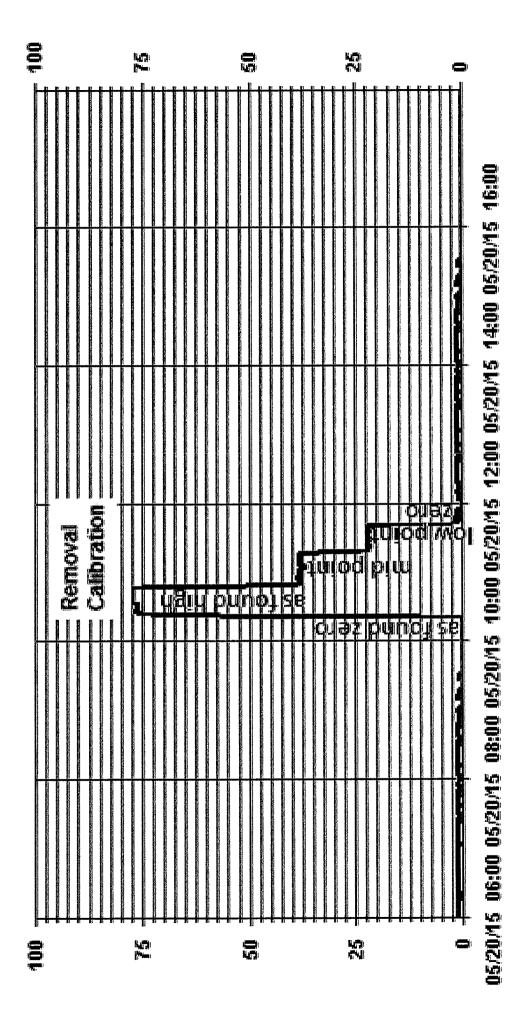


Date:		May-15		•	End Time (mst):	9:24 / 1		
Company:		ICA			oration Purpose:	Remo		
Station Name/Location:		Point Yakupov			Make & Model: _ nverter Serial #:	Interi NA		
Performed by: Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :		H2S			Gas Expiry Date:	15-Jul		
								,y
Analyzer: Serial Number:		1226154	721	Range ppb:	100			
Last Calibration Date:	-	8-Apr-1	LS	As Found C.F.				
Previous Cal High Point C.F.:	-	0,999		New C.F.:	1,004			
		As four	ıdı		As left:			
	BKG:	14,6		BKG:	NA			
	COEF	1,001		COEF:	NA			
MOTHERBOARD:	3,3	3.3		3,3	NA NA			
	5.0	5,0 15,1		5.0	NA NA			
15.0 24,0	15.0	24,0		15.0 24.0	NA NA			
	-3,3	-3.2		-3.3	NA.			
INTERFACE BOARD:	PMT:	-654.		PMT:	NA			
	FLASH:	931		FLASH:	NA			
	3,3	3.3		3.3	NA NA			
	5.0	5.0 14.9		5,0 15.0	NA NA			
	15.0 -15.0	-15.1		-15.0 -15.0	NA NA	<del></del>		
	24.0	24.1		24.0	NA			
ll ll	NTERNAL:	33,5		INTERNAL:	NÄ			
С	HAMBER:	45.1		CHAMBER:	NA			
CONVERT		338		CONVERTER TEMP:	NA NA	<del></del>		
	RTER SET:	340 35.0		CONVERTER SET: PERM OVEN GAS:	NA NA			
	IVEN GAS: IVEN HTR:	34.20		PERM OVEN HTR:	NA NA			
	RESSURE:	582,		PRESSURE:	ŇA			
SAMP	LE FLOW:	0.88	9	SAMPLE FLOW:	NA			
	NTENSITY:	91		LAMP INTENSITY:	NA NA			
Inte	rnal Span:	39.8		Internal Span:	NA NA			
Calibrator:					Callbrator Flov	v Targets:		
Flow Meter ID's:		na	. [	point	diluent (cc/min)	cal gas (		total (cc/min
Make & Model:		PI 700	.	zero	5000	3:		5000
Serial #1		830 .36837	. }	high mid	5000 5000	1		5039 5019
Cal Gas Cylinder i.D. # : Cal Gas Conc. (ppm):		10.0	٠	low	5000	1		5011
				. ,				
Calibration:								
Calibrator F	low Rates	(cc/mln)		Calculated Concentration:	Indicated Conce	ntration:	Correc	tion Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)			
as found zero	4999	0.0	4999	0	0.0			NA NA
adjusted zero	4050	NA 20.00	4997	78.0	77,5			1.007
as found high adjusted high	4958	39,00 NA	4337	76.0	1715			
mld	4978	19.00	4997	38,0	38.0			1.001
low	4987	11,00	4998	22,0	21.9			1,005
calibrator zero	<u></u>	NA NA			Aver	age C.F.=	·	1.004
					Avei	age C.F		11007
			Linear Re	gression/Callbration Results				
İ					LIMITS	Pass/Fail ?		
		Correlation Co		1.000	- > or = 0.995	PASS		
	h (Int	ercent as % of	Slope = full scale)=	1.006 -0.07%	_ 0.85-1.15 ± 3% F.S.	PASS PASS		
b (Intercept as % of full scale)= % change in C.F. from last cal		-0.B1%	± 15%	PASS				
		Cor	overter Effe	ciency Check for H₂S/TRS ap	pucation:			
			erter effeci	ency test immediately follow	ving zero adjust**			
		**run conv	SO <sub>2</sub> High Point gas concentration: 20 ppb					
SO <sub>2</sub> High Point gas concentra	tion:		pb	Time gas run (mst):	: 10:10 - 10:20			
SO <sub>2</sub> High Point gas concentra Zero corrrected analyzer resp				Time gas run (mst):	: 10:10 - 10:20	<u>,</u>		
		20 p		Time gas run (mst):	: 10:10 - 10:20			
Zero corrrected analyzer resp		20 p		Time gas run (mst):	: 10:10 - 10:20			
Zero corrrected analyzer resp		20 p		Time gas run (mst):	: 10:10 - 10:20		<u>-</u>	

#### Thermo 4501 H25 Analyzer Calibration



of Minute Averages



- LICA35 H2S\_ PPB

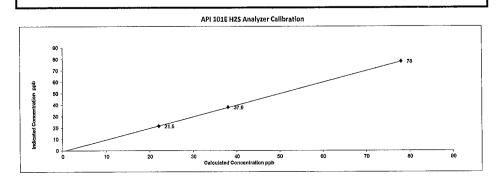
#### API 101E H2S Analyzer Calibration 9:24 / 14:02 21-May-15 Start/End Time (mst): Calibration Purpose: Installation LICA Converter Make & Model: Internal Elk Point Station Name/Location: Converter Serial #: NA Alex Yakupov Performed by: Cal Gas Expiry Date: 15-Jul-17 Application H<sub>2</sub>S/TRS/SO<sub>2</sub>: Analyzer: 510 Range ppb: 100 Serial Number: Last Calibration Date: ŃΑ As Found C.F. 1,000 Previous Cal High Point C.F.: ΝA New C.F.: As left: As found: SLOPE: 1.218 SLOPE: 1.028 26,5 OFFSET: 27.2 OFFSET: 526 526 HVPS: HVPS: 50.0 RCELL TEMP 50.0 RCELL TEMP: 34.9 BOX TEMP 34 9 BOX TEMP: 8.4 PMT TEMP 8.4 IZS TEMP: 45.0 IZS TEMP 45.0 315.2 TEST 315.2 TEST STABIL: 0.1 STABIL: 0.0 22,2 22.2 PRES: PRES: 573 SAMP FL: SAMP FL: 84.0 PMT: 82.7 PMT: 26.4 NORM PMT: 26.5 NORM PMT: 3194.2 **UV LAMP** 3191.7 UV LAMP: LAMP RATIO: 100.7 LAMP RATIO: 100.6 STR. LGT 14.0 STR, LGT 16.2 62.9 DRK PMT: 65.3 DRK PMT -1,6 DRK LMP: -1.5 DRK LMP: NA 44,38 Internal Span: Internal Span: Calibrator Flow Targets: Calibrator: cal gas (cc/min) total (cc/min) Flow Meter ID's: point diluent (cc/min) Make & Model: API 700 zero 'n 5000 830 high 5000 39 5039 Cal Gas Cylinder I.D. # LL36837 mld 5000 19 5019 11 Cal Gas Conc. (ppm): 10.0 low 5000 5011 Calibrations Calibrator Flow Rates (cc/mln) Indicated Concentration Correction Factors: Calculated Concentration: Point Diluent Cal Ga (ppb) as found zero NA -0.3 ÑĀ 5000 0.0 5000 adjusted zero NA as found high 78.0 0.997 4997 adjusted high 4958 39.00 78.0 37.9 0.995 4979 19.00 4998 38.0 21,5 1.009 low 4990 11,00 5001 22.0 -0.3 5000 0.00 5000 calibrator zero 0 1.000 Linear Regression/Calibration Results: Pass/Fall ? LIMITS Correlation Coeffecient = 1.000 > or = 0.995PASS. 0.85-1.15 PASS Slope = 0.995 ± 3% F.S. PASS b (Intercept as % of full scale)= 0.40% % change in C.F. from last cal ± 15% NΑ NA Converter Effeciency Check for H<sub>2</sub>S/TRS application: \*\*run converter effeciency test immediately following zero adjust\*\* Time gas run (mst): 10:18 - 10:27 SO<sub>2</sub> High Point gas concentration: 20 ppb

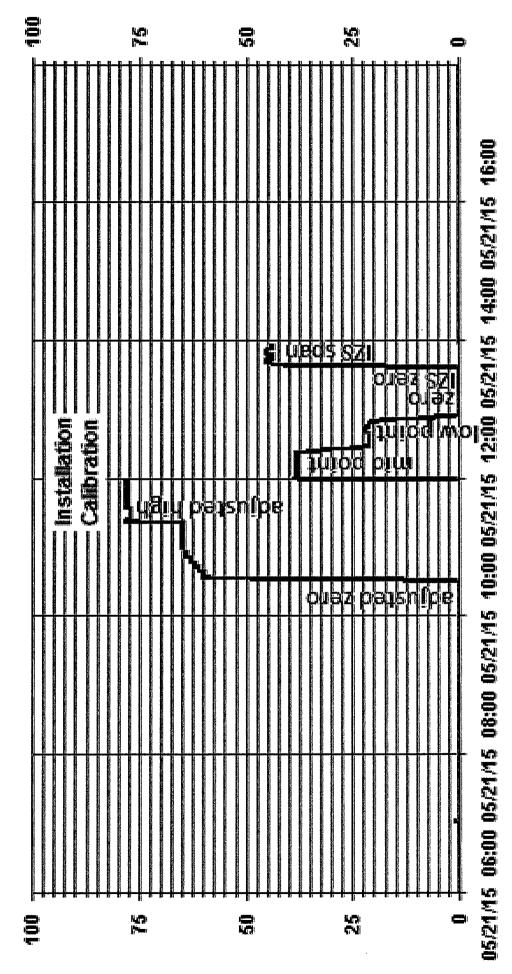
#### Comments:

Zero corrrected analyzer response:

May 20, 2015 analyzer left in "M" overnight for stabilizing its readings (after instalation readings are 33 ppb out of Zero Air generator with very slow reduction). Calibration is to be done on May 21, 2015. Filter changed. The analizer requires analog output voltage adjustment to compensate for -0.3 ppb.

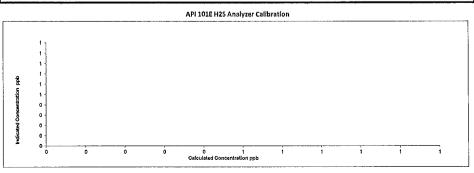
0.2 ppb

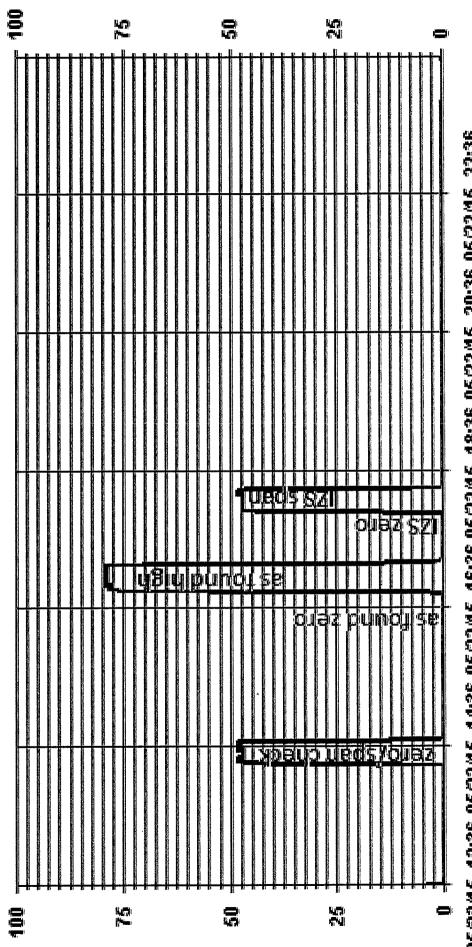




- LICA35 H2S\_ PPB

Maxyar	n	API 1	01E H2	S Analyzer Cal	ibration	. ,	,
Date:	22			-	/End Time (mst):	16:26 / 18:21	
Date: Company:		May-15 LICA	-		/End Time (mst): bration Purpose:	16:26 / 18:21 As Found	-
Station Name/Location:	El	k Point	•	Converte	Converter Make & Model:		
Performed by:		Yakupov			onverter Serial #:	NA AF IN LAT	
Application H <sub>2</sub> S/TRS/SO <sub>2</sub> :		H2S		Cal	Gas Expiry Date:	15-Jul-17	-
Analyzer:			,	• • • • • • • • • • • • • • • • • • • •		<del>, , , , , , , , , , , , , , , , , , , </del>	
Serial Number:		510		Range ppb:	100		
Last Calibration Date:		21-Ma 0,99		As Found C.F.			
Previous Cal High Point C.F.:		0,95	· · · · · · · · · · · · · · · · · · ·	New C.F.:	NA NA	<del></del>	
		As for	ınd:		As left:		
	SLOPE:	1.21	18	SLOPE:	1,218		
	OFFSET:	26.		OFFSET:	26.5	······································	
200	HVPS:	52		HVPS:	526		
	ELL TEMP: OX TEMP:	50, 35,		RCELL TEMP: BOX TEMP:	50.0 35.2		
	MT TEMP:	8.4		PMT TEMP:	8,4		
	IZS TEMP:	45.		IZS TEMP:	45.0		
	TEST:	315		TEST:	315.3		
	STABIL:	0,0		STABIL:	0.1	<del></del> -	
	PRES:	22,		PRES:	22.1	-	
	SAMP FL; PMT:	57 73,		SAMP FL: PMT:	57 <b>1</b> 72,7		
No	PINIT:	27.		NORM PMT:	27.4	···	
	UV LAMP:	319:		UV LAMP:	3191.5		
	MP RATIO:	100	,6	LAMP RATIO:	100.6		
	STR. LGT	16.		STR. LGT	16.2		
	DRK PMT:	53.		DRK PMT:	53.1		
	DRK LMP:	-1.		DRK LMP:	-1,7 47,53		
Inte	rnal Span:	44,3		Internal Span:	47,33		
Calibrator:					Calibrator Flor		
Flow Meter ID's:		na	_	point	diluent (cc/min)	cal gas (cc/min)	total (cc/min)
Make & Model:	A	PI 700	-	zero biab	5000	0 39	5000
Serial #: Cal Gas Cylinder i.D. # :		830 L36837	-	high mid	\$000 5000	19	5039 5019
Cal Gas Conc. (ppm):		10.0	<del>-</del>	low	5000	11	5011
			-				
Calibration:							
Calibrator F	low Rates	(cc/mln)		Calculated Concentration:	Indicated Conce	ntration: Correc	tion Factors:
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)		
as found zero	5000	0.0	5000	0	-0.1		NA
adjusted zero		NA					
as found high	4958	39,00	4997	78.0	78.5		0.994
adjusted high mid		NA NA	ļ				
low		NA NA	<u> </u>	<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>			
calibrator zero	5000	0,00	5000	0	0.0		NA
	-				Aver	age C,F,=	0.994
			Linear De	gression/Calibration Results:			
			Filledi Me	Blession/ Calibration Results,	LIMITS	Pass/Fail ?	
		Correlation C	oeffecient =	NA	> or = 0.995		
			Slope =		0.85-1.15		
		ntercept as % o			± 3% F.S.		
	% change	in C.F. from la	st cal	NA	± 15%	NA	
		Co	nverter Effe	ciency Check for H <sub>2</sub> S/TRS app	olication:		
		**run con	verter effeci	ency test immediately follow	ing zero adjust**		
SO <sub>2</sub> High Point gas concentration: NA Time gas run (mst): NA							
SO <sub>2</sub> High Point gas concentrat	ioni	19/	•	- urne gas run (mst):	110	<del></del>	
Zero corrrected analyzer resp	onse:	N.	۸	_			
Comments:							
As Found was required as spa	n drift was	more than 9%	(first check	- 46/44 4,55%, second check4	7/44 6.28%, third	check 48/44 9.09%)	
					-	•	
				., ., .,			

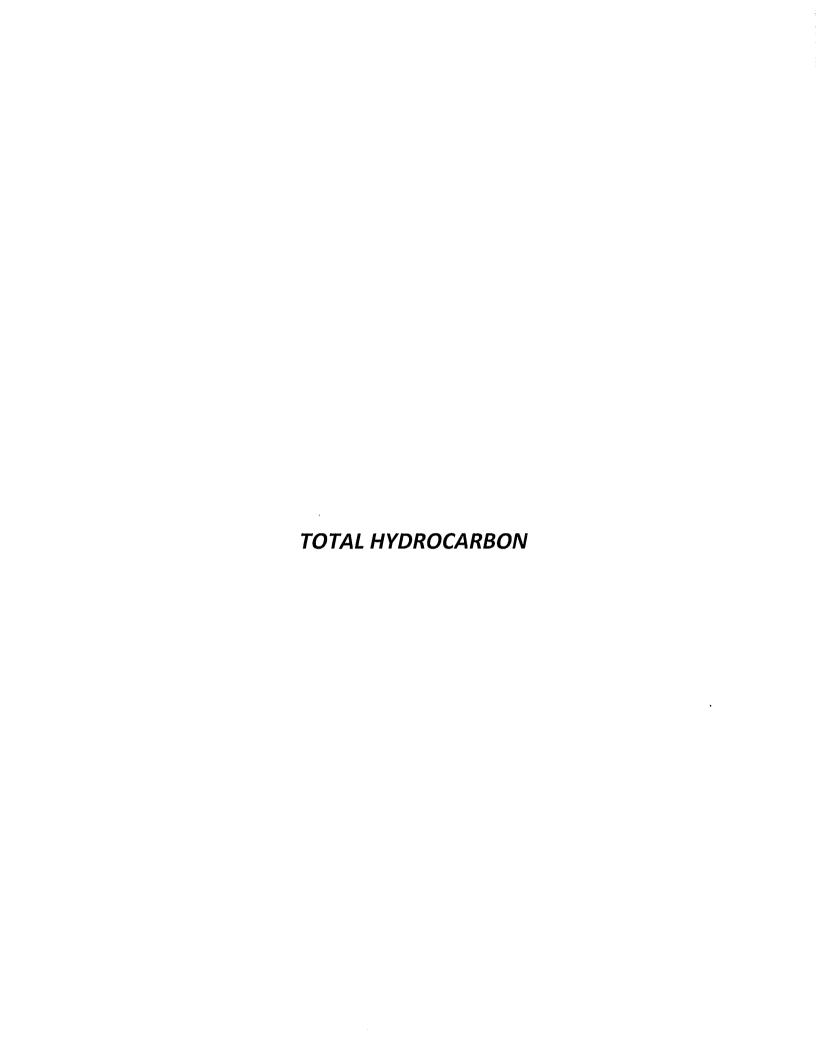




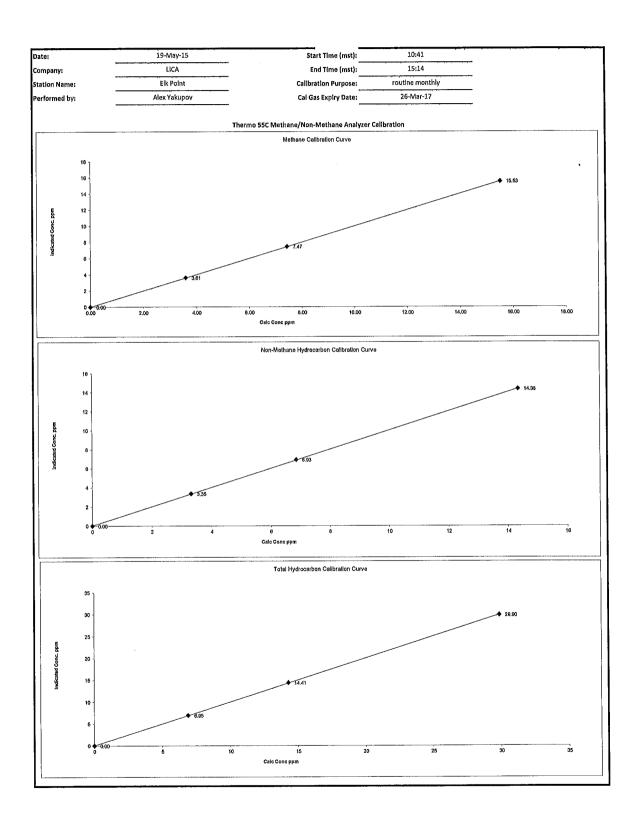
05/22/15 12:36 05/22/15 14:36 05/22/15 16:36 05/22/15 18:36 05/22/15 20:36 05/22/15 22:36

H S S

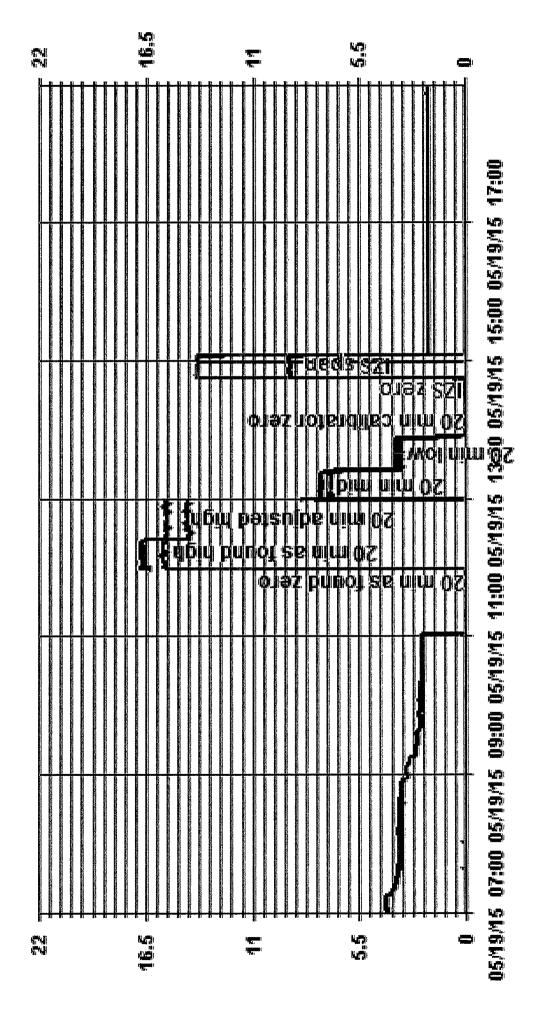
- LICA35



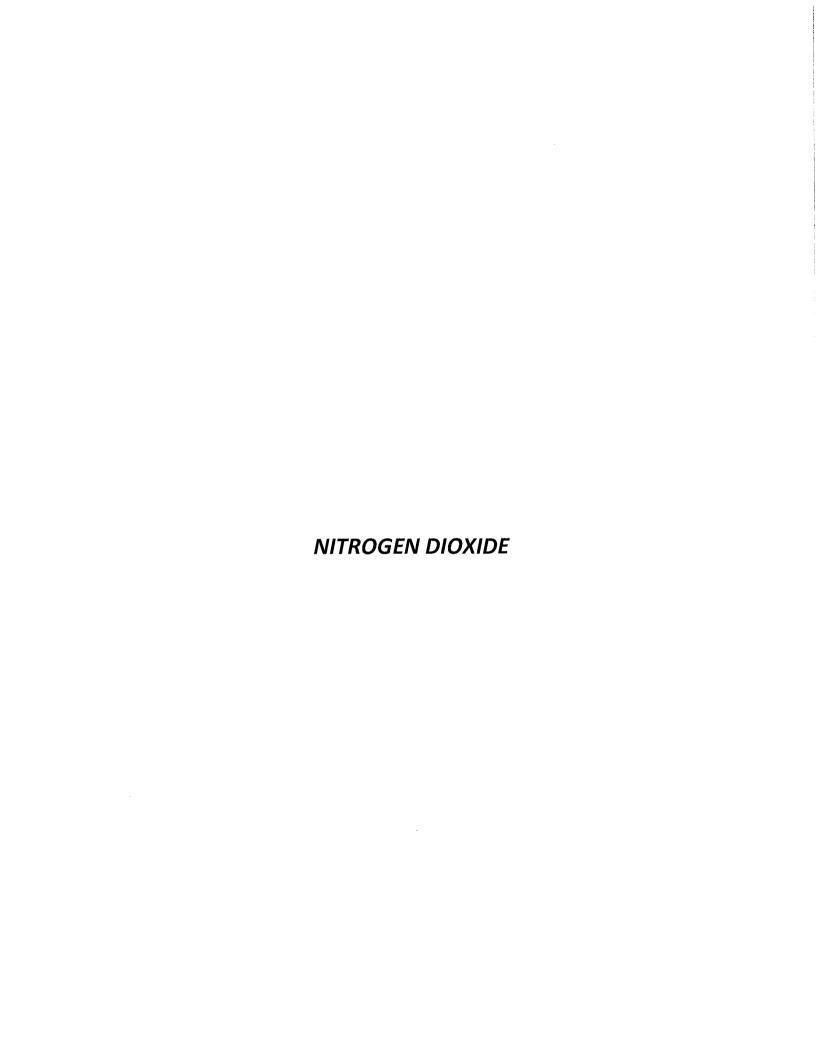
ate:	19	19-May-15				Time (mst):	10:41 15:14 routine monthly					l
ompany:	LICA Elk Point					Time (mst): on Purpose:						1
tation Name: erformed by:		x Yakupov				Expiry Date:	26-Mar-17					
- Control of the control	,					<del>-</del>	,,					
nalyzer & Diagnostics:					As found	I C.F.	Previous Cal Hig	gh Point C.F.	,	Analyzer I		- 1
	rial Number: _	**************************************				CH <sub>4</sub> = 0.933		CH <sub>4</sub> = 0.997 NMHC= 0.997		CH <sub>4</sub> ¤ — IMHC⊐	20	
Last Call	oration Date:	8-Api	r-15		NMHC= _ THC=	0.923	THC=	0.997	,	THC≃	40	l
			2				CH CD Pation	NA NA				l
Mother Board Voltages:		3,3; _ 5.0:	3. 4.		Calibration Histo	ary cut ast:	CH <sub>4</sub> SP Ratio: CH <sub>4</sub> RT:	NA				
		15.0:	14	.9			CH₄ PK IDX:	NA				- 1
		24.0:	24				CH4 PK HT:	NA NA				
		-3,3; _ 3,3;	-3 3,				NM Span Conc: NM SP Ratio:	NA NA				
Interface Board Voltages:		5.0:	5.				NM Peak Area:	NA.				
		15.0:	15		Run History>1:		Date:	May 19,				1
		24.0:	23	3.6			Tlme:	12:5	8			
		-15.0:	-1!				CH₄ PK HT:	8.0	······································			
		as Supply: _		5.0			CH <sub>4</sub> RT: CH <sub>4</sub> Baseline:	223				
Temperatures:	Detec	tor Oven: _ Filter:		5.1			CH4 LOD:	63				
	Colu	mn Oven:		5.0			CH <sub>4</sub> 5D:	20				
		Flame:	38	1.2			CH₄ CONC:	0.0	0			
		Internal:		5.0			NM PK HT:	0				
Pressures cylinder/reg.: FID Status:		Carrler:	780	48			NM Peak Area: NM CONC:	0				
		Fuel: _ Air:	200 46	40.0 32.3			NM Base Start:	220				
	Status:						NM Base End: 22		.3			
		Counts:	26	213			NM LOD:	17				
		Flame:		1.5			NM Start IDX:	35				
		Det Base:		5.0			NM End IDX:	8:Se				
Flame and Power Stats:		Power On:		15 @ 05:38			NM Max Slope: NM Min Slope:	-4.86				
		Flameouts: 40 Det Oven at Start: 170.1			_		NM PT Count:					
		n at Start:			Daily Zero/Spar	n Values:	Previous CH4:	9.7				
Callbration History>1:		Time:		NA			Previous NMHC	14.				
		Type:		NA			Previous THC: New CH4:	9,:				
	Cha	Status: No. Check/Adjust: No.					New NMHC 13,89					
		CH <sub>4</sub> Span Conc; NA					New THC: 23.06		06			
	· ·	·										
Calibrator	and Gas Inform	ation:						Calibrator Flow T	argets: (cc/min):			
Make & Model: API 700  Serlal #: 830							point diluent cal ga		total flow 2000			
					_		zero	2000	0	20		
Cal Gas Cylinder I.D. #: LL33674				Come		high mld	2000	53 25	20			
CH <sub>4</sub> Cylinder Conc.= 601.4 202.0 =C CH <sub>4</sub> as C <sub>3</sub> H <sub>8</sub> = 555.5 1156.9 =tc			=C <sub>3</sub> H <sub>8</sub> Cylinder			low	2000	12	20			
I	CH4 as C3H8-	333.3	1130.5	-total and ede			L					
					Calibrat	ion Data:						
Calibrator	Flow Rates (co	:/min)		Calculated	Calculated	Calculated	Indicated CH <sub>4</sub>	Indicated NMHC	Indicated THC		ection Fa	_
Point	Diluent	Cal Gas	Total Flow	CH₄ (ppm)	NMHC (ppm)	THC (ppm)	(ppm)	(ppm)	(ppm)	CH4	NMHC NA	THC
20 min as found zero	2000	0.00	2000	0,00	0,00	0,00	0.00	0.00 15.53	0.00 32.20	NA 0,933	0.923	0.928
20 min as found high point	2000	53.00	2053	15.53	14.34	29.87	16.65 15.53	14.36	29,90	1,000	0.999	0.999
20 min adjusted high	2000	53.00 25.00	2053 2025	15.53 7.42	14,34 6,86	14.28	7.47	6,93	14.41	0,994	0,990	0.991
20 mln mld 20 mln low	2000	12.00	2012	3.59	3.31	6.90	3.61	3,35	6,95	0.994	0.989	0,993
20 min calibrator zero	2000	0,00	2000	0.00	0,00	0.00	0.00	0.00	0.00	NA	NA	NA
		·, .,							Average C.F.=	0.996	0.992	0.994
				Linear Reg	ression/Calibra	tion Results:						
				CH <sub>4</sub>	NMHC	THC	LIMITS					
Correlation Coeffecient =   1.000   Slope =   1.000   b (Intercept as % of full scale)=   0.09%					1.000	1.000	> or = 0.995					
					1,001	1.001	0.85-1.15					
					0.13%	0.10%	± 3% F.S.					
	% char	ige in C.F. fi	rum last cal=	6.92%	-7.97%	-7.49%	+/-15%					
1												

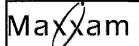


of Minute Averages



Mad METHANE — LICA35





# **API 200E NOx Analyzer Calibration**

Date: Company: Station Name/Location: Performed by:

19-May-15	
LICA	
Elk Point	
Alex Yakupov	

Start Time (mst):	10:41	
End Time (mst):	17:58	
Calibration Purpose:	Monthly Calibration	
Cal Gas Expiry Date:	12-Mar-19	

#### Correction Factors:

 Analyzer Serial Number:
 592

 Last Calibration Date:
 20-Apr-15

 Range ppb:
 1000

As found C.F.				
NO=	1.065			
NOx=	1,068			
NO <sub>2</sub> =	1.000			

ractors:		
Previous Cal High P	oint C.F.:	
NO=	1,000	
NOx=	1.000	
NO <sub>2</sub> =	1.005	

	As found:
NOx SLOPE:	0.990
NOx OFFS:	4.0
NO SLOPE:	0.990
NO OFFS:	0.4
TEST:	127.5
SAMP FLW:	489
OZONE FL:	75
PMT:	19.5
NORM PMT:	0.1
AZERO:	17.3
HVPS:	637
RCELL TEMP:	50.0
BOX TEMP:	31.8
PMT TEMP:	6.9
IZS TEMP:	40.2
MOLY TEMP:	316.3
RCEL:	6.8
SAMP:	28.2
Internal Span:	290.7/4.93/286.5

	As left:	
NOx SLOPE:	1.054	
NOx OFFS:	0.1	
NO SLOPE:	1.050	
NO OFFS:	-0.3	
TEST:	127,S	
SAMP FLW:	488	
OZONE FL:	75	
PMT:	16.4	
NORM PMT:	0.3	
AZERO:	17.2	
HVPS:	637	
RCELL TEMP:	50,0	
BOX TEMP:	31.7	
PMT TEMP:	6.9	
IZS TEMP:	40.3	
MOLY TEMP:	315.7	
RCEL:	6.2	
SAMP:	27.5	
nternal Span:	307.7/5.1/303.5	

#### **Calibrator Flow Targets:**

 Make & Model:
 Environics 6100

 Serial #:
 4760

 Cal Gas Cylinder I.D. #:
 BLM002073

 NO Cylinder Conc. (ppm):
 50.6

 NOx Cylinder Conc. (ppm):
 50.6

point	diluent (cc/min)	cal gas (cc/min)	O <sub>3</sub> setting (v or ppb)	total (cc/min)
zero	5000	0	0	5000
high	5000	77	330.00	5077
mid	5000	33	165.00	5033
low	S000	16	80.00	5016

#### Calibration:

Calibr	ator Flow Rate	s (cc/min)		Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)	$\geq$	M
as found zero	4994	0	4994	0	0	0.0	-1.0	NA	NA
adjusted zero	4994	0.0	4994	0	0	0.0	1.0	NA	NA
as found high	4930	63.99	4994	648.4	648.4	609	608	1.065	1.068
adjusted high	4930	63,99	4994	648.4	648,4	648	649	1.001	1.001
mid	4961	34.46	4995	349.1	349.1	349	349	1.000	1.003
low	4977	16.72	4994	169.4	169.4	169	170	1.002	1.002
calibrator zero	4994	0,00	4994	0	0	0.0	1.0	NA	NA
							Average C.F.=	1,001	1.002

Calibra	tor Flow Rate	s (cc/min)		Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO₂	NO drop	NO₂ increase	NO₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4931	64.02	4995	0.0	652.0	652.0	1.0	0.0	1.0	$\geq$
as found NO2	4931	64.02	4995	330.0	267.0	653.0	386.0	385.0	385.0	1.000
adjusted NO <sub>2</sub>	4931	64.02	4995	330,0	267.0	653,0	386.0	385.0	385.0	1.000
gpt mid	4931	64.02	4995	165.0	456.0	653,0	197.0	196.0	196.0	1.000
gpt low	4931	64.02	4995	80.0	562.0	653.0	92,0	90.0	91.0	0.989
<del></del>								Av	erage NO <sub>2</sub> C.F.=	0.996

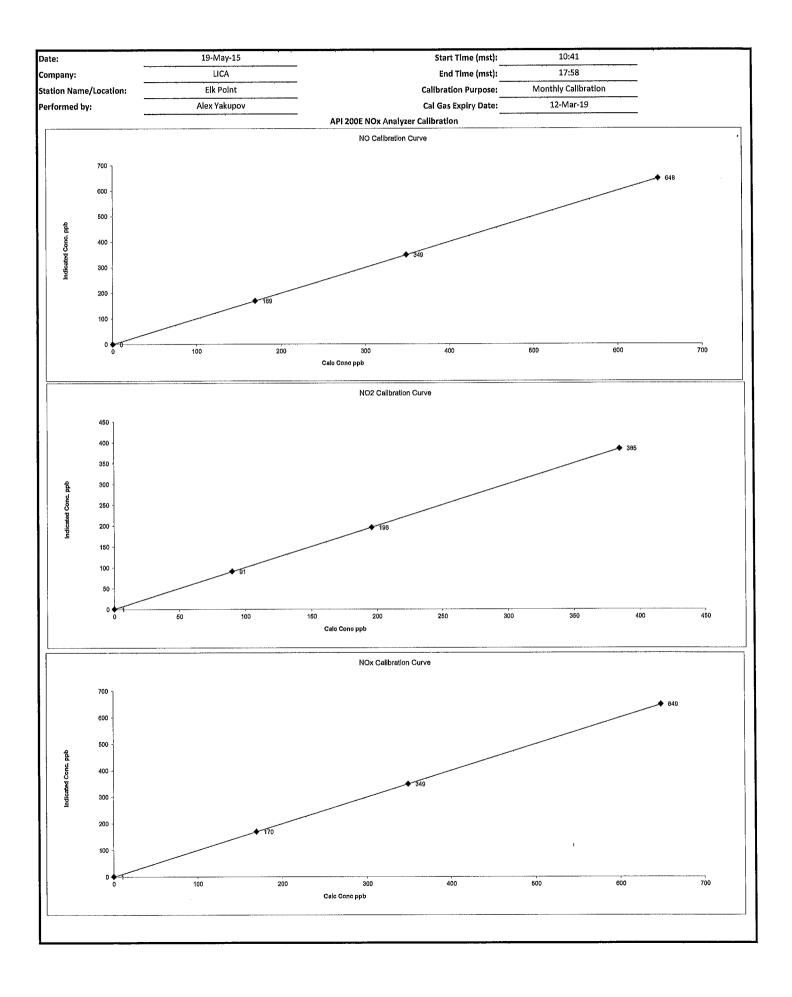
Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>
Correlation Coeffecient =	1,000	<b>1.0</b> 00	1.000
Slope =	1,000	0.999	0.997
b (intercept as % of full scale)=	-0.01%	0.07%	0.10%
% change in C.F. from last cal=	-6.46%	-6.81%	0.50%
NO2 converter effeciency		$\geq$	100.4%

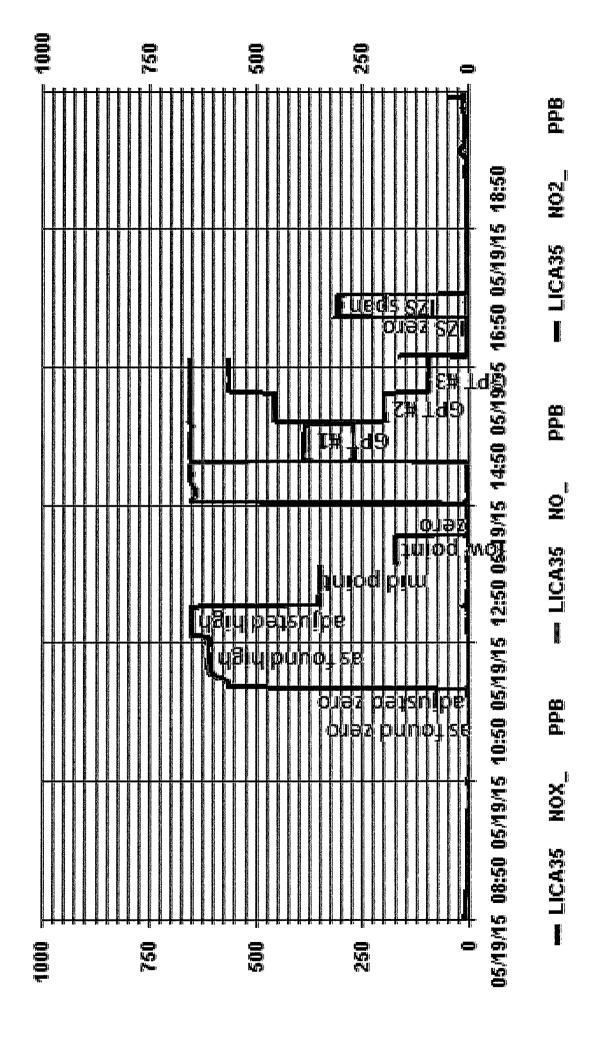
LIMITS > or = 0.995 0.85-1.15 ± 3% F.S. +/-15% >85%

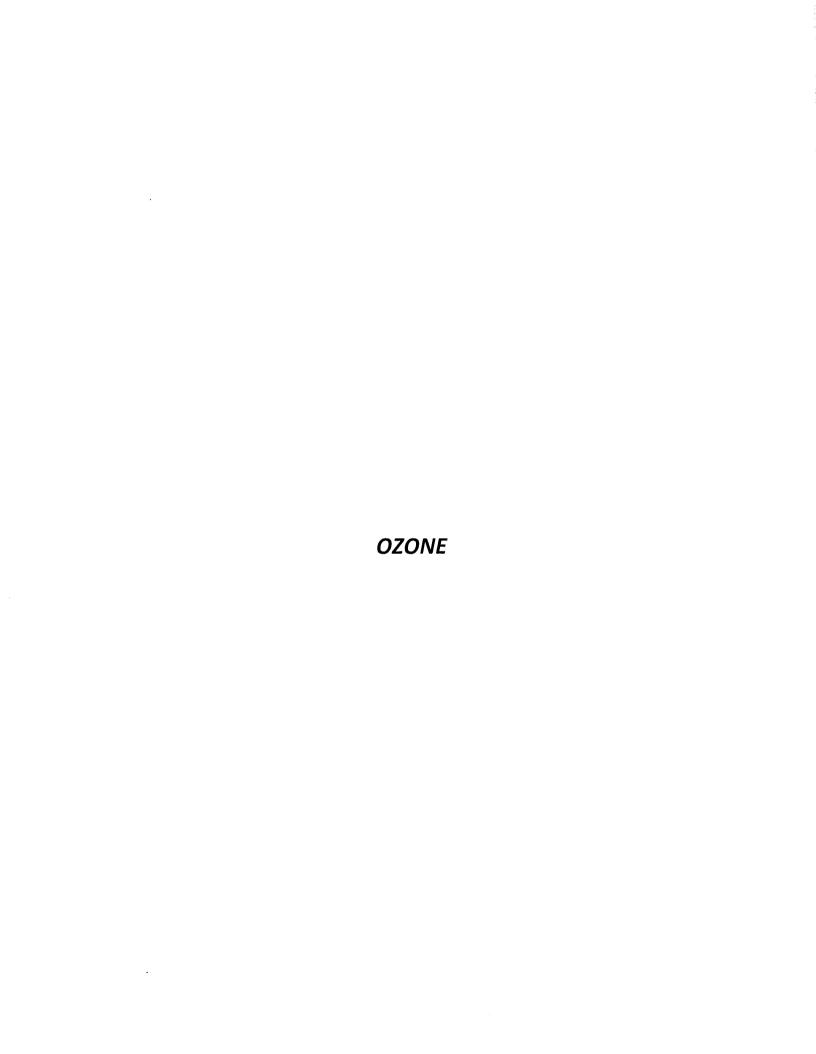
#### Comments:

Filter Changed. No NO2 adjustment made. 12:15 - High Point concentration of NO was increased from 610 to 650 ppb to keep SO2 concentration upper than 600 ppb



Of Minute Averages





Date:	20-Ma	ıv-15	Start	Time (mst):	9:24
Company:	Lic			Time (mst):	13:59
Station Name/Location:	Elk P			on Purpose:	Monthly
Performed by:	Alex Ya			G.P.T. Date:	19-May-15
Analyzer:		1002240272		500	
Seriai Number:		1002240372	Range ppm:	0.990	
Last Calibration Date:		9-Apr-15	As Found C.F.		<del>.,</del>
Previous Cal High Point C.F.:	_	0.999	New C.F.:	0.995	
		As found:		As left:	
	O <sub>3</sub> Bkg:	0.0	O <sub>3</sub> Bkg:	-0.1	
	O <sub>3</sub> Coef:	1,035	O <sub>3</sub> Coef:	1.019	<del></del>
Motherboard:	3,3	3.3	3.3	3,3	
	15.0	15.0	15.0	15.0	
	24.0	23.9	24.0	23.9	
	-3.3	-3,2	-3.3	-3.2	
Interface Board:	3.3	3,3	3.3	3,3	
	5.0	5.0	5.0	5.0	
	15.0	14.9	15.0	14.9	
	-15.0	-15.1	-15.0	-15.1	
Ph	oto Lamp	9,8	Photo Lamp	9.8	
	24.0	23.5	24.0	23.5	
	O <sub>3</sub> Lamp	9,4	O <sub>3</sub> Lamp	9.4	<u> </u>
	Bench:	31.1	Bench:	31.5	
Be	nch Lamp:	54.1	Bench Lamp:	54.1	
	O <sub>3</sub> Lamp:	68,2	O <sub>3</sub> Lamp:	68,2	
	Pressure:	706.6	Pressure:	705.7	_
	Cell A Ipm:	0.753	Cell A lpm:	0.752	_
	Cell 8 lpm:	0.761	Cell B lpm:	0,761	
	O <sub>3</sub> ppb:	0.3	O <sub>3</sub> ppb:	-0.1	
(	Cell A ppb:	2.2	Cell A ppb:	-5.8	
	Cell B ppb:	-1.6	Cell B ppb:	5.6	
	Cell A Int:	47964	Cell A Int:	47939	
	Cell B Int:	44510	Cell B int:	44489	
Inte	rnal Span:	350.4	Internal Span:	353.6	-

Calibrator:

Make & Model:	Environics 6100
Serial #:	4760
NOx Gas Cylinder I.D. #:	BLM002073
NOx Cylinder Conc. (ppm):	50.6

	Calibrator Flow Targets:	
point	total flow (cc/min)	O <sub>3</sub> setting (v or ppb)
zero	5000	0
hlgh	5000	330
mid	5000	165
low	5000	80

### Calibration:

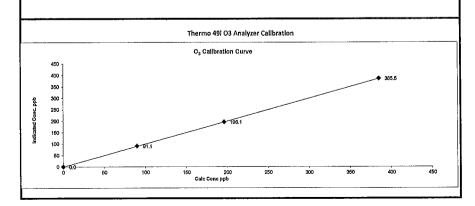
Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	4994	0.0	4994	0.0	0.2	NA.
adjusted zero	4994	0.0	4994	0.0	0.0	NA
as found high	4994	330.00	5324	385.0	389.0	0.990
adjusted high	4994	330,00	5324	385.0	385.5	0.999
mid	4994	165,00	5159	196.0	196.1	0.999
low	4994	80.00	5074	90,0	91.1	0.988
calibrator zero	4994	0.00	4994	0,0	0.0	NA
u and nasta flavos an	d NO deserves	from MOV on	l la sa sale	ulated concentration**	Average C.F.=	0.995

Linear Regression/Calibration Results:

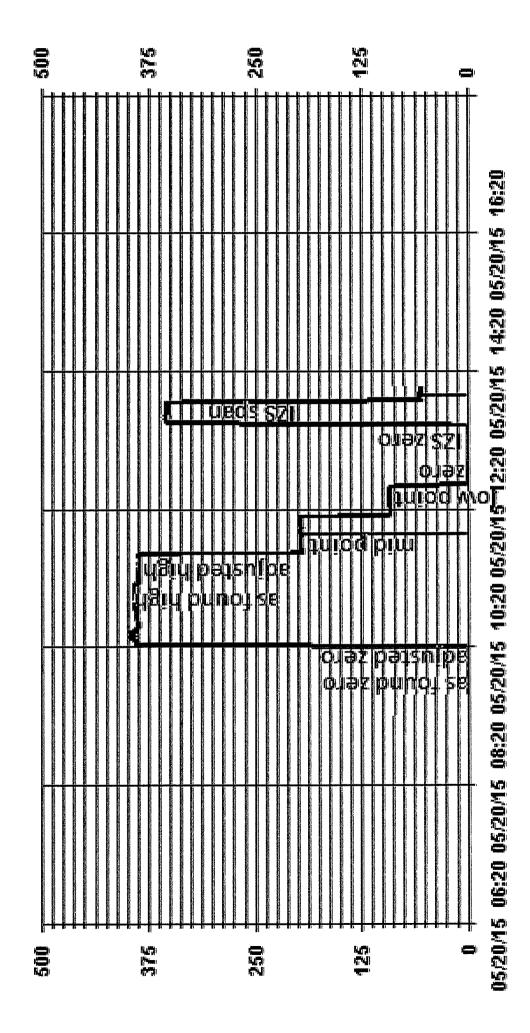
		LIMITS	Pass/Fail
Correlation Coeffecient =	1.000	> or = 0.995	PASS
Slope =	1.000	0.85-1.15	PAS\$
b (Intercept as % of full scale)=	0.074%	± 3% F.S.	PASS
% change in C.F. from last cal	1%	± 15%	PASS

Comments:

Filter changed



Of Minute Averages



- LICA35 03\_ PPB



As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm

 1405F main flow lpm:
 3.00

 reference main flow lpm:
 2.99

 difference lpm:
 -0.01

total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm/+/- 7%

1400A total/aux flow lpm: 16.66
reference total/aux flow lpm: 16.65
difference lpm: -0.01

K<sub>o</sub> Audit:

Last  $K_0$  audit date: 20-Mar-15 1405F  $K_0$  factor: 15634 Measured  $K_0$  factor: 15712.9000 % difference: 0.50

Comments:

An External FDMS Filter changed

 1405F main flow lpm:
 3.00

 reference main flow lpm:
 3.06

 difference lpm:
 0.06

reference total/aux flow lpm: 16.67

difference lpm: 0.14

Ko Audit:

Last K<sub>o</sub> audit date: 20-Mar-15

1405F K<sub>o</sub> factor: 15634

Measured K<sub>o</sub> factor: 15712,9000

% difference: 0.50

Comments:

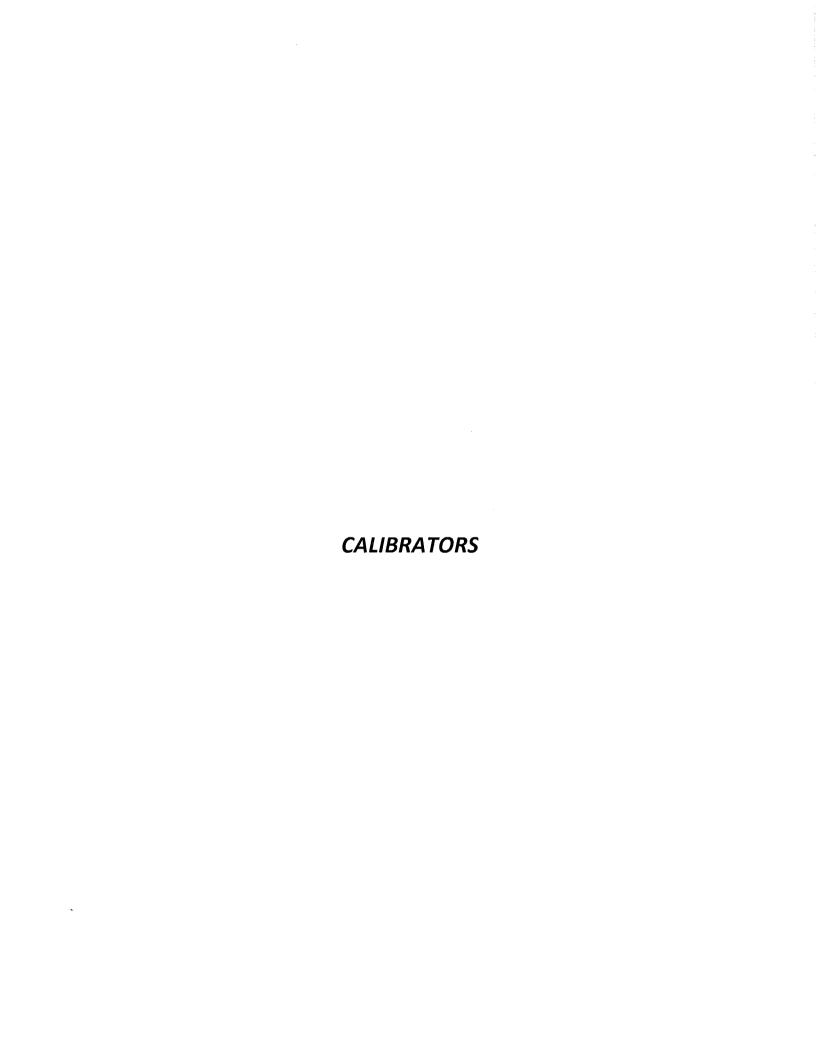
An External FDMS Filter changed and particulate sampling filter changed. Dryer for FDMS replaced with a new one.



Maxxam A Bureou Vertise Group Company
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# Meteorological Sensor Audit

	Ctati	on Information			
Company:	LICA	on information Performed	By: Chric	Wesson/Kevin Hope	
Location:	Elk Point	Reason:		Bl-annual audit	
Audit Date:	21-Feb-14	Start Time (mst):		15:10	
Previous Audit Date:	24-Nov-11	End Time (		15:40	
	١	Wind Speed			
Sensor make:	RM Young	Sensor height:		10M	
Sensor model:	5103VK	Serial Num		56589	
Calibrator:	RM Young		eed motor:	CA 03309	
Voltage range:	0 - 1	Output sig	nal range:	0 - 200 KPH	
		Speed Audit Data	1. 11. 1. 11.00 0000	L Cuino all	
RPM		al Indicated WS - CW 0.02	Indicated WS-CCW	Correction Factor	
0	0.0	17.79	0,03 17,75	0,99	
1000	35,28	35,64	35,53	0,99	
3000	52,92	53,29	53.31	0.99	
4000	70.56	71.08	71,08	0.99	
5000	88,2	88,88	88.91	0.99	
6000	105,84	106.6	106.7	0,99	
7000	123.48	124,4	124.5	0,99	
8000	141.12	142,2	142.2	0.99	
9000	158.76	160	160.1	0.99	
10000	176,4	177.8	177.8	0.99	
			erage Correction Facto		
	W	ind Direction			
Sensor make:	RM Young	Sensor height:		10M	
Sensor model:	5103VK	Serial Num		56589	
Calibrator:	RM Young	Variable speed motor:		CA03309	
Voltage range:	0 - 1	Output sig	<del></del>	0 - 360	
		Irection Audit Data			
Wind Dire	ection	Indicated		on Factor	
0		355.0		A	
45		43.1		04	
90		89.5		01	
135		135,5		00	
180		181.2 226.1	AVE-T-0004-1-0004-1-00-0-0-0-0-0-0-0-0-0-0-0-	99 00	
225		270.1		00	
270					
315 360		312,3 354.7	4.44-4.	01 01	
300	,	3371/	1,	V	
			WANT		
			······································	· · · · · · · · · · · · · · · · · · ·	





# Calibrator Performance Audit Oxides Of Nitrogen

File No. 2014-260A

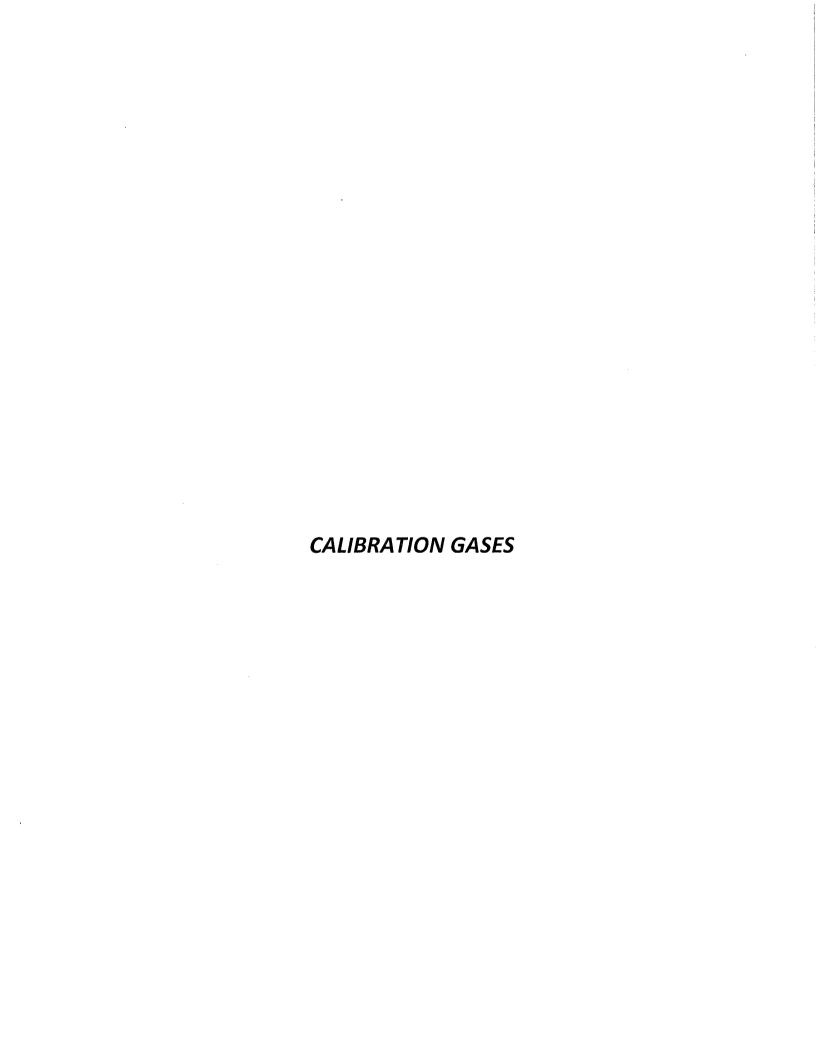
Calibrator:   Make/Model   Environice 6100	Company	Max	xam	V		Operator:	ator: Limin Li			
Serial Number   Last Verification Date   December 2013   Temperature (°C)   N/A										
December 2013   December 2013   LL42475   Barometric Pressure   N/A				-			· · · · · · · · · · · · · · · · · · ·			
NO Cylinder S/N   A 5,548,58   Barometric Pressure   N/A				-		,		****		
NO/NOX Concentration   48.5/48.5			·		-					
Dilution Flow (sccm)	-		LL42	475	-	Barometr	ic Pressure	N	I/A	
Pt. #1	<del></del>	***************************************		48.5	·					
Pt. #1   80   Pt. #2   40   Pt. #3   20   Gas flows not available from display.		•	•			·			, , , , , ,	
Pt. #1   80				5000	Pt. #3	5000	<b>-</b>			
Calculated Conc.(ppm)   Indicated Conc.(ppm)   % Difference vs Audit Gas   NO   NOx   NO   NO2   NOx   NO   NOx			om)		44-					
Dilution   Gas   NO   NOx   NO   NO2   NOx   NO   NOx     4980   0.0   0.000   0.000   0.000   0.000   0.000   0.000   0.000     4983   0.0   0.799   0.799   0.840   0.001   0.839   5%   5%     4994   0.0   0.399   0.399   0.420   0.001   0.419   5%   5%     4991   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%     4994   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%     4994   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%     4994   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%     5%	Pt. #1	80	Pt. #2	40	Pt. #3	20	Gas flows not a	vailable from d	isplay.	
4980   0.0   0.000   0.000   0.000   0.000   0.000   Limit ± 10%     4993   0.0   0.799   0.799   0.840   -0.001   0.839   5%   5%     4994   0.0   0.399   0.399   0.420   -0.001   0.419   5%   5%     4991   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%     4991   0.0   0.200   0.200   0.211   0.000   0.211   0.5%   5%     4991   5%   5%   5%     Absolute Average Percent Difference   5%   5%     5%   5%     5%   5%     5%   5%	Calibrator F	low (scem)	Calculated (	Conc.(ppm)	Indi	cated Conc.(	ppm)	% Difference	e vs Audit Gas	
4993   0.0   0.799   0.799   0.840   -0.001   0.839   6%   5%   6494   40.0   0.399   0.399   0.420   -0.001   0.419   5%   5%   5%   4991   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%   5%   5%   4991   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%   5%   5%   5%   5%   5%	Dilution	Gas	NO	NOx	NO	$NO_2$	NOx	NO	NOx	
4993   0.0   0.799   0.799   0.840   -0.001   0.839   6%   5%   6494   40.0   0.399   0.399   0.420   -0.001   0.419   5%   5%   5%   4991   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%   5%   5%   4991   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%   5%   5%   5%   5%   5%	4980	0.0	0.000	0.000	0.000	0.000	0,000	Limit		
4994   0.0   0.399   0.399   0.420   -0.001   0.419   5%   5%   5%     4991   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%     Absolute Average Percent Difference   5%   5%     Absolut	4993	0.0		<del></del>	<del></del>		· · · · · · · · · · · · · · · · · · ·			
4991   0.0   0.200   0.200   0.211   0.000   0.211   5%   5%   5%     Absolute Average Percent Difference   5%   5%     5%   5%     5%   5%     5%   5%	4994	0.0	0.399	0.399		<del></del>			· · · · · · · · · · · · · · · · · · ·	
Absolute Average Percent Difference   5%   5%	4991	0.0	0,200	0.200	0.211	· · · · · · · · · · · · · · · · · · ·			<del></del>	
NO					Absolute A	verage Perce	nt Difference			
4993   0.000   0.000   0.823   -0.001   0.822   NO₂   % Diff Lim		Correlation= m (Slope)=	1.0511	≥ 0.90	.990 -1.10	b (Intere	Correlation= m (Slope)=	1.0496		
4993   0.000   0.000   0.823   -0.001   0.822   NO₂   % Diff. Lin	Flow	O <sub>3</sub> Conc	NO De	crease	NO	NO2	NOX	% Diff. V	s Audit gas	
4993   0.240   0.269   0.554   0.269   0.823   0	4993	0.000	0,0	00	0.823	-0.001	0.822	$NO_2$	% Diff, Lim	
Align	4993	0.480	0.5	30	0.293	0.530	0.823	0	± 10%	
Absolute Average Percent Difference 0 ± 10%  LINEAR REGRESSION ANALYSIS  y=mx+b (where x=calculated concentration, y=Indicated concentration)  NO₂ LIMITS Correlation= 1.0000 ≥ 0.995  m (Slope)= 1.0006 0.90-1.10  b (Intercept % of FS)= -0.0132 ± 3% F.S.  AENV Standards Audit Calibrator  Make/Model Teco 146i Serial/AMU Number AMU 1868 Serial/AMU Number AMU 1809  Last Calibration Date December 15, 2014  Full Scale (ppm) 1.0  COMMENTS: Auditor: Al Clark  Date: December 17, 2014			······		0,554	0.269	0.823	0	± 10%	
INEAR REGRESSION ANALYSIS         y=mx+b (where x=calculated concentration, y=Indicated concentration)           NO2         LIMITS           Correlation== 1.0000 ≥ 0.995         1.0006 0.90-1.10           b (Intercept % of FS)= -0.0132 ±3% F.S.         NO <sub>X</sub> Analyzer           AENV Standards         NO <sub>X</sub> Analyzer           Audit Calibrator         Make/Model Teco 42i           Make/Model Serial/AMU Number         AMU 1868           Serial/AMU Number         Last Calibration Date December 15, 2014           Full Scale (ppm)         1.0           COMMENTS:         Auditor:         Al Clark         Date: December 17, 2014	4993	0.090	0,0	96	<u> </u>				± 10%	
NO₂       LIMITS         Correlation== 1.0000 ≥ 0.995       1.0006 0.90-1.10         b (Intercept % of FS)== -0.0132 ± 3% F.S.       NO₂ Analyzer         AENV Standards       NO₂ Analyzer         Audit Calibrator       Make/Model Teco 42i         Make/Model Teco 146i       Serial/AMU Number AMU 1868         Serial/AMU Number AMU 1809       Last Calibration Date December 15, 2014         Full Scale (ppm)       1.0         COMMENTS:       Auditor: Al Clark       Date: December 17, 2014					Absolute A	verage Perce	nt Difference	0	± 10%	
Correlation= 1,0000 ≥ 0.995 m (Slope)= 1,0006 0.90-1.10         b (Intercept % of FS)= -0.0132 ±3% F,S.         AENV Standards NO <sub>X</sub> Analyzer Make/Model Teco 42i         Audit Calibrator Make/Model Make/Model Teco 146i Serial/AMU Number AMU 1868         Serial/AMU Number AMU 1809 Last Calibration Date Full Scale (ppm) 1.0         COMMENTS: Auditor: Al Clark       Date: December 17, 2014	LINEAR I	REGRESSI	ON ANALYS	SIS	y≕	nx+b (where x=	calculated concent	tration, y=Indicat	ed concentration	
m (Slope)=       1.0006       0.90-1.10         b (Intercept % of FS)=       -0.0132       ± 3% F.S.             AENV Standards       NO <sub>X</sub> Analyzer         Audit Calibrator       Make/Model       Teco 42i         Make/Model       Teco 146i       Serial/AMU Number       AMU 1868         Serial/AMU Number       AMU 1809       Last Calibration Date       December 15, 2014         Full Scale (ppm)       1.0     COMMENTS:  Auditor:  Al Clark  Date:  December 17, 2014				LIM	<u>IITS</u>					
b (Intercept % of FS)= -0.0132 ±3% F,S.    AENV Standards										
AENV Standards         NO <sub>X</sub> Analyzer           Audit Calibrator         Make/Model         Teco 42i           Make/Model         Teco 146i         Serial/AMU Number         AMU 1868           Serial/AMU Number         AMU 1809         Last Calibration Date         December 15, 2014           Full Scale (ppm)         1.0           COMMENTS:           Auditor:         Al Clark         Date:         December 17, 2014		` - /								
Audit Calibrator         Make/Model         Teco 42i           Make/Model         Teco 146i         Serial/AMU Number         AMU 1868           Serial/AMU Number         AMU 1809         Last Calibration Date Full Scale (ppm)         December 15, 2014           Full Scale (ppm)         1.0    COMMENTS:  Auditor:  Al Clark  Date: December 17, 2014	b (Interce	pt % of FS)=	-0.0132	±3%	6 F.S.					
Audit Calibrator         Make/Model         Teco 42i           Make/Model         Teco 146i         Serial/AMU Number         AMU 1868           Serial/AMU Number         AMU 1809         Last Calibration Date Full Scale (ppm)         December 15, 2014           Full Scale (ppm)         1.0    COMMENTS:  Auditor:  Al Clark  Date: December 17, 2014	·	AENV S	tandards				NO <sub>v</sub> An	ıalvzer		
Make/Model Serial/AMU Number         Teco 146i         Serial/AMU Number         AMU 1868           Serial/AMU Number         AMU 1809         Last Calibration Date         December 15, 2014           Full Scale (ppm)         1.0           COMMENTS:           Auditor:         Al Clark         Date: December 17, 2014		Audit Ca	librator					-	o 42i	
Serial/AMU Number AMU 1809 Last Calibration Date December 15, 2014 Full Scale (ppm) 1.0  COMMENTS: Auditor: Al Clark Date: December 17, 2014						Serial/		****		
COMMENTS: Auditor: Al Clark Date: December 17, 2014	Serial/A	MU Number	AMU 1	1809			_		er 15, 2014	
Auditor: Al Clark Date: December 17, 2014		····				Fu	ll Scale (ppm)	1	.0	
	CO	MMENTS:								
		Auditor:	Al Cl	ark		Date:	December	17, 2014		
	Operator	-	120-1	On a				*	-	



# Calibrator Performance Audit Sulphur Dioxide (by Cylinder Dilution)

File No. 2014-258A

Company Max	cxam	_	Operator:	Limir	n Ll	
Calibrator Make/Model Serial Number Last Verification Date SO <sub>2</sub> Cylinder Conc. SO <sub>2</sub> Cylinder S/N	AP 8 Oct 5	I 700 330 2013 0.3	Flow Measure Make/Model Serial Number Temperature (°C Barometric Press	: C)	<b>Device:</b>	'A 'A
Flow Measuren			4			
Pt. No. 1 79.5	Pt. No. 2	39.8	Pt. No. 3 19	,9		
Calibrator Flow	Calc	ulated	Indicated		% Dif	ference
(sccm)	Concentra	ation (ppm)	Concentration (p)	om)	vs Audit Gas	% Diff. Limit
Zero Air	0.	000	0,000			
4918	0.	800	0.798		0%	± 10%
4960	0.4	400	0.398		-1%	± 10%
4977	0.:	200	0,200		0%	± 10%
go	LINI		SSION ANALYSIS mx+b (where x=calculated o	oncentra	ition, y≕indicated	l concentration)
Correlation= m (Slope)= b (Intercept % of FS)=	1.0000 0.9971 0.0000	LIMITS $\geq$ 0.995 0.90-1.10 ± 3% F.S.	·			
Correlation= m (Slope)= b (Intercept % of FS)=	0.9971	$\geq 0.995$ $0.90-1.10$		Do Ana	nlyzer	
Correlation= m (Slope)= b (Intercept % of FS)=	0.9971 0.0000	$\geq 0.995$ $0.90-1.10$		D <sub>2</sub> Ana	n <b>lyzer</b> Teco	43C
Correlation= m (Slope)= b (Intercept % of FS)=  AENV S	0.9971 0.0000 Standards	$\geq 0.995$ $0.90-1.10$	SC	- ·	•	
Correlation= m (Slope)= b (Intercept % of FS)=  AENV S  Audit Calibrator	0.9971 0.0000 <b>Standards</b> R&R M	≥ 0.995 0.90-1.10 ± 3% F.S.	S( Make/Model	ber	Teco	1623
Correlation= m (Slope)= b (Intercept % of FS)=  AENV S  Audit Calibrator  Make/Model	0.9971 0.0000 <b>Standards</b> R&R M	≥ 0.995 0.90-1.10 ± 3% F.S.	So Make/Model Serial/AMU Num	ber ate	Teco AMU	1623 15/14
Correlation= m (Slope)= b (Intercept % of FS)=  AENV S Audit Calibrator Make/Model Serial/AMU Number  COMMENTS:	0.9971 0.0000  Standards R&R M AMU	≥ 0.995 0.90-1.10 ± 3% F.S.	Make/Model Serial/AMU Num Last Calibration D Full Scale (ppm	ber ate )	Teco AMU Dec 1.	1623 15/14 0
Correlation= m (Slope)= b (Intercept % of FS)=  AENV S Audit Calibrator Make/Model Serial/AMU Number  COMMENTS:	0.9971 0.0000  Standards R&R M AMU	≥ 0.995 0.90-1.10 ± 3% F.S. MFC 201 0 1690 slow to move the control of the con	Make/Model Serial/AMU Num Last Calibration D Full Scale (ppm	ber rate ) heck fo	Teco AMU Dec 1.	1623 15/14 0



Form No. Version No. F-GAS-002 1.1



# Calibration Gas Audit

Cylinder #:         BLM002073         Concentration PPM:         49.5         Tolerance(%)         2         Certified B           Reference Calibrator and Gas:         Flow Measurement Device:           Make/Model:         R&R MFC 201         Make/Model:         Bk           Serial Number:         AMU 1690         Serial Number:         AM           Last Verification Date:         March 31, 2015         Temp. °C;         2           Gas Type:         SO2         Conc.         98.67         B.P.         690           Cylinder Number:         CAL016720         Serial/AMU Number:         1623         1.0           Reference Analyzer:           Make/Model:         Teco 43C         Serial/AMU Number:         1623           Instrument Settings:         Zero:         7.9         Span:         1.028         Range:         1.0           Last Calibration:         Date:         Mar 31/15         C.F.         1.000         Done By:         A           Calibrator Flows (seem)         Indicated         Gas Flow/ Dilution Flow         Concentration         Concentration         Concentration         Concentration         Concentration         Concentration         Concentration         Concentration         Concentration	Operator's	Limin Li
Make/Model:         R&R MFC 201         Make/Model:         Bit           Serial Number:         AMU 1690         Serial Number:         AM           Last Verification Date:         March 31, 2015         Temp. °C;         2           Gas Type:         SO2         Conc.         98.67         B.P.         690           Cylinder Number:         CAL016720         Serial/AMU Number:         1623           Reference Analyzer:           Make/Model:         Teco 43C         Serial/AMU Number:         1623           nstrument Settings:         Zero:         7.9         Span:         1.028         Range:         1.0           Last Calibration:         Date:         Mar 31/15         C.F.         1.000         Done By:         A           Calibrator Flows (scom)         Indicated         Gas Flow/ Dilution Flow         Concentration         Cy           Dilution         Gas         Concentration (PPM)         Dilution Flow         Factor         Concentration           6000         0.0         0.000         O.01680         60.242         4993         41.0         0.396         0.00821         121.780         4974         20.2         0.193         0.00406         246.386         Average Cylinder Concentratio		
Serial Number:   AMU 1690   Serial Number:   AMU Last Verification Date:   March 31, 2015   Temp. °C;   2	F	rement Device:
Serial Number:   AMU 1690   Serial Number:   AMU Last Verification Date:   March 31, 2015   Temp, °C;   2	01	e/Model: Blos DC2
Last Verification Date:   March 31, 2015   Temp, °C;   2     Gas Type:   SO2   Conc.   98.67   B.P.   690     Cylinder Number:   CAL016720	)	
Gas Type:   SO2   Conc.   98.67   B.P.   690	115	'emp, °C: 22.5 C
Cylinder Number:   CAL016720     CAL016720     CAL016720     CAL016720     CAL016720     CAL016720     CAL016720     CAL016720     CAL016720     CAL016720     CAL016720     CAL016720     CAL016720     CAL016720   CAL0167	Conc. 98,57	B.P. 690 mmhg
Make/Model:         Teco 43C         Serial/AMU Number:         1623           astrument Settings:         Zero:         7.9         Span:         1.028         Range:         1.0           ast Calibration:         Date:         Mar 31/15         C.F.         1,000         Done By:         A           alibrator Flows (seem)         Indicated         Gas Flow/         Concentration         Cy           Dilution         Gas         Concentration (PPM)         Dilution Flow         Factor         Concentration           5000         0.0         0.000         Second         Second         Concentration         Concentration           4976         82.6         0.801         0.01660         60.242         60.	<del></del>	
Asst Calibration:   Date:   Mar 31/15   C.F.   1,000   Done By:   Asst Calibration:   Date:   Mar 31/15   C.F.   1,000   Done By:   Asst Calibrator Flows (seem)   Indicated   Gas Flow/   Concentration   Cy Dilution   Gas   Concentration (PPM)   Dilution Flow   Factor   Concentration   Factor   Concentration   Cy Dilution   Factor   Concentration   Cy Dilution   Factor   Concentration   Cy Dilution   Factor   Concentration   Cy Dilution   Factor   Concentration   Cy Dilution   Factor   Concentration   Cy Dilution   Factor   Concentration   Cy Dilution   C		
Calibrator Flows (sccm) Indicated Gas Flow/ Concentration Cy Dilution Gas Concentration (PPM) Dilution Flow Factor Conc 5000 0.0 0.000  4976 82.6 0.801 0.01660 60.242 4993 41.0 0.396 0.00821 121.780 4977 20.2 0.193 0.00406 246.386  Average Cylinder Concentration:  Previous Stated Concentration PPM: 49.5  Percent variance from Stated: 3.0  Meets Manufacturer Tolerance. Use manufacturers stated concentration X		
Dilution   Gas   Concentration (PPM)   Dilution Flow   Factor   Concentration		Al Clark
Dilution   Gas   Concentration (PPM)   Dilution Flow   Factor   Concentration	, , , , , , , , , , , , , , , , , , , ,	
Dilution   Gas   Concentration (PPM)   Dilution Flow   Factor   Concentration   Gas   Concentration (PPM)   Dilution Flow   Factor   Concentration   Gas   Concentration   Concentration   Concentration   Comments   Comm		on Cylinder
4976         82.6         0.801         0.01660         60.242           4993         41.0         0.396         0.00821         121.780           4977         20.2         0.193         0.00406         246.386           Average Cylinder Concentration:           Previous Stated Concentration PPM: 49.5           Percent variance from Stated: 3.0           Meets Manufacturer Tolerance, Use manufacturers stated concentration X	PPM) Dilution Flow	Concentration
4993 41.0 0.396 0.00821 121.780 4977 20.2 0.193 0.00406 246.386  Average Cylinder Concentration:  Previous Stated Concentration PPM: 49.5  Percent variance from Stated: 3.0  Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS:  3.6  COMMENTS:		
4977 20.2 0.193 0.00406 246.386  Average Cylinder Concentration:  Previous Stated Concentration PPM: 49.5  Percent variance from Stated: 3.0  Meets Manufacturer Tolerance, Use manufacturers stated concentration COMMENTS:  =5% Outside Manufacturer Tolerance, Use manufacturers concentration X	**************************************	48.3
Average Cylinder Concentration:  Previous Stated Concentration PPM: 49.5  Percent variance from Stated: 3.0  Meets Manufacturer Tolerance, Use manufacturers stated concentration COMMENTS:  =5% Outside Manufacturer Tolerance, Use manufacturers concentration X		48,2
Previous Stated Concentration PPM: 49.5  Percent variance from Stated: 3.0  Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS:  =5% Outside Manufacturer Tolerance. Use manufacturers concentration X		47.6
Percent variance from Stated: 3.0  Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: COMMENTS:	Average Cynt	ntration: 48.0
Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS:  <=5% Outside Manufacturer Tolerance. Use manufacturers concentration X	19.5	
Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS:  <=5% Outside Manufacturer Tolerance. Use manufacturers concentration X		
<=5% Outside Manufacturer Tolerance. Use manufacturers concentration X	3.0	
<=5% Outside Manufacturer Tolerance. Use manufacturers concentration X	rers stated concentration COMM	
\$		
	<del></del>	
Auditor: Al Clark Date: March 31, 2015		March 24, 2045
Auditor: Al Clark Date: March 31, 2015  Operator Signature: Location: McIntyre Center Edmonto	<u> </u>	· · · · · · · · · · · · · · · · · · ·



# Calibration Gas Audit

Company:	Max	oxam		Operators nam	e: Limin	Ц	
Cylinder#:	BLM002073	Conc (PPM)	50.6/50.6	Tolerance (%)_2	2 Certified By:	Air Liqu	ide
Reference (	Calibrator a	ınd Gas:		]	Flow Measureme	ent Device:	
Make/	Model	Teco 1	461		Make/Model	Bios D	C2
Serial N		AMU 1			Serial Number	AMU 16	359
		March 31			Temp.°C	22.5	С
	·	NO		48.79		690 mn	
	• •	CAL018			-		
<b>Reference</b> A	· ·	Teco 4	421		Serial/AMU	J Number:	1868
Instrument S	Settings	Zero:	4.2	Spa	n: 1.008	Range:	1.0
Last Calibra	ation:	Date:	Mar 31/15	. C.1	F. <u>1.000</u>	Done By: _	Al Clark
Calibrator Flo	Gas	Indicated Co	NOX	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Con	ncentration NOX
		0.000	0,000				
5000	0.0		0.848	I	60 242 I	51.5	51.1
5000 4976	82,6	0.855	0,848 0,421	0.01660 0.00821	60.242 121.780	51.5 52.0	51.1 51.3
5000			0.848 0.421 0.209	0.01660 0.00821 0.00406	60.242 121.780 246.386	51.5 52.0 52.5	51.1 51.3 51.5
5000 4976 4993	82,6 41.0	0.855 0.427	0.421	0.00821 0.00406	121.780	52.0 52.5	51.3
5000 4976 4993	82,6 41.0	0.855 0.427	0.421	0.00821 0.00406	121.780 246.386	52.0 52.5	51.3 51.5
5000 4976 4993 4977	82,6 41.0 20.2	0.855 0.427	0.421 0.209	0.00821 0.00406	121.780 246.386 er Concentration:	52.0 52.5	51.3 51.5
5000 4976 4993 4977 Previous	82,6 41.0 20.2 Stated Conce	0.855 0.427 0.213	0.421 0.209 <u>NO</u>	0.00821 0.00406	121.780 246.386 er Concentration:	52.0 52.5	51.3 51.5
5000 4976 4993 4977 Previous Pe Cy Meets Ma	82.6 41.0 20.2  Stated Conce	0.855 0.427 0.213  ontration PPM: se from Stated: colerances baserance. Use manu	0.421 0.209 NO 50.6 2.8 sed on NO	0.00821 0.00406 Average Cylinde	121.780	52.0 52.5	51.3 51.5
5000 4976 4993 4977  Previous  Po  Cy  Meets Ma <=5% Outsi	82,6 41.0 20.2  Stated Conce ercent variance linder gas to nufacturer Tole de Manufactur	0.855 0.427 0.213  ontration PPM: ce from Stated: colerances baserance. Use manurer Tolerance. Use	0.421 0.209  NO 50.6 2.8 sed on NO afacturers state manufactur	0.00821 0.00406 Average Cylindo  only ted concentration ers concentration	121.780	52.0 52.5 <b>52.0</b>	51.3 51.5 <b>51.3</b>
5000 4976 4993 4977 Previous Po Cy Meets Ma <=5% Outsi	82,6 41.0 20.2  Stated Conce ercent variance linder gas to nufacturer Tole de Manufactur	0.855 0.427 0.213  ontration PPM: ce from Stated: colerances baserance. Use manurer Tolerance. Use	0.421 0.209  NO 50.6 2.8 sed on NO afacturers state manufactur	0.00821 0.00406 Average Cylinde	121.780	52.0 52.5 <b>52.0</b>	51.3 51.5 <b>51.3</b>



Proxad Conodo Inc. 9501-24th Street EXTERNITION AS TER 2X5 Tel: 780-440-0178 Fax: 780-449-5302

03/27/2014

MAXXAM ANALYTICS INC \*NA\* 9372 49TH ST EDMONTON, AB T6B 2L7

> Work Order No. 20248656 Customer Reference No.

Product LovBatch No Z582 4 085 02 Product Part No. NI ME600P2P-AQ

# CERTIFICATE OF ANALYSIS Primary Standard

Component Mothana Propene Nitrogen

Requested Concentration mqq0.003 200.0ppm Balance

Certified Concentration 601.4ppm 202ppm Balance

Analytical Principle

Analytical Accuracy ±1% rol ±1% rel

Analytical Instruments:

Mettler-Toledo Analytical Belance-ID2ex/USA---Hewlett-Packard (Aglient)-6890---GC-FID

Cylinder Style. Cylinder Pressure 4970F Cylinder Volume Valve Outlet Connection Cylinder No(s)

AQ 2200 psig 82.0 ft3 CGA-350 LL33874

Filling Method Date of Fill: Expiration Date:

Gravimetric 03/28/2014 03/26/2017

Todd Hrynlw

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# Calibration Gas Audit Single Component Cylinder Gas

File No. 2014-251CGA

Company: _	Maxx	am	Oper	ator's Name: Limi	ln Ll
Cylinder #:	LL36837	Concentration PPM:	10.0	Tolerance(%) 2	Certified By: Air Liquide
Reference Ca	alibrator a	nd Gas:		Flow Measurement	Device:
Ma	ke/Model:	R&R MFC 201	ı	Make/Model:	Bios DC2
		AMU 1690		Serial Number:	AMU 1659
	-	December 15, 2014		Temp.°C:	23,0 C
	-	H2S Conc.	20,43	B.P.	702 mmhg
	-	CAL015106			
Reference A	nalyzer:				
Ma	ake/Model: ˌ	Teco 45C		MU Number: 1624	-
Instrument S	ettings:	Zero: 6.4		1.160 Range:	
Last Calibrat	ion:	Date:Dec15/14	C.F.	1.000 Done By:	Al Clark
Calibrator Flo	ws (scem) Gas	Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
5000	0.0	0.0000			
5099	38,5	0.0754	0.00755	132.442	10.0
5092	18.0	0.0349	0.00353	282.889	9.9
5066	9,2	0.0178	0.00182 Aver	550.652 age Cylinder Concentration	
Pe Meets Mar <=5% Outsid	rcent varianc nufacturer Tok le Manufactur Dutside Manuf	ntration PPM: 10.0  e from Stated: 1.1  orance, Use manufacturers state for Tolerance, Use manufacture facturer Tolerance, DO NOT U	ers concentration		ber 16, 2014
	Auditor	, Al Olar K		Location: McIntyre C	

# APPENDIX IV ANALYTICAL RESULTS

**VOCs** 



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 7 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AB

T9N 2J5

LABORATORY SAMPLE ID:

15050100-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 6, 2015

**CANISTER ID:** 

2654

**DESCRIPTION:** Elk Point Airport

**DATE SAMPLED:** 06-May-15

0:00

DATE RECEIVED: 13-May-15

REPORT CREATED: **REPORT VERSION:** 

03-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	14-May-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8 ppbv	0.8	AC-058	14-May-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	14-May-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,2-Dichlorobenzene	K, T, U .	< 0.03 ppbv	0.03	AC-058	14-May-15
1,2-Dichloroethane	1	0.04 ppbv	0.01	AC-058	14-May-15
1,2-Dichloropropane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	14-May-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
2,2,4-Trimethylpentane	1	0.04 ppbv	0.01	AC-058	14-May-15
2,2-Dimethylbutane	1	0.03 ppbv	0.01	AC-058	14-May-15
2,3,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
2,3-Dimethylbutane	1	0.07 ppbv	0.02	AC-058	14-May-15
2,3-Dimethylpentane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15

## Qualifiers

K Off-scale low, Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 8 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050100-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 6, 2015

**CANISTER ID:** 

2654

**DESCRIPTION:** Elk Point Airport

**DATE SAMPLED:** 06-May-15

**DATE RECEIVED:** 13-May-15

REPORT CREATED:

03-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
2-Methylpentane	1	0.04 ppbv	0.01	AC-058	14-May-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
3-Methylhexane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
3-Methylpentane	1	0.03 ppbv	0.01	AC-058	14-May-15
Acetone		2.6 ppbv	0.4	AC-058	14-May-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	14-May-15
Benzene	1	0.08 ppbv	0.01	AC-058	14-May-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
Carbon disulfide	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
Carbon tetrachloride	1	0.13 ppbv	0.01	AC-058	14-May-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Chloroform	1	0.06 ppbv	0.02	AC-058	14-May-15
Chloromethane		0.85 ppbv	0.02	AC-058	14-May-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
cis-2-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
cis-2-Pentene	K, T, ∪	< 0.02 ppbv	0.02	AC-058	14-May-15
Cyclohexane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May- <b>1</b> 5
Cyclopentane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
Dibromochloromethane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15

## Qualifiers

K. Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 9 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

T2E 6P8

**INVOICE TO:** 

Charmaine Code

PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050100-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 6, 2015

**CANISTER ID:** 

**DESCRIPTION:** 

Elk Point Airport

**DATE SAMPLED:** 06-May-15

0:00

DATE RECEIVED: 13-May-15

**REPORT CREATED:** 

03-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
Ethanol		0.6 ppbv	0.3	AC-058	14-May-15
Ethyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Ethylbenzene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
Freon-11		0.33 ppbv	0.02	AC-058	14-May-15
Freon-113	İ	0.11 ppbv	0.01	AC-058	14-May-15
Freon-114	1	0.03 ppbv	0.02	AC-058	14-May-15
Freon-12		0.71 ppbv	0.02	AC-058	14-May-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50 ppbv	0.5	AC-058	14-May-15
Isobutane	1	0.07 ppbv	0.02	AC-058	14-May-15
Isopentane	1	0.20 ppbv	0.03	AC-058	14-May-15
Isoprene	1	0.03 ppbv	0.01	AC-058	14-May-15
Isopropyl alcohol	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Isopropylbenzene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
m,p-Xylene	K, T, U	< 0.03 ppbv	0.03	AC-058	14-May-15
m-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
m-Ethyltoluene	K, T, U	< 0.08 ppbv	0.08	AC-058	14-May-15
Methyl butyl ketone	K, T, U	< 0.50 ppbv	0.5	AC-058	14-May-15
Methyl ethyl ketone	K, T, U	< 0.3 ppbv	0.3	AC-058	14-May-15
Methyl isobutyl ketone	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Methyl methacrylate	K, T, U	< 0.07 ppbv	0.07	AC-058	14-May-15
Methyl tert butyl ether	K, T, U	< 0.03 ppbv	0.03	AC-058	14-May-15
Methylcyclohexane	I	0.02 ppbv	0.01	AC-058	14-May-15
Methylcyclopentane	1	0.03 ppbv	0.02	AC-058	14-May-15
Methylene chloride	K, T, U	< 0.3 ppbv	0.3	AC-058	14-May-15
n-Butane	1	0.24 ppbv	0.03	AC-058	14-May-15
n-Decane	K, T, U	< 0.06 ppbv	0.06	AC-058	14-May-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 10 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

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AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050100-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 6, 2015

**CANISTER ID:** 

**DESCRIPTION:** 

Elk Point Airport

**DATE SAMPLED:** 06-May-15

0:00

DATE RECEIVED:

13-May-15

**REPORT CREATED: REPORT VERSION:** 

03-Jun-15

Version 01

		_1			
Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
n-Heptane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
n-Hexane	1	0.04 ppbv	0.01	AC-058	14-May-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	14-May-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	<b>14-</b> May- <b>1</b> 5
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	14-May-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	14-May-15
n-Nonane	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
o-Ethyltoluene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
o-Xylene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	14-May-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May <b>-</b> 15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	14-May-15
Toluene	1	0.02 ppbv	0.01	AC-058	14-May-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	14-May-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	14-May-15
Vinyl acetate		0.5 ppbv	0.4	AC-058	14-May-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	14-May-15

#### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 7 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

ΑB

T9N 2J5

**LABORATORY SAMPLE ID:** 

15050198-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 12, 2015

**CANISTER ID:** 

S5673

**DESCRIPTION:** Elk Point Airport

**DATE SAMPLED:** 

12-May-15

DATE RECEIVED: 19-May-15

REPORT CREATED:

05-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	1	0.03 ppbv	0.02	AC-058	27-May-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1,2-Trichloroethane	1	0.03 ppbv	0.02	AC-058	27 <b>-</b> May-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May-15
1,2,4-Trichlorobenzene	<b>K, T,</b> ∪	< 0.8 ppbv	0.8	AC-058	27-May-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dichloroethane	1	0.05 ppbv	0.01	AC-058	27-May-15
1,2-Dichloropropane	1	0.03 ppbv	0.01	AC-058	27-May-15
1,3,5-Trimethylbenzene	ļ	0.02 ppbv	0.02	AC-058	27-May-15
1,3-Butadiene	<b>K, T,</b> U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,3-Dichlorobenzene	<b>K,</b> ⊤, U	< 0.3 ppbv	0.3	AC-058	27-May-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1-Hexene	1	0.04 ppbv	0.02	AC-058	27-May-15
1-Pentene	K, T, ∪	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2,4-Trimethylpentane	<b>K, T,</b> ∪	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2-Dimethylbutane	1	0.08 ppbv	0.01	AC-058	27-May-15
2,3,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,3-Dimethylbutane	1	0.16 ppbv	0.02	AC-058	27-May-15
2,3-Dimethylpentane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15

#### **Qualifiers**

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 8 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050198-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 12, 2015

**CANISTER ID:** 

S5673

**DESCRIPTION:** 

Elk Point Airport

**DATE SAMPLED:** 12-May-15

DATE RECEIVED: 19-May-15

**REPORT CREATED: REPORT VERSION:** 

05-Jun-15

Version 01

Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	1	0.02	ppb∨	0.01	AC-058	27-May-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-15
2-Methylpentane	1	0.11	ppbv	0.01	AC-058	27-May-15
3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
3-Methylhexane	1	0.04	ppb∨	0.02	AC-058	27-May-15
3-Methylpentane	I	0.09	ppbv	0.01	AC-058	27-May-15
Acetone		4.3	ppbv	0.4	AC-058	27 <b>-</b> May-15
Acrolein		0.7	ppbv	0.3	AC-058	27-May-15
Benzene	1	0.17	ppbv	0.01	AC-058	27-May-15
Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Bromodichloromethane		0.02	ppbv	0.02	AC-058	27-May-15
Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-15
Carbon disulfide	I	0.09	ppbv	0.01	AC-058	27-May-15
Carbon tetrachloride	1	0.12	ppbv	0.01	AC-058	27-May-15
Chlorobenzene	1	0.03	ppbv	0.02	AC-058	27-May-15
Chloroethane	K <b>,</b> T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
Chloroform	1	0.04	ppbv	0.02	AC-058	27-May-15
Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
cis-1,2-Dichloroethene	1	0.02	ppbv	0.01	AC-058	27-May-15
cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
Cyclohexane	1	0.11	ppbv	0.02	AC-058	27-May-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-15
Dibromochloromethane	1	0.02	ppbv	0.01	AC-058	27-May-15

#### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 9 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AB T9N 2J5

LABORATORY SAMPLE ID:

15050198-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 12, 2015

**CANISTER ID:** 

S5673

DESCRIPTION:

**Elk Point Airport** 

DATE SAMPLED:

12-May-15 0:00

**DATE RECEIVED:** 

19-May-15

REPORT CREATED:

05-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result		MDL	Method	Analysis Date
Ethanol			ppbv	0.3	AC-058	27-May-15
Ethyl acetate	K, T, U		ppbv	0.4	AC-058	27-May-15
Ethylbenzene	I	0.04	ppbv	0.01	AC-058	27-May-15
Freon-11		0.32	ppbv	0.02	AC-058	27-May-15
Freon-113	l	0.11	ppbv	0.01	AC-058	27-May-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
Freon-12	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
Isobutane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
Isopentane		0.33	ppbv	0.03	AC-058	27-May-15
Isoprene	I	0.03	ppbv	0.01	AC-058	27-May-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
ls opropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-15
m,p-Xylene	I	0.08	ppbv	0.03	AC-058	27-May-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	27-May-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
Methyl ethyl ketone		0.5	ppbv	0.3	AC-058	27-May-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	27-May-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-15
Methylcyclohexane	1	0.16	ppbv	0.01	AC-058	27-May-15
Methylcyclopentane	1	0.09	ppbv	0.02	AC-058	27-May-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-15
n-Butane	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	27-May-15

#### Qualifiers

- K. Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 10 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AΒ

T9N 2J5

LABORATORY SAMPLE ID:

15050198-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 12, 2015

**CANISTER ID:** 

S5673

**DESCRIPTION:** Elk Point Airport

**DATE SAMPLED:** 

12-May-15 0:00

DATE RECEIVED: 19-May-15

REPORT CREATED:

05-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
n-Heptane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May <b>-1</b> 5
n-Hexane	1	0.18 ppbv	0.01	AC-058	27-May-15
n-Octane	1	0.03 ppbv	0.02	AC-058	27-May-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	27 <b>-</b> May-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27 <b>-</b> May-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
n-Nonane	1	0.02 ppbv	0.01	AC-058	27-May-15
o-Ethyltoluene	1	0.01 ppbv	0.01	AC-058	27-May-15
o-Xylene	1	0.04 ppbv	0.01	AC-058	27-May-15
p-Diethylbenzene	K, T, Ų	< 0.04 ppbv	0.04	AC-058	27-May-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv .	0.07	AC-058	27-May-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Toluene	I	0.14 ppbv	0.01	AC-058	27-May-15
trans-1,2-Dichloroethylene	I	0.02 ppbv	0.01	AC-058	27-May-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-2-Pentene	1	0.02 ppbv	0.02	AC-058	27-May-15
Trichloroethylene	1	0.05 ppbv	0.04	AC-058	27-May-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15

#### Qualifiers

- K Off-scale low, Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 7 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St Bonnyville

T9N 2J5 AΒ

T2E 6P8

LABORATORY SAMPLE ID: 15050298-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 18, 2015

**CANISTER ID:** 

S5680

**DESCRIPTION:** 

Elk Point Airport

**DATE SAMPLED:** 

18-May-15 0:00

DATE RECEIVED: 25-May-15

REPORT CREATED: **REPORT VERSION:** 

05-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May-15
1,2,4-Trichlorobenzene	K, T, U	< 0.8 ppbv	0.8	AC-058	27-May-15
1,2,4-Trimethylbenzene	1	0.04 ppbv	0.03	AC-058	27-May-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dichloroethane	1	0.02 ppbv	0.01	AC-058	27-May-15
1,2-Dichloropropane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1-Butene	K <i>,</i> T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2-Dimethylbutane	1	0.06 ppbv	0.01	AC-058	27-May-15
2,3,4-Trimethylpentane	1	0.02 ppbv	0.01	AC-058	27-May-15
2,3-Dimethylbutane	I	0.13 ppbv	0.02	AC-058	27-May-15
2,3-Dimethylpentane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15

#### **Oualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 8 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050298-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 18, 2015

**CANISTER ID:** 

S5680

DESCRIPTION:

**Elk Point Airport** 

DATE SAMPLED:

18-May-15 0:00

DATE RECEIVED:

25-May-15

REPORT CREATED: **REPORT VERSION:** 

05-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2-Methylpentane	1	0.11 ppbv	0.01	AC-058	27-May-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
3-Methylhexane	1	0.05 ppbv	0.02	AC-058	27-May-15
3-Methylpentane	1	0.06 ppbv	0.01	AC-058	27-May-15
Acetone		7.6 ppbv	0.4	AC-058	27-May-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-15
Benzene	1	0.09 ppbv	0.01	AC-058	27-May-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
Carbon disulfide		0.63 ppbv	0.01	AC-058	27-May-15
Carbon tetrachloride	I	0.10 ppbv	0.01	AC-058	27-May-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloroform	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloromethane		0.75 ppbv	0.02	AC-058	27-May-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
cis-2-Butene	I	0.11 ppbv	0.02	AC-058	27-May-15
cis-2-Pentene	I	0.03 ppbv	0.02	AC-058	27-May-15
Cyclohexane	I	0.08 ppbv	0.02	AC-058	27-May-15
Cyclopentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
Dibromochloromethane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15

## Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- 1 The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 9 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

T9N 2J5 ΑB

**LABORATORY SAMPLE ID:** 

15050298-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 18, 2015

**CANISTER ID:** 

S5680

**DESCRIPTION:** Elk Point Airport

DATE SAMPLED:

18-May-15 0:00

DATE RECEIVED:

25-May-15

**REPORT CREATED: REPORT VERSION:** 

05-Jun-15

Version 01

Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		0.9	ppbv	0.3	AC-058	27 <b>-</b> May-15
Ethyl acetate	K, T, U	< 0.4	ppb∨	0.4	AC-058	27-May-15
Ethylbenzene	1	0.12	ppbv	0.01	AC-058	27-May-15
Freon-11		0.31	ppbv	0.02	AC-058	27-May-15
Freon-113	1	0.10	ppbv	0.01	AC-058	27 <b>-</b> May-15
Freon-114	1	0.03	ppbv	0.02	AC-058	27-May-15
Freon-12		0.68	ppbv	0.02	AC-058	27-May-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
Isobutane		0.43	ppbv	0.02	AC-058	27-May-15
Isopentane		0.34	ppbv	0.03	AC-058	27-May-15
Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-15
Isopropyl alcohol		0.5	ppbv	0.4	AC-058	27-May-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-15
m,p-Xylene	i	0.13	ppbv	0.03	AC-058	27-May-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	27-May-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
Methyl ethyl ketone		1.7	ppbv	0.3	AC-058	27-May-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	27-May-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-15
Methylcyclohexane	1	0.16	ppbv	0.01	AC-058	27-May-15
Methylcyclopentane	1	0.08	ppbv	0.02	AC-058	27 <b>-</b> May-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-15
n-Butane		0.65	ppbv	0.03	AC-058	27 <b>-</b> May-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	27-May-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 10 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AΒ

T9N 2J5

**LABORATORY SAMPLE ID:** 

15050298-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 18, 2015

**CANISTER ID:** 

S5680

**DESCRIPTION:** 

Elk Point Airport

**DATE SAMPLED:** 

18-May-15 0:00

DATE RECEIVED: 25-May-15

**REPORT CREATED: REPORT VERSION:** 

05-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
n-Heptane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
n-Hexane	1	0.09 ppbv	0.01	AC-058	27-May-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	27-May-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	27 <b>-</b> May-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
n-Nonane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May <b>-1</b> 5
o-Ethyltoluene	1	0.02 ppbv	0.01	AC-058	27-May-15
o-Xylene	1	0.06 ppbv	0.01	AC-058	27-May-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	27-May-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Toluene		0.58 ppbv	0.01	AC-058	27-May-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 5 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050334-002

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 24, 2015

**CANISTER ID:** 

H2825

DESCRIPTION:

Elk Point Airport

DATE SAMPLED:

24-May-15

DATE RECEIVED: 27-May-15

**REPORT CREATED: REPORT VERSION:** 

19-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May <b>-1</b> 5
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May <b>-1</b> 5
1,2,4-Trichlorobenzene	K, T, U	< 0.8 ppbv	0.8	AC-058	27-May-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-15
1,2-Dichloroethane	I	0.02 ppbv	0.01	AC-058	27-May-15
1,2-Dichloropropane	1	0.01 ppbv	0.01	AC-058	27-May-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	27 <b>-</b> May-15
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2,2,4-Trimethylpentane	I	0.16 ppbv	0.01	AC-058	27-May-15
2,2-Dimethylbutane	I	0.03 ppbv	0.01	AC-058	27-May-15
2,3,4-Trimethylpentane	1	0.03 ppbv	0.01	AC-058	27-May-15
2,3-Dimethylbutane	1	0.12 ppbv	0.02	AC-058	27-May-15
2,3-Dimethylpentane	1	0.13 ppbv	0.02	AC-058	27-May-15
2,4-Dimethylpentane	I	0.08 ppbv	0.01	AC-058	27-May-15

#### **Qualifiers**

- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 6 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15050334-002

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 24, 2015

**CANISTER ID:** 

H2825

**DESCRIPTION:** 

Elk Point Airport

**DATE SAMPLED:** 

24-May-15 0:00

DATE RECEIVED: 27-May-15

**REPORT CREATED: REPORT VERSION:** 

19-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
2-Methylpentane	l	0.05 ppbv	0.01	AC-058	27-May-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
3-Methylhexane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May <b>-1</b> 5
3-Methylpentane	1	0.03 ppbv	0.01	AC-058	27-May-15
Acetone		7.2 ppbv	0.4	AC-058	27-May-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-15
Benzene	1	0.08 ppbv	0.01	AC-058	27-May-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
Carbon disulfide		0.70 ppbv	0.01	AC-058	27-May-15
Carbon tetrachloride	1	0.10 ppbv	0.01	AC-058	27-May-15
Chlorobenzene	K, T, ∪	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloroform	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Chloromethane		0.83 ppbv	0.02	AC-058	27-May-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
cis-2-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Cyclohexane	1	0.03 ppbv	0.02	AC-058	27-May-15
Cyclopentane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
Dibromochloromethane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15

#### **Qualifiers**

- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 7 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AB

T9N 2J5

LABORATORY SAMPLE ID: 15050334-002

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 24, 2015

**CANISTER ID:** 

H2825

**DESCRIPTION:** 

**Elk Point Airport** 

DATE SAMPLED:

24-May-15 0:00

DATE RECEIVED: 27-May-15

REPORT CREATED: **REPORT VERSION:** 

19-Jun-15

Version 01

_						
Parameter	Qualifier	Result		MDL	Method	Analysis Date
Ethanol			ppbv	0.3	AC-058	27-May-15
Ethyl acetate	K, T, U		ppbv	0.4	AC-058	27-May-15
Ethylbenzene	I	0.01	ppbv	0.01	AC-058	27-May-15
Freon-11	1	0.30	ppbv	0.02	AC-058	27-May <b>-1</b> 5
Freon-113	1	0.09	ppbv	0.01	AC-058	27-May-15
Freon-114	1	0.02	ppbv	0.02	AC-058	27-May-15
Freon-12		0.65	ppbv	0.02	AC-058	27-May-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
lsobutane	1	0.22	ppbv	0.02	AC-058	27-May-15
Isopentane		0.55	ppbv	0.03	AC-058	27-May-15
Isoprene		0.32	ppbv	0.01	AC-058	27-May-15
Isopropyl alcohol		0.7	ppbv	0.4	AC-058	27-May-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-15
m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	27-May-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	27-May-15
Methyl ethyl ketone		0.5	ppbv	0.3	AC-058	27-May-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-15
Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	27-May-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-15
Methylcyclohexane	I	0.06	ppbv	0.01	AC-058	27-May-15
Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-15
Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-15
n-Butane		0.68	ppbv	0.03	AC-058	27-May-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	27-May-15

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 8 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

**LABORATORY SAMPLE ID:** 

15050334-002

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 24, 2015

**CANISTER ID:** 

H2825

DESCRIPTION:

Elk Point Airport

DATE SAMPLED:

24-May-15 0:00

**DATE RECEIVED:** 27-May-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
n-Heptane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
n-Hexane	1	0.07 ppbv	0.01	AC-058	27-May-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	27-May-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	27-May-15
n-Nonane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
o-Ethyltoluene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
o-Xylene	l	0.01 ppbv	0.01	AC-058	27-May-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	27-May-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Toluene	1	0.10 ppbv	0.01	AC-058	27-May-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	27 <b>-</b> May-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-15
		×			

#### **Qualifiers**

- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 7 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AΒ

T9N 2J5

LABORATORY SAMPLE ID:

15060054-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 30, 2015

**CANISTER ID:** 

S5684

**DESCRIPTION:** Elk Point Airport

DATE SAMPLED:

30-May-15 0:00

DATE RECEIVED: 05-Jun-15

REPORT CREATED:

19-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jun-15
1,2,4-Trichlorobenzene	К, T, U	< 0.8 ppbv	0.8	AC-058	06-Jun-15
1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jun-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	06-Jun-15
1,2-Dichloroethane	1	0.02 ppbv	0.01	AC-058	06-Jun-15
1,2-Dichloropropane	1	0.01 ppbv	0.01	AC-058	06-Jun-15
1,3,5-Trimethylbenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	06-Jun-15
1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jun-15
1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jun-15
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
2,2,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
2,2-Dimethylbutane	1	0.03 ppbv	0.01	AC-058	06-Jun-15
2,3,4-Trimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
2,3-Dimethylbutane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
2,3-Dimethylpentane	1	0.02 ppbv	0.02	AC-058	06-Jun-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
2,4-Dimethylpentane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jur

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 8 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

T2E 6P8 AB

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AB T9N 2J5 LABORATORY SAMPLE ID: 15060054-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 30, 2015

**CANISTER ID:** 

S5684

**DESCRIPTION:** Elk Point Airport

DATE SAMPLED: 30-May-15 0:00

DATE RECEIVED: 05-Jun-15

REPORT CREATED: **REPORT VERSION:** 

19-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
2-Methylheptane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
2-Methylhexane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
2-Methylpentane	1	0.06 ppbv	0.01	AC-058	06-Jun-15
3-Methylheptane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun <b>-1</b> 5
3-Methylhexane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
3-Methylpentane	1	0.05 ppbv	0.01	AC-058	06-Jun-15
Acetone		3.1 ppbv	0.4	AC-058	06-Jun-15
Acrolein	K, T, U	< 0.3 ppbv	0.3	AC-058	06-Jun-15
Benzene	I	0.09 ppbv	0.01	AC-058	06-Jun-15
Benzyl chloride	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jun-15
Bromodichloromethane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
Bromoform	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
Bromomethane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
Carbon disulfide		0.56 ppbv	0.01	AC-058	06-Jun-15
Carbon tetrachloride	1	0.09 ppbv	0.01	AC-058	06-Jun-15
Chlorobenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
Chloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
Chloroform	l	0.02 ppbv	0.02	AC-058	06-Jun-15
Chloromethane		0.84 ppbv	0.02	AC-058	06-Jun-15
cis-1,2-Dichloroethene	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
cis-1,3-Dichloropropene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
cis-2-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
cis-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun <b>-1</b> 5
Cyclohexane	1	0.04 ppbv	0.02	AC-058	06-Jun-15
Cyclopentane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
Dibromochloromethane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 9 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

T2E 6P8 AB

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AΒ T9N 2J5 LABORATORY SAMPLE ID:

15060054-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 30, 2015

**CANISTER ID:** 

S5684

DESCRIPTION:

Elk Point Airport

**DATE SAMPLED:** 30-May-15

DATE RECEIVED: 05-Jun-15

**REPORT CREATED: REPORT VERSION:** 

19-Jun-15

Version 01

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Parameter	Qualifier	Result		MDL	Method	Analysis Date
Ethanol		0.7	ppbv	0.3	AC-058	06-Jun-15
Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	06-Jun-15
Ethylbenzene	1	0.02	ppbv	0.01	AC-058	06-Jun-15
Freon-11	1	0.27	ppbv	0.02	AC-058	06-Jun-15
Freon-113	1	0.09	ppbv	0.01	AC-058	06-Jun-15
Freon-114	I	0.02	ppbv	0.02	AC-058	06-Jun-15
Freon-12		0.60	ppbv	0.02	AC-058	06-Jun-15
Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.5	AC-058	06-Jun-15
Isobutane	I	0.17	ppbv	0.02	AC-058	06-Jun-15
Isopentane	I	0.12	ppbv	0.03	AC-058	06-Jun-15
lsoprene	I	0.07	ppbv	0.01	AC-058	06-Jun-15
Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	06-Jun-15
ls opropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	06-Jun-15
m,p-Xylene	I	0.03	ppbv	0.03	AC-058	06-Jun-15
m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	06-Jun-15
m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	06-Jun-15
Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.5	AC-058	06-Jun-15
Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	06-Jun-15
Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	06-Jun-15
Methyl methacrylate	K, T, U	< 0.07	ppb∨	0.07	AC-058	06-Jun-15
Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	06-Jun-15
Methylcyclohexane	1	0.07	ppbv	0.01	AC-058	06-Jun-15
Methylcyclopentane	1	0.04	ppbv	0.02	AC-058	06-Jun-15
Methylene chloride	K, T, ∪	< 0.3	ppbv	0.3	AC-058	06-Jun-15
n-Butane	1	0.22	ppb∨	0.03	AC-058	06-Jun-15
n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	06-Jun-15

#### **Qualifiers**

K. Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

Compound was analyzed for but not detected

The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 10 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15060054-003

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/EP/May 30, 2015

**CANISTER ID:** 

S5684

**DESCRIPTION:** Elk Point Airport

**DATE SAMPLED:** 

30-May-15 0:00

DATE RECEIVED: 05-Jun-15

REPORT CREATED:

19-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jun-15
n-Heptane	1	0.03 ppbv	0.01	AC-058	06-Jun-15
n-Hexane	1	0.14 ppbv	0.01	AC-058	06-Jun-15
n-Octane	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
n-Pentane	K, T, U	< 0.1 ppbv	0.1	AC-058	06-Jun-15
n-Propylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	06-Jun-15
n-Undecane	K, T, U	< 0.5 ppbv	0.5	AC-058	06-Jun-15
Naphthalene	K, T, U	< 0.5 ppbv	0.5	AC-058	06-Jun-15
n-Nonane	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
o-Ethyltoluene	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
o-Xylene	1	0.02 ppbv	0.01	AC-058	06-Jun-15
p-Diethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	06-Jun-15
Styrene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
Tetrachloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
Tetrahydrofuran	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jun-15
Toluene	1	0.04 ppbv	0.01	AC-058	06-Jun-15
trans-1,2-Dichloroethylene	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
trans-1,3-Dichloropropylene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
trans-2-Butene	K, T, U	< 0.01 ppbv	0.01	AC-058	06-Jun-15
trans-2-Pentene	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15
Trichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	06-Jun-15
Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	06-Jun-15
Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	06-Jun-15

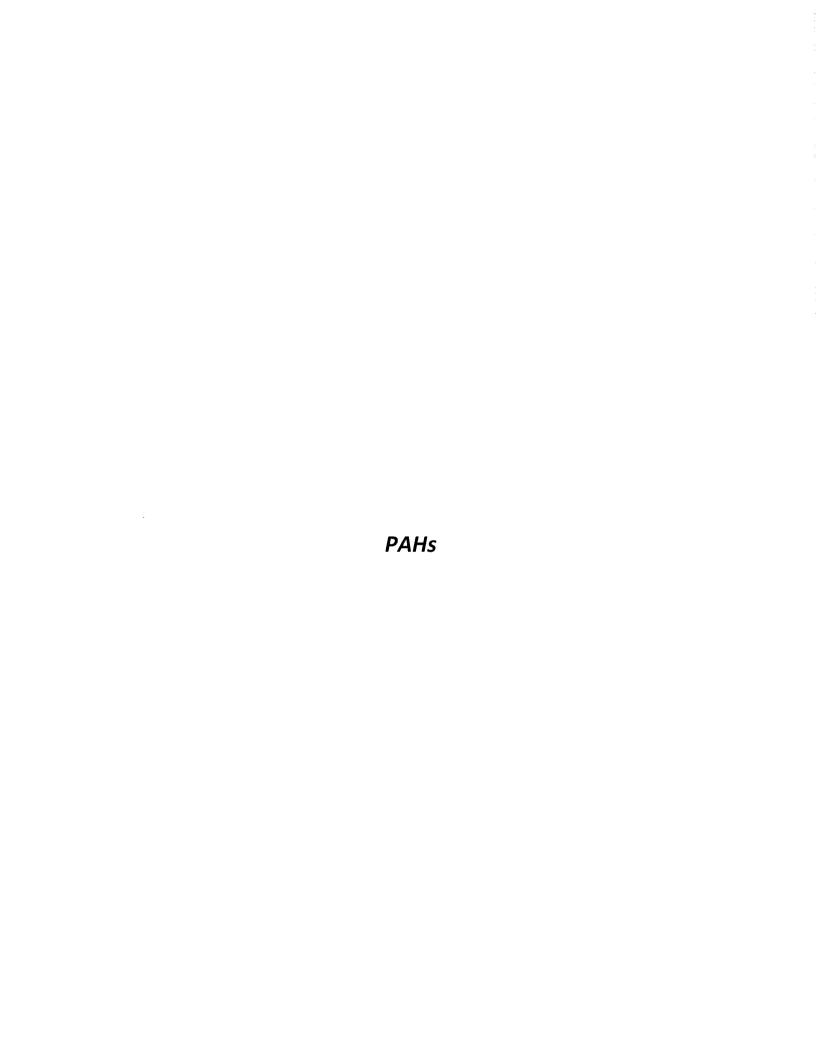
#### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455





PO Bag 4000 Vegreville, Alberta Canada T9C 1T4

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 11 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

ΑB

T9N 2J5

**LABORATORY SAMPLE ID:** 

15050100-004

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/EP/May 6, 2015

**CANISTER ID:** 

DESCRIPTION: **Elk Point Airport** 

**DATE SAMPLED:** 06-May-15

0:00

DATE RECEIVED:

13-May-15

**REPORT CREATED: REPORT VERSION:** 

03-Jun-15

Version 01

Parameter	Qualifier	Result Uni	nits MDL	Method	<b>Analysis Date</b>
1-Methylnaphthalene		0.02 ug/	/filter 0.01	NA-017	28-May-15
2-Methylnaphthalene		0.03 ug/	/filter 0.01	NA-017	28-May-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
7,12-Dimethylbenz(a) anthracene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Acenaphthene		0.01 ug/	/filter 0.01	NA-017	28-May-15
Acenaphthylene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Acridine	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Anthracene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Chrysene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/	/filter 0.01	NA-017	28-May-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/	g/filter 0.01	NA-017	28-May-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/	g/filter 0.01	NA-017	28-May-15
Fluoranthene		0.02 ug/	g/filter 0.01	NA-017	28-May-15
Fluorene		0.02 ug/	g/filter 0.01	NA-017	28-May-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/	g/filter 0.01	NA-017	28-May-15
Naphthalene		0.03 ug/	g/filter 0.01	NA-017	28-May-15
Perylene	K, T, U	< 0.01 ug/	g/filter 0.01	NA-017	28-May-15
Phenanthrene		0.05 ug/	g/filter 0.01	NA-017	28-May-15
Pyrene		0.02 ug,	g/filter 0.01	NA-017	28-May-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 12 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

**LABORATORY SAMPLE ID:** 

15050100-004

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/EP/May 6, 2015

**CANISTER ID:** 

**DESCRIPTION:** Elk Point Airport

**DATE SAMPLED:** 06-May-15

DATE RECEIVED:

13-May-15

REPORT CREATED:

03-Jun-15

**REPORT VERSION:** 

Version 01

**Parameter** 

Retene

Qualifier

**Result Units** 

MDL Method

**Analysis Date** 

0.01 ug/filter

0.01 NA-017

28-May-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 11 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AΒ

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AB

T9N 2J5

LABORATORY SAMPLE ID:

15050198-004

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/EP/May 12, 2015

**CANISTER ID:** 

DESCRIPTION: **Elk Point Airport** 

**DATE SAMPLED:** 12-May-15

0:00

DATE RECEIVED:

19-May-15

REPORT CREATED: **REPORT VERSION:** 

05-Jun-15

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.05 ug/filter	0.01	NA-017	28-May-15
2-Methylnaphthalene		0.10 ug/filter	0.01	NA-017	28-May-15
3-Methylcholanthrene	K, T, Ù	< 0.01 ug/filter	0.01	NA-017	28-May-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	, 28-May-15
Acenaphthene	, ,	0.01 ug/filter	0.01	NA-017	, 28-May-15
Acenaphthylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	, 28-May-15
Acridine	κ, Τ, U	< 0.01 ug/filter	0.01	NA-017	, 28-May-15
Anthracene	, , , К, Т, U	< 0.01 ug/filter	0.01	NA-017	, 28-May-15
Benzo(a)anthracene	к, Т, U	< 0.01 ug/filter	0.01	NA-017	, 28-May-15
Benzo(a)pyrene	к, Т, U	< 0.01 ug/filter	0.01	NA-017	, 28-May-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Chrysene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(a, I) pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Fluoranthene		0.02 ug/filter	0.01	NA-017	28-May-15
Fluorene		0.04 ug/filter	0.01	NA-017	28-May-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Naphthalene		0.05 ug/filter	0.01	NA-017	28-May-15
Perylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	28-May-15
Phenanthrene		0.07 ug/filter	0.01	NA-017	28-May-15
Pyrene		0.02 ug/filter	0.01	NA-017	28-May-15

# Qualifiers

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 12 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St Bonnyville

AΒ

T9N 2J5

LABORATORY SAMPLE ID:

15050198-004

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/EP/May 12, 2015

**CANISTER ID:** 

TE-05

**DESCRIPTION:** 

Elk Point Airport

DATE SAMPLED: 12-May-15

0:00

DATE RECEIVED: 19-May-15

REPORT CREATED: **REPORT VERSION:** 

05-Jun-15

Version 01

**Parameter** 

Retene

Qualifier

**Result Units** 

MDL Method

**Analysis Date** 

0.01 ug/filter

0.01 NA-017

28-May-15

#### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 11 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AB T9N 2J5

LABORATORY SAMPLE ID: 15050298-004

MATRIX: Air Filter

CLIENT SAMPLE ID: LICA/PUF/EP/May 18, 2015

CANISTER ID: TE-01

**DESCRIPTION:** Elk Point Airport

**DATE SAMPLED:** 18-May-15 0:00

**DATE RECEIVED:** 25-May-15

REPORT CREATED: 05-Jun-15
REPORT VERSION: Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.09 ug/filter	0.01	NA-017	29-May-15
2-Methylnaphthalene		0.16 ug/filter	0.01	NA-017	29-May-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Acenaphthene		0.02 ug/filter	0.01	NA-017	29-May-15
Acenaphthylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May <b>-1</b> 5
Acridine	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Benzo(c)phenanthrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Chrysene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Dibenzo (a,i) pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Dibenzo(a, l) pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Dibenzo (ah) anthracene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Fluoranthene		0.02 ug/filter	0.01	NA-017	29-May-15
Fluorene		0.04 ug/filter	0.01	NA-017	29-May-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Naphthalene		0.09 ug/filter	0.01	NA-017	29-May-15
Perylene	K, T, U	< 0.01 ug/filter	0.01	NA-017	29-May-15
Phenanthrene		0.09 ug/filter	0.01	NA-017	29-May-15
Pyrene		0.02 ug/filter	0.01	NA-017	29-May-15

#### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 12 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

LICA

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St Bonnyville

ΑB

T9N 2J5

**LABORATORY SAMPLE ID:** 

15050298-004

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/EP/May 18, 2015

**CANISTER ID:** 

TE-01

**DESCRIPTION:** 

Elk Point Airport

DATE SAMPLED:

18-May-15 0:00

DATE RECEIVED:

25-May-15

**REPORT CREATED: REPORT VERSION:** 

05-Jun-15

Version 01

**Parameter** 

Retene

Qualifier

**Result Units** 

MDL Method

**Analysis Date** 

0.02 ug/filter

0.01 NA-017

29-May-15

#### Qualifiers

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Ops Manager

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 9 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AB

T2E 6P8

INVOICE TO:

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AB

T9N 2J5

LABORATORY SAMPLE ID:

15050334-003

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/EP/May 24, 2015

**CANISTER ID:** 

P13-01

DESCRIPTION:

Elk Point Airport

**DATE SAMPLED:** 24-May-15

0:00

DATE RECEIVED: 27-May-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	<b>Analysis Date</b>
1-Methylnaphthalene		0.03 ug/Filter	0.01	NA-017	12-Jun-15
2-Methylnaphthalene		0.05 ug/Filter	0.01	NA-017	12-Jun-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
7,12-Dimethylbenz(a) anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acenaphthene		0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(a) anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(b,j,k)fluoranthene		0.02 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(c)phenanthrene		0.04 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(e)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Chrysene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo (ah) anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Fluoranthene		0.02 ug/Filter	0.01	NA-017	12-Jun-15
Fluorene		0.03 ug/Filter	0.01	NA-017	12-Jun-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Naphthalene		0.04 ug/Filter	0.01	NA-017	12-Jun-15
Perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Phenanthrene		0.10 ug/Filter	0.01	NA-017	12-Jun-15
Pyrene		0.02 ug/Filter	0.01	NA-017	12-Jun-15

# Qualifiers

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 10 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AΒ

T2E 6P8

INVOICE TO:

Charmaine Code PO Box 8237 5107W-50 St

Bonnyville

AB

T9N 2J5

LABORATORY SAMPLE ID:

15050334-003

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/EP/May 24, 2015

**CANISTER ID:** 

P13-01

**DESCRIPTION:** Elk Point Airport

DATE SAMPLED:

24-May-15

DATE RECEIVED:

27-May-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** 

Version 01

Parameter

Retene

Qualifier

Result Units

MDL Method **Analysis Date** 

0.02 ug/Filter

0.01 NA-017

12-Jun-15

#### Qualifiers

- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 11 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

ΑB

T2E 6P8

INVOICE TO:

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15060054-004

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/EP/May 30, 2015

**CANISTER ID:** 

A13-02

**DESCRIPTION:** 

Elk Point Airport

**DATE SAMPLED:** 30-May-15

DATE RECEIVED: 05-Jun-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1-Methylnaphthalene		0.02 ug/Filter	0.01	NA-017	12-Jun-15
2-Methylnaphthalene		0.04 ug/Filter	0.01	NA-017	12-Jun-15
3-Methylcholanthrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acenaphthene		0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acenaphthylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Acridine	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(a)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(a)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(b,j,k)fluoranthene		0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(c)phenanthrene		0.02 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(e)pyrene	K, T,∙U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Benzo(ghi)perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Chrysene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(a,I)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Dibenzo(ah)anthracene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Fluoranthene		0.02 ug/Filter	0.01	NA-017	12-Jun-15
Fluorene		0.03 ug/Filter	0.01	NA-017	12-Jun-15
Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Naphthalene		0.02 ug/Filter	0.01	NA-017	12-Jun-15
Perylene	K, T, U	< 0.01 ug/Filter	0.01	NA-017	12-Jun-15
Phenanthrene		0.06 ug/Filter	0.01	NA-017	12-Jun-15
Pyrene		0.02 ug/Filter	0.01	NA-017	12-Jun-15

#### **Qualifiers**

- K Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 12 of 12

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

ΑB

T9N 2J5

LABORATORY SAMPLE ID:

15060054-004

MATRIX: Air Filter

**CLIENT SAMPLE ID:** 

LICA/PUF/EP/May 30, 2015

**CANISTER ID:** 

A13-02

DESCRIPTION:

Elk Point Airport

DATE SAMPLED:

30-May-15

DATE RECEIVED: 05-Jun-15

**REPORT CREATED: REPORT VERSION:** 

19-Jun-15

Version 01

**Parameter** 

Qualifier

**Result Units** 

MDL Method

**Analysis Date** 

Retene

0.04 ug/Filter

0.01 NA-017

12-Jun-15

#### Qualifiers

- K. Off-scale low. Actual value is known to be less than the value given
- Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected
- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455





780 812-2182

# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 1 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

ΑB

T2E 6P8

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

AB

T9N 2J5

LABORATORY SAMPLE ID:

15050334-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/ELK/May 22, 2015

**CANISTER ID:** 

S5647

**DESCRIPTION:** Elk Point Airport

**DATE SAMPLED:** 22-May-15

6:20

DATE RECEIVED: 27-May-15

REPORT CREATED:

19-Jun-15

**REPORT VERSION:** 

Version 01

Parameter	Qualifier	Result Units	MDL	Method	Analysis Date
1,1,1-Trichloroethane	1	0.03 ppbv	0.02	AC-058	28-May-15
1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	28-May-15
1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	28-May-15
1,1-Dichloroethane	1	0.03 ppbv	0.02	AC-058	28-May-15
1,1-Dichloroethylene	K, T, U	< 0.05 ppbv	0.04	AC-058	28-May-15
1,2,3-Trimethylbenzene	K, T, U	< 0.06 ppbv	0.05	AC-058	28-May-15
1,2,4-Trichlorobenzene	K, T, U	< 1.0 ppbv	0.8	AC-058	28-May-15
1,2,4-Trimethylbenzene	I	0.11 ppbv	0.03	AC-058	28-May-15
1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	28-May-15
1,2-Dichlorobenzene	K, T, U	< 0.04 ppbv	0.03	AC-058	28-May-15
1,2-Dichloroethane	1	0.05 ppbv	0.01	AC-058	28-May-15
1,2-Dichloropropane	1	0.05 ppbv	0.01	AC-058	28-May-15
1,3,5-Trimethylbenzene	1	0.10 ppbv	0.02	AC-058	28-May-15
1,3-Butadiene	K, T, U	< 0.02 ppbv	0.02	AC-058	28-May-15
1,3-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.3	AC-058	28-May-15
1,4-Dichlorobenzene	K, T, U	< 0.5 ppbv	0.4	AC-058	28-May-15
1,4-Dioxane	K, T, U	< 0.5 ppbv	0.4	AC-058	28-May-15
1-Butene	K, T, U	< 0.02 ppbv	0.02	AC-058	28-May-15
1-Hexene	K, T, U	< 0.02 ppbv	0.02	AC-058	28-May-15
1-Pentene	K, T, U	< 0.01 ppbv	0.01	AC-058	28-May-15
2,2,4-Trimethylpentane		3.36 ppbv	0.01	AC-058	28-May-15
2,2-Dimethylbutane	K, T, U	< 0.01 ppbv	0.01	AC-058	28-May-15
2,3,4-Trimethylpentane		0.62 ppbv	0.01	AC-058	28-May-15
2,3-Dimethylbutane		0.52 ppbv	0.02	AC-058	28-May-15
2,3-Dimethylpentane		2.18 ppbv	0.02	AC-058	28-May-15
2,4-Dimethylpentane		0.74 ppbv	0.01	AC-058	28-May-15

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

- K Off-scale low. Actual value is known to be less than the value given
- T Value reported is less than the laboratory method detection limit
- U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 2 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

T2E 6P8 AB

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

T9N 2J5 ΑB

LABORATORY SAMPLE ID: 15050334-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/ELK/May 22, 2015

**CANISTER ID:** 

S5647

DESCRIPTION:

Elk Point Airport

DATE SAMPLED: 22-May-15

6:20

DATE RECEIVED: 27-May-15

**REPORT CREATED: REPORT VERSION:** 

19-Jun-15

Version 01

						· · · · · · · · · · · · · · · · · · ·
Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
2-Methylheptane	1	0.05	ppbv	0.01	AC-058	28-May-15
2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-May-15
2-Methylpentane	1	0.32	ppbv	0.01	AC-058	28-May-15
3-Methylheptane	1	0.06	ppbv	0.02	AC-058	28-May-15
3-Methylhexane	1	0.12	ppbv	0.02	AC-058	28-May-15
3-Methylpentane	1	0.25	ppbv	0.01	AC-058	28-May-15
Acetone		46.9	ppbv	0.4	AC-058	28-May-15
Acrolein	K, T, U	< 0.4	ppbv	0.3	AC-058	28-May-15
Benzene	1	0.23	ppbv	0.01	AC-058	28-May-15
Benzyl chloride	K, T, U	< 0.5	ppbv	0.4	AC-058	28-May-15
Bromodichloromethane		0.04	ppbv	0.02	AC-058	28-May-15
Bromoform	I	0.03	ppbv	0.02	AC-058	28-May-15
Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-May-15
Carbon disulfide	1	0.30	ppbv	0.01	AC-058	28-May-15
Carbon tetrachloride	1	0.12	ppbv	0.01	AC-058	28-May-15
Chlorobenzene	1	0.05	ppbv	0.02	AC-058	28-May-15
Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-May-15
Chloroform	1	0.05	ppbv	0.02	AC-058	28-May <b>-</b> 15
Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-May-15
cis-1,2-Dichloroethene	l	0.02	ppbv	0.01	AC-058	28-May-15
cis-1,3-Dichloropropene	K, T, U	< 0.05	ppbv	0.04	AC-058	28-May-15
cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-May-15
cis-2-Pentene	1	0.03	ppbv	0.02	AC-058	28-May-15
Cyclohexane	1	0.21	ppbv	0.02	AC-058	28-May-15
Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-May-15
Dibromochloromethane		0.04	ppbv	0.01	AC-058	28-May-15
AND THE STATE OF T						

#### Qualifiers

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



# **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 3 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

4000, 19 St NE

Calgary

AB

T2E 6P8

**INVOICE TO:** 

Charmaine Code

780 812-2182

PO Box 8237 5107W-50 St Bonnyville

AΒ

T9N 2J5

LABORATORY SAMPLE ID: 15050334-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/ELK/May 22, 2015

**CANISTER ID:** 

S5647

**DESCRIPTION:** 

Elk Point Airport

DATE SAMPLED:

22-May-15 6:20

DATE RECEIVED: 27-May-15

**REPORT CREATED: REPORT VERSION:** 

19-Jun-15

Version 01

Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
Ethanol		3.7	ppbv	0.3	AC-058	28-May-15
Ethyl acetate		0.9	ppbv	0.4	AC-058	28-May-15
Ethylbenzene	į.	0.12	ppbv	0.01	AC-058	28-May-15
Freon-11	1	0.34	ppbv	0.02	AC-058	28-May-15
Freon-113	1	0.13	ppbv	0.01	AC-058	28-May-15
Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	28-May-15
Freon-12	K, T, U	< 0.02	ppbv	0.02	AC-058	28-May-15
Hexachloro-1,3-butadiene	K, T, U	< 0.60	ppbv	0.5	AC-058	28-May-15
Isobutane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-May-15
Isopentane		1.10	ppbv	0.03	AC-058	28-May-15
Isoprene	1	0.13	ppbv	0.01	AC-058	28-May-15
Isopropyl alcohol	K, T, U	< 0.5	ppbv	0.4	AC-058	28-May-15
Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-May-15
m,p-Xylene	1	0.29	ppbv	0.03	AC-058	28-May-15
m-Diethylbenzene	K, T, U	< 0.05	ppbv	0.04	AC-058	28-May-15
m-Ethyltoluene	K, T, U	< 0.10	ppbv	0.08	AC-058	28-May-15
Methyl butyl ketone	K, T, U	< 0.60	ppbv	0.5	AC-058	28-May-15
Methyl ethyl ketone		2.1	ppbv	0.3	AC-058	28-May-15
Methyl isobutyl ketone	K, T, U	< 0.5	ppbv	0.4	AC-058	28-May-15
Methyl methacrylate	K, T, U	< 0.08	ppbv	0.07	AC-058	28-May-15
Methyl tert butyl ether	K, T, U	< 0.04	ppbv	0.03	AC-058	28-May-15
Methylcyclohexane	1	0.36	ppbv	0.01	AC-058	28-May-15
Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-May-15
Methylene chloride		0.4	ppbv	0.3	AC-058	28-May-15
n-Butane	K, T, U	< 0.04	ppbv	0.03	AC-058	28-May-15
n-Decane	1	0.14	ppbv	0.06	AC-058	28-May-15

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

K Off-scale low. Actual value is known to be less than the value given

T Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455



780 812-2182

## **ENVIRONMENTAL ANALYTICAL SERVICES**

**TEST REPORT** 

Page 4 of 10

**RESULTS TO:** 

Adewunmi Adekanmbi

Lakeland Industry and Community Assn

T2E 6P8

4000, 19 St NE

Calgary

AB

**INVOICE TO:** 

Charmaine Code PO Box 8237

5107W-50 St

Bonnyville

T9N 2J5 ΑB

LABORATORY SAMPLE ID:

15050334-001

MATRIX: Ambient Air

**CLIENT SAMPLE ID:** 

LICA/VOC/ELK/May 22, 2015

**CANISTER ID:** 

S5647

**DESCRIPTION:** 

**Elk Point Airport** 

**DATE SAMPLED:** 22-May-15

6:20

DATE RECEIVED:

27-May-15

**REPORT CREATED:** 

19-Jun-15

**REPORT VERSION:** Version 01

Parameter	Qualifier	Result	Units	MDL	Method	Analysis Date
n-Dodecane	K, T, U	< 0.5	ppbv	0.4	AC-058	28-May-15
n-Heptane	I	0.29	ppbv	0.01	AC-058	28-May-15
n-Hexane		0.51	ppbv	0.01	AC-058	28-May-15
n-Octane	1	0.08	ppbv	0.02	AC-058	28-May-15
n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	28-May-15
n-Propylbenzene	K, T, U	< 0.06	ppbv	0.05	AC-058	28-May-15
n-Undecane	K, T, U	< 0.6	ppbv	0.5	AC-058	28-May-15
Naphthalene	K, T, U	< 0.6	ppbv	0.5	AC-058	28-May-15
n-Nonane	1	0.07	ppbv	0.01	AC-058	28-May-15
o-Ethyltoluene	I	0.03	ppbv	0.01	AC-058	28-May-15
o-Xylene	I	0.13	ppbv	0.01	AC-058	28-May-15
p-Diethylbenzene	K, T, U	< 0.05	ppbv	0.04	AC-058	28-May-15
p-Ethyltoluene	K, T, U	< 0.08	ppbv	0.07	AC-058	28-May-15
Styrene	K, T, U	< 0.05	ppbv	0.04	AC-058	28-May-15
Tetrachloroethylene		1.18	ppbv	0.04	AC-058	28-May-15
Tetrahydrofuran	K, T, U	< 0.5	ppbv	0.4	AC-058	28-May-15
Toluene		2.16	ppbv	0.01	AC-058	28-May-15
trans-1,2-Dichloroethylene	I	0.03	ppbv	0.01	AC-058	28-May-15
trans-1,3-Dichloropropylene	1	0.05	ppbv	0.04	AC-058	28-May-15
trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-May-15
trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-May-15
Trichloroethylene	K, T, U	< 0.05	ppbv	0.04	AC-058	28-May-15
Vinyl acetate		5.9	ppbv	0.4	AC-058	28-May-15
Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	28-May-15

## Qualifiers

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

K Off-scale low. Actual value is known to be less than the value given

Value reported is less than the laboratory method detection limit

U Compound was analyzed for but not detected

Certified By: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Portfolio Manager, EAS

Inquiries: (780) 632 8455

# APPENDIX V CHAIN OF CUSTODY



Client: Lakeland Industry & Community Association

# Maxxam Analytics - Air Services Group Project Chain of Custody

**Project #:** 196-2015-05-93- C

Site: Elk Point Airport Site		Contact: Mike Bisaga			
QA Check Complete	Madmhe	Date	22 - June -2015		
QA Check Review	<u>mgelmh</u> q	Date	22 - June - 20-15		
Report Complete	enselnta	Date	24 - June - 2015		
Report Reviewed	E. Tangang	Date	24-Sun-15		
Report Shipped		Date			
Notes					