



**WOOD BUFFALO
ENVIRONMENTAL ASSOCIATION**

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Wood Buffalo Environmental Association

MARCH 2025 MONTHLY CALIBRATION REPORT

CONTINUOUS MONITORING

April 30, 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS01 BERTHA GANTER - FORT MCKAY MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 7, 2025 Last Cal Date: February 4, 2025
Start time (MST): 12:25 End time (MST): 17:31
Reason: Routine

Calibration Standards

Cal Gas Concentration: 49.21 ppm Cal Gas Exp Date: March 10, 2031
Cal Gas Cylinder #: CC418809
Removed Cal Gas Conc: 49.21 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: Teledyne API T700 Serial Number: 3565
Zero Air Gen Model: Teledyne API T701 Serial Number: 4766

Analyzer Information

Analyzer make: Thermo 43i Serial Number: JC1501301448
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.004763	1.001209	Backgd or Offset:	20.7	20.8
Calibration intercept:	-0.213147	-0.193570	Coeff or Slope:	0.895	0.887

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.3	----
As found High point	4918	81.3	800.3	808.1	0.991
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	807.8	Previous response	803.9	*% change	0.5%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.5	----
High point	4918	81.3	800.3	801.4	0.999
Mid point	4959	40.7	400.6	400.5	1.000
Low point	4979	20.3	199.8	199.2	1.003
As left zero	5000	0.0	0.0	0.6	----
As left span	4918	81.3	800.3	802.9	0.997
Average Correction Factor:					1.001

Notes: Changed the inlet filter after as founds. Adjusted the span.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

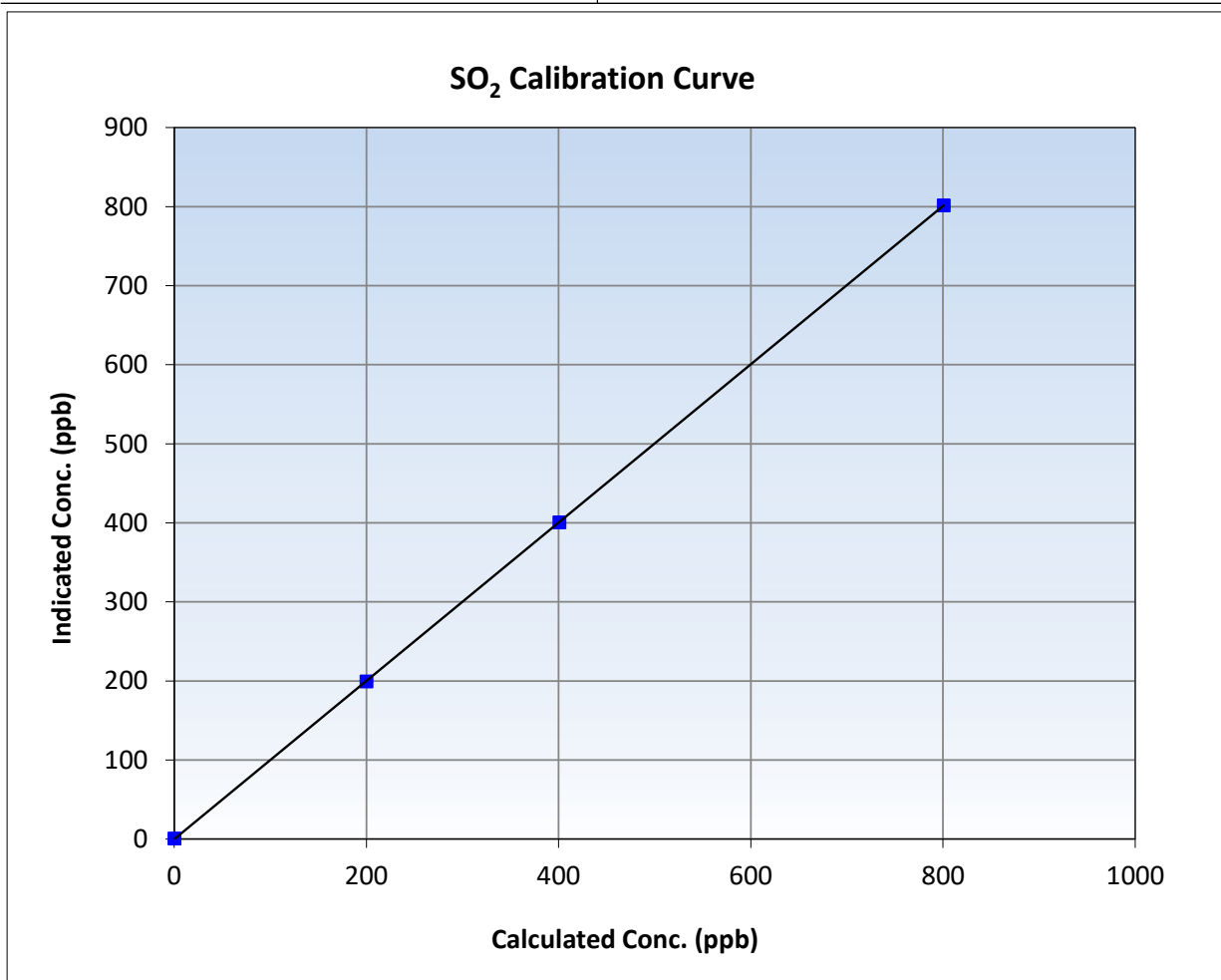
SO₂ Calibration Summary

Station Information

Calibration Date:	March 7, 2025	Previous Calibration:	February 4, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	12:25	End Time (MST):	17:31
Analyzer make:	Thermo 43i	Analyzer serial #:	JC1501301448

Calibration Data

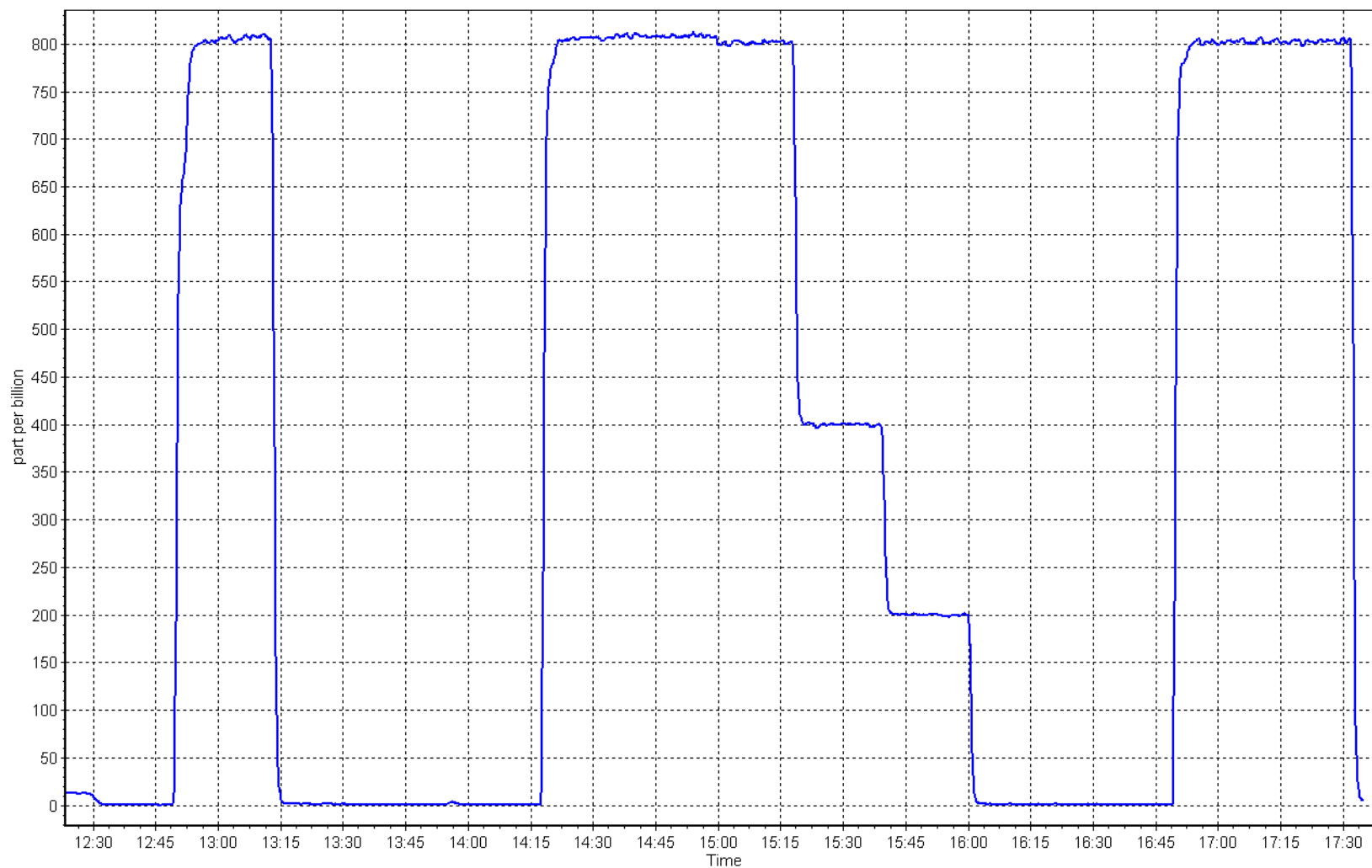
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.5	----	Correlation Coefficient	0.999997	≥0.995
800.3	801.4	0.9986	Slope	1.001209	0.90 - 1.10
400.6	400.5	1.0002	Intercept	-0.193570	+/-30
199.8	199.2	1.0031			



SO2 Calibration Plot

Date: March 7, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 19, 2025 Last Cal Date: February 26, 2025
Start time (MST): 10:39 End time (MST): 13:15
Reason: Removal

Calibration Standards

Cal Gas Concentration: 4.84 ppm Cal Gas Exp Date: September 5, 2027
Cal Gas Cylinder #: CC738239
Removed Cal Gas Conc: 4.84 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3565
ZAG Make/Model: Teledyne API T701 Serial Number: 146

Analyzer Information

Analyzer make: Thermo 43i-TLE Analyzer serial #: 1218153461
Converter make: CD Nova Converter serial #: 470
Analyzer Range: 0 - 100 ppb Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.003243		Backgd or Offset:	2.59	
Calibration intercept:	0.041398		Coeff or Slope:	0.915	

TRS As Found Data

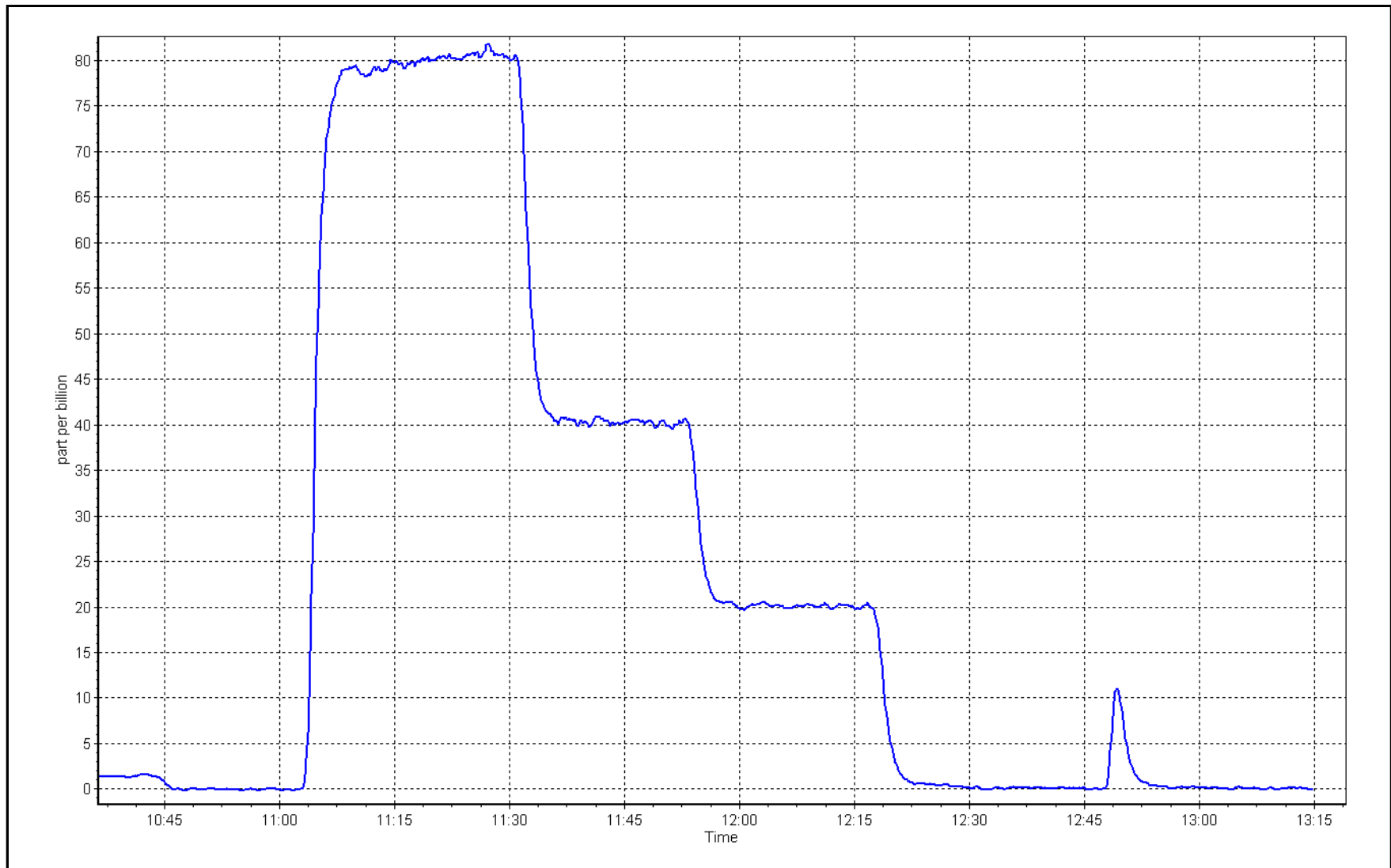
Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.0	----
As found High point	4917	82.6	80.0	80.4	0.995
As found Mid point	4959	41.3	40.0	40.3	0.992
As found Low point	4979	20.7	20.0	20.1	0.997
New cylinder response					
Baseline Corr As found:	80.4	Prev response:	80.26	*% change:	0.2%
Baseline Corr 2nd AF pt:	40.3	AF Slope:	1.005820	AF Intercept:	0.001845
Baseline Corr 3rd AF pt:	20.1	AF Correlation:	0.999997	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.1	----
High point					
Mid point					
Low point					
As left zero					
As left span					
SO2 Scrubber Check	4919	81.3	813.0	0.0	----
Date of last scrubber change:		December 17, 2021		Ave Corr Factor	<input type="text"/>
Date of last converter efficiency test:					

Notes: Inlet filter change and scrubber check completed after as founds. Removing the instrument because of excessive noise

Calibration Performed By: Rene Chamberland





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 20, 2025 Last Cal Date: NA
Start time (MST): 10:25 End time (MST): 13:37
Reason: Install

Calibration Standards

Cal Gas Concentration: 4.84 ppm Cal Gas Exp Date: September 5, 2027
Cal Gas Cylinder #: CC738239
Removed Cal Gas Conc: 4.84 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3565
ZAG Make/Model: Teledyne API T701 Serial Number: 146

Analyzer Information

Analyzer make: Thermo 43iQ-TLE Analyzer serial #: 12426335706
Converter make: CD Nova Converter serial #: 470
Analyzer Range: 0 - 100 ppb Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:		0.998531	Backgd or Offset:		2.22
Calibration intercept:		0.181893	Coeff or Slope:		1.024

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	NA	Prev response:	NA	*% change:	NA
Baseline Corr 2nd AF pt:	NA	AF Slope:	NA	AF Intercept:	NA
Baseline Corr 3rd AF pt:	NA	AF Correlation:	NA	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4917	82.6	80.0	80.0	1.000
Mid point	4959	41.3	40.0	40.1	0.997
Low point	4979	20.7	20.0	20.3	0.987
As left zero	5000	0.0	0.0	0.3	----
As left span	4917	82.6	80.0	79.6	1.005
SO2 Scrubber Check	4919	81.3	813.0	0.0	----
Date of last scrubber change:	December 17, 2021			Ave Corr Factor	0.995
Date of last converter efficiency test:					

Notes: Installing a new instrument. Scrubber check passed. Adjusted both zero and span.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

TRS Calibration Summary

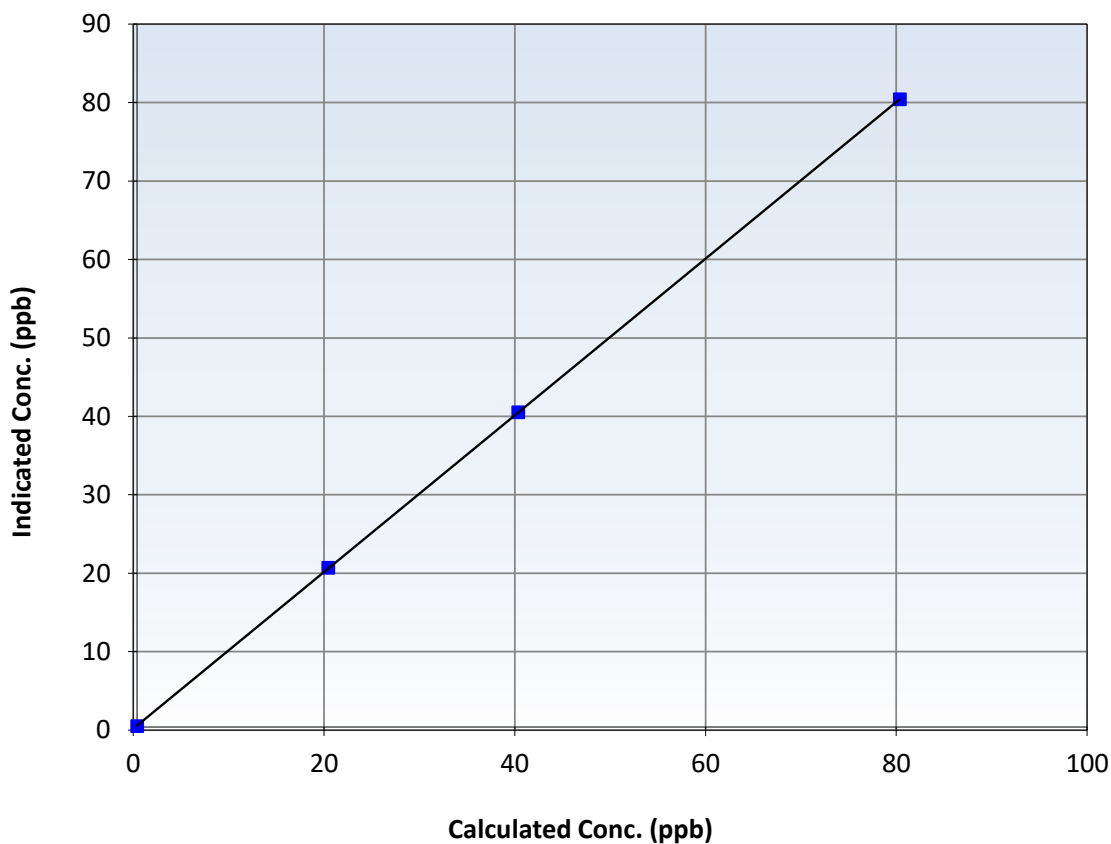
Station Information

Calibration Date:	March 20, 2025	Previous Calibration:	NA
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:25	End Time (MST):	13:37
Analyzer make:	Thermo 43iQ-TLE	Analyzer serial #:	12426335706

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999994		≥ 0.995
80.0	80.0	0.9995	Slope	0.998531		$0.90 - 1.10$
40.0	40.1	0.9969	Intercept	0.181893		± 3
20.0	20.3	0.9871				

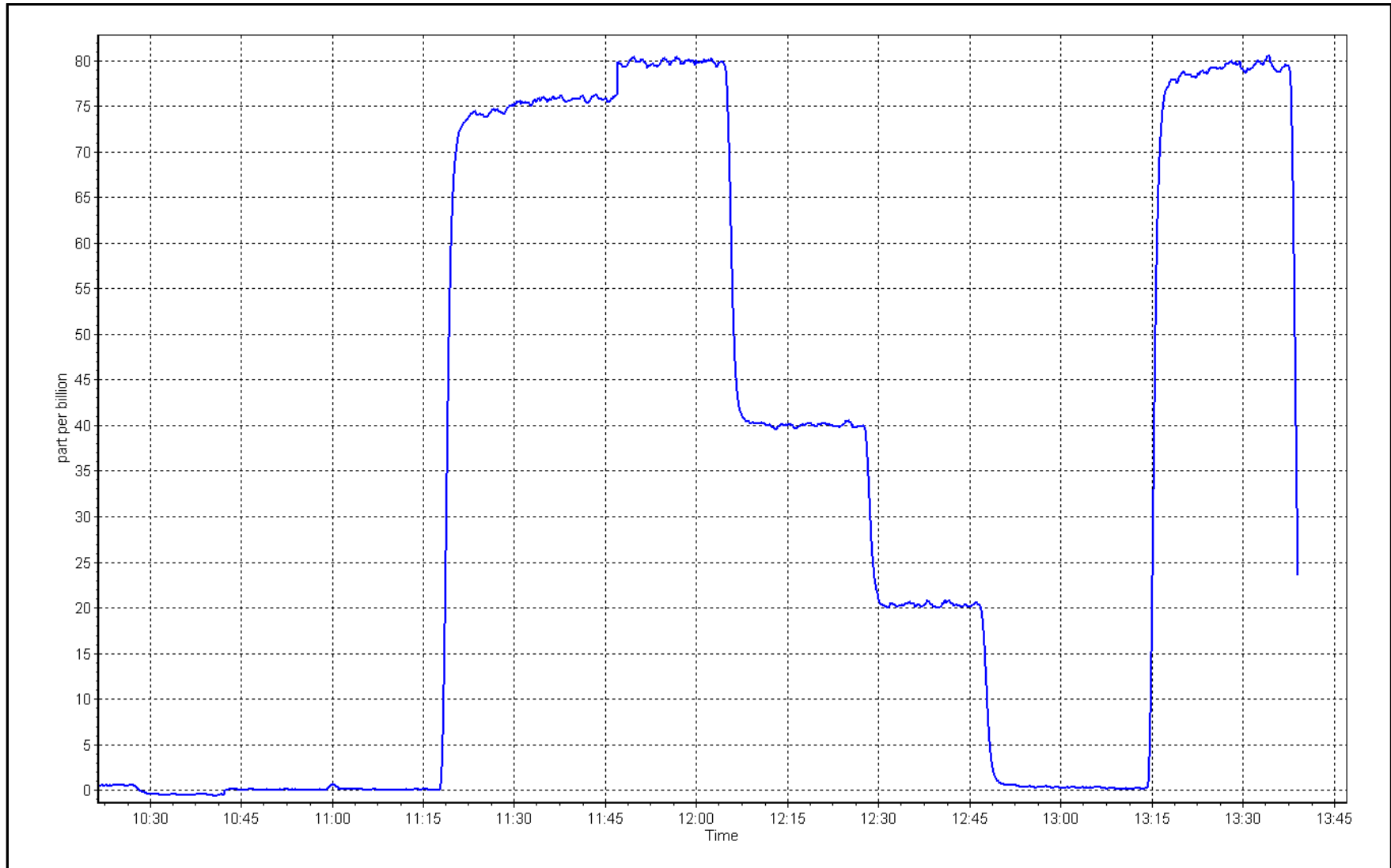
TRS Calibration Curve



TRS Calibration Plot

Date: March 20, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 27, 2025 Last Cal Date: March 20, 2025
Start time (MST): 10:25 End time (MST): 11:00
Reason: Removal

Calibration Standards

Cal Gas Concentration: 4.84 ppm Cal Gas Exp Date: September 5, 2027
Cal Gas Cylinder #: CC738239
Removed Cal Gas Conc: 4.84 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3565
ZAG Make/Model: Teledyne API T701 Serial Number: 146

Analyzer Information

Analyzer make: Thermo 43iQ-TLE Analyzer serial #: 12426335706
Converter make: CD Nova Converter serial #: 470
Analyzer Range: 0 - 100 ppb Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.998531		Backgd or Offset:	2.22	
Calibration intercept:	0.181893		Coeff or Slope:	1.024	

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4917	82.6	80.0	78.7	1.017
As found Mid point	4959	41.3	40.0	39.8	1.007
As found Low point	4979	20.7	20.0	19.9	1.012
New cylinder response					
Baseline Corr As found:	78.6	Prev response:	80.03	*% change:	-1.8%
Baseline Corr 2nd AF pt:	39.7	AF Slope:	0.983090	AF Intercept:	0.222250
Baseline Corr 3rd AF pt:	19.8	AF Correlation:	0.999967	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero					
High point					
Mid point					
Low point					
As left zero					
As left span					
SO2 Scrubber Check					
Date of last scrubber change:		December 17, 2021		Ave Corr Factor	<input type="text"/>
Date of last converter efficiency test:					

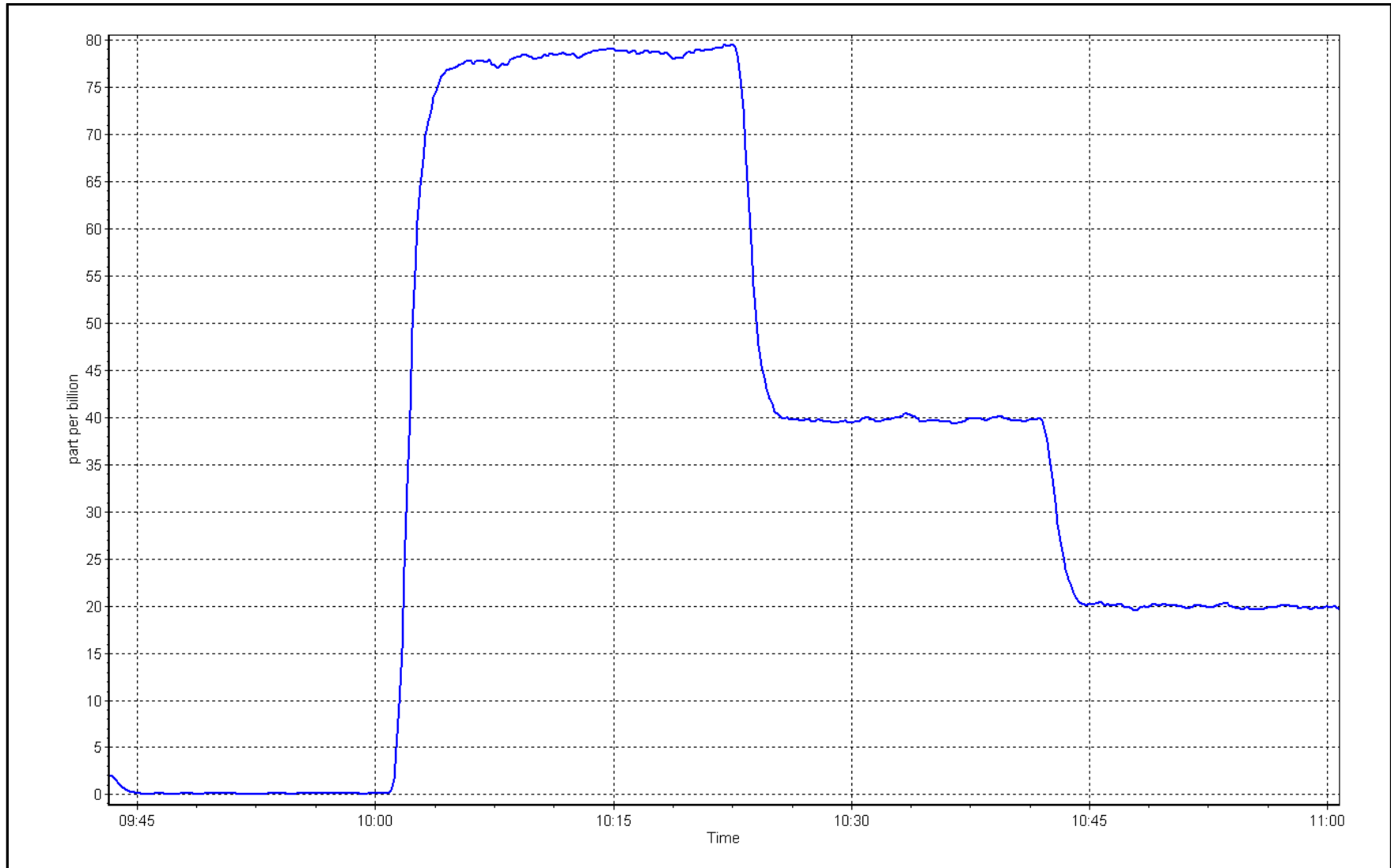
Notes: Removing the instrument due to issues with the communication board which is causing flow / pressure instability at times.

Calibration Performed By: Max Farrell

TRS Calibration Plot

Date: March 27, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 27, 2025 Last Cal Date: NA
Start time (MST): 11:30 End time (MST): 14:01
Reason: Install

Calibration Standards

Cal Gas Concentration: 4.84 ppm Cal Gas Exp Date: September 5, 2027
Cal Gas Cylinder #: CC738239
Removed Cal Gas Conc: 4.84 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3565
ZAG Make/Model: Teledyne API T701 Serial Number: 146

Analyzer Information

Analyzer make: Thermo 43iQ-TLE Analyzer serial #: 12113311966
Converter make: CD Nova Converter serial #: 470
Analyzer Range: 0 - 100 ppb Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:		0.995103	Backgd or Offset:		2.14
Calibration intercept:		0.201884	Coeff or Slope:		1.124

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	NA	Prev response:	NA	*% change:	NA
Baseline Corr 2nd AF pt:	NA	AF Slope:	NA	AF Intercept:	NA
Baseline Corr 3rd AF pt:	NA	AF Correlation:	NA	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4917	82.6	80.0	79.7	1.003
Mid point	4959	41.3	40.0	40.0	0.999
Low point	4979	20.7	20.0	20.4	0.982
As left zero	5000	0.0	0.0	0.0	----
As left span	4917	82.6	80.0	79.4	1.007
SO2 Scrubber Check	4919	81.3	813.0	-0.2	----
Date of last scrubber change:	December 17, 2021			Ave Corr Factor	0.995
Date of last converter efficiency test:					

Notes: Install calibration. Adjusted the span.

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

TRS Calibration Summary

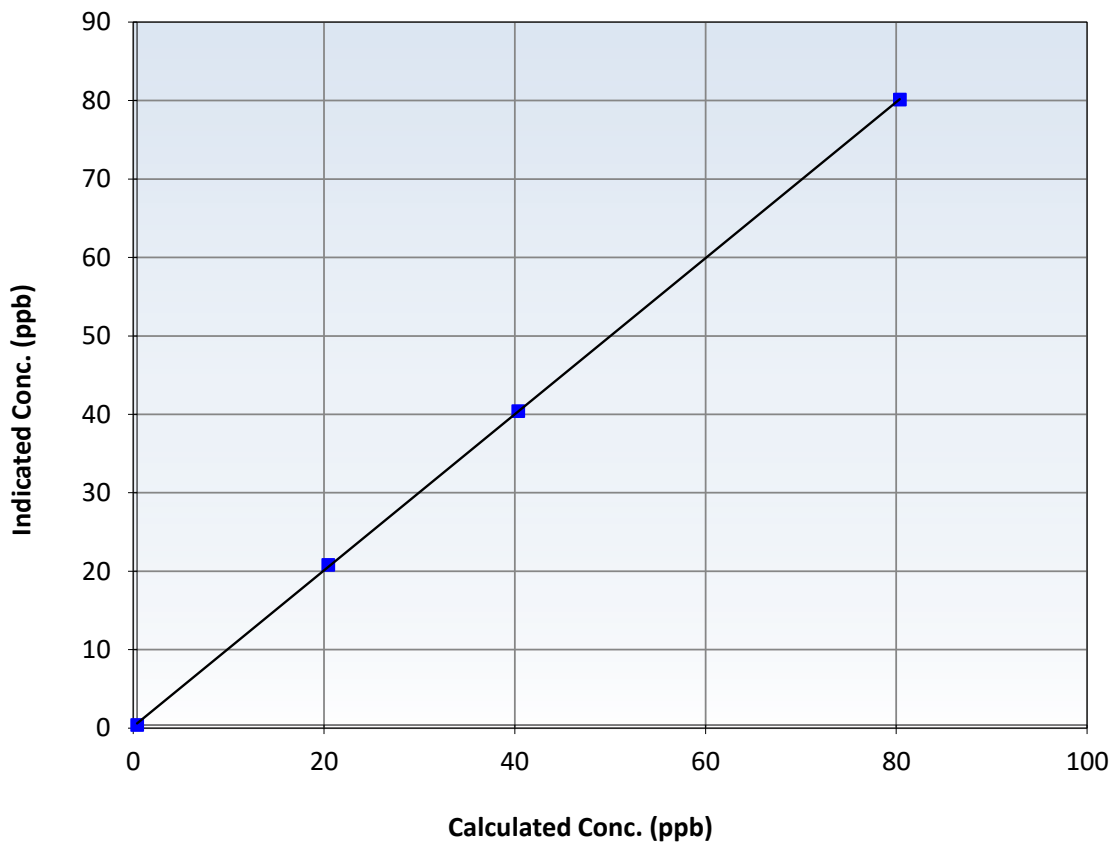
Station Information

Calibration Date:	March 27, 2025	Previous Calibration:	NA
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:30	End Time (MST):	14:01
Analyzer make:	Thermo 43iQ-TLE	Analyzer serial #:	12113311966

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999967		≥ 0.995
80.0	79.7	1.0033	Slope	0.995103		0.90 - 1.10
40.0	40.0	0.9994	Intercept	0.201884		+/-3
20.0	20.4	0.9823				

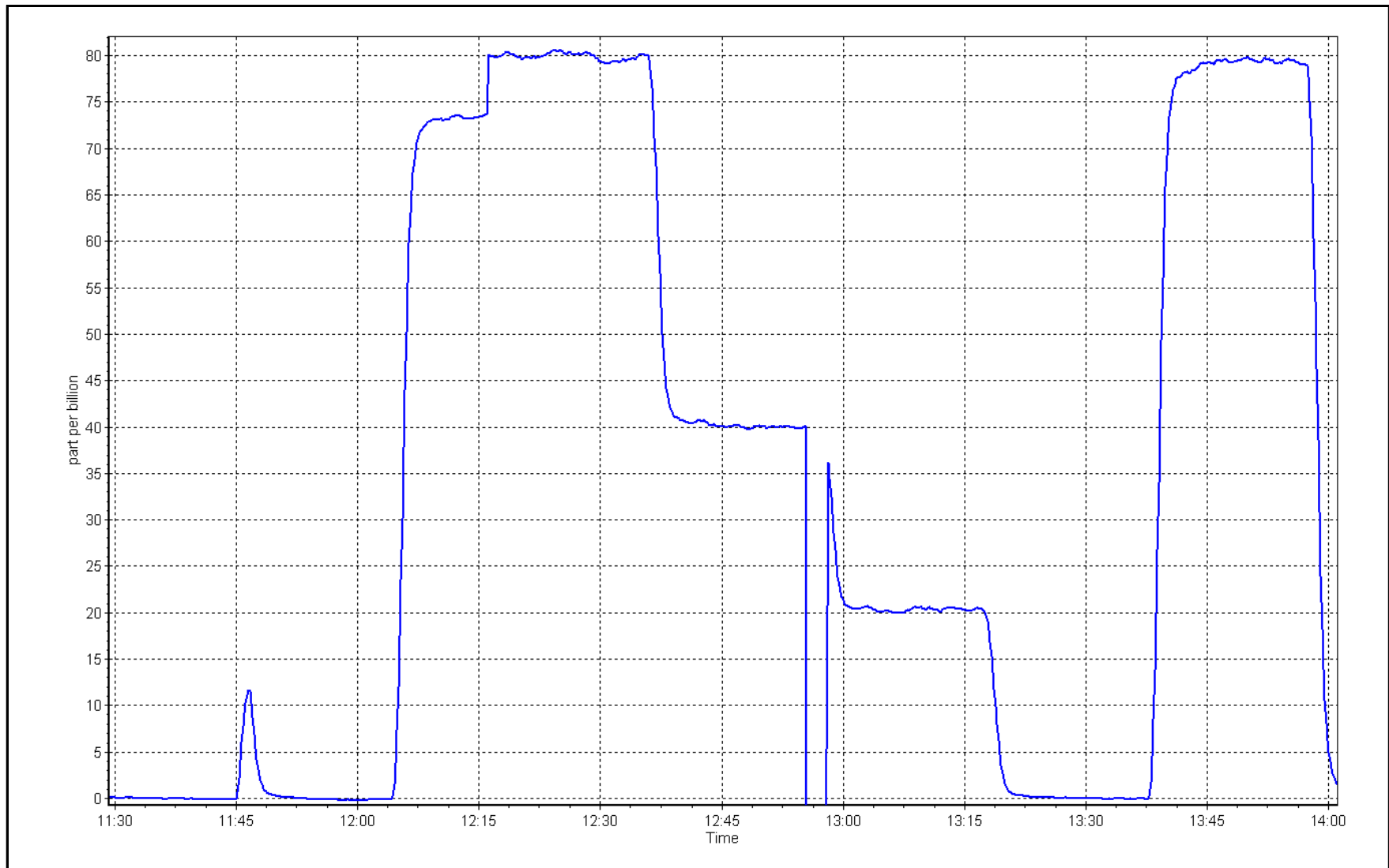
TRS Calibration Curve



TRS Calibration Plot

Date: March 27, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 19, 2025 Last Cal Date: February 26, 2025
Start time (MST): 10:39 End time (MST): 15:08
Reason: Routine

Calibration Standards

Cal Gas Concentration: 4.84 ppm Cal Gas Exp Date: September 5, 2027
Cal Gas Cylinder #: CC738239
Removed Cal Gas Conc: 4.84 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3565
ZAG Make/Model: Teledyne API T701 Serial Number: 146

Analyzer Information

Analyzer make: Thermo 43iQ-TL Analyzer serial #: 1200326167
Converter make: CD Nova Converter serial #: 2022-221
Analyzer Range: 0 - 100 ppb Converter Temp: 315 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.995528	1.000243	Backgd or Offset:	2.02
Calibration intercept:	0.062001	0.021999	Coeff or Slope:	0.983

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.0	----
As found High point	4917	82.6	80.0	79.8	1.002
As found Mid point	4959	41.3	40.0	40.0	0.999
As found Low point	4979	20.7	20.0	19.9	1.007
New cylinder response					
Baseline Corr As found:	79.8	Prev response:	79.67	*% change:	0.2%
Baseline Corr 2nd AF pt:	40.0	AF Slope:	0.998528	AF Intercept:	-0.018006
Baseline Corr 3rd AF pt:	19.9	AF Correlation:	0.999994	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4917	82.6	80.0	80.0	1.000
Mid point	4959	41.3	40.0	40.1	0.997
Low point	4979	20.7	20.0	19.9	1.007
As left zero	5000	0.0	0.0	0.3	----
As left span	4917	82.6	80.0	79.8	1.002
SO2 Scrubber Check	4919	81.3	813.0	0.0	----
Date of last scrubber change:	January 25, 2024		Ave Corr Factor		1.001
Date of last converter efficiency test:	November 7, 2024		107.9% efficiency		

Notes: Inlet filter change and scrubber check completed after as founds. No adjustments made.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

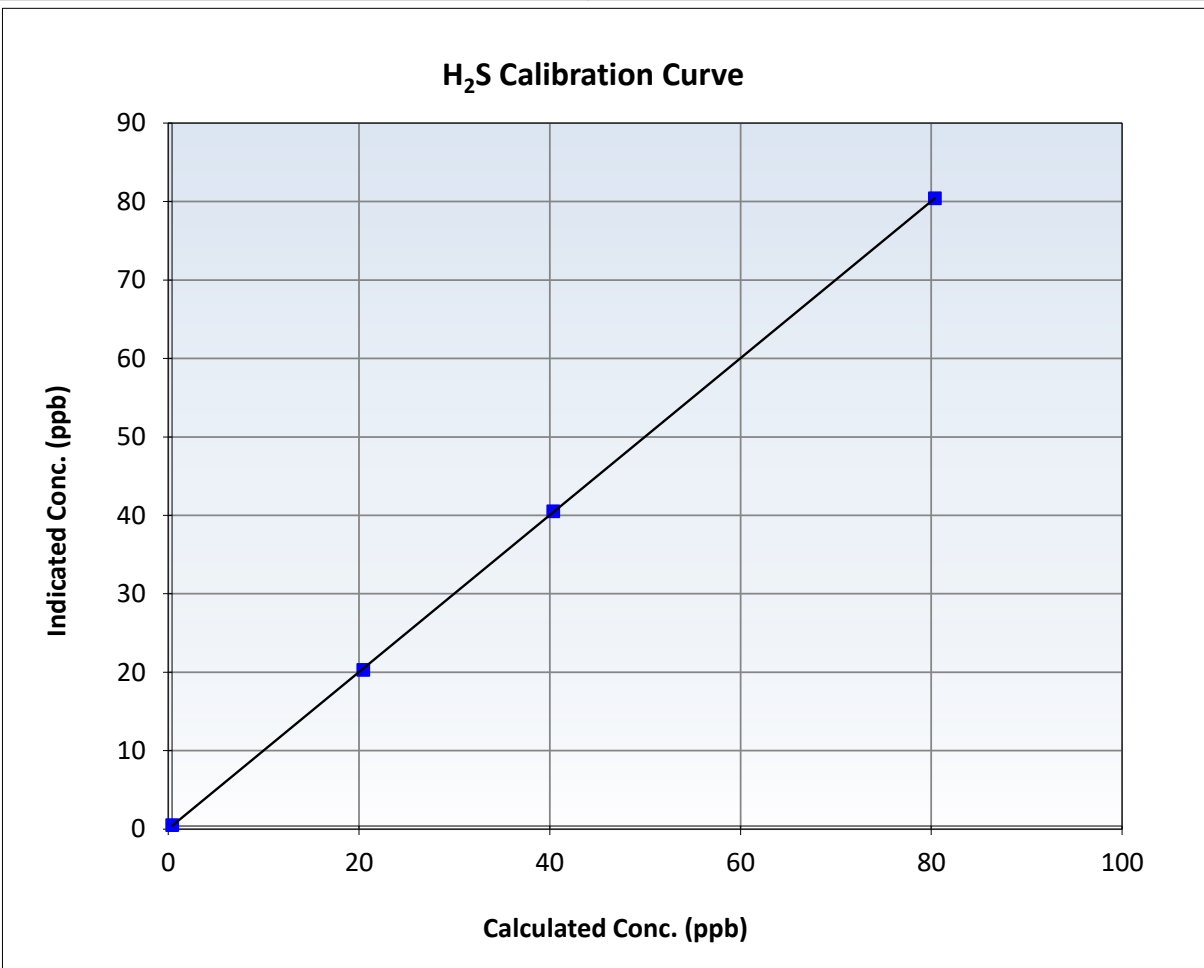
H₂S Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 26, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:39	End Time (MST):	15:08
Analyzer make:	Thermo 43iQ-TL	Analyzer serial #:	1200326167

Calibration Data

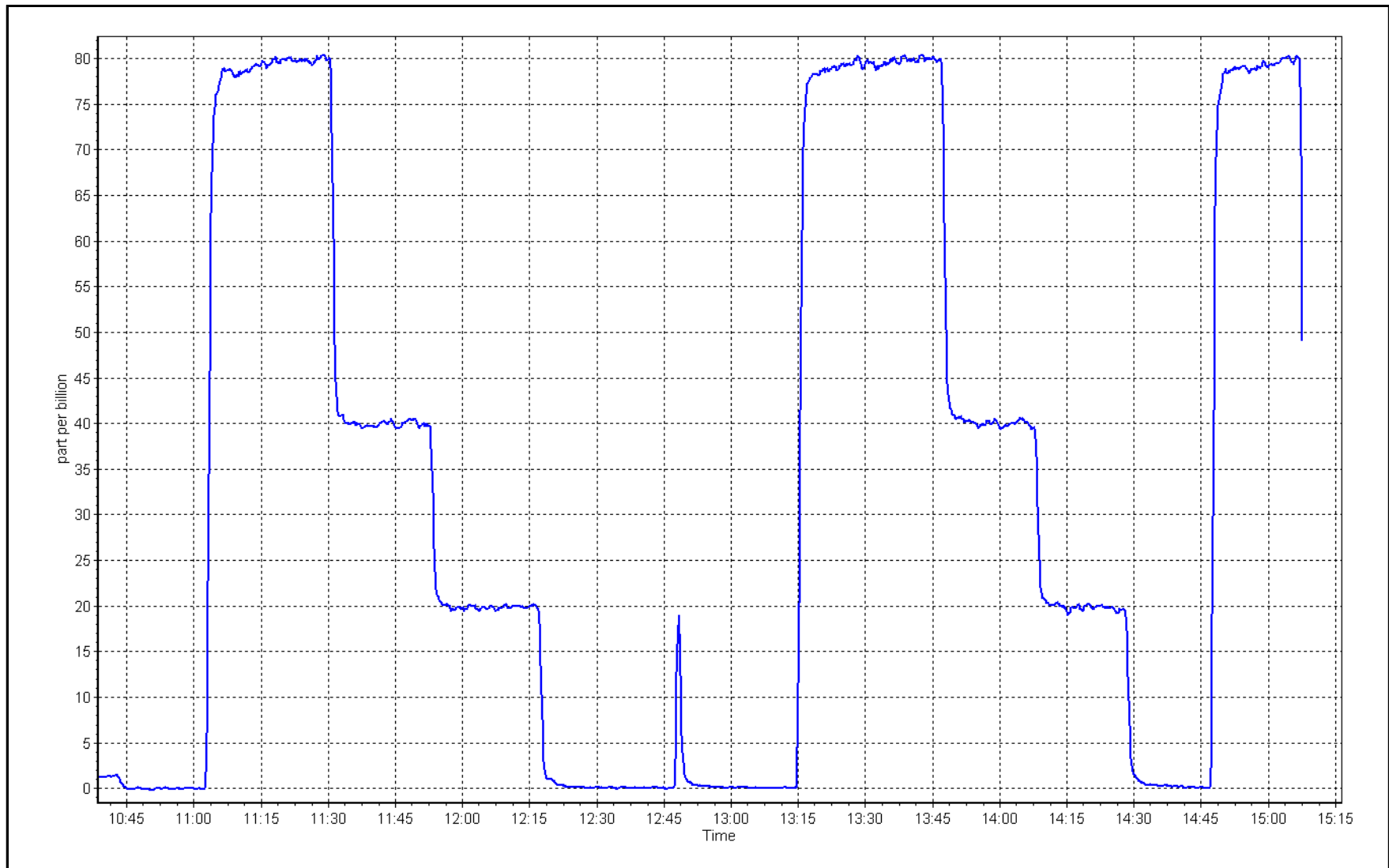
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999988		≥0.995
80.0	80.0	0.9995	Slope	1.000243		0.90 - 1.10
40.0	40.1	0.9969	Intercept	0.021999		+/-3
20.0	19.9	1.0070				



H₂S Calibration Plot

Date: March 19, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 7, 2025 Last Cal Date: February 4, 2025
Start time (MST): 12:25 End time (MST): 19:30
Reason: Removal

Calibration Standards

Gas Cert Reference: CC418809 Cal Gas Expiry Date: March 10, 2031
CH₄ Cal Gas Conc. 497.2 ppm CH₄ Equiv Conc. 1061.8 ppm
C₃H₈ Cal Gas Conc. 205.3 ppm
Removed Gas Cert: NA Removed Gas Expiry: NA
Removed CH₄ Conc. 497.2 ppm CH₄ Equiv Conc. 1061.8 ppm
Removed C₃H₈ Conc. 205.3 ppm Diff between cyl (THC):
Diff between cyl (CH₄): Diff between cyl (NMHC):
Calibrator Model: Teledyne API T700 Serial Number: 3565
Zero Air Gen model: Teledyne API T701 Serial Number: 4766

Analyzer Information

Analyzer make: Thermo 55i Analyzer serial #: 1180320040
THC Range: 0 - 20 ppm NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	4.49E-04		NMHC SP Ratio:	8.21E-05
CH ₄ Retention time:	16.7		NMHC Peak Area:	111958
Zero Chromatogram:	ON		Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4918	81.3	17.27	16.96	1.018
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.96	Prev response	17.13	*% change	-1.0%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	81.3	17.27	17.25	1.001
Mid point	4959	40.7	8.64	8.43	1.026
Low point	4979	20.3	4.31	4.24	1.016
As left zero					
As left span					

Average Correction Factor **1.014**

Notes: Changed the inlet filter and N₂/H₂ cylinders after as founds. Increased carrier pressure and adjusted window timings. Adjusted span. Removing the instrument due to nonlinearity/elevated zeroes.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4918	81.3	9.18	8.89	1.033
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.89	Prev response	9.12	*% change	-2.7%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	81.3	9.18	9.16	1.002
Mid point	4959	40.7	4.60	4.54	1.012
Low point	4979	20.3	2.29	2.26	1.015
As left zero					
As left span					

Average Correction Factor 1.010

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4918	81.3	8.09	8.07	1.002
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.07	Prev response	8.01	*% change	0.7%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	81.3	8.09	8.09	0.999
Mid point	4959	40.7	4.05	3.88	1.042
Low point	4979	20.3	2.02	1.98	1.018
As left zero					
As left span					

Average Correction Factor 1.020

Calibration Statistics

	Start	Finish
THC Cal Slope:	0.995673	0.998853
THC Cal Offset:	-0.057223	-0.065996
CH ₄ Cal Slope:	0.997378	0.999742
CH ₄ Cal Offset:	-0.051717	-0.046079
NMHC Cal Slope:	0.994147	0.998070
NMHC Cal Offset:	-0.005906	-0.019917

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

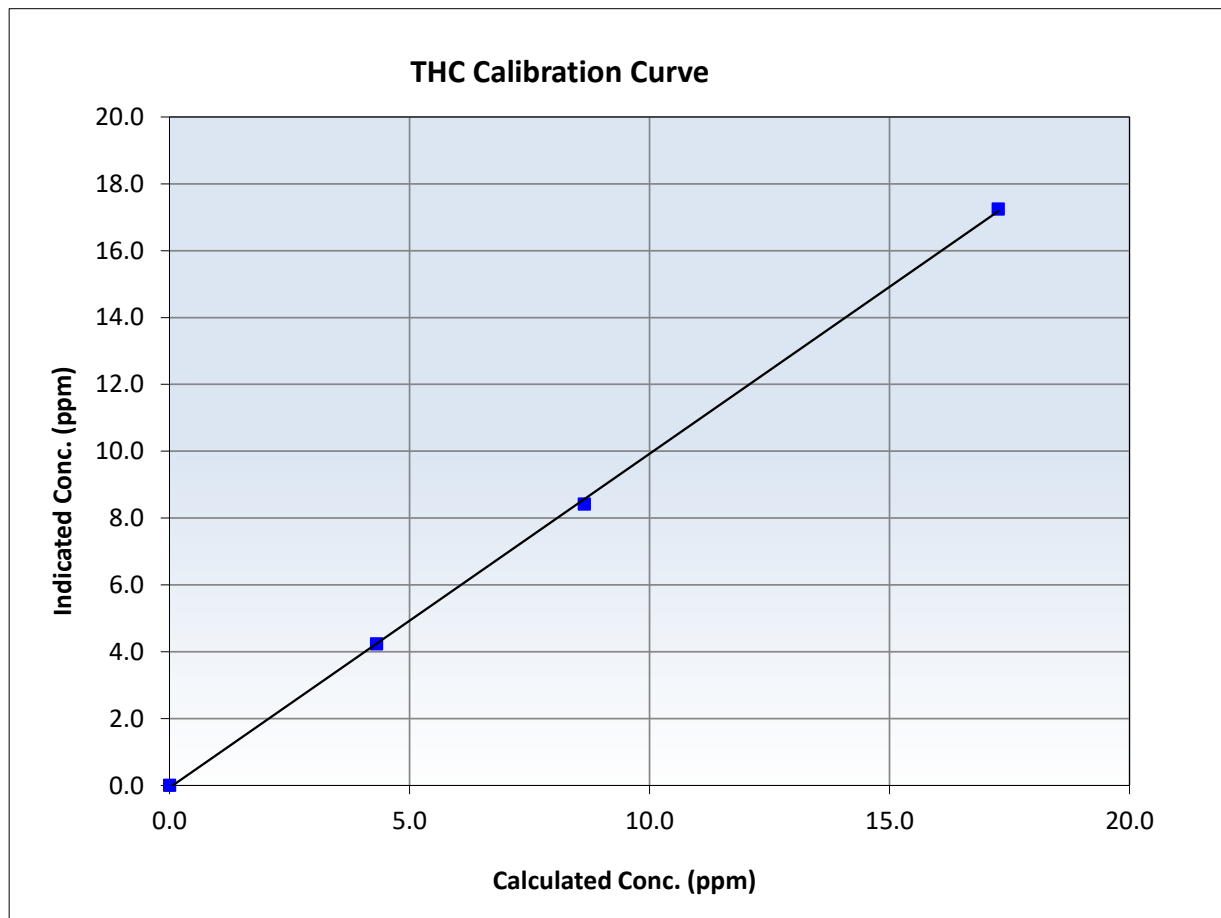
THC Calibration Summary

Station Information

Calibration Date:	March 7, 2025	Previous Calibration:	February 4, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	12:25	End Time (MST):	19:30
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320040

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999814	<i>≥0.995</i>
17.27	17.25	1.0009	Slope	0.998853	<i>0.90 - 1.10</i>
8.64	8.43	1.0259	Intercept	-0.065996	<i>+/-0.5</i>
4.31	4.24	1.0164			





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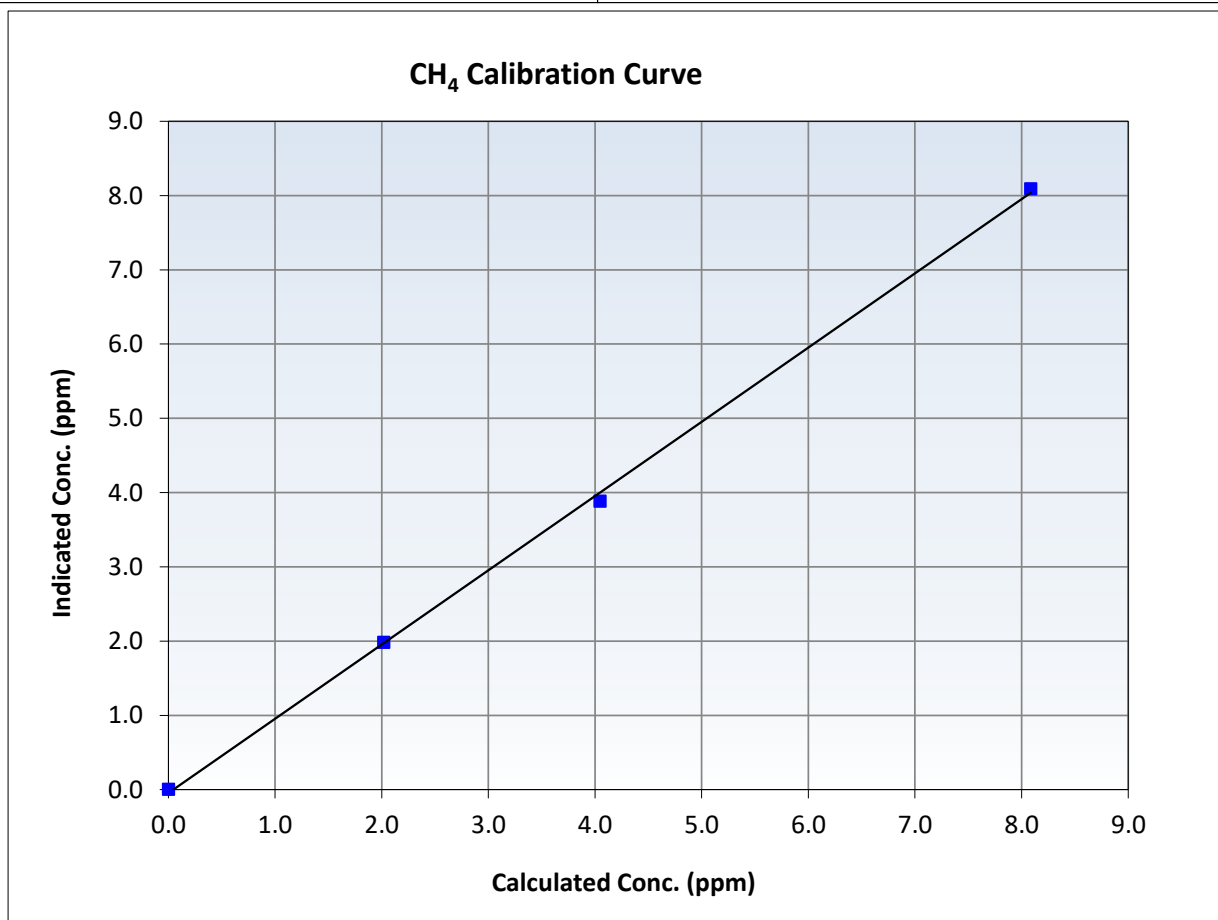
CH₄ Calibration Summary

Station Information

Calibration Date:	March 7, 2025	Previous Calibration:	February 4, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	12:25	End Time (MST):	19:30
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320040

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			Limits
0.00	0.00	----	Correlation Coefficient	0.999462		≥ 0.995
8.09	8.09	0.9991	Slope	0.999742		0.90 - 1.10
4.05	3.88	1.0421	Intercept	-0.046079		± 0.5
2.02	1.98	1.0181				





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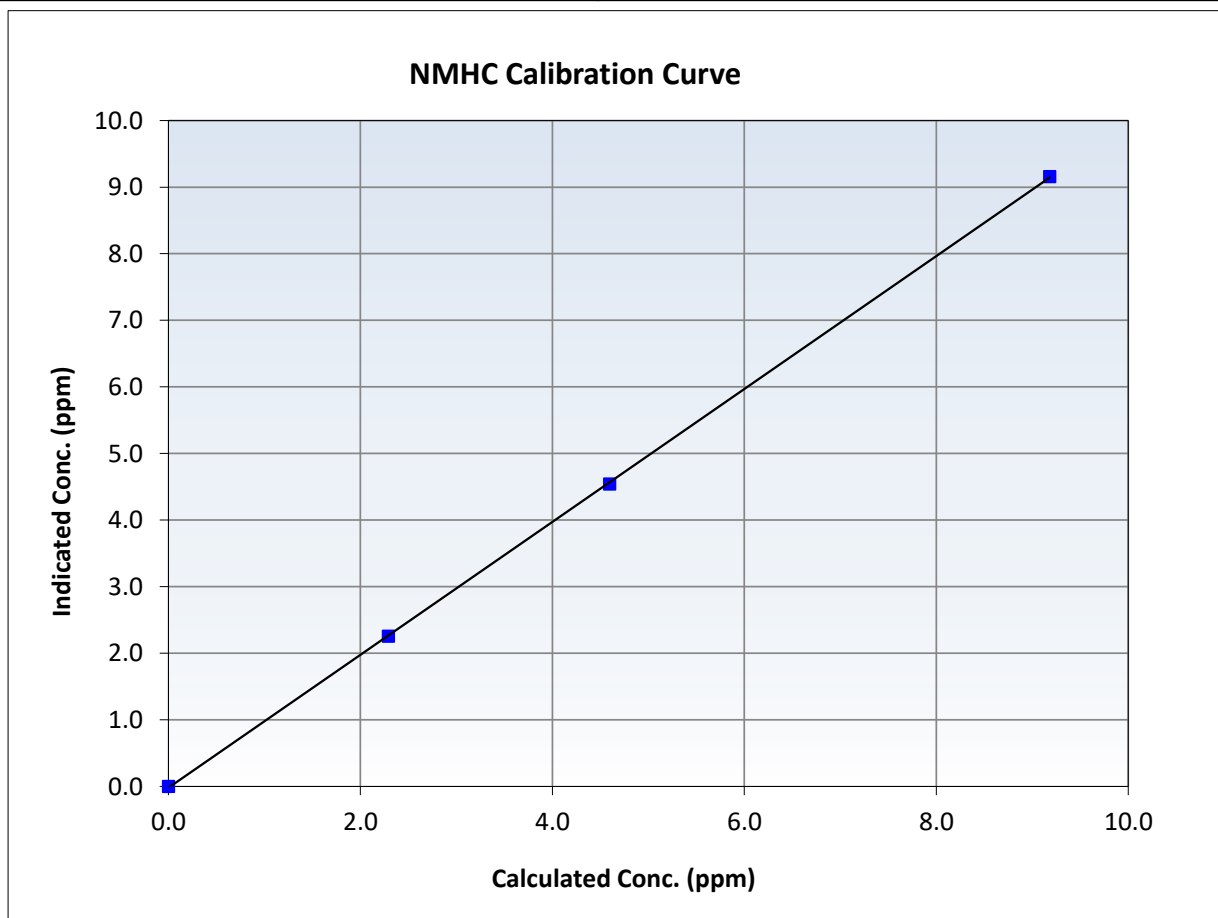
NMHC Calibration Summary

Station Information

Calibration Date:	March 7, 2025	Previous Calibration:	February 4, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	12:25	End Time (MST):	19:30
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320040

Calibration Data

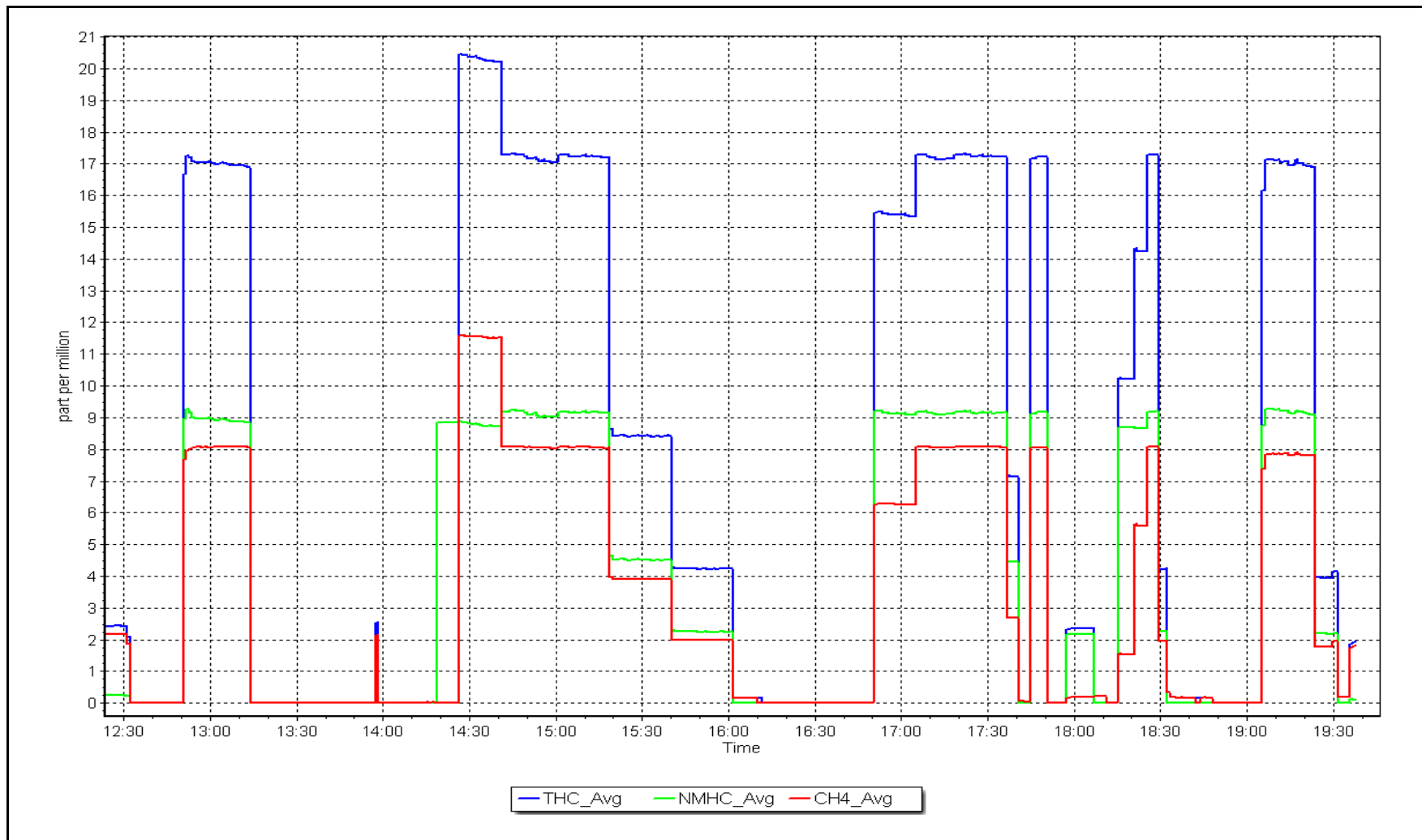
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999970	<i>≥0.995</i>
9.18	9.16	1.0024	Slope	0.998070	<i>0.90 - 1.10</i>
4.60	4.54	1.0121	Intercept	-0.019917	<i>+/-0.5</i>
2.29	2.26	1.0148			



NMHC Calibration Plot

Date: March 7, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name:	Bertha Ganter-Fort McKay	Station number:	AMS 01
Calibration Date:	March 9, 2025	Last Cal Date:	February 4, 2025
Start time (MST):	11:00	End time (MST):	13:50
Reason:	Install		

Calibration Standards

Gas Cert Reference:	CC418809	Cal Gas Expiry Date:	March 10, 2031
CH ₄ Cal Gas Conc.	497.2 ppm	CH ₄ Equiv Conc.	1061.8 ppm
C ₃ H ₈ Cal Gas Conc.	205.3 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH ₄ Conc.	497.2 ppm	CH ₄ Equiv Conc.	1061.8 ppm
Removed C ₃ H ₈ Conc.	205.3 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	Teledyne API T700	Serial Number:	3565
Zero Air Gen model:	Teledyne API T701	Serial Number:	146

Analyzer Information

Analyzer make:	Thermo 55i	Analyzer serial #:	1193585648
THC Range:	0 - 20 ppm	NMHC/CH ₄ Range:	0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:		2.47E-04	NMHC SP Ratio:	4.82E-05
CH ₄ Retention time:		14.8	NMHC Peak Area:	190523
Zero Chromatogram:		OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	81.3	17.27	17.27	1.000
Mid point	4959	40.7	8.64	8.70	0.994
Low point	4979	20.3	4.31	4.36	0.990
As left zero	5000	0.0	0.00	0.00	----
As left span	4918	81.3	17.27	17.13	1.008
Average Correction Factor					0.994

Notes: Intsalling a new NMHC analyzer and ZAG. Adjusted span only.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	81.3	9.18	9.15	1.003
Mid point	4959	40.7	4.60	4.64	0.991
Low point	4979	20.3	2.29	2.34	0.982
As left zero	5000	0.0	0.00	0.00	----
As left span	4918	81.3	9.18	9.07	1.012
Average Correction Factor					0.992

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	81.3	8.09	8.12	0.996
Mid point	4959	40.7	4.05	4.06	0.998
Low point	4979	20.3	2.02	2.02	0.999
As left zero	5000	0.0	0.00	0.00	----
As left span	4918	81.3	8.09	8.05	1.004
Average Correction Factor					0.998

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
THC Cal Slope:		0.999822
THC Cal Offset:		0.026931
CH ₄ Cal Slope:		1.004040
CH ₄ Cal Offset:		-0.003534
NMHC Cal Slope:		0.995772
NMHC Cal Offset:		0.031064

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

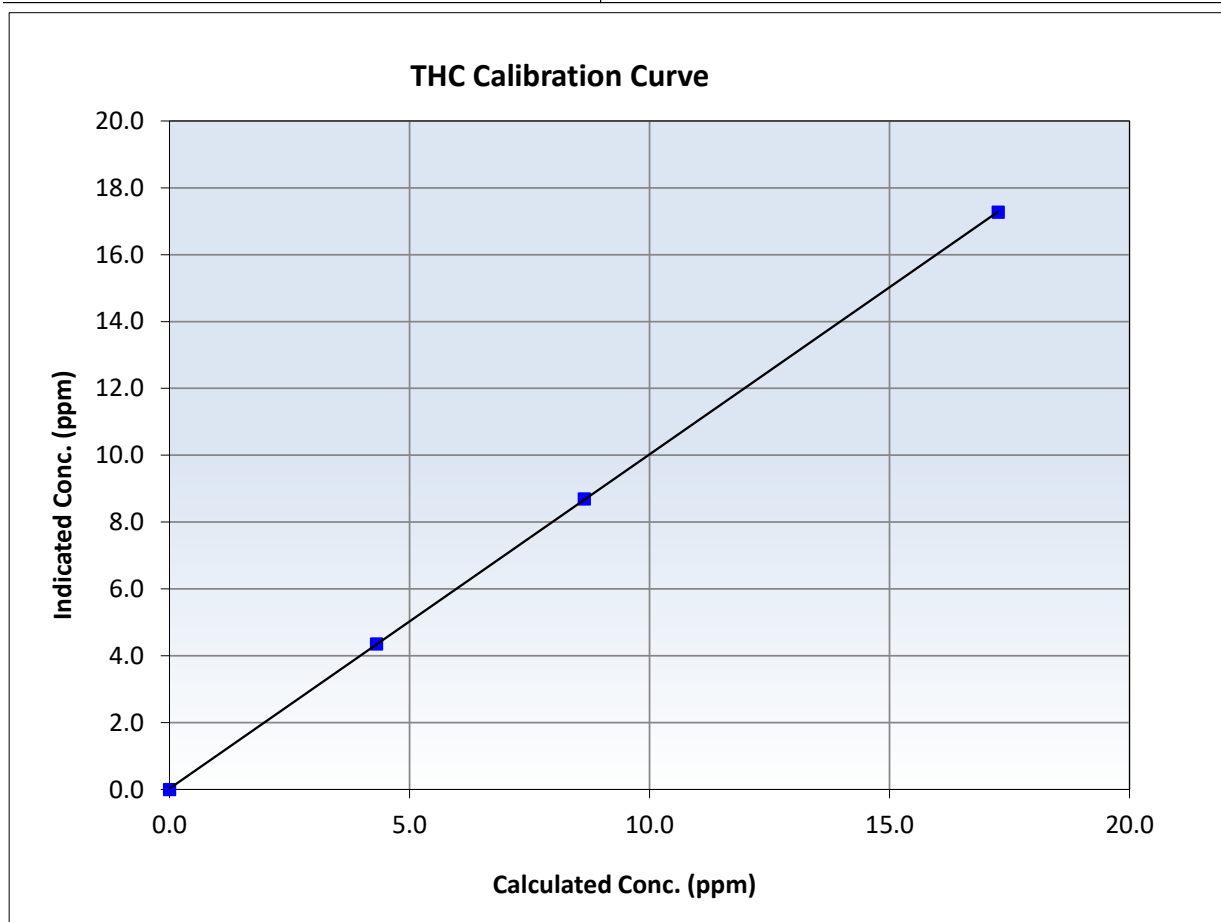
THC Calibration Summary

Station Information

Calibration Date:	March 9, 2025	Previous Calibration:	February 4, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:00	End Time (MST):	13:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585648

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999987	≥ 0.995
17.27	17.27	0.9996	Slope	0.999822	$0.90 - 1.10$
8.64	8.70	0.9941	Intercept	0.026931	± 0.5
4.31	4.36	0.9898			





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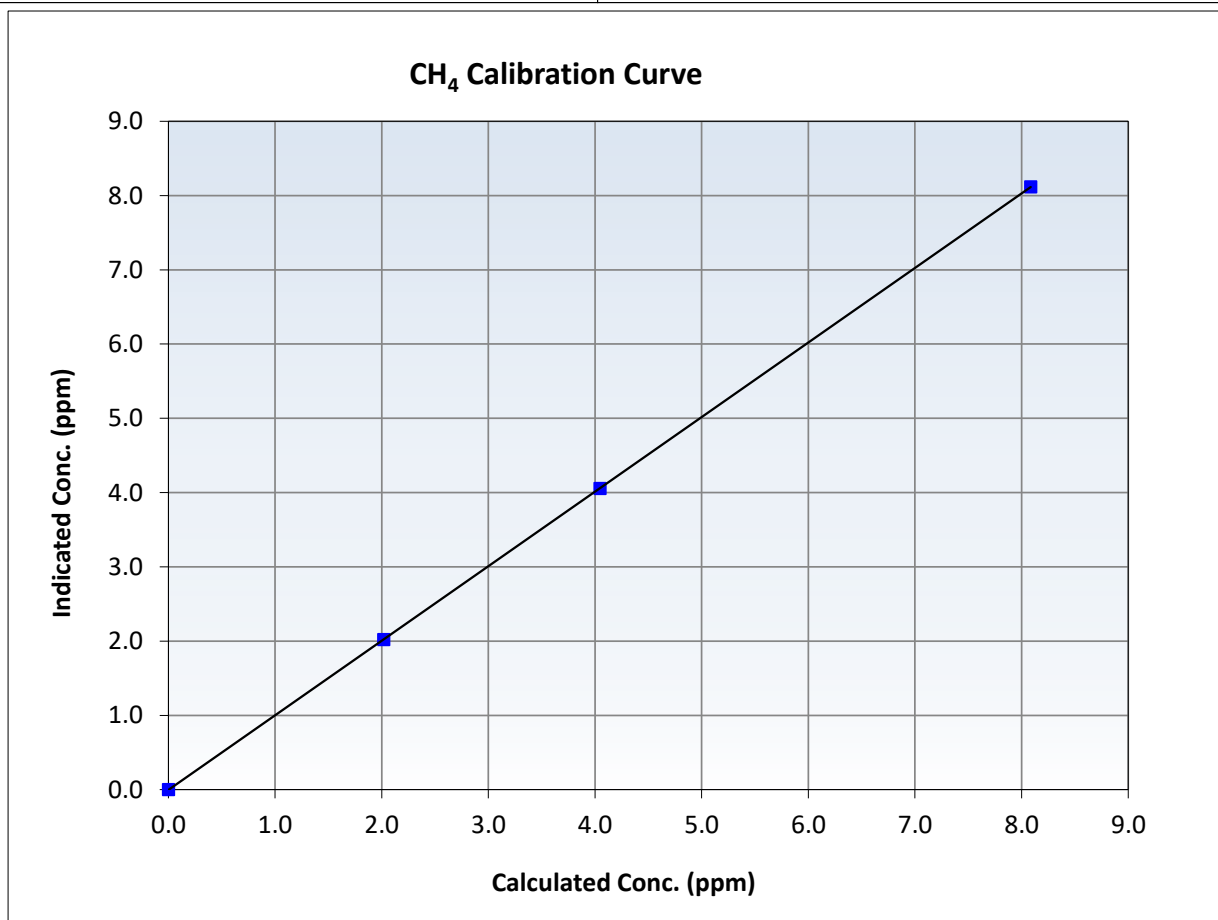
CH₄ Calibration Summary

Station Information

Calibration Date:	March 9, 2025	Previous Calibration:	February 4, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:00	End Time (MST):	13:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585648

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999999	<i>≥0.995</i>
8.09	8.12	0.9961	Slope	1.004040	<i>0.90 - 1.10</i>
4.05	4.06	0.9976	Intercept	-0.003534	<i>+/-0.5</i>
2.02	2.02	0.9990			





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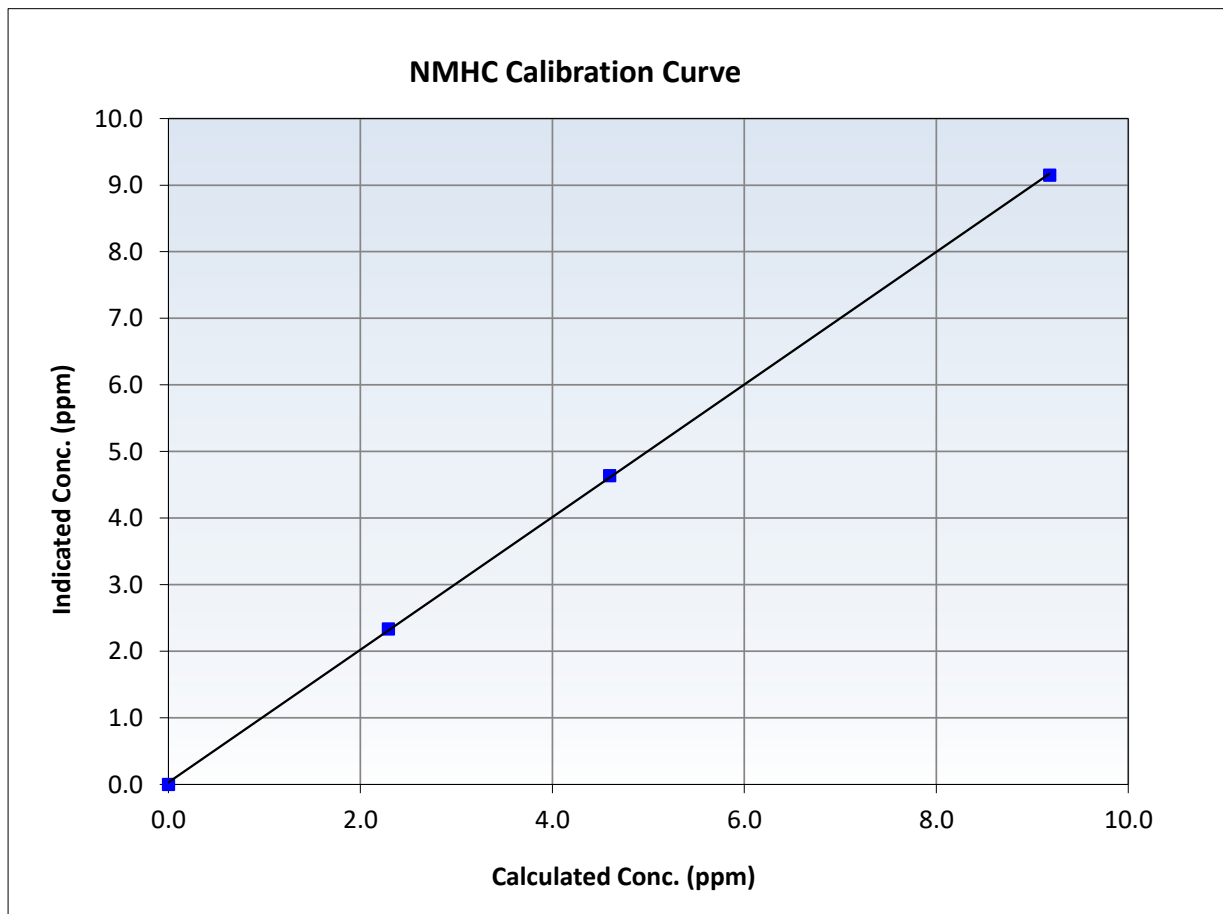
NMHC Calibration Summary

Station Information

Calibration Date:	March 9, 2025	Previous Calibration:	February 4, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:00	End Time (MST):	13:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585648

Calibration Data

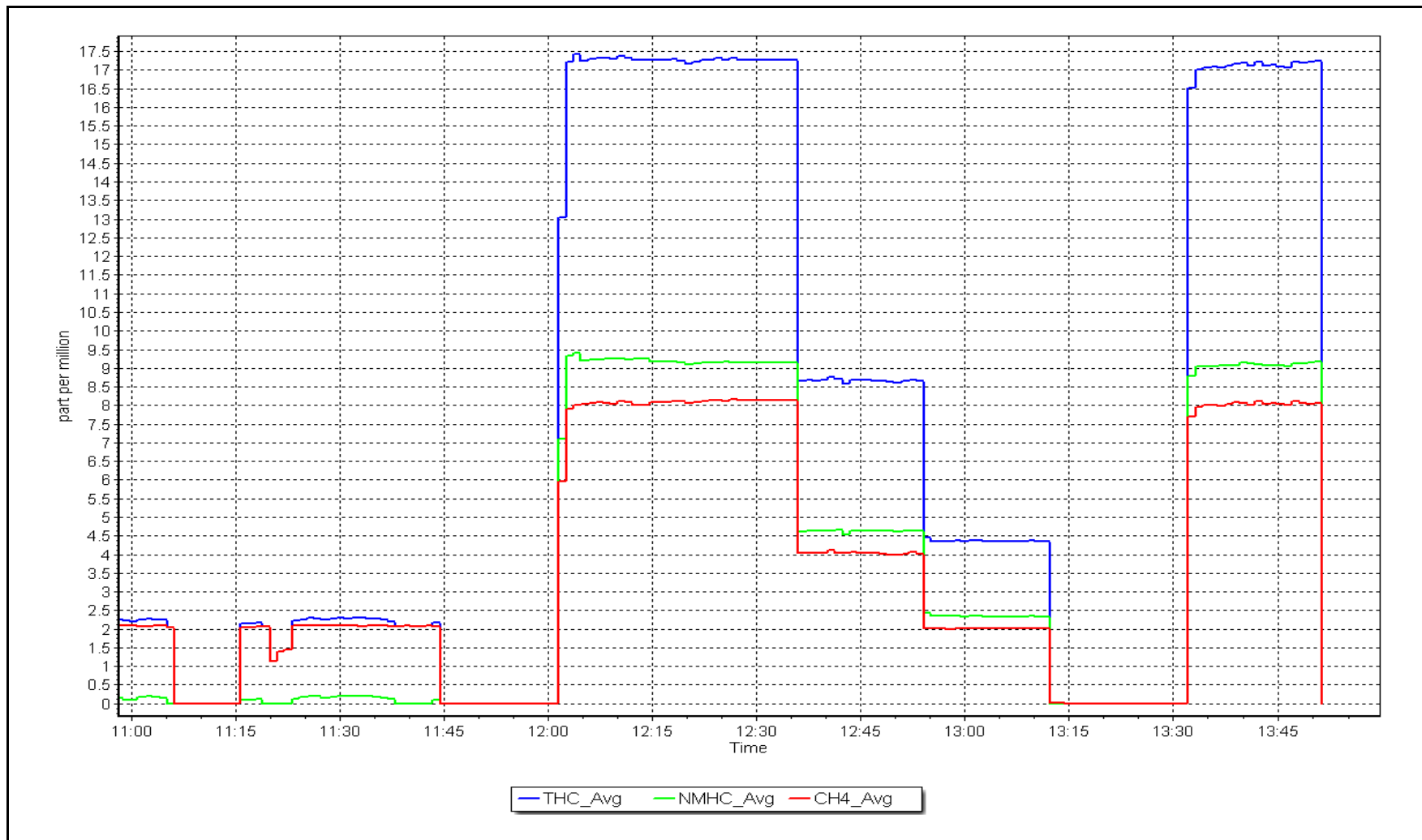
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999940	<i>≥0.995</i>
9.18	9.15	1.0031	Slope	0.995772	<i>0.90 - 1.10</i>
4.60	4.64	0.9909	Intercept	0.031064	<i>+/-0.5</i>
2.29	2.34	0.9818			



NMHC Calibration Plot

Date: March 9, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay
Station number: AMS 01
Calibration Date: March 11, 2025
Last Cal Date: February 25, 2025
Start time (MST): 10:35
End time (MST): 15:45
Reason: Routine

Calibration Standards

NO Gas Cylinder #: CC335700
NOX Cal Gas Conc: 59.40 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 59.40 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701
Cal Gas Expiry Date: September 1, 2032
NO Cal Gas Conc: 59.20 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 59.20 ppm
NO gas Diff:
Serial Number: 3565
Serial Number: 146

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.2	0.0	----	----
AF High point	4932	67.6	803.1	800.4	2.7	801.8	794.0	7.6	1.0014	1.0078
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO _x = 803.9 ppb	NO = 801.1 ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = -0.2%
Baseline Corr 1st pt	NO _x = 802.0 ppb	NO = 794.2 ppb	<u>As Found Statistics</u>		*Percent Change	NO = -0.9%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found	NO _x r ² :	Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found	NO r ² :	NO SI:	NO Int:
			As found	NO ₂ r ² :	NO2 SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Teledyne API T200
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 7117

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.172	1.176	NO bkgnd or offset:	-3.1	-3.1
NOX coeff or slope:	1.175	1.178	NOX bkgnd or offset:	-2.9	-2.9
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	7.5	7.7

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.001420	0.999328
NO _x Cal Offset:	-0.300000	-0.640000
NO Cal Slope:	1.002961	1.001476
NO Cal Offset:	-1.680000	-1.660000
NO ₂ Cal Slope:	0.994959	1.000095
NO ₂ Cal Offset:	0.263028	0.729865

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.1	0.1	0.0	----	----
High point	4932	67.6	803.1	800.4	2.7	802.5	800.9	1.7	1.0007	0.9994
Mid point	4966	33.8	401.5	400.2	1.4	399.6	397.9	1.7	1.0049	1.0058
Low point	4983	16.9	200.8	200.1	0.7	199.7	197.2	2.4	1.0054	1.0147
As left zero	5000	0.0	0.0	0.0	0.0	1.8	1.8	0.0	----	----
As left span	4932	67.6	803.1	396.4	406.7	797.5	396.4	401.1	1.0070	1.0000
Average Correction Factor									1.0037	1.0066

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.0	----	----
High GPT point	794.8	391.1	406.4	406.8	0.9990	100.1%
Mid GPT point	794.8	589.1	208.4	209.5	0.9948	100.5%
Low GPT point	794.8	692.7	104.8	106.3	0.9859	101.4%
Average Correction Factor					0.9932	100.7%

Notes: Changed the inlet filter after as founds. Adjusted the span.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

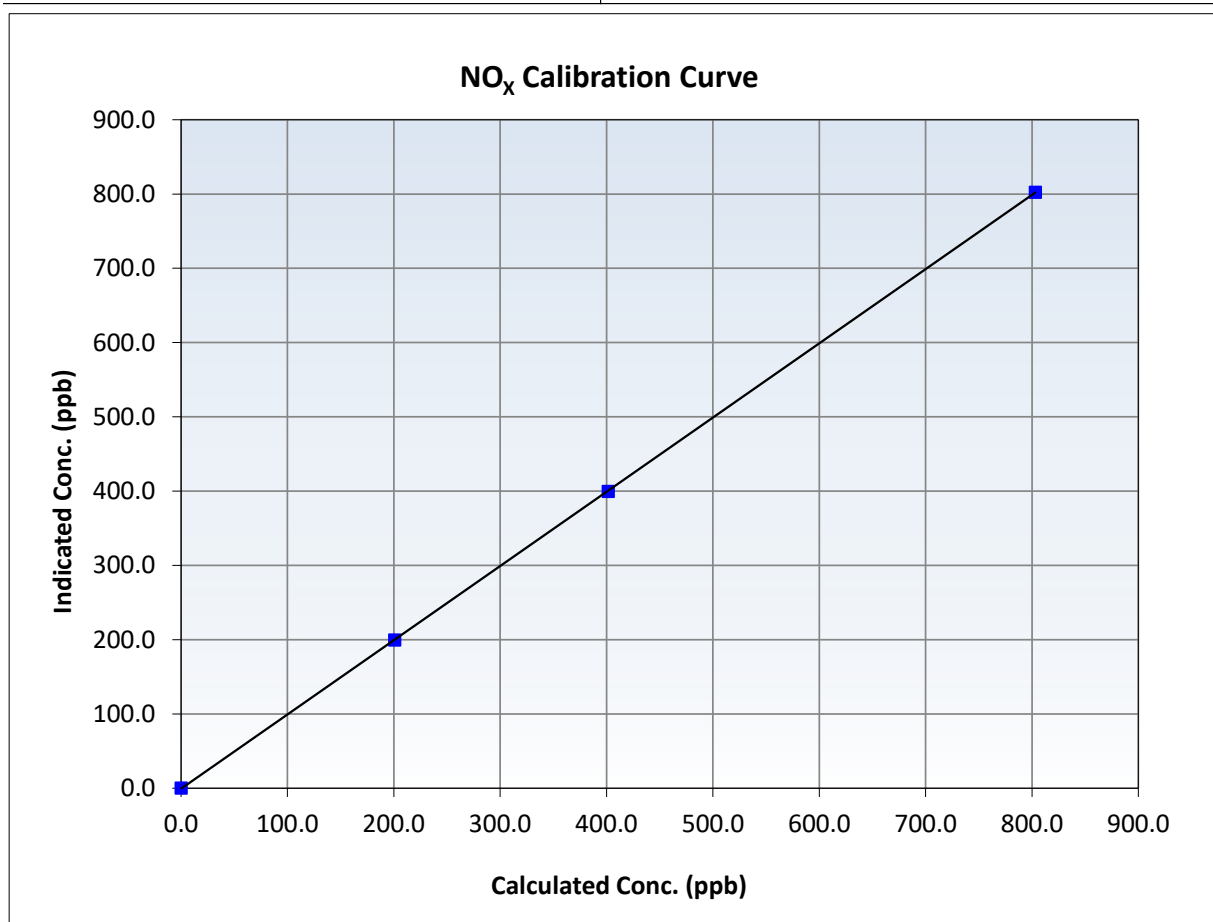
NO_x Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 25, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:35	End Time (MST):	15:45
Analyzer make:	Teledyne API T200	Analyzer serial #:	7117

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999994	≥0.995
803.1	802.5	1.0007	Slope	0.999328	0.90 - 1.10
401.5	399.6	1.0049	Intercept	-0.640000	+/-20
200.8	199.7	1.0054			





Wood Buffalo Environmental Association

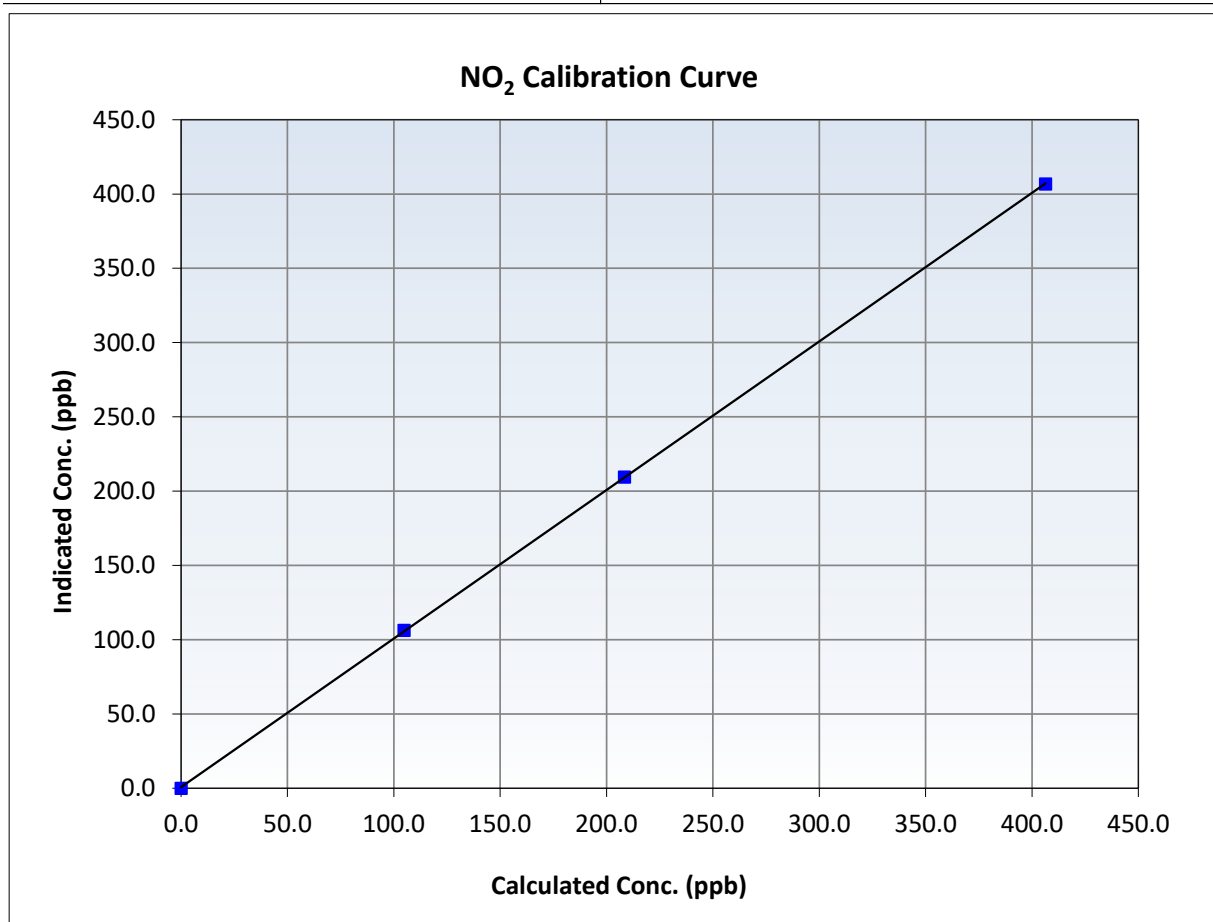
NO₂ Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 25, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:35	End Time (MST):	15:45
Analyzer make:	Teledyne API T200	Analyzer serial #:	7117

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999985	≥0.995
406.4	406.8	0.9990	Slope	1.000095	0.90 - 1.10
208.4	209.5	0.9948	Intercept	0.729865	+/-20
104.8	106.3	0.9859			





Wood Buffalo Environmental Association

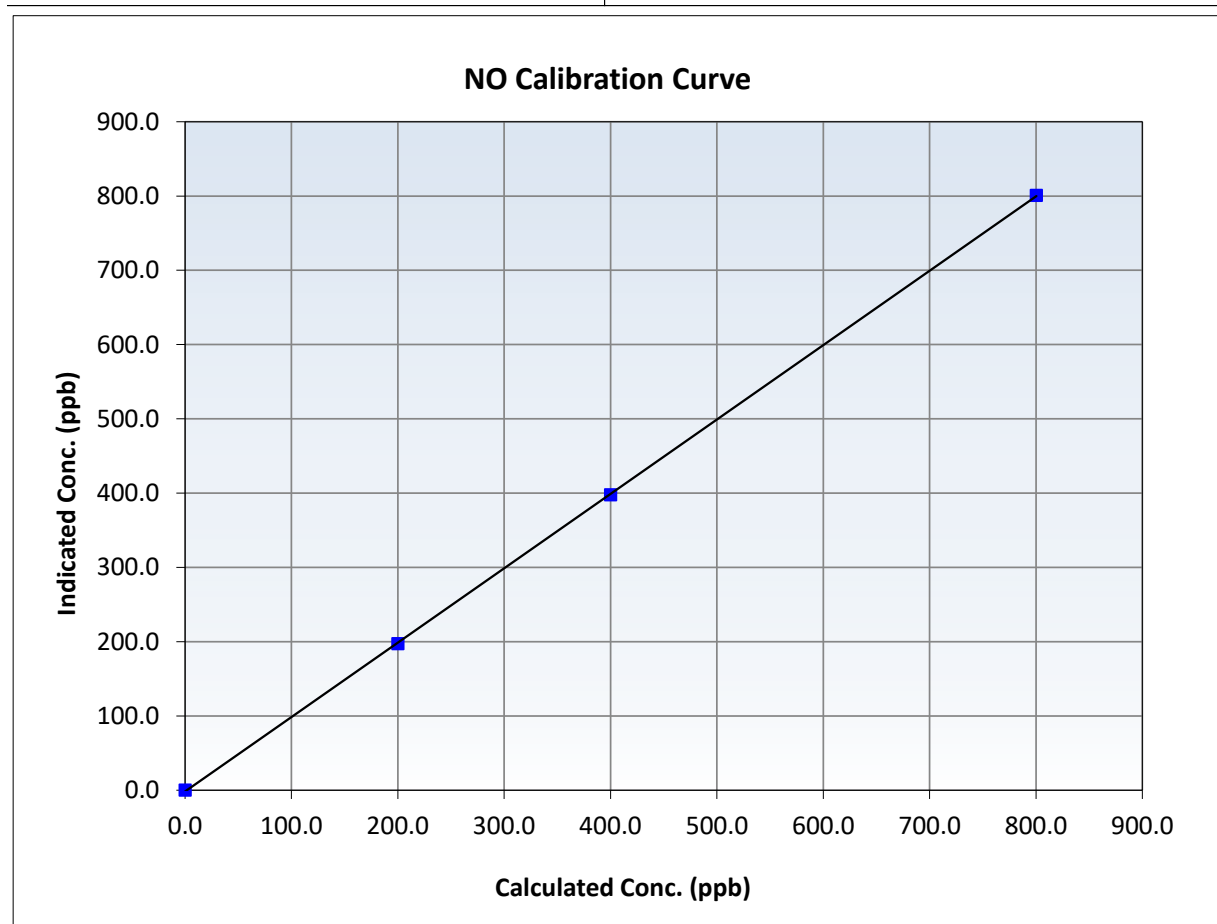
NO Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 25, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:35	End Time (MST):	15:45
Analyzer make:	Teledyne API T200	Analyzer serial #:	7117

Calibration Data

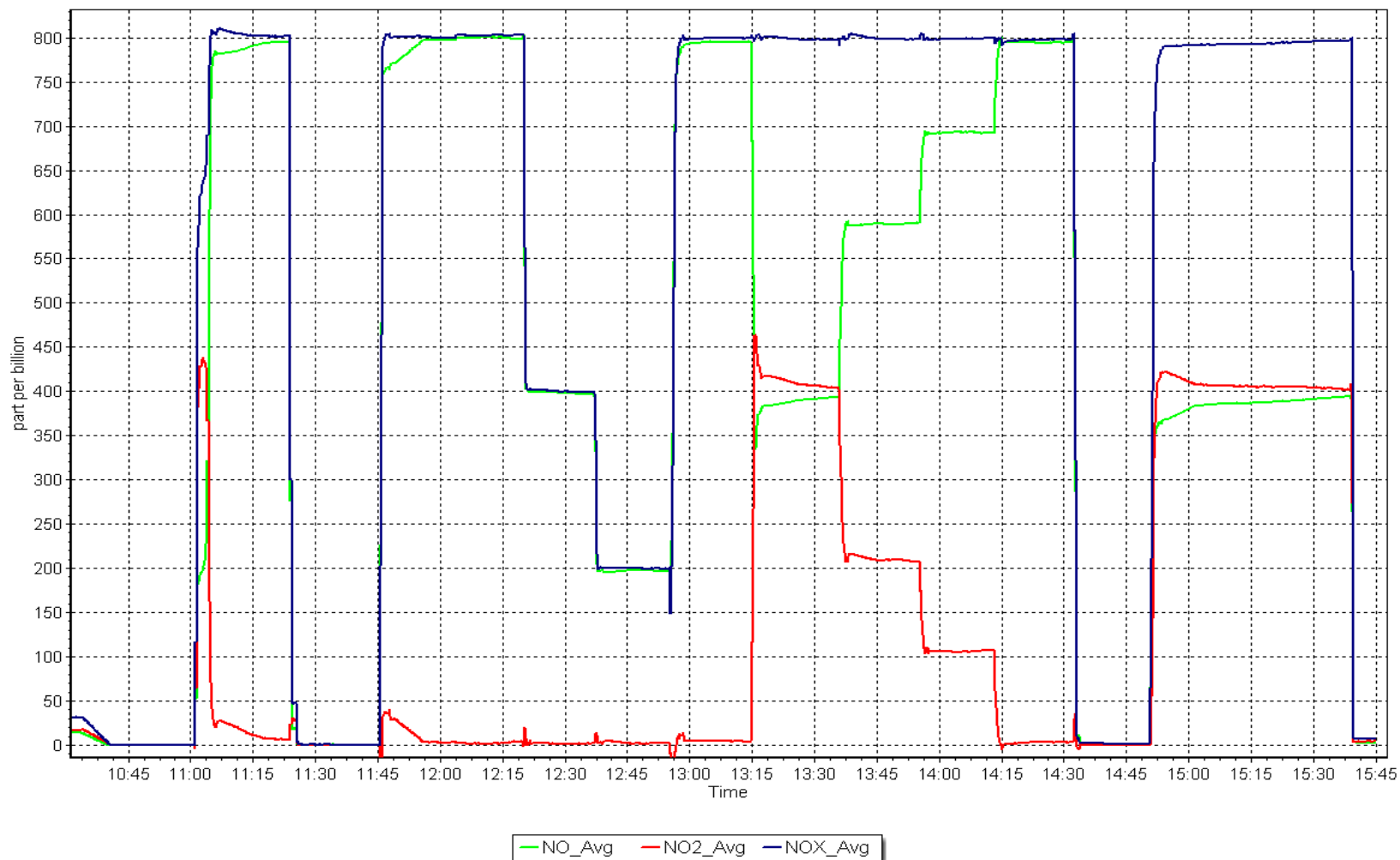
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.1	----	Correlation Coefficient	0.999977	≥ 0.995
800.4	800.9	0.9994	Slope	1.001476	$0.90 - 1.10$
400.2	397.9	1.0058	Intercept	-1.660000	± 20
200.1	197.2	1.0147			



NO_x Calibration Plot

Date: March 11, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 5, 2025 Last Cal Date: February 12, 2025
Start time (MST): 12:26 End time (MST): 15:12
Reason: Routine

Calibration Standards

O₃ generation mode: Photometer
Calibrator Make/Model: Teledyne API T700 Serial Number: 3565
ZAG Make/Model: Teledyne API T701 Serial Number: 4766

Analyzer Information

Analyzer make: Teledyne API T400 Analyzer serial #: 1107
Analyzer Range: 0 - 500 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.001314	1.001943	Backgd or Offset:	7.6	7.6
Calibration intercept:	0.020000	0.260000	Coeff or Slope:	1.021	1.021

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.4	----
As found High point	5000	863.1	400.0	402.5	0.995
As found Mid point					
As found Low point					
Baseline Corr As found:	402.1	Previous response	400.5	*% change	0.4%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	5000	863.1	400.0	400.8	0.998
Mid point	5000	744.0	200.0	201.1	0.995
Low point	5000	651.7	100.0	100.5	0.995
As left zero	5000	0.0	0.0	0.1	----
As left span	5000	863.1	400.0	405.6	0.986
Average Correction Factor					0.996

Notes: Changed the inlet filter after as founds. No adjustments made.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

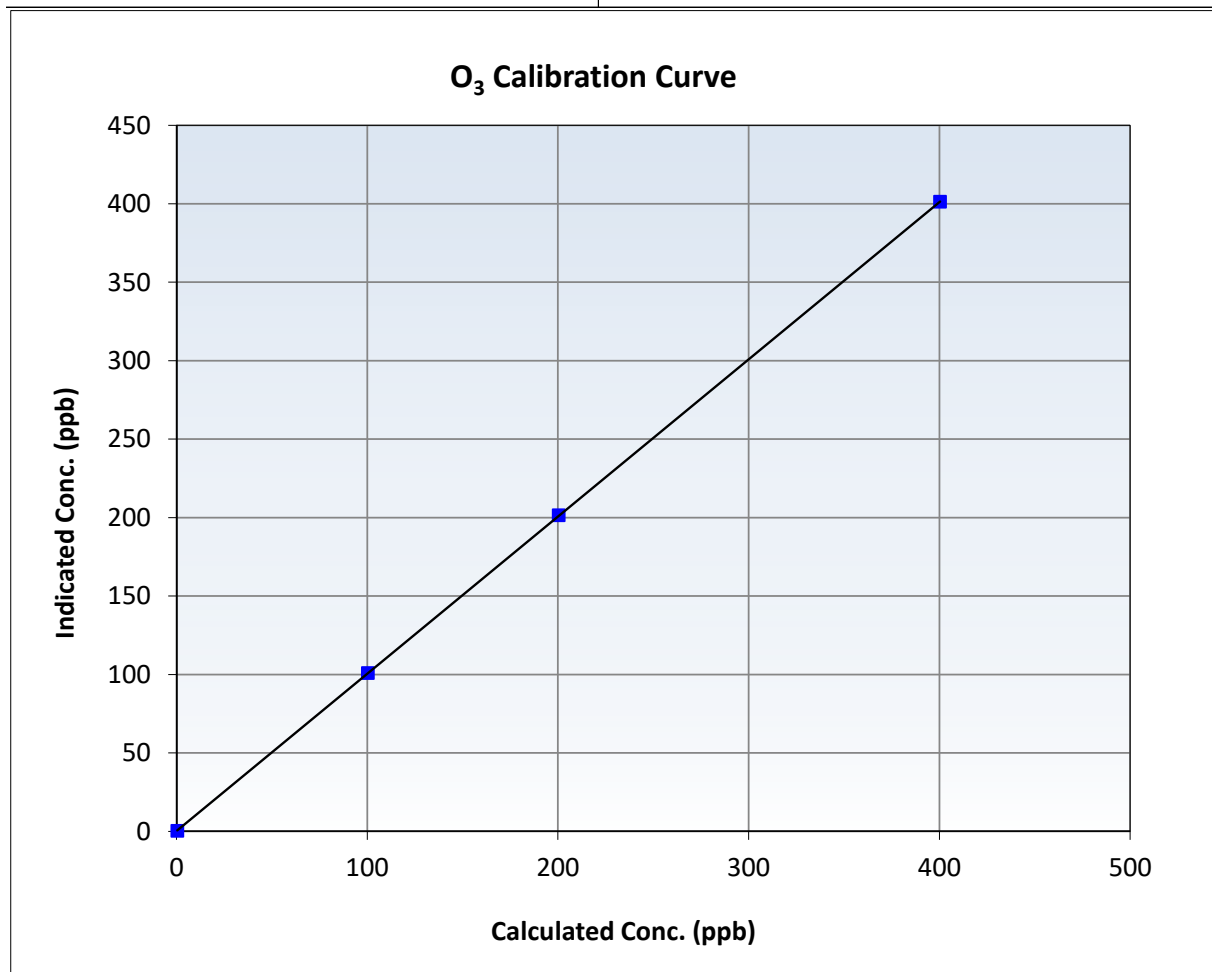
O₃ Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 12, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	12:26	End Time (MST):	15:12
Analyzer make:	Teledyne API T400	Analyzer serial #:	1107

Calibration Data

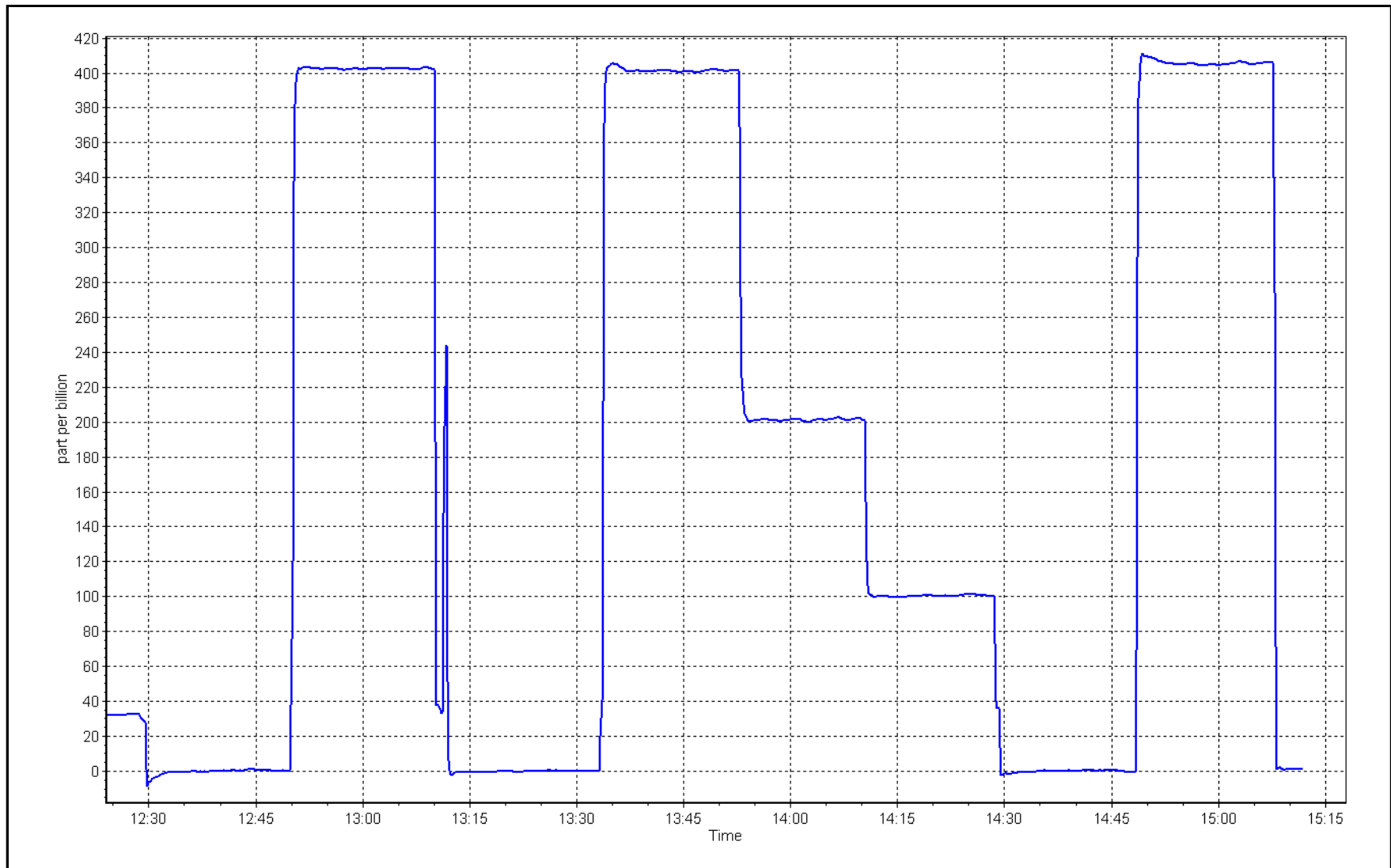
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999996	≥0.995
400.0	400.8	0.9980	Slope	1.001943	0.90 - 1.10
200.0	201.1	0.9945	Intercept	0.260000	+/- 5
100.0	100.5	0.9950			



O₃ Calibration Plot

Date: March 5, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Fort McKay - Bertha Ganter Station number: AMS 01
Calibration Date: March 20, 2025 Last Cal Date: February 26, 2025
Start time (MST): 13:05 End time (MST): 13:34

Analyzer Make: Teledyne API T640 S/N: 322
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388752
Temp/RH standard: Alicat FP-25BT S/N: 388752

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-7	-8.1	-7	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	731.6	734.18	731.6	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	4.99	4.867	4.99	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	39		39	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA:	6.7	PM w/ HEPA:	0.0	<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: June 10, 2024
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test				<input type="checkbox"/>	10.9 +/- 0.5

Date Optical Chamber Cleaned: January 30, 2025
Date Disposable Filter Changed: January 30, 2025

Post- maintenance Zero Verification: PM w/ HEPA: <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: October 24, 2024
Date RH/T Sensor Cleaned: October 24, 2024

Notes: Flow, temperature, and pressure were verified. Leak check passed.

Calibration by: Rene Chamberland



Wood Buffalo Environmental Association

CO Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 3, 2025 Last Cal Date: February 18, 2025
Start time (MST): 12:17 End time (MST): 15:32
Reason: Routine

Calibration Standards

Cal Gas Concentration: 3,040 ppm Cal Gas Exp Date: December 1, 2028
Cal Gas Cylinder #: ALM042207
Removed Cal Gas Conc: 3,040 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3565
ZAG Make/Model: Teledyne API T701 Serial Number: 4766

Analyzer Information

Analyzer make: Teledyne API T300 Analyzer serial #: 3520
Analyzer Range: 0 - 50 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	1.000580	1.000806	Backgd or Offset:	-0.015
Calibration intercept:	0.139846	0.125839	Coeff or Slope:	0.994

CO As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4933	66.7	40.6	41.0	0.993
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	40.86	Prev response:	40.72	*% change:	0.3%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CO Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4933	66.7	40.6	40.7	0.997
Mid point	4966	33.3	20.2	20.7	0.980
Low point	4983	16.7	10.2	10.2	0.997
As left zero	5000	0.0	0.0	0.0	----
As left span	2960	40.0	40.5	40.0	1.012
Average Correction Factor					0.991

Notes: Changed the inlet filter after as founds. Adjusted the zero and span.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

CO Calibration Summary

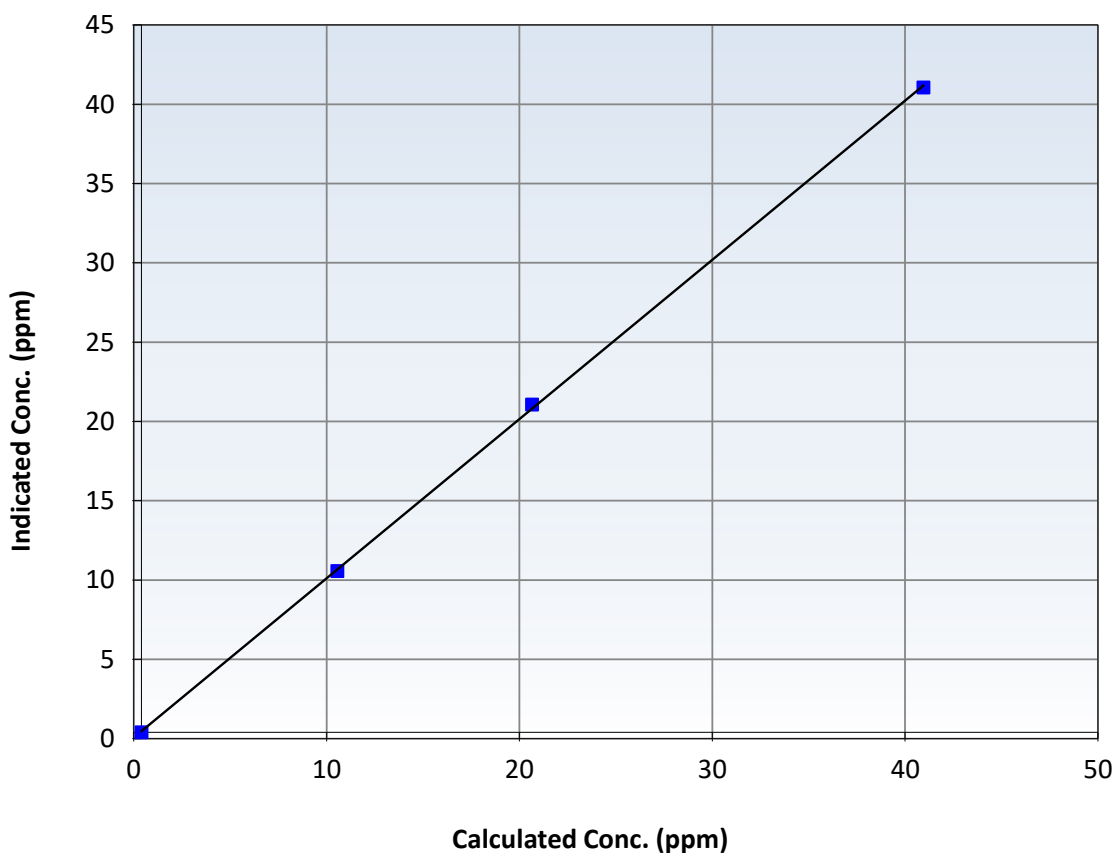
Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 18, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	12:17	End Time (MST):	15:32
Analyzer make:	Teledyne API T300	Analyzer serial #:	3520

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999891	≥ 0.995
40.6	40.7	0.9972	Slope	1.003849	$0.90 - 1.10$
20.2	20.7	0.9796	Intercept	0.071854	± 1.5
10.2	10.2	0.9975			

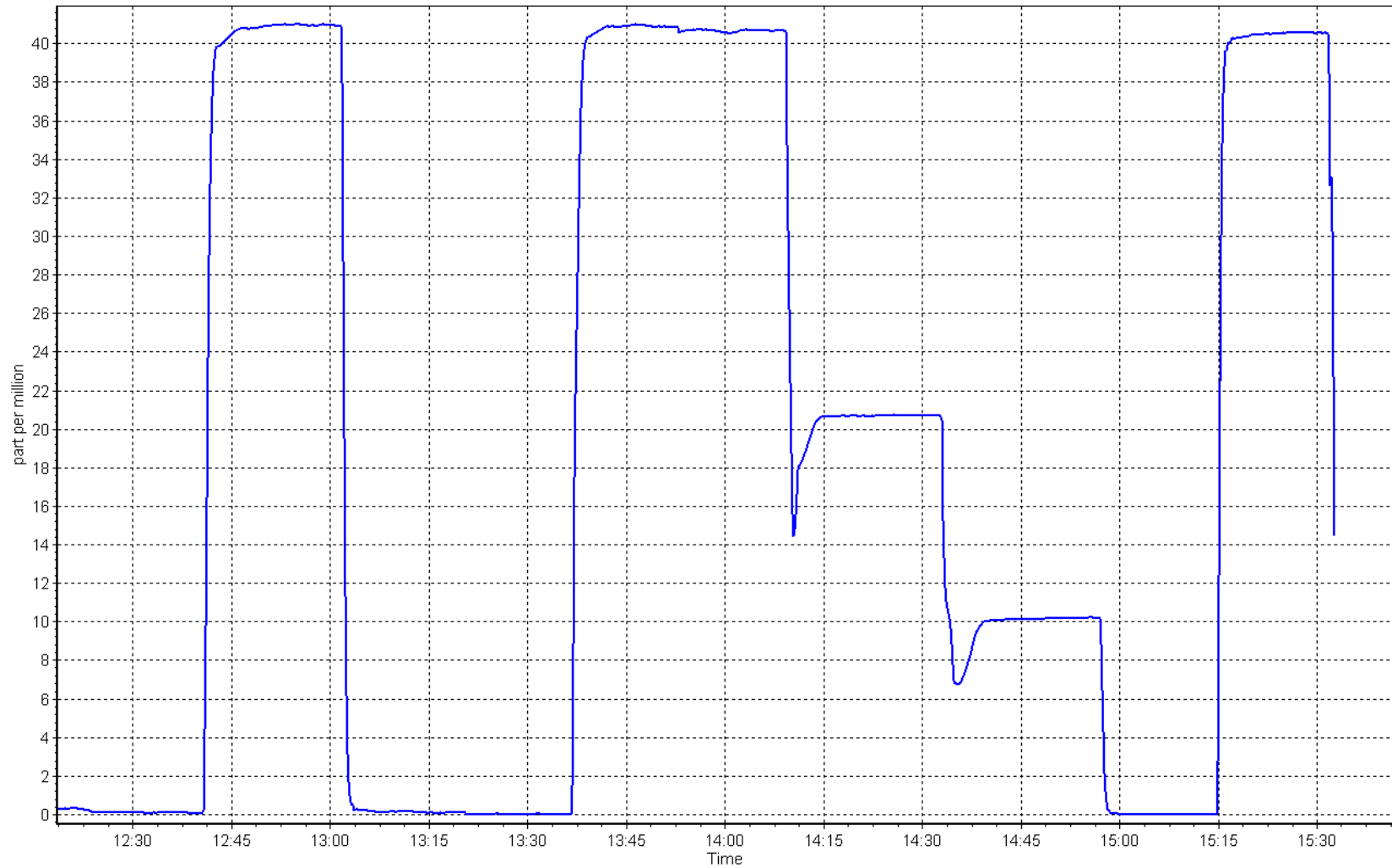
CO Calibration Curve



CO Calibration Plot

Date: March 3, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

CO₂ Calibration Report

Station Information

Station Name: Bertha Ganter-Fort McKay Station number: AMS 01
Calibration Date: March 4, 2025 Last Cal Date: February 10, 2025
Start time (MST): 12:18 End time (MST): 15:56
Reason: Routine

Calibration Standards

Cal Gas Concentration: 60,200 ppm Cal Gas Exp Date: December 1, 2028
Cal Gas Cylinder #: ALM042207
Removed Cal Gas Conc: 60,200 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3565
N2 Gen Make/Model: Peak Scientific Serial Number: 7220900034

Analyzer Information

Analyzer make: Teledyne API 360 Analyzer serial #: 442
Analyzer Range: 0 - 2,000 ppm

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.000693	1.005093	Backgd or Offset:	-0.011	-0.011
Calibration intercept:	-4.320000	-5.360000	Coeff or Slope:	0.923	0.922

CO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	3000	0.0	0.0	0.3	----
As found High Point	2920	80.0	1605.3	1612.3	0.996
As found Mid Point					
As found Low Point					
New cylinder response					
Baseline Corr As found:	1612.0	Prev response:	1602.1	*% change:	0.6%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	3000	0.0	0.0	0.0	----
High point	2920	80.0	1605.3	1614.0	0.995
Mid point	2960	40.0	802.7	789.2	1.017
Low point	2980	20.0	401.3	399.0	1.006
As left zero	3000	0.0	0.0	-3.1	----
As left span	2960	40.0	802.7	791.3	1.014
Average Correction Factor					1.006

Notes: Changed the inlet filter after as founds. Adjusted the span.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

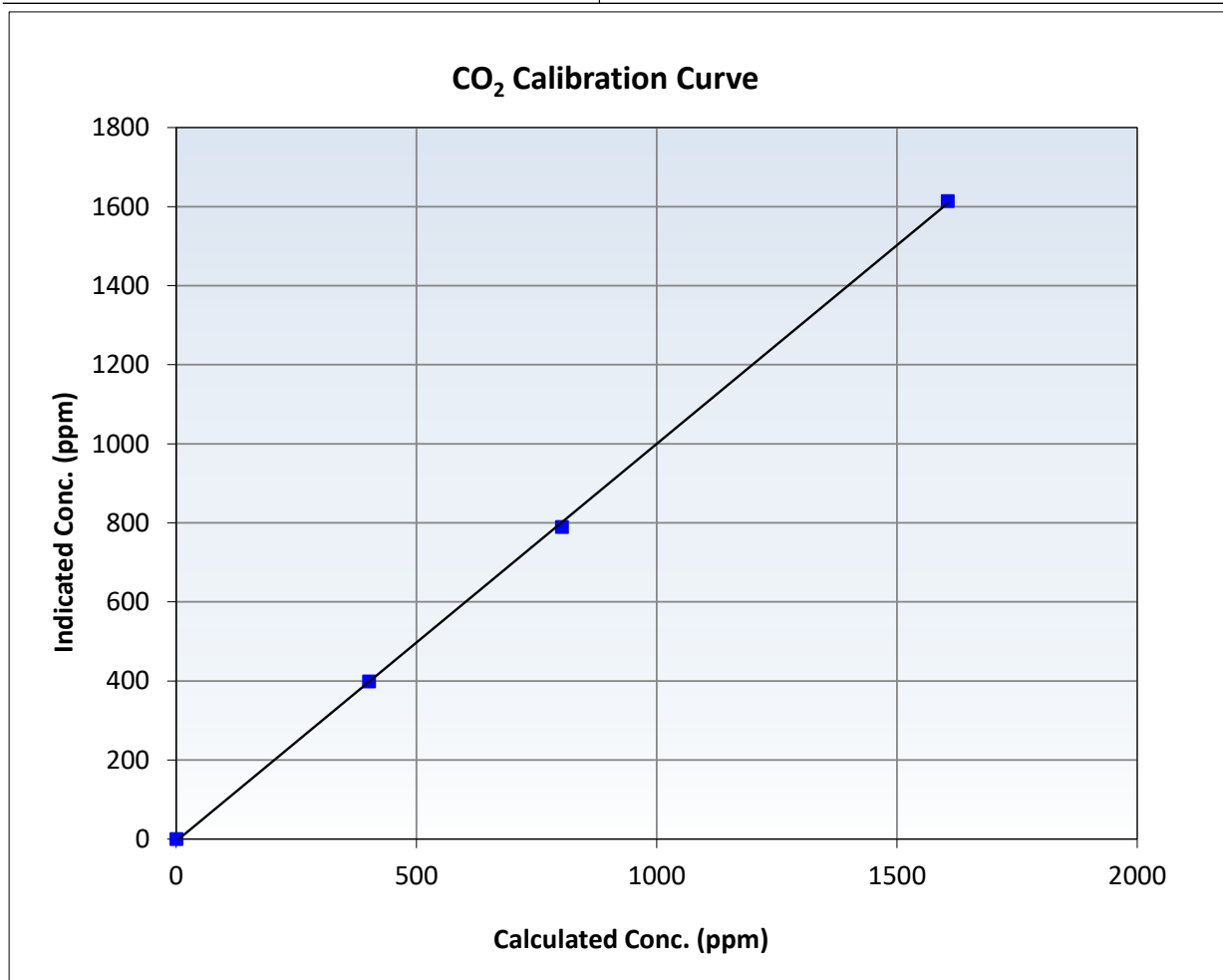
CO₂ Calibration Summary

Station Information

Calibration Date	March 4, 2025	Previous Calibration	February 10, 2025
Station Name	Bertha Ganter-Fort McKay	Station Number	AMS 01
Start Time (MST)	12:18	End Time (MST)	15:56
Analyzer make	Teledyne API 360	Analyzer serial #	442

Calibration Data

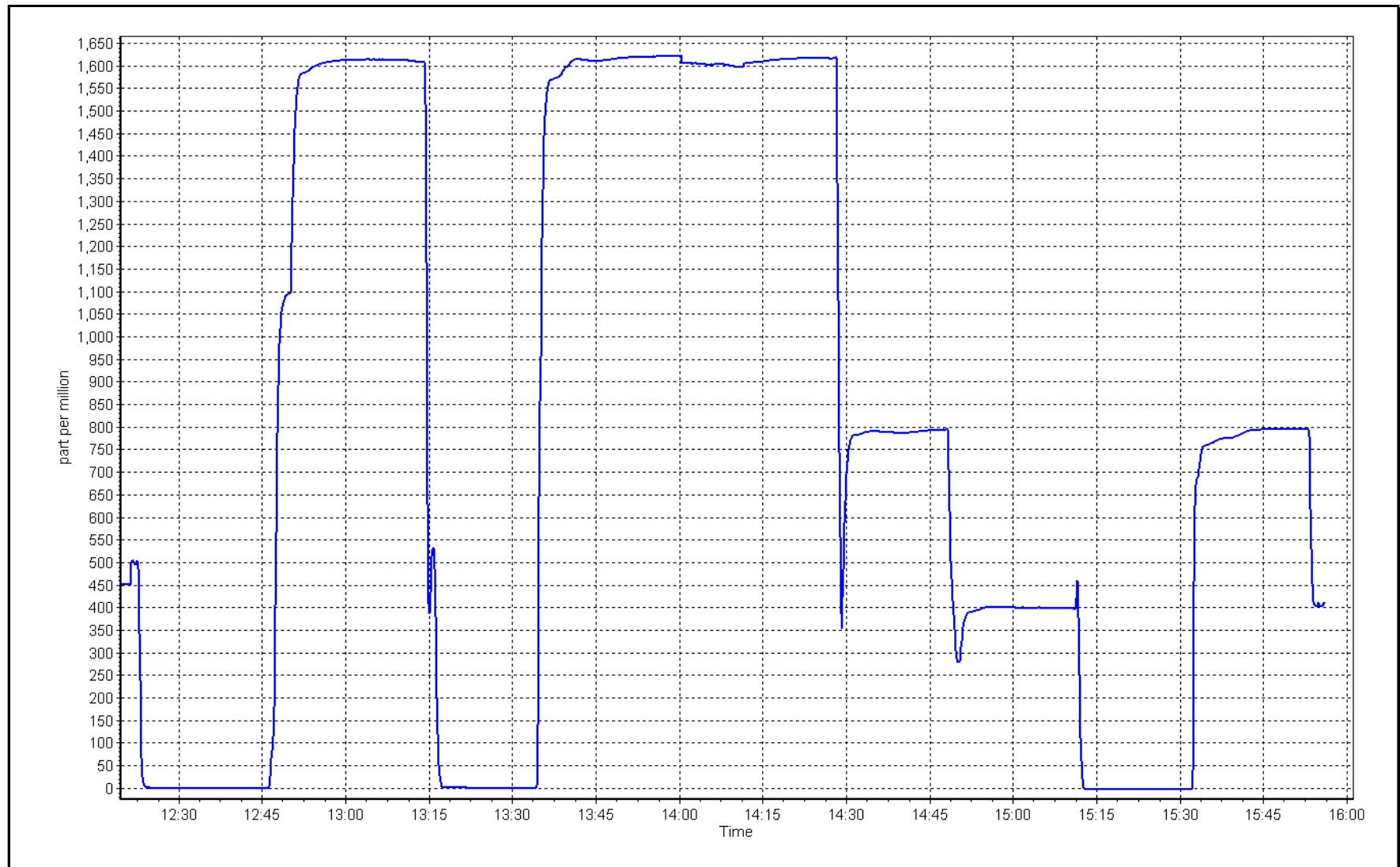
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999851		≥0.995
1605.3	1614.0	0.9946	Slope	1.005093		0.90 - 1.10
802.7	789.2	1.0171	Intercept	-5.4		+/-20
401.3	399.0	1.0058				



CO₂ Calibration Plot

Date: March 4, 2025

Location: Bertha Ganter-Fort McKay





Wood Buffalo Environmental Association

Nt - NOX - NH3 Calibration Report

Station Information

Station Name:	Bertha Ganter-Fort McKay	Station number:	AMS 01
NOX Cal Date:	March 12, 2025	Last Cal Date:	February 13, 2025
Start time (MST):	11:39	End time (MST):	16:03
NH3 Cal Date:	March 13, 2025	Last Cal Date:	February 14, 2025
Start time (MST):	10:45	End time (MST):	15:01
Reason:	Cylinder Change		

Calibration Standards

NOX Cal Gas Conc:	59.40	ppm	NO Gas Cylinder #:	CC335700
NO Cal Gas Conc:	59.20	ppm	NO Cal Gas Expiry:	September 1, 2032
Removed NOX Conc:	59.40	ppm	Removed Cylinder #:	NA
Removed NO Conc:	59.20	ppm	Removed cyl Expiry:	NA
NOX gas Diff:			NO gas Diff:	
NH3 Cal Gas Conc:	77.80	ppm	NH3 Gas Cylinder #:	CC711249
			NH3 Cal Gas Expiry:	December 31, 2025
Removed NH3 Conc:	76.58	ppm	Removed Cylinder #:	CC743587
NH3 gas Diff:	4.8%		Removed cyl Expiry:	August 22, 2024
Calibrator Model:	API T700		Serial Number:	3565
ZAG make/model:	API T701		Serial Number:	146

Analyzer Information

Analyzer model:	API T201	Analyzer serial #:	808
Converter model:	API T501	Converter serial #:	484
NH3 Range (ppb):	0 - 2000 ppb	Reaction cell Press:	4.30
NOX Range (ppb):	0 - 1000 ppb	Sample Flow:	407

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coefficient:	0.915	0.911	Nt coefficient:	0.956	0.918
NOX coefficient:	0.921	0.912	NO bkgnd:	-1.8	-1.8
NO2 coefficient:	1.000	1.000	NOX bkgnd:	-1.7	-1.7
NH3 coefficient:	0.921	0.983	Nt bkgnd:	-0.6	-0.6

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.001150	0.998844
NO _x Cal Offset:	-0.780000	-1.020000
NO Cal Slope:	0.999506	1.001505
NO Cal Offset:	-2.520000	-1.720000
NO ₂ Cal Slope:	1.005170	1.004855
NO ₂ Cal Offset:	0.688584	-0.045831
NH3 Cal Slope:	0.997869	0.998529
NH3 Cal Offset:	-5.468907	1.260645
Nt Cal Slope:	1.003183	1.002958
Nt Cal Offset:	-4.202260	3.555325



Wood Buffalo Environmental Association

NO_x - NO - NO₂ Calibration Report

NO_x / NO / Nt As Found Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated Nt concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated Nt concentration (ppb) (Ic)	Baseline corr NO _x Correction factor (Cc/Ic) <i>Limit = 0.9 - 1.0</i>	Baseline corr NO Correction factor (Cc/Ic) <i>Limit = 0.9 - 1.0</i>
As found zero	5000	0.0	0.0	0.0	0.0	0.7	0.6	0.8	----	----
As found span	4932	67.6	803.1	800.4	803.1	804.9	795.6	802.6	0.9977	1.0060
AF GPT span	4932	67.6	803.1	-----	803.1	794.0	-----	798.2	1.0114	-----

new NO cyl rp

Baseline Corr As Fd Nt = 801.8 ppb NO_x = 804.2 ppb NO = 795.0 ppb

Previous Response Nt = 801.44 ppb NO_x = 803.2 ppb NO = 797.5 ppb

****NO_x Δ (NO to GPT response) = -1.4%**

*** = > +/-2% difference initiates investigation**

***Percent Change Nt_(NO) = 0.0%**

***Percent Change NO_x = 0.1%**

***Percent Change NO = -0.3%**

*** = > +/-5% change initiates investigation**

NO_x / NO / Nt Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated Nt concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated Nt concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibration zero	5000	0.0	0.0	0.0	0.0	1.0	0.9	1.2	----	----
High point	4932	67.6	803.1	800.4	803.1	802.8	801.0	804.0	1.0004	0.9992
Mid point	4966	33.8	401.5	400.2	401.5	397.1	398.3	398.4	1.0112	1.0048
Low point	4983	16.9	200.8	200.1	200.8	198.8	195.7	199.1	1.0099	1.0225
Average Correction Factor									1.0072	1.0088

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Calibration zero	----	----	0.0	0.1	----	----
High GPT point (400 ppb O3)	790.9	398.6	395.0	396.9	0.9952	100.5%
Mid GPT point (200 ppb O3)	790.9	595.1	198.5	199.5	0.9950	100.5%
Low GPT point (100 ppb O3)	790.9	692.7	100.9	101.1	0.9981	100.2%
Average Correction Factor					0.9961	100.4%



Wood Buffalo Environmental Association NH₃ - N_T Calibration Report

NH₃ As Found Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated Nt concentration (ppb) (Cc)	Calculated NOX concentration (ppb) (Cc)	Calculated NH3 concentration (ppb) (Cc)	Indicated Nt concentration (ppb) (Ic)	Indicated NOX concentration (ppb) (Ic)	Indicated NH3 concentration (ppb) (Ic)	Baseline corr Nt Correction factor (Cc/(Ic-zero)) <i>Limit = 0.9 - 1.1</i>	Baseline corr NH3 Correction factor (Cc/(Ic-zero)) <i>Limit = 0.9 - 1.1</i>
As found zero	5000	0.0	0.0	0.0	0.0	0.9	0.9	0.0	----	----
AF High point	2929	70.5	1799.9	----	1799.9	1789.7	----	1780.2	1.006	1.011
AF Mid point							----			
AF Low point							----			
new NH3 cyl rp	2931	69.4	1799.8	----	1799.8	1878.2	----	1868.7	0.958	0.963
Baseline Corr As Fd	Nt =	1788.8 ppb	NH3 =	1780.2 ppb				*Percent Change	Nt _(NH3) =	-0.7%
Previous Response	Nt =	1801.5 ppb	NH3 =	1790.6 ppb			* = > +/-5% change initiates investigation	*Percent Change	NH3 =	-0.6%

NH₃ Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated Nt concentration (ppb) (Cc)	Calculated NOX concentration (ppb) (Cc)	Calculated NH3 concentration (ppb) (Cc)	Indicated Nt concentration (ppb) (Ic)	Indicated NOX concentration (ppb) (Ic)	Indicated NH3 concentration (ppb) (Ic)	Nt Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NH3 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibration zero	5000	0.0	0.0	0.0	0.0	1.2	1.0	0.1	----	----
High point	2931	69.4	1799.8	----	1799.8	1812.5	----	1803.3	0.993	0.998
Mid point	2961	38.6	1001.0	----	1001.0	995.2	----	986.9	1.006	1.014
Low point	2981	19.3	500.5	----	500.5	516.4	----	511.2	0.969	0.979
Average Correction Factor									0.9894	0.9972
NH3 Previous Converter Efficiency =		90.8 %								
NH3 Current Converter Efficiency =		98.3 %								

Notes: Changed the inlet filter after as founds. Adjusted the NOx/NT spans. Used the 2nd GPT reference point. Changed the NH3 cylinder. Adjusted the NH3 span.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

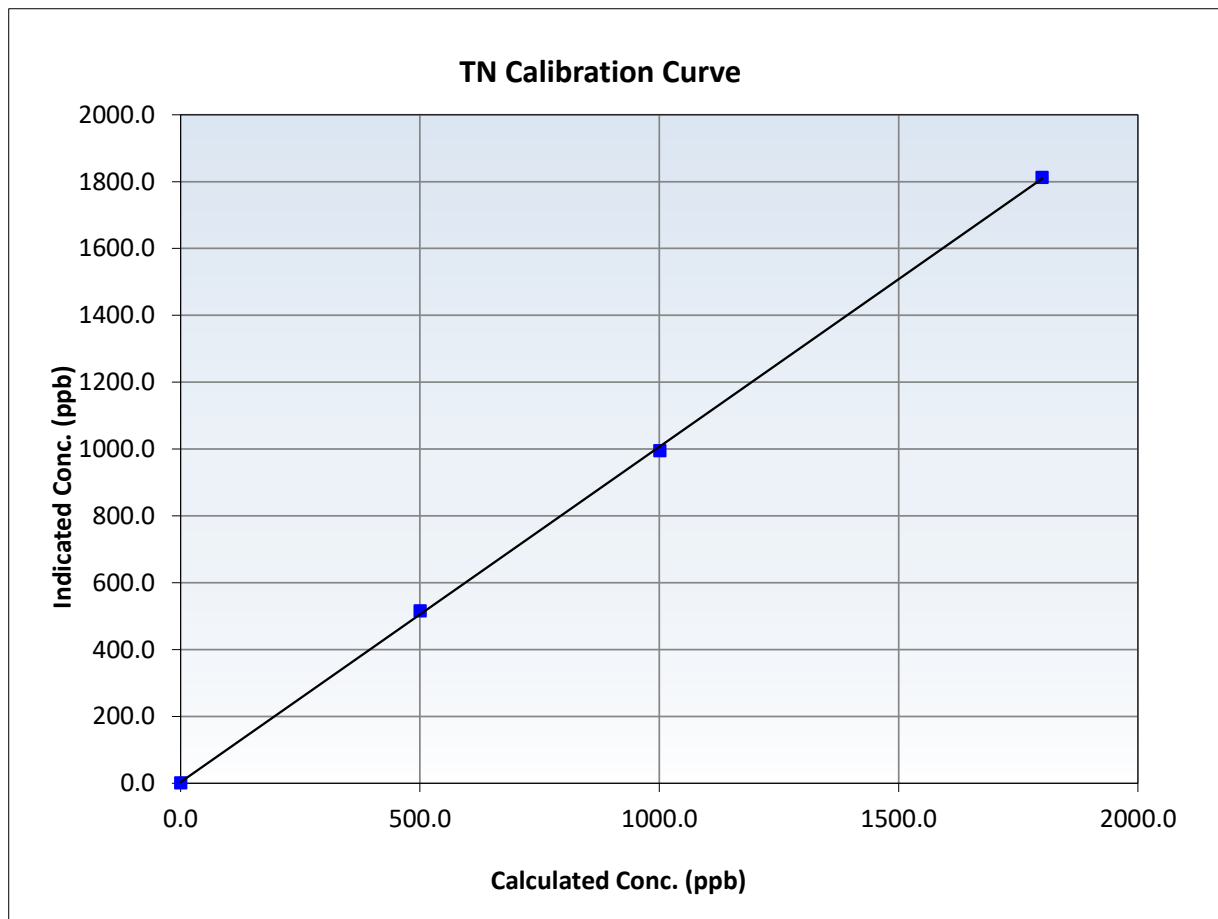
Nt Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 13, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:39	End Time (MST):	16:03
Analyzer make:	API T201	Analyzer serial #:	808

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	1.2	----	Correlation Coefficient	0.999837	≥0.995
1799.8	1812.5	0.9930	Slope	1.002958	0.90 - 1.10
1001.0	995.2	1.0059	Intercept	3.555325	+/-20
500.5	516.4	0.9692			





Wood Buffalo Environmental Association

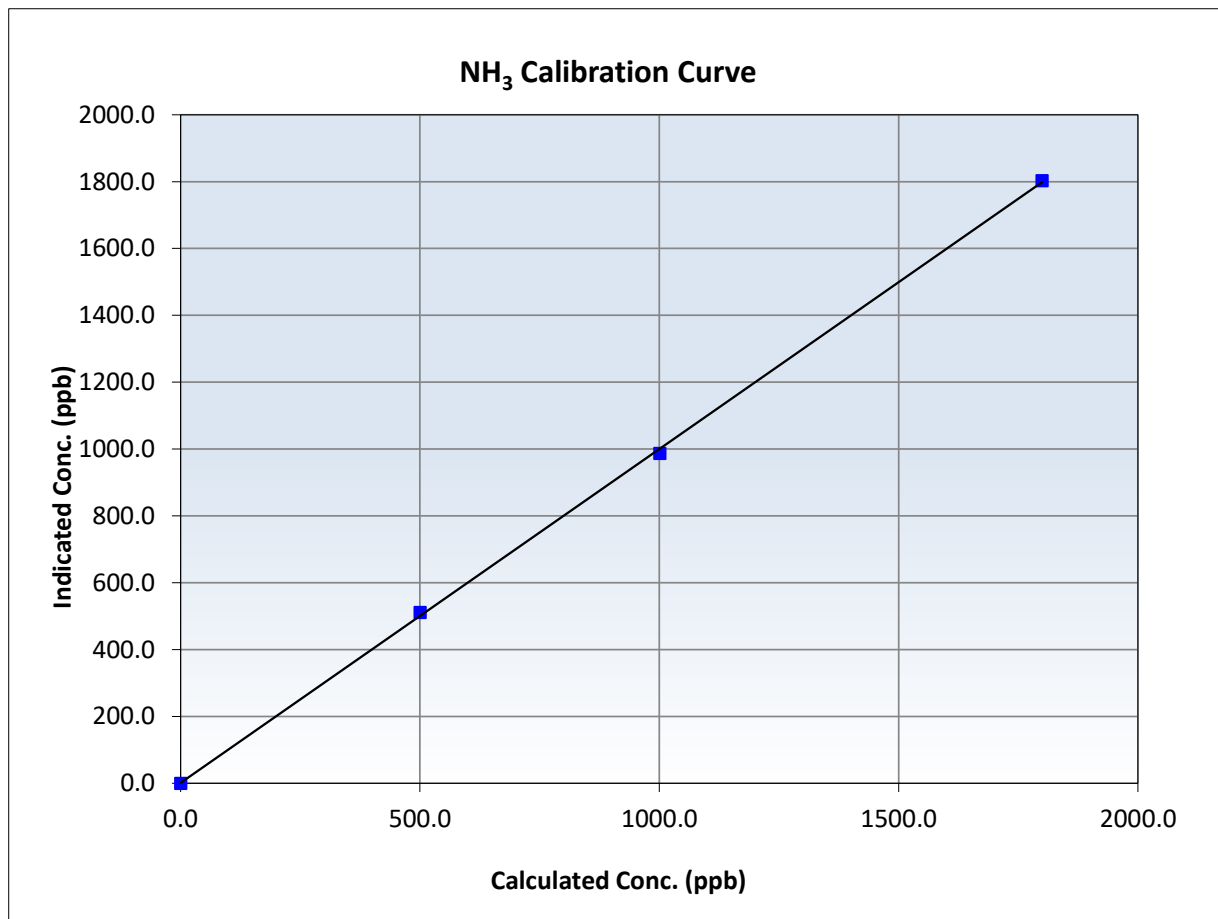
NH₃ Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 13, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:39	End Time (MST):	16:03
Analyzer make:	API T201	Analyzer serial #:	808

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999817	<i>≥0.995</i>
1799.8	1803.3	0.9980	Slope	0.998529	<i>0.90 - 1.10</i>
1001.0	986.9	1.0143	Intercept	1.260645	<i>+/-20</i>
500.5	511.2	0.9791			





Wood Buffalo Environmental Association

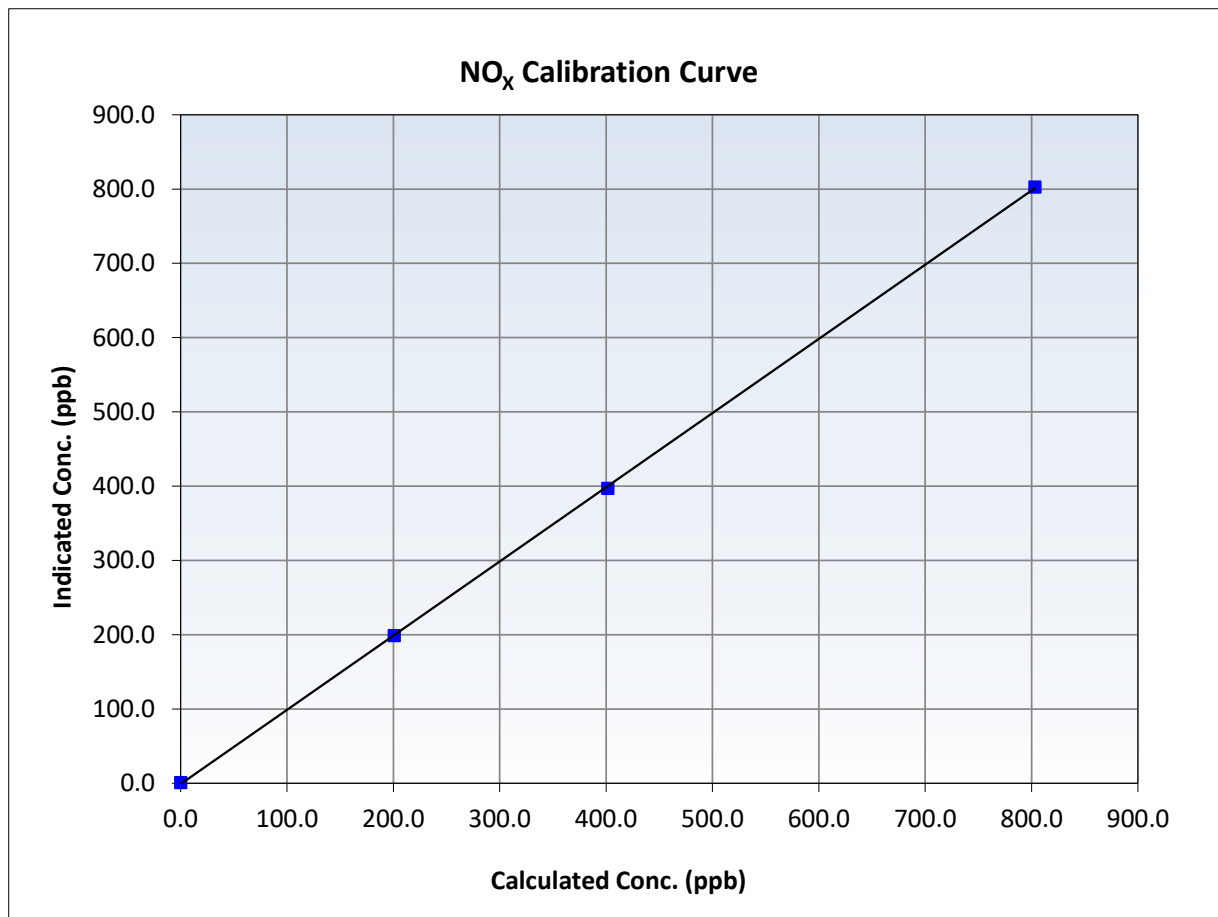
NO_x Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:39	End Time (MST):	16:03
Analyzer make:	API T201	Analyzer serial #:	808

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	1.0	----	Correlation Coefficient	0.999954	<i>≥0.995</i>
803.1	802.8	1.0004	Slope	0.998844	<i>0.90 - 1.10</i>
401.5	397.1	1.0112	Intercept	-1.020000	<i>+/-20</i>
200.8	198.8	1.0099			





Wood Buffalo Environmental Association

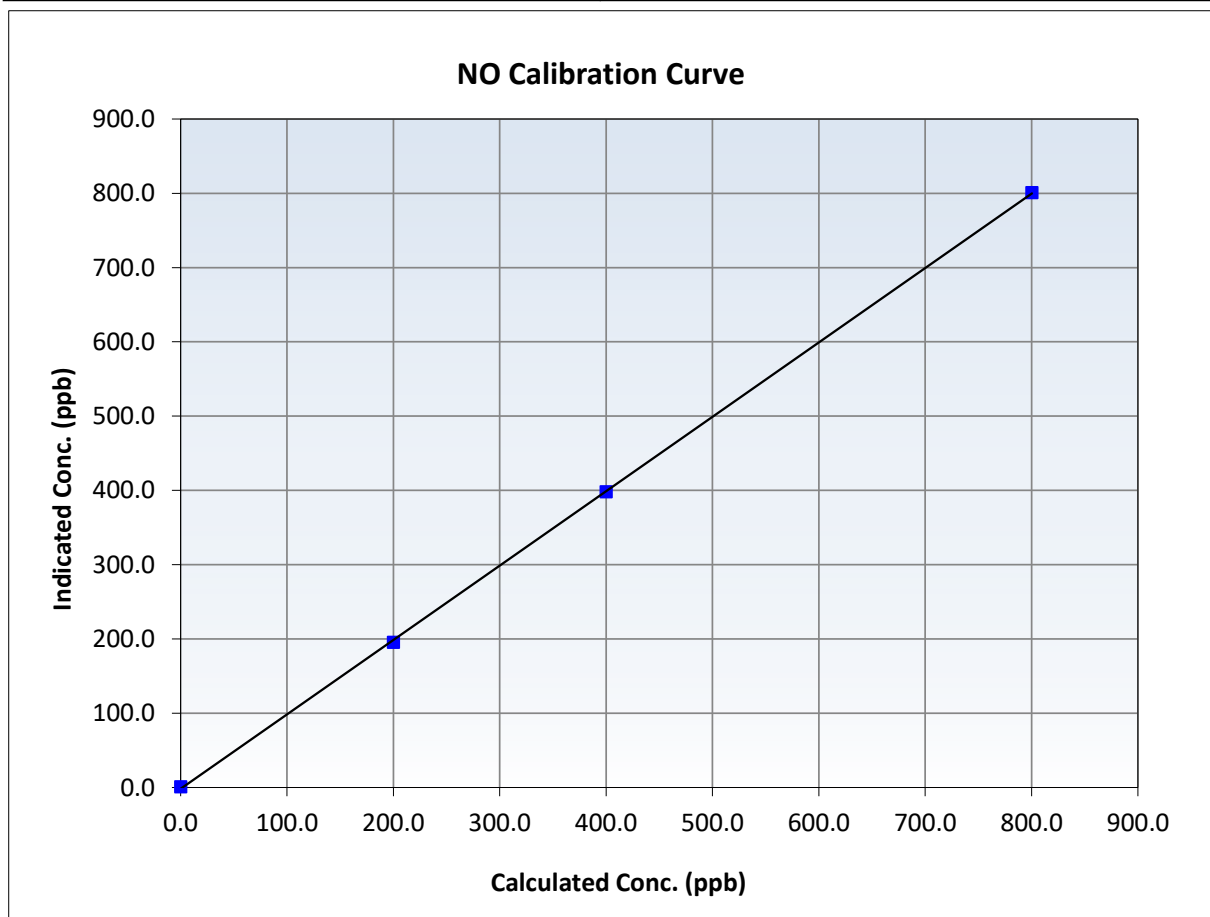
NO Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:39	End Time (MST):	16:03
Analyzer make:	API T201	Analyzer serial #:	808

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.9	----	Correlation Coefficient	0.999950	≥ 0.995
800.4	801.0	0.9992	Slope	1.001505	0.90 - 1.10
400.2	398.3	1.0048	Intercept	-1.720000	+/-20
200.1	195.7	1.0225			





Wood Buffalo Environmental Association

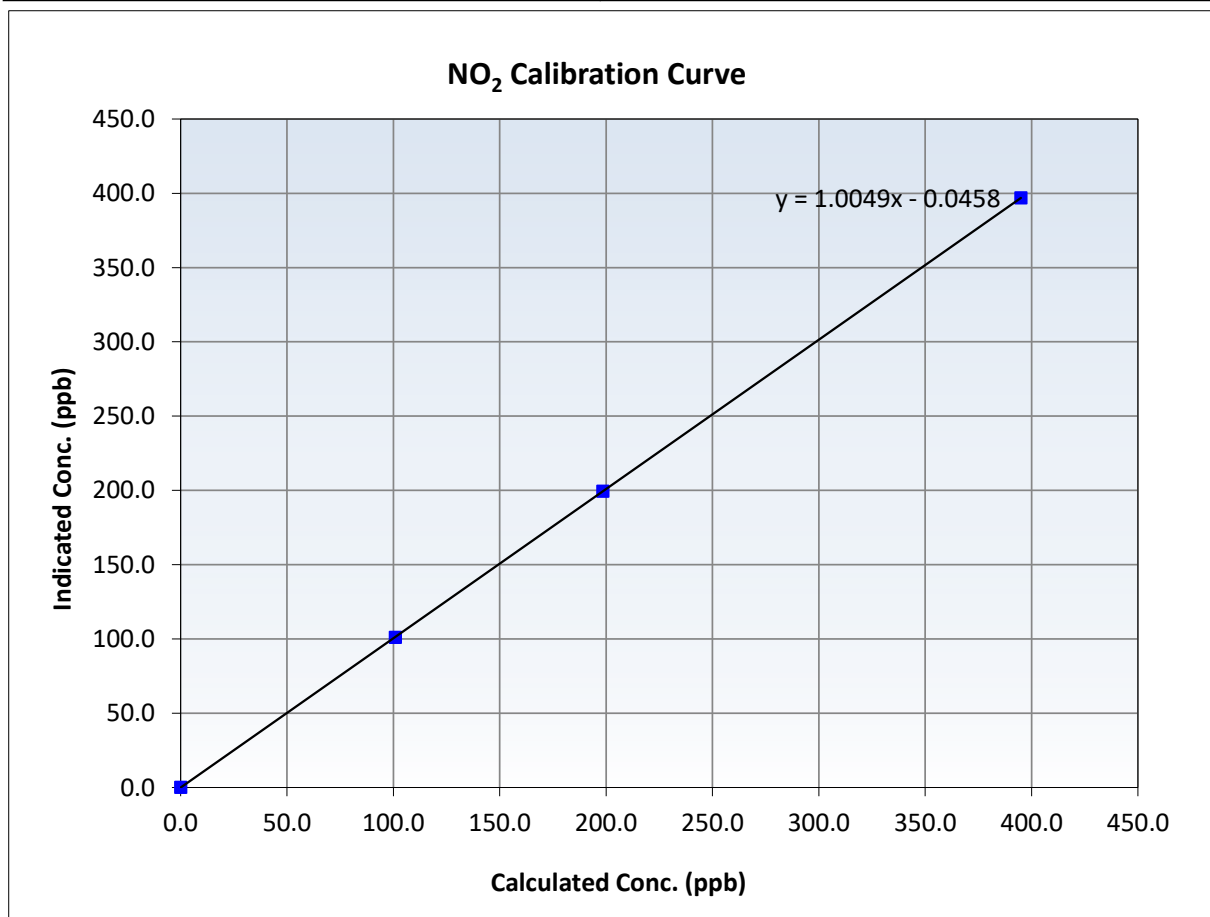
NO₂ Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:39	End Time (MST):	16:03
Analyzer make:	API T201	Analyzer serial #:	808

Calibration Data

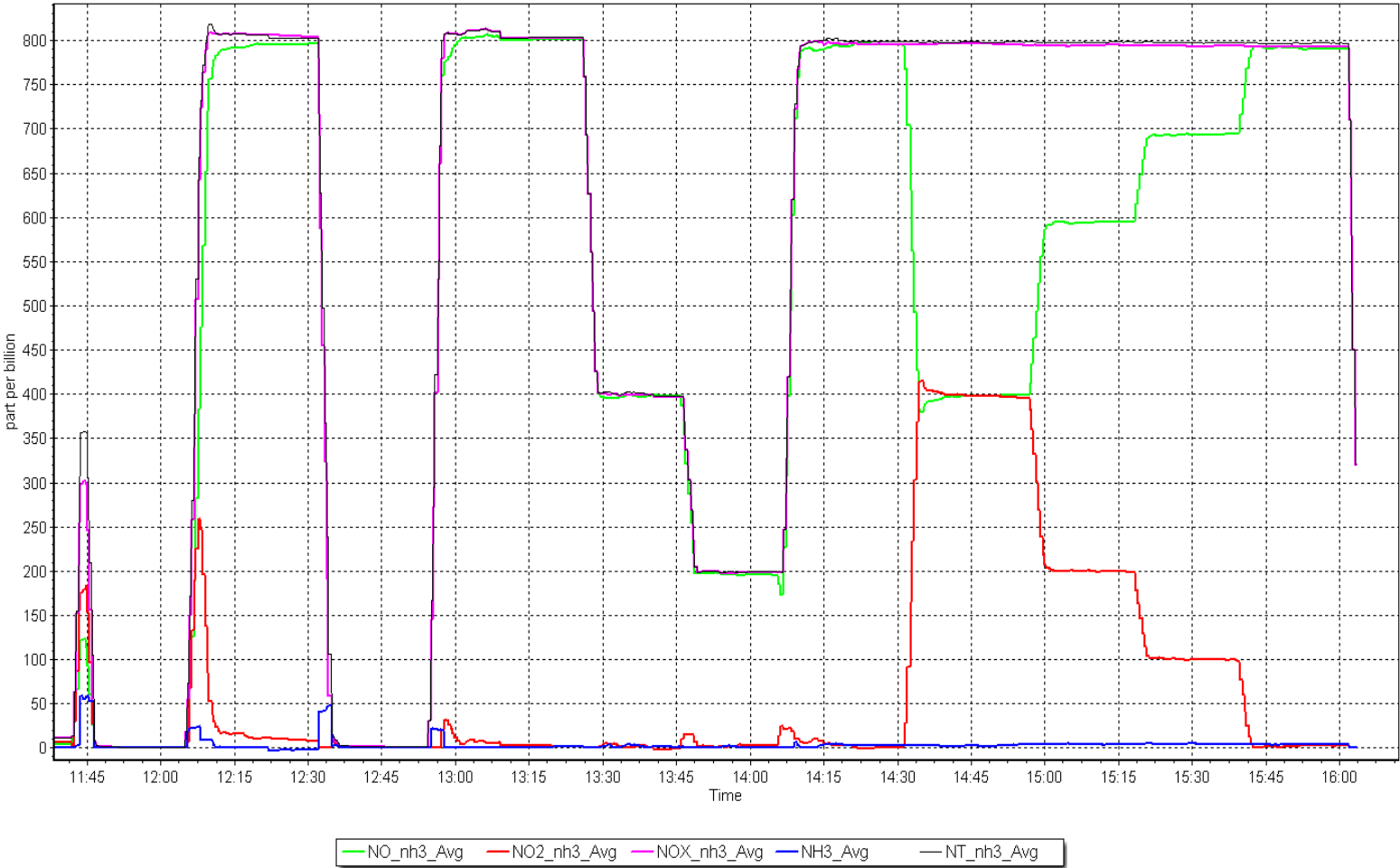
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999999	≥ 0.995
395.0	396.9	0.9952	Slope	1.004855	0.90 - 1.10
198.5	199.5	0.9950	Intercept	-0.045831	+/-20
100.9	101.1	0.9981			



NO_x Calibration Plot

Date: March 12, 2025

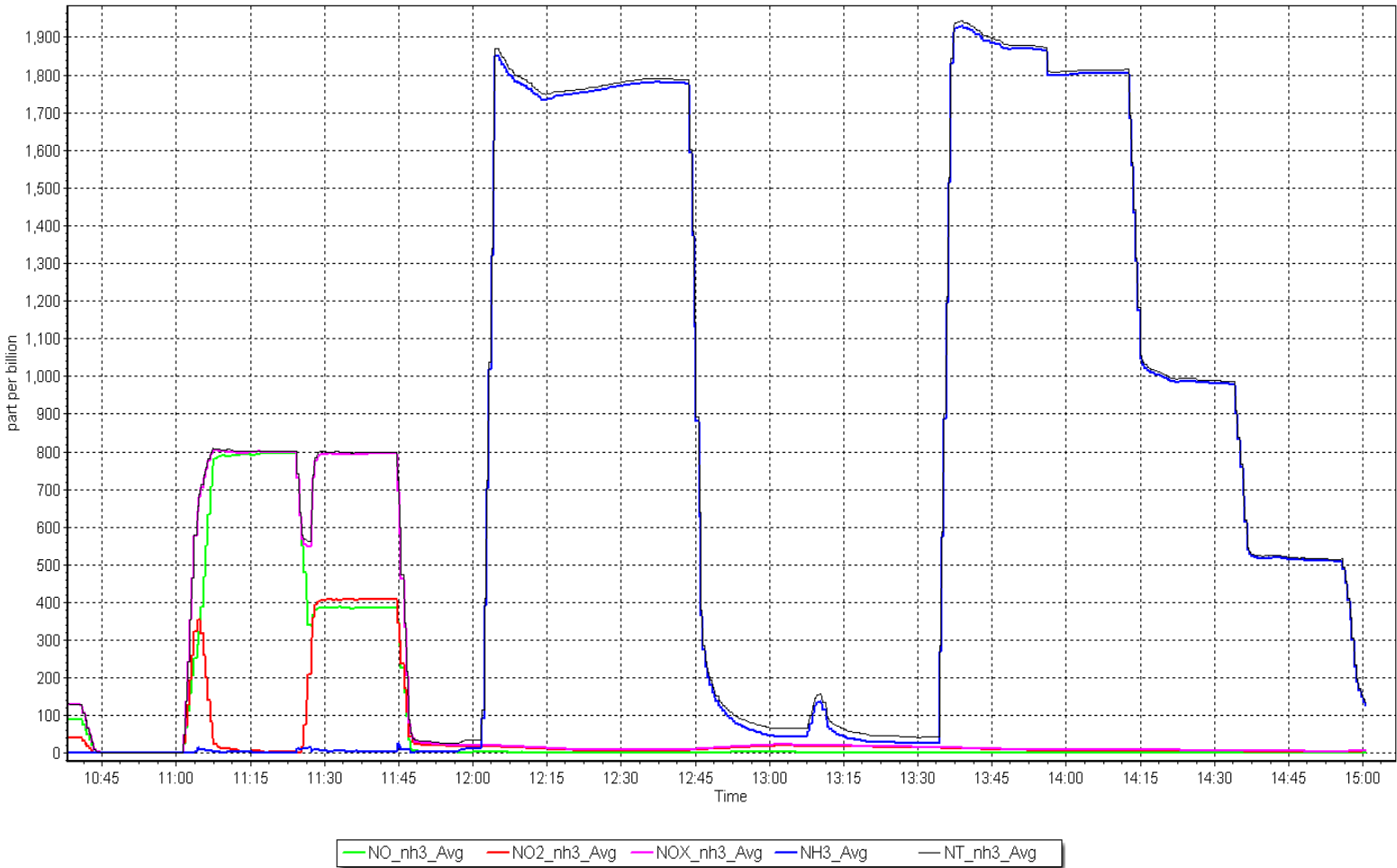
Location: Bertha Ganter-Fort McKay



NH₃ Calibration Plot

Date: March 13, 2025

Location: Bertha Ganter-Fort McKay





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS02 MILDRED LAKE MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Mildred Lake Station number: AMS 02
Calibration Date: March 3, 2025 Last Cal Date: February 4, 2025
Start time (MST): 11:42 End time (MST): 16:38
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.99 ppm Cal Gas Exp Date: October 9, 2032
Cal Gas Cylinder #: EB0112903
Removed Cal Gas Conc: 50.99 ppm Rem Gas Exp Date:
Removed Gas Cyl #: Diff between cyl:
Calibrator Model: Teledyne API T700 Serial Number: 1185
Zero Air Gen Model: Teledyne API T701 Serial Number: 4891

Analyzer Information

Analyzer make: Thermo 43i Serial Number: JC1404901075
Analyzer Range: 0-1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.990572	1.004323	Backgd or Offset:	19.3	24.4
Calibration intercept:	-0.382210	-1.490497	Coeff or Slope:	0.775	0.791

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	4.0	----
As found High point	4913	78.6	803.0	791.7	1.019
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	787.7	Previous response	795.0	*% change	-0.9%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.3	----
High point	4913	78.4	801.0	803.0	0.997
Mid point	4961	39.2	399.8	401.0	0.997
Low point	4980	19.6	199.9	197.0	1.015
As left zero	5000	0.0	0.0	-0.7	----
As left span	4913	78.4	801.0	801.0	1.000
Average Correction Factor:					1.003

Notes: Changed sample inlet filter after as founds. Adjusted zero and span.

Calibration Performed By: Braiden Boutillier



Wood Buffalo Environmental Association

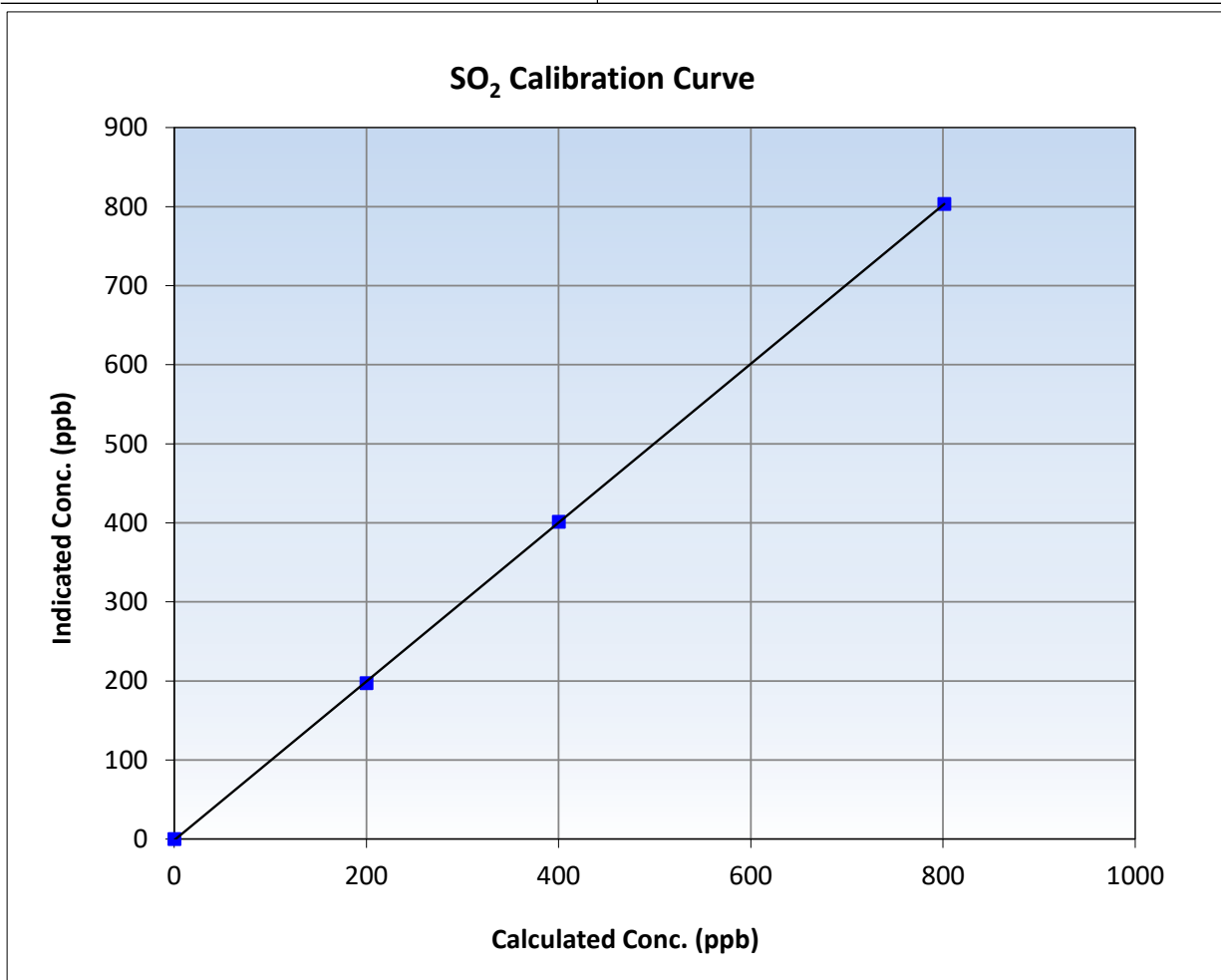
SO₂ Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	11:42	End Time (MST):	16:38
Analyzer make:	Thermo 43i	Analyzer serial #:	JC1404901075

Calibration Data

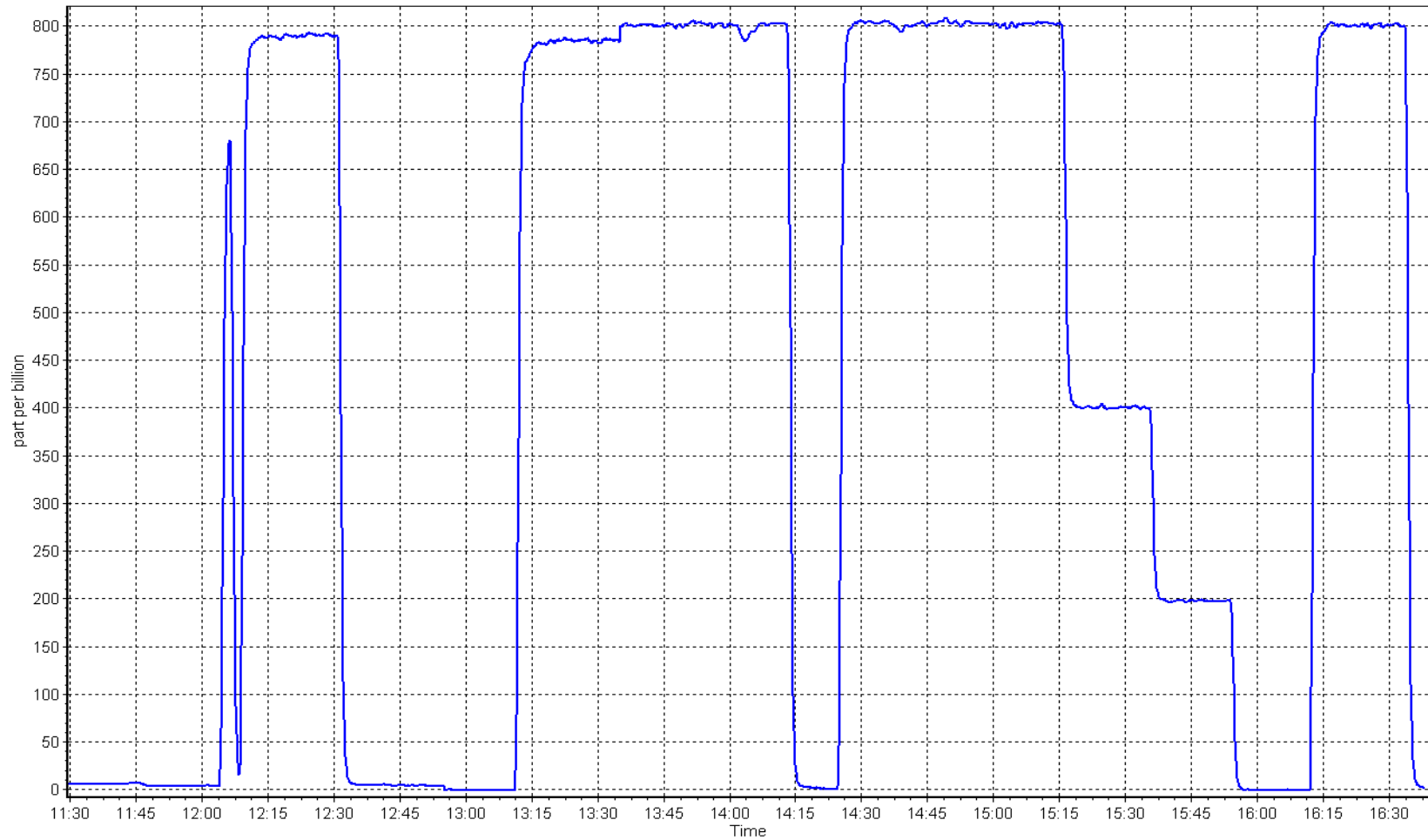
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.3	----	Correlation Coefficient	0.999979	≥0.995
801.0	803.0	0.9975	Slope	1.004323	0.90 - 1.10
399.8	401.0	0.9969	Intercept	-1.490497	+/-30
199.9	197.0	1.0146			



SO2 Calibration Plot

Date: March 3, 2025

Location: Mildred Lake





Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name: Mildred Lake
Calibration Date: March 28, 2025
Start time (MST): 9:18
Reason: Routine

Station number: AMS 02
Last Cal Date: February 27, 2025
End time (MST): 14:00

Calibration Standards

Cal Gas Concentration: 4.75 ppm
Cal Gas Cylinder #: CC700774
Removed Cal Gas Conc: 4.75 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne API T701

Cal Gas Exp Date: August 28, 2027
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 1185
Serial Number: 4891

Analyzer Information

Analyzer make: Thermo 43iQTL
Converter make: Global G150
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 12333331546
Converter serial #: 2023-267
Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.003268	0.999268	Backgd or Offset:	1.48	1.41
Calibration intercept:	-0.060000	0.180000	Coeff or Slope:	1.017	0.972

H2S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.0	----
As found High point	4916	84.2	80.0	83.2	0.961
As found Mid point	4958	42.1	40.0	41.7	0.959
As found Low point	4979	21.1	20.0	21.0	0.952
New cylinder response					
Baseline Corr As found:	83.2	Prev response:	80.19	*% change:	3.6%
Baseline Corr 2nd AF pt:	41.7	AF Slope:	1.039416	AF Intercept:	0.100000
Baseline Corr 3rd AF pt:	21.0	AF Correlation:	0.999993	* = > +/-5% change initiates investigation	

H2S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.3	----
High point	4916	84.2	80.0	80.2	0.997
Mid point	4958	42.1	40.0	40.0	1.000
Low point	4979	21.1	20.0	20.1	0.995
As left zero	5000	0.0	0.0	0.2	----
As left span	4916	84.2	80.0	79.7	1.004
SO2 Scrubber Check	4920	80.2	802.0	-0.2	----
Date of last scrubber change:		July 16, 2024		Ave Corr Factor	0.997
Date of last converter efficiency test:		NA			

Notes: Changed sample inlet filter after as founds. Adjusted span.

Calibration Performed By: Braiden Boutilier



Wood Buffalo Environmental Association

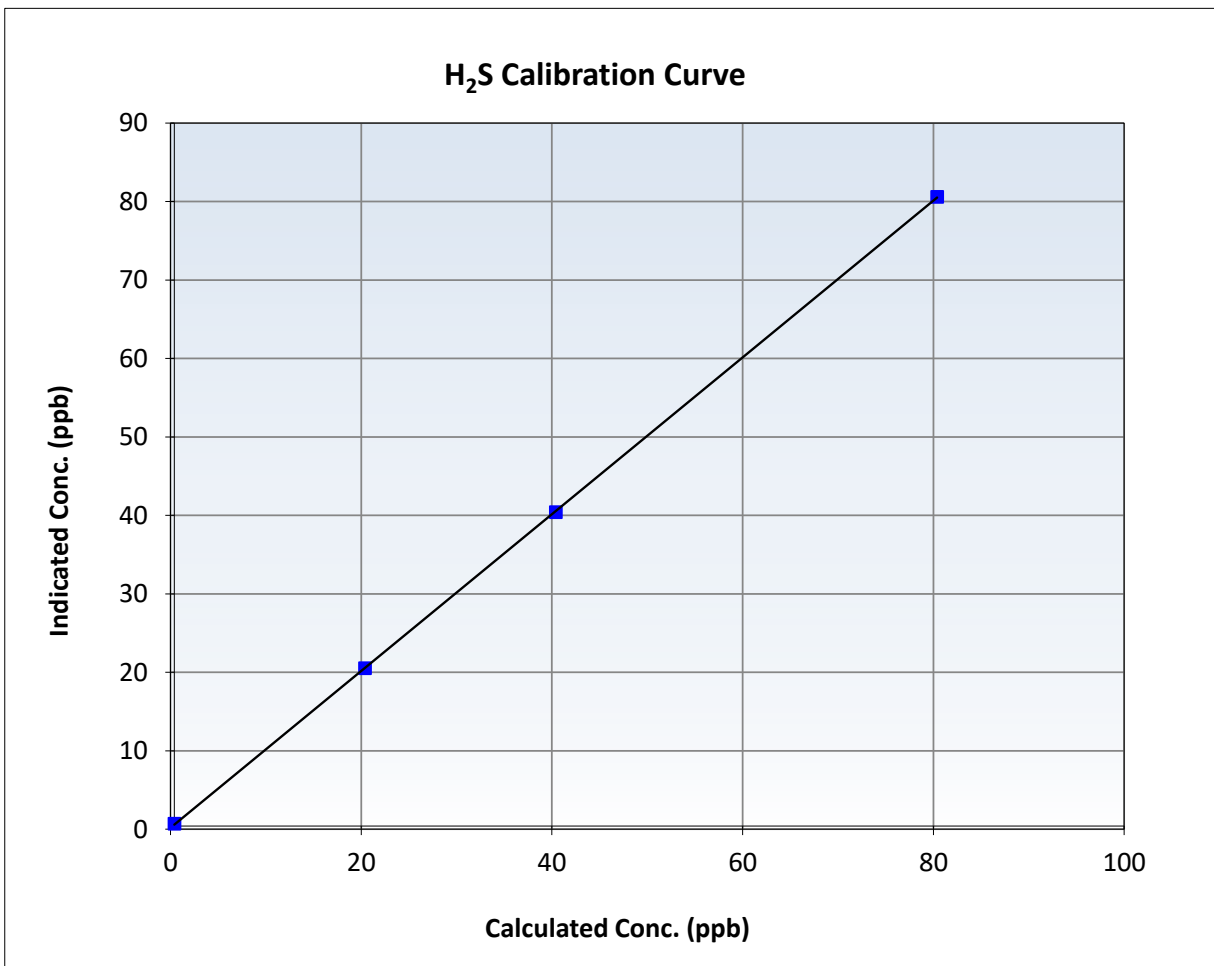
H₂S Calibration Summary

Station Information

Calibration Date:	March 28, 2025	Previous Calibration:	February 27, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	9:18	End Time (MST):	14:00
Analyzer make:	Thermo 43iQTL	Analyzer serial #:	12333331546

Calibration Data

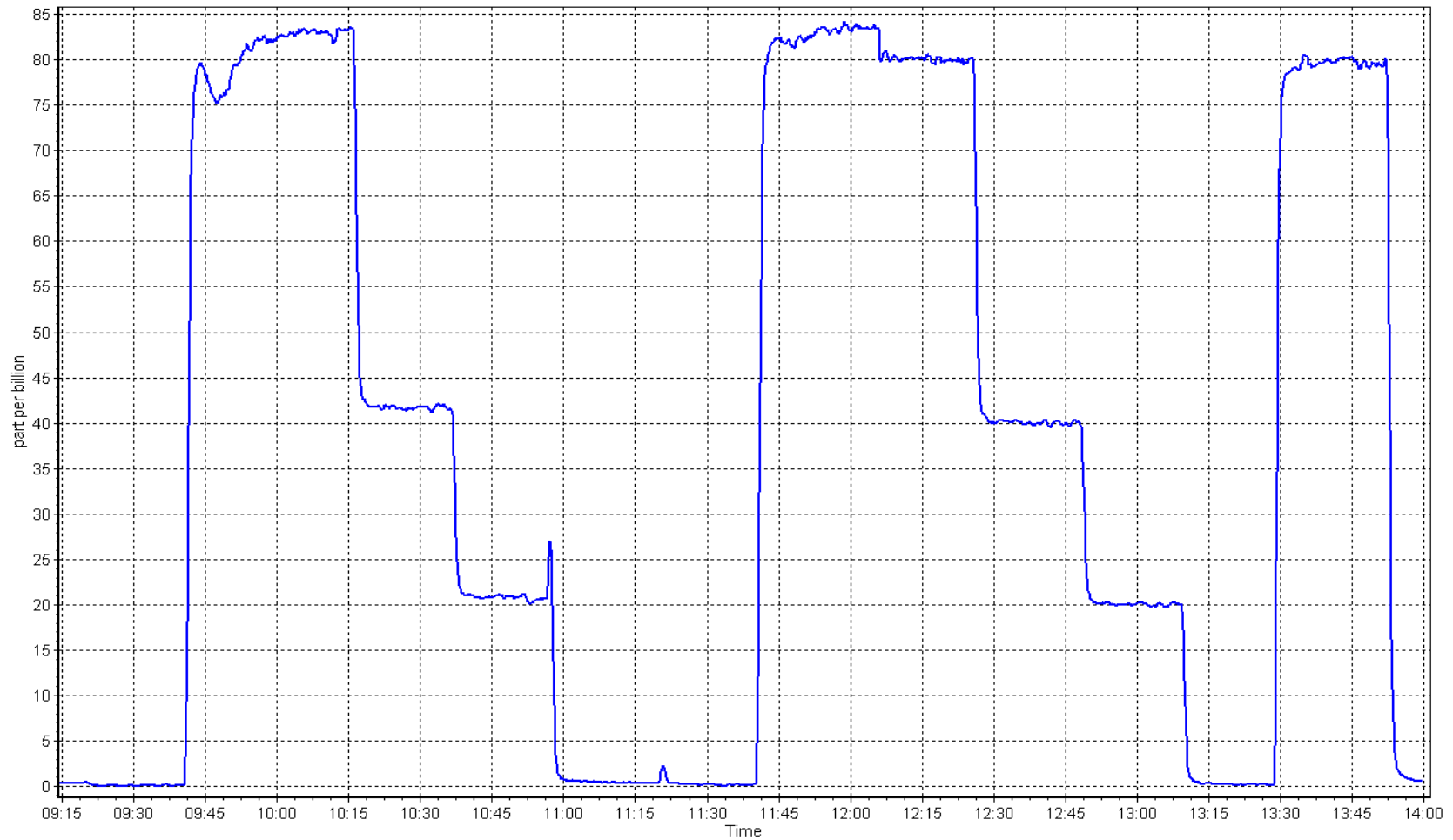
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999986		≥0.995
80.0	80.2	0.9974	Slope	0.999268		0.90 - 1.10
40.0	40.0	0.9999	Intercept	0.180000		+/-3
20.0	20.1	0.9949				



H2S Calibration Plot

Date: March 28, 2025

Location: Mildred Lake





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Mildred Lake
 Calibration Date: March 3, 2025
 Start time (MST): 11:42
 Reason: Routine

Station number: AMS 02
 Last Cal Date: February 4, 2025
 End time (MST): 16:38

Calibration Standards

Gas Cert Reference:	EB0112903	Cal Gas Expiry Date:	October 9, 2032
CH ₄ Cal Gas Conc.	503.1 ppm	CH ₄ Equiv Conc.	1067.1 ppm
C ₃ H ₈ Cal Gas Conc.	205.1 ppm		
Removed Gas Cert:		Removed Gas Expiry:	
Removed CH ₄ Conc.	503.1 ppm	CH ₄ Equiv Conc.	1067.1 ppm
Removed C ₃ H ₈ Conc.	205.1 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	Teledyne API T700	Serial Number:	1185
Zero Air Gen model:	Teledyne API T701	Serial Number:	4891

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 12227620776
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	3.10E-04	3.06E-04	NMHC SP Ratio:	5.34E-05
CH ₄ Retention time:	14.6	14.8	NMHC Peak Area:	168955
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF
				156011

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	16.76	16.39	1.023
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.39	Prev response	16.80	*% change	-2.5%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	
High point	4913	78.4	16.76	16.84	0.995
Mid point	4961	39.2	8.37	8.49	0.985
Low point	4980	19.6	4.18	4.26	0.982
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	16.76	17.23	0.973
Average Correction Factor					0.988

Notes:

Changed sample inlet filter after as founds. Changed hydrogen cylinder but swapped back due to potential contamination. Will attempt to replace the cylinder March 4.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4913	78.4	8.86	8.50	1.042
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.50	Prev response	8.90	*% change	-4.7%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	Limit = 0.95-1.05
High point	4913	78.4	8.86	8.91	0.994
Mid point	4961	39.2	4.42	4.53	0.976
Low point	4980	19.6	2.21	2.28	0.969
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	8.86	9.24	0.959
Average Correction Factor					0.980

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4913	78.4	7.90	7.90	1.001
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.90	Prev response	7.90	*% change	-0.1%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	Limit = 0.95-1.05
High point	4913	78.4	7.90	7.93	0.996
Mid point	4961	39.2	3.94	3.96	0.996
Low point	4980	19.6	1.97	1.98	0.996
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	7.90	7.99	0.989
Average Correction Factor					0.996

Calibration Statistics

	Start	Finish
THC Cal Slope:	1.001658	1.003988
THC Cal Offset:	0.010524	0.040502
CH ₄ Cal Slope:	1.000400	1.003566
CH ₄ Cal Offset:	-0.001811	0.000856
NMHC Cal Slope:	1.002780	1.004494
NMHC Cal Offset:	0.012334	0.039646

Calibration Performed By: Braiden Boutillier



Wood Buffalo Environmental Association

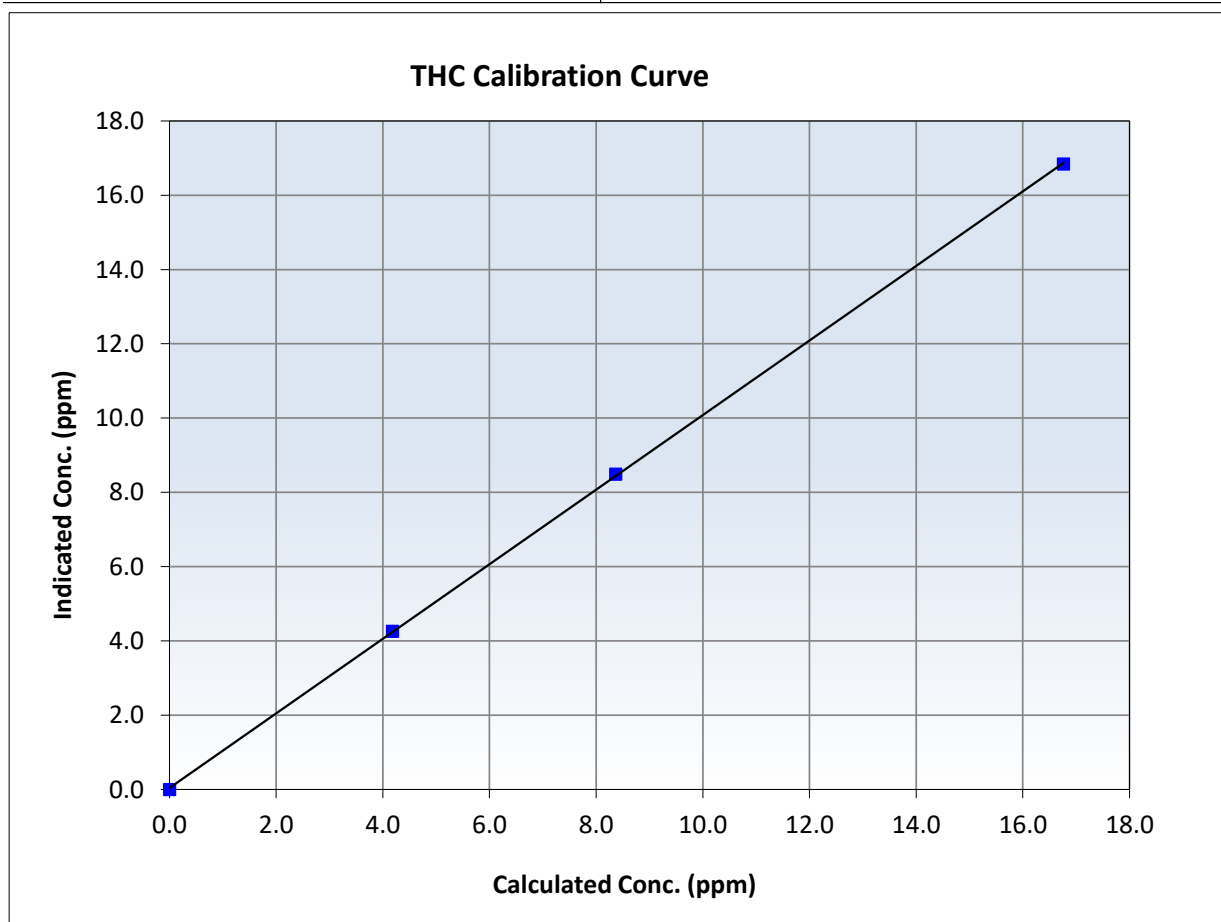
THC Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	11:42	End Time (MST):	16:38
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620776

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999965	≥ 0.995
16.76	16.84	0.9954	Slope	1.003988	0.90 - 1.10
8.37	8.49	0.9854	Intercept	0.040502	± 0.5
4.18	4.26	0.9817			





Wood Buffalo Environmental Association

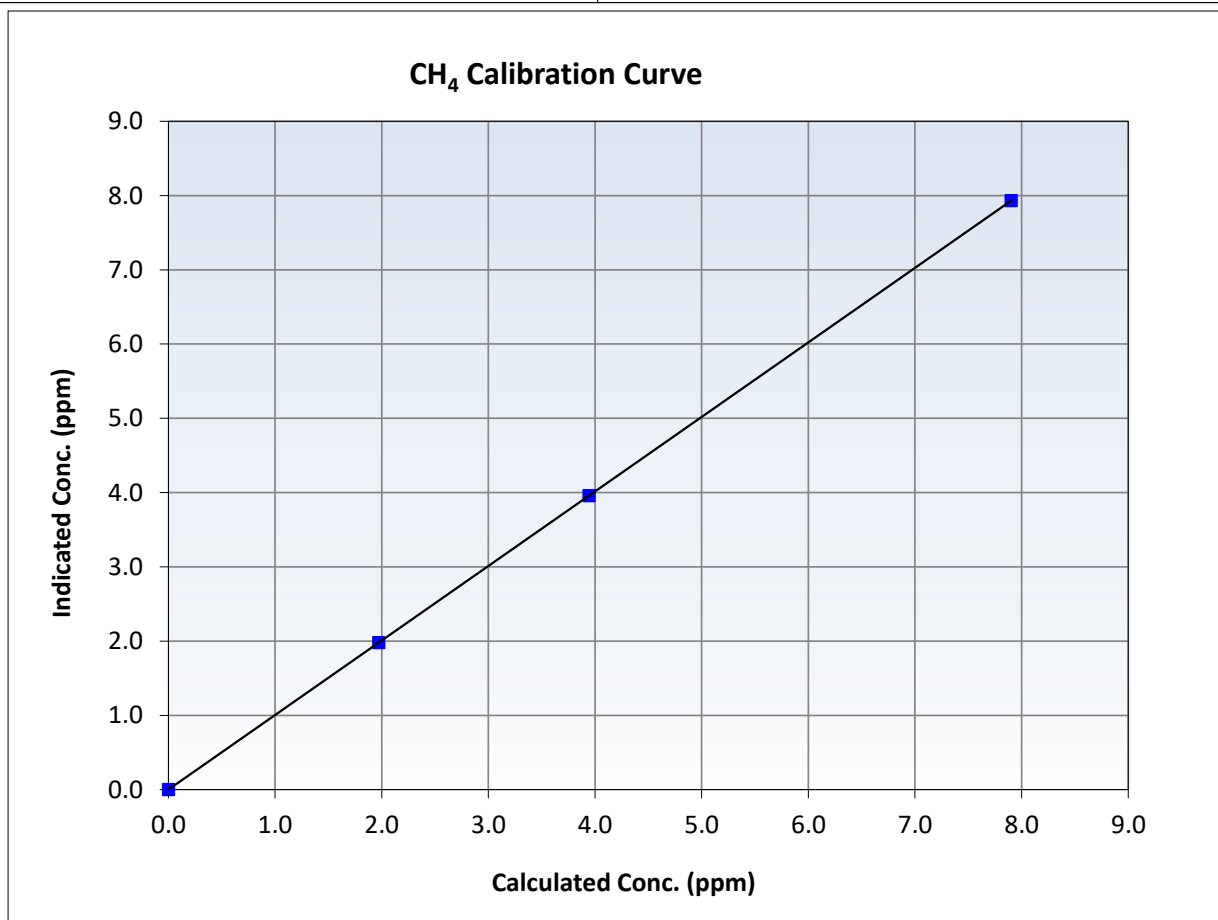
CH₄ Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	11:42	End Time (MST):	16:38
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620776

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	1.000000	<i>≥0.995</i>
7.90	7.93	0.9964	Slope	1.003566	<i>0.90 - 1.10</i>
3.94	3.96	0.9958	Intercept	0.000856	<i>+/-0.5</i>
1.97	1.98	0.9960			





Wood Buffalo Environmental Association

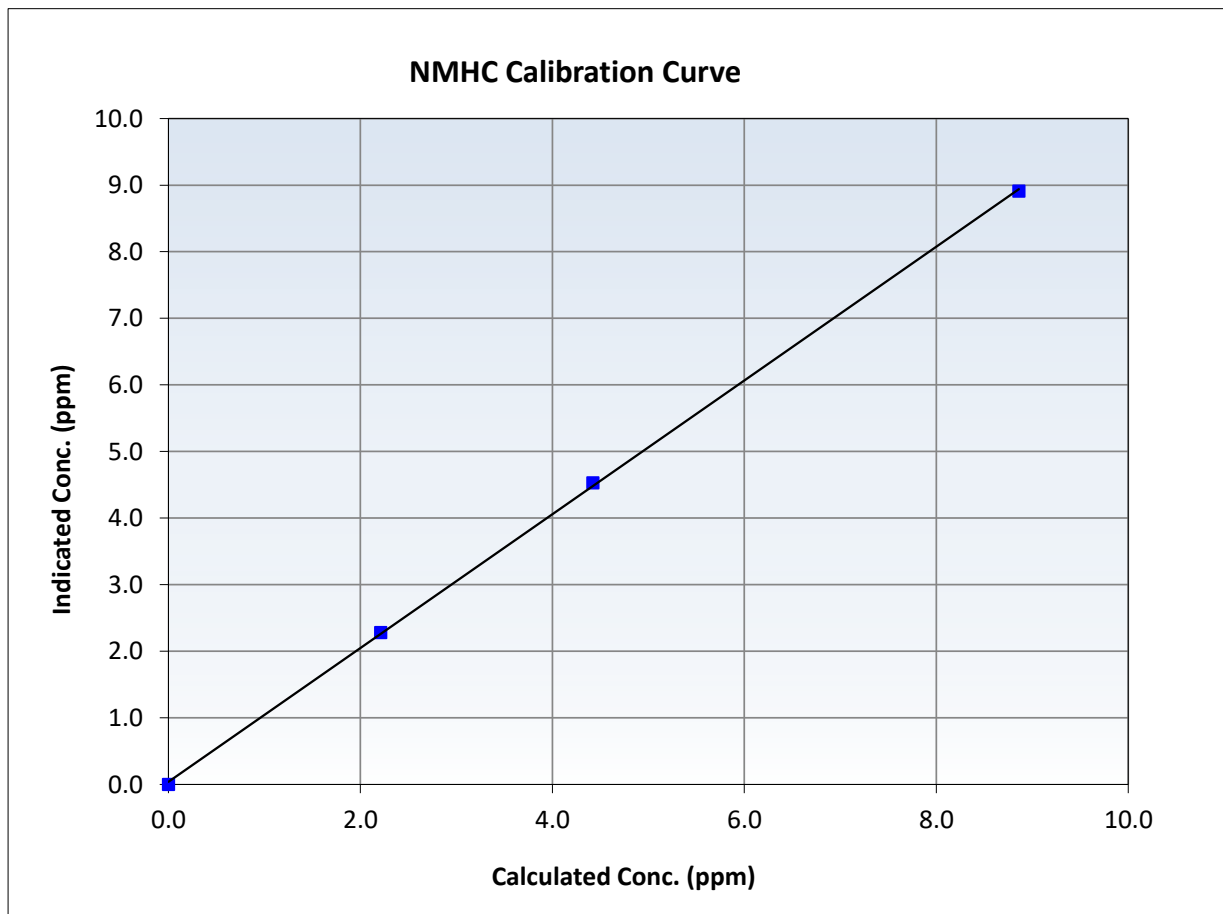
NMHC Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	11:42	End Time (MST):	16:38
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620776

Calibration Data

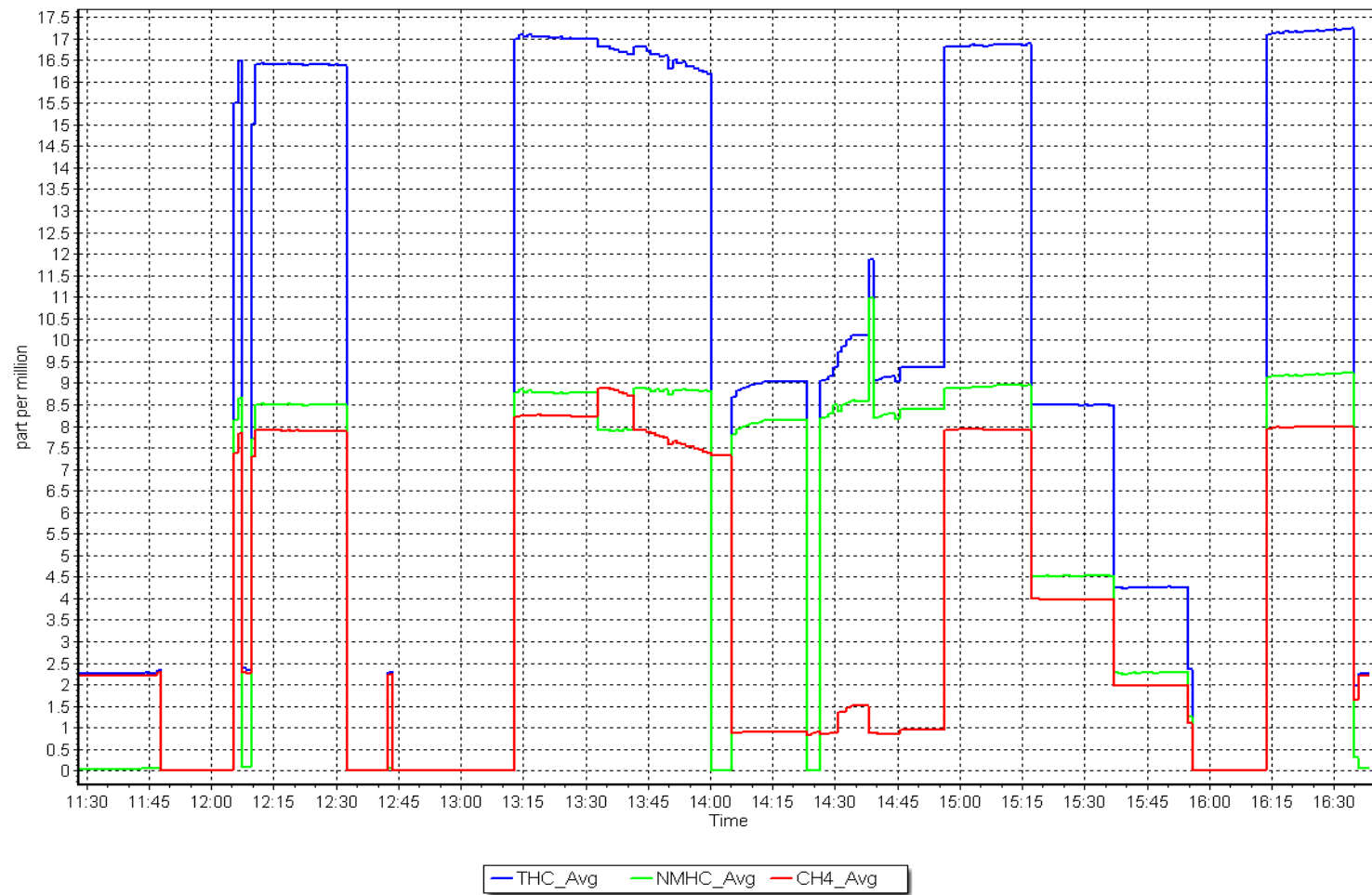
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999880	<i>≥0.995</i>
8.86	8.91	0.9944	Slope	1.004494	<i>0.90 - 1.10</i>
4.42	4.53	0.9761	Intercept	0.039646	<i>+/-0.5</i>
2.21	2.28	0.9693			



NMHC Calibration Plot

Date: March 3, 2025

Location: Mildred Lake





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name:	Mildred Lake	Station number:	AMS 02
Calibration Date:	March 6, 2025	Last Cal Date:	March 3, 2025
Start time (MST):	10:38	End time (MST):	14:38
Reason:	Cylinder Change		

Calibration Standards

Gas Cert Reference:	EB0112903	Cal Gas Expiry Date:	October 9, 2032
CH4 Cal Gas Conc.	503.1 ppm	CH4 Equiv Conc.	1067.1 ppm
C3H8 Cal Gas Conc.	205.1 ppm		
Removed Gas Cert:		Removed Gas Expiry:	
Removed CH4 Conc.	503.1 ppm	CH4 Equiv Conc.	1067.1 ppm
Removed C3H8 Conc.	205.1 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	Teledyne API T700	Serial Number:	1185
Zero Air Gen model:	Teledyne API T701	Serial Number:	4891

Analyzer Information

Analyzer make:	Thermo 55i	Analyzer serial #:	12227620776
THC Range:	0 - 20 ppm	NMHC/CH ₄ Range:	0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH4 SP Ratio:	3.06E-04	3.14E-04	NMHC SP Ratio:	5.69E-05
CH4 Retention time:	14.8	14.8	NMHC Peak Area:	156011
Zero Chromatogram:	OFF	ON	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	16.76	17.35	0.966
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	17.35	Prev response	16.87	*% change	2.8%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	
High point	4913	78.4	16.76	16.83	0.996
Mid point	4961	39.2	8.37	8.37	1.000
Low point	4980	19.6	4.18	4.13	1.012
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	16.76	16.74	1.001
Average Correction Factor					1.003

Notes: Changed hydrogen cylinder. Adjusted span. Turned on use zero chromatogram setting.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	8.86	9.31	0.952
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.31	Prev response	8.94	*% change	4.0%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4913	78.4	8.86	8.89	0.997
Mid point	4961	39.2	4.42	4.45	0.994
Low point	4980	19.6	2.21	2.21	0.999
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	8.86	8.85	1.001
Average Correction Factor					0.997

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	7.90	8.04	0.983
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.04	Prev response	7.93	*% change	1.3%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4913	78.4	7.90	7.94	0.995
Mid point	4961	39.2	3.94	3.93	1.005
Low point	4980	19.6	1.97	1.92	1.028
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	7.90	7.89	1.001
Average Correction Factor					1.009

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
THC Cal Slope:	1.003988	1.005204
THC Cal Offset:	0.040502	-0.033153
CH ₄ Cal Slope:	1.003566	1.007405
CH ₄ Cal Offset:	0.000856	-0.033157
NMHC Cal Slope:	1.004494	1.003755
NMHC Cal Offset:	0.039646	0.000006

Calibration Performed By: Braiden Boutilier



Wood Buffalo Environmental Association

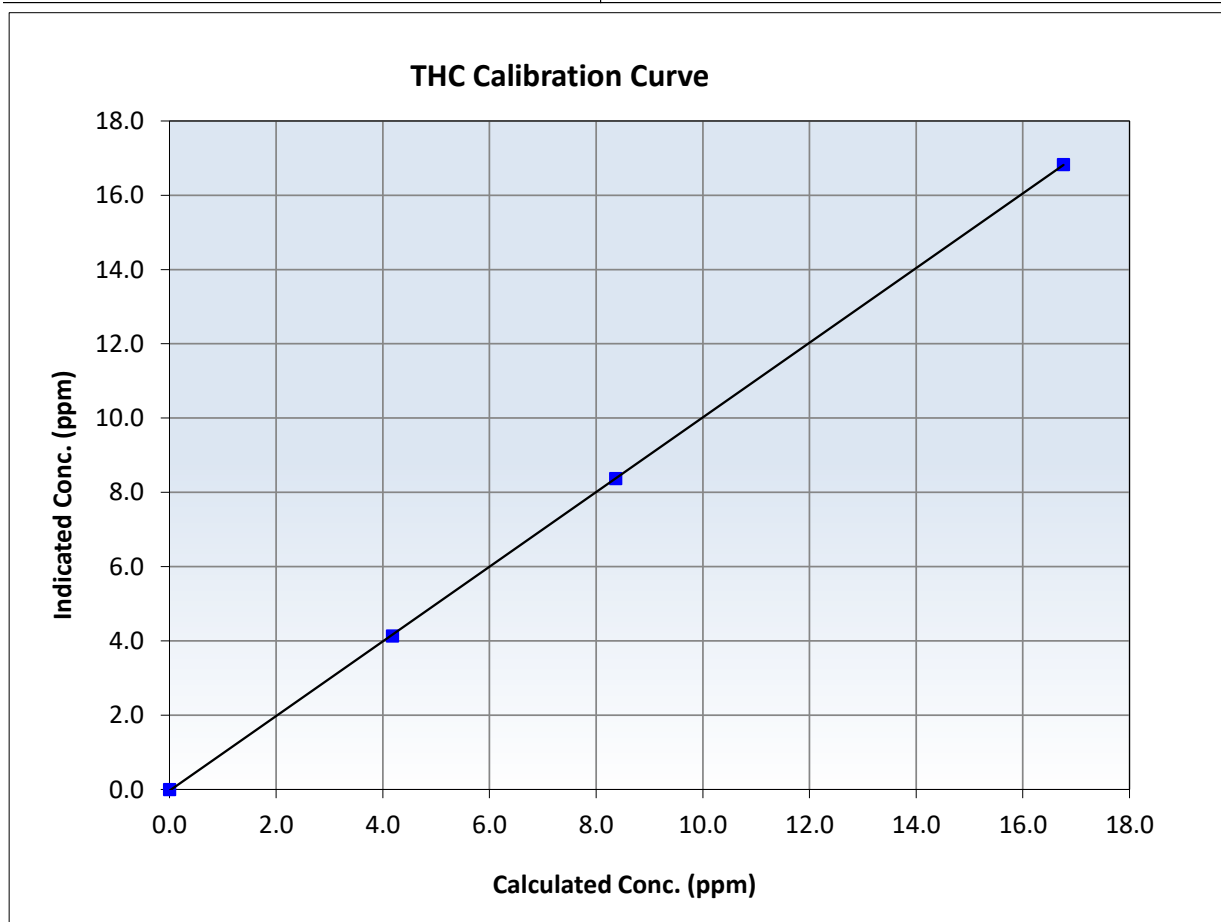
THC Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	March 3, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	10:38	End Time (MST):	14:38
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620776

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999981	≥ 0.995
16.76	16.83	0.9960	Slope	1.005204	$0.90 - 1.10$
8.37	8.37	0.9996	Intercept	-0.033153	± 0.5
4.18	4.13	1.0124			





Wood Buffalo Environmental Association

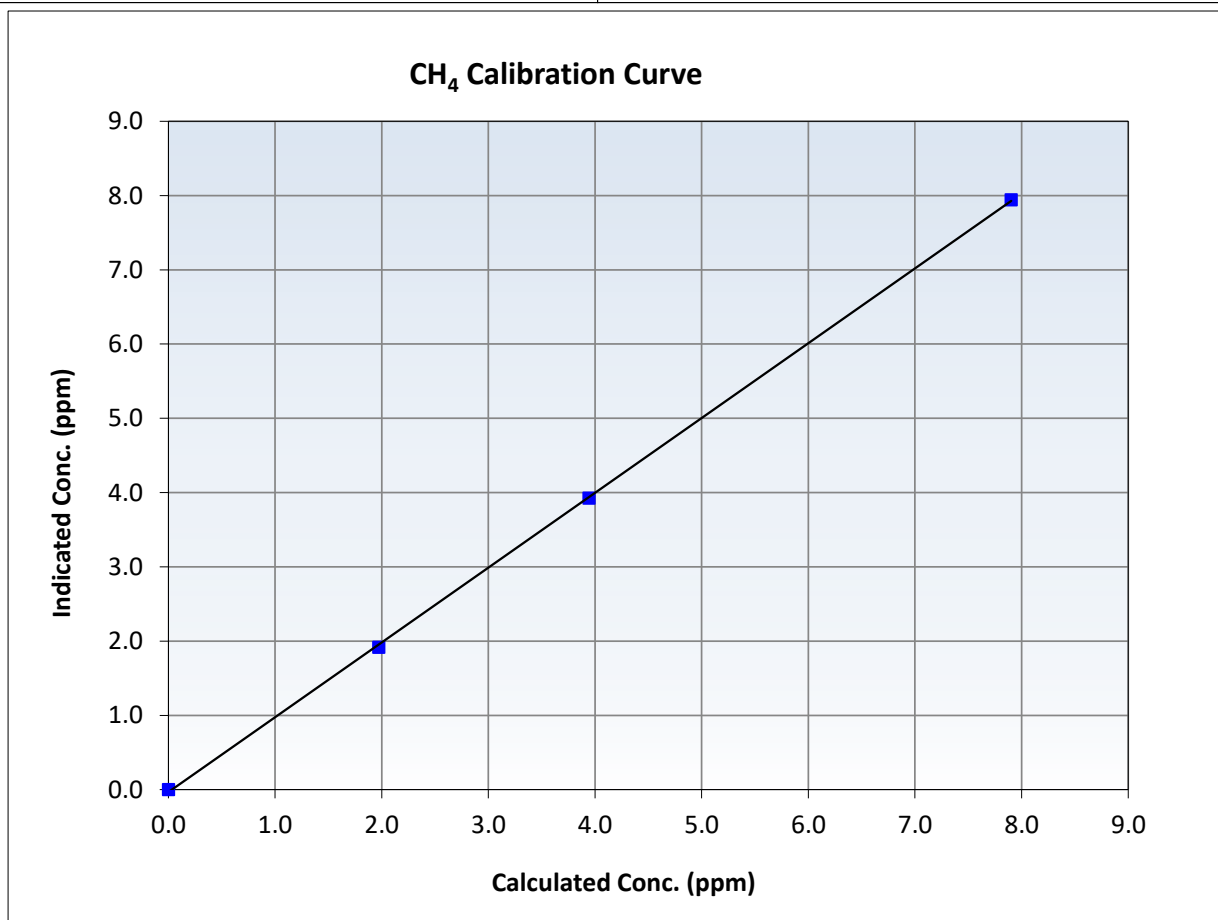
CH₄ Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	March 3, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	10:38	End Time (MST):	14:38
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620776

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999921	<i>≥0.995</i>
7.90	7.94	0.9948	Slope	1.007405	<i>0.90 - 1.10</i>
3.94	3.93	1.0047	Intercept	-0.033157	<i>+/-0.5</i>
1.97	1.92	1.0277			





Wood Buffalo Environmental Association

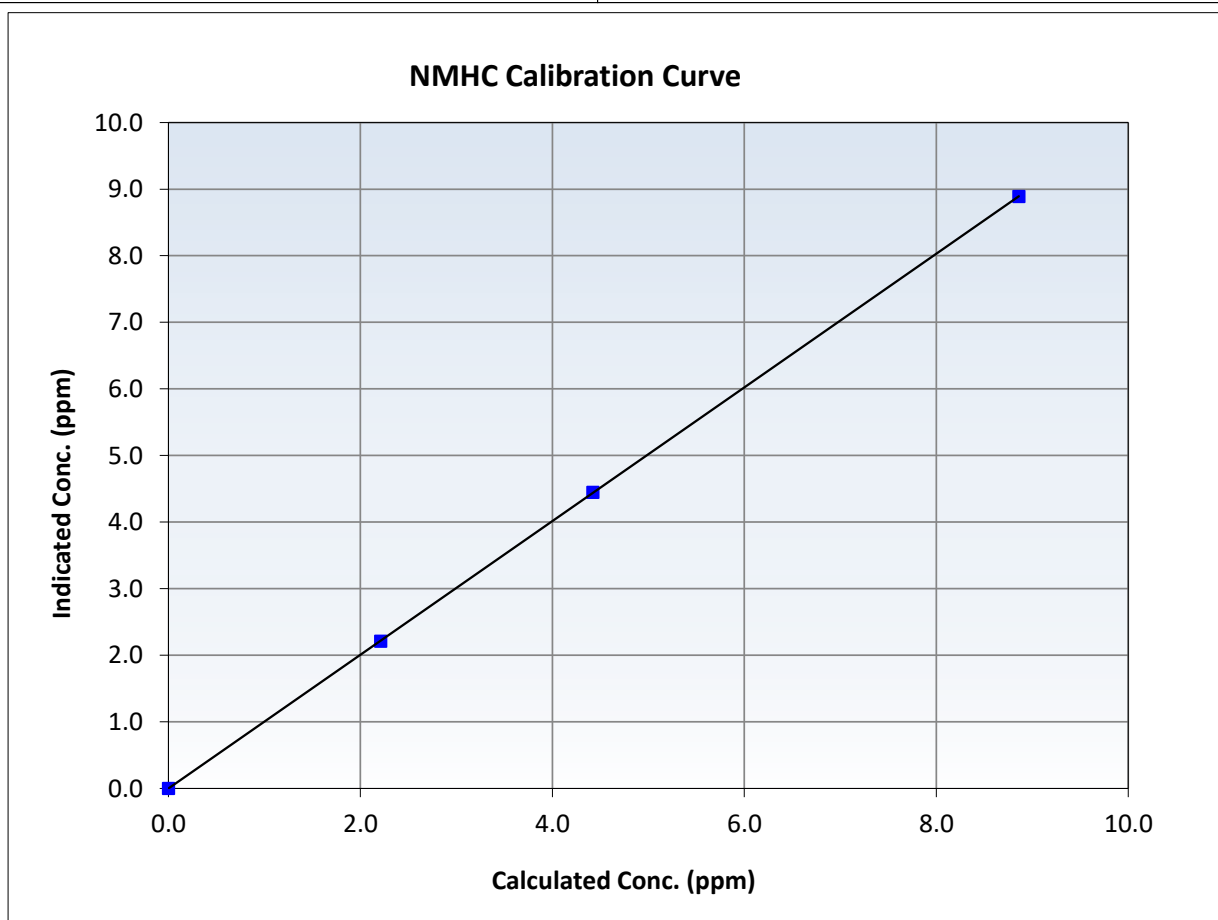
NMHC Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	March 3, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	10:38	End Time (MST):	14:38
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620776

Calibration Data

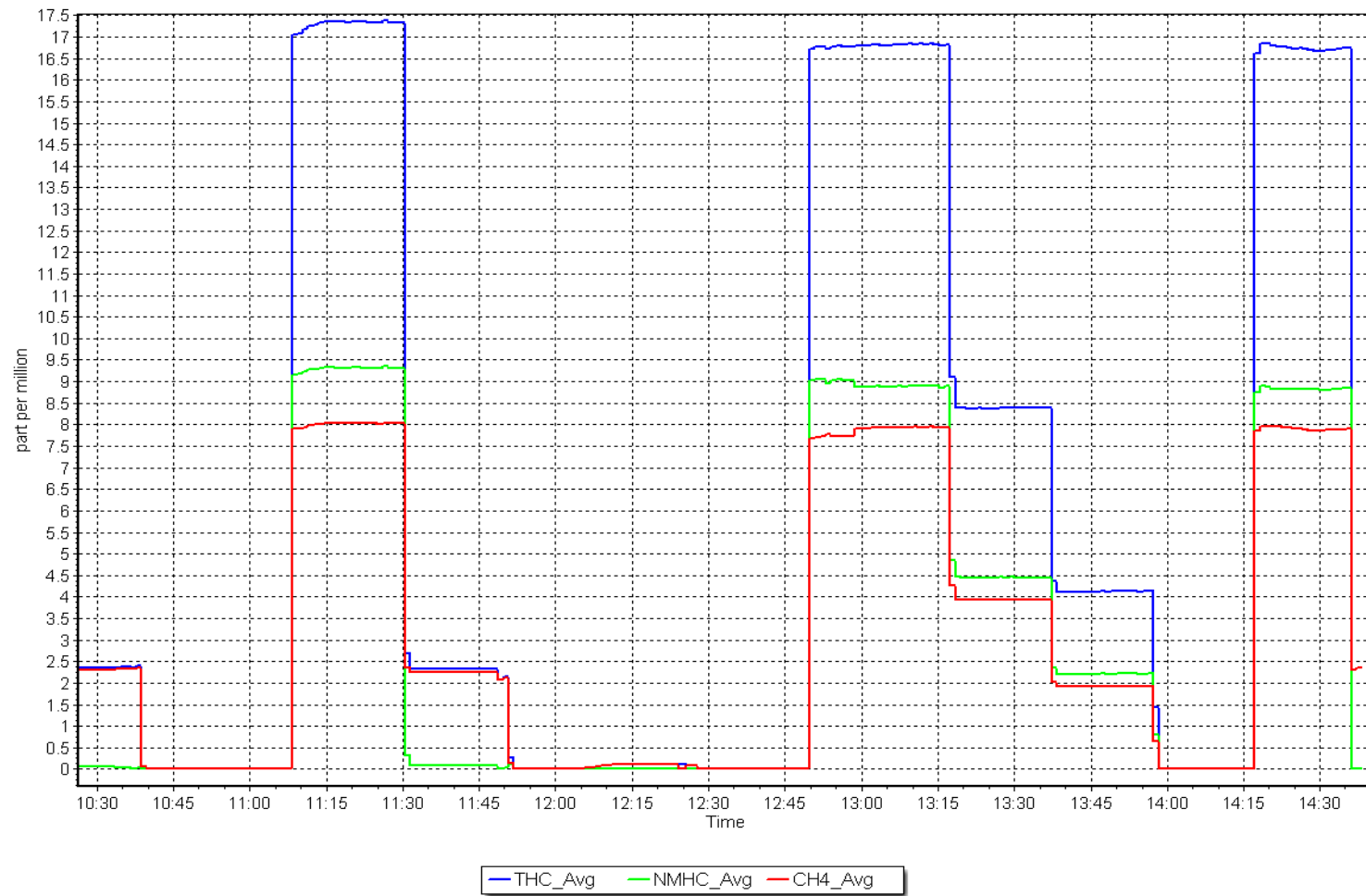
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999997	≥ 0.995
8.86	8.89	0.9966	Slope	1.003755	$0.90 - 1.10$
4.42	4.45	0.9941	Intercept	0.000006	± 0.5
2.21	2.21	0.9991			



NMHC Calibration Plot

Date: March 6, 2025

Location: Mildred Lake





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS04 BUFFALO VIEWPOINT MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Buffalo Viewpoint Station number: AMS 04
Calibration Date: March 19, 2025 Last Cal Date: February 24, 2025
Start time (MST): 9:02 End time (MST): 11:41
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.87 ppm Cal Gas Exp Date: March 10, 2031
Cal Gas Cylinder #: CC446753
Removed Cal Gas Conc: 50.87 ppm Rem Gas Exp Date:
Removed Gas Cyl #: Diff between cyl:
Calibrator Model: API T700 Serial Number: 3808
Zero Air Gen Model: API T701 Serial Number: 362

Analyzer Information

Analyzer make: Thermo 43i Serial Number: JC1327300932
Analyzer Range: 0-1000ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.002101	1.008431	Backgd or Offset:	28.0	28.0
Calibration intercept:	-0.605004	-0.643895	Coeff or Slope:	0.892	0.892

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4921	78.6	799.7	803.8	0.995
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	804.0	Previous response	800.8	*% change	0.4%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4921	78.6	799.7	806.1	0.992
Mid point	4961	39.3	399.8	402.4	0.994
Low point	4980	19.6	199.4	199.7	0.999
As left zero	5000	0.0	0.0	-0.1	----
As left span	4921	78.6	799.7	806.5	0.992
Average Correction Factor:					0.995

Notes: No Maintenance or adjustments done.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

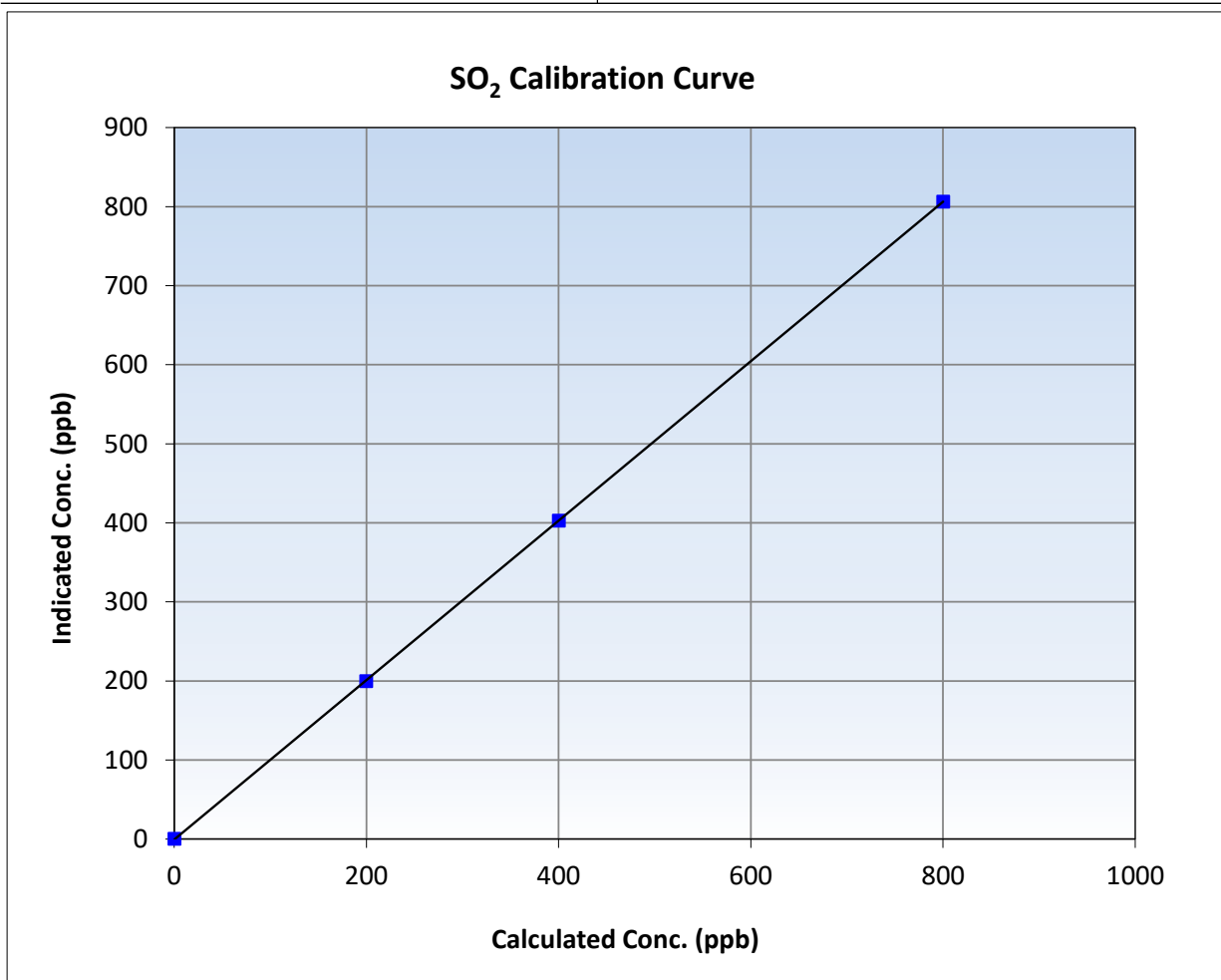
SO₂ Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 24, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	9:02	End Time (MST):	11:41
Analyzer make:	Thermo 43i	Analyzer serial #:	JC1327300932

Calibration Data

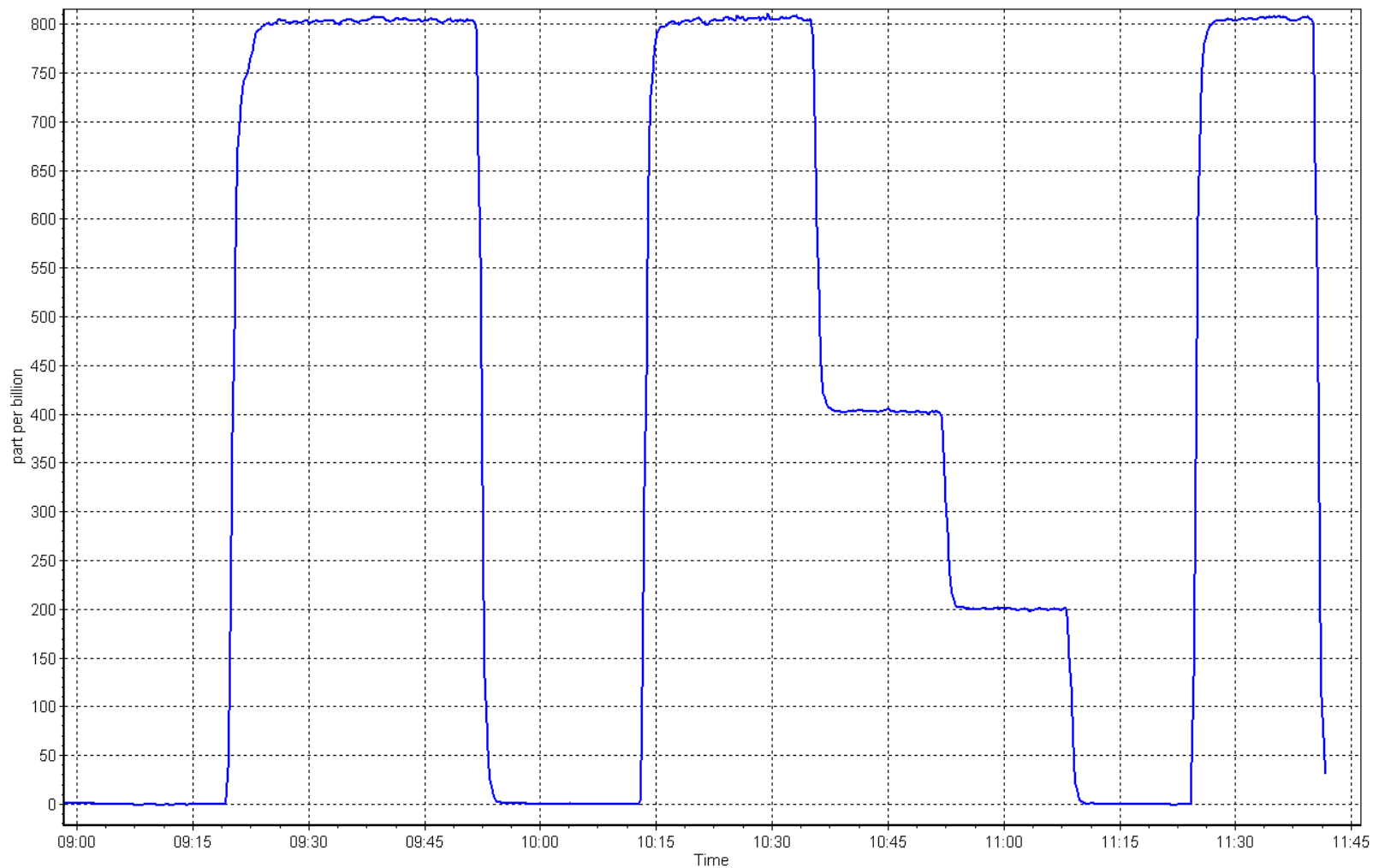
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999997	≥0.995
799.7	806.1	0.9921	Slope	1.008431	0.90 - 1.10
399.8	402.4	0.9936	Intercept	-0.643895	+/-30
199.4	199.7	0.9986			



SO2 Calibration Plot

Date: March 19, 2025

Location: Buffalo Viewpoint





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: Buffalo Viewpoint Station number: AMS 04
Calibration Date: March 18, 2025 Last Cal Date: February 27, 2025
Start time (MST): 7:30 End time (MST): 11:23
Reason: Routine

Calibration Standards

Cal Gas Concentration: 4.80 ppm Cal Gas Exp Date: August 28, 2027
Cal Gas Cylinder #: DT0037528
Removed Cal Gas Conc: 4.80 ppm Rem Gas Exp Date:
Removed Gas Cyl #: Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3808
ZAG Make/Model: Teledyne API T701H Serial Number: 362

Analyzer Information

Analyzer make: Thermo 43i-LTE Analyzer serial #: 1008841400
Converter make: Global Converter serial #: 2022-200
Analyzer Range: 0 - 100 ppb Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.002722	1.007150	Backgd or Offset:	1.97	1.97
Calibration intercept:	0.138138	0.158201	Coeff or Slope:	1.130	1.130

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4917	83.3	80.0	80.5	0.995
As found Mid point	4958	41.7	40.0	40.8	0.984
As found Low point	4979	20.8	20.0	20.3	0.989
New cylinder response					
Baseline Corr As found:	80.4	Prev response:	80.32	*% change:	0.1%
Baseline Corr 2nd AF pt:	40.7	AF Slope:	1.005582	AF Intercept:	0.238066
Baseline Corr 3rd AF pt:	20.2	AF Correlation:	0.999962	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.2	----
High point	4917	83.3	80.0	80.7	0.991
Mid point	4958	41.7	40.0	40.5	0.989
Low point	4979	20.8	20.0	20.2	0.989
As left zero	5000	0.0	0.0	0.3	----
As left span	4917	83.3	80.0	80.6	0.992
SO2 Scrubber Check	4920	80.0	800.0	0.4	----
Date of last scrubber change:	16-May-23		Ave Corr Factor		0.989
Date of last converter efficiency test:					

Notes: Sox scrubber checked after calibrator zero. No adjustments done.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

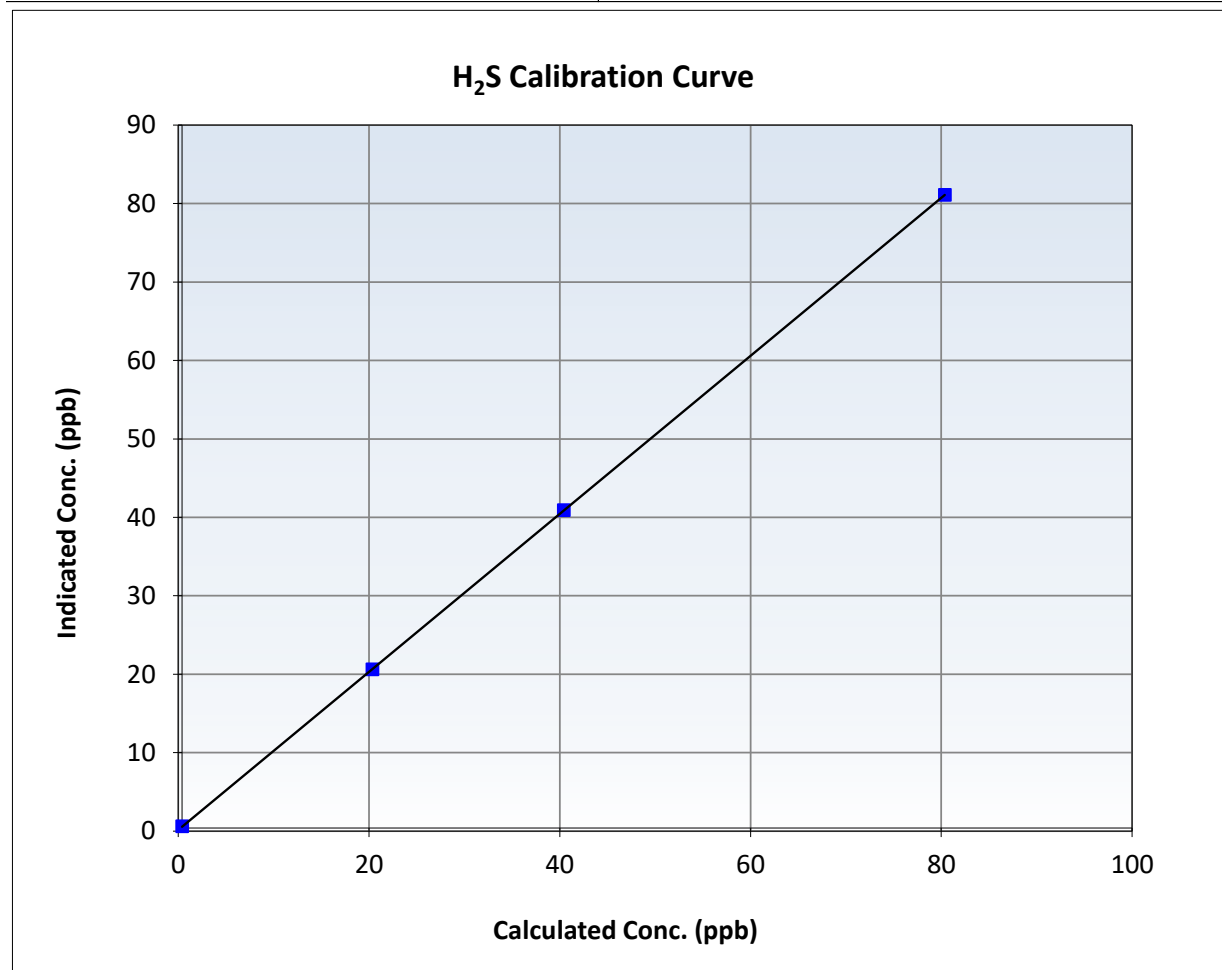
H₂S Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 27, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	7:30	End Time (MST):	11:23
Analyzer make:	Thermo 43i-LTE	Analyzer serial #:	1008841400

Calibration Data

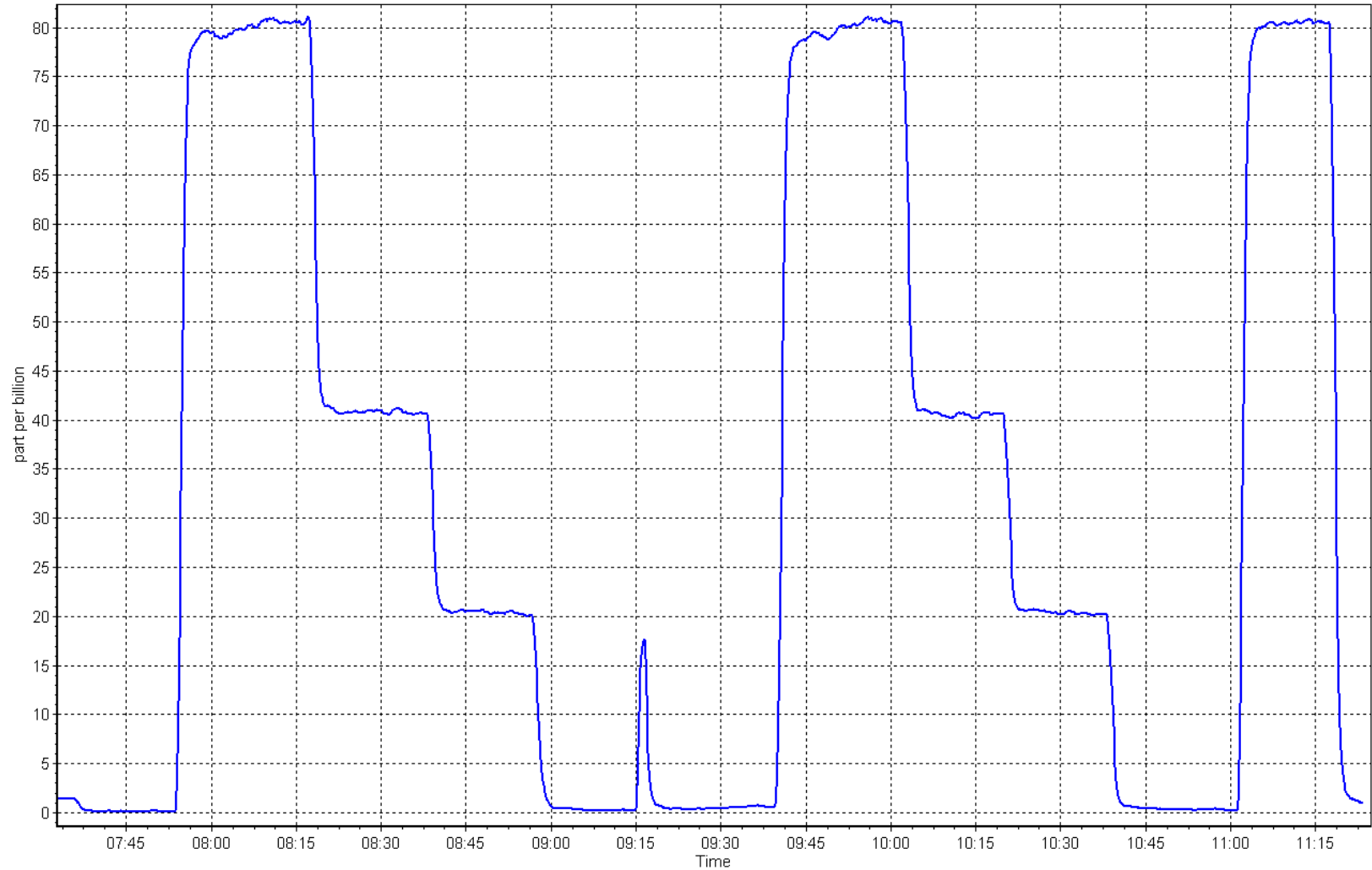
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999998		≥0.995
80.0	80.7	0.9909	Slope	1.007150		0.90 - 1.10
40.0	40.5	0.9885	Intercept	0.158201		+/-3
20.0	20.2	0.9886				



H₂S Calibration Plot

Date: March 18, 2025

Location: Buffalo Viewpoint





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Buffalo Viewpoint
 Calibration Date: March 19, 2025
 Start time (MST): 9:02
 Reason: Routine

Station number: AMS 04
 Last Cal Date: February 24, 2025
 End time (MST): 11:42

Calibration Standards

Gas Cert Reference:	CC446753	Cal Gas Expiry Date:	March 10, 2031
CH ₄ Cal Gas Conc.	497.2 ppm	CH ₄ Equiv Conc.	1058.2 ppm
C ₃ H ₈ Cal Gas Conc.	204.0 ppm		
Removed Gas Cert:		Removed Gas Expiry:	
Removed CH ₄ Conc.	497.2 ppm	CH ₄ Equiv Conc.	1058.2 ppm
Removed C ₃ H ₈ Conc.	204.0 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	API T700	Serial Number:	3808
Zero Air Gen model:	API T701	Serial Number:	362

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1426262594
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	4.48E-04	4.58E-04	NMHC SP Ratio:	9.52E-04
CH ₄ Retention time:	13.7	13.7	NMHC Peak Area:	92639
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	78.6	16.64	16.53	1.007
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.53	Prev response	16.56	*% change	-0.2%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	78.6	16.64	16.57	1.004
Mid point	4961	39.3	8.32	8.20	1.014
Low point	4980	19.6	4.15	4.05	1.025
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.6	16.64	16.60	1.002
Average Correction Factor					1.014

Notes:

No Maintenance done. Span adjusted.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4921	78.6	8.82	8.90	0.992
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.90	Prev response	8.79	*% change	1.2%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	78.6	8.82	8.78	1.005
Mid point	4961	39.3	4.41	4.36	1.012
Low point	4980	19.6	2.20	2.14	1.030
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.6	8.82	8.81	1.002
Average Correction Factor					1.016

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4921	78.6	7.82	7.63	1.024
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.63	Prev response	7.77	*% change	-1.9%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	78.6	7.82	7.79	1.003
Mid point	4961	39.3	3.91	3.85	1.016
Low point	4980	19.6	1.95	1.91	1.019
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.6	7.82	7.79	1.003
Average Correction Factor					1.013

Calibration Statistics

	Start	Finish
THC Cal Slope:	0.998330	0.997100
THC Cal Offset:	-0.045766	-0.049569
CH ₄ Cal Slope:	0.997727	0.997360
CH ₄ Cal Offset:	-0.026117	-0.022114
NMHC Cal Slope:	0.998592	0.996753
NMHC Cal Offset:	-0.018849	-0.027256

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

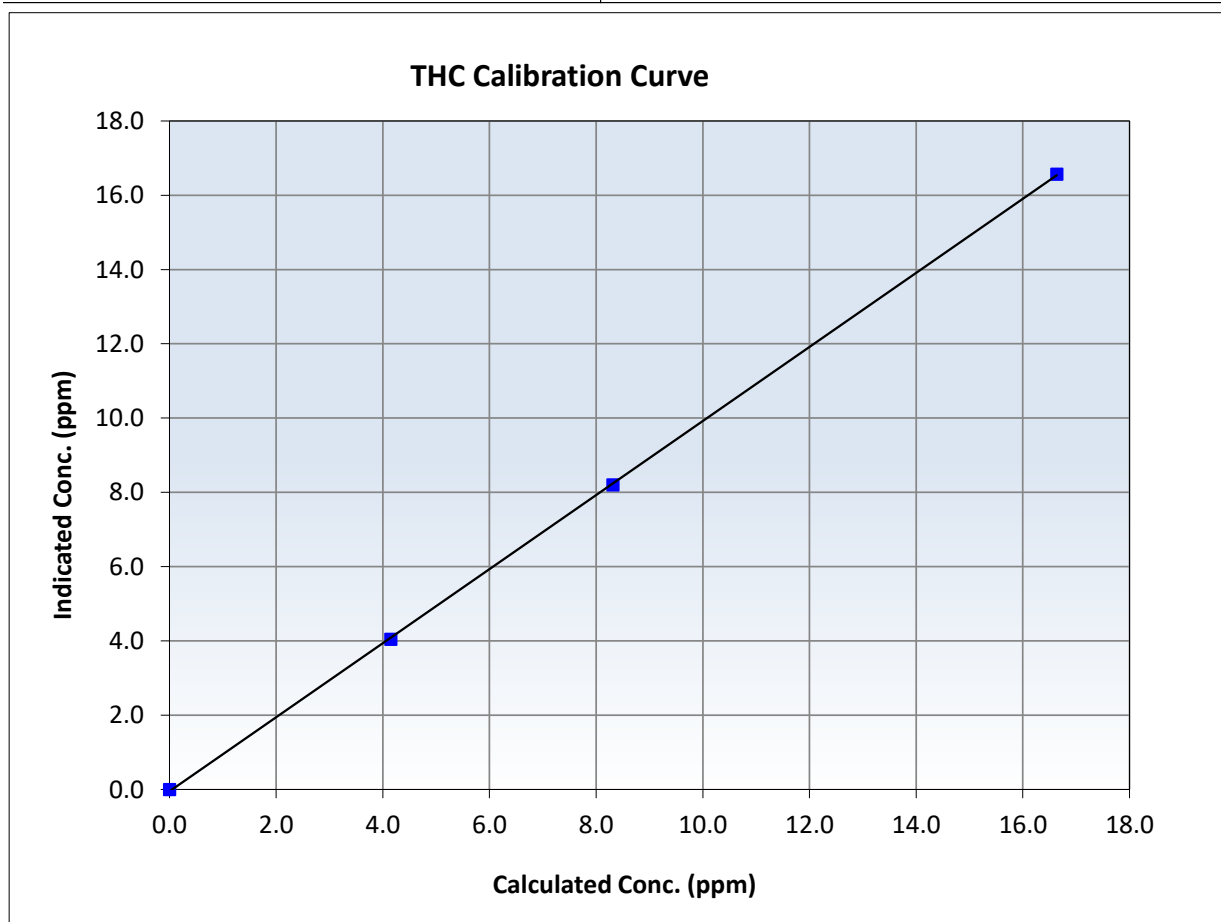
THC Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 24, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	9:02	End Time (MST):	11:42
Analyzer make:	Thermo 55i	Analyzer serial #:	1426262594

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999957	<i>≥0.995</i>
16.64	16.57	1.0041	Slope	0.997100	<i>0.90 - 1.10</i>
8.32	8.20	1.0138	Intercept	-0.049569	<i>+/-0.5</i>
4.15	4.05	1.0251			





Wood Buffalo Environmental Association

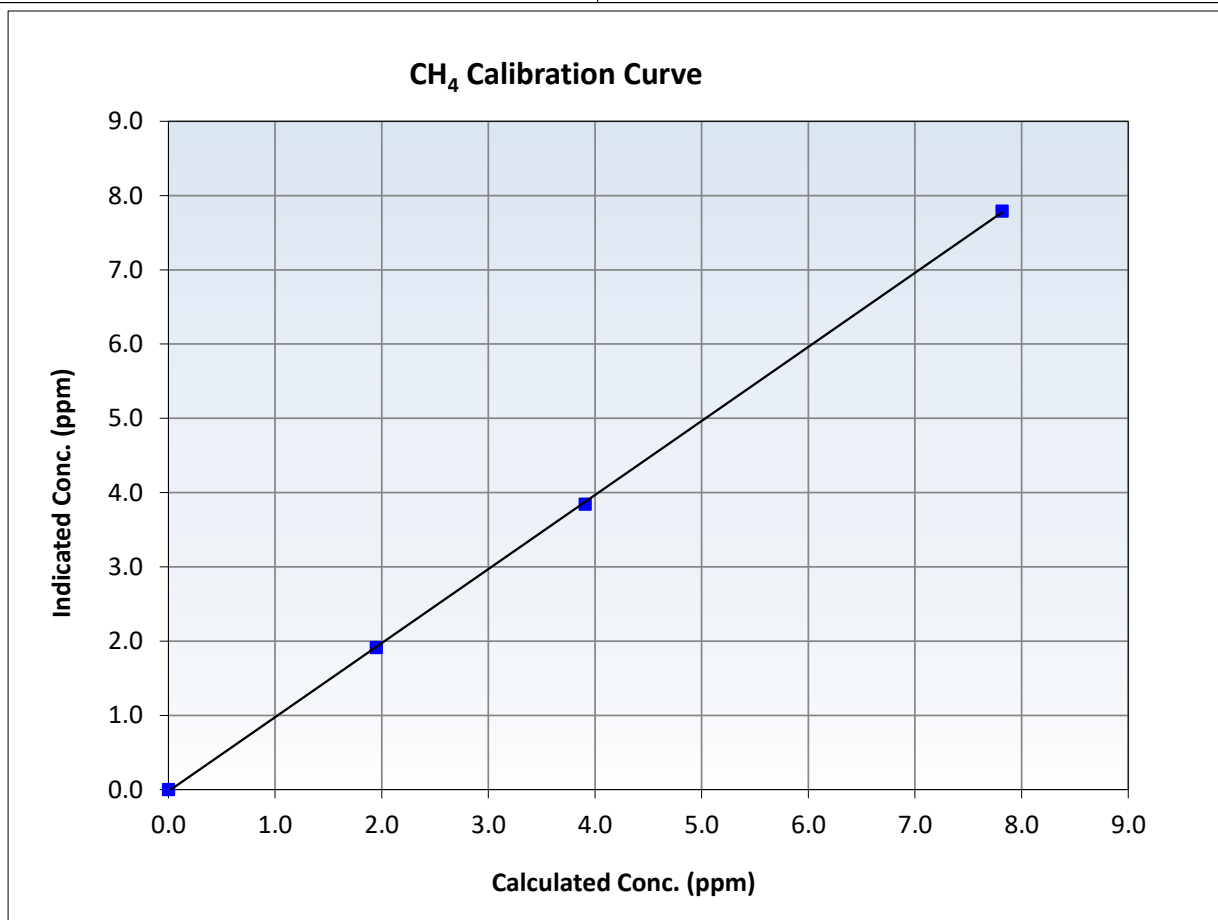
CH₄ Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 24, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	9:02	End Time (MST):	11:42
Analyzer make:	Thermo 55i	Analyzer serial #:	1426262594

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999948	<i>≥0.995</i>
7.82	7.79	1.0033	Slope	0.997360	<i>0.90 - 1.10</i>
3.91	3.85	1.0161	Intercept	-0.022114	<i>+/-0.5</i>
1.95	1.91	1.0194			





Wood Buffalo Environmental Association

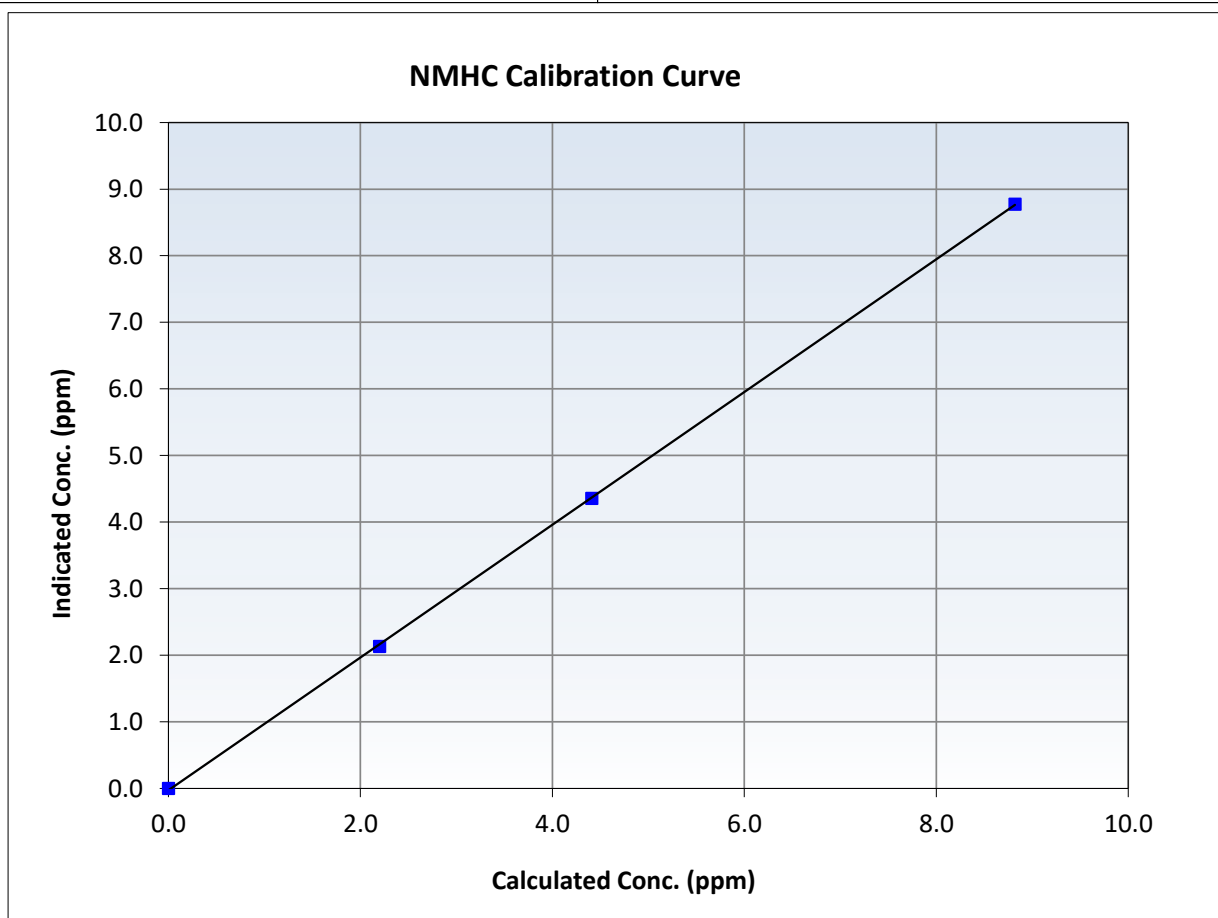
NMHC Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 24, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	9:02	End Time (MST):	11:42
Analyzer make:	Thermo 55i	Analyzer serial #:	1426262594

Calibration Data

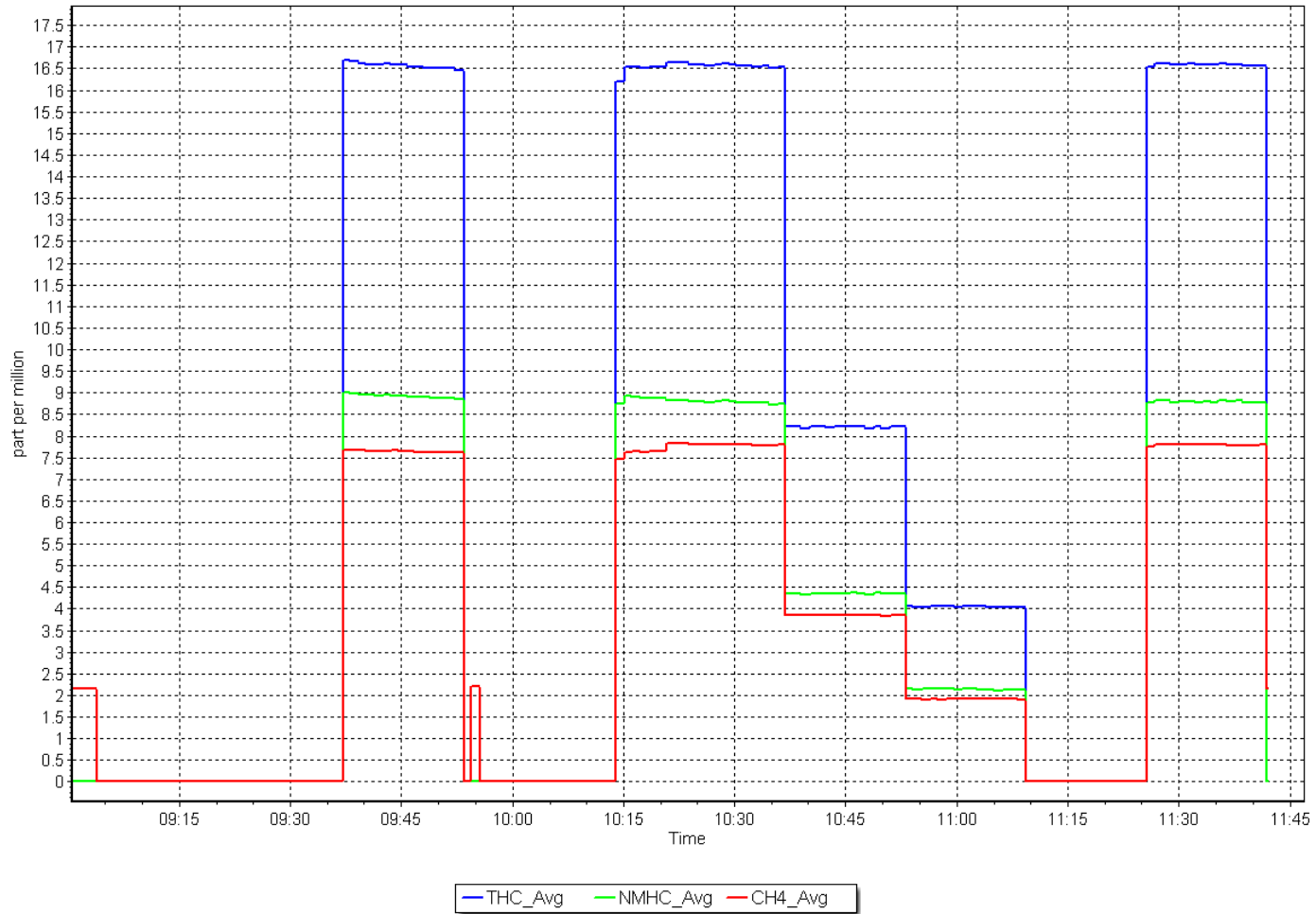
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999956	≥ 0.995
8.82	8.78	1.0050	Slope	0.996753	$0.90 - 1.10$
4.41	4.36	1.0117	Intercept	-0.027256	± 0.5
2.20	2.14	1.0301			



NMHC Calibration Plot

Date: March 19, 2025

Location: Buffalo Viewpoint





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Buffalo Viewpoint Station number: AMS 04
 Calibration Date: March 26, 2025 Last Cal Date: March 19, 2025
 Start time (MST): 8:43 End time (MST): 10:20
 Reason: Cylinder Change Hydrogen and Nitrogen Cylinder Change

Calibration Standards

Gas Cert Reference: CC446753 Cal Gas Expiry Date: March 10, 2031
 CH₄ Cal Gas Conc. 497.2 ppm CH₄ Equiv Conc. 1058.2 ppm
 C₃H₈ Cal Gas Conc. 204.0 ppm
 Removed Gas Cert: Removed Gas Expiry:
 Removed CH₄ Conc. 497.2 ppm CH₄ Equiv Conc. 1058.2 ppm
 Removed C₃H₈ Conc. 204.0 ppm Diff between cyl (THC):
 Diff between cyl (CH₄): Diff between cyl (NM):
 Calibrator Model: API T700 Serial Number: 3808
 Zero Air Gen model: API T701 Serial Number: 362

Analyzer Information

Analyzer make: Thermo 55i Analyzer serial #: 1426262594
 THC Range: 0 - 20 ppm NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	4.58E-04	4.58E-04	NMHC SP Ratio:	9.45E-04
CH ₄ Retention time:	13.7	13.7	NMHC Peak Area:	93285
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	78.6	16.64	16.34	1.018
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.34	Prev response	16.54	*% change	-1.2%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	78.6	16.64	16.14	1.031
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.031

Notes: Nitrogen and Hydrogen Cylinder Changed.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10 ----
As found High point	4921	78.6	8.82	8.72	1.012
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.72	Prev response	8.76	*% change	-0.5%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	78.6	8.82	8.56	1.030
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.030

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10 ----
As found High point	4921	78.6	7.82	7.62	1.025
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.62	Prev response	7.77	*% change	-2.0%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	78.6	7.82	7.58	1.031
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.031

Calibration Statistics

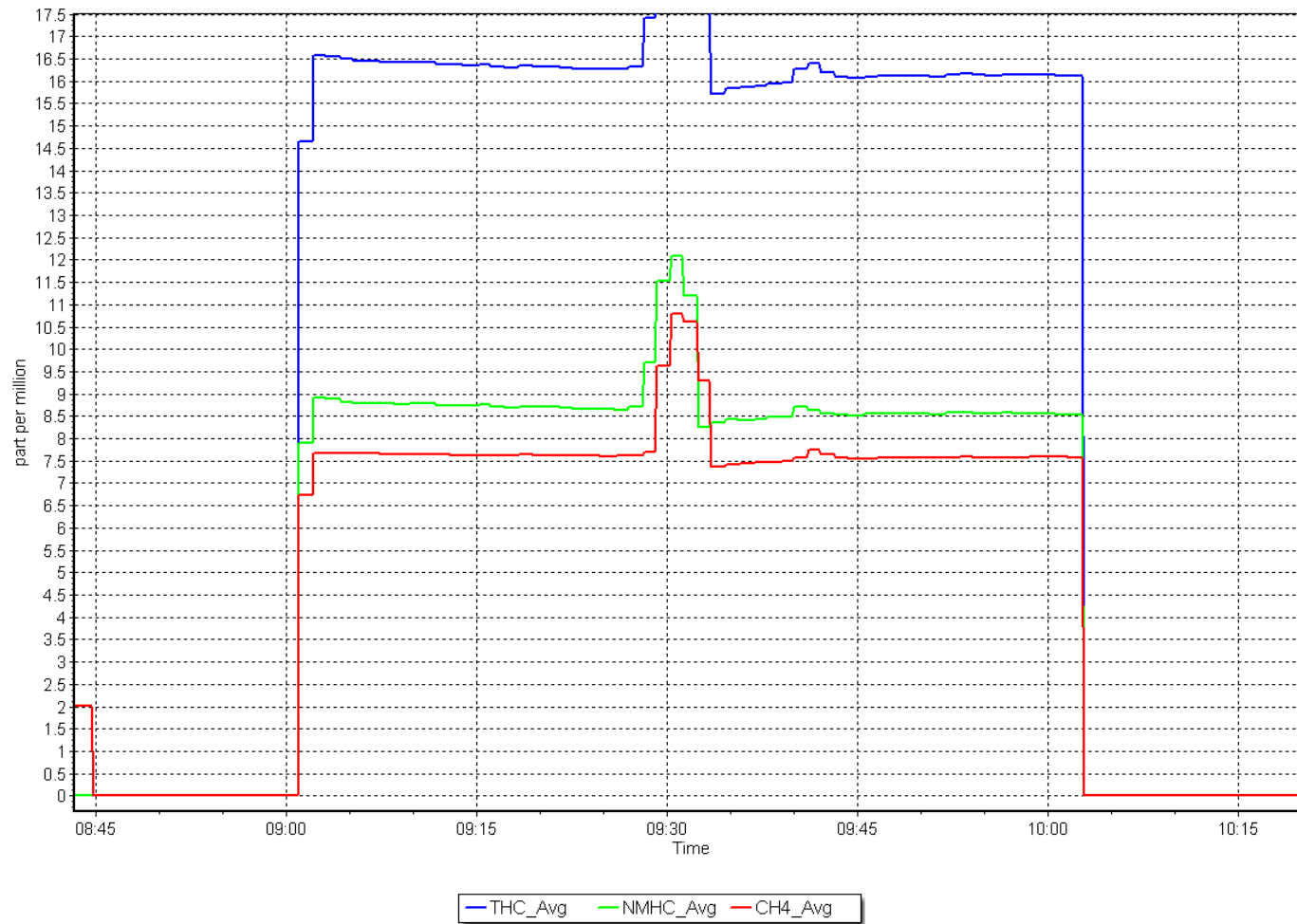
	Start	Finish
THC Cal Slope:	0.997100	0.970352
THC Cal Offset:	-0.049569	0.000000
CH ₄ Cal Slope:	0.997360	0.969474
CH ₄ Cal Offset:	-0.022114	0.000000
NMHC Cal Slope:	0.996753	0.970903
NMHC Cal Offset:	-0.027256	0.000000

Calibration Performed By: Melissa Lemay

NMHC Calibration Plot

Date: March 26, 2025

Location: Buffalo Viewpoint





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Buffalo Viewpoint
Station number: AMS 04
Calibration Date: March 14, 2025
Last Cal Date: February 26, 2025
Start time (MST): 6:30
End time (MST): 11:09
Reason: Routine

Calibration Standards

NO Gas Cylinder #: CC324979
NOX Cal Gas Conc: 48.90 ppm
Removed Cylinder #:
Removed Gas NOX Conc: 48.90 ppm
NOX gas Diff:
Calibrator Model: API T700
ZAG make/model: APIT701
Cal Gas Expiry Date: November 3, 2032
NO Cal Gas Conc: 48.80 ppm
Removed Gas Exp Date:
Removed Gas NO Conc: 48.80 ppm
NO gas Diff:
Serial Number: 3808
Serial Number: 362

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	----	----
AF High point	4918	81.8	800.0	798.4	1.6	794.6	794.5	0.1	1.0067	1.0047
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x = 800.0 ppb	NO = 797.9 ppb				* = > +/-5% change initiates investigation		*Percent Change	NO _x = -0.7%	
Baseline Corr 1st pt	NO _x = 794.7 ppb	NO = 794.7 ppb				<u>As Found Statistics</u>		*Percent Change	NO = -0.4%	
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb				As found NO _x r ² :		Nx SI:	Nx Int:	
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb				As found NO r ² :		NO SI:	NO Int:	
						As found NO ₂ r ² :		NO2 SI:	NO ₂ Int:	

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Teledyne API T200
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 721

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.267	1.276	NO bkgnd or offset:	0.2	0.2
NOX coeff or slope:	1.254	1.266	NOX bkgnd or offset:	-0.2	-0.2
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	4.6	4.6

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.999123	1.001880
NO _x Cal Offset:	0.646369	0.006724
NO Cal Slope:	1.000815	1.000957
NO Cal Offset:	-1.154442	-0.954223
NO ₂ Cal Slope:	0.983455	0.992096
NO ₂ Cal Offset:	1.332198	0.653706

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.6	0.2	0.4	----	----
High point	4918	81.8	800.0	798.4	1.6	801.7	798.6	3.0	0.9979	0.9997
Mid point	4959	40.9	400.0	399.2	0.8	400.9	398.6	2.2	0.9978	1.0015
Low point	4980	20.4	199.5	199.1	0.4	199.0	196.8	2.2	1.0025	1.0116
As left zero	5000	0.0	0.0	0.8	-0.8	0.9	0.8	0.1	----	----
As left span	4918	81.8	800.0	400.2	800.0	787.5	400.2	387.4	1.0159	1.0000
Average Correction Factor									0.9994	1.0043

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.4	----	----
High GPT point	793.5	399.6	395.5	393.6	1.0049	99.5%
Mid GPT point	793.5	599.6	195.5	192.8	1.0142	98.6%
Low GPT point	793.5	700.1	95.0	96.5	0.9848	101.5%
Average Correction Factor					1.0013	99.9%

Notes: No maintenance done. Span adjusted.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

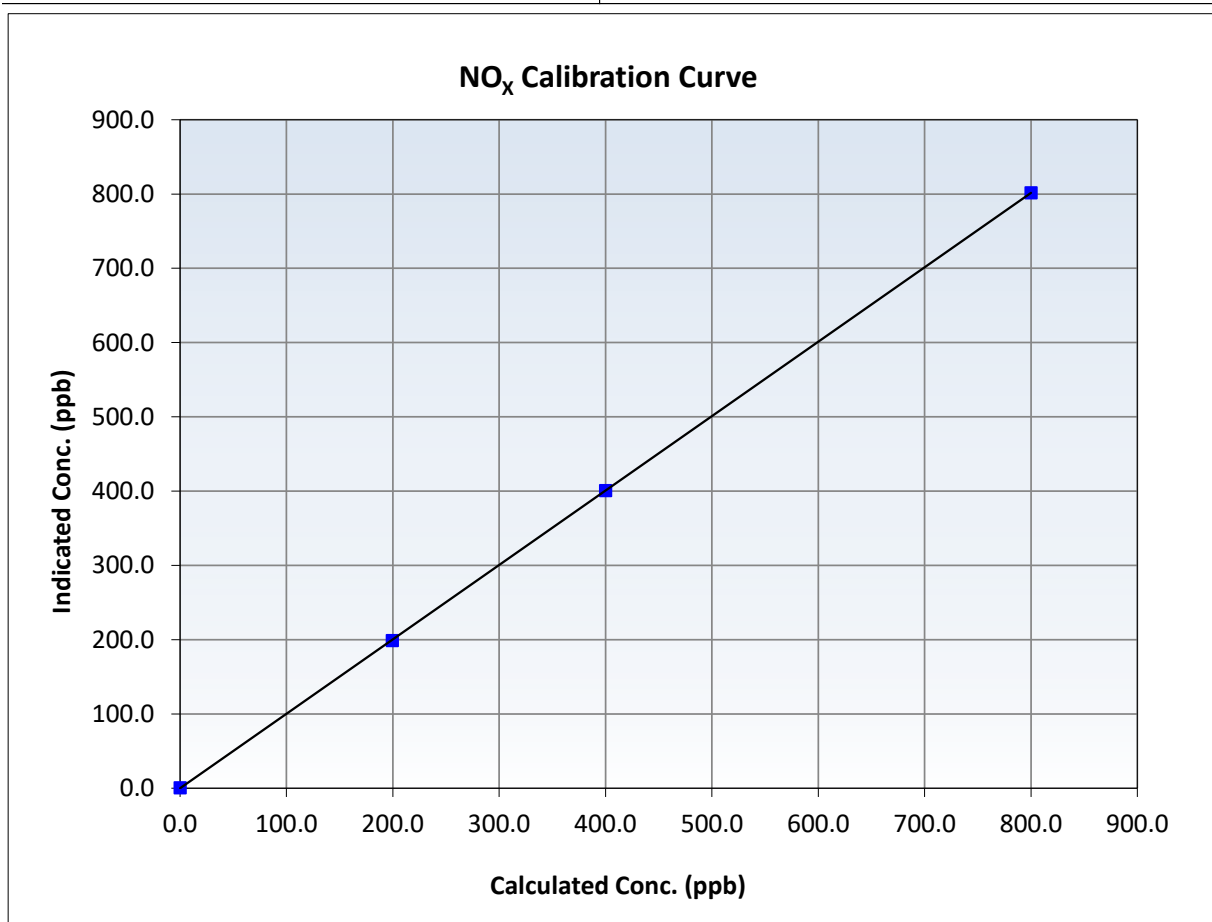
NO_x Calibration Summary

Station Information

Calibration Date:	March 14, 2025	Previous Calibration:	February 26, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	6:30	End Time (MST):	11:09
Analyzer make:	Teledyne API T200	Analyzer serial #:	721

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.6	----	Correlation Coefficient	0.999997	≥0.995
800.0	801.7	0.9979	Slope	1.001880	0.90 - 1.10
400.0	400.9	0.9978	Intercept	0.006724	+/-20
199.5	199.0	1.0025			





Wood Buffalo Environmental Association

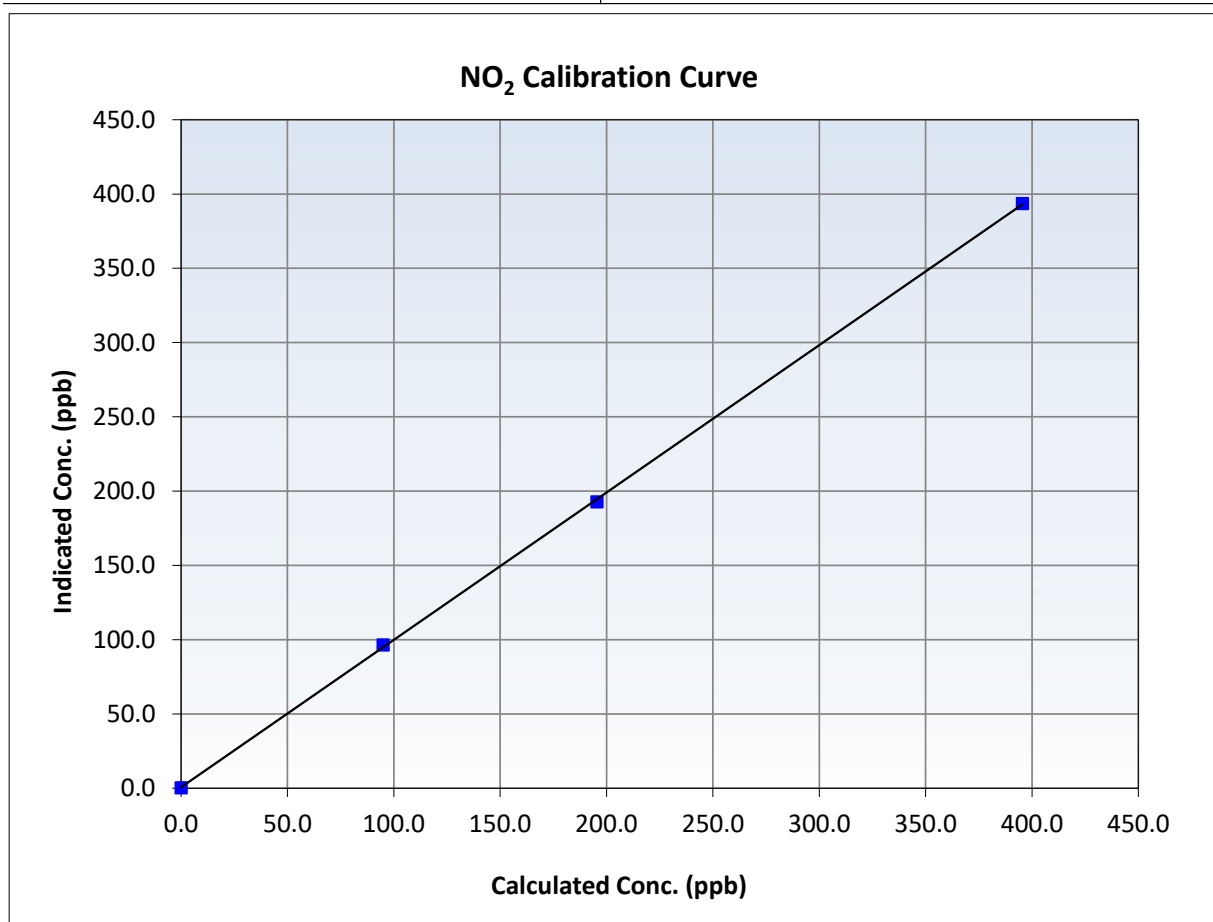
NO₂ Calibration Summary

Station Information

Calibration Date:	March 14, 2025	Previous Calibration:	February 26, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	6:30	End Time (MST):	11:09
Analyzer make:	Teledyne API T200	Analyzer serial #:	721

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.4	----	Correlation Coefficient	0.999927	≥0.995
395.5	393.6	1.0049	Slope	0.992096	0.90 - 1.10
195.5	192.8	1.0142	Intercept	0.653706	+/-20
95.0	96.5	0.9848			





Wood Buffalo Environmental Association

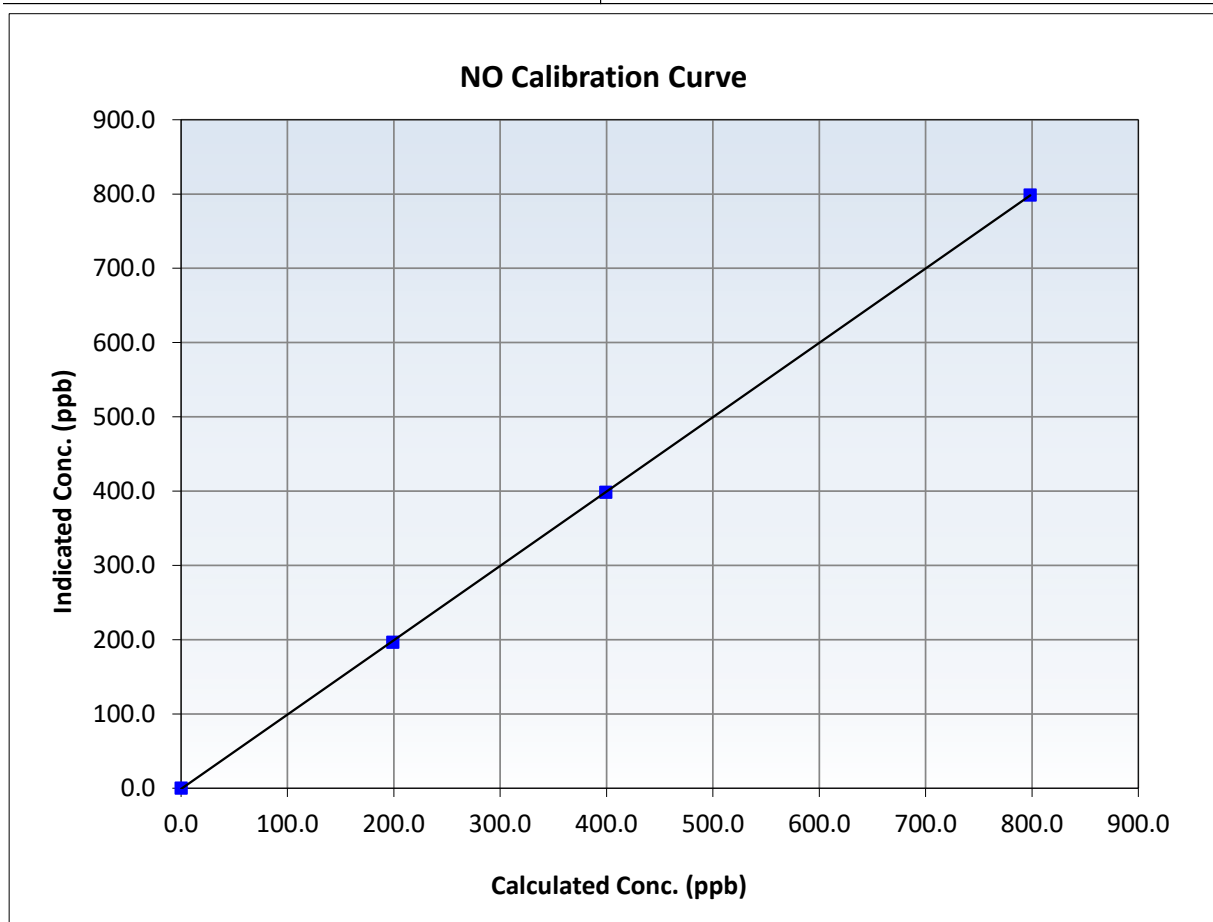
NO Calibration Summary

Station Information

Calibration Date:	March 14, 2025	Previous Calibration:	February 26, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	6:30	End Time (MST):	11:09
Analyzer make:	Teledyne API T200	Analyzer serial #:	721

Calibration Data

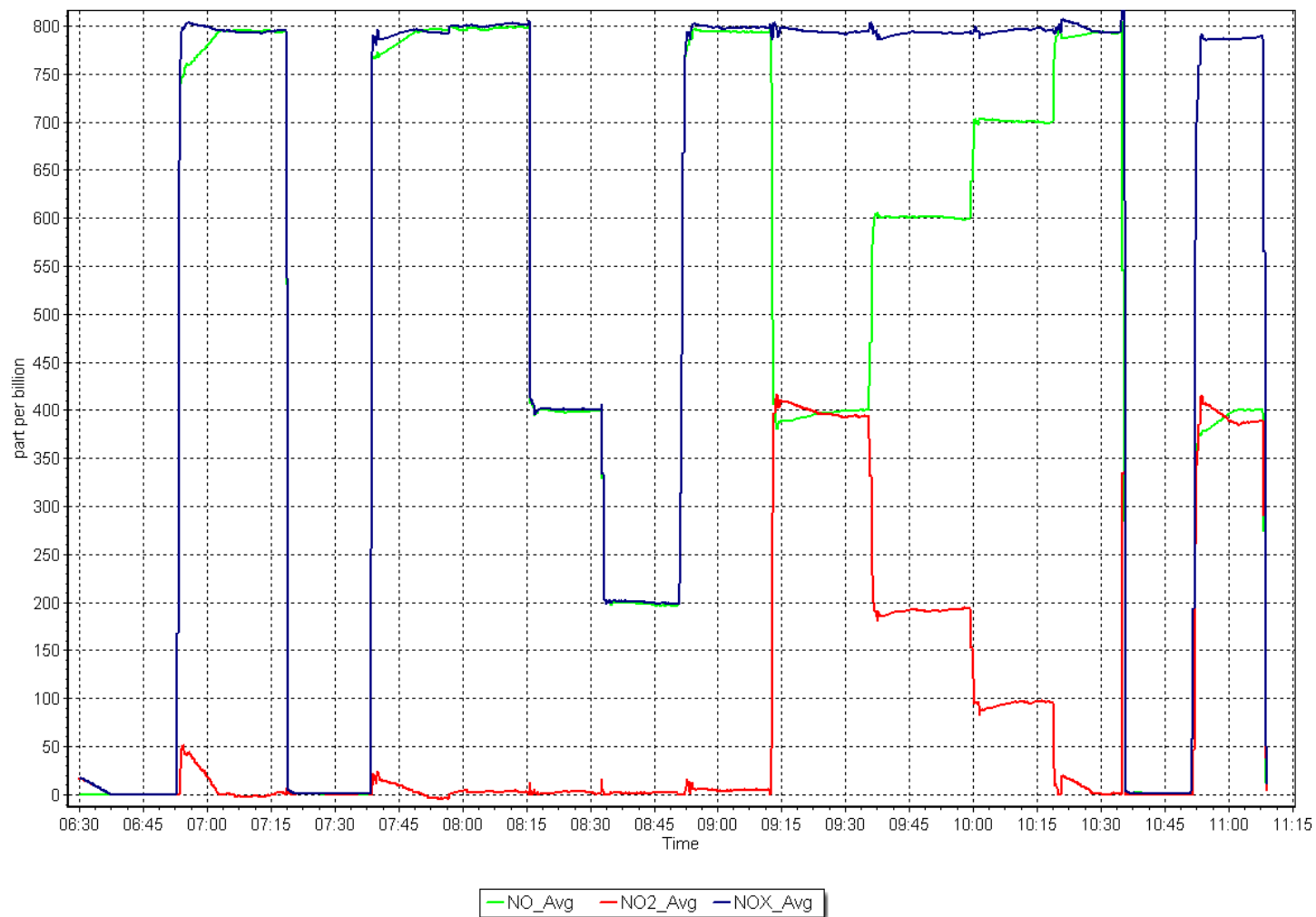
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.2	----	Correlation Coefficient	0.999989	≥ 0.995
798.4	798.6	0.9997	Slope	1.000957	$0.90 - 1.10$
399.2	398.6	1.0015	Intercept	-0.954223	± 20
199.1	196.8	1.0116			



NO_x Calibration Plot

Date: March 14, 2025

Location: Buffalo Viewpoint





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Buffalo Viewpoint
Calibration Date: March 19, 2025
Start time (MST): 6:30
Reason: Routine

Station number: AMS 04
Last Cal Date: February 20, 2025
End time (MST): 9:03

Calibration Standards

O3 generation mode: Photometer
Calibrator Make/Model: APIP T700
ZAG Make/Model: API T701

Serial Number: 3808
Serial Number: 362

Analyzer Information

Analyzer make: API T400
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 2961

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.993714	1.000914	Backgd or Offset:	-2.2	-1.2
Calibration intercept:	2.200000	0.640000	Coeff or Slope:	1.051	1.054

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.7	----
As found High point	5000	1001.4	400.0	400.6	1.000
As found Mid point					
As found Low point					
Baseline Corr As found:	399.9	Previous response	399.7	*% change	0.1%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.2	----
High point	5000	1004.1	400.0	400.5	0.999
Mid point	5000	825.8	200.0	201.5	0.993
Low point	5000	711.8	100.0	101.4	0.986
As left zero	5000	0.0	0.0	0.0	----
As left span	5000	1003.2	400.0	399.0	1.003
Average Correction Factor					0.993

Notes: No Maintenance done. Zero adjusted.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

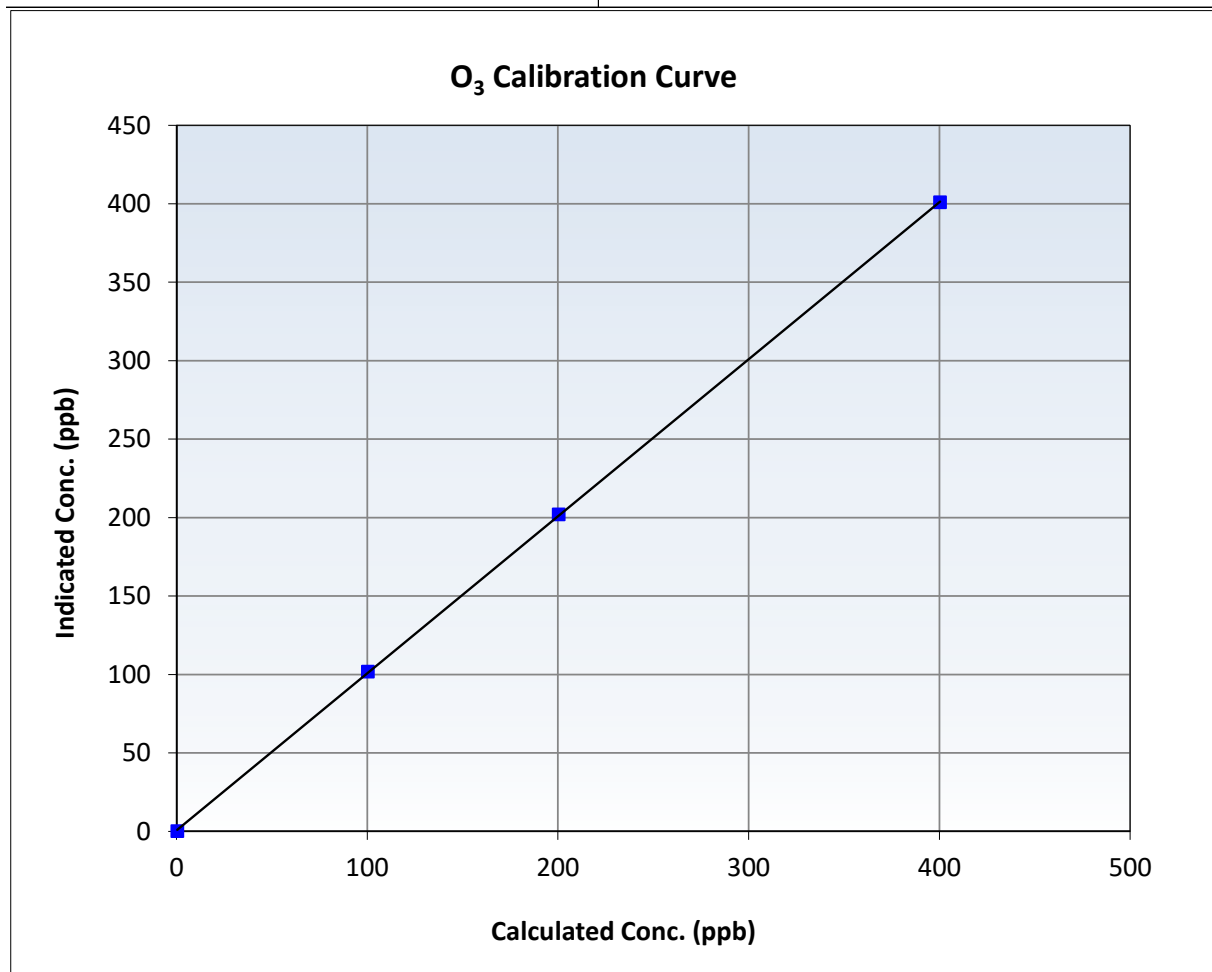
O₃ Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 20, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	6:30	End Time (MST):	9:03
Analyzer make:	API T400	Analyzer serial #:	2961

Calibration Data

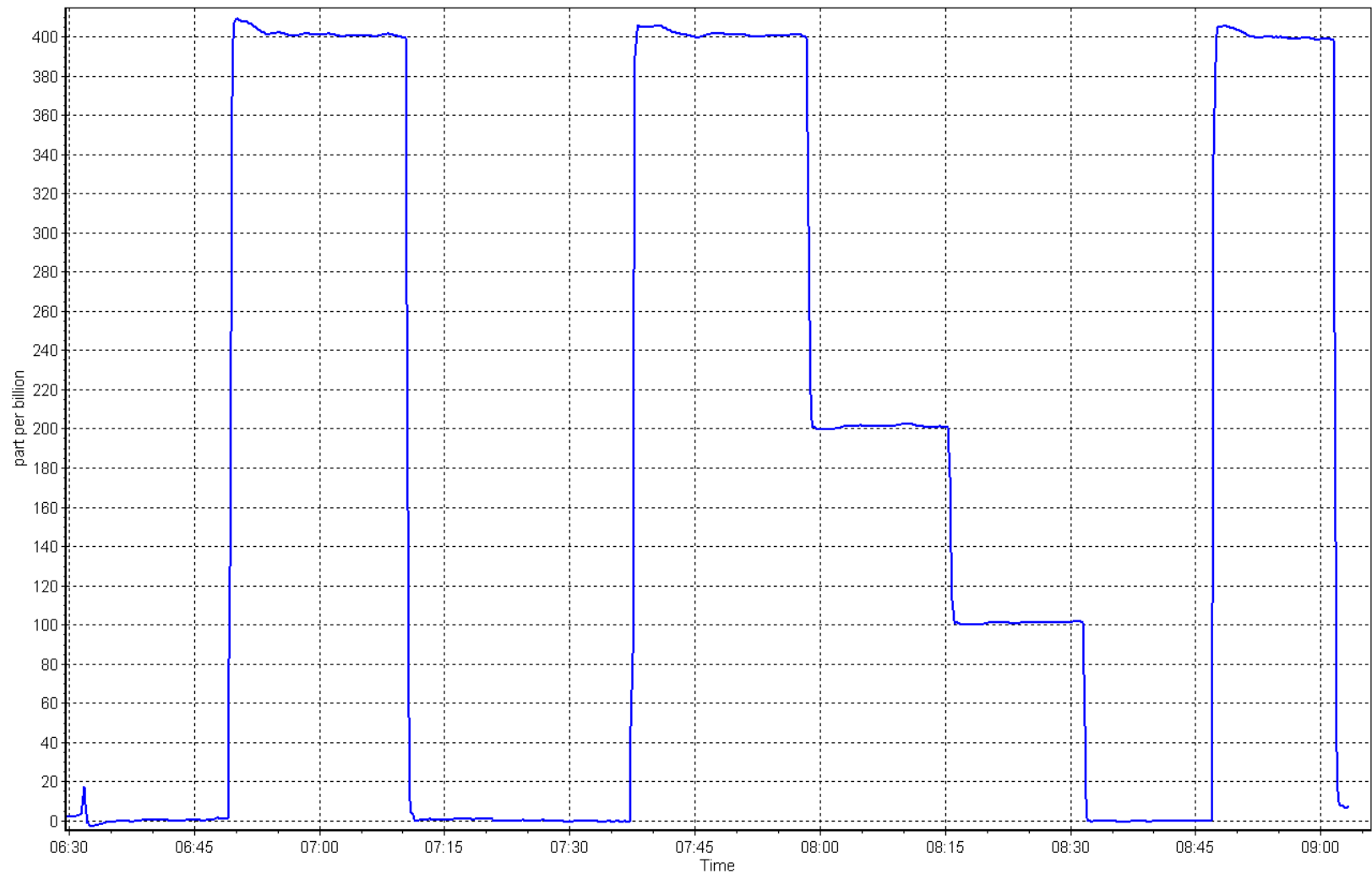
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.2	----	Correlation Coefficient	0.999979	≥0.995
400.0	400.5	0.9988	Slope	1.000914	0.90 - 1.10
200.0	201.5	0.9926	Intercept	0.640000	+/- 5
100.0	101.4	0.9862			



O₃ Calibration Plot

Date: March 19, 2025

Location: Buffalo Viewpoint





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Buffalo Viewpoint Station number: AMS 04
Calibration Date: March 26, 2025 Last Cal Date: February 26, 2025
Start time (MST): 7:18 End time (MST): 8:29

Analyzer Make: Teledyne API T640 S/N: 321
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388753
Temp/RH standard: Alicat FP-25BT S/N: 388753

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-10.8	-11.0	-10.8	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	738.0	740.0	738.0	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	4.99	5.05	5.02	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	40	----	39	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 3.3		PM w/ HEPA: 0.0		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: 16-Jul-26
Lot No.: 100128-050-050

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test	9	10.5	10.5	<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: March 26, 2025
Date Disposable Filter Changed: March 26, 2025

Post- maintenance Zero Verification: PM w/ HEPA: 0 <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: March 26, 2025
Date RH/T Sensor Cleaned: March 26, 2025

Notes: No adjustments done. Deleted Memory, Warning that memory was full. Leak Check, PMT and Flow checked before and after optical chamber cleaning.

Calibration by: Melissa Lemay



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

**AMS05
MANNIX
MARCH 2025**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Mannix
Calibration Date: March 12, 2025
Start time (MST): 10:08
Reason: Routine

Station number: AMS 05
Last Cal Date: February 12, 2025
End time (MST): 13:50

Calibration Standards

Cal Gas Concentration:	50.06	ppm	Cal Gas Exp Date:	October 22, 2032
Cal Gas Cylinder #:	CC308040			
Removed Cal Gas Conc:	50.06	ppm	Rem Gas Exp Date:	October 22, 2032
Removed Gas Cyl #:			Diff between cyl:	
Calibrator Model:	API T700		Serial Number:	5470
Zero Air Gen Model:	API T701		Serial Number:	361

Analyzer Information

Analyzer make: Thermo 43i
Analyzer Range: 1000 ppb
Serial Number: 1008841399

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.005051	1.006894	Backgd or Offset:	10.3	10.3
Calibration intercept:	-0.917443	-0.937958	Coeff or Slope:	0.950	0.950

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.2	----
As found High point	4920	79.9	800.0	804.7	0.994
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	804.5	Previous response	803.1	*% change	0.2%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.3	----
High point	4920	79.9	800.0	805.0	0.994
Mid point	4960	40.0	400.5	402.2	0.996
Low point	4980	20.0	200.2	199.1	1.006
As left zero	5000	0.0	0.0	0.4	----
As left span	4920	79.9	800.0	805.2	0.994
Average Correction Factor:					0.998

Notes: Changed the inlet filter after as founds. No adjustments made.

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

SO₂ Calibration Summary

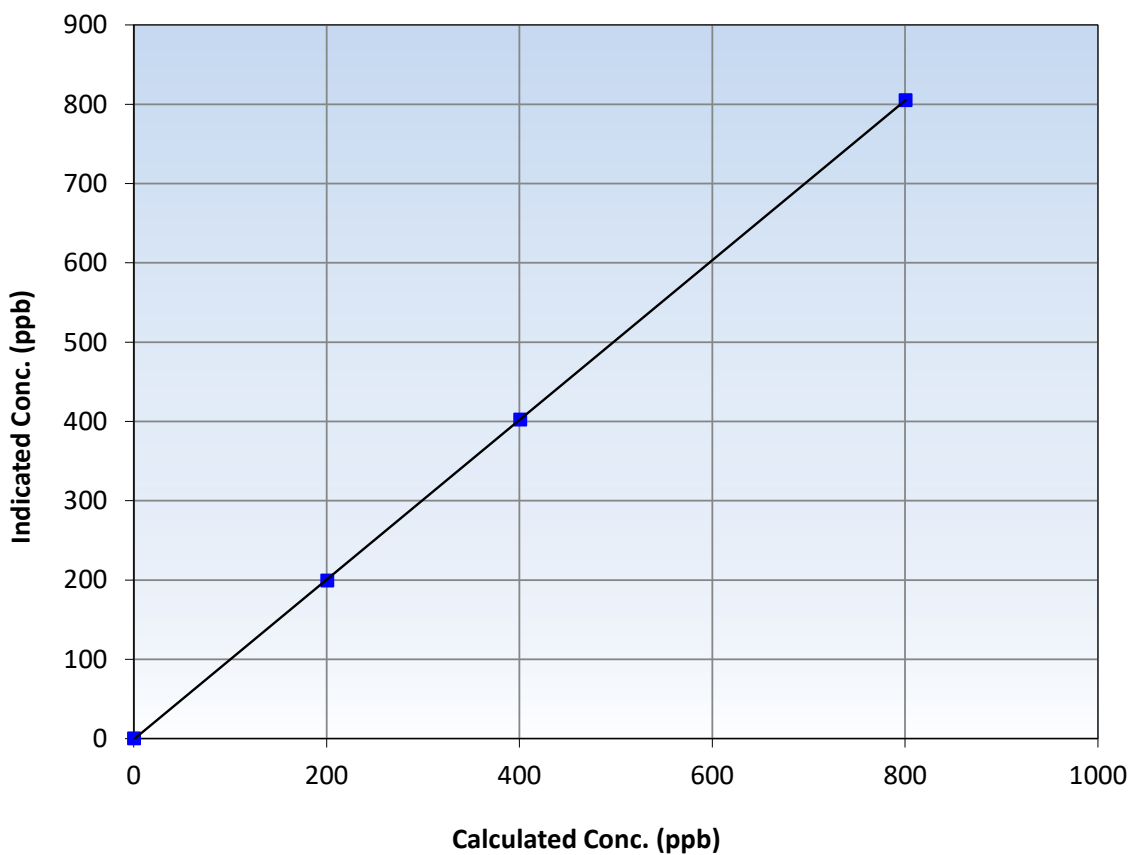
Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 12, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	10:08	End Time (MST):	13:50
Analyzer make:	Thermo 43i	Analyzer serial #:	1008841399

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999988	≥0.995
800.0	805.0	0.9938	Slope	1.006894	0.90 - 1.10
400.5	402.2	0.9957	Intercept	-0.937958	+/-30
200.2	199.1	1.0057			

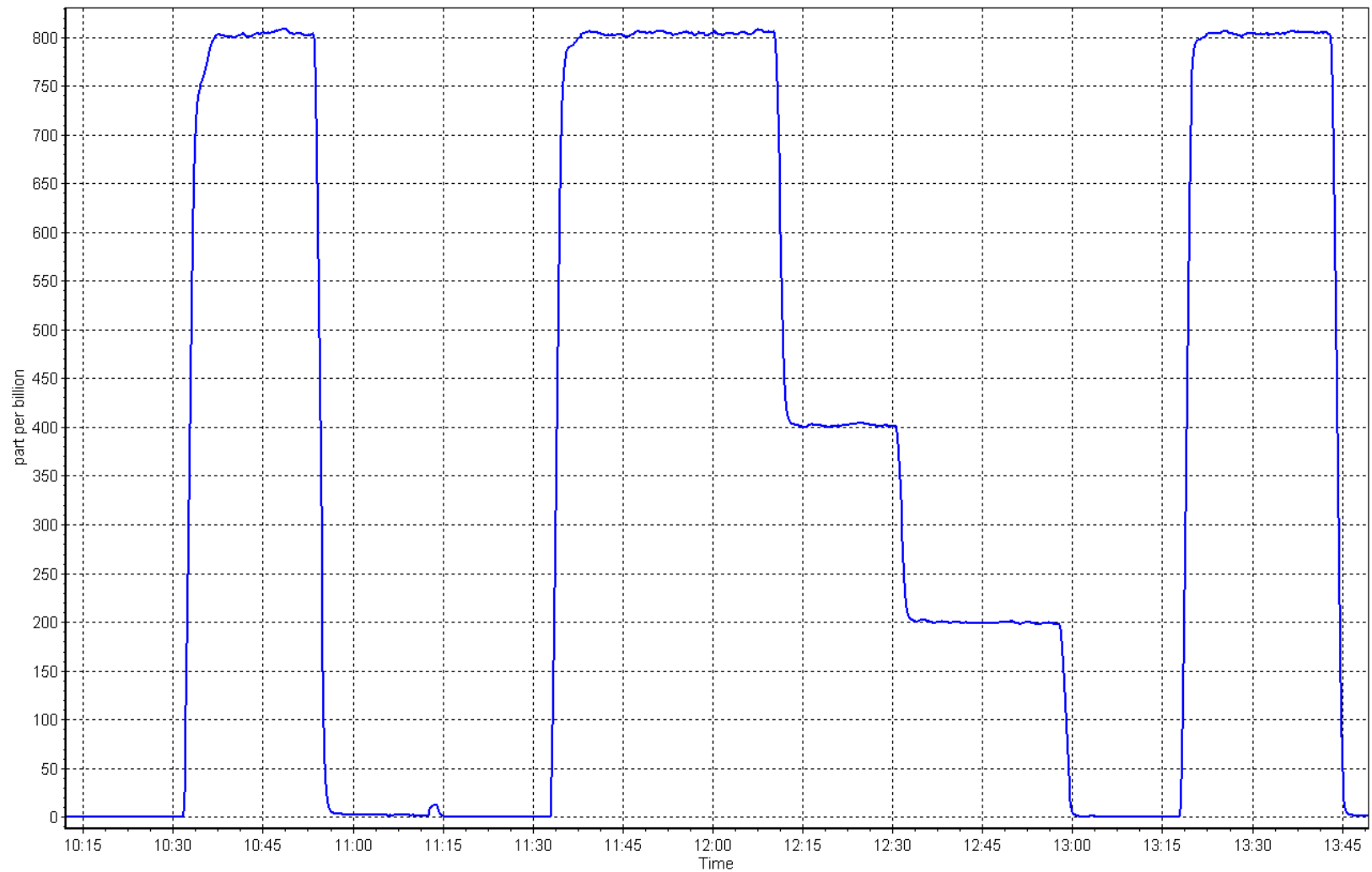
SO₂ Calibration Curve



SO2 Calibration Plot

Date: March 12, 2025

Location: Mannix





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: Mannix
Calibration Date: March 5, 2025
Start time (MST): 10:27
Reason: Routine

Station number: AMS 05
Last Cal Date: February 5, 2025
End time (MST): 15:00

Calibration Standards

Cal Gas Concentration: 4.96 ppm
Cal Gas Cylinder #: DT0037363
Removed Cal Gas Conc: 4.96 ppm
Removed Gas Cyl #: N/A
Calibrator Make/Model: API T700
ZAG Make/Model: API T701

Cal Gas Exp Date: November 15, 2026
Rem Gas Exp Date: N/A
Diff between cyl:
Serial Number: 5470
Serial Number: 361

Analyzer Information

Analyzer make: Thermo 43iQ
Converter make: Global
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1200326169
Converter serial #: 2022-225
Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.989251	1.005120	Backgd or Offset:	1.25	1.25
Calibration intercept:	0.282543	0.102228	Coeff or Slope:	1.029	1.029

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.0	----
As found High point	4919	80.6	80.0	81.2	0.985
As found Mid point	4960	40.3	40.0	40.5	0.987
As found Low point	4980	20.2	20.0	20.1	0.997
New cylinder response					
Baseline Corr As found:	81.2	Prev response:	79.38	*% change:	2.2%
Baseline Corr 2nd AF pt:	40.5	AF Slope:	1.016414	AF Intercept:	-0.117982
Baseline Corr 3rd AF pt:	20.1	AF Correlation:	0.999989	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4919	80.6	80.0	80.4	0.995
Mid point	4960	40.3	40.0	40.5	0.987
Low point	4980	20.2	20.0	20.1	0.997
As left zero	5000	0.0	0.0	0.1	----
As left span	4919	80.6	80.0	79.9	1.001
SO2 Scrubber Check	4920	80.3	803.0	0.2	----
Date of last scrubber change:				Ave Corr Factor	0.993
Date of last converter efficiency test:					

Notes: Changed the inlet filter after as founds. Ran a SO2 scrubber check after calibrator zero. No adjustments made.

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

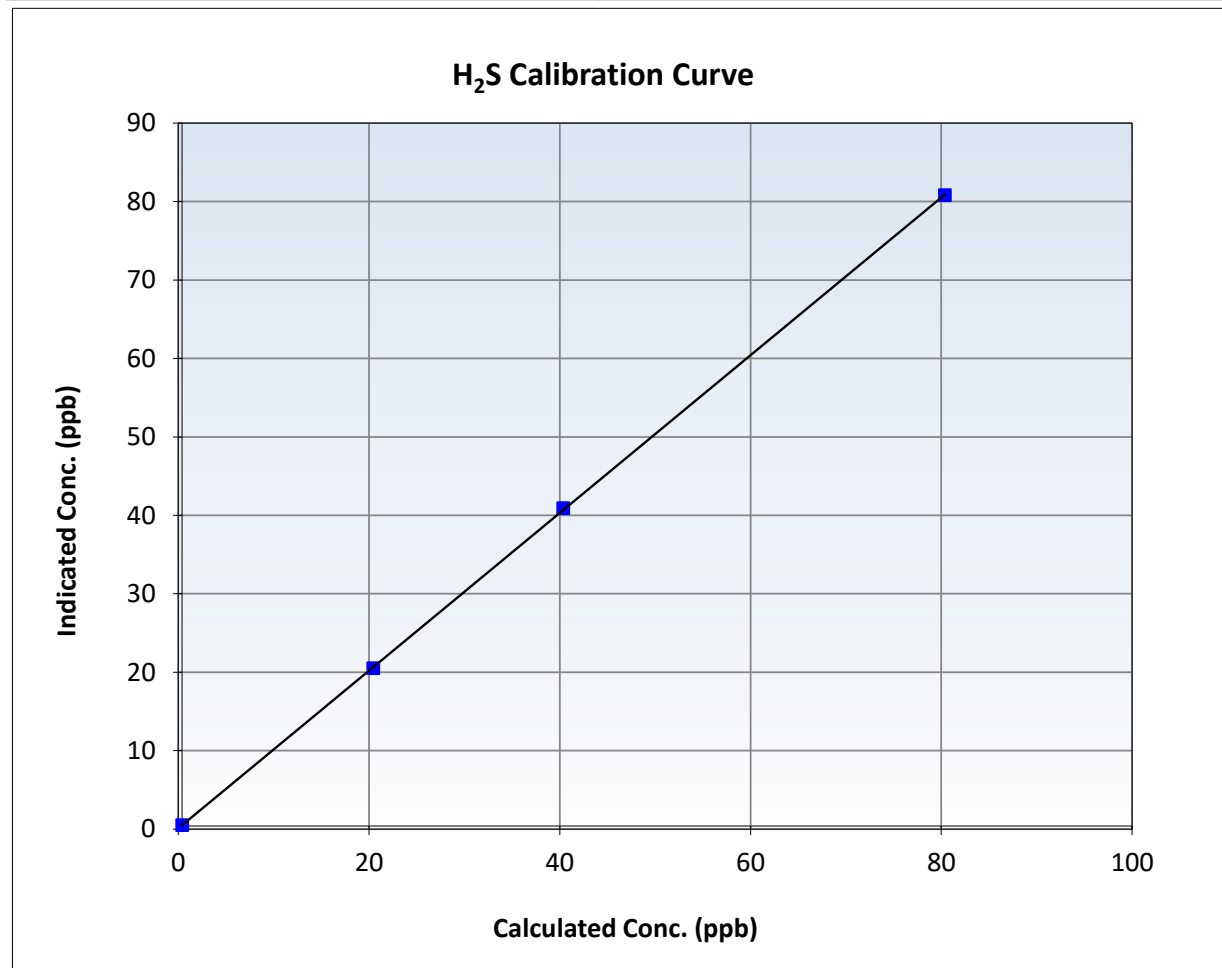
H₂S Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 5, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	10:27	End Time (MST):	15:00
Analyzer make:	Thermo 43iQ	Analyzer serial #:	1200326169

Calibration Data

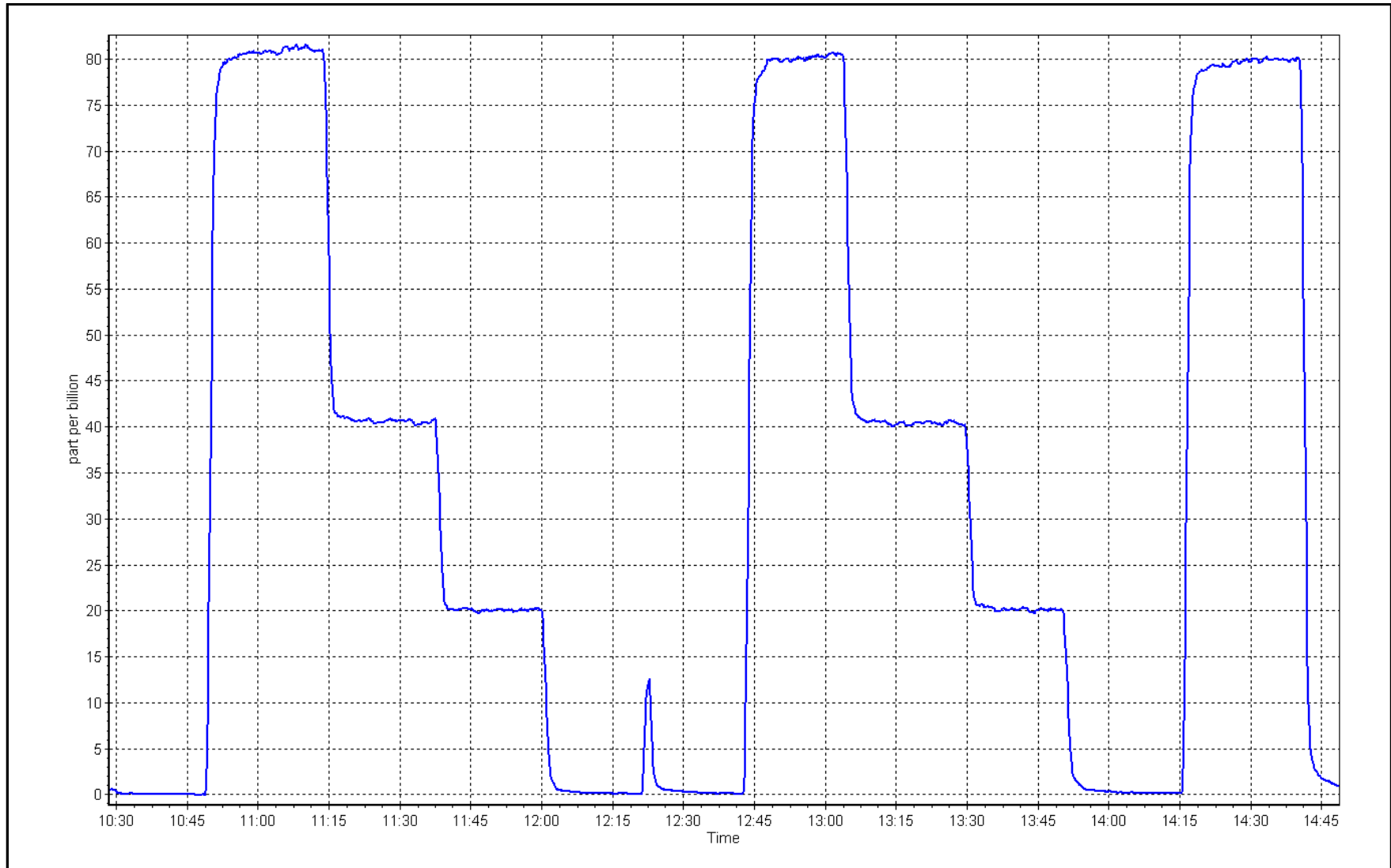
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999979	≥ 0.995
80.0	80.4	0.9945	Slope	1.005120	$0.90 - 1.10$
40.0	40.5	0.9870	Intercept	0.102228	± 3
20.0	20.1	0.9969			



H₂S Calibration Plot

Date: March 5, 2025

Location: Mannix





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name:	Mannix	Station number:	AMS 05
Calibration Date:	March 12, 2025	Last Cal Date:	February 13, 2025
Start time (MST):	10:08	End time (MST):	13:50
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC308040	Cal Gas Expiry Date:	October 22, 2032
CH ₄ Cal Gas Conc.	500.3 ppm	CH ₄ Equiv Conc.	1047.6 ppm
C ₃ H ₈ Cal Gas Conc.	199.0 ppm		
Removed Gas Cert:		Removed Gas Expiry:	
Removed CH ₄ Conc.	500.3 ppm	CH ₄ Equiv Conc.	1047.6 ppm
Removed C ₃ H ₈ Conc.	199.0 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	API T700	Serial Number:	5470
Zero Air Gen model:	API T701	Serial Number:	361

Analyzer Information

Analyzer make:	Thermo 55i	Analyzer serial #:	1193585649
THC Range:	0 - 20 ppm	NMHC/CH ₄ Range:	0 - 10 ppm

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	3.49E-04	3.79E-04	NMHC SP Ratio:	6.60E-05	7.45E-05
CH ₄ Retention time:	15.6	15.6	NMHC Peak Area:	132508	117387
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.9	16.74	15.75	1.063
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	15.75	Prev response	16.68	*% change	-5.9%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.9	16.74	16.67	1.004
Mid point	4960	40.0	8.38	8.26	1.015
Low point	4980	20.0	4.19	4.12	1.017
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.9	16.74	16.98	0.986
Average Correction Factor					1.012

Notes: Changed the inlet filter and the H₂ cylinder after as founds. Adjusted the span. Instrument is drifting quite a bit every month, diagnostics are normal. Will plan to replace it with a new one.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.9	8.75	8.15	1.074
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.15	Prev response	8.73	*% change	-7.1%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.9	8.75	8.73	1.002
Mid point	4960	40.0	4.38	4.37	1.003
Low point	4980	20.0	2.19	2.19	0.998
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.9	8.75	8.92	0.980
Average Correction Factor					1.001

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.9	7.99	7.60	1.052
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.60	Prev response	7.96	*% change	-4.7%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.9	7.99	7.94	1.007
Mid point	4960	40.0	4.00	3.89	1.028
Low point	4980	20.0	2.00	1.93	1.039
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.9	7.99	8.05	0.993
Average Correction Factor					1.025

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
THC Cal Slope:	0.999692	0.996286
THC Cal Offset:	-0.051687	-0.038478
CH ₄ Cal Slope:	1.000001	0.994597
CH ₄ Cal Offset:	-0.038143	-0.040730
NMHC Cal Slope:	0.999356	0.997646
NMHC Cal Offset:	-0.013343	0.002452

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

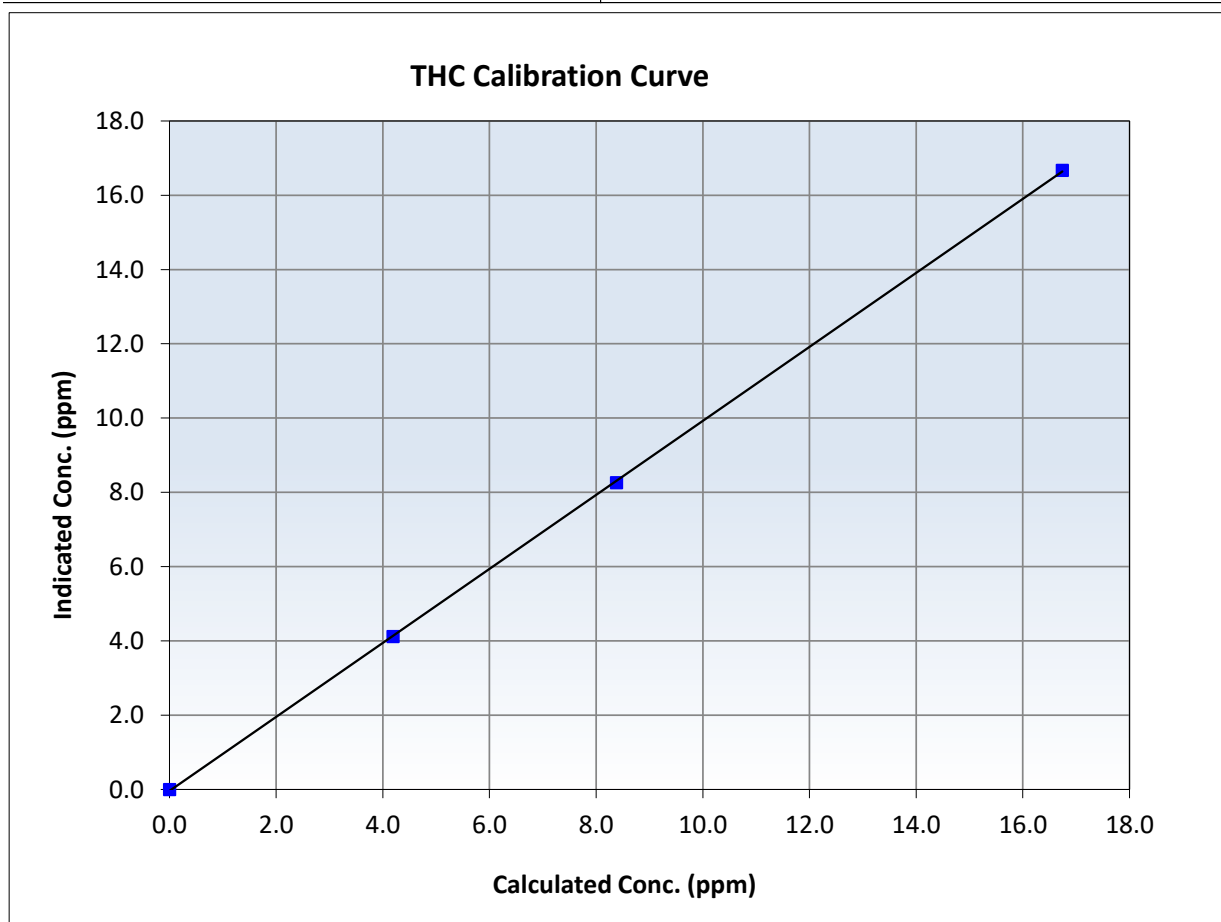
THC Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	10:08	End Time (MST):	13:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585649

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999964	≥ 0.995
16.74	16.67	1.0042	Slope	0.996286	$0.90 - 1.10$
8.38	8.26	1.0148	Intercept	-0.038478	± 0.5
4.19	4.12	1.0170			





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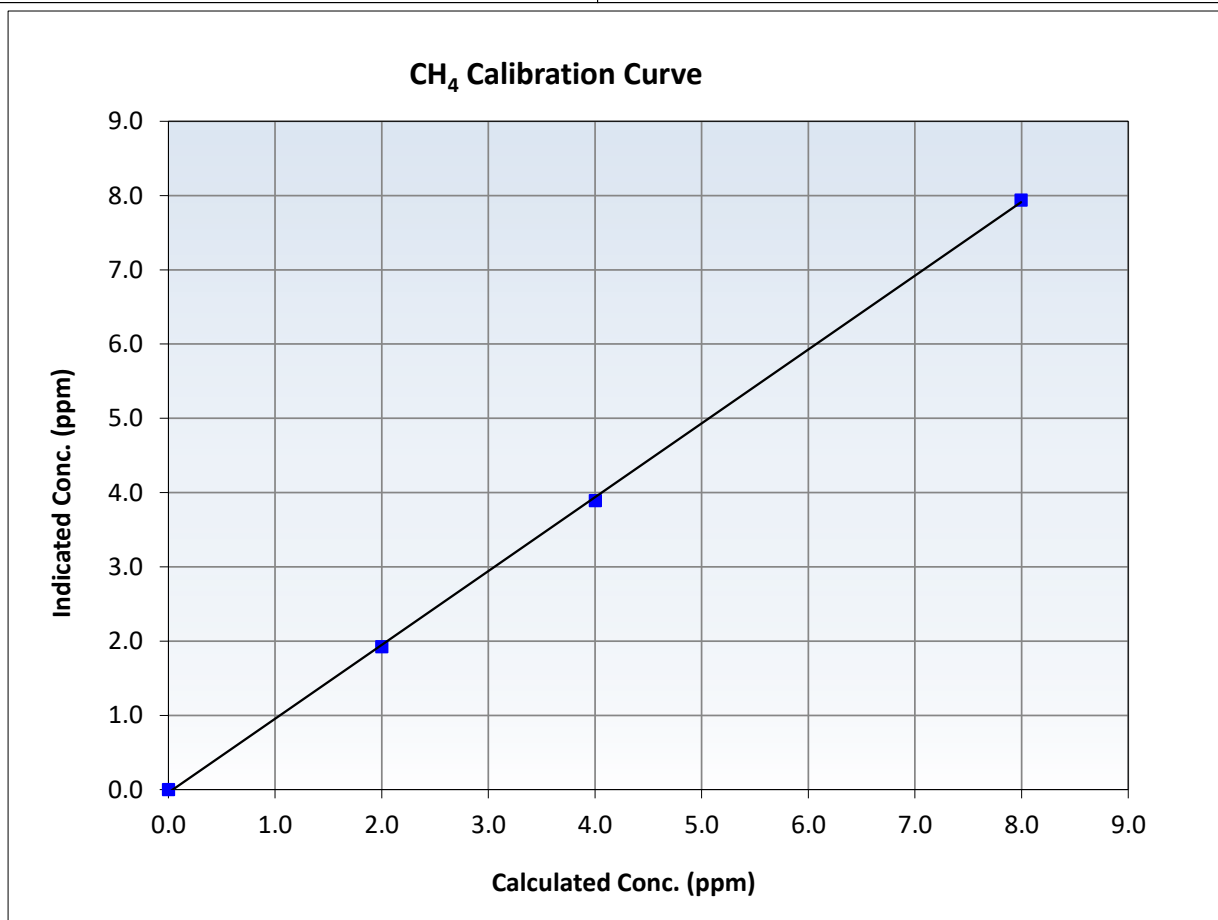
CH₄ Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	10:08	End Time (MST):	13:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585649

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			Limits
0.00	0.00	----	Correlation Coefficient	0.999850		≥0.995
7.99	7.94	1.0069	Slope	0.994597		0.90 - 1.10
4.00	3.89	1.0278	Intercept	-0.040730		+/-0.5
2.00	1.93	1.0390				





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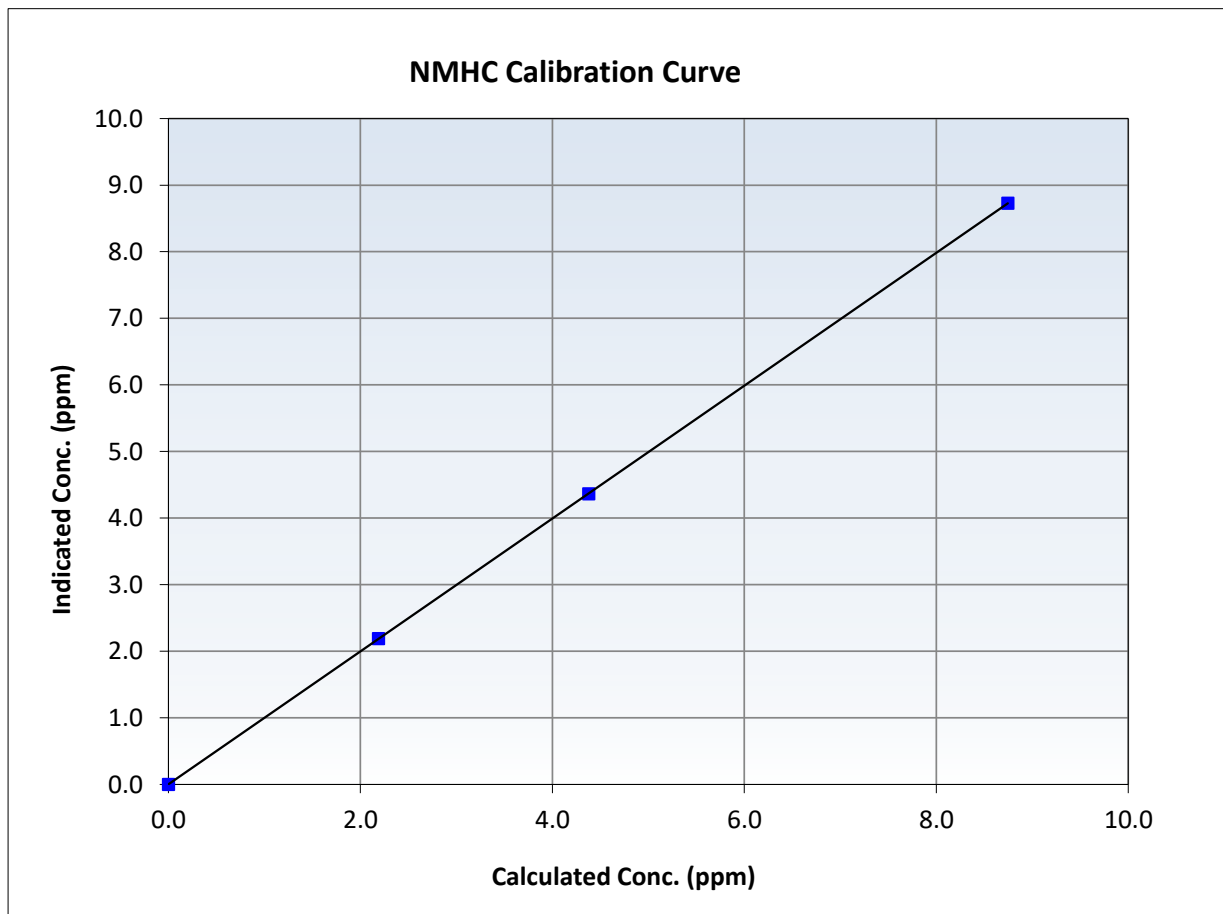
NMHC Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	10:08	End Time (MST):	13:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585649

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999998	<i>≥0.995</i>
8.75	8.73	1.0020	Slope	0.997646	<i>0.90 - 1.10</i>
4.38	4.37	1.0030	Intercept	0.002452	<i>+/-0.5</i>
2.19	2.19	0.9982			



NMHC Calibration Plot

Date: March 12, 2025

Location: Mannix





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS06
PATRICIA MCINNES
MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Patricia McInnes
Calibration Date: March 13, 2025
Start time (MST): 10:44
Reason: Routine

Station number: AMS 06
Last Cal Date: February 3, 2025
End time (MST): 13:45

Calibration Standards

Cal Gas Concentration: 50.08 ppm
Cal Gas Cylinder #: CC255448
Removed Cal Gas Conc: 50.08 ppm
Removed Gas Cyl #:
Calibrator Model: API T700
Zero Air Gen Model: API T701

Cal Gas Exp Date: October 22, 2032
Rem Gas Exp Date:
Diff between cyl:
Serial Number: 3566
Serial Number: 4602

Analyzer Information

Analyzer make: Thermo 43i
Analyzer Range: 0 - 1000 ppb

Serial Number: 1160290013

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999835	1.001008	Backgd or Offset:	18.0	18.5
Calibration intercept:	1.698954	1.638757	Coeff or Slope:	0.922	0.928

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	NA	Previous response	NA	*% change	NA
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4920.2	79.8	799.3	800.9	0.998
Mid point	4960.1	39.9	399.6	402.6	0.993
Low point	4980	20.0	200.3	203.6	0.984
As left zero	5000	0.0	0.0	0.0	----
As left span	4919.7	80.3	804.3	800.3	1.005
Average Correction Factor:					0.992

Notes: Flow is 0 upon arrival to the station. Changed the inlet filter and the pump. Adjusted the span.

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

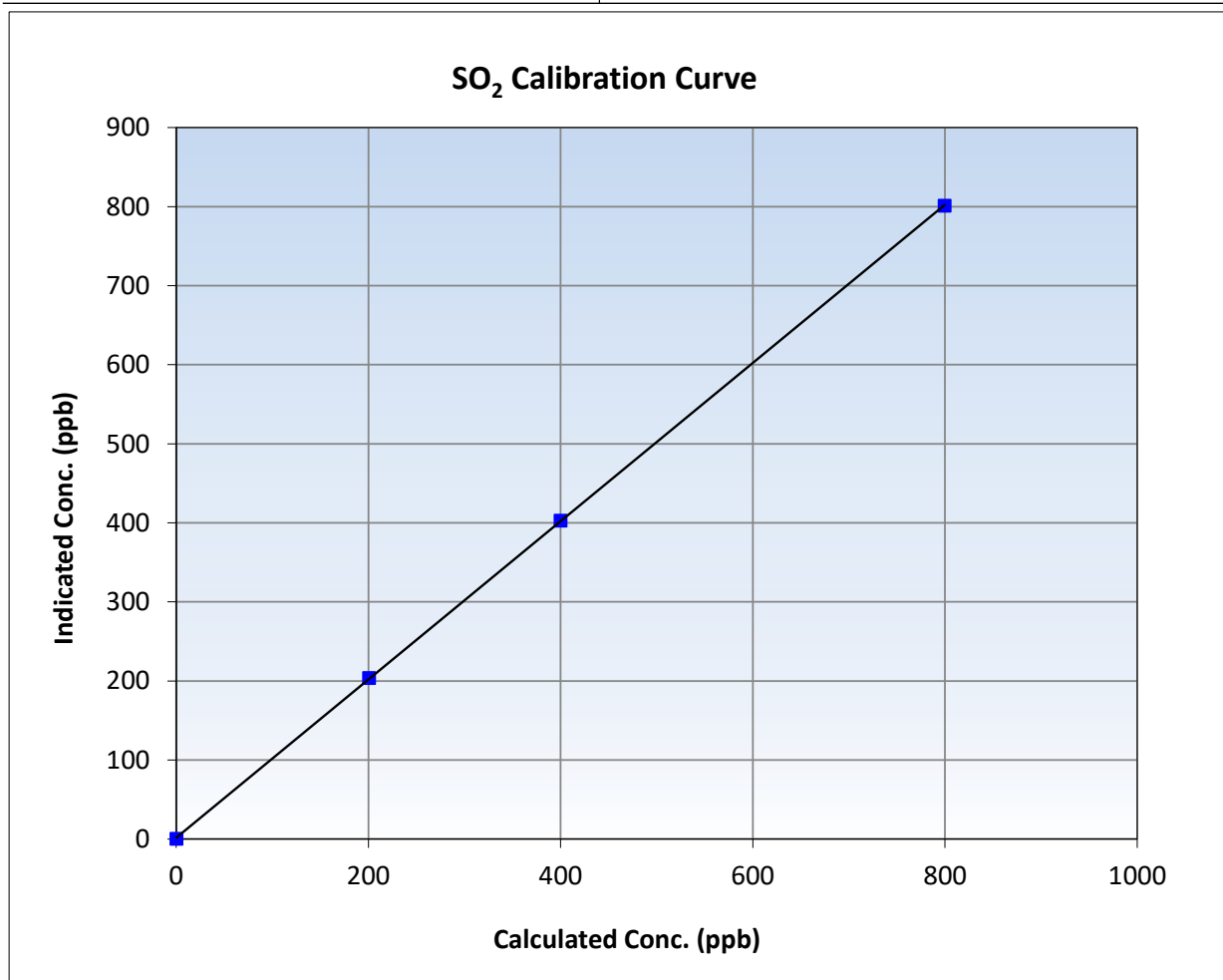
SO₂ Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 3, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	10:44	End Time (MST):	13:45
Analyzer make:	Thermo 43i	Analyzer serial #:	1160290013

Calibration Data

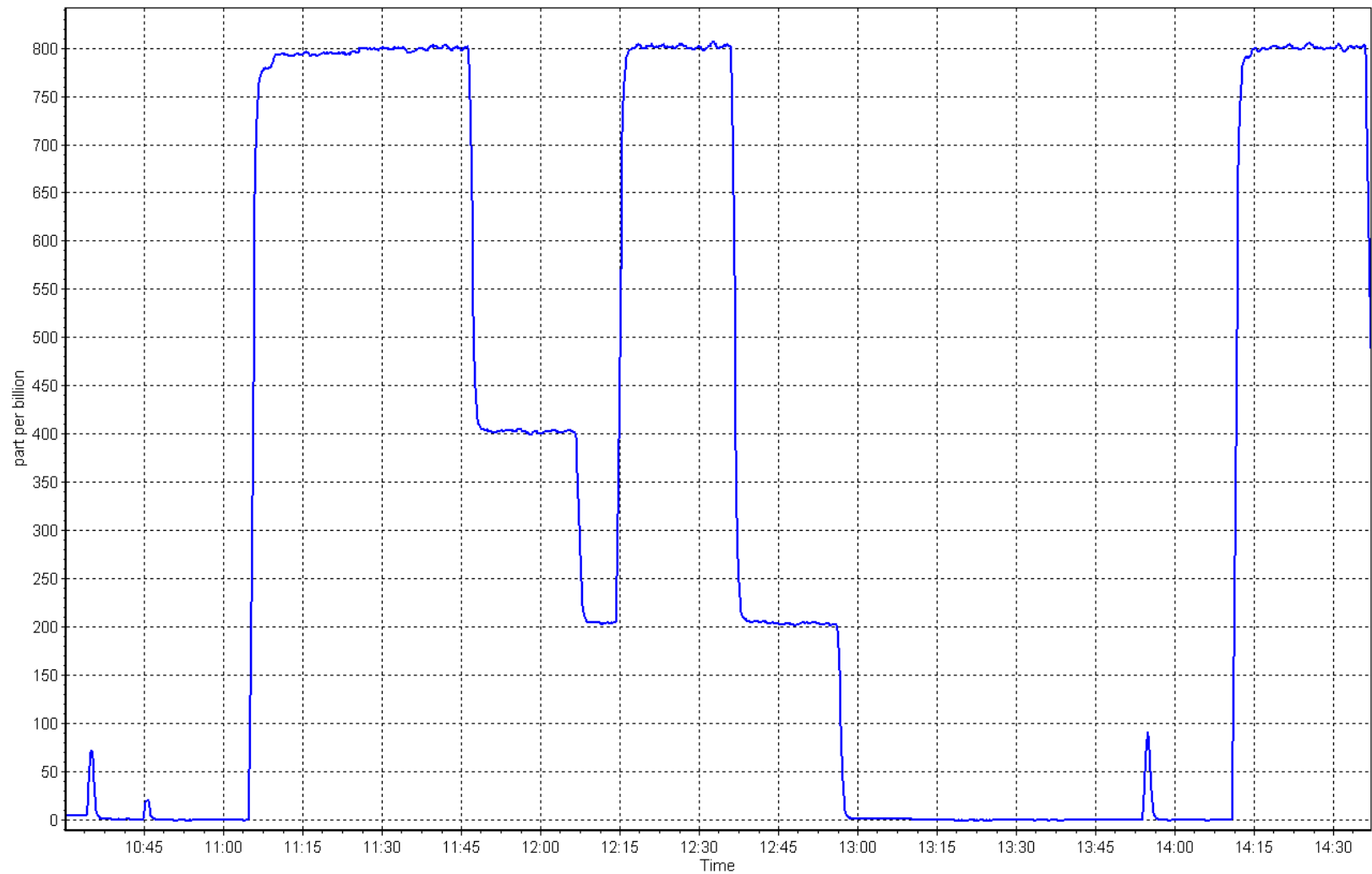
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999983	≥0.995
799.3	800.9	0.9980	Slope	1.001008	0.90 - 1.10
399.6	402.6	0.9926	Intercept	1.638757	+/-30
200.3	203.6	0.9839			



SO2 Calibration Plot

Date: March 13, 2025

Location: Patricia McInnes





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Patricia McInnes
Calibration Date: March 20, 2025
Start time (MST): 9:02
Reason: Routine

Station number: AMS 06
Last Cal Date: February 19, 2025
End time (MST): 15:00

Calibration Standards

Cal Gas Concentration: 4.760 ppm
Cal Gas Cylinder #: DT0014585
Removed Cal Gas Conc: 5.328 ppm
Removed Gas Cyl #: CC506659
Calibrator Make/Model: API T700
ZAG Make/Model: API T701

Cal Gas Exp Date: August 28, 2027
Rem Gas Exp Date: February 14, 2025
Diff between cyl: 2.4%
Serial Number: 3566
Serial Number: 4602

Analyzer Information

Analyzer make: Thermo 43i TLE
Converter make: CDN-101
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1218153358
Converter serial #: 517
Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.993309	1.001258	Backgd or Offset:	1.98	1.94
Calibration intercept:	0.180450	0.120000	Coeff or Slope:	1.135	1.117

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4925	75.1	80.0	79.8	1.004
As found Mid point	4963	37.5	40.0	40.4	0.991
As found Low point	4981	18.8	20.0	19.9	1.012
New cylinder response	4916	84.0	80.0	81.7	0.979
Baseline Corr As found:	79.7	Prev response:	79.67	*% change:	0.0%
Baseline Corr 2nd AF pt:	40.3	AF Slope:	0.997308	AF Intercept:	0.140452
Baseline Corr 3rd AF pt:	19.8	AF Correlation:	0.999931	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.4	----
High point	4916	84.0	80.0	80.3	0.996
Mid point	4958	42.0	40.0	40.1	0.997
Low point	4979	21.0	20.0	19.8	1.010
As left zero	5000	0.0	0.0	0.4	----
As left span	4916	84.0	80.0	79.2	1.010
SO2 Scrubber Check				0.1	
Date of last scrubber change:		December 20, 2021		Ave Corr Factor	1.001
Date of last converter efficiency test:					

Notes: Changed the H2S cylinder after multipoint as founds. Ran a SO2 scrubber check after calibrator zero. Adjusted the span.

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

TRS Calibration Summary

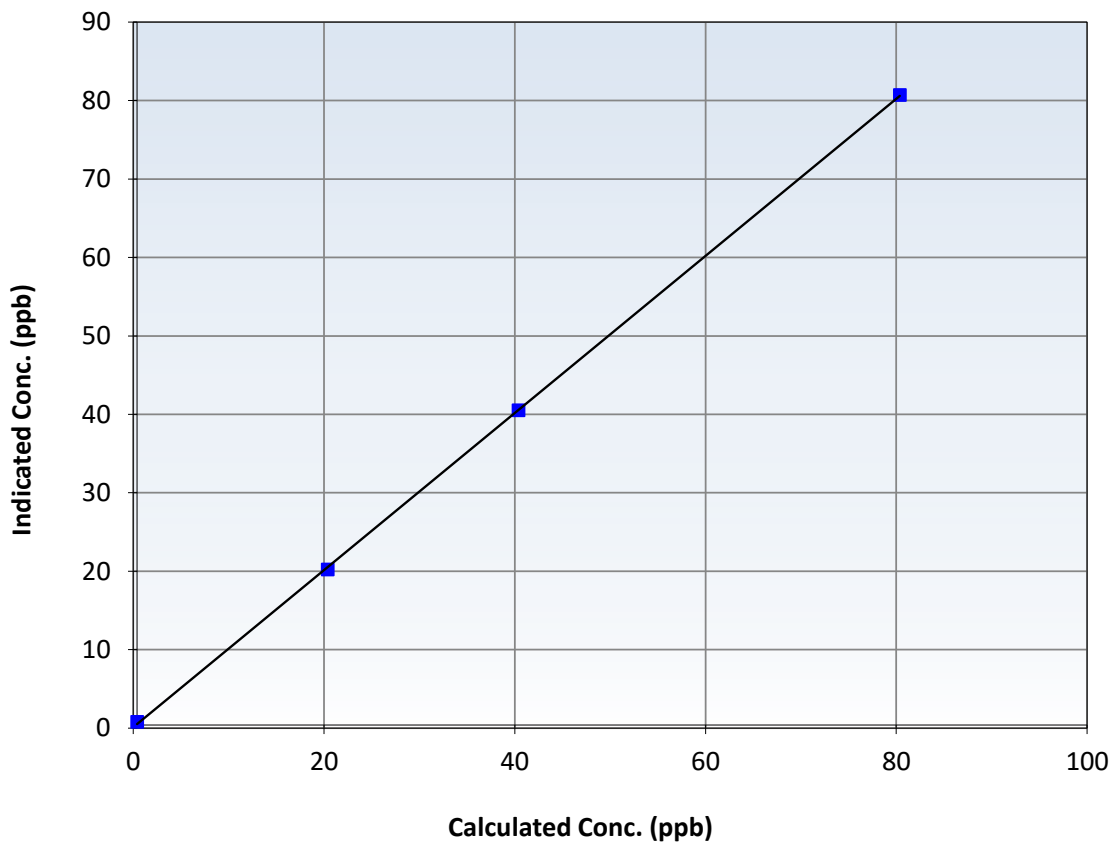
Station Information

Calibration Date:	March 20, 2025	Previous Calibration:	February 19, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	9:02	End Time (MST):	15:00
Analyzer make:	Thermo 43i TLE	Analyzer serial #:	1218153358

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.4	----	Correlation Coefficient	0.999941		≥ 0.995
80.0	80.3	0.9959	Slope	1.001258		$0.90 - 1.10$
40.0	40.1	0.9971	Intercept	0.120000		± 3
20.0	19.8	1.0097				

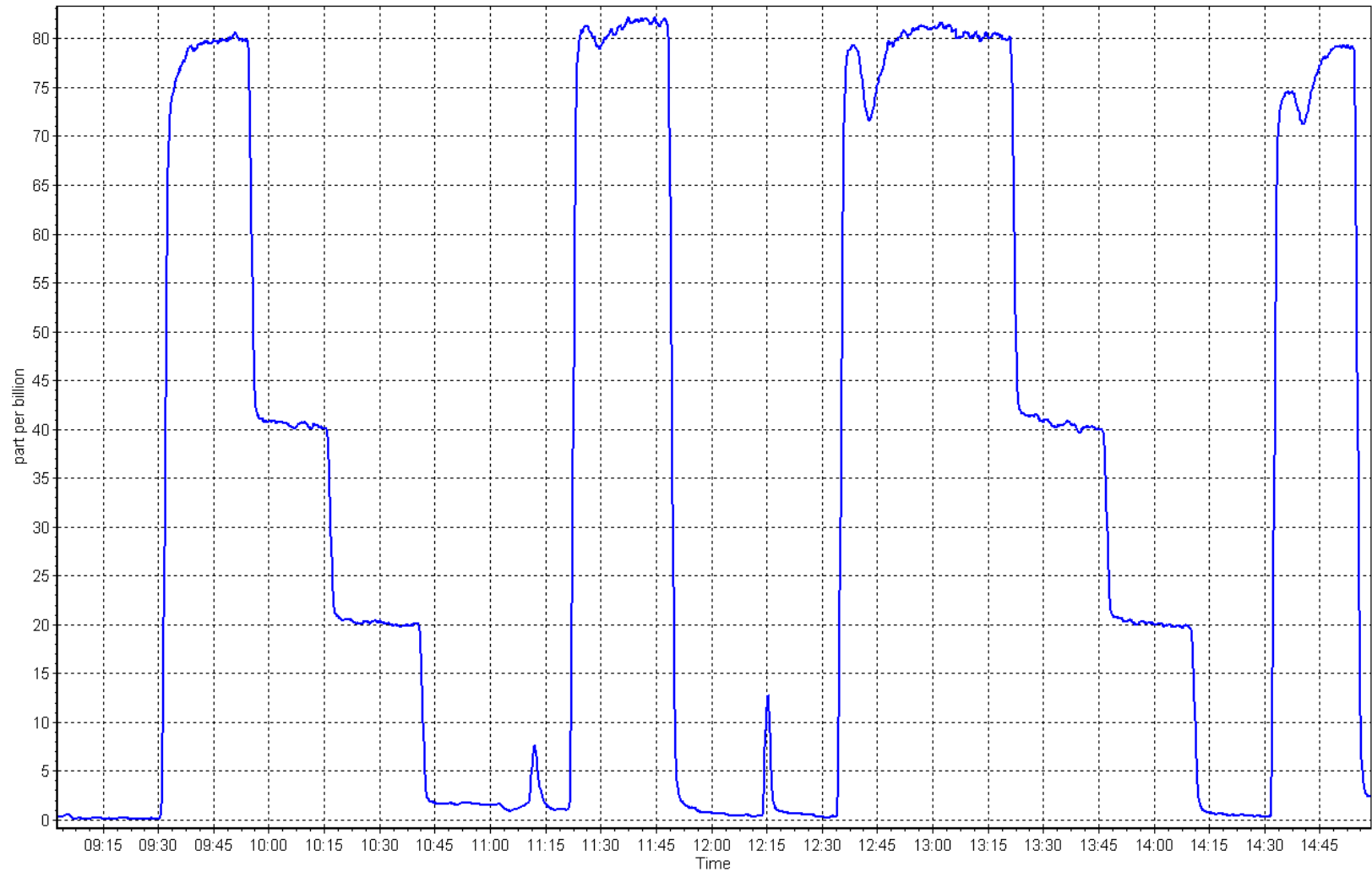
TRS Calibration Curve



TRS Calibration Plot

Date: March 20, 2025

Location: Patricia McInnes





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Patricia McInnes
Calibration Date: March 13, 2025
Start time (MST): 9:39
Reason: Removal

Station number: AMS 06
Last Cal Date: February 25, 2025
End time (MST): 13:00

Calibration Standards

Gas Cert Reference: AAL070632
CH₄ Cal Gas Conc. 501.4 ppm
C₃H₈ Cal Gas Conc. 199.3 ppm
Removed Gas Cert:
Removed CH₄ Conc. 501.4 ppm
Removed C₃H₈ Conc. 199.3 ppm
Diff between cyl (CH₄):
Calibrator Model: API T700
Zero Air Gen model: API T701

Cal Gas Expiry Date: September 9, 2024
CH₄ Equiv Conc. 1049.5 ppm
Removed Gas Expiry:
CH₄ Equiv Conc. 1049.5 ppm
Diff between cyl (THC):
Diff between cyl (NM):
Serial Number: 3566
Serial Number: 4602

Analyzer Information

Analyzer make: Mocon
THC Range: 0 - 20 ppm

Analyzer serial #: 1220DR0671
NMHC/CH₄ Range: 0 - 10 ppm

Start
CH₄ SP Ratio:
CH₄ Retention time:
Zero Chromatogram:

Finish
NMHC SP Ratio:
NMHC Peak Area:
Flat Baseline:

Start Finish

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	16.75	16.63	1.007
As found Mid point	4960	39.9	8.37	8.37	1.000
As found Low point	4980	20.0	4.20	4.11	1.023
New cylinder response					
Baseline Corr AF:	16.63	Prev response	16.79	*% change	-1.0%
Baseline Corr 2nd AF:	8.37	AF Slope:	0.994771	AF Intercept:	-0.014748
Baseline Corr 3rd AF:	4.11	AF Correlation:	0.999957	* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero					
High point					
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor

Notes:

Started as a routine calibration but the third point is failing even after multiple adjustments. Took the instrument back to the shop and failed on the bench there as well.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4920	79.8	8.75	8.79	0.995
As found Mid point	4960.1	39.9	4.37	4.55	0.962
As found Low point	4980	20.0	2.19	2.30	0.955
New cylinder response					
Baseline Corr AF:	8.79	Prev response	8.86	*% change	-0.8%
Baseline Corr 2nd AF:	4.55	AF Slope:	1.003385	AF Intercept:	0.066986
Baseline Corr 3rd AF:	2.30	AF Correlation:	0.999609	* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero					
High point					
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4920	79.8	8.00	7.84	1.021
As found Mid point	4960.1	39.9	4.00	3.83	1.046
As found Low point	4980	20.0	2.01	1.82	1.104
New cylinder response					
Baseline Corr AF:	7.84	Prev response	7.93	*% change	-1.2%
Baseline Corr 2nd AF:	3.83	AF Slope:	0.984854	AF Intercept:	-0.078735
Baseline Corr 3rd AF:	1.82	AF Correlation:	0.999543	* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero					
High point					
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor

Calibration Statistics

	<u>Start</u>	
THC Cal Slope:	1.002275	
THC Cal Offset:	0.006993	
CH ₄ Cal Slope:	0.997189	
CH ₄ Cal Offset:	-0.045185	
NMHC Cal Slope:	1.006848	
NMHC Cal Offset:	0.051979	

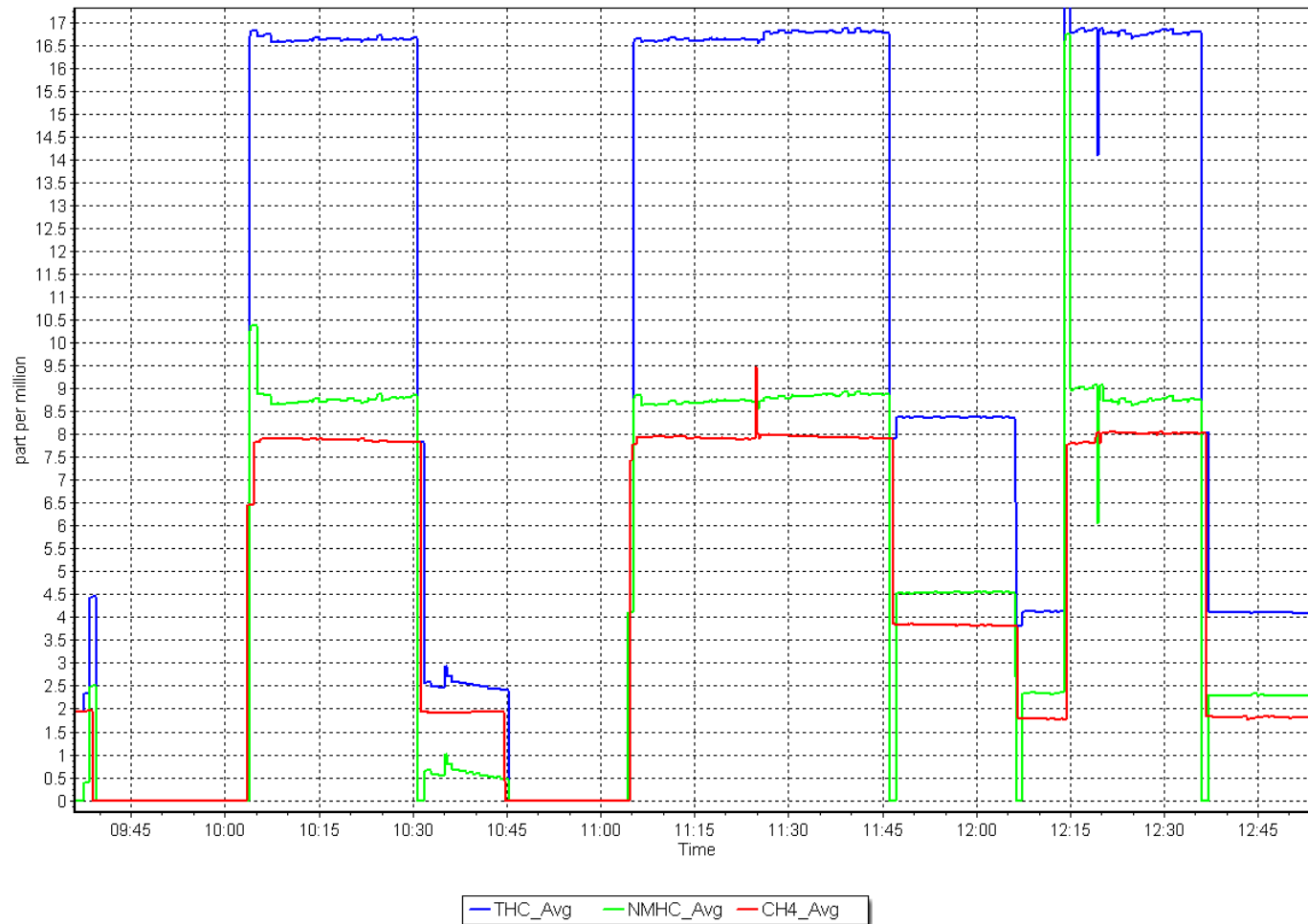
Finish

Calibration Performed By: Max Farrell

NMHC Calibration Plot

Date: March 13, 2025

Location: Patricia McInnes





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Patricia McInnes
 Calibration Date: March 14, 2025
 Start time (MST): 10:30
 Reason: Install

Station number: AMS 06
 Last Cal Date: N/A
 End time (MST): 13:00

Calibration Standards

Gas Cert Reference: AAL070632
 CH₄ Cal Gas Conc. 501.4 ppm
 C₃H₈ Cal Gas Conc. 199.3 ppm
 Removed Gas Cert:
 Removed CH₄ Conc. 501.4 ppm
 Removed C₃H₈ Conc. 199.3 ppm
 Diff between cyl (CH₄):
 Calibrator Model: API T700
 Zero Air Gen model: API T701

Cal Gas Expiry Date: September 9, 2024
 CH₄ Equiv Conc. 1049.5 ppm
 Removed Gas Expiry:
 CH₄ Equiv Conc. 1049.5 ppm
 Diff between cyl (THC):
 Diff between cyl (NM):
 Serial Number: 3566
 Serial Number: 4602

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1118148494
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:		4.25E-04	NMHC SP Ratio:	4.12E-05
CH ₄ Retention time:		14.0	NMHC Peak Area:	212421
Zero Chromatogram:		OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	16.75	16.81	0.996
Mid point	4960	39.9	8.37	8.50	0.985
Low point	4980	20.0	4.20	4.31	0.973
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	16.75	16.71	1.002
Average Correction Factor					0.985

Notes:

Installed 55i due to Mocon failing linearity. Adjusted the span.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	8.75	8.77	0.998
Mid point	4960.1	39.9	4.37	4.44	0.986
Low point	4980	20.0	2.19	2.25	0.975
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	8.75	8.76	0.998
Average Correction Factor					0.986

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00		----
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	8.00	8.04	0.995
Mid point	4960.1	39.9	4.00	4.07	0.984
Low point	4980	20.0	2.01	2.07	0.971
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	8.00	7.95	1.007
Average Correction Factor					0.983

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
THC Cal Slope:		1.002148
THC Cal Offset:		0.059170
CH ₄ Cal Slope:		1.003496
CH ₄ Cal Offset:		0.028976
NMHC Cal Slope:		1.000667
NMHC Cal Offset:		0.031394

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

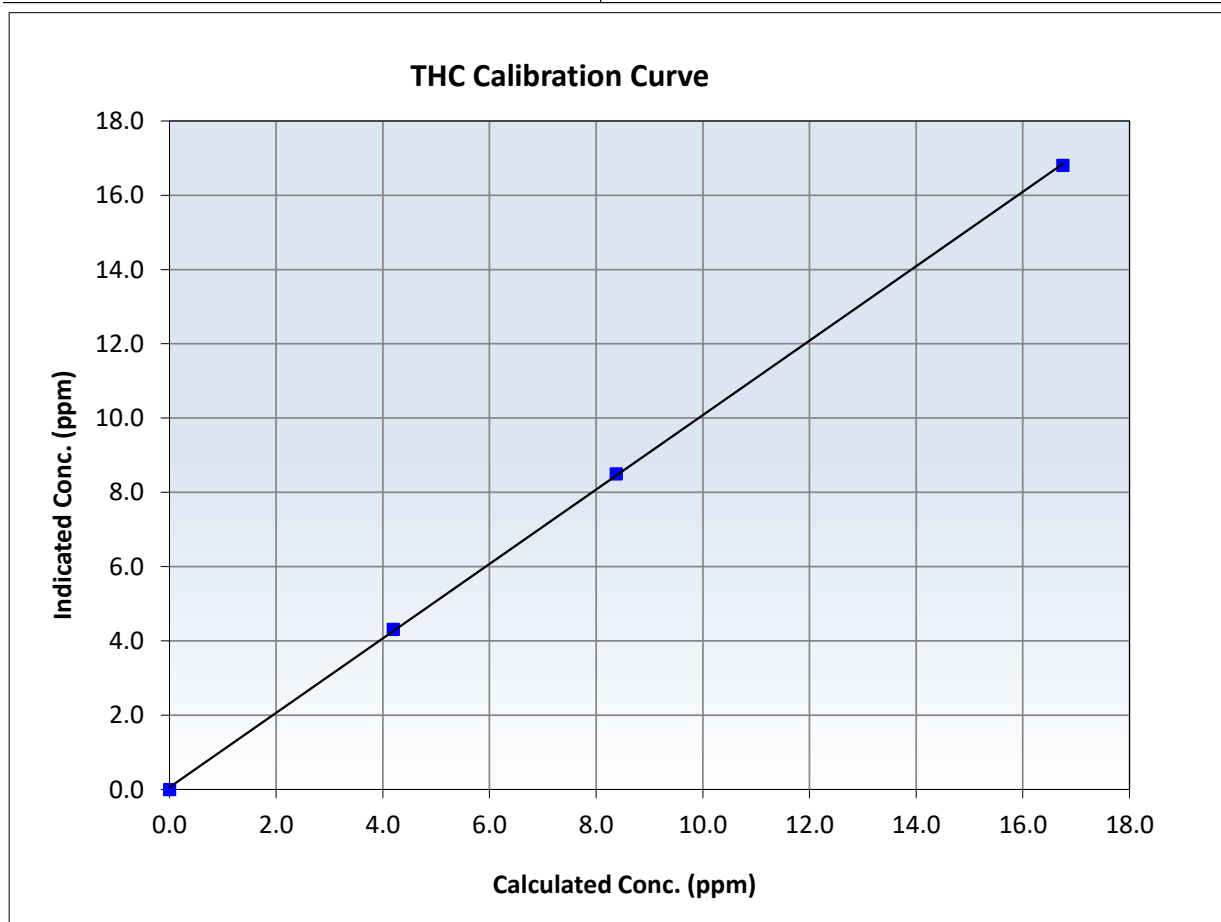
THC Calibration Summary

Station Information

Calibration Date:	March 14, 2025	Previous Calibration:	N/A
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	10:30	End Time (MST):	13:00
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148494

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999940		≥ 0.995
16.75	16.81	0.9965	Slope	1.002148		$0.90 - 1.10$
8.37	8.50	0.9853	Intercept	0.059170		± 0.5
4.20	4.31	0.9733				





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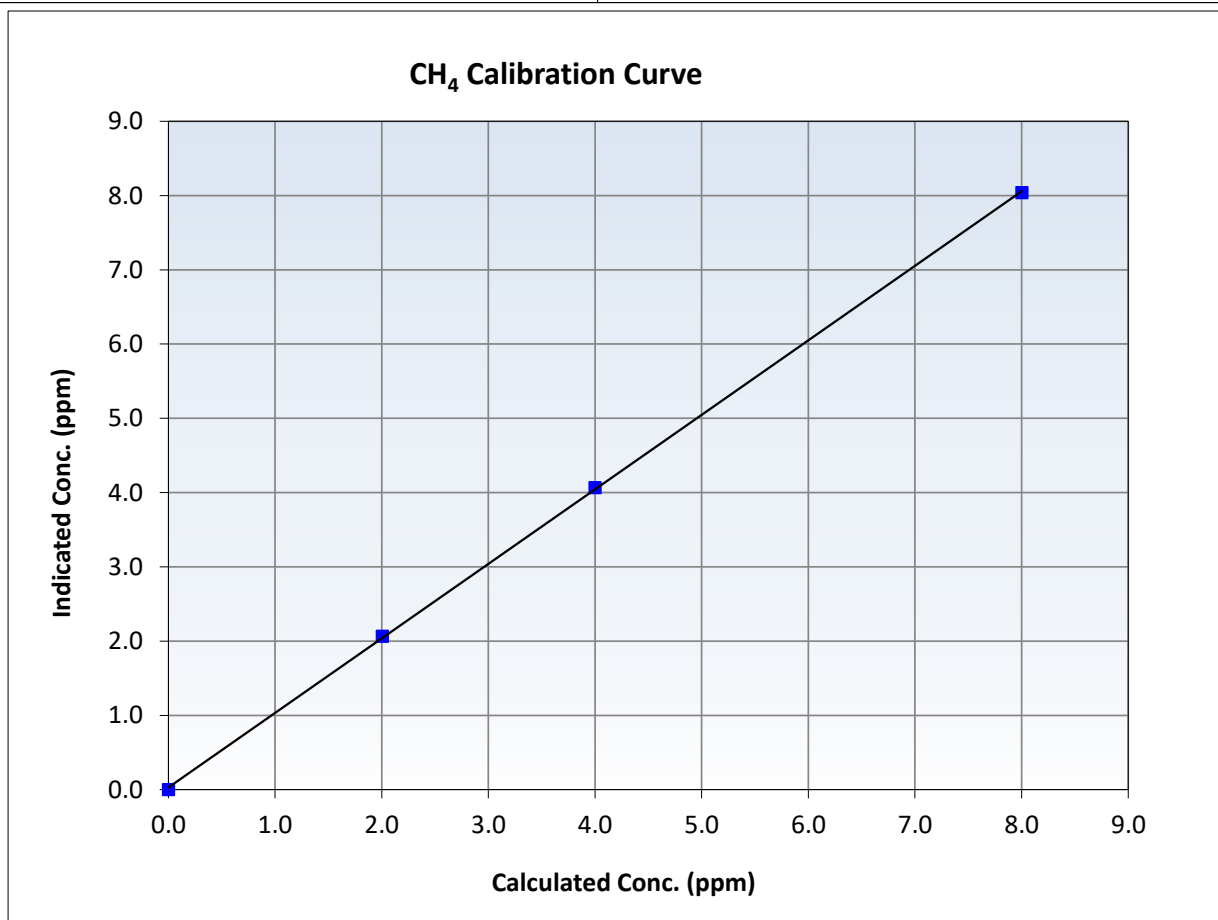
CH₄ Calibration Summary

Station Information

Calibration Date:	March 14, 2025	Previous Calibration:	N/A
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	10:30	End Time (MST):	13:00
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148494

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999937	<i>≥0.995</i>
8.00	8.04	0.9951	Slope	1.003496	<i>0.90 - 1.10</i>
4.00	4.07	0.9838	Intercept	0.028976	<i>+/-0.5</i>
2.01	2.07	0.9712			





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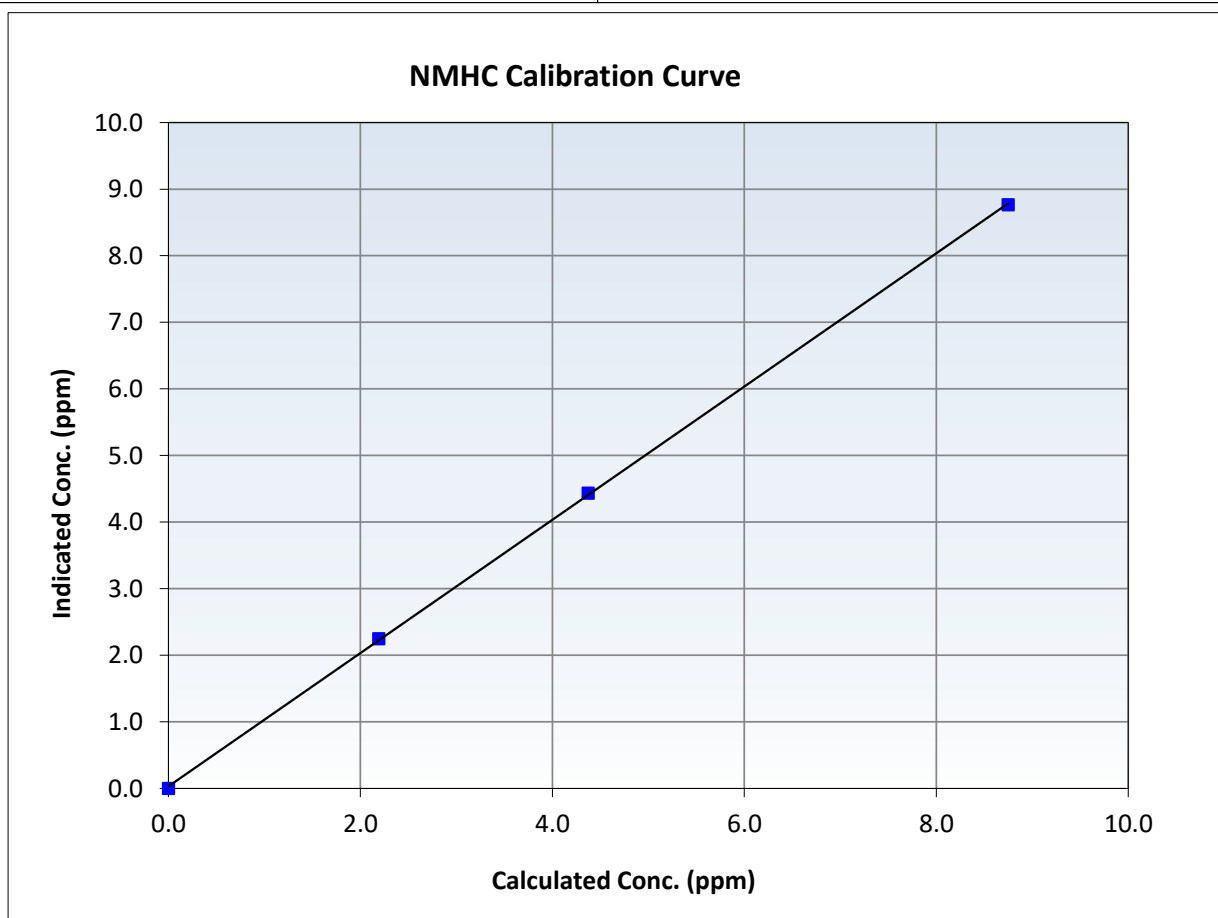
NMHC Calibration Summary

Station Information

Calibration Date:	March 14, 2025	Previous Calibration:	N/A
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	10:30	End Time (MST):	13:00
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148494

Calibration Data

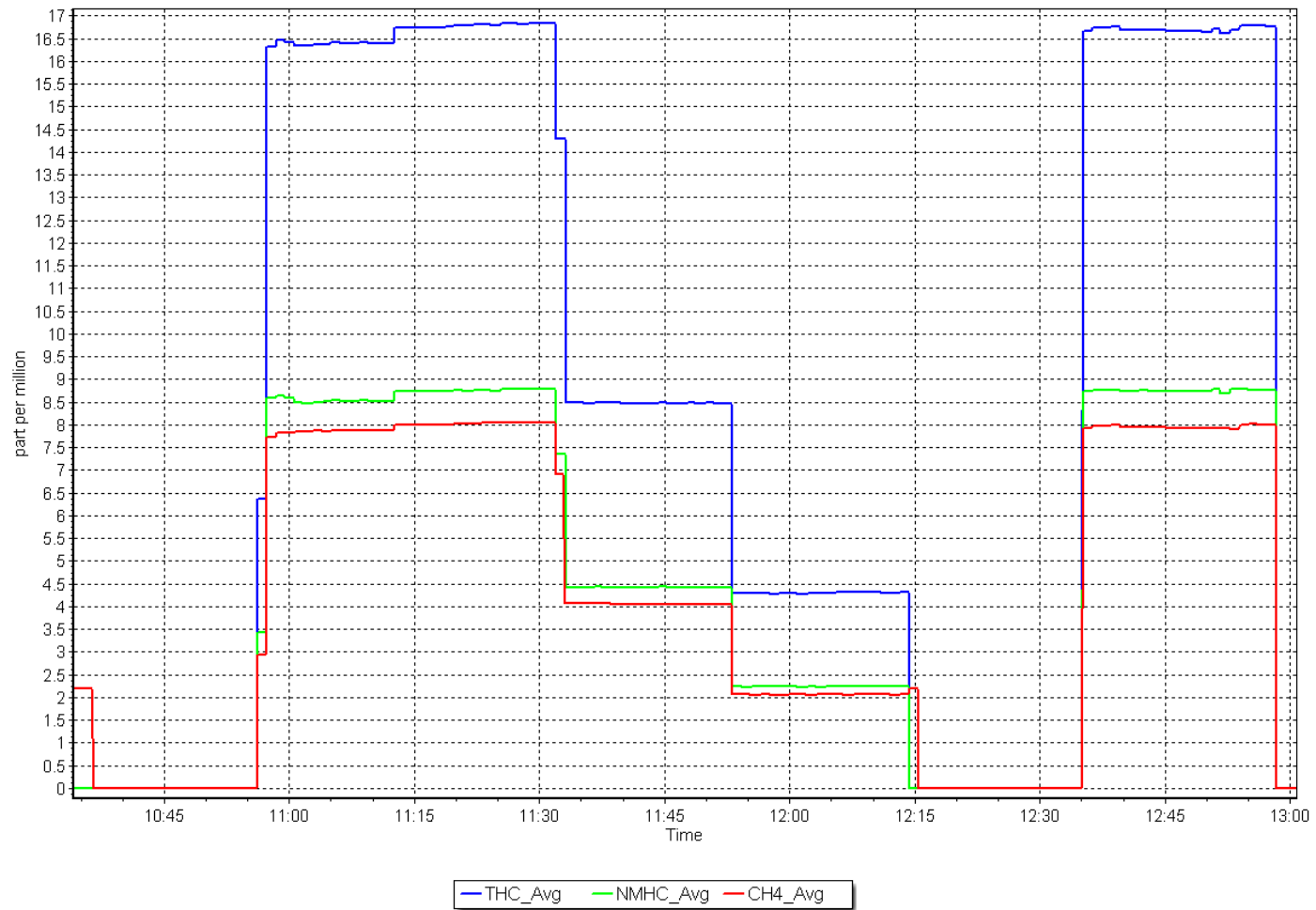
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999936	<i>≥0.995</i>
8.75	8.77	0.9980	Slope	1.000667	<i>0.90 - 1.10</i>
4.37	4.44	0.9862	Intercept	0.031394	<i>+/-0.5</i>
2.19	2.25	0.9748			



NMHC Calibration Plot

Date: March 14, 2025

Location: Patricia McInnes





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Patricia McInnes
Calibration Date: March 21, 2025
Start time (MST): 10:24
Reason: Cylinder Change

Station number: AMS 06
Last Cal Date: March 14, 2025
End time (MST): 12:30

Calibration Standards

Gas Cert Reference: AAL070632
CH₄ Cal Gas Conc. 501.4 ppm
C₃H₈ Cal Gas Conc. 199.3 ppm
Removed Gas Cert:
Removed CH₄ Conc. 501.4 ppm
Removed C₃H₈ Conc. 199.3 ppm
Diff between cyl (CH₄):
Calibrator Model: API T700
Zero Air Gen model: API T701

Cal Gas Expiry Date: September 9, 2024
CH₄ Equiv Conc. 1049.5 ppm
Removed Gas Expiry:
CH₄ Equiv Conc. 1049.5 ppm
Diff between cyl (THC):
Diff between cyl (NM):
Serial Number: 3566
Serial Number: 4602

Analyzer Information

Analyzer make: Thermo 55i
THC Range: 0 - 20 ppm

Analyzer serial #: 1118148494
NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	4.25E-04	4.25E-04	NMHC SP Ratio:	4.12E-05	4.12E-05
CH ₄ Retention time:	14.0	14.0	NMHC Peak Area:	212421	212421
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.01	----
As found High point	4920	79.8	16.75	16.24	1.032
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.24	Prev response	16.84	*% change	-3.7%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.01	----
High point	4920	79.8	16.75	16.23	1.032
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.032

Notes:

Swapped the N2 cylinder after as founds. As founds are a little low, instrument was just installed this month, most likely due to the instrument stabilizing.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10 ----
As found High point	4920	79.8	8.75	8.59	1.018
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.59	Prev response	8.78	*% change	-2.2%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	8.75	8.58	1.019
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.019

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.01	Limit = 0.90-1.10 ----
As found High point	4920	79.8	8.00	7.65	1.047
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.64	Prev response	8.06	*% change	-5.4%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.01	----
High point	4920	79.8	8.00	7.65	1.046
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.046

Calibration Statistics

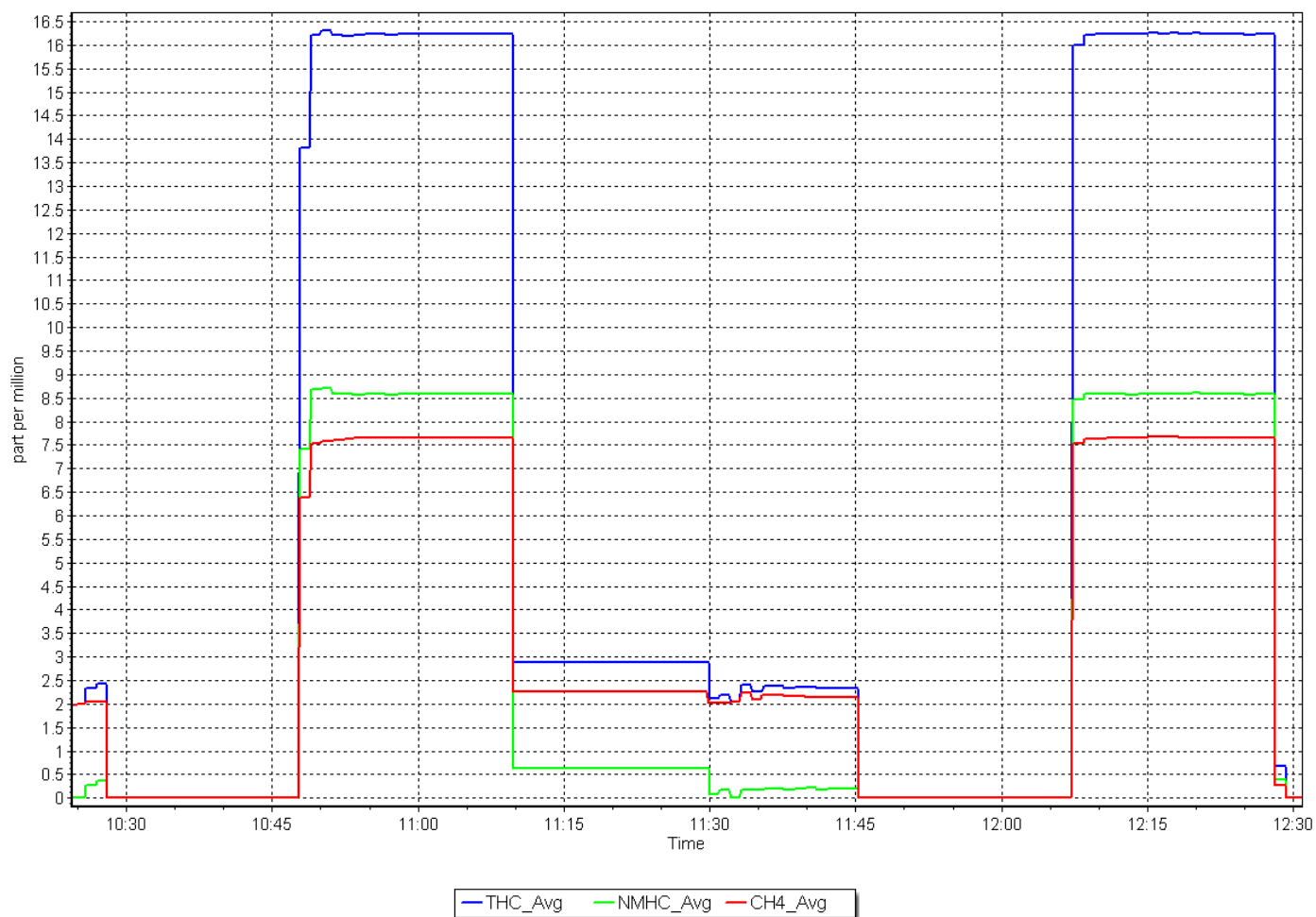
	Start	Finish
THC Cal Slope:	1.002148	0.968559
THC Cal Offset:	0.059170	0.010000
CH ₄ Cal Slope:	1.003496	0.955095
CH ₄ Cal Offset:	0.028976	0.010000
NMHC Cal Slope:	1.000667	0.981105
NMHC Cal Offset:	0.031394	0.000000

Calibration Performed By: Max Farrell

NMHC Calibration Plot

Date: March 21, 2025

Location: Patricia McInnes





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Patricia McInnes
Station number: AMS 06
Calibration Date: March 4, 2025
Last Cal Date: February 6, 2025
Start time (MST): 10:10
End time (MST): 15:15
Reason: Routine

Calibration Standards

NO Gas Cylinder #: T30YCWN
NOX Cal Gas Conc: 47.94 ppm
Removed Cylinder #: N/A
Removed Gas NOX Conc: 47.94 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701
Cal Gas Expiry Date: April 11, 2025
NO Cal Gas Conc: 46.39 ppm
Removed Gas Exp Date: N/A
Removed Gas NO Conc: 46.39 ppm
NO gas Diff:
Serial Number: 3566
Serial Number: 4602

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.7	-0.1	-0.6	----	----
AF High point	4914	86.2	826.5	799.7	26.7	829.7	800.3	29.3	0.9952	0.9992
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO _x = 830.4 ppb	NO = 803.5 ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = 0.0%
Baseline Corr 1st pt	NO _x = 830.4 ppb	NO = 800.4 ppb	<u>As Found Statistics</u>		*Percent Change	NO = -0.4%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found	NO _x r ² :	Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found	NO r ² :	NO SI:	NO Int:
			As found	NO ₂ r ² :	NO2 SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1172750022

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.841	0.841	NO bkgnd or offset:	3.8	3.8
NOX coeff or slope:	0.990	0.990	NOX bkgnd or offset:	4.7	4.7
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	155.1	155.1

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.003301	1.000894
NO _x Cal Offset:	1.254881	1.375479
NO Cal Slope:	1.003390	1.001960
NO Cal Offset:	1.081913	0.582447
NO ₂ Cal Slope:	0.999529	1.000905
NO ₂ Cal Offset:	-0.673863	-0.618864

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	-0.5	-0.2	-0.3	----	----
High point	4914	86.2	826.5	799.7	26.7	827.7	801.5	26.3	0.9985	0.9978
Mid point	4957	43.1	413.2	399.9	13.4	415.7	401.6	14.1	0.9941	0.9957
Low point	4978	21.6	207.1	200.4	6.7	210.7	202.2	8.5	0.9830	0.9912
As left zero	5000	0.0	0.0	0.0	0.0	-0.6	0.0	-0.6	----	----
As left span	4914	86.2	826.5	400.1	426.4	824.7	400.1	424.4	1.0021	1.0000
Average Correction Factor									0.9919	0.9949

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.3	----	----
High GPT point	798.7	399.2	426.2	426.2	1.0000	100.0%
Mid GPT point	798.7	593.8	231.6	231.0	1.0027	99.7%
Low GPT point	798.7	695.7	129.7	128.9	1.0064	99.4%
Average Correction Factor					1.0030	99.7%

Notes: Changed the inlet filter after as founds. No adjustments made.

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

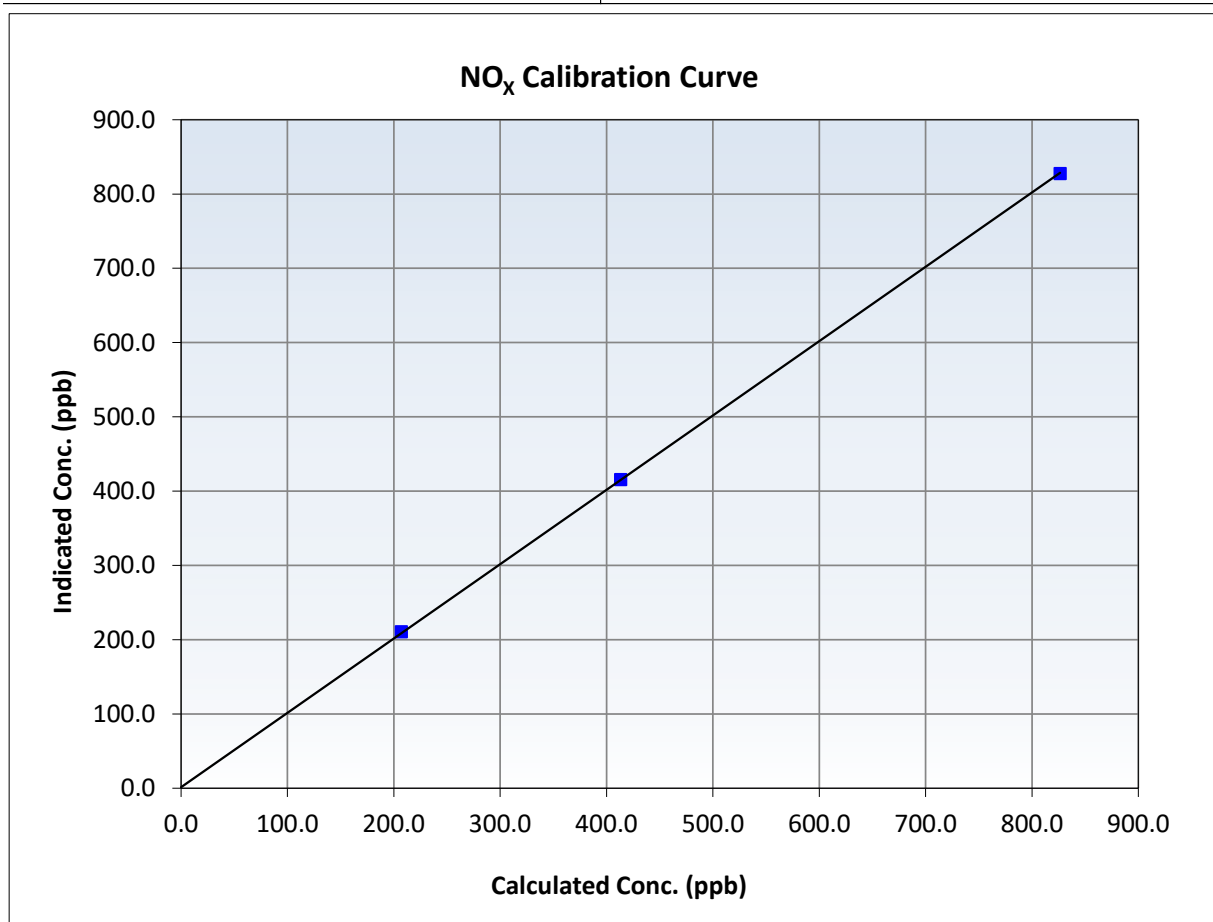
NO_x Calibration Summary

Station Information

Calibration Date:	March 4, 2025	Previous Calibration:	February 6, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	10:10	End Time (MST):	15:15
Analyzer make:	Thermo 42i	Analyzer serial #:	1172750022

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.5	----	Correlation Coefficient	0.999976	≥0.995
826.5	827.7	0.9985	Slope	1.000894	0.90 - 1.10
413.2	415.7	0.9941	Intercept	1.375479	+/-20
207.1	210.7	0.9830			





Wood Buffalo Environmental Association

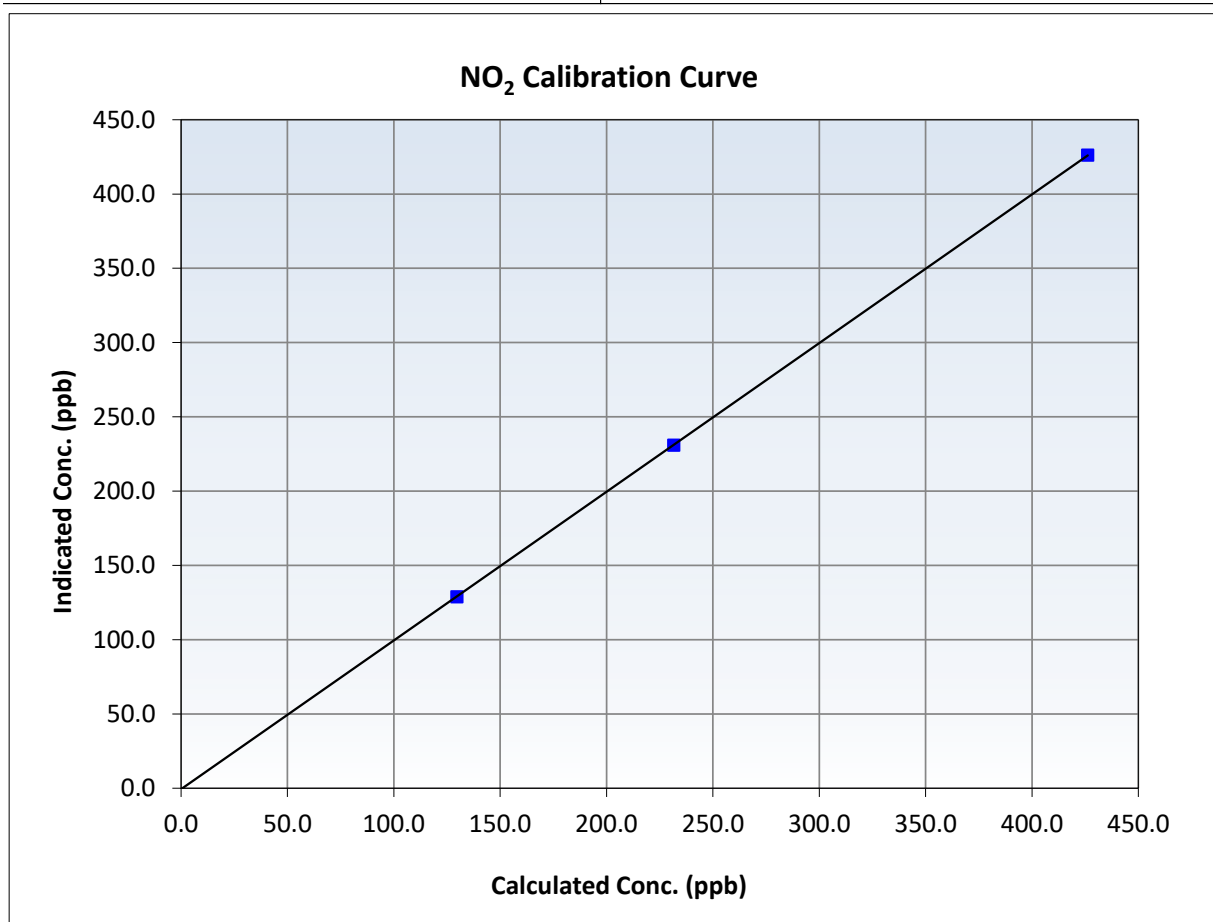
NO₂ Calibration Summary

Station Information

Calibration Date:	March 4, 2025	Previous Calibration:	February 6, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	10:10	End Time (MST):	15:15
Analyzer make:	Thermo 42i	Analyzer serial #:	1172750022

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.3	----	Correlation Coefficient	0.999997	≥0.995
426.2	426.2	1.0000	Slope	1.000905	0.90 - 1.10
231.6	231.0	1.0027	Intercept	-0.618864	+/-20
129.7	128.9	1.0064			





Wood Buffalo Environmental Association

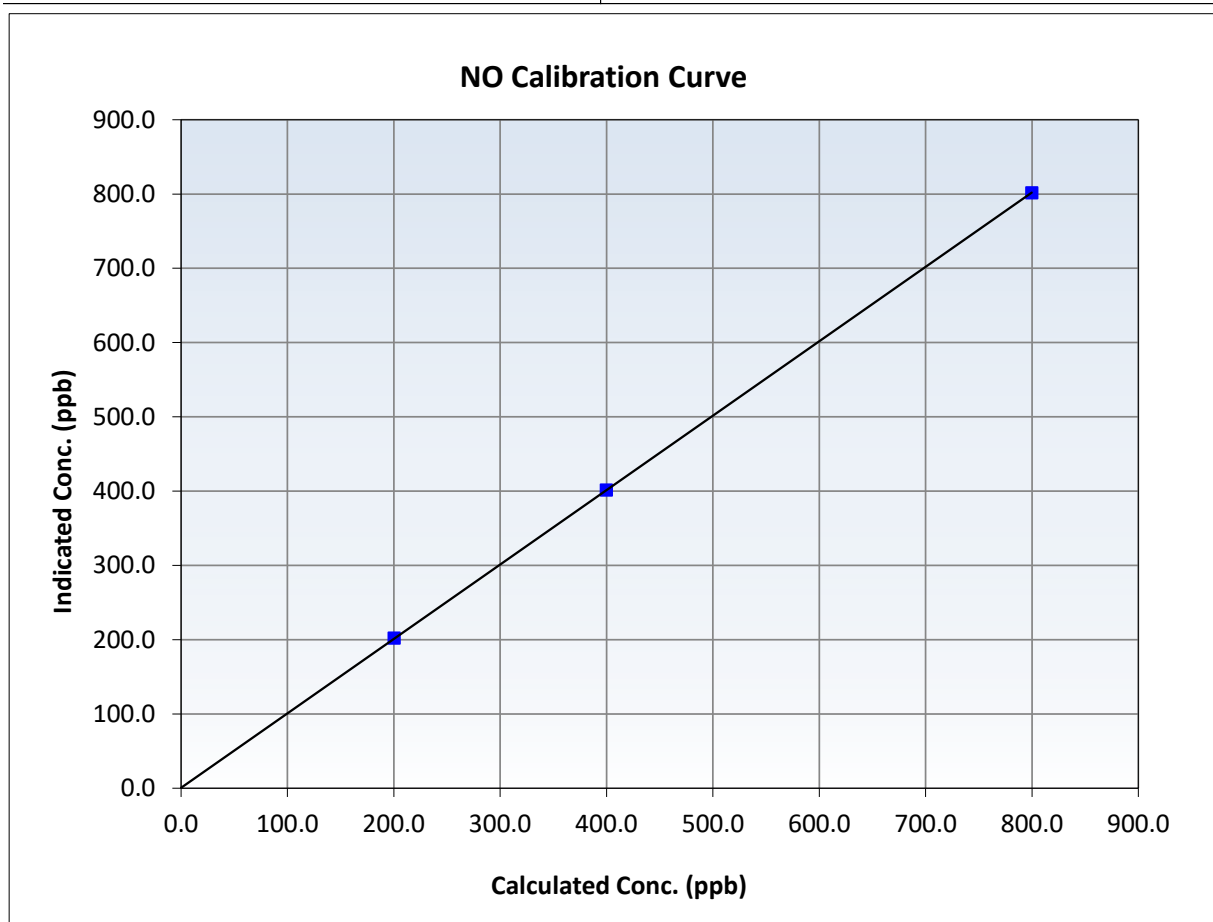
NO Calibration Summary

Station Information

Calibration Date:	March 4, 2025	Previous Calibration:	February 6, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	10:10	End Time (MST):	15:15
Analyzer make:	Thermo 42i	Analyzer serial #:	1172750022

Calibration Data

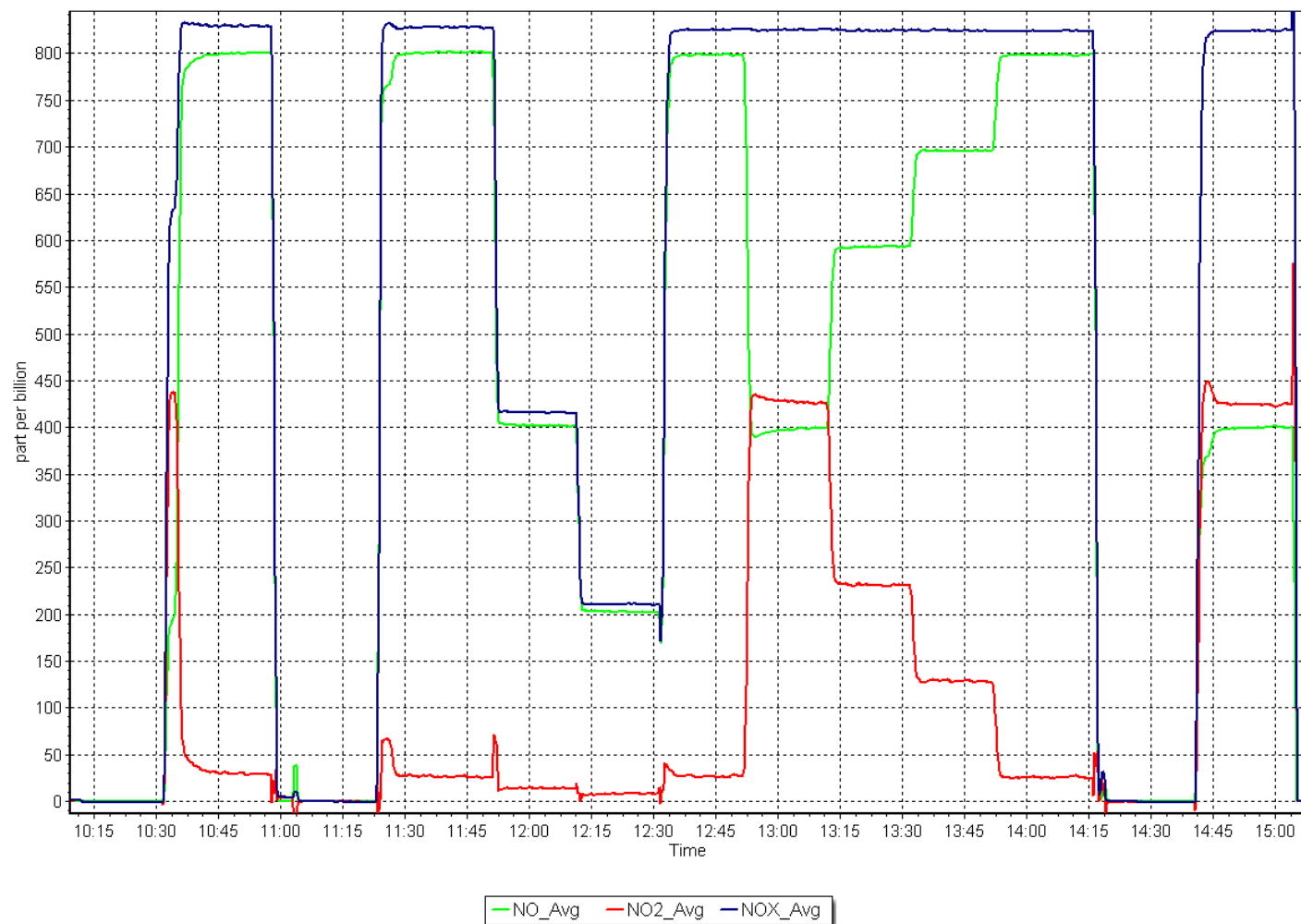
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.2	----	Correlation Coefficient	0.999996	≥ 0.995
799.7	801.5	0.9978	Slope	1.001960	$0.90 - 1.10$
399.9	401.6	0.9957	Intercept	0.582447	± 20
200.4	202.2	0.9912			



NO_x Calibration Plot

Date: March 4, 2025

Location: Patricia McInnes





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Patricia McInnes
Calibration Date: March 17, 2025
Start time (MST): 9:42
Reason: Routine

Station number: AMS 06
Last Cal Date: February 20, 2025
End time (MST): 13:00

Calibration Standards

O₃ generation mode: Photometer
Calibrator Make/Model: API T700
ZAG Make/Model: API T701

Serial Number: 3566
Serial Number: 4602

Analyzer Information

Analyzer make: Thermo 49i
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 1300156234

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.004086	1.001200	Backgd or Offset:	-0.5	-0.5
Calibration intercept:	-0.040000	0.340000	Coeff or Slope:	1.020	1.020

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	800.0	0.0	0.1	----
As found High point	5000	1031.0	400.0	401.2	0.997
As found Mid point					
As found Low point					
Baseline Corr As found:	401.1	Previous response	401.6	*% change	-0.1%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	800.0	0.0	0.1	----
High point	5000	1031.0	400.0	400.7	0.998
Mid point	5000	821.4	200.0	200.7	0.997
Low point	5000	699.5	100.0	100.7	0.993
As left zero	5000	800.0	0.0	0.6	----
As left span	5000	1031.0	400.0	401.7	0.996
Average Correction Factor					0.996

Notes: Changed the inlet filter after as founds. No adjustments made.

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

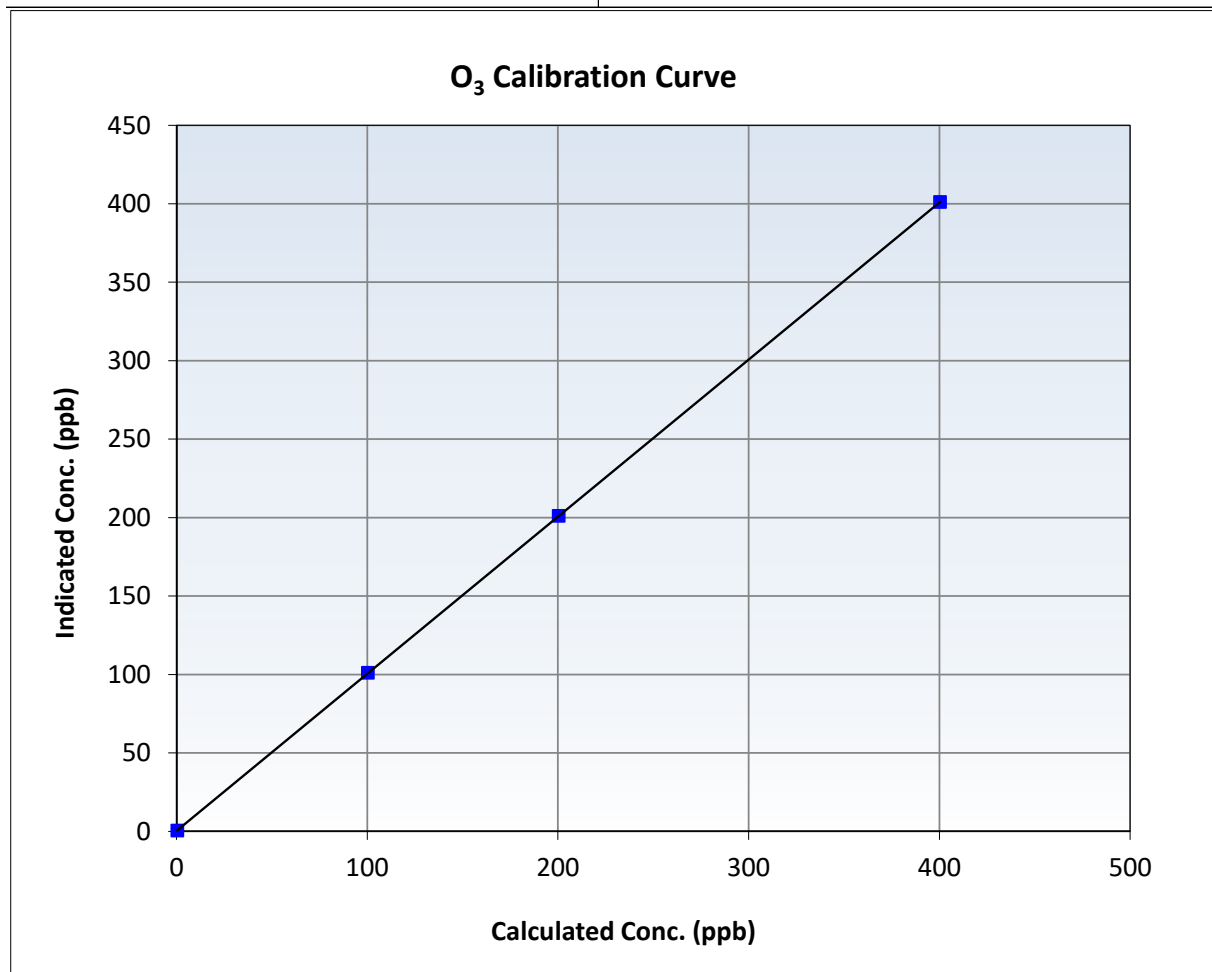
O₃ Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 20, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	9:42	End Time (MST):	13:00
Analyzer make:	Thermo 49i	Analyzer serial #:	1300156234

Calibration Data

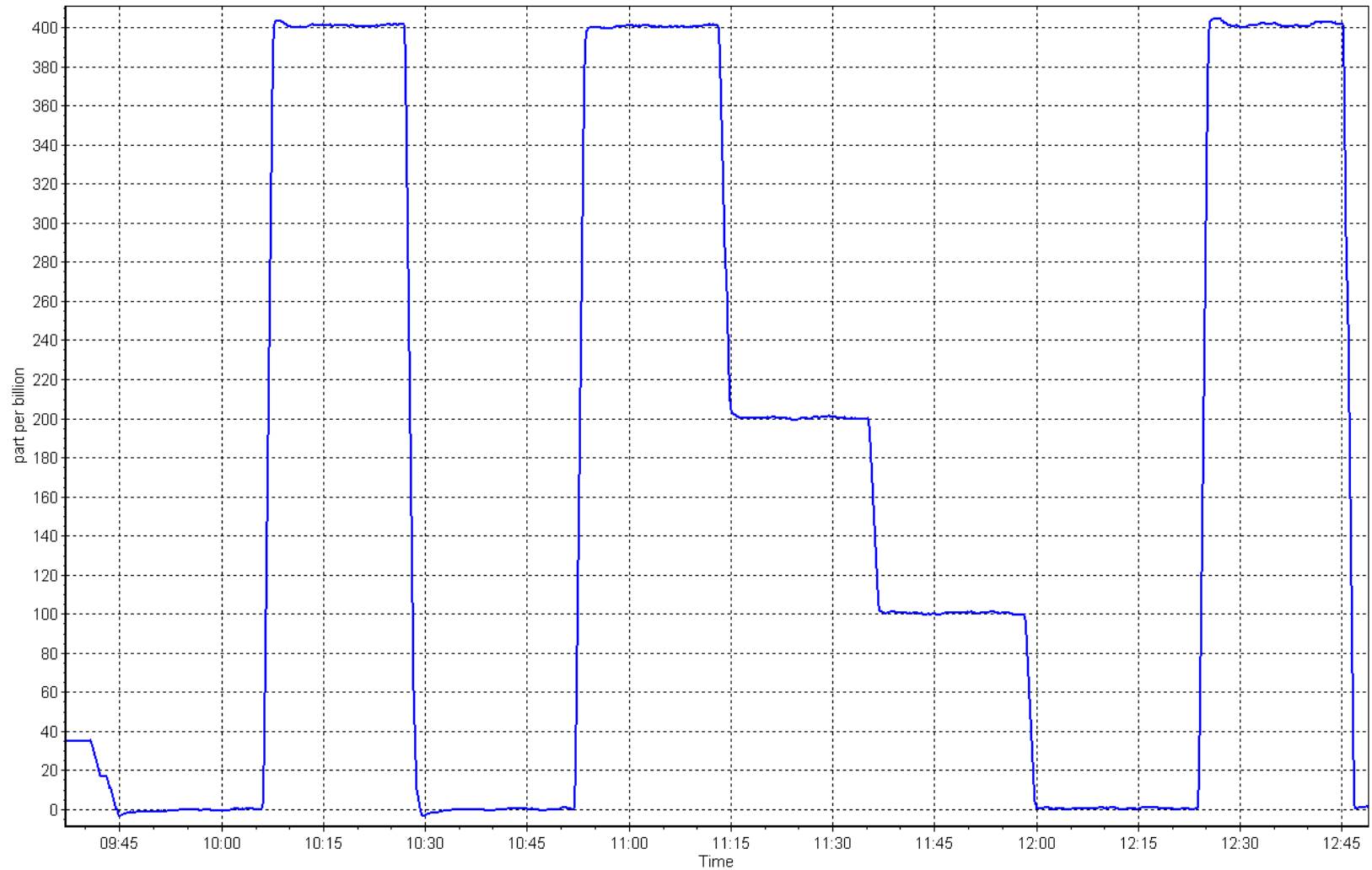
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999998	≥0.995
400.0	400.7	0.9983	Slope	1.001200	0.90 - 1.10
200.0	200.7	0.9965	Intercept	0.340000	+/- 5
100.0	100.7	0.9930			



O₃ Calibration Plot

Date: March 17, 2025

Location: Patricia McInnes





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Patricia McInnes Station number: AMS 06
Calibration Date: March 17, 2025 Last Cal Date: February 20, 2025
Start time (MST): 13:50 End time (MST): 14:30

Analyzer Make: API T640 S/N: 766
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388755
Temp/RH standard: Alicat FP-25BT S/N: 388755

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-5.6	-6	-5.6	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	720.10	721.20	720.10	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	5.04	5.08	5.04	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	59	----	59	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: _____	13.3	PM w/ HEPA: _____	0.0	<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: 07-16-2026
Lot No.: 100128-050-050

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test	9.7	10.8	10.8	<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: March 17, 2025
Date Disposable Filter Changed: March 17, 2025

Post- maintenance Zero Verification: PM w/ HEPA: 0.00 <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: April 13, 2023
Date RH/T Sensor Cleaned: April 13, 2023

Notes: Parameters within limits. No adjustments made. Leak check passed.

Calibration by: Max Farrell



Wood Buffalo Environmental Association

Nt - NOX - NH3 Calibration Report

Station Information

Station Name:	Patricia McInnes	Station number:	AMS 06
NOX Cal Date:	March 10, 2025	Last Cal Date:	February 10, 2025
Start time (MST):	9:52	End time (MST):	14:25
NH3 Cal Date:	March 11, 2025	Last Cal Date:	February 10, 2025
Start time (MST):	8:43	End time (MST):	13:30
Reason:	Routine		

Calibration Standards

NOX Cal Gas Conc:	47.94	ppm	NO Gas Cylinder #:	T30YCWN
NO Cal Gas Conc:	46.39	ppm	NO Cal Gas Expiry:	April 11, 2025
Removed NOX Conc:	47.94	ppm	Removed Cylinder #:	N/A
Removed NO Conc:	46.39	ppm	Removed cyl Expiry:	N/A
NOX gas Diff:			NO gas Diff:	
NH3 Cal Gas Conc:	75.0	ppm	NH3 Gas Cylinder #:	CC709372
			NH3 Cal Gas Expiry:	December 31, 2025
Removed NH3 Conc:	76.3	ppm	Removed Cylinder #:	EB0108520
NH3 gas Diff:	3.5%		Removed cyl Expiry:	August 22, 2024
Calibrator Model:	API T700		Serial Number:	3566
ZAG make/model:	API T701		Serial Number:	4602

Analyzer Information

Analyzer model:	API T201	Analyzer serial #:	215
Converter model:	API T501	Converter serial #:	147
NH3 Range (ppb):	0 - 2000 ppb	Reaction cell Press:	6.20
NOX Range (ppb):	0 - 1000 ppb	Sample Flow:	25.4

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coefficient:	1.002	1.002	Nt coefficient:	0.995	0.995
NOX coefficient:	0.993	0.993	NO bkgrnd:	0.2	0.2
NO2 coefficient:	1.000	1.000	NOX bkgrnd:	-0.1	-0.1
NH3 coefficient:	0.902	0.922	Nt bkgrnd:	1.7	1.7

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.995817	0.996053
NO _x Cal Offset:	2.136894	1.276664
NO Cal Slope:	0.997714	0.991297
NO Cal Offset:	-0.156320	0.864516
NO ₂ Cal Slope:	0.994964	1.003410
NO ₂ Cal Offset:	-0.653941	-0.382664
NH3 Cal Slope:	0.982692	1.005770
NH3 Cal Offset:	6.971477	4.646188
Nt Cal Slope:	0.985943	1.009569
Nt Cal Offset:	7.288794	4.888735



Wood Buffalo Environmental Association

NO_x - NO - NO₂ Calibration Report

NO_x / NO / Nt As Found Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated Nt concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated Nt concentration (ppb) (Ic)	Baseline corr NO _x Correction factor (Cc/Ic) <i>Limit = 0.9 - 1.0</i>	Baseline corr NO Correction factor (Cc/Ic) <i>Limit = 0.9 - 1.0</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.5	----	----
As found span	4914	86.2	826.5	799.7	826.5	825.7	798.4	826.4	1.0009	1.0017
AF GPT span										
new NO cyl rp										

Baseline Corr As Fd Nt = 826.9 ppb NO_x = 825.9 ppb NO = 798.6 ppb

Previous Response Nt = 822.12 ppb NO_x = 825.1 ppb NO = 797.7 ppb

****NO_x Δ (NO to GPT response) =**

*** = > +/-2% difference initiates investigation**

***Percent Change Nt_(NO) = 0.6%**

***Percent Change NO_x = 0.1%**

***Percent Change NO = 0.1%**

*** = > +/-5% change initiates investigation**

NO_x / NO / Nt Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated Nt concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated Nt concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibration zero	5000	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	----	----
High point	4914	86.2	826.5	799.7	826.5	824.1	793.1	822.4	1.0029	1.0084
Mid point	4957	43.1	413.2	399.9	413.2	412.8	397.9	415.1	1.0011	1.0050
Low point	4978	21.6	207.1	200.4	207.1	209.2	200.4	210.9	0.9900	1.0001
Average Correction Factor									0.9980	1.0045

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found zero	----	----	0.0	0.0	----	----
Calibration zero	----	----	0.0	0.2	----	----
High GPT point (400 ppb O3)	793.6	397.9	422.4	423.5	0.9975	100.3%
Mid GPT point (200 ppb O3)	793.6	589.3	231.0	232.1	0.9954	100.5%
Low GPT point (100 ppb O3)	793.6	691.5	128.8	127.6	1.0096	99.1%
Average Correction Factor					1.0008	99.9%



Wood Buffalo Environmental Association NH₃ - N_T Calibration Report

NH₃ As Found Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated Nt concentration (ppb) (Cc)	Calculated NOX concentration (ppb) (Cc)	Calculated NH ₃ concentration (ppb) (Cc)	Indicated Nt concentration (ppb) (Ic)	Indicated NOX concentration (ppb) (Ic)	Indicated NH ₃ concentration (ppb) (Ic)	Baseline corr Nt Correction factor (Cc/(Ic-zero)) <i>Limit = 0.9 - 1.1</i>	Baseline corr NH ₃ Correction factor (Cc/(Ic-zero)) <i>Limit = 0.9 - 1.1</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.5	-0.2	-0.3	----	----
AF High point	3417	82.6	1800.6	0.0	1800.6	1782.6	6.8	1775.8	1.010	1.014
AF Mid point										
AF Low point										
new NH ₃ cyl rp	3416	84.0	1799.0	----	1799.0	1843.9	----	1836.9	0.976	0.979
Baseline Corr As Fd	Nt = 1783.1 ppb		NH ₃ = 1776.1 ppb					*Percent Change	Nt _(NH₃) = 0.0%	
Previous Response	Nt = 1782.6 ppb		NH ₃ = 1776.5 ppb			* = > +/-5% change initiates investigation		*Percent Change	NH ₃ = 0.0%	

NH₃ Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated Nt concentration (ppb) (Cc)	Calculated NOX concentration (ppb) (Cc)	Calculated NH ₃ concentration (ppb) (Cc)	Indicated Nt concentration (ppb) (Ic)	Indicated NOX concentration (ppb) (Ic)	Indicated NH ₃ concentration (ppb) (Ic)	Nt Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NH ₃ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibration zero	5000	0.0	0.0	0.0	0.0	-0.1	0.1	-0.2	----	----
High point	3416	84.0	1799.0	0.0	1799.0	1818.7	7.0	1811.7	0.989	0.993
Mid point	3453	46.7	1000.3	0.0	1000.3	1016.1	4.2	1012.0	0.984	0.988
Low point	3477	23.3	499.0	0.0	499.0	514.7	2.3	512.4	0.969	0.974
Average Correction Factor									0.9810	0.9851
NH ₃ Previous Converter Efficiency =			90.2 %							
NH ₃ Current Converter Efficiency =			92.2 %							

Notes: Changed the inlet filter after as founds. Changed the NH₃ calibration gas after the NH₃ as found span on the 11th. Adjusted the NH₃ span only.

Calibration Performed By: Max Farrell



Wood Buffalo Environmental Association

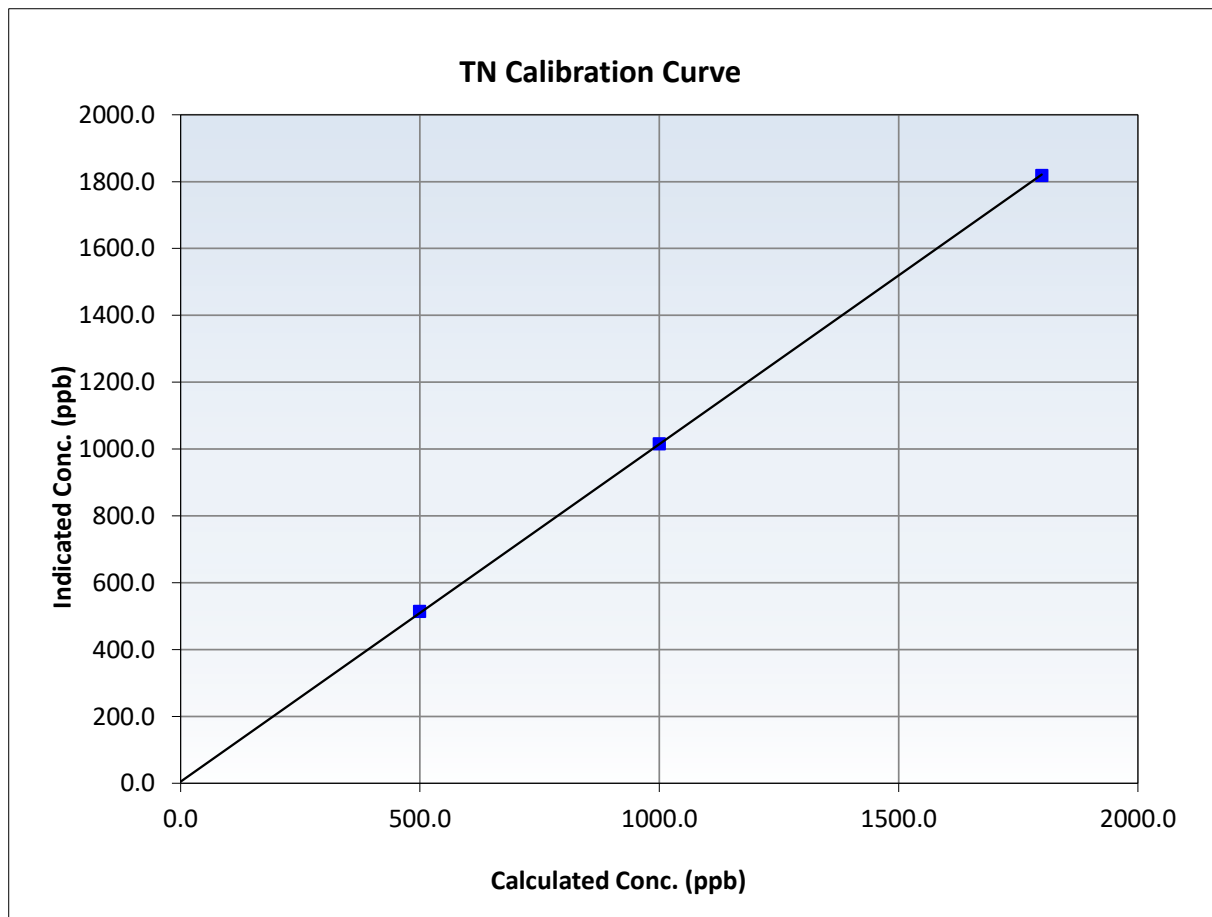
Nt Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	9:52	End Time (MST):	14:25
Analyzer make:	API T201	Analyzer serial #:	215

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999961	≥ 0.995
1799.0	1818.7	0.9892	Slope	1.009569	0.90 - 1.10
1000.3	1016.1	0.9844	Intercept	4.888735	+/-20
499.0	514.7	0.9695			





Wood Buffalo Environmental Association

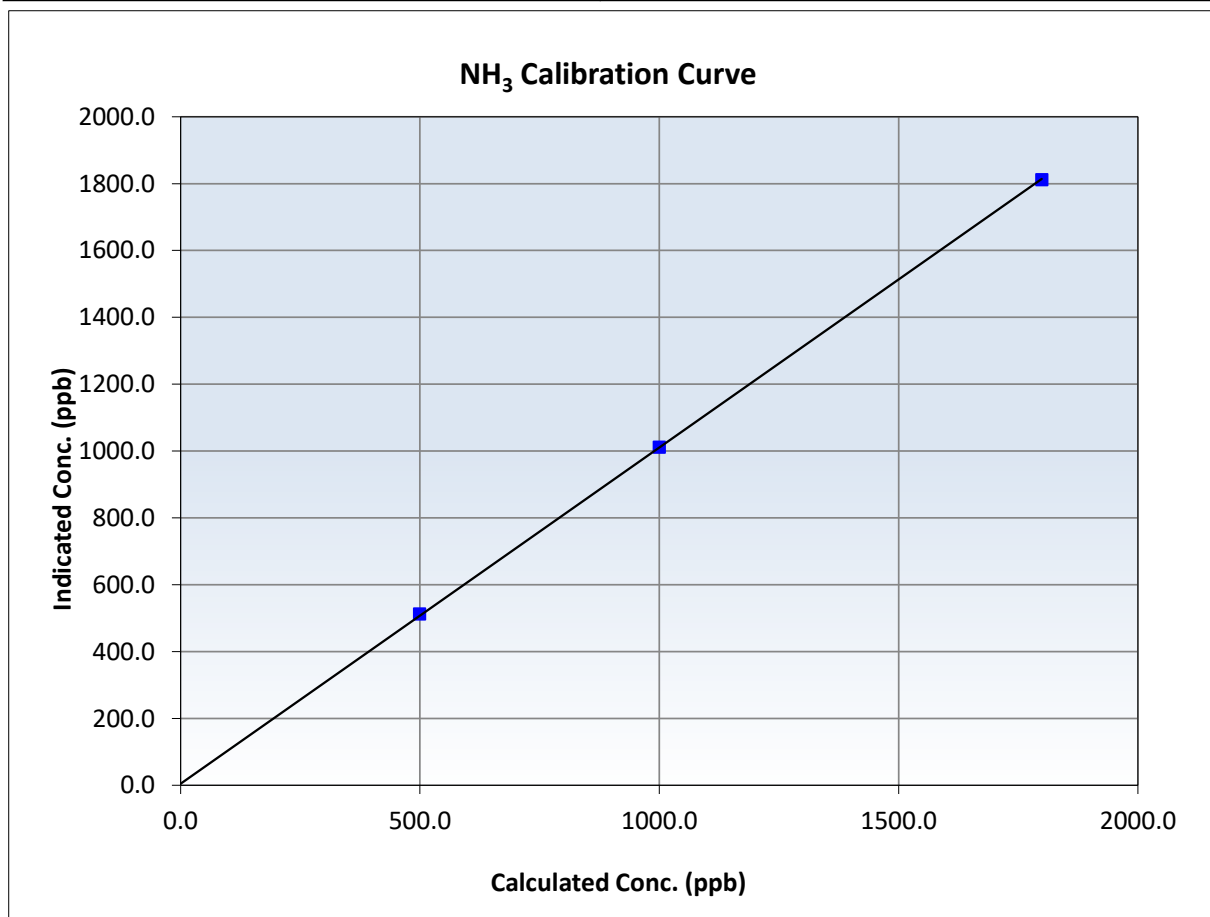
NH₃ Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	9:52	End Time (MST):	14:25
Analyzer make:	API T201	Analyzer serial #:	215

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.0	-0.2	----	Correlation Coefficient	0.999963	<i>≥0.995</i>
1799.0	1811.7	0.9930	Slope	1.005770	<i>0.90 - 1.10</i>
1000.3	1012.0	0.9884	Intercept	4.646188	<i>+/-20</i>
499.0	512.4	0.9738			





Wood Buffalo Environmental Association

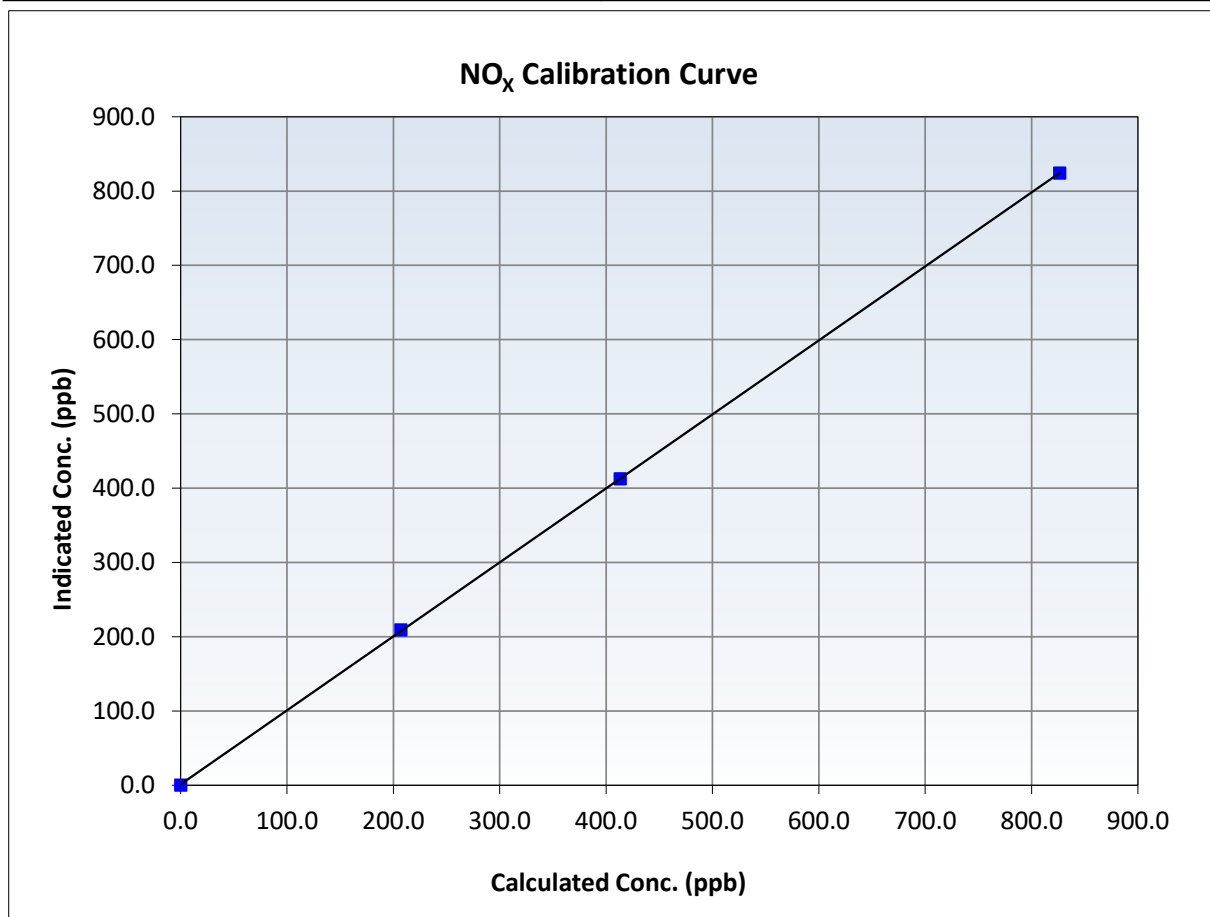
NO_x Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	9:52	End Time (MST):	14:25
Analyzer make:	API T201	Analyzer serial #:	215

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.0	0.1	----	Correlation Coefficient	0.999989	<i>≥0.995</i>
826.5	824.1	1.0029	Slope	0.996053	<i>0.90 - 1.10</i>
413.2	412.8	1.0011	Intercept	1.276664	<i>+/-20</i>
207.1	209.2	0.9900			





Wood Buffalo Environmental Association

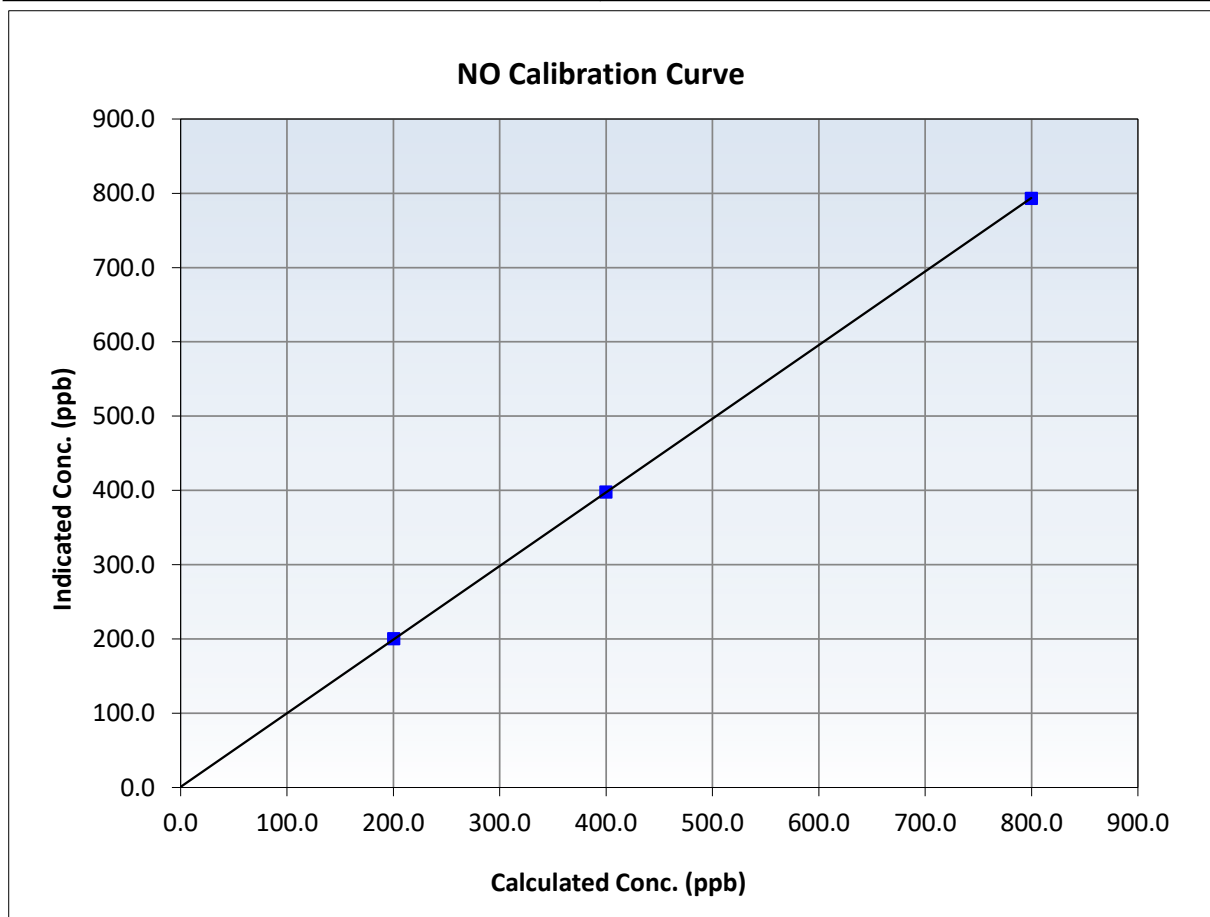
NO Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	9:52	End Time (MST):	14:25
Analyzer make:	API T201	Analyzer serial #:	215

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999993	≥ 0.995
799.7	793.1	1.0084	Slope	0.991297	0.90 - 1.10
399.9	397.9	1.0050	Intercept	0.864516	+/-20
200.4	200.4	1.0001			





Wood Buffalo Environmental Association

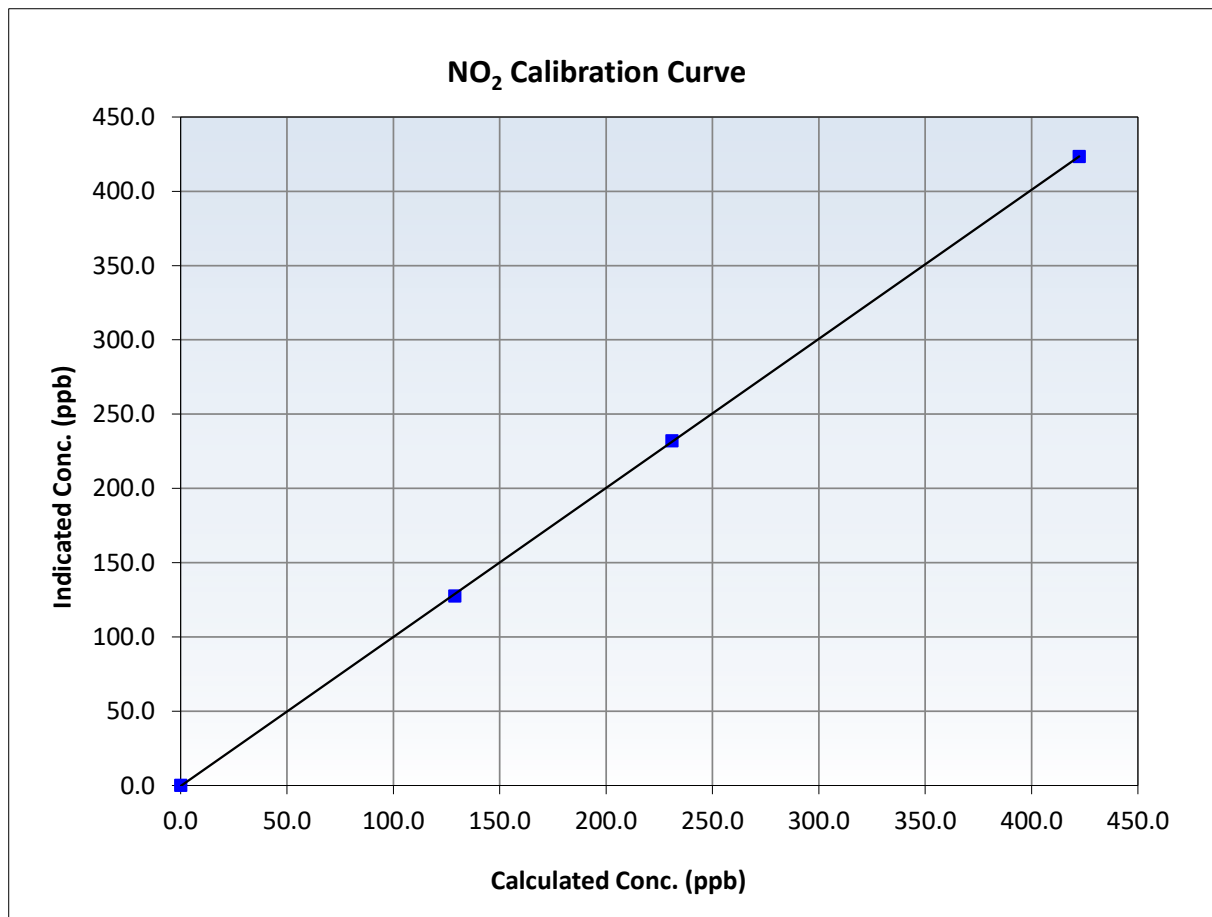
NO₂ Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	9:52	End Time (MST):	14:25
Analyzer make:	API T201	Analyzer serial #:	215

Calibration Data

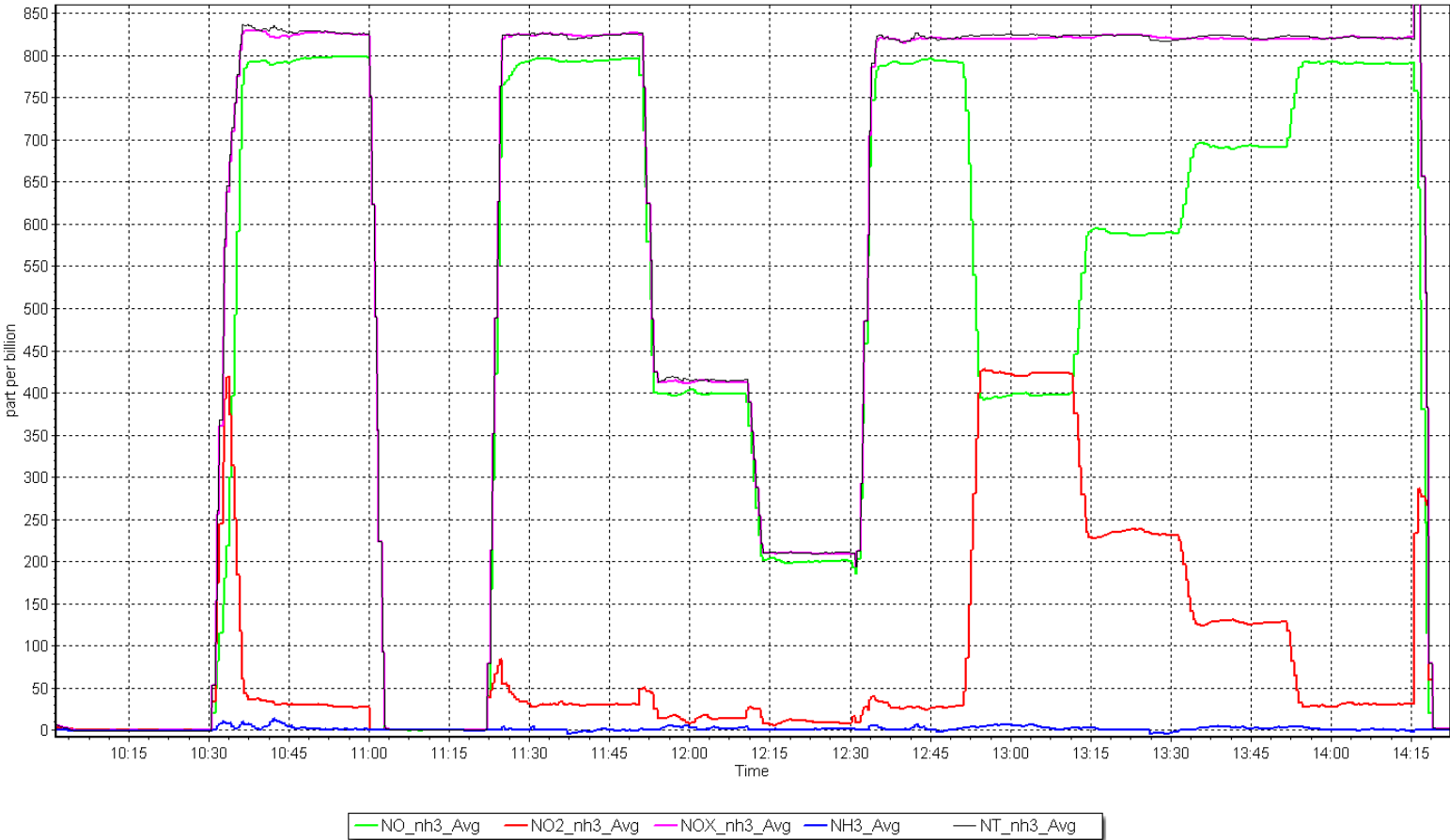
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.2	----	Correlation Coefficient	0.999975	≥0.995
422.4	423.5	0.9975	Slope	1.003410	0.90 - 1.10
231.0	232.1	0.9954	Intercept	-0.382664	+/-20
128.8	127.6	1.0096			



NO_x Calibration Plot

Date: March 10, 2025

Location: Patricia McInnes







WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS07 ATHABASCA VALLEY MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Athabasca Valley Station number: AMS07
Calibration Date: March 11, 2025 Last Cal Date: February 18, 2025
Start time (MST): 9:16 End time (MST): 13:08
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.06 ppm Cal Gas Exp Date: March 10, 2031
Cal Gas Cylinder #: CC320556
Removed Cal Gas Conc: 50.06 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: API T700 Serial Number: 3805
Zero Air Gen Model: API 701H Serial Number: 198

Analyzer Information

Analyzer make: Thermo 43i-LTE Serial Number: 1507864683
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.996457	0.997988	Backgd or Offset:	2.70	2.70
Calibration intercept:	2.284936	2.224556	Coeff or Slope:	0.859	0.859

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4920	79.8	799.0	797.1	1.002
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	797.2	Previous response	798.4	*% change	-0.2%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.2	----
High point	4920	79.8	799.0	798.0	1.001
Mid point	4960	39.9	399.5	403.7	0.990
Low point	4980	20.0	200.2	202.9	0.987
As left zero	5000	0.0	0.0	0.1	----
As left span	4920	79.8	799.0	800.0	0.999
Average Correction Factor:					0.993

Notes:

Span adjusted.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

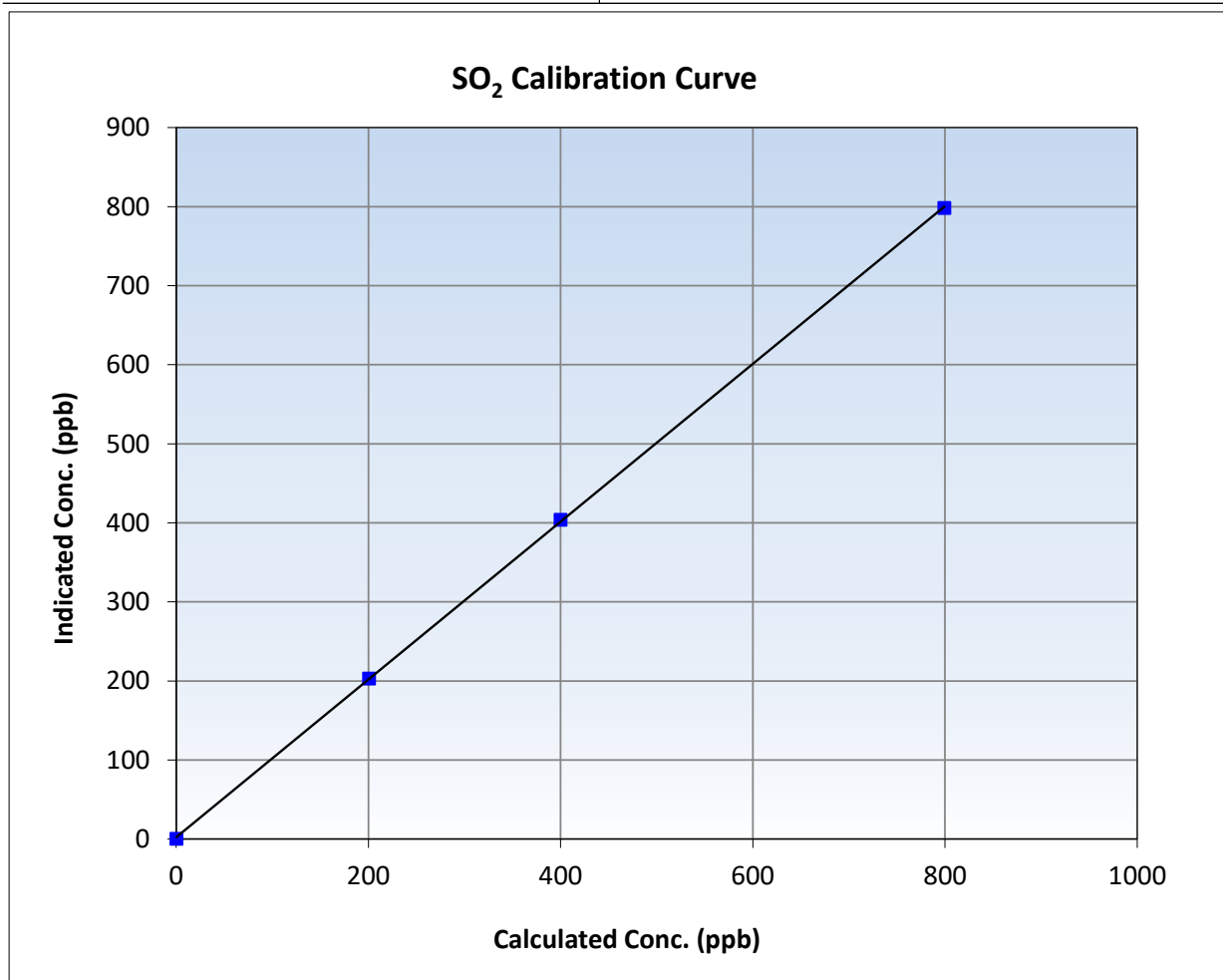
SO₂ Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 18, 2025
Station Name:	Athabasca Valley	Station Number:	AMS07
Start Time (MST):	9:16	End Time (MST):	13:08
Analyzer make:	Thermo 43i-LTE	Analyzer serial #:	1507864683

Calibration Data

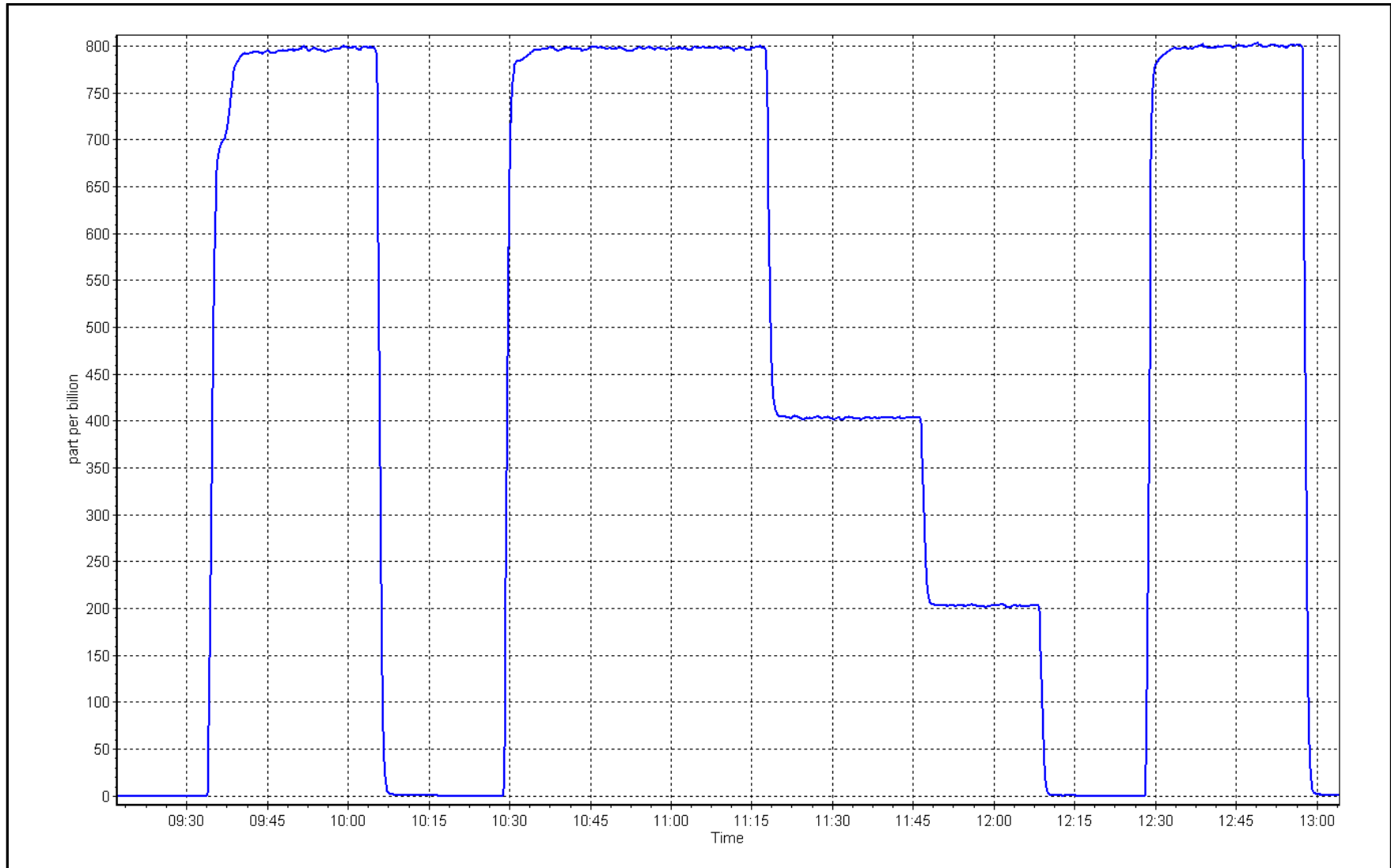
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999956	≥0.995
799.0	798.0	1.0012	Slope	0.997988	0.90 - 1.10
399.5	403.7	0.9896	Intercept	2.224556	+/-30
200.2	202.9	0.9869			



SO2 Calibration Plot

Date: March 11, 2025

Location: Athabasca Valley





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Athabasca Valley
Calibration Date: March 5, 2025
Start time (MST): 10:05
Reason: Routine

Station number: AMS07
Last Cal Date: February 21, 2025
End time (MST): 15:19

Calibration Standards

Cal Gas Concentration: 5.25 ppm
Cal Gas Cylinder #: CC504080
Removed Cal Gas Conc: 5.25 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: API T700
ZAG Make/Model: API T701H

Cal Gas Exp Date: January 3, 2026
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 3805
Serial Number: 198

Analyzer Information

Analyzer make: Thermo 43i LTE
Converter make: CDN-101
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1180540018
Converter serial #: 551
Converter Temp: 840 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.001948	1.011167	Backgd or Offset:	2.7	2.7
Calibration intercept:	-0.162349	-0.282221	Coeff or Slope:	0.990	0.908

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4925	75.5	79.3	87.6	0.903
As found Mid point	4962	37.7	39.6	43.7	0.902
As found Low point	4981	18.9	19.8	21.5	0.915
New cylinder response					
Baseline Corr As found:	87.8	Prev response:	79.26	*% change:	9.7%
Baseline Corr 2nd AF pt:	43.9	AF Slope:	1.108937	AF Intercept:	-0.302354
Baseline Corr 3rd AF pt:	21.7	AF Correlation:	0.999985	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4925	75.5	79.3	80.0	0.991
Mid point	4962	37.7	39.6	39.7	0.998
Low point	4981	18.9	19.9	19.6	1.013
As left zero	5000	0.0	0.0	0.0	----
As left span	4925	75.5	79.3	79.0	1.004
SO2 Scrubber Check	4920	79.2	792.1	0.1	----
Date of last scrubber change:		21-Feb-25		Ave Corr Factor	1.001
Date of last converter efficiency test:		April 22, 2022			

Notes:

Span adjusted.

Calibration Performed By: Aswin Sasi Kumar



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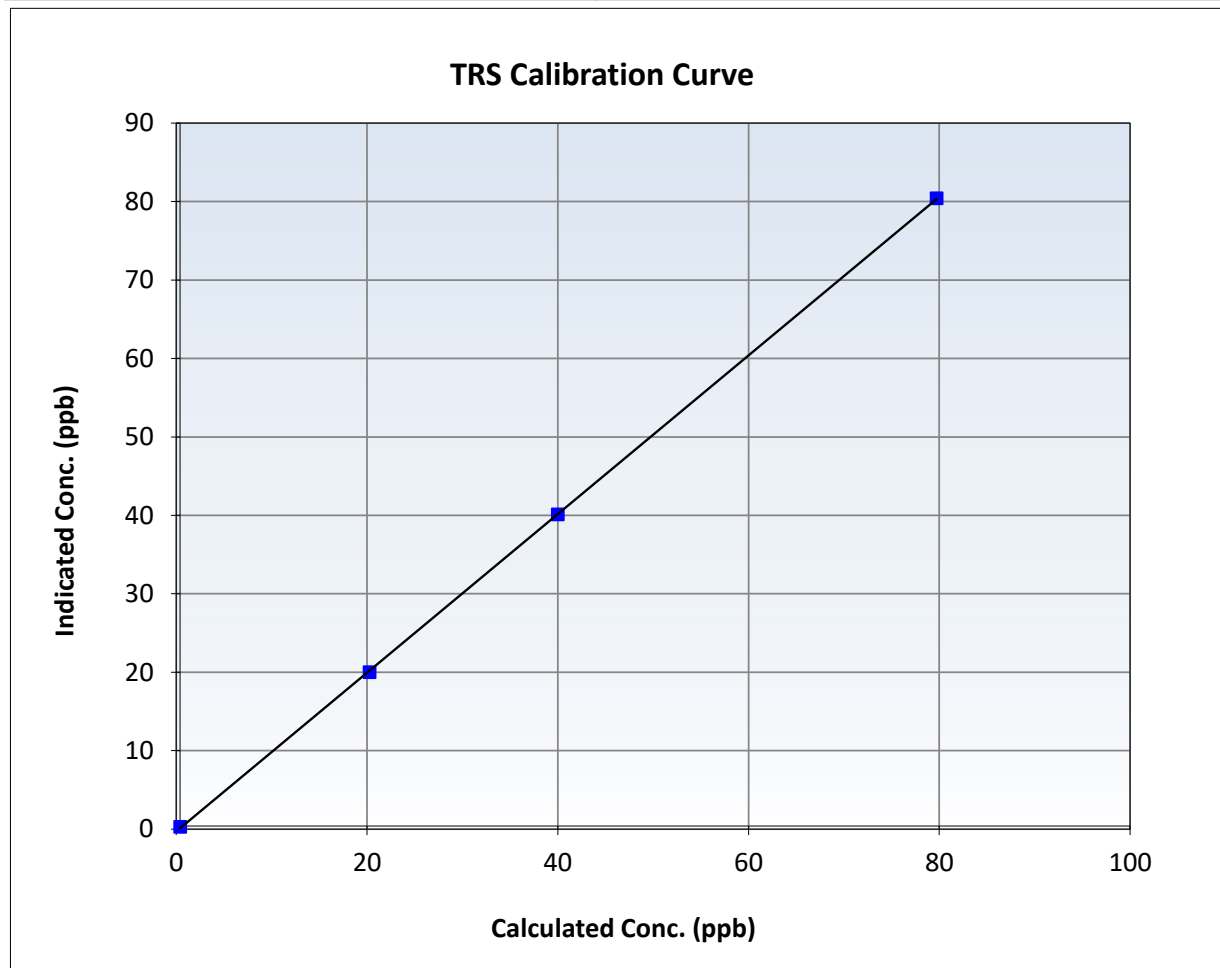
TRS Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 21, 2025
Station Name:	Athabasca Valley	Station Number:	AMS07
Start Time (MST):	10:05	End Time (MST):	15:19
Analyzer make:	Thermo 43i LTE	Analyzer serial #:	1180540018

Calibration Data

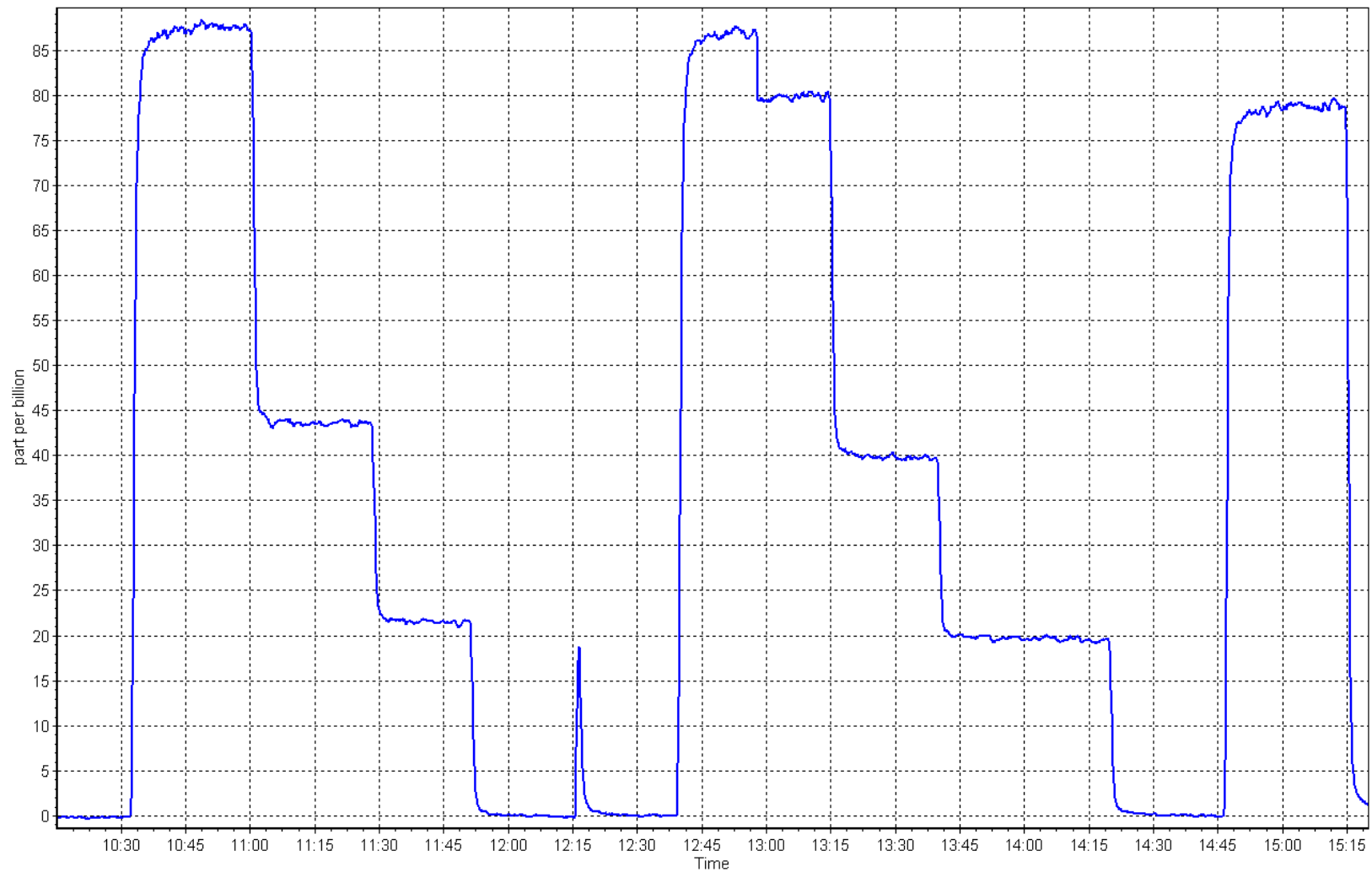
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999976		≥ 0.995
79.3	80.0	0.9914	Slope	1.011167		0.90 - 1.10
39.6	39.7	0.9977	Intercept	-0.282221		+/-3
19.9	19.6	1.0131				



TRS Calibration Plot

Date: March 5, 2025

Location: Athabasca Valley





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Athabasca Valley
 Calibration Date: March 11, 2025
 Start time (MST): 9:16
 Reason: Routine

Station number: AMS 07
 Last Cal Date: February 18, 2025
 End time (MST): 13:08

Calibration Standards

Gas Cert Reference:	CC320556	Cal Gas Expiry Date:	March 10, 2031
CH ₄ Cal Gas Conc.	496.0 ppm	CH ₄ Equiv Conc.	1059.8 ppm
C ₃ H ₈ Cal Gas Conc.	205.0 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH ₄ Conc.	496.0 ppm	CH ₄ Equiv Conc.	1059.8 ppm
Removed C ₃ H ₈ Conc.	205.0 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	Teledyne API T700	Serial Number:	3805
Zero Air Gen model:	Teledyne API T701H	Serial Number:	198

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1331259520
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	3.08E-04	2.99E-03	NMHC SP Ratio:	5.58E-05
CH ₄ Retention time:	14.4	14.4	NMHC Peak Area:	161180
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	16.91	17.20	0.983
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	17.20	Prev response	16.95	*% change	1.4%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	16.91	16.90	1.001
Mid point	4960	39.9	8.46	8.50	0.995
Low point	4980	20.0	4.24	4.29	0.989
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	16.91	16.85	1.004
Average Correction Factor					0.995

Notes:

N2 changed out. Span adjusted.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	9.00	9.03	0.996
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.03	Prev response	8.97	*% change	0.7%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	9.00	8.99	1.000
Mid point	4960	39.9	4.50	4.52	0.995
Low point	4980	20.0	2.26	2.29	0.986
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	9.00	8.96	1.005
Average Correction Factor					0.994

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	7.92	8.17	0.968
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.17	Prev response	7.98	*% change	2.4%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	7.92	7.91	1.001
Mid point	4960	39.9	3.96	3.98	0.996
Low point	4980	20.0	1.98	2.00	0.992
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	7.92	7.89	1.003
Average Correction Factor					0.996

Calibration Statistics

	Start	Finish
THC Cal Slope:	1.000809	0.998416
THC Cal Offset:	0.025444	0.030657
CH ₄ Cal Slope:	1.006508	0.998146
CH ₄ Cal Offset:	0.012043	0.012263
NMHC Cal Slope:	0.995694	0.998641
NMHC Cal Offset:	0.013802	0.018194

Calibration Performed By: Aswin Sasi Kumar



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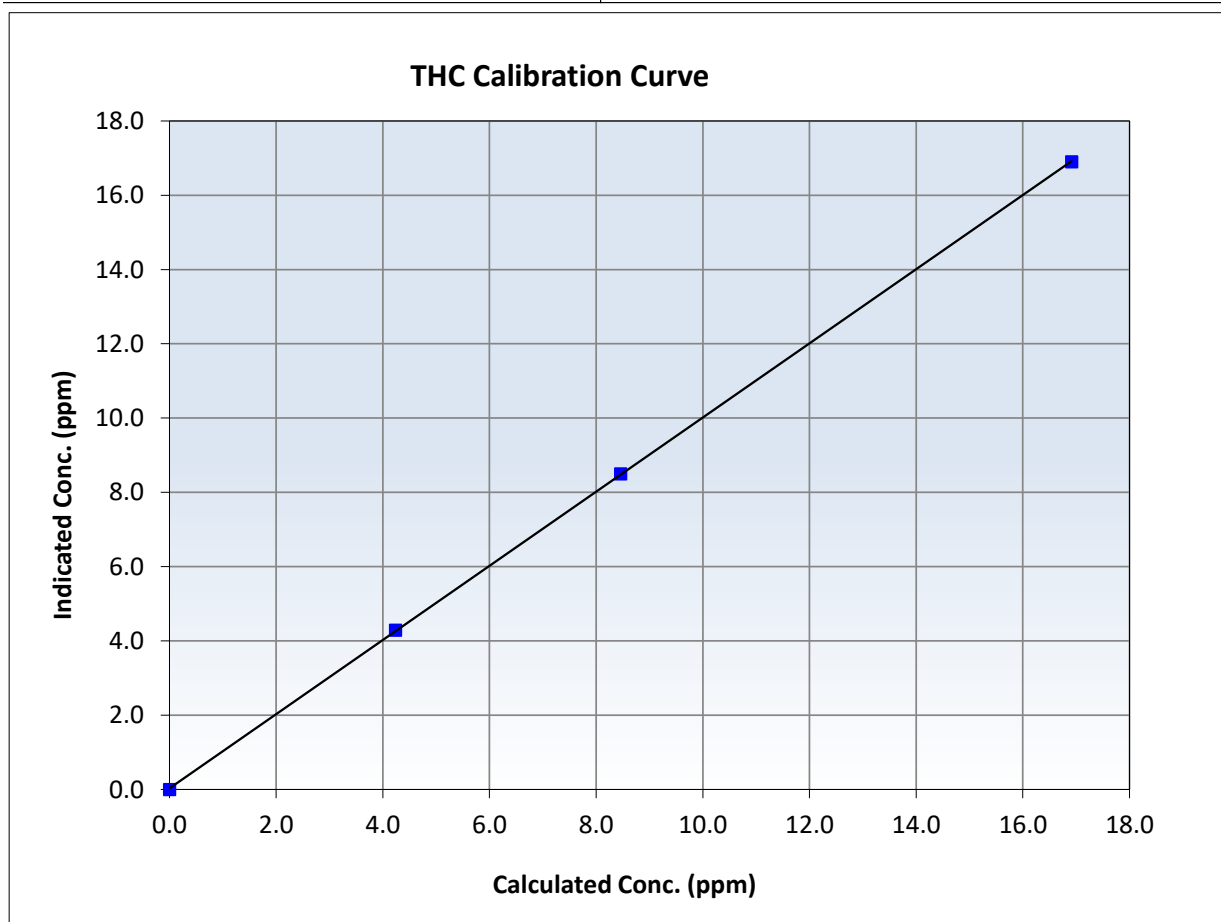
THC Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 18, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	9:16	End Time (MST):	13:08
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259520

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999984	≥ 0.995
16.91	16.90	1.0008	Slope	0.998416	$0.90 - 1.10$
8.46	8.50	0.9952	Intercept	0.030657	± 0.5
4.24	4.29	0.9886			





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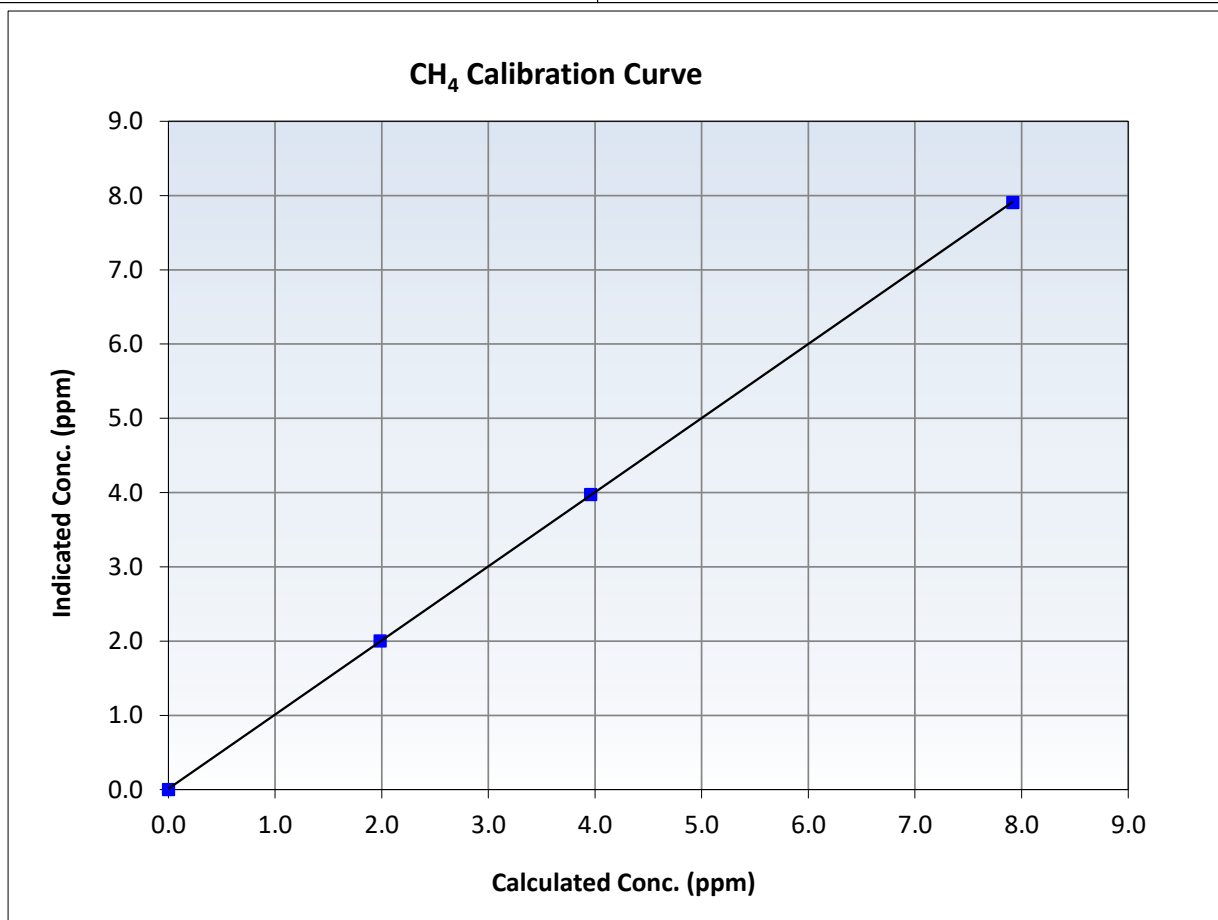
CH₄ Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 18, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	9:16	End Time (MST):	13:08
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259520

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999987	≥ 0.995
7.92	7.91	1.0013	Slope	0.998146	$0.90 - 1.10$
3.96	3.98	0.9958	Intercept	0.012263	± 0.5
1.98	2.00	0.9915			





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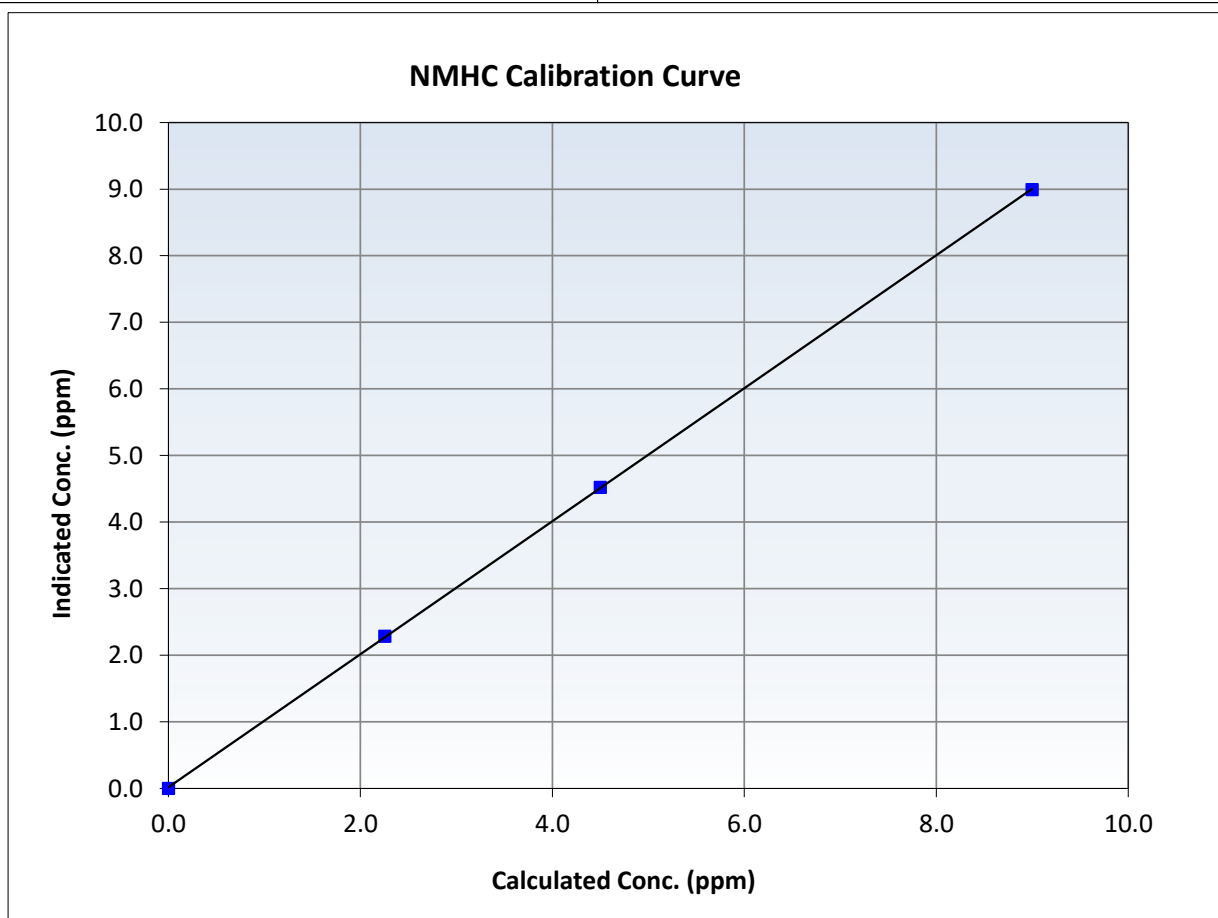
NMHC Calibration Summary

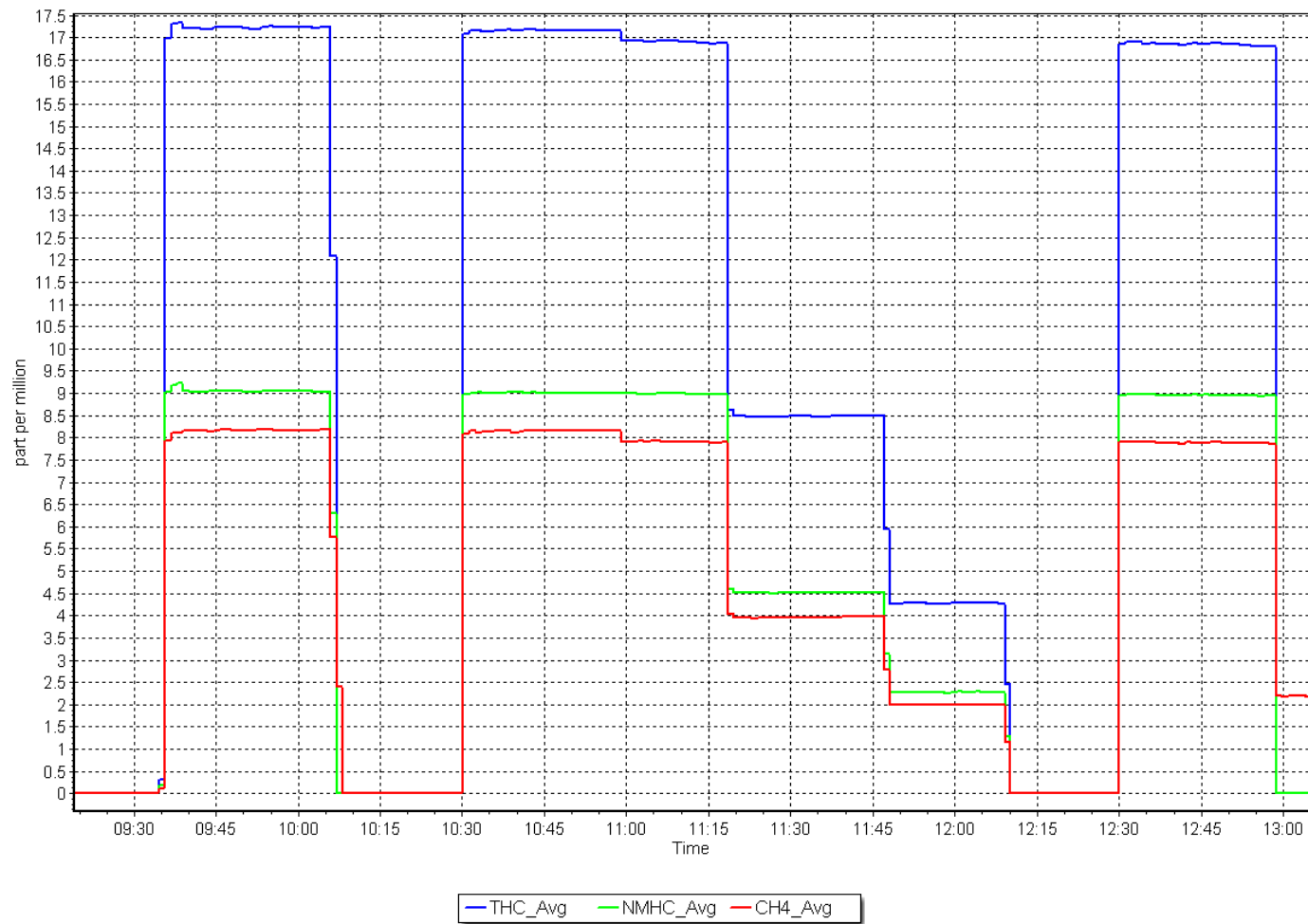
Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 18, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	9:16	End Time (MST):	13:08
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259520

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999981	≥ 0.995
9.00	8.99	1.0004	Slope	0.998641	0.90 - 1.10
4.50	4.52	0.9949	Intercept	0.018194	± 0.5
2.26	2.29	0.9860			







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NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Athabasca Valley
Station number: AMS 07
Calibration Date: March 10, 2025
Last Cal Date: February 19, 2025
Start time (MST): 10:01
End time (MST): 15:16
Reason: Routine

Calibration Standards

NO Gas Cylinder #: DT0033919
NOX Cal Gas Conc: 60.10 ppm
Removed Cylinder #: N/A
Removed Gas NOX Conc: 60.10 ppm
NOX gas Diff:
Calibrator Model: API T700
ZAG make/model: API T701H
Cal Gas Expiry Date: January 9, 2032
NO Cal Gas Conc: 59.90 ppm
Removed Gas Exp Date: N/A
Removed Gas NO Conc: 59.90 ppm
NO gas Diff:
Serial Number: 3805
Serial Number: 198

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO _x Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	----	----
AF High point	4933	66.8	803.0	800.3	2.7	819.6	812.5	6.9	0.9796	0.9850
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x = 804.9 ppb	NO = 803.0 ppb				* = > +/-5% change initiates investigation		*Percent Change	NO _x = 1.8%	
Baseline Corr 1st pt	NO _x = 819.7 ppb	NO = 812.5 ppb				<u>As Found Statistics</u>		*Percent Change	NO = 1.2%	
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb				As found	NO _x r ² :	Nx SI:	Nx Int:	
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb				As found	NO r ² :	NO SI:	NO Int:	
						As found	NO ₂ r ² :	NO ₂ SI:	NO ₂ Int:	

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO ₂ Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



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NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1160120024

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.999574	0.997767
NO _x Cal Offset:	2.291907	1.751943
NO Cal Slope:	1.000941	0.999427
NO Cal Offset:	1.931929	1.411957
NO ₂ Cal Slope:	1.000103	1.002402
NO ₂ Cal Offset:	1.477810	1.579936

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.177	1.155	NO bkgnd or offset:	8.4	8.3
NOX coeff or slope:	1.004	1.004	NOX bkgnd or offset:	8.7	8.6
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	235.9	229.8

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.2	0.1	0.1	----	----
High point	4933	66.8	803.0	800.3	2.7	802.0	800.4	1.6	1.0012	0.9999
Mid point	4966	33.4	401.5	400.2	1.3	403.6	402.6	1.0	0.9948	0.9940
Low point	4983	16.7	200.7	200.1	0.7	203.3	202.3	1.0	0.9874	0.9890
As left zero	5000	0.0	0.0	0.0	0.0	0.1	0.2	-0.1	----	----
As left span	4933	66.8	803.0	398.5	404.5	803.2	398.5	404.6	0.9997	1.0000
Average Correction Factor									0.9945	0.9943

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.1	----	----
High GPT point	795.7	396.5	401.9	403.7	0.9955	100.5%
Mid GPT point	795.7	603.6	194.8	197.6	0.9857	101.5%
Low GPT point	795.7	702.2	96.2	99.4	0.9675	103.4%
Average Correction Factor					0.9829	101.8%

Notes:

Span adjusted.

Calibration Performed By:

Aswin Sasi Kumar



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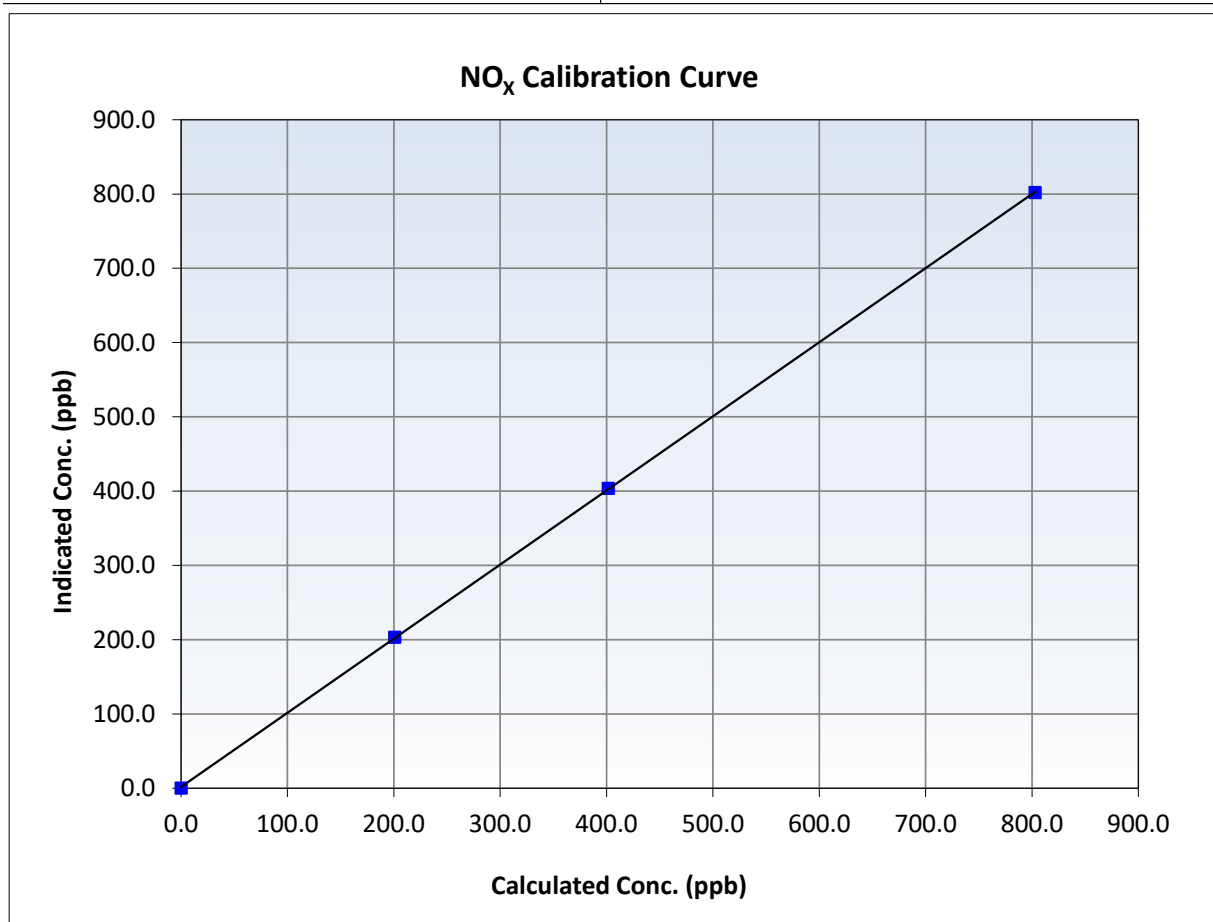
NO_x Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 19, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	10:01	End Time (MST):	15:16
Analyzer make:	Thermo 42i	Analyzer serial #:	1160120024

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999982	≥0.995
803.0	802.0	1.0012	Slope	0.997767	0.90 - 1.10
401.5	403.6	0.9948	Intercept	1.751943	+/-20
200.7	203.3	0.9874			





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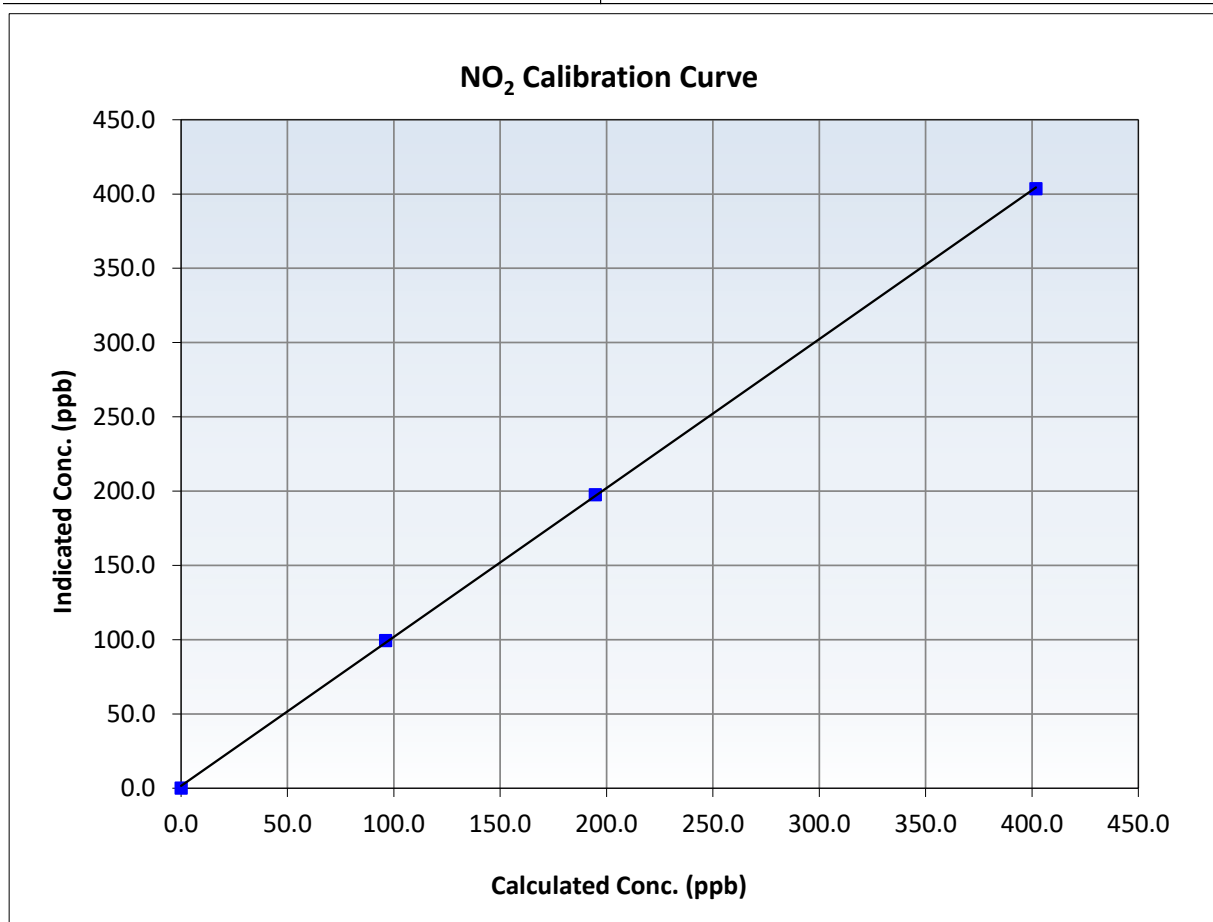
NO₂ Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 19, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	10:01	End Time (MST):	15:16
Analyzer make:	Thermo 42i	Analyzer serial #:	1160120024

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999940	≥0.995
401.9	403.7	0.9955	Slope	1.002402	0.90 - 1.10
194.8	197.6	0.9857	Intercept	1.579936	+/-20
96.2	99.4	0.9675			





Wood Buffalo Environmental Association

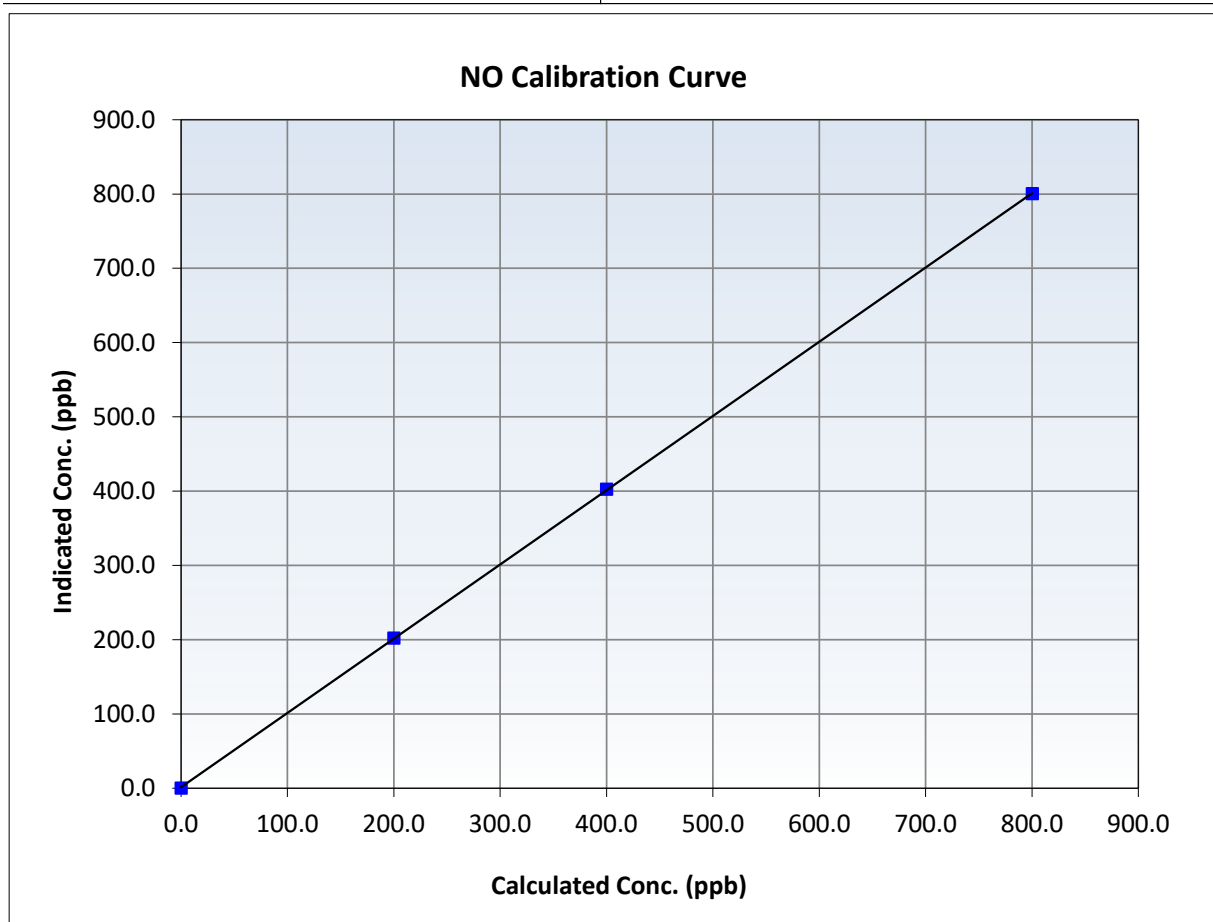
NO Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 19, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	10:01	End Time (MST):	15:16
Analyzer make:	Thermo 42i	Analyzer serial #:	1160120024

Calibration Data

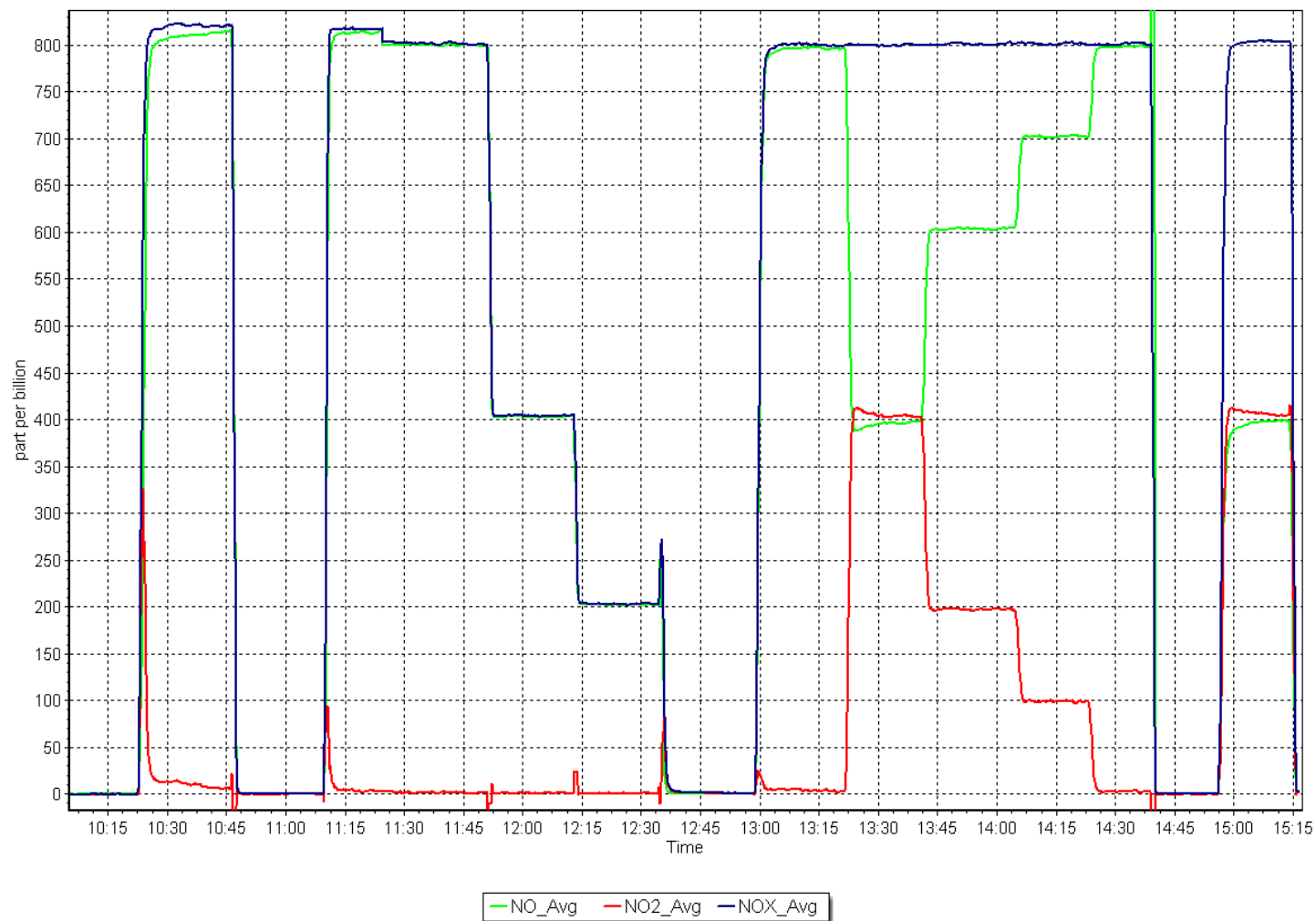
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999986	≥ 0.995
800.3	800.4	0.9999	Slope	0.999427	$0.90 - 1.10$
400.2	402.6	0.9940	Intercept	1.411957	± 20
200.1	202.3	0.9890			



NO_x Calibration Plot

Date: March 10, 2025

Location: Athabasca Valley





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Athabasca Valley
Calibration Date: March 17, 2025
Start time (MST): 9:45
Reason: Routine

Station number: AMS07
Last Cal Date: February 27, 2025
End time (MST): 14:07

Calibration Standards

O₃ generation mode: Photometer
Calibrator Make/Model: T700
ZAG Make/Model: T701H

Serial Number: 3805
Serial Number: 198

Analyzer Information

Analyzer make: Thermo 49i
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 1152220023

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.997057	1.001457	Backgd or Offset:	-1.1	-1.2
Calibration intercept:	-1.760000	0.820000	Coeff or Slope:	1.560	1.605

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	800.0	0.0	0.7	----
As found High point	5000	1652.0	400.0	389.5	1.029
As found Mid point					
As found Low point					
Baseline Corr As found:	388.8	Previous response	397.1	*% change	-2.1%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	800.0	0.0	0.3	----
High point	5000	1654.3	400.0	401.1	0.997
Mid point	5000	1152.0	200.0	201.5	0.993
Low point	5000	913.0	100.0	101.4	0.986
As left zero	5000	1652.9	0.0	0.7	----
As left span	5000	1582.6	400.0	404.2	0.990
Average Correction Factor					0.992

Notes: Changed the inlet filter after as founds. Span adjusted.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

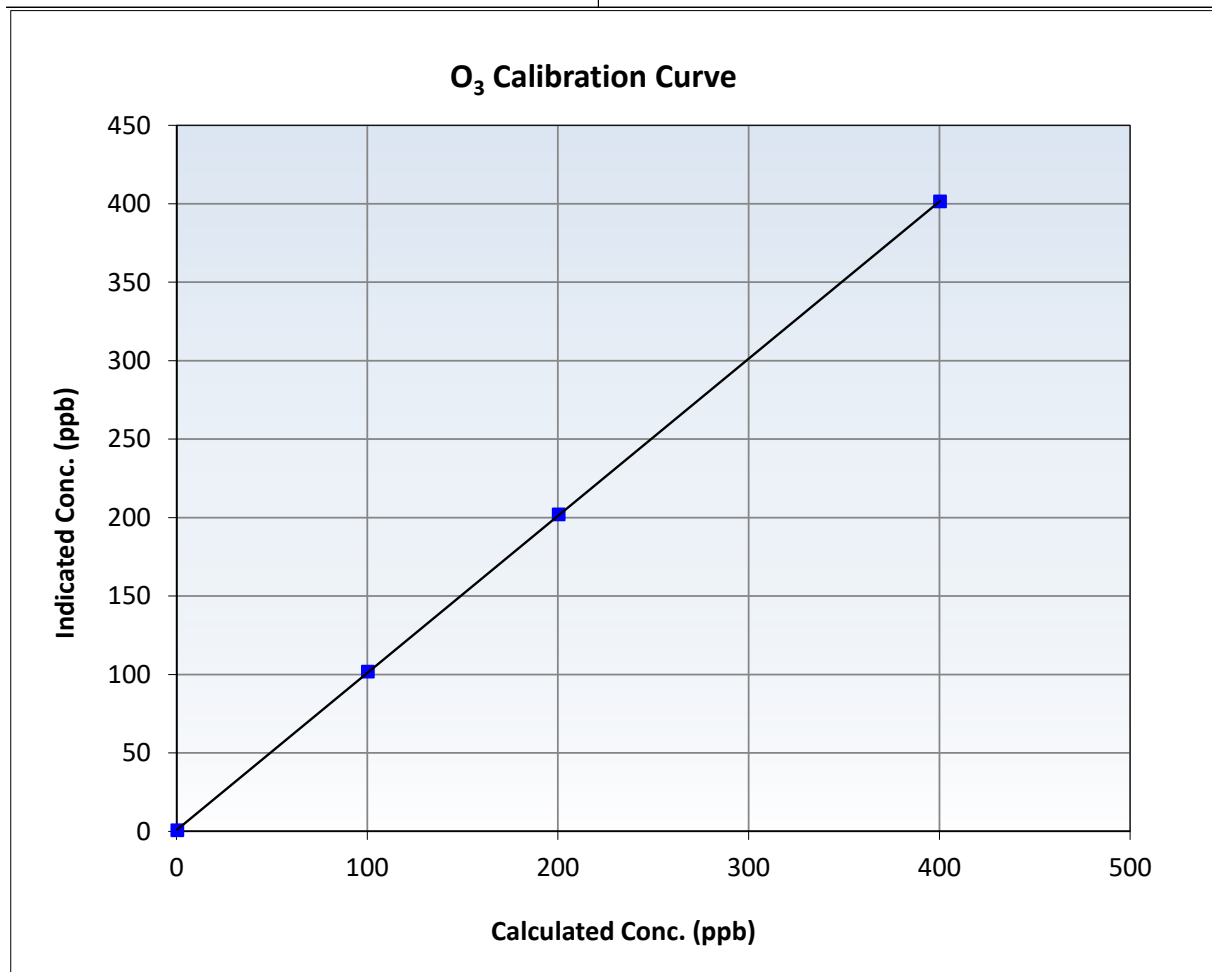
O₃ Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 27, 2025
Station Name:	Athabasca Valley	Station Number:	AMS07
Start Time (MST):	9:45	End Time (MST):	14:07
Analyzer make:	Thermo 49i	Analyzer serial #:	1152220023

Calibration Data

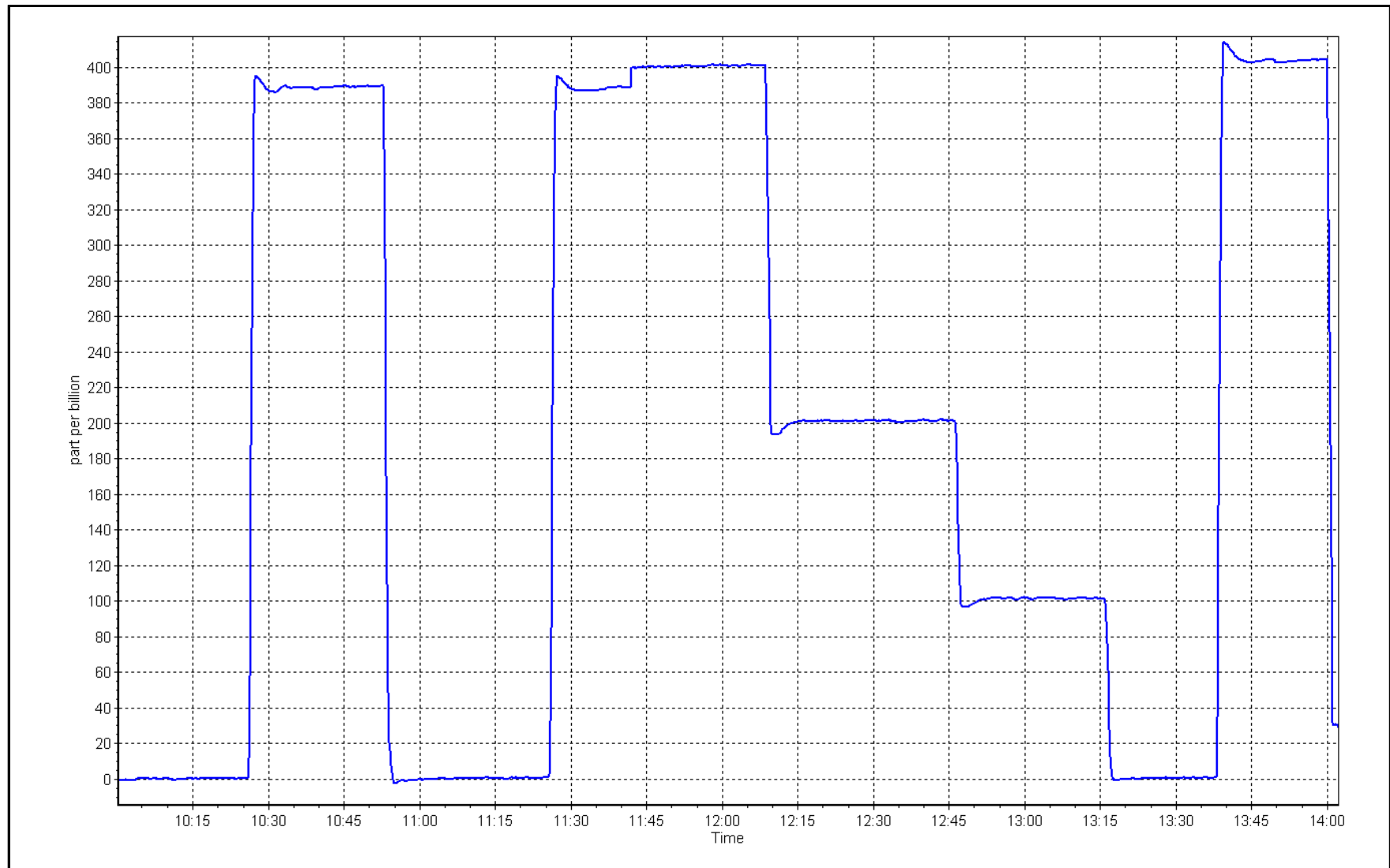
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999992	≥ 0.995
400.0	401.1	0.9973	Slope	1.001457	$0.90 - 1.10$
200.0	201.5	0.9926	Intercept	0.820000	± 5
100.0	101.4	0.9862			



O₃ Calibration Plot

Date: March 17, 2025

Location: Athabasca Valley





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Athabasca Valley Station number: AMS 07
Calibration Date: March 24, 2025 Last Cal Date: February 27, 2025
Start time (MST): 13:29 End time (MST): 14:02

Analyzer Make: API T640 S/N: 645
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388748
Temp/RH standard: Alicat FP-25BT S/N: 388748

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	6.6	5.9	6.6	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	733.1	730.4	733.1	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	5.02	5.01	5.02	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	38	----	38	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 6.5		PM w/ HEPA: 0.0		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: October 6, 2024
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test				<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: February 27, 2025
Date Disposable Filter Changed: February 27, 2025

Post- maintenance Zero Verification: PM w/ HEPA: 0.0 <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: July 8, 2024
Date RH/T Sensor Cleaned: July 8, 2024

Notes: Flow, temp and pressure checked. Leak check passed.

Calibration by: Aswin Sasi Kumar



Wood Buffalo Environmental Association

CO Calibration Report

Station Information

Station Name: Athabasca Valley Station number: AMS 07
Calibration Date: March 24, 2025 Last Cal Date: February 5, 2025
Start time (MST): 10:00 End time (MST): 14:25
Reason: Routine

Calibration Standards

Cal Gas Concentration: 2,953 ppm Cal Gas Exp Date: September 30, 2029
Cal Gas Cylinder #: T1TWKRN
Removed Cal Gas Conc: 2,953 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T750 Serial Number: 282
ZAG Make/Model: Teledyne API 751H Serial Number: 321

Analyzer Information

Analyzer make: Thermo 48i-TLE Analyzer serial #: 1408761381
Analyzer Range: 0 - 50 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.997610	0.997952	Backgd or Offset:	5.282
Calibration intercept:	0.150017	0.154017	Coeff or Slope:	1.068

CO As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4932	67.8	40.0	40.2	0.998
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	40.11	Prev response:	40.10	*% change:	0.0%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CO Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4932	67.8	40.0	40.0	1.001
Mid point	4966	33.9	20.0	20.3	0.988
Low point	4983	16.9	10.0	10.2	0.976
As left zero	5000	0.0	0.0	0.0	----
As left span	4932	67.8	40.0	40.0	1.001

Average Correction Factor **0.988**

Notes: Zero and span adjusted.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

CO Calibration Summary

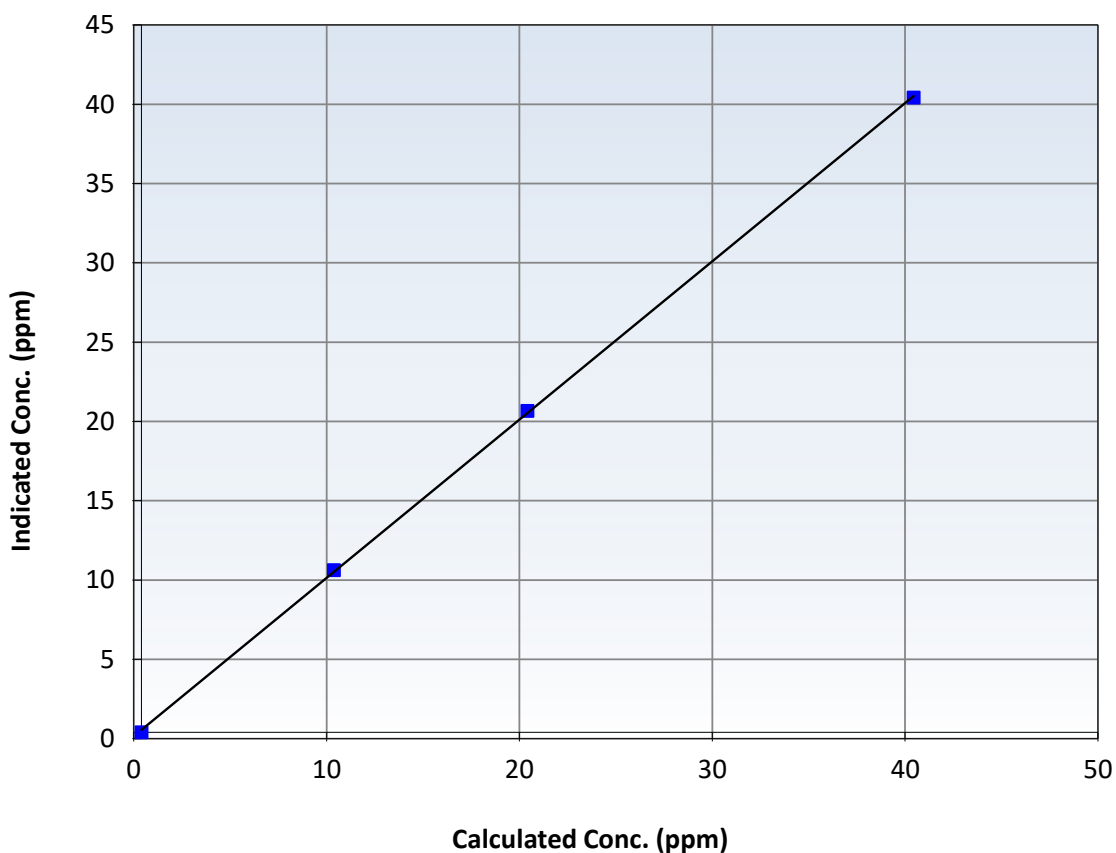
Station Information

Calibration Date:	March 24, 2025	Previous Calibration:	February 5, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	10:00	End Time (MST):	14:25
Analyzer make:	Thermo 48i-TLE	Analyzer serial #:	1408761381

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999926	≥ 0.995
40.0	40.0	1.0006	Slope	0.997952	$0.90 - 1.10$
20.0	20.3	0.9878	Intercept	0.154017	± 1.5
10.0	10.2	0.9757			

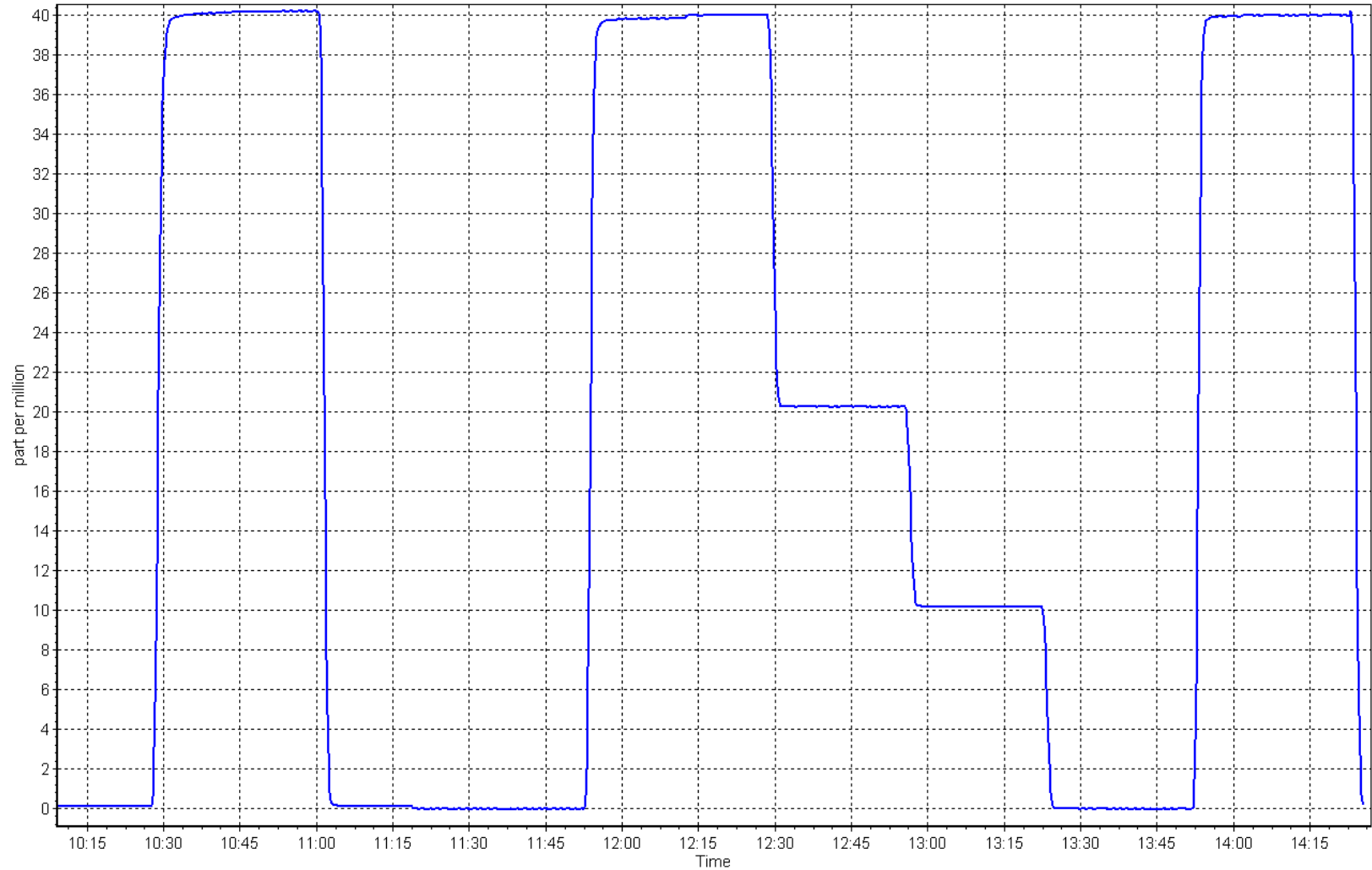
CO Calibration Curve



CO Calibration Plot

Date: March 24, 2025

Location: Athabasca Valley





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS08 FORT CHIPEWYAN MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Fort Chipewyan Station number: AMS08
Calibration Date: March 17, 2025 Last Cal Date: February 13, 2025
Start time (MST): 8:51 End time (MST): 11:22
Reason: Routine

Calibration Standards

Cal Gas Concentration: 49.84 ppm Cal Gas Exp Date: January 6, 2030
Cal Gas Cylinder #: CC196697
Removed Cal Gas Conc: 49.84 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: Teledyne API T700 Serial Number: 3810
Zero Air Gen Model: Teledyne API T701 Serial Number: 135

Analyzer Information

Analyzer make: Thermo 43i-TLE Serial Number: 1236656116
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.001201	1.001018	Backgd or Offset:	1.9	2.0
Calibration intercept:	-0.204036	0.635300	Coeff or Slope:	1.048	1.048

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.0	----
As found High point	4920	80.3	800.4	799.4	1.001
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	799.4	Previous response	801.1	*% change	-0.2%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.3	----
High point	4920	80.3	800.4	801.5	0.999
Mid point	4960	40.2	400.7	402.4	0.996
Low point	4980	20.1	200.4	201.2	0.996
As left zero	5000	0.0	0.0	0.3	----
As left span	4920	80.3	800.4	803.8	0.996
Average Correction Factor:					0.997

Notes: Changed out inlet filter after as founds.

Calibration Performed By: Matthew Courtoreille



Wood Buffalo Environmental Association

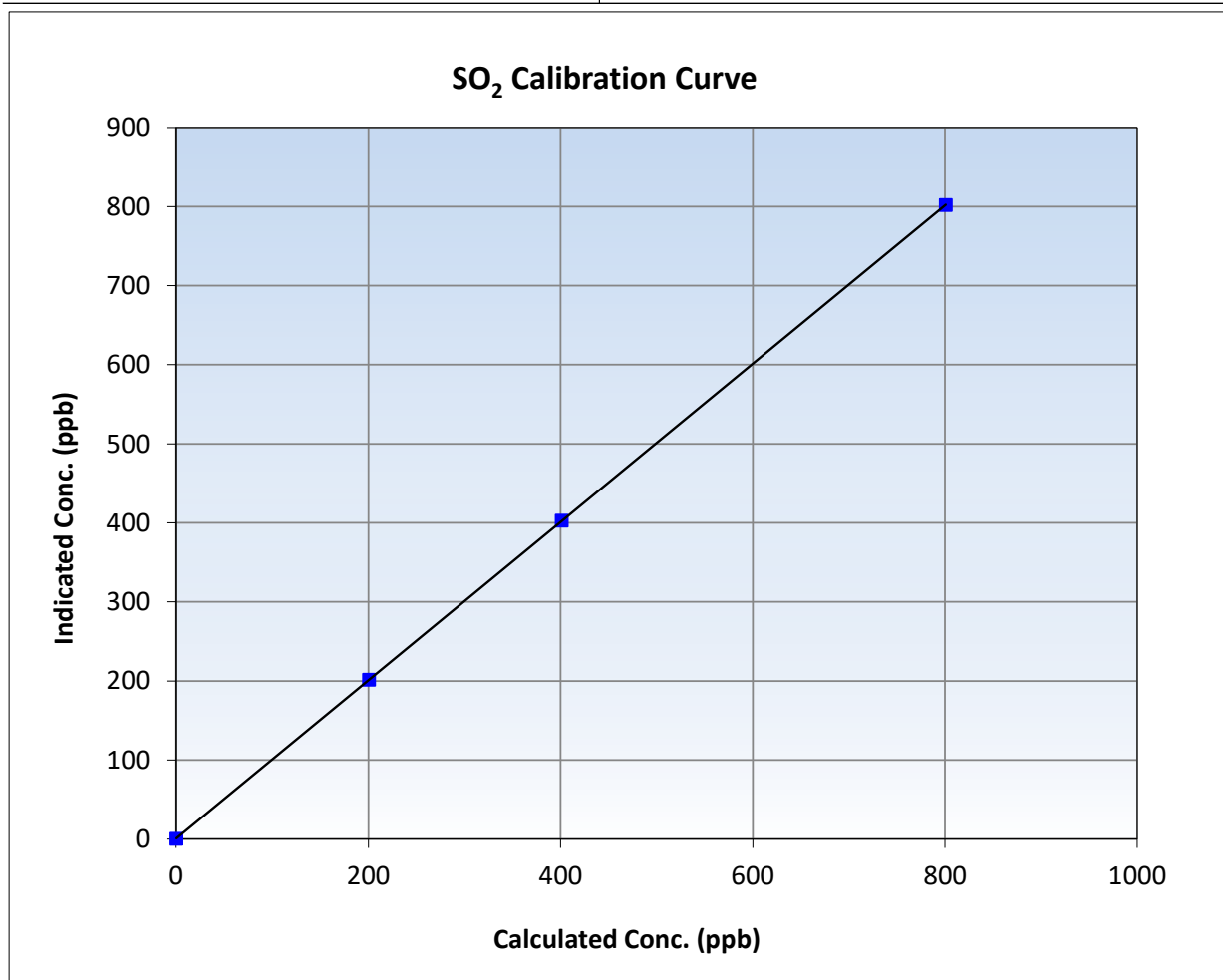
SO₂ Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 13, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS08
Start Time (MST):	8:51	End Time (MST):	11:22
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1236656116

Calibration Data

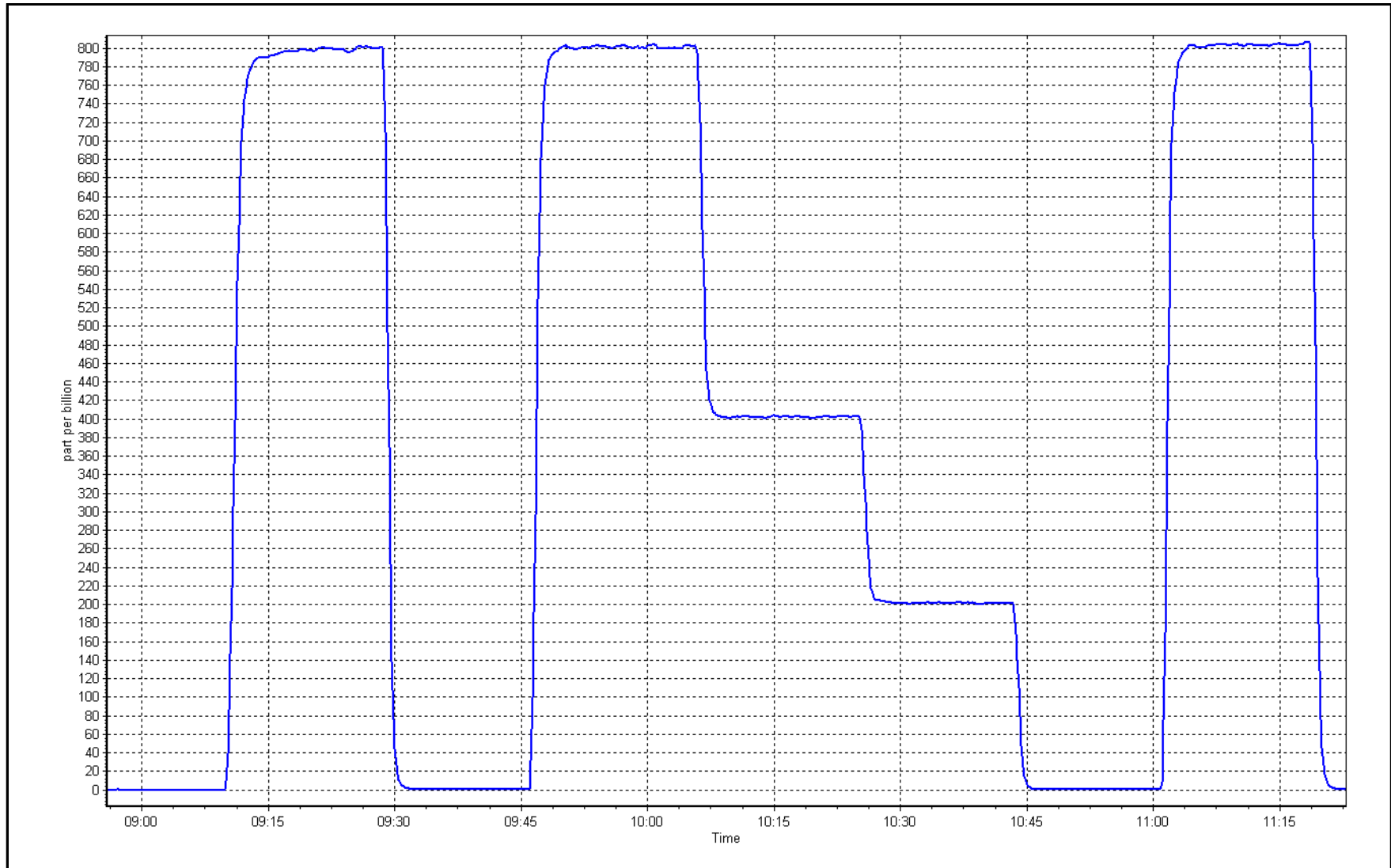
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999998	≥0.995
800.4	801.5	0.9986	Slope	1.001018	0.90 - 1.10
400.7	402.4	0.9958	Intercept	0.635300	+/-30
200.4	201.2	0.9958			



SO2 Calibration Plot

Date: March 17, 2025

Location: Fort Chipewyan





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Fort Chipewyan Station number: AMS 08
Calibration Date: March 10, 2025 Last Cal Date: February 3, 2025
Start time (MST): 11:36 End time (MST): 16:39
Reason: Routine

Calibration Standards

Cal Gas Concentration: 4.84 ppm Cal Gas Exp Date: August 28, 2027
Cal Gas Cylinder #: SA7549
Removed Cal Gas Conc: 4.84 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3810
ZAG Make/Model: Teledyne API T701 Serial Number: 135

Analyzer Information

Analyzer make: Thermo 43iQ-TL Analyzer serial #: 1203169744
Converter make: CDN-101 Converter serial #: 580
Analyzer Range: 0 - 100 ppb Converter Temp: 850 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.005392	1.012535	Backgd or Offset:	1.5	2.0
Calibration intercept:	-0.058192	-0.258150	Coeff or Slope:	0.751	0.779

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4917	82.6	80.0	76.5	1.043
As found Mid point	4959	41.3	40.0	37.9	1.049
As found Low point	4979	20.7	20.0	18.6	1.066
New cylinder response					
Baseline Corr As found:	76.7	Prev response:	80.34	*% change:	-4.7%
Baseline Corr 2nd AF pt:	38.1	AF Slope:	0.960644	AF Intercept:	-0.417263
Baseline Corr 3rd AF pt:	18.8	AF Correlation:	0.999963	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4917	82.6	80.0	80.8	0.990
Mid point	4959	41.3	40.0	40.2	0.994
Low point	4979	20.7	20.0	19.7	1.017
As left zero	5000	0.0	0.0	0.0	----
As left span	4917	82.6	80.0	81.5	0.981
SO2 Scrubber Check	4919.7	80.3	803.0	-0.1	----
Date of last scrubber change:		March 7, 2022		Ave Corr Factor	1.000
Date of last converter efficiency test:		March 15, 2022		103.4% efficiency	

Notes: Changed inlet filter after as founds. Scrubber check passed no issues. Adjusted high point span.

Calibration Performed By: Matthew Courtoreille



Wood Buffalo Environmental Association

TRS Calibration Summary

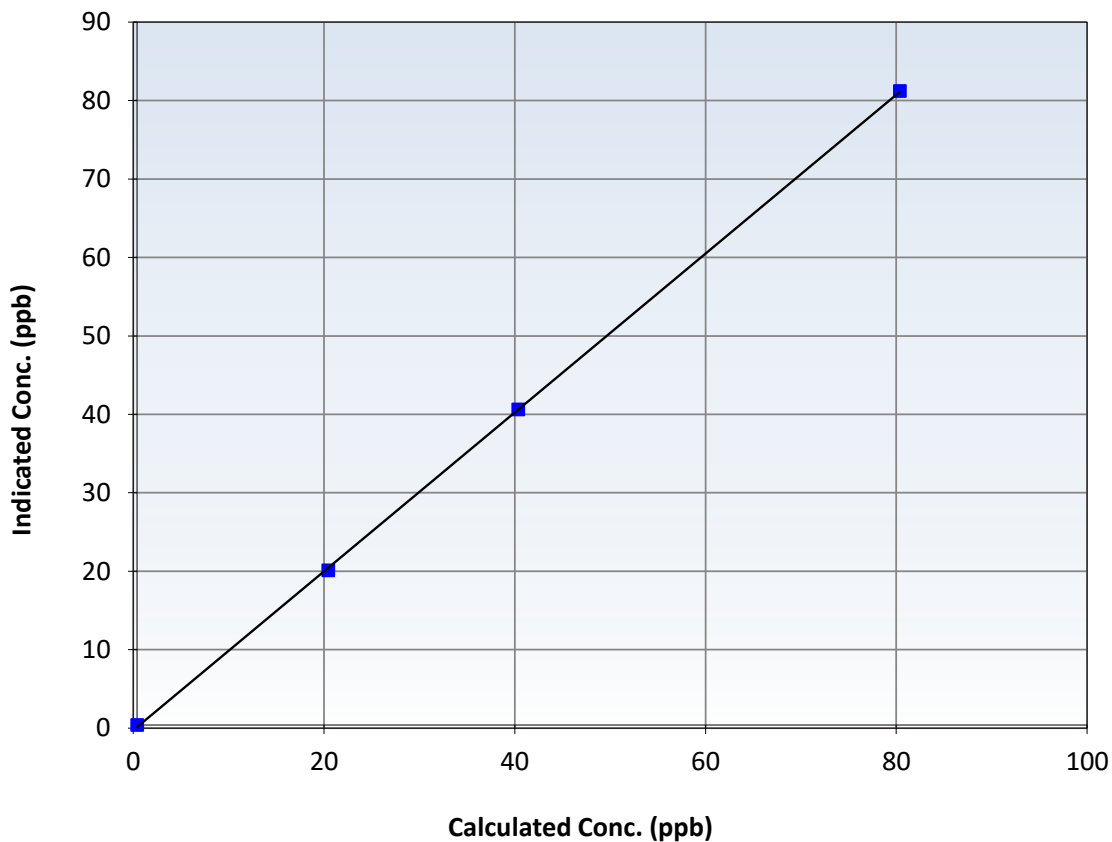
Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 3, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	11:36	End Time (MST):	16:39
Analyzer make:	Thermo 43iQ-TL	Analyzer serial #:	1203169744

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999948		≥ 0.995
80.0	80.8	0.9896	Slope	1.012535		$0.90 - 1.10$
40.0	40.2	0.9944	Intercept	-0.258150		± 3
20.0	19.7	1.0172				

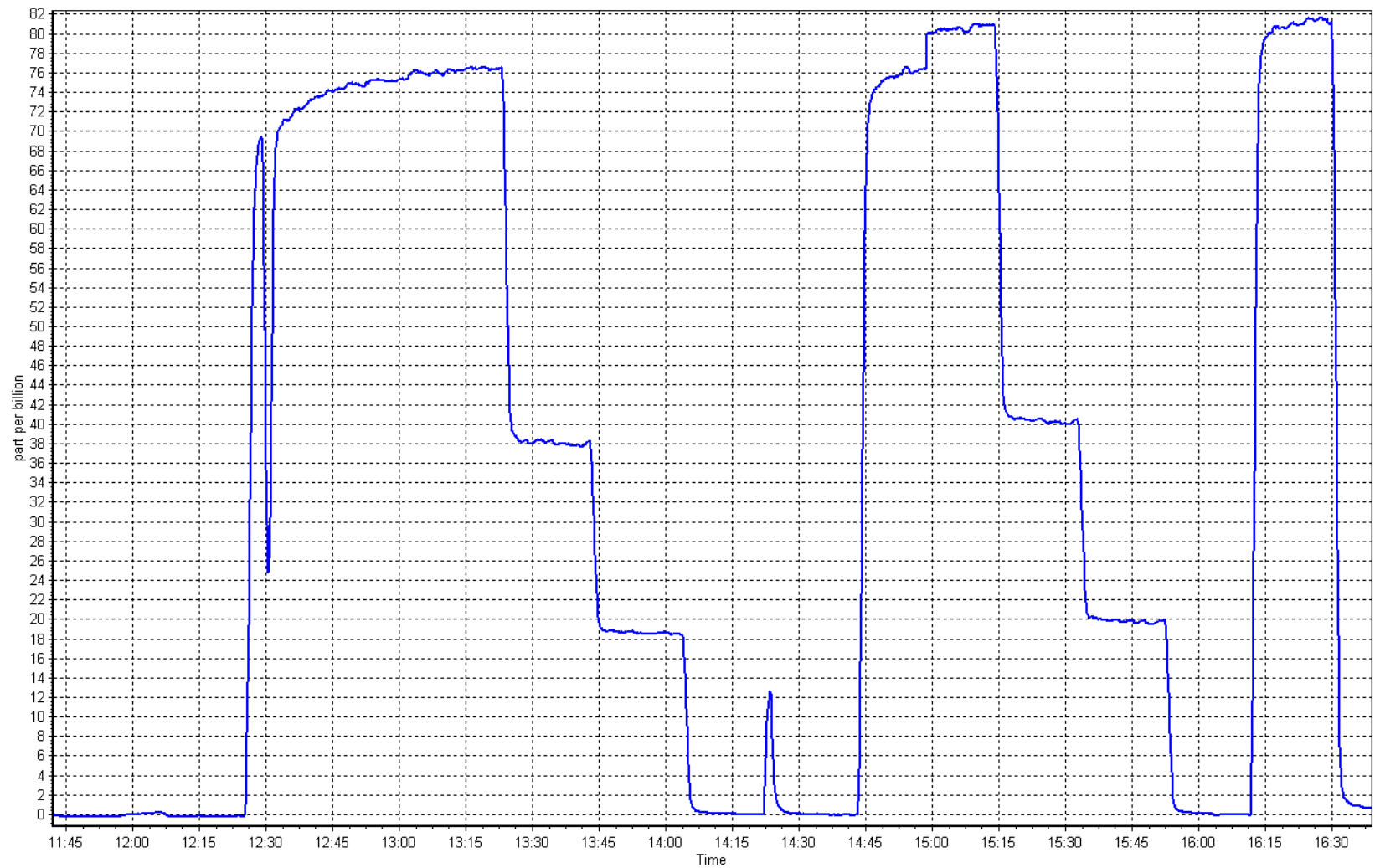
TRS Calibration Curve



TRS Calibration Plot

Date: March 10, 2025

Location: Fort Chipewyan





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Fort Chipewyan
Station number: AMS 08
Calibration Date: March 20, 2025
Last Cal Date: February 16, 2025
Start time (MST): 10:19
End time (MST): 14:14
Reason: Routine

Calibration Standards

NO Gas Cylinder #: DT0046831
NOX Cal Gas Conc: 60.20 ppm
Removed Cylinder #: DT0046831
Removed Gas NOX Conc: 60.20 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701H
Cal Gas Expiry Date: January 9, 2032
NO Cal Gas Conc: 60.00 ppm
Removed Gas Exp Date: January 9, 2032
Removed Gas NO Conc: 60.00 ppm
NO gas Diff:
Serial Number: 3810
Serial Number: 135

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.6	-0.3	-0.3	----	----
AF High point	4933	66.7	803.1	800.4	2.7	791.4	788.0	3.5	1.0140	1.0154
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO _x = 801.8 ppb	NO = 799.3 ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = -1.2%
Baseline Corr 1st pt	NO _x = 792.0 ppb	NO = 788.3 ppb	<u>As Found Statistics</u>		*Percent Change	NO = -1.4%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found	NO _x r ² :	Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found	NO r ² :	NO SI:	NO Int:
			As found	NO ₂ r ² :	NO2 SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42iQ
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 2072

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.727	0.727	NO bkgnd or offset:	0.8	0.8
NOX coeff or slope:	0.996	0.996	NOX bkgnd or offset:	1.1	1.1
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	114.5	113.7

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.996890	0.985076
NO _x Cal Offset:	1.194493	1.194368
NO Cal Slope:	0.997843	0.984347
NO Cal Offset:	0.574281	0.474217
NO ₂ Cal Slope:	0.971567	0.970828
NO ₂ Cal Offset:	1.371312	0.668600

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	-0.6	-0.3	-0.3	----	----
High point	4933	66.7	803.1	800.4	2.7	791.4	788.0	3.5	1.0148	1.0158
Mid point	4967	33.3	400.9	399.6	1.3	397.1	394.2	2.9	1.0096	1.0136
Low point	4983	16.7	201.1	200.4	0.7	201.0	198.5	2.5	1.0003	1.0096
As left zero	5000	0.0	0.0	0.0	0.0	2.3	0.4	1.9	----	----
As left span	4933	66.7	803.1	380.0	423.1	776.8	380.0	396.9	1.0339	1.0000
Average Correction Factor									1.0082	1.0130

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.3	----	----
High GPT point	785.3	376.4	411.6	399.7	1.0297	97.1%
Mid GPT point	785.3	586.1	201.9	197.3	1.0232	97.7%
Low GPT point	785.3	685.7	102.3	100.8	1.0146	98.6%
Average Correction Factor					1.0225	97.8%

Notes: No adjustments or maintenance performed.

Calibration Performed By: Matthew Courtoreille



Wood Buffalo Environmental Association

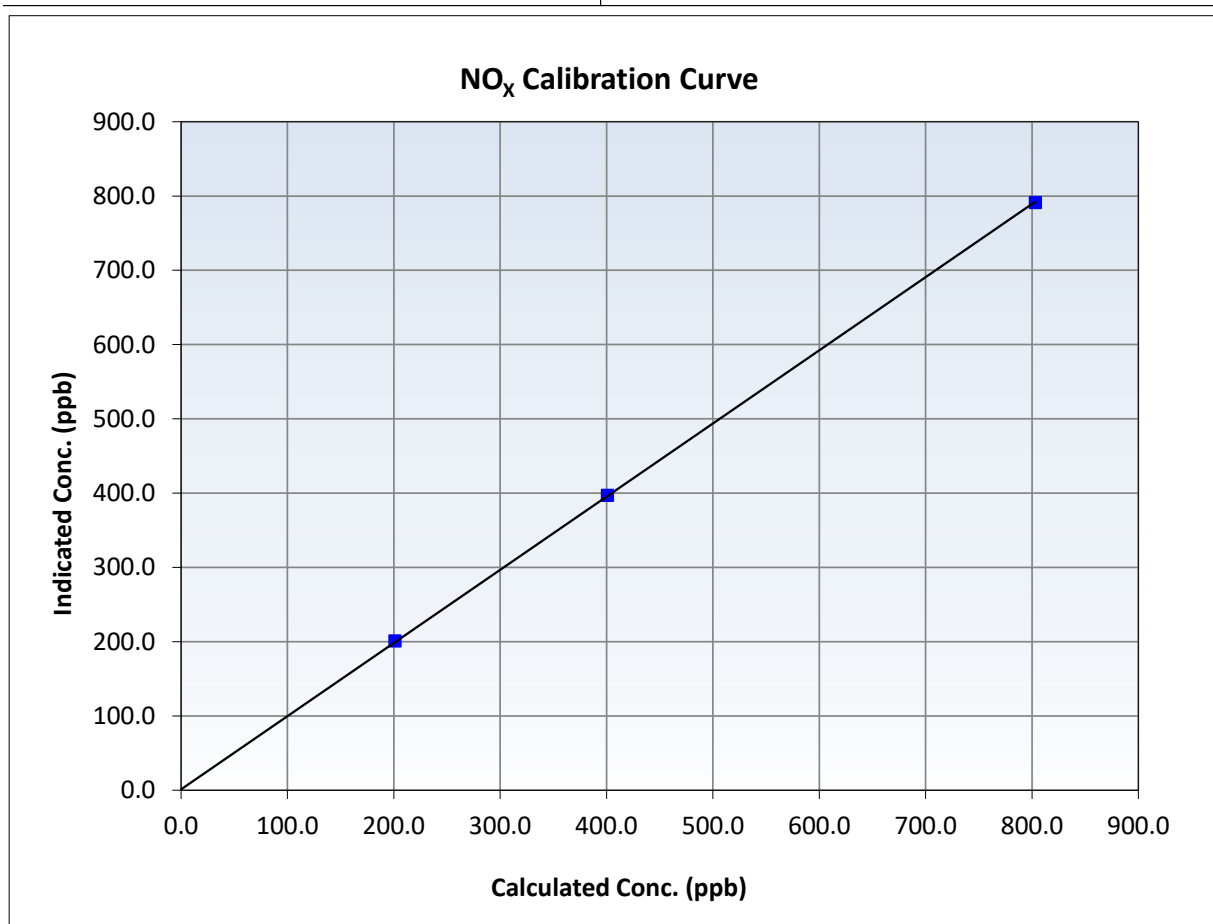
NO_x Calibration Summary

Station Information

Calibration Date:	March 20, 2025	Previous Calibration:	February 16, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	10:19	End Time (MST):	14:14
Analyzer make:	Thermo 42iQ	Analyzer serial #:	2072

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.6	----	Correlation Coefficient	0.999976	≥0.995
803.1	791.4	1.0148	Slope	0.985076	0.90 - 1.10
400.9	397.1	1.0096	Intercept	1.194368	+/-20
201.1	201.0	1.0003			





Wood Buffalo Environmental Association

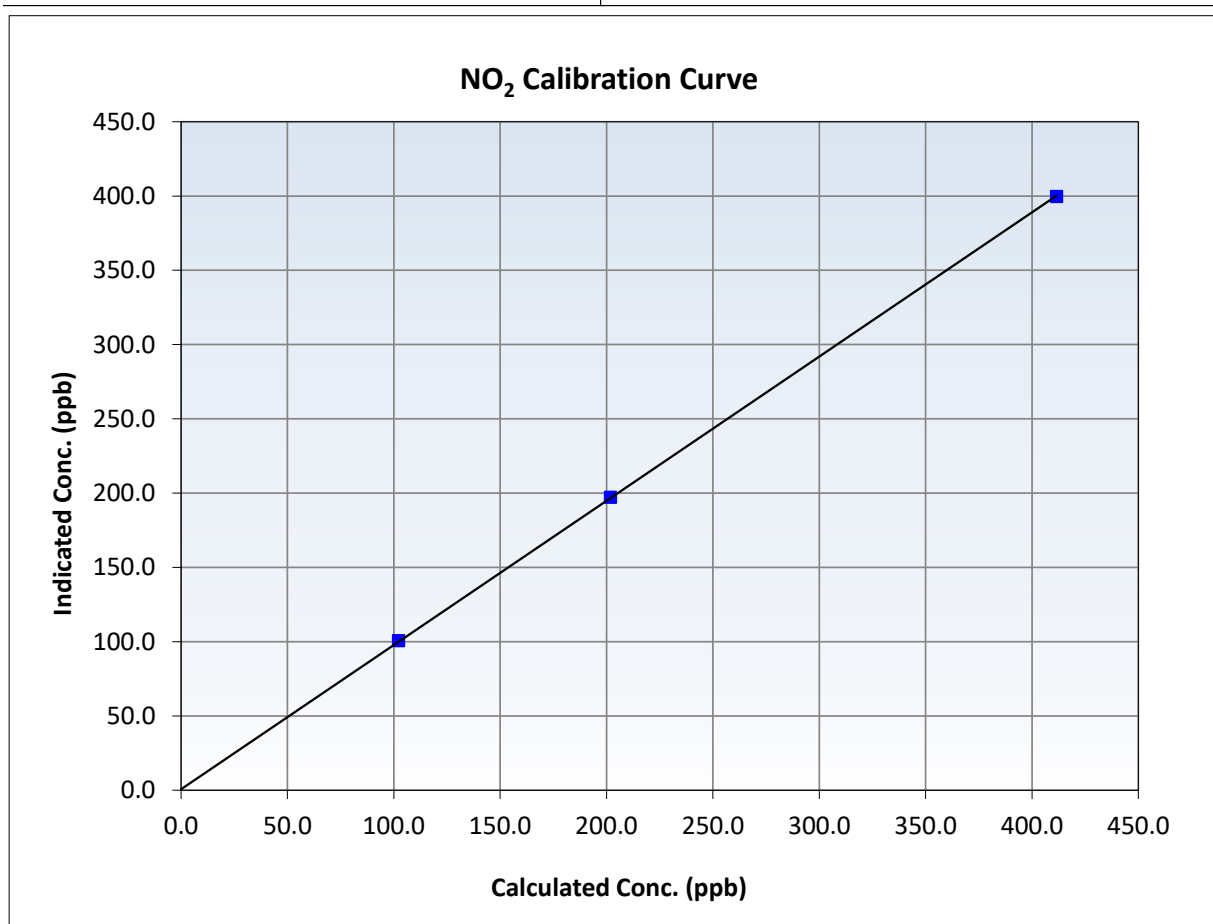
NO₂ Calibration Summary

Station Information

Calibration Date:	March 20, 2025	Previous Calibration:	February 16, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	10:19	End Time (MST):	14:14
Analyzer make:	Thermo 42iQ	Analyzer serial #:	2072

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.3	----	Correlation Coefficient	0.999973	≥0.995
411.6	399.7	1.0297	Slope	0.970828	0.90 - 1.10
201.9	197.3	1.0232	Intercept	0.668600	+/-20
102.3	100.8	1.0146			





Wood Buffalo Environmental Association

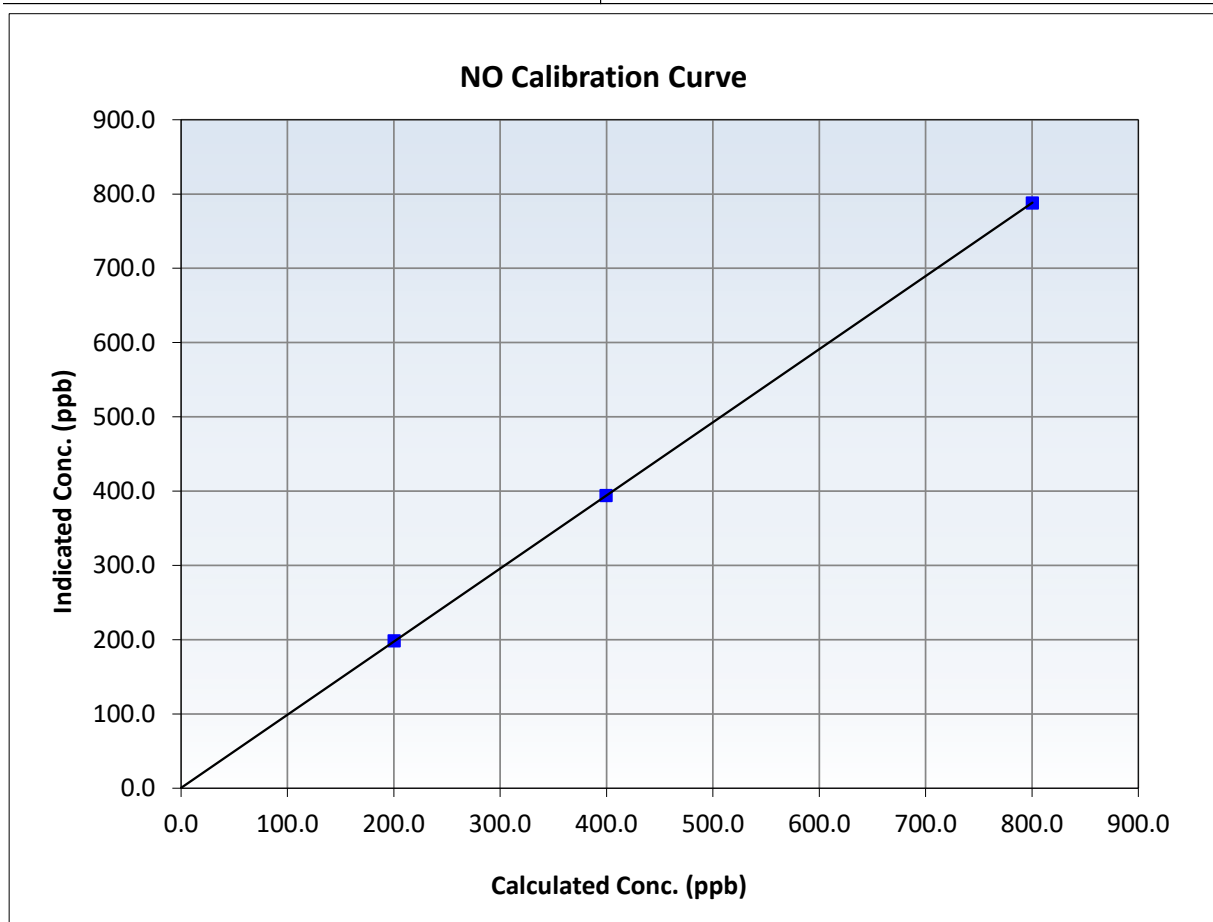
NO Calibration Summary

Station Information

Calibration Date:	March 20, 2025	Previous Calibration:	February 16, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	10:19	End Time (MST):	14:14
Analyzer make:	Thermo 42iQ	Analyzer serial #:	2072

Calibration Data

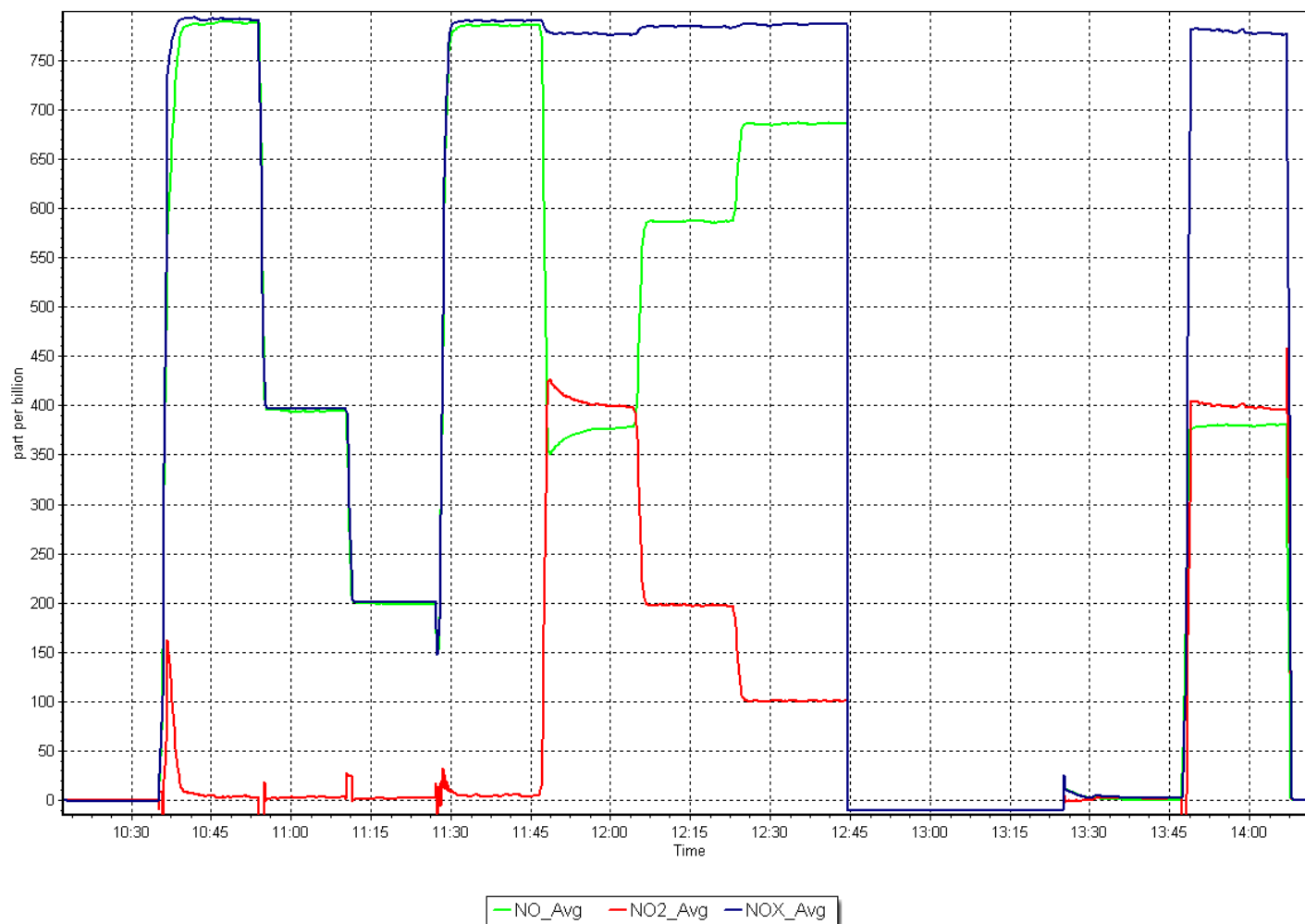
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.3	----	Correlation Coefficient	0.999996	≥ 0.995
800.4	788.0	1.0158	Slope	0.984347	$0.90 - 1.10$
399.6	394.2	1.0136	Intercept	0.474217	± 20
200.4	198.5	1.0096			



NO_x Calibration Plot

Date: March 20, 2025

Location: Fort Chipewyan





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Fort Chipewyan
Calibration Date: March 11, 2025
Start time (MST): 7:37
Reason: Routine

Station number: AMS 08
Last Cal Date: February 10, 2025
End time (MST): 12:03

Calibration Standards

O₃ generation mode: Photometer
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne API T701

Serial Number: 3810
Serial Number: 135

Analyzer Information

Analyzer make: Thermo 49i
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 1152220026

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.002400	0.993514	Backgd or Offset:	-0.3	-0.3
Calibration intercept:	-0.320000	0.060000	Coeff or Slope:	1.015	1.005

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.5	----
As found High point	5000	968.7	400.0	400.6	1.000
As found Mid point	5000	820.5	200.0	199.7	1.004
As found Low point	5000	720.0	100.0	98.2	1.024
Baseline Corr As found:	400.1	Previous response	400.6	*% change	-0.1%
Baseline Corr 2nd AF pt:	199.2	AF Slope:	1.002000	AF Intercept:	-0.600000
Baseline Corr 3rd AF pt:	97.7	AF Correlation:	0.999962	* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.5	----
High point	5000	968.7	400.0	397.7	1.006
Mid point	5000	820.5	200.0	198.5	1.008
Low point	5000	720.0	100.0	99.0	1.010
As left zero	5000	0.0	0.0	0.2	----
As left span	5000	968.7	400.0	396.4	1.009
Average Correction Factor					1.008

Notes: Changed Filter after, three point as founds, newer pump was installed. Adjustment made to span high point but calibrator was not responding properly. I just reset the calibrator.

Calibration Performed By: Matthew Courtoreille



Wood Buffalo Environmental Association

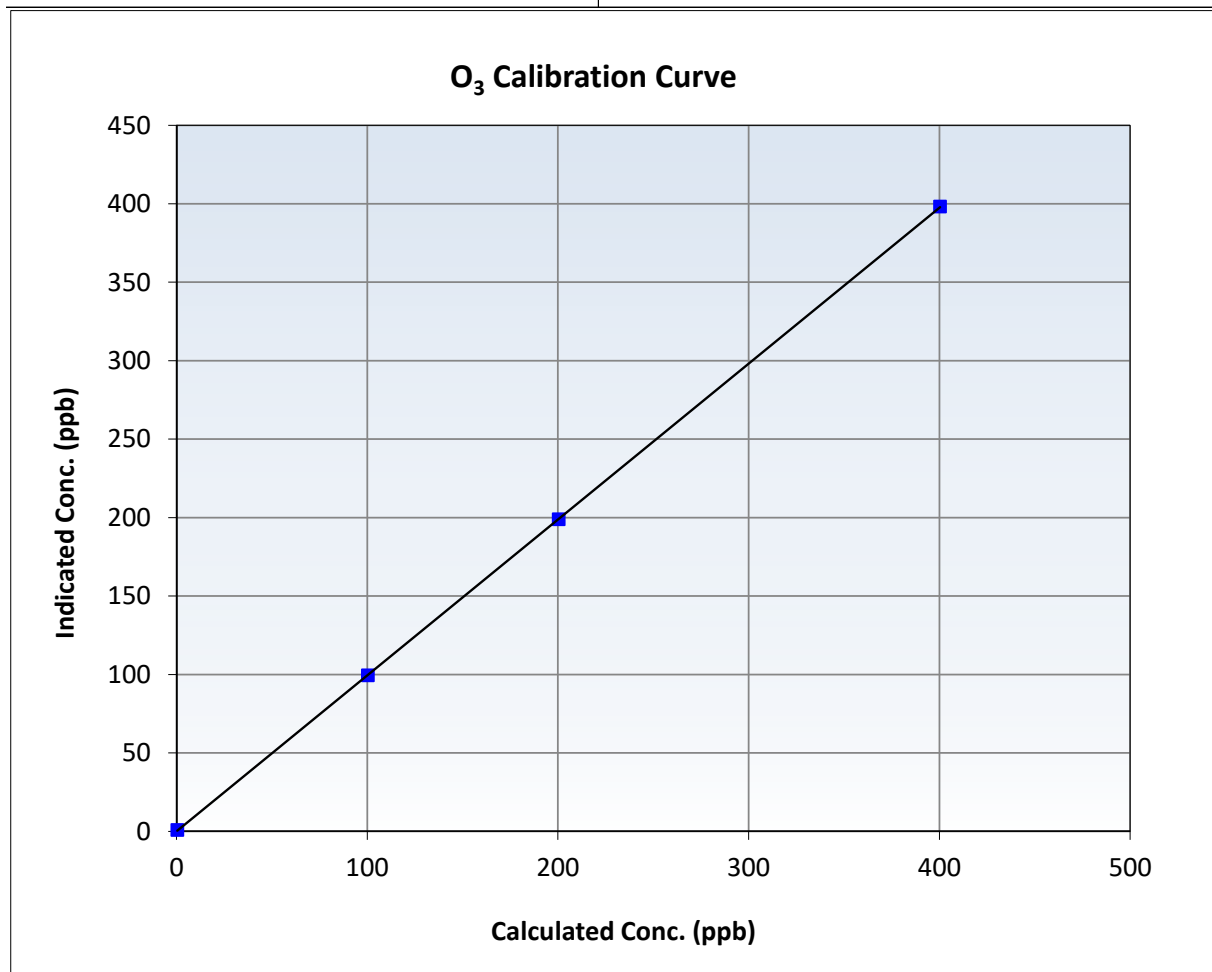
O₃ Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 10, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	7:37	End Time (MST):	12:03
Analyzer make:	Thermo 49i	Analyzer serial #:	1152220026

Calibration Data

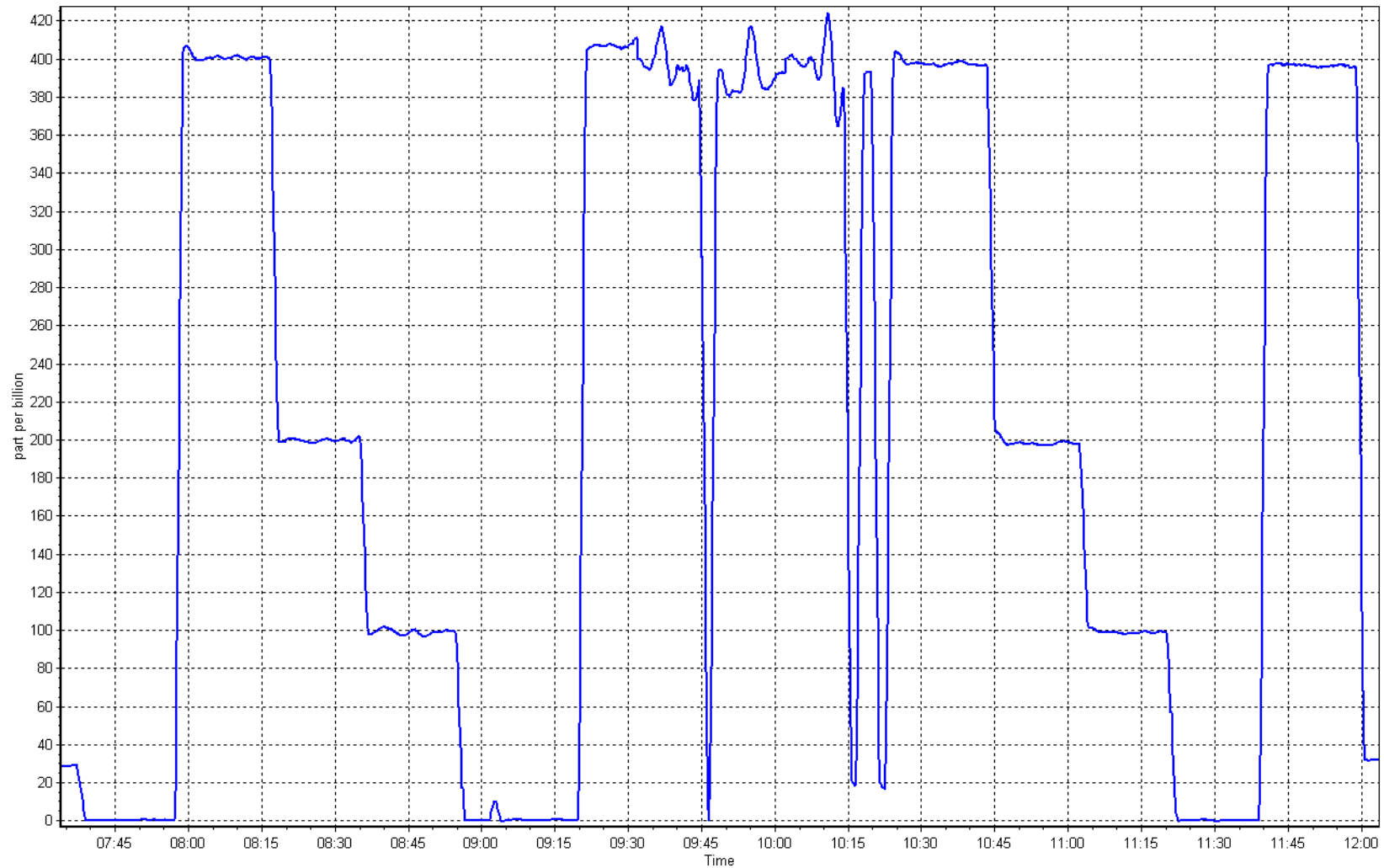
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.5	----	Correlation Coefficient	0.999994	≥0.995
400.0	397.7	1.0058	Slope	0.993514	0.90 - 1.10
200.0	198.5	1.0076	Intercept	0.060000	+/- 5
100.0	99.0	1.0101			



O₃ Calibration Plot

Date: March 11, 2025

Location: Fort Chipewyan





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Fort Chipewyan Station number: AMS 08
Calibration Date: March 11, 2025 Last Cal Date: February 25, 2025
Start time (MST): 13:06 End time (MST): 14:30

Analyzer Make: Teledyne API T640 S/N: 319
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 14719
Temp/RH standard: Alicat FP-25BT S/N: 14719

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-18.80	-20.85	-19.60	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	735.10	735.5	734.30	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	5.00	4.99	5.00	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	40%		40%	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 4.86		PM w/ HEPA: 0.00		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☐

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.90 Expiry Date: 10-Jun-24
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test	NA	10.80	10.80	<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: March 11, 2025

Date Disposable Filter Changed: September 18, 2024

Post- maintenance Zero Verification: PM w/ HEPA: 0.00 <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: August 29, 2024

Date RH/T Sensor Cleaned: August 29, 2024

Notes:

No adjustment made

Calibration by: Matthew Courtoreille



Wood Buffalo Environmental Association

CO Calibration Report

Station Information

Station Name: Fort Chipewyan Station number: AMS 08
Calibration Date: March 17, 2025 Last Cal Date: February 17, 2025
Start time (MST): 11:26 End time (MST): 14:34
Reason: Routine

Calibration Standards

Cal Gas Concentration: 3,030 ppm Cal Gas Exp Date: December 1, 2028
Cal Gas Cylinder #: ALM014846
Removed Cal Gas Conc: 3,030 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3810
ZAG Make/Model: Teledyne API T701H Serial Number: 135

Analyzer Information

Analyzer make: Teledyne API T300 Analyzer serial #: 3505
Analyzer Range: 0 - 50 ppm

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.988119	0.998216	Backgd or Offset:	-0.016	-0.016
Calibration intercept:	0.058910	0.172906	Coeff or Slope:	0.998	1.003

CO As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.2	----
As found High point	4934	66.7	40.4	40.5	1.001
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	40.37	Prev response:	39.99	*% change:	0.9%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CO Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4934	66.7	40.4	40.4	1.000
Mid point	4966.7	33.3	20.2	20.4	0.987
Low point	4983.3	16.7	10.1	10.4	0.976
As left zero	5000	0.0	0.0	0.1	----
As left span	2960	40.0	40.4	40.3	1.002
Average Correction Factor					0.988

Notes: Changed inlet filter after as found. Adjusted zero and span high point.

Calibration Performed By: Matthew Courtoreille



Wood Buffalo Environmental Association

CO Calibration Summary

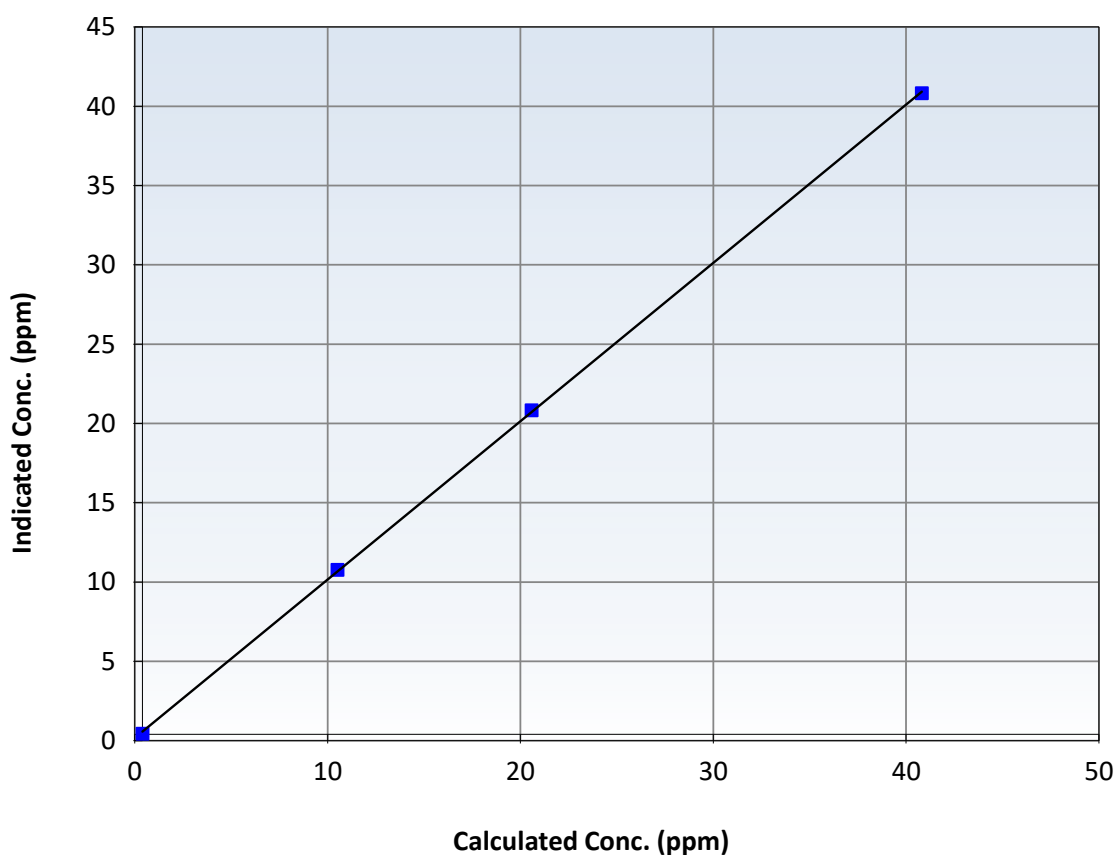
Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 17, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	11:26	End Time (MST):	14:34
Analyzer make:	Teledyne API T300	Analyzer serial #:	3505

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999945	≥ 0.995
40.4	40.4	0.9996	Slope	0.998216	$0.90 - 1.10$
20.2	20.4	0.9873	Intercept	0.172906	± 1.5
10.1	10.4	0.9759			

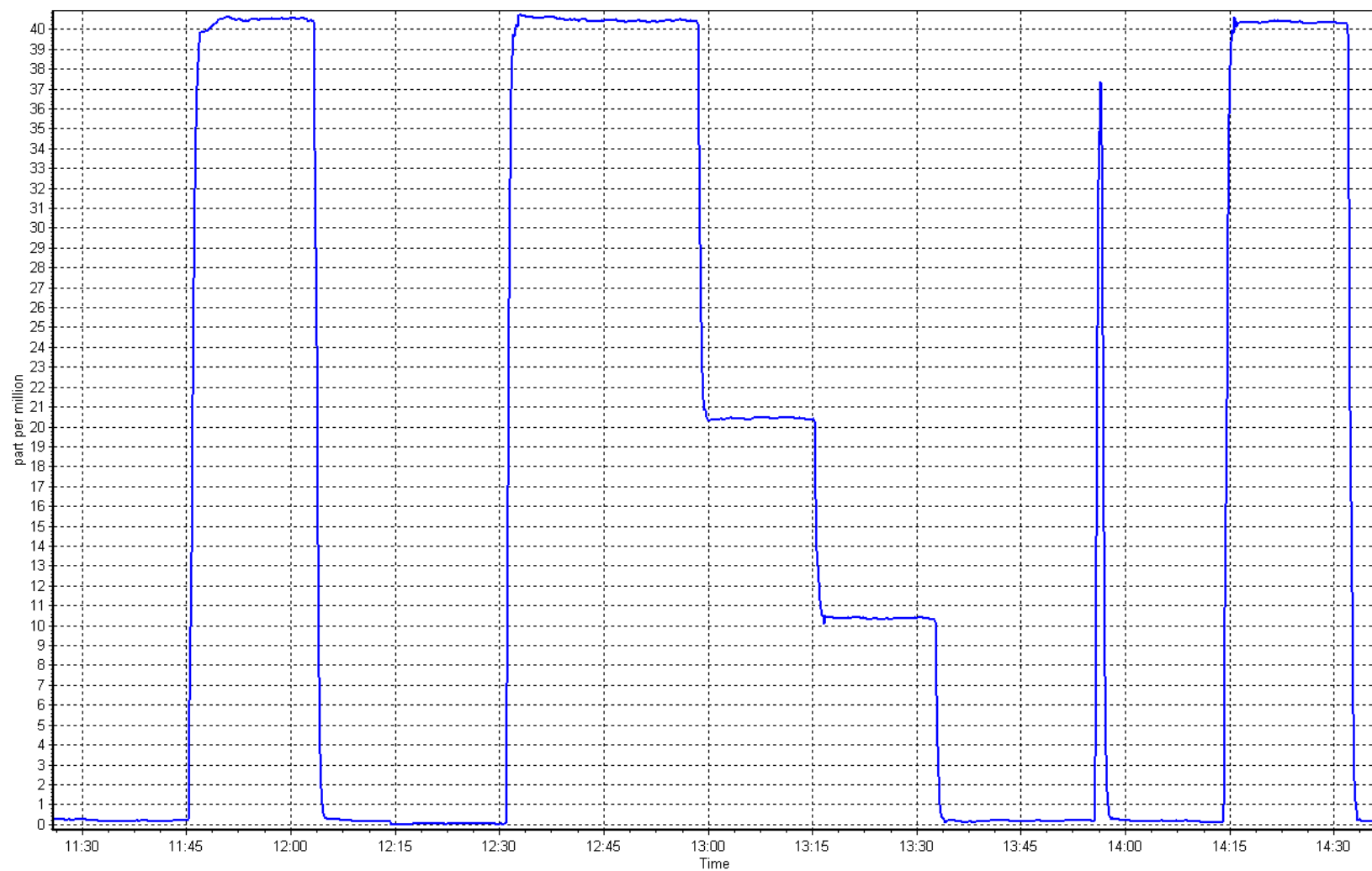
CO Calibration Curve



CO Calibration Plot

Date: March 17, 2025

Location: Fort Chipewyan





Wood Buffalo Environmental Association

CO₂ Calibration Report

Station Information

Station Name: Fort Chipewyan Station number: AMS 08
Calibration Date: March 19, 2025 Last Cal Date: February 17, 2025
Start time (MST): 12:40 End time (MST): 15:47
Reason: Routine

Calibration Standards

Cal Gas Concentration: 60,220 ppm Cal Gas Exp Date: December 1, 2028
Cal Gas Cylinder #: ALM014846
Removed Cal Gas Conc: 60,220 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3810
N2 Gen Make/Model: Peak Scientific Serial Number: 135

Analyzer Information

Analyzer make: Teledyne API T360 Analyzer serial #: 289
Analyzer Range: 0 - 2,000 ppm

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.998902	0.998354	Backgd or Offset:	-0.014	-0.014
Calibration intercept:	-9.320000	-4.560000	Coeff or Slope:	1.038	1.033

CO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	3000	0.0	0.0	0.0	----
As found High Point	2920	80.0	1605.9	1633.9	0.983
As found Mid Point					
As found Low Point					
New cylinder response					
Baseline Corr As found:	1633.9	Prev response:	1594.8	*% change:	2.4%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	3000	0.0	0.0	0.3	----
High point	2920	80.0	1605.9	1605.0	1.001
Mid point	2960	40.0	802.9	782.9	1.026
Low point	2980	20.0	401.5	399.2	1.006
As left zero	3000	0.0	0.0	0.0	----
As left span	2960	40.0	802.9	779.9	1.030

Average Correction Factor **1.011**

Notes: Changed inlet filter after as found, adjusted span high point.

Calibration Performed By: Matthew Courtoreille



Wood Buffalo Environmental Association

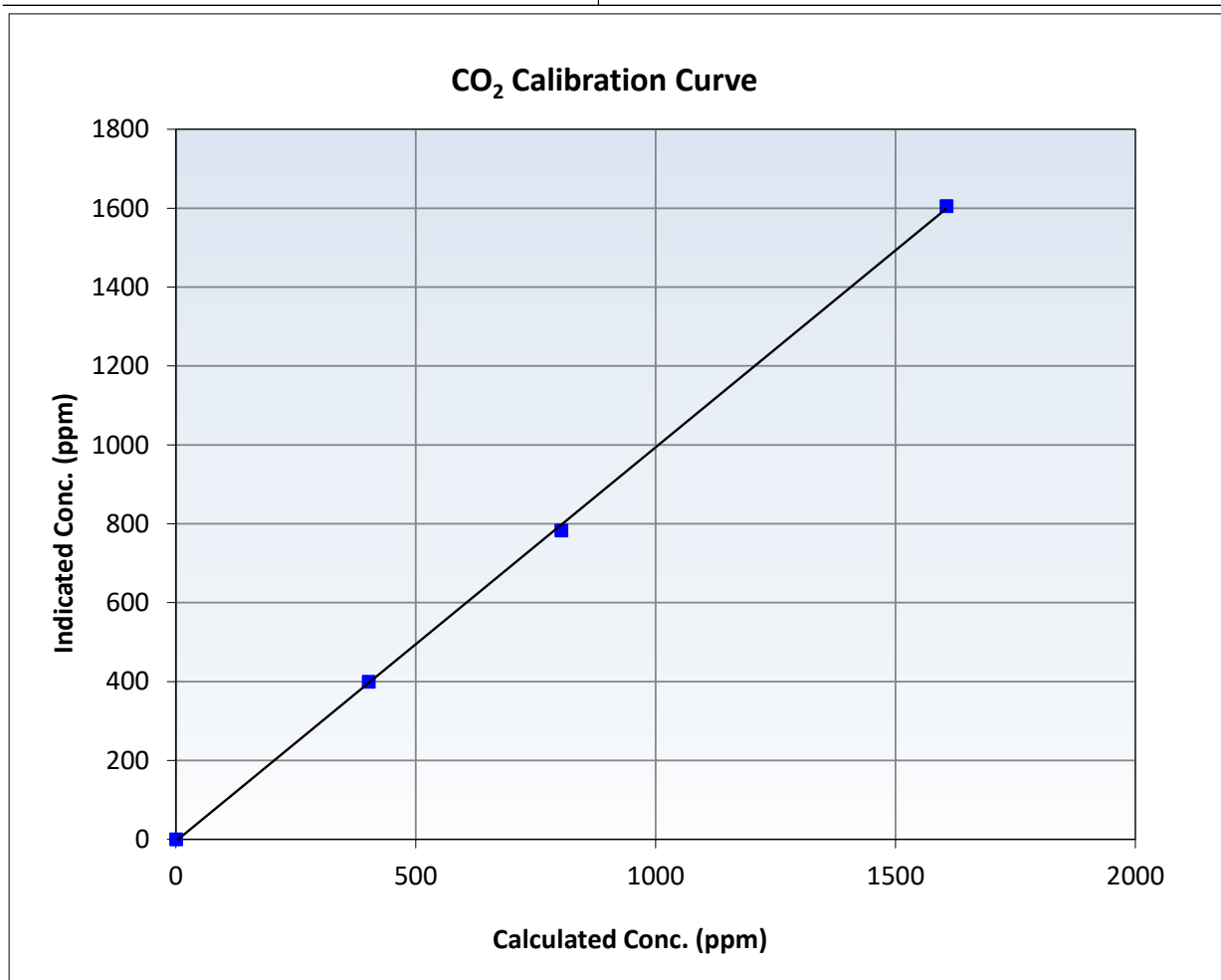
CO₂ Calibration Summary

Station Information

Calibration Date	March 19, 2025	Previous Calibration	February 17, 2025
Station Name	Fort Chipewyan	Station Number	AMS 08
Start Time (MST)	12:40	End Time (MST)	15:47
Analyzer make	Teledyne API T360	Analyzer serial #	289

Calibration Data

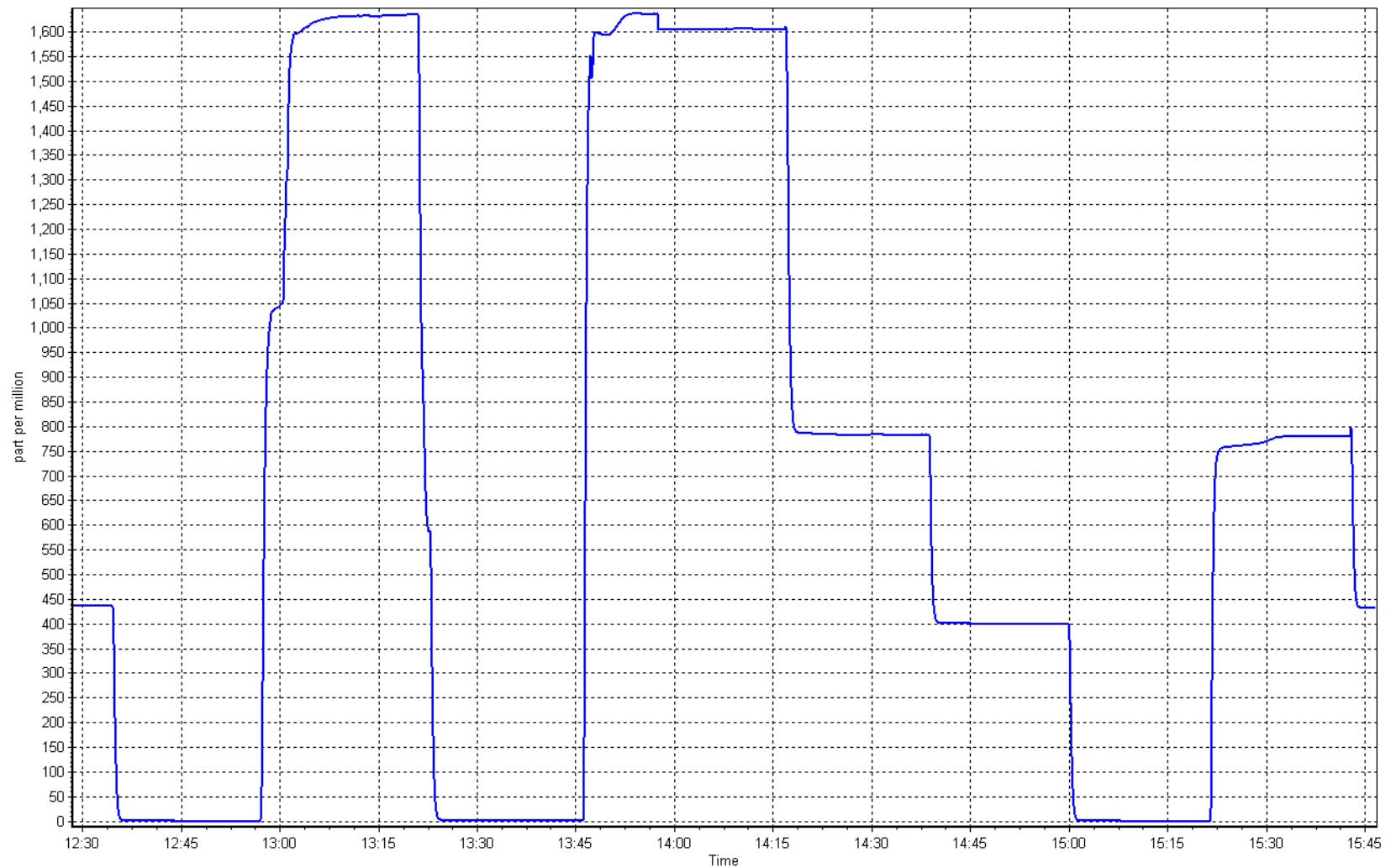
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999806	≥0.995
1605.9	1605.0	1.0005	Slope	0.998354	0.90 - 1.10
802.9	782.9	1.0256	Intercept	-4.6	+/-20
401.5	399.2	1.0057			



CO₂ Calibration Plot

Date: March 19, 2025

Location: Fort Chipewyan





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS09 BARGE LANDING MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Barge Landing
Calibration Date: March 6, 2025
Start time (MST): 9:56
Reason: Routine

Station number: AMS 09
Last Cal Date: February 10, 2025
End time (MST): 15:32

Calibration Standards

Cal Gas Concentration: 50.56 ppm
Cal Gas Cylinder #: CC705748
Removed Cal Gas Conc: 49.96 ppm
Removed Gas Cyl #: CC151285
Calibrator Model: API T700
Zero Air Gen Model: APIT701

Cal Gas Exp Date: October 9, 2032
Rem Gas Exp Date: January 5, 2025
Diff between cyl: -1.6%
Serial Number: 3812
Serial Number: 4888

Analyzer Information

Analyzer make: Thermo 43i
Analyzer Range: 0 - 1000 ppb

Serial Number: 1118148498

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.997728	0.999602	Backgd or Offset:	11.0	11.4
Calibration intercept:	0.246708	-0.799117	Coeff or Slope:	0.976	0.998

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4919	80.2	801.5	796.1	1.007
As found Mid point					
As found Low point					
New cylinder response	4921	79.1	799.8	782.1	1.023
Baseline Corr As found:	796.3	Previous response	799.9	*% change	-0.5%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4921	79.1	799.8	799.5	1.000
Mid point	4961	39.5	399.4	397.0	1.006
Low point	4980	19.8	200.2	199.1	1.006
As left zero	5000	0.0	0.0	-0.1	----
As left span	4921	79.1	799.8	796.7	1.004
Average Correction Factor:					1.004

Notes: Inlet filter changed after as founds. Adjusted span only.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

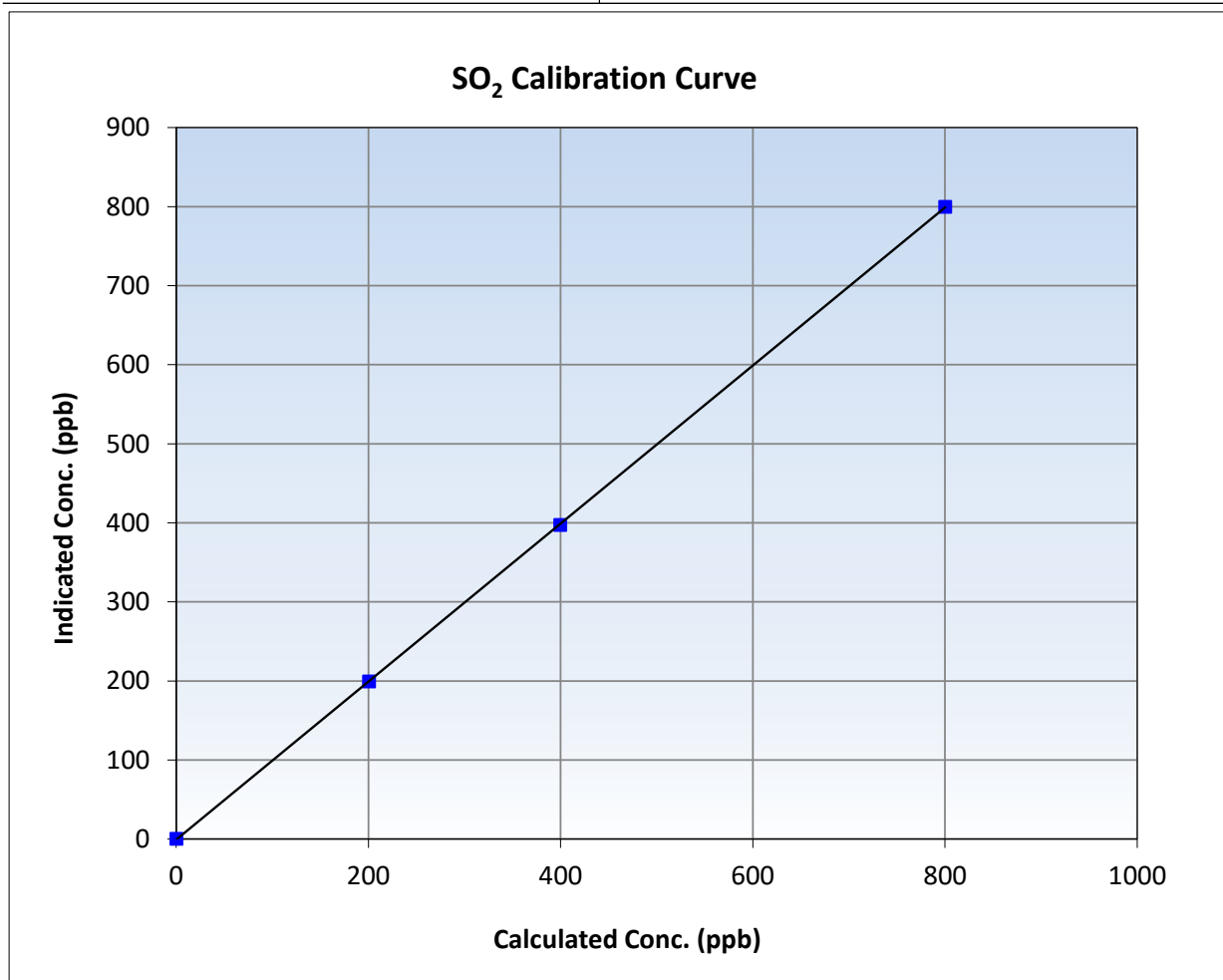
SO₂ Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 10, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:56	End Time (MST):	15:32
Analyzer make:	Thermo 43i	Analyzer serial #:	1118148498

Calibration Data

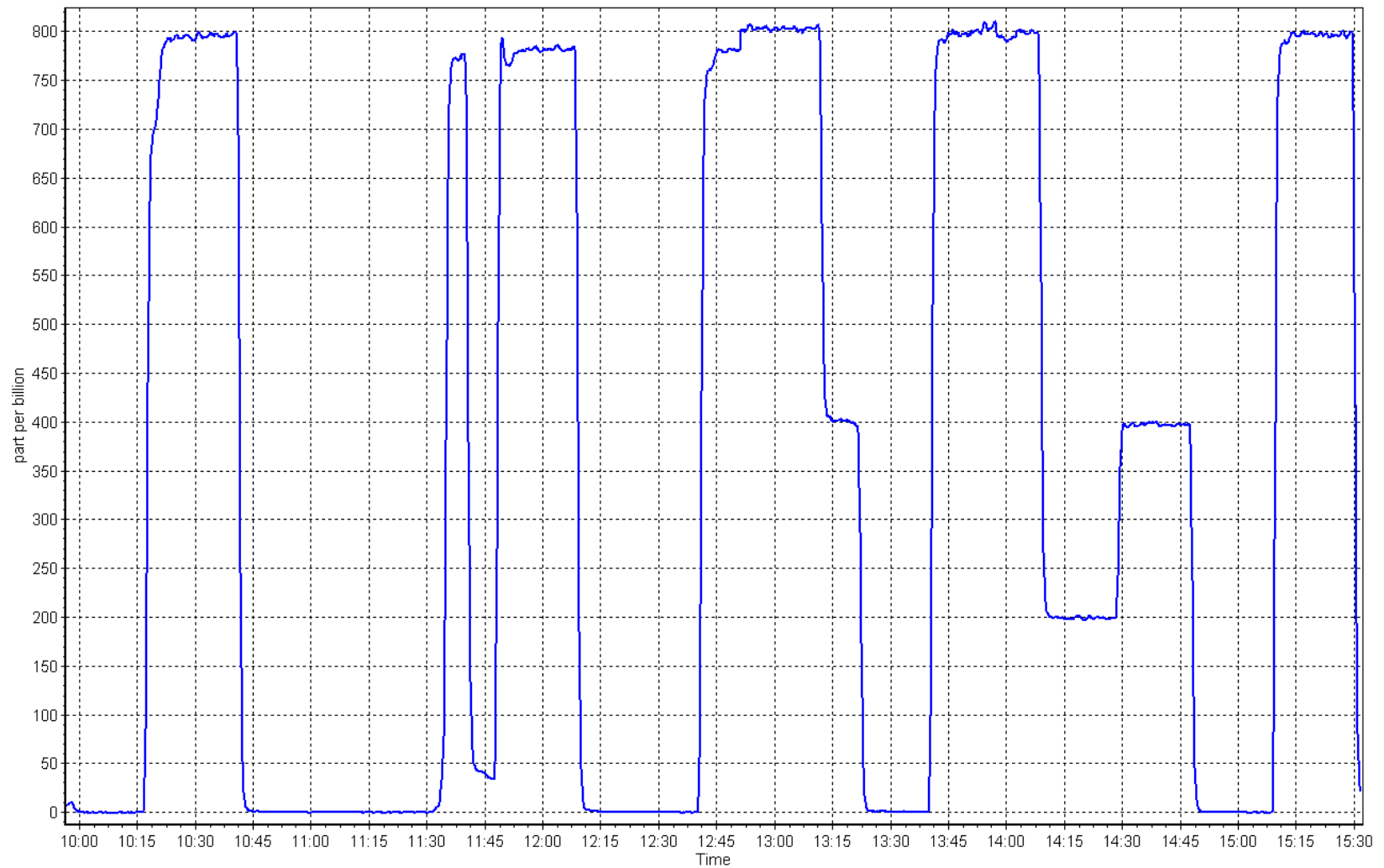
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999990	≥0.995
799.8	799.5	1.0004	Slope	0.999602	0.90 - 1.10
399.4	397.0	1.0060	Intercept	-0.799117	+/-30
200.2	199.1	1.0057			



SO2 Calibration Plot

Date: March 6, 2025

Location: Barge Landing





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Barge Landing
Calibration Date: March 12, 2025
Start time (MST): 9:21
Reason: Routine

Station number: AMS 09
Last Cal Date: February 12, 2025
End time (MST): 13:19

Calibration Standards

Cal Gas Concentration: 5.17 ppm
Cal Gas Cylinder #: CC511415
Removed Cal Gas Conc: 5.17 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: API T700
ZAG Make/Model: API T701

Cal Gas Exp Date: August 22, 2026
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 3812
Serial Number: 4888

Analyzer Information

Analyzer make: Thermo 43i-TLE
Converter make: CDN-101
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1331259320
Converter serial #: 519
Converter Temp: 830 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.986132	0.988273	Backgd or Offset:	2.880	2.880
Calibration intercept:	0.179099	0.279163	Coeff or Slope:	1.182	1.182

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4923	77.4	80.0	79.3	1.011
As found Mid point	4961	38.7	40.0	39.8	1.008
As found Low point	4981	19.3	20.0	20.1	0.998
New cylinder response					
Baseline Corr As found:	79.2	Prev response:	79.11	*% change:	0.1%
Baseline Corr 2nd AF pt:	39.7	AF Slope:	0.988556	AF Intercept:	0.219256
Baseline Corr 3rd AF pt:	20.0	AF Correlation:	0.999989	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.2	----
High point	4923	77.4	80.0	79.3	1.009
Mid point	4961	38.7	40.0	40.0	1.001
Low point	4981	19.3	20.0	20.0	0.998
As left zero	5000	0.0	0.0	0.2	----
As left span	4923	77.4	80.0	79.9	1.002
SO2 Scrubber Check	4920	80.2	802.0	0.0	----
Date of last scrubber change:				Ave Corr Factor	1.003
Date of last converter efficiency test:					

Notes: Sample inlet filter changed after multipoint as founds. SO2 scrubber check completed after calibrator zero. No adjustments made.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

TRS Calibration Summary

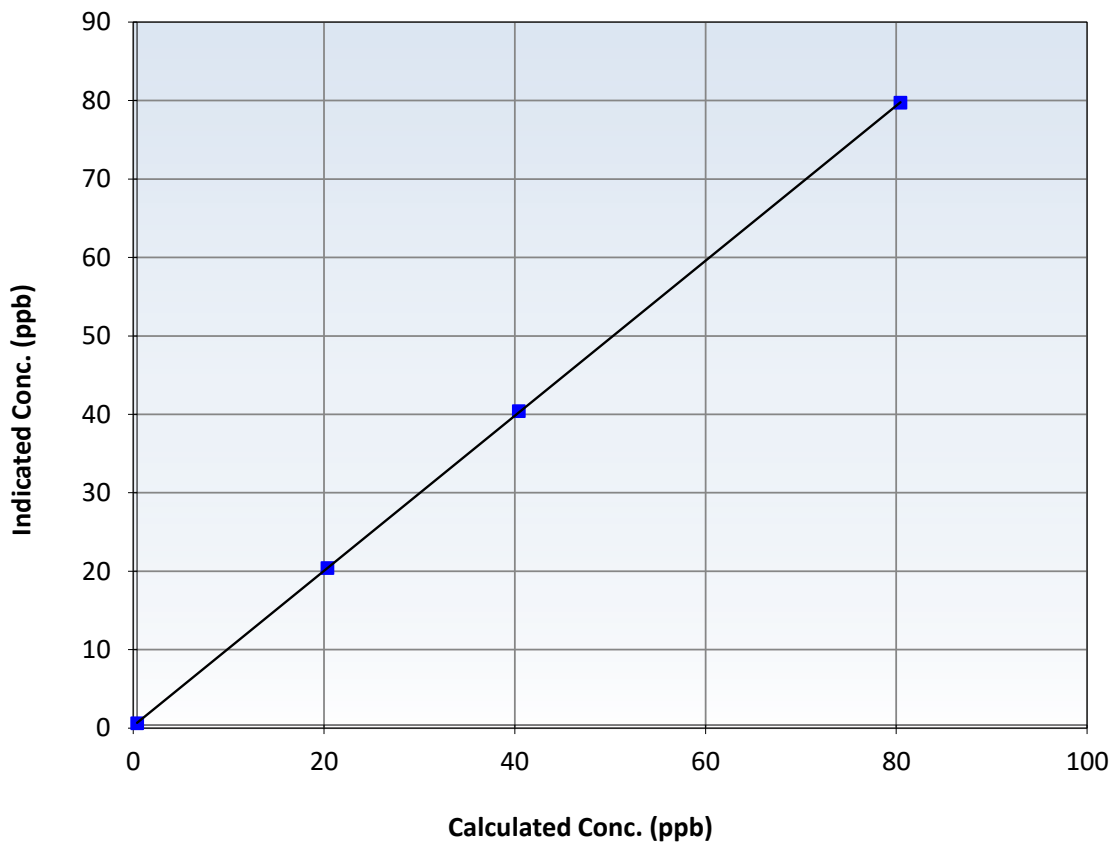
Station Information

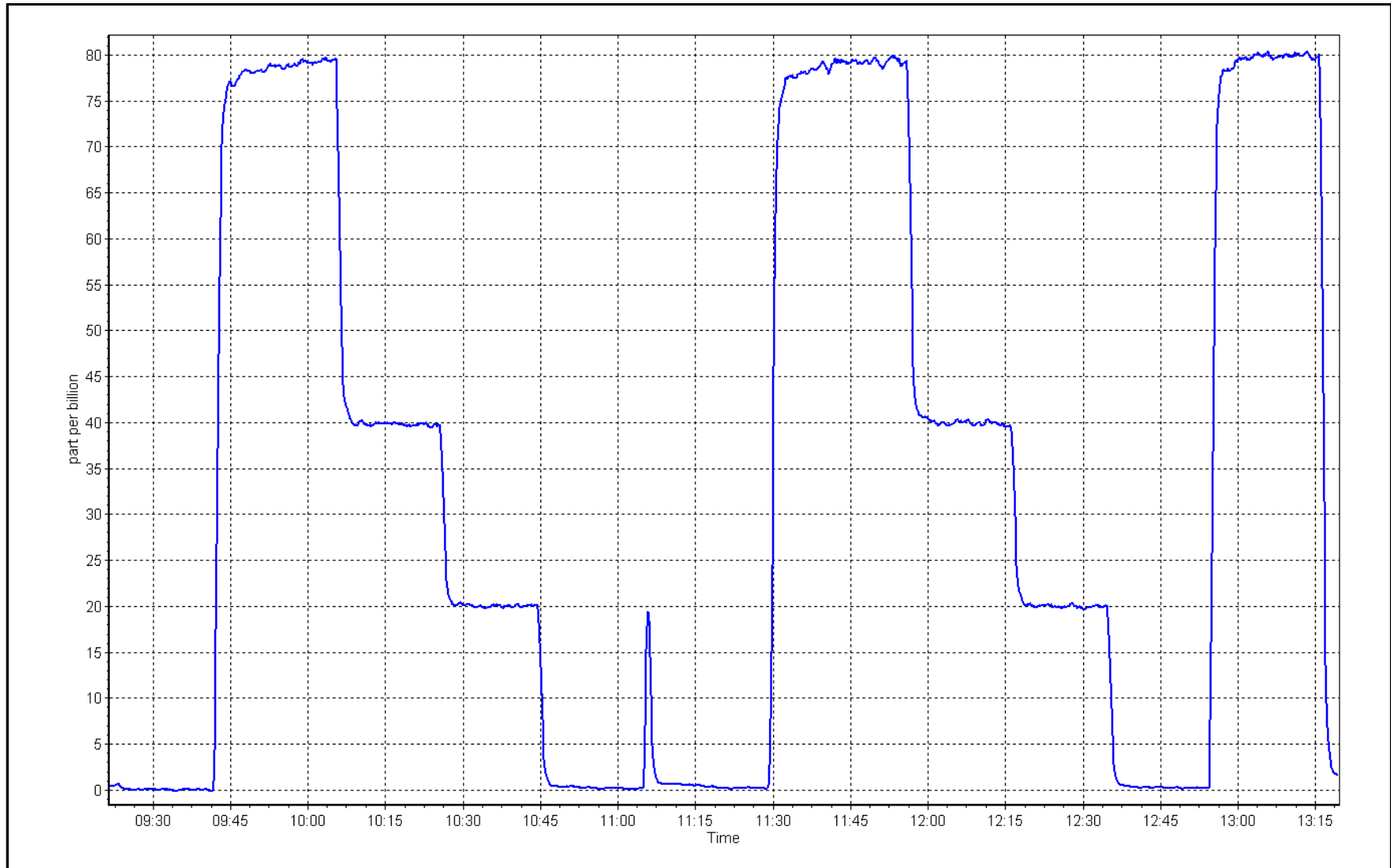
Calibration Date:	March 12, 2025	Previous Calibration:	February 12, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:21	End Time (MST):	13:19
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1331259320

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999988	≥ 0.995
80.0	79.3	1.0093	Slope	0.988273	$0.90 - 1.10$
40.0	40.0	1.0006	Intercept	0.279163	± 3
20.0	20.0	0.9979			

TRS Calibration Curve







Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Barge Landing
Calibration Date: March 24, 2025
Start time (MST): 10:50
Reason: Install

Station number: AMS 09
Last Cal Date: March 12, 2025
End time (MST): 13:32

Calibration Standards

Cal Gas Concentration: 5.17 ppm
Cal Gas Cylinder #: CC511415
Removed Cal Gas Conc: 5.17 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: API T700
ZAG Make/Model: API T701

Cal Gas Exp Date: August 22, 2026
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 3812
Serial Number: 4888

Analyzer Information

Analyzer make: Thermo 43i-TLE
Converter make: CDN-101
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 12426335708
Converter serial #: 519
Converter Temp: 830 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	NA	0.999979	Backgd or Offset:	NA	2.130
Calibration intercept:	NA	-0.280625	Coeff or Slope:	NA	1.069

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	NA	Prev response:	NA	*% change:	NA
Baseline Corr 2nd AF pt:	NA	AF Slope:	NA	AF Intercept:	NA
Baseline Corr 3rd AF pt:	NA	AF Correlation:	NA	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4923	77.4	80.0	79.9	1.002
Mid point	4961	38.7	40.0	39.5	1.013
Low point	4981	19.3	20.0	19.6	1.018
As left zero	5000	0.0	0.0	-0.6	----
As left span	4923	77.4	80.0	79.7	1.004
SO2 Scrubber Check					
Date of last scrubber change:				Ave Corr Factor	1.011
Date of last converter efficiency test:					

Notes:

Install Calibration.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

TRS Calibration Summary

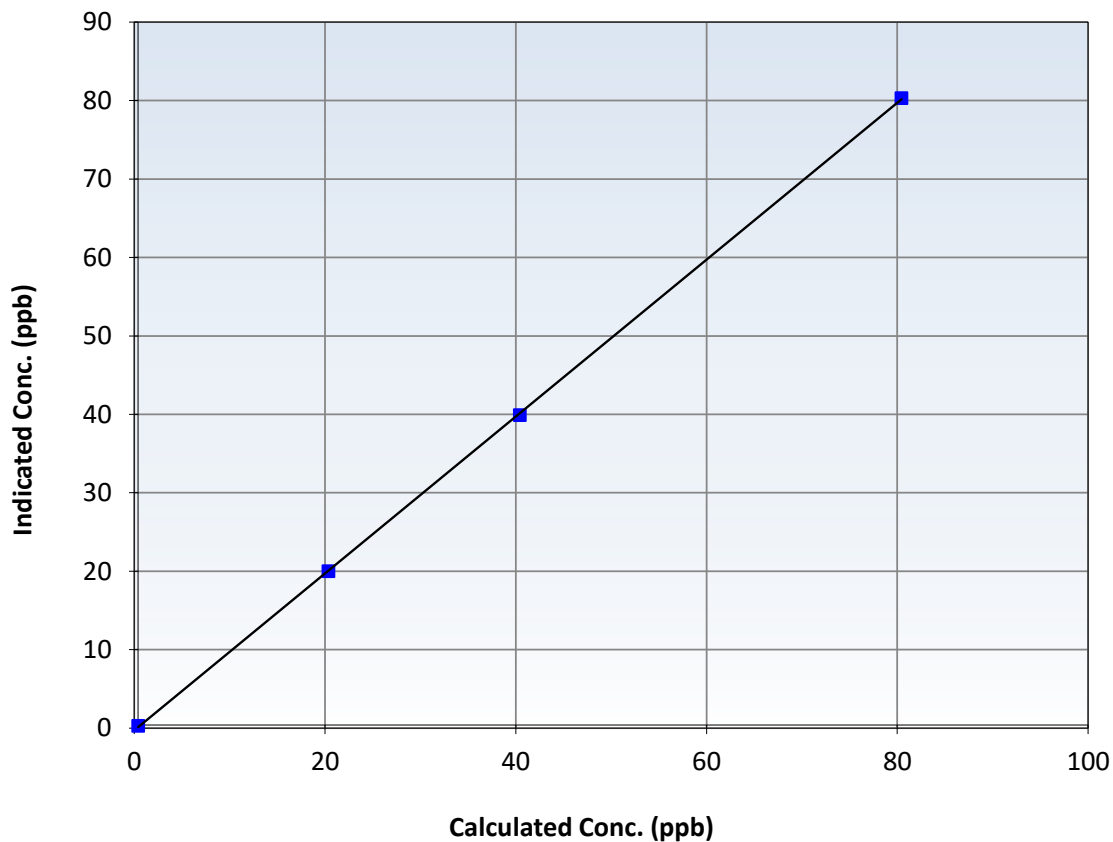
Station Information

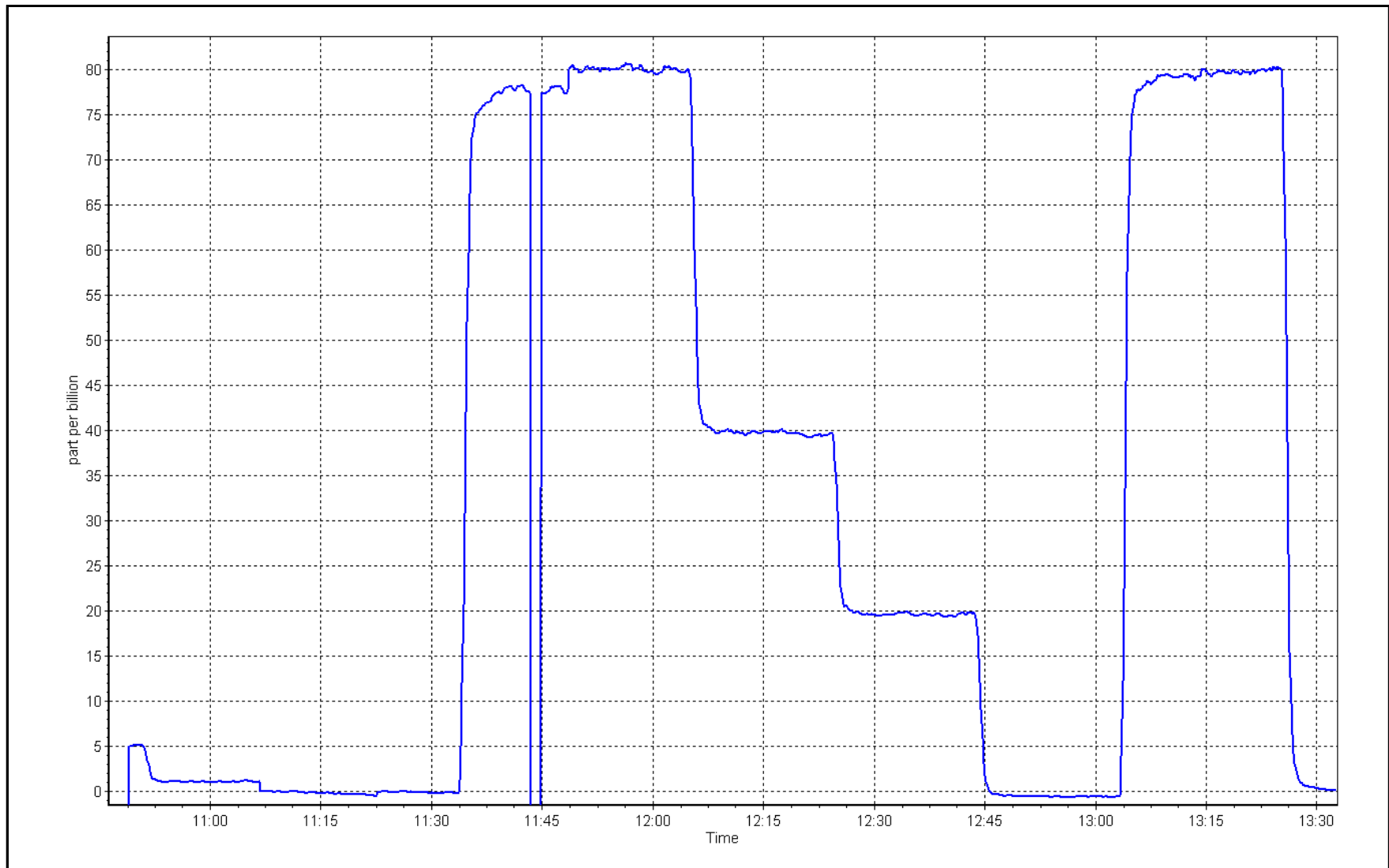
Calibration Date:	March 24, 2025	Previous Calibration:	March 12, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	10:50	End Time (MST):	13:32
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	12426335708

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999966		≥ 0.995
80.0	79.9	1.0018	Slope	0.999979		$0.90 - 1.10$
40.0	39.5	1.0133	Intercept	-0.280625		± 3
20.0	19.6	1.0183				

TRS Calibration Curve







Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Barge Landing
 Calibration Date: March 6, 2025
 Start time (MST): 9:56
 Reason: Routine

Station number: AMS 09
 Last Cal Date: February 6, 2025
 End time (MST): 15:32

Calibration Standards

Gas Cert Reference: CC705748
 CH₄ Cal Gas Conc. 505.6 ppm
 C₃H₈ Cal Gas Conc. 204.8 ppm
 Removed Gas Cert: CC151285
 Removed CH₄ Conc. 497.6 ppm
 Removed C₃H₈ Conc. 207.1 ppm
 Diff between cyl (CH₄): -1.0%
 Calibrator Model: API T700
 Zero Air Gen model: APIT701

Cal Gas Expiry Date: October 9, 2032
 CH₄ Equiv Conc. 1068.8 ppm
 Removed Gas Expiry: January 5, 2025
 CH₄ Equiv Conc. 1067.1 ppm
 Diff between cyl (THC): 0.6%
 Diff between cyl (NM): 2.0%
 Serial Number: 3812
 Serial Number: 4888

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1180320038
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	2.91E-04	3.11E-04	NMHC SP Ratio:	7.54E-05
CH ₄ Retention time:	13.8	13.8	NMHC Peak Area:	121142
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF
				8.06E-05
				110544
				OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.04	----
As found High point	4919	80.2	17.12	16.06	1.069
As found Mid point					
As found Low point					
New cylinder response	4921	79.1	16.91	15.95	1.060
Baseline Corr AF:	16.02	Prev response	17.02	*% change	-6.2%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	16.91	16.92	0.999
Mid point	4961	39.5	8.44	8.30	1.018
Low point	4980	19.8	4.23	4.11	1.030
As left zero	5000	0.0	0.00	0.01	----
As left span	4921	79.1	16.91	16.86	1.003
Average Correction Factor					1.016

Notes:

Adjusted zero and span.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	----
As found High point	4919	80.2	9.14	8.49	1.077
As found Mid point					
As found Low point					
New cylinder response	4921	79.1	8.91	8.43	1.057
Baseline Corr AF:	8.49	Prev response	9.02	*% change	-6.3%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	8.91	8.94	0.997
Mid point	4961	39.5	4.45	4.43	1.004
Low point	4980	19.8	2.23	2.20	1.013
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	8.91	8.89	1.003
Average Correction Factor					1.005

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.04	----
As found High point	4919	80.2	7.98	7.58	1.059
As found Mid point					
As found Low point					
New cylinder response	4921	79.1	8.00	7.52	1.063
Baseline Corr AF:	7.54	Prev response	8.00	*% change	-6.2%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	8.00	7.98	1.002
Mid point	4961	39.5	3.99	3.86	1.034
Low point	4980	19.8	2.00	1.91	1.049
As left zero	5000	0.0	0.00	0.01	----
As left span	4921	79.1	8.00	7.97	1.003
Average Correction Factor					1.029

Calibration Statistics

	Start	Finish
THC Cal Slope:	0.997456	1.002184
THC Cal Offset:	-0.054979	-0.080998
CH ₄ Cal Slope:	1.007698	0.999666
CH ₄ Cal Offset:	-0.045337	-0.060213
NMHC Cal Slope:	0.988858	1.004317
NMHC Cal Offset:	-0.010041	-0.020785

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

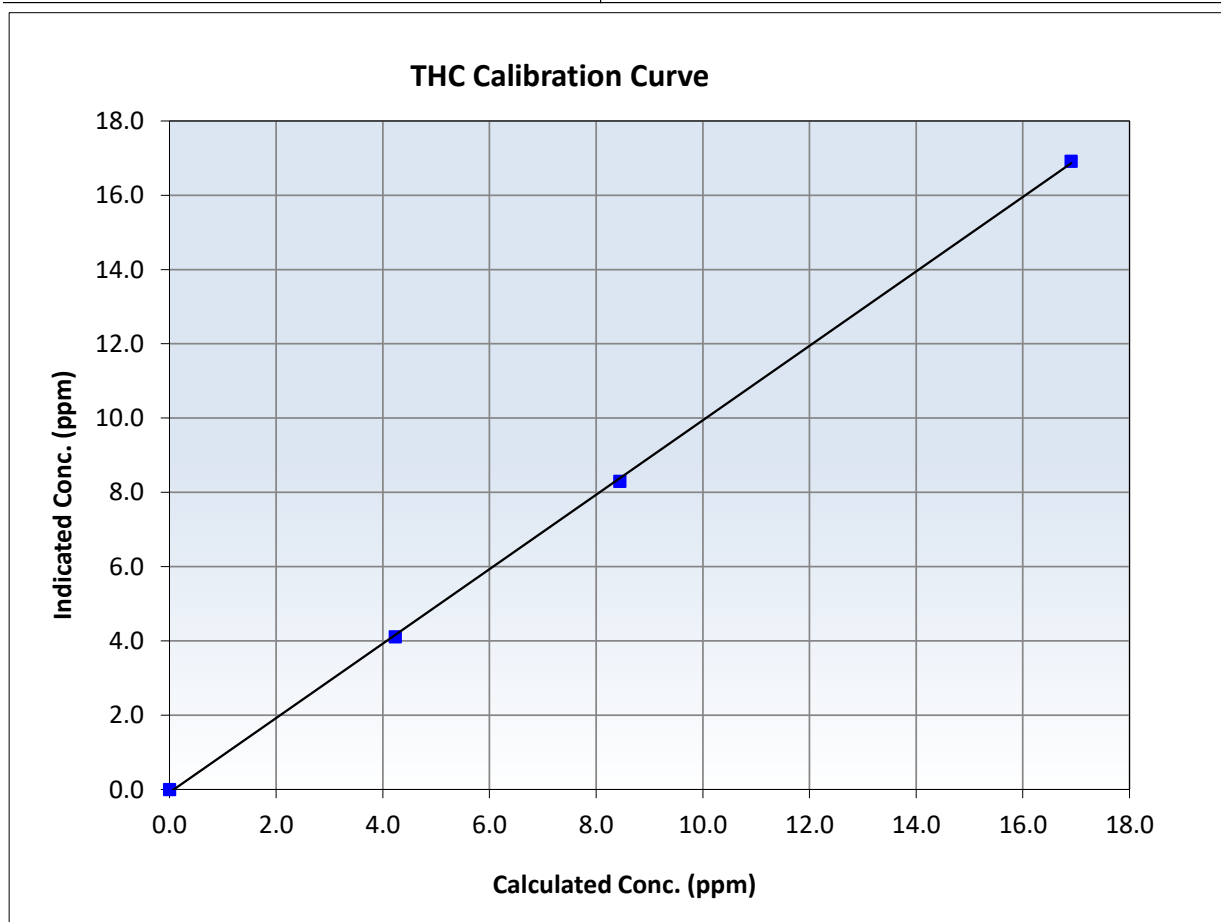
THC Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 6, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:56	End Time (MST):	15:32
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320038

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999877	≥ 0.995
16.91	16.92	0.9994	Slope	1.002184	0.90 - 1.10
8.44	8.30	1.0177	Intercept	-0.080998	± 0.5
4.23	4.11	1.0301			





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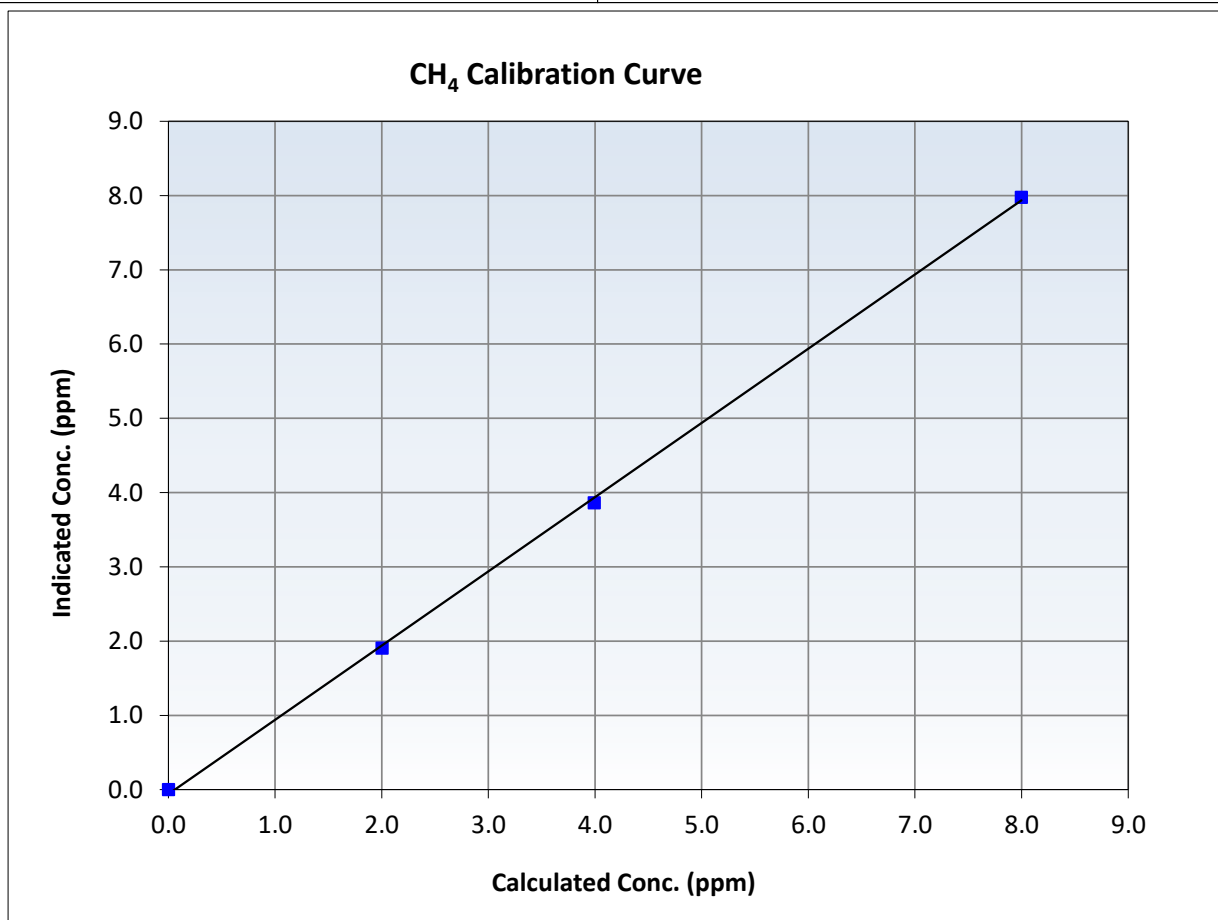
CH₄ Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 6, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:56	End Time (MST):	15:32
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320038

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999669	≥ 0.995
8.00	7.98	1.0024	Slope	0.999666	$0.90 - 1.10$
3.99	3.86	1.0341	Intercept	-0.060213	± 0.5
2.00	1.91	1.0494			





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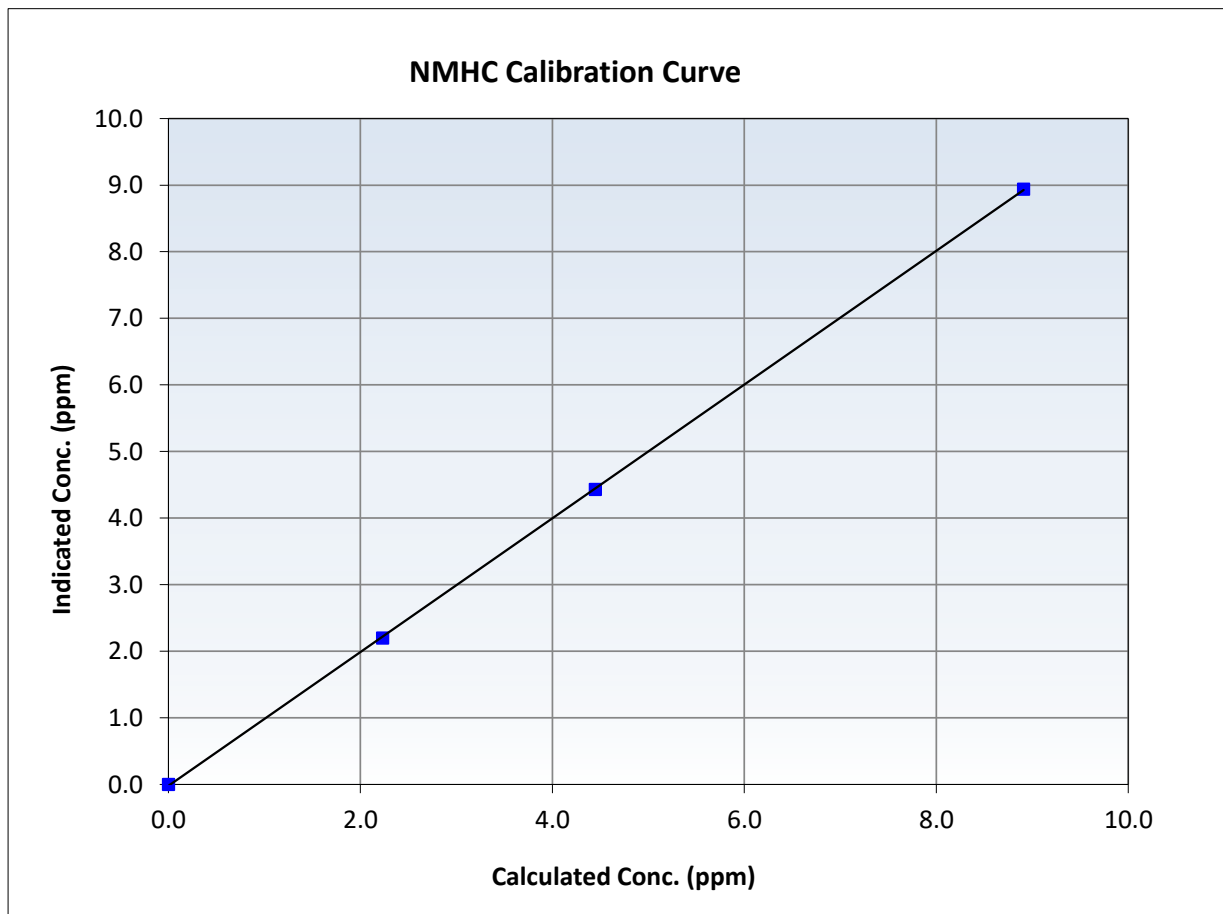
NMHC Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 6, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:56	End Time (MST):	15:32
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320038

Calibration Data

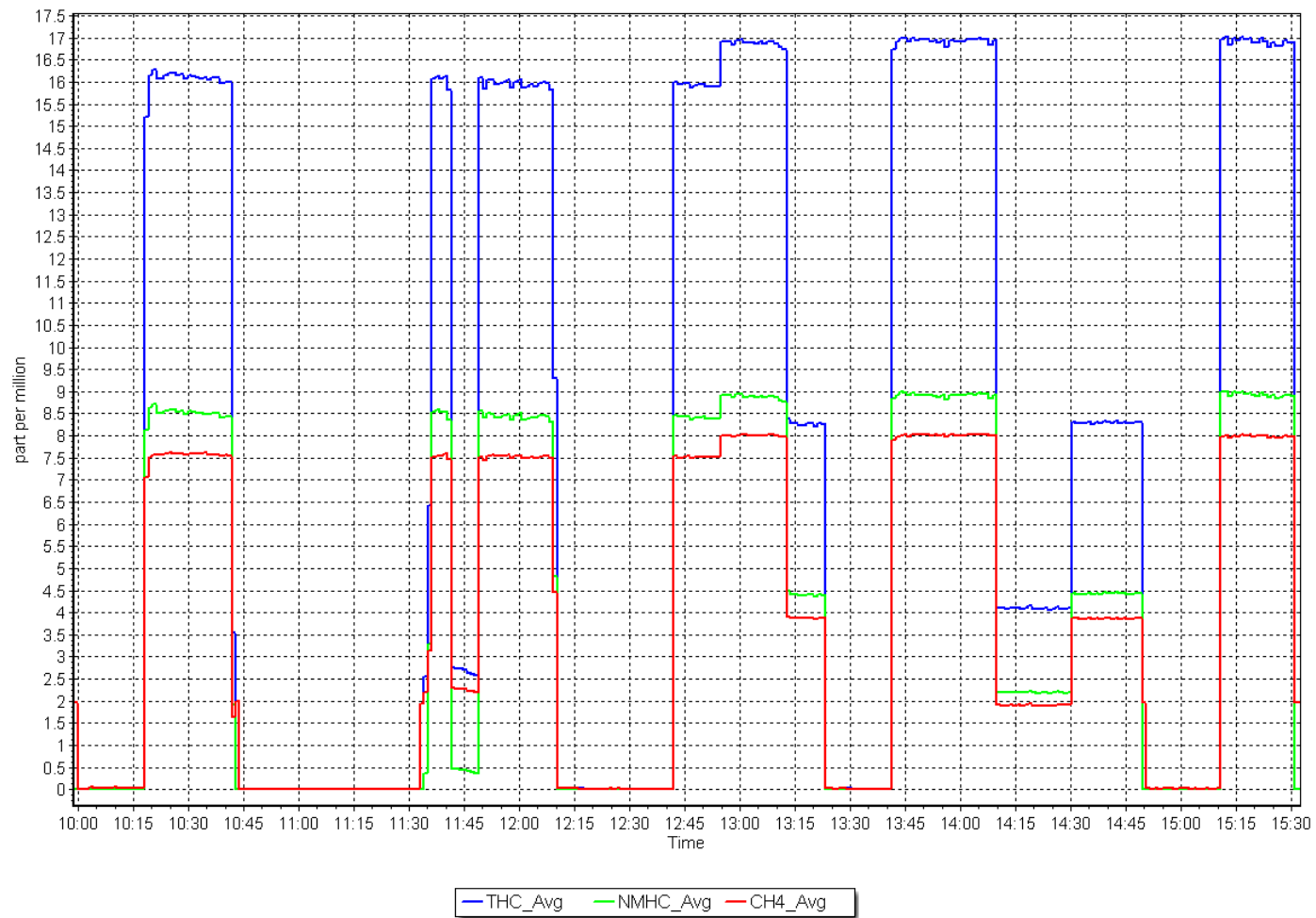
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999975	<i>≥0.995</i>
8.91	8.94	0.9967	Slope	1.004317	<i>0.90 - 1.10</i>
4.45	4.43	1.0036	Intercept	-0.020785	<i>+/-0.5</i>
2.23	2.20	1.0133			



NMHC Calibration Plot

Date: March 6, 2025

Location: Barge Landing





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Barge Landing
Calibration Date: March 14, 2025
Start time (MST): 9:31
Reason: Cylinder Change

Station number: AMS 09
Last Cal Date: March 6, 2025
End time (MST): 11:40

Calibration Standards

Gas Cert Reference: CC705748
CH₄ Cal Gas Conc. 505.6 ppm
C₃H₈ Cal Gas Conc. 204.8 ppm
Removed Gas Cert: NA
Removed CH₄ Conc. 505.6 ppm
Removed C₃H₈ Conc. 204.8 ppm
Diff between cyl (CH₄):
Calibrator Model: API T700
Zero Air Gen model: APIT701

Cal Gas Expiry Date: October 9, 2032
CH₄ Equiv Conc. 1068.8 ppm
Removed Gas Expiry:
CH₄ Equiv Conc. 1068.8 ppm
Diff between cyl (THC):
Diff between cyl (NM):
Serial Number: 3812
Serial Number: 4888

Analyzer Information

Analyzer make: Thermo 55i
THC Range: 0 - 20 ppm

Analyzer serial #: 1180320038
NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	3.11E-04	3.11E-04	NMHC SP Ratio:	8.06E-05	8.06E-05
CH ₄ Retention time:	13.8	13.8	NMHC Peak Area:	110544	110544
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.01	----
As found High point	4921	79.1	16.91	16.70	1.013
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.69	Prev response	16.86	*% change	-1.1%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.02	----
High point	4921	79.1	16.91	16.19	1.044
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.044

Notes:

H2 and N2 cylinder change.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4921	79.1	8.91	8.77	1.016
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.77	Prev response	8.93	*% change	-1.8%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	Limit = 0.95-1.05
High point	4921	79.1	8.91	8.39	1.062
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.062

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.01	Limit = 0.90-1.10
As found High point	4921	79.1	8.00	7.93	1.011
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.91	Prev response	7.94	*% change	-0.3%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.02	Limit = 0.95-1.05
High point	4921	79.1	8.00	7.80	1.026
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.026

Calibration Statistics

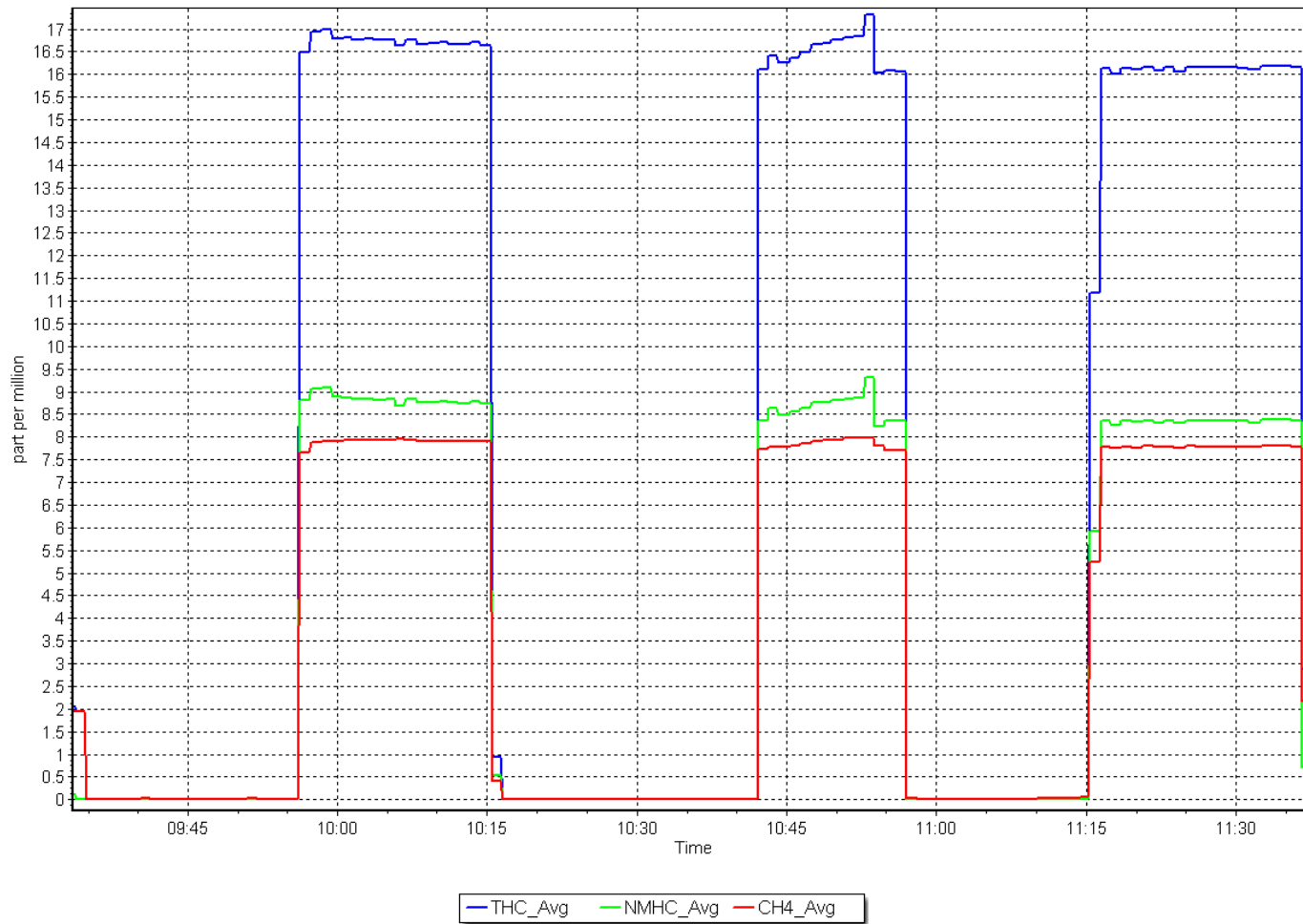
	Start	Finish
THC Cal Slope:	1.002184	0.956229
THC Cal Offset:	-0.080998	0.022000
CH ₄ Cal Slope:	0.999666	0.972066
CH ₄ Cal Offset:	-0.060213	0.022000
NMHC Cal Slope:	1.004317	0.941676
NMHC Cal Offset:	-0.020785	0.000000

Calibration Performed By: Sean Bala

NMHC Calibration Plot

Date: March 14, 2025

Location: Barge Landing





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Barge Landing
Station number: AMS 09
Calibration Date: March 17, 2025
Last Cal Date: February 11, 2025
Start time (MST): 9:13
End time (MST): 13:32
Reason: Routine

Calibration Standards

NO Gas Cylinder #: T2Y1KDH
NOX Cal Gas Conc: 47.38 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 47.38 ppm
NOX gas Diff:
Calibrator Model: API T700
ZAG make/model: Api T701
Cal Gas Expiry Date: November 17, 2026
NO Cal Gas Conc: 46.94 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 46.94 ppm
NO gas Diff:
Serial Number: 3812
Serial Number: 4888

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	----	----
AF High point	4915	85.3	808.3	800.7	7.5	791.5	780.8	10.6	1.0208	1.0254
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x = 806.7 ppb	NO = 799.0 ppb				* = > +/-5% change initiates investigation			*Percent Change	NO _x = -1.9%
Baseline Corr 1st pt	NO _x = 791.8 ppb	NO = 780.9 ppb				<u>As Found Statistics</u>			*Percent Change	NO = -2.3%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb				As found NO _x r ² :			Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb				As found NO r ² :			NO SI:	NO Int:
						As found NO ₂ r ² :			NO2 SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1426262593

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.997905	0.998427
NO _x Cal Offset:	0.117905	0.358142
NO Cal Slope:	0.999111	0.998439
NO Cal Offset:	-1.004100	-0.543944
NO ₂ Cal Slope:	1.001159	1.002354
NO ₂ Cal Offset:	-1.423157	-0.248929

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.096	1.124	NO bkgnd or offset:	10.0	10.3
NOX coeff or slope:	0.999	0.999	NOX bkgnd or offset:	10.3	10.6
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	180.4	176.8

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOX concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOX concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	-0.2	0.0	-0.2	----	----
High point	4915	85.3	808.3	800.7	7.5	807.1	799.2	7.8	1.0014	1.0019
Mid point	4957	42.6	403.7	400.0	3.7	403.6	398.6	5.0	1.0003	1.0034
Low point	4979	21.3	201.8	200.0	1.9	202.5	198.5	4.0	0.9967	1.0073
As left zero	5000	0.0	0.0	0.0	0.0	-0.2	0.0	-0.2	----	----
As left span	4915	85.3	808.3	427.7	380.6	805.6	427.7	377.9	1.0033	1.0000
Average Correction Factor									0.9995	1.0042

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.2	----	----
High GPT point	794.9	424.8	377.6	378.2	0.9984	100.2%
Mid GPT point	794.9	609.4	193.0	193.4	0.9980	100.2%
Low GPT point	794.9	702.6	99.8	99.6	1.0021	99.8%
Average Correction Factor					0.9995	100.1%

Notes:

Inlet filter changed after as founds. Span adjusted.

Calibration Performed By:

Sean Bala



Wood Buffalo Environmental Association

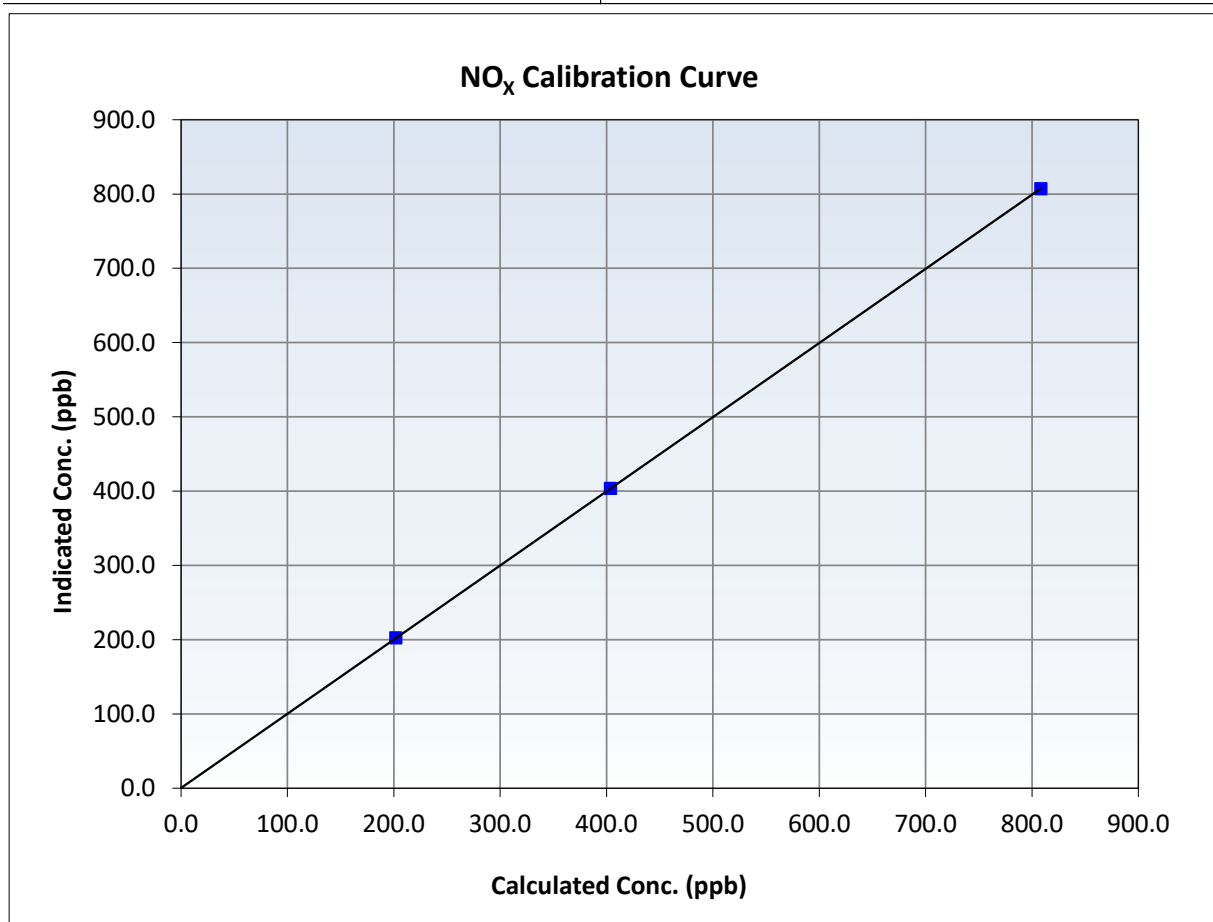
NO_x Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 11, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:13	End Time (MST):	13:32
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262593

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.2	----	Correlation Coefficient	0.999998	≥0.995
808.3	807.1	1.0014	Slope	0.998427	0.90 - 1.10
403.7	403.6	1.0003	Intercept	0.358142	+/-20
201.8	202.5	0.9967			





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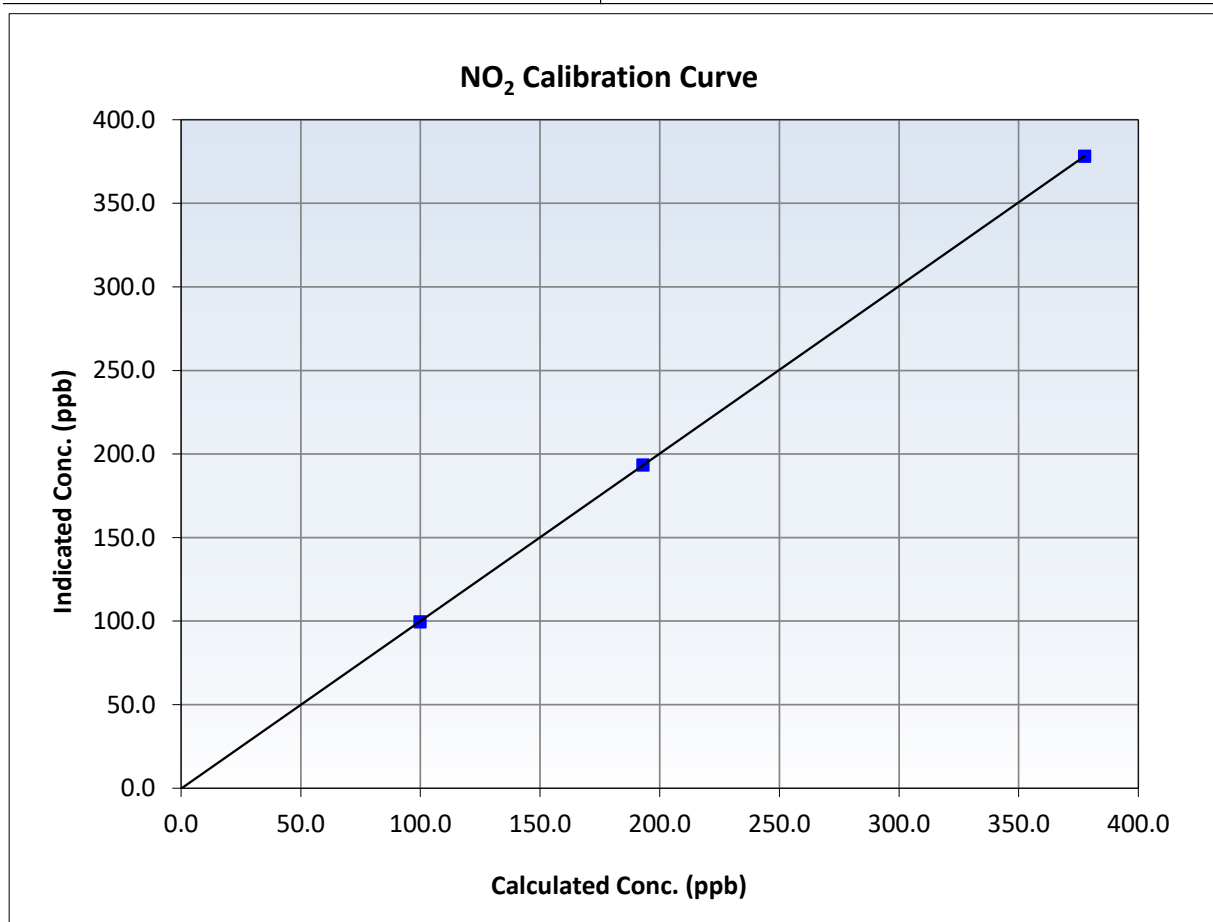
NO₂ Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 11, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:13	End Time (MST):	13:32
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262593

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.2	----	Correlation Coefficient	0.999999	≥ 0.995
377.6	378.2	0.9984	Slope	1.002354	$0.90 - 1.10$
193.0	193.4	0.9980	Intercept	-0.248929	± 20
99.8	99.6	1.0021			





Wood Buffalo Environmental Association

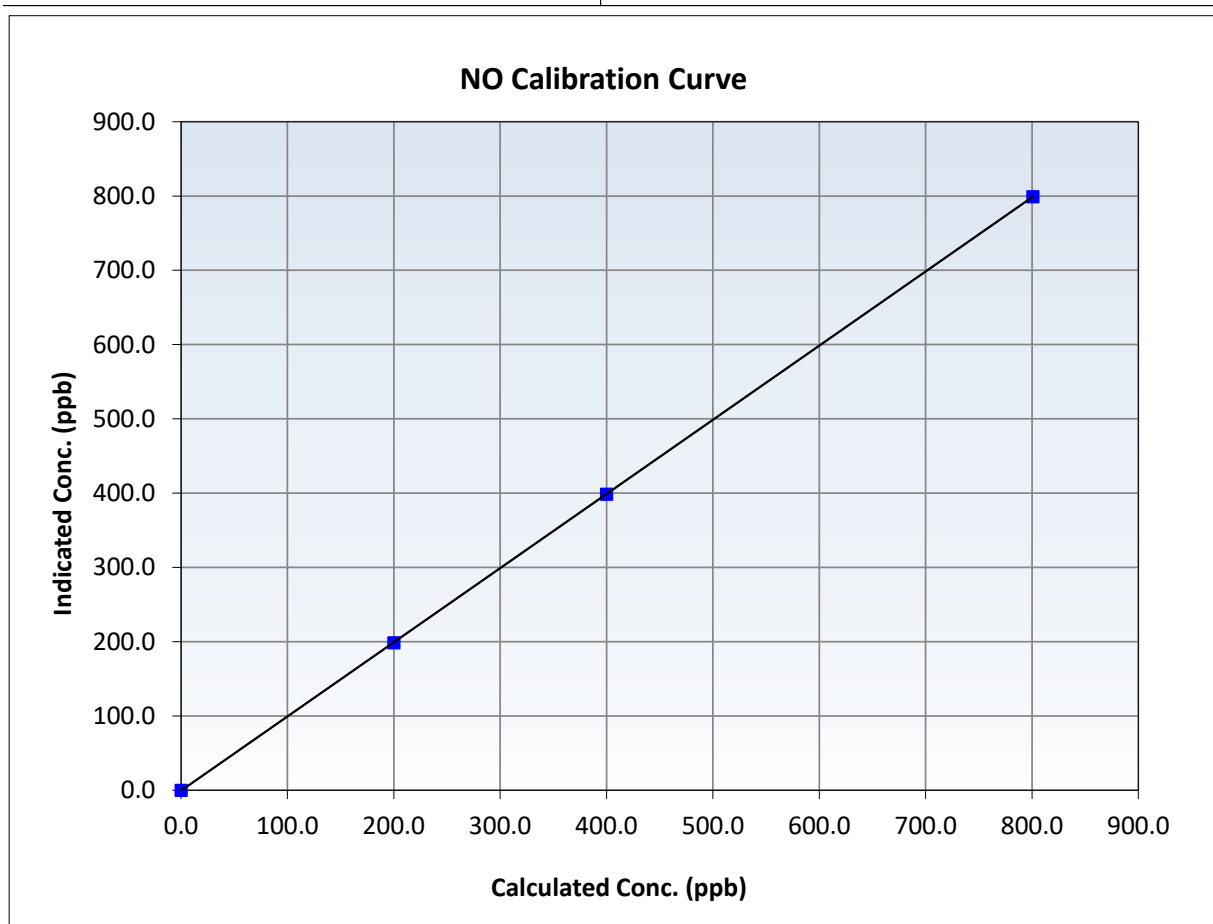
NO Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 11, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:13	End Time (MST):	13:32
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262593

Calibration Data

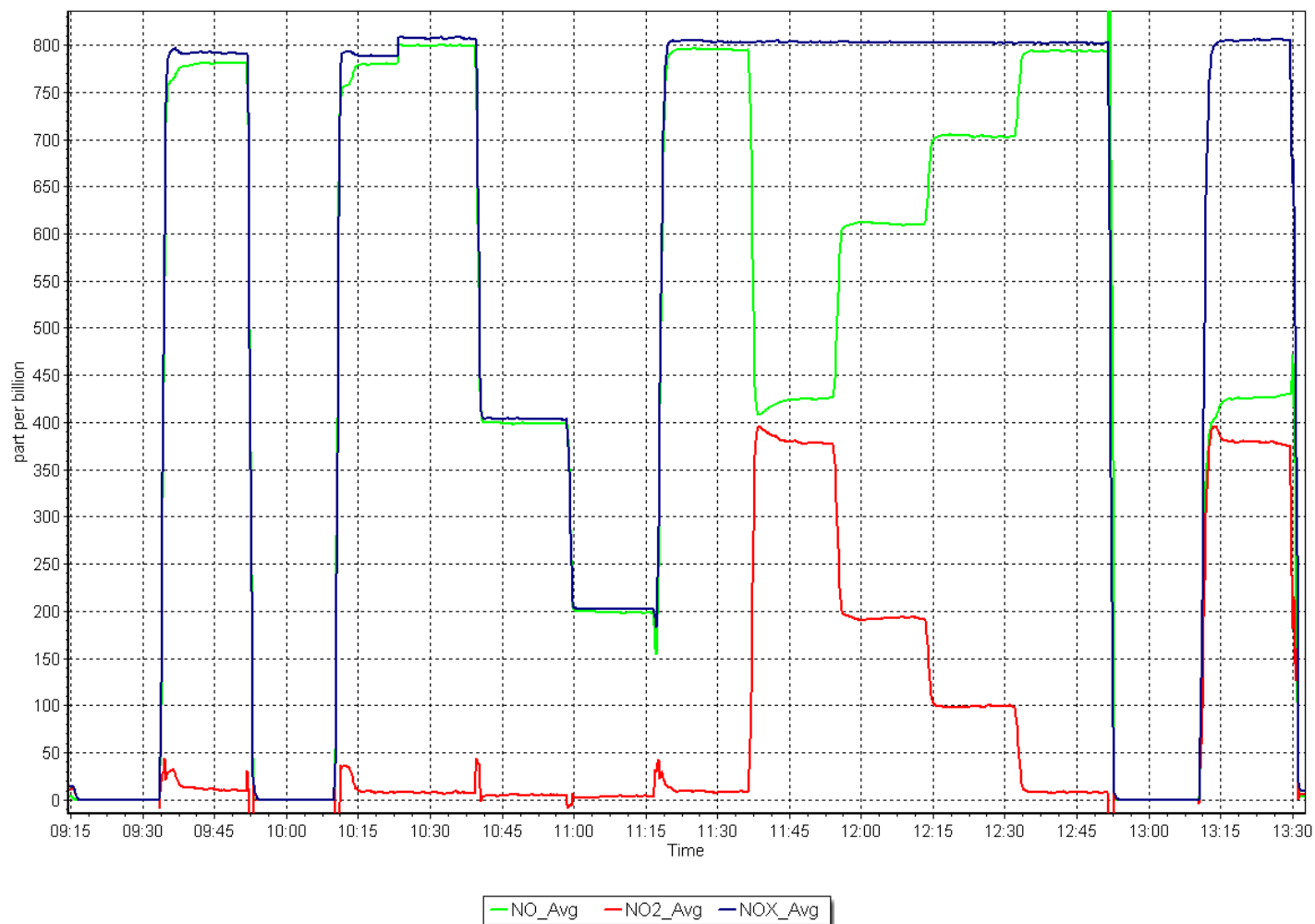
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999998	≥ 0.995
800.7	799.2	1.0019	Slope	0.998439	$0.90 - 1.10$
400.0	398.6	1.0034	Intercept	-0.543944	± 20
200.0	198.5	1.0073			



NO_x Calibration Plot

Date: March 17, 2025

Location: Barge Landing





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Barge Landing Station number: AMS 09
Calibration Date: March 7, 2025 Last Cal Date: February 11, 2025
Start time (MST): 10:15 End time (MST): 10:57

Analyzer Make: API T640 S/N: 844
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388754
Temp/RH standard: Alicat FP-25BT S/N: 388754

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-3.00	-4.24	-3.00	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	718.80	727.00	718.80	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	4.98	4.90	4.98	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	39	----	39	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 19.00		PM w/ HEPA: 0.10		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: June 10, 2024
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test	7.00	12.00	11.00	<input checked="" type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: March 7, 2025
Date Disposable Filter Changed: March 7, 2025

Post- maintenance Zero Verification: PM w/ HEPA: 0.00 <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: October 18, 2024
Date RH/T Sensor Cleaned: October 18, 2024

Notes: Adjusted PMT peak. Leak check passed.

Calibration by: Sean Bala



Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Barge Landing Station number: AMS 09
Calibration Date: March 24, 2025 Last Cal Date: March 7, 2025
Start time (MST): 11:00 End time (MST): 12:20

Analyzer Make: API T640 S/N: 844
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388746
Temp/RH standard: Alicat FP-25BT S/N: 388746

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	4.10	4.19	4.10	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	721.30	728.90	721.30	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	4.98	5.12	4.98	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	38	----	38	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 55.70		PM w/ HEPA: 0.00		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: June 10, 2024
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test	6.00	11.20	11.00	<input checked="" type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: March 24, 2025
Date Disposable Filter Changed: March 7, 2025

Post- maintenance Zero Verification: PM w/ HEPA: 0.00 <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: October 18, 2024
Date RH/T Sensor Cleaned: October 18, 2024

Notes: Adjusted PMT peak. Leak check passed.

Calibration by: Sean Bala



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS11 LOWER CAMP MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Lower Camp Station number: AMS 11
Calibration Date: March 3, 2025 Last Cal Date: February 4, 2025
Start time (MST): 12:47 End time (MST): 17:52
Reason: Routine

Calibration Standards

Cal Gas Concentration: 48.75 ppm Cal Gas Exp Date: October 9, 2032
Cal Gas Cylinder #: CC741503
Removed Cal Gas Conc: 49.25 ppm Rem Gas Exp Date: February 23, 2025
Removed Gas Cyl #: CC2216 Diff between cyl: -1.3%
Calibrator Model: Teledyne API T700 Serial Number: 3807
Zero Air Gen Model: Teledyne API T701 Serial Number: 196

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 100841398
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.015479	1.003845	Backgd or Offset:	16.0	16.2
Calibration intercept:	-0.935768	-0.495900	Coeff or Slope:	0.999	1.005

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4932	81.4	799.6	806.7	0.991
As found Mid point	4959	40.7	400.9	401.7	0.998
As found Low point	4981	20.4	200.9	200.7	1.001
New cylinder response	4939	81.5	791.4	788.4	1.004
Baseline Corr As found:	806.6	Previous response	811.1	*% change	-0.6%
Baseline Corr 2nd AF pt:	401.6	AF Slope:	1.009158	AF Intercept:	-1.270983
Baseline Corr 3rd AF pt:	200.6	AF Correlation:	0.999983	* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.6	----
High point	4939	81.5	791.4	794.6	0.996
Mid point	4972	40.8	396.8	396.9	1.000
Low point	4990	20.4	198.5	197.9	1.003
As left zero	5000	0.0	0.0	0.4	----
As left span	4939	81.5	791.4	793.6	0.997
Average Correction Factor:					1.000

Notes: Changed sample inlet filter and calibration gas after as founds. Adjusted span only.

Calibration Performed By: Mohammed Kashif



Wood Buffalo Environmental Association

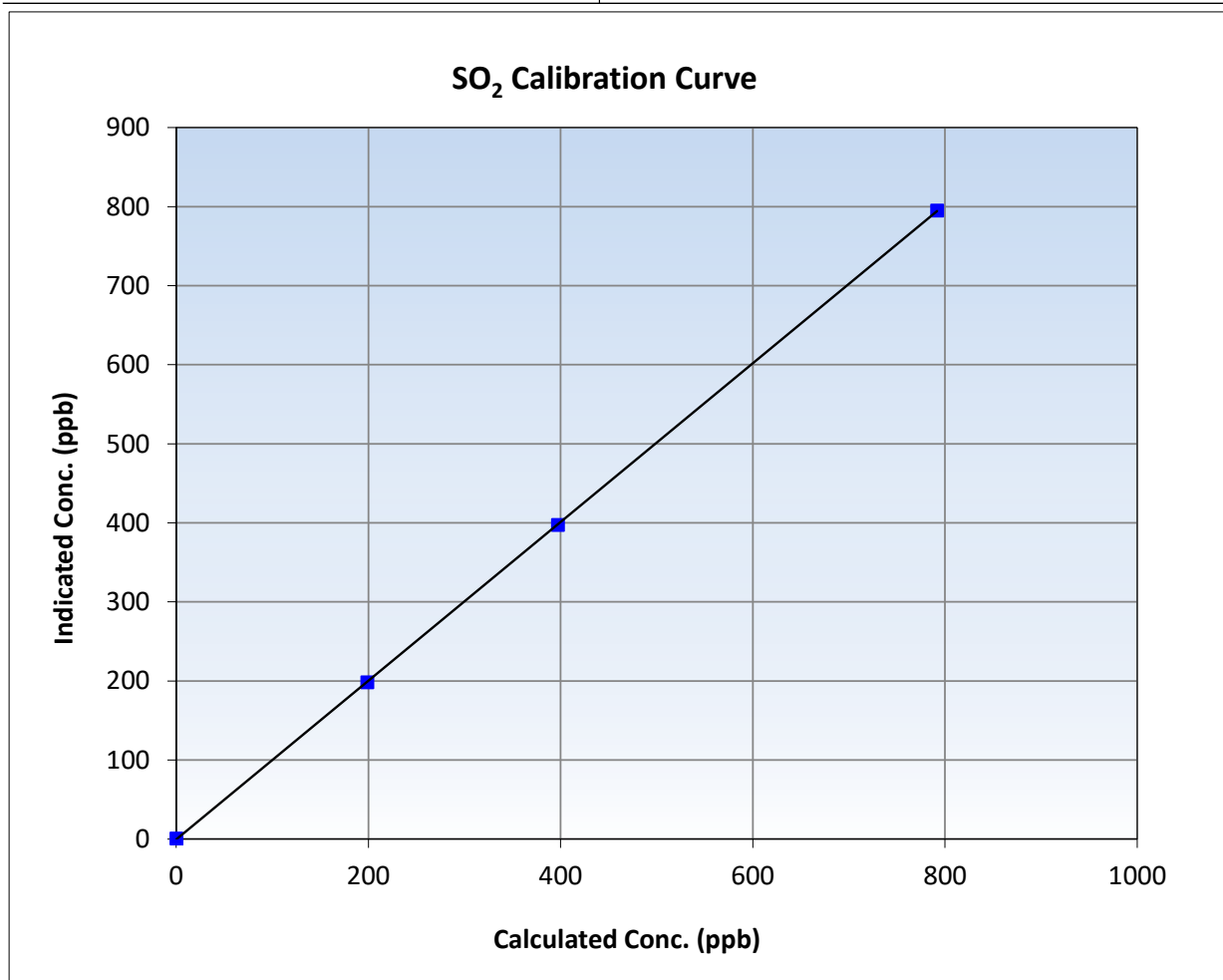
SO₂ Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:47	End Time (MST):	17:52
Analyzer make:	Thermo 43i	Analyzer serial #:	100841398

Calibration Data

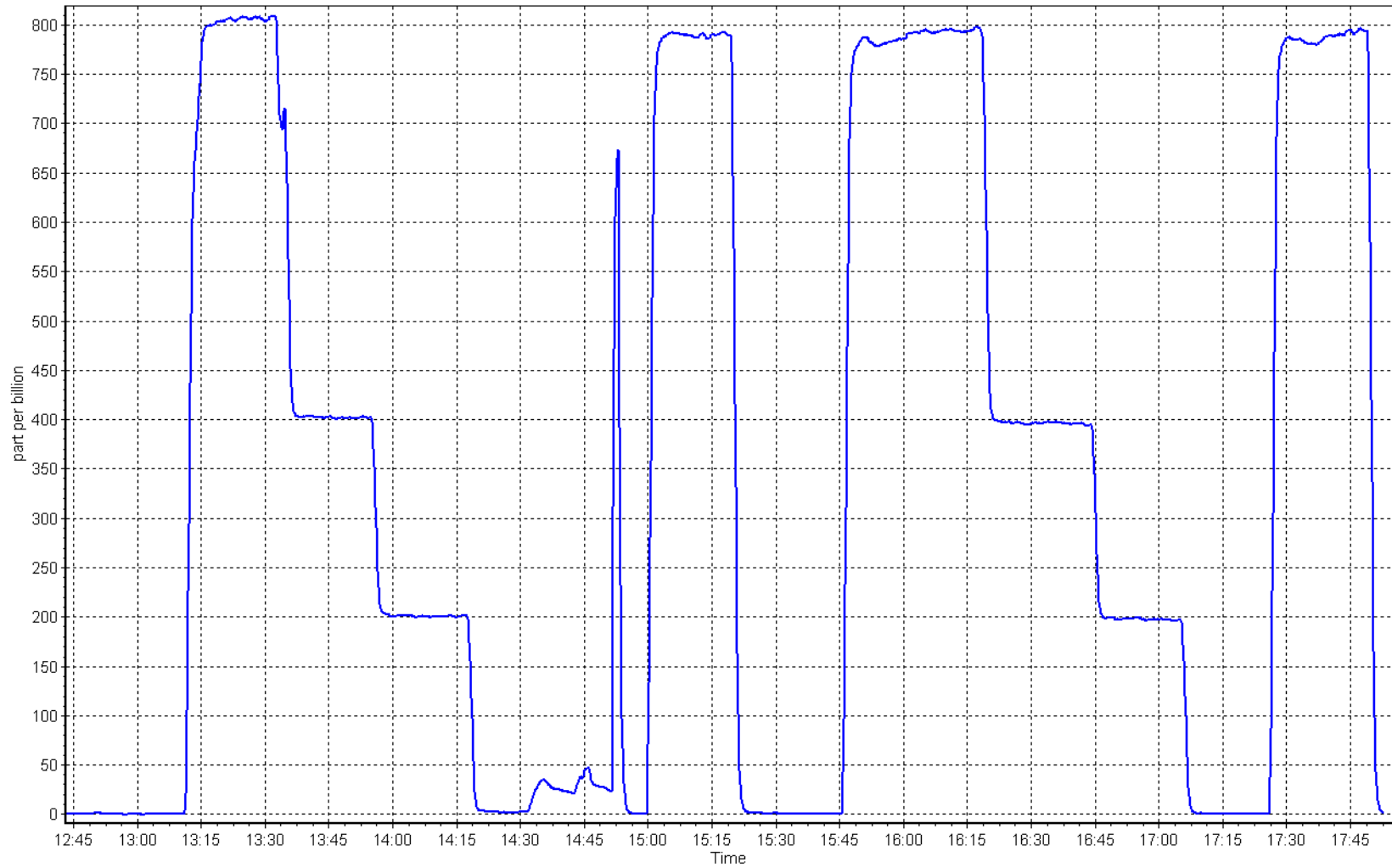
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.6	----	Correlation Coefficient	0.999991	≥0.995
791.4	794.6	0.9959	Slope	1.003845	0.90 - 1.10
396.8	396.9	0.9997	Intercept	-0.495900	+/-30
198.5	197.9	1.0030			



SO2 Calibration Plot

Date: March 3, 2025

Location: Lower Camp





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: Lower Camp Station number: AMS 11
Calibration Date: March 24, 2025 Last Cal Date: February 26, 2025
Start time (MST): 11:31 End time (MST): 15:44
Reason: Routine

Calibration Standards

Cal Gas Concentration: 4.83 ppm Cal Gas Exp Date: August 28, 2028
Cal Gas Cylinder #: CC737863
Removed Cal Gas Conc: 4.83 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: API T700 Serial Number: 3807
ZAG Make/Model: API T701H Serial Number: 196

Analyzer Information

Analyzer make: Thermo 43iQ Analyzer serial #: 1203169745
Converter make: Global G150 Converter serial #: 2022-223
Analyzer Range: 0 - 100 ppb Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.998644	1.000358	Backgd or Offset:	2.6
Calibration intercept:	-0.142627	-0.202641	Coeff or Slope:	0.752

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.3	----
As found High point	4935	83.0	79.9	79.4	1.002
As found Mid point	4977	41.6	40.0	39.9	0.996
As found Low point	4993	20.9	20.1	19.9	0.997
New cylinder response					
Baseline Corr As found:	79.7	Prev response:	79.64	*% change:	0.1%
Baseline Corr 2nd AF pt:	40.2	AF Slope:	0.997501	AF Intercept:	-0.202602
Baseline Corr 3rd AF pt:	20.2	AF Correlation:	0.999987	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.2	----
High point	4935	83.0	79.9	79.7	1.002
Mid point	4977	41.6	40.0	39.9	1.003
Low point	4993	20.9	20.1	19.9	1.012
As left zero	5000	0.0	0.0	-0.1	----
As left span	4935	83.0	79.9	79.7	1.002
SO2 Scrubber Check	4935	81.5	812.3	0.1	----
Date of last scrubber change:				Ave Corr Factor	1.006
Date of last converter efficiency test:					

Notes: Changed sample inlet filter after as founds. Ran scrubber check after calibrator zero and it passed.
No adjustments made.

Calibration Performed By: Mohammed Kashif



Wood Buffalo Environmental Association

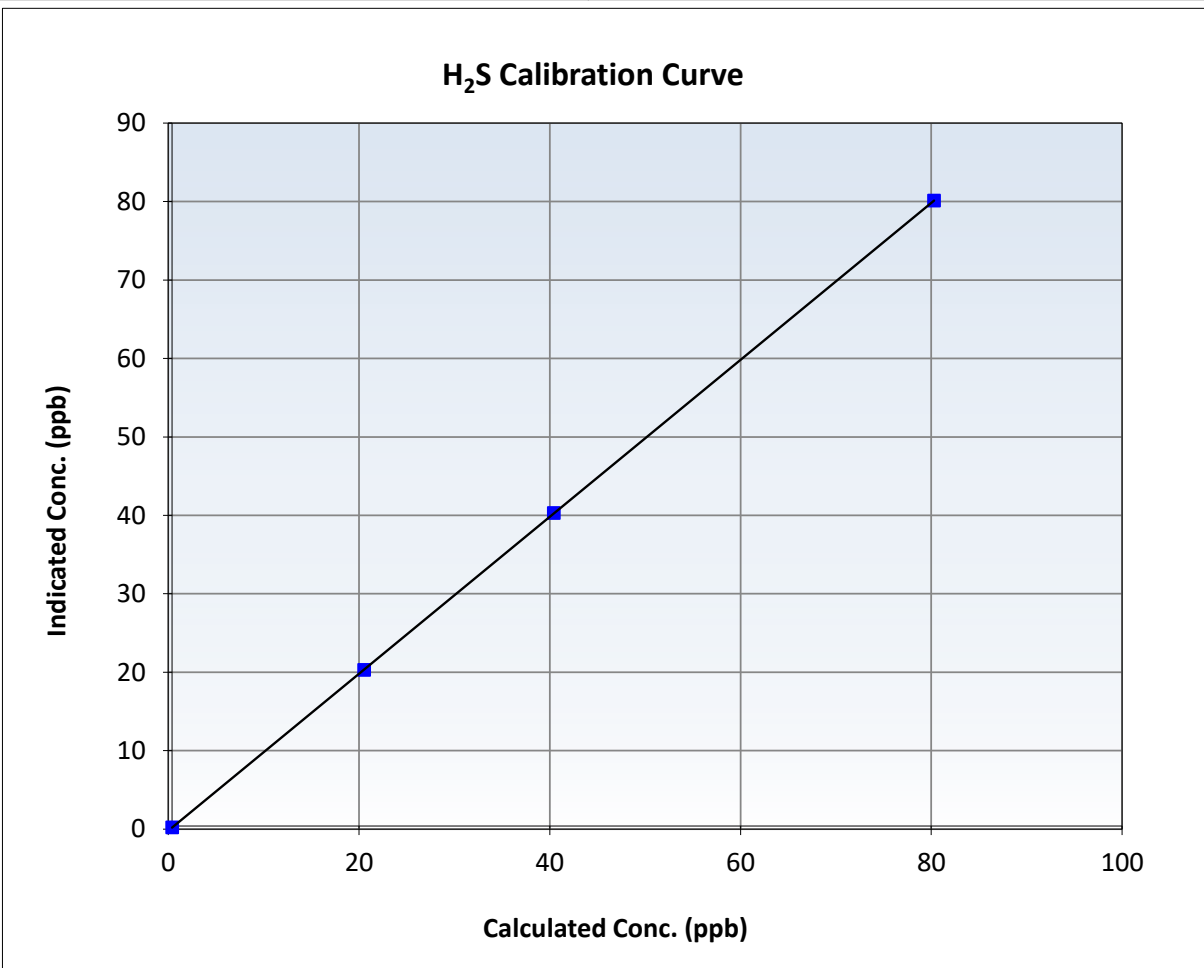
H₂S Calibration Summary

Station Information

Calibration Date:	March 24, 2025	Previous Calibration:	February 26, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	11:31	End Time (MST):	15:44
Analyzer make:	Thermo 43iQ	Analyzer serial #:	1203169745

Calibration Data

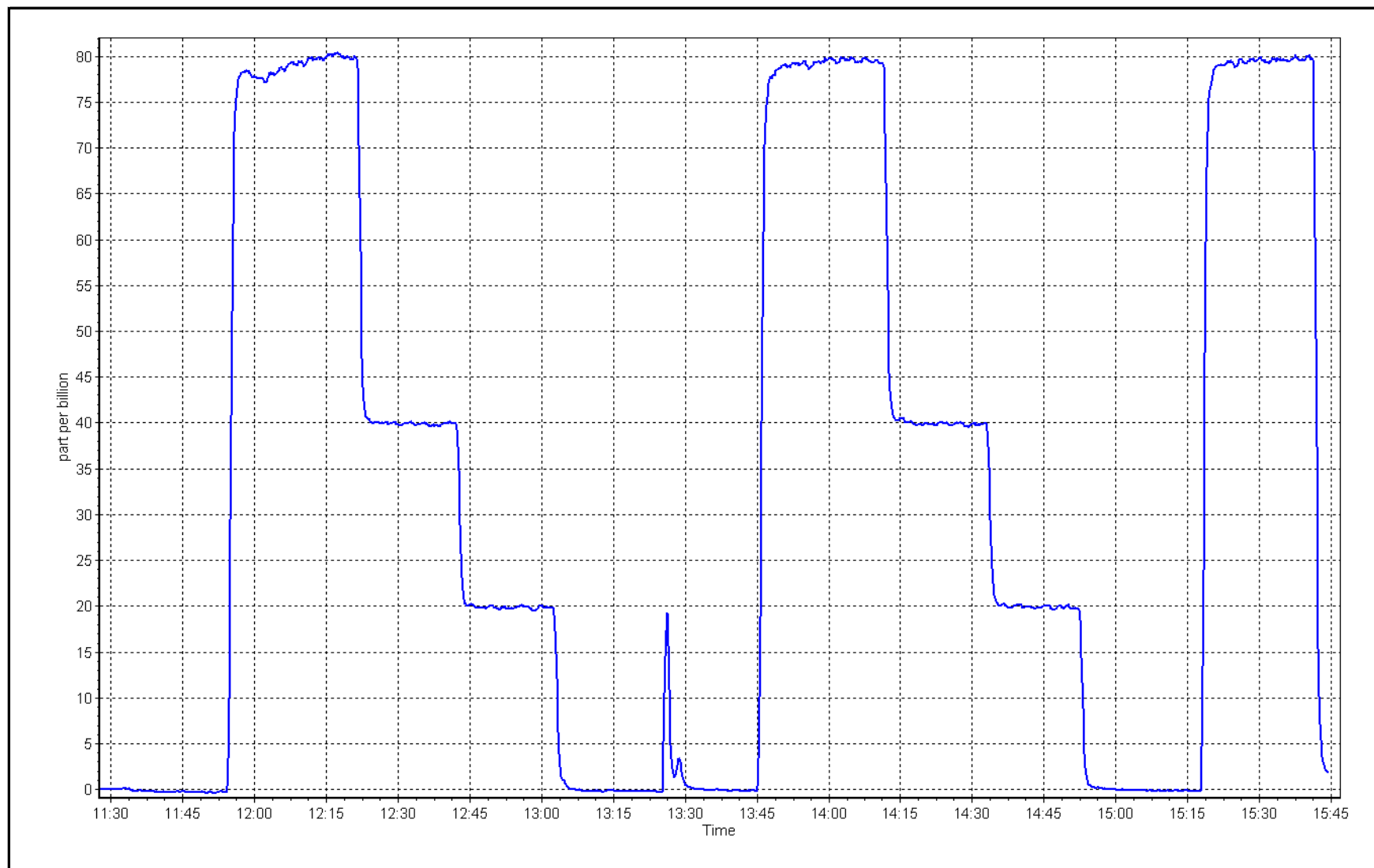
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	-0.2	----	Correlation Coefficient	0.999999		≥0.995
79.9	79.7	1.0024	Slope	1.000358		0.90 - 1.10
40.0	39.9	1.0034	Intercept	-0.202641		+/-3
20.1	19.9	1.0117				



H₂S Calibration Plot

Date: March 24, 2025

Location: Lower Camp





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Lower Camp
Calibration Date: March 3, 2025
Start time (MST): 12:47
Reason: Routine

Station number: AMS 11
Last Cal Date: February 4, 2025
End time (MST): 17:52

Calibration Standards

Gas Cert Reference: CC741503
CH₄ Cal Gas Conc. 504.8 ppm
C₃H₈ Cal Gas Conc. 206.2 ppm
Removed Gas Cert: CC2216
Removed CH₄ Conc. 502.0 ppm
Removed C₃H₈ Conc. 205.5 ppm
Diff between cyl (CH₄): 1.2%
Calibrator Model: API T700
Zero Air Gen model: API T701

Cal Gas Expiry Date: October 9, 2032
CH₄ Equiv Conc. 1071.9 ppm
Removed Gas Expiry: February 23, 2025
CH₄ Equiv Conc. 1067.1 ppm
Diff between cyl (THC): 1.7%
Diff between cyl (NM): 2.1%
Serial Number: 3807
Serial Number: 196

Analyzer Information

Analyzer make: Thermo 55i
THC Range: 0 - 20 ppm

Analyzer serial #: 1505164381
NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	3.26E-04	3.26E-04	NMHC SP Ratio:	4.73E-05
CH ₄ Retention time:	16.0	16.0	NMHC Peak Area:	194068
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4932	81.4	17.33	17.23	1.006
As found Mid point	4959	40.7	8.69	8.60	1.010
As found Low point	4981	20.4	4.35	4.31	1.010
New cylinder response	4939	81.5	17.40	17.59	0.989
Baseline Corr AF:	17.23	Prev response	17.42	*% change	-1.1%
Baseline Corr 2nd AF:	8.60	AF Slope:	0.994327	AF Intercept:	-0.014668
Baseline Corr 3rd AF:	4.31	AF Correlation:	0.999994	* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4939	81.5	17.40	17.42	0.999
Mid point	4972	40.8	8.72	8.72	1.001
Low point	4990	20.4	4.36	4.39	0.995
As left zero	5000	0.0	0.00	0.00	----
As left span	4939	81.5	17.40	17.61	0.988
Average Correction Factor				0.998	

Notes: Changed sample inlet filter and calibration gas after as founds. Adjusted span only.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
					<i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4932	81.4	9.18	9.18	1.000
As found Mid point	4959	40.7	4.60	4.58	1.004
As found Low point	4981	20.4	2.31	2.30	1.004
New cylinder response	4939	81.5	9.21	9.40	0.979
Baseline Corr AF:	9.18	Prev response	9.17	*% change	0.1%
Baseline Corr 2nd AF:	4.58	AF Slope:	1.000109	AF Intercept:	-0.006962
Baseline Corr 3rd AF:	2.30	AF Correlation:	0.999995	* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
					<i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4939	81.5	9.21	9.22	0.998
Mid point	4972	40.8	4.62	4.62	1.000
Low point	4990	20.4	2.31	2.32	0.996
As left zero	5000	0.0	0.00	0.00	----
As left span	4939	81.5	9.21	9.28	0.992
Average Correction Factor					0.998

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
					<i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4932	81.4	8.15	8.05	1.013
As found Mid point	4959	40.7	4.09	4.02	1.017
As found Low point	4981	20.4	2.05	2.01	1.018
New cylinder response	4939	81.5	8.19	8.19	1.001
Baseline Corr AF:	8.05	Prev response	8.25	*% change	-2.5%
Baseline Corr 2nd AF:	4.02	AF Slope:	0.987707	AF Intercept:	-0.007306
Baseline Corr 3rd AF:	2.01	AF Correlation:	0.999994	* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
					<i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4939	81.5	8.19	8.20	0.999
Mid point	4972	40.8	4.11	4.10	1.001
Low point	4990	20.4	2.06	2.07	0.993
As left zero	5000	0.0	0.00	0.00	----
As left span	4939	81.5	8.19	8.33	0.983
Average Correction Factor					0.998

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
THC Cal Slope:	1.006261	1.000931
THC Cal Offset:	-0.018016	0.002942
CH ₄ Cal Slope:	1.012923	1.000480
CH ₄ Cal Offset:	-0.007859	0.002877
NMHC Cal Slope:	1.000306	1.001792
NMHC Cal Offset:	-0.009757	-0.000537

Calibration Performed By:

Mohammed Kashif



Wood Buffalo Environmental Association

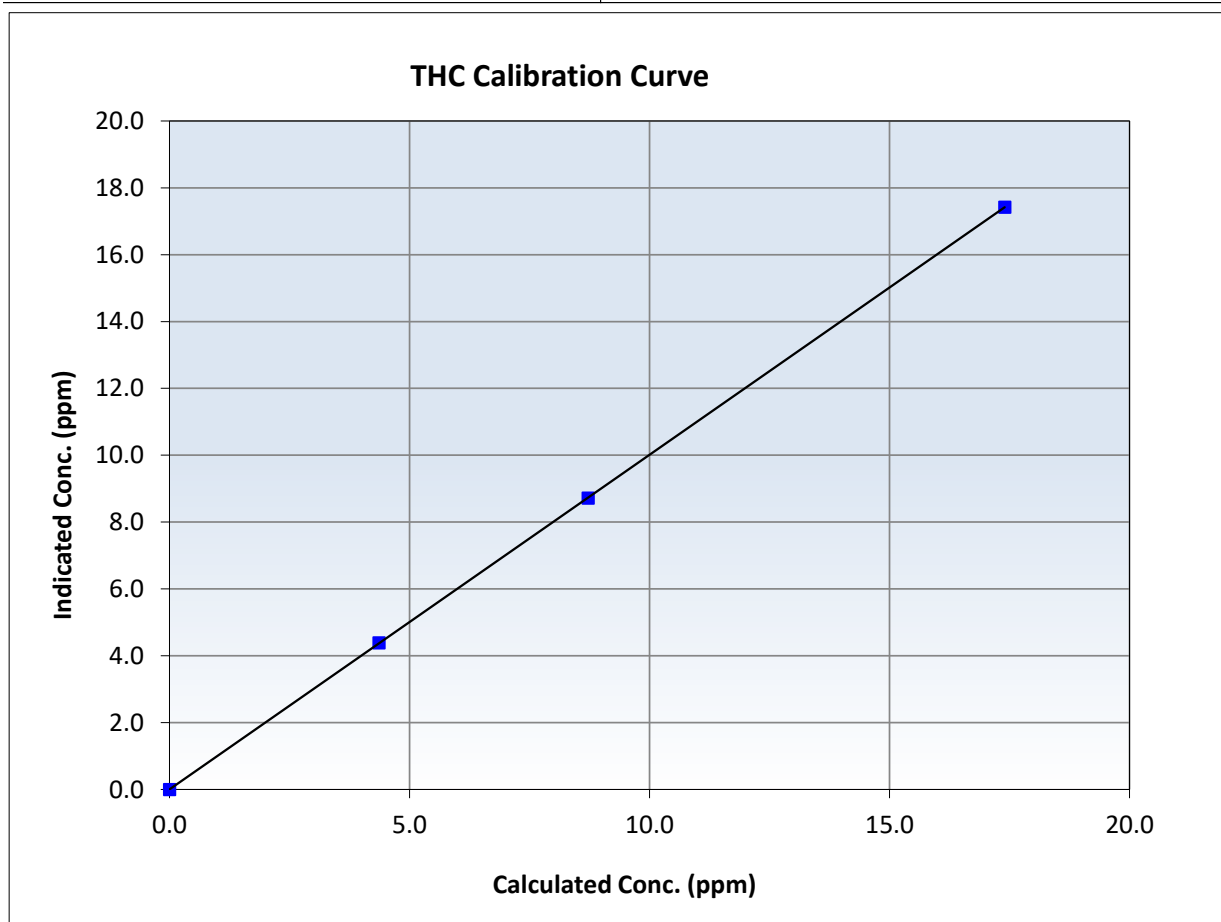
THC Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:47	End Time (MST):	17:52
Analyzer make:	Thermo 55i	Analyzer serial #:	1505164381

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999996	≥ 0.995
17.40	17.42	0.9986	Slope	1.000931	$0.90 - 1.10$
8.72	8.72	1.0008	Intercept	0.002942	± 0.5
4.36	4.39	0.9948			





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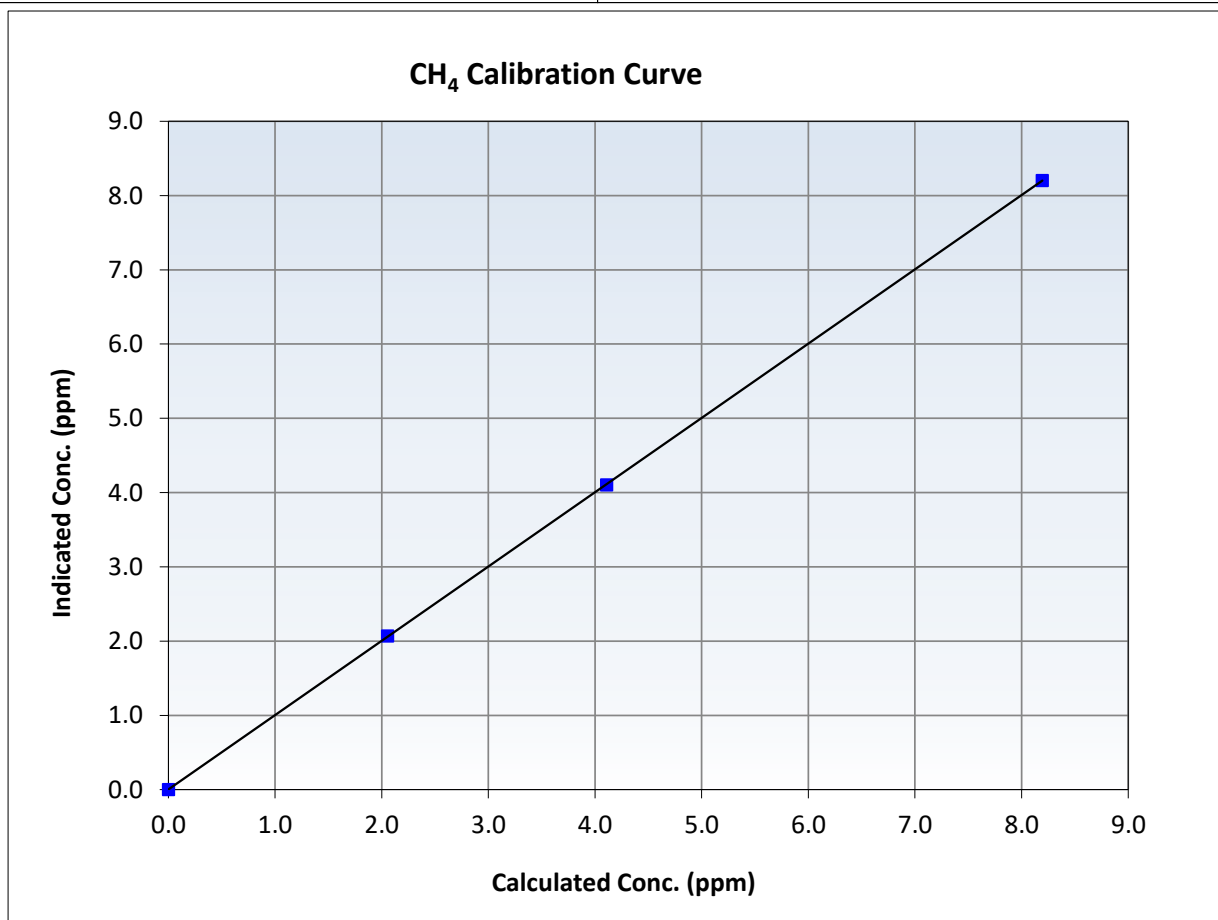
CH₄ Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:47	End Time (MST):	17:52
Analyzer make:	Thermo 55i	Analyzer serial #:	1505164381

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999993	<i>≥0.995</i>
8.19	8.20	0.9989	Slope	1.000480	<i>0.90 - 1.10</i>
4.11	4.10	1.0014	Intercept	0.002877	<i>+/-0.5</i>
2.06	2.07	0.9929			





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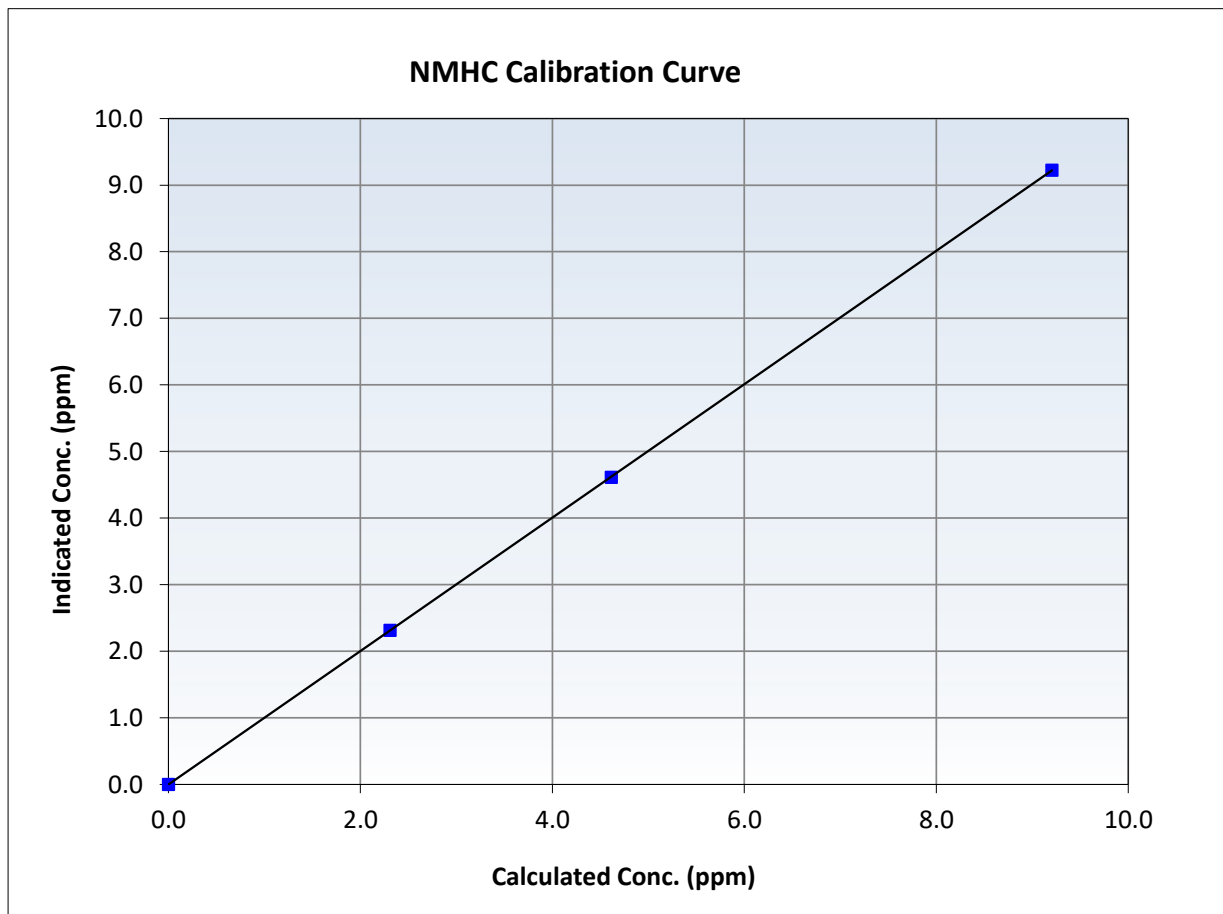
NMHC Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:47	End Time (MST):	17:52
Analyzer make:	Thermo 55i	Analyzer serial #:	1505164381

Calibration Data

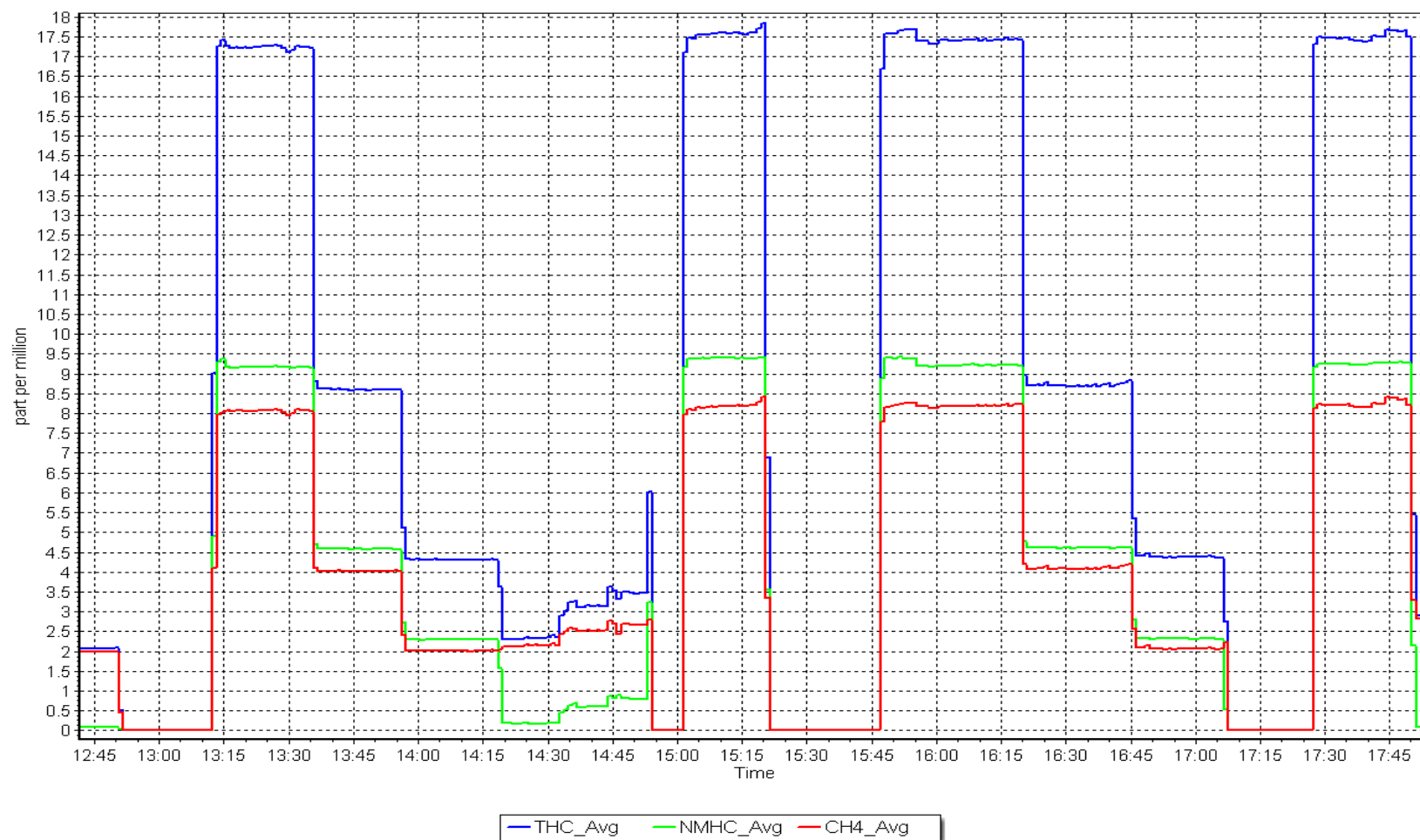
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999998	<i>≥0.995</i>
9.21	9.22	0.9980	Slope	1.001792	<i>0.90 - 1.10</i>
4.62	4.62	1.0001	Intercept	-0.000537	<i>+/-0.5</i>
2.31	2.32	0.9964			



NMHC Calibration Plot

Date: March 3, 2025

Location: Lower Camp





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Lower Camp
Calibration Date: March 16, 2025
Start time (MST): 12:35
Reason: Install

Station number: AMS 11
Last Cal Date: March 3, 2025
End time (MST): 16:38

Calibration Standards

Gas Cert Reference:	CC741503	Cal Gas Expiry Date:	October 9, 2032
CH ₄ Cal Gas Conc.	504.8 ppm	CH ₄ Equiv Conc.	1071.9 ppm
C ₃ H ₈ Cal Gas Conc.	206.2 ppm		
Removed Gas Cert:		Removed Gas Expiry:	
Removed CH ₄ Conc.	504.8 ppm	CH ₄ Equiv Conc.	1071.9 ppm
Removed C ₃ H ₈ Conc.	206.2 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	API T700	Serial Number:	3807
Zero Air Gen model:	API T701	Serial Number:	196

Analyzer Information

Analyzer make: Thermo 55i
THC Range: 0 - 20 ppm

Analyzer serial #: 1118148495
NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>	
CH ₄ SP Ratio:	NA	2.04E-04	NMHC SP Ratio:	NA	4.27E-05
CH ₄ Retention time:	NA	14.3	NMHC Peak Area:	NA	215713
Zero Chromatogram:		OFF	Flat Baseline:		OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4939	81.5	17.40	17.39	1.001
Mid point	4972	40.8	8.72	8.71	1.002
Low point	4990	20.4	4.36	4.41	0.990
As left zero	5000	0.0	0.00	0.00	----
As left span	4939	81.5	17.40	17.26	1.008
Average Correction Factor					0.997

Notes:

Install calibration completed. Adjusted span.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4939	81.5	9.21	9.21	0.999
Mid point	4972	40.8	4.62	4.66	0.991
Low point	4990	20.4	2.31	2.38	0.970
As left zero	5000	0.0	0.00	0.00	----
As left span	4939	81.5	9.21	9.08	1.014
Average Correction Factor					0.987

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4939	81.5	8.19	8.18	1.002
Mid point	4972	40.8	4.11	4.06	1.013
Low point	4990	20.4	2.06	2.03	1.012
As left zero	5000	0.0	0.00	0.00	----
As left span	4939	81.5	8.19	8.18	1.002
Average Correction Factor					1.009

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
THC Cal Slope:	NA	0.998443
THC Cal Offset:	NA	0.017156
CH ₄ Cal Slope:	NA	0.998463
CH ₄ Cal Offset:	NA	-0.017882
NMHC Cal Slope:	NA	0.998401
NMHC Cal Offset:	NA	0.035637

Calibration Performed By:

Braiden Boutilier



Wood Buffalo Environmental Association

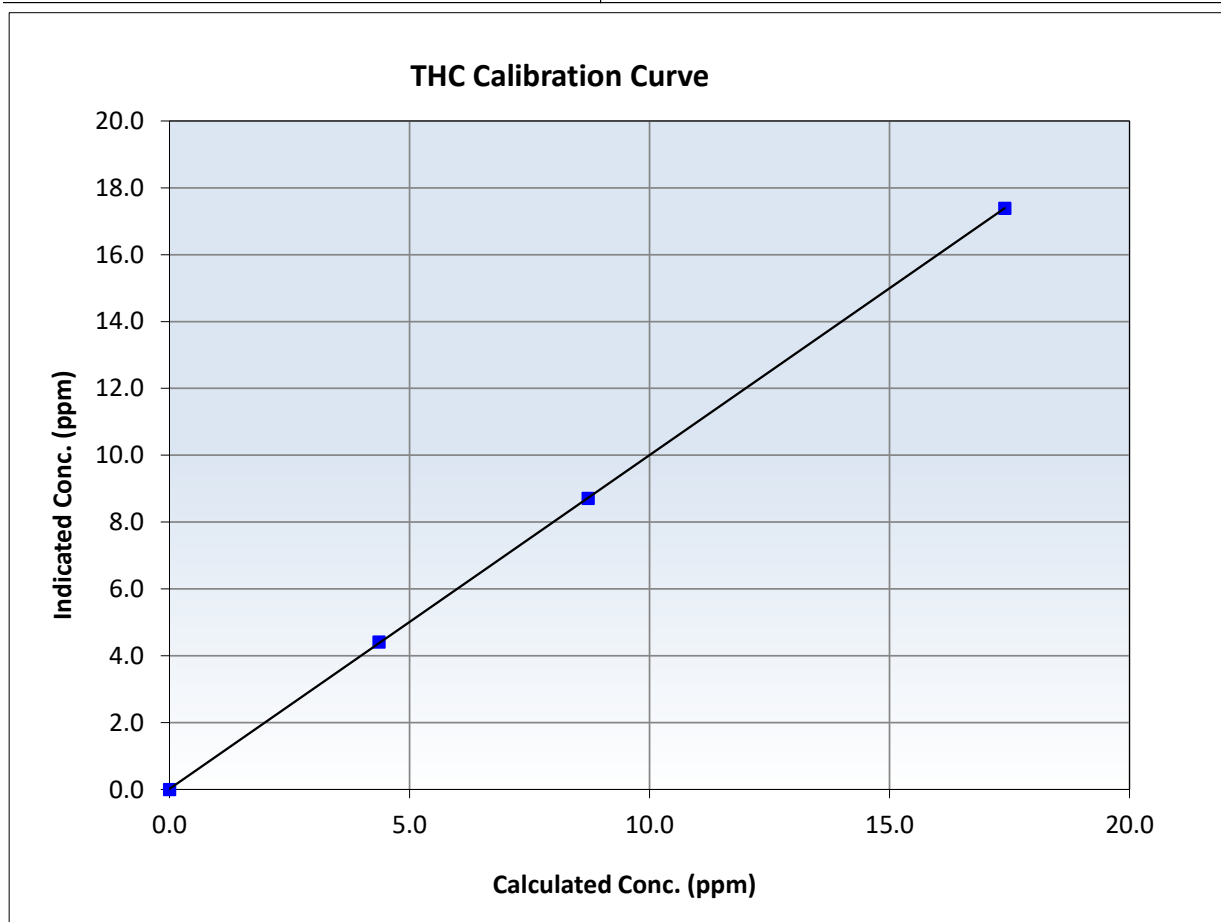
THC Calibration Summary

Station Information

Calibration Date:	March 16, 2025	Previous Calibration:	March 3, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:35	End Time (MST):	16:38
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148495

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999989	<i>≥0.995</i>
17.40	17.39	1.0006	Slope	0.998443	<i>0.90 - 1.10</i>
8.72	8.71	1.0016	Intercept	0.017156	<i>+/-0.5</i>
4.36	4.41	0.9898			





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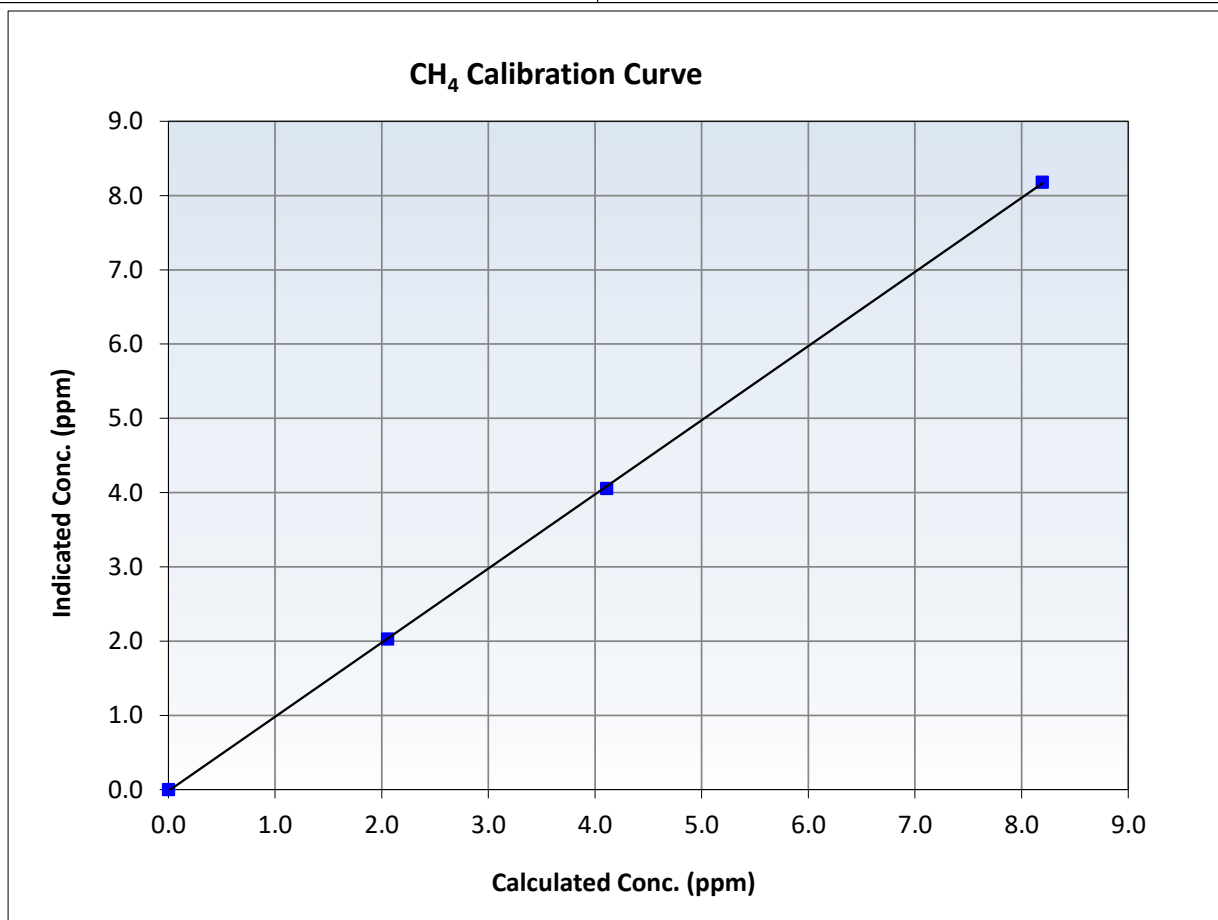
CH₄ Calibration Summary

Station Information

Calibration Date:	March 16, 2025	Previous Calibration:	March 3, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:35	End Time (MST):	16:38
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148495

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999960	≥0.995
8.19	8.18	1.0018	Slope	0.998463	0.90 - 1.10
4.11	4.06	1.0132	Intercept	-0.017882	+/-0.5
2.06	2.03	1.0125			





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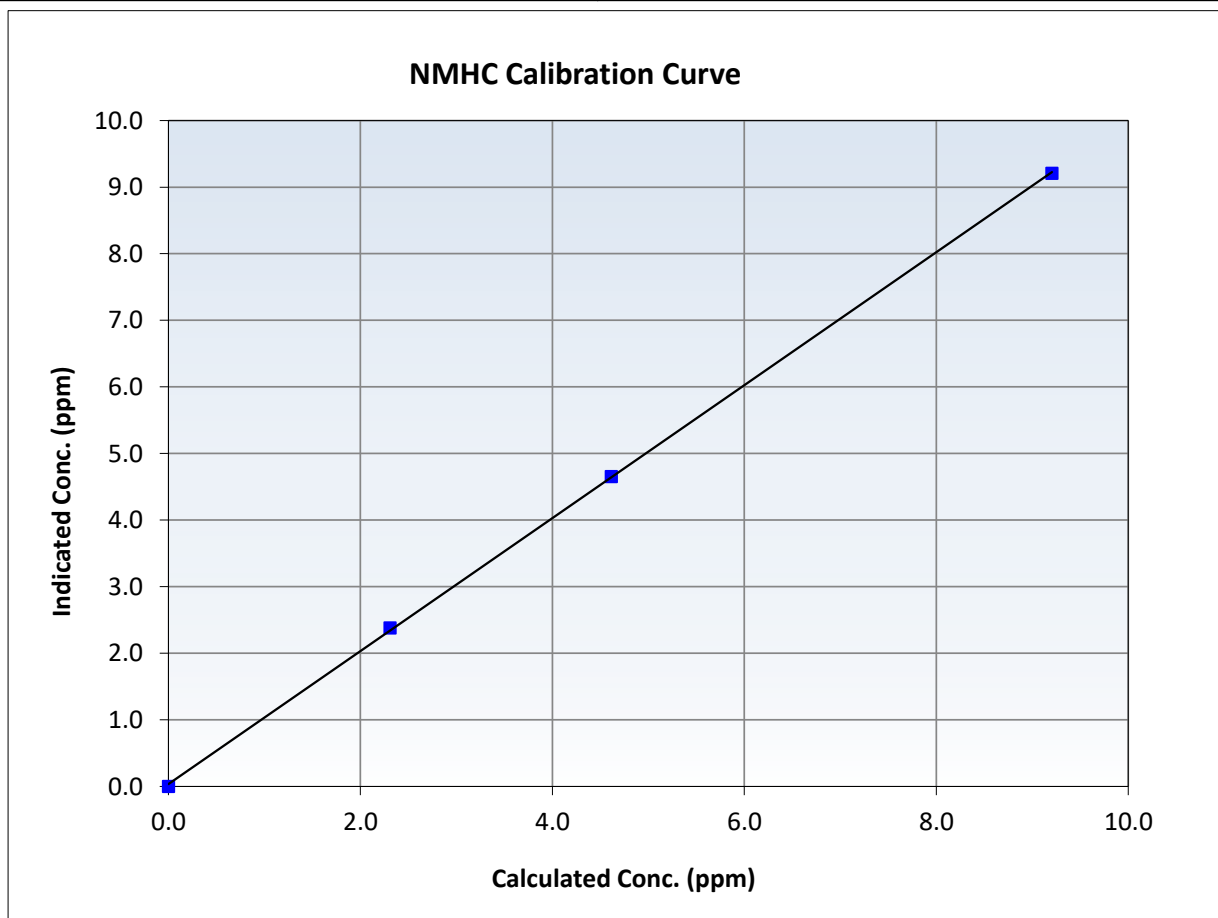
NMHC Calibration Summary

Station Information

Calibration Date:	March 16, 2025	Previous Calibration:	March 3, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:35	End Time (MST):	16:38
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148495

Calibration Data

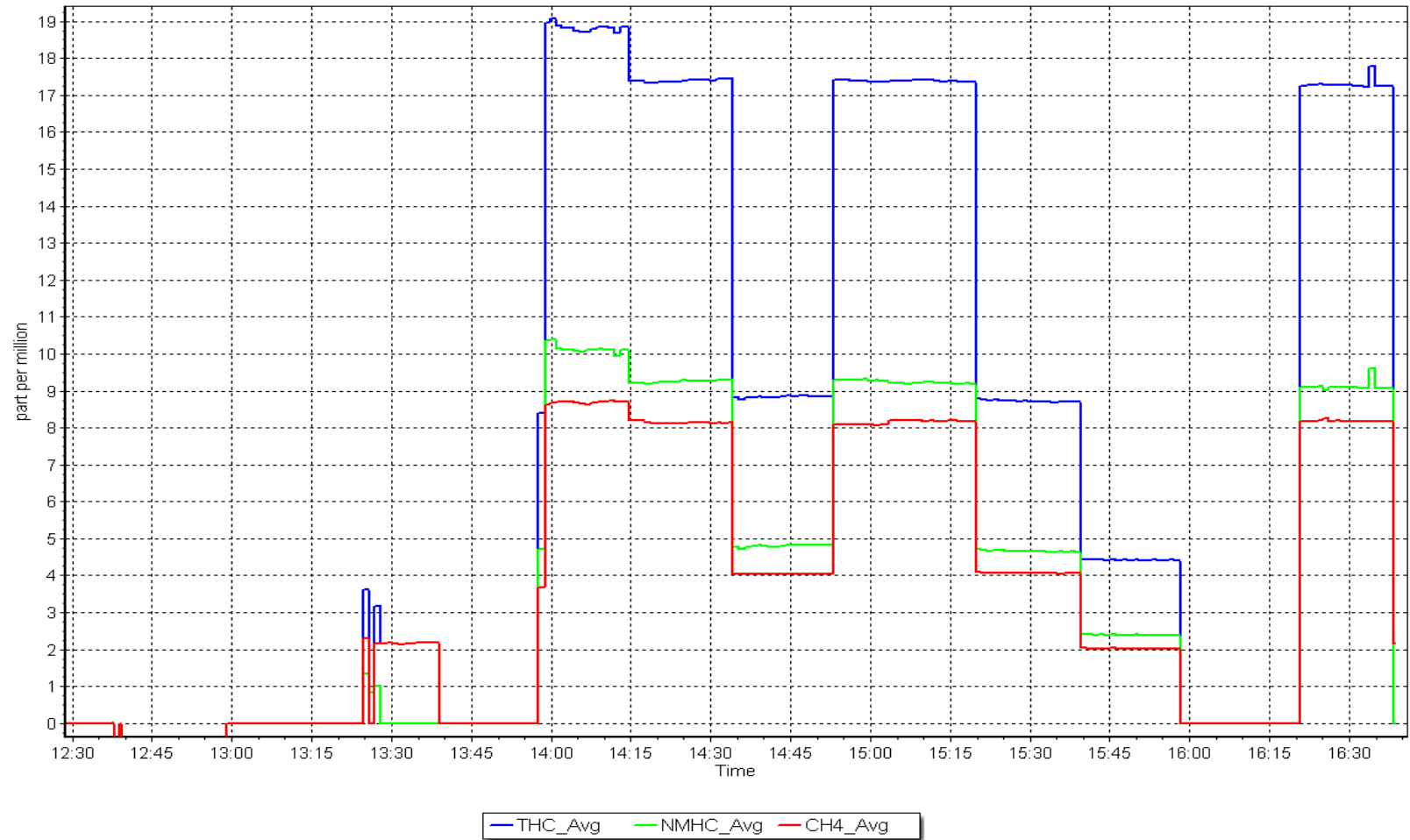
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999930	<i>≥0.995</i>
9.21	9.21	0.9995	Slope	0.998401	<i>0.90 - 1.10</i>
4.62	4.66	0.9913	Intercept	0.035637	<i>+/-0.5</i>
2.31	2.38	0.9701			



NMHC Calibration Plot

Date: March 16, 2025

Location: Lower Camp





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS13 FORT MCKAY SOUTH MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Fort McKay South Station number: AMS 13
Calibration Date: March 3, 2025 Last Cal Date: February 4, 2025
Start time (MST): 10:15 End time (MST): 13:14
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.55 ppm Cal Gas Exp Date: December 29, 2028
Cal Gas Cylinder #: CC260812
Removed Cal Gas Conc: 50.55 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: Teledyne API T700 Serial Number: 2448
Zero Air Gen Model: Teledyne API T701 Serial Number: 1118

Analyzer Information

Analyzer make: Teledyne API T100 Serial Number: 599
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.005429	1.003357	Backgd or Offset:	99.5	99.5
Calibration intercept:	-3.518058	-2.818185	Coeff or Slope:	0.700	0.694

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4921	79.1	799.7	806.4	0.992
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	806.5	Previous response	800.5	*% change	0.7%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4921	79.1	799.7	800.9	0.998
Mid point	4961	39.5	399.3	396.7	1.007
Low point	4980	19.8	200.2	194.9	1.027
As left zero	5000	0.0	0.0	0.1	----
As left span	4921	79.1	799.7	800.7	0.999
Average Correction Factor:					1.011

Notes: Sample inlet filters changed after as founds. Adjusted span only.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

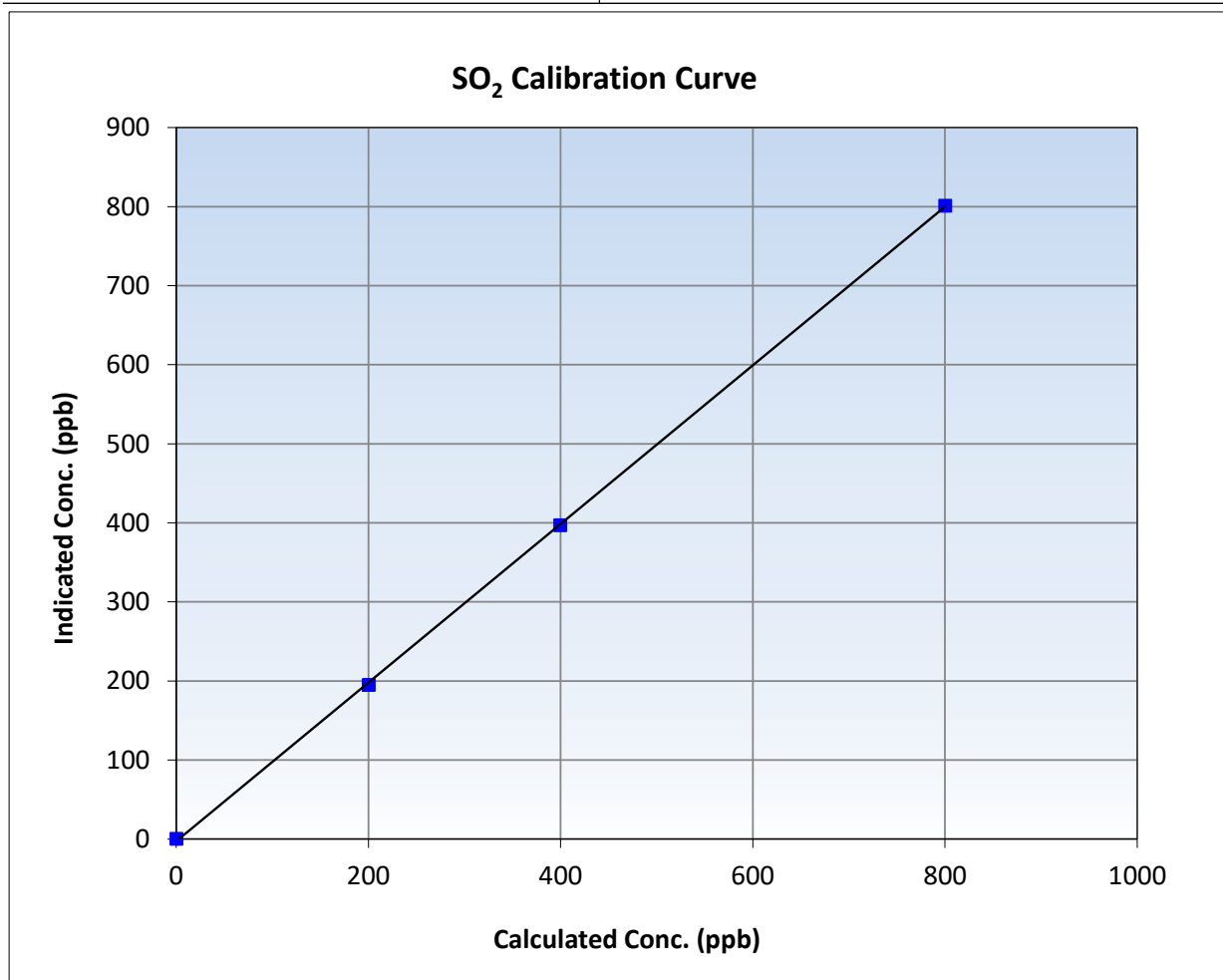
SO₂ Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Fort McKay South	Station Number:	AMS 13
Start Time (MST):	10:15	End Time (MST):	13:14
Analyzer make:	Teledyne API T100	Analyzer serial #:	599

Calibration Data

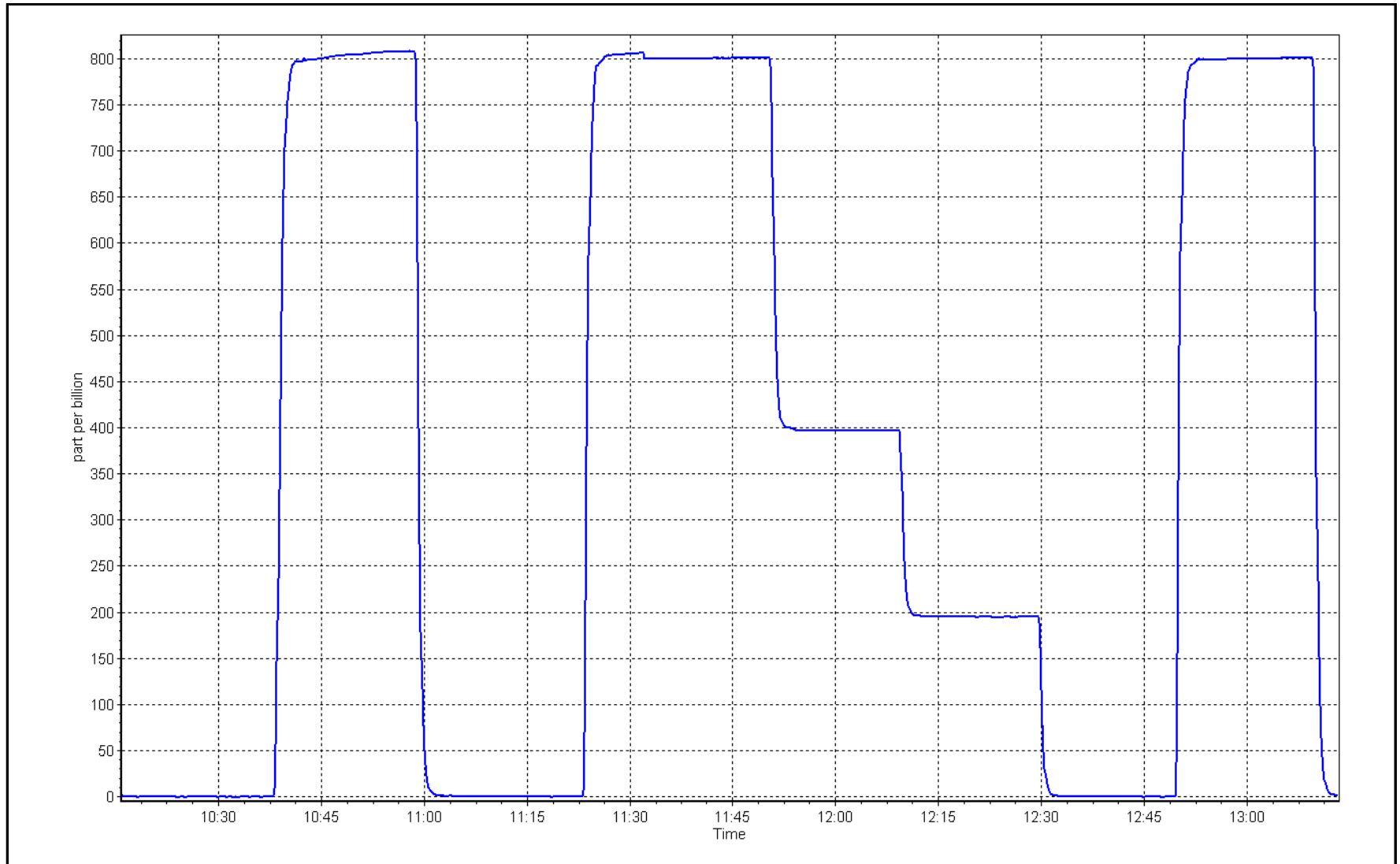
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999939	≥0.995
799.7	800.9	0.9985	Slope	1.003357	0.90 - 1.10
399.3	396.7	1.0066	Intercept	-2.818185	+/-30
200.2	194.9	1.0271			



SO2 Calibration Plot

Date: March 3, 2025

Location: Fort McKay South





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Fort McKay South
Calibration Date: March 4, 2025
Start time (MST): 10:34
Reason: Routine

Station number: AMS 13
Last Cal Date: February 26, 2025
End time (MST): 14:51

Calibration Standards

Cal Gas Concentration: 4.88 ppm
Cal Gas Cylinder #: CC500241
Removed Cal Gas Conc: 4.88 ppm
Removed Gas Cyl #: CC500241
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne API T701

Cal Gas Exp Date: September 5, 2027
Rem Gas Exp Date:
Diff between cyl:
Serial Number: 2448
Serial Number: 5609

Analyzer Information

Analyzer make: Thermo 43i TLE
Converter make: CDN-101
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1180540017
Converter serial #: 521
Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.003404	1.016748	Backgd or Offset:	3.77	3.77
Calibration intercept:	-0.038408	-0.078387	Coeff or Slope:	1.14	1.14

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.0	----
As found High point	4918	81.6	79.6	80.8	0.986
As found Mid point	4959	40.8	39.8	40.3	0.988
As found Low point	4980	20.4	19.9	19.8	1.005
New cylinder response					
Baseline Corr As found:	80.8	Prev response:	79.88	*% change:	1.1%
Baseline Corr 2nd AF pt:	40.3	AF Slope:	1.016031	AF Intercept:	-0.178389
Baseline Corr 3rd AF pt:	19.8	AF Correlation:	0.999973	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4918	81.6	79.6	81.0	0.983
Mid point	4959	40.8	39.8	40.3	0.988
Low point	4980	20.4	19.9	20.0	0.995
As left zero	5000	0.0	0.0	0.4	----
As left span	4918	81.6	79.6	80.1	0.994
SO2 Scrubber Check	4921	79.1	791.0	0.1	----
Date of last scrubber change:	20-Jan-20		Ave Corr Factor		0.989
Date of last converter efficiency test:					

Notes: Changed inlet filter after multipoint as founds. SO2 scrubber check done after calibrator zero and passed. No adjustment made.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

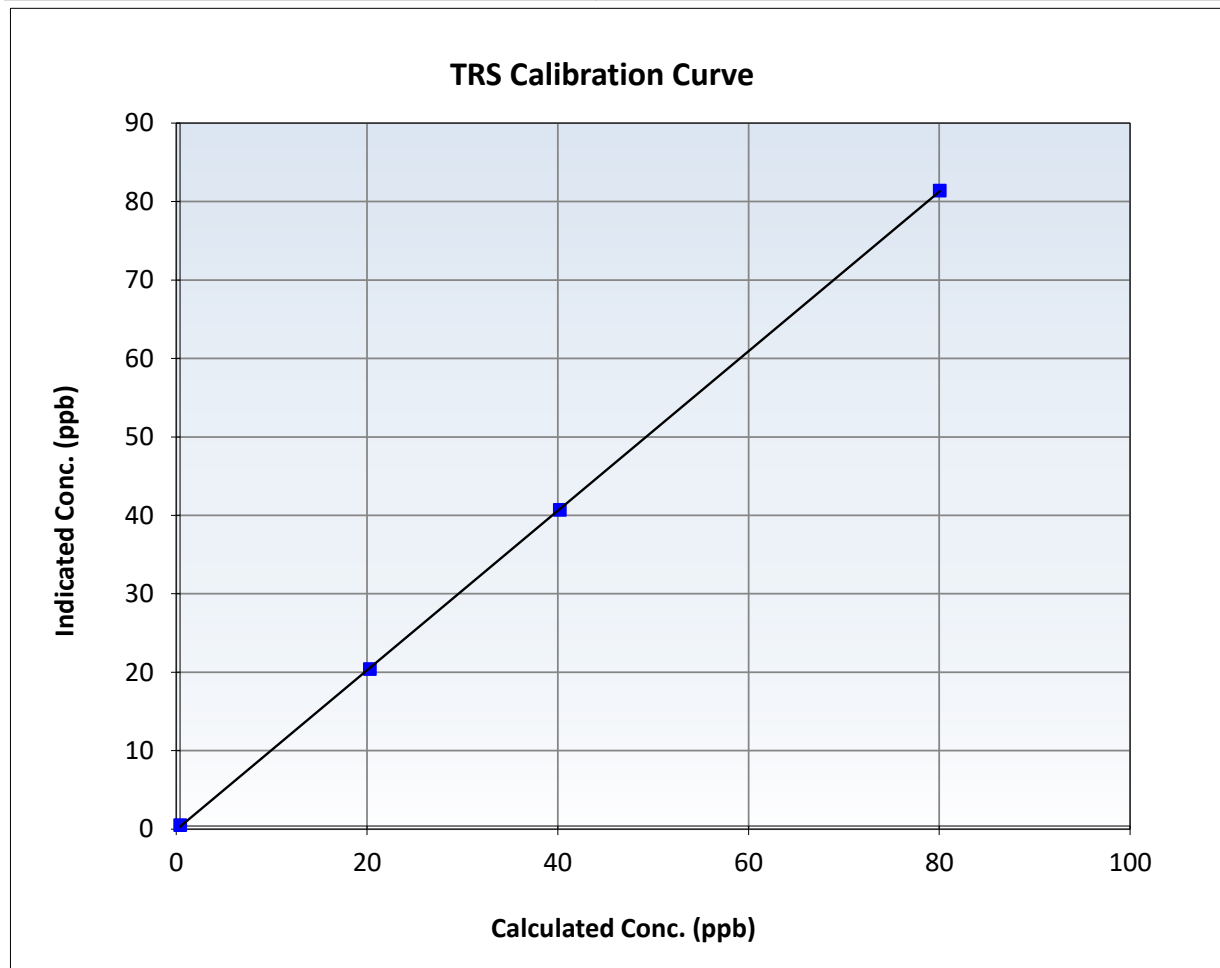
TRS Calibration Summary

Station Information

Calibration Date:	March 4, 2025	Previous Calibration:	February 26, 2025
Station Name:	Fort McKay South	Station Number:	AMS 13
Start Time (MST):	10:34	End Time (MST):	14:51
Analyzer make:	Thermo 43i TLE	Analyzer serial #:	1180540017

Calibration Data

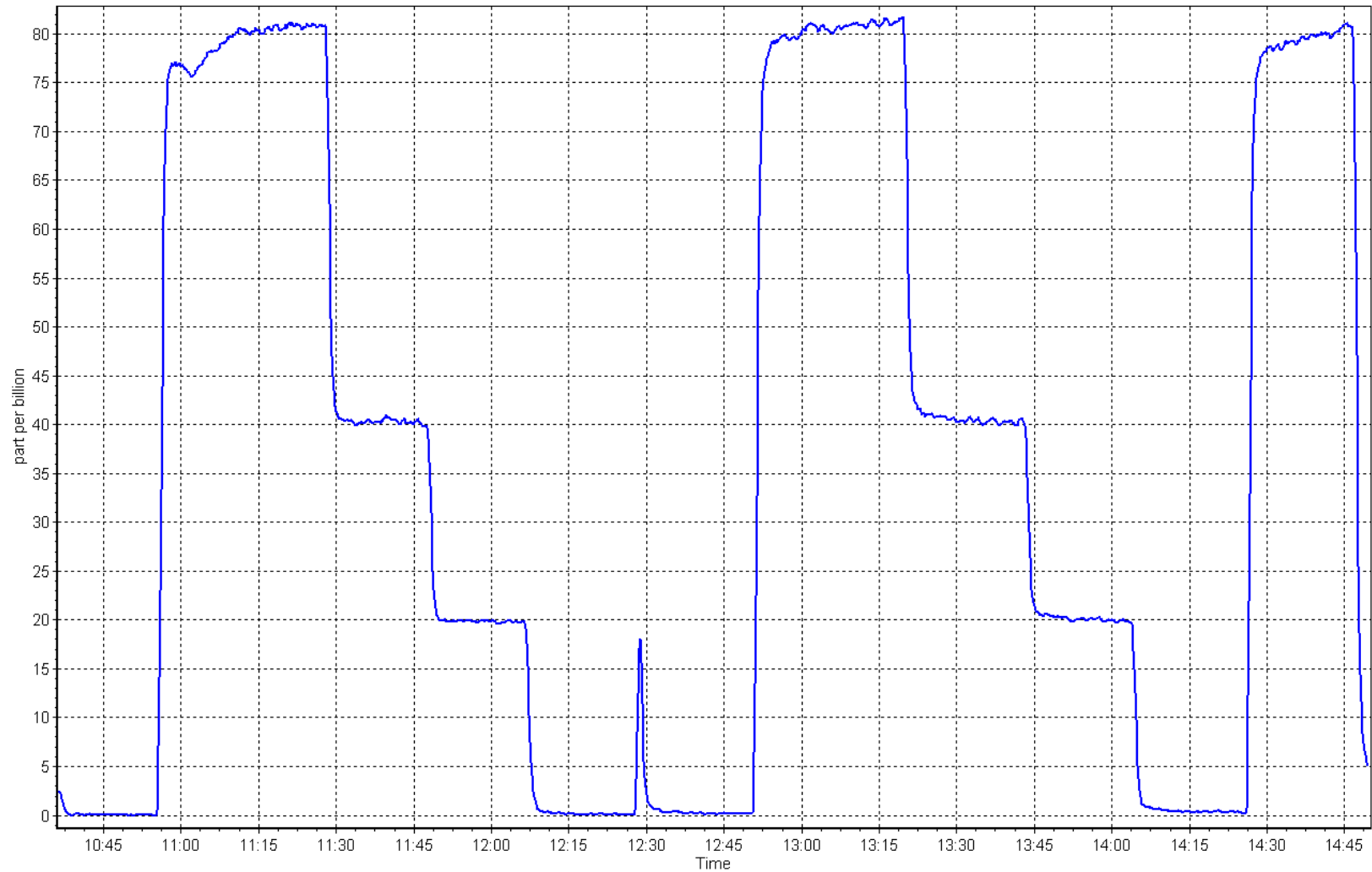
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999978	≥ 0.995
79.6	81.0	0.9833	Slope	1.016748	$0.90 - 1.10$
39.8	40.3	0.9881	Intercept	-0.078387	± 3
19.9	20.0	0.9954			



TRS Calibration Plot

Date: March 4, 2025

Location: Fort McKay South





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Fort McKay South
 Calibration Date: March 3, 2025
 Start time (MST): 10:15
 Reason: Routine

Station number: AMS 13
 Last Cal Date: February 4, 2025
 End time (MST): 13:14

Calibration Standards

Gas Cert Reference:	CC260812	Cal Gas Expiry Date:	December 29, 2028
CH ₄ Cal Gas Conc.	503.6 ppm	CH ₄ Equiv Conc.	1077.5 ppm
C ₃ H ₈ Cal Gas Conc.	208.7 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	
Removed CH ₄ Conc.	503.6 ppm	CH ₄ Equiv Conc.	1077.5 ppm
Removed C ₃ H ₈ Conc.	208.7 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	Teledyne API T700	Serial Number:	2448
Zero Air Gen model:	Teledyne API T701	Serial Number:	1118

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1181490018
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	2.60E-04	2.65E-04	NMHC SP Ratio:	4.50E-05
CH ₄ Retention time:	14.80	14.80	NMHC Peak Area:	201859
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.1	17.05	16.94	1.006
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.94	Prev response	17.05	*% change	-0.6%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	17.05	17.06	0.999
Mid point	4961	39.5	8.51	8.46	1.007
Low point	4980	19.8	4.27	4.18	1.022
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	17.05	17.12	0.996
Average Correction Factor					1.009

Notes:

Adjusted span only.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.1	9.08	9.09	0.999
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.09	Prev response	9.13	*% change	-0.5%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	9.08	9.08	1.000
Mid point	4961	39.5	4.53	4.51	1.006
Low point	4980	19.8	2.27	2.23	1.017
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	9.08	9.10	0.997
Average Correction Factor					1.008

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.1	7.97	7.86	1.014
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.86	Prev response	7.91	*% change	-0.8%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	7.97	7.98	0.998
Mid point	4961	39.5	3.98	3.95	1.007
Low point	4980	19.8	1.99	1.94	1.026
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	7.97	8.02	0.993
Average Correction Factor					1.011

Calibration Statistics

	Start	Finish
THC Cal Slope:	1.003104	1.002159
THC Cal Offset:	-0.053361	-0.049566
CH ₄ Cal Slope:	0.997112	1.003513
CH ₄ Cal Offset:	-0.028979	-0.028783
NMHC Cal Slope:	1.008361	1.001223
NMHC Cal Offset:	-0.024382	-0.020782

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

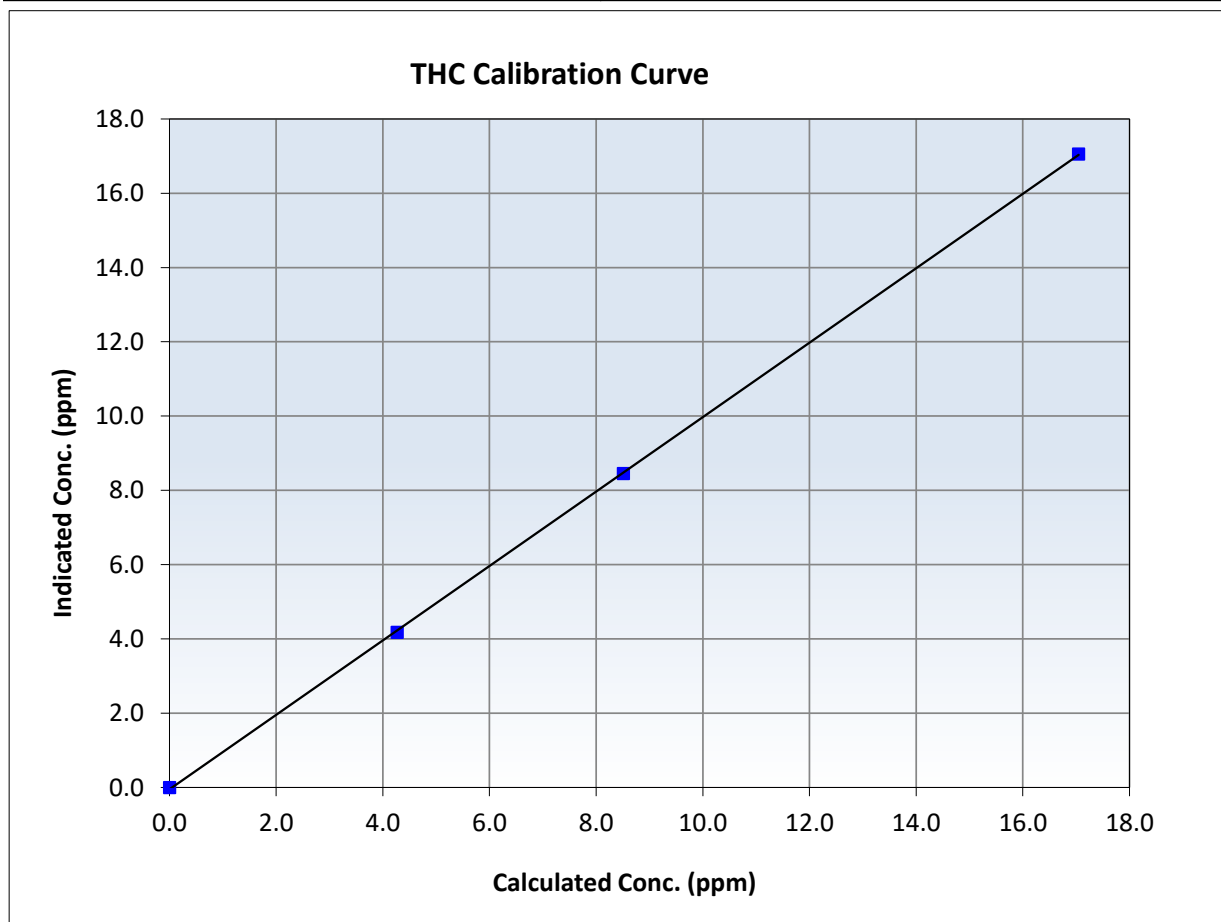
THC Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Fort McKay South	Station Number:	AMS 13
Start Time (MST):	10:15	End Time (MST):	13:14
Analyzer make:	Thermo 55i	Analyzer serial #:	1181490018

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999961	<i>≥0.995</i>
17.05	17.06	0.9993	Slope	1.002159	<i>0.90 - 1.10</i>
8.51	8.46	1.0066	Intercept	-0.049566	<i>+/-0.5</i>
4.27	4.18	1.0216			





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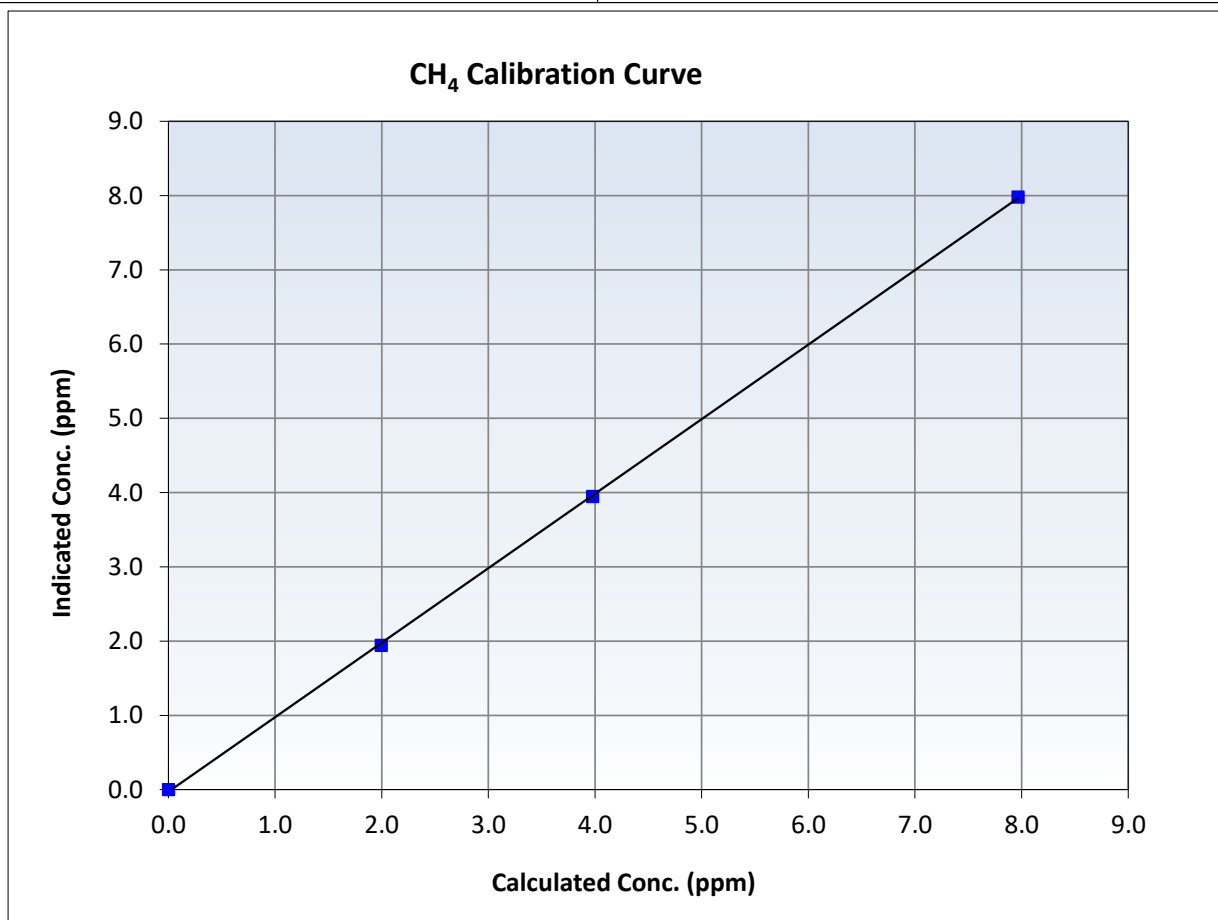
CH₄ Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Fort McKay South	Station Number:	AMS 13
Start Time (MST):	10:15	End Time (MST):	13:14
Analyzer make:	Thermo 55i	Analyzer serial #:	1181490018

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999941		<i>≥0.995</i>
7.97	7.98	0.9983	Slope	1.003513		<i>0.90 - 1.10</i>
3.98	3.95	1.0071	Intercept	-0.028783		<i>+/-0.5</i>
1.99	1.94	1.0264				





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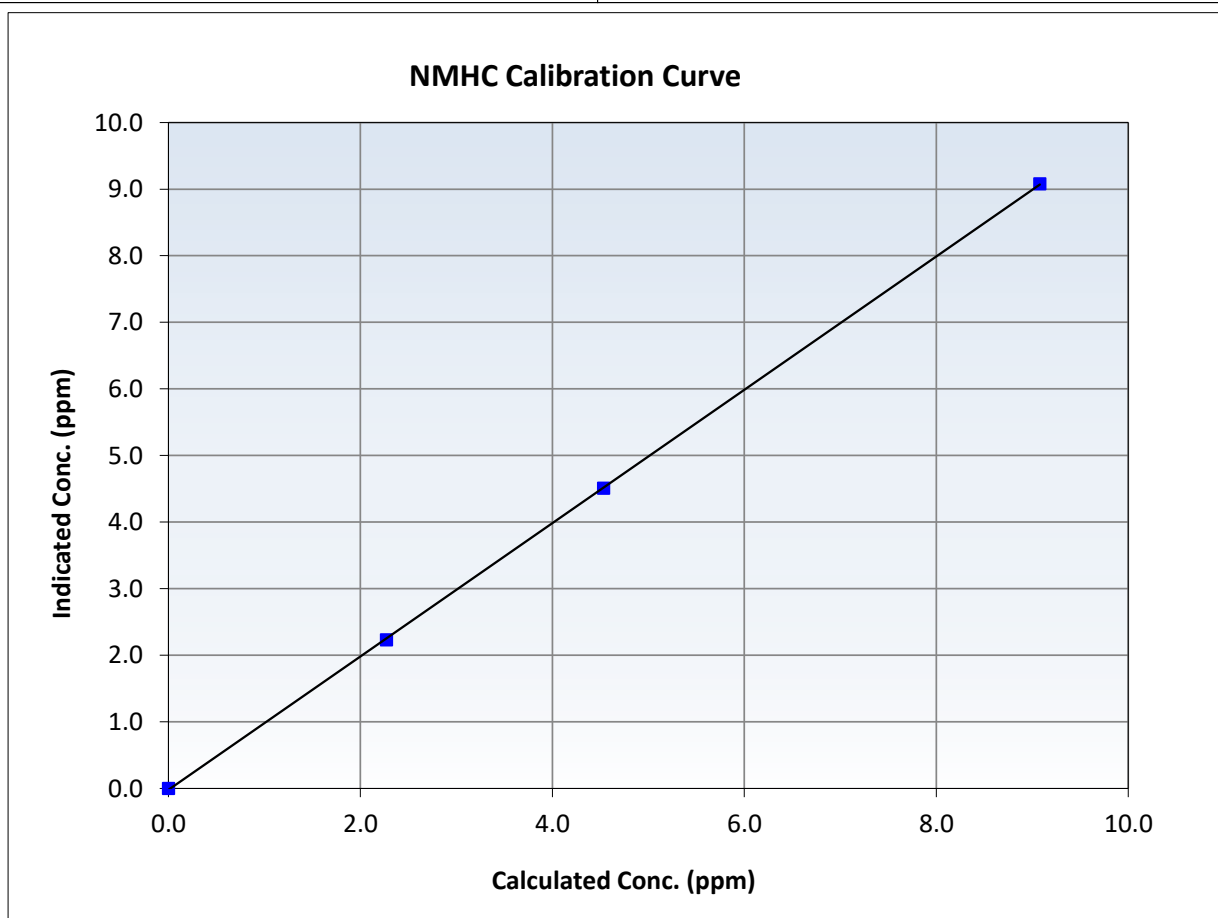
NMHC Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Fort McKay South	Station Number:	AMS 13
Start Time (MST):	10:15	End Time (MST):	13:14
Analyzer make:	Thermo 55i	Analyzer serial #:	1181490018

Calibration Data

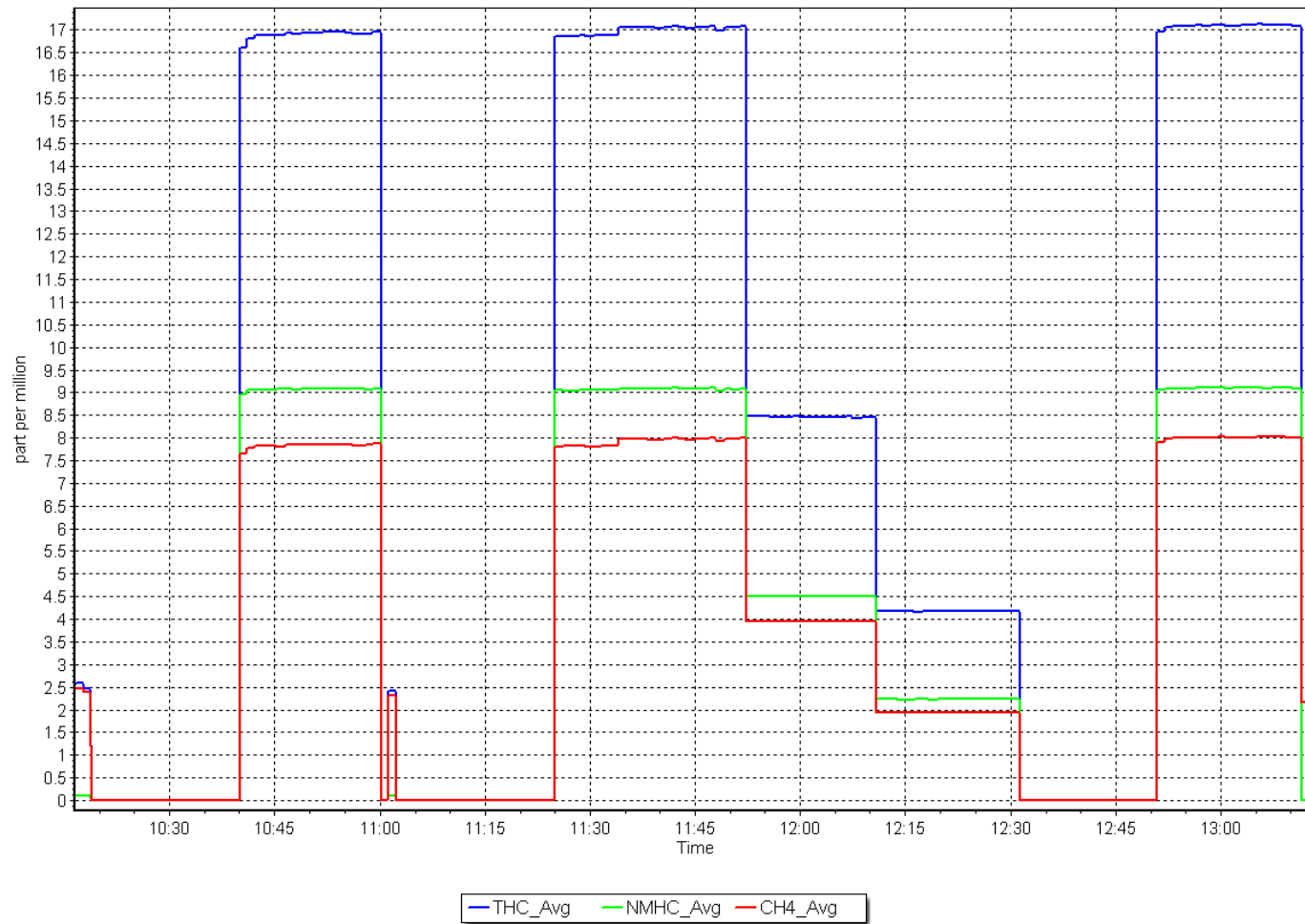
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999976	<i>≥0.995</i>
9.08	9.08	0.9999	Slope	1.001223	<i>0.90 - 1.10</i>
4.53	4.51	1.0057	Intercept	-0.020782	<i>+/-0.5</i>
2.27	2.23	1.0174			



NMHC Calibration Plot

Date: March 3, 2025

Location: Fort McKay South





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Fort McKay South
Station number: AMS 13
Calibration Date: March 18, 2025
Last Cal Date: February 5, 2025
Start time (MST): 8:30
End time (MST): 12:52
Reason: Routine

Calibration Standards

NO Gas Cylinder #: T2UP1RP
NOX Cal Gas Conc: 48.25 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 48.25 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne APIT701
Cal Gas Expiry Date: November 17, 2026
NO Cal Gas Conc: 47.88 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 47.88 ppm
NO gas Diff:
Serial Number: 2448
Serial Number: 1118

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO _x Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	0.6	0.3	0.3	----	----
AF High point	4917	83.5	805.7	799.5	6.2	824.5	819.0	5.6	0.9779	0.9766
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO _x = 804.7 ppb	NO = 800.8 ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = 2.3%
Baseline Corr 1st pt	NO _x = 823.9 ppb	NO = 818.7 ppb	<u>As Found Statistics</u>		*Percent Change	NO = 2.2%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found	NO _x r ² :	Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found	NO r ² :	NO SI:	NO Int:
			As found	NO ₂ r ² :	NO ₂ SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO ₂ Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42iQ
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 12300522720

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.003982	1.001910
NO _x Cal Offset:	-4.171968	-4.491112
NO Cal Slope:	1.008651	1.005393
NO Cal Offset:	-5.590686	-5.050140
NO ₂ Cal Slope:	0.997534	0.999251
NO ₂ Cal Offset:	-0.464731	-0.440433

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.636	1.599	NO bkgnd or offset:	9.0	8.3
NOX coeff or slope:	0.997	0.997	NOX bkgnd or offset:	8.8	8.1
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	349.3	351.3

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.7	0.4	0.3	----	----
High point	4917	83.5	805.7	799.5	6.2	805.8	801.9	3.8	0.9999	0.9970
Mid point	4958	41.8	403.4	400.3	3.1	395.7	393.5	2.3	1.0194	1.0173
Low point	4979	20.9	201.7	200.1	1.5	193.3	191.5	1.8	1.0434	1.0451
As left zero	5000	0.0	0.0	0.0	0.0	0.7	0.4	0.3	----	----
As left span	4917	83.5	805.7	361.7	444.0	784.0	361.7	422.3	1.0277	1.0000
Average Correction Factor									1.0209	1.0198

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.3	----	----
High GPT point	799.9	373.0	433.1	432.8	1.0006	99.9%
Mid GPT point	799.9	585.6	220.5	219.2	1.0058	99.4%
Low GPT point	799.9	693.7	112.4	111.3	1.0097	99.0%
Average Correction Factor					1.0054	99.5%

Notes:

Changed inlet filter after as founds. Adjusted span only.

Calibration Performed By:

Sean Bala



Wood Buffalo Environmental Association

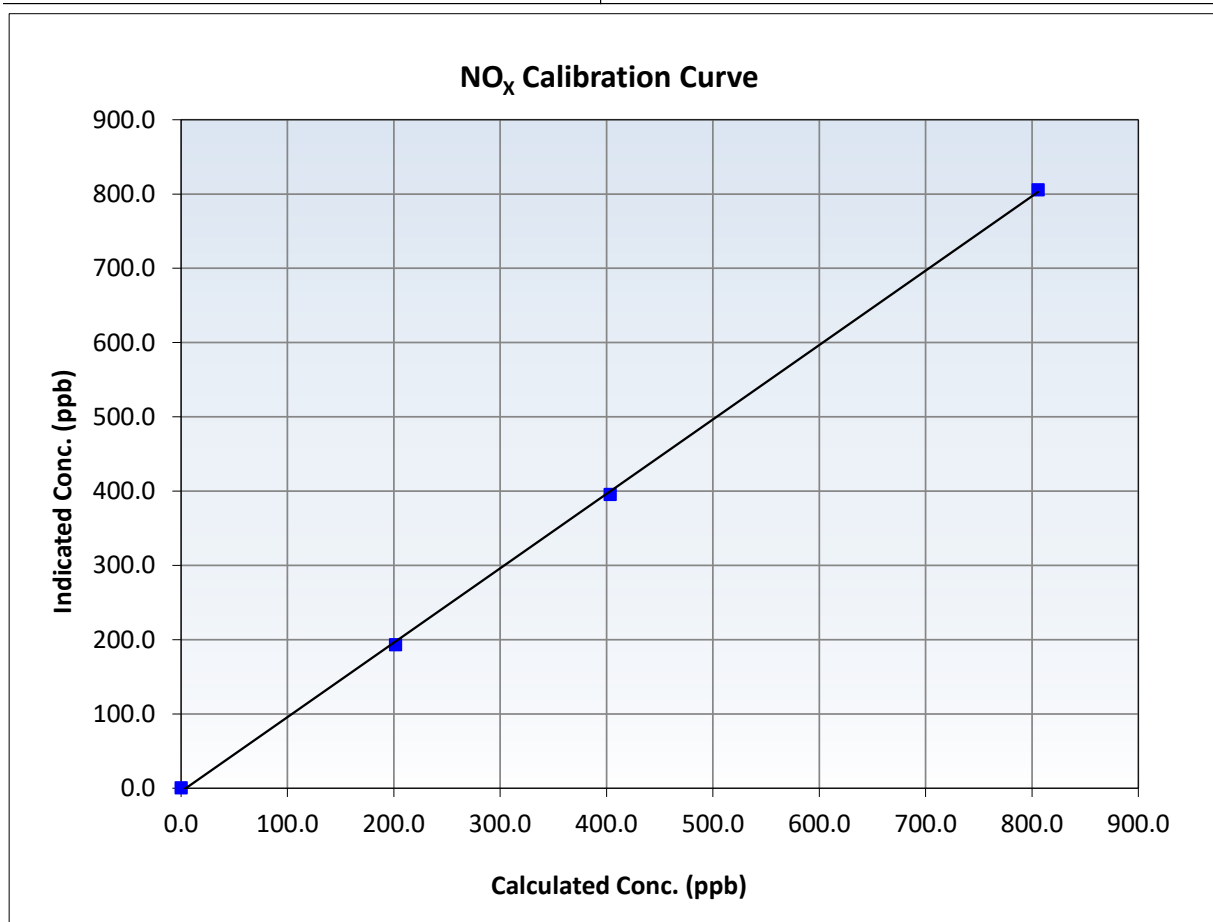
NO_x Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 5, 2025
Station Name:	Fort McKay South	Station Number:	AMS 13
Start Time (MST):	8:30	End Time (MST):	12:52
Analyzer make:	Thermo 42iQ	Analyzer serial #:	12300522720

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.7	----	Correlation Coefficient	0.999803	≥0.995
805.7	805.8	0.9999	Slope	1.001910	0.90 - 1.10
403.4	395.7	1.0194	Intercept	-4.491112	+/-20
201.7	193.3	1.0434			





Wood Buffalo Environmental Association

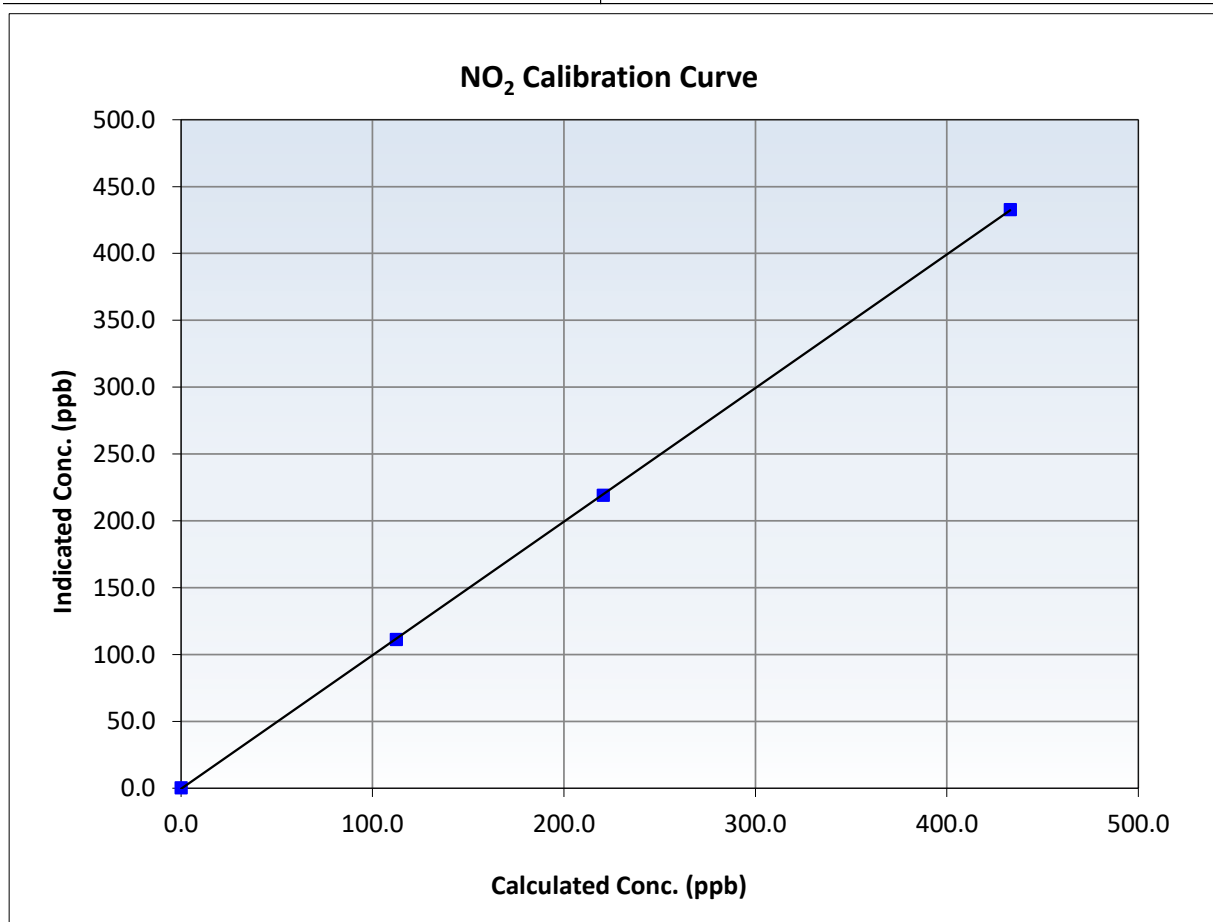
NO₂ Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 5, 2025
Station Name:	Fort McKay South	Station Number:	AMS 13
Start Time (MST):	8:30	End Time (MST):	12:52
Analyzer make:	Thermo 42iQ	Analyzer serial #:	12300522720

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999985	≥0.995
433.1	432.8	1.0006	Slope	0.999251	0.90 - 1.10
220.5	219.2	1.0058	Intercept	-0.440433	+/-20
112.4	111.3	1.0097			





Wood Buffalo Environmental Association

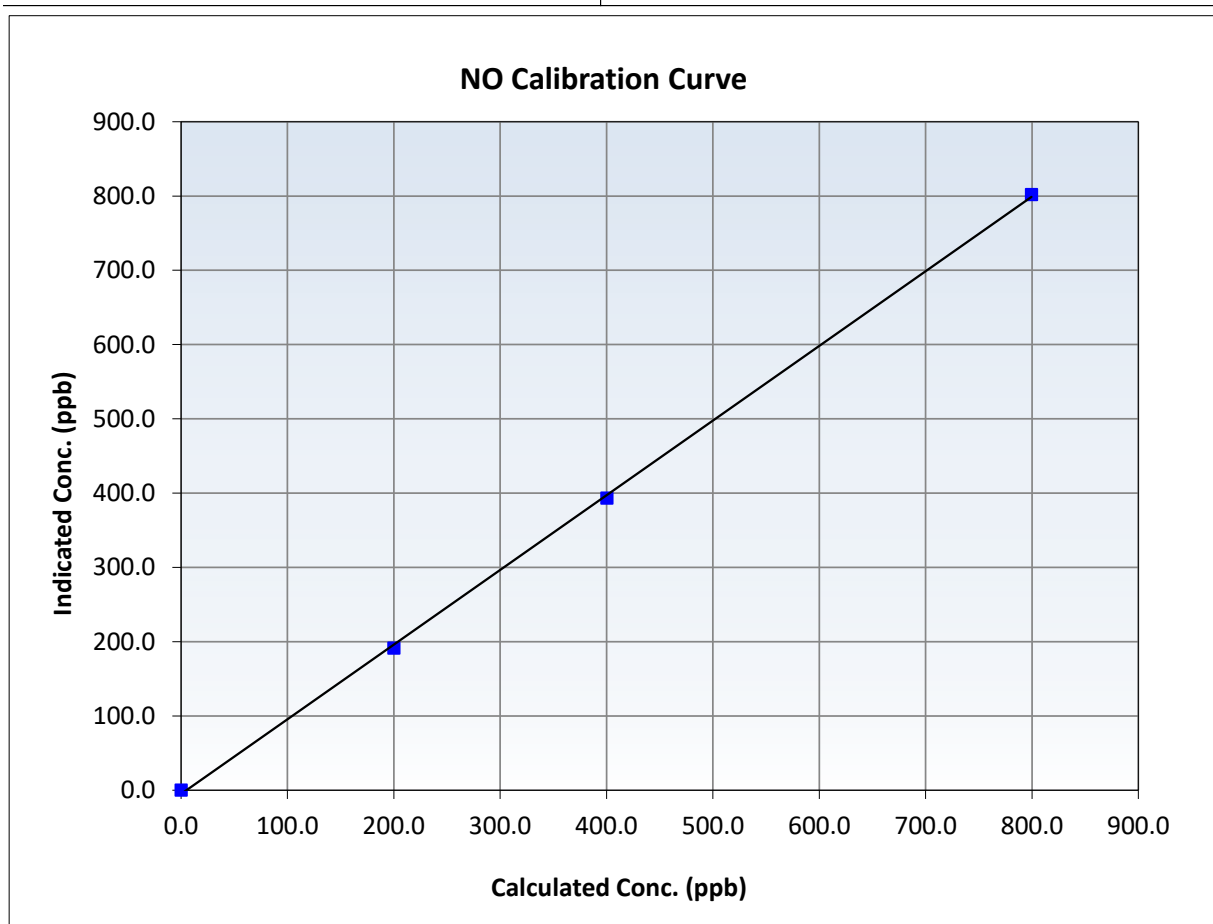
NO Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 5, 2025
Station Name:	Fort McKay South	Station Number:	AMS 13
Start Time (MST):	8:30	End Time (MST):	12:52
Analyzer make:	Thermo 42iQ	Analyzer serial #:	12300522720

Calibration Data

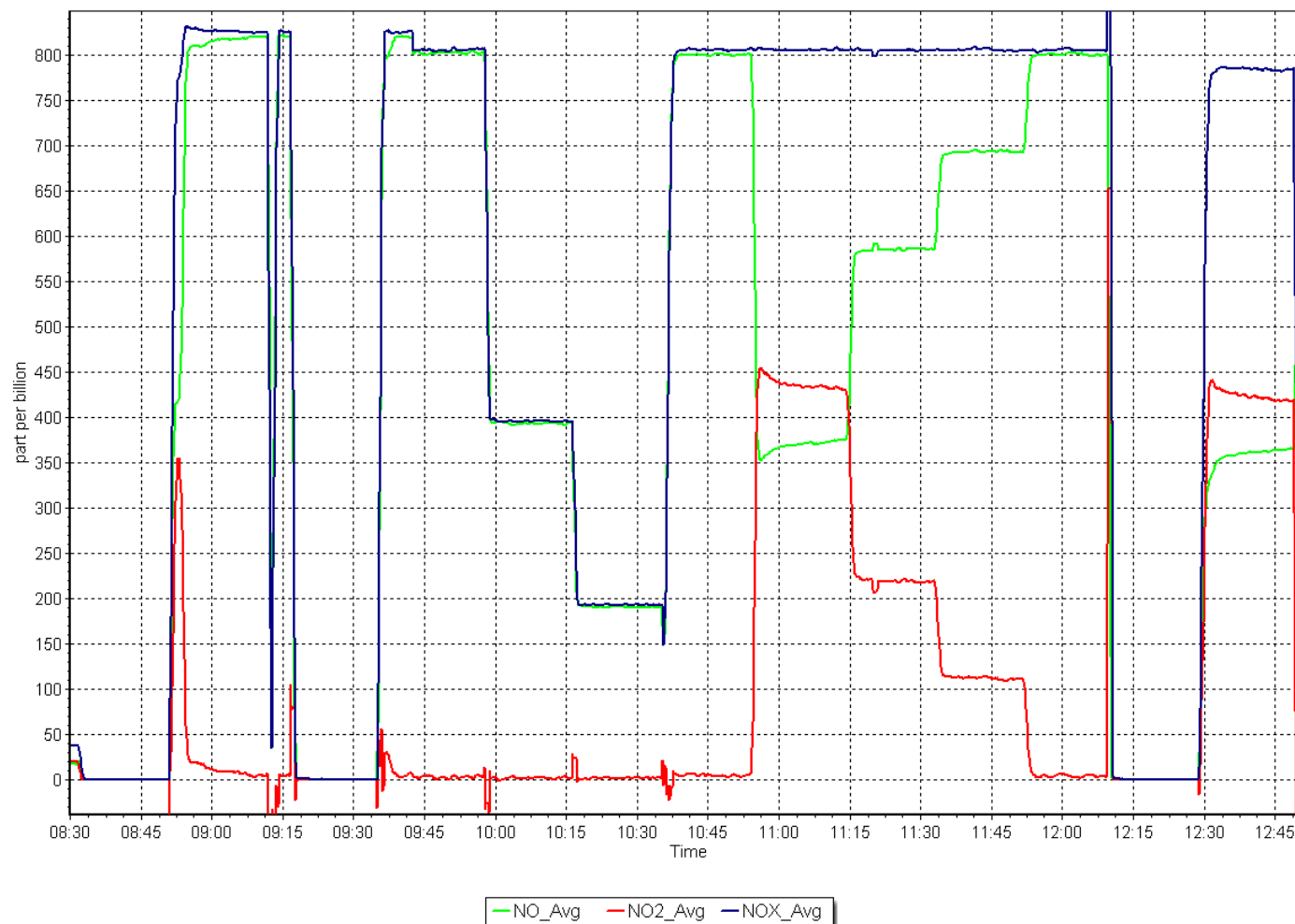
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.4	----	Correlation Coefficient	0.999784	≥ 0.995
799.5	801.9	0.9970	Slope	1.005393	0.90 - 1.10
400.3	393.5	1.0173	Intercept	-5.050140	+/-20
200.1	191.5	1.0451			



NO_x Calibration Plot

Date: March 18, 2025

Location: Fort McKay South





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Fort McKay South
Calibration Date: March 5, 2025
Start time (MST): 9:40
Reason: Routine

Station number: AMS 13
Last Cal Date: February 3, 2025
End time (MST): 12:38

Calibration Standards

O3 generation mode: Photometer
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne API T701

Serial Number: 2448
Serial Number: 1118

Analyzer Information

Analyzer make: Teledyne API T400
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 3871

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.001029	1.000886	Backgd or Offset:	2.8	2.8
Calibration intercept:	1.020000	1.220000	Coeff or Slope:	0.982	0.982

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.2	----
As found High point	5000	997.5	400.0	402.6	0.993
As found Mid point					
As found Low point					
Baseline Corr As found:	402.8	Previous response	401.4	*% change	0.3%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.2	----
High point	5000	996.1	400.0	401.1	0.997
Mid point	5000	850.2	200.0	201.8	0.991
Low point	5000	751.7	100.0	102.4	0.977
As left zero	5000	0.0	0.0	0.2	----
As left span	5000	996.1	400.0	401.1	0.997
Average Correction Factor					0.988

Notes: Changed inlet filter after as founds. No adjustment made.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

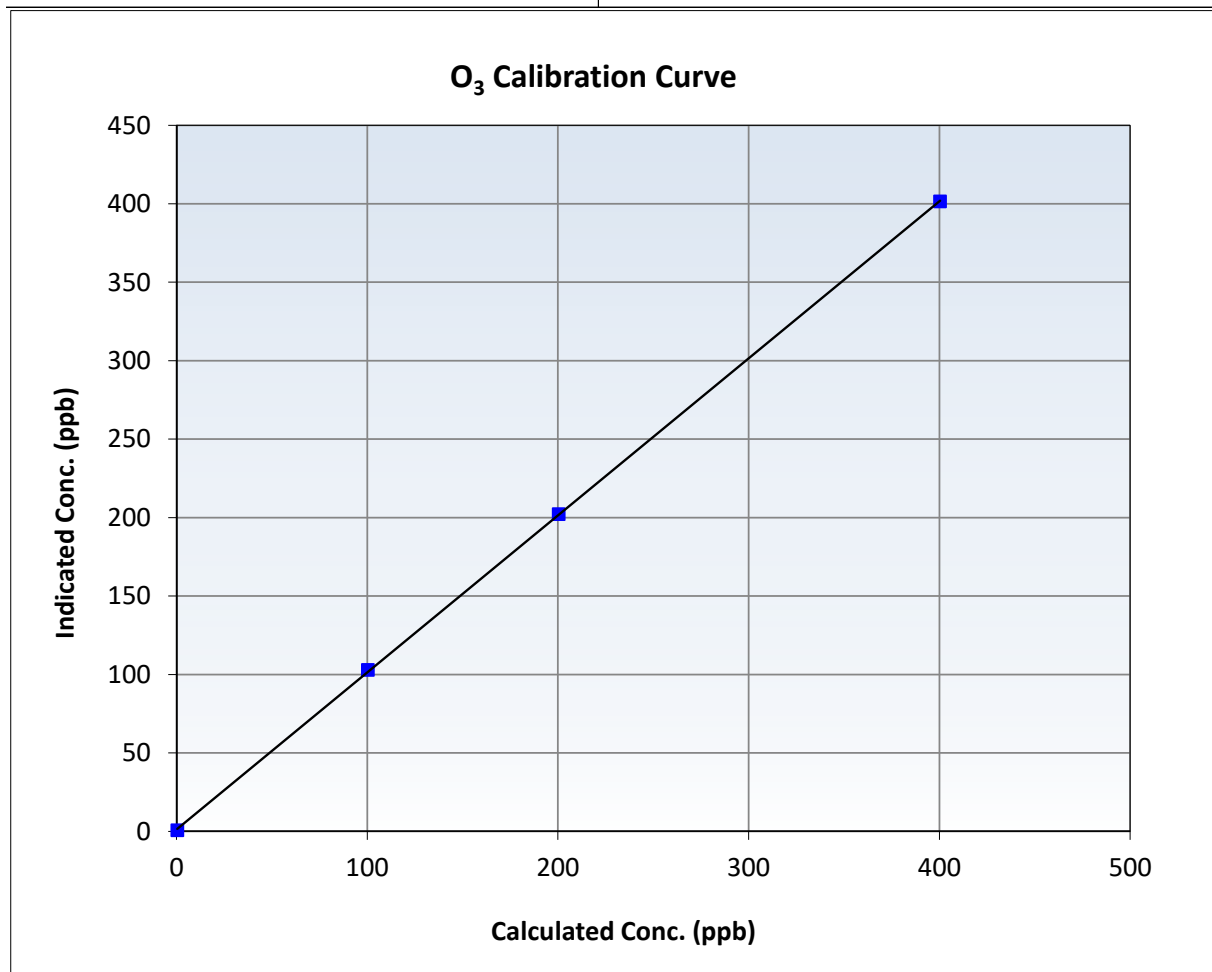
O₃ Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 3, 2025
Station Name:	Fort McKay South	Station Number:	AMS 13
Start Time (MST):	9:40	End Time (MST):	12:38
Analyzer make:	Teledyne API T400	Analyzer serial #:	3871

Calibration Data

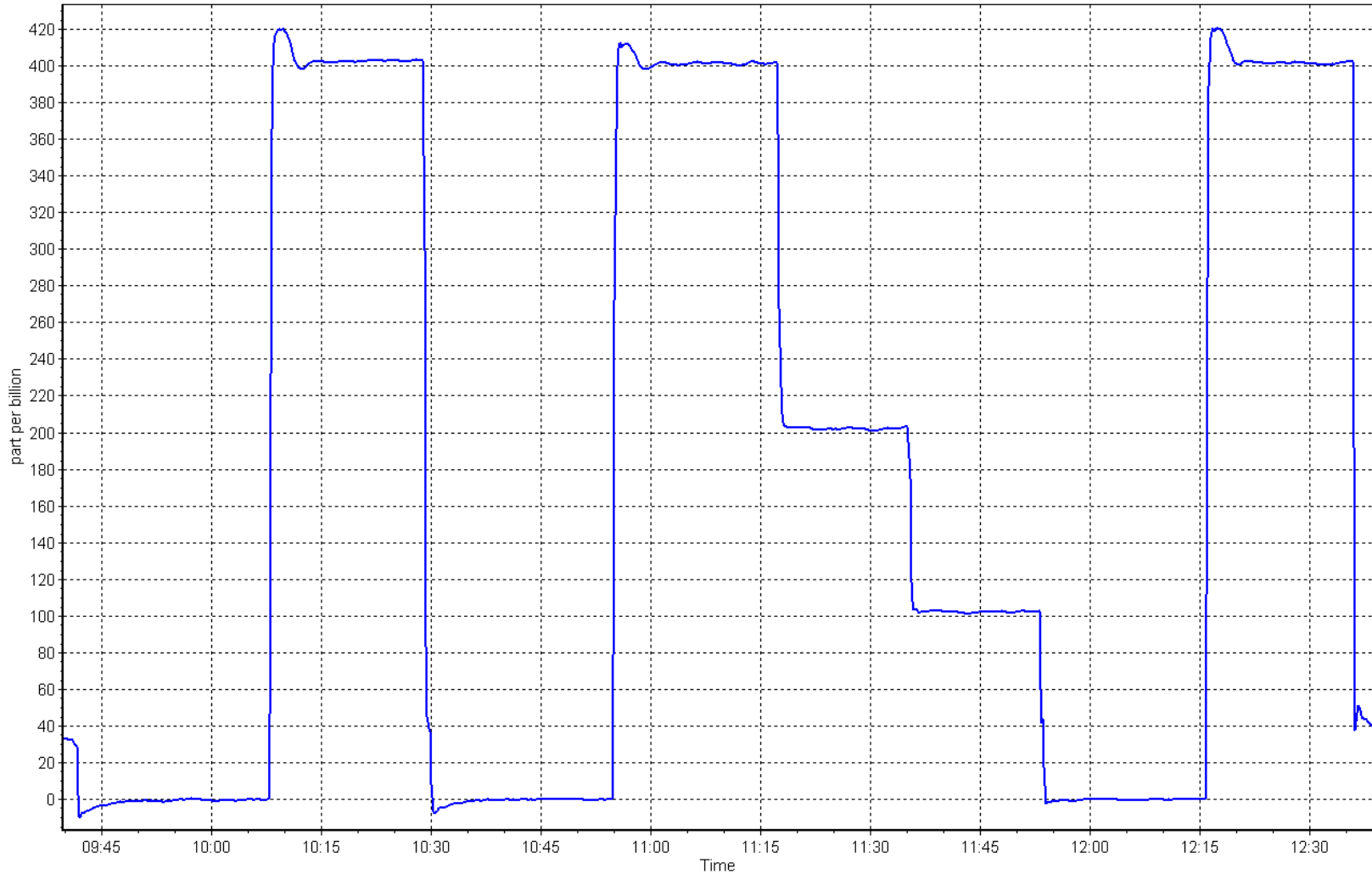
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999970	≥ 0.995
400.0	401.1	0.9973	Slope	1.000886	$0.90 - 1.10$
200.0	201.8	0.9911	Intercept	1.220000	± 5
100.0	102.4	0.9766			



O₃ Calibration Plot

Date: March 5, 2025

Location: Fort McKay South





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Fort McKay South Station number: AMS 13
Calibration Date: March 18, 2025 Last Cal Date: February 26, 2025
Start time (MST): 9:58 End time (MST): 10:16

Analyzer Make: Teledyne API T640 S/N: 1335
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388746
Temp/RH standard: Alicat FP-25BT S/N: 388746

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-7.3	-8.09	-7.3	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	735.6	736.80	735.6	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	5.02	5.05	5.02	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	45	----	45	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: _____	9.5	PM w/ HEPA: _____	0.0	<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: June 10, 2024
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test				<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: January 23, 2025
Date Disposable Filter Changed: January 23, 2025

Post- maintenance Zero Verification: PM w/ HEPA: _____ <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: October 1, 2024
Date RH/T Sensor Cleaned: October 1, 2024

Notes: Leak check passed. No adjustment.

Calibration by: Sean Bala



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

**AMS14
ANZAC
MARCH 2025**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Anzac Station number: AMS 14
Calibration Date: March 5, 2025 Last Cal Date: February 10, 2025
Start time (MST): 11:04 End time (MST): 14:07
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.32 ppm Cal Gas Exp Date: October 9, 2032
Cal Gas Cylinder #: CC462030
Removed Cal Gas Conc: 50.32 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: API T700 Serial Number: 3060
Zero Air Gen Model: API T701H Serial Number: 357

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 0710321322
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.000447	1.004124	Backgd or Offset:	24.4	24.4
Calibration intercept:	-0.899826	-0.860151	Coeff or Slope:	1.074	1.074

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.9	----
As found High point	4941	79.7	798.8	801.1	0.998
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	800.2	Previous response	798.3	*% change	0.2%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	1.0	----
High point	4941	79.7	798.8	802.6	0.995
Mid point	4980	39.9	400.0	398.5	1.004
Low point	4994	19.9	199.7	198.7	1.005
As left zero	5000	0.0	0.0	1.0	----
As left span	4941	79.7	798.8		

Average Correction Factor: 1.001

Notes: Changed sample inlet filter after as founds. No adjustments made.

Calibration Performed By: Mohammed Kashif



Wood Buffalo Environmental Association

SO₂ Calibration Summary

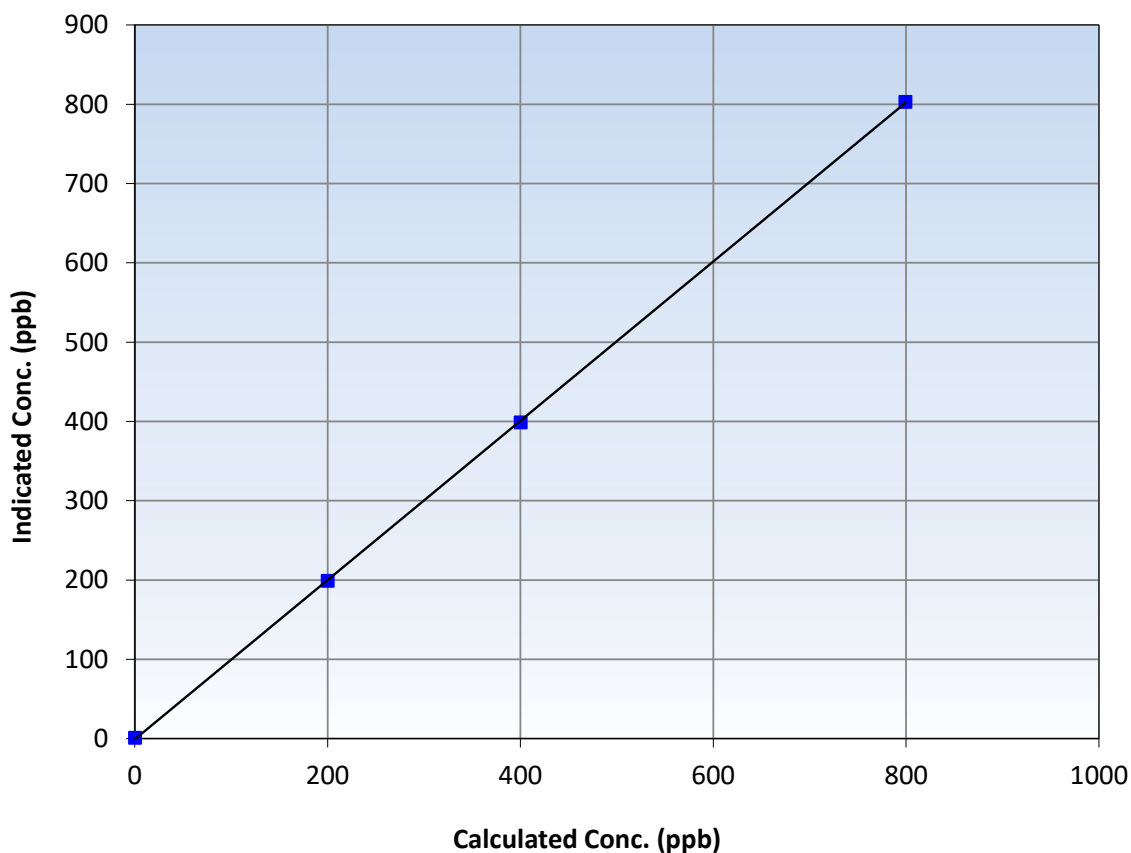
Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 10, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	11:04	End Time (MST):	14:07
Analyzer make:	Thermo 43i	Analyzer serial #:	0710321322

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	1.0	----	Correlation Coefficient	0.999968	≥0.995
798.8	802.6	0.9953	Slope	1.004124	0.90 - 1.10
400.0	398.5	1.0037	Intercept	-0.860151	+/-30
199.7	198.7	1.0051			

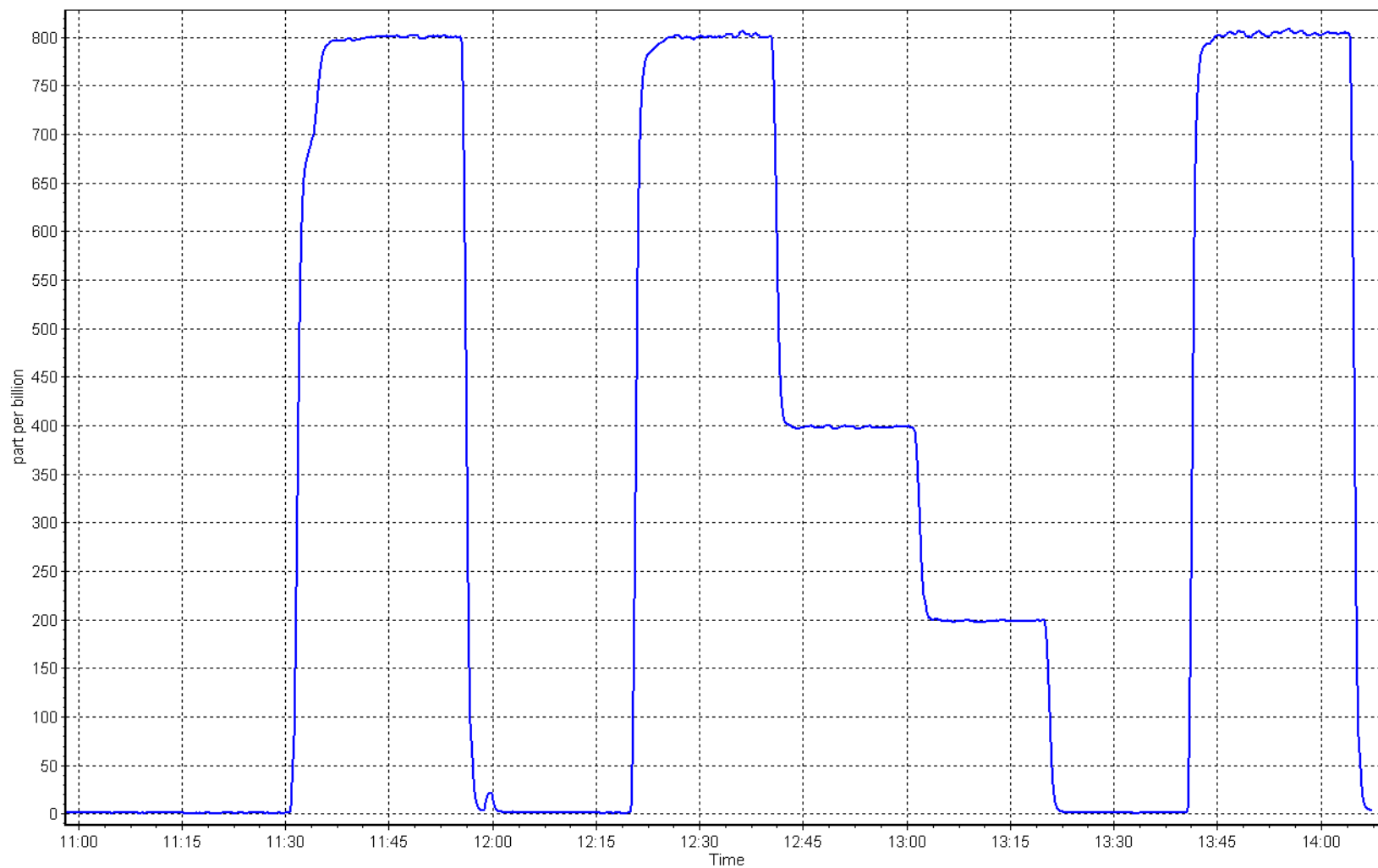
SO₂ Calibration Curve



SO2 Calibration Plot

Date: March 5, 2025

Location: Anzac





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Anzac
Calibration Date: March 11, 2025
Start time (MST): 10:57
Reason: Routine

Station number: AMS 14
Last Cal Date: February 21, 2025
End time (MST): 15:18

Calibration Standards

Cal Gas Concentration: 5.15 ppm
Cal Gas Cylinder #: CC510379
Removed Cal Gas Conc: 5.15 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: API T700
ZAG Make/Model: API 701H

Cal Gas Exp Date: January 3, 2026
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 3060
Serial Number: 357

Analyzer Information

Analyzer make: Thermo 43i-TLE
Converter make: CD Nova CDN-101
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1218153582
Converter serial #: 503
Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	1.019174	0.981575	Backgd or Offset:	2.4
Calibration intercept:	-0.125479	-0.085266	Coeff or Slope:	1.027

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4938	77.9	80.0	78.8	1.014
As found Mid point	4973	38.9	40.0	39.2	1.017
As found Low point	4997	19.5	20.0	19.4	1.027
New cylinder response					
Baseline Corr As found:	78.9	Prev response:	81.39	*% change:	-3.2%
Baseline Corr 2nd AF pt:	39.3	AF Slope:	0.987339	AF Intercept:	-0.225324
Baseline Corr 3rd AF pt:	19.5	AF Correlation:	0.999988	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4938	77.9	80.0	78.4	1.020
Mid point	4973	38.9	40.0	39.2	1.019
Low point	4997	19.5	20.0	19.4	1.032
As left zero	5000	0.0	0.0	0.1	----
As left span	4938	77.9	80.0	77.4	1.033
SO2 Scrubber Check	4936	80.3	800.4	0.1	----
Date of last scrubber change:				Ave Corr Factor	1.024
Date of last converter efficiency test:					

Notes: Changed the sample inlet filter after as founds. Completed a SO2 scrubber check after calibrator zero. No adjustments made.

Calibration Performed By: Mohammed Kashif



Wood Buffalo Environmental Association

TRS Calibration Summary

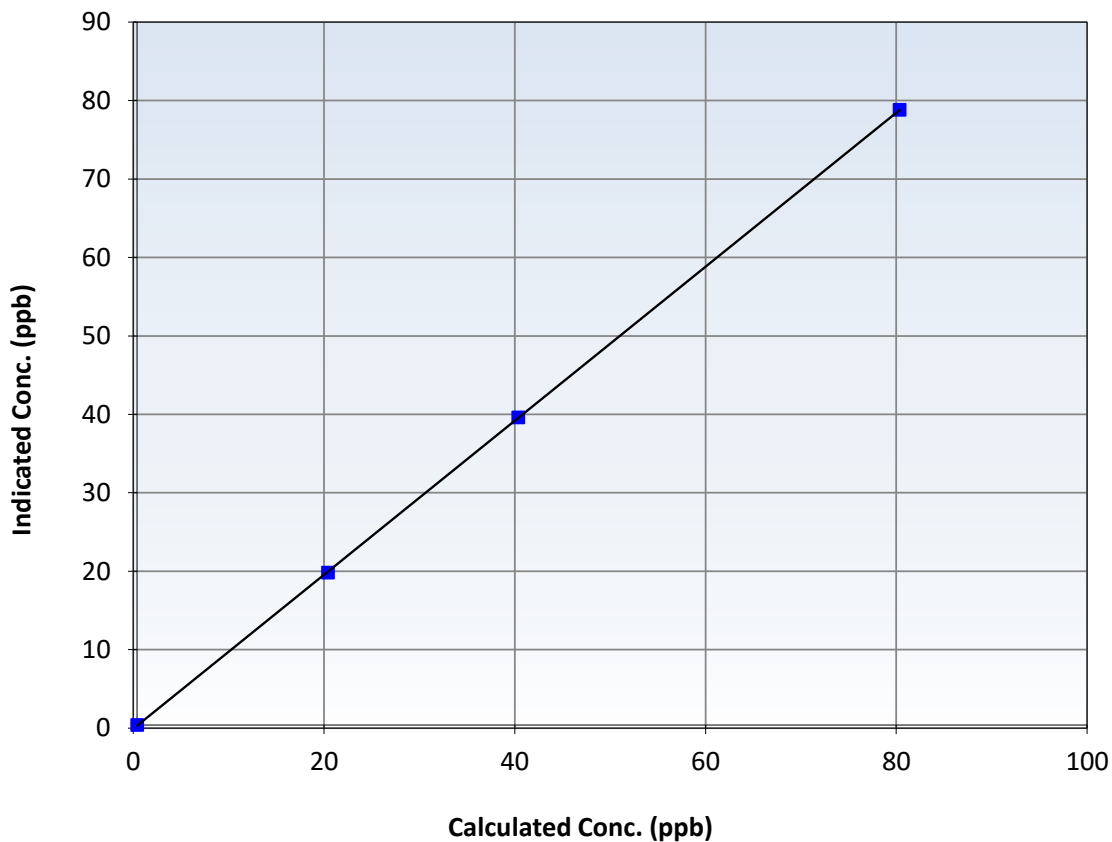
Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 21, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:57	End Time (MST):	15:18
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1218153582

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999989	≥ 0.995
80.0	78.4	1.0198	Slope	0.981575	$0.90 - 1.10$
40.0	39.2	1.0193	Intercept	-0.085266	± 3
20.0	19.4	1.0315			

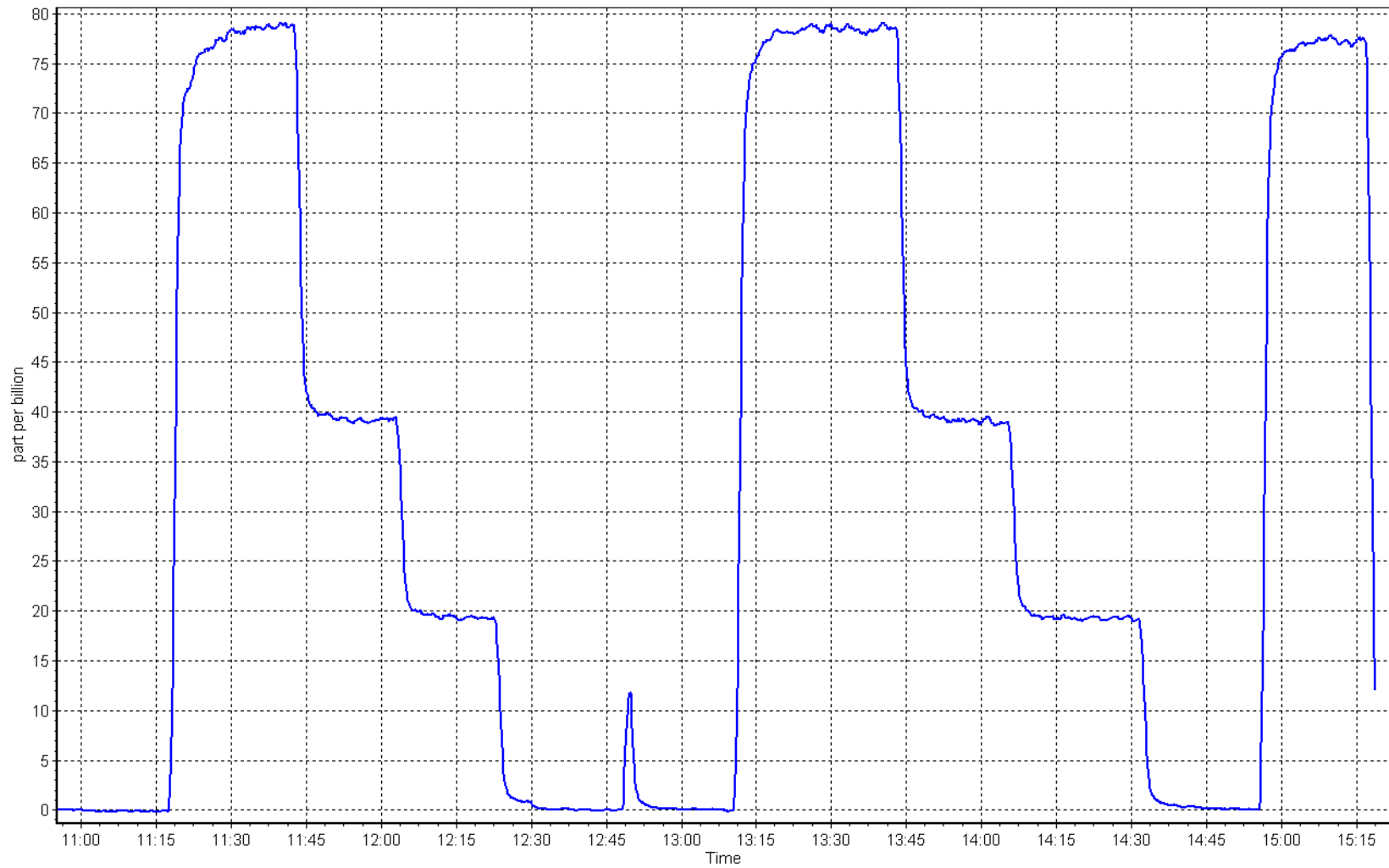
TRS Calibration Curve



TRS Calibration Plot

Date: March 11, 2025

Location: Anzac





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Anzac
 Calibration Date: March 5, 2025
 Start time (MST): 11:04
 Reason: Routine

Station number: AMS 14
 Last Cal Date: February 10, 2025
 End time (MST): 14:07

Calibration Standards

Gas Cert Reference:	CC462030	Cal Gas Expiry Date:	October 9, 2032
CH ₄ Cal Gas Conc.	505.3 ppm	CH ₄ Equiv Conc.	1068.8 ppm
C ₃ H ₈ Cal Gas Conc.	204.9 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH ₄ Conc.	505.3 ppm	CH ₄ Equiv Conc.	1068.8 ppm
Removed C ₃ H ₈ Conc.	204.9 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	API T700	Serial Number:	3060
Zero Air Gen model:	API 701H	Serial Number:	357

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1331259521
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	2.92E-04	2.92E-04	NMHC SP Ratio:	5.51E-05
CH ₄ Retention time:	14.9	14.9	NMHC Peak Area:	162132
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4941	79.7	16.97	16.94	1.001
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.94	Prev response	16.89	*% change	0.3%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4941	79.7	16.97	16.91	1.003
Mid point	4980	39.9	8.50	8.29	1.025
Low point	4994	19.9	4.24	4.09	1.038
As left zero	5000	0.0	0.00	0.00	----
As left span	4941	79.7	16.97		

Average Correction Factor 1.022

Notes: Changed sample inlet filter after as founds. No adjustments made.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4941	79.7	8.94	8.85	1.010
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.85	Prev response	8.90	*% change	-0.6%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4941	79.7	8.94	8.84	1.012
Mid point	4980	39.9	4.48	4.35	1.031
Low point	4994	19.9	2.24	2.15	1.042
As left zero	5000	0.0	0.00	0.00	----
As left span	4941	79.7	8.94		

Average Correction Factor 1.028

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4941	79.7	8.02	8.09	0.992
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.09	Prev response	7.98	*% change	1.3%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4941	79.7	8.02	8.08	0.993
Mid point	4980	39.9	4.02	3.94	1.019
Low point	4994	19.9	2.01	1.94	1.033
As left zero	5000	0.0	0.00	0.00	----
As left span	4941	79.7	8.02		

Average Correction Factor 1.015

Calibration Statistics

	Start	Finish
THC Cal Slope:	0.999889	0.998574
THC Cal Offset:	-0.076918	-0.092906
CH ₄ Cal Slope:	1.000872	1.008920
CH ₄ Cal Offset:	-0.044586	-0.051592
NMHC Cal Slope:	0.998866	0.989475
NMHC Cal Offset:	-0.032532	-0.041514

Calibration Performed By: Mohammed Kashif



Wood Buffalo Environmental Association

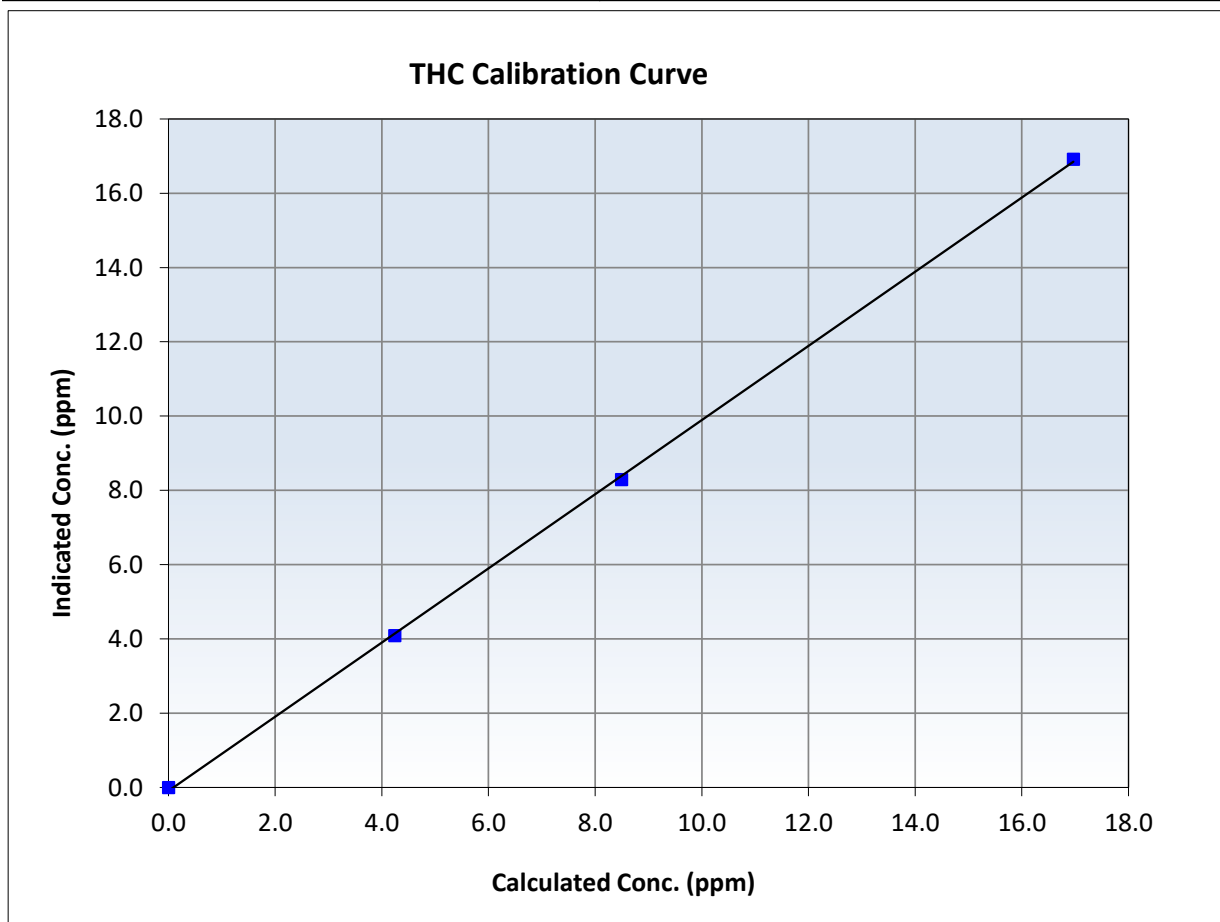
THC Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 10, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	11:04	End Time (MST):	14:07
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259521

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999832	≥ 0.995
16.97	16.91	1.0031	Slope	0.998574	$0.90 - 1.10$
8.50	8.29	1.0250	Intercept	-0.092906	± 0.5
4.24	4.09	1.0379			





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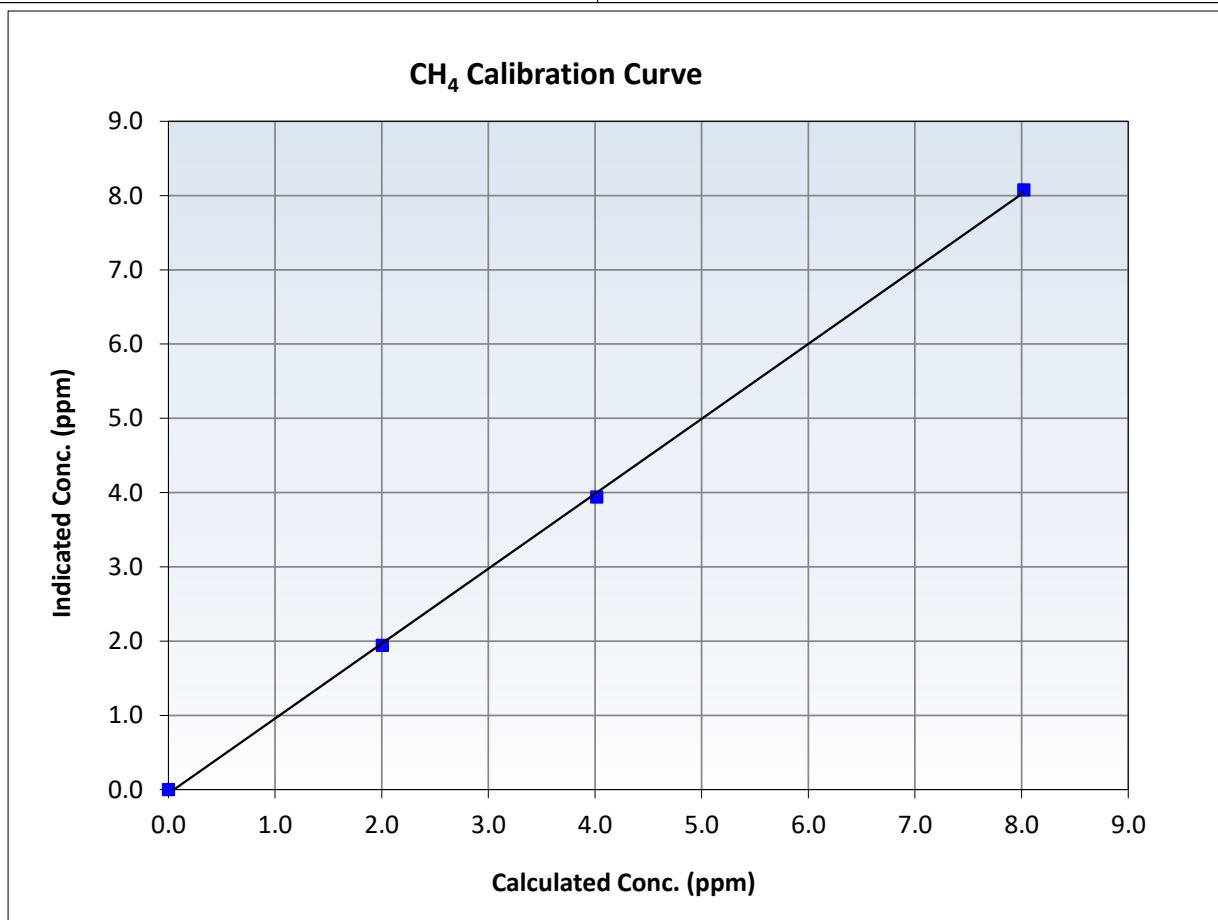
CH₄ Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 10, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	11:04	End Time (MST):	14:07
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259521

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999768	<i>≥0.995</i>
8.02	8.08	0.9930	Slope	1.008920	<i>0.90 - 1.10</i>
4.02	3.94	1.0189	Intercept	-0.051592	<i>+/-0.5</i>
2.01	1.94	1.0327			





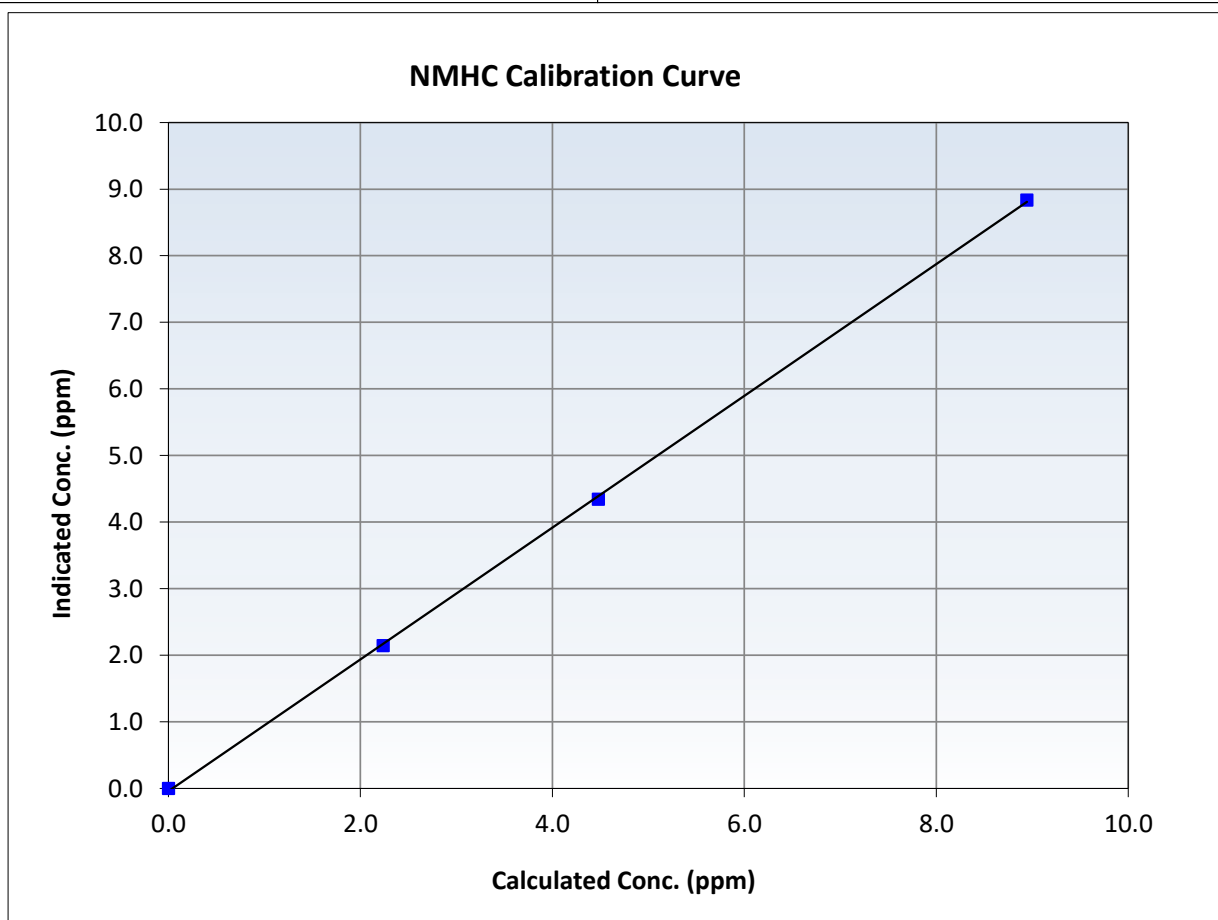
Wood Buffalo Environmental Association NMHC Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 10, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	11:04	End Time (MST):	14:07
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259521

Calibration Data

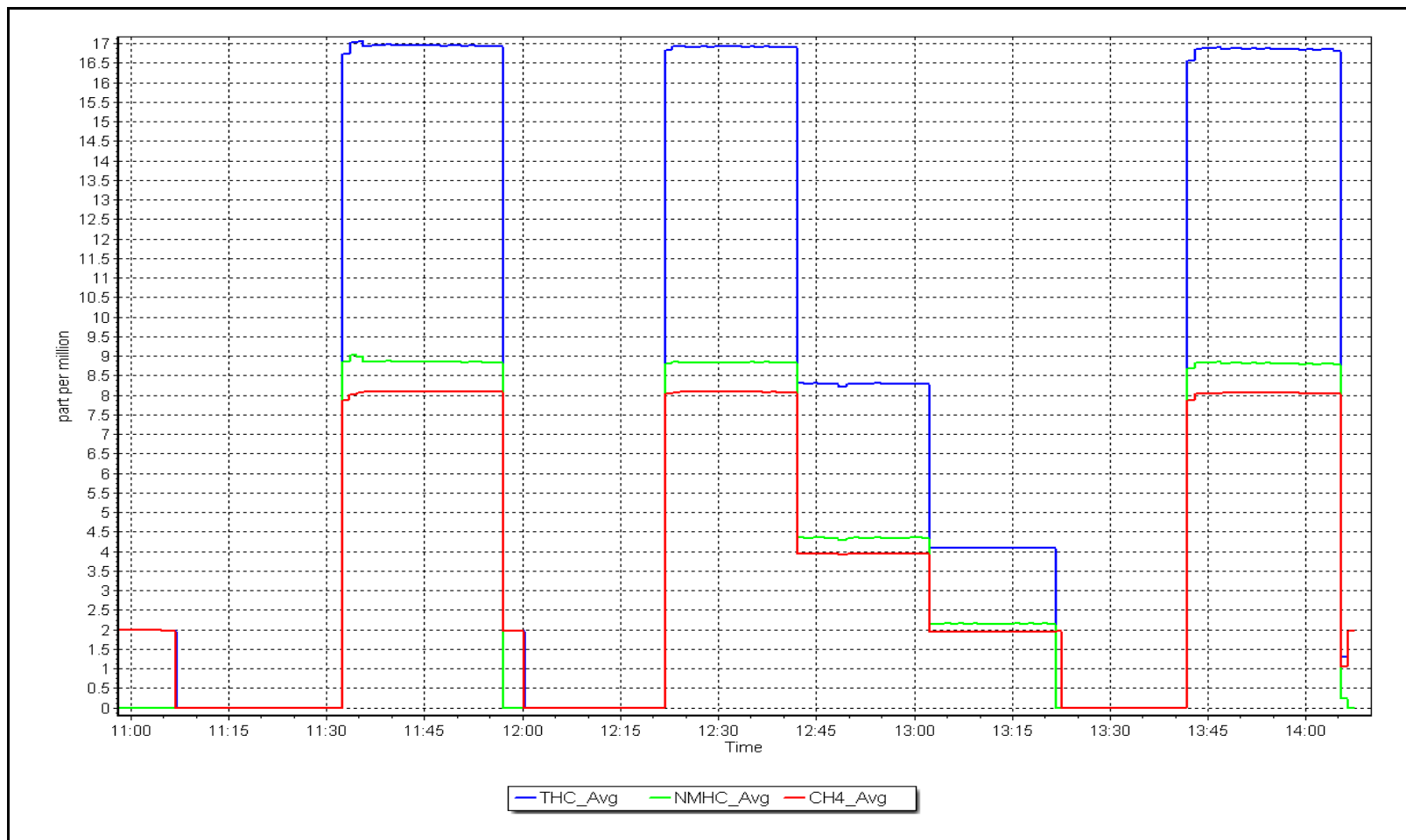
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999878	<i>≥0.995</i>
8.94	8.84	1.0121	Slope	0.989475	<i>0.90 - 1.10</i>
4.48	4.35	1.0308	Intercept	-0.041514	<i>+/-0.5</i>
2.24	2.15	1.0421			



NMHC Calibration Plot

Date: March 5, 2025

Location: Anzac





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Anzac
Calibration Date: March 14, 2025
Start time (MST): 11:08
Reason: Cylinder Change

Station number: AMS 14
Last Cal Date: March 5, 2025
End time (MST): 13:04

Calibration Standards

Gas Cert Reference:	CC462030	Cal Gas Expiry Date:	October 9, 2032
CH ₄ Cal Gas Conc.	505.3 ppm	CH ₄ Equiv Conc.	1068.8 ppm
C ₃ H ₈ Cal Gas Conc.	204.9 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH ₄ Conc.	505.3 ppm	CH ₄ Equiv Conc.	1068.8 ppm
Removed C ₃ H ₈ Conc.	204.9 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	API T700	Serial Number:	3060
Zero Air Gen model:	API 701H	Serial Number:	357

Analyzer Information

Analyzer make: Thermo 55i
THC Range: 0 - 20 ppm

Analyzer serial #: 1331259521
NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	2.92E-04	2.92E-04	NMHC SP Ratio:	5.51E-05
CH ₄ Retention time:	14.9	14.9	NMHC Peak Area:	162132
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4941	79.7	16.97	16.99	0.998
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.99	Prev response	16.85	*% change	0.9%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4941	79.7	16.97	17.16	0.989
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 0.989

Notes:

Changed H2 cylinder.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4941	79.7	8.94	8.87	1.009
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.87	Prev response	8.81	*% change	0.7%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4941	79.7	8.94	8.90	1.005
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 1.005

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4941	79.7	8.02	8.12	0.988
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.12	Prev response	8.04	*% change	1.0%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4941	79.7	8.02	8.26	0.971
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor 0.971

Calibration Statistics

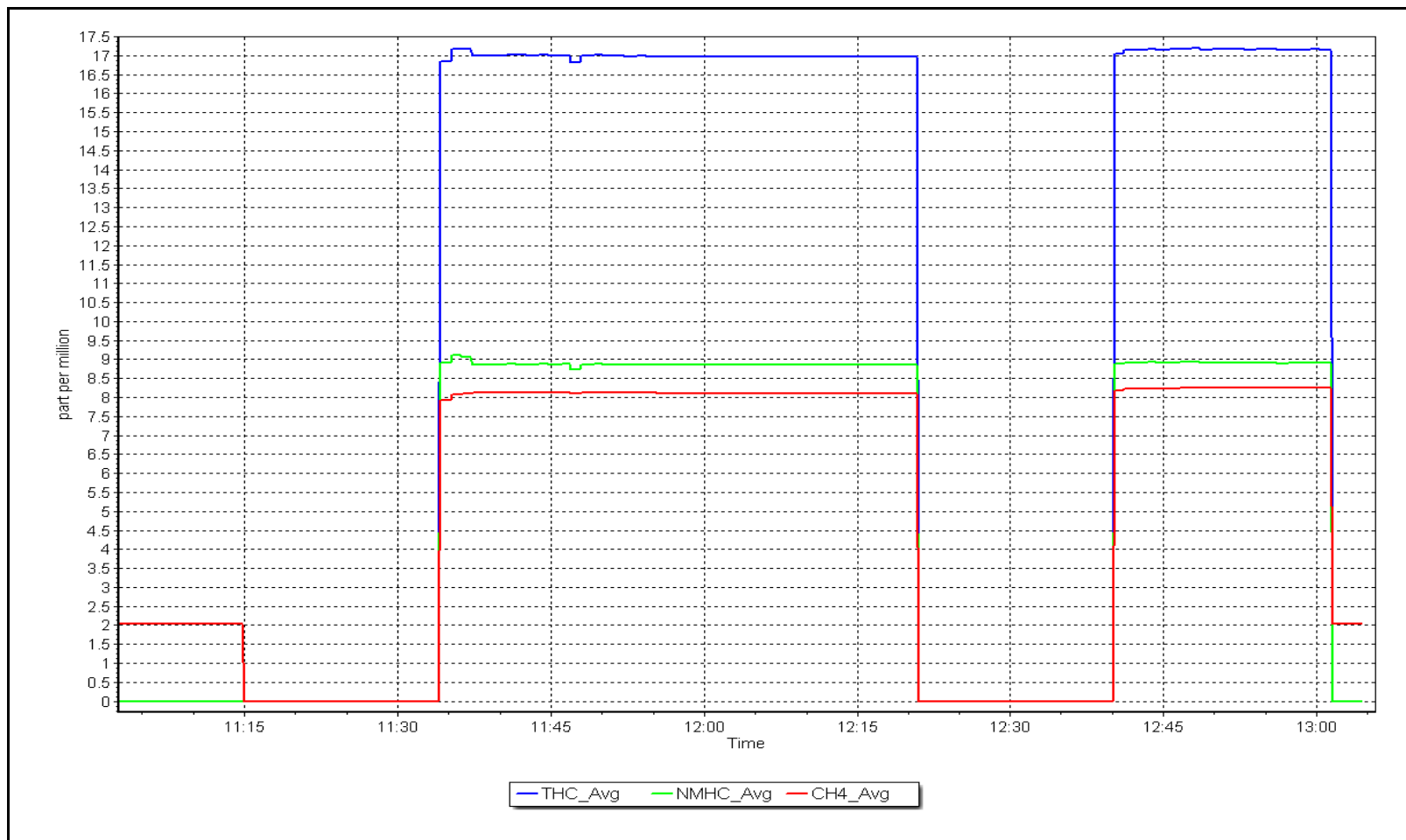
	Start	Finish
THC Cal Slope:	0.998574	NA
THC Cal Offset:	-0.092906	NA
CH ₄ Cal Slope:	1.008920	NA
CH ₄ Cal Offset:	-0.051592	NA
NMHC Cal Slope:	0.989475	NA
NMHC Cal Offset:	-0.041514	NA

Calibration Performed By: Mohammed Kashif

NMHC Calibration Plot

Date: March 14, 2025

Location: Anzac





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Anzac
Station number: AMS 14
Calibration Date: March 6, 2025
Last Cal Date: February 6, 2025
Start time (MST): 10:48
End time (MST): 15:35
Reason: Routine

Calibration Standards

NO Gas Cylinder #: DT0037092
NOX Cal Gas Conc: 60.7 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 60.70 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T700H
Cal Gas Expiry Date: May 16, 2031
NO Cal Gas Conc: 60.40 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 60.40 ppm
NO gas Diff:
Serial Number: 3060
Serial Number: 357

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	----	----
AF High point	4934	66.3	804.8	800.9	4.0	803.2	799.9	3.3	1.0019	1.0009
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO _x = 807.7 ppb	NO = 805.2 ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = -0.6%
Baseline Corr 1st pt	NO _x = 803.3 ppb	NO = 800.1 ppb	<u>As Found Statistics</u>		*Percent Change	NO = -0.6%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found	NO _x r ² :	Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found	NO r ² :	NO SI:	NO Int:
			As found	NO ₂ r ² :	NO2 SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1152430008

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.424	1.424	NO bkgnd or offset:	3.9	3.9
NOX coeff or slope:	0.996	0.996	NOX bkgnd or offset:	3.9	3.9
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	158.8	156.9

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.004986	0.995143
NO _x Cal Offset:	-1.111022	-0.470500
NO Cal Slope:	1.007964	0.999427
NO Cal Offset:	-2.030657	-1.989787
NO ₂ Cal Slope:	0.992318	0.994537
NO ₂ Cal Offset:	-1.158689	-1.309208

Dilution Calibration Data

Set Point	Dilution flow rate (scm)	Source gas flow rate (scm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	0.1	----	----
High point	4934	66.3	804.8	800.9	4.0	800.7	799.3	1.5	1.0052	1.0019
Mid point	4985	33.2	401.6	399.6	2.0	399.0	396.7	2.4	1.0065	1.0073
Low point	5004	16.7	201.9	200.9	1.0	199.8	196.6	3.2	1.0105	1.0219
As left zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	0.1	----	----
As left span	4934	66.3	804.8	416.0	388.8	798.4	416.0	382.4	1.0081	1.0000
Average Correction Factor									1.0074	1.0104

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.1	----	----
High GPT point	796.8	413.7	387.1	384.3	1.0072	99.3%
Mid GPT point	796.8	609.1	191.7	188.8	1.0152	98.5%
Low GPT point	796.8	702.9	97.9	94.5	1.0357	96.5%
Average Correction Factor					1.0194	98.1%

Notes:

Sample inlet filter changed after as founds. No adjustments made.

Calibration Performed By:

Mohammed Kashif



Wood Buffalo Environmental Association

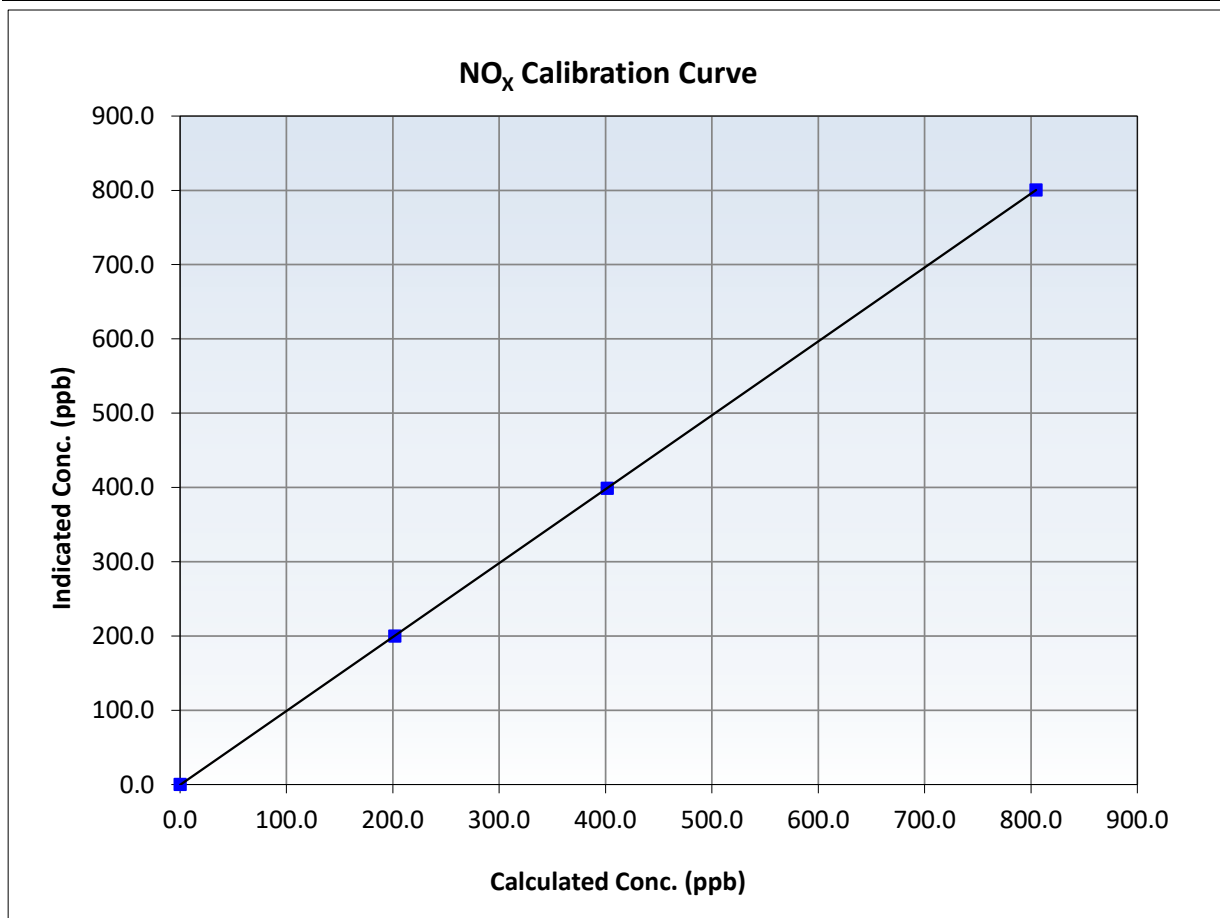
NO_x Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 6, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:48	End Time (MST):	15:35
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430008

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999998	≥0.995
804.8	800.7	1.0052	Slope	0.995143	0.90 - 1.10
401.6	399.0	1.0065	Intercept	-0.470500	+/-20
201.9	199.8	1.0105			





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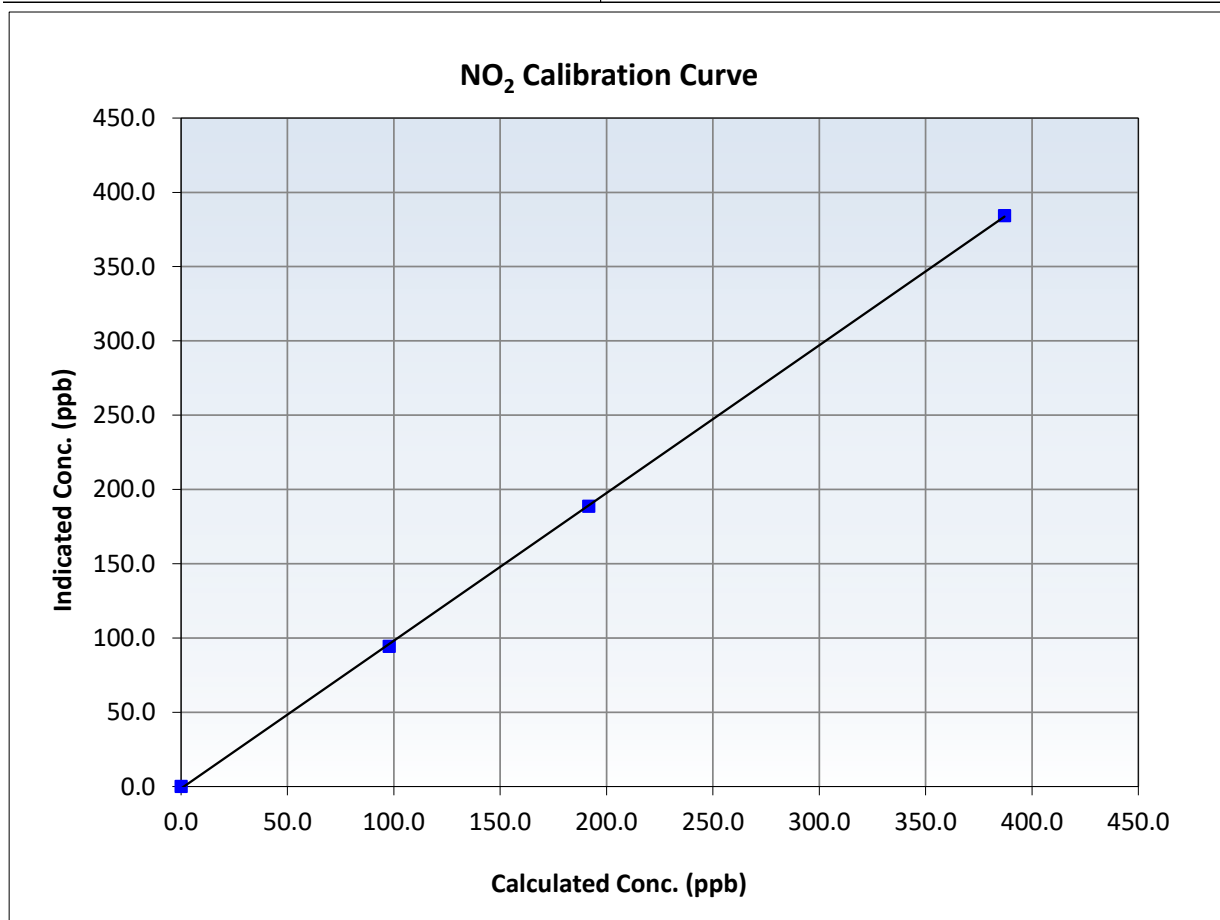
NO₂ Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 6, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:48	End Time (MST):	15:35
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430008

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999938	≥0.995
387.1	384.3	1.0072	Slope	0.994537	0.90 - 1.10
191.7	188.8	1.0152	Intercept	-1.309208	+/-20
97.9	94.5	1.0357			





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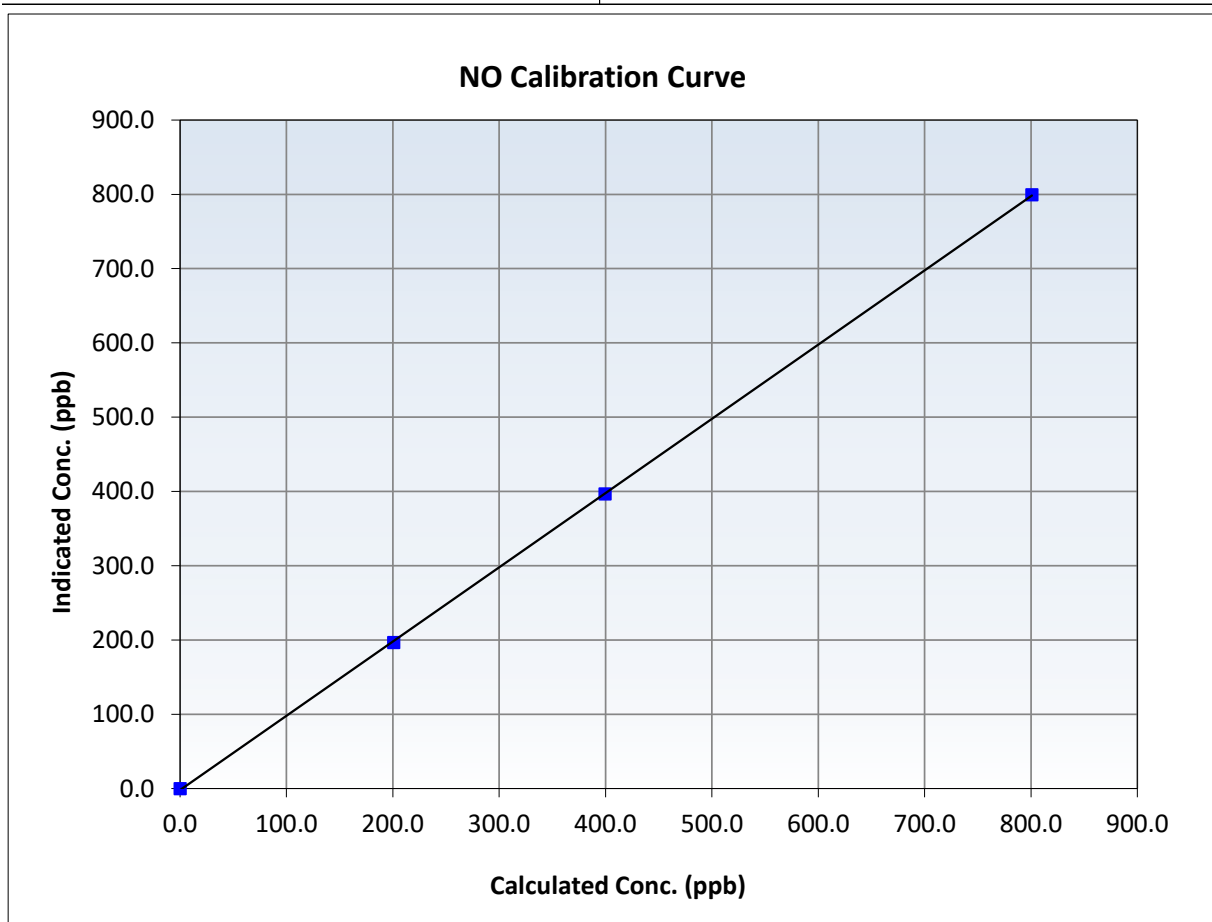
NO Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 6, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:48	End Time (MST):	15:35
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430008

Calibration Data

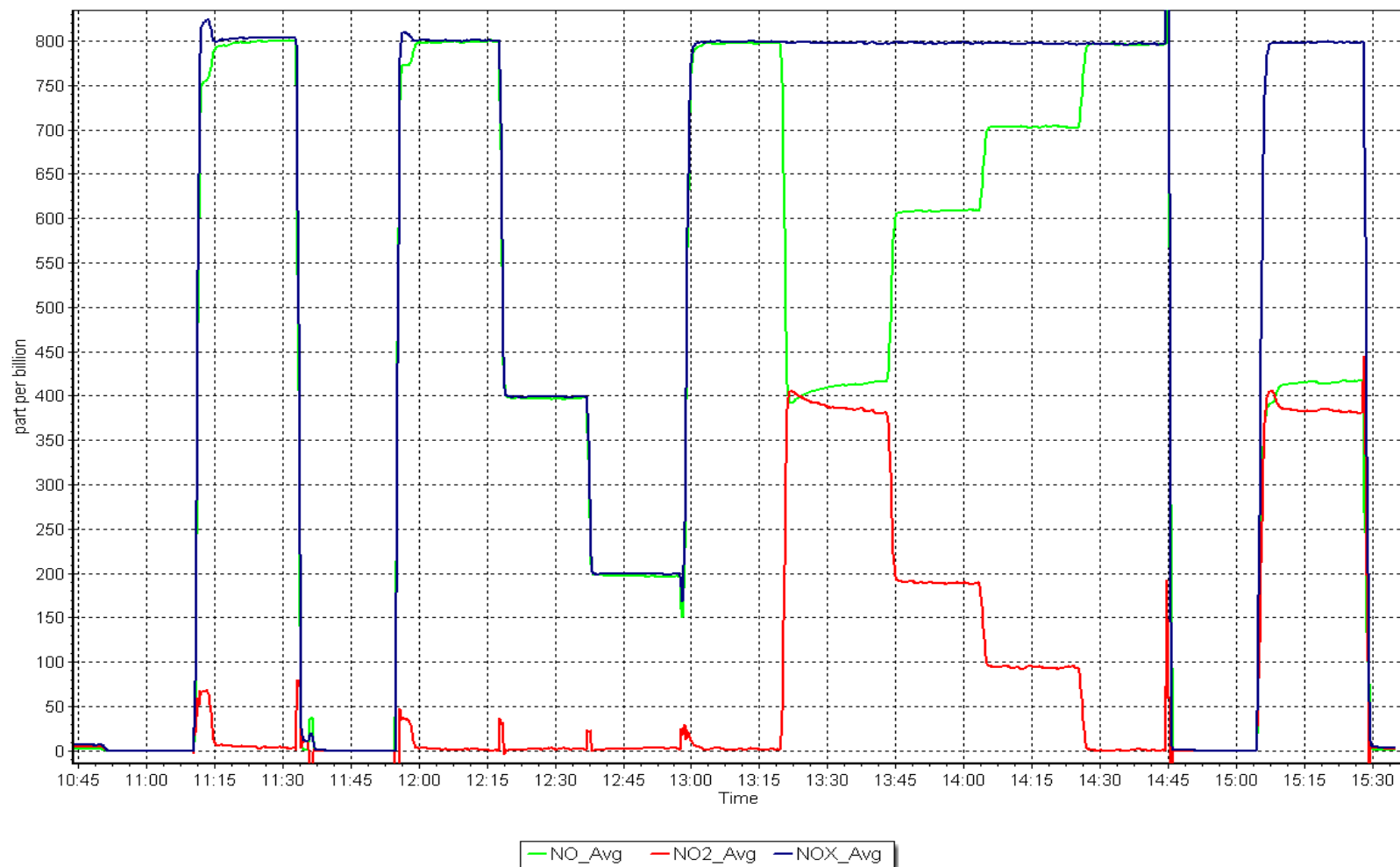
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999971	≥ 0.995
800.9	799.3	1.0019	Slope	0.999427	$0.90 - 1.10$
399.6	396.7	1.0073	Intercept	-1.989787	± 20
200.9	196.6	1.0219			



NO_x Calibration Plot

Date: March 6, 2025

Location: Anzac





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Anzac
Calibration Date: March 4, 2025
Start time (MST): 10:57
Reason: Routine

Station number: AMS 14
Last Cal Date: February 5, 2025
End time (MST): 13:48

Calibration Standards

O₃ generation mode: Photometer
Calibrator Make/Model: API T700
ZAG Make/Model: API 701H

Serial Number: 3060
Serial Number: 357

Analyzer Information

Analyzer make: Thermo 49i
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 1426262595

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.000800	0.991800	Backgd or Offset:	1.6	1.5
Calibration intercept:	-0.840000	0.060000	Coeff or Slope:	1.668	1.668

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.9	----
As found High point	5000	935.9	400.0	395.9	1.013
As found Mid point					
As found Low point					
Baseline Corr As found:	395.0	Previous response	399.5	*% change	-1.1%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.6	----
High point	5000	935.9	400.0	396.9	1.008
Mid point	5000	817.5	200.0	198.6	1.007
Low point	5000	722.8	100.0	98.4	1.016
As left zero	5000	0.0	0.0	0.4	----
As left span	5000	935.9	400.0	400.4	0.999
Average Correction Factor					1.010

Notes: Sample inlet filter changed after asfound. No adjustment made.

Calibration Performed By: Mohammed Kashif



Wood Buffalo Environmental Association

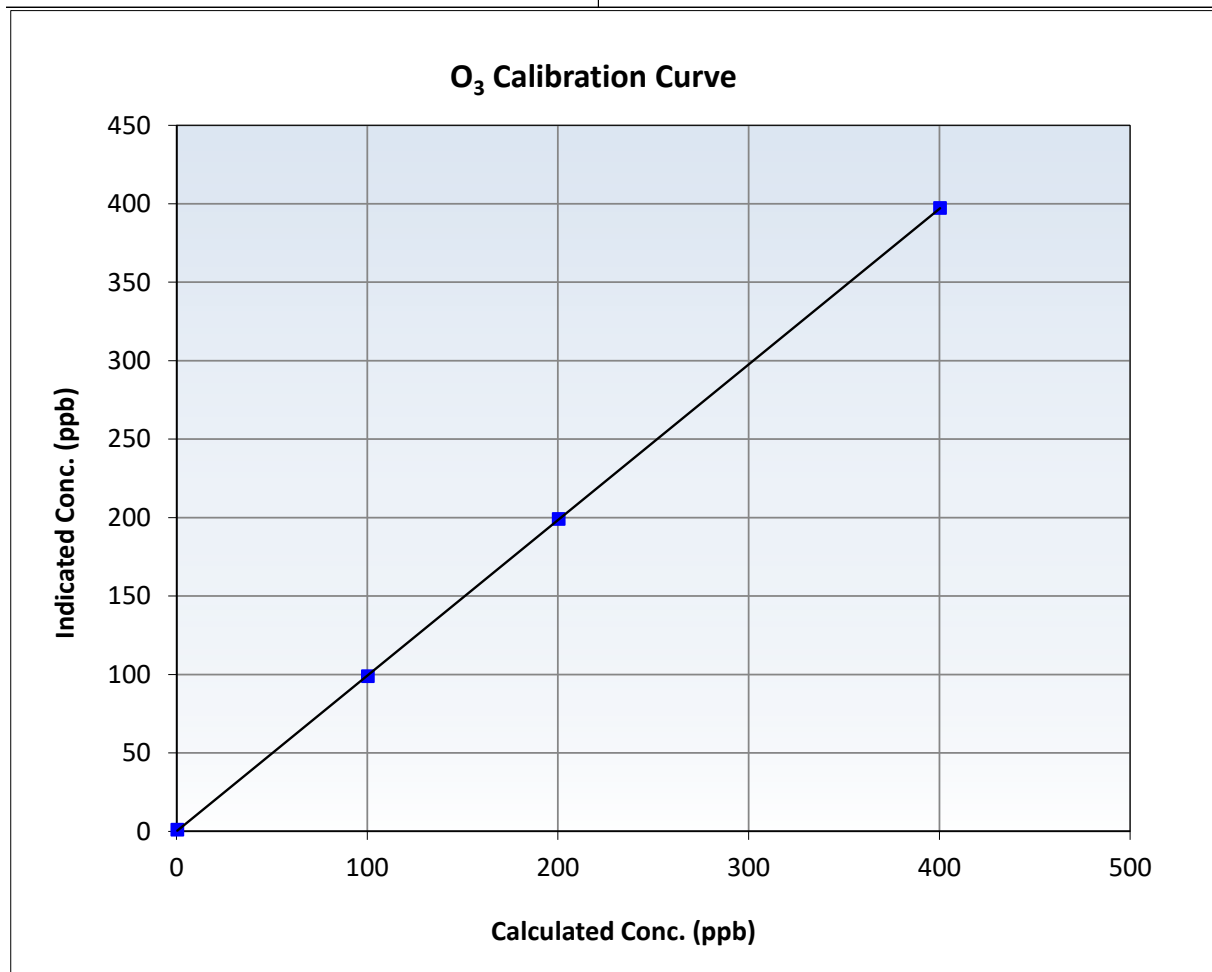
O₃ Calibration Summary

Station Information

Calibration Date:	March 4, 2025	Previous Calibration:	February 5, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:57	End Time (MST):	13:48
Analyzer make:	Thermo 49i	Analyzer serial #:	1426262595

Calibration Data

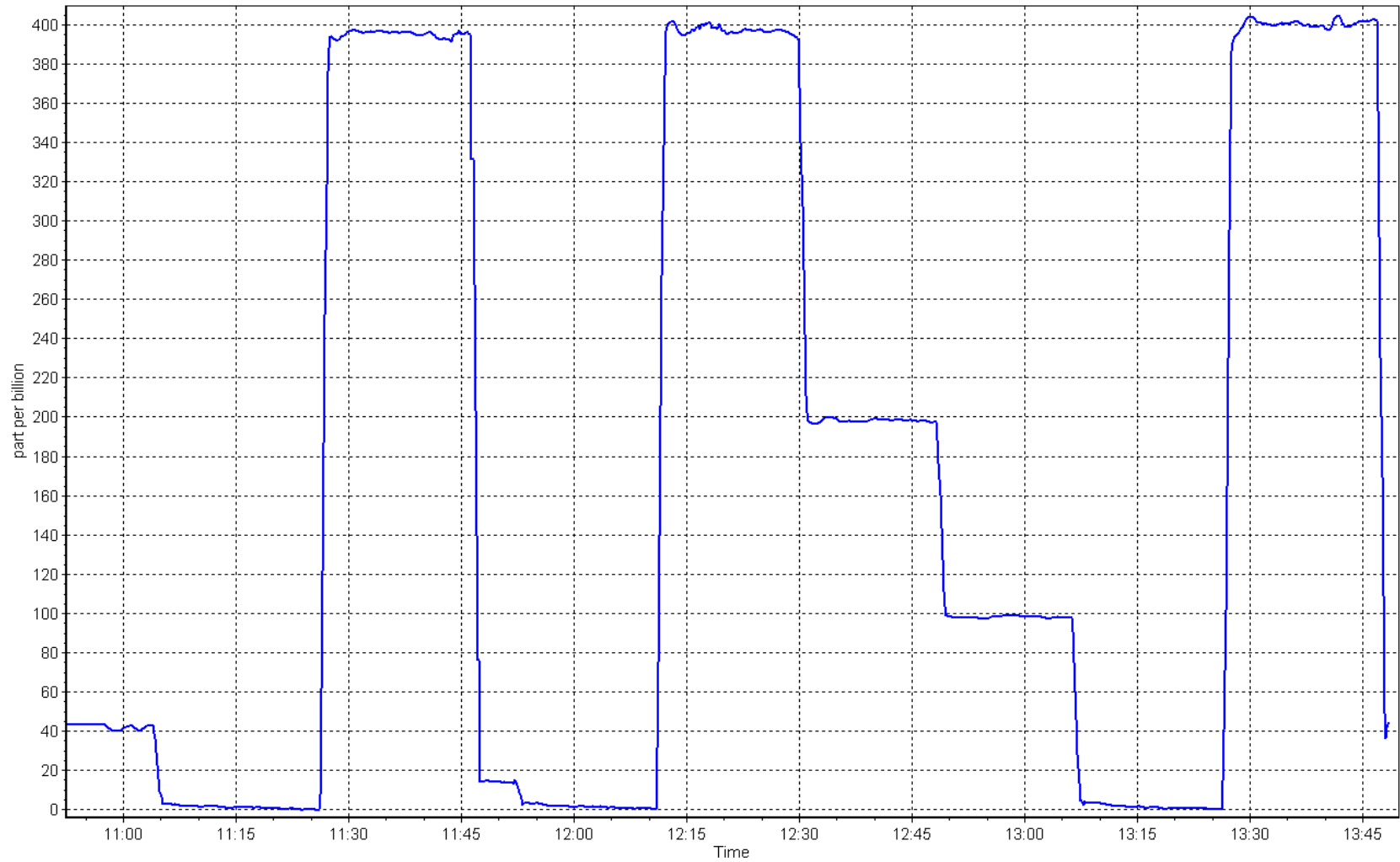
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.6	----	Correlation Coefficient	0.999988	≥0.995
400.0	396.9	1.0078	Slope	0.991800	0.90 - 1.10
200.0	198.6	1.0070	Intercept	0.060000	+/- 5
100.0	98.4	1.0163			



O₃ Calibration Plot

Date: March 4, 2025

Location: Anzac





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Anzac
Calibration Date: March 14, 2025
Start time (MST): 13:12
Station number: AMS 14
Last Cal Date: February 21, 2025
End time (MST): 13:28
Analyzer Make: AP T640
S/N: 825
Particulate Fraction: PM2.5
Flow Meter Make/Model: Alicat FP-25BT
S/N: 388749
Temp/RH standard: Alicat FP-25BT
S/N: 388749

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-11.4	-12.55	-11.4	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	708.9	710.17	708.9	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	4.990	4.955	4.990	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	40	-----	40	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 2.5		PM w/ HEPA: 0.0		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: Expiry Date:
Lot No.:

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test				<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: January 30, 2025
Date Disposable Filter Changed: January 30, 2025

Post- maintenance Zero Verification: PM w/ HEPA: <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: August 29, 2024
Date RH/T Sensor Cleaned: August 29, 2024

Notes: No adjustments made. Leak check passed. Head cleaned

Calibration by: Mohammed Kashif



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS17
WAPASU
MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Wapasu
Calibration Date: March 4, 2025
Start time (MST): 11:31
Reason: Routine

Station number: AMS17
Last Cal Date: February 3, 2025
End time (MST): 15:05

Calibration Standards

Cal Gas Concentration: 50.38 ppm
Cal Gas Cylinder #: ALM066507
Removed Cal Gas Conc: 50.38 ppm
Removed Gas Cyl #: N/A
Calibrator Model: Teledyne API T700
Zero Air Gen Model: Teledyne API 701H

Cal Gas Exp Date: January 12, 2029
Rem Gas Exp Date: N/A
Diff between cyl:
Serial Number: 2449
Serial Number: 1238

Analyzer Information

Analyzer make: Thermo 43i
Analyzer Range: 0 - 1000 ppb

Serial Number: 1218153459

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999996	0.994240	Backgd or Offset:	14.0	14.0
Calibration intercept:	-2.179746	-1.540718	Coeff or Slope:	1.109	1.109

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4921	79.4	800.0	795.3	1.006
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	795.2	Previous response	797.8	*% change	-0.3%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.5	----
High point	4921	79.4	800.0	795.3	1.006
Mid point	4960	39.7	400.0	393.8	1.016
Low point	4980	19.8	199.5	195.7	1.019
As left zero	5000	0.0	0.0	0.3	----
As left span	4920	79.4	800.1	799.4	1.001
Average Correction Factor:					1.014

Notes: No adjustments needed.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

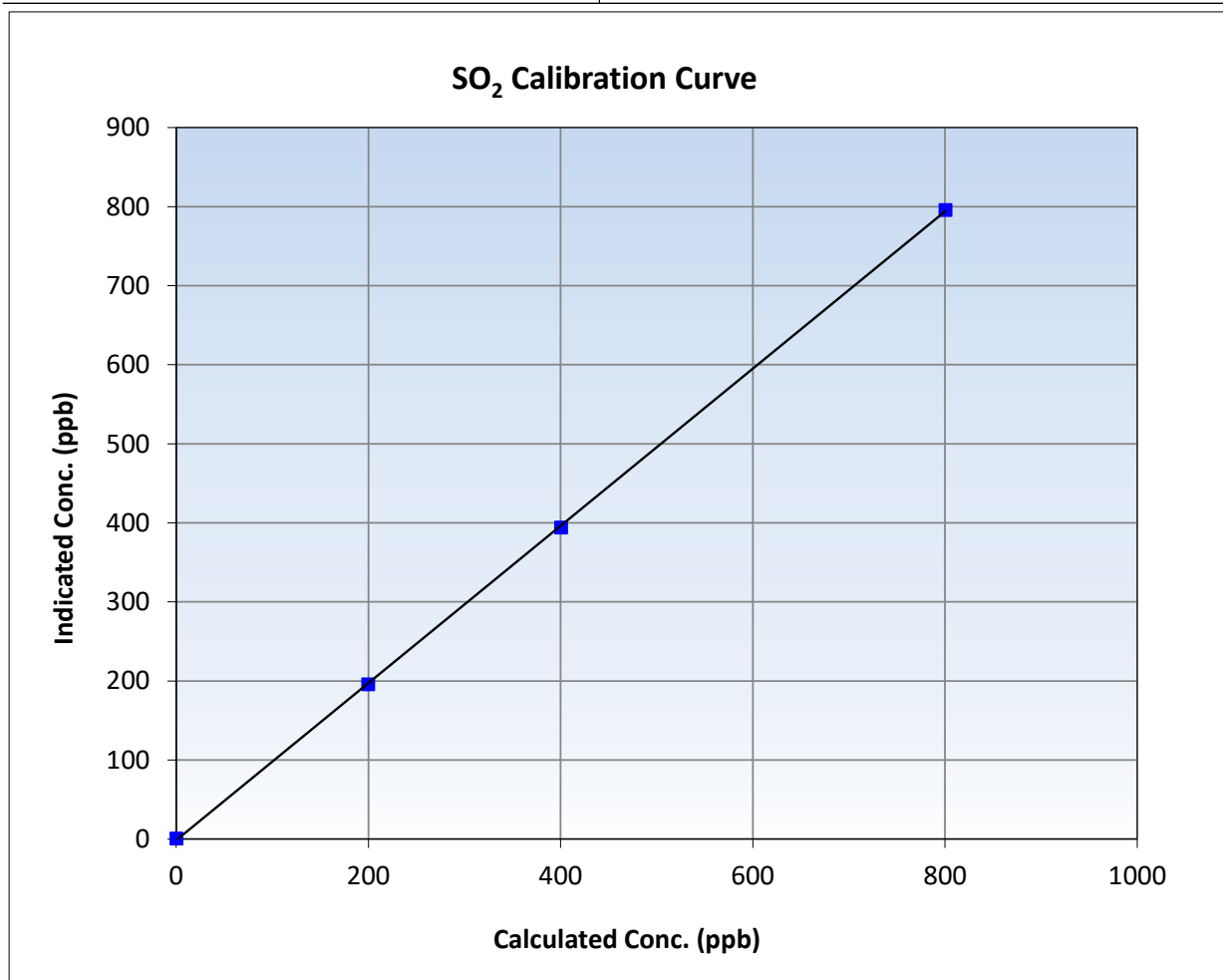
SO₂ Calibration Summary

Station Information

Calibration Date:	March 4, 2025	Previous Calibration:	February 3, 2025
Station Name:	Wapasu	Station Number:	AMS17
Start Time (MST):	11:31	End Time (MST):	15:05
Analyzer make:	Thermo 43i	Analyzer serial #:	1218153459

Calibration Data

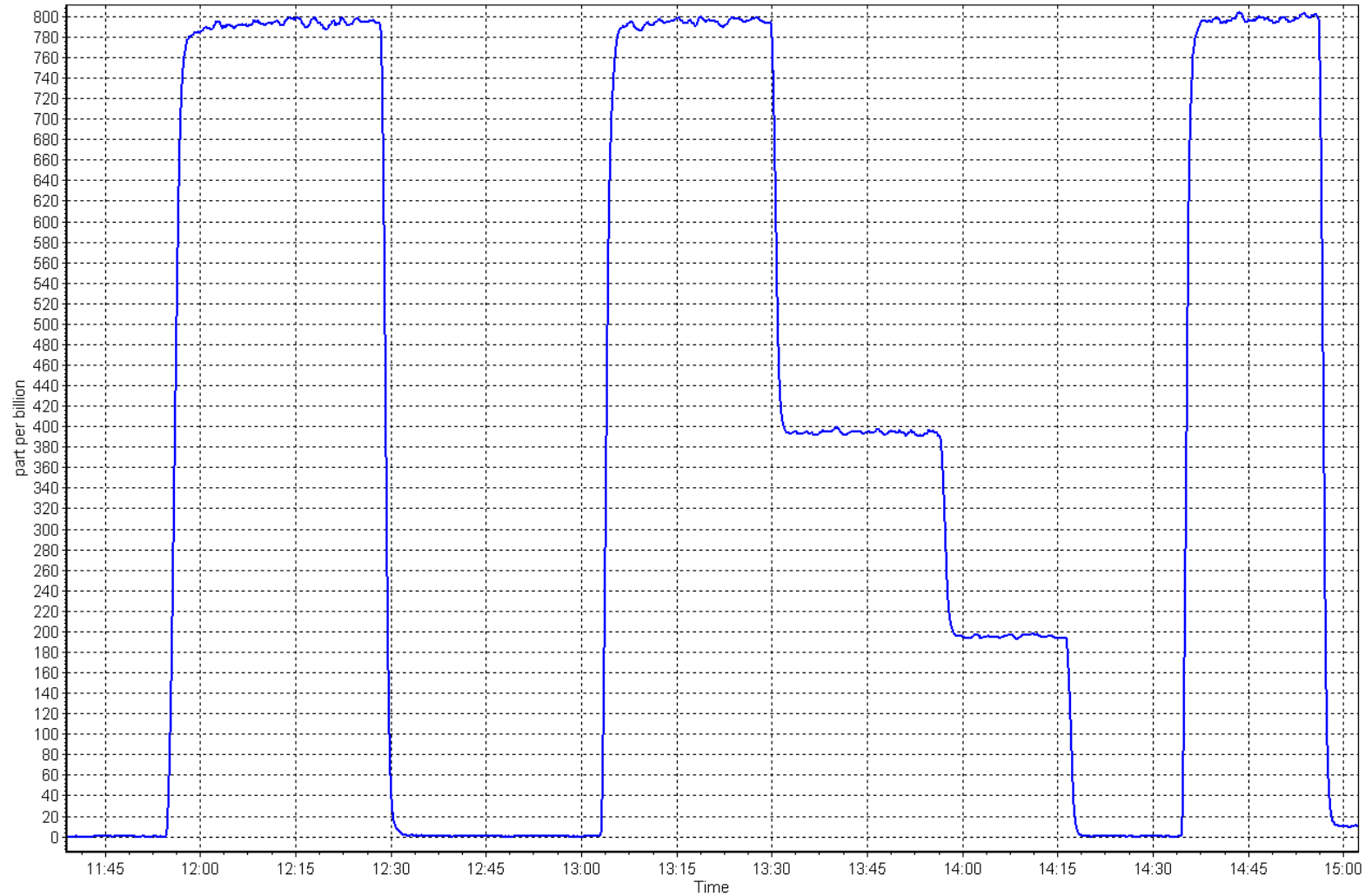
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.5	----	Correlation Coefficient	0.999961	≥0.995
800.0	795.3	1.0059	Slope	0.994240	0.90 - 1.10
400.0	393.8	1.0158	Intercept	-1.540718	+/-30
199.5	195.7	1.0195			



SO2 Calibration Plot

Date: March 4, 2025

Location: Wapasu





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: Wapasu
Calibration Date: March 20, 2025
Start time (MST): 10:27
Reason: Routine

Station number: AMS 17
Last Cal Date: February 26, 2025
End time (MST): 15:23

Calibration Standards

Cal Gas Concentration: 4.77 ppm
Cal Gas Cylinder #: DT20029267
Removed Cal Gas Conc: 4.77 ppm
Removed Gas Cyl #:
Calibrator Make/Model: API T700
ZAG Make/Model: API T701H

Cal Gas Exp Date: August 28, 2027
Rem Gas Exp Date:
Diff between cyl:
Serial Number: 2449
Serial Number: 359

Analyzer Information

Analyzer make: Thermo 450i
Converter make: CD Nova
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1218153583
Converter serial #: N/A
Converter Temp: 340 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.996928	0.997355	Backgd or Offset:	13.1	13.1
Calibration intercept:	0.020172	0.680200	Coeff or Slope:	1.099	1.099

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.3	----
As found High point	4921	83.9	80.0	80.2	1.001
As found Mid point	4961	41.9	39.9	40.0	1.006
As found Low point	4980	21.0	20.0	20.1	1.012
New cylinder response					
Baseline Corr As found:	79.9	Prev response:	79.74	*% change:	0.2%
Baseline Corr 2nd AF pt:	39.7	AF Slope:	0.999829	AF Intercept:	0.170568
Baseline Corr 3rd AF pt:	19.8	AF Correlation:	0.999987	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.5	----
High point	4916	83.9	80.0	80.4	0.996
Mid point	4958	41.9	40.0	40.7	0.982
Low point	4979	21.0	20.0	20.8	0.963
As left zero	5000	0.0	0.0	1.4	----
As left span	4916	83.9	80.0	79.6	1.006
SO ₂ Scrubber Check	4921	79.4	793.9	0.0	----
Date of last scrubber change:		N/A		Ave Corr Factor	0.980
Date of last converter efficiency test:		N/A			

Notes: No adjustments needed.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

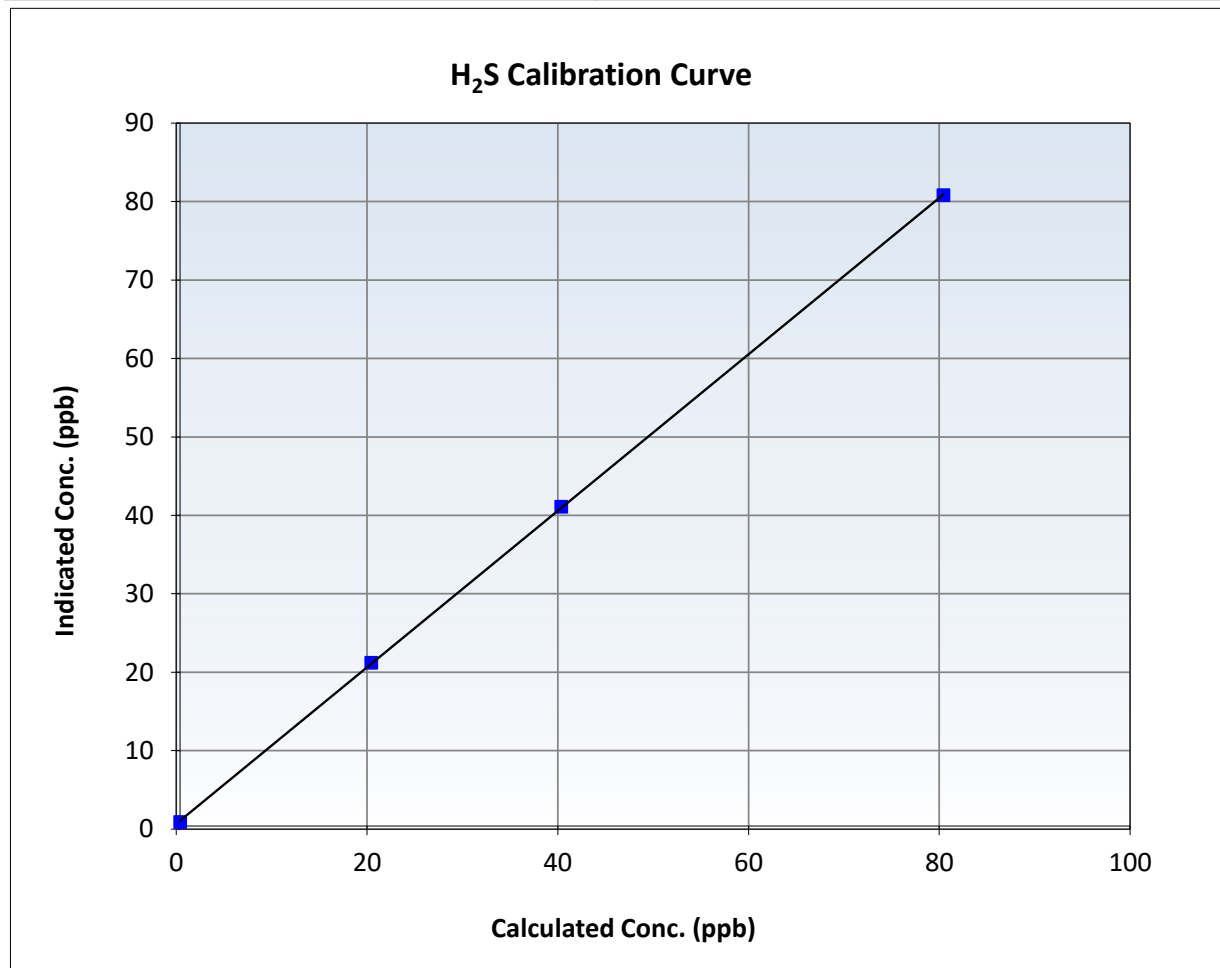
H₂S Calibration Summary

Station Information

Calibration Date:	March 20, 2025	Previous Calibration:	February 26, 2025
Station Name:	Wapasu	Station Number:	AMS 17
Start Time (MST):	10:27	End Time (MST):	15:23
Analyzer make:	Thermo 450i	Analyzer serial #:	1218153583

Calibration Data

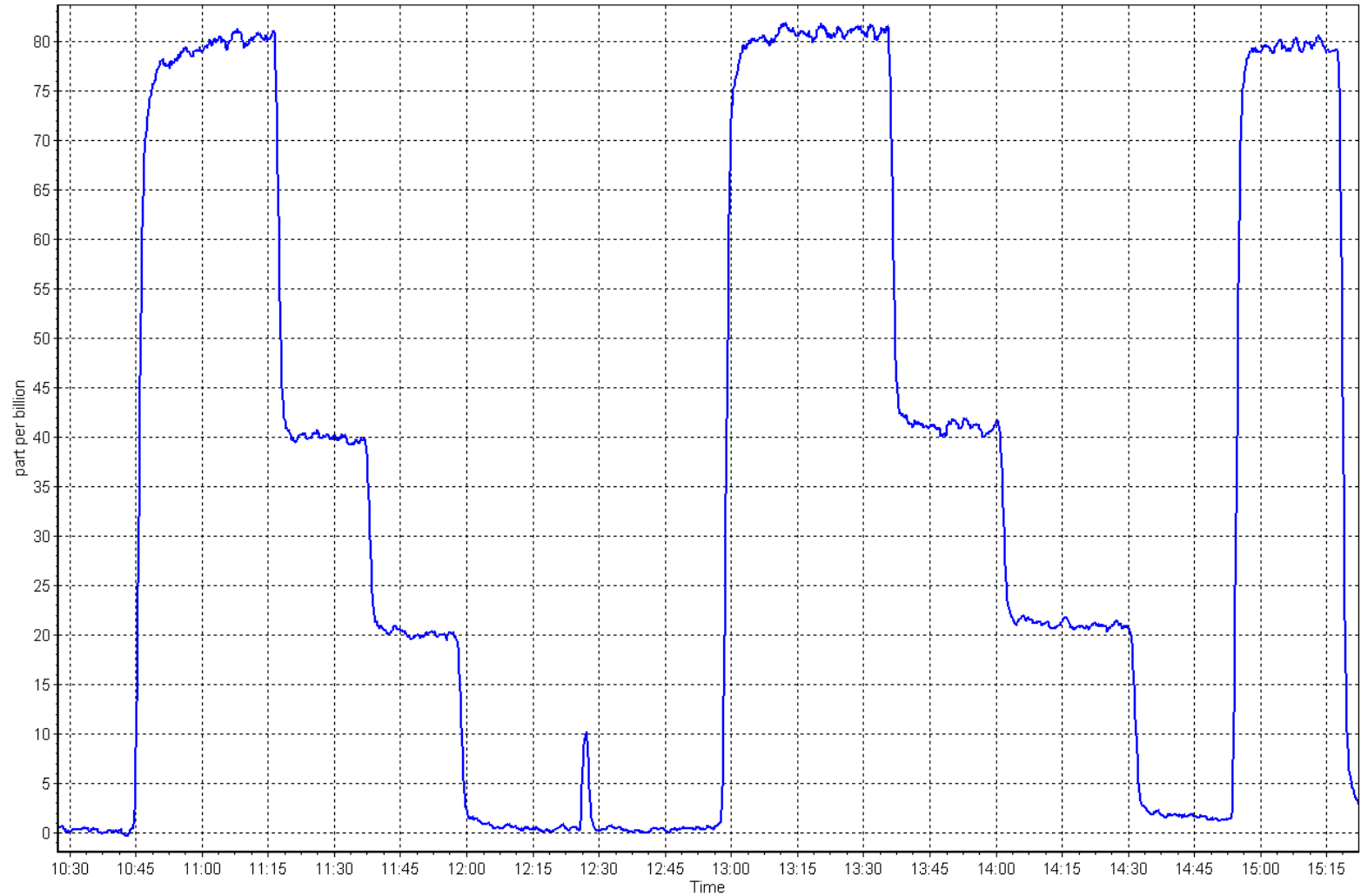
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.5	----	Correlation Coefficient	0.999975	≥ 0.995
80.0	80.4	0.9955	Slope	0.997355	$0.90 - 1.10$
40.0	40.7	0.9821	Intercept	0.680200	± 3
20.0	20.8	0.9632			



H₂S Calibration Plot

Date: March 20, 2025

Location: Wapasu





Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name: Wapasu Station number: AMS17
Calibration Date: March 4, 2025 Last Cal Date: February 3, 2025
Start time (MST): 11:31 End time (MST): 15:05
Reason: Routine

Calibration Standards

Gas Cert Reference: ALM066507 Cal Gas Expiry Date: January 12, 2029
CH4 Cal Gas Conc. 503.5 ppm CH4 Equiv Conc. 1076.3 ppm
C3H8 Cal Gas Conc. 208.3 ppm
Removed Gas Cert: n/a Removed Gas Expiry:
Removed CH4 Conc. 503.5 ppm CH4 Equiv Conc. 1076.3 ppm
Removed C3H8 Conc. 208.3 ppm Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 2449
ZAG Make/Model: Teledyne API 701H Serial Number: 1238

Analyzer Information

Analyzer make: Thermo 51i-LT Analyzer serial #: 1218153352
Analyzer Range: 0 - 20 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999116	0.993740	Background:	3.230
Calibration intercept:	-0.042549	-0.053360	Coefficient:	4.337

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	-0.05	----
As found High point	4921	79.4	17.09	16.90	1.009
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	16.95	Previous response	17.03	*% change	-0.5%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	-0.02	----
High point	4921	79.4	17.09	16.96	1.007
Mid point	4960	39.7	8.55	8.37	1.021
Low point	4980	19.8	4.26	4.18	1.019
As left zero	5000	0.0	0.00	0.05	----
As left span	4921	79.4	17.09	17.02	1.004
Average Correction Factor					1.016

Notes: H2 cylinder changed out. No adjustments needed.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

THC Calibration Summary

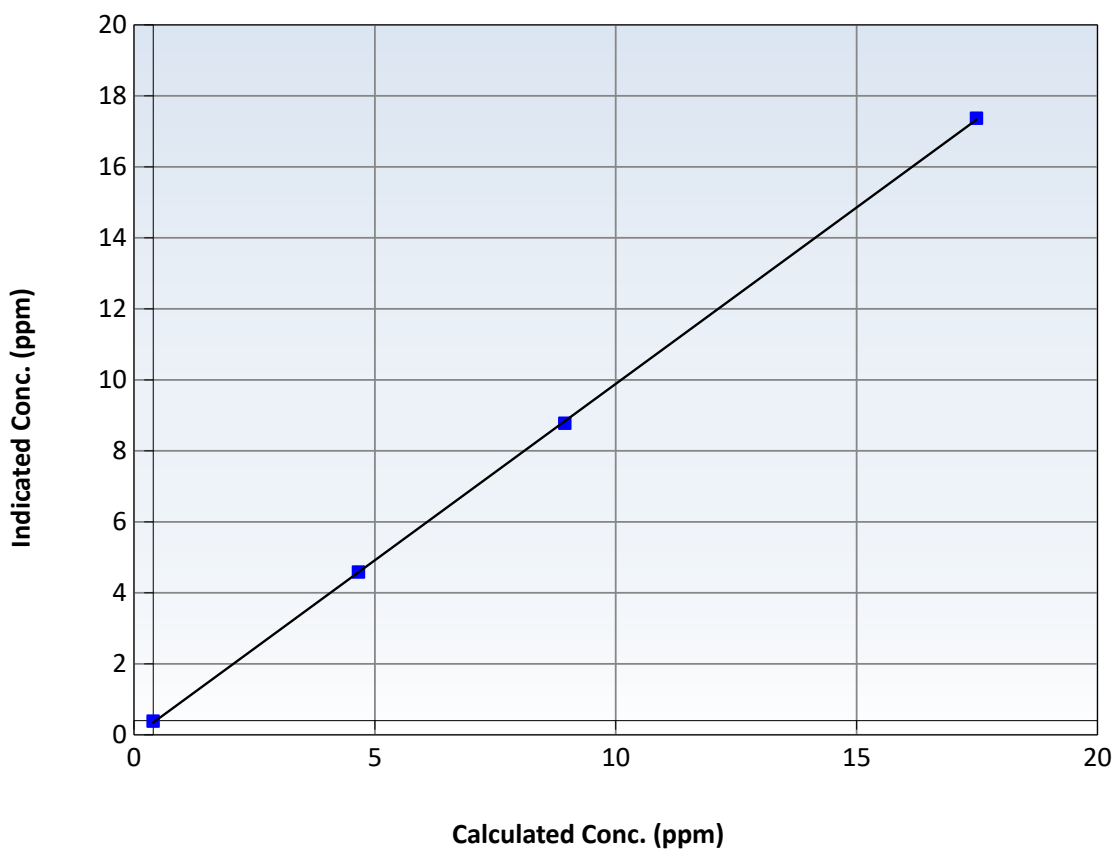
Station Information

Calibration Date:	March 4, 2025	Previous Calibration:	February 3, 2025
Station Name:	Wapasu	Station Number:	AMS17
Start Time (MST):	11:31	End Time (MST):	15:05
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1218153352

Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	-0.02	----	Correlation Coefficient	0.999957	≥ 0.995
17.09	16.96	1.0075	Slope	0.993740	$0.90 - 1.10$
8.55	8.37	1.0207	Intercept	-0.053360	± 1.5
4.26	4.18	1.0195			

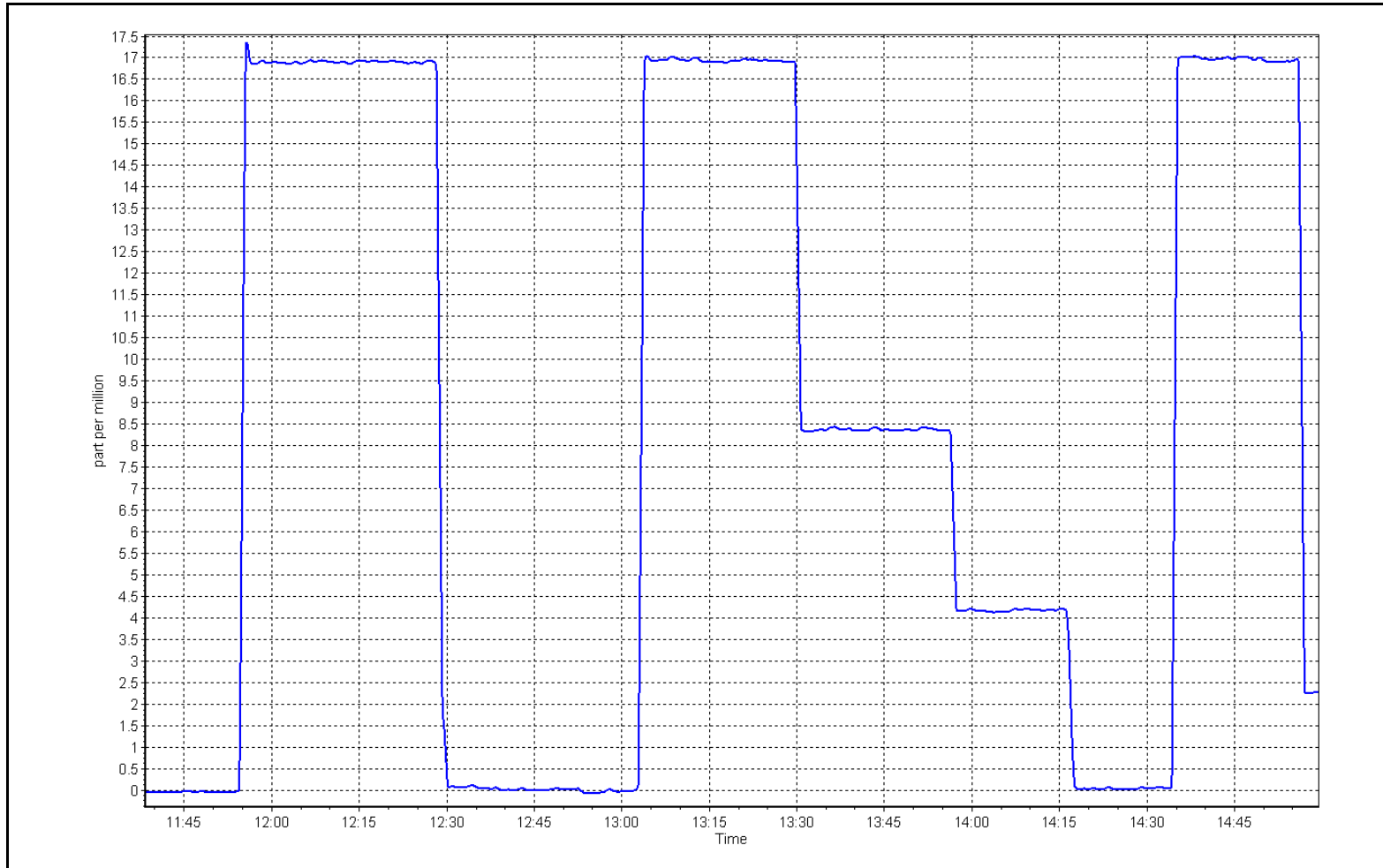
THC Calibration Curve



THC Calibration Plot

Date: March 4, 2025

Location: Wapasu





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Wapasu
Station number: AMS 17
Calibration Date: March 19, 2025
Last Cal Date: February 13, 2025
Start time (MST): 10:17
End time (MST): 15:12
Reason: Routine

Calibration Standards

NO Gas Cylinder #: T375YK8
NOX Cal Gas Conc: 49.11 ppm
Removed Cylinder #: N/A
Removed Gas NOX Conc: 49.11 ppm
NOX gas Diff:
Calibrator Model: API T700
ZAG make/model: API T701H
Cal Gas Expiry Date: April 13, 2025
NO Cal Gas Conc: 48.07 ppm
Removed Gas Exp Date: N/A
Removed Gas NO Conc: 48.07 ppm
NO gas Diff:
Serial Number: 2449
Serial Number: 359

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.6	-0.2	-0.4	----	----
AF High point	4917	83.2	817.2	799.9	17.3	815.7	796.3	19.3	1.0011	1.0042
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO _x = 816.6 ppb	NO = 798.4 ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = 0.0%
Baseline Corr 1st pt	NO _x = 816.3 ppb	NO = 796.5 ppb	<u>As Found Statistics</u>		*Percent Change	NO = -0.2%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found	NO _x r ² :	Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found	NO r ² :	NO SI:	NO Int:
			As found	NO ₂ r ² :	NO2 SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo Scientific 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1218153460

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.080	1.084	NO bkgnd or offset:	3.8	3.8
NOX coeff or slope:	0.995	0.996	NOX bkgnd or offset:	4.2	4.2
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	243.0	240.6

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.000921	1.001354
NO _x Cal Offset:	-1.300000	-1.280000
NO Cal Slope:	1.000244	0.999687
NO Cal Offset:	-1.660000	-1.740000
NO ₂ Cal Slope:	1.001713	1.002988
NO ₂ Cal Offset:	-0.349393	0.366820

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	-0.4	0.0	-0.4	----	----
High point	4917	83.2	817.2	799.9	17.3	817.5	798.8	18.8	0.9996	1.0014
Mid point	4958	41.6	408.6	399.9	8.7	407.3	397.1	10.2	1.0032	1.0072
Low point	4979	20.8	204.3	200.0	4.3	202.5	196.5	6.0	1.0089	1.0177
As left zero	5000	0.0	0.0	0.0	0.0	-0.5	-0.2	-0.3	----	----
As left span	4917	83.2	817.2	396.3	420.9	819.5	396.3	423.1	0.9972	1.0000
Average Correction Factor									1.0039	1.0087

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.4	----	----
High GPT point	796.6	398.2	415.7	416.9	0.9971	100.3%
Mid GPT point	796.6	600.6	213.3	214.7	0.9935	100.7%
Low GPT point	796.6	701.3	112.6	114.1	0.9869	101.3%
Average Correction Factor					0.9925	100.8%

Notes:

Sample inlet filter changed after as founds. Span adjusted.

Calibration Performed By:

Aswin Sasi Kumar



Wood Buffalo Environmental Association

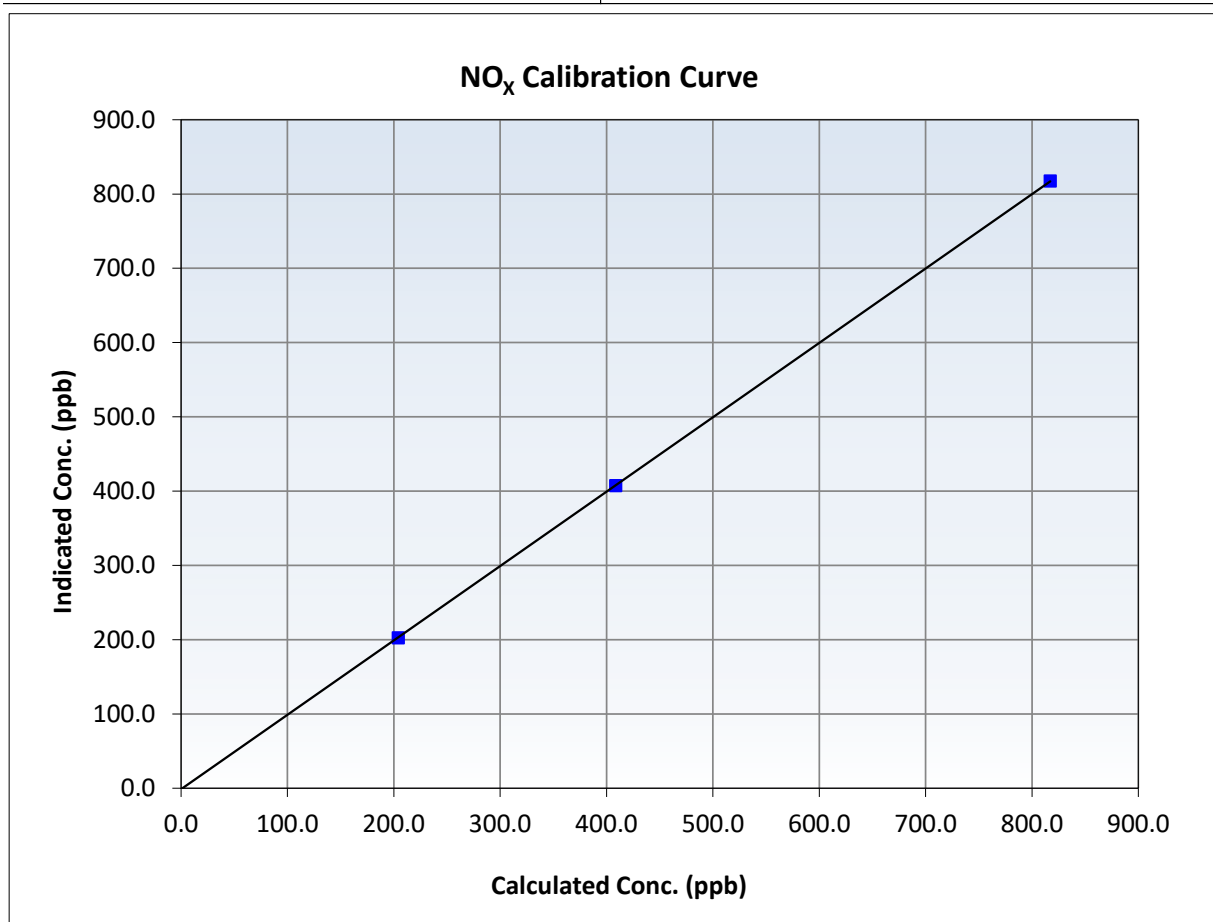
NO_x Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 13, 2025
Station Name:	Wapasu	Station Number:	AMS 17
Start Time (MST):	10:17	End Time (MST):	15:12
Analyzer make:	Thermo Scientific 42i	Analyzer serial #:	1218153460

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.4	----	Correlation Coefficient	0.999995	≥0.995
817.2	817.5	0.9996	Slope	1.001354	0.90 - 1.10
408.6	407.3	1.0032	Intercept	-1.280000	+/-20
204.3	202.5	1.0089			





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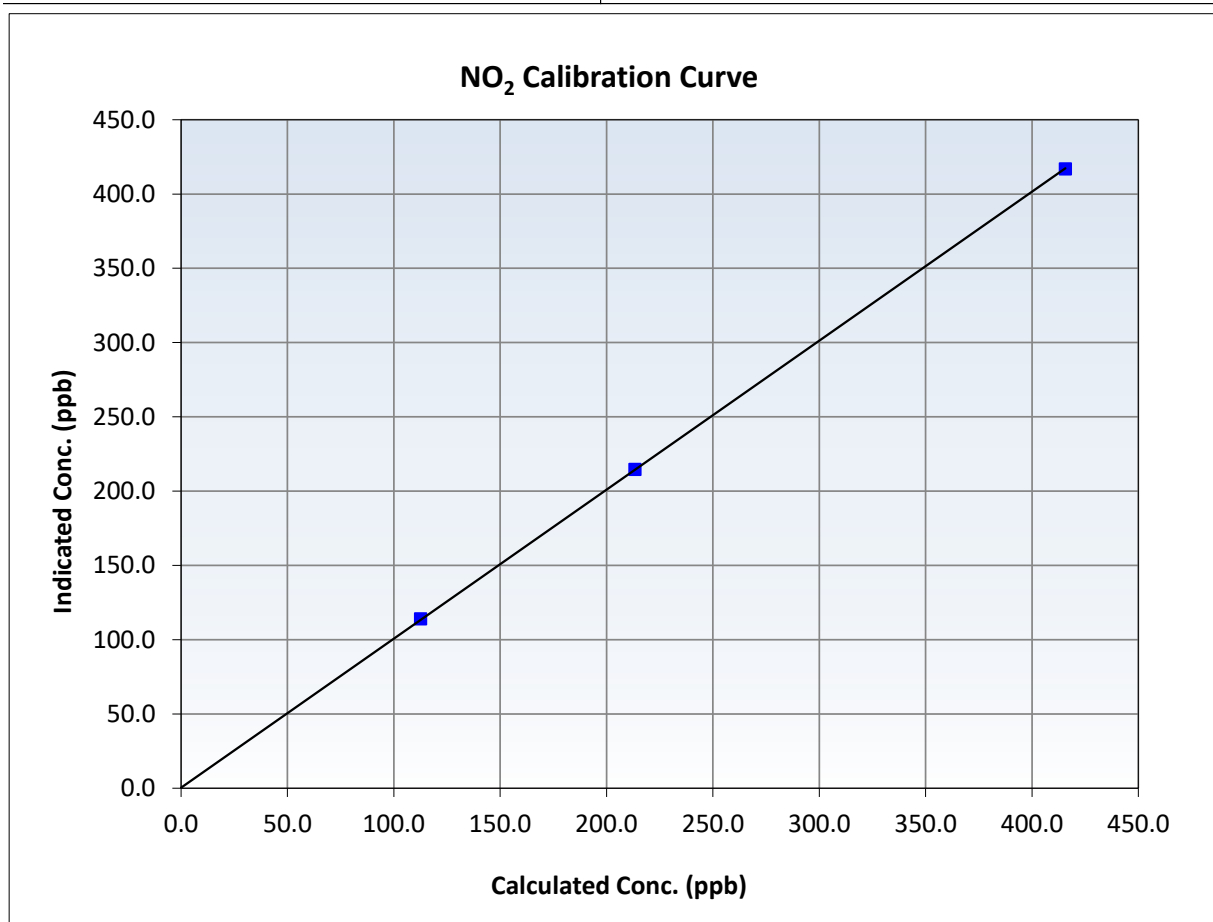
NO₂ Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 13, 2025
Station Name:	Wapasu	Station Number:	AMS 17
Start Time (MST):	10:17	End Time (MST):	15:12
Analyzer make:	Thermo Scientific 42i	Analyzer serial #:	1218153460

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.4	----	Correlation Coefficient	0.999984	≥ 0.995
415.7	416.9	0.9971	Slope	1.002988	$0.90 - 1.10$
213.3	214.7	0.9935	Intercept	0.366820	± 20
112.6	114.1	0.9869			





Wood Buffalo Environmental Association

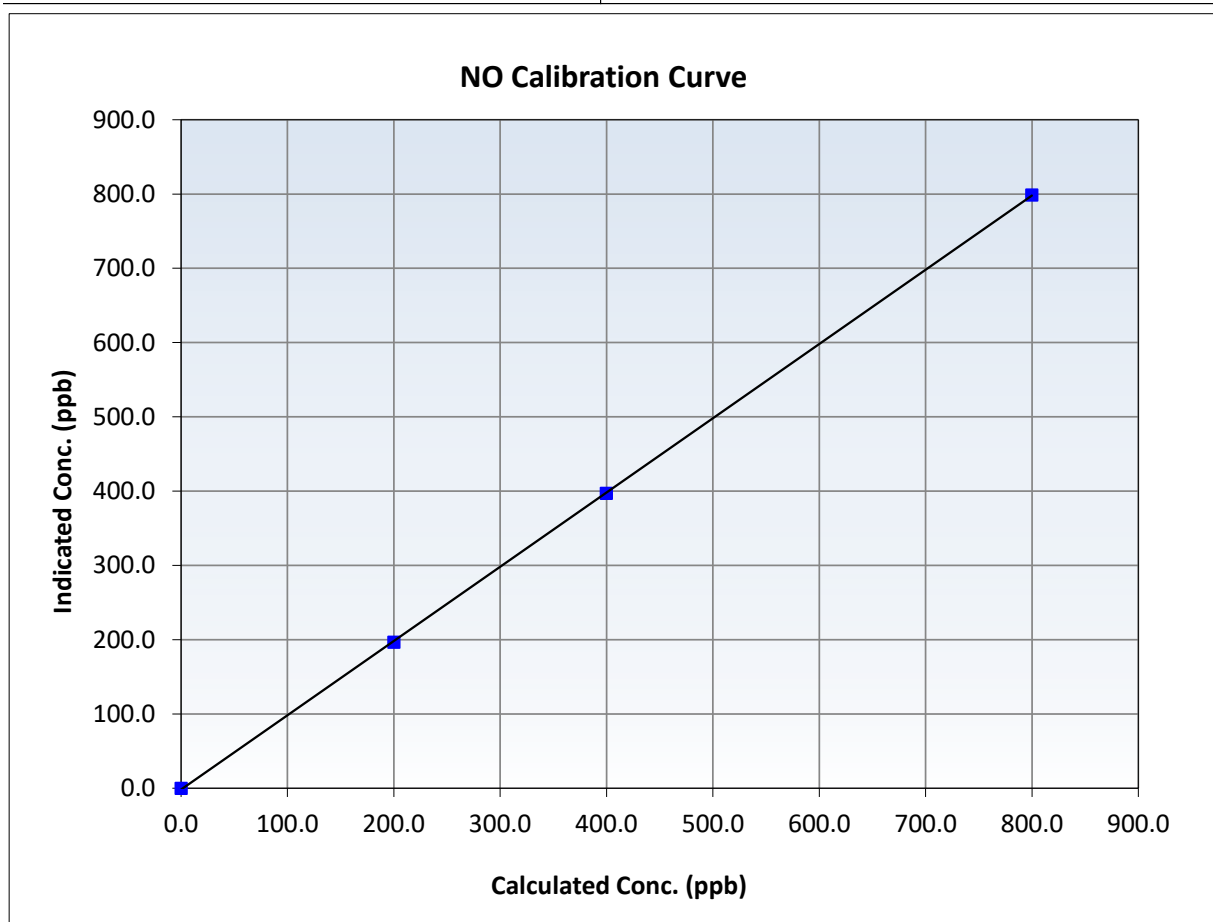
NO Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 13, 2025
Station Name:	Wapasu	Station Number:	AMS 17
Start Time (MST):	10:17	End Time (MST):	15:12
Analyzer make:	Thermo Scientific 42i	Analyzer serial #:	1218153460

Calibration Data

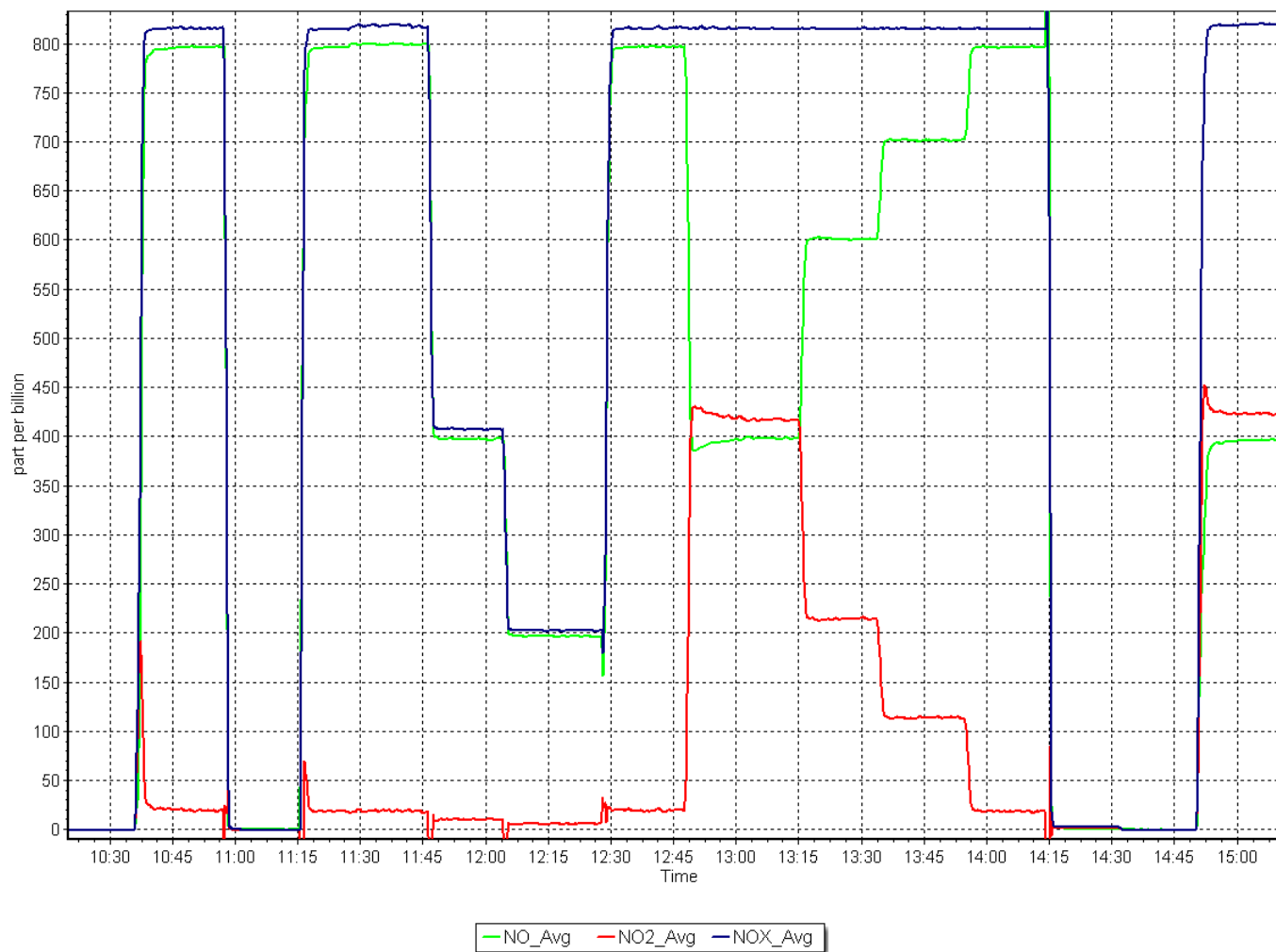
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999978	≥ 0.995
799.9	798.8	1.0014	Slope	0.999687	$0.90 - 1.10$
399.9	397.1	1.0072	Intercept	-1.740000	± 20
200.0	196.5	1.0177			



NO_x Calibration Plot

Date: March 19, 2025

Location: Wapasu





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Wapasu
Calibration Date: March 13, 2025
Start time (MST): 10:40
Reason: Routine

Station number: AMS17
Last Cal Date: February 4, 2025
End time (MST): 14:41

Calibration Standards

O3 generation mode: Photometer
Calibrator Make/Model: API T700
ZAG Make/Model: API T701H

Serial Number: 2449
Serial Number: 359

Analyzer Information

Analyzer make: API T400
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 7045

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.001914	1.010314	Backgd or Offset:	0.6	0.6
Calibration intercept:	0.340000	-0.280000	Coeff or Slope:	1.046	1.046

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-2.6	----
As found High point	5000	1104.7	400.0	330.6	1.200
As found Mid point	5000	917.3	200.0	164.7	1.195
As found Low point	5000	797.9	100.0	80.9	1.198
Baseline Corr As found:	333.2	Previous response	401.1	*% change	-20.4%
Baseline Corr 2nd AF pt:	167.3	AF Slope:	0.833029	AF Intercept:	-2.380000
Baseline Corr 3rd AF pt:	83.5	AF Correlation:	0.999995	* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	5000	1104.7	400.0	404.0	0.990
Mid point	5000	917.3	200.0	201.6	0.992
Low point	5000	797.9	100.0	100.5	0.995
As left zero	5000	0.0	0.0	1.2	----
As left span	5000	1104.0	400.0	410.2	0.975
Average Correction Factor					0.992

Notes: Pump changed out after MPAF. No adjustments needed.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

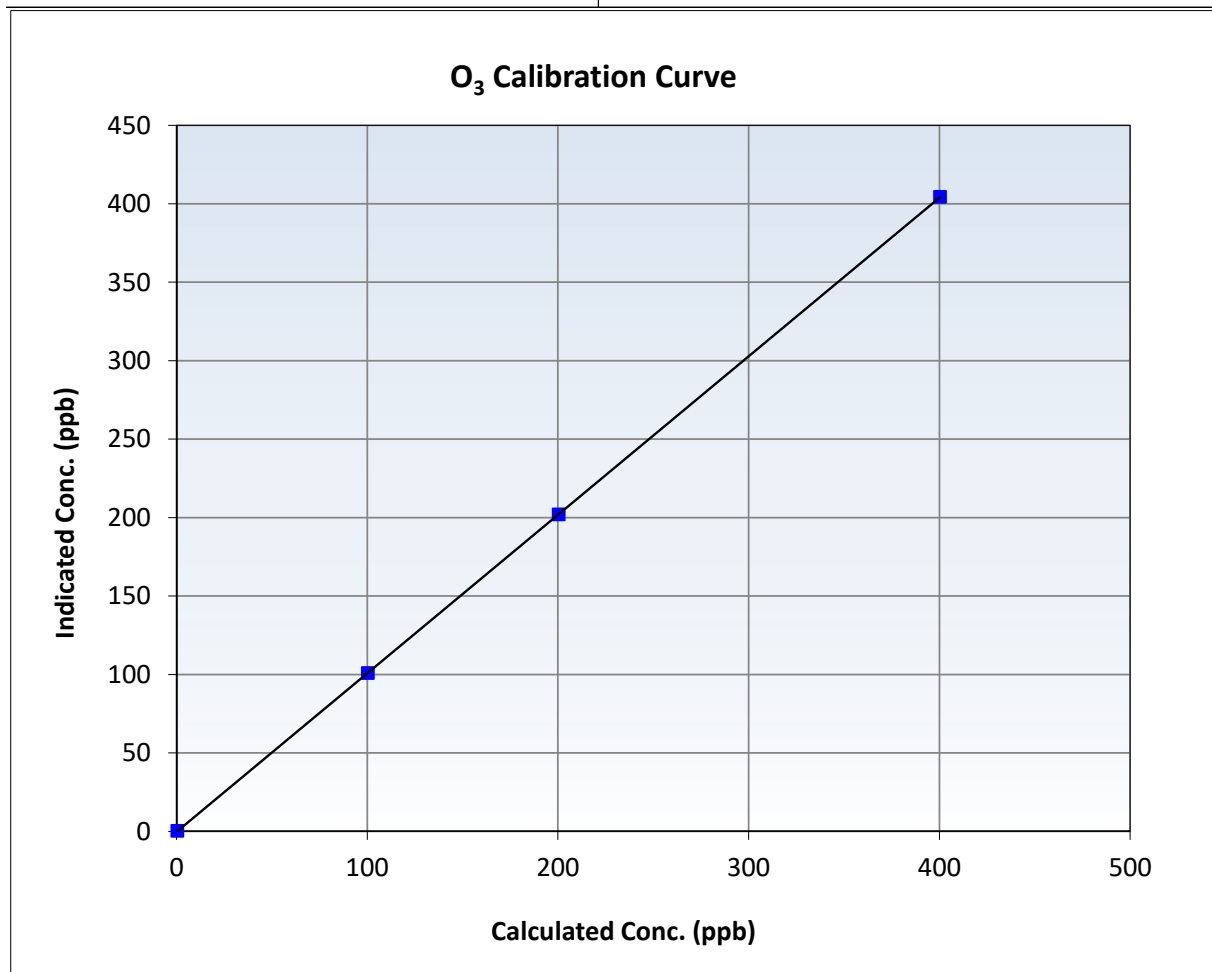
O₃ Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 4, 2025
Station Name:	Wapasu	Station Number:	AMS17
Start Time (MST):	10:40	End Time (MST):	14:41
Analyzer make:	API T400	Analyzer serial #:	7045

Calibration Data

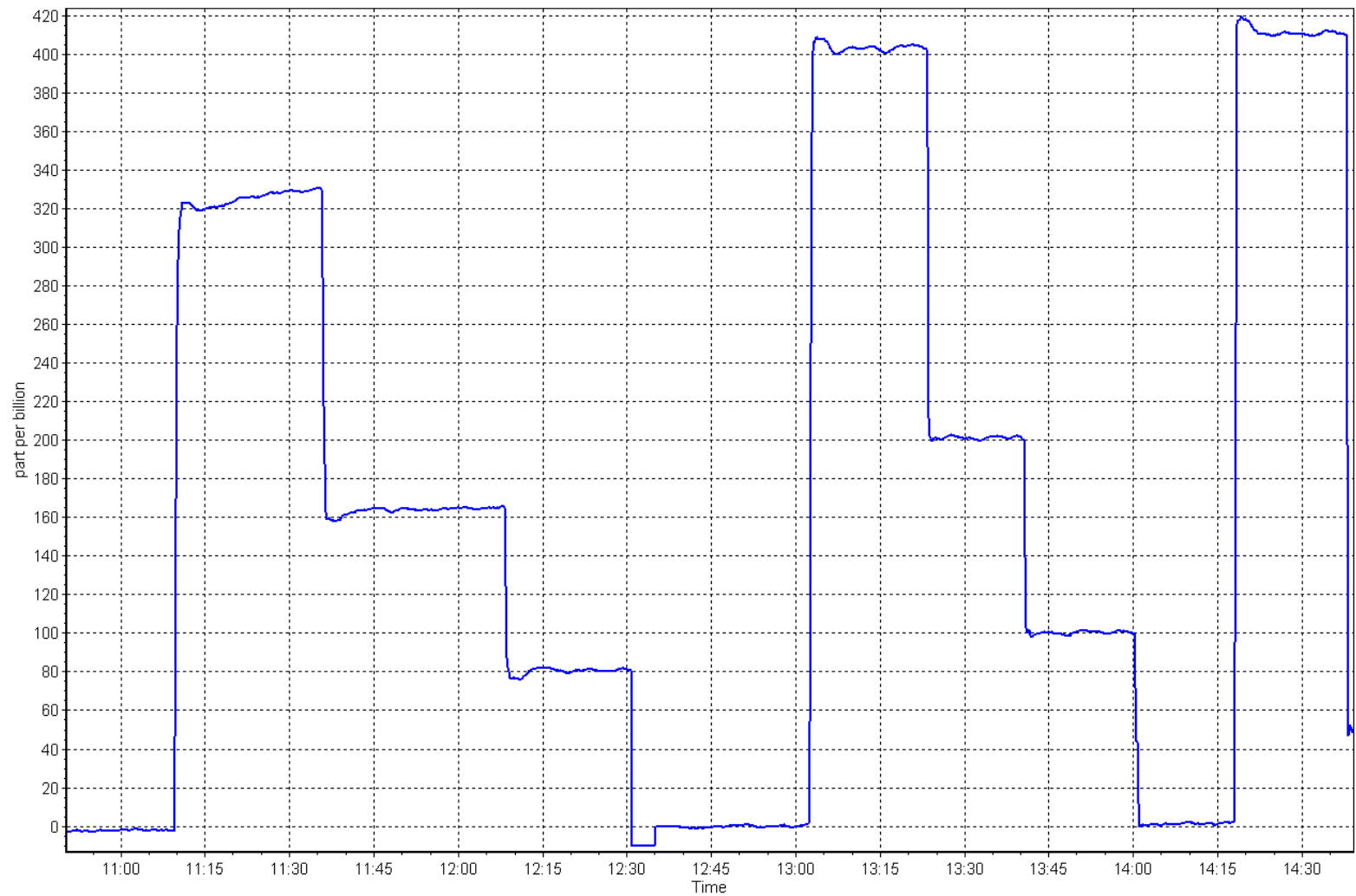
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999998	≥0.995
400.0	404.0	0.9901	Slope	1.010314	0.90 - 1.10
200.0	201.6	0.9921	Intercept	-0.280000	+/- 5
100.0	100.5	0.9950			



O₃ Calibration Plot

Date: March 13, 2025

Location: Wapasu





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Wapasu Station number: AMS 17
Calibration Date: March 20, 2025 Last Cal Date: February 26, 2025
Start time (MST): 14:05 End time (MST): 15:25

Analyzer Make: Teledyne API T640 S/N: 1183
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388749
Temp/RH standard: Alicat FP-25BT S/N: 388749

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-4.10	-4.80	-4.10	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	709.50	708.60	709.50	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	5.01	4.98	5.01	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	35	----	36	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 1.3		PM w/ HEPA: 0.0		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: October 6, 2024
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test	10.70	10.70	10.70	<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: February 26, 2025
Date Disposable Filter Changed: March 20, 2025

Post- maintenance Zero Verification: PM w/ HEPA: 0.00 <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: July 23, 2024
Date RH/T Sensor Cleaned: July 23, 2024

Notes:

Flow, temp and pressure checked. DFU filter changed out.

Calibration by: Aswin Sasi Kumar



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS18 STONY MOUNTAIN MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Stony Mountain Station number: AMS 18
Calibration Date: March 12, 2025 Last Cal Date: February 24, 2025
Start time (MST): 10:55 End time (MST): 16:20
Reason: Routine

Calibration Standards

Cal Gas Concentration: 51.22 ppm Cal Gas Exp Date: October 9, 2032
Cal Gas Cylinder #: CC417455
Removed Cal Gas Conc: 50.02 ppm Rem Gas Exp Date: January 12, 2029
Removed Gas Cyl #: XC026809B Diff between cyl: -3.9%
Calibrator Model: Teledyne API T700 Serial Number: 282
Zero Air Gen Model: Teledyne API 701H Serial Number: 321

Analyzer Information

Analyzer make: Thermo 43i Serial Number: JC1501301453
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.997387	1.003718	Backgd or Offset:	24.4	25.6
Calibration intercept:	-1.400000	-3.279867	Coeff or Slope:	0.776	0.830

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4920	80.0	800.3	773.6	1.034
As found Mid point	4960	40.0	400.2	386.2	1.036
As found Low point	4980	20.0	200.1	190.8	1.048
New cylinder response	4921	78.1	800.2	745.4	1.074
Baseline Corr As found:	773.8	Previous response	796.8	*% change	-3.0%
Baseline Corr 2nd AF pt:	386.4	AF Slope:	0.967841	AF Intercept:	-1.280000
Baseline Corr 3rd AF pt:	191.0	AF Correlation:	0.999989	* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.2	----
High point	4921	78.1	800.2	800.7	0.999
Mid point	4960	39.1	400.6	399.6	1.003
Low point	4980	20.0	204.9	197.7	1.036
As left zero	5000	0.0	0.0	-0.1	----
As left span				803.4	
Average Correction Factor:					1.013

Notes: Calibration gas changed out. Span adjusted.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

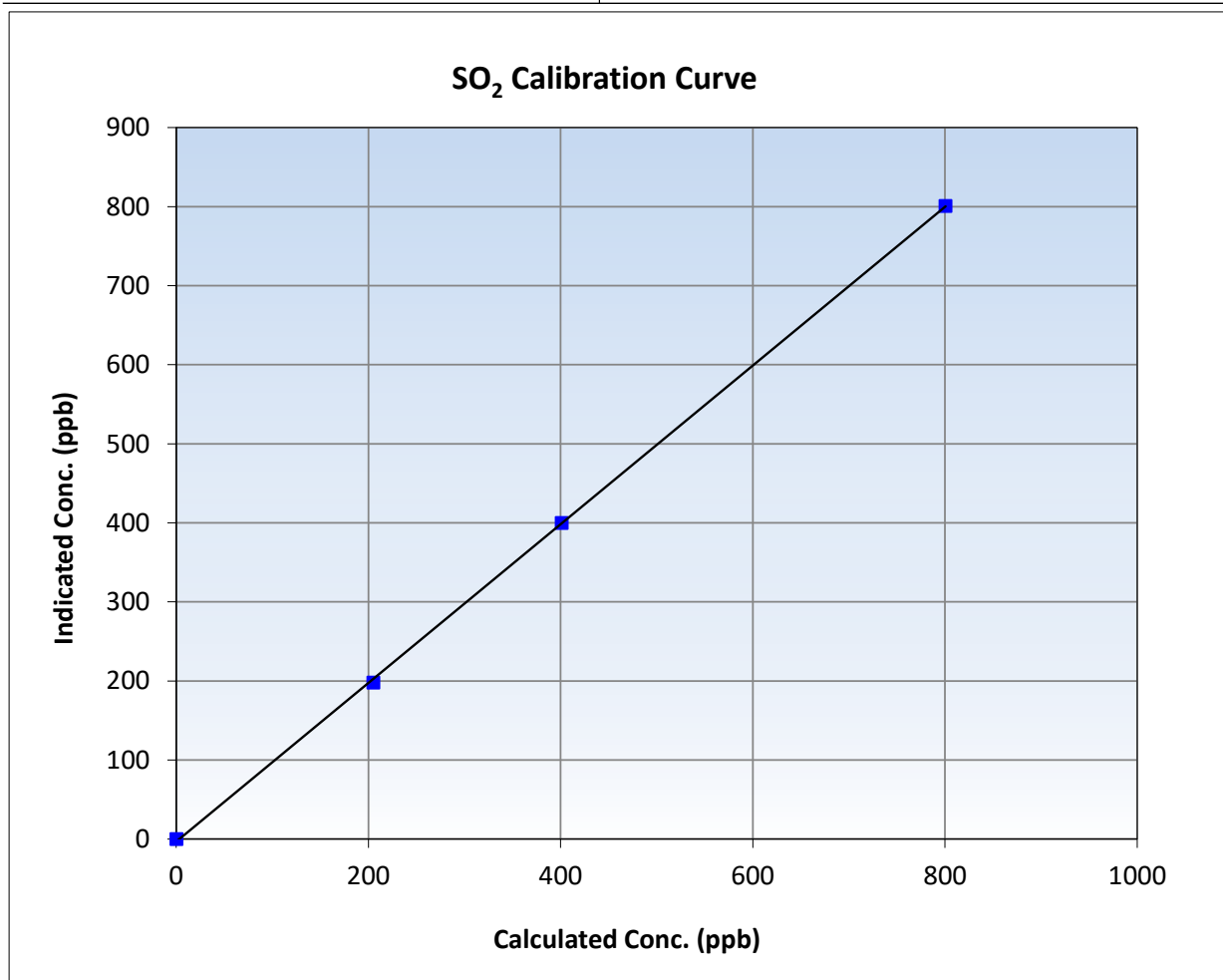
SO₂ Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 24, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	10:55	End Time (MST):	16:20
Analyzer make:	Thermo 43i	Analyzer serial #:	JC1501301453

Calibration Data

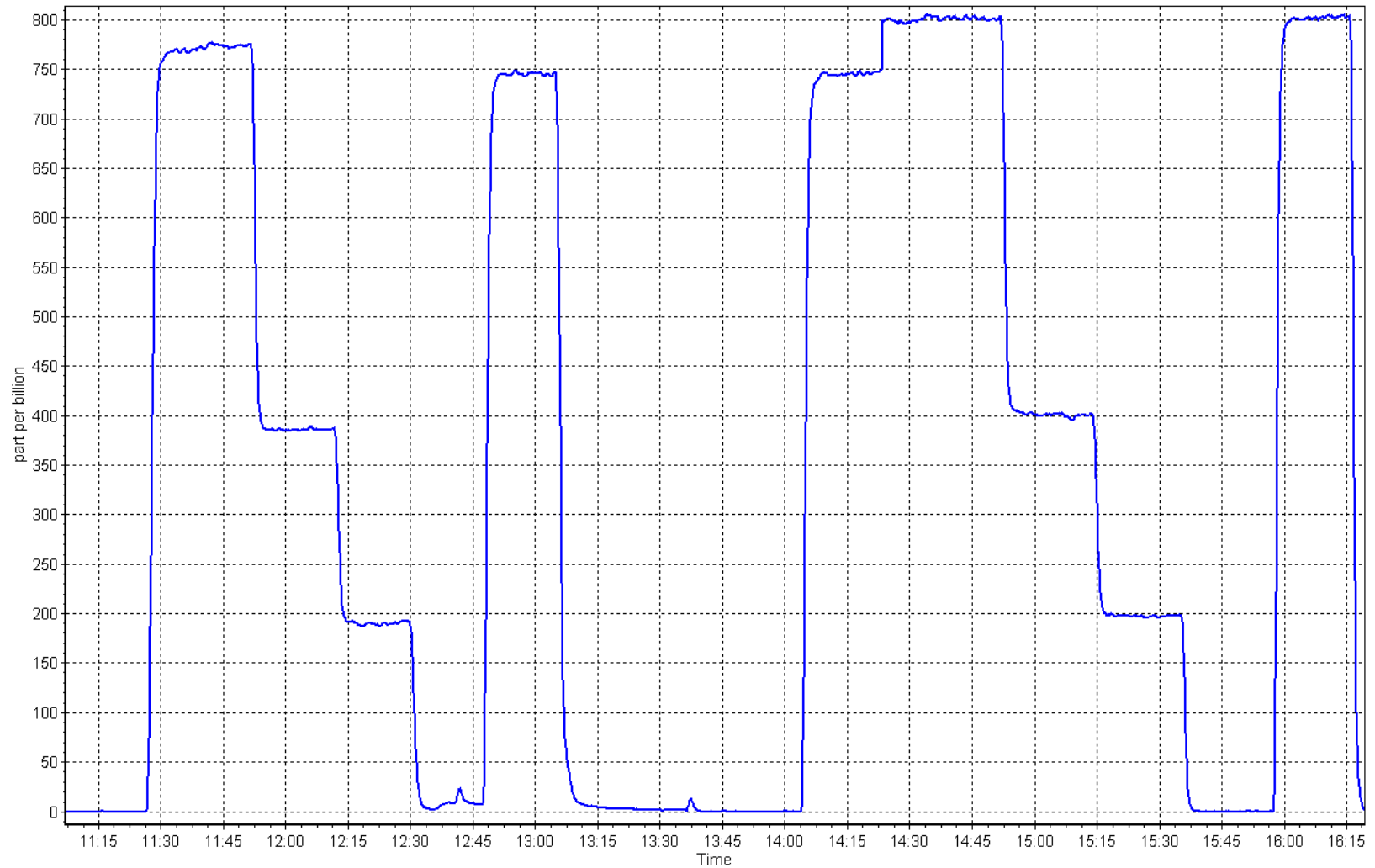
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.2	----	Correlation Coefficient	0.999908	≥0.995
800.2	800.7	0.9994	Slope	1.003718	0.90 - 1.10
400.6	399.6	1.0025	Intercept	-3.279867	+/-30
204.9	197.7	1.0363			



SO2 Calibration Plot

Date: March 12, 2025

Location: Stony Mountain





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Stony Mountain Station number: AMS18
Calibration Date: March 25, 2025 Last Cal Date: February 25, 2025
Start time (MST): 10:39 End time (MST): 16:00
Reason: Routine

Calibration Standards

Cal Gas Concentration: 4.86 ppm Cal Gas Exp Date: May 9, 2027
Cal Gas Cylinder #: CC523103
Removed Cal Gas Conc: 4.86 ppm Rem Gas Exp Date:
Removed Gas Cyl #: Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 2658
ZAG Make/Model: Teledyne API T701 Serial Number: 360

Analyzer Information

Analyzer make: Thermo 43i-TLE Analyzer serial #: 1218153359
Converter make: CD Nova CDN-101 Converter serial #: 555
Analyzer Range: 0 - 100 ppb Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.997088	1.007792	Backgd or Offset:	2.9	2.90
Calibration intercept:	0.080874	-0.218991	Coeff or Slope:	1.172	1.172

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4917	82.3	80.0	82.6	0.970
As found Mid point	4958	41.2	40.1	40.8	0.984
As found Low point	4979	20.6	20.0	20.1	1.001
New cylinder response					
Baseline Corr As found:	82.5	Prev response:	79.85	*% change:	3.2%
Baseline Corr 2nd AF pt:	40.7	AF Slope:	1.033078	AF Intercept:	-0.279536
Baseline Corr 3rd AF pt:	20.0	AF Correlation:	0.999899	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.2	----
High point	4917	82.3	80.0	80.7	0.991
Mid point	4958	41.2	40.1	39.7	1.009
Low point	4979	20.6	20.0	19.7	1.016
As left zero	5000	0.0	0.0	0.3	----
As left span	4917	82.3	80.0	80.9	0.989
SO2 Scrubber Check	4923	77.1	771.0	0.1	----
Date of last scrubber change:		17-Dec-21		Ave Corr Factor	1.006
Date of last converter efficiency test:					

Notes:

No adjustments made.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

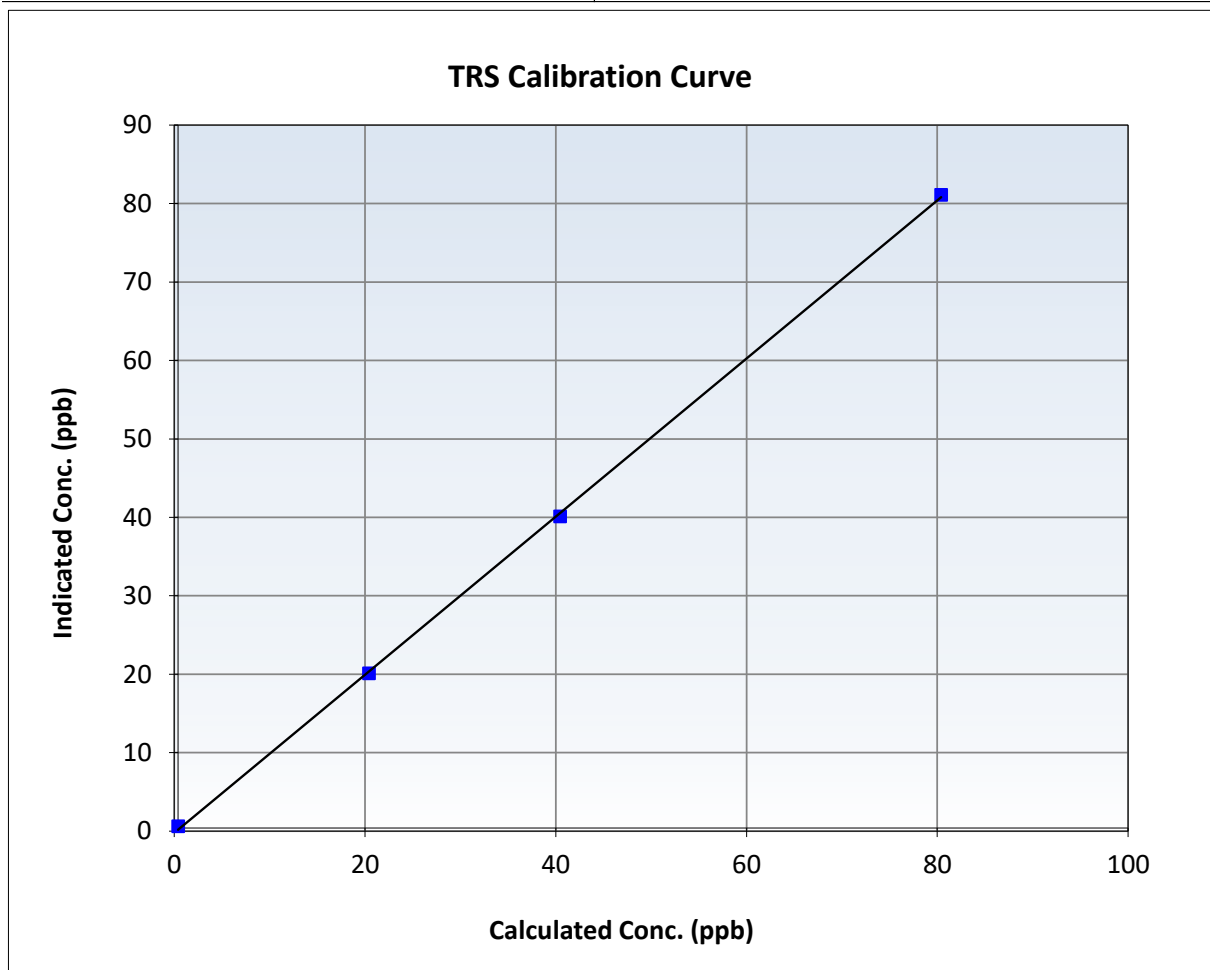
TRS Calibration Summary

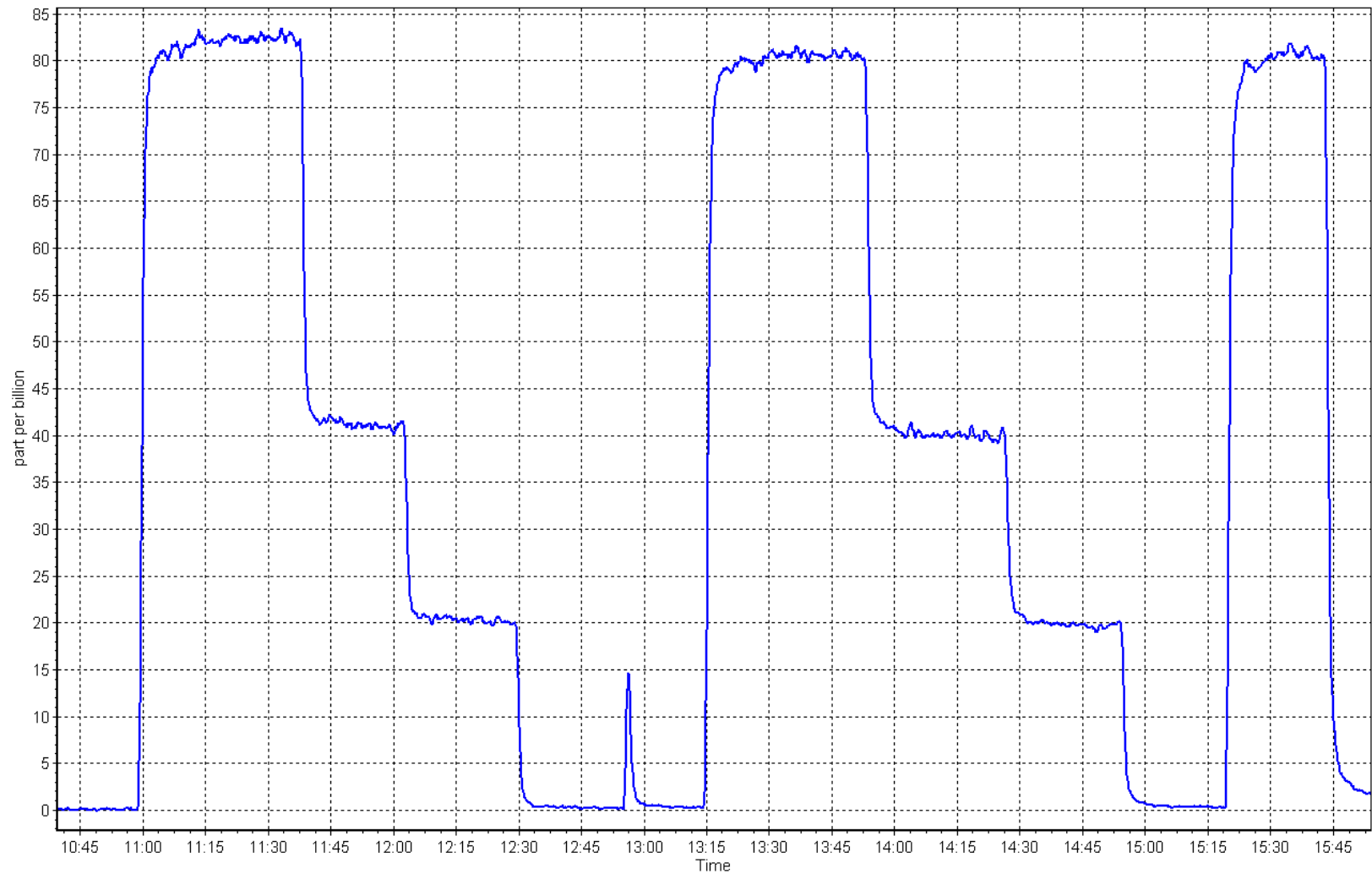
Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 25, 2025
Station Name:	Stony Mountain	Station Number:	AMS18
Start Time (MST):	10:39	End Time (MST):	16:00
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1218153359

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999852		≥ 0.995
80.0	80.7	0.9914	Slope	1.007792		$0.90 - 1.10$
40.1	39.7	1.0089	Intercept	-0.218991		± 3
20.0	19.7	1.0165				







Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Stony Mountain
 Calibration Date: March 12, 2025
 Start time (MST): 10:55
 Reason: Routine

Station number: AMS 18
 Last Cal Date: February 24, 2025
 End time (MST): 16:20

Calibration Standards

Gas Cert Reference:	CC417455	Cal Gas Expiry Date:	October 9, 2032
CH ₄ Cal Gas Conc.	502.3 ppm	CH ₄ Equiv Conc.	1065.8 ppm
C ₃ H ₈ Cal Gas Conc.	204.9 ppm		
Removed Gas Cert:	XC026809B	Removed Gas Expiry:	January 12, 2029
Removed CH ₄ Conc.	504.9 ppm	CH ₄ Equiv Conc.	1076.6 ppm
Removed C ₃ H ₈ Conc.	207.9 ppm	Diff between cyl (THC):	0.9%
Diff between cyl (CH ₄):	0.0%	Diff between cyl (NM):	1.5%
Calibrator Model:	Teledyne API T750	Serial Number:	282
Zero Air Gen model:	Teledyne API T751H	Serial Number:	321

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1193585647
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	2.96E-04	3.22E-04	NMHC SP Ratio:	4.32E-05
CH ₄ Retention time:	16.6	16.8	NMHC Peak Area:	211820
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.01	----
As found High point	4920	80.0	17.23	15.46	1.115
As found Mid point	4960	40.0	8.61	7.73	1.115
As found Low point	4980	20.0	4.31	3.87	1.117
New cylinder response	4921	78.1	16.65	15.06	1.106
Baseline Corr AF:	15.45	Prev response	17.18	*% change	-11.2%
Baseline Corr 2nd AF:	7.72	AF Slope:	0.896890	AF Intercept:	0.009200
Baseline Corr 3rd AF:	3.86	AF Correlation:	1.000000	* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.02	----
High point	4921	78.1	16.65	16.83	0.989
Mid point	4960	39.1	8.34	8.44	0.988
Low point	4980	20.0	4.26	4.22	1.009
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	16.65	17.02	0.978
Average Correction Factor					0.996

Notes:

Calibration gas changed out. Pump changed out. Span adjusted.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
					<i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	80.0	9.15	8.41	1.088
As found Mid point	4960	40.0	4.57	4.24	1.080
As found Low point	4980	20.0	2.29	2.12	1.079
New cylinder response	4921	78.1	8.80	8.21	1.072
Baseline Corr AF:	8.41	Prev response	9.13	*% change	-8.6%
Baseline Corr 2nd AF:	4.24	AF Slope:	0.919136	AF Intercept:	0.012800
Baseline Corr 3rd AF:	2.12	AF Correlation:	0.999983	* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
					<i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	78.1	8.80	8.95	0.984
Mid point	4960	39.1	4.41	4.48	0.985
Low point	4980	20.0	2.25	2.25	1.001
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	8.80	9.02	0.976
Average Correction Factor					0.990

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
					<i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.01	----
As found High point	4920	80.0	8.08	7.05	1.148
As found Mid point	4960	40.0	4.04	3.50	1.159
As found Low point	4980	20.0	2.02	1.75	1.163
New cylinder response	4921	78.1	7.85	6.85	1.146
Baseline Corr AF:	7.04	Prev response	8.04	*% change	-14.3%
Baseline Corr 2nd AF:	3.49	AF Slope:	0.871743	AF Intercept:	-0.004000
Baseline Corr 3rd AF:	1.74	AF Correlation:	0.999969	* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
					<i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.02	----
High point	4921	78.1	7.85	7.88	0.996
Mid point	4960	39.1	3.93	3.96	0.992
Low point	4980	20.0	2.01	1.97	1.018
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	7.85	8.00	0.981
Average Correction Factor					1.002

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
THC Cal Slope:	0.996076	1.011792
THC Cal Offset:	0.019200	-0.022319
CH ₄ Cal Slope:	0.994935	1.004409
CH ₄ Cal Offset:	0.006600	-0.004252
NMHC Cal Slope:	0.997083	1.018166
NMHC Cal Offset:	0.012600	-0.017262

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

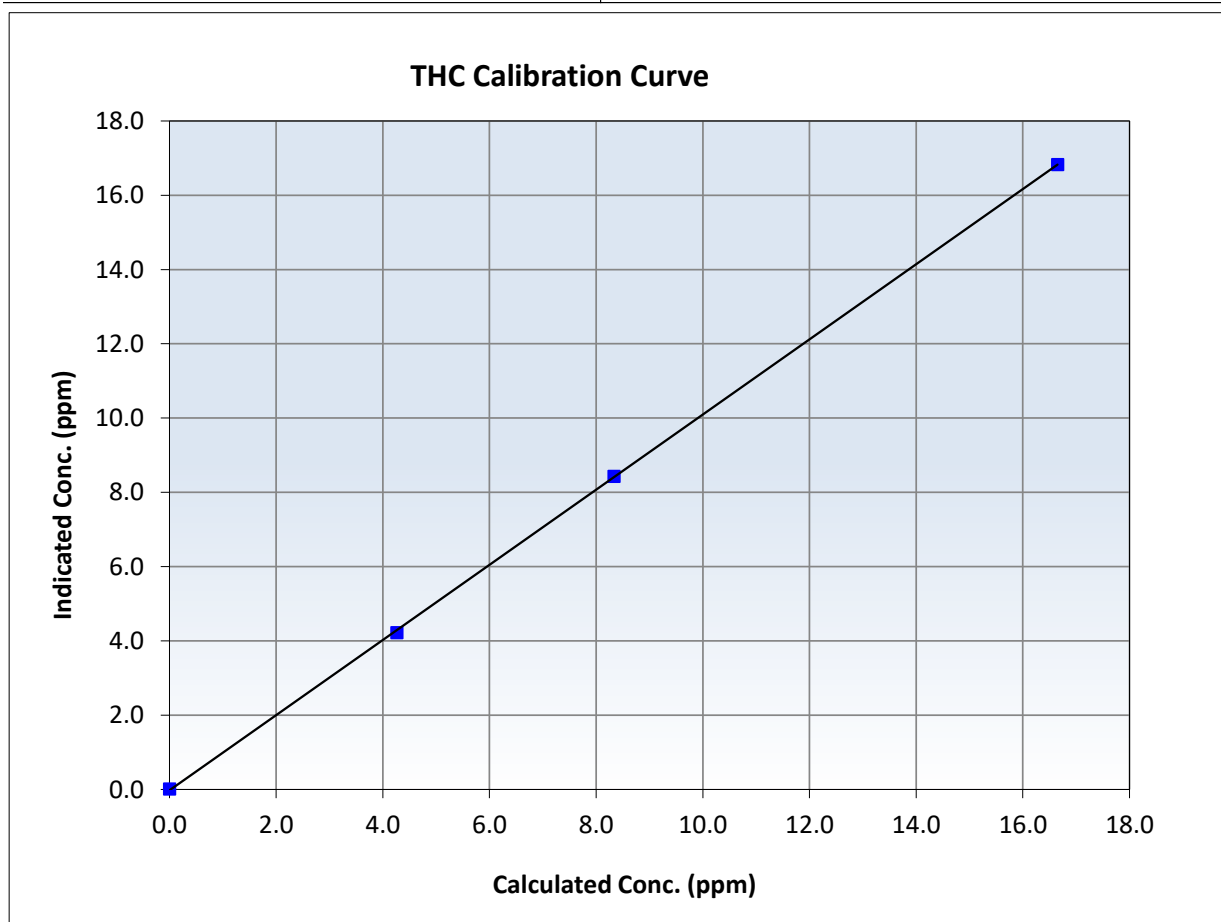
THC Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 24, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	10:55	End Time (MST):	16:20
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585647

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.02	----	Correlation Coefficient	0.999958	≥ 0.995
16.65	16.83	0.9893	Slope	1.011792	$0.90 - 1.10$
8.34	8.44	0.9882	Intercept	-0.022319	± 0.5
4.26	4.22	1.0093			





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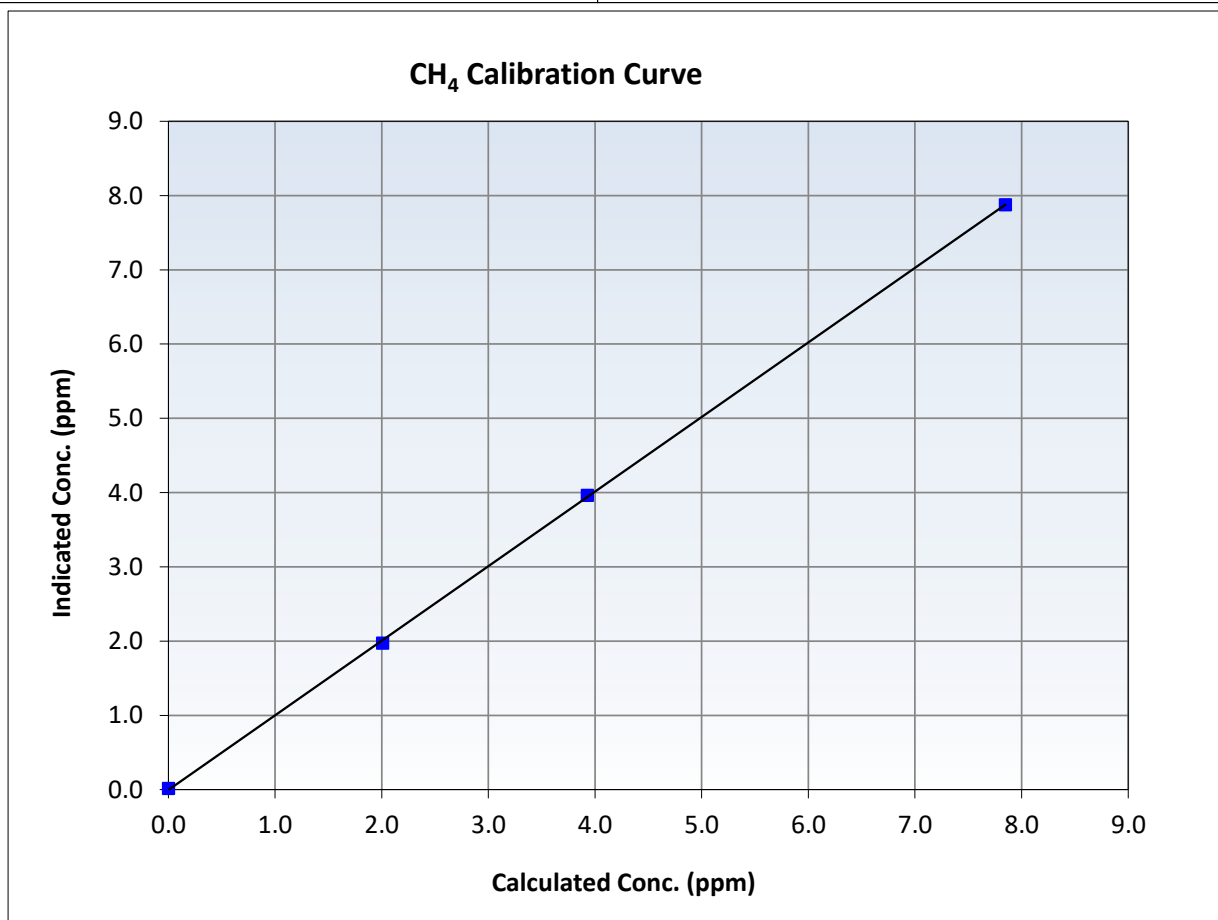
CH₄ Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 24, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	10:55	End Time (MST):	16:20
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585647

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.02	----	Correlation Coefficient	0.999927	<i>≥0.995</i>
7.85	7.88	0.9961	Slope	1.004409	<i>0.90 - 1.10</i>
3.93	3.96	0.9916	Intercept	-0.004252	<i>+/-0.5</i>
2.01	1.97	1.0183			





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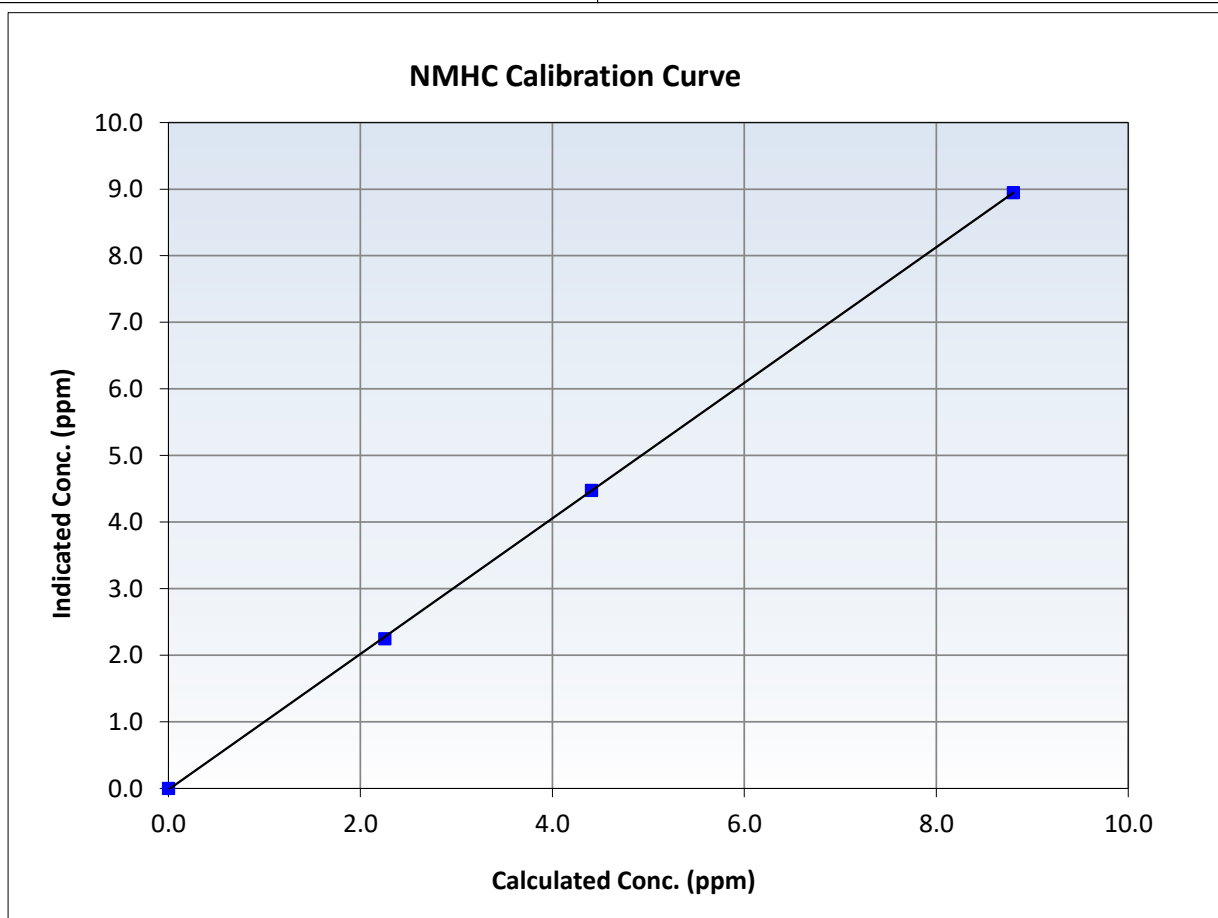
NMHC Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 24, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	10:55	End Time (MST):	16:20
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585647

Calibration Data

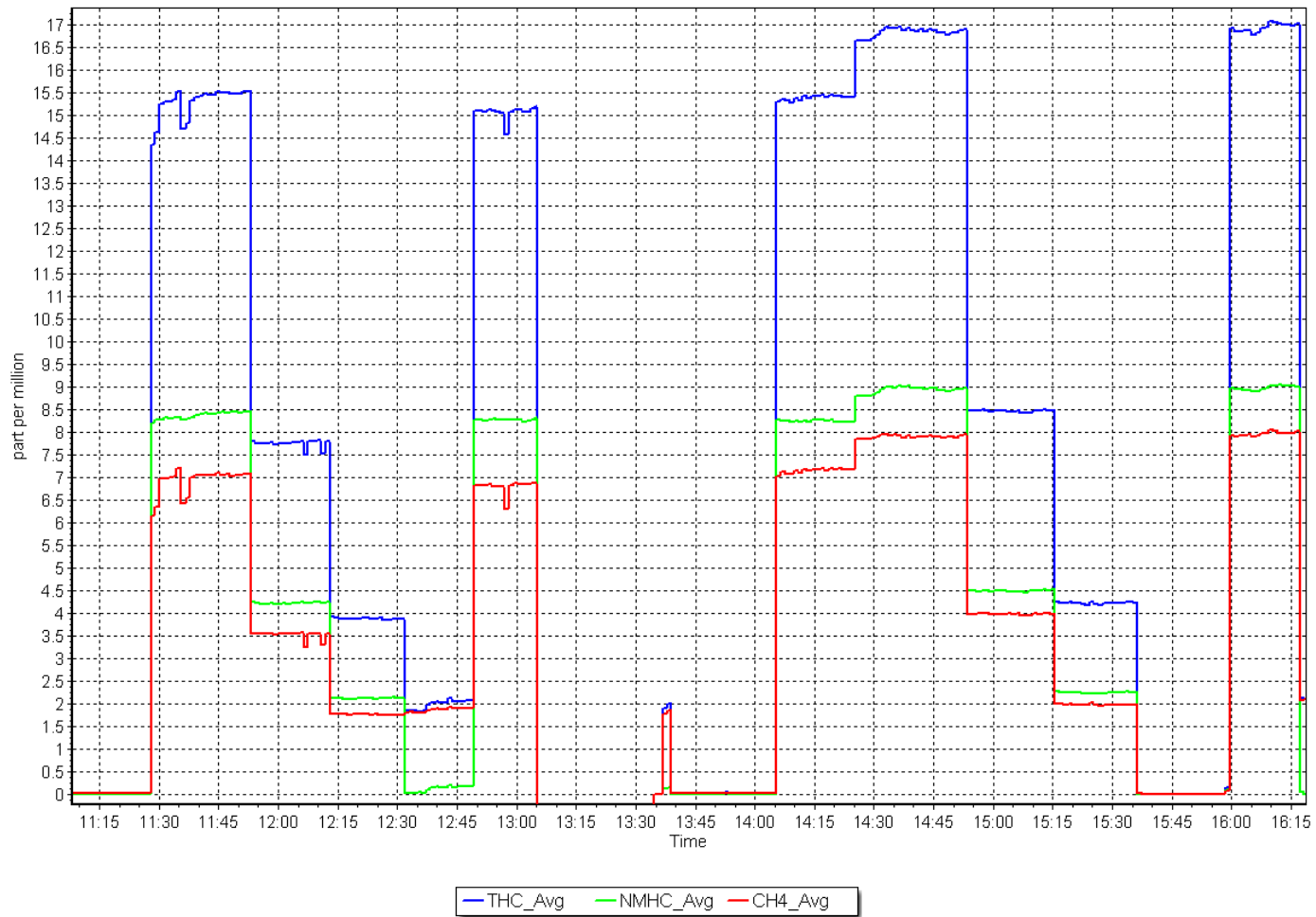
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999976		<i>≥0.995</i>
8.80	8.95	0.9836	Slope	1.018166		<i>0.90 - 1.10</i>
4.41	4.48	0.9848	Intercept	-0.017262		<i>+/-0.5</i>
2.25	2.25	1.0013				



NMHC Calibration Plot

Date: March 12, 2025

Location: Stony Mountain





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Stony Mountain
Calibration Date: March 18, 2025
Start time (MST): 10:55
Reason: Removal

Station number: AMS 18
Last Cal Date: March 12, 2025
End time (MST):

Calibration Standards

Gas Cert Reference:	XC026809B	Cal Gas Expiry Date:	January 12, 2029
CH ₄ Cal Gas Conc.	504.9 ppm	CH ₄ Equiv Conc.	1076.6 ppm
C ₃ H ₈ Cal Gas Conc.	207.9 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH ₄ Conc.	504.9 ppm	CH ₄ Equiv Conc.	1076.6 ppm
Removed C ₃ H ₈ Conc.	207.9 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	Teledyne API T750	Serial Number:	282
Zero Air Gen model:	Teledyne API T751H	Serial Number:	321

Analyzer Information

Analyzer make: Thermo 55i
THC Range: 0 - 20 ppm

Analyzer serial #: 1193585647
NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	3.22E-04		NMHC SP Ratio:	4.62E-05
CH ₄ Retention time:	16.8		NMHC Peak Area:	190475
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.01	----
As found High point	4921	78.1	16.82	15.74	1.069
As found Mid point	4960	39.1	8.42	7.98	1.057
As found Low point	4980	20.0	4.31	4.01	1.078
New cylinder response					
Baseline Corr AF:	15.73	Prev response	17.00	*% change	-8.1%
Baseline Corr 2nd AF:	7.97	AF Slope:	0.936385	AF Intercept:	0.017125
Baseline Corr 3rd AF:	4.00	AF Correlation:	0.999938	* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero					
High point					
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor

Notes:

Instrument removed due to baseline drift.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4921	78.1	8.93	8.77	1.018
As found Mid point	4960	39.1	4.47	4.46	1.004
As found Low point	4980	20.0	2.29	2.23	1.027
New cylinder response					
Baseline Corr AF:	8.77	Prev response	9.08	*% change	-3.5%
Baseline Corr 2nd AF:	4.46	AF Slope:	0.983426	AF Intercept:	0.005378
Baseline Corr 3rd AF:	2.23	AF Correlation:	0.999904	* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero					
High point					
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.01	Limit = 0.90-1.10
As found High point	4921	78.1	7.89	6.97	1.133
As found Mid point	4960	39.1	3.95	3.52	1.124
As found Low point	4980	20.0	2.02	1.78	1.141
New cylinder response					
Baseline Corr AF:	6.96	Prev response	7.92	*% change	-13.8%
Baseline Corr 2nd AF:	3.51	AF Slope:	0.883264	AF Intercept:	0.011745
Baseline Corr 3rd AF:	1.77	AF Correlation:	0.999969	* = > +/-5% change initiates investigation	

CH₄ Calibration Data

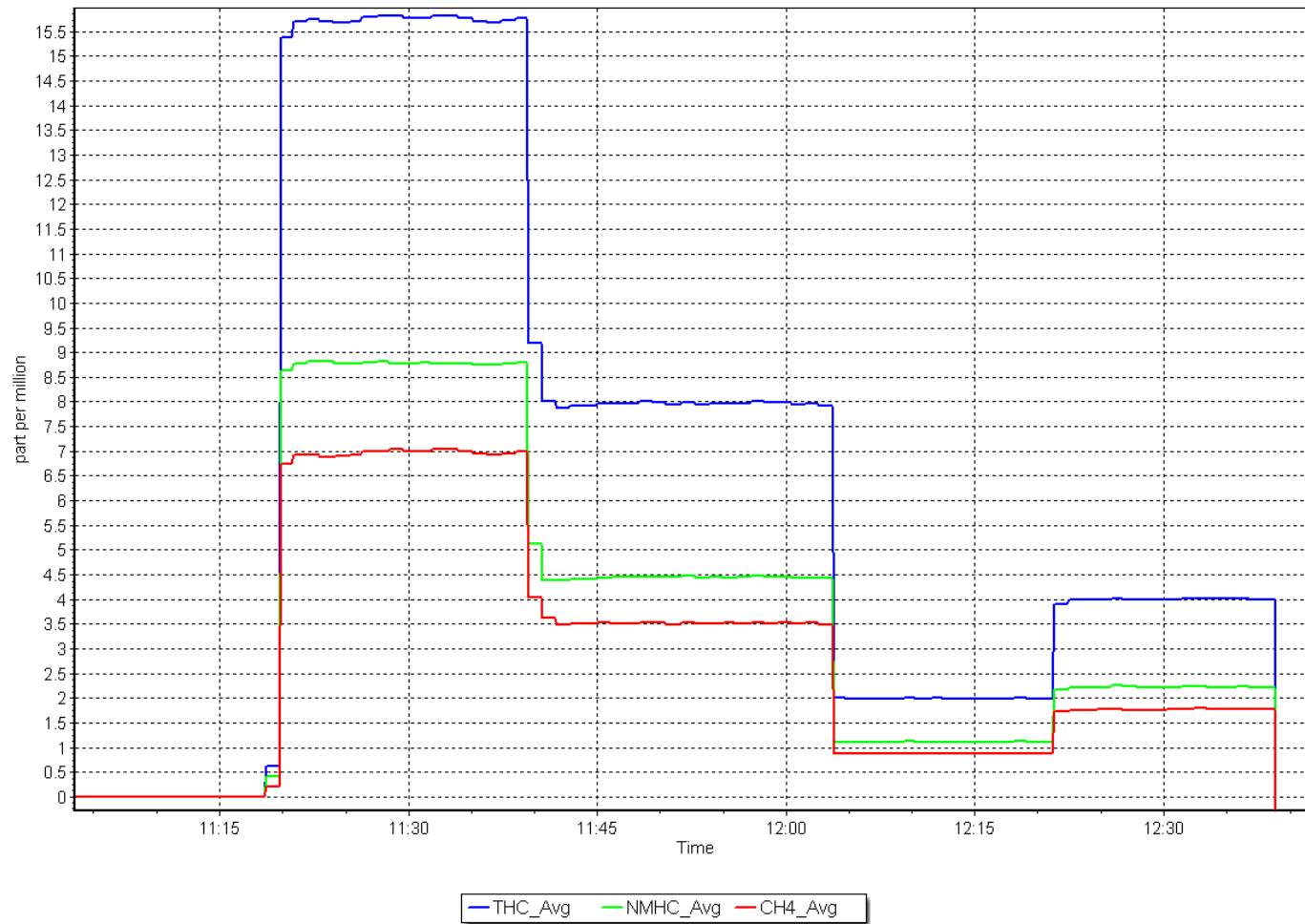
Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero					
High point					
Mid point					
Low point					
As left zero					
As left span					

Average Correction Factor

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
THC Cal Slope:	1.011792	
THC Cal Offset:	-0.022319	
CH ₄ Cal Slope:	1.004409	
CH ₄ Cal Offset:	-0.004252	
NMHC Cal Slope:	1.018166	
NMHC Cal Offset:	-0.017262	

Calibration Performed By: Aswin Sasi Kumar





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Stony Mountain
 Calibration Date: March 18, 2025
 Start time (MST): 13:15
 Reason: Install

Station number: AMS 18
 Last Cal Date:
 End time (MST): 16:05

Calibration Standards

Gas Cert Reference:	XC026809B	Cal Gas Expiry Date:	January 12, 2029
CH ₄ Cal Gas Conc.	504.9 ppm	CH ₄ Equiv Conc.	1076.6 ppm
C ₃ H ₈ Cal Gas Conc.	207.9 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH ₄ Conc.	504.9 ppm	CH ₄ Equiv Conc.	1076.6 ppm
Removed C ₃ H ₈ Conc.	207.9 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	Teledyne API T750	Serial Number:	282
Zero Air Gen model:	Teledyne API T751H	Serial Number:	321

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1218153355
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:		2.17E-04	NMHC SP Ratio:	4.10E-05
CH ₄ Retention time:		14.2	NMHC Peak Area:	217649
Zero Chromatogram:		OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.01	----
High point	4921	78.1	16.82	16.84	0.999
Mid point	4960	39.1	8.42	8.44	0.998
Low point	4980	20.0	4.31	4.19	1.029
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	16.82	16.70	1.007
Average Correction Factor					1.008

Notes:

Install cal. Span adjusted.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	78.1	8.93	8.96	0.997
Mid point	4960	39.1	4.47	4.50	0.993
Low point	4980	20.0	2.29	2.23	1.024
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	8.93	8.87	1.007
Average Correction Factor					1.004

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero					
As found High point					
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	NA	Prev response	NA	*% change	NA
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.01	----
High point	4921	78.1	7.89	7.88	1.001
Mid point	4960	39.1	3.95	3.94	1.003
Low point	4980	20.0	2.02	1.95	1.034
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	7.89	7.83	1.008
Average Correction Factor					1.013

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
THC Cal Slope:		1.003220
THC Cal Offset:		-0.041072
CH ₄ Cal Slope:		1.001011
CH ₄ Cal Offset:		-0.021650
NMHC Cal Slope:		1.005632
NMHC Cal Offset:		-0.020230

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

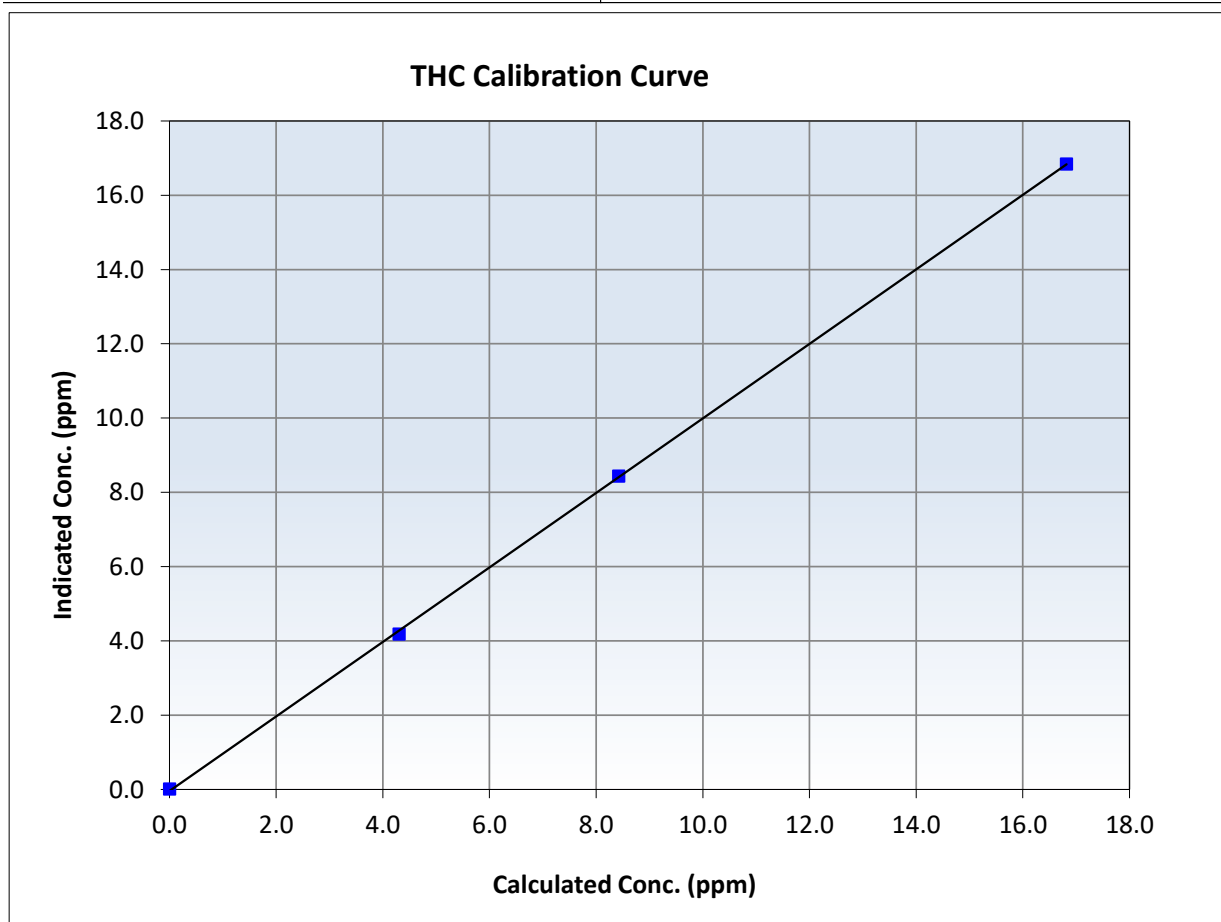
THC Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	13:15	End Time (MST):	16:05
Analyzer make:	Thermo 55i	Analyzer serial #:	1218153355

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			Limits
0.00	0.01	----	Correlation Coefficient	0.999920		≥ 0.995
16.82	16.84	0.9988	Slope	1.003220		0.90 - 1.10
8.42	8.44	0.9977	Intercept	-0.041072		± 0.5
4.31	4.19	1.0285				





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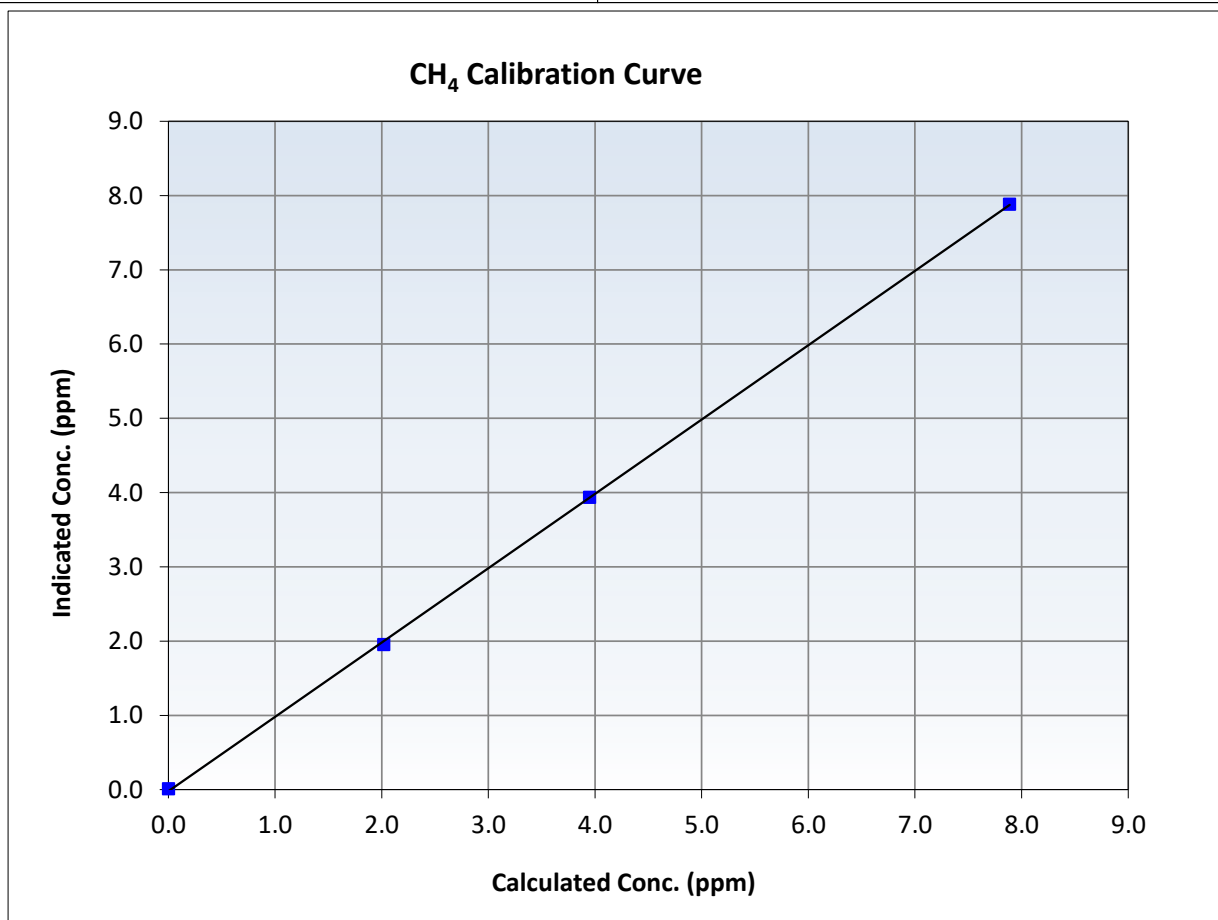
CH₄ Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	13:15	End Time (MST):	16:05
Analyzer make:	Thermo 55i	Analyzer serial #:	1218153355

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.00	0.01	----	Correlation Coefficient	0.999900		≥ 0.995
7.89	7.88	1.0005	Slope	1.001011		0.90 - 1.10
3.95	3.94	1.0033	Intercept	-0.021650		± 0.5
2.02	1.95	1.0341				





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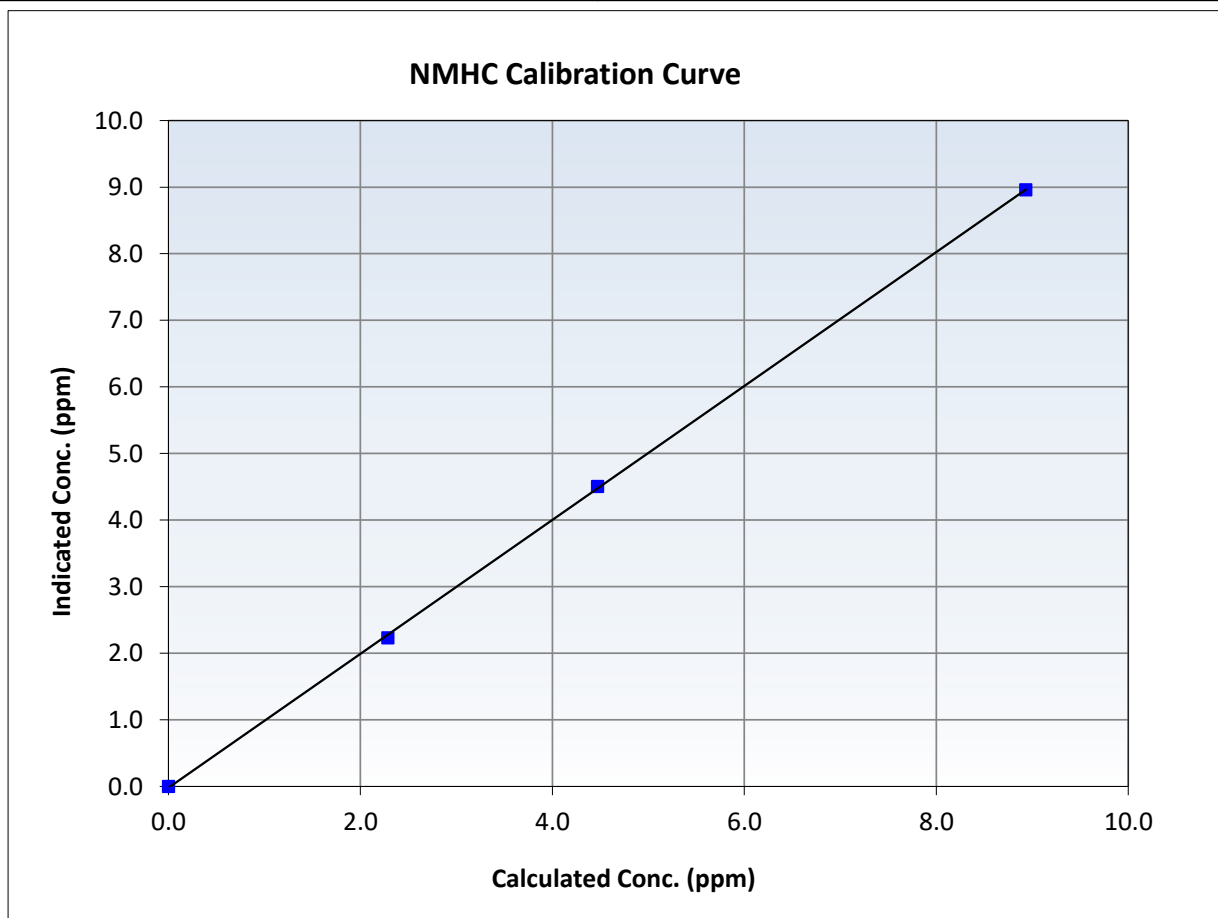
NMHC Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	13:15	End Time (MST):	16:05
Analyzer make:	Thermo 55i	Analyzer serial #:	1218153355

Calibration Data

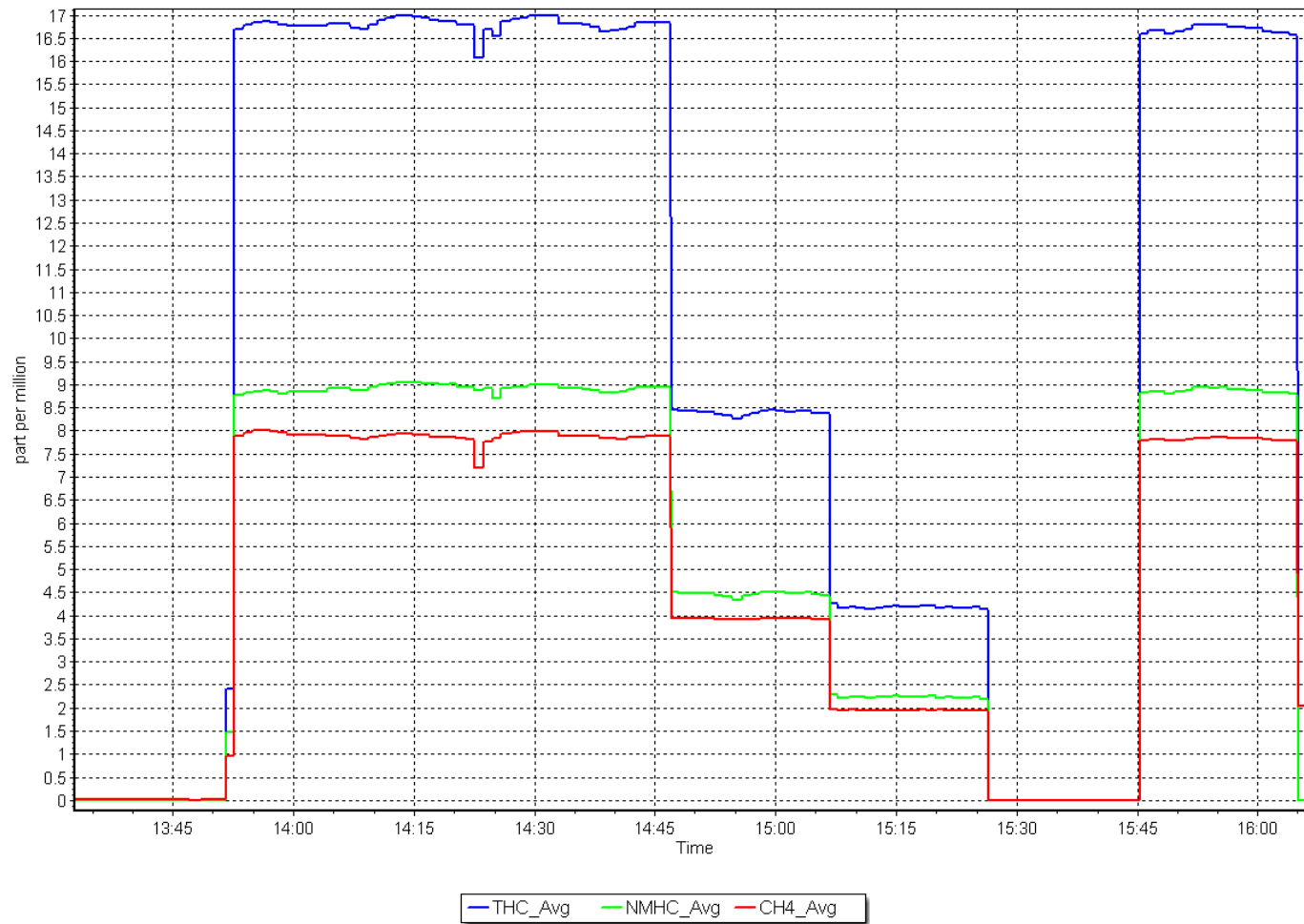
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999926	<i>≥0.995</i>
8.93	8.96	0.9969	Slope	1.005632	<i>0.90 - 1.10</i>
4.47	4.50	0.9928	Intercept	-0.020230	<i>+/-0.5</i>
2.29	2.23	1.0237			



NMHC Calibration Plot

Date: March 18, 2025

Location: Stony Mountain





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Stony Mountain
Station number: AMS 18
Calibration Date: March 25, 2025
Last Cal Date: February 25, 2025
Start time (MST): 10:39
End time (MST): 16:24
Reason: Routine

Calibration Standards

NO Gas Cylinder #: DT0045516
NOX Cal Gas Conc: 60.30 ppm
Removed Cylinder #: N/A
Removed Gas NOX Conc: 60.30 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T750
ZAG make/model: Teledyne API 751H
Cal Gas Expiry Date: November 17, 2026
NO Cal Gas Conc: 60.10 ppm
Removed Gas Exp Date: N/A
Removed Gas NO Conc: 60.10 ppm
NO gas Diff:
Serial Number: 282
Serial Number: 321

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO _x Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-1.4	-1.9	0.5	----	----
AF High point	4933	66.6	803.3	800.6	2.7	790.5	791.5	-1.0	1.0143	1.0091
AF Mid point										
AF Low point										
New cyl resp										
Previous Respo 4933	NO _x = 800.6 ppb	NO = 801.0 ppb	* = > +/-5% change initiates investigation			*Percent Change		NO _x = -1.1%		
Baseline Corr 1st pt	NO _x = 791.9 ppb	NO = 793.4 ppb	<u>As Found Statistics</u>			*Percent Change		NO = -1.0%		
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found NO _x r ² :			Nx SI:		Nx Int:		
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found NO r ² :			NO SI:		NO Int:		
			As found NO ₂ r ² :			NO ₂ SI:		NO ₂ Int:		

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO ₂ Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Teledyne API T200
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1035

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.920	0.938	NO bkgnd or offset:	-37.9	-28.3
NOX coeff or slope:	0.915	0.935	NOX bkgnd or offset:	-37.8	-28.0
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	6.9	7.3

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.997062	0.999208
NO _x Cal Offset:	-0.329445	-0.808436
NO Cal Slope:	1.002008	1.003246
NO Cal Offset:	-1.249337	-1.307881
NO ₂ Cal Slope:	0.990097	0.987109
NO ₂ Cal Offset:	1.526841	-0.087128

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	-0.3	-0.2	0.0	----	----
High point	4933	66.6	803.3	800.6	2.7	801.7	802.8	-1.1	1.0019	0.9973
Mid point	4967	33.3	401.6	400.2	1.3	401.3	398.6	2.7	1.0007	1.0041
Low point	4983	16.6	200.2	199.5	0.7	198.0	198.5	-0.5	1.0112	1.0053
As left zero	5000	0.0	0.0	0.0	0.0	0.3	0.1	0.2	----	----
As left span	4933	66.6	803.3	366.8	436.5	790.6	366.8	423.8	1.0160	1.0000
Average Correction Factor									1.0046	1.0022

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.0	----	----
High GPT point	804.0	409.7	397.0	391.3	1.0145	98.6%
Mid GPT point	804.0	604.0	202.7	201.4	1.0063	99.4%
Low GPT point	804.0	704.7	102.0	99.5	1.0248	97.6%
Average Correction Factor					1.0152	98.5%

Notes:

Portable calibration system used. Zero and Span adjusted.

Calibration Performed By:

Aswin Sasi Kumar



Wood Buffalo Environmental Association

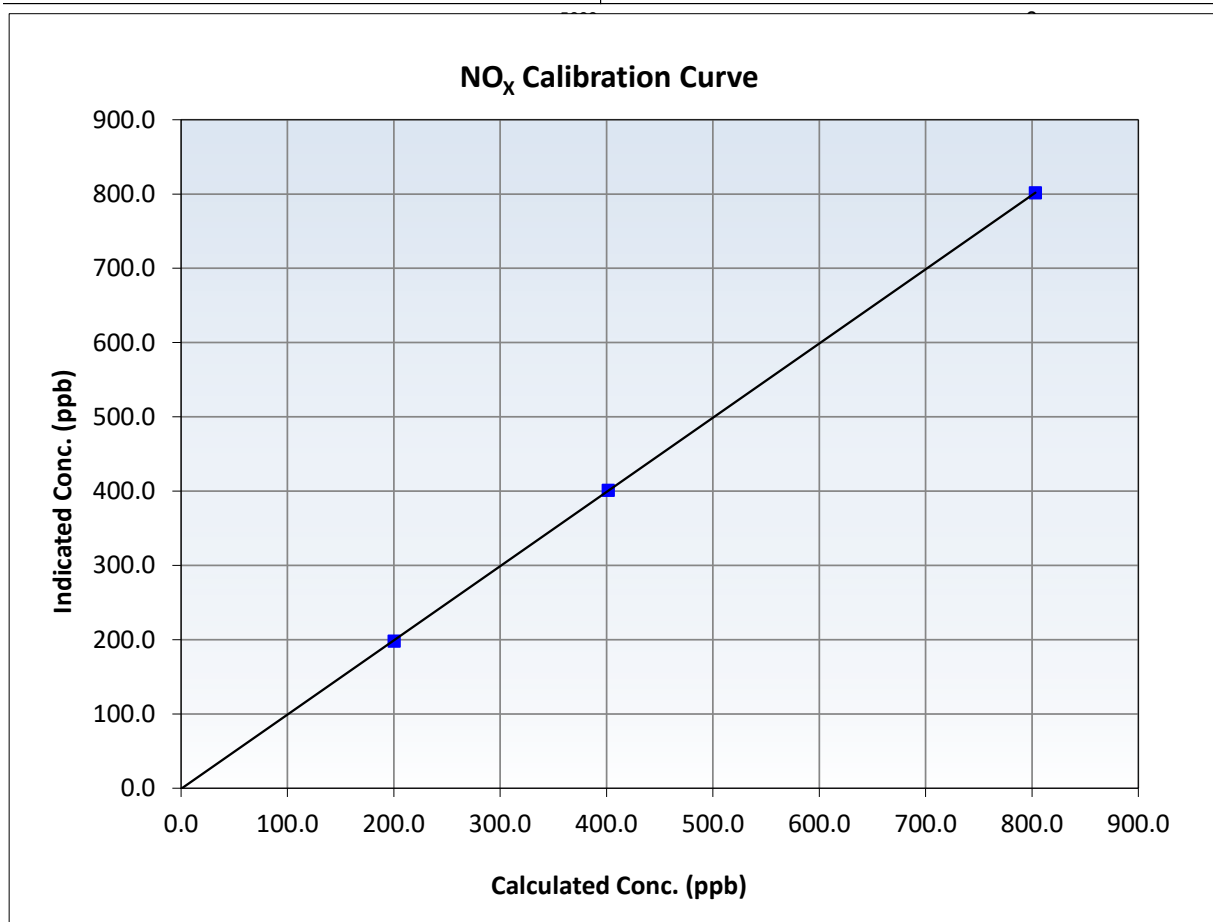
NO_x Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 25, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	10:39	End Time (MST):	16:24
Analyzer make:	Teledyne API T200	Analyzer serial #:	1035

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.3	----	Correlation Coefficient	0.999993	≥0.995
803.3	801.7	1.0019	Slope	0.999208	0.90 - 1.10
401.6	401.3	1.0007	Intercept	-0.808436	+/-20
200.2	198.0	1.0112			





Wood Buffalo Environmental Association

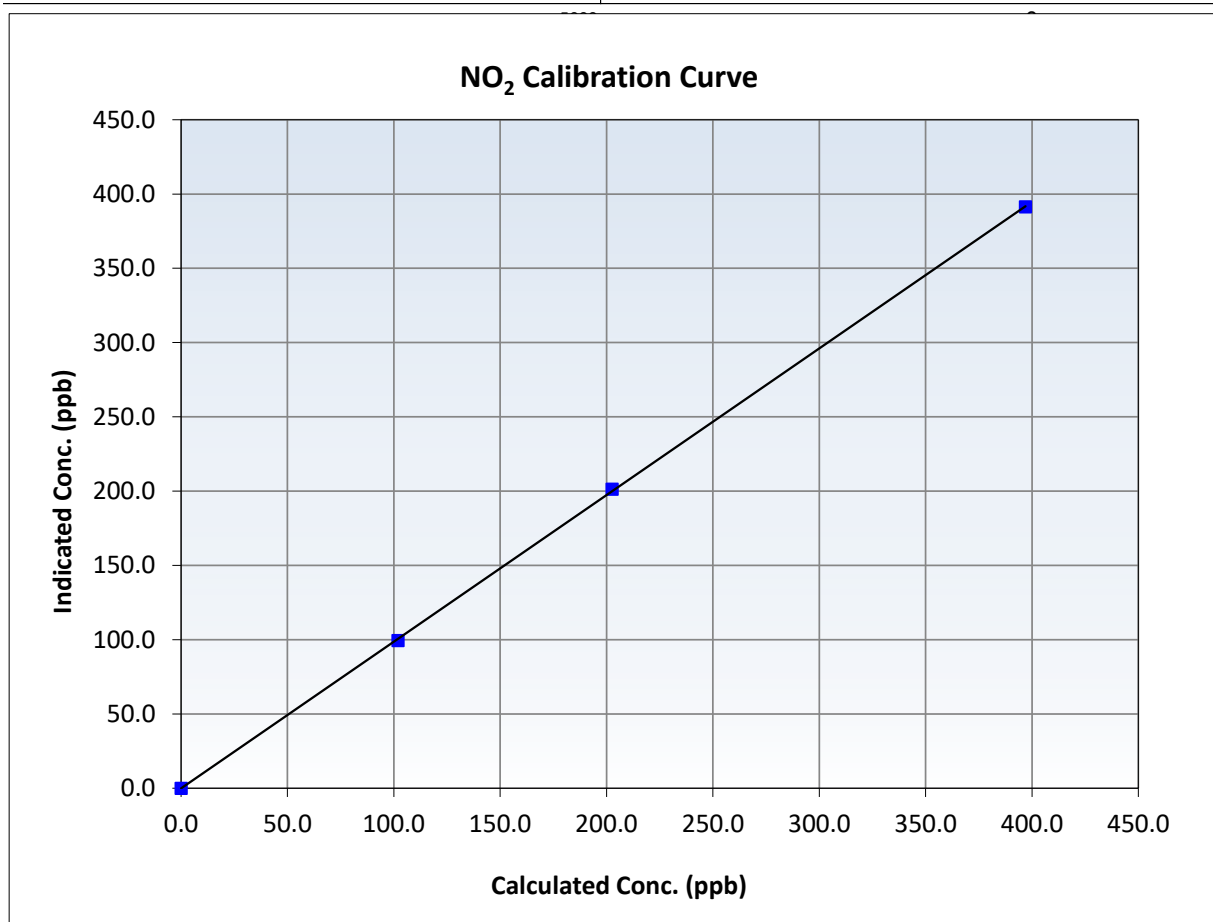
NO₂ Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 25, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	10:39	End Time (MST):	16:24
Analyzer make:	Teledyne API T200	Analyzer serial #:	1035

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999959	≥0.995
397.0	391.3	1.0145	Slope	0.987109	0.90 - 1.10
202.7	201.4	1.0063	Intercept	-0.087128	+/-20
102.0	99.5	1.0248			





Calibration Date:	March 25, 2025	Previous Calibration:	February 25, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	10:39	End Time (MST):	16:24
Analyzer make:	Teledyne API T200	Analyzer serial #:	1035

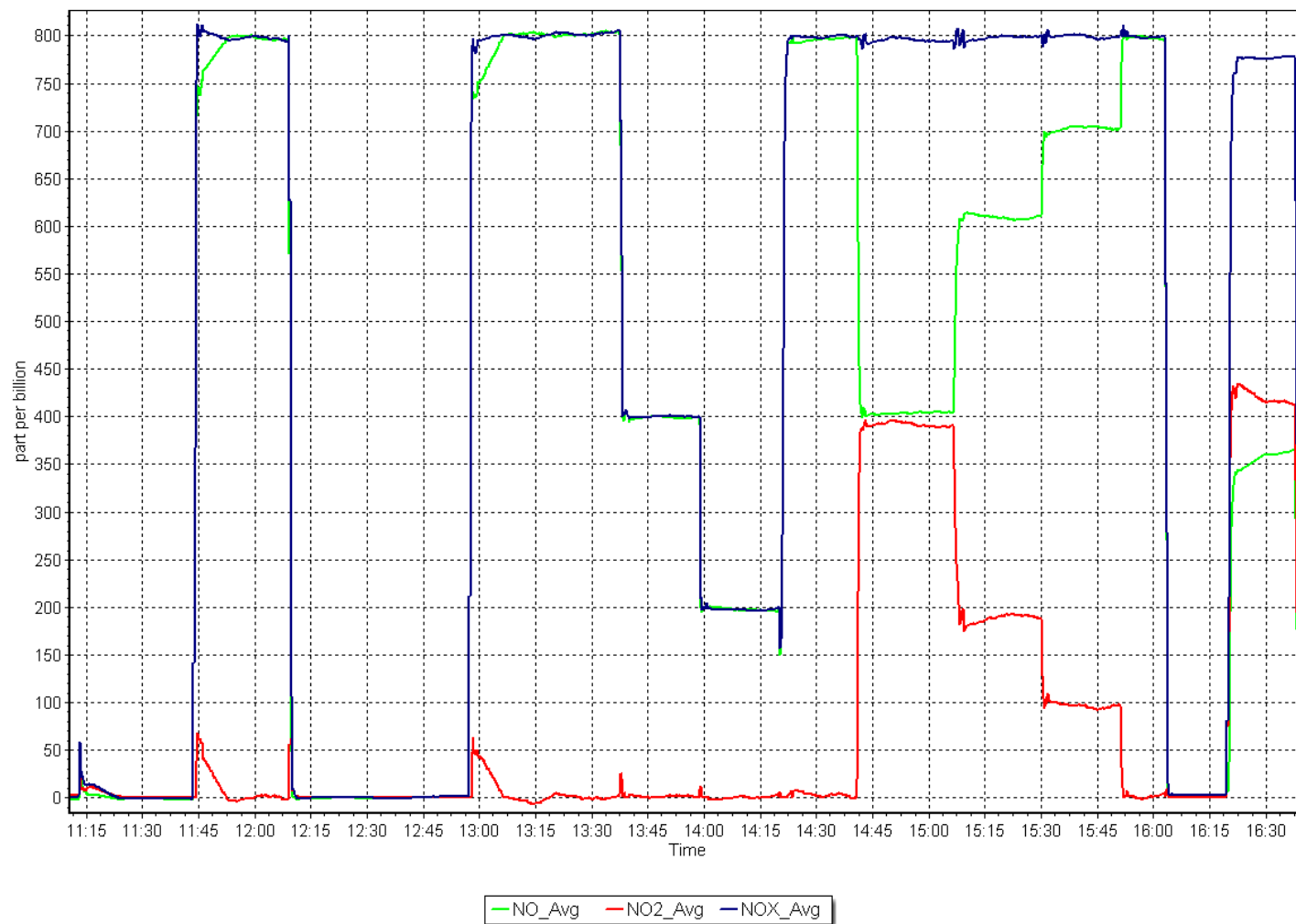
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		
					<u>Limits</u>
0.0	-0.2	----	Correlation Coefficient	0.999986	≥0.995
800.6	802.8	0.9973	Slope	1.003246	0.90 - 1.10
400.2	398.6	1.0041			
199.5	198.5	1.0053	Intercept	-1.307881	+/-20
		5000	0		
		4933	66.6		



NO_x Calibration Plot

Date: March 25, 2025

Location: Stony Mountain





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Stony Mountain
Calibration Date: March 6, 2025
Start time (MST): 11:30
Reason: Routine

Station number: AMS 18
Last Cal Date: February 10, 2025
End time (MST): 14:47

Calibration Standards

O₃ generation mode: Photometer
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne API 701H

Serial Number: 2658
Serial Number: 355

Analyzer Information

Analyzer make: API T400
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 825

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.002629	0.997629	Backgd or Offset:	2.0	2.0
Calibration intercept:	0.640000	0.840000	Coeff or Slope:	1.027	1.027

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	NA	0.0	0.4	----
As found High point	4888	1138.1	400.0	403.9	0.991
As found Mid point					
As found Low point					
Baseline Corr As found:	403.5	Previous response	401.7	*% change	0.4%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	NA	0.0	0.5	----
High point	4888	1138.1	400.0	399.6	1.001
Mid point	4888	884.5	200.0	200.9	0.996
Low point	4888	741.4	100.0	100.7	0.993
As left zero	5000	NA	0.0	0.1	----
As left span	4812	1097.9	400.0	403.8	0.991
Average Correction Factor					0.997

Notes: No adjustments needed.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

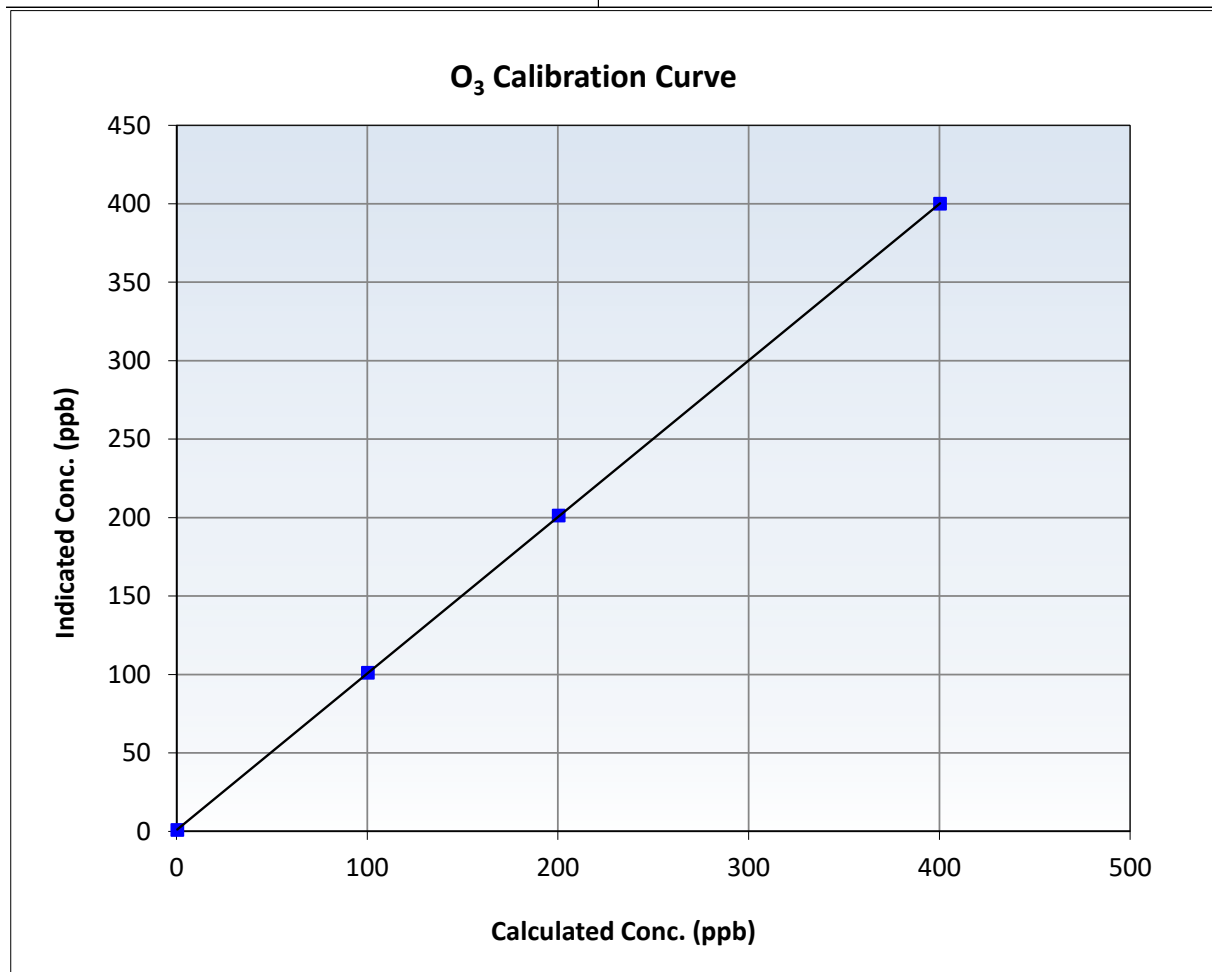
O₃ Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 10, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	11:30	End Time (MST):	14:47
Analyzer make:	API T400	Analyzer serial #:	825

Calibration Data

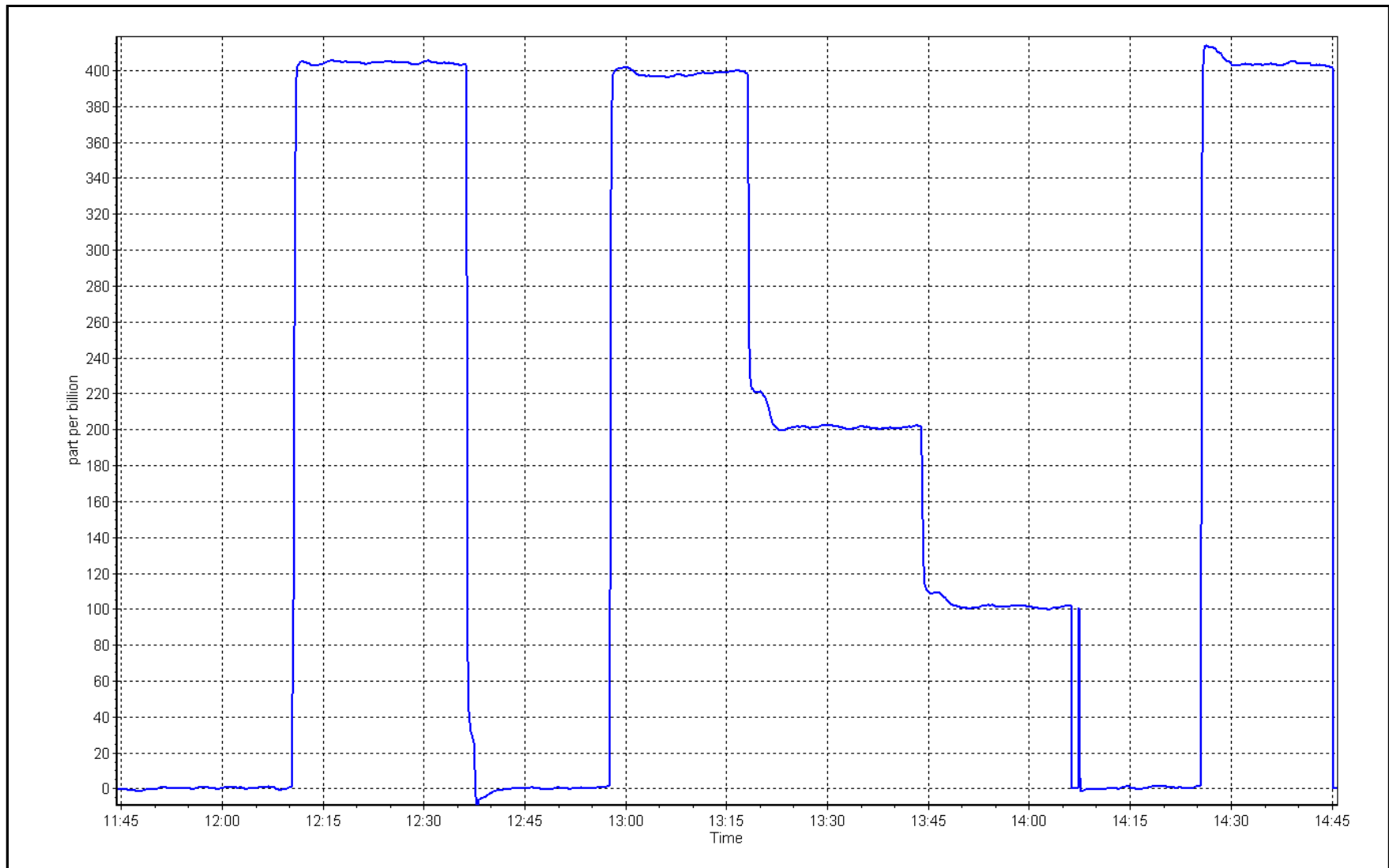
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.5	----	Correlation Coefficient	0.999994	≥ 0.995
400.0	399.6	1.0010	Slope	0.997629	$0.90 - 1.10$
200.0	200.9	0.9955	Intercept	0.840000	± 5
100.0	100.7	0.9930			



O₃ Calibration Plot

Date: March 6, 2025

Location: Stony Mountain





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Stony Mountain Station number: AMS 18
Calibration Date: March 27, 2025 Last Cal Date: February 27, 2025
Start time (MST): 14:45 End time (MST): 15:34

Analyzer Make: API T640 S/N: 324
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388750
Temp/RH standard: Alicat FP-25BT S/N: 388750

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-4.3	-5.2	-4.3	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	703.7	695.30	703.7	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	5.01	5.05	5.01	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	73	----	61	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 2.1		PM w/ HEPA: 0.0		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: October 10, 2024
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test	11.0	11	11.0	<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: February 27, 2025
Date Disposable Filter Changed: December 20, 2024

Post- maintenance Zero Verification: PM w/ HEPA: 0.0 <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: July 4, 2024
Date RH/T Sensor Cleaned: July 4, 2024

Notes: Flow, temp and pressure checked. Leak check passed.

Calibration by: Aswin Sasi Kumar



Wood Buffalo Environmental Association

CO Calibration Report

Station Information

Station Name: Stony Mountain Station number: AMS 18
Calibration Date: March 3, 2025 Last Cal Date: February 27, 2025
Start time (MST): 11:05 End time (MST): 14:10
Reason: Routine

Calibration Standards

Cal Gas Concentration: 3,080 ppm Cal Gas Exp Date: November 4, 2028
Cal Gas Cylinder #: EB0065608
Removed Cal Gas Conc: 3,080 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 2658
ZAG Make/Model: Teledyne API T701H Serial Number: 355

Analyzer Information

Analyzer make: Teledyne API T300 Analyzer serial #: 3504
Analyzer Range: 0 - 50 ppm

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.998437	0.997355	Backgd or Offset:	-0.012	-0.012
Calibration intercept:	0.109810	0.081757	Coeff or Slope:	0.907	0.907

CO As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero) Limit = 0.90-1.10
As found zero	5000	0.0	0.0	0.0	----
As found High point	4933	66.7	41.1	41.0	1.002
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	41.00	Prev response:	41.14	*% change:	-0.3%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CO Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4933	66.7	41.1	41.0	1.002
Mid point	4966	33.3	20.5	20.7	0.992
Low point	4983	16.7	10.3	10.3	0.997
As left zero	5000	0.0	0.0	0.0	----
As left span	4933	66.7	41.1	41.1	1.000
Average Correction Factor					0.997

Notes: No adjustments made.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

CO Calibration Summary

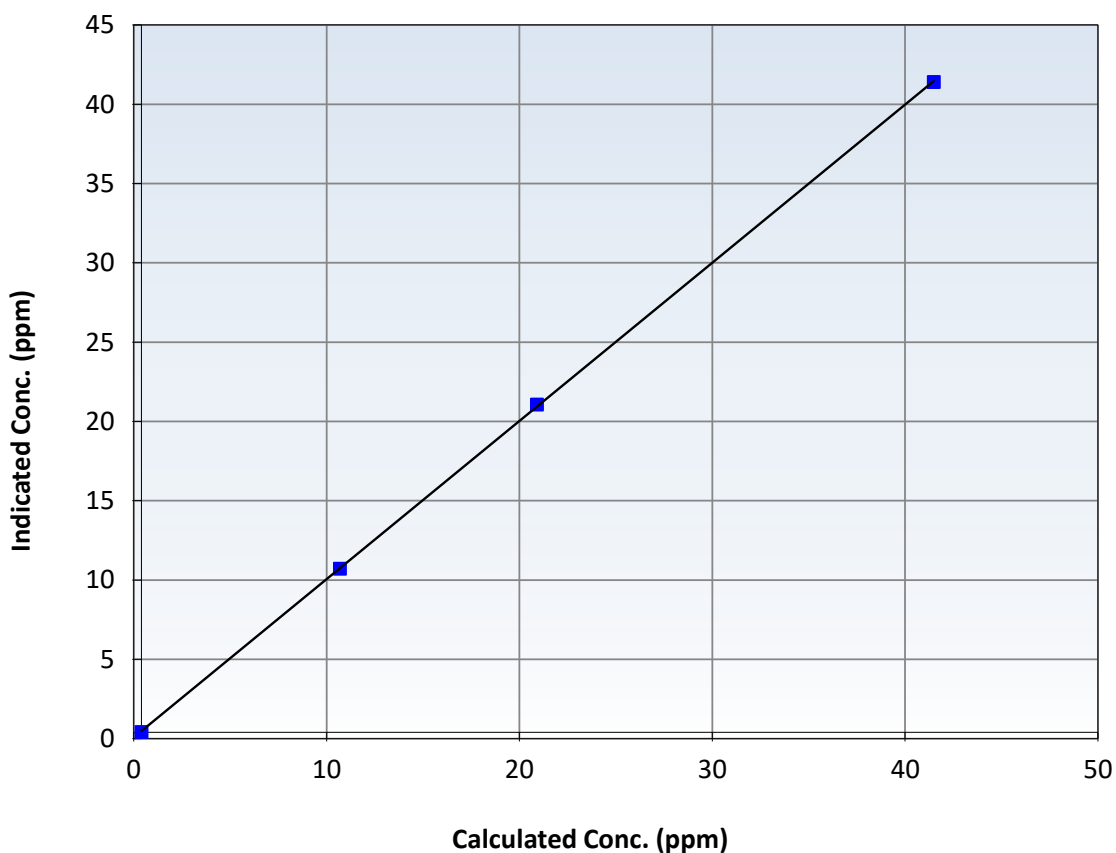
Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 27, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	11:05	End Time (MST):	14:10
Analyzer make:	Teledyne API T300	Analyzer serial #:	3504

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999972	≥ 0.995
41.1	41.0	1.0022	Slope	0.997355	$0.90 - 1.10$
20.5	20.7	0.9921	Intercept	0.081757	± 1.5
10.3	10.3	0.9969			

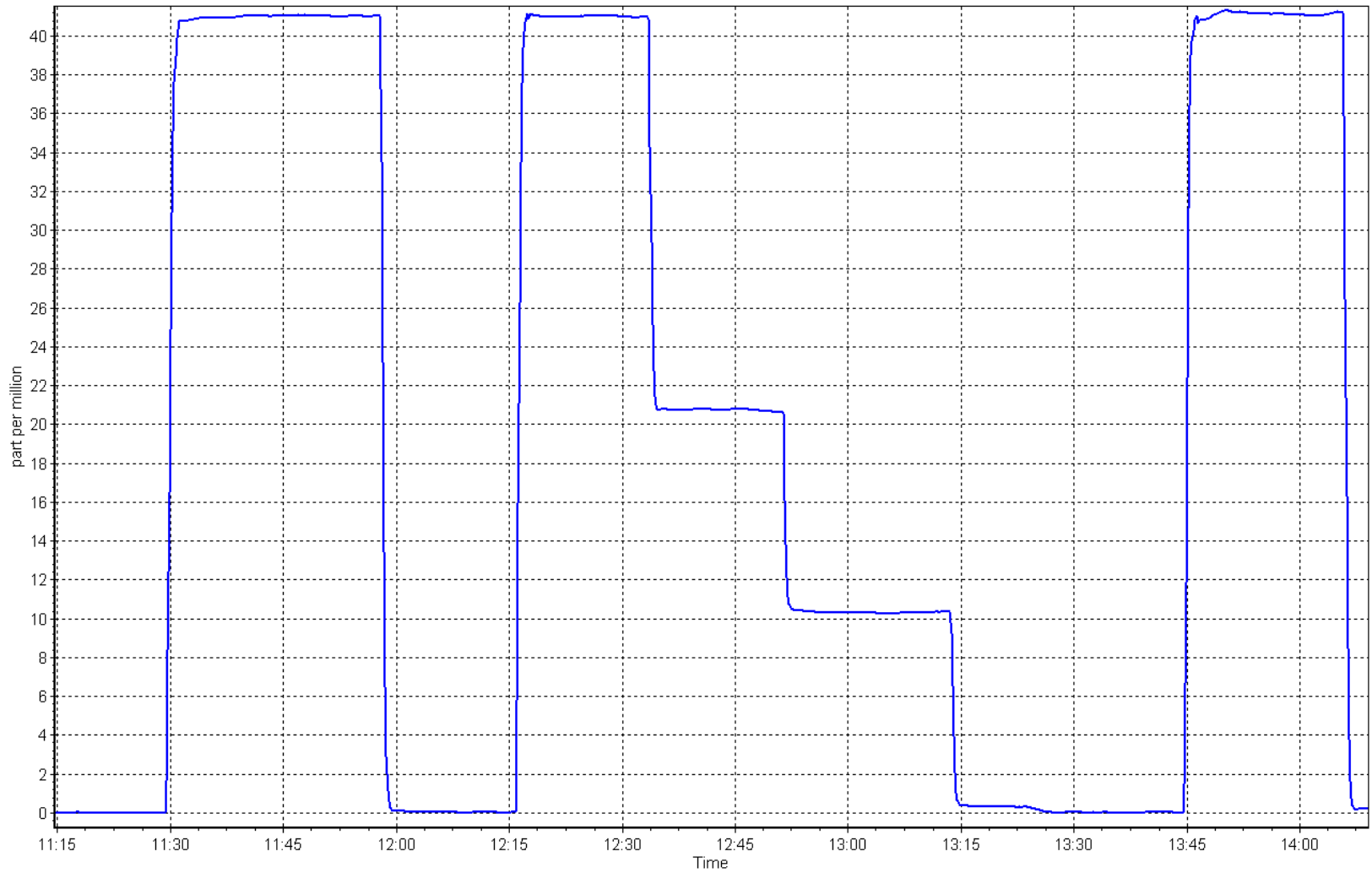
CO Calibration Curve



CO Calibration Plot

Date: March 3, 2025

Location: Stony Mountain





Wood Buffalo Environmental Association

CO₂ Calibration Report

Station Information

Station Name: Stony Mountain
Calibration Date: March 27, 2025
Start time (MST): 11:45
Reason: Routine

Station number: AMS 18
Last Cal Date: February 24, 2025
End time (MST): 15:51

Calibration Standards

Cal Gas Concentration: 59,100 ppm
Cal Gas Cylinder #: EB0065608
Removed Cal Gas Conc: 59,100 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: Teledyne API T700
N2 Gen Make/Model: Peak Scientific
Cal Gas Exp Date: November 4, 2028
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 2658
Serial Number: 771048318

Analyzer Information

Analyzer make: API T360
Analyzer Range: 0 - 2,000 ppm

Analyzer serial #: 489

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999304	0.998644	Backgd or Offset:	-0.068	-0.068
Calibration intercept:	-2.420000	-1.640000	Coeff or Slope:	0.960	0.960

CO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	3000	0.0	0.0	0.1	----
As found High Point	2920	80.0	1576.0	1572.6	1.002
As found Mid Point					
As found Low Point					
New cylinder response					
Baseline Corr As found:	1572.5	Prev response:	1572.5	*% change:	0.0%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	3000	0.0	0.0	0.4	----
High point	2920	80.0	1576.0	1575.0	1.001
Mid point	2960	40.0	788.0	779.0	1.012
Low point	2980	20.0	394.0	393.3	1.002
As left zero	3000	0.0	0.0	-0.1	----
As left span	2930	80.0	1570.8	1573.4	0.998
Average Correction Factor					1.005

Notes: N2 generator swapped out before calibration. No adjustments needed.

Calibration Performed By: Aswin Sasi Kumar



Wood Buffalo Environmental Association

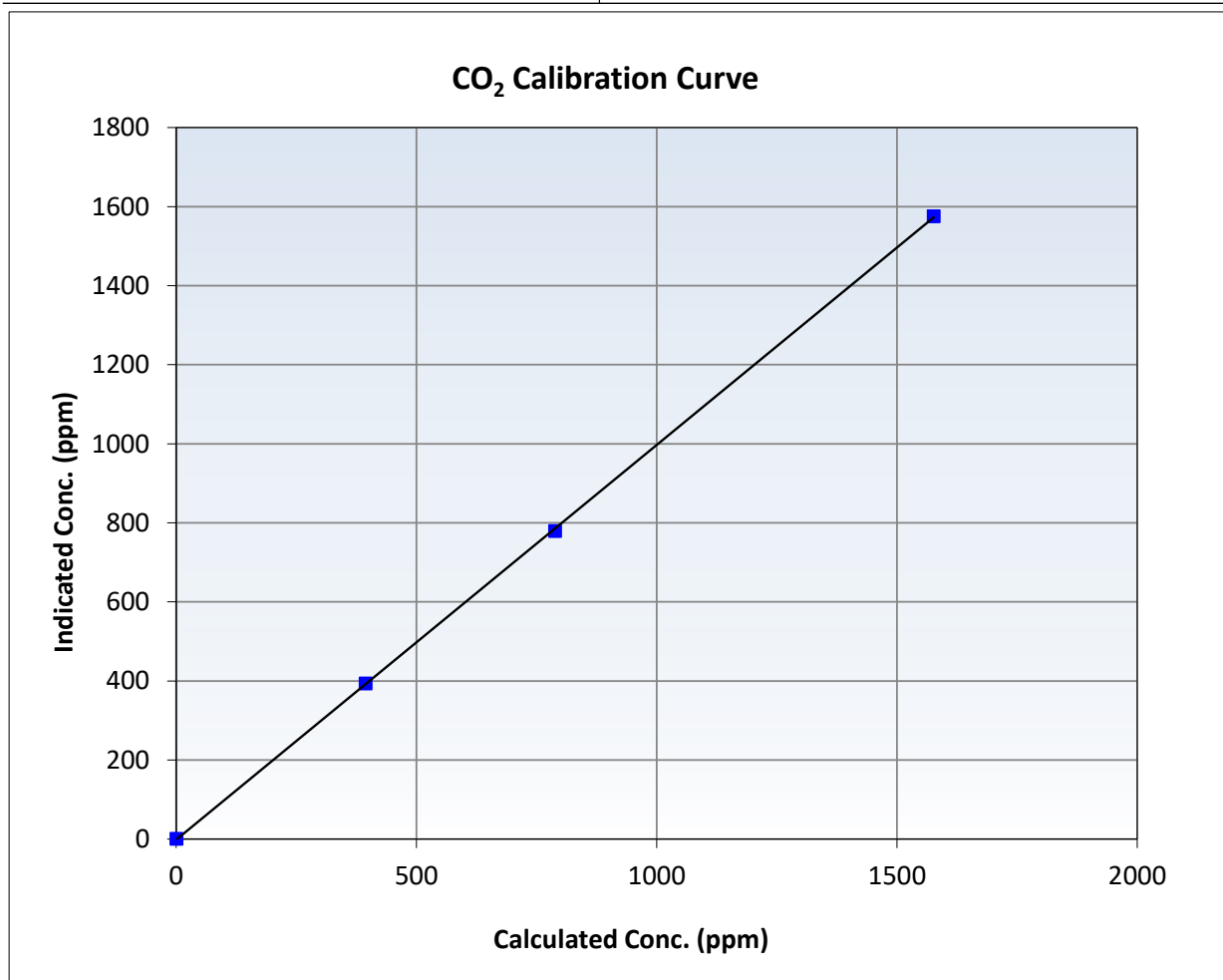
CO₂ Calibration Summary

Station Information

Calibration Date	March 27, 2025	Previous Calibration	February 24, 2025
Station Name	Stony Mountain	Station Number	AMS 18
Start Time (MST)	11:45	End Time (MST)	15:51
Analyzer make	API T360	Analyzer serial #	489

Calibration Data

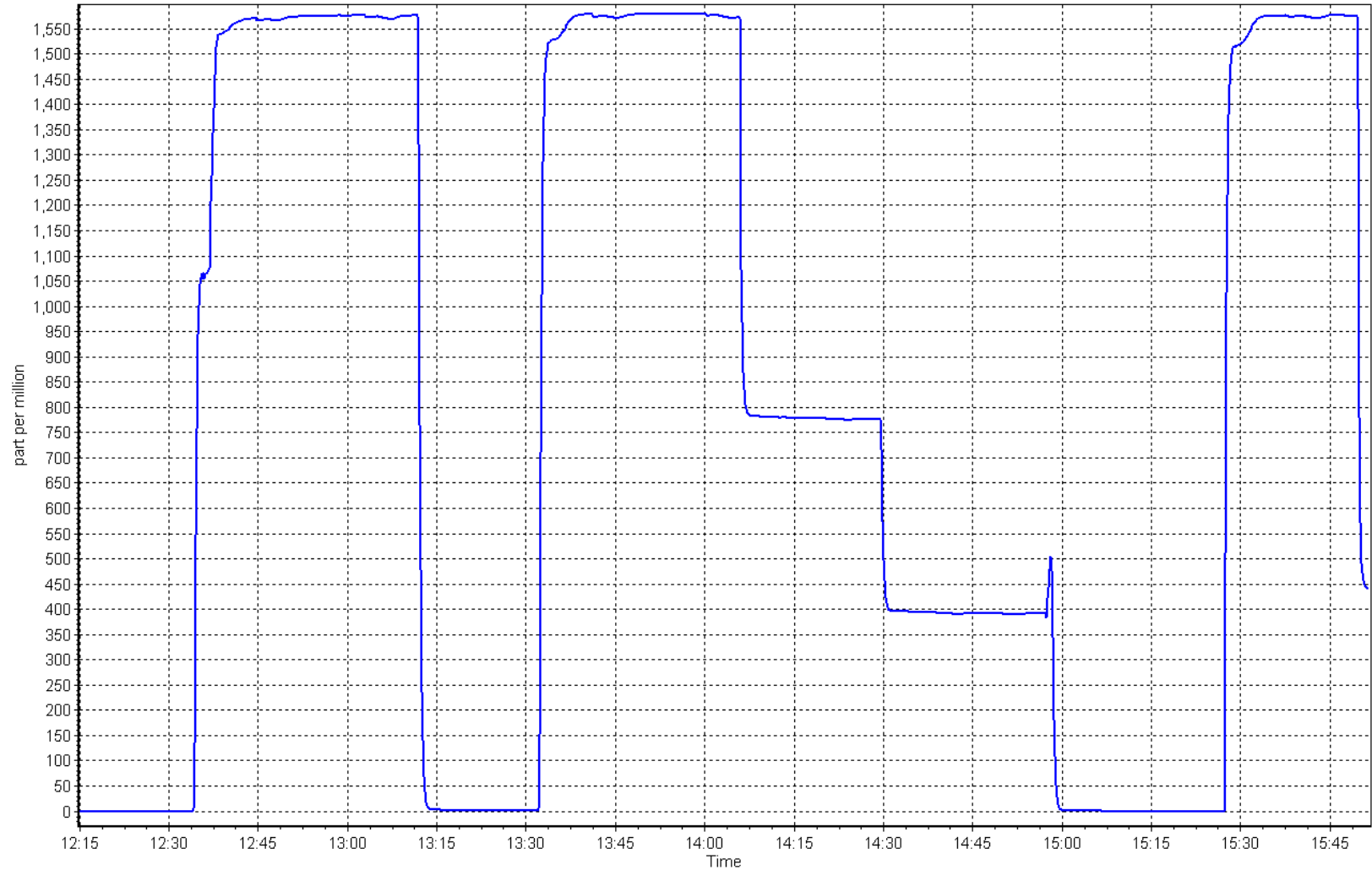
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.4	----	Correlation Coefficient	0.999960		≥0.995
1576.0	1575.0	1.0006	Slope	0.998644		0.90 - 1.10
788.0	779.0	1.0116	Intercept	-1.6		+/-20
394.0	393.3	1.0018				



CO₂ Calibration Plot

Date: March 27, 2025

Location: Stony Mountain





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS19 FIREBAG MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Firebag Station number: AMS 19
Calibration Date: March 15, 2025 Last Cal Date: February 25, 2025
Start time (MST): 10:30 End time (MST): 15:33
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.97 ppm Cal Gas Exp Date: October 9, 2032
Cal Gas Cylinder #: CC705799
Removed Cal Gas Conc: 50.97 ppm Rem Gas Exp Date:
Removed Gas Cyl #: Diff between cyl:
Calibrator Model: Teledyne API T700 Serial Number: 1607
Zero Air Gen Model: Teledyne API T701H Serial Number: 201

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1410661308
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.003348	1.002848	Backgd or Offset:	11.6	10.9
Calibration intercept:	0.400000	0.800000	Coeff or Slope:	1.005	1.005

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	4999	0.0	0.0	-0.4	----
As found High point	4922	78.4	799.2	799.0	1.000
As found Mid point	4961	39.2	399.6	398.2	1.003
As found Low point	4980	19.6	199.8	200.0	0.997
New cylinder response					
Baseline Corr As found:	799.4	Previous response	802.3	*% change	-0.4%
Baseline Corr 2nd AF pt:	398.6	AF Slope:	0.999845	AF Intercept:	-0.400000
Baseline Corr 3rd AF pt:	200.4	AF Correlation:	0.999996	* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	4999	0.0	0.0	0.2	----
High point	4922	78.4	799.2	802.0	0.997
Mid point	4961	39.2	399.6	401.8	0.995
Low point	4980	19.6	199.8	201.8	0.990
As left zero	4999	0.0	0.0	0.1	----
As left span	4922	78.4	799.2	804.0	0.994
Average Correction Factor:					0.994

Notes: Changed sample inlet filter after as founds. Adjusted zero.

Calibration Performed By: Braiden Boutillier



Wood Buffalo Environmental Association

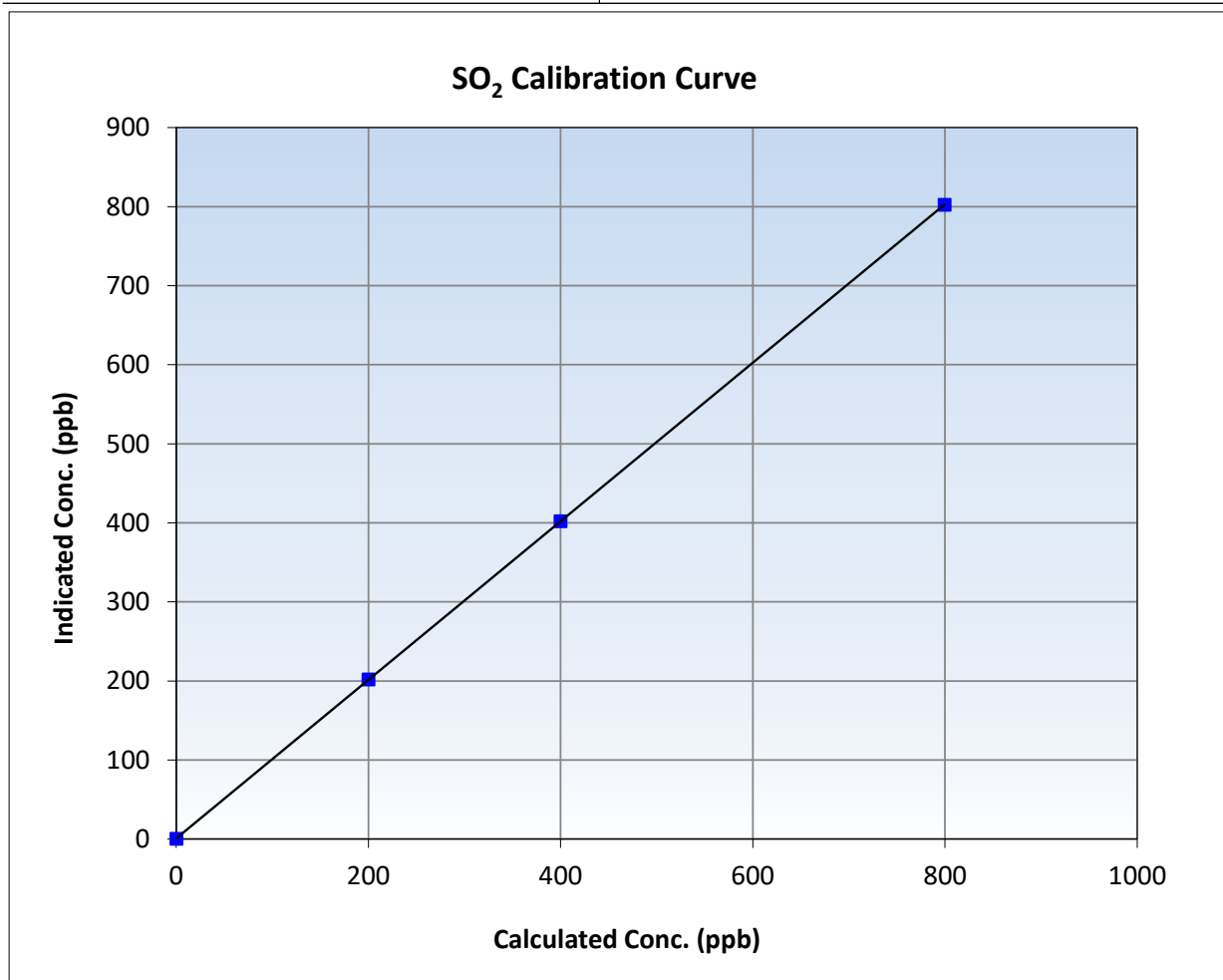
SO₂ Calibration Summary

Station Information

Calibration Date:	March 15, 2025	Previous Calibration:	February 25, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	10:30	End Time (MST):	15:33
Analyzer make:	Thermo 43i	Analyzer serial #:	1410661308

Calibration Data

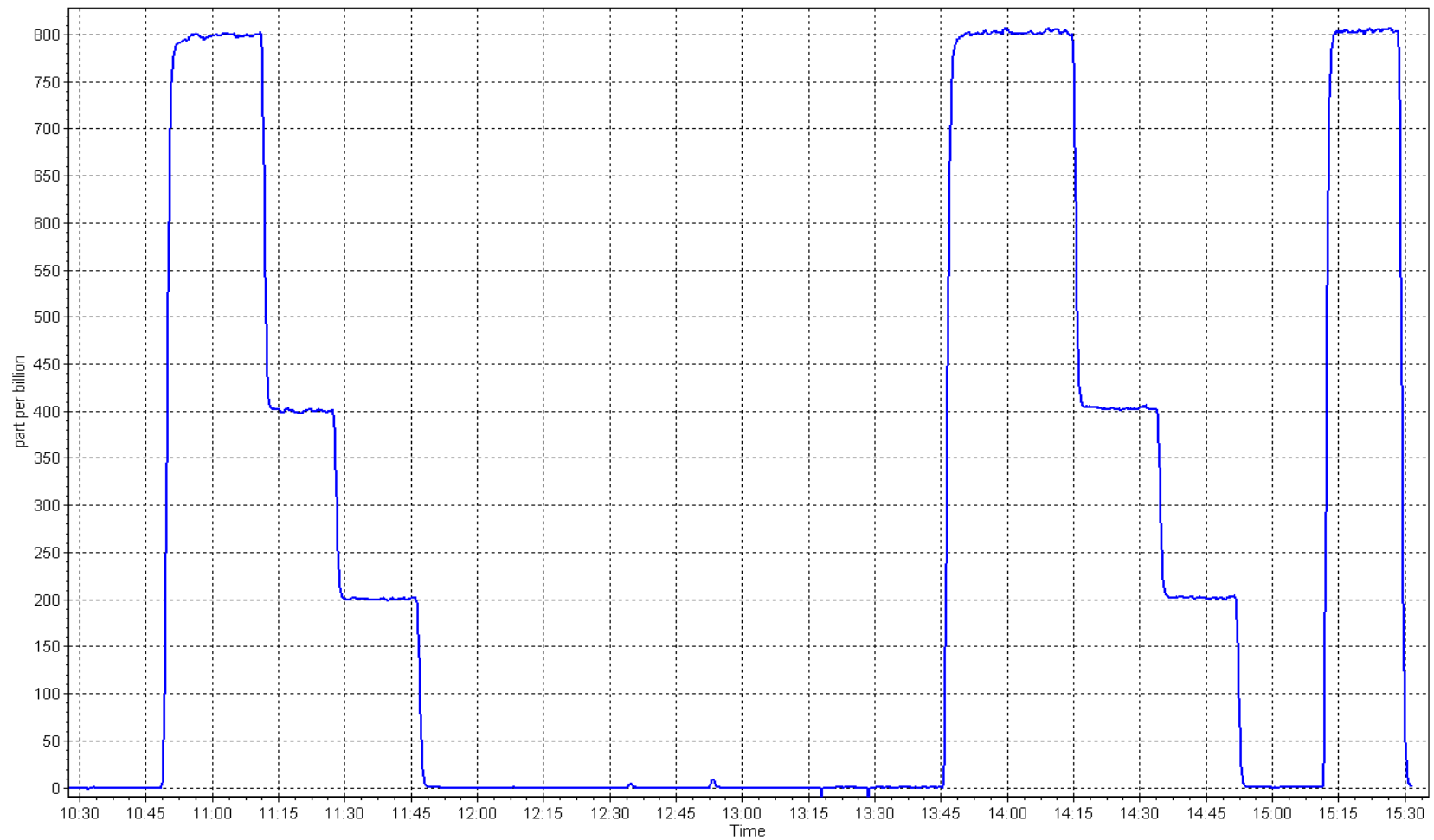
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999997	≥0.995
799.2	802.0	0.9965	Slope	1.002848	0.90 - 1.10
399.6	401.8	0.9945	Intercept	0.800000	+/-30
199.8	201.8	0.9901			



SO2 Calibration Plot

Date: March 15, 2025

Location: Firebag





Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name: Firebag
Calibration Date: March 4, 2025
Start time (MST): 11:50
Reason: Routine

Station number: AMS 19
Last Cal Date: February 18, 2025
End time (MST): 16:53

Calibration Standards

Cal Gas Concentration: 5.29 ppm
Cal Gas Cylinder #: DT0010492
Removed Cal Gas Conc: 5.29 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne API T701

Cal Gas Exp Date: March 19, 2027
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 1607
Serial Number: 201

Analyzer Information

Analyzer make: Thermo 43i-TLE
Converter make: Global
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1151680032
Converter serial #: 2022-222
Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.987188	1.001762	Backgd or Offset:	3.57	3.07
Calibration intercept:	0.080000	0.020000	Coeff or Slope:	1.251	1.214

H2S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.6	----
As found High point	4924	75.6	80.0	83.2	0.954
As found Mid point	4962	37.8	40.0	41.3	0.954
As found Low point	4981	18.9	20.0	20.5	0.948
New cylinder response					
Baseline Corr As found:	83.8	Prev response:	79.04	*% change:	5.7%
Baseline Corr 2nd AF pt:	41.9	AF Slope:	1.047056	AF Intercept:	-0.540000
Baseline Corr 3rd AF pt:	21.1	AF Correlation:	0.999996	* = > +/-5% change initiates investigation	

H2S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4924	75.6	80.0	80.1	0.999
Mid point	4962	37.8	40.0	40.2	0.995
Low point	4981	18.9	20.0	20.0	1.000
As left zero	5000	0.0	0.0	0.2	----
As left span	4924	75.6	80.0	79.3	1.009
SO2 Scrubber Check	4922	78.4	784.0	0.0	----
Date of last scrubber change:	18-Jan-23			Ave Corr Factor	0.998
Date of last converter efficiency test:	November 26, 2024			106.2%	efficiency

Notes: Large % change on as founds likely due to large shift in ambient temperature. Adjusted zero and span.

Calibration Performed By: Braiden Boutilier



Wood Buffalo Environmental Association

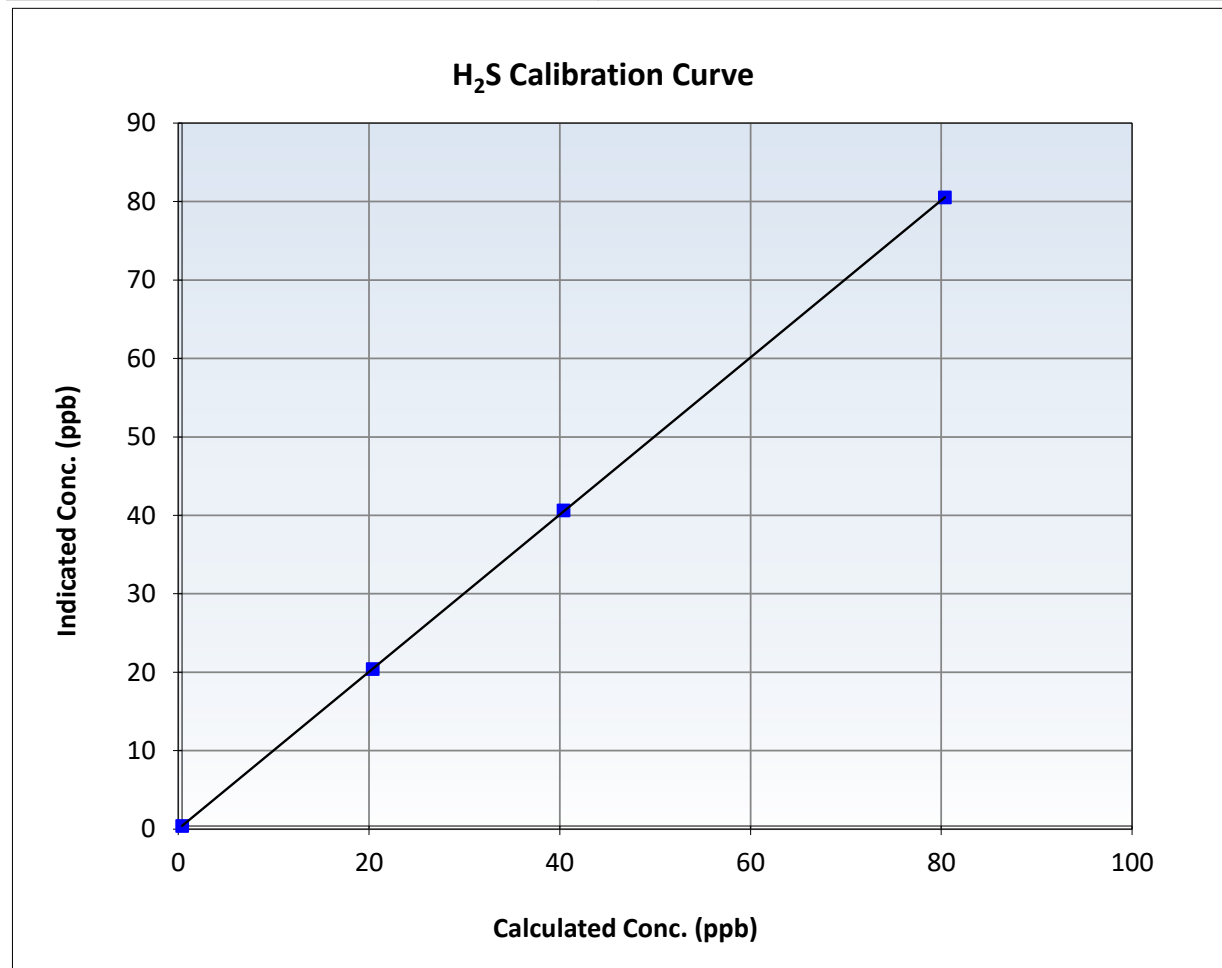
H2S Calibration Summary

Station Information

Calibration Date:	March 4, 2025	Previous Calibration:	February 18, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	11:50	End Time (MST):	16:53
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1151680032

Calibration Data

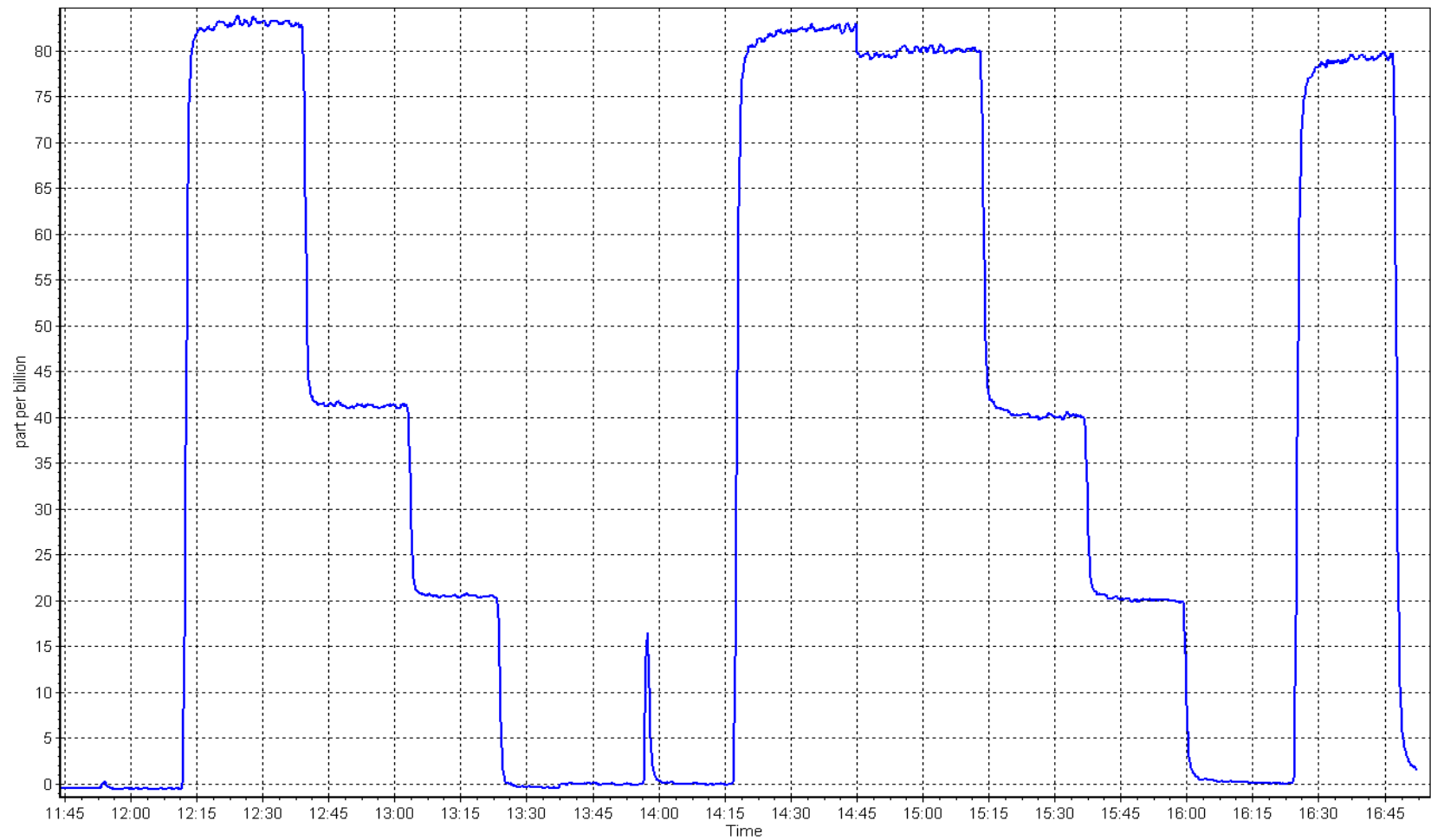
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999995	≥ 0.995
80.0	80.1	0.9986	Slope	1.001762	$0.90 - 1.10$
40.0	40.2	0.9948	Intercept	0.020000	± 3
20.0	20.0	0.9998			



H2S Calibration Plot

Date: March 4, 2025

Location: Firebag





Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name: Firebag Station number: AMS 19
Calibration Date: March 15, 2025 Last Cal Date: February 25, 2025
Start time (MST): 10:30 End time (MST): 15:33
Reason: Routine

Calibration Standards

Gas Cert Reference: CC705799 Cal Gas Expiry Date: October 9, 2032
CH4 Cal Gas Conc. 505.1 ppm CH4 Equiv Conc. 1066.9 ppm
C3H8 Cal Gas Conc. 204.3 ppm
Removed Gas Cert: Removed Gas Expiry:
Removed CH4 Conc. 505.1 ppm CH4 Equiv Conc. 1066.9 ppm
Removed C3H8 Conc. 204.3 ppm Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 1607
ZAG Make/Model: Teledyne API T701H Serial Number: 201

Analyzer Information

Analyzer make: Thermo 51i-LT Analyzer serial #: 1336160089
Analyzer Range: 0 - 20 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.983638	0.992690	Background:	1.95
Calibration intercept:	0.067069	-0.023933	Coefficient:	3.882

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	4999	0.0	0.00	0.36	----
As found High point	4922	78.4	16.73	14.75	1.163
As found Mid point	4961	39.2	8.36	7.45	1.180
As found Low point	4980	19.6	4.18	3.89	1.188
New cylinder response					
Baseline Corr As found:	14.39	Previous response	16.52	*% change	-14.8%
Baseline Corr 2nd AF pt:	7.09	AF Slope:	0.860821	AF Intercept:	0.312485
Baseline Corr 3rd AF pt:	3.52	AF Correlation:	0.999928	* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	4999	0.0	0.00	-0.03	----
High point	4922	78.4	16.73	16.58	1.009
Mid point	4961	39.2	8.36	8.28	1.010
Low point	4980	19.6	4.18	4.14	1.010
As left zero	4999	0.0	0.00	0.01	----
As left span	4922	78.4	16.73	16.63	1.006
Average Correction Factor					1.010

Notes: Changed sample inlet filter and swapped internal pump after as founds. Adjusted zero and span.

Calibration Performed By: Braiden Boutilier



Wood Buffalo Environmental Association

THC Calibration Summary

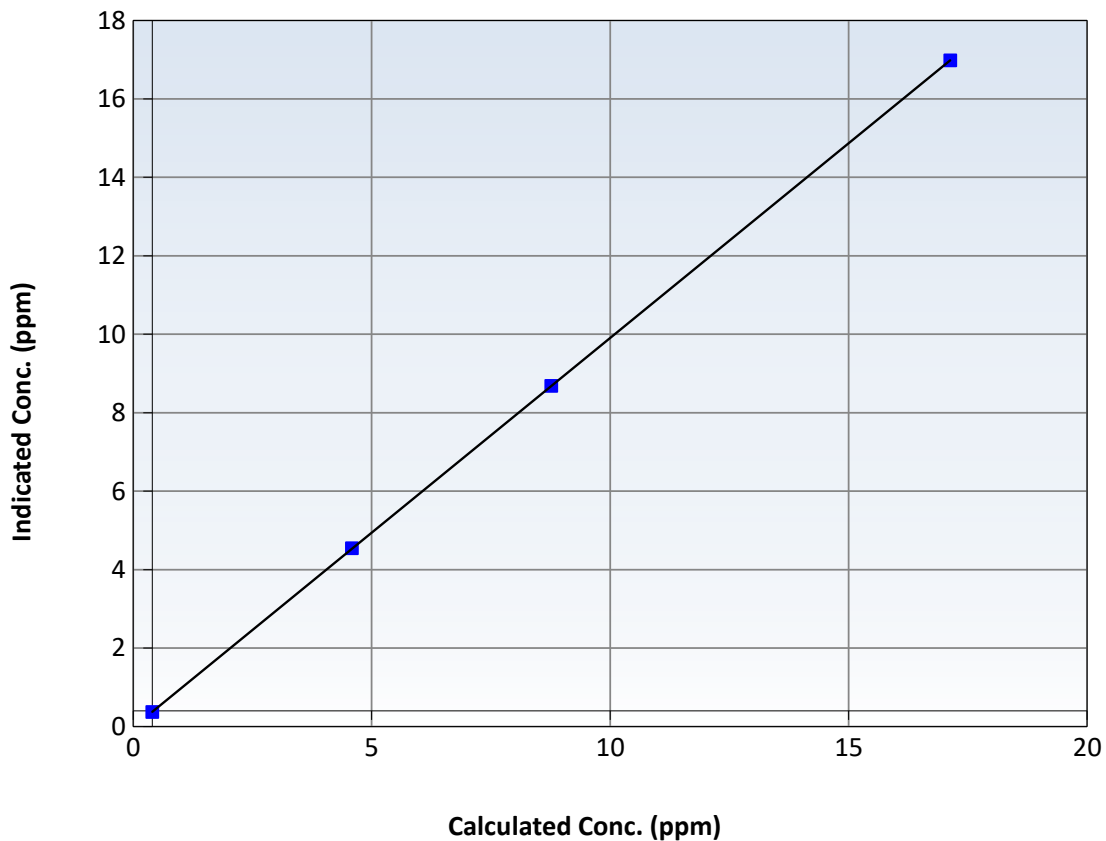
Station Information

Calibration Date:	March 15, 2025	Previous Calibration:	February 25, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	10:30	End Time (MST):	15:33
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1336160089

Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	-0.03	----	Correlation Coefficient	0.999998	≥ 0.995
16.73	16.58	1.0090	Slope	0.992690	$0.90 - 1.10$
8.36	8.28	1.0102	Intercept	-0.023933	± 1.5
4.18	4.14	1.0103			

THC Calibration Curve



THC Calibration Plot

Date: March 15, 2025

Location: Firebag





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Firebag
Station number: AMS 19
Calibration Date: March 11, 2025
Last Cal Date: February 11, 2025
Start time (MST): 10:46
End time (MST): 15:10
Reason: Routine

Calibration Standards

NO Gas Cylinder #: DT0044018
NOX Cal Gas Conc: 48.90 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 48.90 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701H
Cal Gas Expiry Date: November 3, 2031
NO Cal Gas Conc: 48.70 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 48.70 ppm
NO gas Diff:
Serial Number: 1607
Serial Number: 201

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.2	0.0	----	----
AF High point	4918	82.1	802.9	799.7	3.3	799.7	794.7	5.0	1.0038	1.0060
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO _x = 801.5 ppb	NO = 799.4 ppb	* = > +/-5% change initiates investigation	*Percent Change	NO _x = -0.2%
Baseline Corr 1st pt	NO _x = 799.9 ppb	NO = 794.9 ppb	<u>As Found Statistics</u>	*Percent Change	NO = -0.6%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found NO _x r ² :	Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found NO r ² :	NO SI:	NO Int:
			As found NO ₂ r ² :	NO2 SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1410661309

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.905	0.905	NO bkgnd or offset:	4.5	4.5
NOX coeff or slope:	0.994	0.994	NOX bkgnd or offset:	4.5	4.5
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	163.0	160.5

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.996893	0.993178
NO _x Cal Offset:	1.020188	0.800270
NO Cal Slope:	0.999158	0.992470
NO Cal Offset:	0.460271	0.300227
NO ₂ Cal Slope:	0.999084	1.001499
NO ₂ Cal Offset:	0.467000	-0.313391

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	----	----
High point	4918	82.1	802.9	799.7	3.3	798.0	793.9	4.1	1.0062	1.0072
Mid point	4959	41.1	402.0	400.3	1.6	400.0	397.4	2.6	1.0049	1.0073
Low point	4980	20.5	200.5	199.7	0.8	201.0	199.0	1.9	0.9975	1.0034
As left zero	5000	0	0.0	0.0	0.0	0.0	-0.1	0.1	----	----
As left span	4918	82.1	802.9	415.8	387.1	795.9	415.8	380.1	1.0088	1.0000
Average Correction Factor									1.0028	1.0060

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.0	----	----
High GPT point	791.6	415.4	379.5	379.9	0.9989	100.1%
Mid GPT point	791.6	603.1	191.8	191.6	1.0010	99.9%
Low GPT point	791.6	697.9	97.0	96.5	1.0050	99.5%
Average Correction Factor					1.0016	99.8%

Notes:

Changed sample inlet filter after as founds. No adjustments made.

Calibration Performed By:

Braiden Boutilier



Wood Buffalo Environmental Association

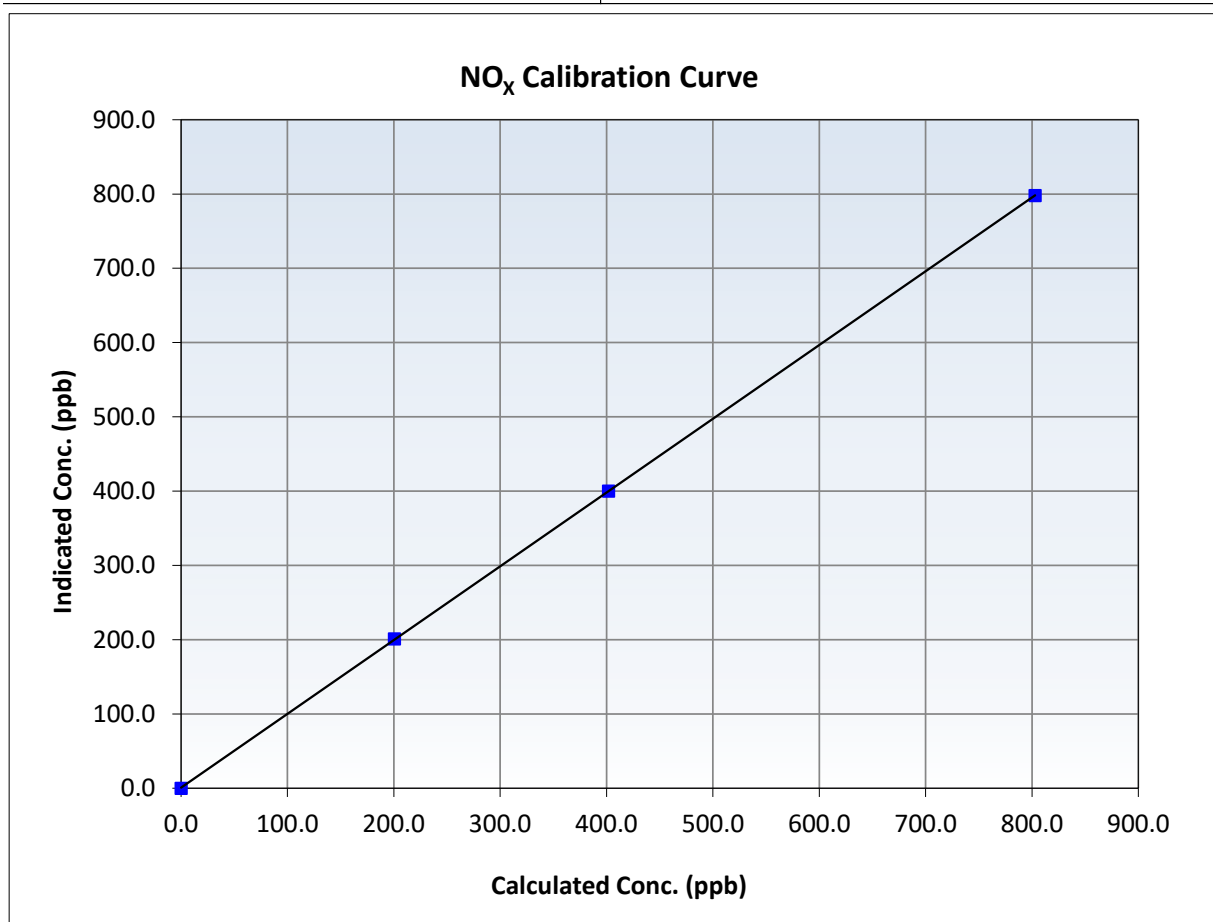
NO_x Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 11, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	10:46	End Time (MST):	15:10
Analyzer make:	Thermo 42i	Analyzer serial #:	1410661309

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999995	≥0.995
802.9	798.0	1.0062	Slope	0.993178	0.90 - 1.10
402.0	400.0	1.0049	Intercept	0.800270	+/-20
200.5	201.0	0.9975			





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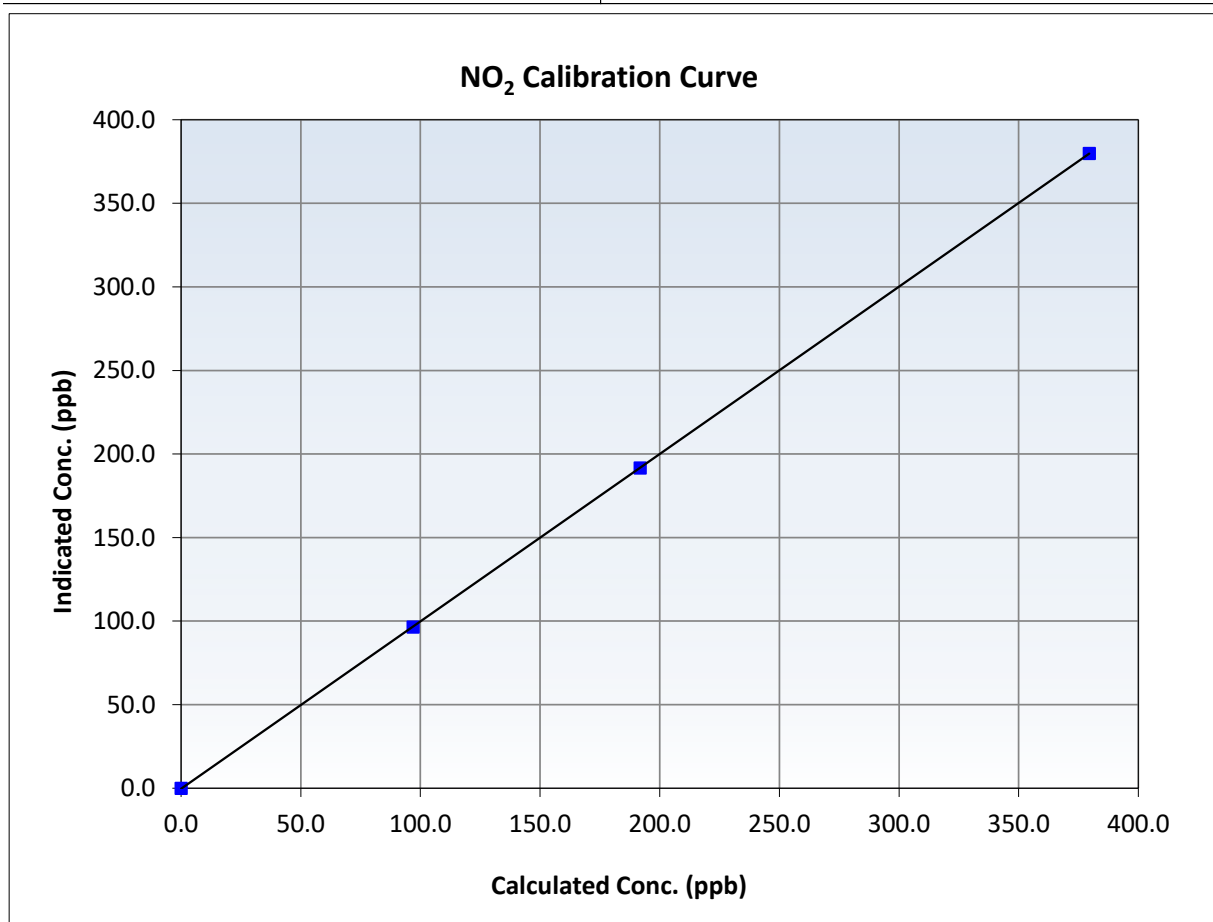
NO₂ Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 11, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	10:46	End Time (MST):	15:10
Analyzer make:	Thermo 42i	Analyzer serial #:	1410661309

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999997	≥ 0.995
379.5	379.9	0.9989	Slope	1.001499	$0.90 - 1.10$
191.8	191.6	1.0010	Intercept	-0.313391	± 20
97.0	96.5	1.0050			





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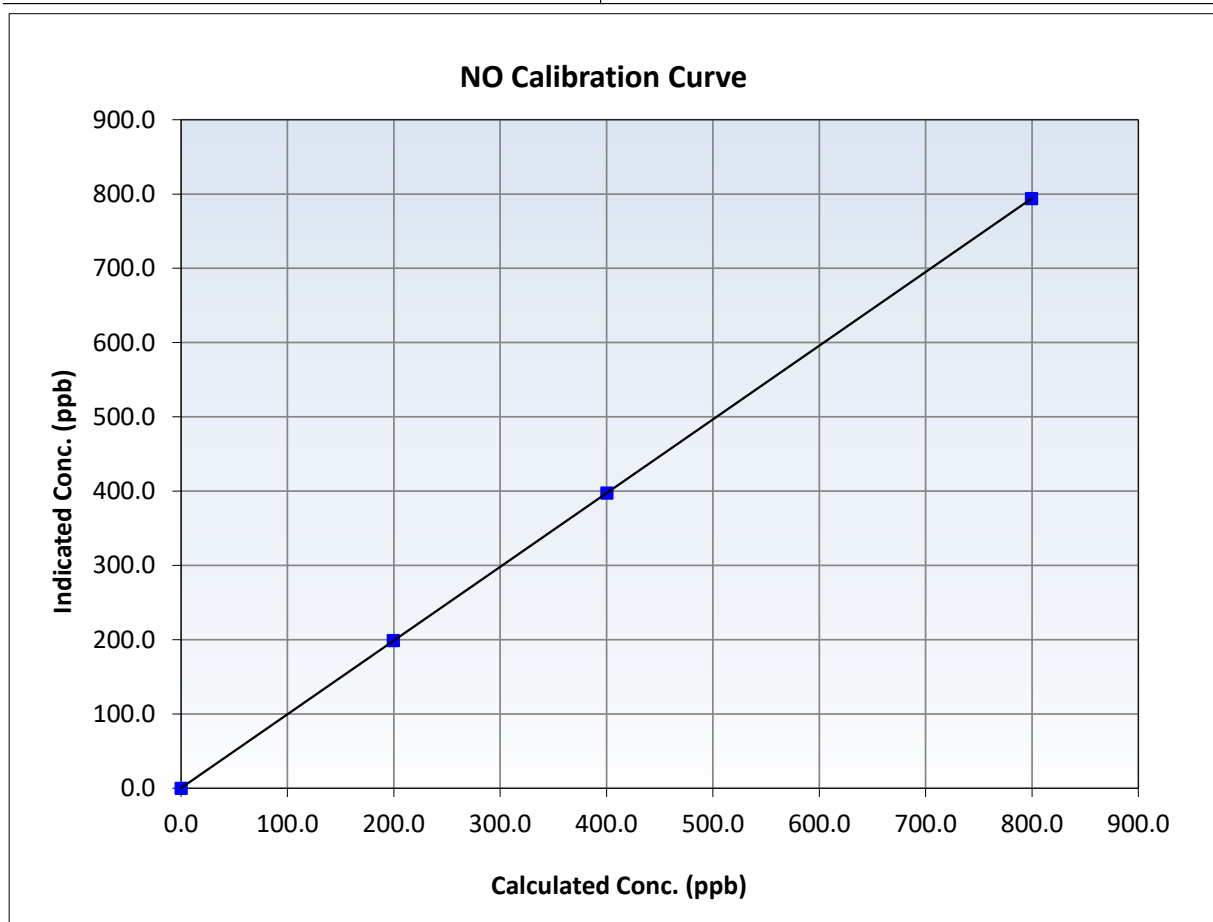
NO Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	February 11, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	10:46	End Time (MST):	15:10
Analyzer make:	Thermo 42i	Analyzer serial #:	1410661309

Calibration Data

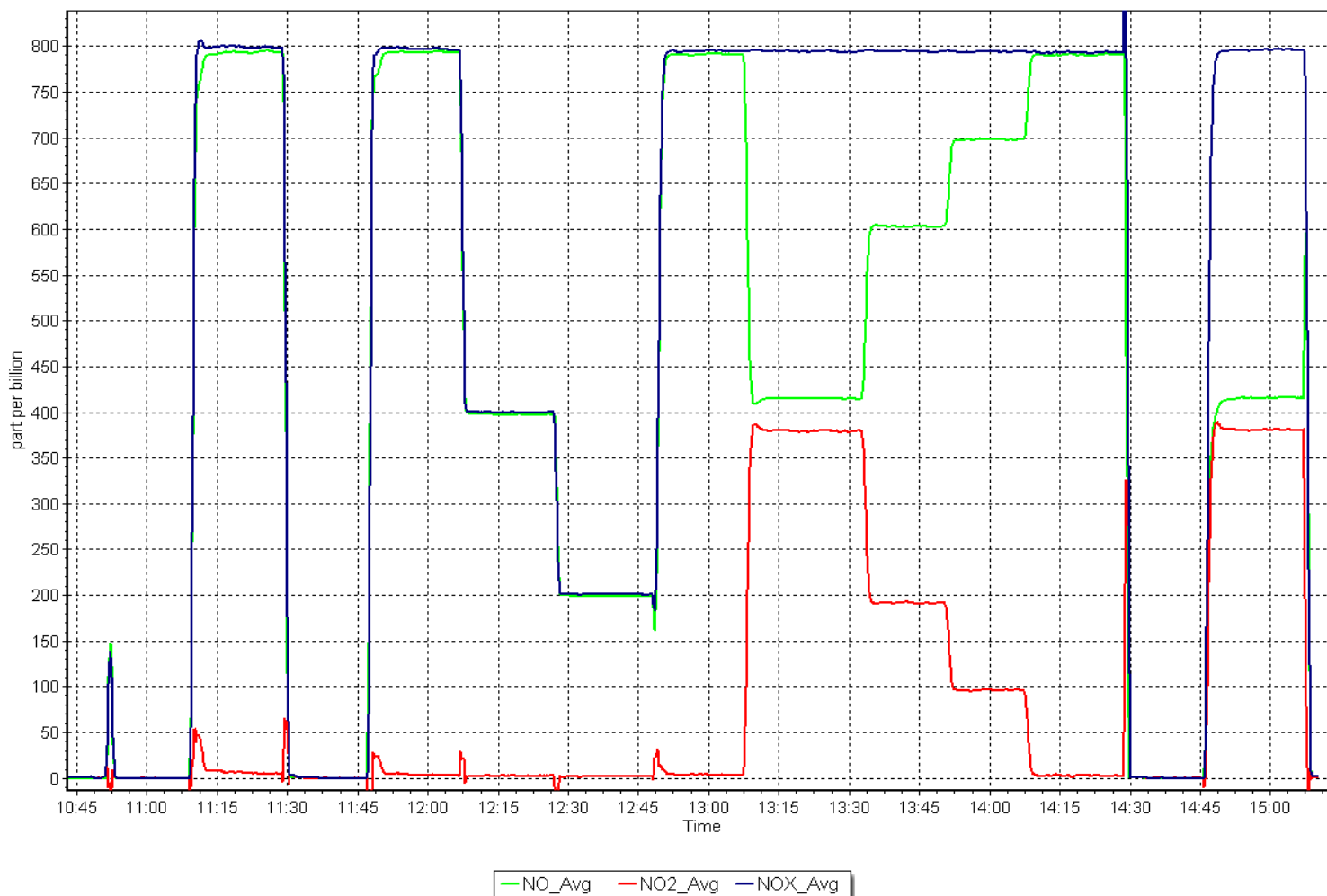
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999999	≥ 0.995
799.7	793.9	1.0072	Slope	0.992470	$0.90 - 1.10$
400.3	397.4	1.0073	Intercept	0.300227	± 20
199.7	199.0	1.0034			



NO_x Calibration Plot

Date: March 11, 2025

Location: Firebag





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS20 MACKAY RIVER MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: MacKay River Station number: AMS 20
Calibration Date: March 10, 2025 Last Cal Date: February 5, 2025
Start time (MST): 7:45 End time (MST): 10:30
Reason: Routine

Calibration Standards

Cal Gas Concentration: 49.15 ppm Cal Gas Exp Date: October 9, 2032
Cal Gas Cylinder #: CC409669
Removed Cal Gas Conc: 49.15 ppm Rem Gas Exp Date:
Removed Gas Cyl #: Diff between cyl:
Calibrator Model: API T700 Serial Number: 5706
Zero Air Gen Model: API 701 Serial Number: 4522

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1501301450
Analyzer Range: 0-1000ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.000989	1.009842	Backgd or Offset:	20.5	20.5
Calibration intercept:	-0.756186	-0.254232	Coeff or Slope:	0.961	0.961

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4919	81.4	800.1	804.2	0.995
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	804.3	Previous response	800.1	*% change	0.5%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4919	81.4	800.1	808.1	0.990
Mid point	4959	40.7	400.1	402.9	0.993
Low point	4980	20.3	199.5	201.5	0.990
As left zero	5000	0.0	0.0	-0.1	----
As left span	4919	81.4	800.1	808.2	0.990
Average Correction Factor:					0.991

Notes: No Maintenance or adjustments done.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

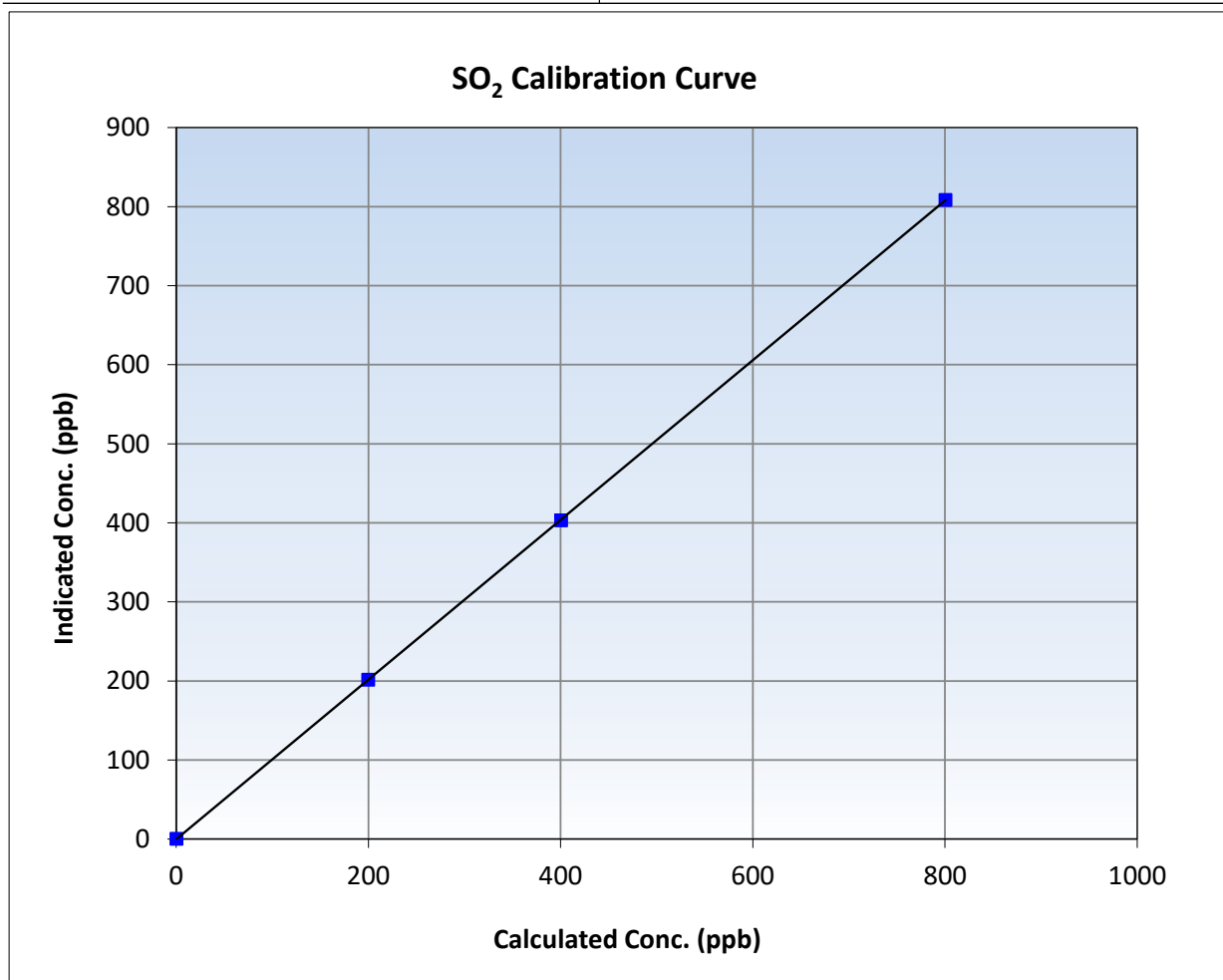
SO₂ Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 5, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	7:45	End Time (MST):	10:30
Analyzer make:	Thermo 43i	Analyzer serial #:	1501301450

Calibration Data

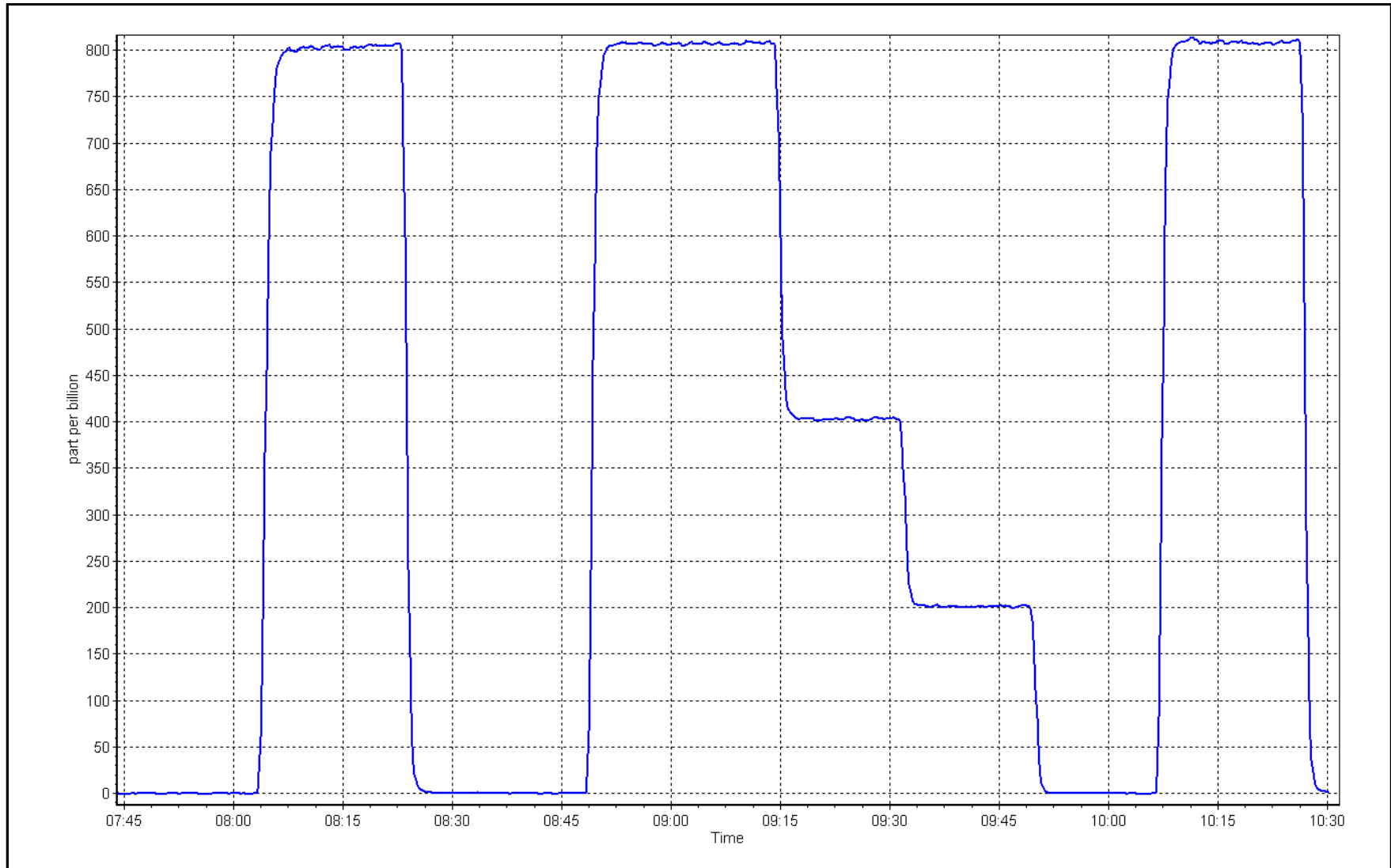
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999997	≥0.995
800.1	808.1	0.9901	Slope	1.009842	0.90 - 1.10
400.1	402.9	0.9931	Intercept	-0.254232	+/-30
199.5	201.5	0.9903			



SO2 Calibration Plot

Date: March 10, 2025

Location: MacKay River





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: MacKay River
Calibration Date: March 6, 2025
Start time (MST): 8:00
Reason: Routine

Station number: AMS 20
Last Cal Date: February 3, 2025
End time (MST): 12:01

Calibration Standards

Cal Gas Concentration: 5.12 ppm
Cal Gas Cylinder #: CC515997
Removed Cal Gas Conc: 5.12 ppm
Removed Gas Cyl #:
Calibrator Make/Model: API T700
ZAG Make/Model: API 701

Cal Gas Exp Date: January 3, 2026
Rem Gas Exp Date:
Diff between cyl:
Serial Number: 5706
Serial Number: 4522

Analyzer Information

Analyzer make: Thermo 43i TLE
Converter make: Global
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1236656117
Converter serial #: 2022-226
Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.993024	1.004456	Backgd or Offset:	3.46
Calibration intercept:	0.399241	-0.100522	Coeff or Slope:	1.086

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.4	----
As found High point	4922	78.1	80.0	81.0	0.992
As found Mid point	4961	39.0	39.9	40.6	0.993
As found Low point	4980	19.5	20.0	20.2	1.009
New cylinder response					
Baseline Corr As found:	80.6	Prev response:	79.81	*% change:	1.0%
Baseline Corr 2nd AF pt:	40.2	AF Slope:	1.009173	AF Intercept:	0.259509
Baseline Corr 3rd AF pt:	19.8	AF Correlation:	0.999981	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4922	78.1	80.0	80.2	0.997
Mid point	4961	39.0	39.9	40.1	0.996
Low point	4980	19.5	20.0	19.9	1.004
As left zero	5000	0.0	0.0	0.0	----
As left span	4922	78.1	80.0	79.9	1.001
SO2 Scrubber Check	4982	81.3	802.8	0.0	----
Date of last scrubber change:	25-May-23		Ave Corr Factor		0.999
Date of last converter efficiency test:					

Notes: Sox scrubber checked after the calibrator zero. Zero adjusted.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

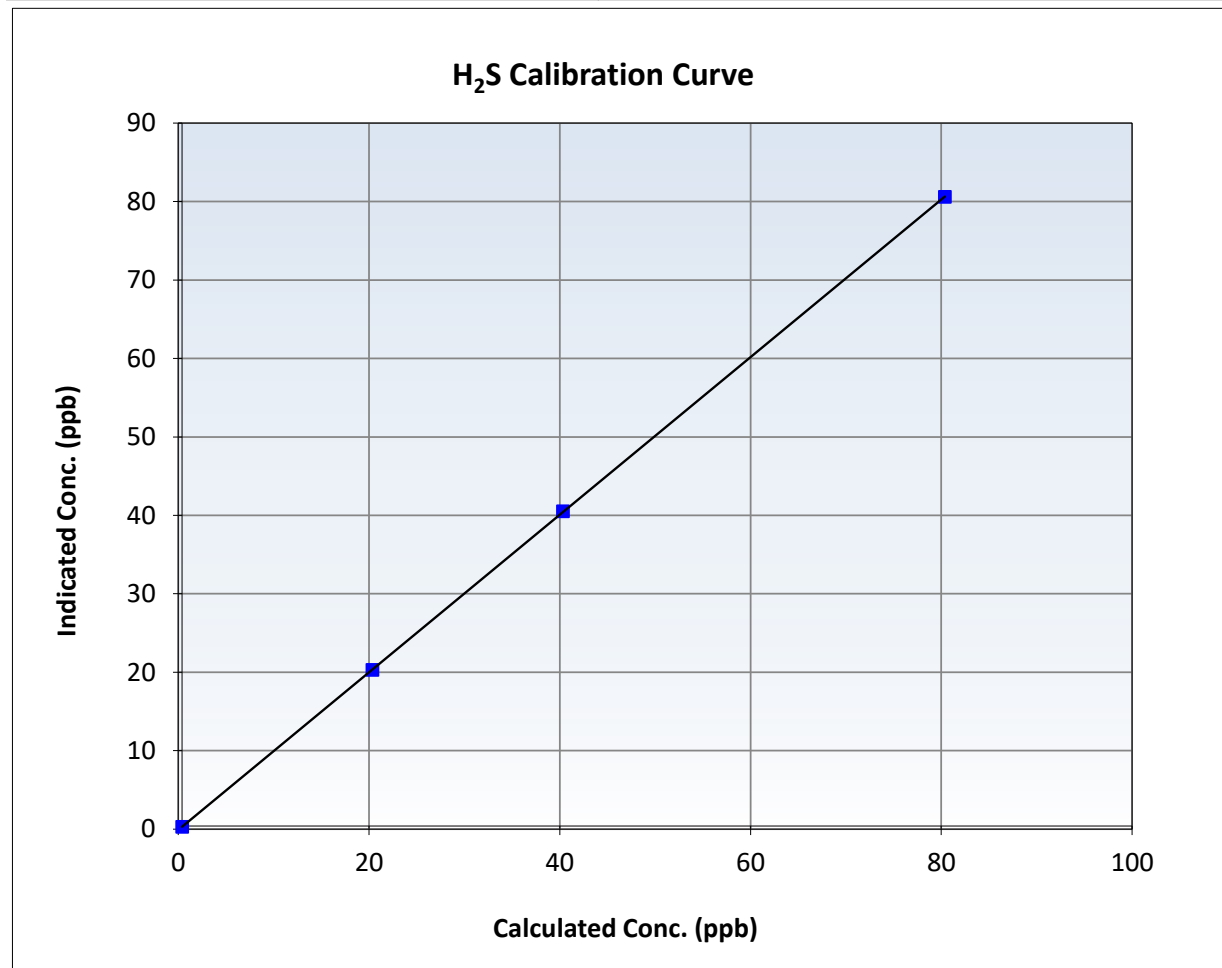
H₂S Calibration Summary

Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 3, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	8:00	End Time (MST):	12:01
Analyzer make:	Thermo 43i TLE	Analyzer serial #:	1236656117

Calibration Data

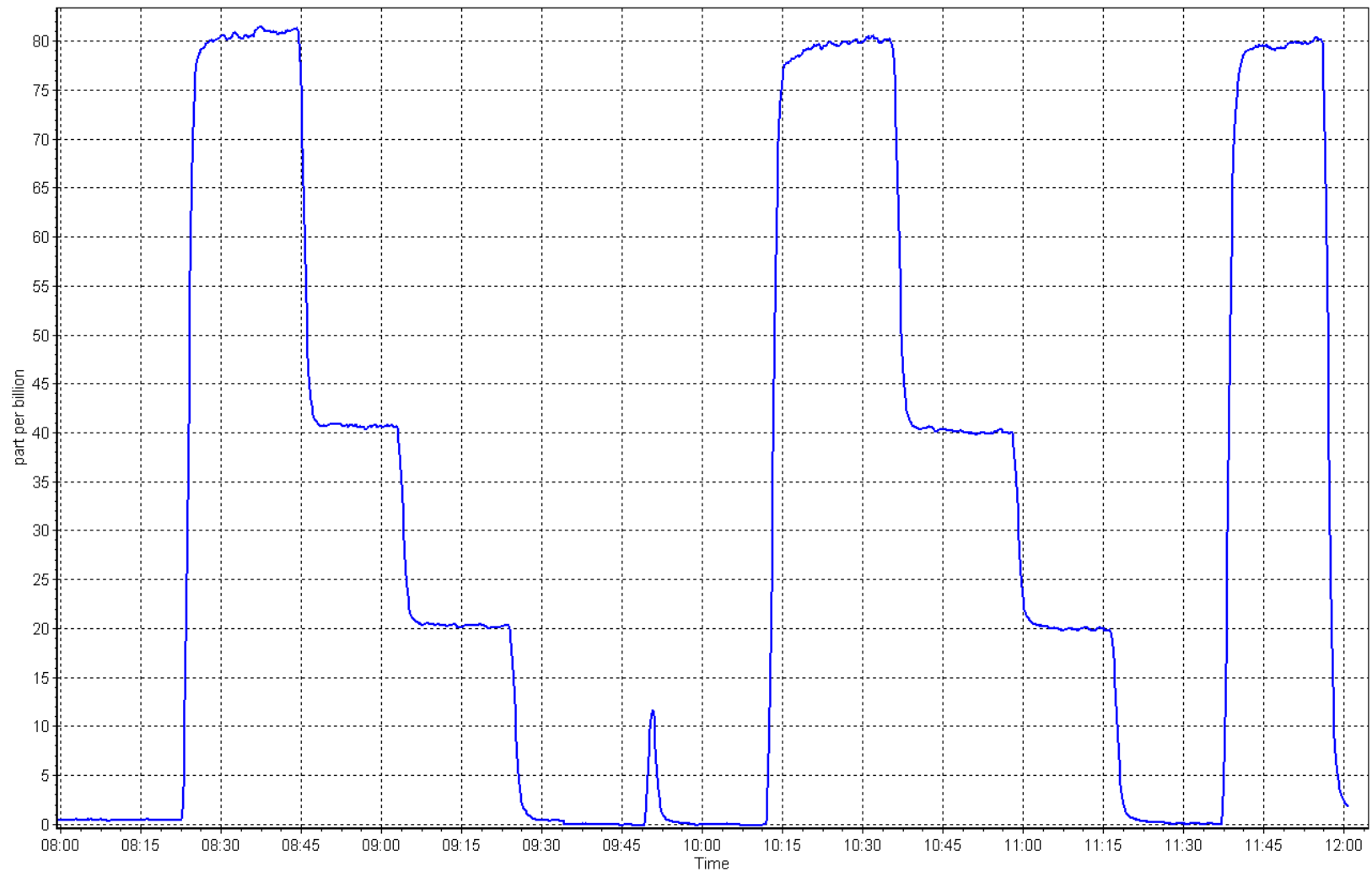
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999997		≥0.995
80.0	80.2	0.9972	Slope	1.004456		0.90 - 1.10
39.9	40.1	0.9959	Intercept	-0.100522		+/-3
20.0	19.9	1.0035				



H₂S Calibration Plot

Date: March 6, 2025

Location: MacKay River





Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name: MacKay River
Calibration Date: March 10, 2025
Start time (MST): 7:45
Reason: Routine

Station number: AMS 20
Last Cal Date: February 6, 2025
End time (MST): 10:29

Calibration Standards

Gas Cert Reference: CC409669
CH4 Cal Gas Conc. 505.1 ppm
C3H8 Cal Gas Conc. 206.4 ppm
Removed Gas Cert:
Removed CH4 Conc. 505.1 ppm
Removed C3H8 Conc. 206.4 ppm
Calibrator Make/Model: API T700
ZAG Make/Model: API 701

Cal Gas Expiry Date: October 9, 2032
CH4 Equiv Conc. 1072.7 ppm
Removed Gas Expiry:
CH4 Equiv Conc. 1072.7 ppm
Diff between cyl:
Serial Number: 5706
Serial Number: 4522

Analyzer Information

Analyzer make: Thermo 51i-LT
Analyzer Range: 0 - 20 ppm

Analyzer serial #: 1501663727

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999357	0.998235	Background:	3.860	3.700
Calibration intercept:	0.022823	0.015636	Coefficient:	4.839	4.900

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic-AFzero))
					<i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	-0.19	----
As found High point	4919	81.4	17.46	17.06	1.012
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	17.26	Previous response	17.47	*% change	-1.3%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)
					<i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	-0.03	----
High point	4919	81.4	17.46	17.43	1.002
Mid point	4959	40.7	8.73	8.73	1.000
Low point	4980	20.3	4.35	4.43	0.983
As left zero	5000	0.0	0.00	0.03	----
As left span	4919	81.4	17.46	17.63	0.991
Average Correction Factor					0.995

Notes: No maintenance done. Zero and span adjusted.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

THC Calibration Summary

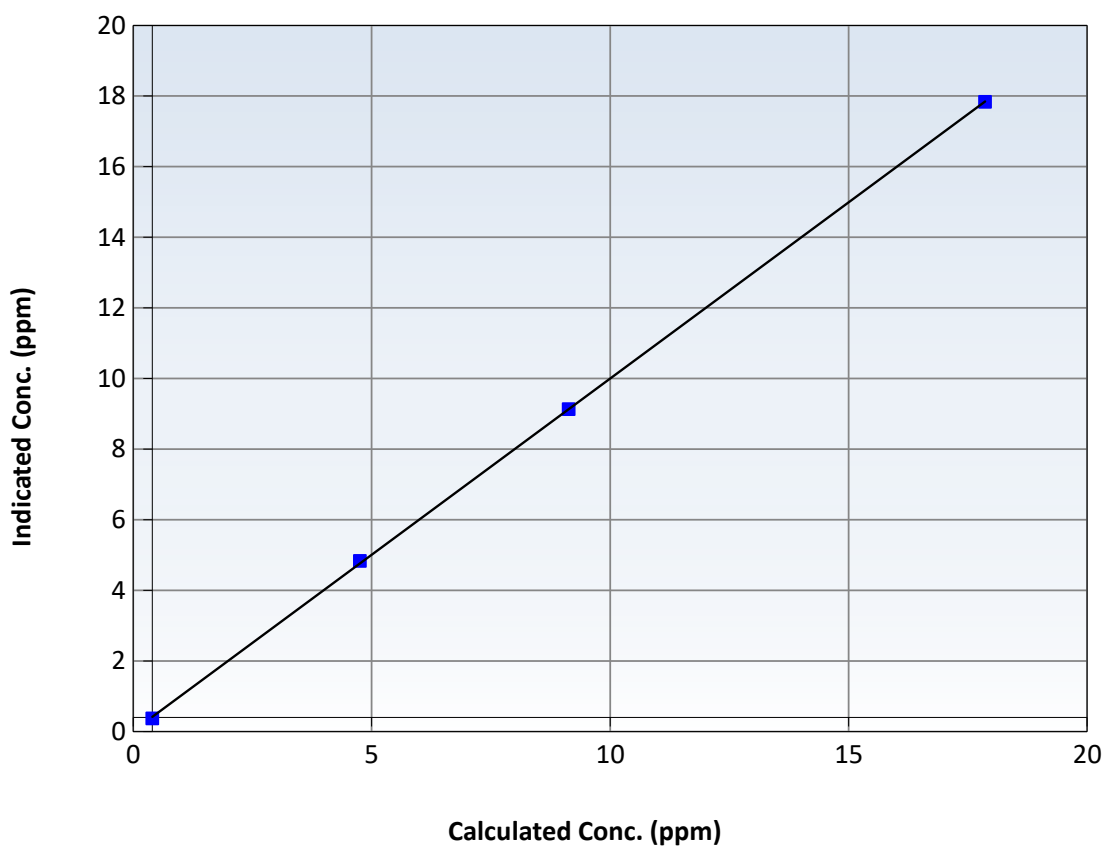
Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 6, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	7:45	End Time (MST):	10:29
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1501663727

Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	-0.03	----	Correlation Coefficient	0.999959	≥ 0.995
17.46	17.43	1.0017	Slope	0.998235	$0.90 - 1.10$
8.73	8.73	1.0003	Intercept	0.015636	± 1.5
4.35	4.43	0.9835			

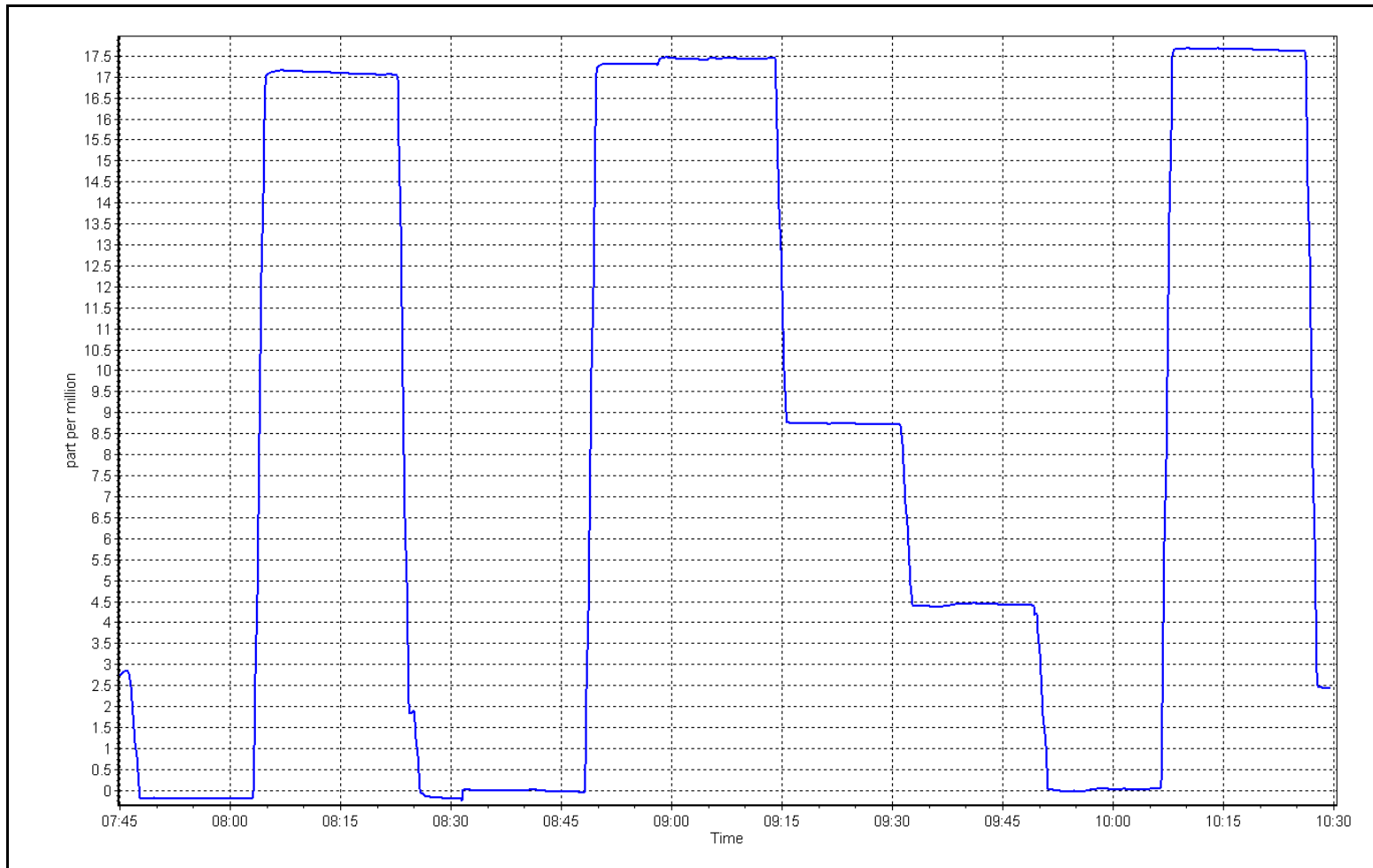
THC Calibration Curve



THC Calibration Plot

Date: March 10, 2025

Location: MacKay River





Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name: MacKay River
Calibration Date: March 21, 2025
Start time (MST): 7:10
Reason: Routine

Station number: AMS 20
Last Cal Date: March 10, 2025
End time (MST): 9:58

Calibration Standards

Gas Cert Reference: CC409669
CH4 Cal Gas Conc. 505.1 ppm
C3H8 Cal Gas Conc. 206.4 ppm
Removed Gas Cert:
Removed CH4 Conc. 505.1 ppm
Removed C3H8 Conc. 206.4 ppm
Calibrator Make/Model: API T700
ZAG Make/Model: API 701

Cal Gas Expiry Date: October 9, 2032
CH4 Equiv Conc. 1072.7 ppm
Removed Gas Expiry:
CH4 Equiv Conc. 1072.7 ppm
Diff between cyl:
Serial Number: 5706
Serial Number: 4522

Analyzer Information

Analyzer make: Thermo 51i-LT
Analyzer Range: 0 - 20 ppm

Analyzer serial #: 1501663727

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.998235	0.999215	Background:	3.700	3.140
Calibration intercept:	0.015636	0.020404	Coefficient:	4.900	4.900

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic-AFzero))
					<i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	-0.53	----
As found High point	4919	81.4	17.46	16.91	1.001
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	17.45	Previous response	17.45	*% change	0.0%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)
					<i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.03	----
High point	4919	81.4	17.46	17.48	0.999
Mid point	4959	40.7	8.73	8.73	1.000
Low point	4980	20.3	4.35	4.36	0.998
As left zero	5000	0.0	0.00	-0.01	----
As left span	4919	81.4	17.46	17.57	0.994
Average Correction Factor					0.999

Notes: Zero drifted down low. Diagnostics similar to last calibration. Zero adjusted.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

THC Calibration Summary

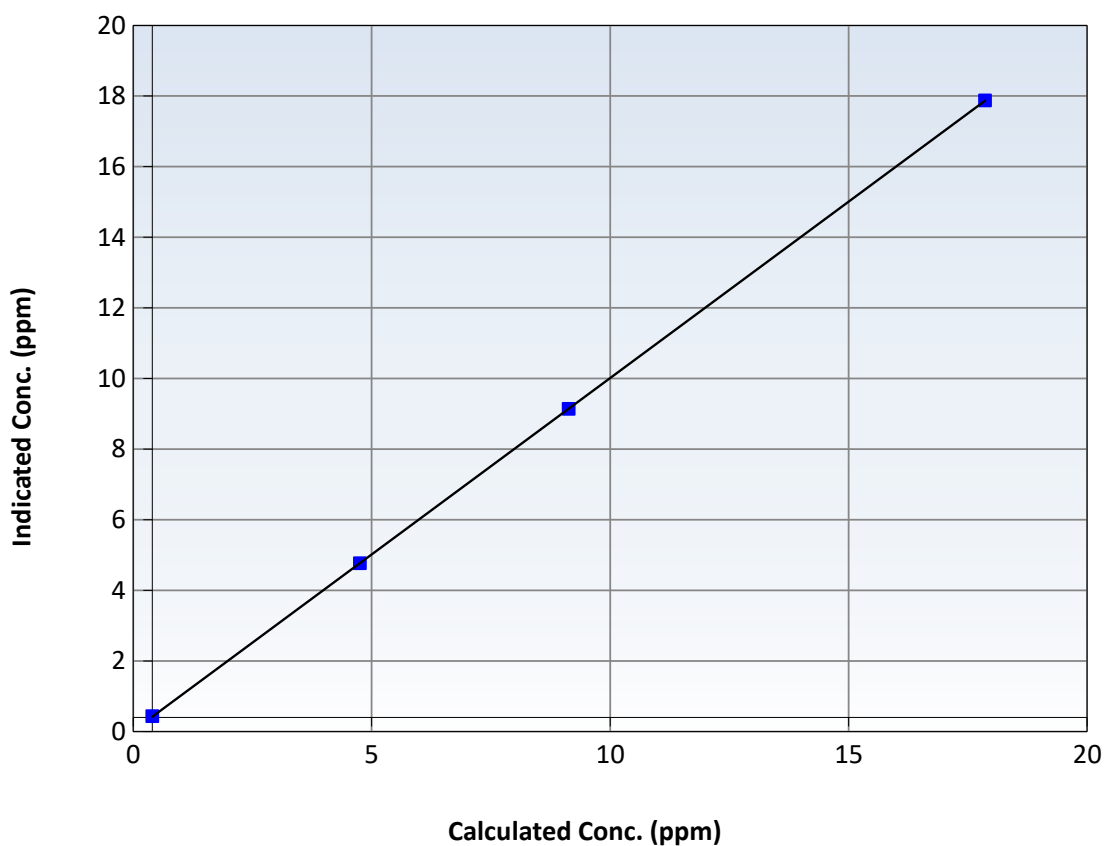
Station Information

Calibration Date:	March 21, 2025	Previous Calibration:	March 10, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	7:10	End Time (MST):	9:58
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1501663727

Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.03	----	Correlation Coefficient	0.999997	≥ 0.995
17.46	17.48	0.9992	Slope	0.999215	$0.90 - 1.10$
8.73	8.73	0.9998	Intercept	0.020404	± 1.5
4.35	4.36	0.9981			

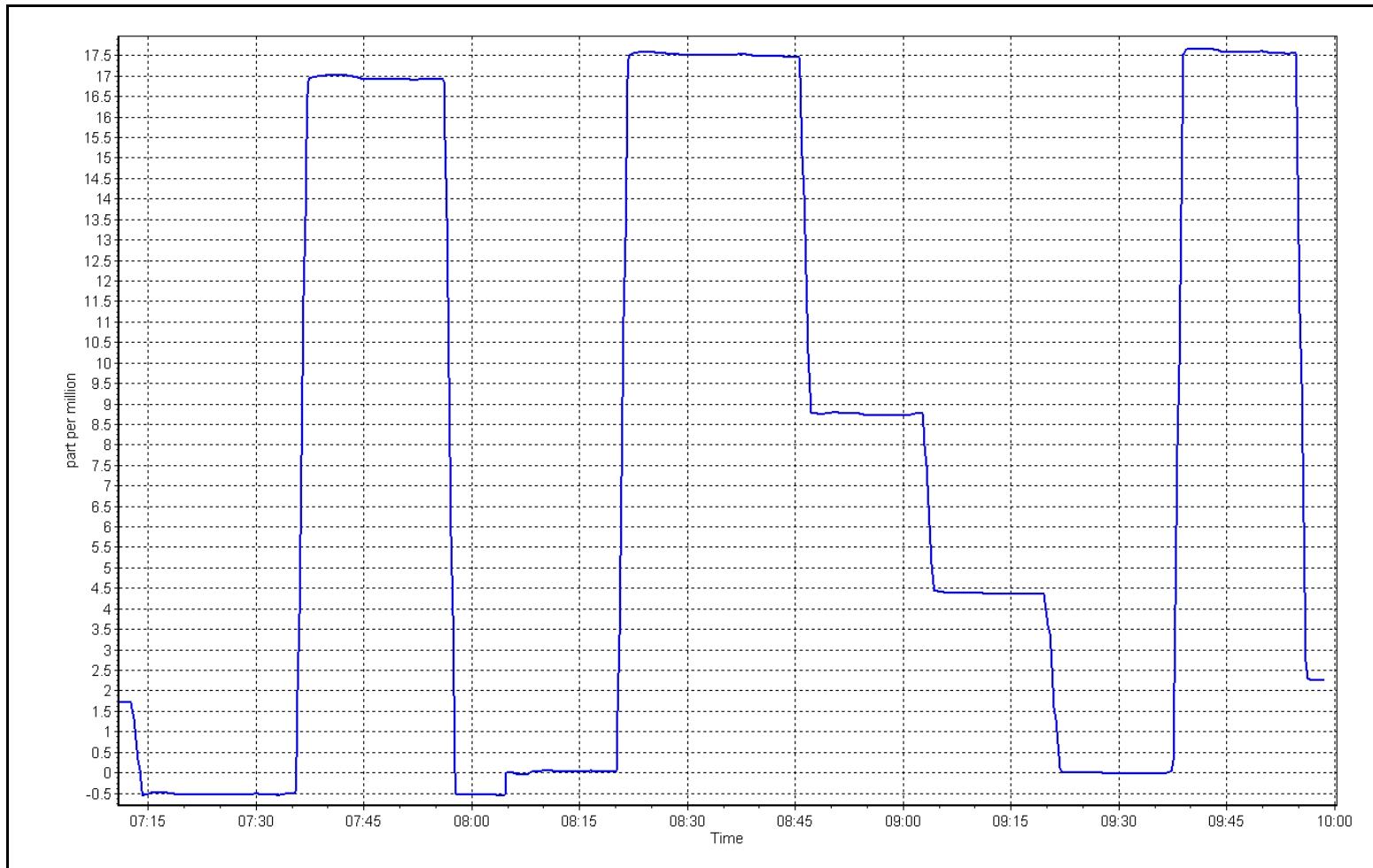
THC Calibration Curve



THC Calibration Plot

Date: March 21, 2025

Location: MacKay River





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: MacKay River
Station number: AMS 20
Calibration Date: March 5, 2025
Last Cal Date: February 10, 2025
Start time (MST): 7:38
End time (MST): 12:00
Reason:

Calibration Standards

NO Gas Cylinder #: T376265
NOX Cal Gas Conc: 49.19 ppm
Removed Cylinder #:
Removed Gas NOX Conc: 49.19 ppm
NOX gas Diff:
Calibrator Model: API T700
ZAG make/model: API T701
Cal Gas Expiry Date: April 13, 2025
NO Cal Gas Conc: 48.04 ppm
Removed Gas Exp Date:
Removed Gas NO Conc: 48.04 ppm
NO gas Diff:
Serial Number: 5706
Serial Number: 4522

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.2	0.0	-0.2	----	----
AF High point	4917	83.3	819.5	800.3	19.2	801.1	780.5	20.7	1.0227	1.0254
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x = 817.0 ppb	NO = 797.1 ppb	* = > +/-5% change initiates investigation			*Percent Change	NO _x = -2.0%			
Baseline Corr 1st pt	NO _x = 801.3 ppb	NO = 780.5 ppb	<u>As Found Statistics</u>			*Percent Change	NO = -2.1%			
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found	NO _x r ² :		Nx SI:	Nx Int:			
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found	NO r ² :		NO SI:	NO Int:			
			As found	NO ₂ r ² :		NO2 SI:	NO ₂ Int:			

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1505164379

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.977	1.002	NO bkgnd or offset:	2.7	2.8
NOX coeff or slope:	0.993	0.991	NOX bkgnd or offset:	2.9	3.0
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	161.2	161.2

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.996924	0.996966
NO _x Cal Offset:	0.062089	0.422044
NO Cal Slope:	0.996873	0.998643
NO Cal Offset:	-0.737471	-0.357427
NO ₂ Cal Slope:	0.997822	0.997985
NO ₂ Cal Offset:	-0.805771	-1.492859

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.0	0.2	-0.2	----	----
High point	4917	83.3	819.5	800.3	19.2	817.2	799.2	18.0	1.0028	1.0014
Mid point	4958	41.7	410.3	400.7	9.6	409.6	399.3	10.3	1.0016	1.0035
Low point	4979	20.8	204.6	199.9	4.8	204.9	198.8	6.1	0.9987	1.0053
As left zero	5000	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	----	----
As left span	4917	83.3	819.5	408.9	410.6	815.4	408.9	406.4	1.0050	1.0000
Average Correction Factor									1.0010	1.0034

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.2	----	----
High GPT point	795.7	407.9	407.0	405.3	1.0041	99.6%
Mid GPT point	795.7	596.9	218.0	215.7	1.0105	99.0%
Low GPT point	795.7	694.3	120.6	117.2	1.0287	97.2%
Average Correction Factor					1.0144	98.6%

Notes: No maintenance done. Span adjusted.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

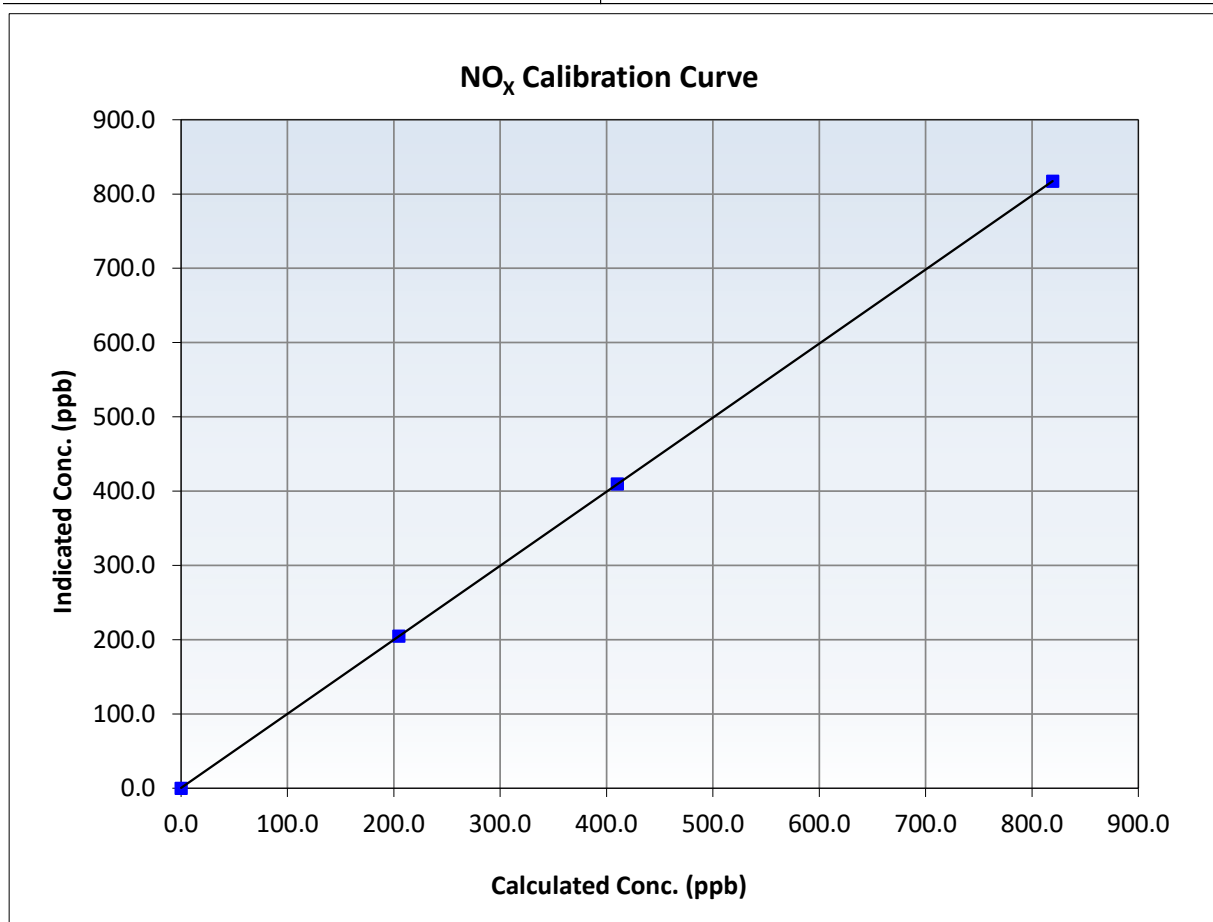
NO_x Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 10, 2025
Station Name:	Mackay River	Station Number:	AMS 20
Start Time (MST):	7:38	End Time (MST):	12:00
Analyzer make:	Thermo 42i	Analyzer serial #:	1505164379

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999999	≥0.995
819.5	817.2	1.0028	Slope	0.996966	0.90 - 1.10
410.3	409.6	1.0016	Intercept	0.422044	+/-20
204.6	204.9	0.9987			





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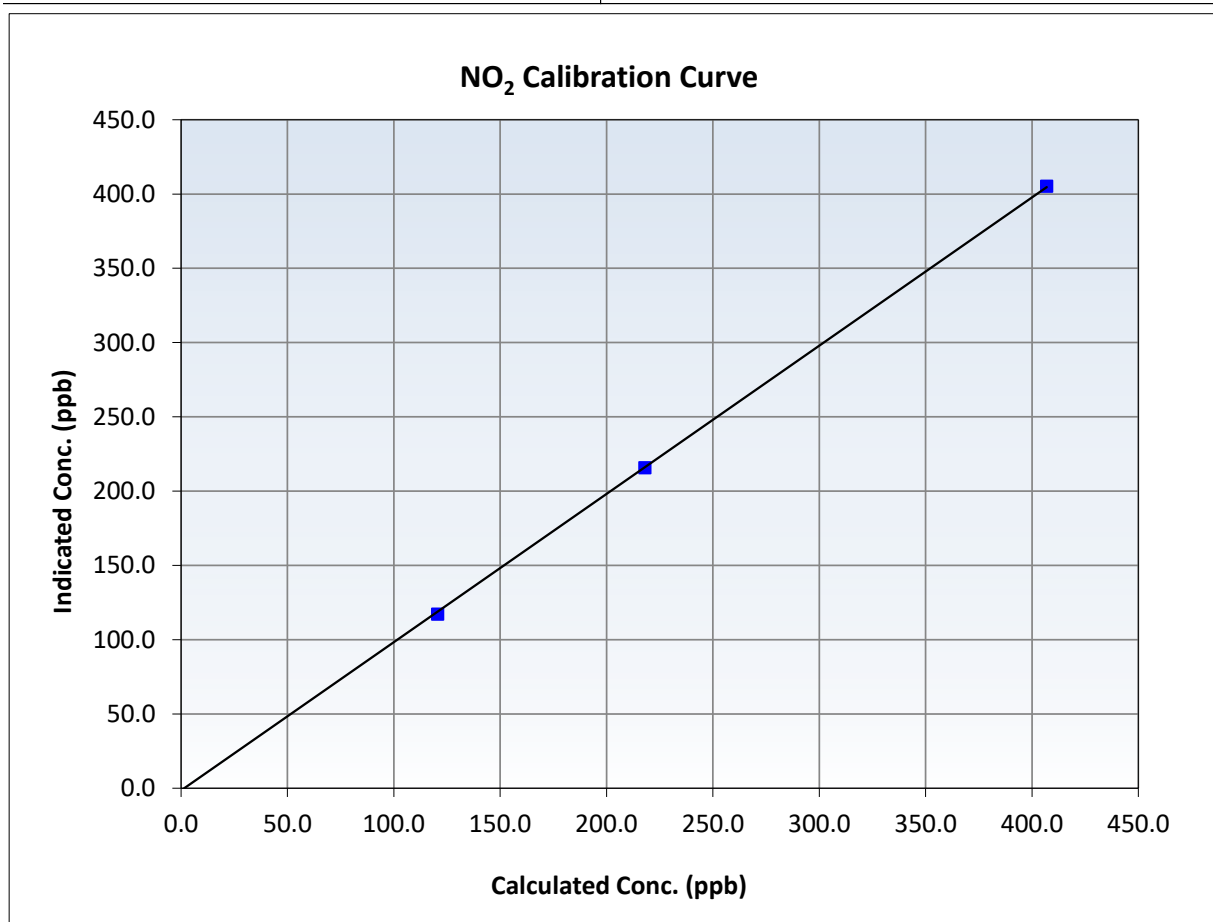
NO₂ Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 10, 2025
Station Name:	Mackay River	Station Number:	AMS 20
Start Time (MST):	7:38	End Time (MST):	12:00
Analyzer make:	Thermo 42i	Analyzer serial #:	1505164379

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.2	----	Correlation Coefficient	0.999945	≥ 0.995
407.0	405.3	1.0041	Slope	0.997985	$0.90 - 1.10$
218.0	215.7	1.0105	Intercept	-1.492859	± 20
120.6	117.2	1.0287			





Wood Buffalo Environmental Association

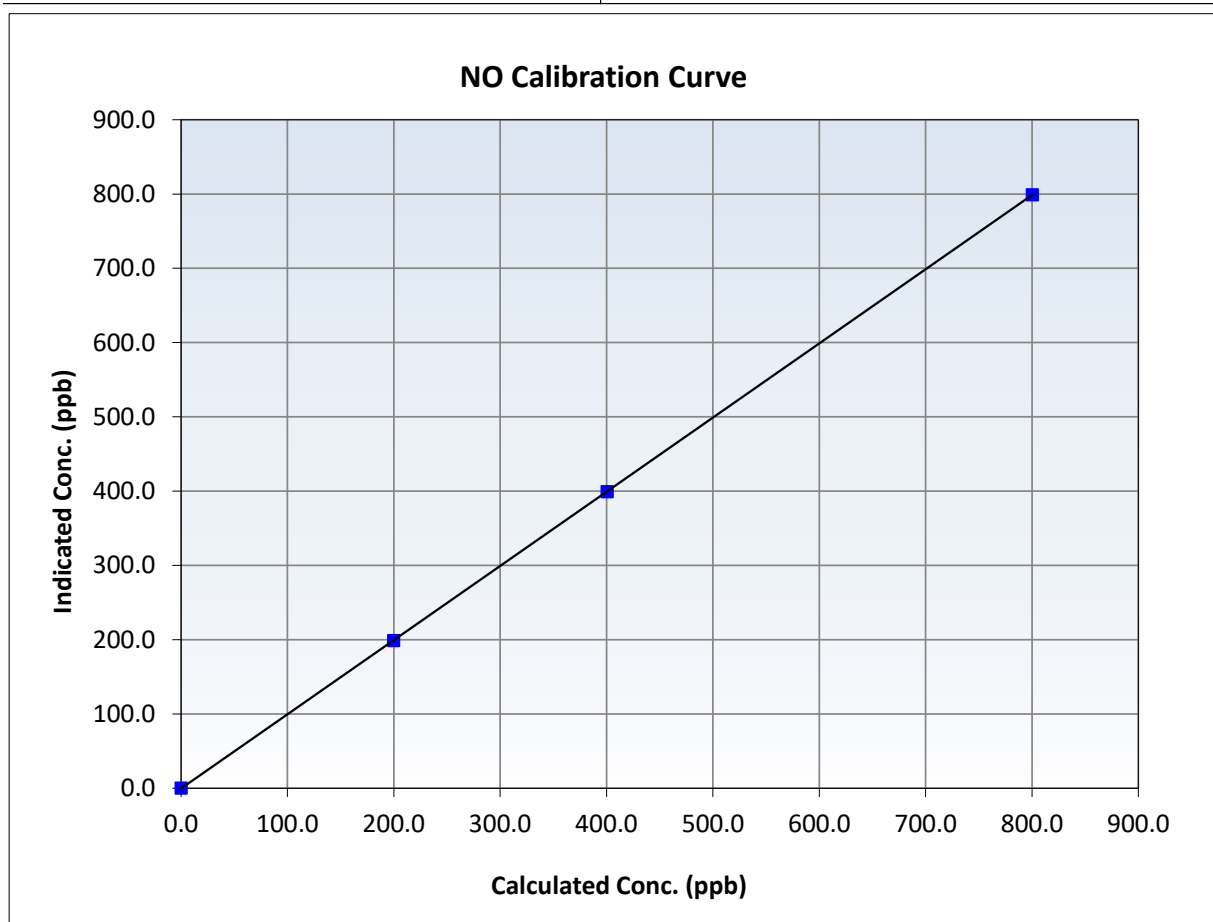
NO Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 10, 2025
Station Name:	Mackay River	Station Number:	AMS 20
Start Time (MST):	7:38	End Time (MST):	12:00
Analyzer make:	Thermo 42i	Analyzer serial #:	1505164379

Calibration Data

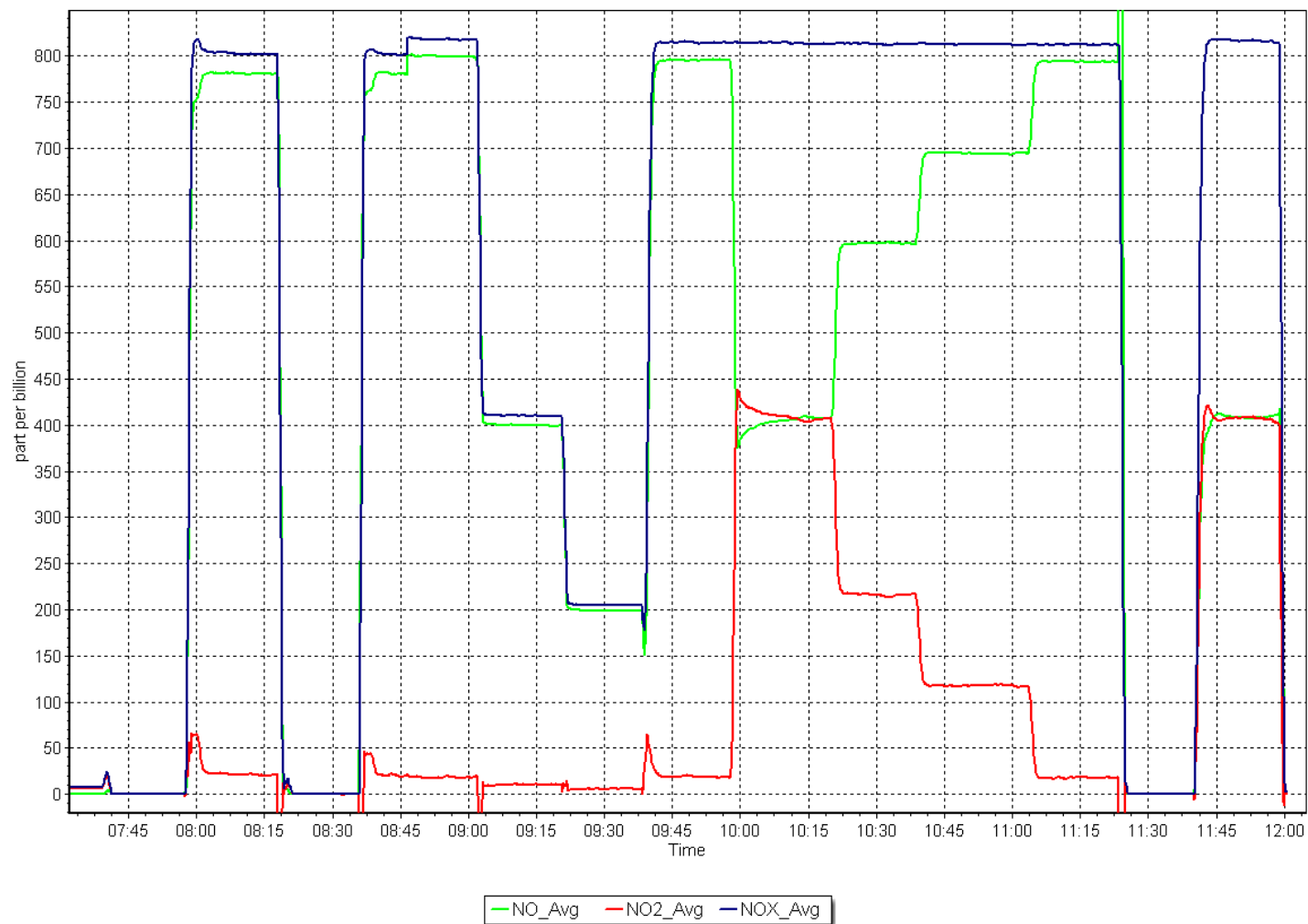
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999998	≥ 0.995
800.3	799.2	1.0014	Slope	0.998643	$0.90 - 1.10$
400.7	399.3	1.0035	Intercept	-0.357427	± 20
199.9	198.8	1.0053			



NO_x Calibration Plot

Date: March 5, 2025

Location: MacKay River





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS21
MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Conklin
Calibration Date: March 17, 2025
Start time (MST): 10:12
Reason: Routine

Station number: AMS 21
Last Cal Date: February 5, 2025
End time (MST): 13:01

Calibration Standards

Cal Gas Concentration: 50.34 ppm
Cal Gas Cylinder #: CC340840
Removed Cal Gas Conc: 50.34 ppm
Removed Gas Cyl #: NA
Calibrator Model: Teledyne API T700
Zero Air Gen Model: Teledyne API T701

Cal Gas Exp Date: October 9, 2032
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 2659
Serial Number: 953

Analyzer Information

Analyzer make: Thermo 43i
Analyzer Range: 0 - 1000 ppb

Serial Number: 1428701363

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.991405	0.995774	Backgd or Offset:	29.3	29.3
Calibration intercept:	0.435788	-0.820824	Coeff or Slope:	0.899	0.899

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.2	----
As found High point	4921	79.5	800.3	796.8	1.005
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	796.6	Previous response	793.9	*% change	0.3%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.6	----
High point	4921	79.5	800.3	796.5	1.005
Mid point	4960	39.8	400.7	398.5	1.006
Low point	4980	19.9	200.4	196.6	1.019
As left zero	5000	0.0	0.0	0.5	----
As left span	4921	79.5	800.3	799.9	1.001
Average Correction Factor:					1.010

Notes: Sample inlet filter was changed after as founds. No adjustment made.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

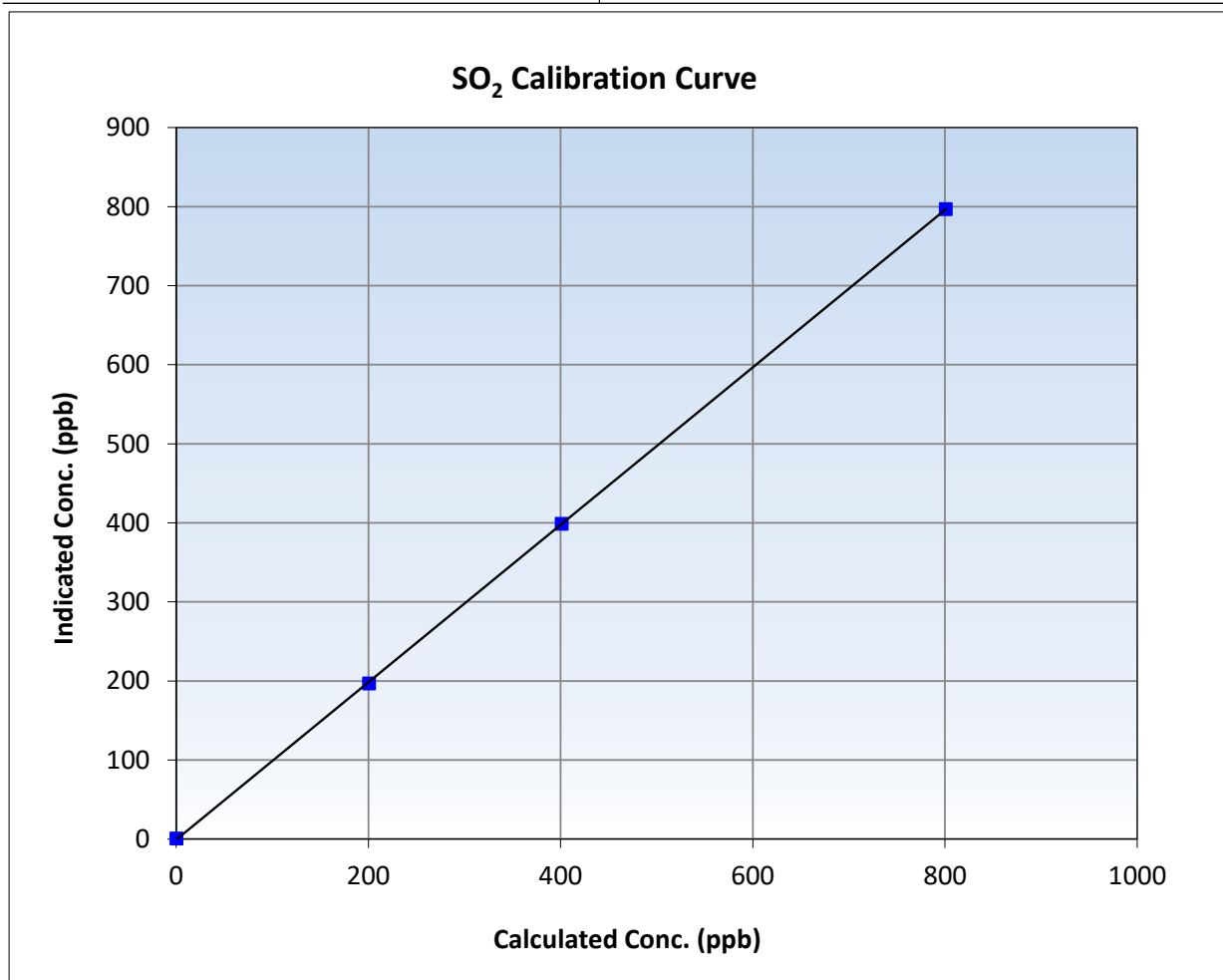
SO₂ Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 5, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	10:12	End Time (MST):	13:01
Analyzer make:	Thermo 43i	Analyzer serial #:	1428701363

Calibration Data

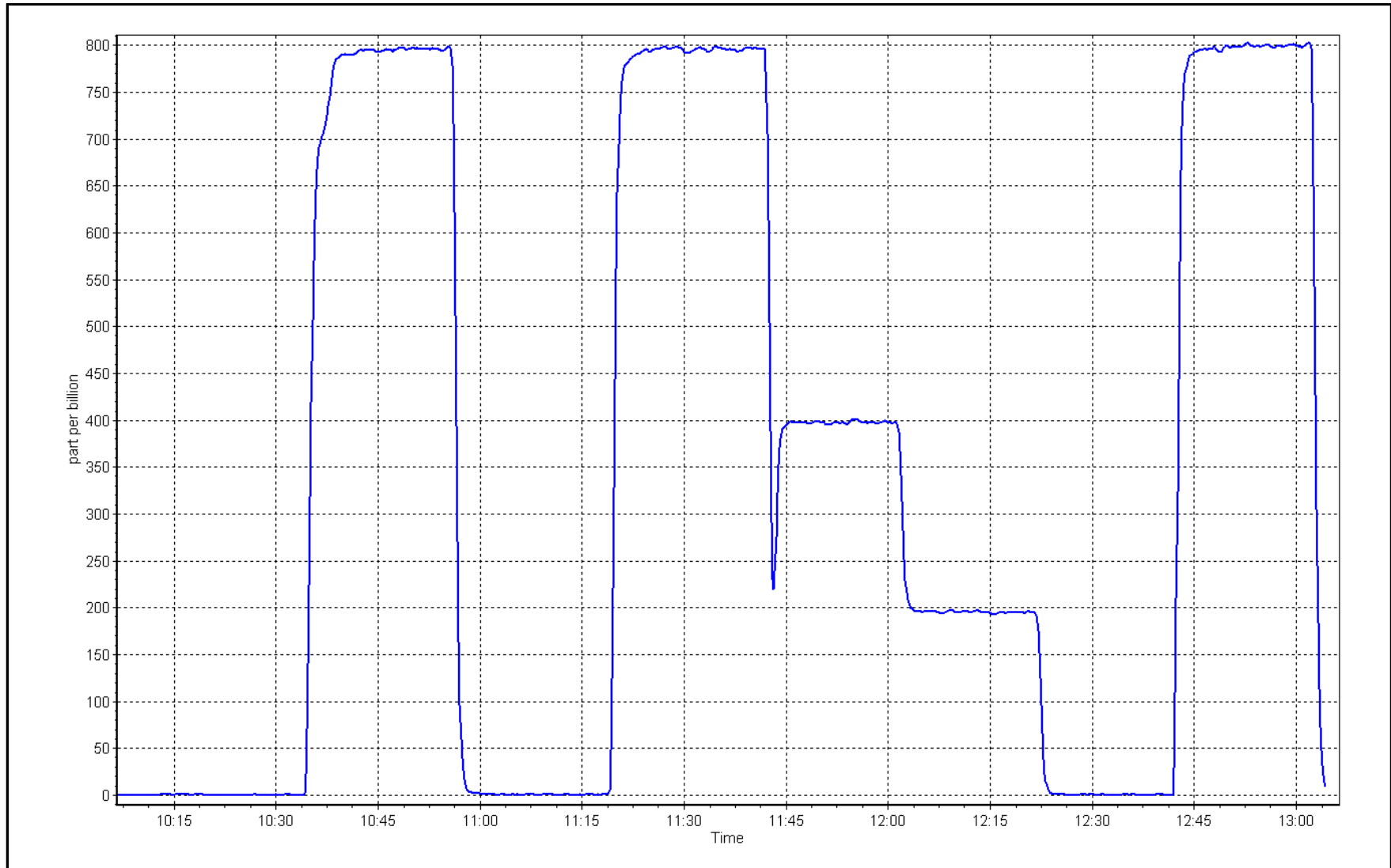
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.6	----	Correlation Coefficient	0.999981	≥0.995
800.3	796.5	1.0048	Slope	0.995774	0.90 - 1.10
400.7	398.5	1.0056	Intercept	-0.820824	+/-30
200.4	196.6	1.0191			



SO2 Calibration Plot

Date: March 17, 2025

Location: Conklin





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Conklin
Calibration Date: March 6, 2025
Start time (MST): 10:51
Reason: Routine

Station number: AMS 21
Last Cal Date: February 13, 2025
End time (MST): 14:39

Calibration Standards

Cal Gas Concentration: 5.00 ppm
Cal Gas Cylinder #: CC501204
Removed Cal Gas Conc: 5.00 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: Teledyne T700
ZAG Make/Model: Teledyne T701

Cal Gas Exp Date: January 3, 2026
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 2659
Serial Number: 953

Analyzer Information

Analyzer make: Thermo 43i-QTL
Converter make: CD-Nova 101
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 12228021058
Converter serial #: 565
Converter Temp: 850 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.000857	1.006000	Backgd or Offset:	3.3	3.3
Calibration intercept:	-0.080000	-0.160000	Coeff or Slope:	1.569	1.545

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4920	80.0	80.0	81.6	0.978
As found Mid point	4960	40.0	40.0	40.5	0.983
As found Low point	4980	20.0	20.0	19.8	1.000
New cylinder response					
Baseline Corr As found:	81.8	Prev response:	79.99	*% change:	2.2%
Baseline Corr 2nd AF pt:	40.7	AF Slope:	1.024143	AF Intercept:	-0.420000
Baseline Corr 3rd AF pt:	20.0	AF Correlation:	0.999965	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4920	80.0	80.0	80.3	0.996
Mid point	4960	40.0	40.0	40.2	0.995
Low point	4980	20.0	20.0	19.8	1.010
As left zero	5000	0.0	0.0	0.0	----
As left span	4920	80.0	80.0	80.3	0.996
SO2 Scrubber Check	4921	79.5	794.9	0.0	----
Date of last scrubber change:	November 13, 2024			Ave Corr Factor	1.000
Date of last converter efficiency test:					

Notes: Sample inlet filter was changed after multipoint as founds. SO2 scrubber check done after calibrator zero and passed. Adjusted span only.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

TRS Calibration Summary

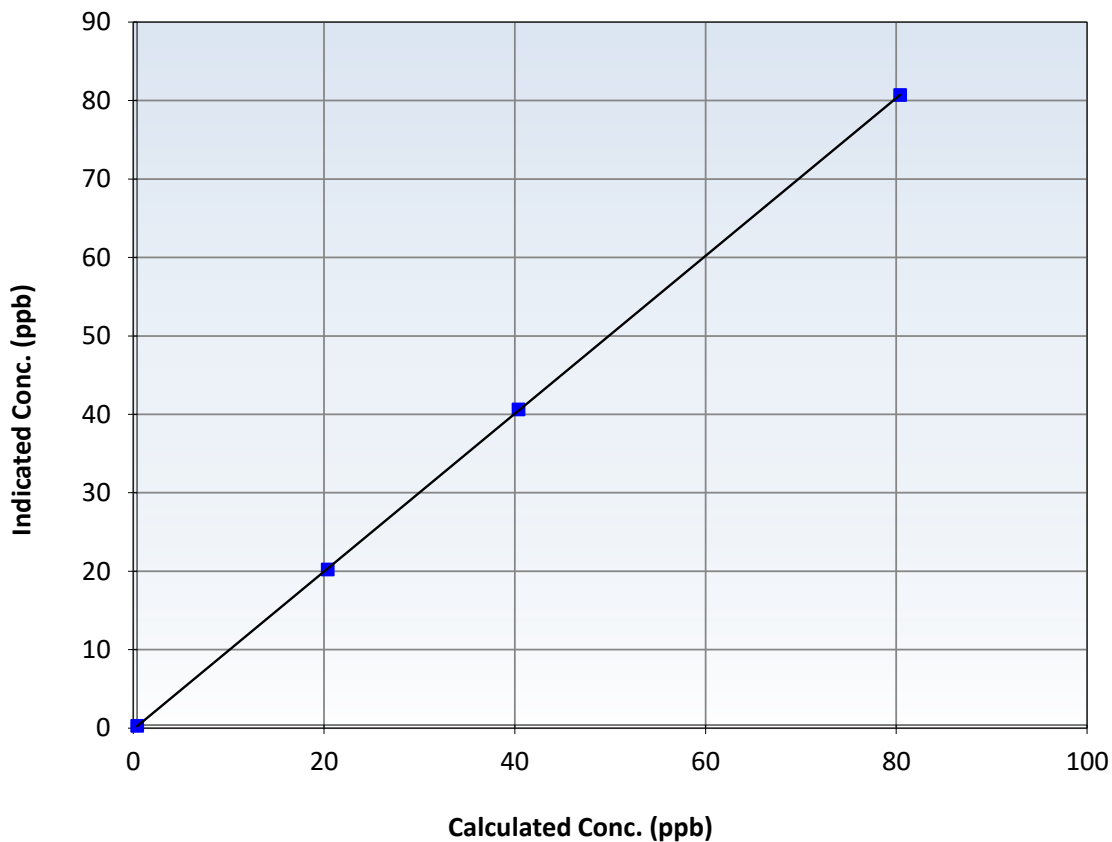
Station Information

Calibration Date:	March 6, 2025	Previous Calibration:	February 13, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	10:51	End Time (MST):	14:39
Analyzer make:	Thermo 43i-QTL	Analyzer serial #:	12228021058

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999988		≥ 0.995
80.0	80.3	0.9963	Slope	1.006000		$0.90 - 1.10$
40.0	40.2	0.9950	Intercept	-0.160000		± 3
20.0	19.8	1.0101				

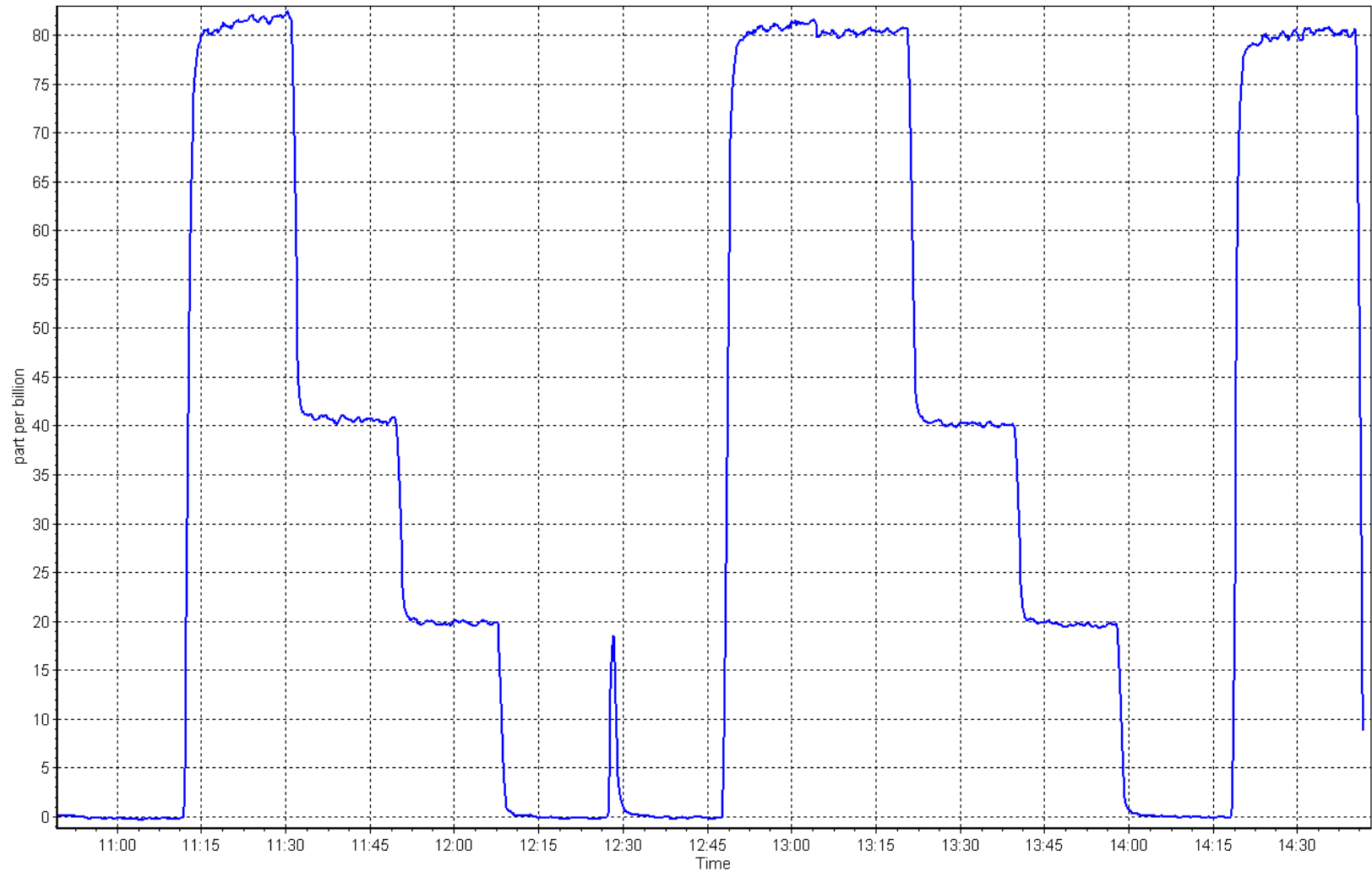
TRS Calibration Curve



TRS Calibration Plot

Date: March 6, 2025

Location: Conklin





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Conklin
 Calibration Date: March 17, 2025
 Start time (MST): 10:12
 Reason: Routine

Station number: AMS 21
 Last Cal Date: February 5, 2025
 End time (MST): 13:01

Calibration Standards

Gas Cert Reference:	CC340840	Cal Gas Expiry Date:	October 9, 2032
CH ₄ Cal Gas Conc.	503.8 ppm	CH ₄ Equiv Conc.	1067.6 ppm
C ₃ H ₈ Cal Gas Conc.	205.0 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH ₄ Conc.	503.8 ppm	CH ₄ Equiv Conc.	1067.6 ppm
Removed C ₃ H ₈ Conc.	205.0 ppm	Diff between cyl (THC):	
Diff between cyl (CH ₄):		Diff between cyl (NM):	
Calibrator Model:	Teledyne API T700	Serial Number:	2659
Zero Air Gen model:	Teledyne API T701	Serial Number:	953

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1180320039
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	2.30E-04	2.30E-04	NMHC SP Ratio:	4.73E-05
CH ₄ Retention time:	15.2	15.2	NMHC Peak Area:	190954
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.5	16.97	17.01	0.998
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	17.01	Prev response	17.05	*% change	-0.2%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.5	16.97	17.02	0.997
Mid point	4960	39.8	8.50	8.48	1.002
Low point	4980	19.9	4.25	4.17	1.019
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.5	16.97	17.01	0.998
Average Correction Factor					1.006

Notes:

Sample inlet filter was changed after as founds. No adjustment made.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4921	79.5	8.96	8.98	0.999
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.98	Prev response	8.99	*% change	-0.1%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	Limit = 0.95-1.05
High point	4921	79.5	8.96	8.98	0.998
Mid point	4960	39.8	4.49	4.49	1.000
Low point	4980	19.9	2.24	2.21	1.013
As left zero	5000	0.0	0.00	0.00	0.999
As left span	4921	79.5	8.96	8.97	0.999
Average Correction Factor					1.004

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4921	79.5	8.01	8.04	0.997
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.04	Prev response	8.07	*% change	-0.4%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	Limit = 0.95-1.05
High point	4921	79.5	8.01	8.04	0.996
Mid point	4960	39.8	4.01	3.99	1.004
Low point	4980	19.9	2.01	1.96	1.025
As left zero	5000	0.0	0.00	0.00	0.997
As left span	4921	79.5	8.01	8.04	0.997
Average Correction Factor					1.009

Calibration Statistics

	Start	Finish
THC Cal Slope:	1.005194	1.004359
THC Cal Offset:	-0.009431	-0.043713
CH ₄ Cal Slope:	1.008593	1.005753
CH ₄ Cal Offset:	-0.012436	-0.029221
NMHC Cal Slope:	1.002636	1.003137
NMHC Cal Offset:	0.002606	-0.015091

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

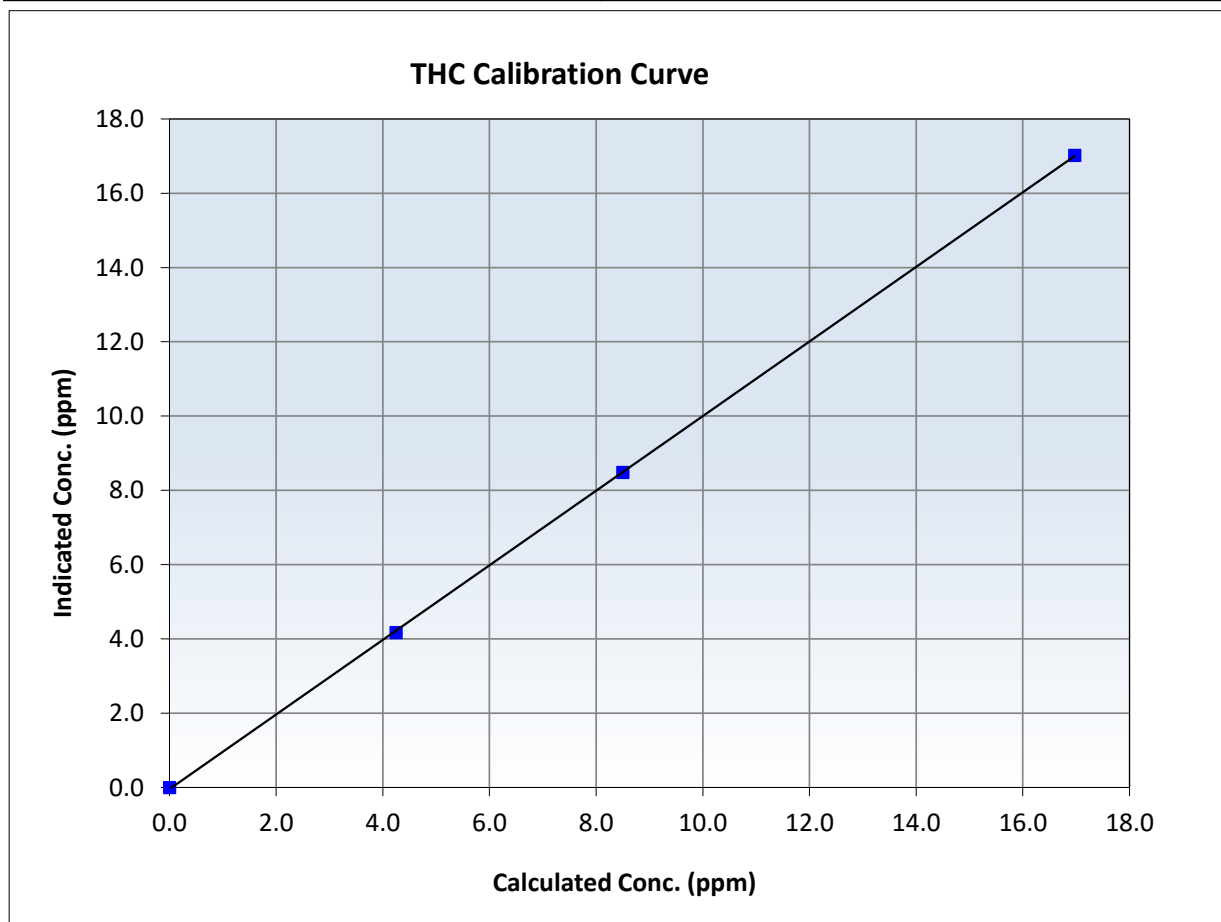
THC Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 5, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	10:12	End Time (MST):	13:01
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320039

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999968		≥ 0.995
16.97	17.02	0.9972	Slope	1.004359		0.90 - 1.10
8.50	8.48	1.0018	Intercept	-0.043713		± 0.5
4.25	4.17	1.0187				





Wood Buffalo Environmental Association

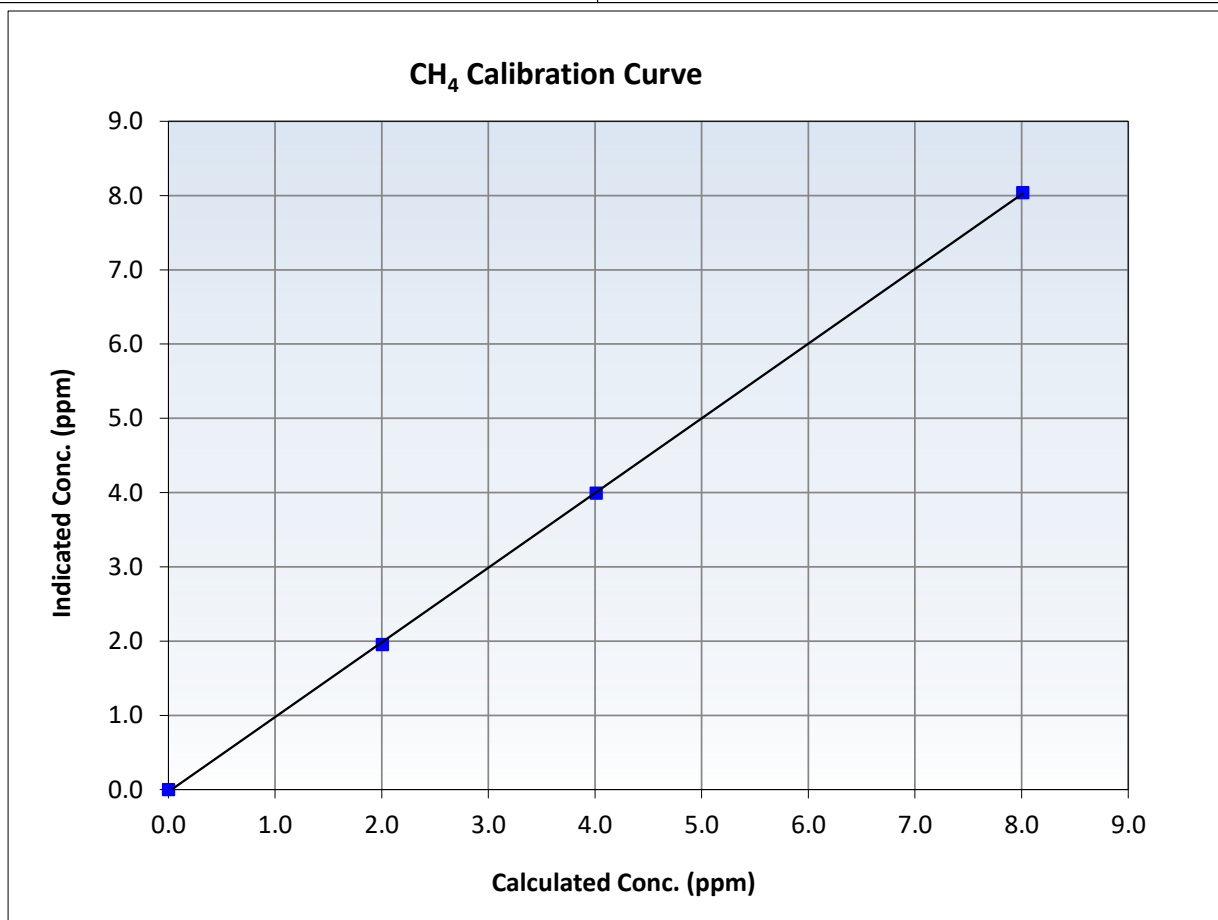
CH₄ Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 5, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	10:12	End Time (MST):	13:01
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320039

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999939	<i>≥0.995</i>
8.01	8.04	0.9962	Slope	1.005753	<i>0.90 - 1.10</i>
4.01	3.99	1.0044	Intercept	-0.029221	<i>+/-0.5</i>
2.01	1.96	1.0251			





Wood Buffalo Environmental Association

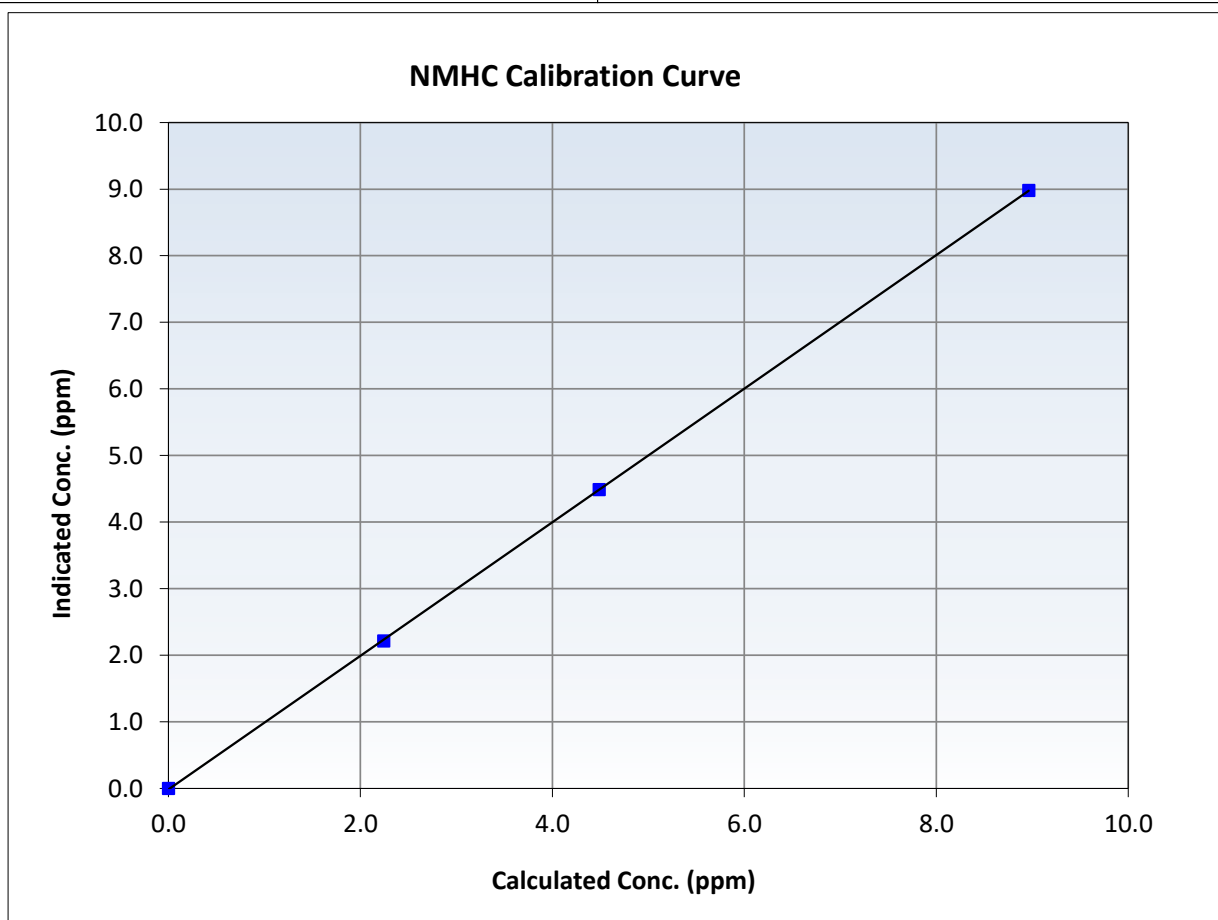
NMHC Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 5, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	10:12	End Time (MST):	13:01
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320039

Calibration Data

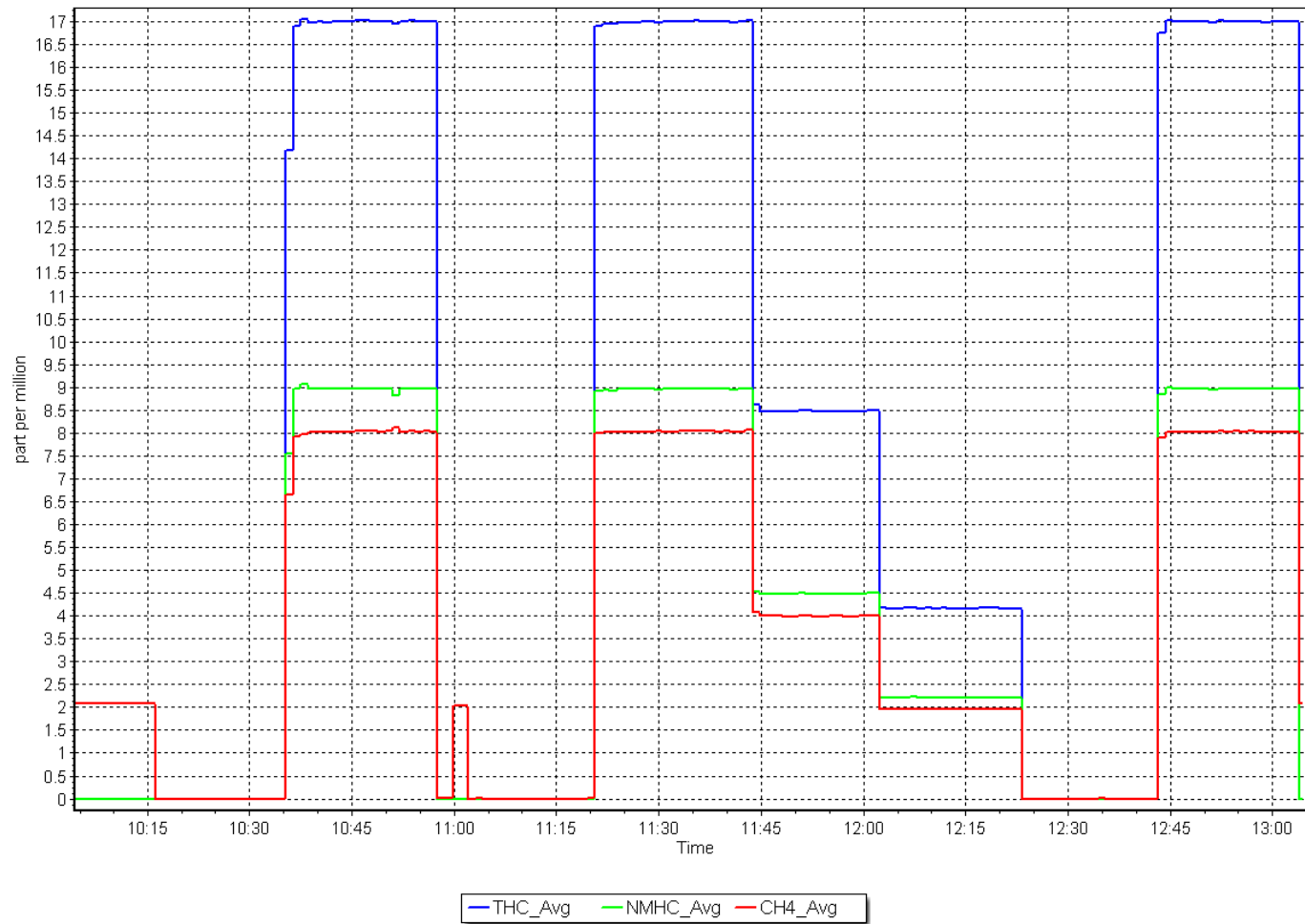
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999984	≥ 0.995
8.96	8.98	0.9981	Slope	1.003137	0.90 - 1.10
4.49	4.49	0.9997	Intercept	-0.015091	± 0.5
2.24	2.21	1.0134			



NMHC Calibration Plot

Date: March 17, 2025

Location: Conklin





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1501663731

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.034	1.043	NO bkgnd or offset:	10.1	10.1
NOX coeff or slope:	0.996	0.995	NOX bkgnd or offset:	10.0	10.1
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	147.0	148.5

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.003547	1.000027
NO _x Cal Offset:	-0.871989	-0.712016
NO Cal Slope:	1.002391	1.002448
NO Cal Offset:	-1.772028	-2.192041
NO ₂ Cal Slope:	0.997276	1.001058
NO ₂ Cal Offset:	0.059926	-0.135051

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.1	0.1	0.0	----	----
High point	4918	82.0	802.0	800.3	1.6	801.2	800.8	0.4	1.0009	0.9994
Mid point	4959	41.0	401.0	400.2	0.8	401.3	399.1	2.2	0.9992	1.0027
Low point	4980	20.5	200.5	200.1	0.4	198.0	195.2	2.8	1.0125	1.0249
As left zero	5000	0.0	0.0	0.0	0.0	0.2	0.1	0.1	----	----
As left span	4918	82.0	802.0	411.3	390.7	801.0	411.3	389.5	1.0012	1.0000
Average Correction Factor									1.0042	1.0090

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.0	----	----
High GPT point	795.4	405.3	391.7	392.2	0.9988	100.1%
Mid GPT point	795.4	602.8	194.2	193.9	1.0018	99.8%
Low GPT point	795.4	702.3	94.7	94.8	0.9994	100.1%
Average Correction Factor					1.0000	100.0%

Notes: Sample inlet filter was changed after as founds. Adjusted span only. Used 2nd NO reference point because of drift.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

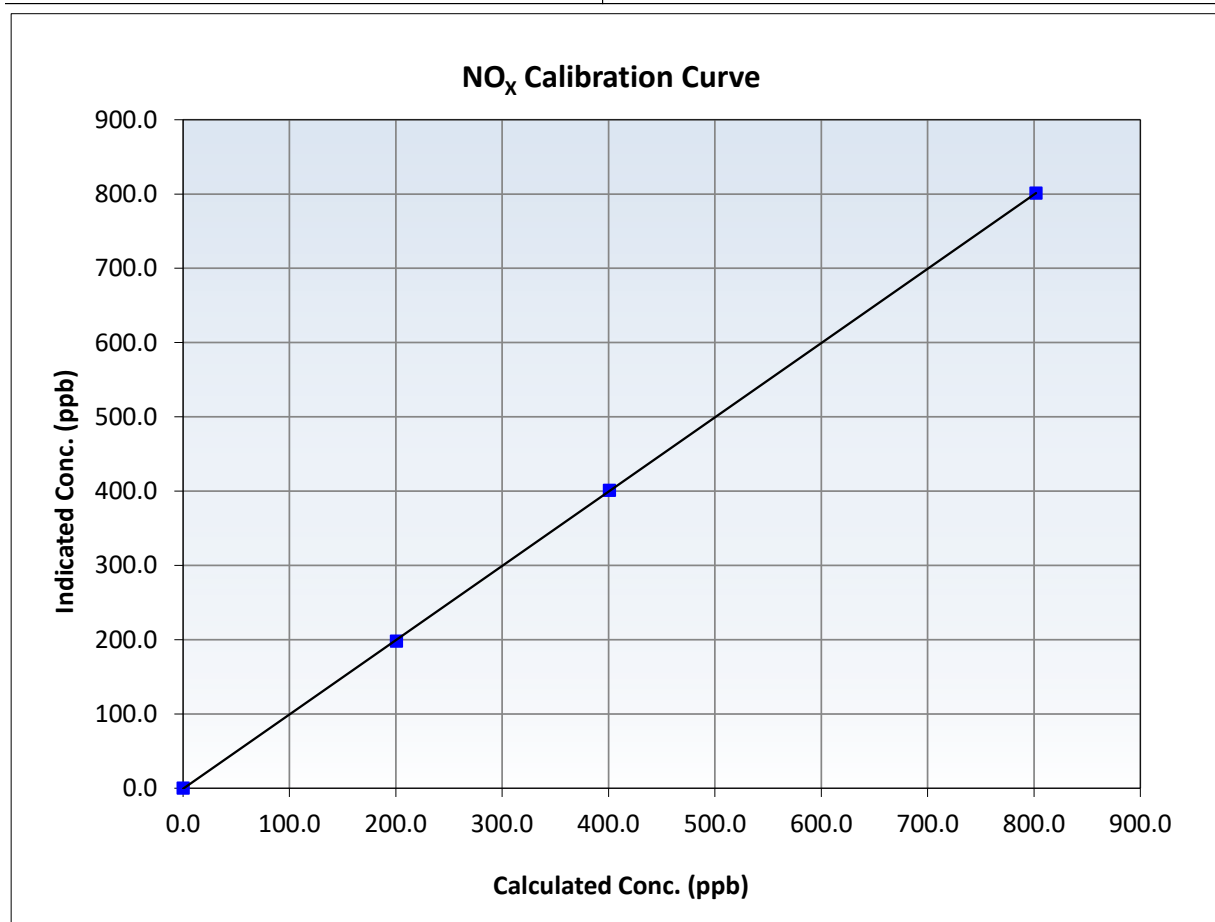
NO_x Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 25, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:46	End Time (MST):	14:12
Analyzer make:	Thermo 42i	Analyzer serial #:	1501663731

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999986	≥0.995
802.0	801.2	1.0009	Slope	1.000027	0.90 - 1.10
401.0	401.3	0.9992	Intercept	-0.712016	+/-20
200.5	198.0	1.0125			





Wood Buffalo Environmental Association

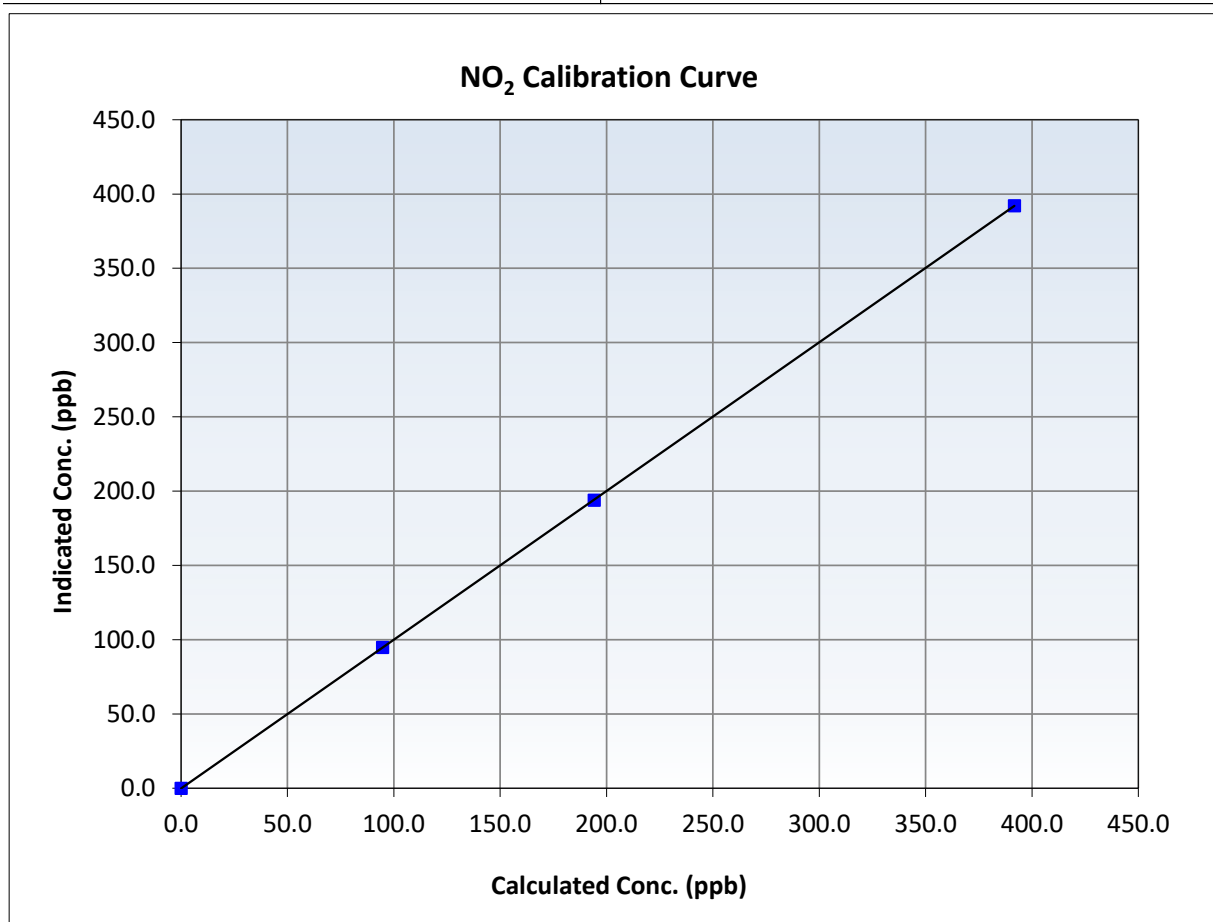
NO₂ Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 25, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:46	End Time (MST):	14:12
Analyzer make:	Thermo 42i	Analyzer serial #:	1501663731

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999997	≥ 0.995
391.7	392.2	0.9988	Slope	1.001058	$0.90 - 1.10$
194.2	193.9	1.0018	Intercept	-0.135051	± 20
94.7	94.8	0.9994			





Wood Buffalo Environmental Association

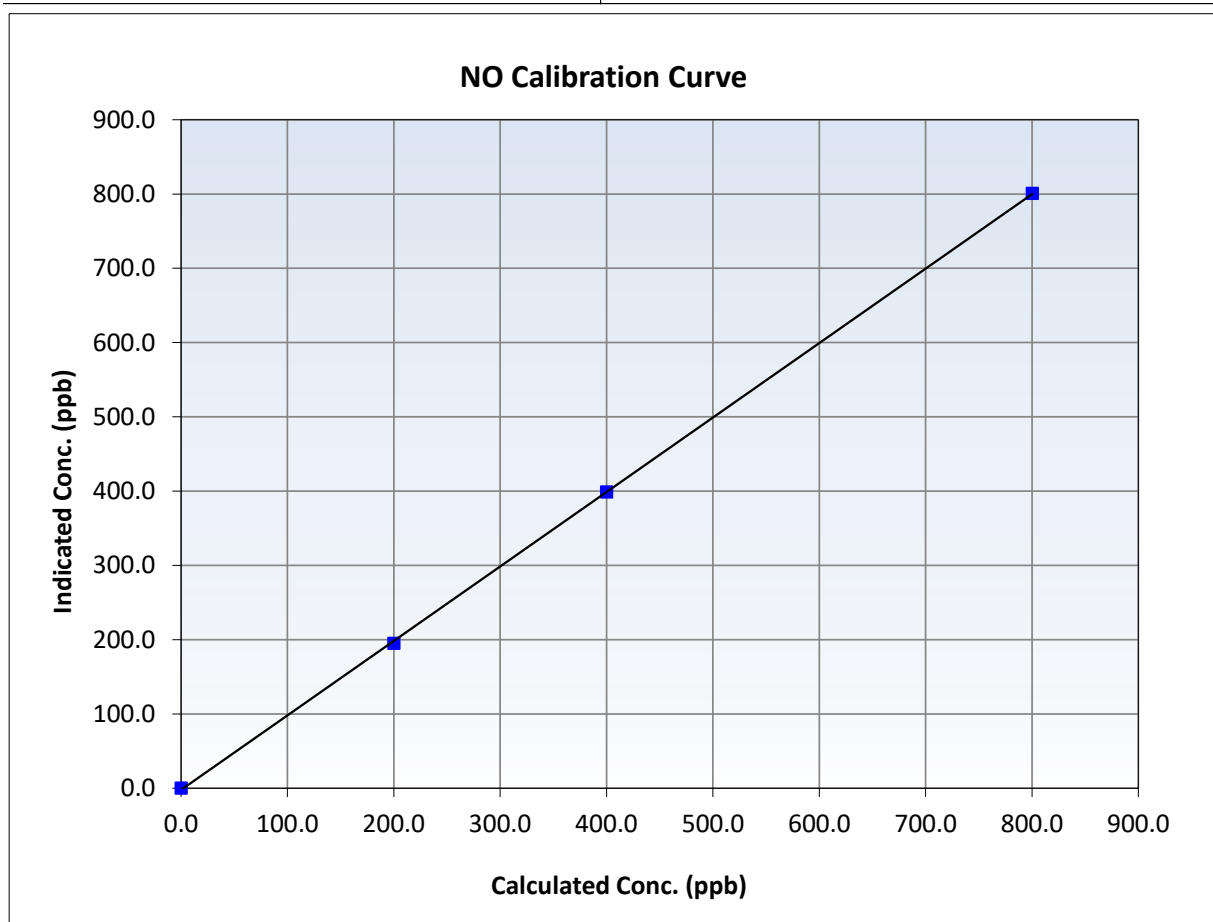
NO Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 25, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:46	End Time (MST):	14:12
Analyzer make:	Thermo 42i	Analyzer serial #:	1501663731

Calibration Data

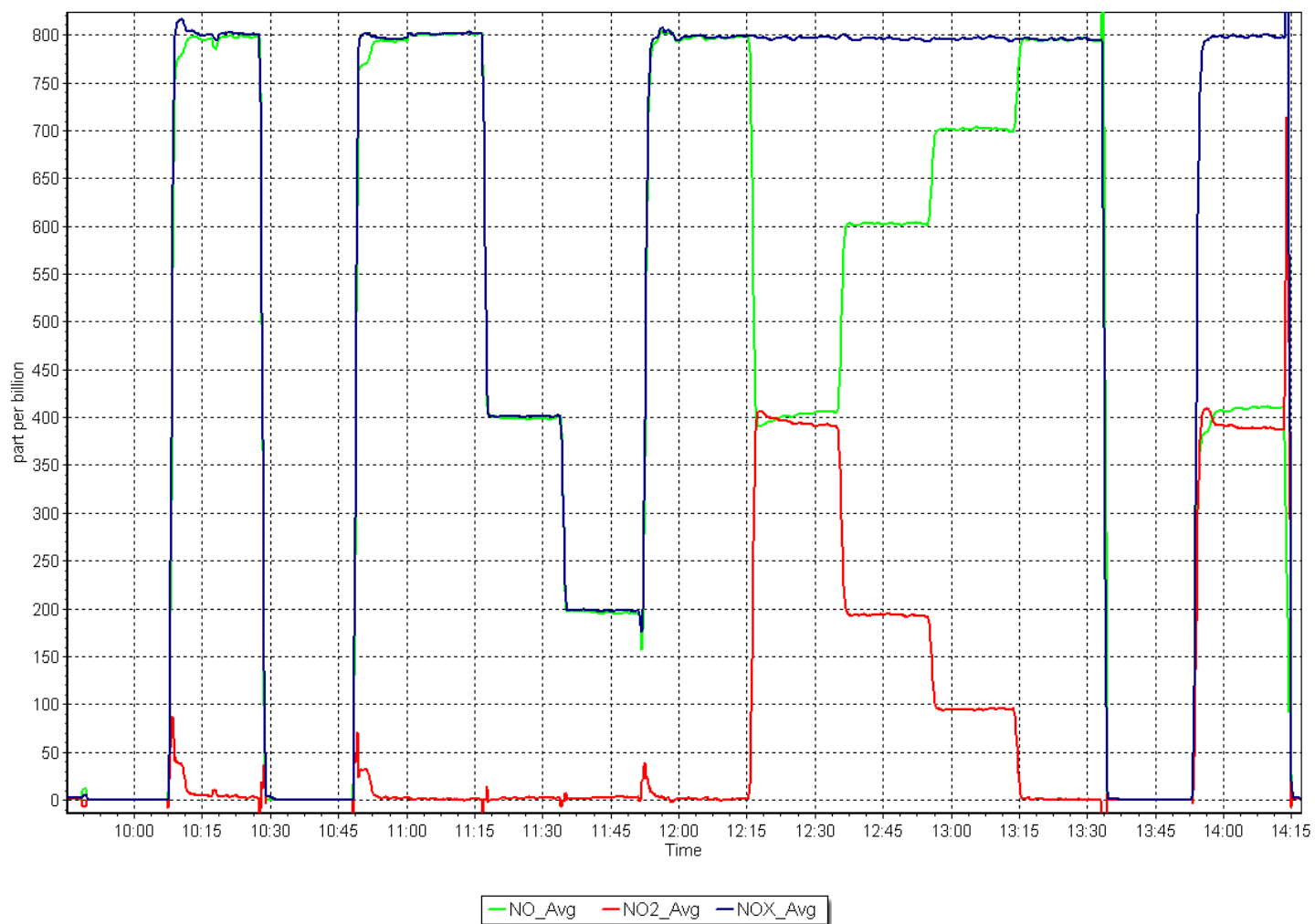
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.1	----	Correlation Coefficient	0.999955	≥ 0.995
800.3	800.8	0.9994	Slope	1.002448	$0.90 - 1.10$
400.2	399.1	1.0027	Intercept	-2.192041	± 20
200.1	195.2	1.0249			



NO_x Calibration Plot

Date: March 18, 2025

Location: Conklin





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Conklin
Calibration Date: March 3, 2025
Start time (MST): 11:35
Reason: Routine

Station number: AMS 21
Last Cal Date: February 12, 2025
End time (MST): 14:14

Calibration Standards

O₃ generation mode: Photometer
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne API T701

Serial Number: 2659
Serial Number: 953

Analyzer Information

Analyzer make: Thermo 49i
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 1501663734

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.029000	1.003886	Backgd or Offset:	2.0	1.9
Calibration intercept:	-0.600000	-0.480000	Coeff or Slope:	1.126	1.100

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	800.0	0.0	0.3	----
As found High point	5000	918.8	400.0	406.1	0.986
As found Mid point					
As found Low point					
Baseline Corr As found:	405.8	Previous response	411.0	*% change	-1.3%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	800.0	0.0	0.0	----
High point	5000	919.4	400.0	401.4	0.997
Mid point	5000	757.9	200.0	199.8	1.001
Low point	5000	650.0	100.0	99.6	1.004
As left zero	5000	800.0	0.0	-0.7	----
As left span	5000	919.0	400.0	412.7	0.969
Average Correction Factor					1.001

Notes: Sample inlet filter was changed after as founds. Adjusted span only.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

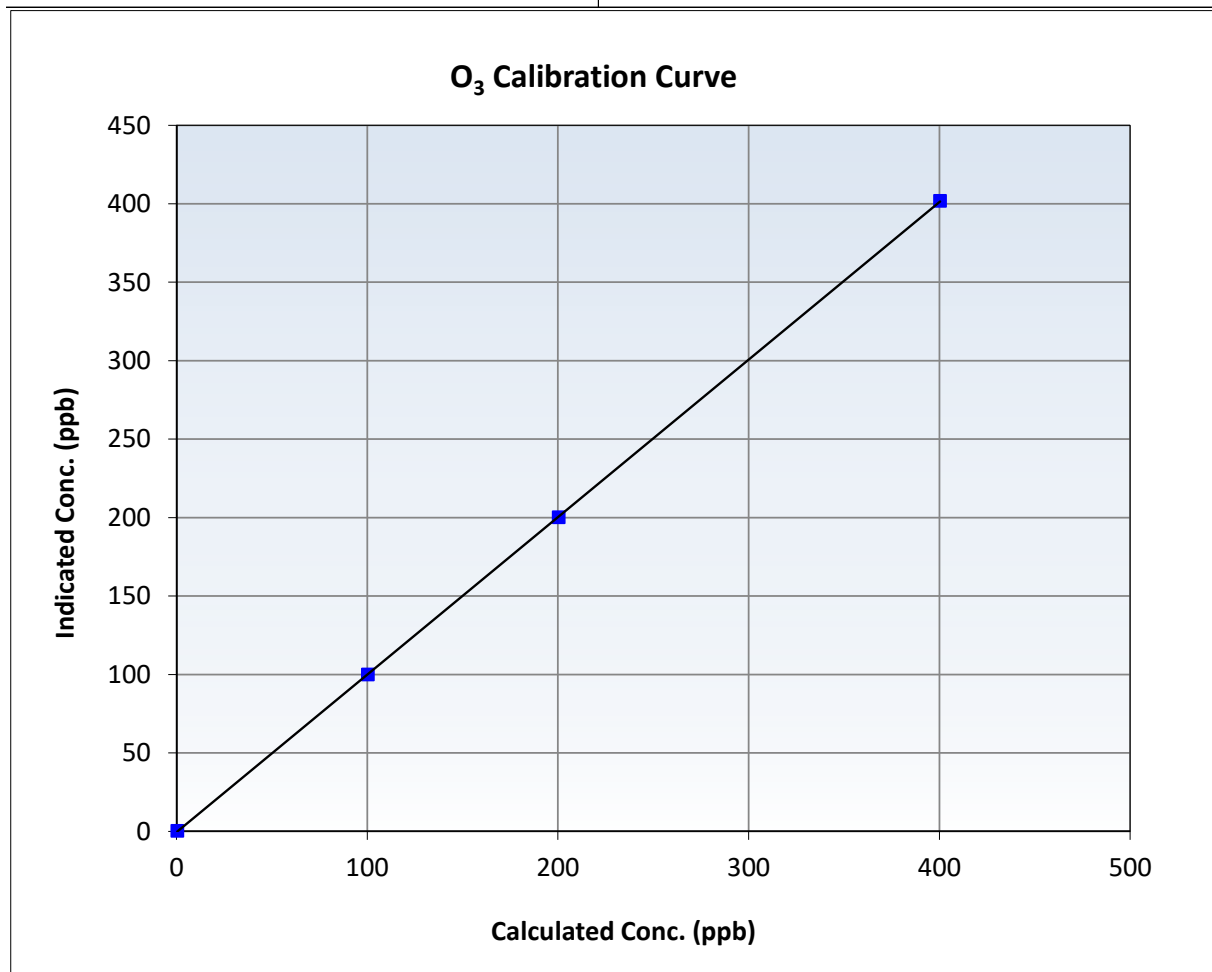
O₃ Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 12, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	11:35	End Time (MST):	14:14
Analyzer make:	Thermo 49i	Analyzer serial #:	1501663734

Calibration Data

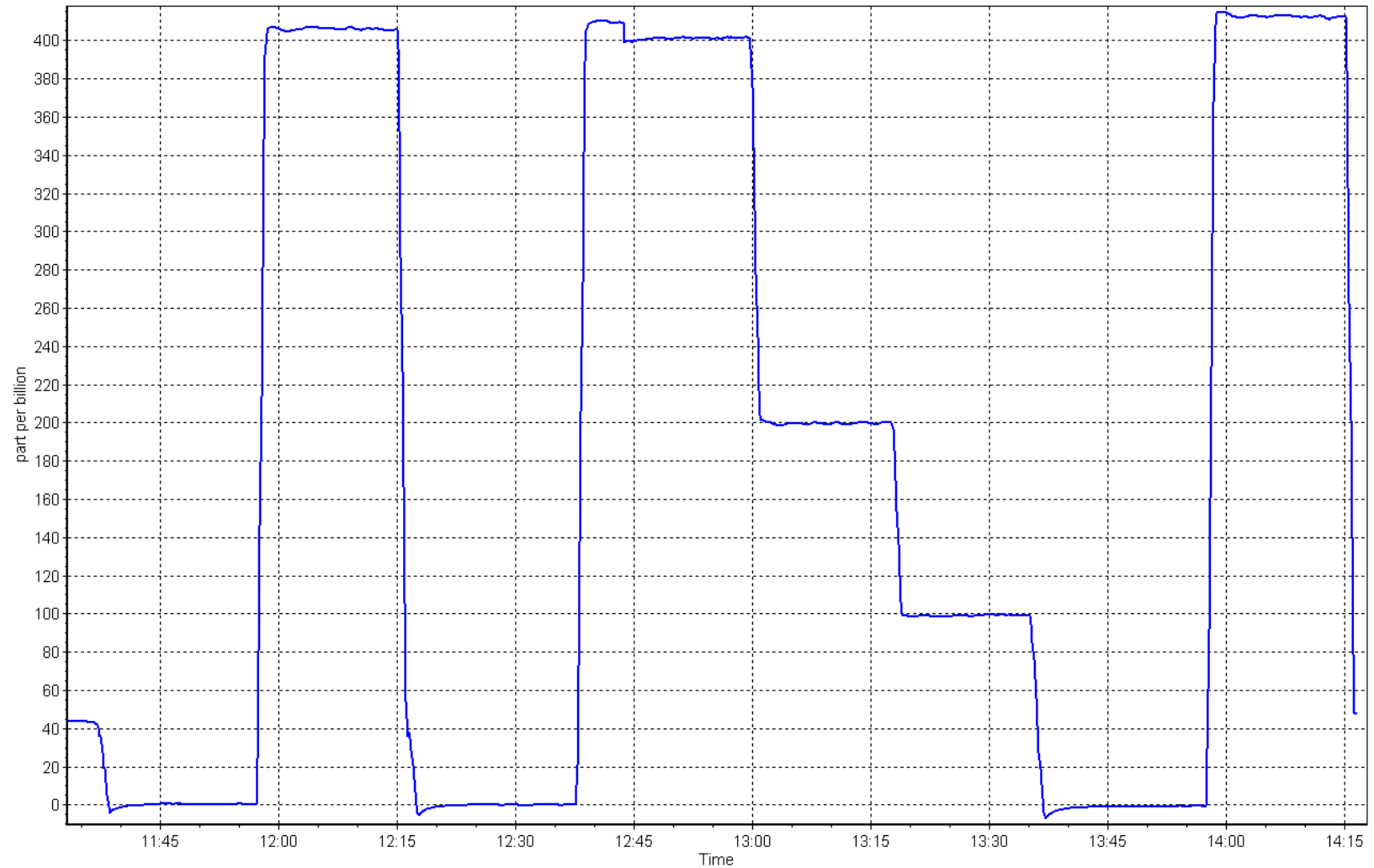
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999992	≥0.995
400.0	401.4	0.9965	Slope	1.003886	0.90 - 1.10
200.0	199.8	1.0010	Intercept	-0.480000	+/- 5
100.0	99.6	1.0040			



O₃ Calibration Plot

Date: March 3, 2025

Location: Conklin





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Conklin
Calibration Date: March 6, 2025
Start time (MST): 12:11
Station number: AMS 21
Last Cal Date: February 25, 2025
End time (MST): 12:29
Analyzer Make: API T640
Particulate Fraction: PM2.5
S/N: 326
Flow Meter Make/Model: Alicat FP-25BT
Temp/RH standard: Alicat FP-25BT
S/N: 388754
S/N: 388754

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	6.10	5.46	6.10	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	701.00	703.33	701.00	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	5.03	5.04	5.03	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	39	----	39	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 3.70		PM w/ HEPA: 0.00		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.90 Expiry Date: July 16, 2026
Lot No.: 100128-050-040

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test				<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: February 25, 2025
Date Disposable Filter Changed: February 25, 2025

Post- maintenance Zero Verification: PM w/ HEPA: <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: August 9, 2024
Date RH/T Sensor Cleaned: August 9, 2024

Notes: Verified flow, pressure, temperature and pump power. No adjustment needed. Leak check passed.

Calibration by: Jan Castro



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS22
JANVIER
MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Janvier Station number: AMS 22
Calibration Date: March 26, 2025 Last Cal Date: February 5, 2025
Start time (MST): 11:11 End time (MST): 14:10
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.11 ppm Cal Gas Exp Date: January 18, 2029
Cal Gas Cylinder #: CC281519
Removed Cal Gas Conc: 50.11 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: Teledyne API T700 Serial Number: 3806
Zero Air Gen Model: Teledyne API T701 Serial Number: 691

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1152430006
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999563	0.999521	Backgd or Offset:	25.7	26.1
Calibration intercept:	0.624687	1.164268	Coeff or Slope:	1.034	1.017

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	1.0	----
As found High point	4920	79.8	799.8	812.6	0.985
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	811.6	Previous response	800.1	*% change	1.4%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.3	----
High point	4920	79.8	799.8	799.9	1.000
Mid point	4960	39.9	399.9	402.0	0.995
Low point	4980	20.0	200.4	201.9	0.993
As left zero	5000	0.0	0.0	0.3	----
As left span	4920	79.8	799.8	801.2	0.998
Average Correction Factor:					0.996

Notes: Changed the inlet filter after as founds. Adjusted both zero and span.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

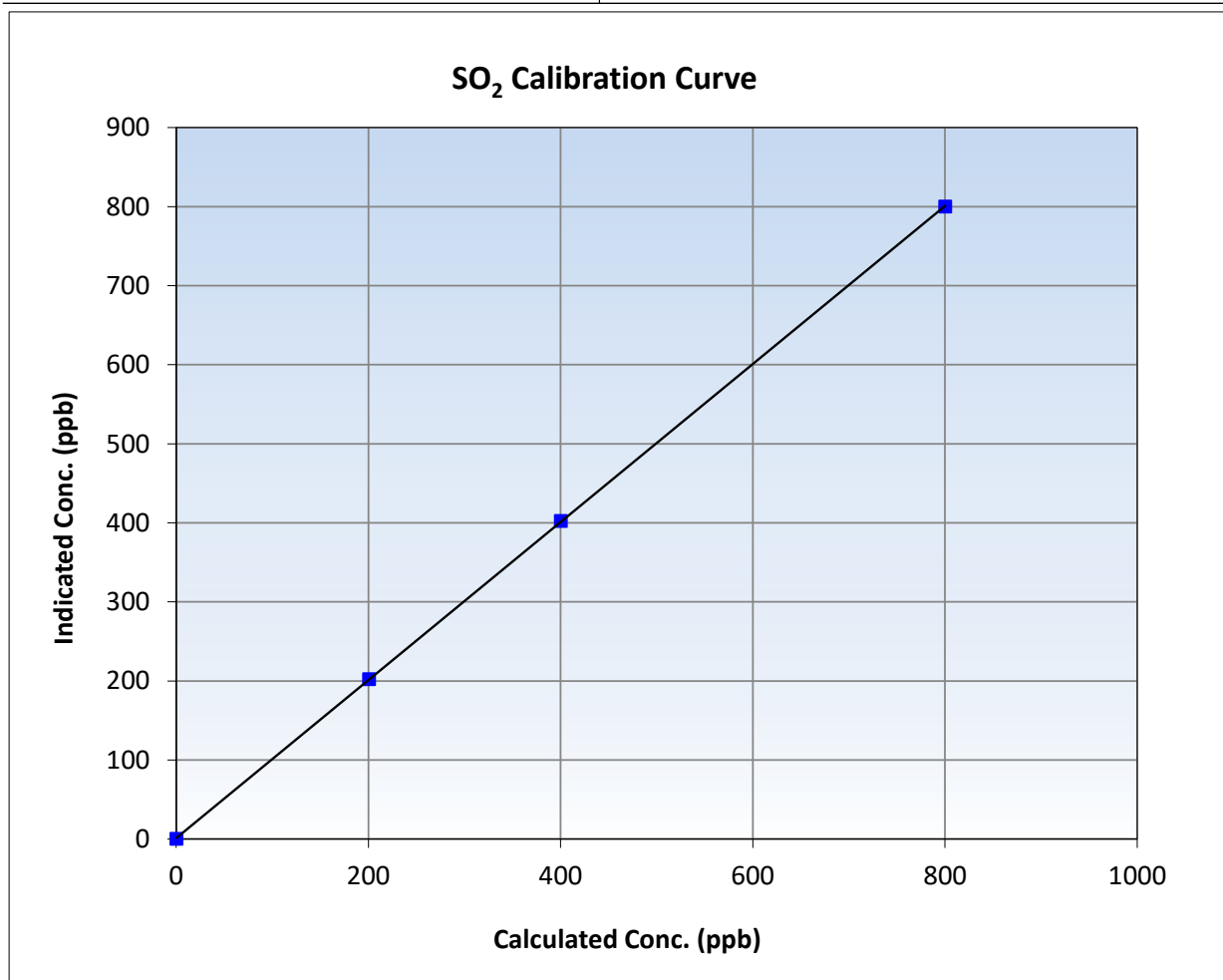
SO₂ Calibration Summary

Station Information

Calibration Date:	March 26, 2025	Previous Calibration:	February 5, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:11	End Time (MST):	14:10
Analyzer make:	Thermo 43i	Analyzer serial #:	1152430006

Calibration Data

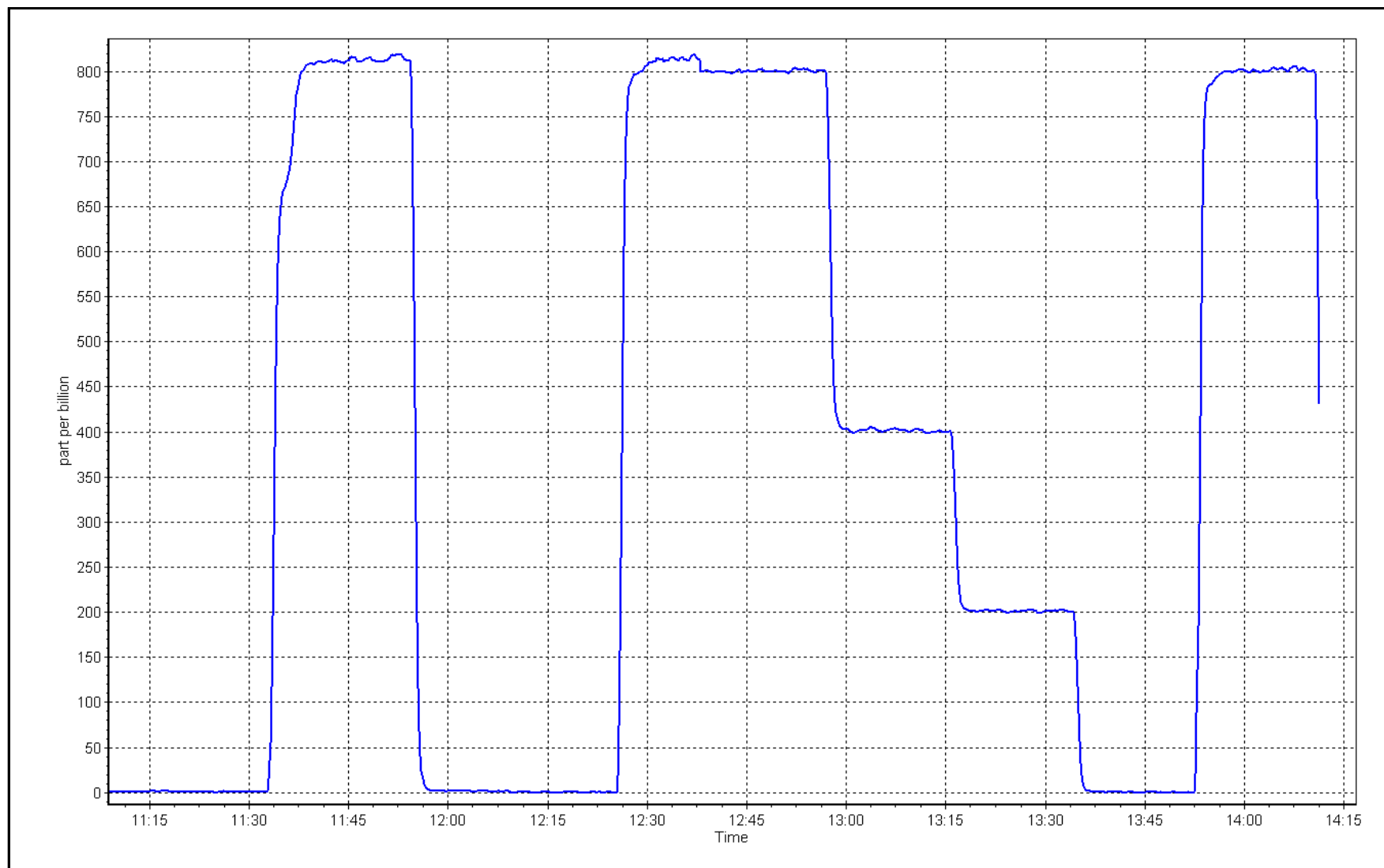
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999992	≥0.995
799.8	799.9	0.9999	Slope	0.999521	0.90 - 1.10
399.9	402.0	0.9947	Intercept	1.164268	+/-30
200.4	201.9	0.9928			



SO2 Calibration Plot

Date: March 26, 2025

Location: Janvier





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Janvier Station number: AMS 22
Calibration Date: March 27, 2025 Last Cal Date: February 27, 2025
Start time (MST): 10:40 End time (MST): 15:15
Reason: Routine

Calibration Standards

Cal Gas Concentration: 5.02 ppm Cal Gas Exp Date: November 15, 2026
Cal Gas Cylinder #: CC424047
Removed Cal Gas Conc: 5.02 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 3806
ZAG Make/Model: Teledyne API T701 Serial Number: 691

Analyzer Information

Analyzer make: Thermo 43i-TLE Analyzer serial #: 1151680031
Converter make: CDN-101 Converter serial #: 620
Analyzer Range: 0 - 100 ppb Converter Temp: 850 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.987382	0.970959	Backgd or Offset:	3.77
Calibration intercept:	0.200418	0.300065	Coeff or Slope:	1.197

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.1	----
As found High point	4920	79.7	80.0	79.0	1.014
As found Mid point	4960	39.8	40.0	39.8	1.007
As found Low point	4980	19.9	20.0	19.9	1.009
New cylinder response					
Baseline Corr As found:	78.9	Prev response:	79.21	*% change:	-0.4%
Baseline Corr 2nd AF pt:	39.7	AF Slope:	0.985954	AF Intercept:	0.200374
Baseline Corr 3rd AF pt:	19.8	AF Correlation:	0.999982	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.2	----
High point	4920	79.7	80.0	77.9	1.027
Mid point	4960	39.8	40.0	39.3	1.017
Low point	4980	19.9	20.0	19.7	1.014
As left zero	5000	0.0	0.0	0.4	----
As left span	4920	79.7	80.0	78.9	1.014
SO2 Scrubber Check	4920	79.8	798.0	-0.1	----
Date of last scrubber change:				Ave Corr Factor	1.019
Date of last converter efficiency test:					

Notes: Changed the inlet filter after as founds. Scrubber test performed after zero point, no issues. No adjustments were made.

Calibration Performed By: Louis Janvier, Caiden Morice



Wood Buffalo Environmental Association

TRS Calibration Summary

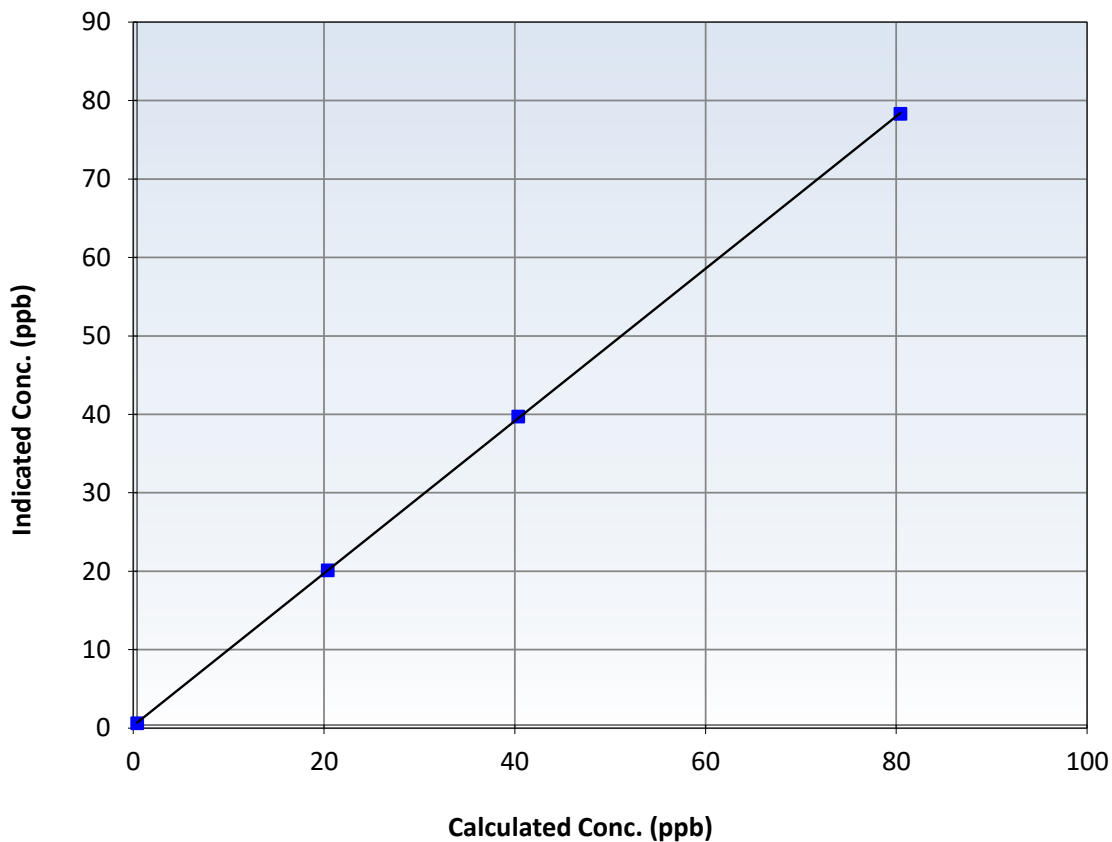
Station Information

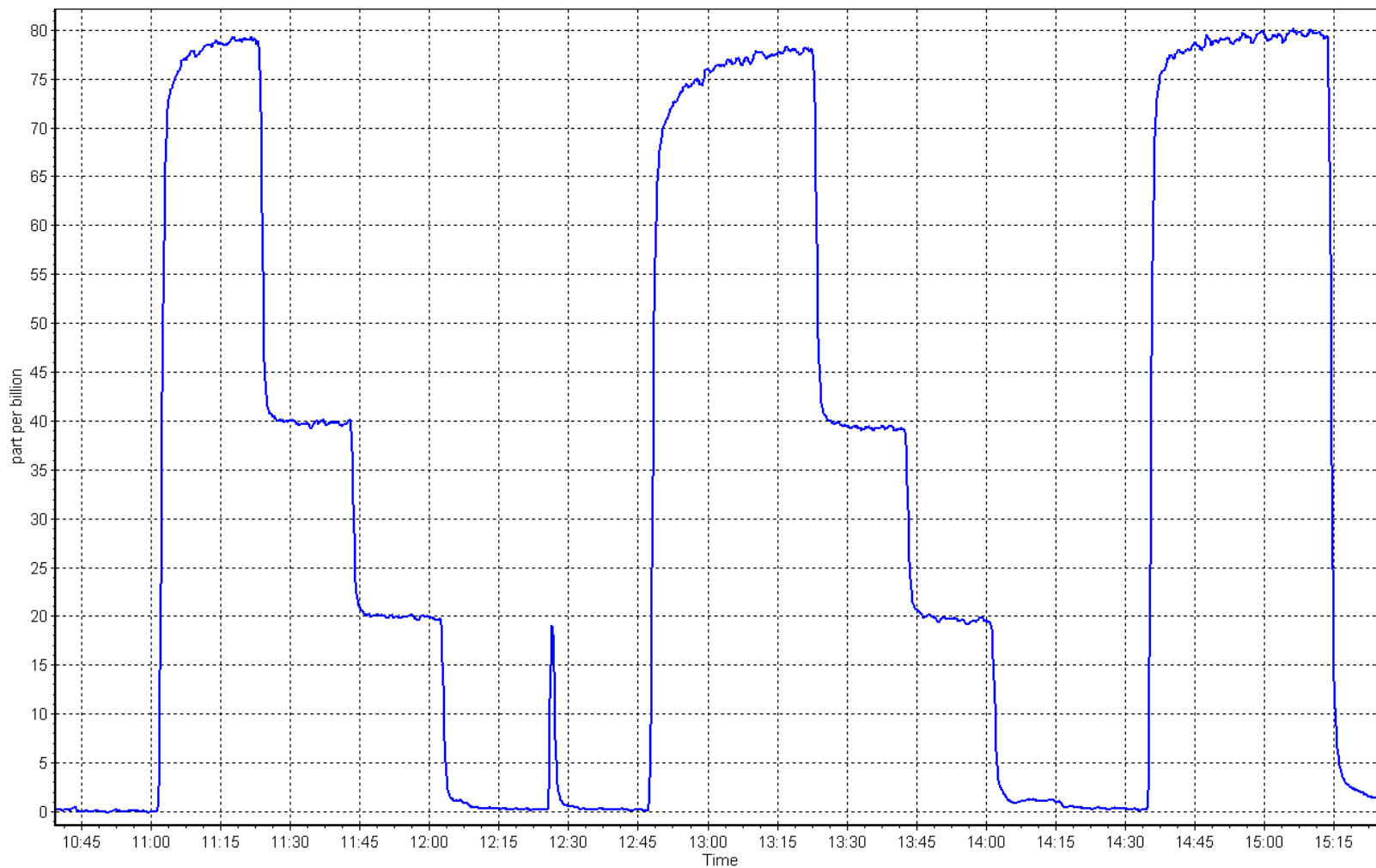
Calibration Date:	March 27, 2025	Previous Calibration:	February 27, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	10:40	End Time (MST):	15:15
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1151680031

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999982		≥ 0.995
80.0	77.9	1.0273	Slope	0.970959		$0.90 - 1.10$
40.0	39.3	1.0168	Intercept	0.300065		± 3
20.0	19.7	1.0142				

TRS Calibration Curve







Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Janvier
 Calibration Date: March 26, 2025
 Start time (MST): 11:11
 Reason: Routine

Station number: AMS 22
 Last Cal Date: February 5, 2025
 End time (MST): 14:13

Calibration Standards

Gas Cert Reference: CC281519
 CH₄ Cal Gas Conc. 502.8 ppm
 C₃H₈ Cal Gas Conc. 208.4 ppm
 Removed Gas Cert: NA
 Removed CH₄ Conc. 502.8 ppm
 Removed C₃H₈ Conc. 208.4 ppm
 Diff between cyl (CH₄):
 Calibrator Model: Teledyne API 700
 Zero Air Gen model: Teledyne API 701

Cal Gas Expiry Date: January 18, 2029
 CH₄ Equiv Conc. 1075.9 ppm
 Removed Gas Expiry: NA
 CH₄ Equiv Conc. 1075.9 ppm
 Diff between cyl (THC):
 Diff between cyl (NM):
 Serial Number: 3806
 Serial Number: 691

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1317958219
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	2.50E-04	2.51E-04	NMHC SP Ratio:	5.96E-05
CH ₄ Retention time:	11.6	11.6	NMHC Peak Area:	153556
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF
				6.02E-05
				152054
				OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	17.17	17.09	1.005
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	17.09	Prev response	17.15	*% change	-0.3%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	17.17	17.18	1.000
Mid point	4960	39.9	8.59	8.51	1.009
Low point	4980	20.0	4.30	4.26	1.011
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	17.17	17.17	1.000
Average Correction Factor					1.007

Notes: Changed the inlet filter after as founds. Adjusted span only.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4920	79.8	9.15	9.08	1.008
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.08	Prev response	9.14	*% change	-0.7%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	9.15	9.15	1.000
Mid point	4960	39.9	4.57	4.55	1.004
Low point	4980	20.0	2.29	2.29	1.003
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	9.15	9.13	1.002
Average Correction Factor					1.002

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4920	79.8	8.03	8.02	1.001
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.02	Prev response	8.01	*% change	0.1%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	8.03	8.03	1.000
Mid point	4960	39.9	4.01	3.95	1.015
Low point	4980	20.0	2.01	1.97	1.021
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	8.03	8.03	0.999
Average Correction Factor					1.012

Calibration Statistics

	Start	Finish
THC Cal Slope:	1.000215	1.000628
THC Cal Offset:	-0.029994	-0.035596
CH ₄ Cal Slope:	1.001466	1.001452
CH ₄ Cal Offset:	-0.027558	-0.029759
NMHC Cal Slope:	0.999143	0.999880
NMHC Cal Offset:	-0.003035	-0.006237

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

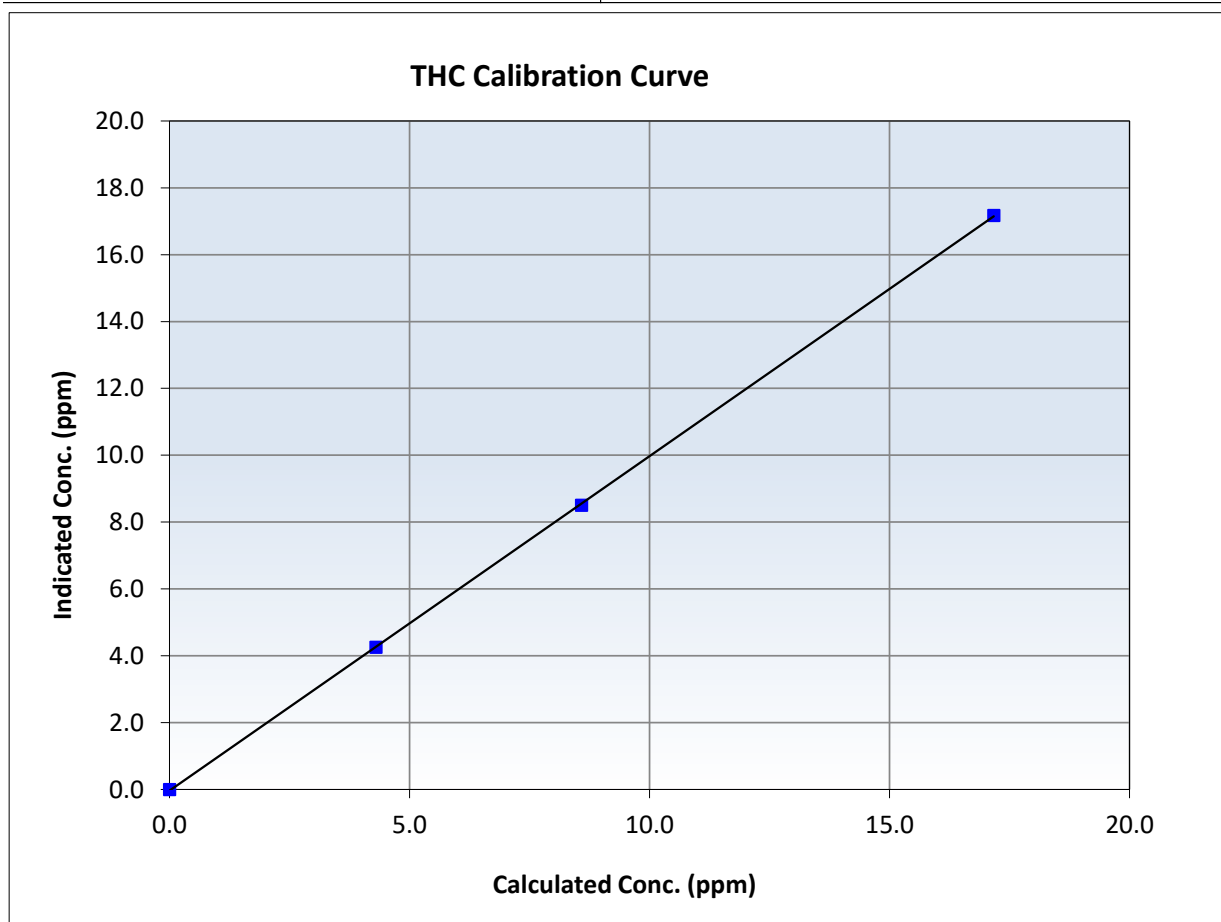
THC Calibration Summary

Station Information

Calibration Date:	March 26, 2025	Previous Calibration:	February 5, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:11	End Time (MST):	14:13
Analyzer make:	Thermo 55i	Analyzer serial #:	1317958219

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999972	≥ 0.995
17.17	17.18	0.9998	Slope	1.000628	$0.90 - 1.10$
8.59	8.51	1.0092	Intercept	-0.035596	± 0.5
4.30	4.26	1.0114			





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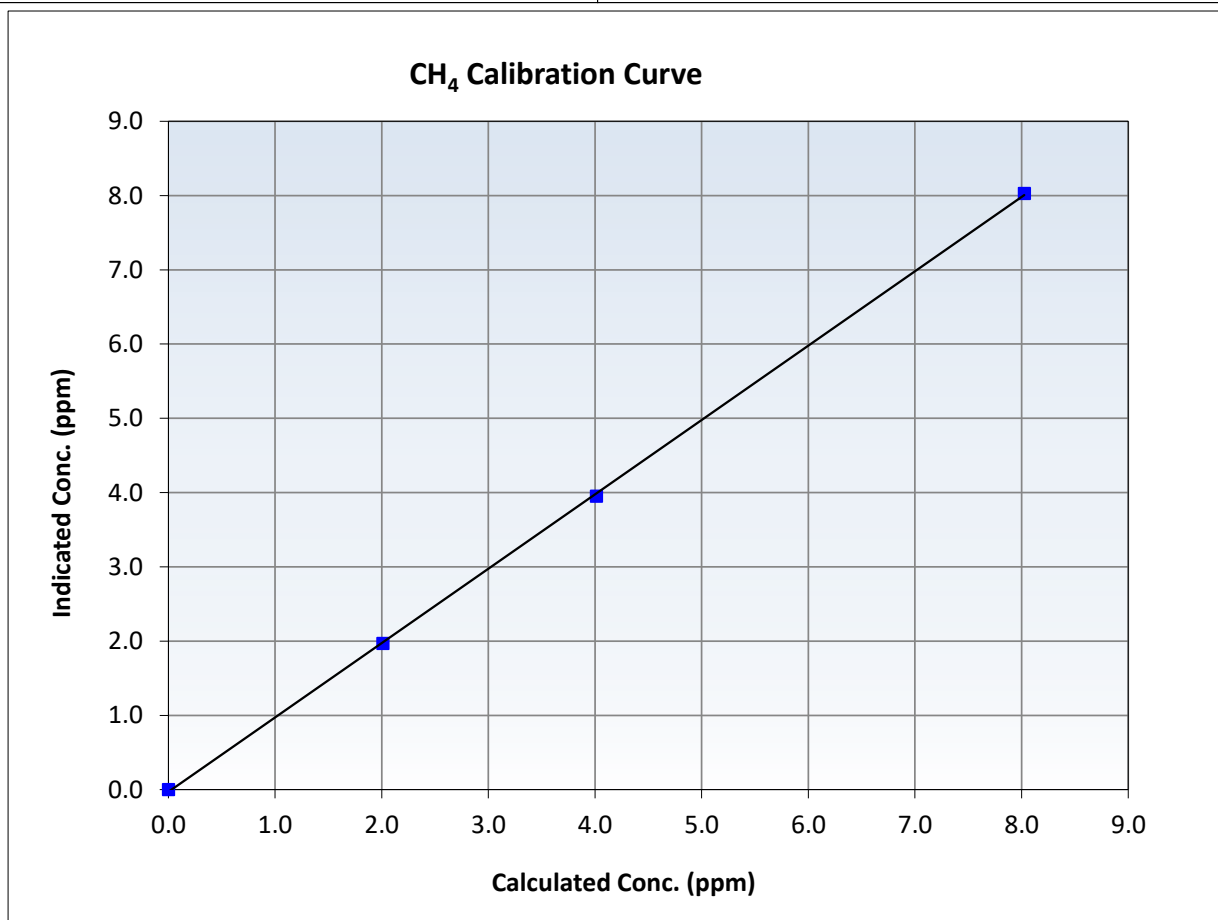
CH₄ Calibration Summary

Station Information

Calibration Date:	March 26, 2025	Previous Calibration:	February 5, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:11	End Time (MST):	14:13
Analyzer make:	Thermo 55i	Analyzer serial #:	1317958219

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999917	<i>≥0.995</i>
8.03	8.03	0.9995	Slope	1.001452	<i>0.90 - 1.10</i>
4.01	3.95	1.0153	Intercept	-0.029759	<i>+/-0.5</i>
2.01	1.97	1.0214			





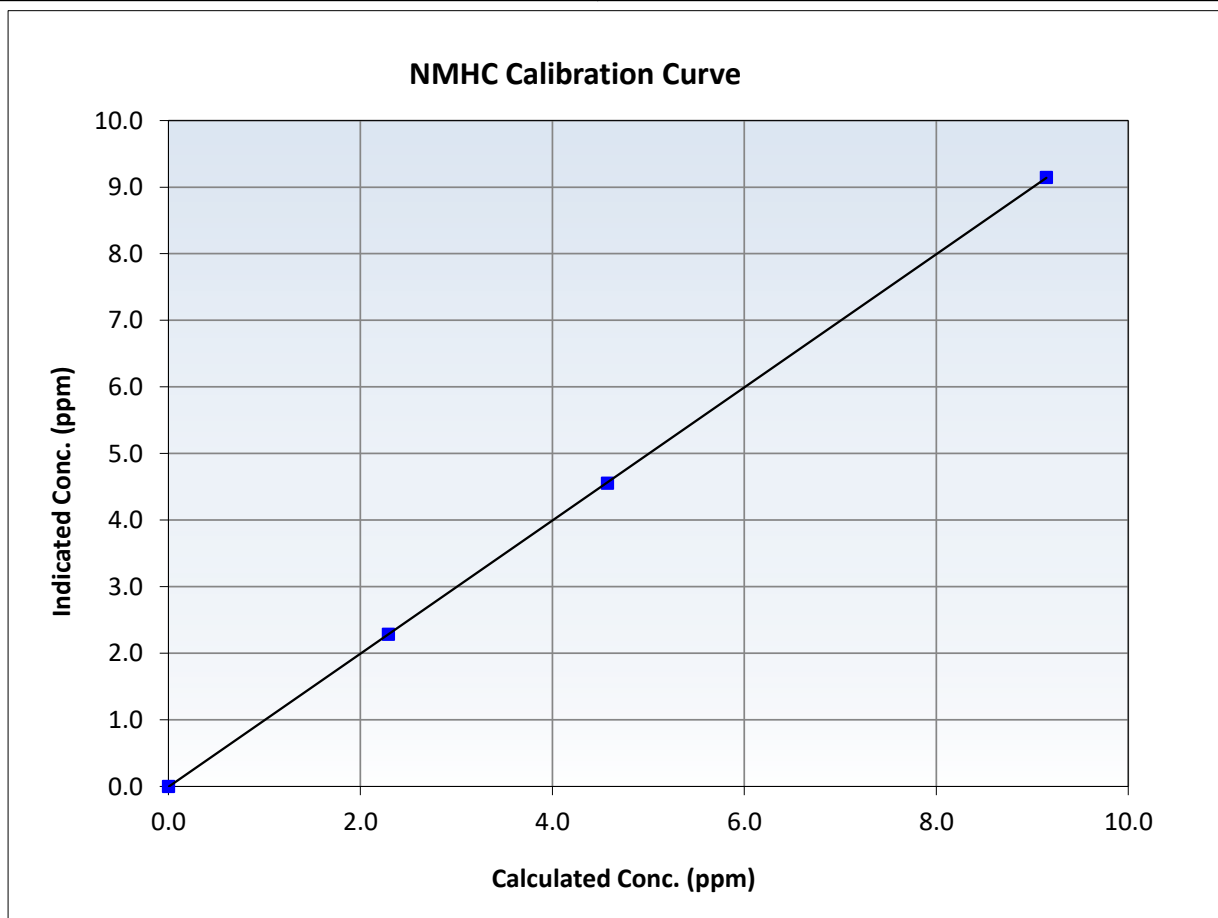
Wood Buffalo Environmental Association NMHC Calibration Summary

Station Information

Calibration Date:	March 26, 2025	Previous Calibration:	February 5, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:11	End Time (MST):	14:13
Analyzer make:	Thermo 55i	Analyzer serial #:	1317958219

Calibration Data

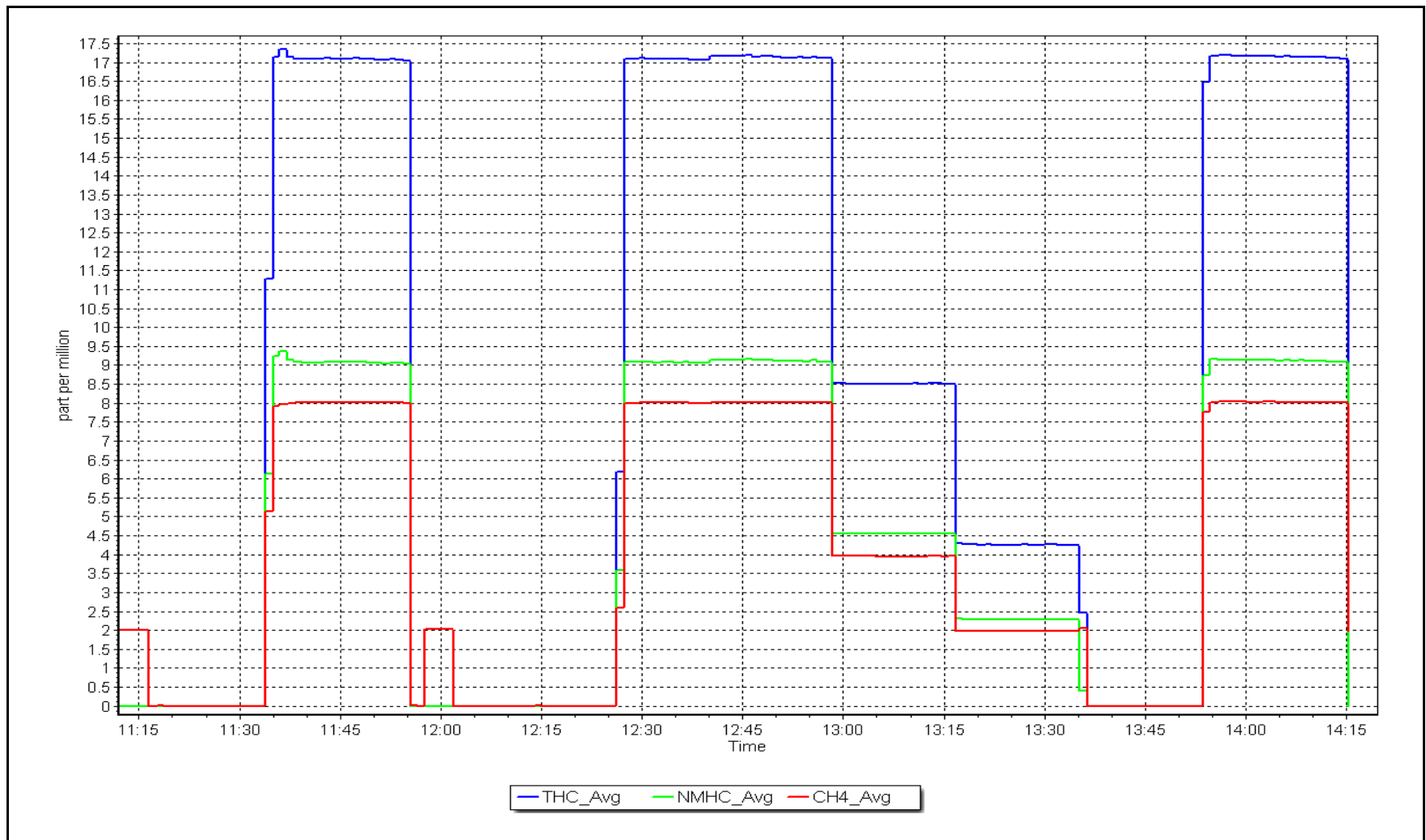
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999995	<i>≥0.995</i>
9.15	9.15	1.0001	Slope	0.999880	<i>0.90 - 1.10</i>
4.57	4.55	1.0043	Intercept	-0.006237	<i>+/-0.5</i>
2.29	2.29	1.0028			



NMHC Calibration Plot

Date: March 26, 2025

Location: Janvier





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Janvier
 Station number: AMS 22
 Calibration Date: March 24, 2025
 Last Cal Date: February 28, 2025
 Start time (MST): 11:12
 End time (MST): 14:31
 Reason: Removal

Calibration Standards

NO Gas Cylinder #: DT0047765
 NOX Cal Gas Conc: 48.90 ppm
 Removed Cylinder #: NA
 Removed Gas NOX Conc: 48.90 ppm
 NOX gas Diff:
 Calibrator Model: Teledyne API T700
 ZAG make/model: Teledyne API T701
 Cal Gas Expiry Date: March 11, 2031
 NO Cal Gas Conc: 48.80 ppm
 Removed Gas Exp Date: NA
 Removed Gas NO Conc: 48.80 ppm
 NO gas Diff:
 Serial Number: 3806
 Serial Number: 691

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO _x Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO ₂ Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	0.1	0.5	-0.4	----	----
AF High point	4918	82.0	802.0	800.3	1.6	797.3	790.7	6.7	1.0060	1.0128
AF Mid point	4960	41.0	400.9	400.1	0.8	399.3	394.1	5.2	1.0043	1.0165
AF Low point	4980	20.5	200.5	200.1	0.4	196.3	192.8	3.4	1.0218	1.0404

New cyl resp

Previous Response	NO _x = 803.4 ppb	NO = 798.9 ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = -0.8%
Baseline Corr 1st pt	NO _x = 797.2 ppb	NO = 790.2 ppb	<u>As Found Statistics</u>		*Percent Change	NO = -1.1%
Baseline Corr 2nd pt	NO _x = 399.2 ppb	NO = 393.6 ppb	As found	NO _x r ² : 0.999978	Nx SI: 0.995478	Nx Int: -0.996
Baseline Corr 3rd pt	NO _x = 196.2 ppb	NO = 192.3 ppb	As found	NO r ² : 0.999951	NO SI: 0.989393	NO Int: -1.876
			As found	NO ₂ r ² : 0.999920	NO ₂ SI: 1.009990	NO ₂ Int: 1.269

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO ₂ Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero	----	----	0.0	-0.4	----	----
As found high GPT point	784.7	390.0	396.3	400.7	0.9891	101.1%
As found mid GPT point	784.7	592.1	194.2	198.4	0.9790	102.1%
As found low GPT point	784.7	685.8	100.5	104.4	0.9630	103.8%



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Teledyne API T200
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 833

Instrument Settings

	<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.880	
NOX coeff or slope:	0.879	
NO2 coeff or slope:	1.000	

	<u>Start</u>	<u>Finish</u>
NO bkgnd or offset:	-0.7	
NOX bkgnd or offset:	0.5	
Reaction cell Press:	8.7	

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.000323	
NO _x Cal Offset:	1.204183	
NO Cal Slope:	0.998346	
NO Cal Offset:	-0.135989	
NO ₂ Cal Slope:	1.002299	
NO ₂ Cal Offset:	0.147273	

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
-----------	---------------------------	-----------------------------	---	--	---	--	---------------------------------------	--	---	--

Cal zero
High point
Mid point
Low point
As left zero
As left span

Average Correction Factor

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
-------------------	--	---------------------------------------	---	--	---	--

Cal zero
High GPT point
Mid GPT point
Low GPT point

Average Correction Factor

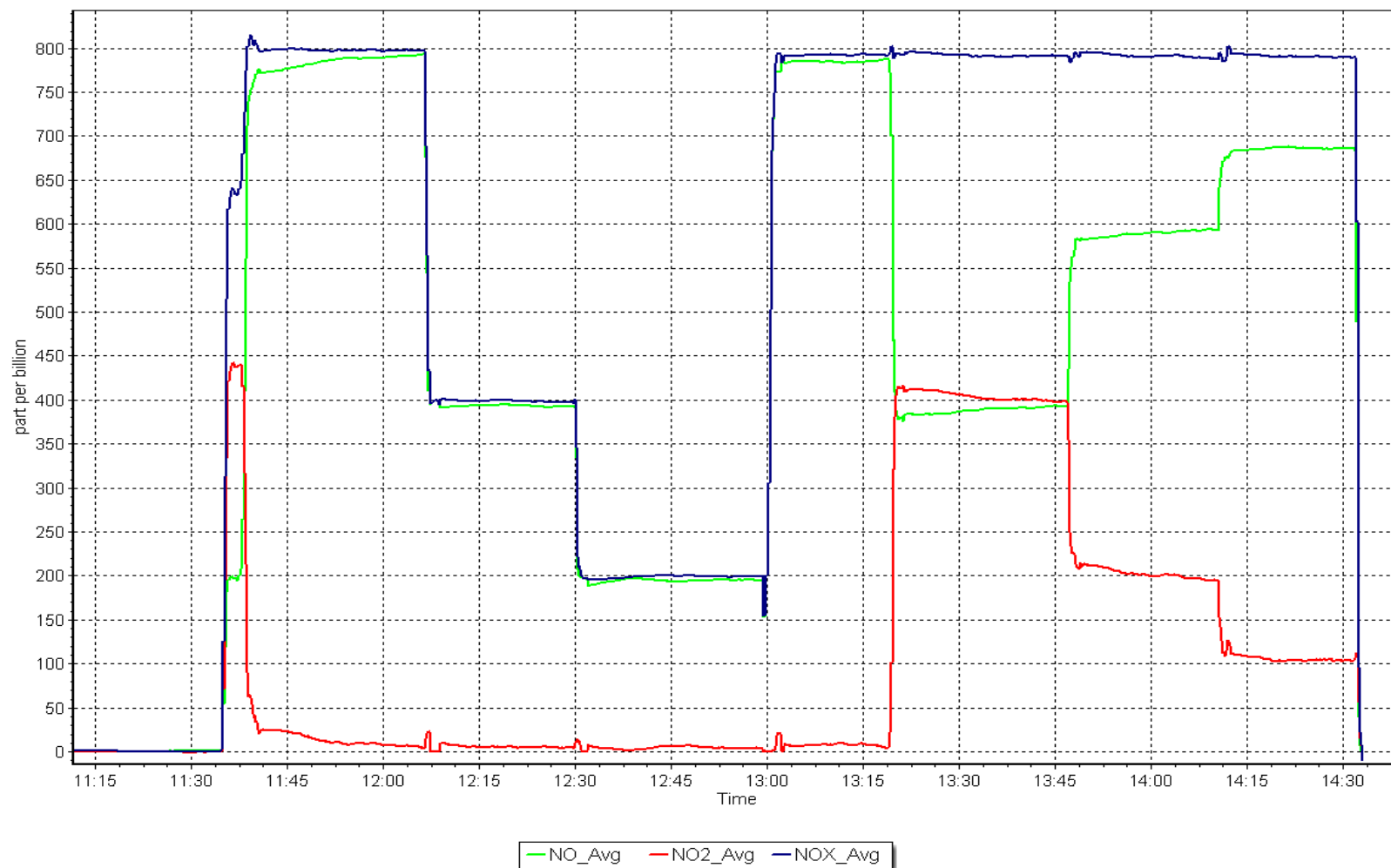
Notes: Removing the instrument after multi-point as founds.

Calibration Performed By: Rene Chamberland

NO_x Calibration Plot

Date: March 24, 2025

Location: Janvier





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Janvier
Station number: AMS 22
Calibration Date: March 25, 2025
Last Cal Date: NA
Start time (MST): 11:15
End time (MST): 15:30
Reason: Install

Calibration Standards

NO Gas Cylinder #: DT0047765
NOX Cal Gas Conc: 48.90 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 48.90 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701
Cal Gas Expiry Date: March 11, 2031
NO Cal Gas Conc: 48.80 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 48.80 ppm
NO gas Diff:
Serial Number: 3806
Serial Number: 691

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
-----------	------------------------------	--------------------------------	---	--	---	--	---	--	--	---

As found zero
AF High point
AF Mid point
AF Low point
New cyl resp

Previous Response	NO _x = NA	ppb	NO = NA	ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = NA
Baseline Corr 1st pt	NO _x = NA	ppb	NO = NA	ppb	<u>As Found Statistics</u>		*Percent Change	NO = NA
Baseline Corr 2nd pt	NO _x = NA	ppb	NO = NA	ppb	As found	NO _x r ² :	Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA	ppb	NO = NA	ppb	As found	NO r ² :	NO SI:	NO Int:
					As found	NO ₂ r ² :	NO2 SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
-------------------	---	--	--	---	--	--

As Found GPT zero
As found high GPT point
As found mid GPT point
As found low GPT point



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1229254994

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.950		NO bkgnd or offset:	2.6	
NOX coeff or slope:	0.996		NOX bkgnd or offset:	2.7	
NO2 coeff or slope:	1.000		Reaction cell Press:	173.8	

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:		1.001849
NO _x Cal Offset:		-0.955969
NO Cal Slope:		1.001603
NO Cal Offset:		-1.676088
NO ₂ Cal Slope:		1.004645
NO ₂ Cal Offset:		-1.110485

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	----	----
High point	4918	82.0	802.0	800.3	1.6	803.0	800.9	2.1	0.9987	0.9993
Mid point	4960	41.0	400.9	400.1	0.8	400.0	397.7	2.3	1.0022	1.0060
Low point	4980	20.5	200.5	200.1	0.4	199.2	197.5	1.7	1.0064	1.0130
As left zero	5000	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	----	----
As left span	4918	82.0	802.0	394.9	407.1	796.1	394.9	401.2	1.0074	1.0000
Average Correction Factor									1.0024	1.0061

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.1	----	----
High GPT point	797.5	393.1	406.0	407.1	0.9974	100.3%
Mid GPT point	797.5	596.2	202.9	203.0	0.9997	100.0%
Low GPT point	797.5	692.9	106.2	104.1	1.0206	98.0%
Average Correction Factor					1.0059	99.4%

Notes: Installing a new Nox instrument. Inlet filter was changed. Pump was changed. Adjusted both zero and span.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

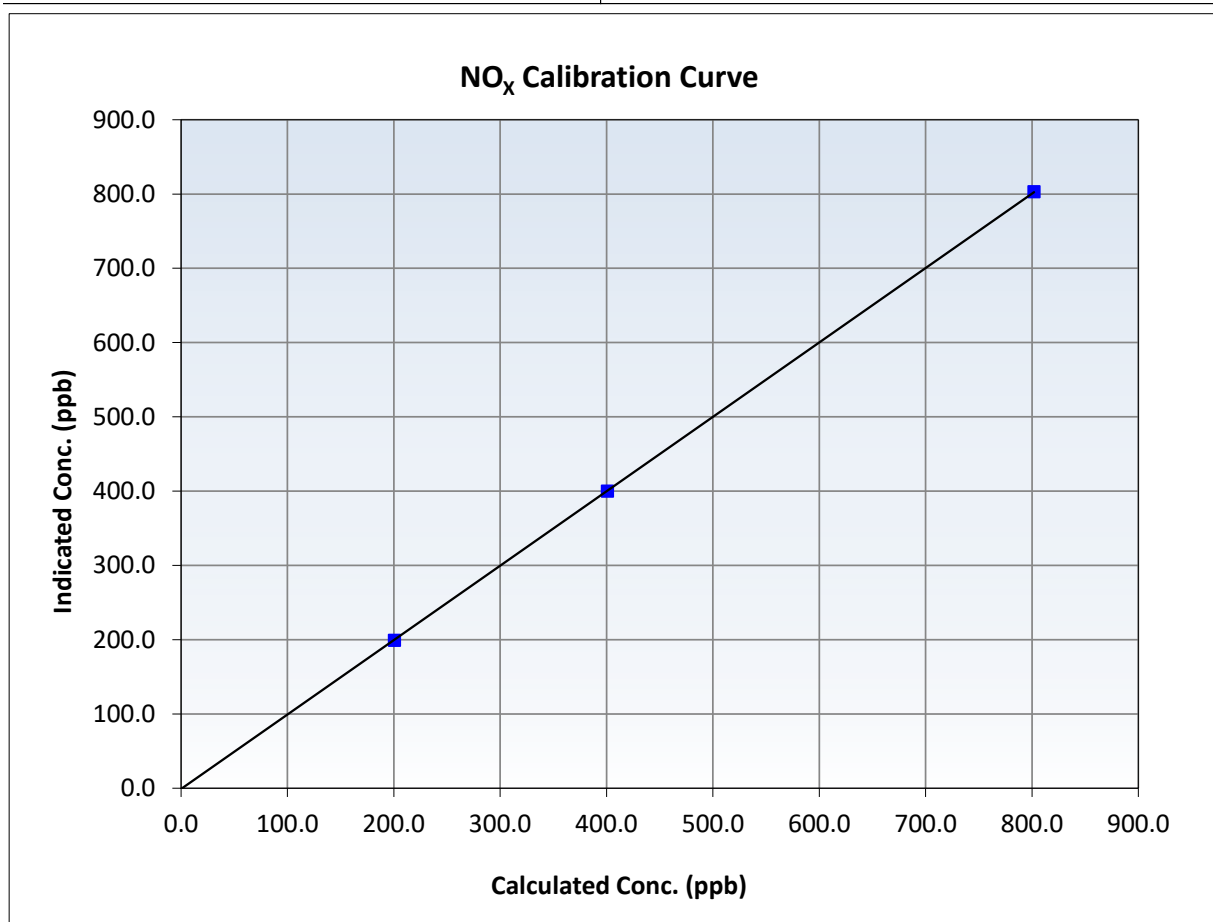
NO_x Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	NA
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:15	End Time (MST):	15:30
Analyzer make:	Thermo 42i	Analyzer serial #:	1229254994

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999995	≥0.995
802.0	803.0	0.9987	Slope	1.001849	0.90 - 1.10
400.9	400.0	1.0022	Intercept	-0.955969	+/-20
200.5	199.2	1.0064			





Wood Buffalo Environmental Association

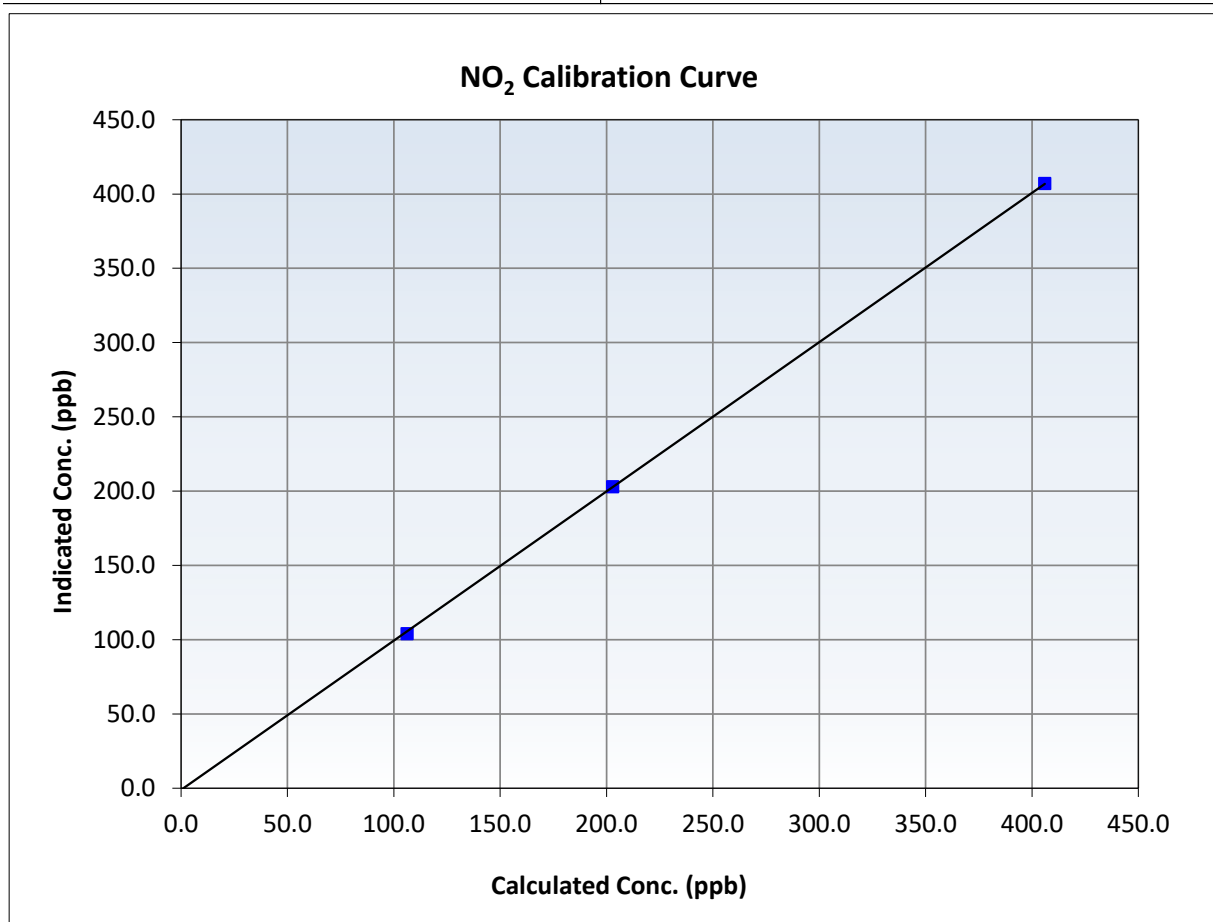
NO₂ Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	NA
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:15	End Time (MST):	15:30
Analyzer make:	Thermo 42i	Analyzer serial #:	1229254994

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999962	≥ 0.995
406.0	407.1	0.9974	Slope	1.004645	$0.90 - 1.10$
202.9	203.0	0.9997	Intercept	-1.110485	± 20
106.2	104.1	1.0206			





Wood Buffalo Environmental Association

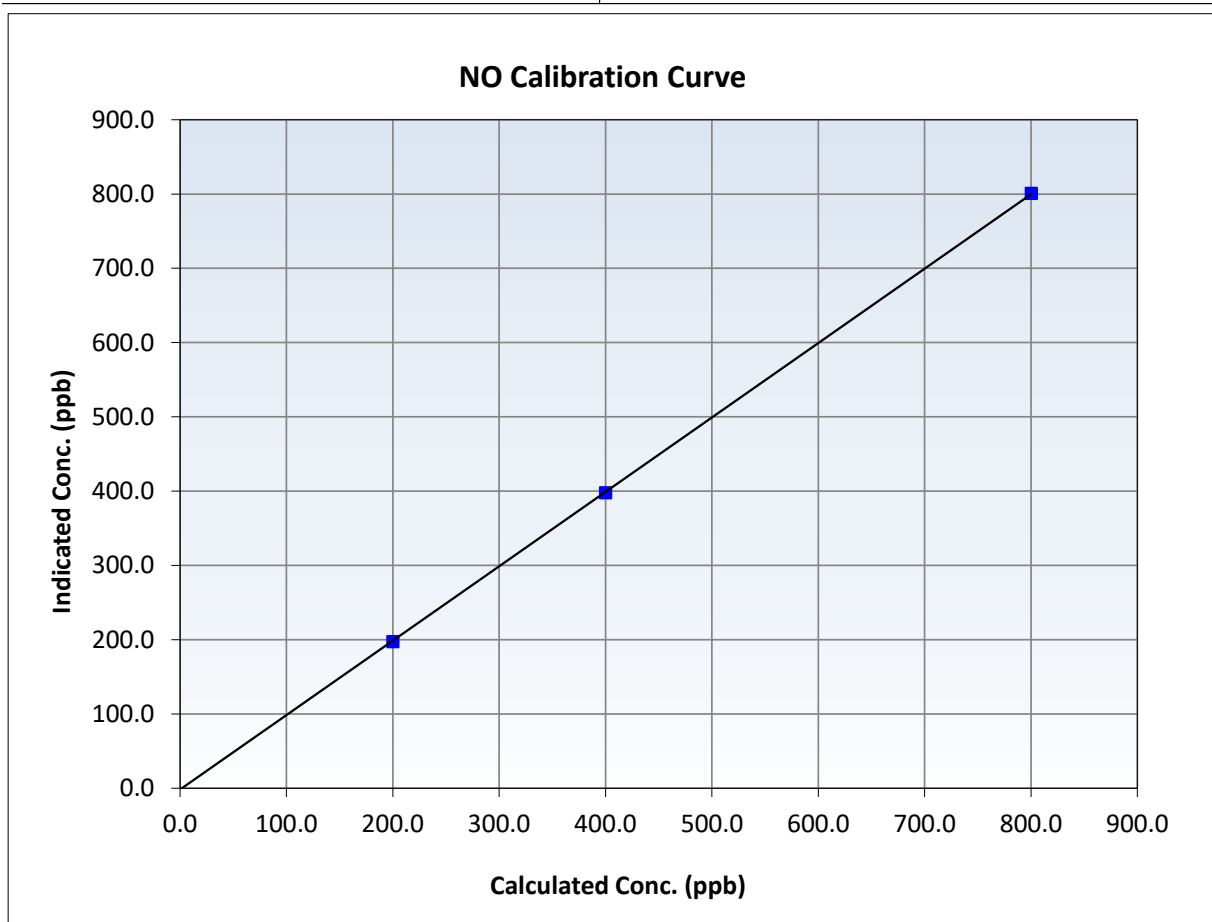
NO Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	NA
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:15	End Time (MST):	15:30
Analyzer make:	Thermo 42i	Analyzer serial #:	1229254994

Calibration Data

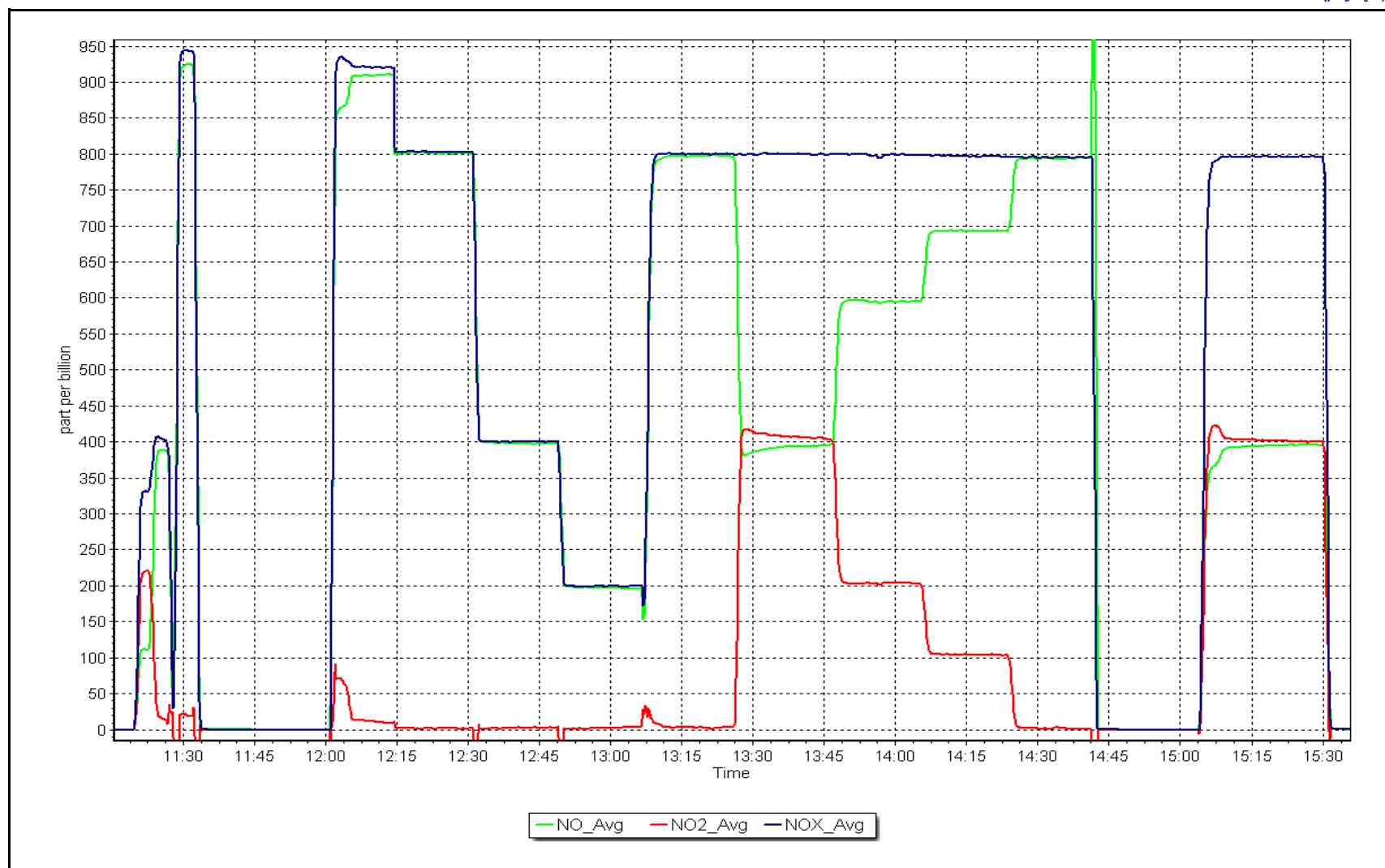
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999981	≥ 0.995
800.3	800.9	0.9993	Slope	1.001603	$0.90 - 1.10$
400.1	397.7	1.0060	Intercept	-1.676088	± 20
200.1	197.5	1.0130			



NO_x Calibration Plot

Date: March 25, 2025

Location: Janvier





Wood Buffalo Environmental Association

O₃ Calibration Report

Station Information

Station Name: Janvier
Calibration Date: March 18, 2025
Start time (MST): 11:22
Reason: Routine

Station number: AMS 22
Last Cal Date: February 11, 2025
End time (MST): 14:21

Calibration Standards

O₃ generation mode: Photometer
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne API T701H

Serial Number: 3806
Serial Number: 691

Analyzer Information

Analyzer make: Teledyne API T400
Analyzer Range: 0 - 500 ppb

Analyzer serial #: 7046

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999714	1.000486	Backgd or Offset:	1.6	1.5
Calibration intercept:	1.600000	1.040000	Coeff or Slope:	1.017	1.011

O₃ As Found Data

Set Point	Dilution air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	800.0	0.0	0.2	----
As found High point	5000	922.9	400.0	400.3	1.000
As found Mid point					
As found Low point					
Baseline Corr As found:	400.1	Previous response	401.5	*% change	-0.3%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O₃ Calibration Data

Set Point	Total air flow rate (sccm)	Calibrator Lamp Voltage Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic- AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	800.0	0.0	0.6	----
High point	5000	922.9	400.0	401.0	0.998
Mid point	5000	768.8	200.0	201.4	0.993
Low point	5000	656.1	100.0	101.5	0.985
As left zero	5000	800.0	0.0	0.7	----
As left span	5000	916.2	400.0	401.9	0.995
Average Correction Factor					0.992

Notes: Changed the inlet filter after the as founds. Adjusted span only.

Calibration Performed By: Rene Chamberland



Wood Buffalo Environmental Association

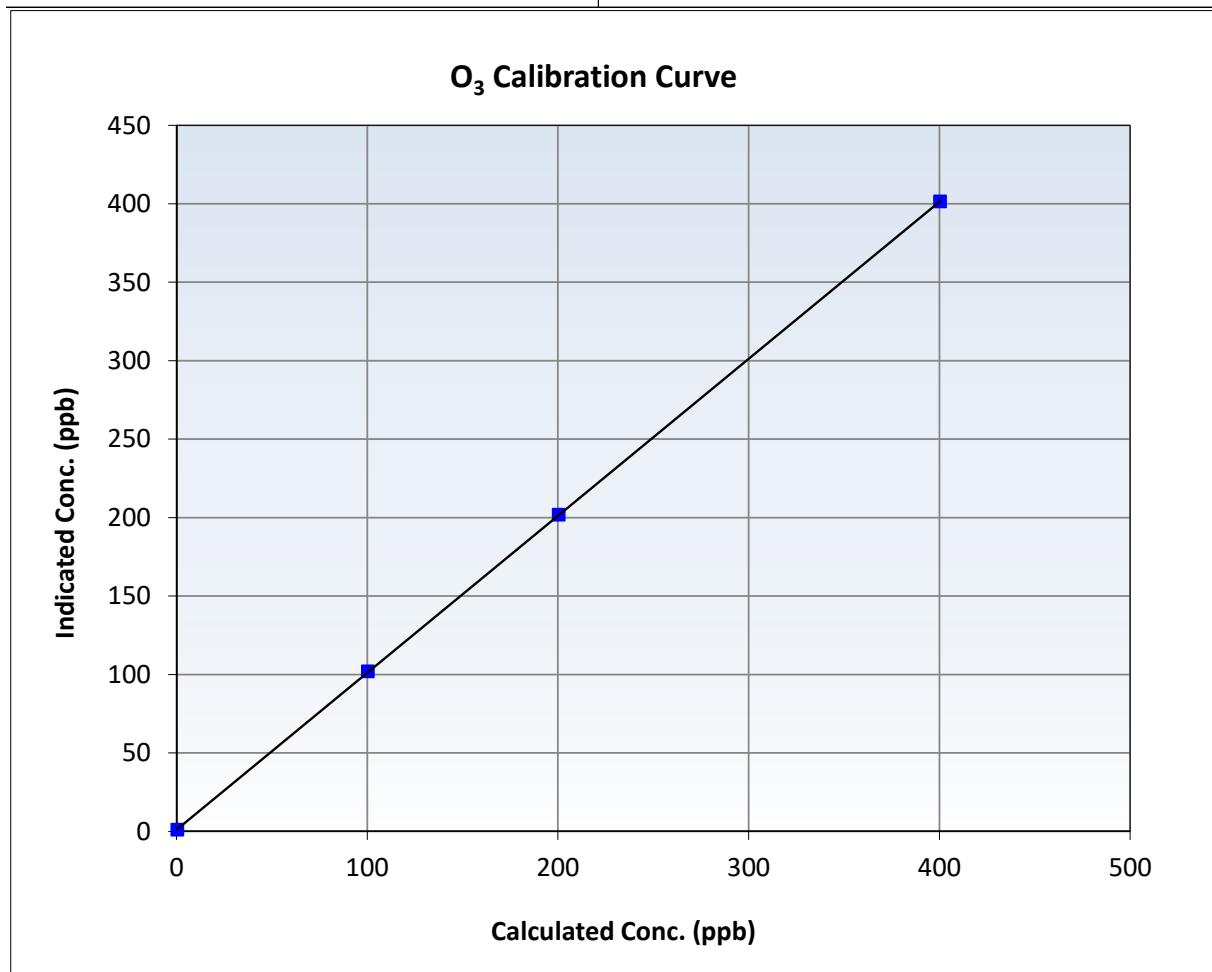
O₃ Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 11, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:22	End Time (MST):	14:21
Analyzer make:	Teledyne API T400	Analyzer serial #:	7046

Calibration Data

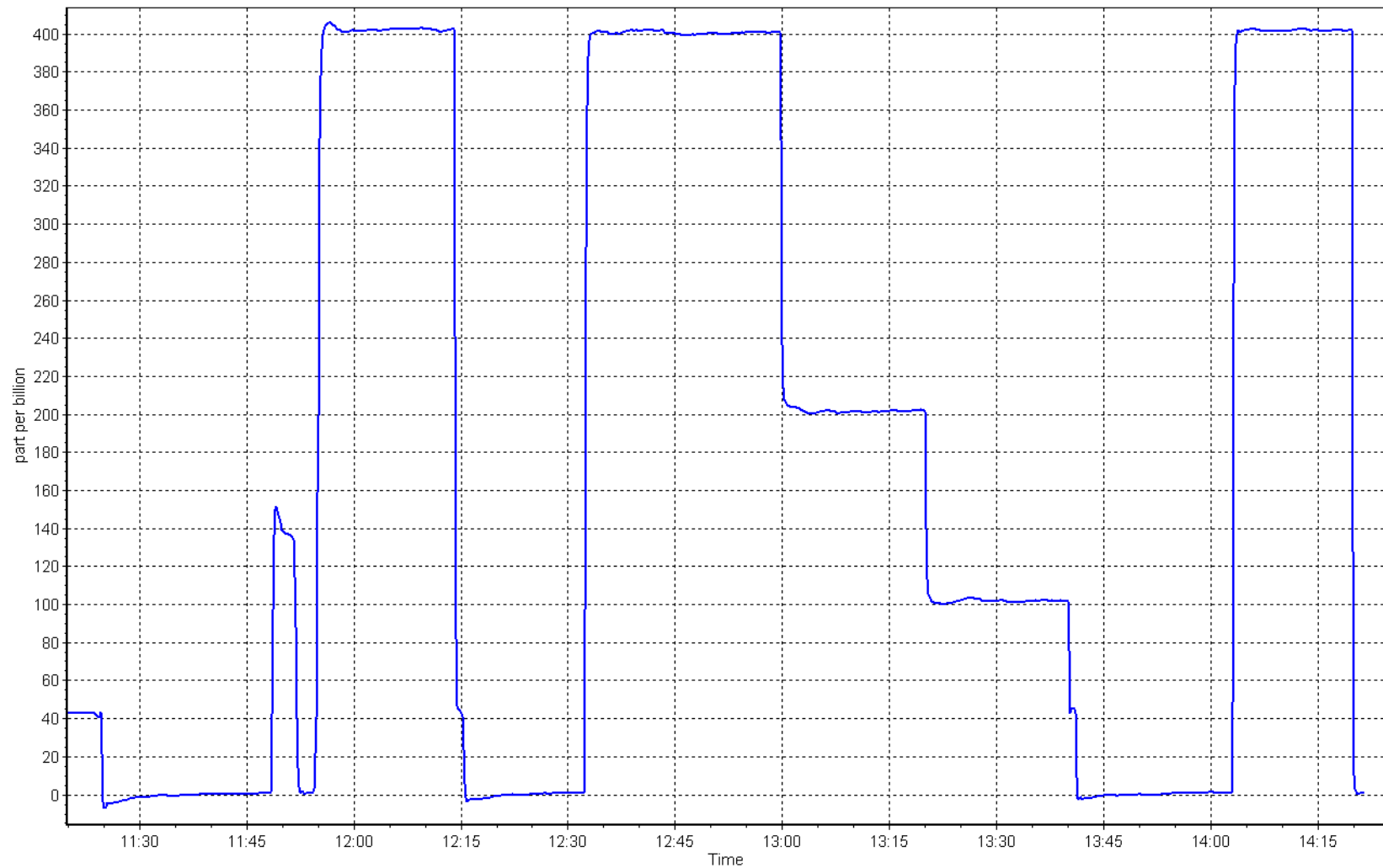
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.6	----	Correlation Coefficient	0.999994	≥ 0.995
400.0	401.0	0.9975	Slope	1.000486	$0.90 - 1.10$
200.0	201.4	0.9930	Intercept	1.040000	± 5
100.0	101.5	0.9852			



O₃ Calibration Plot

Date: March 18, 2025

Location: Janvier





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Janvier Station number: AMS 22
Calibration Date: March 24, 2025 Last Cal Date: February 28, 2025
Start time (MST): 12:24 End time (MST): 13:38

Analyzer Make: Teledyne API T640 S/N: 325
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388752
Temp/RH standard: Alicat FP-25BT S/N: 388752

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	7.0	6.8	7.0	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	712.5	713.75	712.5	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	5.07	4.956	5.07	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	37	----	37	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: _____	1.2	PM w/ HEPA: _____	0.0	<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: June 10, 2024
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test				<input type="checkbox"/>	10.9 +/- 0.5

Date Optical Chamber Cleaned: January 31, 2025
Date Disposable Filter Changed: January 31, 2025

Post- maintenance Zero Verification: PM w/ HEPA: _____ <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: October 29, 2024
Date RH/T Sensor Cleaned: October 29, 2024

Notes: Verified flow, temperature, and pressure. Leak check passed.

Calibration by: Rene Chamberland



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS23
FORT HILLS
MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Fort Hills Station number: AMS 23
Calibration Date: March 17, 2025 Last Cal Date: February 18, 2025
Start time (MST): 8:20 End time (MST): 11:15
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.35 ppm Cal Gas Exp Date: October 9, 2032
Cal Gas Cylinder #: CC484463
Removed Cal Gas Conc: 49.76 ppm Rem Gas Exp Date: January 5, 2025
Removed Gas Cyl #: CC281425 Diff between cyl: -0.7%
Calibrator Model: API T700 Serial Number: 451
Zero Air Gen Model: API T701 Serial Number: 1117

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1160290012
Analyzer Range: 0-1000ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.001281	0.988558	Backgd or Offset:	18.9	18.9
Calibration intercept:	-0.043862	-0.121868	Coeff or Slope:	1.071	1.071

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.2	----
As found High point	4920	80.3	799.1	799.8	0.999
As found Mid point					
As found Low point					
New cylinder response	4921	79.4	799.5	794.7	1.006
Baseline Corr As found:	799.6	Previous response	800.1	*% change	-0.1%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.6	----
High point	4921	79.4	799.5	790.5	1.011
Mid point	4960	39.7	399.8	395.0	1.012
Low point	4980	19.8	199.4	196.1	1.017
As left zero	5000	0.0	0.0	0.6	----
As left span	4921	79.4	799.5	791.5	1.010
Average Correction Factor:					1.013

Notes: Calibration gas changed out. No adjustments done.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

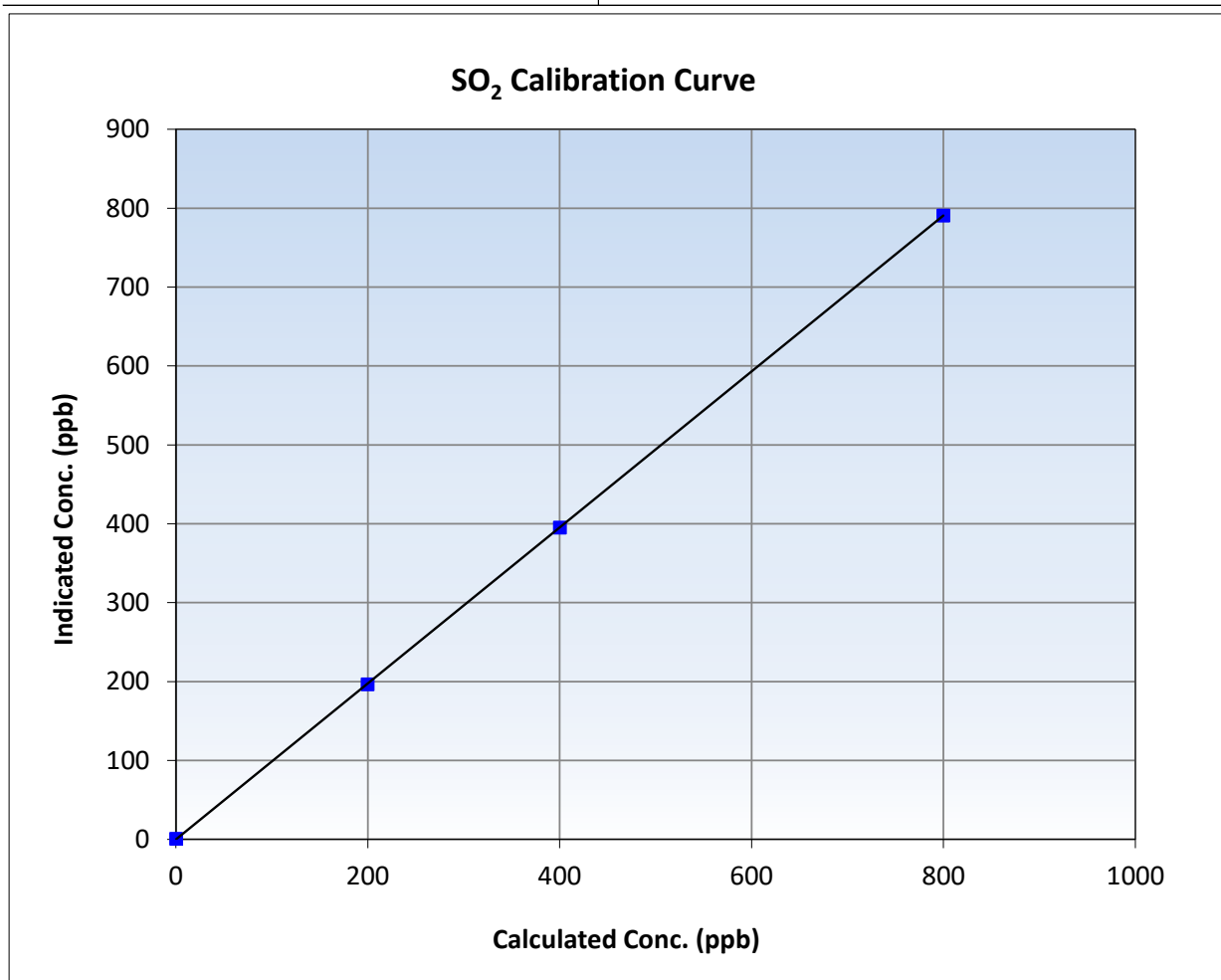
SO₂ Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 18, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	8:20	End Time (MST):	11:15
Analyzer make:	Thermo 43i	Analyzer serial #:	1160290012

Calibration Data

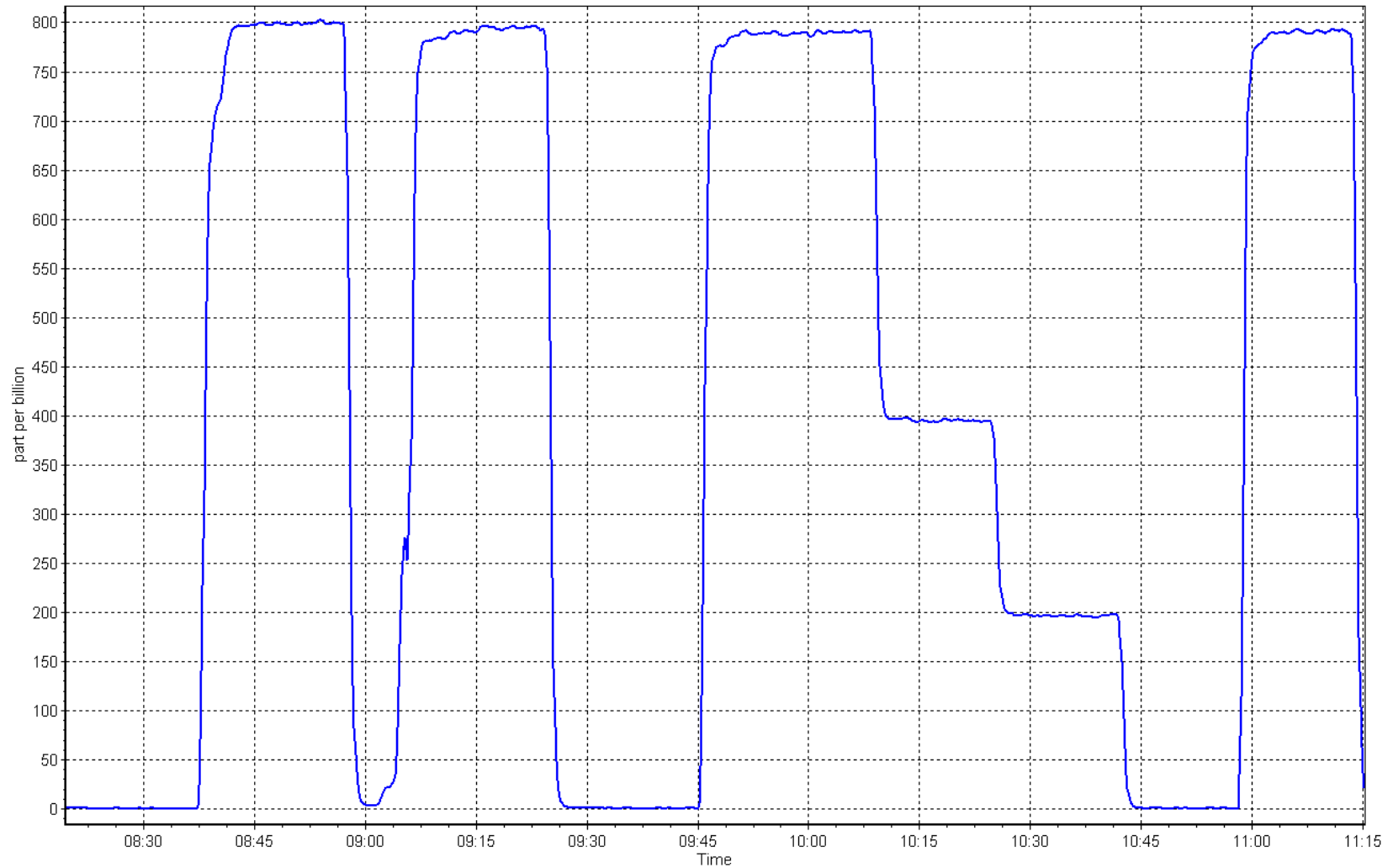
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.6	----	Correlation Coefficient	0.999996	≥0.995
799.5	790.5	1.0114	Slope	0.988558	0.90 - 1.10
399.8	395.0	1.0122	Intercept	-0.121868	+/-30
199.4	196.1	1.0168			



SO2 Calibration Plot

Date: March 17, 2025

Location: Fort Hills





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Fort Hills
Calibration Date: March 11, 2025
Start time (MST): 7:06
Reason: Routine

Station number: AMS 23
Last Cal Date: February 20, 2025
End time (MST): 10:57

Calibration Standards

Cal Gas Concentration: 4.84 ppm
Cal Gas Cylinder #: DT0021910
Removed Cal Gas Conc: 4.84 ppm
Removed Gas Cyl #:
Calibrator Make/Model: API T700
ZAG Make/Model: API T701

Cal Gas Exp Date: August 28, 2027
Rem Gas Exp Date:
Diff between cyl:
Serial Number: 451
Serial Number: 1117

Analyzer Information

Analyzer make: Thermo 43i TLE
Converter make: CDN-101
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1300156232
Converter serial #: 594
Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.004963	1.001247	Backgd or Offset:	1.90	2.06
Calibration intercept:	0.281815	-0.038151	Coeff or Slope:	1.116	1.160

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.3	----
As found High point	4917	82.6	80.0	77.2	1.032
As found Mid point	4959	41.3	40.0	38.2	1.038
As found Low point	4979	20.7	20.0	18.8	1.049
New cylinder response					
Baseline Corr As found:	77.5	Prev response:	80.64	*% change:	-4.1%
Baseline Corr 2nd AF pt:	38.5	AF Slope:	0.970223	AF Intercept:	-0.477470
Baseline Corr 3rd AF pt:	19.1	AF Correlation:	0.999976	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4917	82.6	80.0	80.1	0.998
Mid point	4959	41.3	40.0	39.8	1.004
Low point	4979	20.7	20.0	20.1	0.997
As left zero	5000	0.0	0.0	0.3	----
As left span	4917	82.6	80.0	82.8	0.966
SO2 Scrubber Check	4920	80.3	803.0	0.0	----
Date of last scrubber change:				Ave Corr Factor	1.000
Date of last converter efficiency test:		March 13, 2024		110.3% efficiency	

Notes: SOx scrubber checked after the calibrator zero. Zero and Span adjusted.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

TRS Calibration Summary

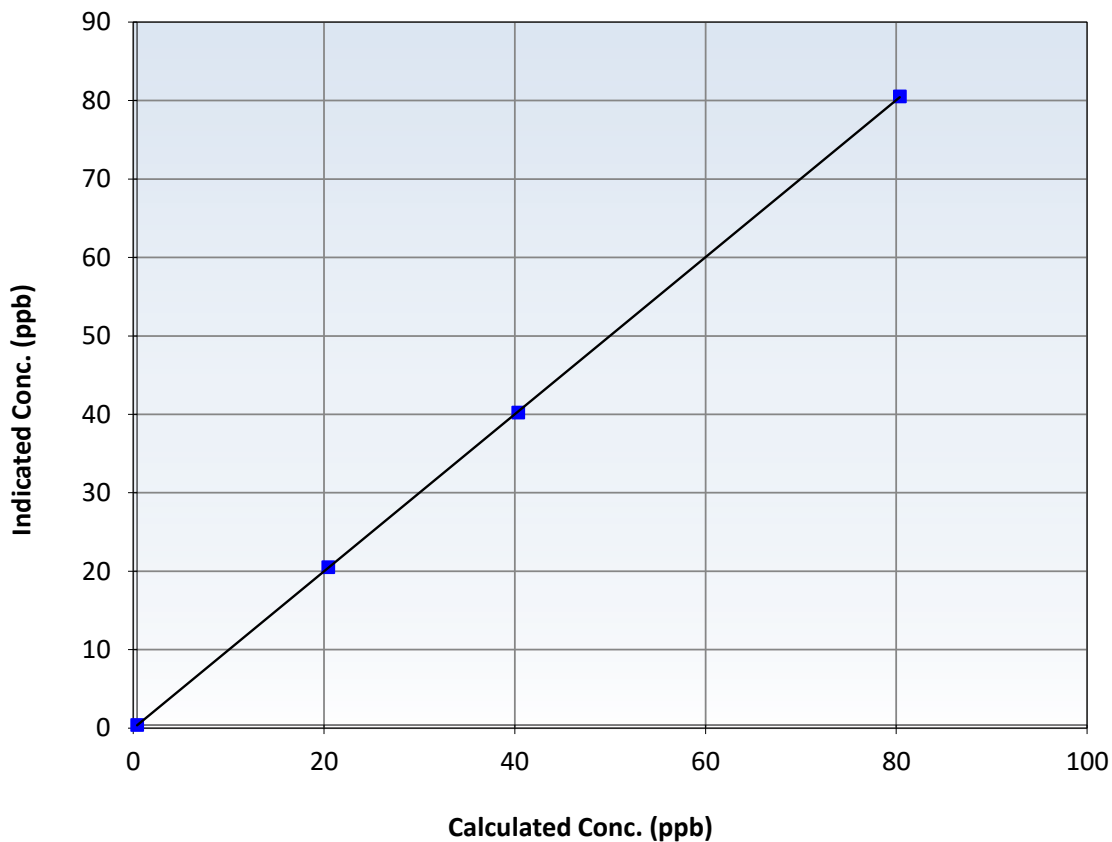
Station Information

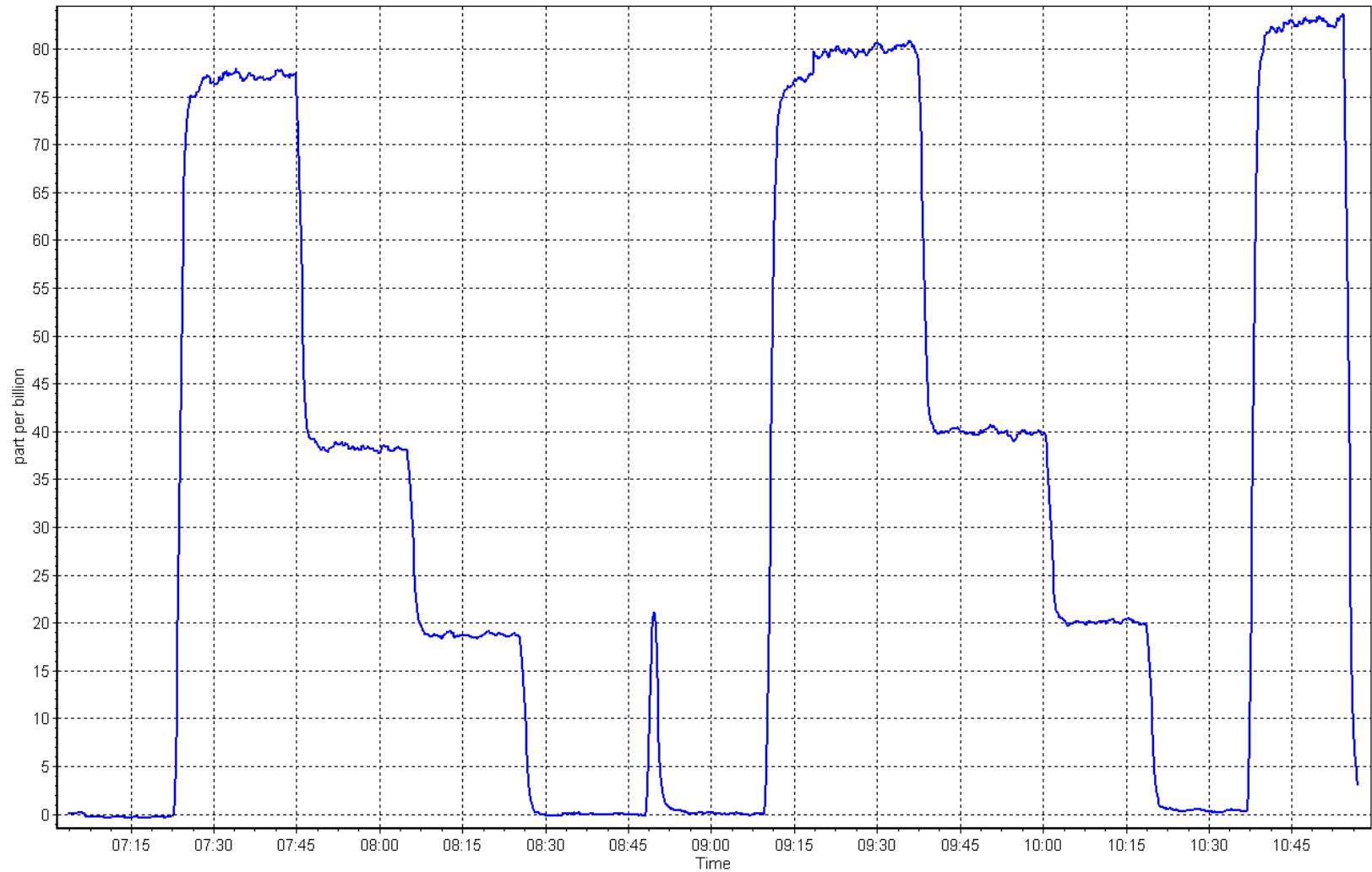
Calibration Date:	March 11, 2025	Previous Calibration:	February 20, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	7:06	End Time (MST):	10:57
Analyzer make:	Thermo 43i TLE	Analyzer serial #:	1300156232

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999986	≥ 0.995
80.0	80.1	0.9983	Slope	1.001247	$0.90 - 1.10$
40.0	39.8	1.0044	Intercept	-0.038151	± 3
20.0	20.1	0.9970			

TRS Calibration Curve







Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Fort Hills
 Calibration Date: March 17, 2025
 Start time (MST): 8:20
 Reason: Routine

Station number: AMS 23
 Last Cal Date: February 26, 2025
 End time (MST): 11:15

Calibration Standards

Gas Cert Reference: CC484463
 CH₄ Cal Gas Conc. 504.3 ppm
 C₃H₈ Cal Gas Conc. 204.1 ppm
 Removed Gas Cert: CC281425
 Removed CH₄ Conc. 500.2 ppm
 Removed C₃H₈ Conc. 207.4 ppm
 Diff between cyl (CH₄): -1.4%
 Calibrator Model: API T700
 Zero Air Gen model: API T701

Cal Gas Expiry Date: October 9, 2032
 CH₄ Equiv Conc. 1065.6 ppm
 Removed Gas Expiry: January 5, 2025
 CH₄ Equiv Conc. 1070.6 ppm
 Diff between cyl (THC): 0.2%
 Diff between cyl (NM): 1.5%
 Serial Number: 451
 Serial Number: 1117

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 12227620777
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	3.49E-04	3.55E-04	NMHC SP Ratio:	5.46E-05
CH ₄ Retention time:	15.2	15.2	NMHC Peak Area:	167869
Zero Chromatogram:	OFF	OFF	Flat Baseline:	OFF
				164497

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	80.3	17.19	17.10	1.005
As found Mid point					
As found Low point					
New cylinder response	4921	79.4	16.92	16.86	1.004
Baseline Corr AF:	17.10	Prev response	17.16	*% change	-0.3%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.4	16.92	16.87	1.003
Mid point	4960	39.7	8.46	8.40	1.008
Low point	4980	19.8	4.22	4.21	1.004
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.4	16.92	16.87	1.003
Average Correction Factor					1.005

Notes: Calibration Gas changed out. Span adjusted.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	80.3	9.16	9.13	1.003
As found Mid point					
As found Low point					
New cylinder response	4921	79.4	8.91	9.02	0.988
Baseline Corr AF:	9.13	Prev response	9.15	*% change	-0.2%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.4	8.91	8.89	1.002
Mid point	4960	39.7	4.46	4.45	1.001
Low point	4980	19.8	2.22	2.25	0.990
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.4	8.91	8.89	1.002
Average Correction Factor					0.998

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero))
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	80.3	8.03	7.97	1.007
As found Mid point					
As found Low point					
New cylinder response	4921	79.4	8.01	7.84	1.022
Baseline Corr AF:	7.97	Prev response	8.01	*% change	-0.5%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.4	8.01	7.98	1.003
Mid point	4960	39.7	4.00	3.94	1.015
Low point	4980	19.8	2.00	1.96	1.019
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.4	8.01	7.98	1.003
Average Correction Factor					1.012

Calibration Statistics

	Start	Finish
THC Cal Slope:	1.000148	0.997066
THC Cal Offset:	-0.031968	-0.009783
CH ₄ Cal Slope:	0.998779	0.997435
CH ₄ Cal Offset:	-0.008441	-0.021799
NMHC Cal Slope:	1.001300	0.996952
NMHC Cal Offset:	-0.023328	0.011416

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

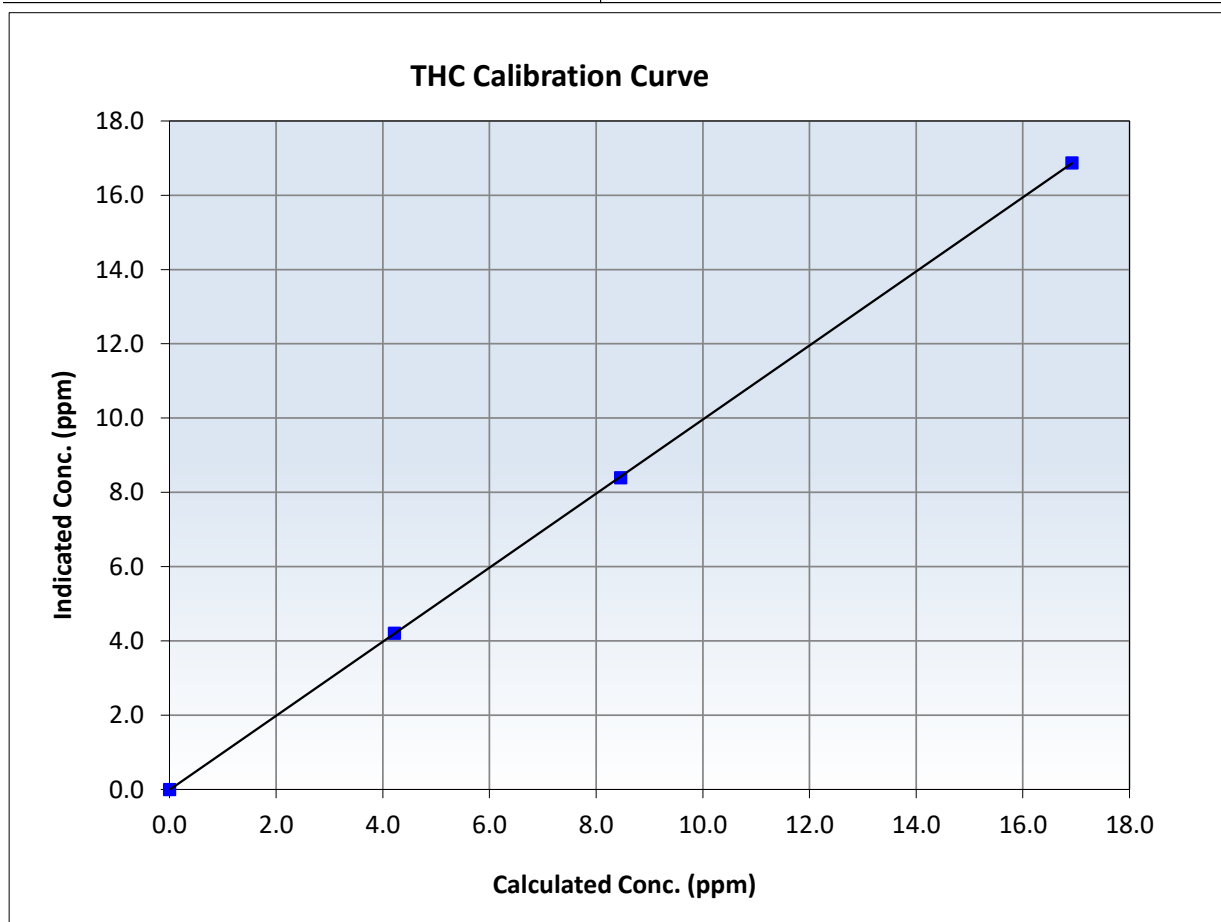
THC Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 26, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	8:20	End Time (MST):	11:15
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620777

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999992	≥ 0.995
16.92	16.87	1.0027	Slope	0.997066	$0.90 - 1.10$
8.46	8.40	1.0078	Intercept	-0.009783	± 0.5
4.22	4.21	1.0035			





Wood Buffalo Environmental Association

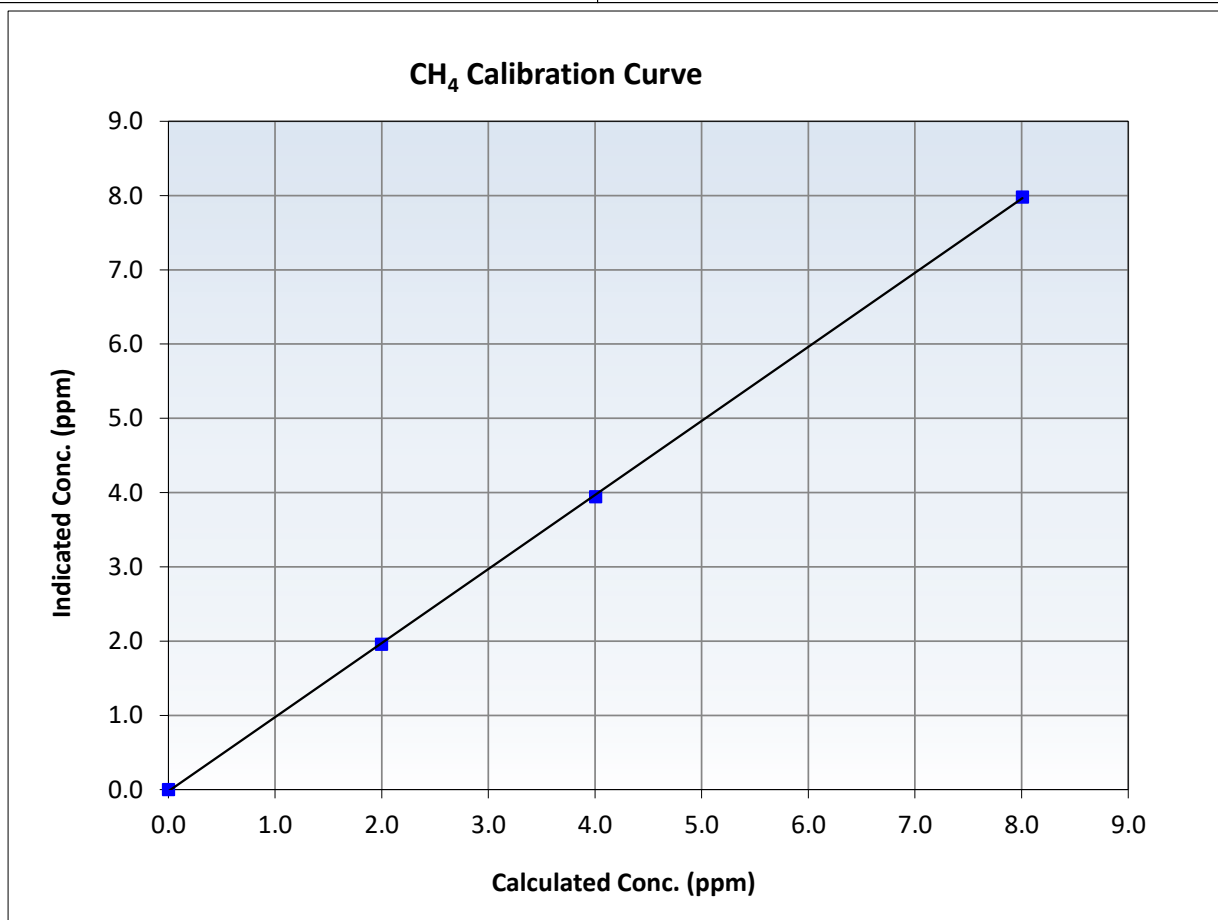
CH₄ Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 26, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	8:20	End Time (MST):	11:15
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620777

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.00	0.00	----	Correlation Coefficient	0.999952		≥ 0.995
8.01	7.98	1.0032	Slope	0.997435		0.90 - 1.10
4.00	3.94	1.0153	Intercept	-0.021799		+/-0.5
2.00	1.96	1.0189				





Wood Buffalo Environmental Association

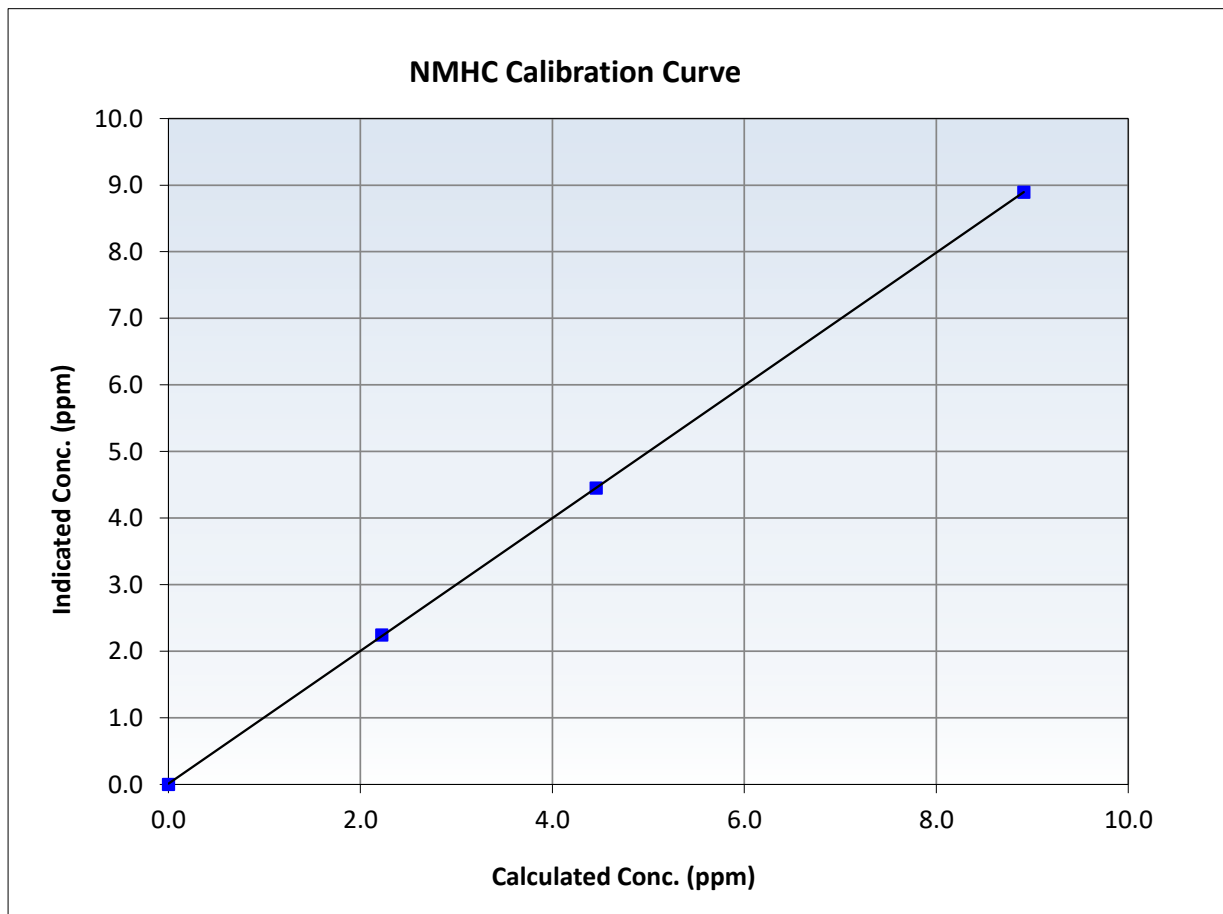
NMHC Calibration Summary

Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 26, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	8:20	End Time (MST):	11:15
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620777

Calibration Data

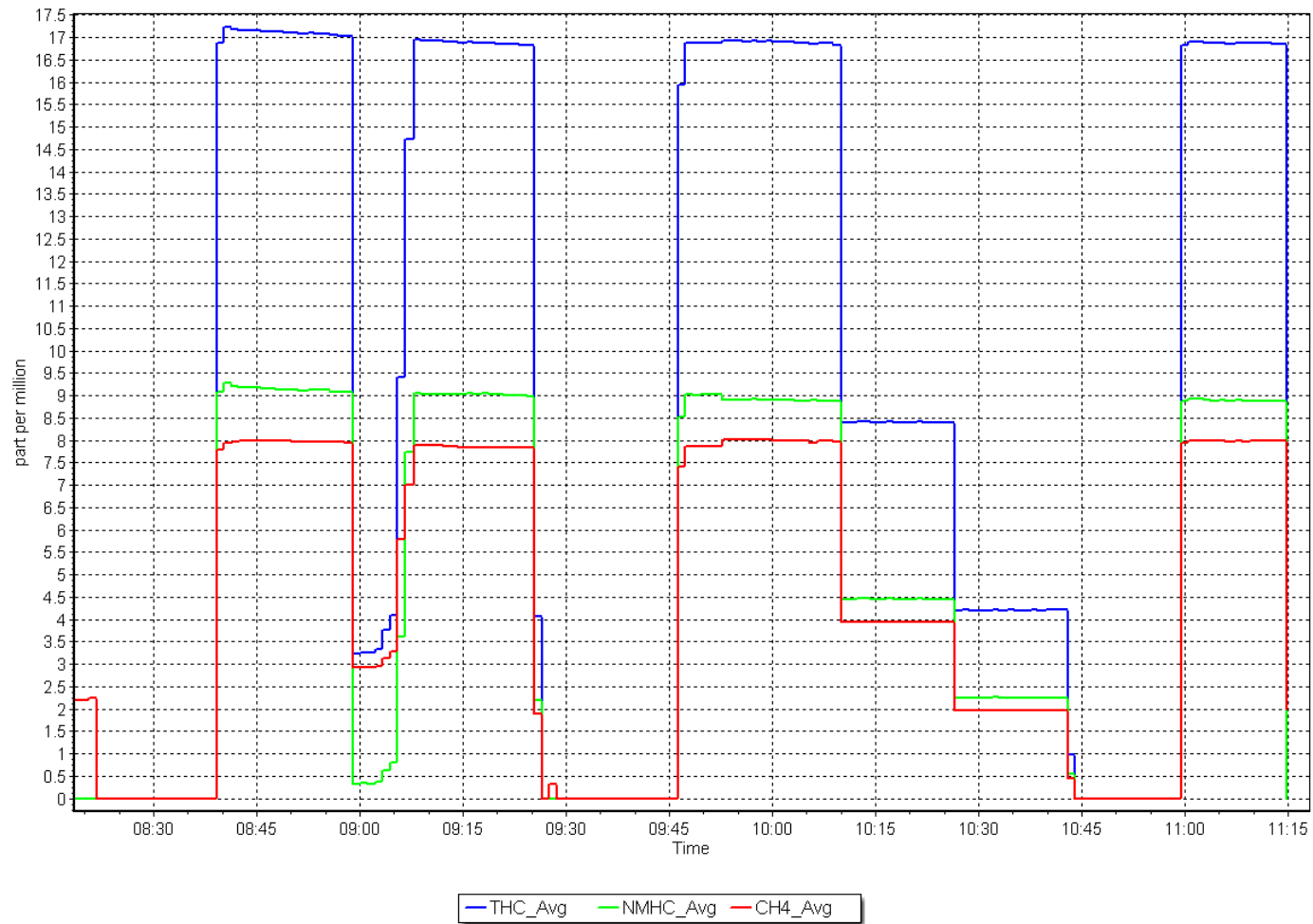
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999989	<i>≥0.995</i>
8.91	8.89	1.0021	Slope	0.996952	<i>0.90 - 1.10</i>
4.46	4.45	1.0013	Intercept	0.011416	<i>+/-0.5</i>
2.22	2.25	0.9901			



NMHC Calibration Plot

Date: March 17, 2025

Location: Fort Hills





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Fort Hills
Station number: AMS 23
Calibration Date: March 12, 2025
Last Cal Date: February 13, 2025
Start time (MST): 6:55
End time (MST): 10:56
Reason: Routine

Calibration Standards

NO Gas Cylinder #: CC358149
NOX Cal Gas Conc: 60.30 ppm
Removed Cylinder #:
Removed Gas NOX Conc: 60.30 ppm
NOX gas Diff:
Calibrator Model: API T700
ZAG make/model: API T701
Cal Gas Expiry Date: January 5, 2032
NO Cal Gas Conc: 60.10 ppm
Removed Gas Exp Date:
Removed Gas NO Conc: 60.10 ppm
NO gas Diff:
Serial Number: 451
Serial Number: 1117

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO _x Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.5	-0.3	-0.1	----	----
AF High point	4934	66.3	799.5	796.9	2.7	796.5	793.1	3.4	1.0032	1.0044
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x = 796.2 ppb	NO = 796.6 ppb				* = > +/-5% change initiates investigation		*Percent Change	NO _x = 0.1%	
Baseline Corr 1st pt	NO _x = 797.0 ppb	NO = 793.4 ppb				<u>As Found Statistics</u>		*Percent Change	NO = -0.4%	
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb				As found	NO _x r ² :	Nx SI:	Nx Int:	
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb				As found	NO r ² :	NO SI:	NO Int:	
						As found	NO ₂ r ² :	NO ₂ SI:	NO ₂ Int:	

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO ₂ Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1152430007

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.996667	0.995194
NO _x Cal Offset:	-0.712719	-0.872416
NO Cal Slope:	1.002734	0.999005
NO Cal Offset:	-2.472313	-2.271408
NO ₂ Cal Slope:	0.997439	0.998438
NO ₂ Cal Offset:	-1.597885	-1.622293

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.940	0.940	NO bkgnd or offset:	2.8	2.8
NOX coeff or slope:	0.990	0.990	NOX bkgnd or offset:	3.0	3.0
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	145.3	145.3

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	----	----
High point	4934	66.3	799.5	796.9	2.7	795.1	795.0	0.1	1.0056	1.0024
Mid point	4967	33.2	400.4	399.0	1.3	397.3	395.0	2.3	1.0077	1.0102
Low point	4983	16.6	200.2	199.5	0.7	197.8	195.1	2.8	1.0122	1.0228
As left zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.1	----	----
As left span	4934	66.3	799.5	405.0	394.5	789.6	405.0	384.6	1.0126	1.0000
Average Correction Factor									1.0085	1.0118

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.1	----	----
High GPT point	789.0	405.1	386.6	385.2	1.0035	99.7%
Mid GPT point	789.0	595.8	195.9	192.9	1.0153	98.5%
Low GPT point	789.0	691.5	100.2	97.0	1.0325	96.9%
Average Correction Factor					1.0171	98.3%

Notes: No adjustments and maintenance done.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

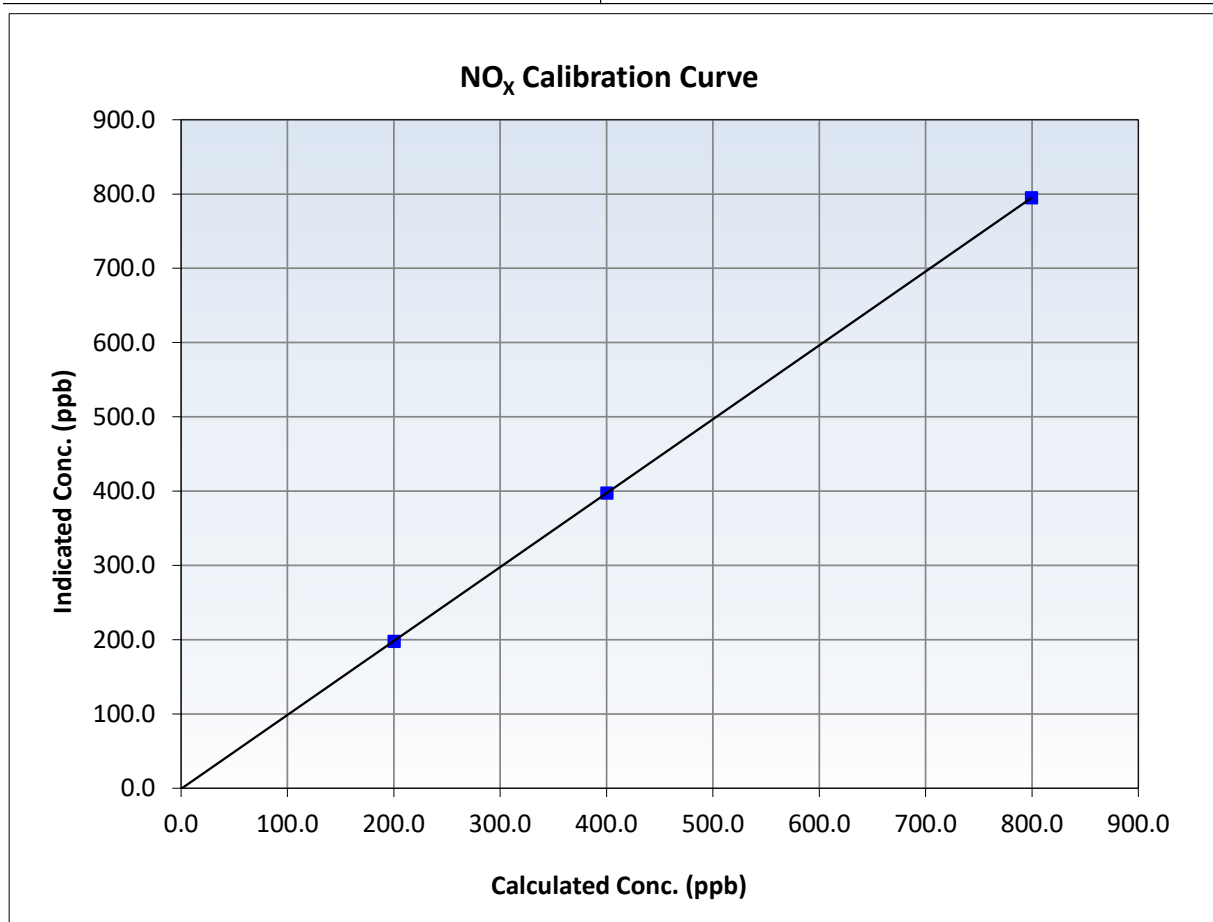
NO_x Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:55	End Time (MST):	10:56
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430007

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.3	----	Correlation Coefficient	0.999998	≥0.995
799.5	795.1	1.0056	Slope	0.995194	0.90 - 1.10
400.4	397.3	1.0077	Intercept	-0.872416	+/-20
200.2	197.8	1.0122			





Wood Buffalo Environmental Association

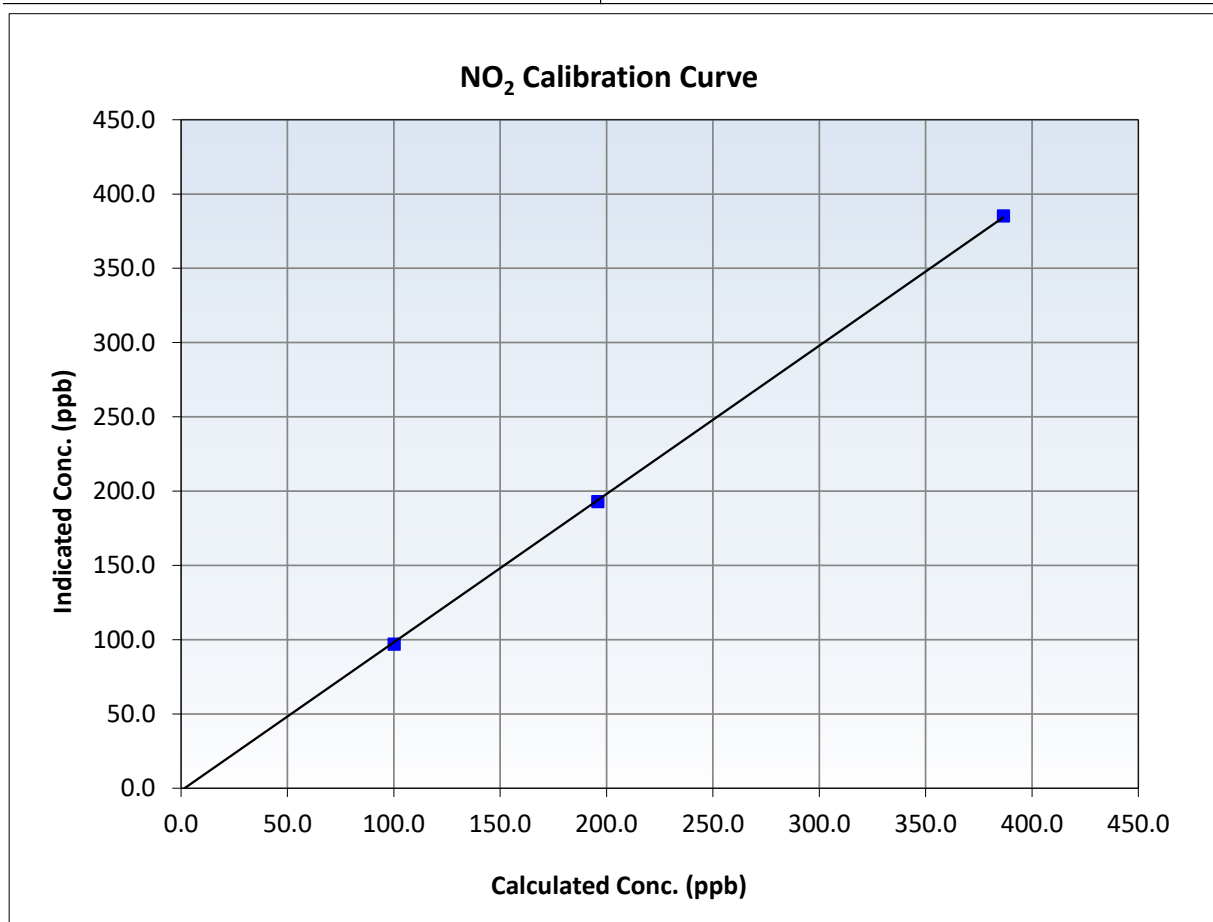
NO₂ Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:55	End Time (MST):	10:56
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430007

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999926	≥0.995
386.6	385.2	1.0035	Slope	0.998438	0.90 - 1.10
195.9	192.9	1.0153	Intercept	-1.622293	+/-20
100.2	97.0	1.0325			





Wood Buffalo Environmental Association

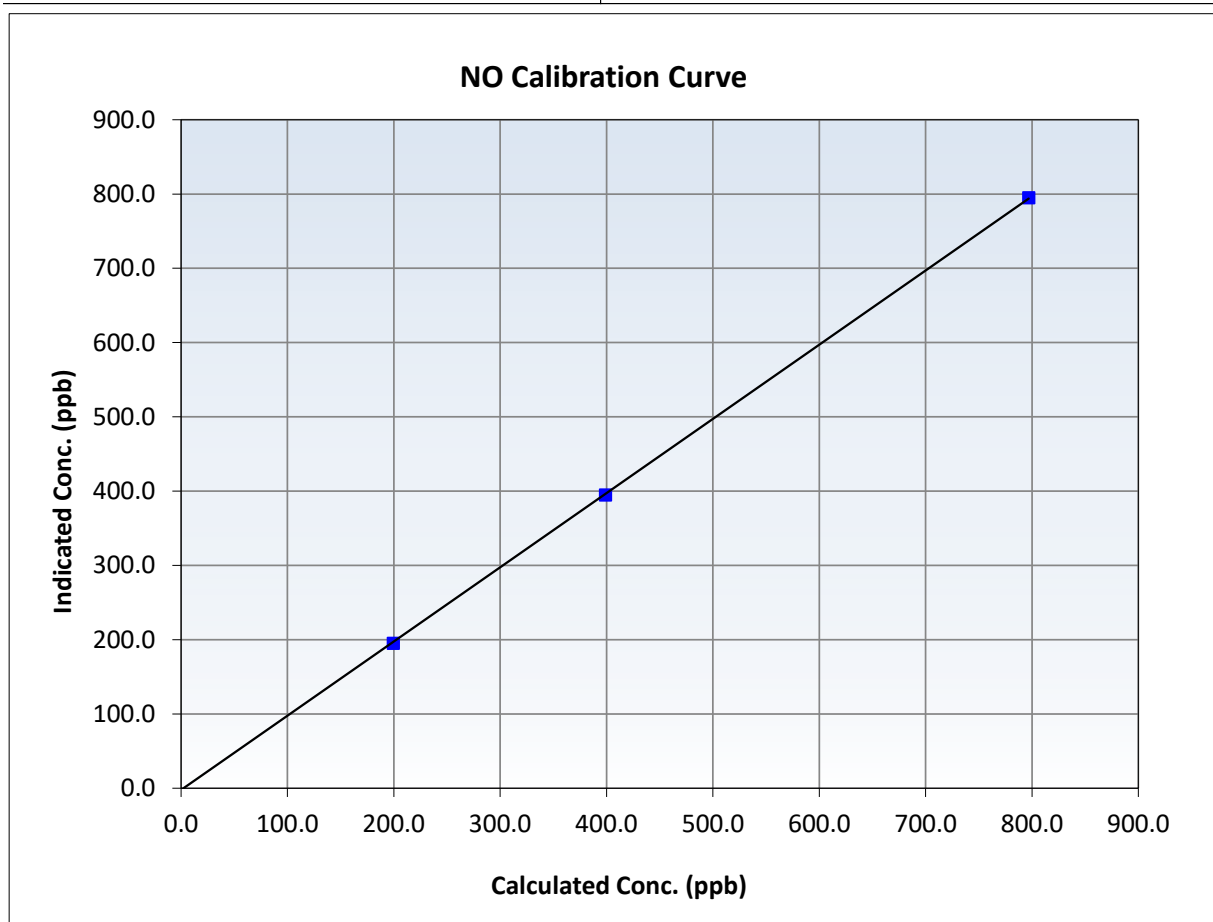
NO Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:55	End Time (MST):	10:56
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430007

Calibration Data

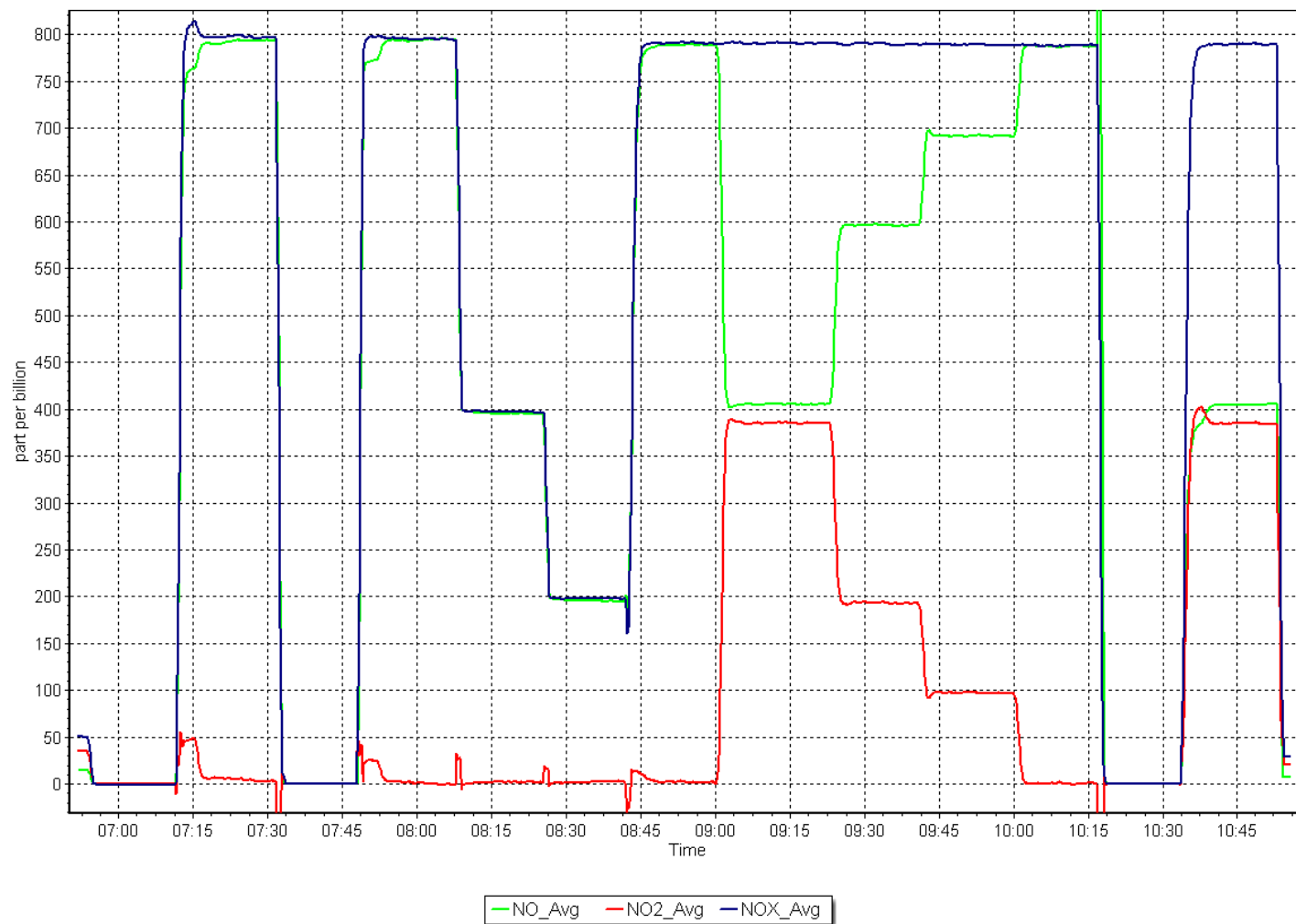
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999966	≥ 0.995
796.9	795.0	1.0024	Slope	0.999005	$0.90 - 1.10$
399.0	395.0	1.0102	Intercept	-2.271408	± 20
199.5	195.1	1.0228			



NO_x Calibration Plot

Date: March 12, 2025

Location: Fort Hills





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Fort Hills Station number: AMS 23
Calibration Date: March 17, 2025 Last Cal Date: February 20, 2025
Start time (MST): 7:10 End time (MST): 8:18

Analyzer Make: API T640 S/N: 320
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388744
Temp/RH standard: Alicat FP-25BT S/N: 388744

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-9.9	-10.3	-9.9	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	729	728.1	728.1	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	4.98	4.95	4.98	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	39	----	39	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 8.6		PM w/ HEPA: 0.0		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: 16-Jul-26
Lot No.: 100128-050-050

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test	5.2	11	11	<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: March 17, 2025
Date Disposable Filter Changed: March 17, 2025

Post- maintenance Zero Verification: PM w/ HEPA: 0 <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: March 17, 2025
Date RH/T Sensor Cleaned: March 17, 2025

Notes: No adjustments done. Leak Check, Flow and PMT checked before and after cleaning.

Calibration by: Melissa Lemay



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS25 WASKŌW OHCI PIMÂTISIWIN MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Waskow ohci Pimatisiwin Station number: AMS 25
Calibration Date: March 25, 2025 Last Cal Date: February 19, 2025
Start time (MST): 7:06 End time (MST): 9:59
Reason: Routine

Calibration Standards

Cal Gas Concentration: 49.70 ppm Cal Gas Exp Date: March 10, 2031
Cal Gas Cylinder #: CC342445
Removed Cal Gas Conc: 49.70 ppm Rem Gas Exp Date:
Removed Gas Cyl #: Diff between cyl:
Calibrator Model: API T700 Serial Number: 621
Zero Air Gen Model: API T701 Serial Number: 4765

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1118148497
Analyzer Range: 0-1000ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.002971	1.003113	Backgd or Offset:	11.4	11.3
Calibration intercept:	-0.252308	-0.352267	Coeff or Slope:	1.089	1.065

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.2	----
As found High point	4920	80.5	800.1	819.3	0.977
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	819.1	Previous response	802.2	*% change	2.1%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.4	----
High point	4920	80.5	800.1	802.7	0.997
Mid point	4960	40.2	399.6	399.8	0.999
Low point	4980	20.1	199.8	199.5	1.001
As left zero	5000	0.0	0.0	0.5	----
As left span	4920	80.5	800.1	803.7	0.996
Average Correction Factor:					0.999

Notes: No maintenance done. Span adjusted.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

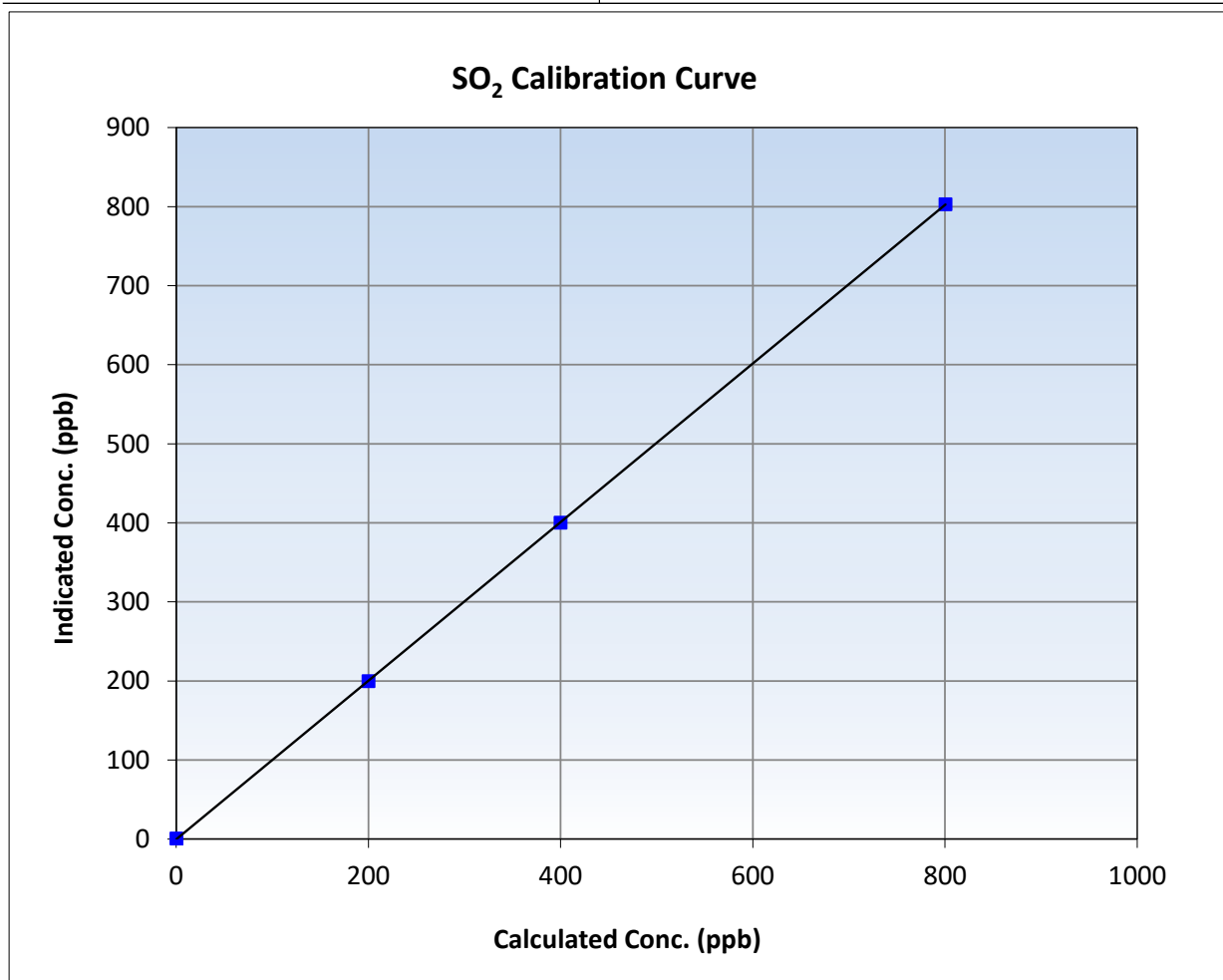
SO₂ Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 19, 2025
Station Name:	Waskow ohci Pimatisiwin	Station Number:	AMS 25
Start Time (MST):	7:06	End Time (MST):	9:59
Analyzer make:	Thermo 43i	Analyzer serial #:	1118148497

Calibration Data

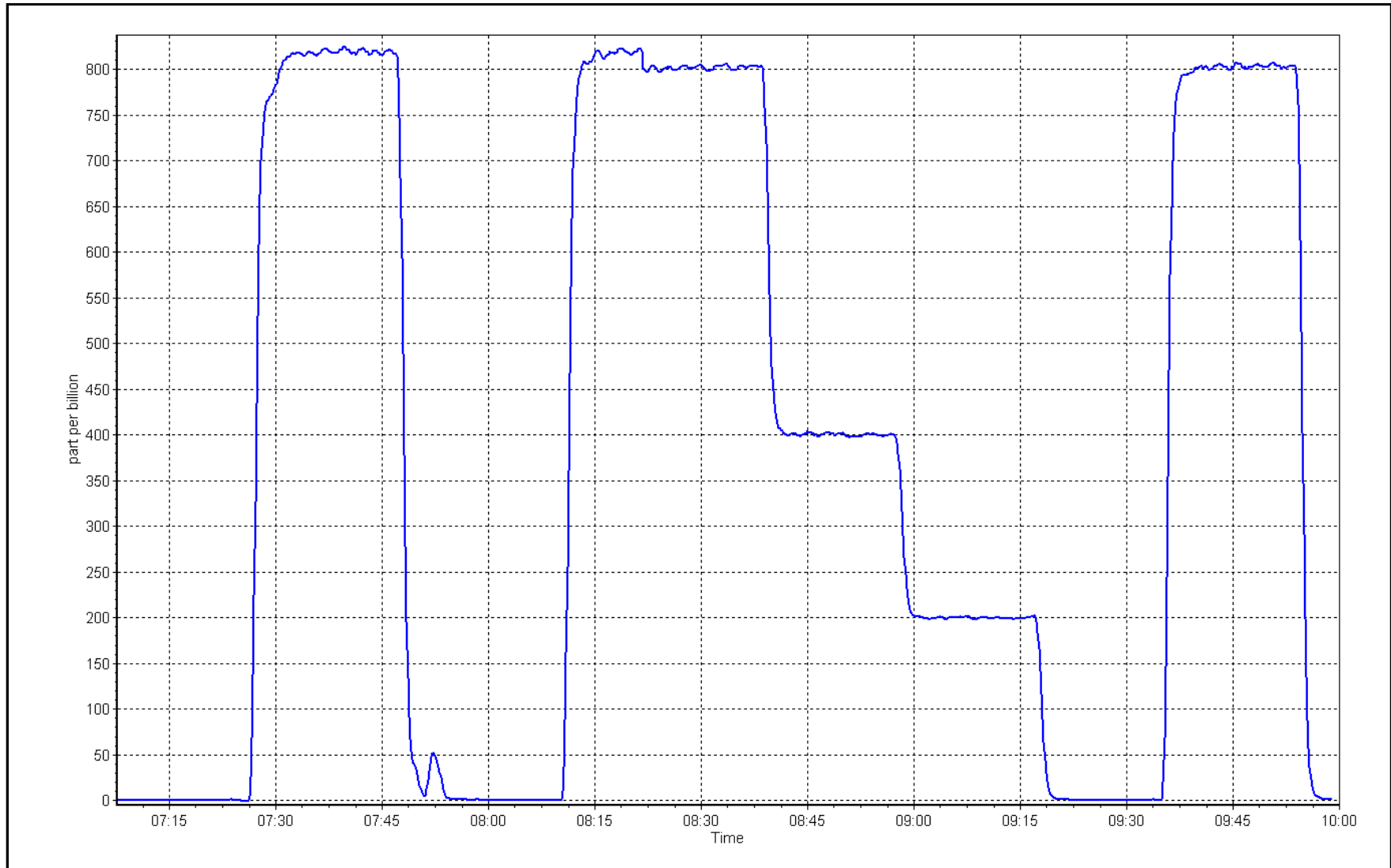
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.4	----	Correlation Coefficient	0.999996	≥0.995
800.1	802.7	0.9967	Slope	1.003113	0.90 - 1.10
399.6	399.8	0.9994	Intercept	-0.352267	+/-30
199.8	199.5	1.0015			



SO2 Calibration Plot

Date: March 25, 2025

Location: Waskow ohci Pimatisiwin





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: Waskow ohci Pimatisiwin Station number: AMS 25
Calibration Date: March 24, 2025 Last Cal Date: February 12, 2025
Start time (MST): 6:36 End time (MST): 10:47
Reason: Routine

Calibration Standards

Cal Gas Concentration: 4.97 ppm Cal Gas Exp Date: January 3, 2026
Cal Gas Cylinder #: CC517099
Removed Cal Gas Conc: 4.97 ppm Rem Gas Exp Date:
Removed Gas Cyl #: Diff between cyl:
Calibrator Make/Model: API T700 Serial Number: 747
ZAG Make/Model: API T701 Serial Number: 261

Analyzer Information

Analyzer make: Thermo 43i-LTE Analyzer serial #: 1170050146
Converter make: Global G-150 Converter serial #: 2022-219
Analyzer Range: 0 - 100 ppb Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	1.006324	1.011498	Backgd or Offset:	3.50
Calibration intercept:	0.140000	-0.140000	Coeff or Slope:	1.108

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.0	----
As found High point	4920	80.0	79.5	80.6	0.987
As found Mid point	4960	40.0	39.8	40.4	0.984
As found Low point	4980	20.0	19.9	20.1	0.989
New cylinder response					
Baseline Corr As found:	80.6	Prev response:	80.16	*% change:	0.5%
Baseline Corr 2nd AF pt:	40.4	AF Slope:	1.013941	AF Intercept:	0.000000
Baseline Corr 3rd AF pt:	20.1	AF Correlation:	0.999997	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4920	80.0	79.5	80.3	0.990
Mid point	4960	40.0	39.8	40.1	0.992
Low point	4980	20.0	19.9	19.9	0.999
As left zero	5000	0.0	0.0	0.0	----
As left span	4920	80.0	800.0	812.1	0.985
SO ₂ Scrubber Check	4920	80.0	800.0	0.2	----
Date of last scrubber change:				Ave Corr Factor	0.994
Date of last converter efficiency test:		February 12, 2025		111.0%	efficiency

Notes: Power cable accidentally unplugged during calibrator zero so calibrator zero restarted. SO_x Scrubber checked after the calibrator zero. No adjustments done.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

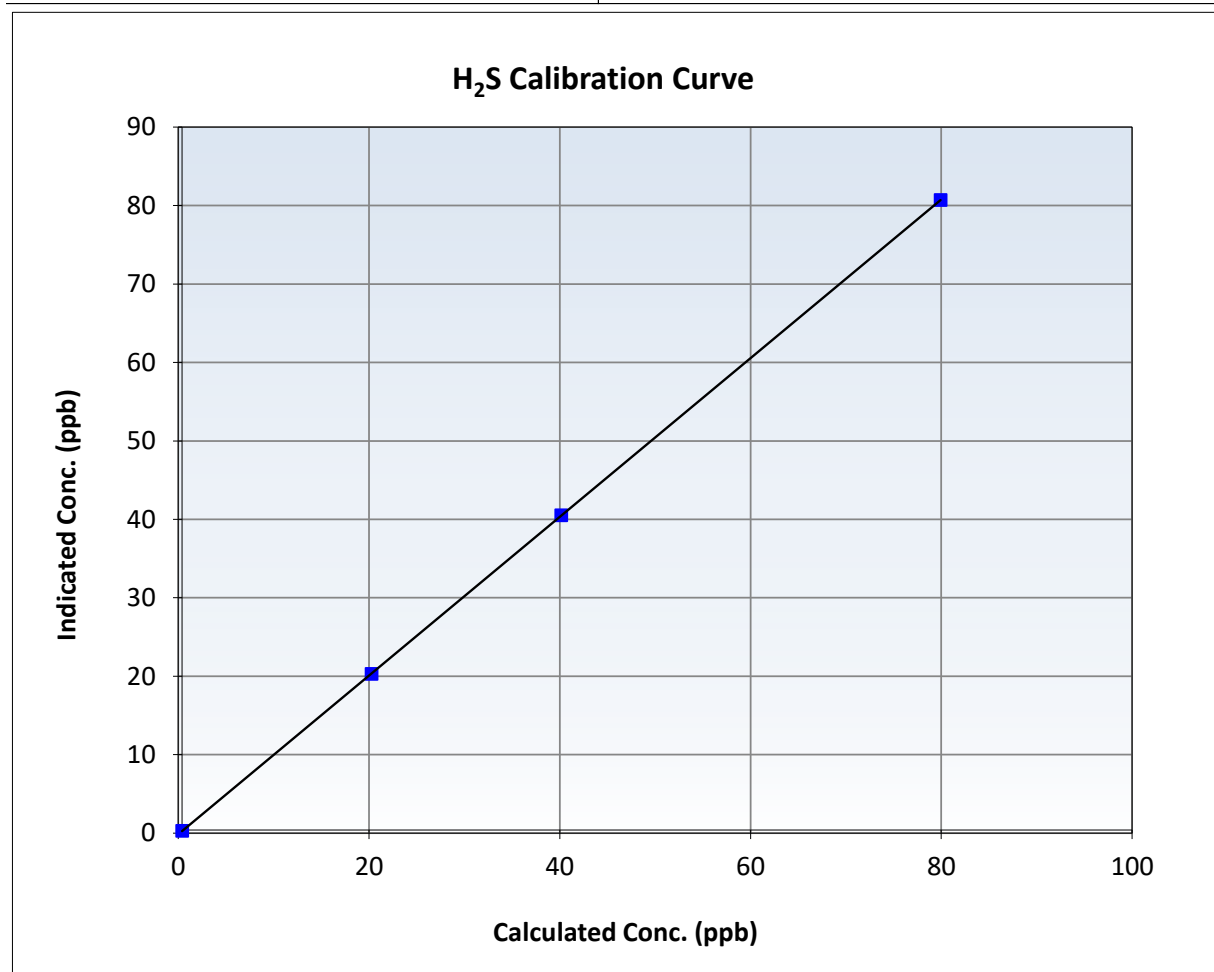
H₂S Calibration Summary

Station Information

Calibration Date:	March 24, 2025	Previous Calibration:	February 12, 2025
Station Name:	Waskow ohci Pimatisiwin	Station Number:	10:47:00 AM
Start Time (MST):	6:36	End Time (MST):	10:47
Analyzer make:	Thermo 43i-LTE	Analyzer serial #:	1170050146

Calibration Data

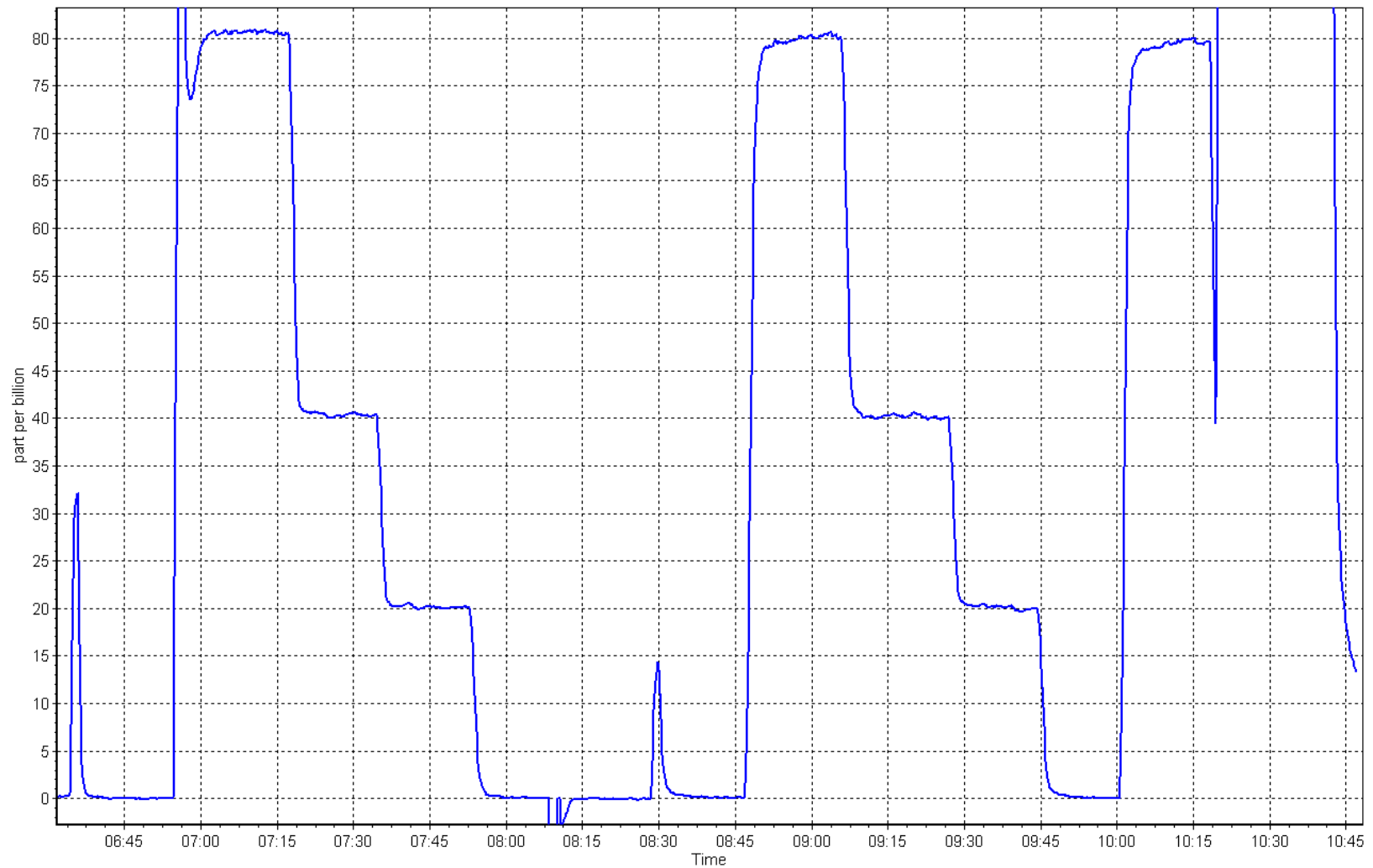
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999998		≥0.995
79.5	80.3	0.9903	Slope	1.011498		0.90 - 1.10
39.8	40.1	0.9915	Intercept	-0.140000		+/-3
19.9	19.9	0.9990				



H₂S Calibration Plot

Date: March 24, 2025

Location: Waskow ohci Pimatisiwin





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS27
JACKFISH 2/3
MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Jackfish 2/3 Station number: AMS 27
Calibration Date: March 13, 2025 Last Cal Date: February 12, 2025
Start time (MST): 11:35 End time (MST): 14:31
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.58 ppm Cal Gas Exp Date: December 29, 2028
Cal Gas Cylinder #: SG9133974BAL
Removed Cal Gas Conc: 50.58 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: API T700 Serial Number: 3811
Zero Air Gen Model: API 701 Serial Number: 268

Analyzer Information

Analyzer make: Thermo 43iQ-TL Serial Number: 12124313138
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.992403	0.997385	Backgd or Offset:	8.4
Calibration intercept:	-0.326973	-0.546041	Coeff or Slope:	0.947

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	1.1	----
As found High point	4919	79.1	800.5	800.4	1.001
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	799.3	Previous response	794.1	*% change	0.7%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	1.5	----
High point	4919	79.1	800.5	798.6	1.002
Mid point	4960	39.5	399.6	397.8	1.005
Low point	4979	19.8	200.3	196.7	1.019
As left zero	5000	0.0	0.0	1.4	----
As left span	4921	79.1	800.2	799.9	1.000
Average Correction Factor:					1.008

Notes: Changed the sample inlet filter after as founds. No adjustments made.

Calibration Performed By: Mohammed Kashif



Wood Buffalo Environmental Association

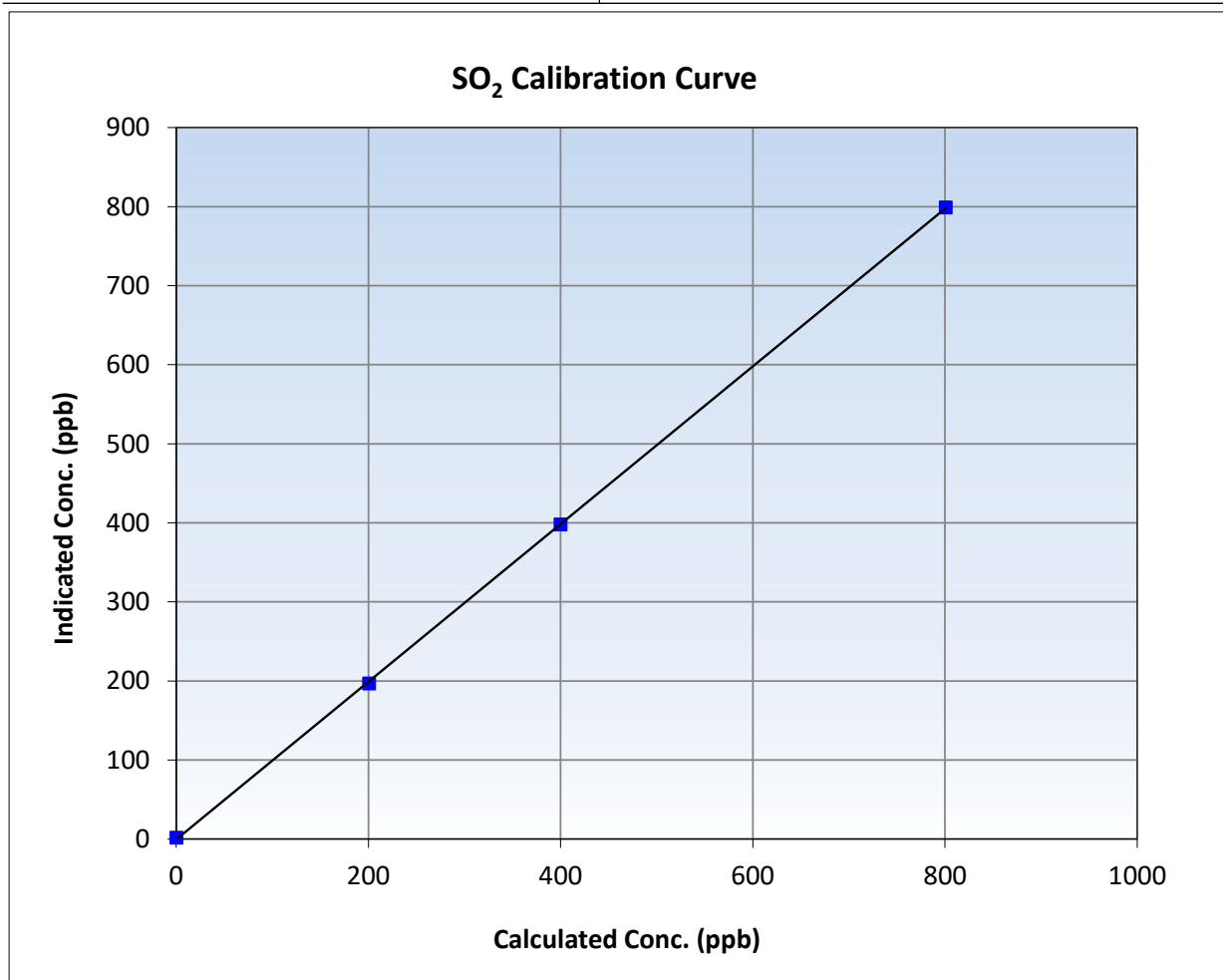
SO₂ Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 12, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	11:35	End Time (MST):	14:31
Analyzer make:	Thermo 43iQ-TL	Analyzer serial #:	12124313138

Calibration Data

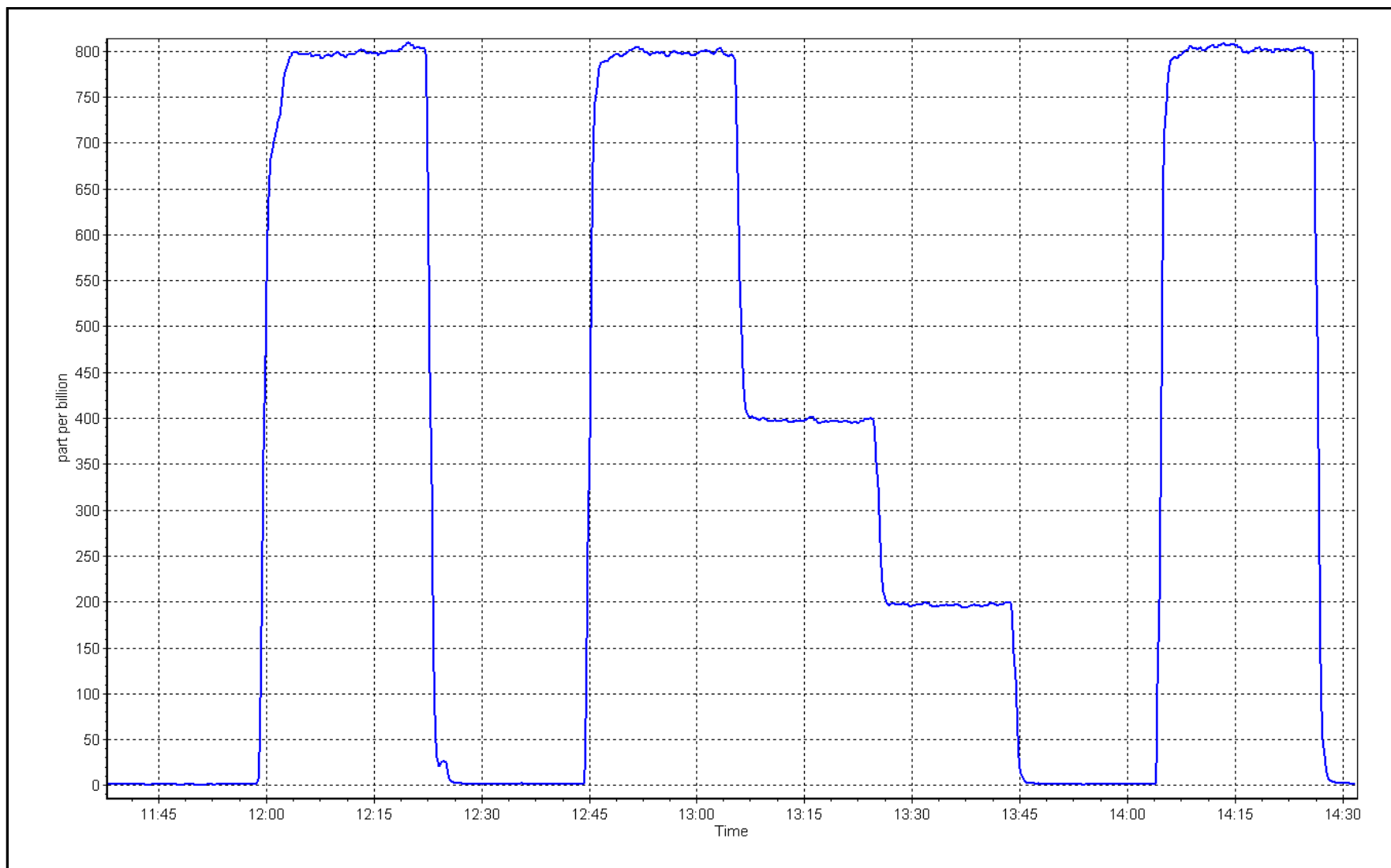
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	1.5	----	Correlation Coefficient	0.999967	≥0.995
800.5	798.6	1.0024	Slope	0.997385	0.90 - 1.10
399.6	397.8	1.0046	Intercept	-0.546041	+/-30
200.3	196.7	1.0185			



SO2 Calibration Plot

Date: March 13, 2025

Location: Jackfish 2/3





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: Jackfish 2/3
Calibration Date: March 19, 2025
Start time (MST): 9:50
Reason: Routine

Station number: AMS 27
Last Cal Date: February 20, 2025
End time (MST): 15:10

Calibration Standards

Cal Gas Concentration: 4.87 ppm
Cal Gas Cylinder #: CC523090
Removed Cal Gas Conc: 4.87 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: API T700
ZAG Make/Model: API T701H

Cal Gas Exp Date: September 5, 2027
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 3811
Serial Number: 268

Analyzer Information

Analyzer make: Thermo 43iQ
Converter make: Global G150
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 12228021055
Converter serial #: 2022-195
Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	1.025400	1.011680	Backgd or Offset:	3.9
Calibration intercept:	-0.307904	-0.227800	Coeff or Slope:	1.167

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.5	----
As found High point	4923	82.2	80.0	83.5	0.952
As found Mid point	4966	41.1	40.0	41.4	0.954
As found Low point	4990	20.6	20.0	20.2	0.967
New cylinder response					
Baseline Corr As found:	84.0	Prev response:	81.70	*% change:	2.7%
Baseline Corr 2nd AF pt:	41.9	AF Slope:	1.051554	AF Intercept:	-0.648128
Baseline Corr 3rd AF pt:	20.7	AF Correlation:	0.999983	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4923	82.2	80.0	80.7	0.991
Mid point	4966	41.1	40.0	40.3	0.992
Low point	4990	20.6	20.0	19.8	1.011
As left zero	5000	0.0	0.0	0.1	----
As left span	4923	82.2	80.0	83.2	0.961
SO2 Scrubber Check	4921	79.1	791.0	0.1	----
Date of last scrubber change:	21-Feb-25			Ave Corr Factor	0.998
Date of last converter efficiency test:					

Notes: Changed sample inlet filter after as founds. Ran scrubber check after calibrator zero and it passed.
Adjusted zero and span.

Calibration Performed By: Mohammed Kashif



Wood Buffalo Environmental Association

H₂S Calibration Summary

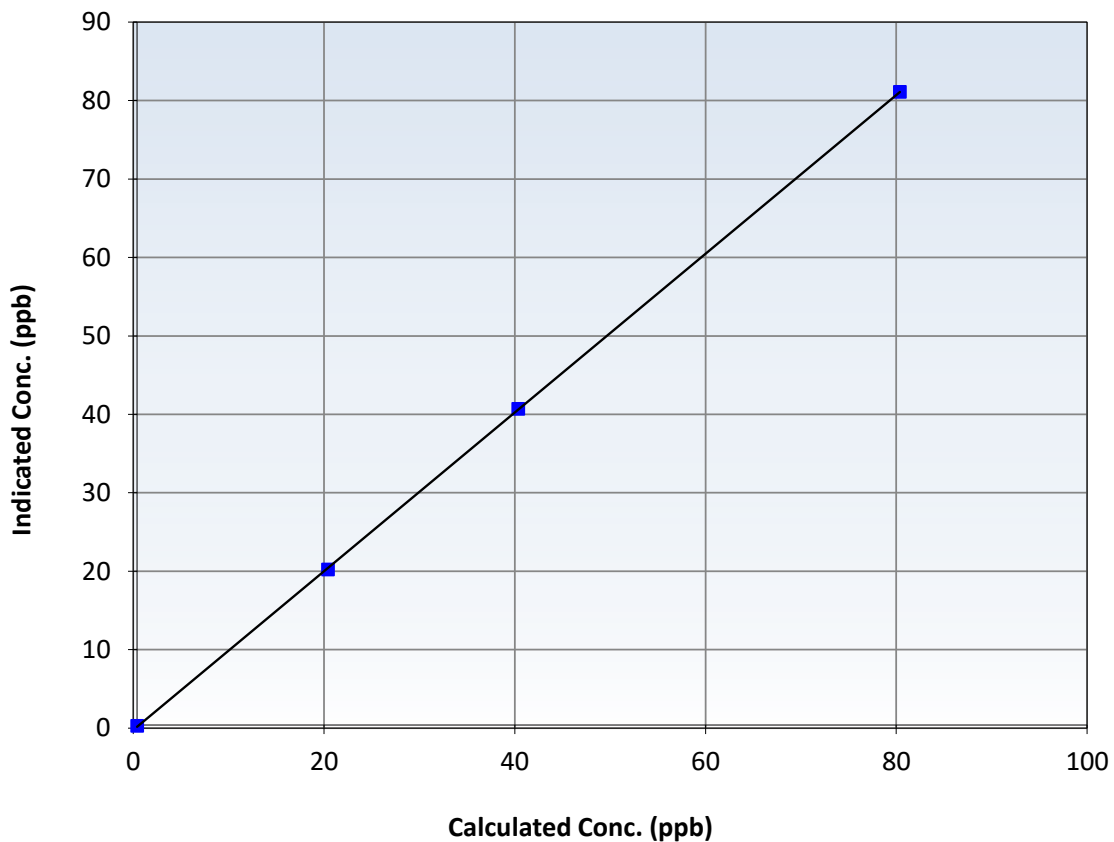
Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 20, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	9:50	End Time (MST):	15:10
Analyzer make:	Thermo 43iQ	Analyzer serial #:	12228021055

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999979	≥ 0.995
80.0	80.7	0.9911	Slope	1.011680	$0.90 - 1.10$
40.0	40.3	0.9919	Intercept	-0.227800	± 3
20.0	19.8	1.0112			

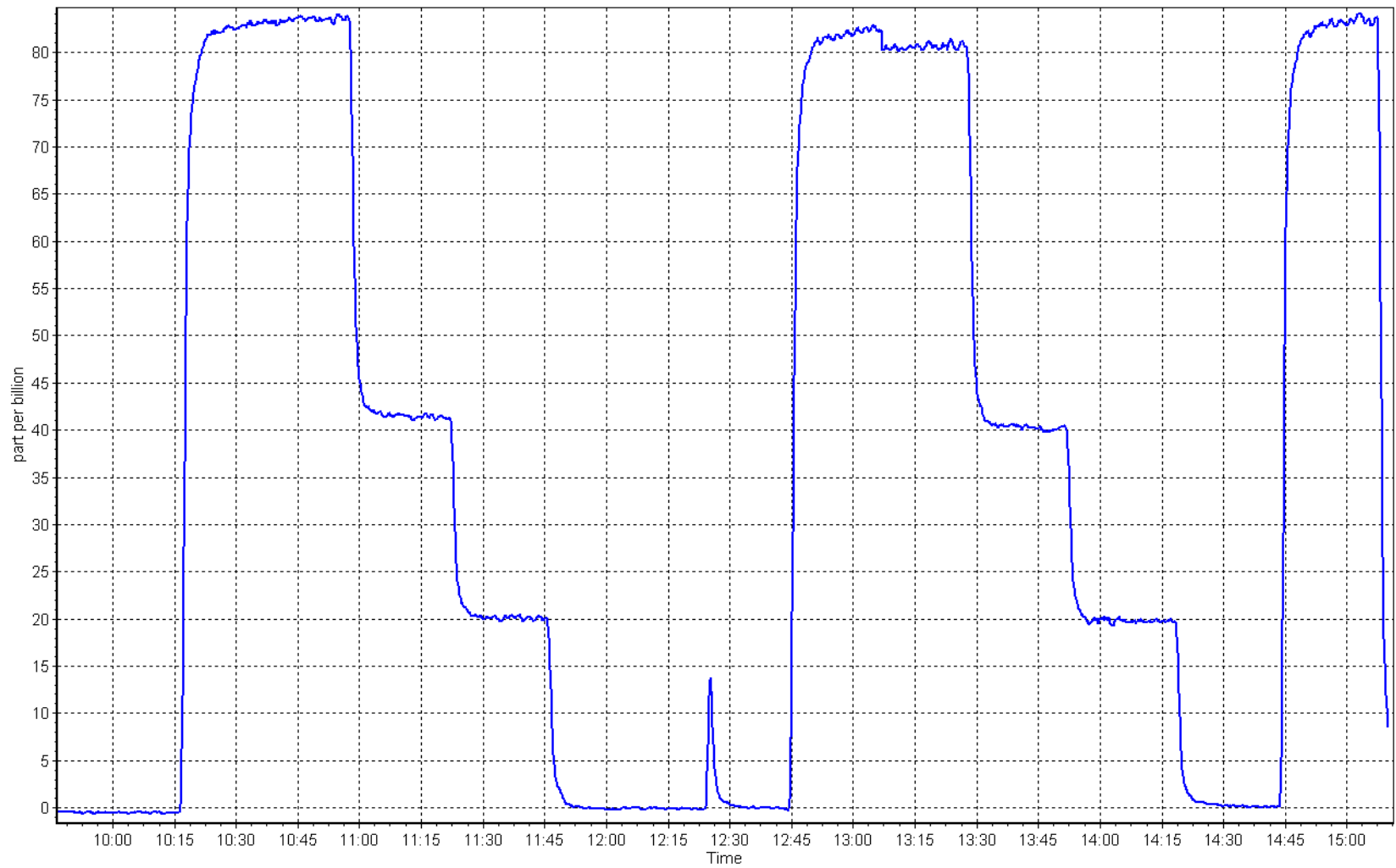
H₂S Calibration Curve



H₂S Calibration Plot

Date: March 19, 2025

Location: Jackfish 2/3





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Jackfish 2/3
Station number: AMS 27
Calibration Date: March 18, 2025
Last Cal Date: February 18, 2025
Start time (MST): 9:14
End time (MST): 14:23
Reason: Routine

Calibration Standards

NO Gas Cylinder #: CC757838
NOX Cal Gas Conc: 60.30 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 60.30 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701
Cal Gas Expiry Date: January 9, 2032
NO Cal Gas Conc: 60.20 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 60.20 ppm
NO gas Diff:
Serial Number: 3811
Serial Number: 268

As Found Dilution Calibration Data

Set Point	Dilution flow rate (scm)	Source gas flow rate (scm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	0.4	0.4	0.0	----	----
AF High point	4942	66.5	800.6	799.3	1.3	801.9	797.1	4.8	0.9989	1.0033
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x = 797.9 ppb	NO = 796.8 ppb							*Percent Change	NO _x = 0.5%
Baseline Corr 1st pt	NO _x = 801.5 ppb	NO = 796.7 ppb							*Percent Change	NO = 0.0%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb								
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb								
As Found Statistics										
	As found	NO _x r ² :							Nx SI:	Nx Int:
	As found	NO r ² :							NO SI:	NO Int:
	As found	NO ₂ r ² :							NO ₂ SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1218153357

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.279	1.279	NO bkgnd or offset:	4.3	4.3
NOX coeff or slope:	0.996	0.996	NOX bkgnd or offset:	4.4	4.4
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	161.3	158.1

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.000089	1.000532
NO _x Cal Offset:	-2.814811	-2.295044
NO Cal Slope:	1.002496	1.001195
NO Cal Offset:	-4.475294	-3.895489
NO ₂ Cal Slope:	0.999907	1.000485
NO ₂ Cal Offset:	-0.355295	-0.127047

Dilution Calibration Data

Set Point	Dilution flow rate (scm)	Source gas flow rate (scm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.9	0.6	0.2	----	----
High point	4942	66.5	800.6	799.3	1.3	800.2	798.5	1.8	1.0005	1.0010
Mid point	4979	33.3	400.6	399.9	0.7	397.4	394.6	2.9	1.0081	1.0136
Low point	4996	16.6	199.7	199.4	0.3	194.0	191.0	3.0	1.0293	1.0438
As left zero	5000	0.0	0.0	0.0	0.0	2.6	0.7	1.9	----	----
As left span	4942	66.5	800.6	394.9	405.7	795.2	394.9	400.4	1.0068	1.0000
Average Correction Factor									1.0127	1.0194

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.2	----	----
High GPT point	795.4	395.0	401.7	402.0	0.9993	100.1%
Mid GPT point	795.4	618.1	178.6	178.2	1.0024	99.8%
Low GPT point	795.4	706.5	90.2	90.0	1.0025	99.7%
Average Correction Factor					1.0014	99.9%

Notes:

Changed sample inlet filter after as founds. No adjustments made.

Calibration Performed By:

Mohammed Kashif



Wood Buffalo Environmental Association

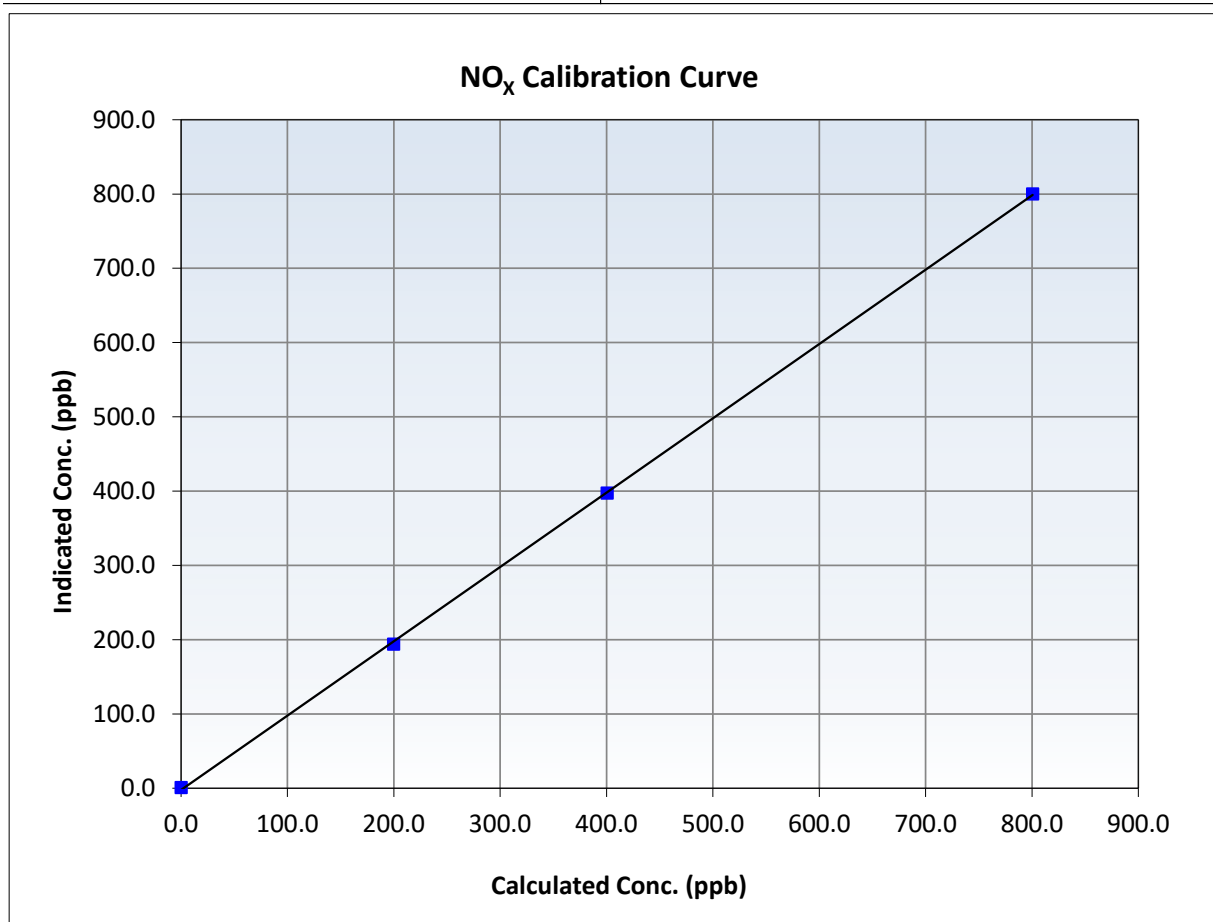
NO_x Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 18, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	9:14	End Time (MST):	14:23
Analyzer make:	Thermo 42i	Analyzer serial #:	1218153357

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.9	----	Correlation Coefficient	0.999926	≥0.995
800.6	800.2	1.0005	Slope	1.000532	0.90 - 1.10
400.6	397.4	1.0081	Intercept	-2.295044	+/-20
199.7	194.0	1.0293			





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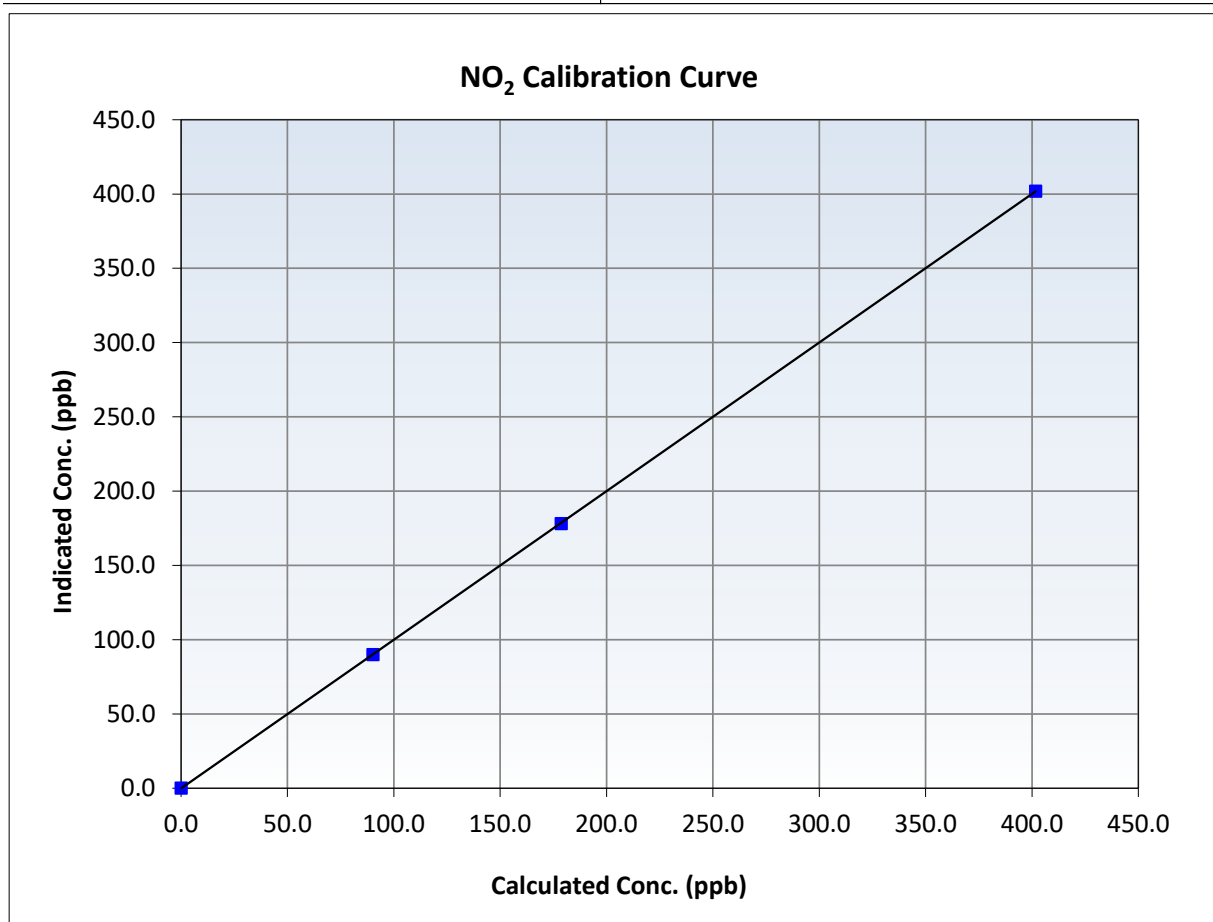
NO₂ Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 18, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	9:14	End Time (MST):	14:23
Analyzer make:	Thermo 42i	Analyzer serial #:	1218153357

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999996	≥0.995
401.7	402.0	0.9993	Slope	1.000485	0.90 - 1.10
178.6	178.2	1.0024	Intercept	-0.127047	+/-20
90.2	90.0	1.0025			





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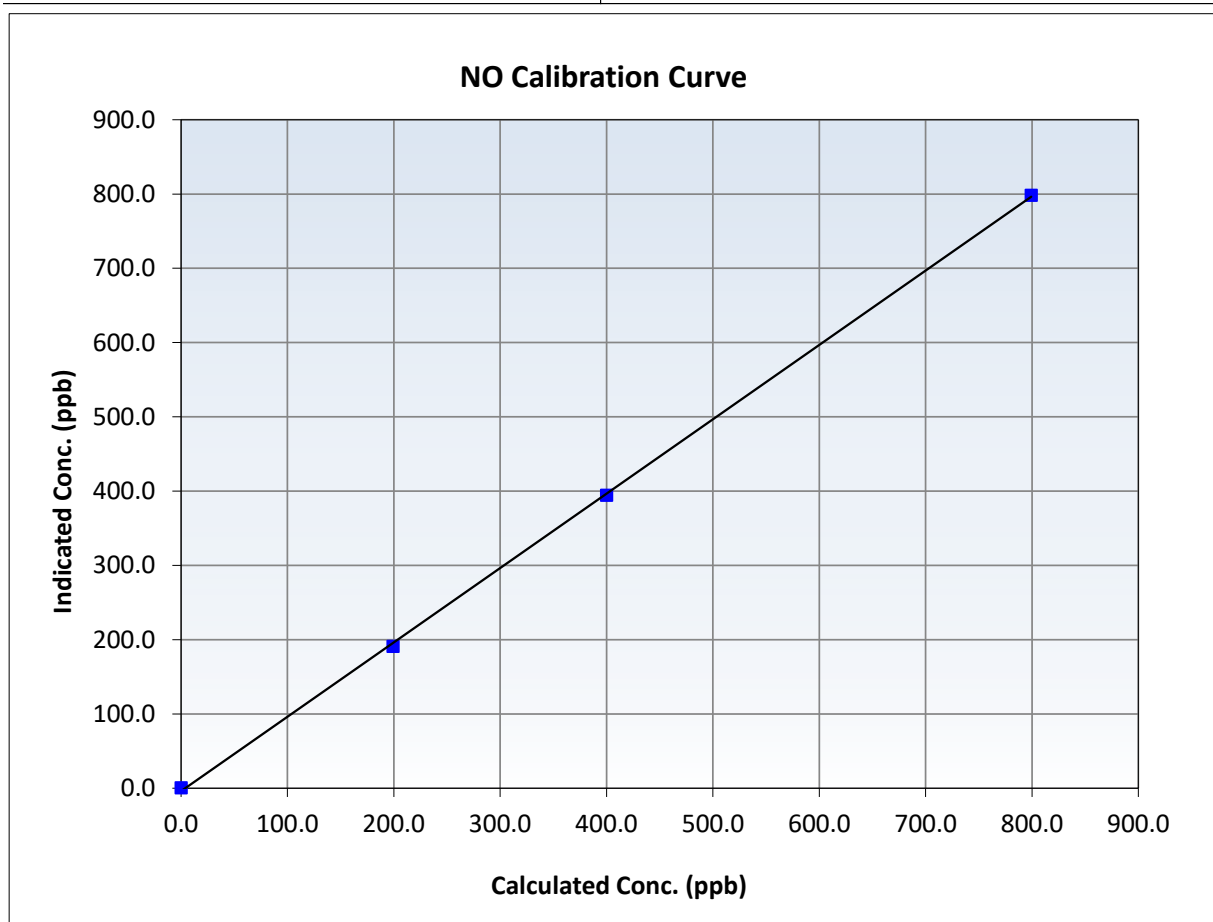
NO Calibration Summary

Station Information

Calibration Date:	March 18, 2025	Previous Calibration:	February 18, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	9:14	End Time (MST):	14:23
Analyzer make:	Thermo 42i	Analyzer serial #:	1218153357

Calibration Data

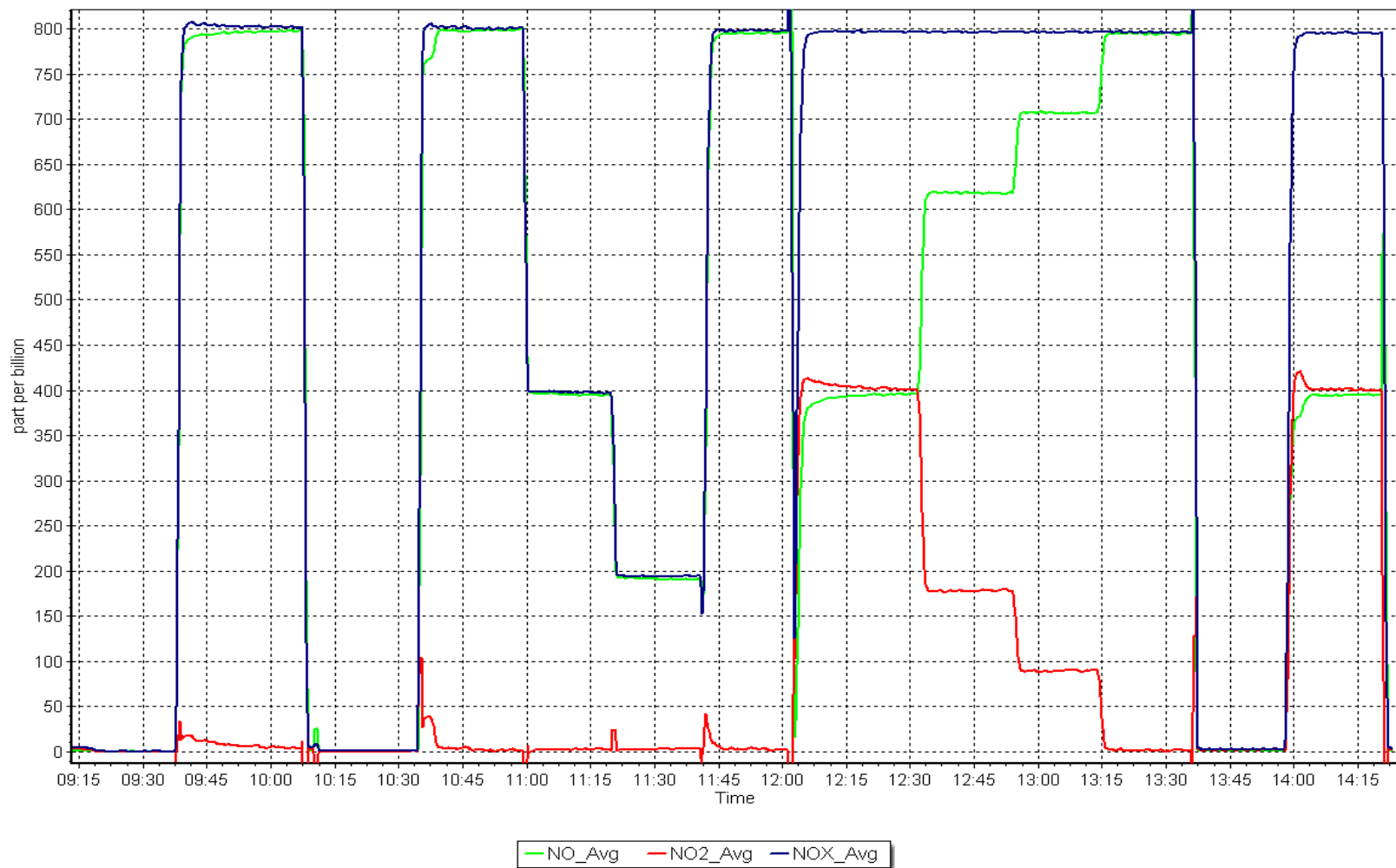
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.6	----	Correlation Coefficient	0.999855	≥ 0.995
799.3	798.5	1.0010	Slope	1.001195	$0.90 - 1.10$
399.9	394.6	1.0136	Intercept	-3.895489	± 20
199.4	191.0	1.0438			



NO_x Calibration Plot

Date: March 18, 2025

Location: Jackfish 2/3





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS29
SURMONT 2
MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Surmont 2 Station number: AMS 29
Calibration Date: March 17, 2025 Last Cal Date: February 5, 2025
Start time (MST): 10:16 End time (MST): 14:16
Reason: Routine

Calibration Standards

Cal Gas Concentration: 49.95 ppm Cal Gas Exp Date: October 9, 2032
Cal Gas Cylinder #: CC356229
Removed Cal Gas Conc: 49.21 ppm Rem Gas Exp Date: February 23, 2025
Removed Gas Cyl #: CC356008 Diff between cyl: -3.0%
Calibrator Model: Teledyne API T700 Serial Number: 5472
Zero Air Gen Model: Teledyne API T701 Serial Number: 4428

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1170050150
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.004141	1.000431	Backgd or Offset:	13.5	14.5
Calibration intercept:	-1.505030	-1.000571	Coeff or Slope:	0.938	0.962

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.5	----
As found High point	4919	81.3	800.1	802.0	0.998
As found Mid point					
As found Low point					
New cylinder response	4920	80.1	800.2	779.0	1.027
Baseline Corr As found:	801.5	Previous response	801.9	*% change	-0.1%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.2	----
High point	4920	80.1	800.2	800.0	1.000
Mid point	4960	40.0	399.6	398.6	1.003
Low point	4980	20.0	199.8	197.4	1.012
As left zero	5000	0.0	0.0	-0.1	----
As left span	4920	80.1	800.2	804.0	0.995
Average Correction Factor:					1.005

Notes: Changed sample inlet filter and calibration gas after as founds. Adjusted zero and span.

Calibration Performed By: Braiden Boutillier



Wood Buffalo Environmental Association

SO₂ Calibration Summary

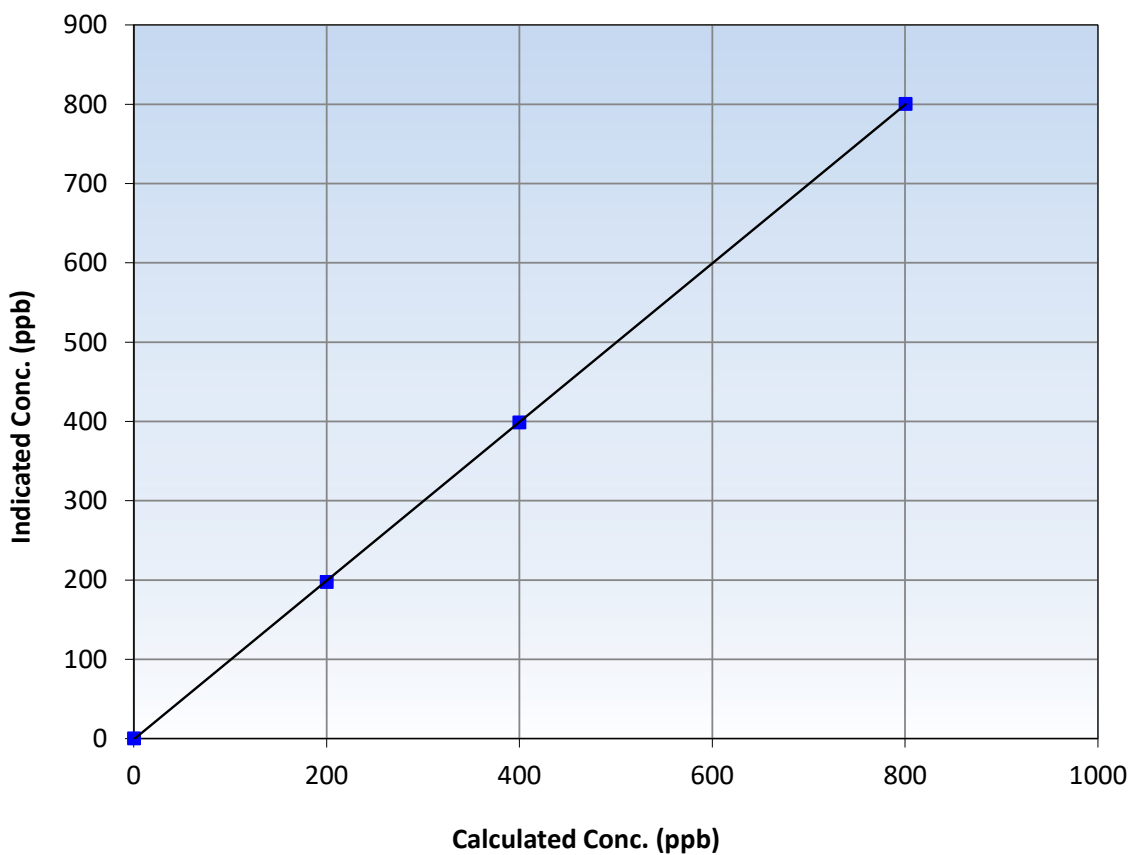
Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 5, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	10:16	End Time (MST):	14:16
Analyzer make:	Thermo 43i	Analyzer serial #:	1170050150

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999989	≥0.995
800.2	800.0	1.0002	Slope	1.000431	0.90 - 1.10
399.6	398.6	1.0025	Intercept	-1.000571	+/-30
199.8	197.4	1.0122			

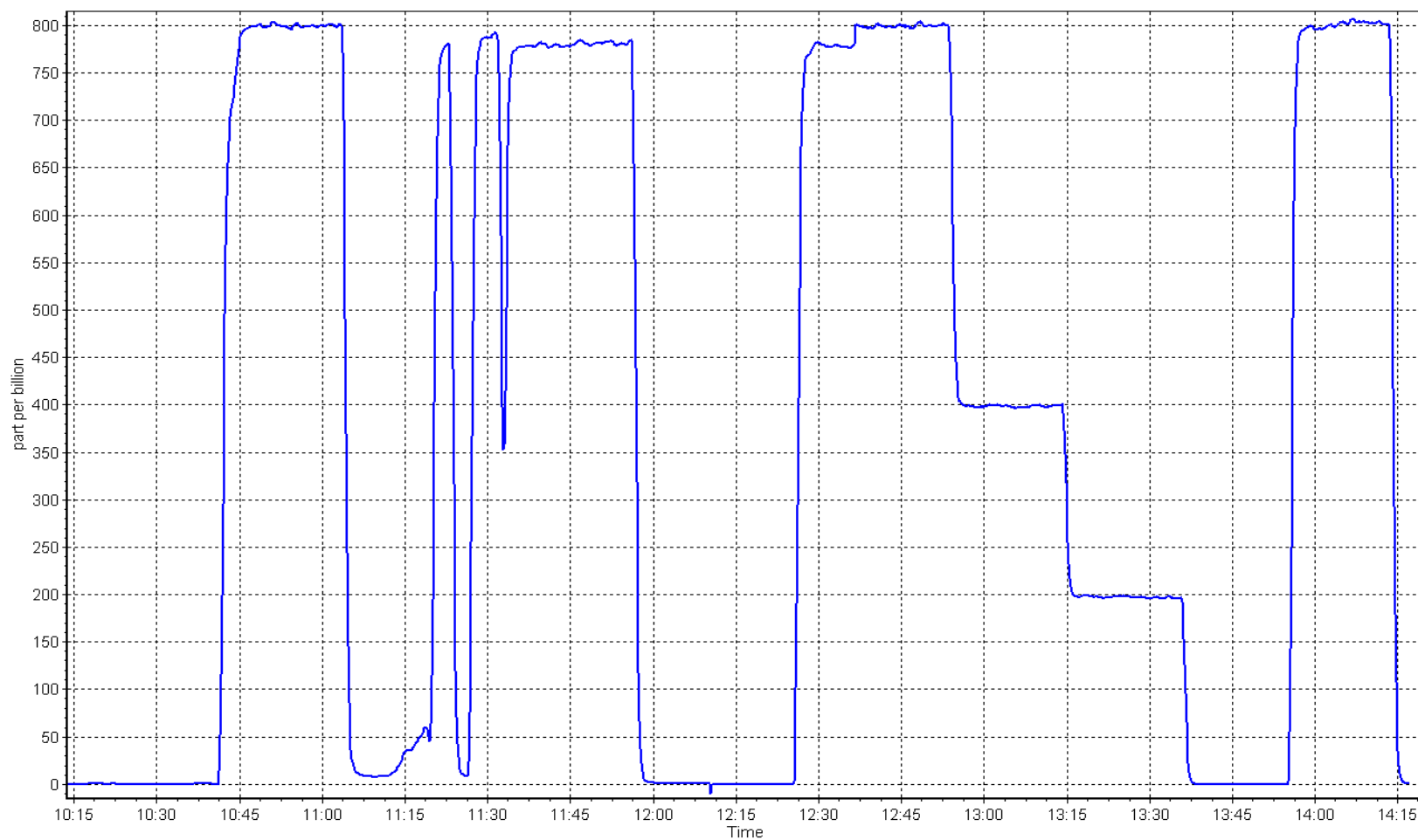
SO₂ Calibration Curve



SO2 Calibration Plot

Date: March 17, 2025

Location: Surmont 2





Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name: Surmont 2 Station number: AMS 29
Calibration Date: March 26, 2025 Last Cal Date: February 26, 2025
Start time (MST): 9:51 End time (MST): 16:07
Reason: Routine

Calibration Standards

Cal Gas Concentration: 4.750 ppm Cal Gas Exp Date: August 28, 2027
Cal Gas Cylinder #: CC737848
Removed Cal Gas Conc: 4.750 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 5472
ZAG Make/Model: Teledyne API T701 Serial Number: 4428

Analyzer Information

Analyzer make: Thermo 43iQ-TLE Analyzer serial #: 1200326170
Converter make: Global Converter serial #: 2022-220
Analyzer Range: 0 - 100 ppb Converter Temp: 325.0 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.998310	1.006025	Backgd or Offset:	0.87
Calibration intercept:	0.039522	-0.080482	Coeff or Slope:	1.012

H2S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.0	----
As found High point	4916	84.2	80.0	79.4	1.007
As found Mid point	4958	42.1	40.0	39.6	1.010
As found Low point	4979	21.1	20.0	19.6	1.020
New cylinder response	4916	84.2	80.0		
Baseline Corr As found:	79.4	Prev response:	79.89	*% change:	-0.6%
Baseline Corr 2nd AF pt:	39.6	AF Slope:	0.993595	AF Intercept:	-0.120476
Baseline Corr 3rd AF pt:	19.6	AF Correlation:	0.999989	* = > +/-5% change initiates investigation	

H2S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4916	84.2	80.0	80.4	0.995
Mid point	4958	42.1	40.0	40.2	0.995
Low point	4979	21.1	20.0	19.9	1.005
As left zero	5000	0.0	0.0	0.0	----
As left span	4916	84.2	80.0	80.0	1.000
SO2 Scrubber Check	4919	81.3	813.0	0.0	----
Date of last scrubber change:				Ave Corr Factor	0.998
Date of last converter efficiency test:		December 5, 2024		108.1% efficiency	

Notes: Changed sample inlet filter after as founds. Adjusted zero and span.

Calibration Performed By: Braiden Boutilier



Wood Buffalo Environmental Association

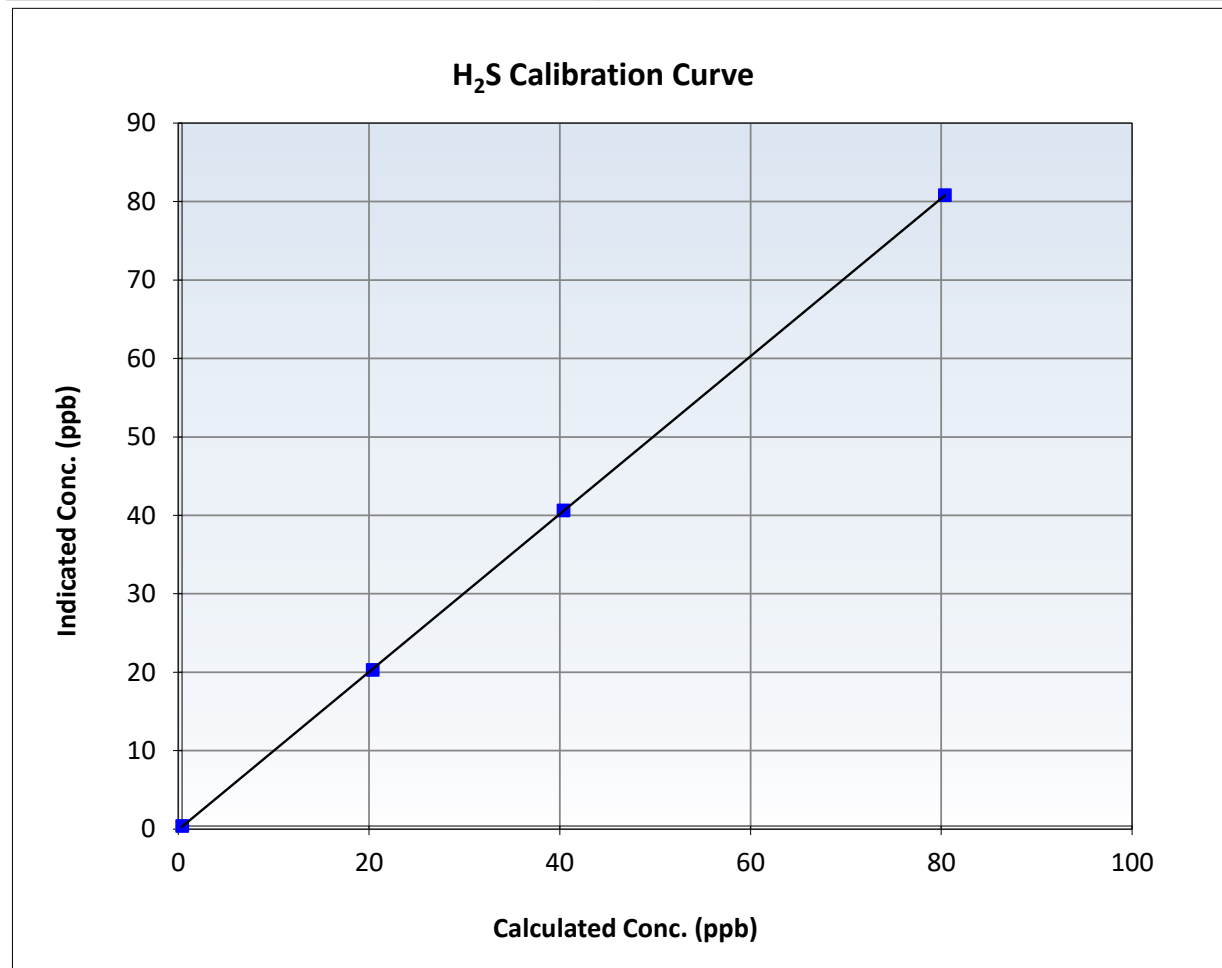
H2S Calibration Summary

Station Information

Calibration Date:	March 26, 2025	Previous Calibration:	February 26, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	9:51	End Time (MST):	16:07
Analyzer make:	Thermo 43iQ-TLE	Analyzer serial #:	1200326170

Calibration Data

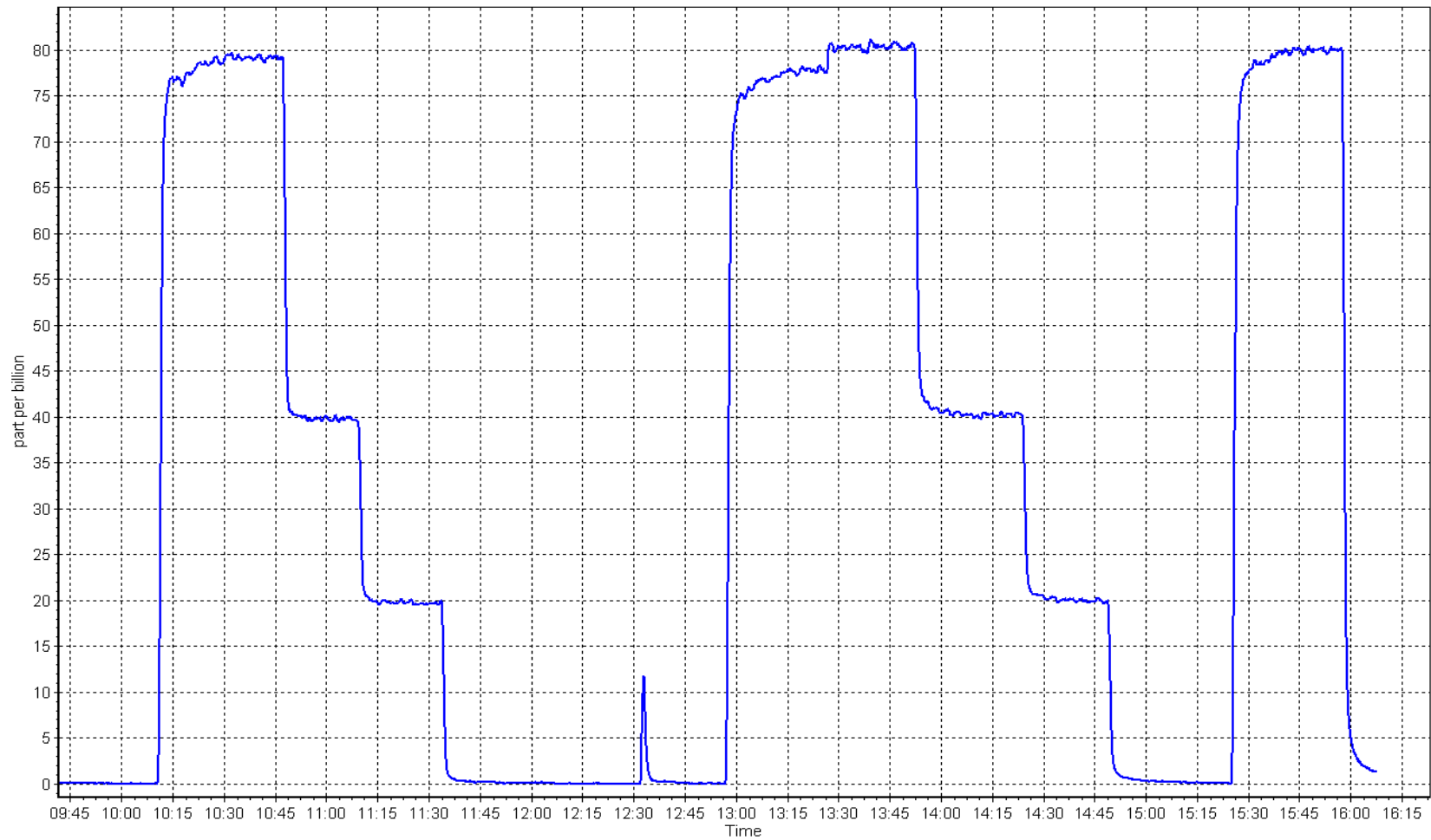
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999992	≥ 0.995
80.0	80.4	0.9949	Slope	1.006025	$0.90 - 1.10$
40.0	40.2	0.9949	Intercept	-0.080482	± 3
20.0	19.9	1.0049			



H2S Calibration Plot

Date: March 26, 2025

Location: Surmont 2





Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name: Surmont 2 Station number: AMS 29
Calibration Date: March 17, 2025 Last Cal Date: February 6, 2025
Start time (MST): 10:16 End time (MST): 14:16
Reason: Routine

Calibration Standards

Gas Cert Reference: CC356229 Cal Gas Expiry Date: October 9, 2032
CH4 Cal Gas Conc. 503.7 ppm CH4 Equiv Conc. 1066.9 ppm
C3H8 Cal Gas Conc. 204.8 ppm
Removed Gas Cert: CC356008 Removed Gas Expiry: February 23, 2025
Removed CH4 Conc. 499.0 ppm CH4 Equiv Conc. 1064.7 ppm
Removed C3H8 Conc. 205.7 ppm Diff between cyl: 0.9%
Calibrator Make/Model: Teledyne API T700 Serial Number: 5472
ZAG Make/Model: Teledyne API T701 Serial Number: 4428

Analyzer Information

Analyzer make: Thermo 51i-LT Analyzer serial #: 1170050149
Analyzer Range: 0 - 20 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	1.009210	0.999635	Background:	3.50
Calibration intercept:	-0.014998	-0.017156	Coefficient:	3.936

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	-0.05	----
As found High point	4918	81.3	17.31	17.28	0.999
As found Mid point					
As found Low point					
New cylinder response	4920	80.1	17.09	17.22	0.993
Baseline Corr As found:	17.33	Previous response	17.46	*% change	-0.8%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.03	----
High point	4920	80.1	17.09	17.09	1.000
Mid point	4960	40.0	8.54	8.50	1.004
Low point	4980	20.0	4.27	4.19	1.018
As left zero	5000	0.0	0.00	-0.02	----
As left span	4920	80.1	17.09	17.23	0.992
Average Correction Factor					1.007

Notes: Changed sample inlet filter and calibration gas after as founds. Adjusted span.

Calibration Performed By: Braiden Boutilier



Wood Buffalo Environmental Association

THC Calibration Summary

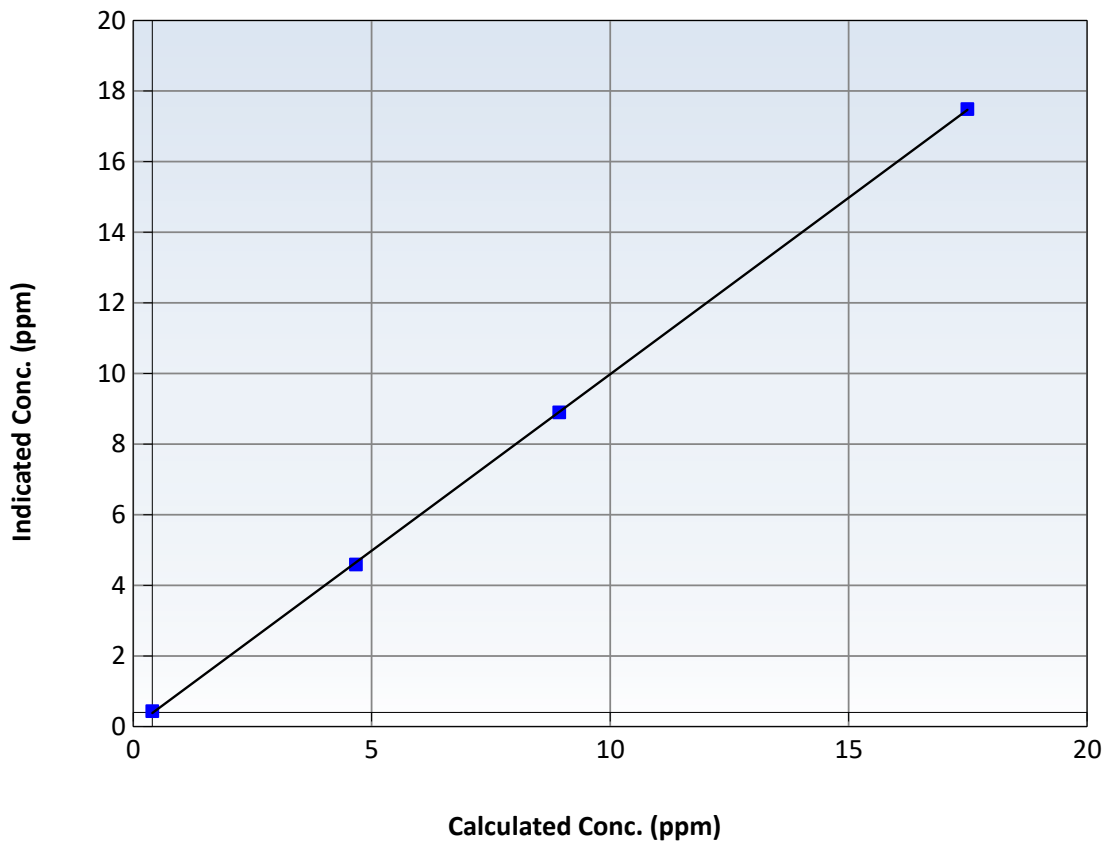
Station Information

Calibration Date:	March 17, 2025	Previous Calibration:	February 6, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	10:16	End Time (MST):	14:16
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1170050149

Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	0.03	----	Correlation Coefficient	0.999960	≥ 0.995
17.09	17.09	1.0001	Slope	0.999635	$0.90 - 1.10$
8.54	8.50	1.0041	Intercept	-0.017156	± 1.5
4.27	4.19	1.0180			

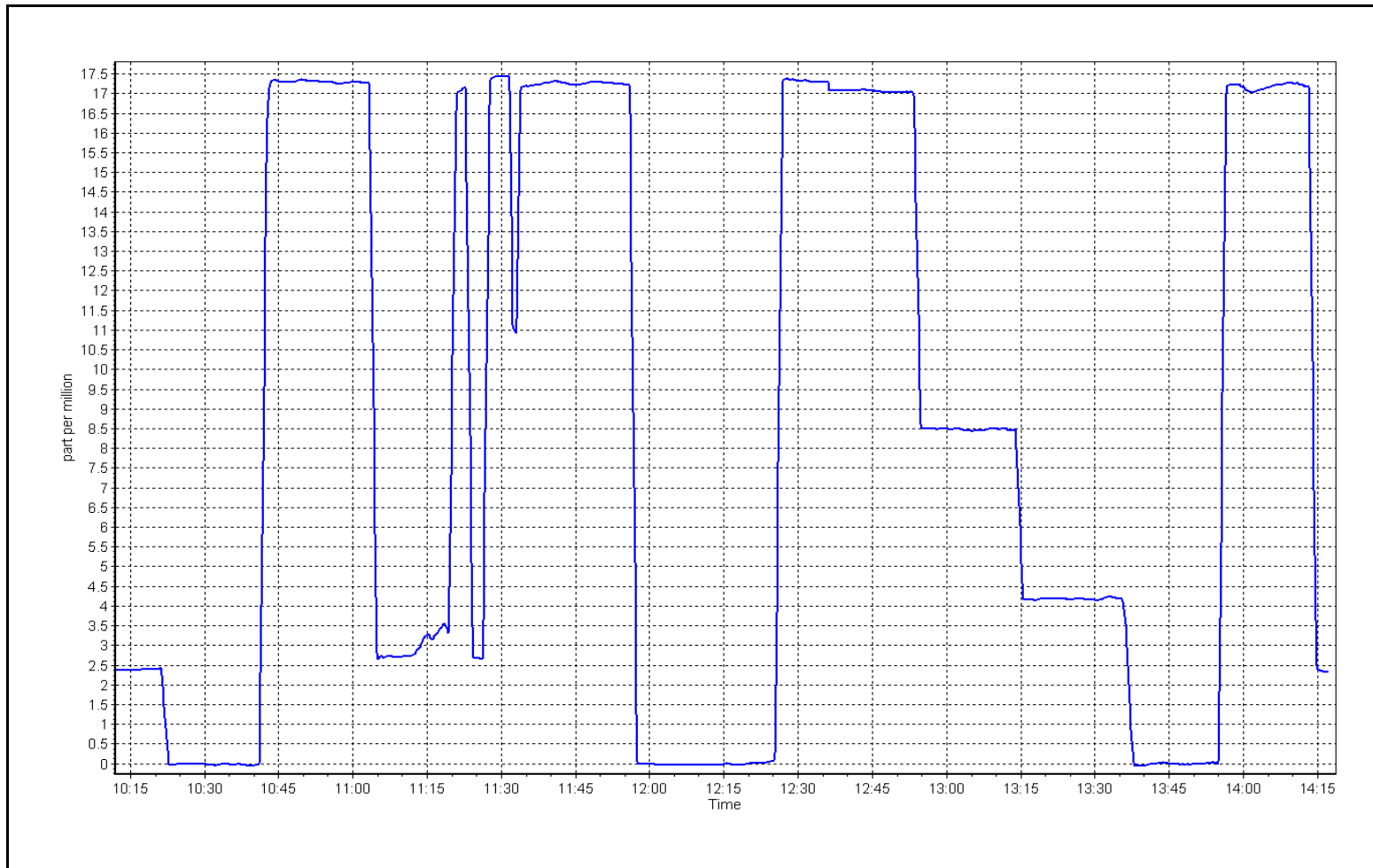
THC Calibration Curve



THC Calibration Plot

Date: March 17, 2025

Location: Surmont 2





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Surmont 2
 Station number: AMS 29
 Calibration Date: March 24, 2025
 Last Cal Date: February 10, 2025
 Start time (MST): 10:05
 End time (MST): 13:43
 Reason: Maintenance

Calibration Standards

NO Gas Cylinder #: CC218007
 NOX Cal Gas Conc: 60.00 ppm
 Removed Cylinder #: NA
 Removed Gas NOX Conc: 60.00 ppm
 NOX gas Diff:
 Calibrator Model: Teledyne API T700
 ZAG make/model: Teledyne API T701
 Cal Gas Expiry Date: January 9, 2032
 NO Cal Gas Conc: 60.00 ppm
 Removed Gas Exp Date: NA
 Removed Gas NO Conc: 60.00 ppm
 NO gas Diff:
 Serial Number: 5472
 Serial Number: 4428

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0	0.0	0.0	0.0	-0.1	-0.1	0.0	----	----
AF High point	4933	66.7	800.4	800.4	0.0	787.6	787.4	0.3	1.0162	1.0164
AF Mid point	4967	33.3	399.6	399.6	0.0	396.4	392.3	4.2	1.0078	1.0183
AF Low point	4983	16.7	200.4	200.4	0.0	195.2	191.4	3.8	1.0262	1.0465

New cyl resp

Previous Response	NO _x = 802.2 ppb	NO = 801.1 ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = -1.8%
Baseline Corr 1st pt	NO _x = 787.7 ppb	NO = 787.5 ppb	<u>As Found Statistics</u>		*Percent Change	NO = -1.7%
Baseline Corr 2nd pt	NO _x = 396.5 ppb	NO = 392.4 ppb	As found	NO _x r ² : 0.999960	Nx SI: 0.985359	Nx Int: -0.208
Baseline Corr 3rd pt	NO _x = 195.3 ppb	NO = 191.5 ppb	As found	NO r ² : 0.999940	NO SI: 0.986147	NO Int: -2.509
			As found	NO ₂ r ² : 0.999935	NO2 SI: 1.001395	NO ₂ Int: 0.674

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero	----	----	0.0	0.0	----	----
As found high GPT point	779.8	397.7	382.1	382.5	0.9990	100.1%
As found mid GPT point	779.8	601.6	178.2	181.1	0.9840	101.6%
As found low GPT point	779.8	690.8	89.0	89.3	0.9966	100.3%



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1170050148

Instrument Settings

	<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.751	1.000
NOX coeff or slope:	0.988	1.000
NO2 coeff or slope:	1.000	1.000

	<u>Start</u>	<u>Finish</u>
NO bkgnd or offset:	1.5	0.0
NOX bkgnd or offset:	1.6	0.0
Reaction cell Press:	200.7	148.4

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.004060	
NO _x Cal Offset:	-1.530579	
NO Cal Slope:	1.004534	
NO Cal Offset:	-2.971481	
NO ₂ Cal Slope:	1.005436	
NO ₂ Cal Offset:	0.470332	

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
-----------	---------------------------	-----------------------------	---	--	---	--	---------------------------------------	--	---	--

Cal zero
High point
Mid point
Low point
As left zero
As left span

Average Correction Factor

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
-------------------	--	---------------------------------------	---	--	---	--

Cal zero
High GPT point
Mid GPT point
Low GPT point

Average Correction Factor

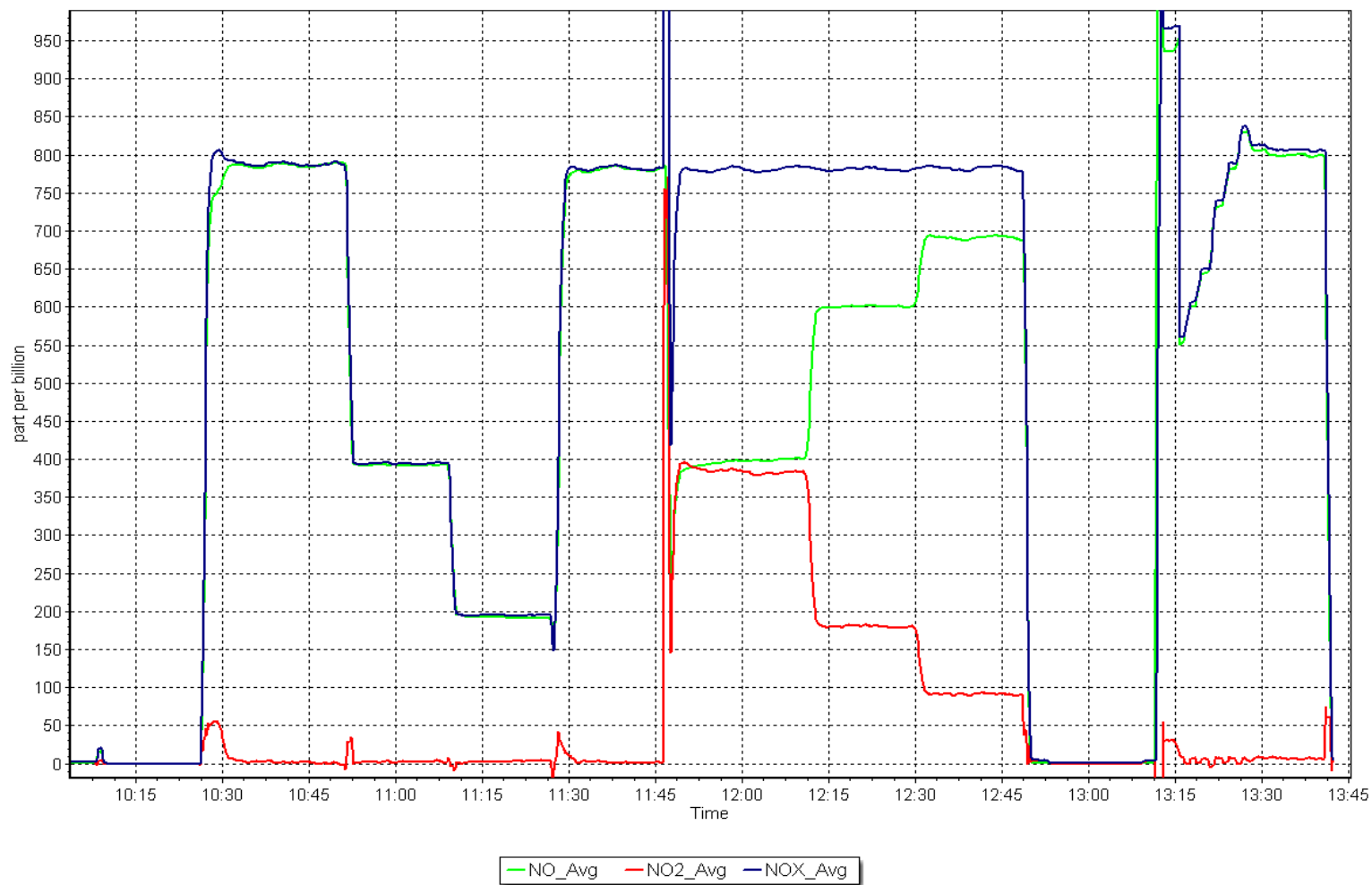
Notes: Multipoint as founds completed. External pump and charcoal filter swapped. Reset calibration factors and adjusted PMT voltage.

Calibration Performed By: Braiden Boutilier

NO_x Calibration Plot

Date: March 24, 2025

Location: Surmont 2





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Surmont 2
Station number: AMS 29
Calibration Date: March 25, 2025
Last Cal Date: February 10, 2025
Start time (MST): 9:45
End time (MST): 14:10
Reason: Routine

Calibration Standards

NO Gas Cylinder #: CC218007
NOX Cal Gas Conc: 60.00 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 60.00 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701
Cal Gas Expiry Date: January 9, 2032
NO Cal Gas Conc: 60.00 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 60.00 ppm
NO gas Diff:
Serial Number: 5472
Serial Number: 4428

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero										
AF High point										
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x = NA	ppb	NO = NA	ppb	* = > +/-5% change initiates investigation		*Percent Change		NO _x =	NA
Baseline Corr 1st pt	NO _x = NA	ppb	NO = NA	ppb	<u>As Found Statistics</u>		*Percent Change		NO =	NA
Baseline Corr 2nd pt	NO _x = NA	ppb	NO = NA	ppb	As found	NO _x r ² :	Nx SI:		Nx Int:	
Baseline Corr 3rd pt	NO _x = NA	ppb	NO = NA	ppb	As found	NO r ² :	NO SI:		NO Int:	
					As found	NO ₂ r ² :	NO2 SI:		NO ₂ Int:	

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1170050148

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.004060	0.999329
NO _x Cal Offset:	-1.530579	-0.449184
NO Cal Slope:	1.004534	0.999498
NO Cal Offset:	-2.971481	-1.708431
NO ₂ Cal Slope:	1.005436	0.995539
NO ₂ Cal Offset:	0.470332	-0.464424

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.000	1.001	NO bkgnd or offset:	0.0	1.2
NOX coeff or slope:	1.000	0.989	NOX bkgnd or offset:	0.0	1.2
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	148.4	150.2

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	----	----
High point	4933	66.7	800.4	800.4	0.0	799.2	798.4	0.9	1.0016	1.0026
Mid point	4967	33.3	399.6	399.6	0.0	400.1	399.2	0.9	0.9987	1.0009
Low point	4983	16.7	200.4	200.4	0.0	198.4	195.3	3.1	1.0101	1.0262
As left zero	5000	0.0	0.0	0.0	0.0	0.1	0.1	0.1	----	----
As left span	4933	66.7	800.4	398.8	401.6	798.6	398.8	399.8	1.0023	1.0000
Average Correction Factor									1.0035	1.0099

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.0	----	----
High GPT point	796.5	400.9	395.6	393.3	1.0058	99.4%
Mid GPT point	796.5	606.8	189.7	189.1	1.0032	99.7%
Low GPT point	796.5	699.8	96.7	94.7	1.0211	97.9%
Average Correction Factor					1.0100	99.0%

Notes:

Followup calibration after maintenance conducted on March 24. Adjusted zero and span.

Calibration Performed By:

Braiden Boutilier



Wood Buffalo Environmental Association

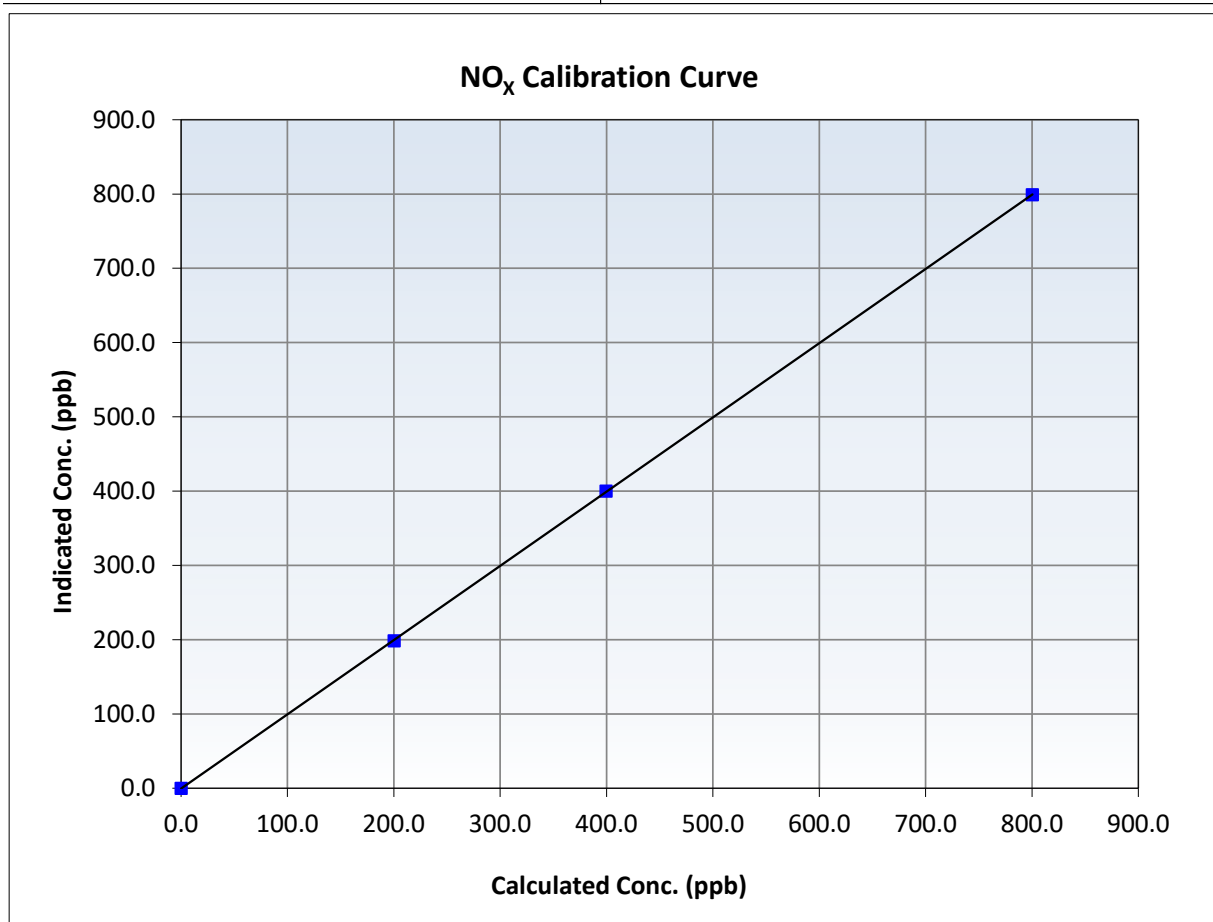
NO_x Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 10, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	9:45	End Time (MST):	14:10
Analyzer make:	Thermo 42i	Analyzer serial #:	1170050148

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999989	≥ 0.995
800.4	799.2	1.0016	Slope	0.999329	$0.90 - 1.10$
399.6	400.1	0.9987	Intercept	-0.449184	± 20
200.4	198.4	1.0101			





Wood Buffalo Environmental Association

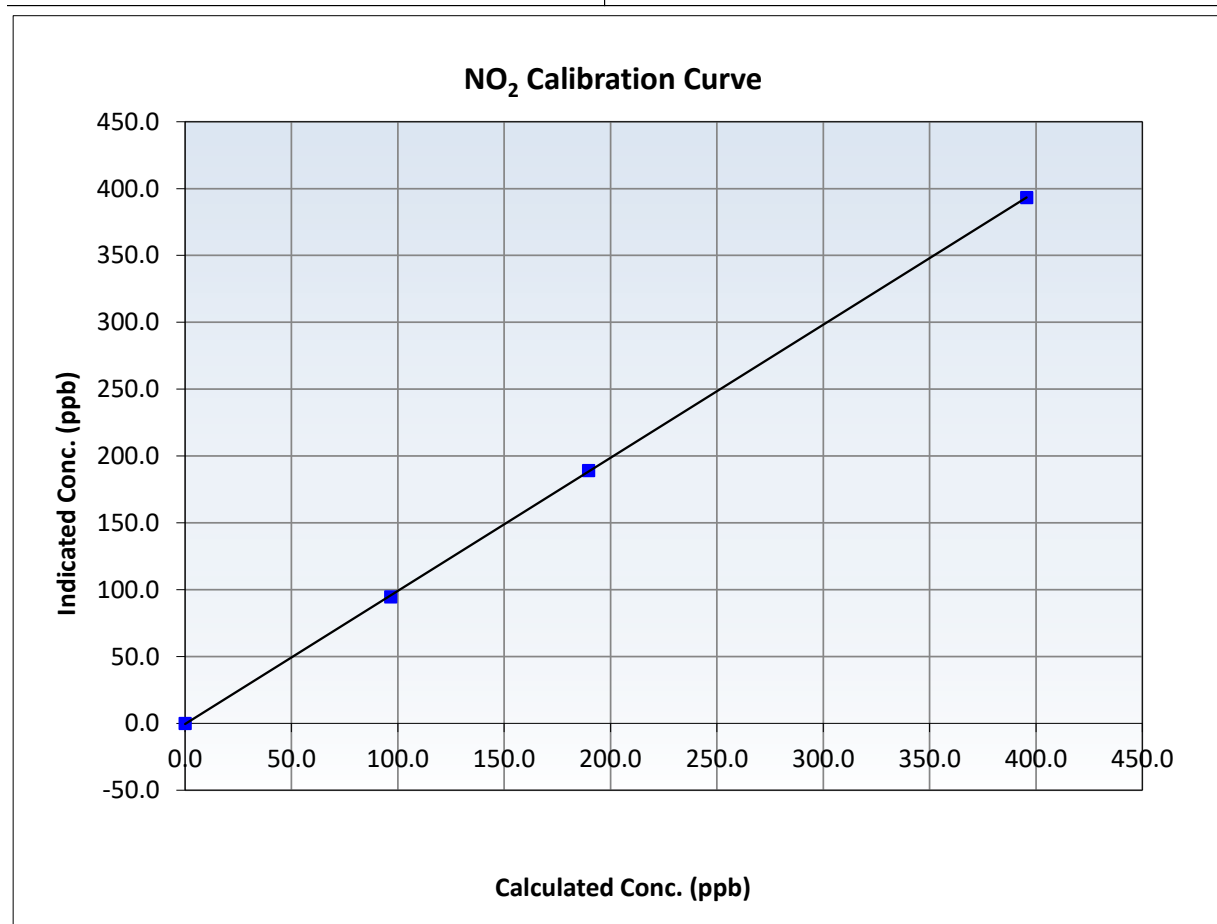
NO₂ Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 10, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	9:45	End Time (MST):	14:10
Analyzer make:	Thermo 42i	Analyzer serial #:	1170050148

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999977	≥0.995
395.6	393.3	1.0058	Slope	0.995539	0.90 - 1.10
189.7	189.1	1.0032	Intercept	-0.464424	+/-20
96.7	94.7	1.0211			





Wood Buffalo Environmental Association

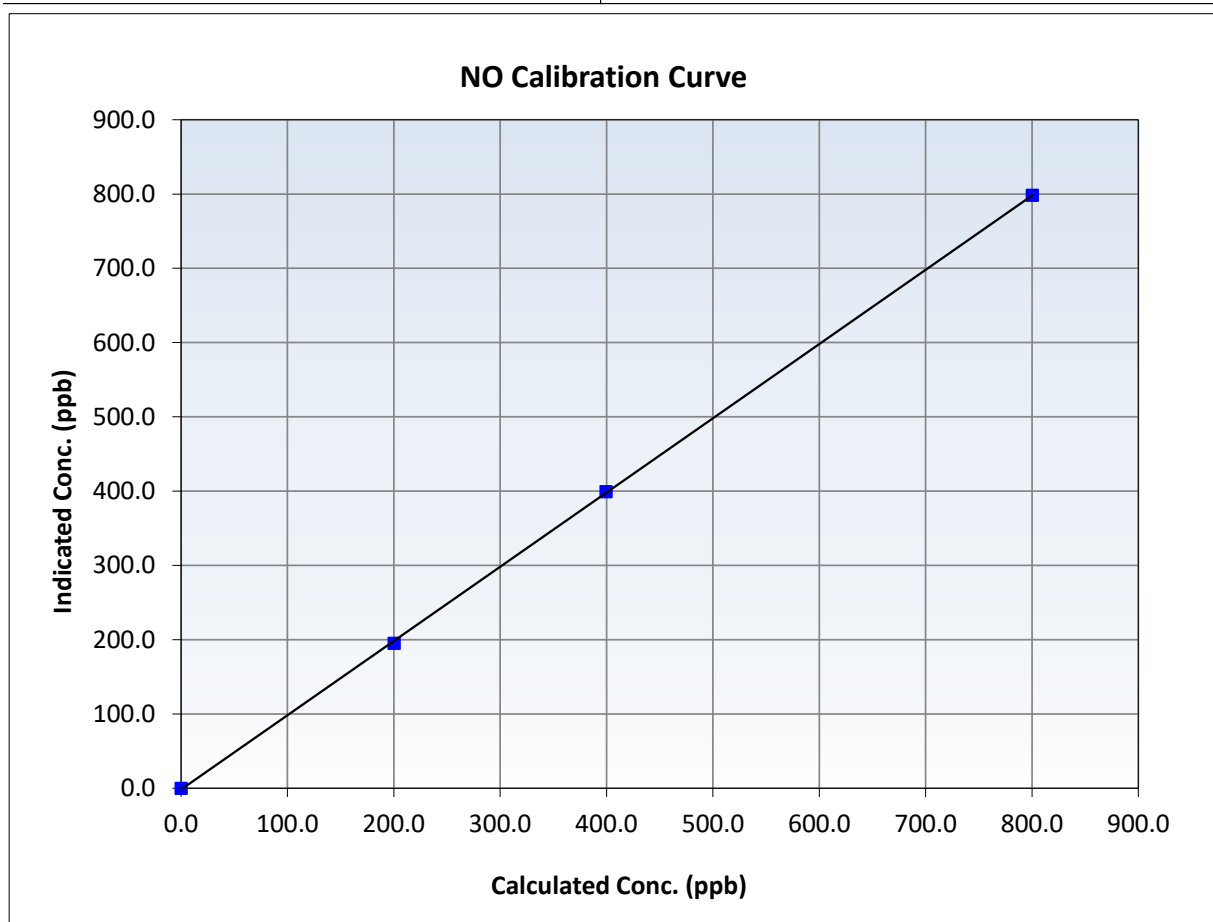
NO Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 10, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	9:45	End Time (MST):	14:10
Analyzer make:	Thermo 42i	Analyzer serial #:	1170050148

Calibration Data

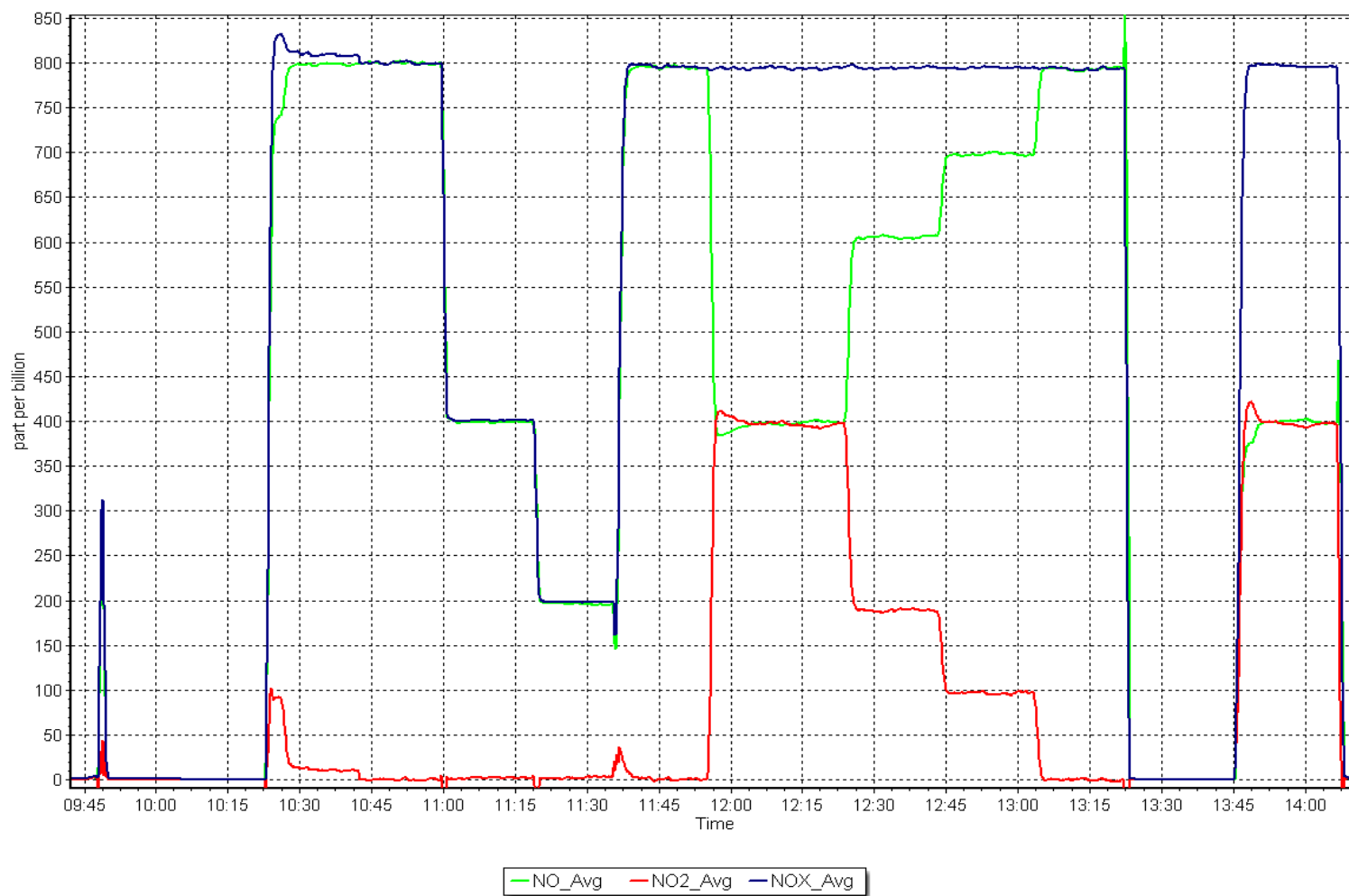
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999954	≥ 0.995
800.4	798.4	1.0026	Slope	0.999498	$0.90 - 1.10$
399.6	399.2	1.0009	Intercept	-1.708431	± 20
200.4	195.3	1.0262			



NO_x Calibration Plot

Date: March 25, 2025

Location: Surmont 2





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Surmont 2 Station number: AMS 29
Calibration Date: March 24, 2025 Last Cal Date: February 26, 2025
Start time (MST): 10:18 End time (MST): 10:34

Analyzer Make: API T640 S/N: 323
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388754
Temp/RH standard: Alicat FP-25BT S/N: 388754

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	6.4	6.47	6.4	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	707.0	705.98	707.0	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	5.00	4.996	5.00	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	37	----	37	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: _____	3.6	PM w/ HEPA: _____	0.0	<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.9 Expiry Date: June 10, 2024
Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test				<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: February 26, 2025
Date Disposable Filter Changed: February 26, 2025

Post- maintenance Zero Verification: PM w/ HEPA: _____ <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: October 30, 2024
Date RH/T Sensor Cleaned: October 30, 2024

Notes: Verified temperature, pressure and flow. No adjustments. Leak check passed.

Calibration by: Braiden Boutilier



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

**AMS30
ELLS RIVER
MARCH 2025**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Ells River Station number: AMS 30
Calibration Date: March 10, 2025 Last Cal Date: February 3, 2025
Start time (MST): 9:44 End time (MST): 12:51
Reason: Routine

Calibration Standards

Cal Gas Concentration: 48.75 ppm Cal Gas Exp Date: March 10, 2031
Cal Gas Cylinder #: CC350110
Removed Cal Gas Conc: 48.75 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: API T700 Serial Number: 3061
Zero Air Gen Model: API T701H Serial Number: 358

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1008841397
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	1.001460	0.999674	Backgd or Offset:	10.1
Calibration intercept:	-3.012049	-3.212066	Coeff or Slope:	1.018

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero) Limit = 0.90-1.10
As found zero	5000	0.0	0.0	-0.3	----
As found High point	4918	82.0	799.5	728.6	1.097
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	728.9	Previous response	797.7	*% change	-9.4%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4918	82.0	799.5	797.8	1.002
Mid point	4959	41.0	399.8	394.3	1.014
Low point	4980	20.5	199.9	193.7	1.032
As left zero	5000	0.0	0.0	-0.1	----
As left span	4918	82.0	799.5	877.1	0.912
Average Correction Factor:					1.016

Notes: Sample inlet filter was changed after as founds. Percent change is high on as found span, but diagnostics seems normal. Adjusted span only.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

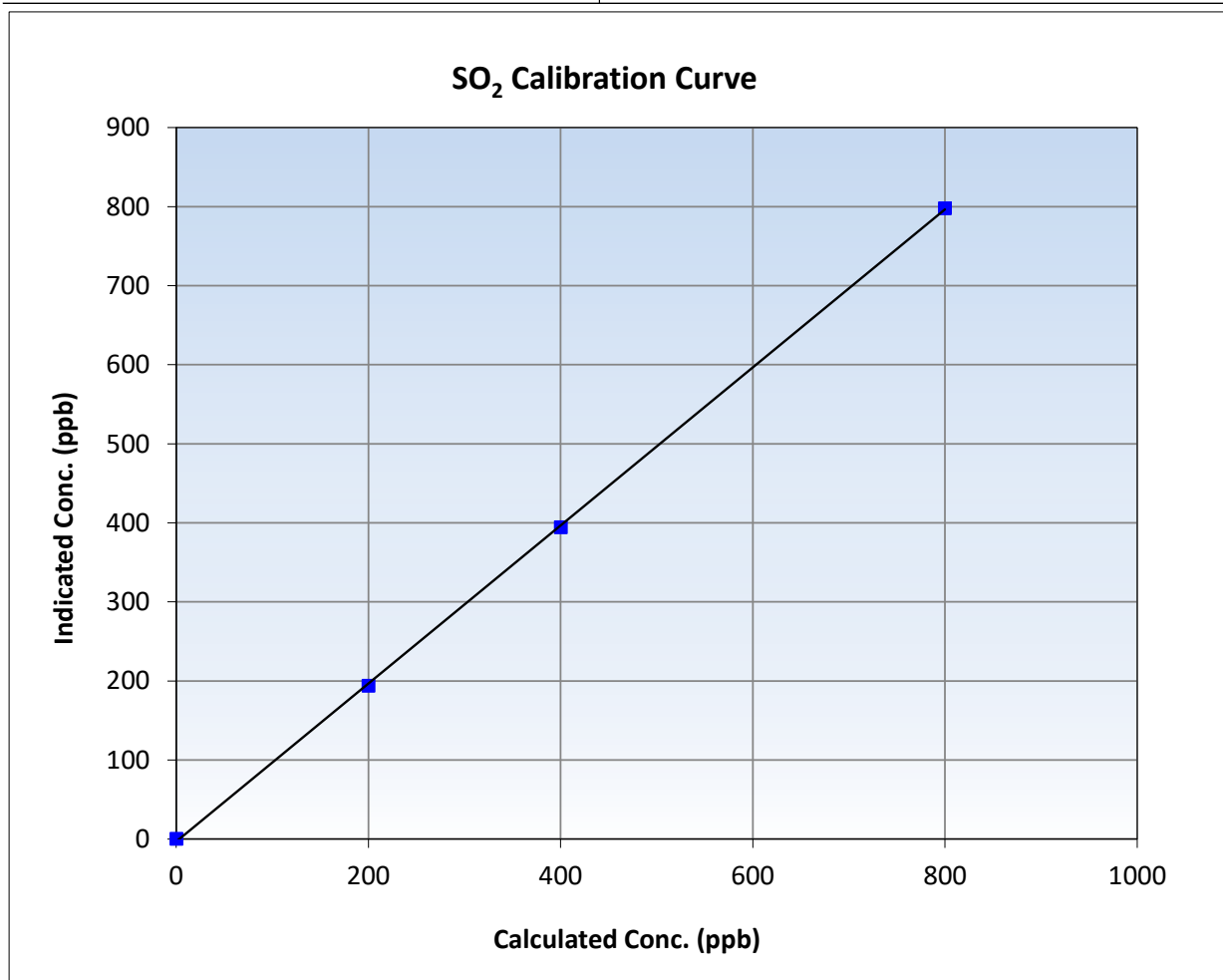
SO₂ Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 3, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:44	End Time (MST):	12:51
Analyzer make:	Thermo 43i	Analyzer serial #:	1008841397

Calibration Data

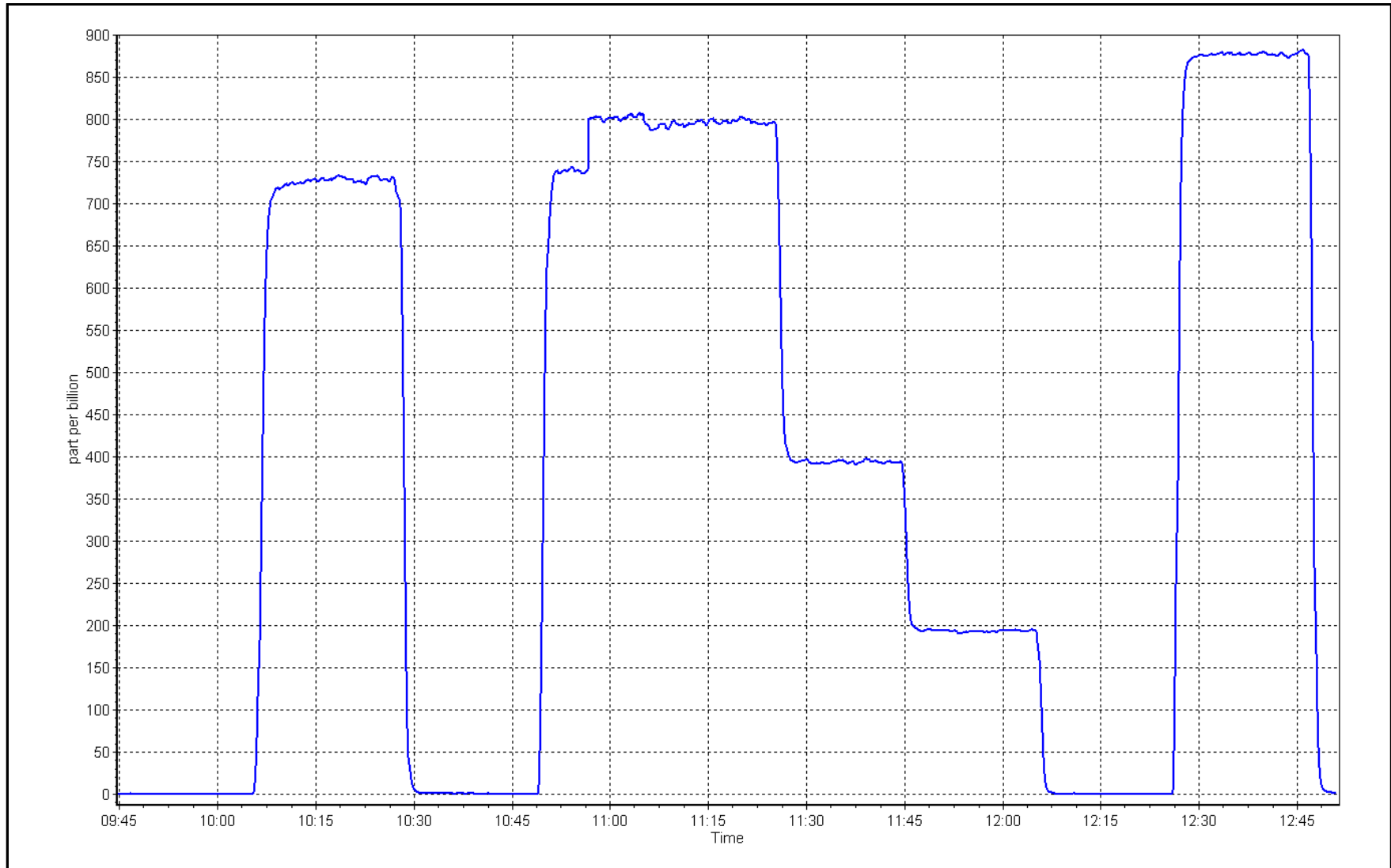
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999925	≥0.995
799.5	797.8	1.0021	Slope	0.999674	0.90 - 1.10
399.8	394.3	1.0138	Intercept	-3.212066	+/-30
199.9	193.7	1.0318			



SO2 Calibration Plot

Date: March 10, 2025

Location: Ells River





Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Ells River Station number: AMS 30
Calibration Date: March 11, 2025 Last Cal Date: March 10, 2025
Start time (MST): 9:35 End time (MST): 13:05
Reason: Maintenance Span response was high.

Calibration Standards

Cal Gas Concentration: 48.75 ppm Cal Gas Exp Date: March 10, 2031
Cal Gas Cylinder #: CC350110
Removed Cal Gas Conc: 48.75 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: API T700 Serial Number: 3061
Zero Air Gen Model: API T701H Serial Number: 358

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1008841397
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999674	1.002175	Backgd or Offset:	11.0	10.1
Calibration intercept:	-3.212066	-3.212042	Coeff or Slope:	1.090	0.991

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.3	----
As found High point	4918	82.0	799.5	833.9	0.958
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	834.2	Previous response	796.0	*% change	4.6%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.2	----
High point	4918	82.0	799.5	799.7	1.000
Mid point	4959	41.0	399.8	395.4	1.011
Low point	4980	20.5	199.9	194.4	1.028
As left zero	5000	0.0	0.0	-0.3	----
As left span	4918	82.0	799.5	877.1	0.912
Average Correction Factor:					1.013

Notes: Tighten up the Teflon fittings and trigger a regular point and then after that I triggered a point directly from the valve and the results are consistent after finding a leak. Adjusted span only.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

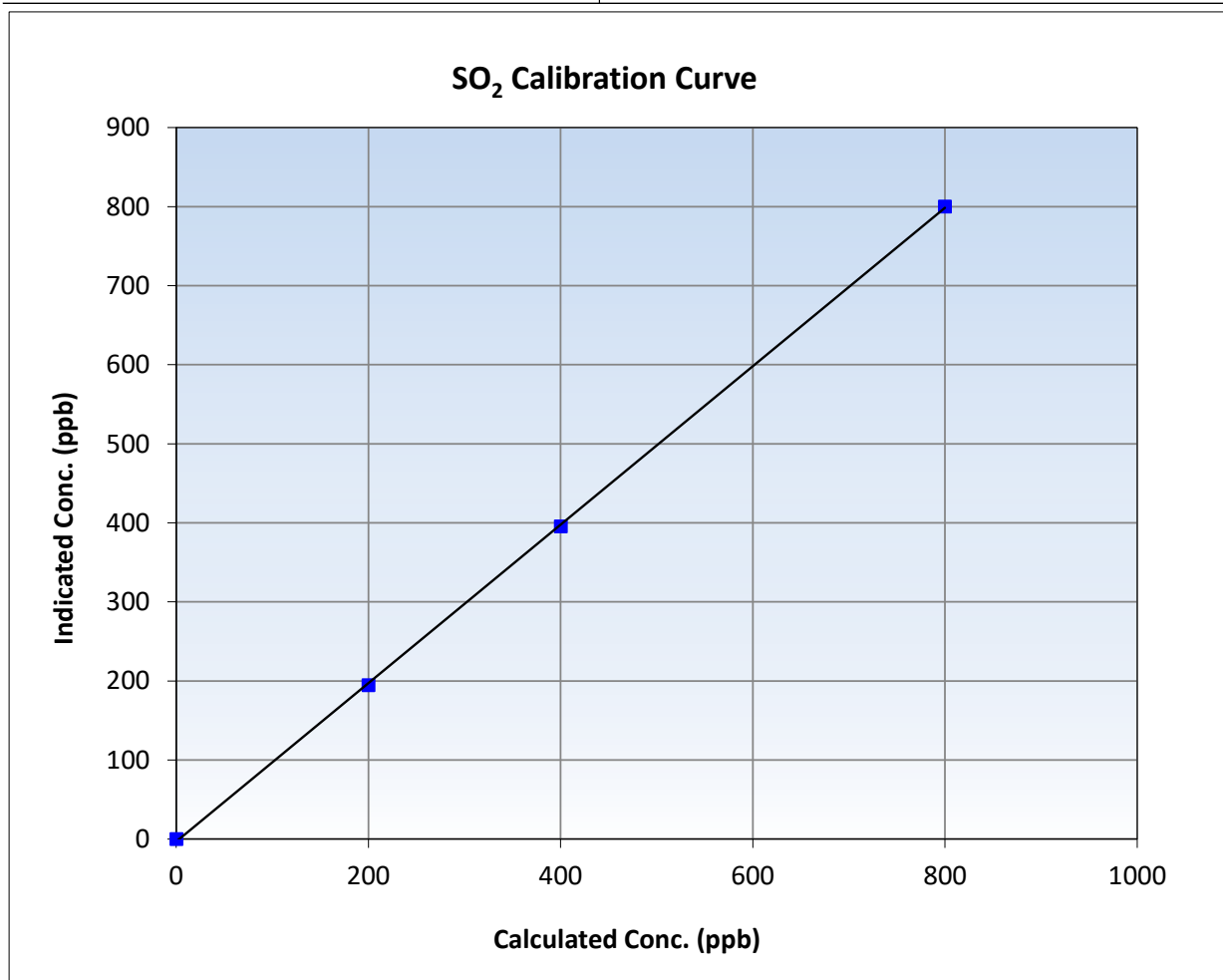
SO₂ Calibration Summary

Station Information

Calibration Date:	March 11, 2025	Previous Calibration:	March 10, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:35	End Time (MST):	13:05
Analyzer make:	Thermo 43i	Analyzer serial #:	1008841397

Calibration Data

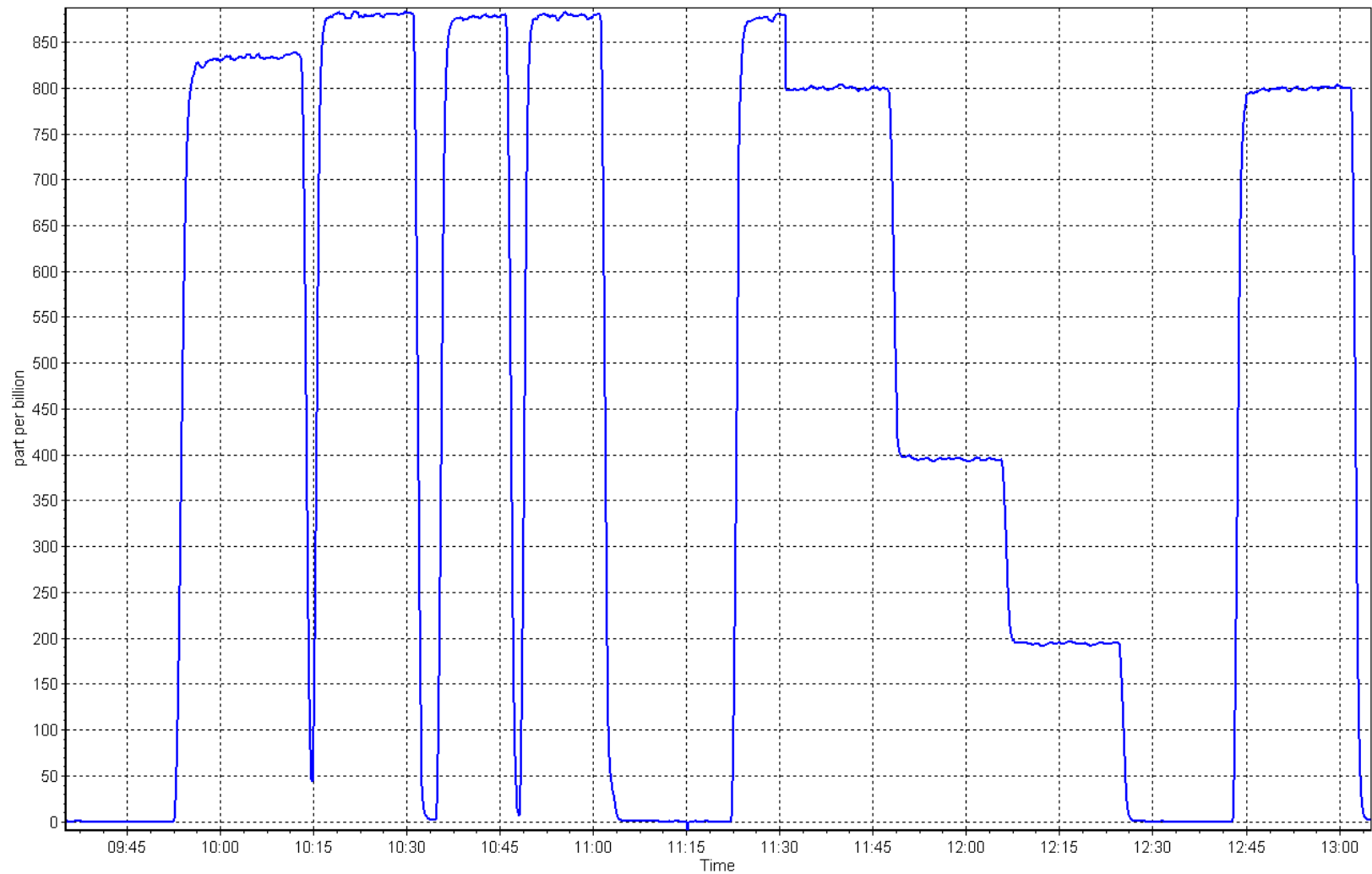
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.2	----	Correlation Coefficient	0.999934	≥0.995
799.5	799.7	0.9997	Slope	1.002175	0.90 - 1.10
399.8	395.4	1.0110	Intercept	-3.212042	+/-30
199.9	194.4	1.0281			



SO2 Calibration Plot

Date: March 11, 2025

Location: Ells River





Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name: Ells River Station number: AMS 30
Calibration Date: March 14, 2025 Last Cal Date: February 6, 2025
Start time (MST): 9:46 End time (MST): 14:08
Reason: Routine

Calibration Standards

Cal Gas Concentration: 4.99 ppm Cal Gas Exp Date: November 15, 2026
Cal Gas Cylinder #: CC505806
Removed Cal Gas Conc: 4.99 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: API T700 Serial Number: 3061
ZAG Make/Model: API 701H Serial Number: 358

Analyzer Information

Analyzer make: Thermo 43i TLE Analyzer serial #: 1410661331
Converter make: CDN- 101 Converter serial #: 562
Analyzer Range: 0 - 100 ppb Converter Temp: 800 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.006900	1.007901	Backgd or Offset:	1.7	1.7
Calibration intercept:	0.079624	-0.180432	Coeff or Slope:	1.080	1.080

TRS As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4920	80.2	80.0	80.1	0.998
As found Mid point	4960	40.1	40.0	40.0	0.998
As found Low point	4980	20.0	20.0	19.7	1.008
New cylinder response					
Baseline Corr As found:	80.2	Prev response:	80.67	*% change:	-0.6%
Baseline Corr 2nd AF pt:	40.1	AF Slope:	1.002905	AF Intercept:	-0.180531
Baseline Corr 3rd AF pt:	19.8	AF Correlation:	0.999992	* = > +/-5% change initiates investigation	

TRS Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4920	80.2	80.0	80.6	0.993
Mid point	4960	40.1	40.0	40.0	1.000
Low point	4980	20.0	20.0	19.8	1.008
As left zero	5000	0.0	0.0	0.0	----
As left span	4920	80.2	80.0	81.1	0.987
SO2 Scrubber Check	4918	82.0	820.0	0.0	----
Date of last scrubber change:	14-Mar-25		Ave Corr Factor		1.001
Date of last converter efficiency test:					

Notes: Changed sample inlet filter and scrubber after multipoint as founds. SO2 scrubber check done after calibrator zero and passed. No adjustment made.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

TRS Calibration Summary

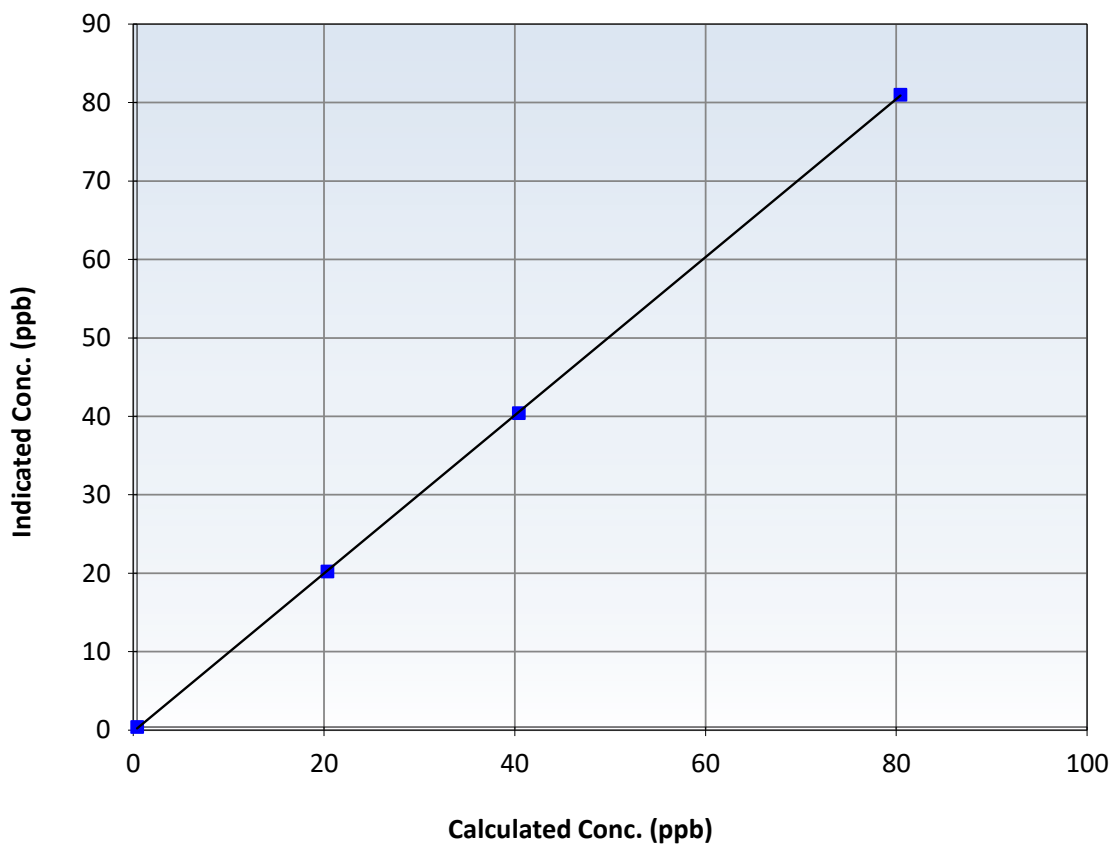
Station Information

Calibration Date:	March 14, 2025	Previous Calibration:	February 6, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:46	End Time (MST):	14:08
Analyzer make:	Thermo 43i TLE	Analyzer serial #:	1410661331

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999975	≥ 0.995
80.0	80.6	0.9930	Slope	1.007901	$0.90 - 1.10$
40.0	40.0	1.0005	Intercept	-0.180432	± 3
20.0	19.8	1.0081			

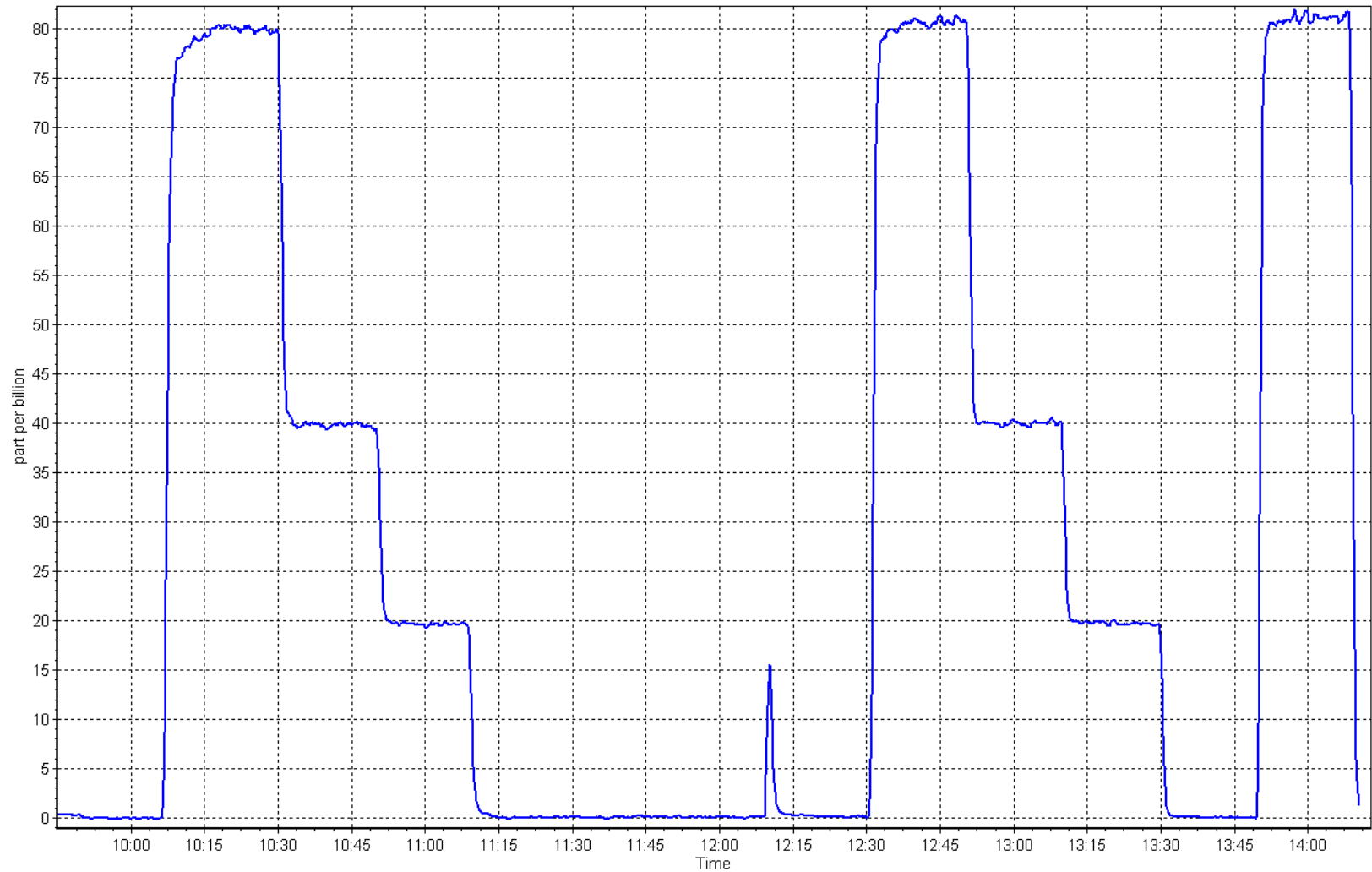
TRS Calibration Curve



TRS Calibration Plot

Date: March 14, 2025

Location: Ells River





Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

Station Information

Station Name: Ells River
 Calibration Date: March 10, 2025
 Start time (MST): 9:44
 Reason: Routine

Station number: AMS 30
 Last Cal Date: February 4, 2025
 End time (MST): 12:51

Calibration Standards

Gas Cert Reference: CC350110
 CH₄ Cal Gas Conc. 496.6 ppm
 C₃H₈ Cal Gas Conc. 207.2 ppm
 Removed Gas Cert: NA
 Removed CH₄ Conc. 496.6 ppm
 Removed C₃H₈ Conc. 207.2 ppm
 Diff between cyl (CH₄):
 Calibrator Model: API T700
 Zero Air Gen model: API T701H

Cal Gas Expiry Date: March 10, 2031
 CH₄ Equiv Conc. 1066.4 ppm
 Removed Gas Expiry: NA
 CH₄ Equiv Conc. 1066.4 ppm
 Diff between cyl (THC):
 Diff between cyl (NM):
 Serial Number: 3061
 Serial Number: 358

Analyzer Information

Analyzer make: Thermo 55i
 THC Range: 0 - 20 ppm

Analyzer serial #: 1152430011
 NMHC/CH₄ Range: 0 - 10 ppm

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
CH ₄ SP Ratio:	3.08E-04	3.11E-04	NMHC SP Ratio:	5.90E-05
CH ₄ Retention time:	17.4	17.4	NMHC Peak Area:	158265
Zero Chromatogram:	ON	ON	Flat Baseline:	OFF
				5.96E-05
				156612
				OFF

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	0.00	----
As found High point	4918	82.0	17.49	17.38	1.006
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	17.38	Prev response	17.46	*% change	-0.5%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	82.0	17.49	17.49	1.000
Mid point	4959	41.0	8.74	8.65	1.011
Low point	4980	20.5	4.37	4.27	1.025
As left zero	5000	0.0	0.00	0.00	----
As left span	4918	82.0	17.49	17.51	0.999
Average Correction Factor					1.012

Notes: Sample inlet filter was changed after as founds. Adjusted span only.



Wood Buffalo Environmental Association

THC / CH₄ / NMHC Calibration Report

NMHC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4918	82.0	9.34	9.31	1.004
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.31	Prev response	9.33	*% change	-0.3%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

NMHC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	Limit = 0.95-1.05
High point	4918	82.0	9.34	9.35	1.000
Mid point	4959	41.0	4.67	4.63	1.008
Low point	4980	20.5	2.34	2.30	1.017
As left zero	5000	0.0	0.00	0.00	
As left span	4918	82.0	9.34	9.35	0.999
Average Correction Factor					1.008

CH₄ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFZero))
As found zero	5000	0.0	0.00	0.00	Limit = 0.90-1.10
As found High point	4918	82.0	8.14	8.07	1.009
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.07	Prev response	8.13	*% change	-0.7%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH₄ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
Calibrator zero	5000	0.0	0.00	0.00	Limit = 0.95-1.05
High point	4918	82.0	8.14	8.14	1.000
Mid point	4959	41.0	4.07	4.01	1.015
Low point	4980	20.5	2.04	1.97	1.035
As left zero	5000	0.0	0.00	0.00	
As left span	4918	82.0	8.14	8.15	0.999
Average Correction Factor					1.017

Calibration Statistics

	Start	Finish
THC Cal Slope:	1.001459	1.001453
THC Cal Offset:	-0.053226	-0.062426
CH ₄ Cal Slope:	1.002769	1.001772
CH ₄ Cal Offset:	-0.036919	-0.039119
NMHC Cal Slope:	1.000758	1.001382
NMHC Cal Offset:	-0.017107	-0.023907

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

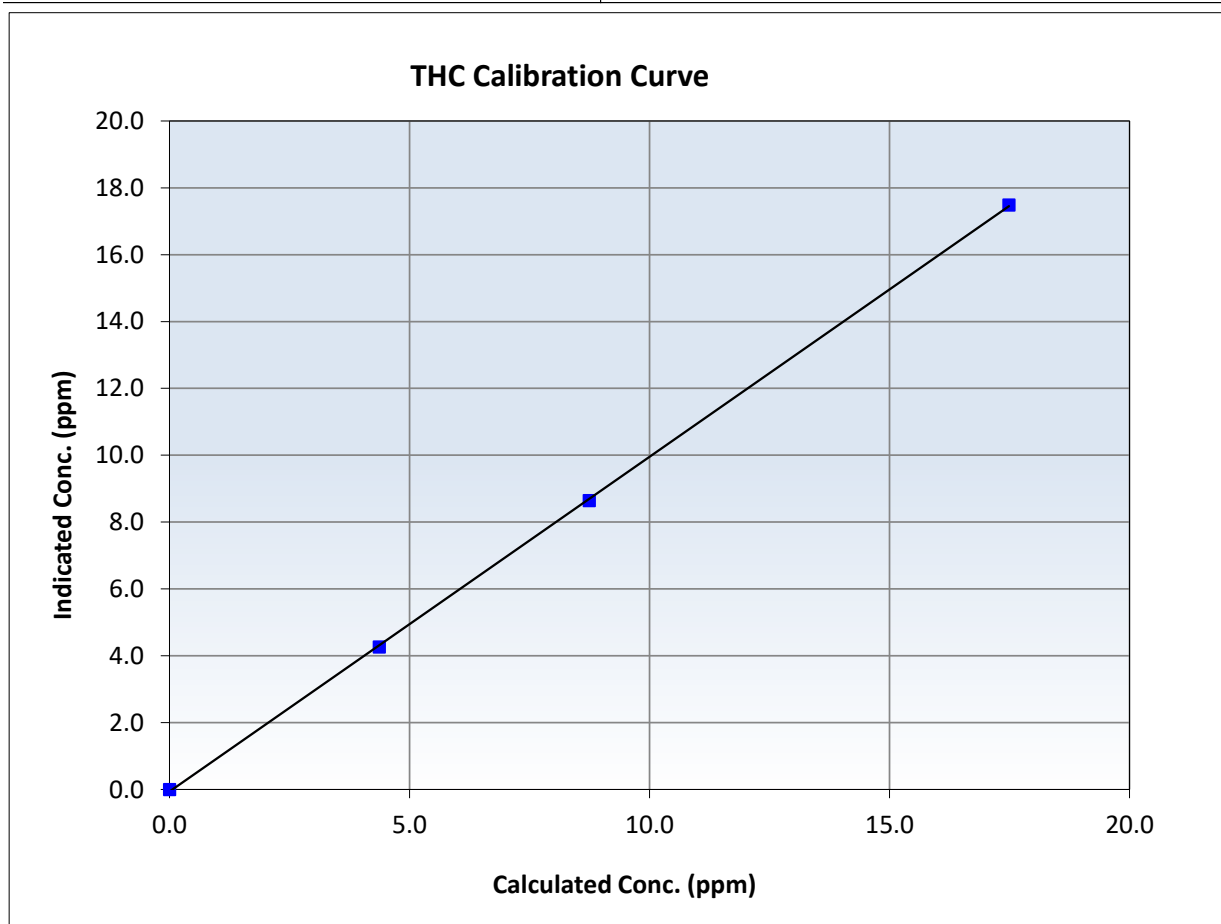
THC Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 4, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:44	End Time (MST):	12:51
Analyzer make:	Thermo 55i	Analyzer serial #:	1152430011

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999939	≥ 0.995
17.49	17.49	1.0000	Slope	1.001453	$0.90 - 1.10$
8.74	8.65	1.0114	Intercept	-0.062426	± 0.5
4.37	4.27	1.0250			





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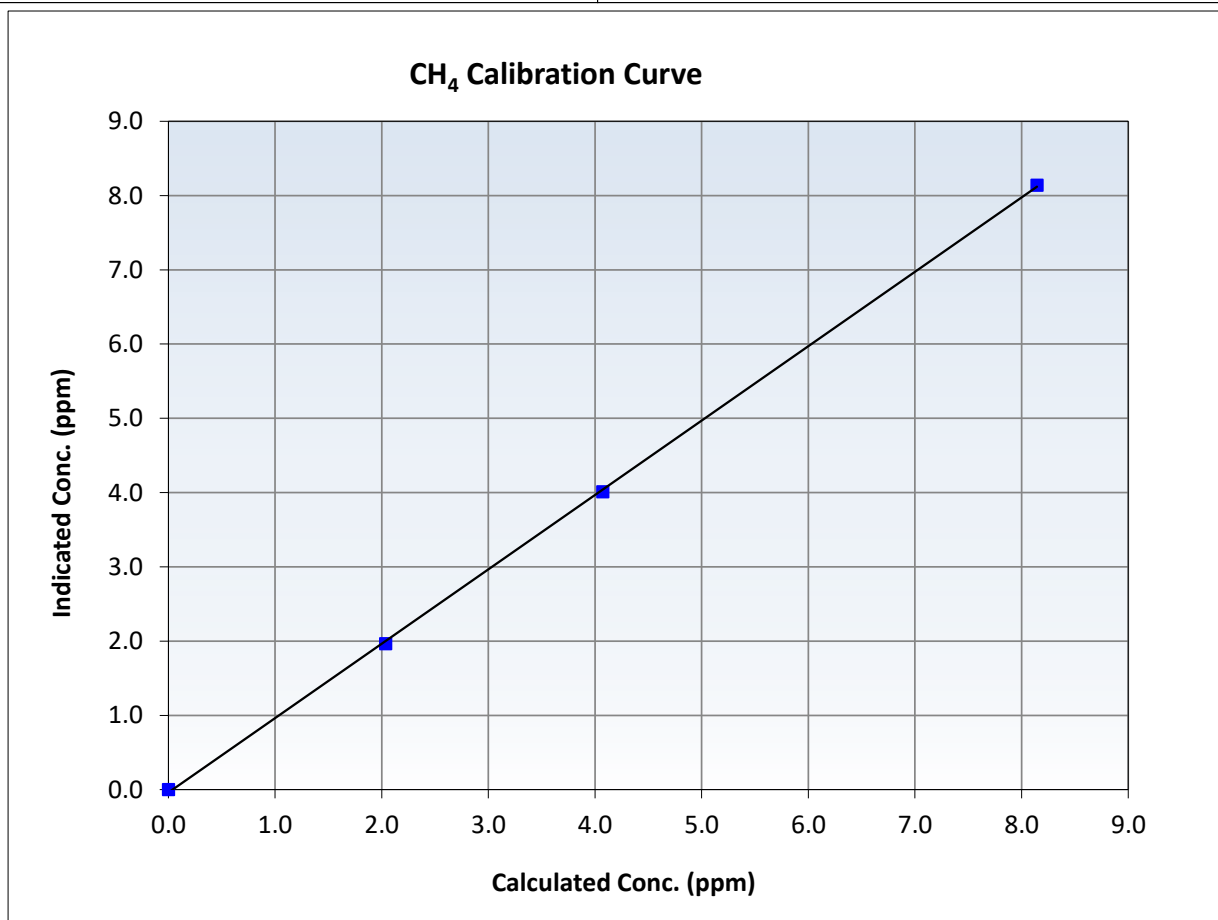
CH₄ Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 4, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:44	End Time (MST):	12:51
Analyzer make:	Thermo 55i	Analyzer serial #:	1152430011

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999892	<i>≥0.995</i>
8.14	8.14	1.0003	Slope	1.001772	<i>0.90 - 1.10</i>
4.07	4.01	1.0150	Intercept	-0.039119	<i>+/-0.5</i>
2.04	1.97	1.0350			





Wood Buffalo Environmental Association

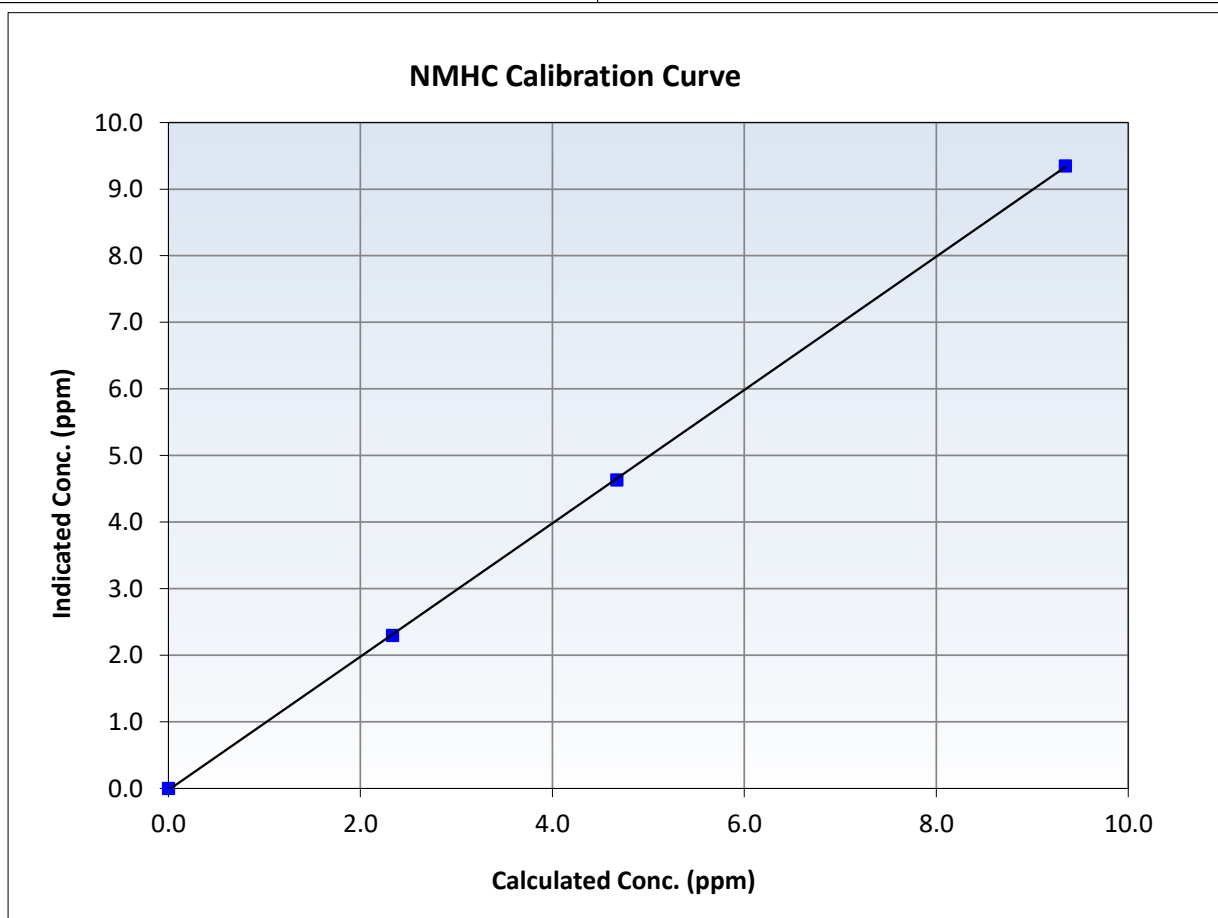
NMHC Calibration Summary

Station Information

Calibration Date:	March 10, 2025	Previous Calibration:	February 4, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:44	End Time (MST):	12:51
Analyzer make:	Thermo 55i	Analyzer serial #:	1152430011

Calibration Data

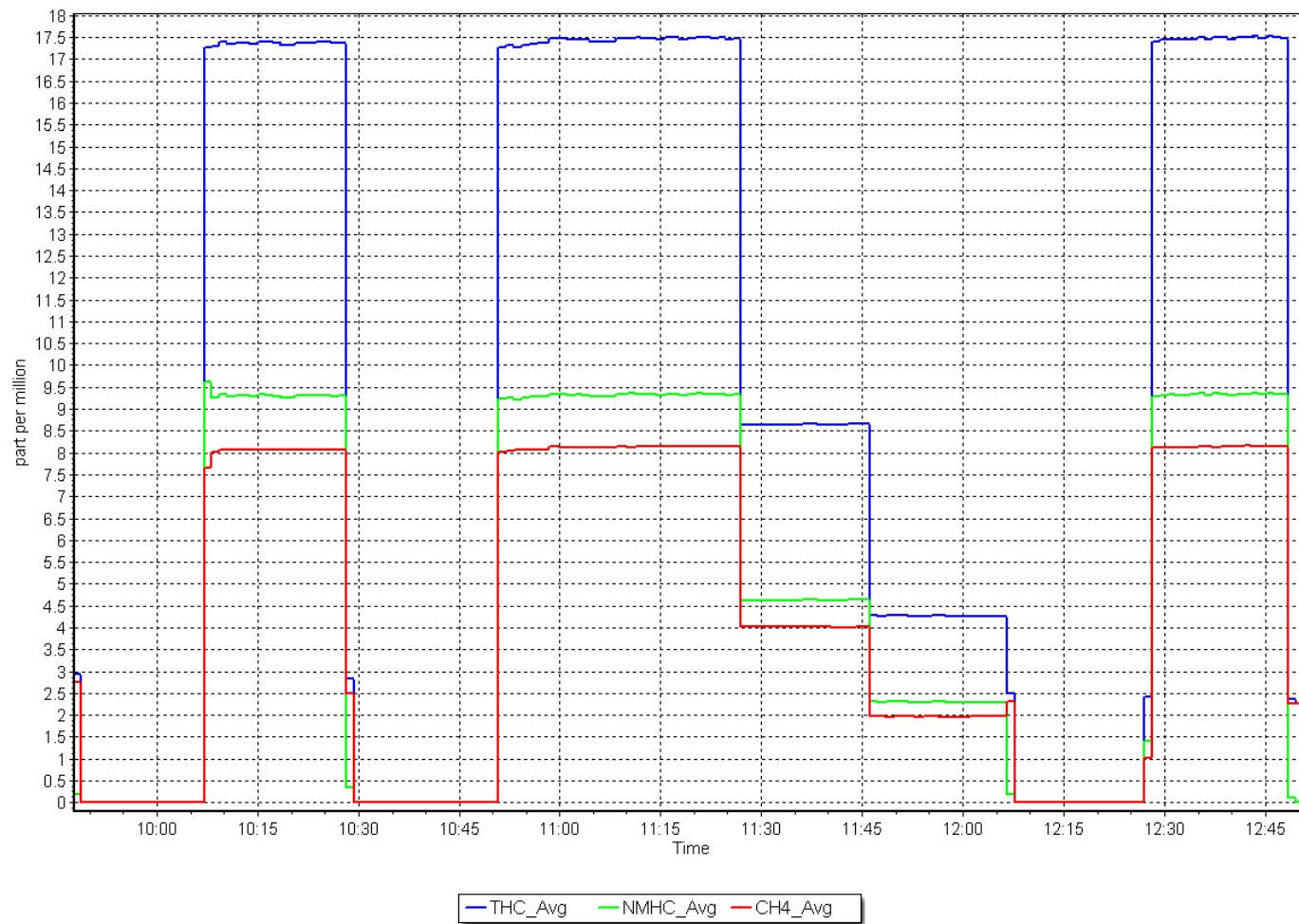
Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<i>Limits</i>
0.00	0.00	----	Correlation Coefficient	0.999967	<i>≥0.995</i>
9.34	9.35	0.9995	Slope	1.001382	<i>0.90 - 1.10</i>
4.67	4.63	1.0085	Intercept	-0.023907	<i>+/-0.5</i>
2.34	2.30	1.0165			



NMHC Calibration Plot

Date: March 10, 2025

Location: Ells River





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Ells River
Station number: AMS 30
Calibration Date: March 13, 2025
Last Cal Date: February 10, 2025
Start time (MST): 9:14
End time (MST): 14:24
Reason: Routine

Calibration Standards

NO Gas Cylinder #: DT0027487
NO_x Cal Gas Conc: 59.30 ppm
Removed Cylinder #: NA
Removed Gas NO_x Conc: 59.30 ppm
NO_x gas Diff:
Calibrator Model: API T700
ZAG make/model: API T701H
Cal Gas Expiry Date: January 9, 2032
NO Cal Gas Conc: 59.10 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 59.10 ppm
NO gas Diff:
Serial Number: 3061
Serial Number: 358

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO _x Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	0.2	0.1	0.0	----	----
AF High point	4932	67.7	803.0	800.3	2.7	779.1	772.7	6.4	1.0309	1.0358
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO _x = 801.4 ppb	NO = 799.8 ppb	* = > +/-5% change initiates investigation		*Percent Change	NO _x = -2.9%
Baseline Corr 1st pt	NO _x = 778.9 ppb	NO = 772.6 ppb	<u>As Found Statistics</u>		*Percent Change	NO = -3.5%
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found	NO _x r ² :	Nx SI:	Nx Int:
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found	NO r ² :	NO SI:	NO Int:
			As found	NO ₂ r ² :	NO ₂ SI:	NO ₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO ₂ Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 710321429

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.020	1.053	NO bkgnd or offset:	11.9	12.3
NOX coeff or slope:	0.994	0.994	NOX bkgnd or offset:	12.0	12.4
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	184.2	181.8

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.998691	1.000203
NO _x Cal Offset:	-0.538441	-2.519480
NO Cal Slope:	1.002144	1.001320
NO Cal Offset:	-2.139201	-3.700986
NO ₂ Cal Slope:	0.986979	0.985498
NO ₂ Cal Offset:	0.965808	0.120532

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.2	0.3	-0.1	----	----
High point	4932	67.7	803.0	800.3	2.7	801.9	799.7	2.1	1.0013	1.0007
Mid point	4966	33.8	400.9	399.5	1.4	397.3	394.1	3.1	1.0090	1.0138
Low point	4983	16.9	200.4	199.8	0.7	195.1	192.5	2.7	1.0274	1.0377
As left zero	5000	0.0	0.0	0.0	0.0	0.2	0.3	-0.1	----	----
As left span	4932	67.7	803.0	430.2	372.8	797.8	430.2	367.7	1.0065	1.0000
Average Correction Factor									1.0126	1.0174

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.1	----	----
High GPT point	800.2	425.9	377.0	371.5	1.0148	98.5%
Mid GPT point	800.2	605.8	197.1	194.6	1.0129	98.7%
Low GPT point	800.2	700.8	102.1	100.9	1.0120	98.8%
Average Correction Factor					1.0132	98.7%

Notes: Sample inlet filter changed after as founds. Adjusted span only. Used 2nd NO reference point due to drift.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

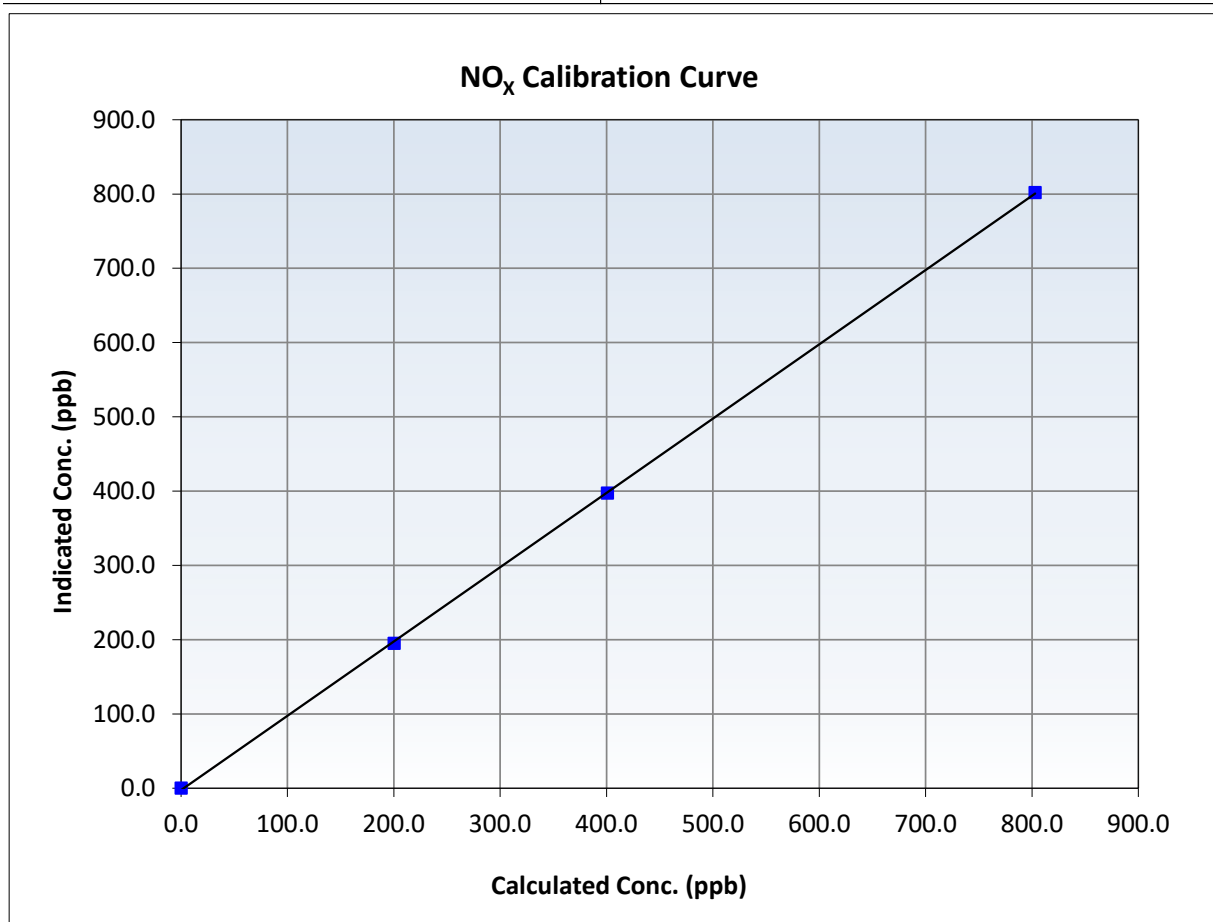
NO_x Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 10, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:14	End Time (MST):	14:24
Analyzer make:	Thermo 42i	Analyzer serial #:	710321429

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999947	≥0.995
803.0	801.9	1.0013	Slope	1.000203	0.90 - 1.10
400.9	397.3	1.0090	Intercept	-2.519480	+/-20
200.4	195.1	1.0274			





Wood Buffalo Environmental Association

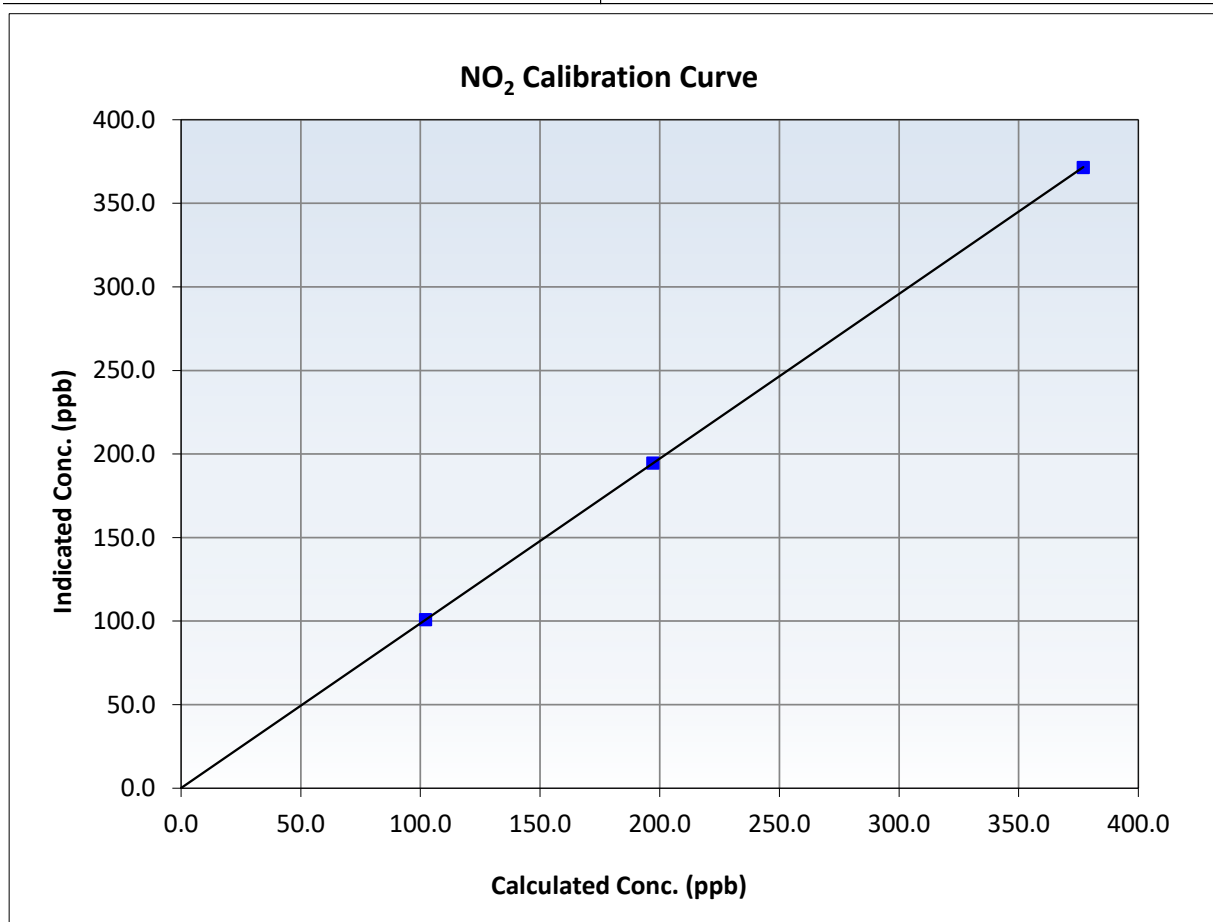
NO₂ Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 10, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:14	End Time (MST):	14:24
Analyzer make:	Thermo 42i	Analyzer serial #:	710321429

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999998	≥0.995
377.0	371.5	1.0148	Slope	0.985498	0.90 - 1.10
197.1	194.6	1.0129	Intercept	0.120532	+/-20
102.1	100.9	1.0120			





Wood Buffalo Environmental Association

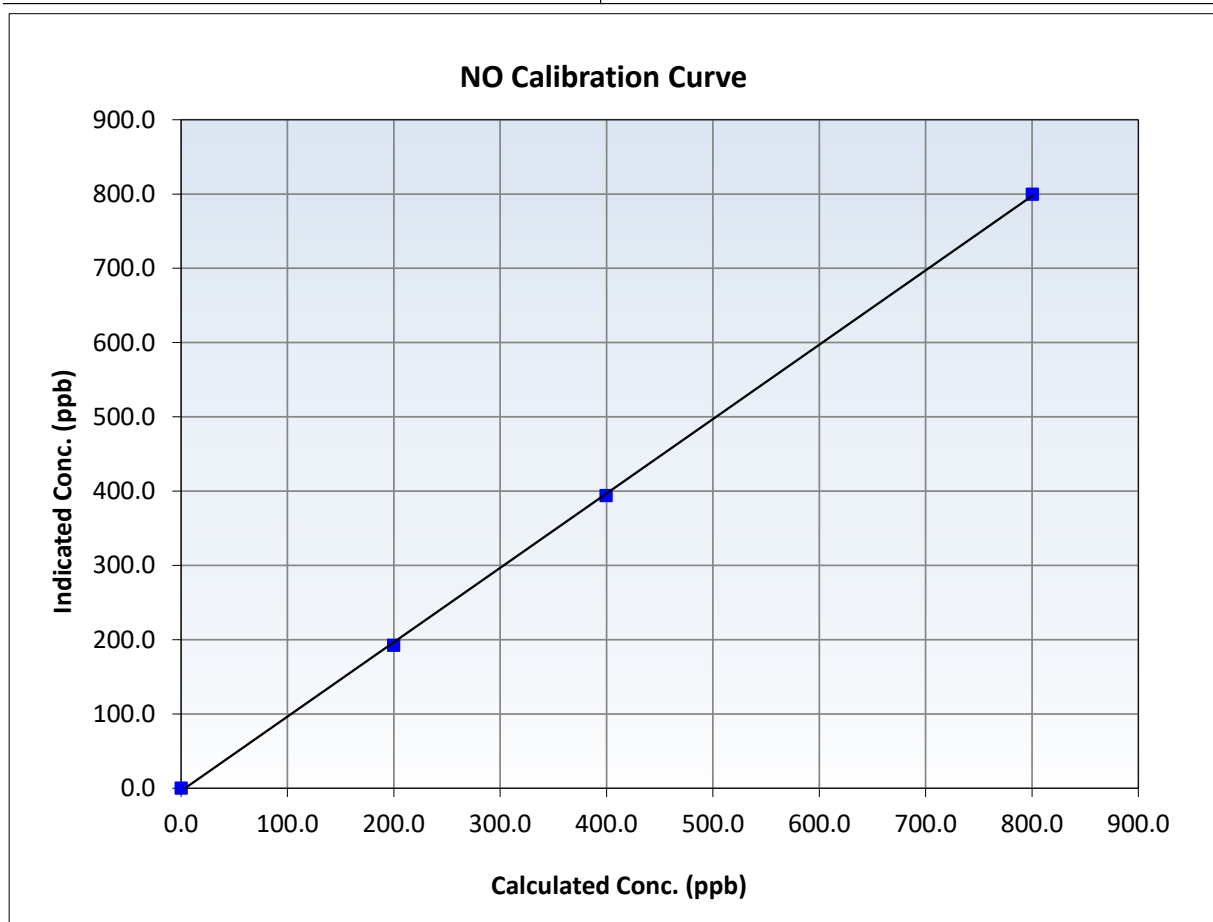
NO Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 10, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:14	End Time (MST):	14:24
Analyzer make:	Thermo 42i	Analyzer serial #:	710321429

Calibration Data

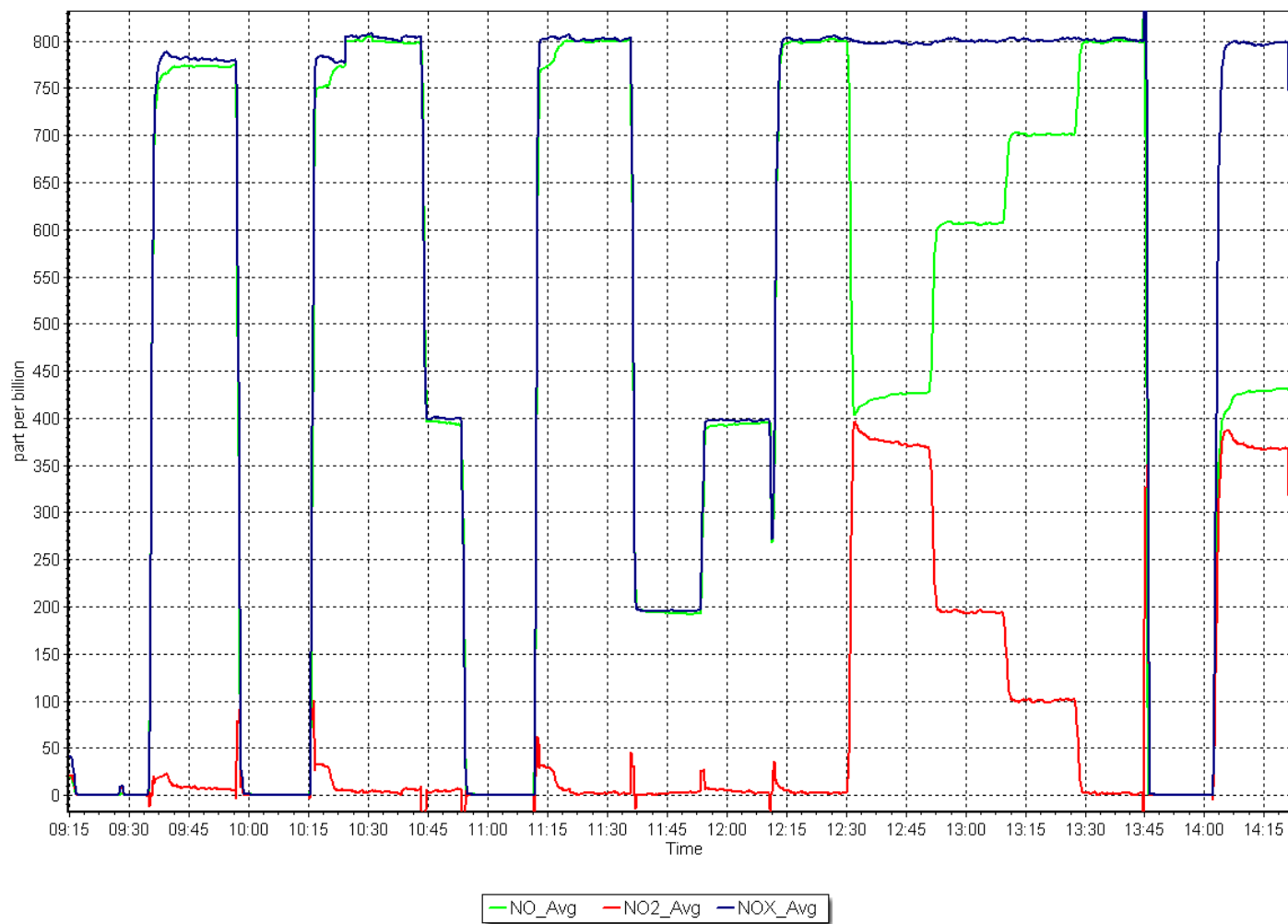
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999886	≥ 0.995
800.3	799.7	1.0007	Slope	1.001320	$0.90 - 1.10$
399.5	394.1	1.0138	Intercept	-3.700986	± 20
199.8	192.5	1.0377			



NO_x Calibration Plot

Date: March 13, 2025

Location: Ells River





Wood Buffalo Environmental Association

T640 PM_{2.5} CALIBRATION

Version-01-2024

Station Information

Station Name: Ells River Station number: AMS 30
Calibration Date: March 14, 2025 Last Cal Date: February 10, 2025
Start time (MST): 12:53 End time (MST): 13:19

Analyzer Make: API T640 S/N: 875
Particulate Fraction: PM2.5

Flow Meter Make/Model: Alicat FP-25BT S/N: 388754
Temp/RH standard: Alicat FP-25BT S/N: 388754

Monthly Calibration Test

Parameter	As found	Measured	As left	Adjusted	(Limits)
T (°C)	-11.50	-12.09	-11.50	<input type="checkbox"/>	+/- 2 °C
P (mmHg)	727.50	729.08	727.50	<input type="checkbox"/>	+/- 10 mmHg
Flow (LPM)	4.97	5.02	4.97	<input type="checkbox"/>	+/- 0.25 LPM
PW% (pump)	35	----	35	<input type="checkbox"/>	>80%
Zero Verification	PM w/o HEPA: 4.20		PM w/ HEPA: 0.00		<0.2 ug/m3

Note: this leak check will be completed before the quarterly work and will serve as the pre maintenance leak check

PM Inlet observation : Inlet Head Clean ☒ Alignment Factor On : ☒

Quarterly Calibration Test

SPAN DUST Refractive Index: 10.90 Expiry Date: September 29, 2024
Lot No.: 100128-050-040

Parameter	As found	Post maintenance	As left	Adjusted	(Limits)
PMT Peak Test				<input type="checkbox"/>	+/- 0.5

Date Optical Chamber Cleaned: January 23, 2025
Date Disposable Filter Changed: January 23, 2025

Post- maintenance Zero Verification: PM w/ HEPA: <0.2 ug/m3

Annual Maintenance

Date Sample Tube Cleaned: December 6, 2024
Date RH/T Sensor Cleaned: February 23, 2024

Notes: Verified flow, temperature, pump power and pressure No adjustment made. Leak check passed.

Calibration by: Jan Castro



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

**AMS31
BLACKROD
MARCH 2025**

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Blackrod Station number: AMS 31
Calibration Date: March 26, 2025 Last Cal Date: February 20, 2025
Start time (MST): 9:47 End time (MST): 12:41
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.25 ppm Cal Gas Exp Date: March 10, 2031
Cal Gas Cylinder #: CC327023
Removed Cal Gas Conc: 50.25 ppm Rem Gas Exp Date: N/A
Removed Gas Cyl #: N/A Diff between cyl:
Calibrator Model: Teledyne T700 Serial Number: 5762
Zero Air Gen Model: Teledyne N701H Serial Number: 72

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1160290014
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.003613	0.999971	Backgd or Offset:	42.4	39.1
Calibration intercept:	-0.951981	-0.052005	Coeff or Slope:	1.072	1.019

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.9	----
As found High point	4920	79.6	800.0	841.8	0.949
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	842.7	Previous response	802.0	*% change	4.8%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.2	----
High point	4920	79.6	800.0	800.1	1.000
Mid point	4960	39.8	400.0	399.8	1.001
Low point	4980	19.9	200.0	199.7	1.001
As left zero	5000	0.0	0.0	0.4	----
As left span	4920	79.6	800.0	799.9	1.000
Average Correction Factor:					1.001

Notes: Sample inlet filter was changed after as founds. Adjusted zero and span.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

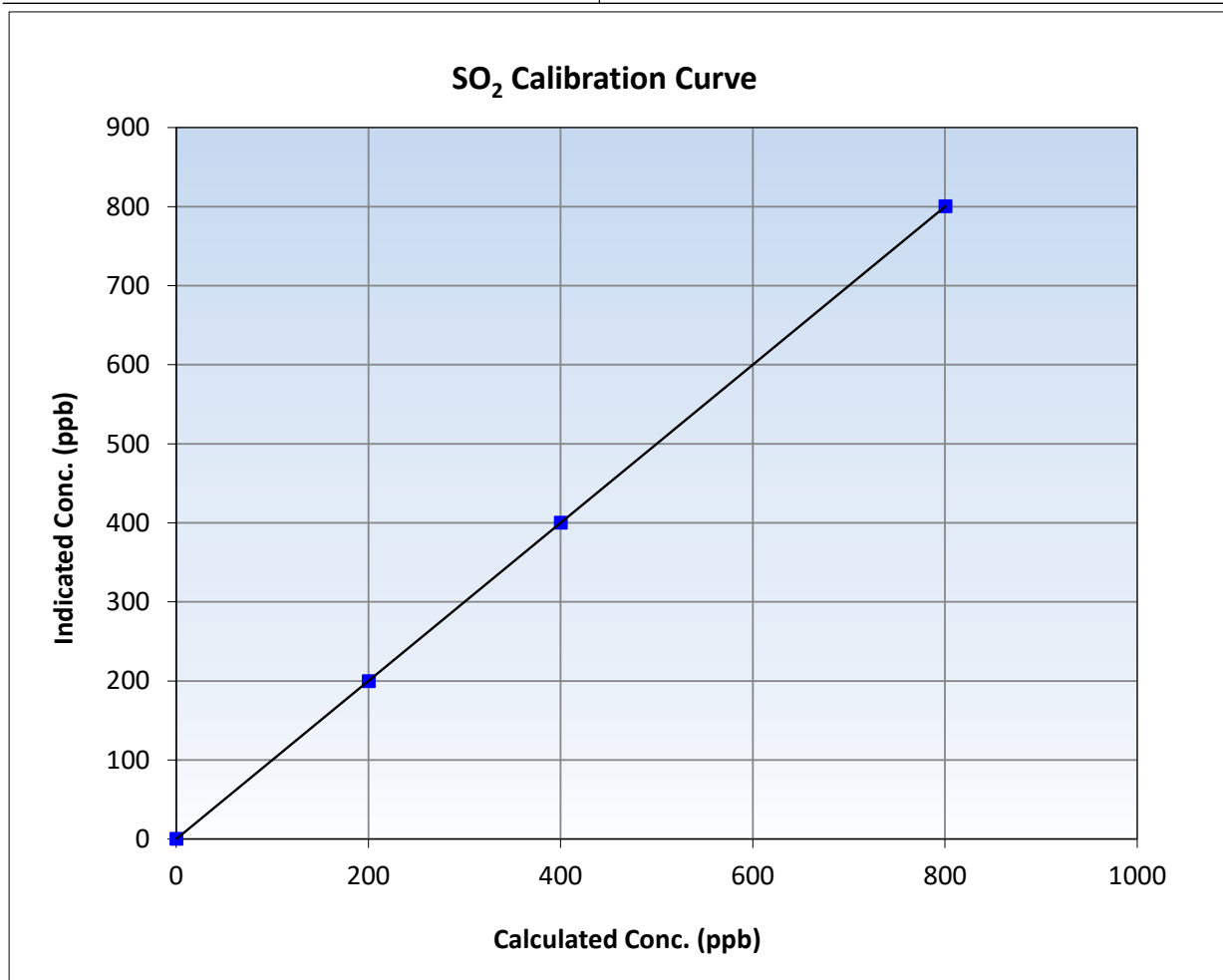
SO₂ Calibration Summary

Station Information

Calibration Date:	March 26, 2025	Previous Calibration:	February 20, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	9:47	End Time (MST):	12:41
Analyzer make:	Thermo 43i	Analyzer serial #:	1160290014

Calibration Data

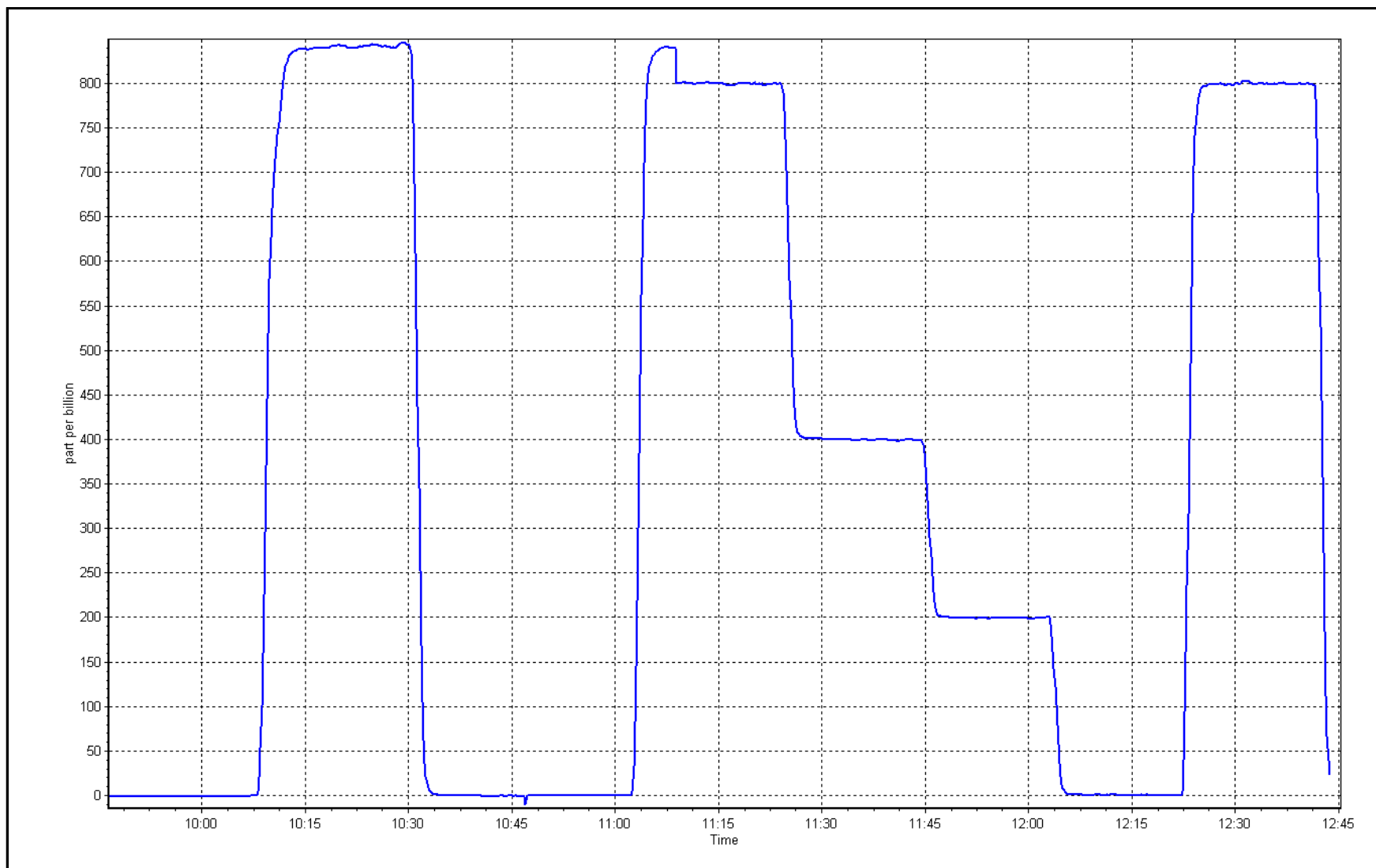
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	1.000000	≥0.995
800.0	800.1	0.9999	Slope	0.999971	0.90 - 1.10
400.0	399.8	1.0005	Intercept	-0.052005	+/-30
200.0	199.7	1.0015			



SO2 Calibration Plot

Date: March 26, 2025

Location: Blackrod





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: Blackrod Station number: AMS 31
Calibration Date: March 24, 2025 Last Cal Date: February 27, 2025
Start time (MST): 9:56 End time (MST): 13:53
Reason: Routine

Calibration Standards

Cal Gas Concentration: 5.42 ppm Cal Gas Exp Date: March 19, 2027
Cal Gas Cylinder #: DT0016926
Removed Cal Gas Conc: 5.42 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: Teledyne API T700 Serial Number: 5762
ZAG Make/Model: Teledyne API N701H Serial Number: 72

Analyzer Information

Analyzer make: Thermo 43iQTL Analyzer serial #: 12228021056
Converter make: Global Converter serial #: 2023-266
Analyzer Range: 0 - 100 ppb Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	1.008191	1.010620	Backgd or Offset:	3.03
Calibration intercept:	-0.300506	-0.060561	Coeff or Slope:	1.044

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.3	----
As found High point	4926	73.8	80.0	82.2	0.970
As found Mid point	4963	36.9	40.0	40.7	0.976
As found Low point	4982	18.5	20.1	20.1	0.983
New cylinder response					
Baseline Corr As found:	82.5	Prev response:	80.36	*% change:	2.6%
Baseline Corr 2nd AF pt:	41.0	AF Slope:	1.032053	AF Intercept:	-0.460984
Baseline Corr 3rd AF pt:	20.4	AF Correlation:	0.999982	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4926	73.8	80.0	80.8	0.990
Mid point	4963	36.9	40.0	40.4	0.990
Low point	4982	18.5	20.1	20.1	0.998
As left zero	5000	0.0	0.0	0.0	----
As left span	4926	73.8	80.0	80.5	0.994
SO2 Scrubber Check	4920	79.6	796.1	0.0	----
Date of last scrubber change:				Ave Corr Factor	0.993
Date of last converter efficiency test:					

Notes: Sample inlet filter was changed after multipoint as founds. SO2 scrubber check done after calibrator zero and passed. Adjusted zero and span.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

H₂S Calibration Summary

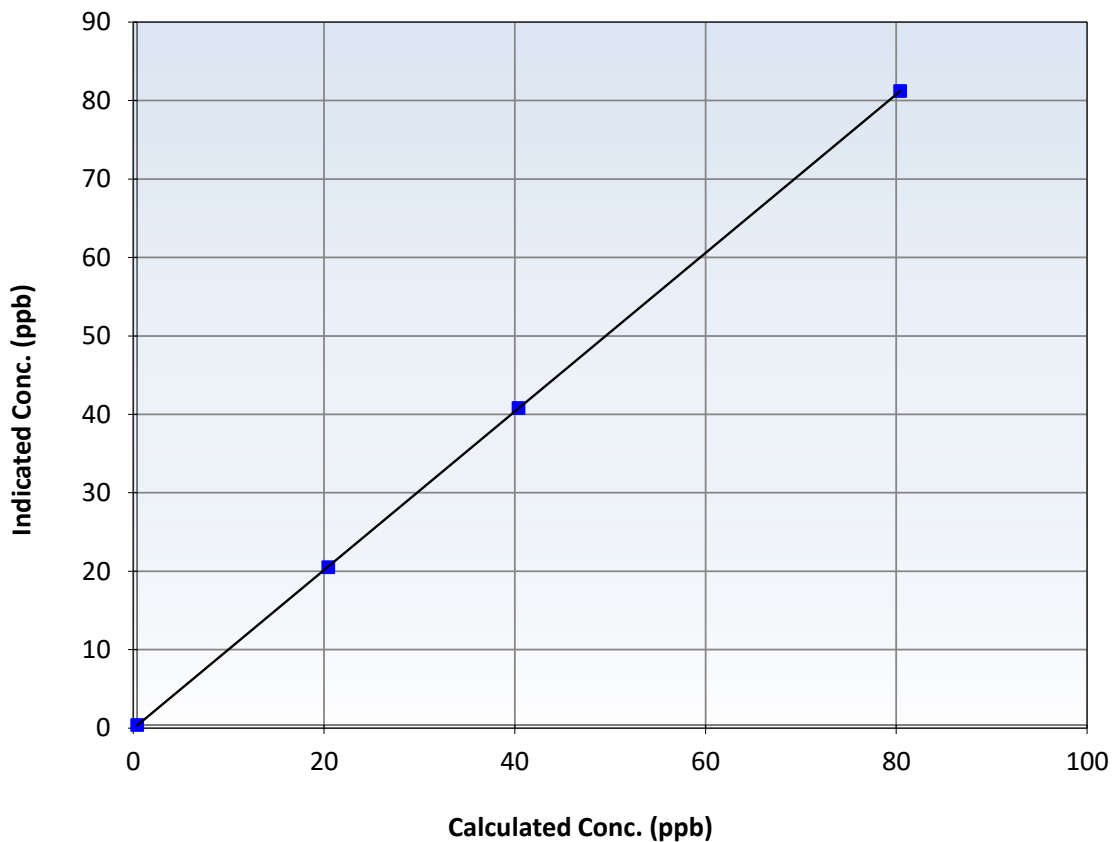
Station Information

Calibration Date:	March 24, 2025	Previous Calibration:	February 27, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	9:56	End Time (MST):	13:53
Analyzer make:	Thermo 43iQTL	Analyzer serial #:	12228021056

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999996		≥ 0.995
80.0	80.8	0.9901	Slope	1.010620		$0.90 - 1.10$
40.0	40.4	0.9901	Intercept	-0.060561		± 3
20.1	20.1	0.9976				

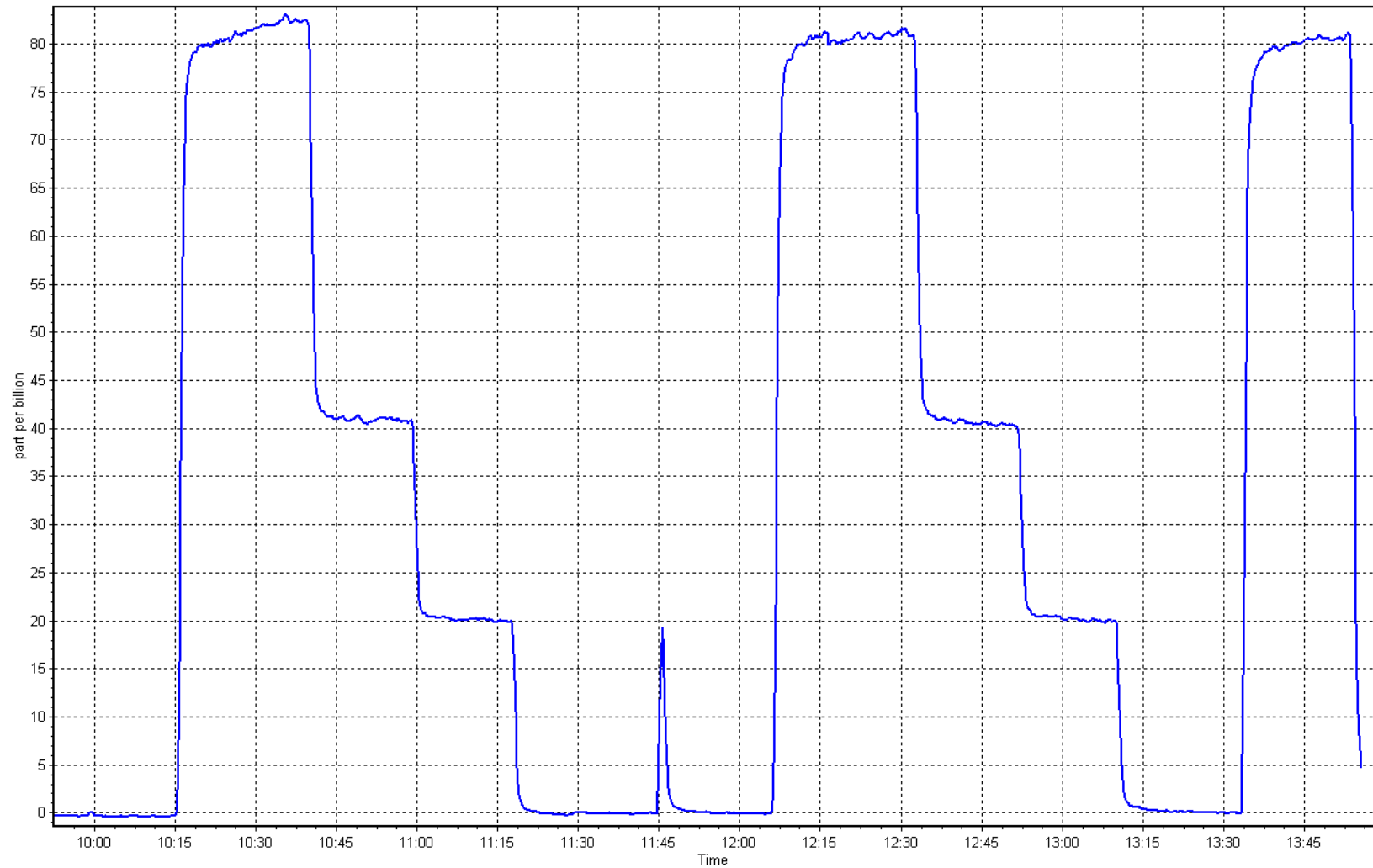
H₂S Calibration Curve



H₂S Calibration Plot

Date: March 24, 2025

Location: Blackrod





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Blackrod
Station number: AMS 31
Calibration Date: March 25, 2025
Last Cal Date: February 26, 2025
Start time (MST): 9:29
End time (MST): 13:58
Reason: Routine

Calibration Standards

NO Gas Cylinder #: DT0035071
NOX Cal Gas Conc: 59.30 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 59.30 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API N701H
Cal Gas Expiry Date: January 9, 2032
NO Cal Gas Conc: 59.10 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 59.10 ppm
NO gas Diff:
Serial Number: 5762
Serial Number: 72

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO _x Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	0.5	0.3	0.2	----	----
AF High point	4932	67.7	803.0	800.3	2.7	783.8	777.9	5.9	1.0251	1.0291
AF Mid point										
AF Low point										
New cyl resp										

Previous Response NO_x = 802.2 ppb NO = 800.8 ppb
Baseline Corr 1st pt NO_x = 783.3 ppb NO = 777.6 ppb
Baseline Corr 2nd pt NO_x = NA ppb NO = NA ppb
Baseline Corr 3rd pt NO_x = NA ppb NO = NA ppb

* = > +/-5% change initiates investigation

*Percent Change NO_x = -2.4%

*Percent Change NO = -3.0%

As Found Statistics

As found NO_x r²:
As found NO r²:
As found NO₂ r²:
Nx SI:
NO SI:
NO₂ SI:
Nx Int:
NO Int:
NO₂ Int:

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	Baseline Adjusted NO ₂ Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1426262592

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.933	0.959	NO bkgnd or offset:	11.7	12.4
NOX coeff or slope:	0.995	0.996	NOX bkgnd or offset:	11.6	12.8
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	203.7	200.4

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.998704	0.995387
NO _x Cal Offset:	0.281963	0.021490
NO Cal Slope:	1.002401	0.996585
NO Cal Offset:	-1.378935	-0.719133
NO ₂ Cal Slope:	1.007601	1.000119
NO ₂ Cal Offset:	-0.808336	-0.101363

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	----	----
High point	4932	67.7	803.0	800.3	2.7	798.8	796.4	2.4	1.0052	1.0048
Mid point	4966	33.8	400.9	399.5	1.4	400.5	399.5	1.0	1.0010	1.0001
Low point	4983	16.9	200.4	199.8	0.7	198.6	195.9	2.7	1.0093	1.0197
As left zero	5000	0.0	0.0	0.0	0.0	-0.1	0.3	-0.3	----	----
As left span	4932	67.7	803.0	407.4	395.6	799.5	407.4	392.1	1.0043	1.0000
Average Correction Factor									1.0051	1.0082

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.1	----	----
High GPT point	795.6	410.0	388.3	388.9	0.9985	100.2%
Mid GPT point	795.6	604.4	193.9	191.9	1.0105	99.0%
Low GPT point	795.6	702.3	96.0	97.2	0.9877	101.2%
Average Correction Factor					0.9989	100.1%

Notes: Sample inlet filter was changed after as founds. Adjusted zero and span.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

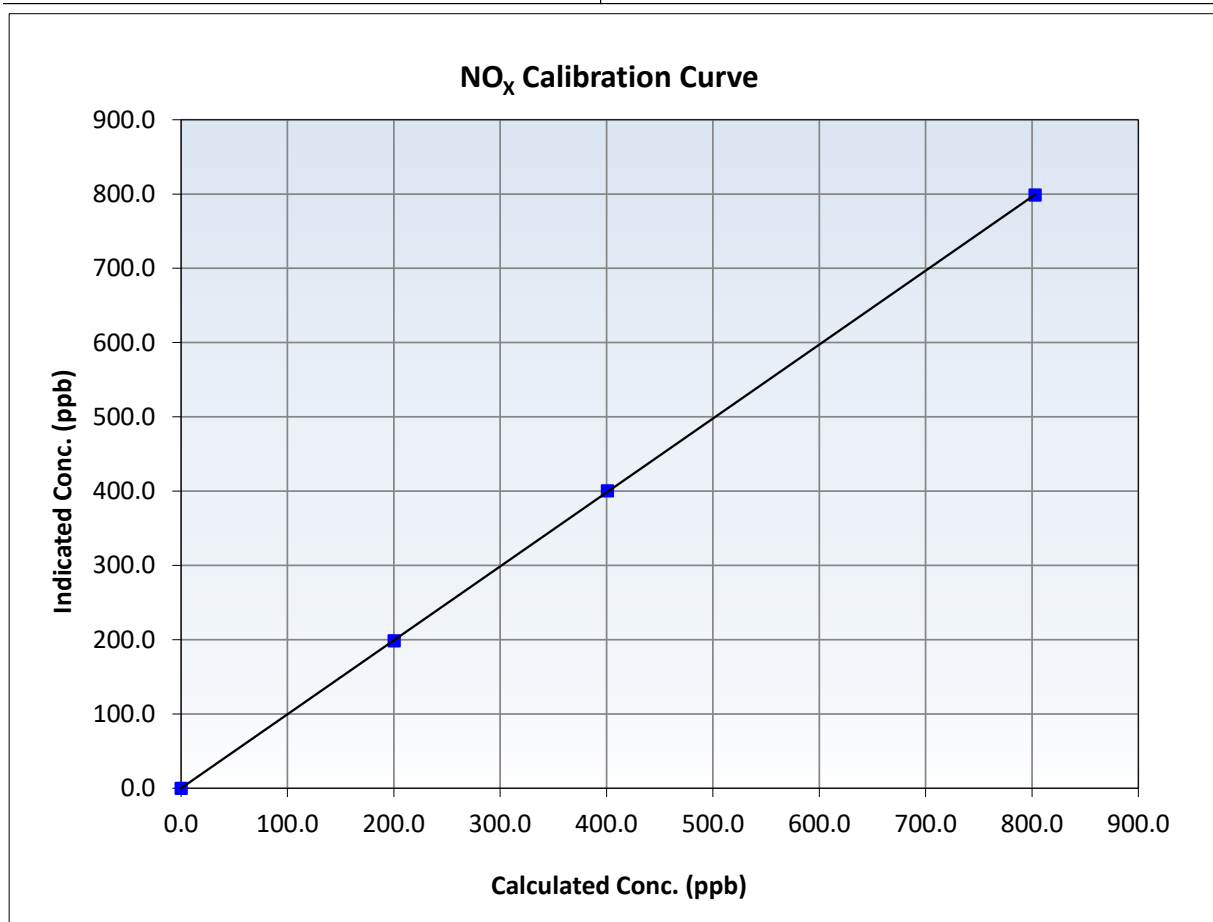
NO_x Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 26, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	9:29	End Time (MST):	13:58
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262592

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999991	≥0.995
803.0	798.8	1.0052	Slope	0.995387	0.90 - 1.10
400.9	400.5	1.0010	Intercept	0.021490	+/-20
200.4	198.6	1.0093			





Wood Buffalo Environmental Association

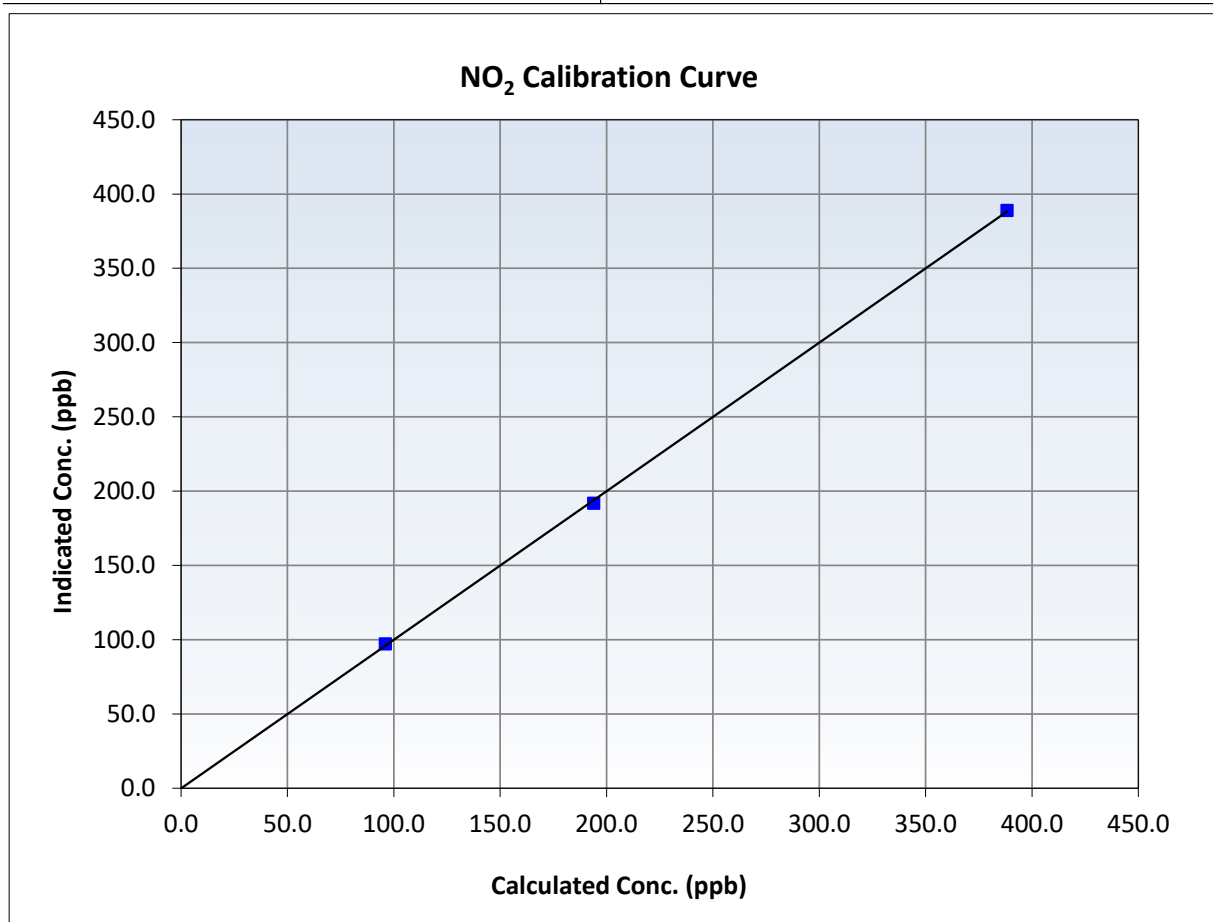
NO₂ Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 26, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	9:29	End Time (MST):	13:58
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262592

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999930	≥0.995
388.3	388.9	0.9985	Slope	1.000119	0.90 - 1.10
193.9	191.9	1.0105	Intercept	-0.101363	+/-20
96.0	97.2	0.9877			





Wood Buffalo Environmental Association

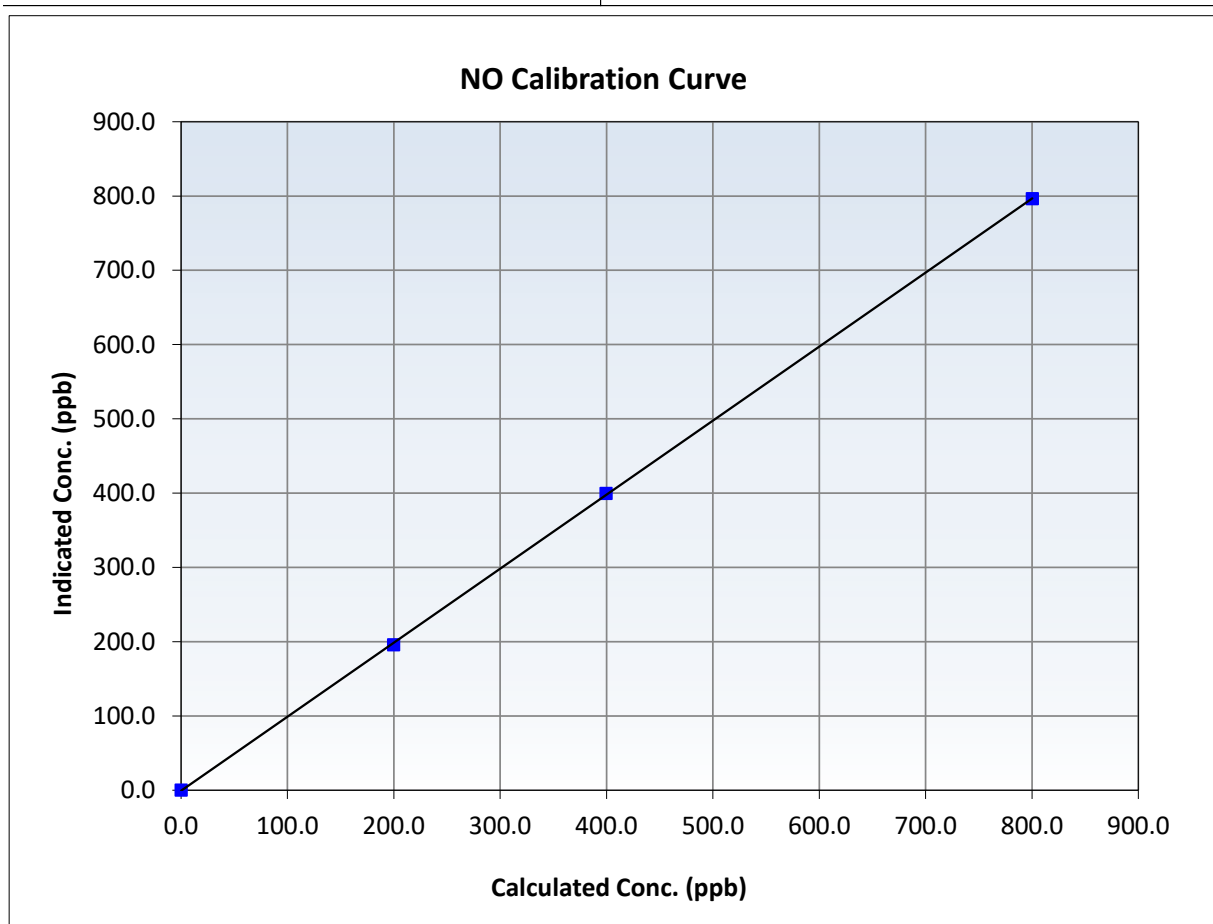
NO Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 26, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	9:29	End Time (MST):	13:58
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262592

Calibration Data

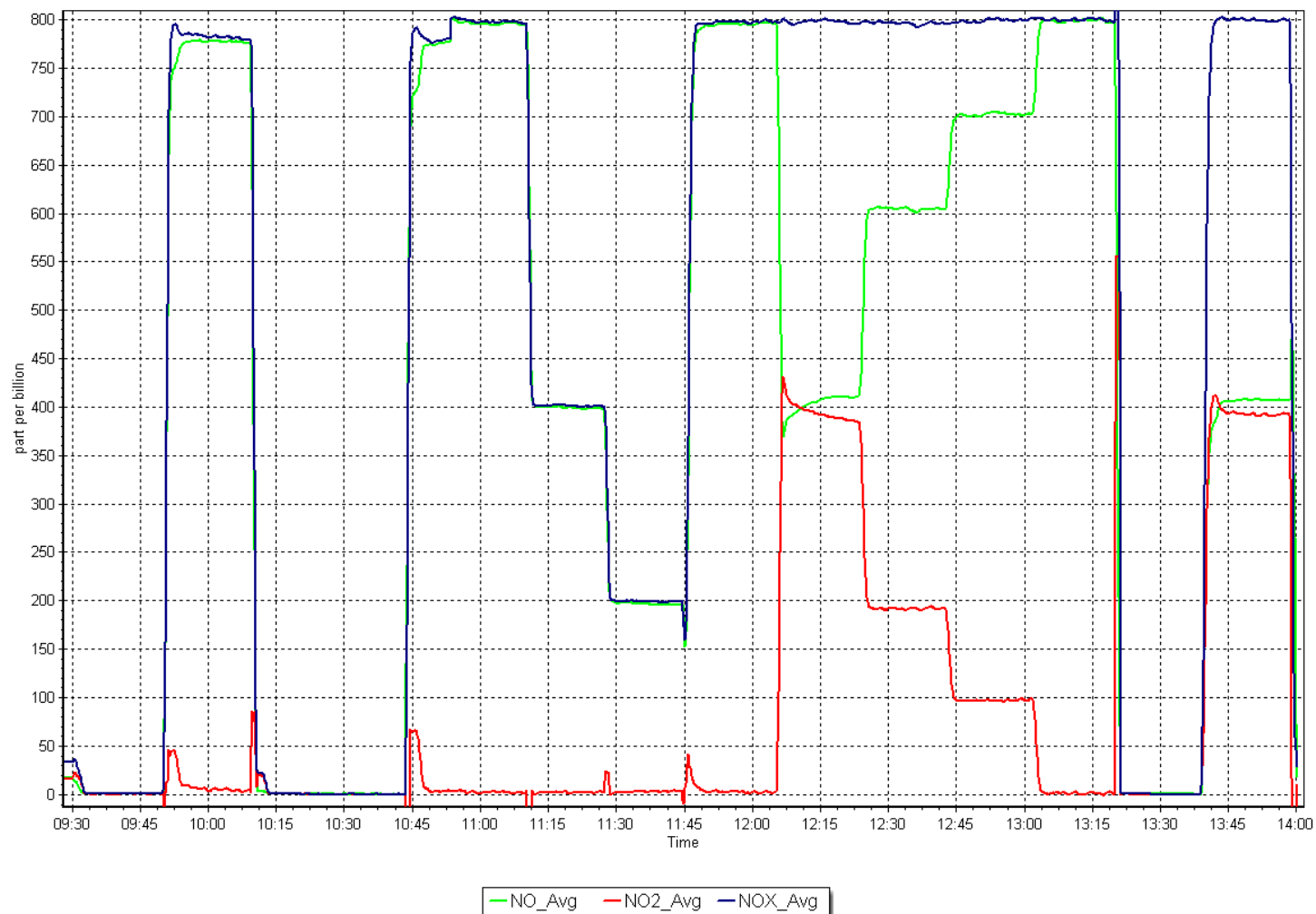
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999968	≥ 0.995
800.3	796.4	1.0048	Slope	0.996585	$0.90 - 1.10$
399.5	399.5	1.0001	Intercept	-0.719133	± 20
199.8	195.9	1.0197			



NO_x Calibration Plot

Date: March 25, 2025

Location: Blackrod





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS33 MONDAY CREEK MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Monday Creek Station number: AMS 33
Calibration Date: March 5, 2025 Last Cal Date: February 12, 2025
Start time (MST): 11:15 End time (MST): 14:05
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.62 ppm Cal Gas Exp Date: March 10, 2031
Cal Gas Cylinder #: EB0008522
Removed Cal Gas Conc: 50.62 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: Teledyne T700 Serial Number: 3253
Zero Air Gen Model: Teledyne T701H Serial Number: 832

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1152430005
Analyzer Range: 0- 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999624	0.997815	Backgd or Offset:	29.9	30.7
Calibration intercept:	0.302478	-0.238150	Coeff or Slope:	1.007	0.988

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.6	----
As found High point	4921	79.1	800.8	814.0	0.985
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	813.4	Previous response	800.8	*% change	1.5%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.4	----
High point	4921	79.1	800.8	798.6	1.003
Mid point	4961	39.5	399.9	399.2	1.002
Low point	4980	19.8	200.5	199.7	1.004
As left zero	5000	0.0	0.0	-0.5	----
As left span	4921	79.1	800.8	797.9	1.004
Average Correction Factor:					1.003

Notes: Sample inlet filter was changed after as founds. Adjusted zero and span.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

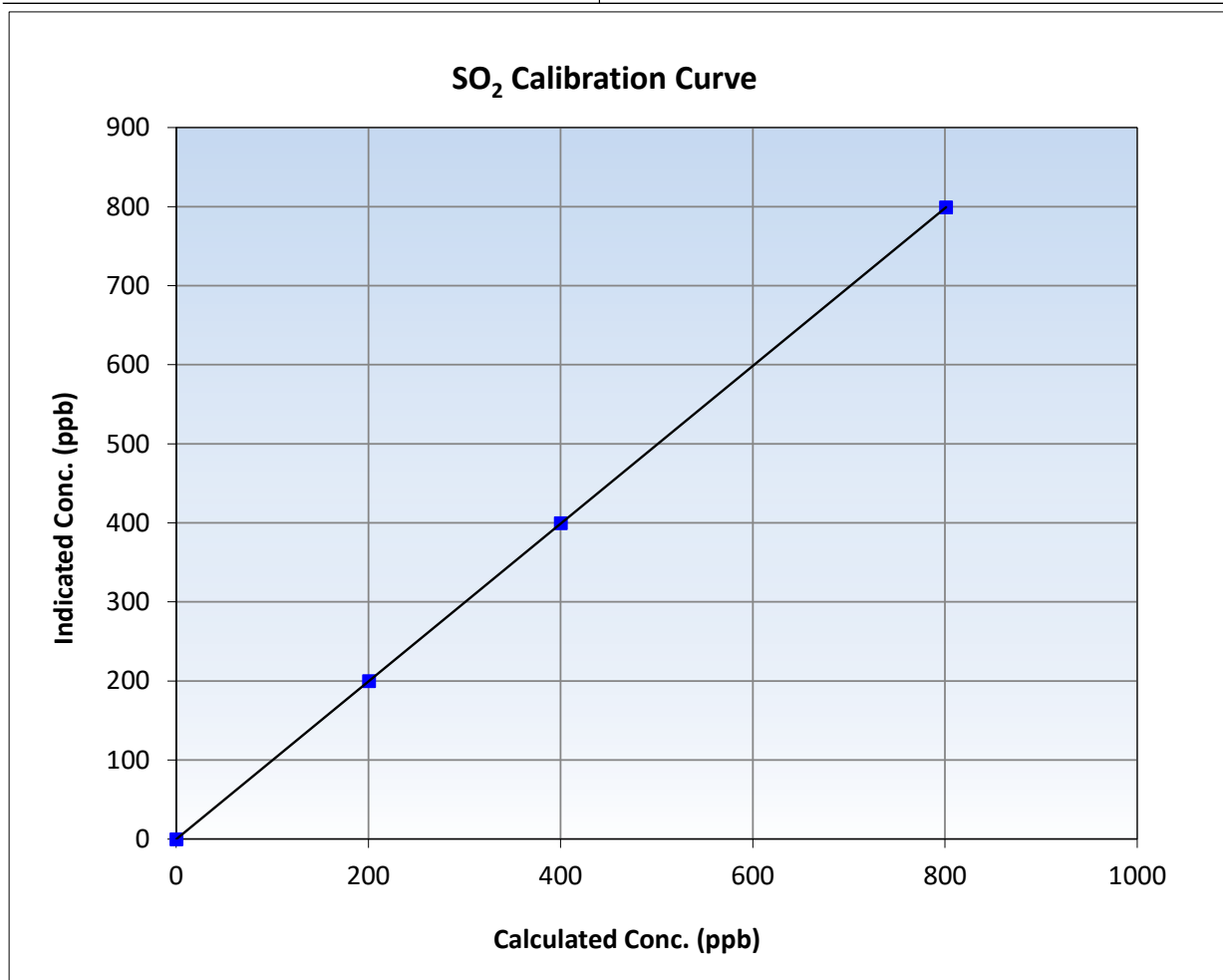
SO₂ Calibration Summary

Station Information

Calibration Date:	March 5, 2025	Previous Calibration:	February 12, 2025
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	11:15	End Time (MST):	14:05
Analyzer make:	Thermo 43i	Analyzer serial #:	1152430005

Calibration Data

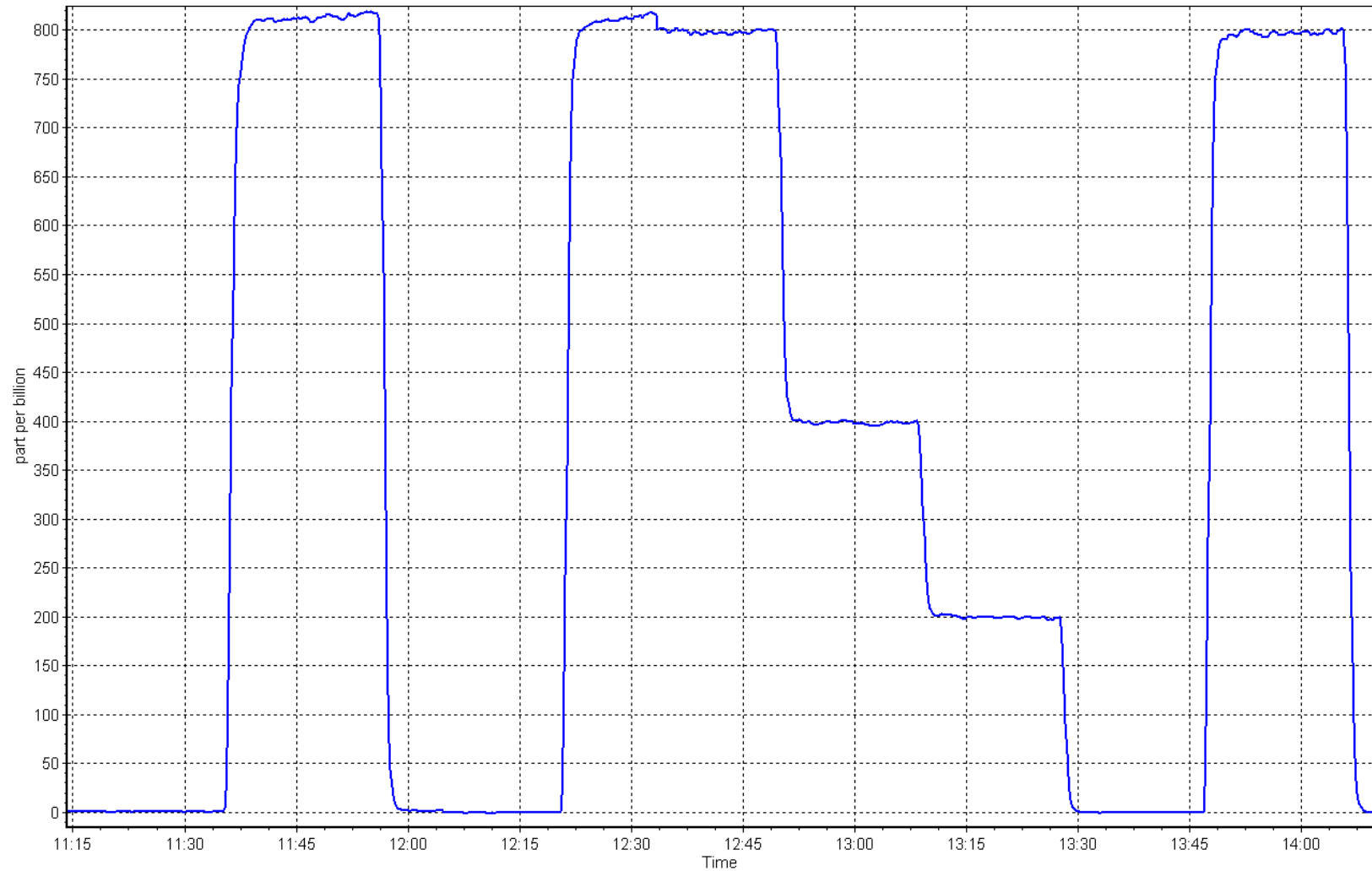
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.4	----	Correlation Coefficient	0.999999	≥0.995
800.8	798.6	1.0027	Slope	0.997815	0.90 - 1.10
399.9	399.2	1.0016	Intercept	-0.238150	+/-30
200.5	199.7	1.0038			



SO2 Calibration Plot

Date: March 5, 2025

Location: Monday Creek





Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name: Monday Creek
Calibration Date: March 4, 2025
Start time (MST): 10:49
Reason: Routine

Station number: AMS 33
Last Cal Date: February 18, 2025
End time (MST): 14:20

Calibration Standards

Cal Gas Concentration: 5.05 ppm
Cal Gas Cylinder #: DT0014831
Removed Cal Gas Conc: 5.05 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne T701H

Cal Gas Exp Date: November 15, 2026
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 3253
Serial Number: 832

Analyzer Information

Analyzer make: Thermo 43iQTL
Converter make: Global 150
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 12333331547
Converter serial #: 2022-196
Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.999283	1.006570	Backgd or Offset:	1.6	1.6
Calibration intercept:	0.178401	-0.101612	Coeff or Slope:	1.076	1.076

H2S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4921	79.2	80.0	80.1	0.996
As found Mid point	4960	39.6	40.0	40.1	0.993
As found Low point	4980	19.8	20.0	20.0	0.990
New cylinder response					
Baseline Corr As found:	80.3	Prev response:	80.11	*% change:	0.2%
Baseline Corr 2nd AF pt:	40.3	AF Slope:	1.003569	AF Intercept:	-0.121610
Baseline Corr 3rd AF pt:	20.2	AF Correlation:	0.999995	* = > +/-5% change initiates investigation	

H2S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4921	79.2	80.0	80.4	0.995
Mid point	4960	39.6	40.0	40.2	0.995
Low point	4980	19.8	20.0	20.0	1.000
As left zero	5000	0.0	0.0	0.0	----
As left span	4921	79.2	80.0	80.0	1.000
SO2 Scrubber Check	4921	79.1	791.0	0.1	----
Date of last scrubber change:	11-Apr-24		Ave Corr Factor		0.997
Date of last converter efficiency test:					

Notes: Sample inlet filter changed after multipoint as founds. SO2 scrubber check done after calibrator zero and passed. No adjustment made.

Calibration Performed By: Jan Castro



Wood Buffalo Environmental Association

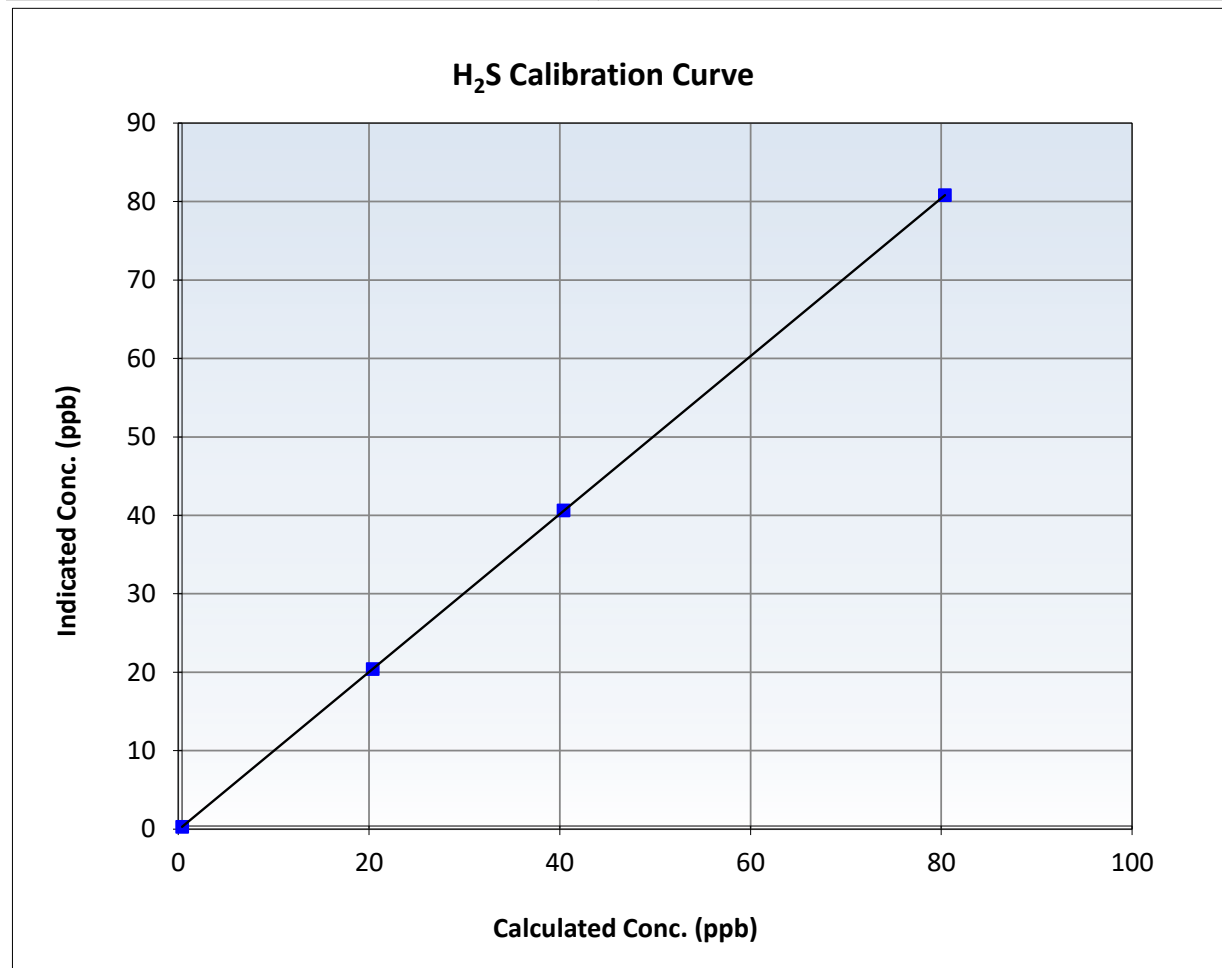
H2S Calibration Summary

Station Information

Calibration Date:	March 4, 2025	Previous Calibration:	February 18, 2025
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	10:49	End Time (MST):	14:20
Analyzer make:	Thermo 43iQTL	Analyzer serial #:	12333331547

Calibration Data

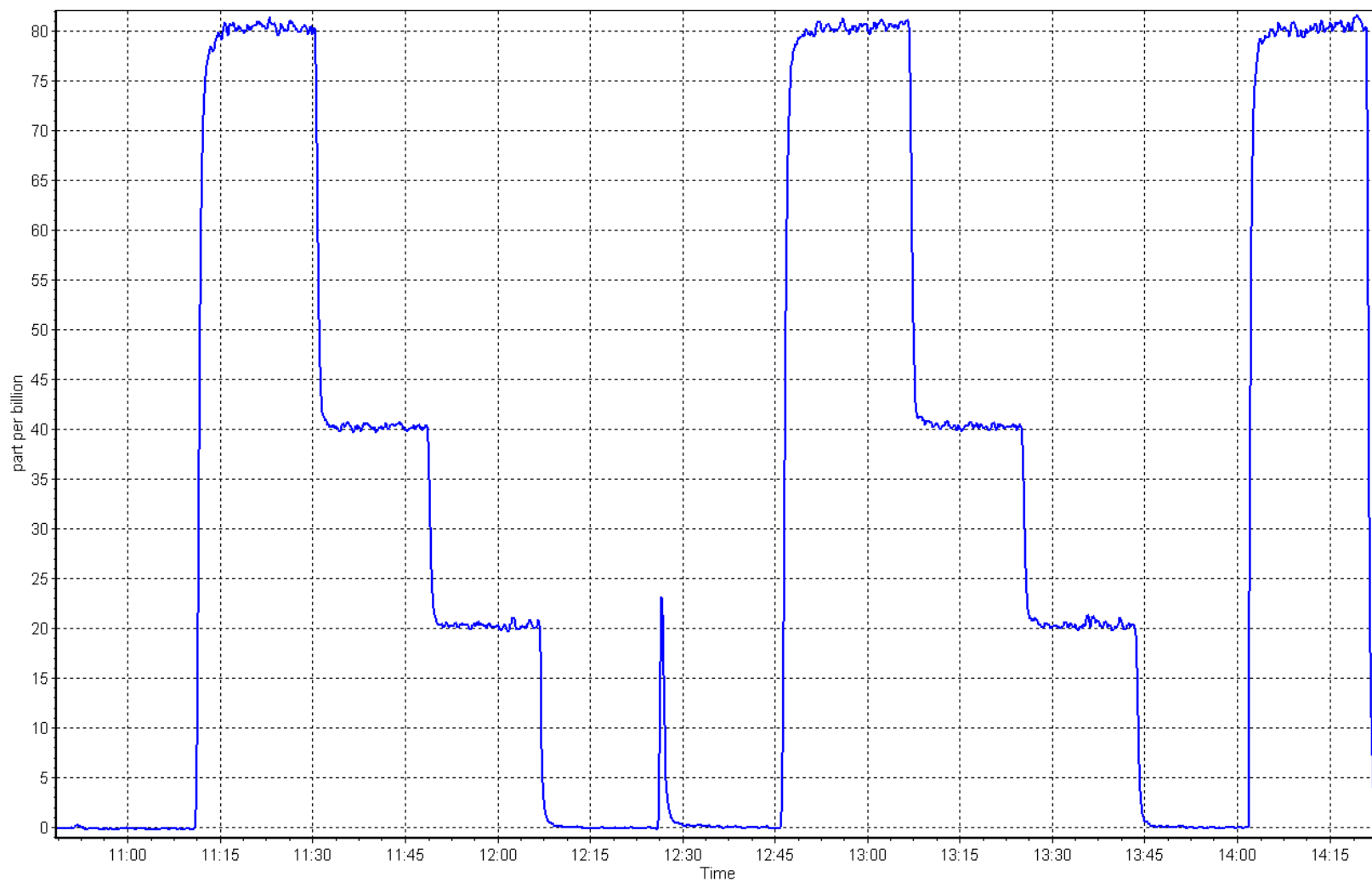
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999999	≥ 0.995
80.0	80.4	0.9949	Slope	1.006570	$0.90 - 1.10$
40.0	40.2	0.9950	Intercept	-0.101612	± 3
20.0	20.0	0.9999			



H2S Calibration Plot

Date: March 4, 2025

Location: Monday Creek





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Monday Creek
Station number: AMS 33
Calibration Date: March 13, 2025
Last Cal Date: February 19, 2025
Start time (MST): 10:12
End time (MST): 14:37
Reason: Routine

Calibration Standards

NO Gas Cylinder #: CC755290
NOX Cal Gas Conc: 48.90 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 48.90 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701H
Cal Gas Expiry Date: January 3, 2031
NO Cal Gas Conc: 48.70 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 48.70 ppm
NO gas Diff:
Serial Number: 3253
Serial Number: 832

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.8	-0.6	-0.2	----	----
AF High point	4918	82.1	802.9	799.6	3.3	797.5	791.6	5.9	1.0058	1.0094
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x = 802.3 ppb	NO = 798.4 ppb	* = > +/-5% change initiates investigation			*Percent Change	NO _x = -0.5%			
Baseline Corr 1st pt	NO _x = 798.3 ppb	NO = 792.2 ppb	<u>As Found Statistics</u>			*Percent Change	NO = -0.8%			
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found NO _x r ² :			Nx SI:	Nx Int:			
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found NO r ² :			NO SI:	NO Int:			
			As found NO ₂ r ² :			NO2 SI:	NO ₂ Int:			

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42iQ
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1182340006

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.202	1.202	NO bkgnd or offset:	1.0	1.0
NOX coeff or slope:	0.992	0.992	NOX bkgnd or offset:	1.2	1.2
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	107.5	104.9

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.999879	0.994870
NO _x Cal Offset:	-0.492868	-1.333022
NO Cal Slope:	0.999870	0.994154
NO Cal Offset:	-1.153061	-2.053068
NO ₂ Cal Slope:	0.997890	0.980054
NO ₂ Cal Offset:	1.847971	2.225929

Dilution Calibration Data

Set Point	Dilution flow rate (scm)	Source gas flow rate (scm)	Calculated NO _x concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO _x concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO ₂ concentration (ppb) (Ic)	NO _x Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.1	0.3	-0.1	----	----
High point	4918	82.1	802.9	799.6	3.3	798.5	794.4	4.1	1.0055	1.0066
Mid point	4959	41.1	401.9	400.3	1.6	396.9	393.8	3.0	1.0127	1.0165
Low point	4980	20.5	200.5	199.7	0.8	197.3	194.7	2.5	1.0161	1.0254
As left zero	5000	0.0	0.0	0.0	0.0	-0.4	-0.3	-0.2	----	----
As left span	4918	82.1	802.9	395.3	407.6	769.6	395.3	374.3	1.0433	1.0000
Average Correction Factor									1.0114	1.0162

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO ₂ concentration (ppb) (Cc)	Indicated NO ₂ concentration (ppb) (Ic)	NO ₂ Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	-0.1	----	----
High GPT point	792.2	392.4	403.1	395.4	1.0194	98.1%
Mid GPT point	792.2	603.2	192.3	194.3	0.9896	101.0%
Low GPT point	792.2	696.2	99.3	100.1	0.9918	100.8%
Average Correction Factor					1.0003	100.0%

Notes:

Sample inlet filter changed after as founds. No adjustment made. Used 2nd NO point because of drift.

Calibration Performed By:

Jan Castro



Wood Buffalo Environmental Association

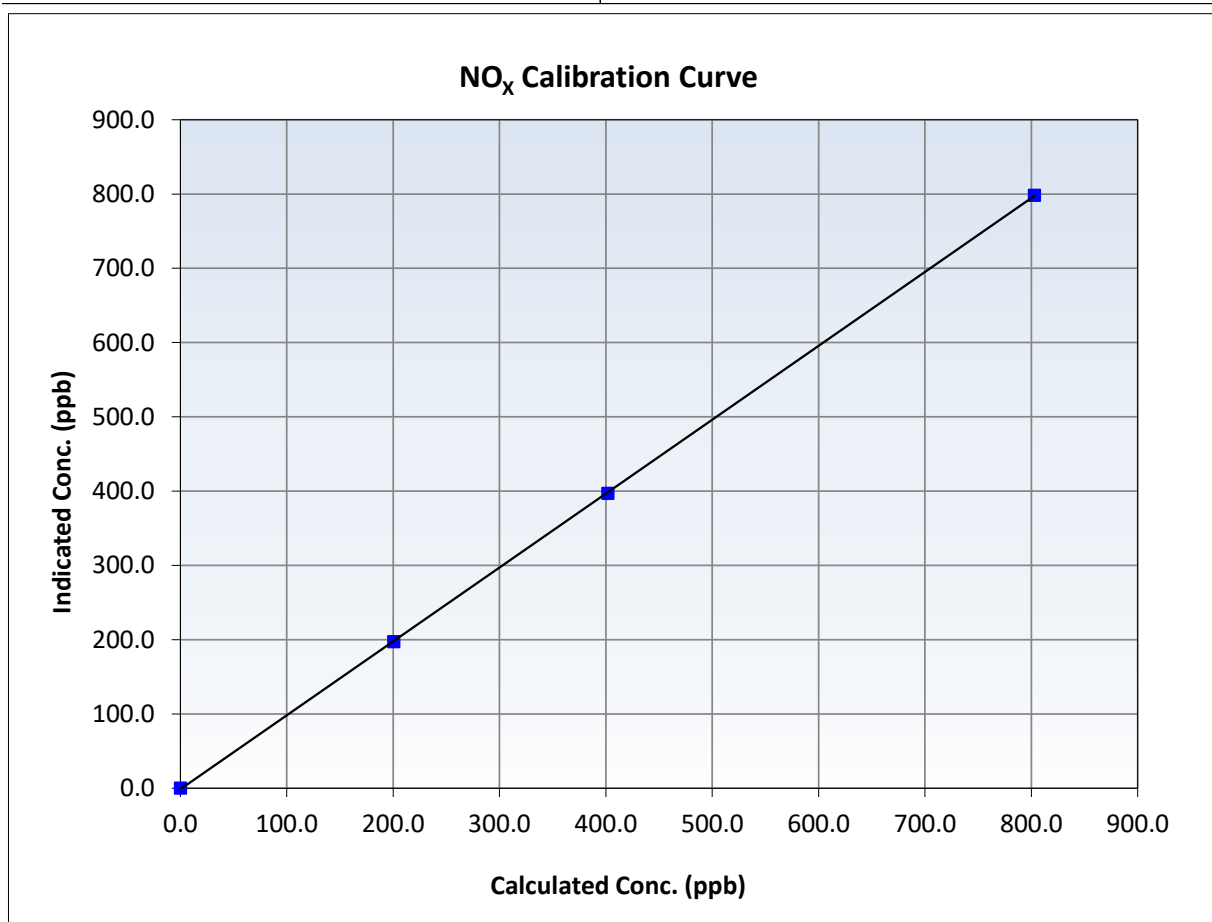
NO_x Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 19, 2025
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	10:12	End Time (MST):	14:37
Analyzer make:	Thermo 42iQ	Analyzer serial #:	1182340006

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999981	≥0.995
802.9	798.5	1.0055	Slope	0.994870	0.90 - 1.10
401.9	396.9	1.0127	Intercept	-1.333022	+/-20
200.5	197.3	1.0161			





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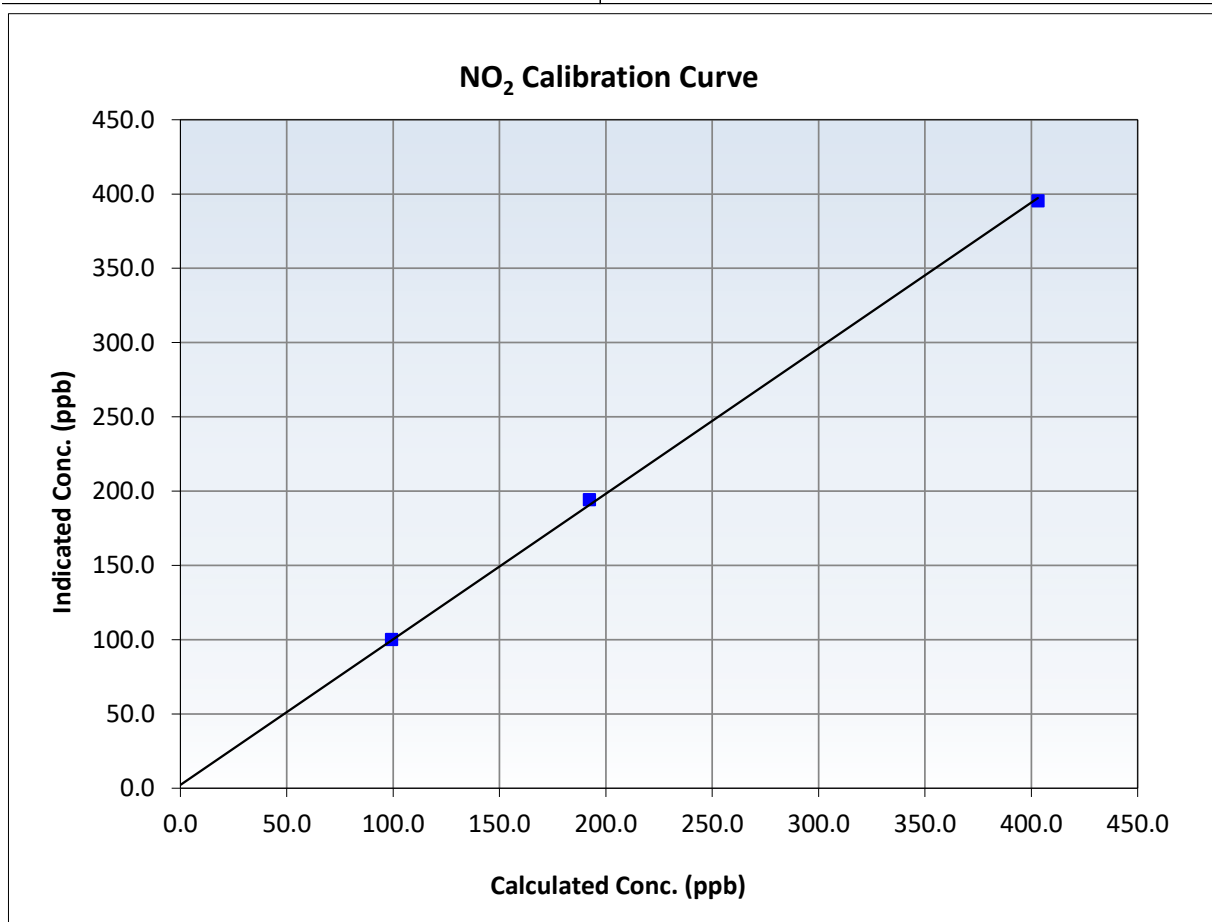
NO₂ Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 19, 2025
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	10:12	End Time (MST):	14:37
Analyzer make:	Thermo 42iQ	Analyzer serial #:	1182340006

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999737	≥ 0.995
403.1	395.4	1.0194	Slope	0.980054	$0.90 - 1.10$
192.3	194.3	0.9896	Intercept	2.225929	± 20
99.3	100.1	0.9918			





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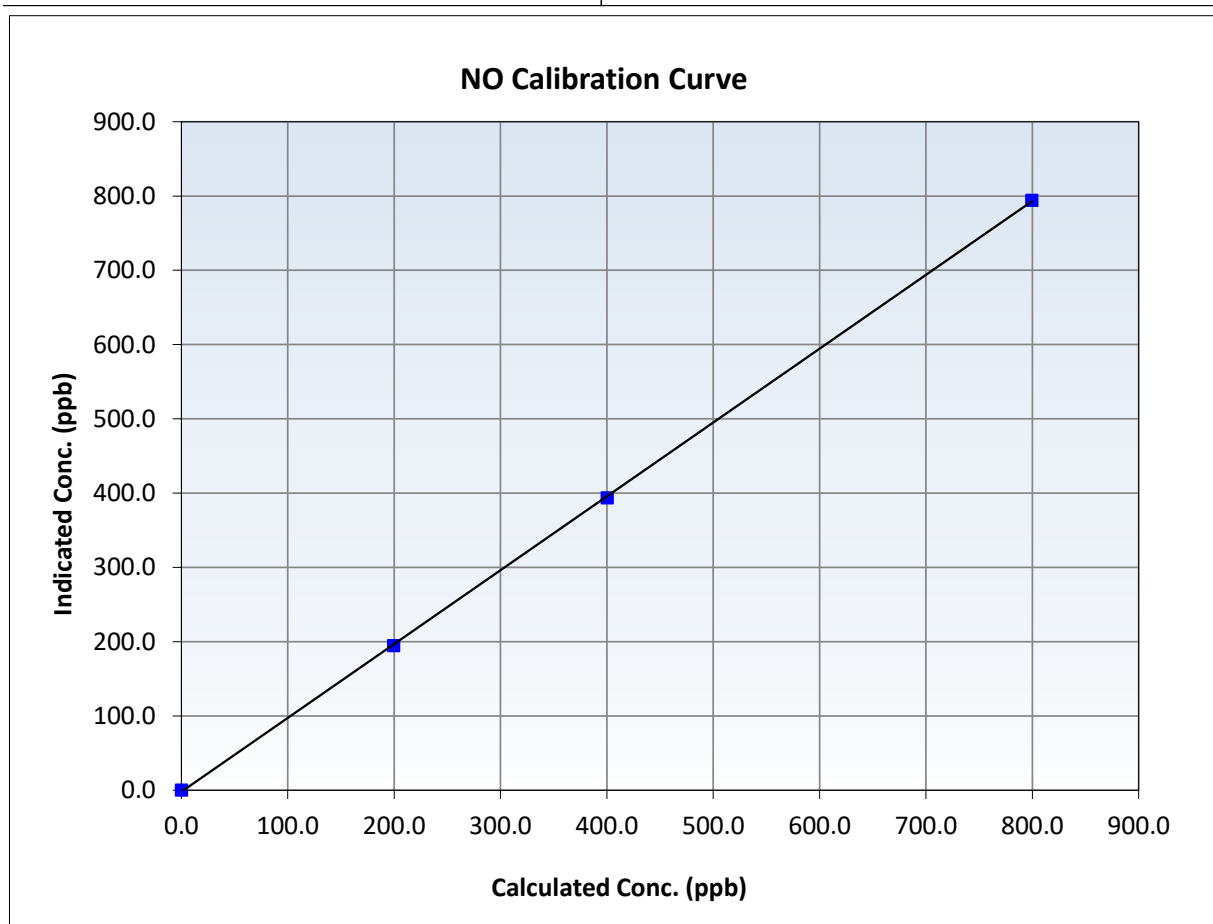
NO Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 19, 2025
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	10:12	End Time (MST):	14:37
Analyzer make:	Thermo 42iQ	Analyzer serial #:	1182340006

Calibration Data

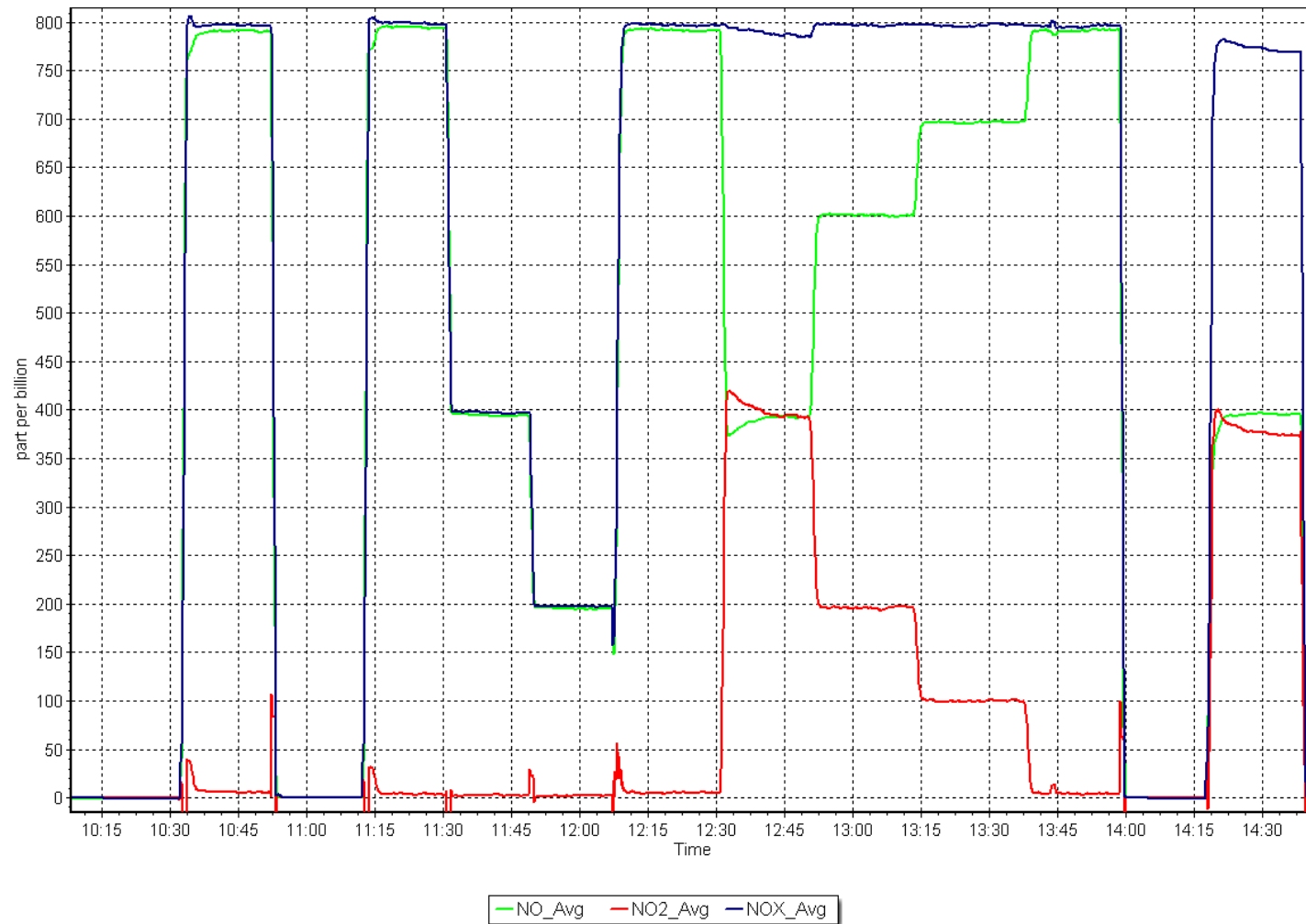
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999956	≥ 0.995
799.6	794.4	1.0066	Slope	0.994154	$0.90 - 1.10$
400.3	393.8	1.0165	Intercept	-2.053068	± 20
199.7	194.7	1.0254			



NO_x Calibration Plot

Date: March 13, 2025

Location: Monday Creek





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS506
JACKFISH 1
MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Jackfish 1 Station number: AMS 506
Calibration Date: March 19, 2025 Last Cal Date: February 18, 2025
Start time (MST): 8:21 End time (MST): 11:12
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.52 ppm Cal Gas Exp Date: December 29, 2028
Cal Gas Cylinder #: CC274266
Removed Cal Gas Conc: 50.52 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: Teledyne API T700 Serial Number: 2659
Zero Air Gen Model: Teledyne API T701 Serial Number: 4427

Analyzer Information

Analyzer make: Thermo 43i Serial Number: 1160290011
Analyzer Range: 0-1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.002472	1.001515	Backgd or Offset:	20.2	20.2
Calibration intercept:	0.703973	0.763956	Coeff or Slope:	1.002	0.985

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.3	----
As found High point	4921	79.2	800.2	817.0	0.980
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	816.7	Previous response	802.9	*% change	1.7%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.4	----
High point	4921	79.2	800.2	802.0	0.998
Mid point	4960	39.6	400.2	401.7	0.996
Low point	4980	19.8	200.1	201.5	0.993
As left zero	5000	0.0	0.0	0.5	----
As left span	4921	79.2	800.2	801.0	0.999
Average Correction Factor:					0.996

Notes: Changed inlet filter after as founds. Adjusted span only.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

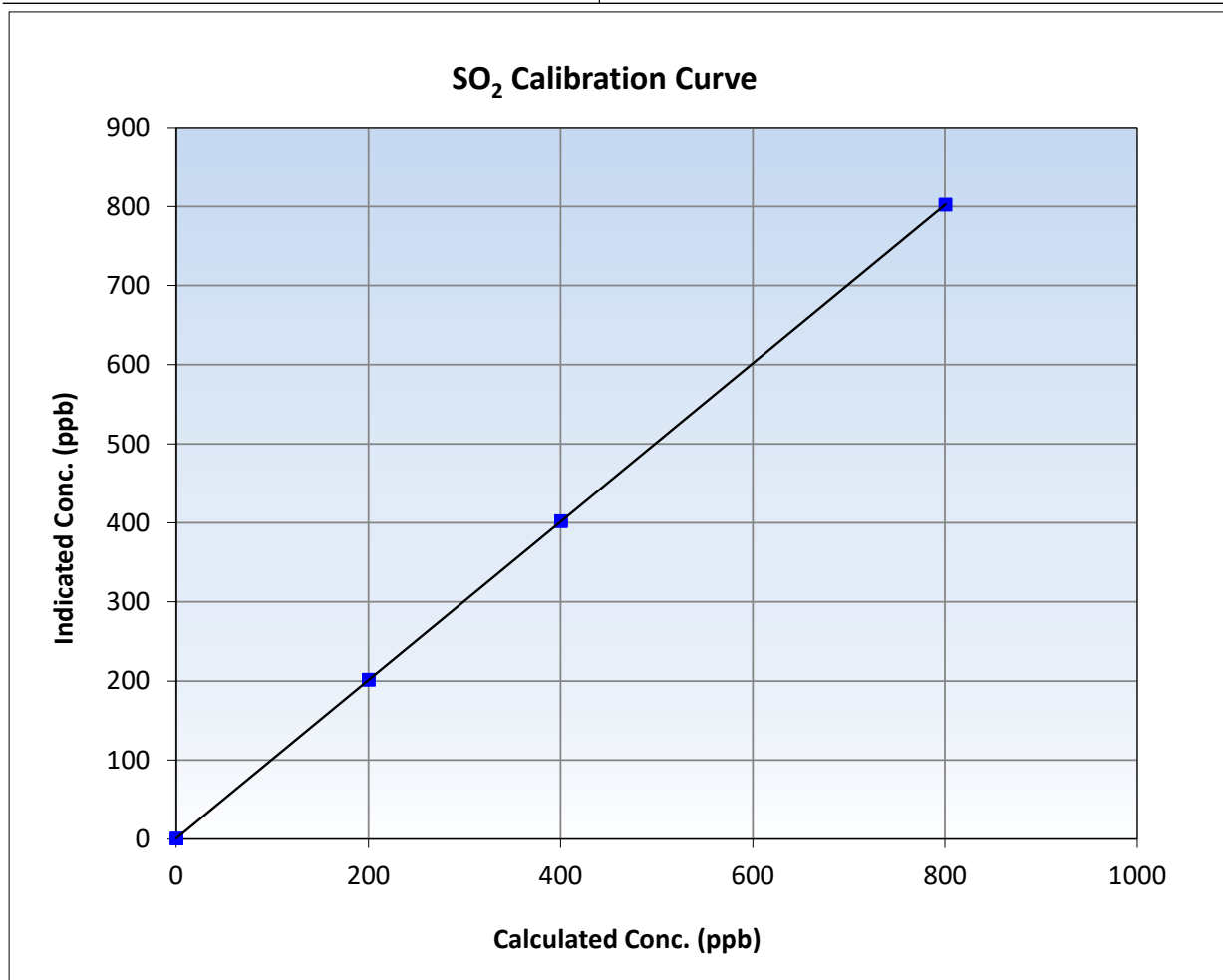
SO₂ Calibration Summary

Station Information

Calibration Date:	March 19, 2025	Previous Calibration:	February 18, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:21	End Time (MST):	11:12
Analyzer make:	Thermo 43i	Analyzer serial #:	1160290011

Calibration Data

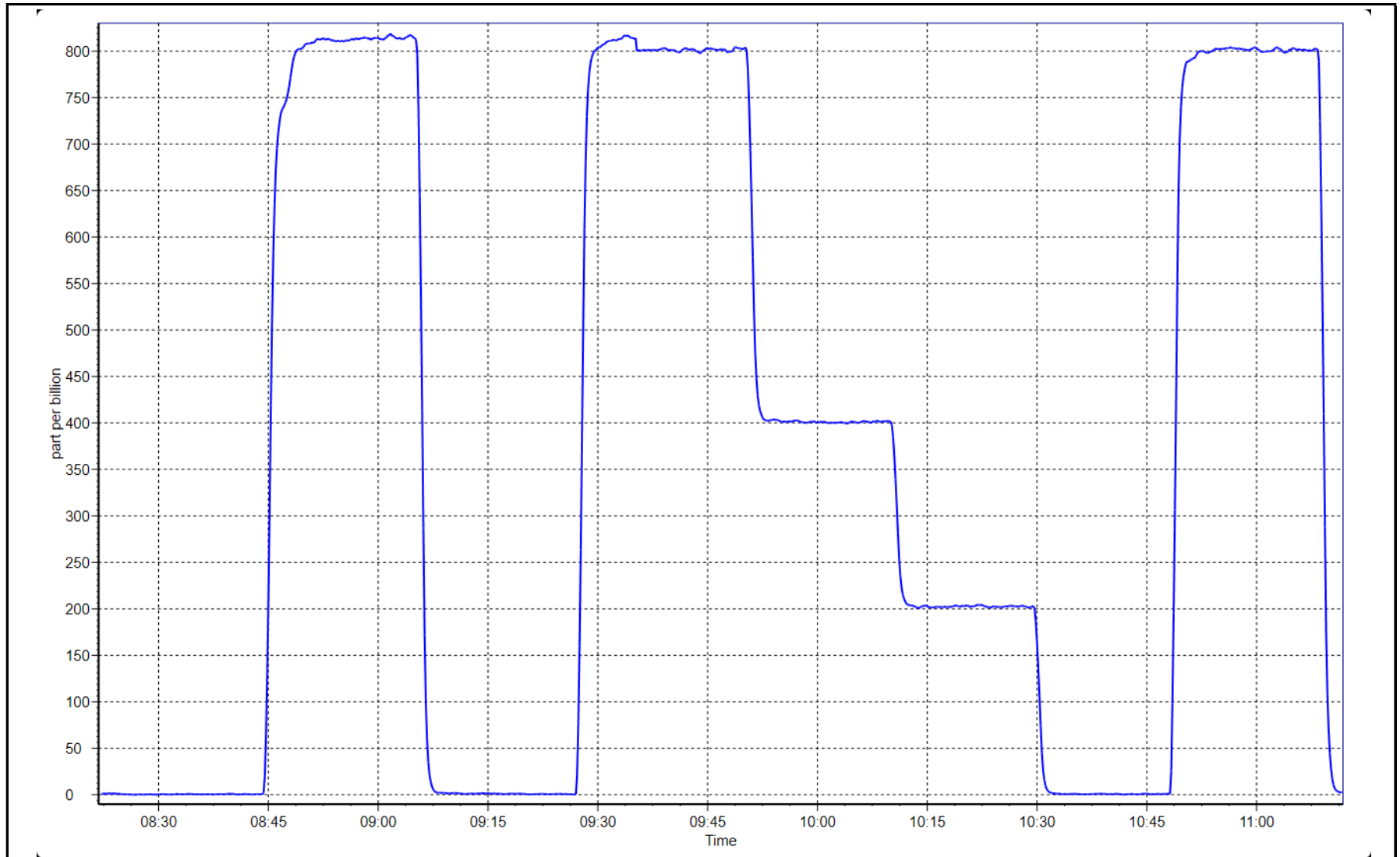
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.4	----	Correlation Coefficient	0.999999	≥0.995
800.2	802.0	0.9978	Slope	1.001515	0.90 - 1.10
400.2	401.7	0.9961	Intercept	0.763956	+/-30
200.1	201.5	0.9929			



SO2 Calibration Plot

Date: March 19, 2025

Location: Jackfish 1





Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name: Jackfish 1
Calibration Date: March 20, 2025
Start time (MST): 8:20
Reason: Routine

Station number: AMS 506
Last Cal Date: February 19, 2025
End time (MST): 12:10

Calibration Standards

Cal Gas Concentration: 4.89 ppm
Cal Gas Cylinder #: CC737971
Removed Cal Gas Conc: 4.89 ppm
Removed Gas Cyl #: NA
Calibrator Make/Model: Teledyne 750
ZAG Make/Model: Teledyne 751H

Cal Gas Exp Date: September 5, 2027
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 282
Serial Number: 321

Analyzer Information

Analyzer make: Thermo 43i-TLE
Converter make: Global G150
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1180540020
Converter serial #: 2022-218
Converter Temp: 325.0 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.987737	1.005447	Backgd or Offset:	3.76
Calibration intercept:	0.240503	0.020854	Coeff or Slope:	1.207

H2S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4918	81.8	80.0	81.8	0.977
As found Mid point	4959	40.9	40.0	40.9	0.976
As found Low point	4980	20.4	19.9	20.5	0.968
New cylinder response					
Baseline Corr As found:	81.9	Prev response:	79.26	*% change:	3.2%
Baseline Corr 2nd AF pt:	41.0	AF Slope:	1.023014	AF Intercept:	-0.018789
Baseline Corr 3rd AF pt:	20.6	AF Correlation:	0.999995	* = > +/-5% change initiates investigation	

H2S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4918	81.8	80.0	80.4	0.995
Mid point	4959	40.9	40.0	40.3	0.993
Low point	4980	20.4	19.9	20.2	0.988
As left zero	5000	0.0	0.0	-0.1	----
As left span	4918	81.8	80.0	81.0	0.988
SO2 Scrubber Check	4921	79.2	800.2	0.0	----
Date of last scrubber change:				Ave Corr Factor	0.992
Date of last converter efficiency test:					

Notes: Changed inlet filter after as founds. Adjusted span only.

Calibration Performed By: Sean Bala



Wood Buffalo Environmental Association

H₂S Calibration Summary

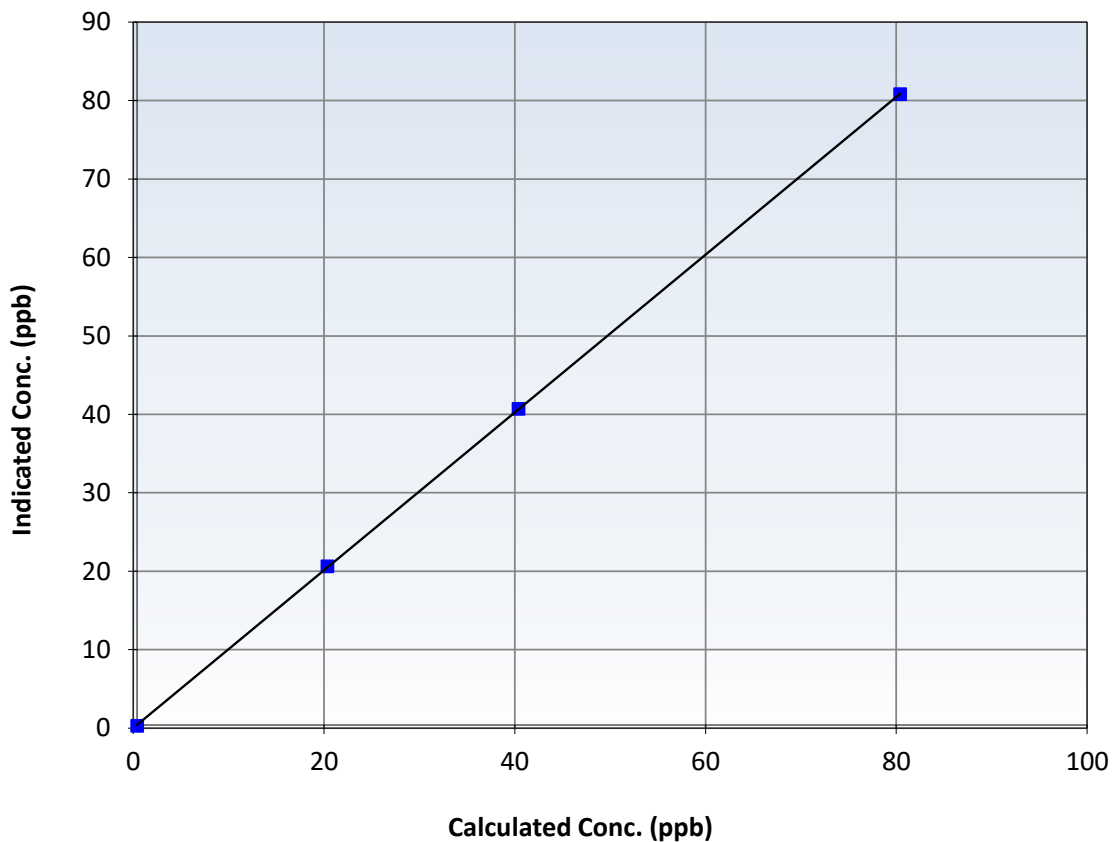
Station Information

Calibration Date:	March 20, 2025	Previous Calibration:	February 19, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:20	End Time (MST):	12:10
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1180540020

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	-0.1	----	Correlation Coefficient	0.999990	≥ 0.995
80.0	80.4	0.9951	Slope	1.005447	$0.90 - 1.10$
40.0	40.3	0.9926	Intercept	0.020854	± 3
19.9	20.2	0.9876			

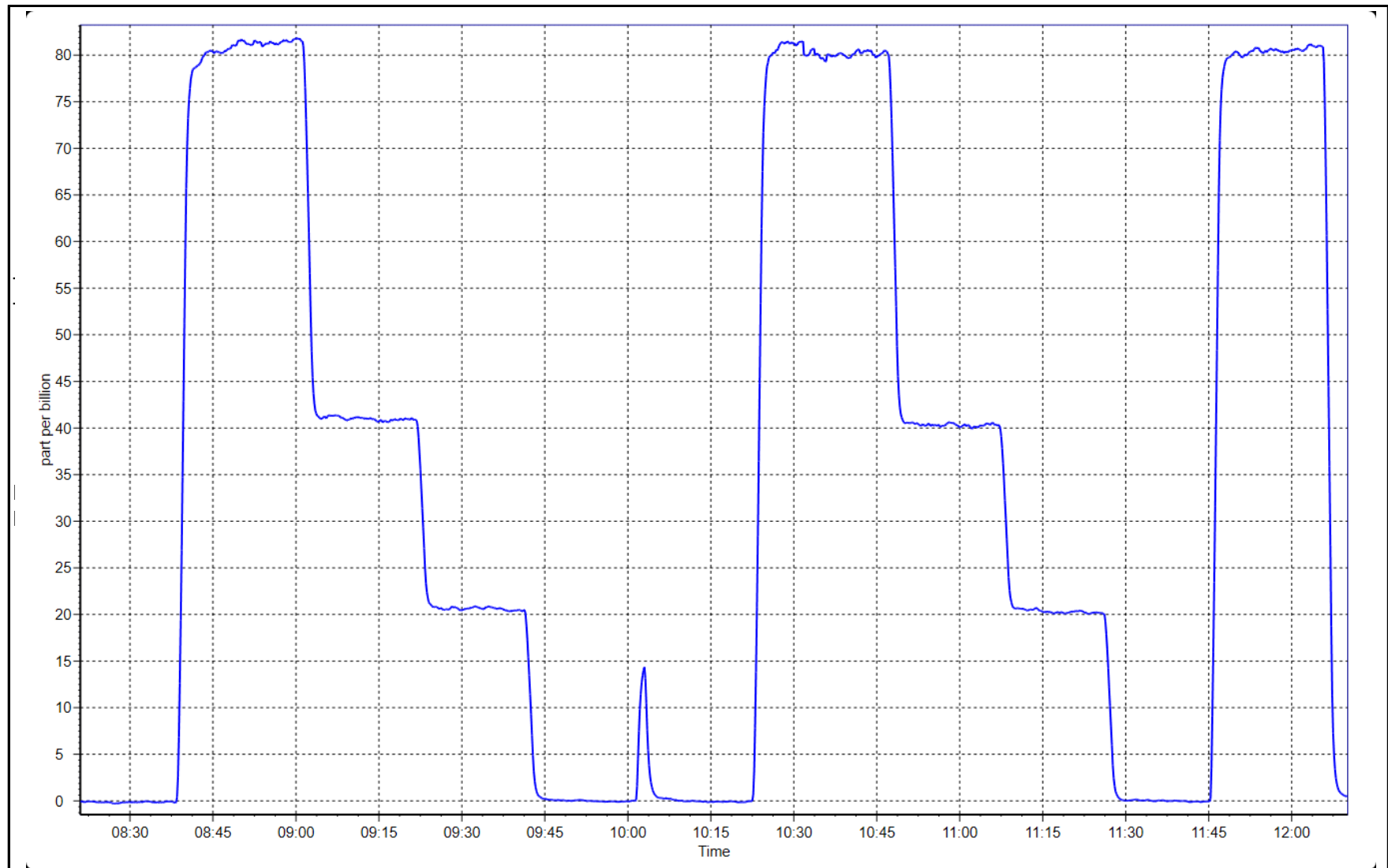
H₂S Calibration Curve



H2S Calibration Plot

Date: March 20, 2025

Location: Jackfish 1



0



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Jackfish 1
Station number: AMS 506
Calibration Date: March 25, 2025
Last Cal Date: February 25, 2025
Start time (MST): 8:21
End time (MST): 12:50
Reason: Routine

Calibration Standards

NO Gas Cylinder #: DT0022706
NOX Cal Gas Conc: 60.20 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 60.20 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API 701
Cal Gas Expiry Date: January 5, 2032
NO Cal Gas Conc: 60.10 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 60.10 ppm
NO gas Diff:
Serial Number: 3252
Serial Number: 4427

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	----	----
AF High point	4933	66.6	801.9	800.6	1.3	793.2	788.1	5.1	1.0109	1.0159
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x =	805.9 ppb	NO =	802.7 ppb	* = > +/-5% change initiates investigation			*Percent Change	NO _x = -1.6%	
Baseline Corr 1st pt	NO _x =	793.3 ppb	NO =	788.1 ppb	<u>As Found Statistics</u>			*Percent Change	NO = -1.9%	
Baseline Corr 2nd pt	NO _x =	NA ppb	NO =	NA ppb	As found NO _x r ² :			Nx SI:	Nx Int:	
Baseline Corr 3rd pt	NO _x =	NA ppb	NO =	NA ppb	As found NO r ² :			NO SI:	NO Int:	
					As found NO ₂ r ² :			NO2 SI:	NO ₂ Int:	

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 12400232071

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.900	0.912	NO bkgnd or offset:	0.7	0.7
NOX coeff or slope:	0.993	0.993	NOX bkgnd or offset:	0.9	0.9
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	191.9	194.7

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.001988	0.996743
NO _x Cal Offset:	2.373992	2.813160
NO Cal Slope:	1.001901	0.996494
NO Cal Offset:	0.612854	0.631010
NO ₂ Cal Slope:	0.986612	0.993078
NO ₂ Cal Offset:	0.963220	2.112455

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.1	0.2	0.0	----	----
High point	4933	66.6	801.9	800.6	1.3	801.0	798.2	2.4	1.0012	1.0030
Mid point	4967	33.3	400.9	400.2	0.7	403.1	399.7	3.4	0.9946	1.0014
Low point	4983	16.6	199.9	199.5	0.3	205.2	199.9	5.2	0.9741	0.9982
As left zero	5000	0.0	0.0	0.0	0.0	0.1	0.2	-0.1	----	----
As left span	4933	66.6	801.9	378.8	423.1	794.3	378.8	415.5	1.0096	1.0000
Average Correction Factor									0.9899	1.0009

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.0	----	----
High GPT point	795.4	378.3	418.4	416.7	1.0042	99.6%
Mid GPT point	795.4	584.0	212.7	213.9	0.9945	100.5%
Low GPT point	795.4	684.4	112.3	116.2	0.9667	103.4%
Average Correction Factor					0.9885	101.2%

Notes:

Changed inlet filter. Adjusted span only.

Calibration Performed By:

Sean Bala



Wood Buffalo Environmental Association

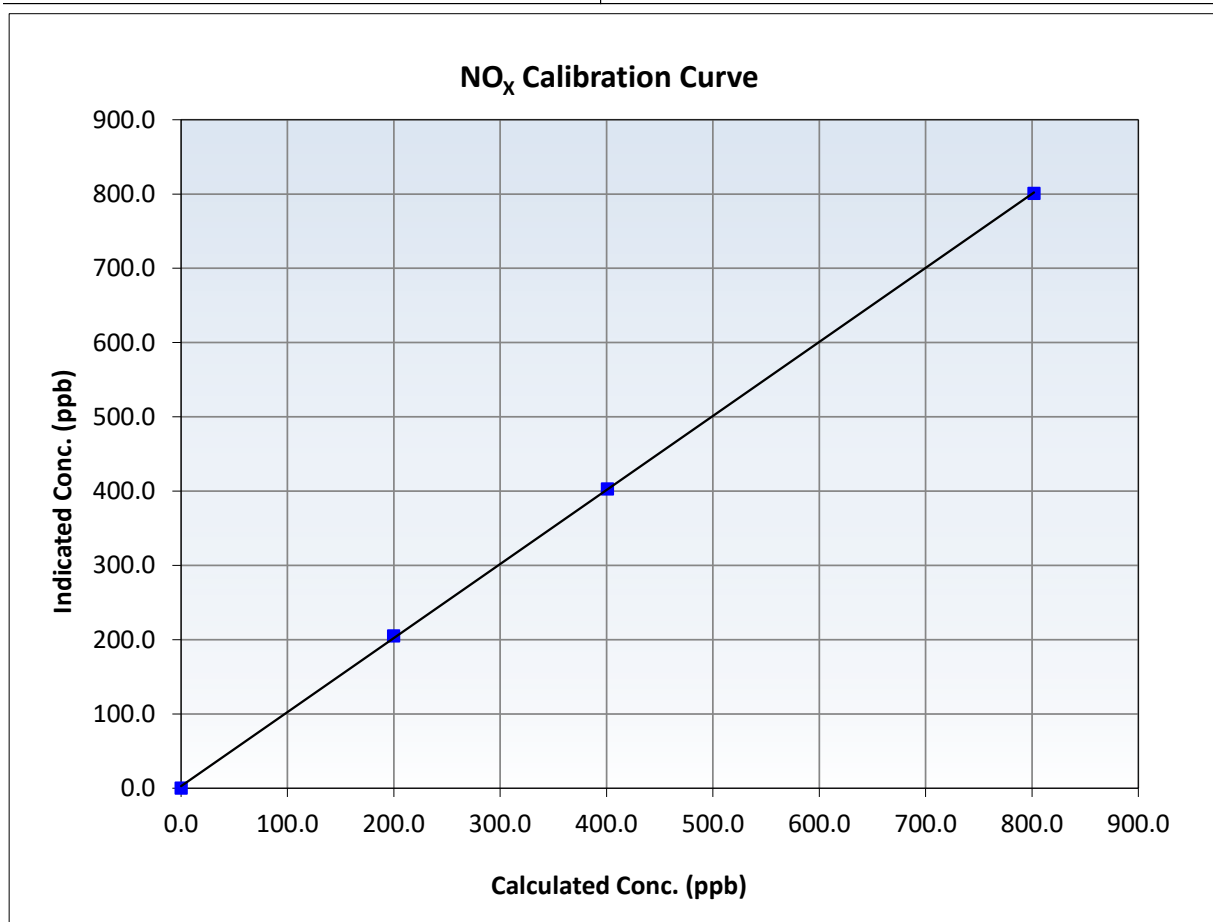
NO_x Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 25, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:21	End Time (MST):	12:50
Analyzer make:	Thermo 42i	Analyzer serial #:	12400232071

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	0.999945	≥0.995
801.9	801.0	1.0012	Slope	0.996743	0.90 - 1.10
400.9	403.1	0.9946	Intercept	2.813160	+/-20
199.9	205.2	0.9741			





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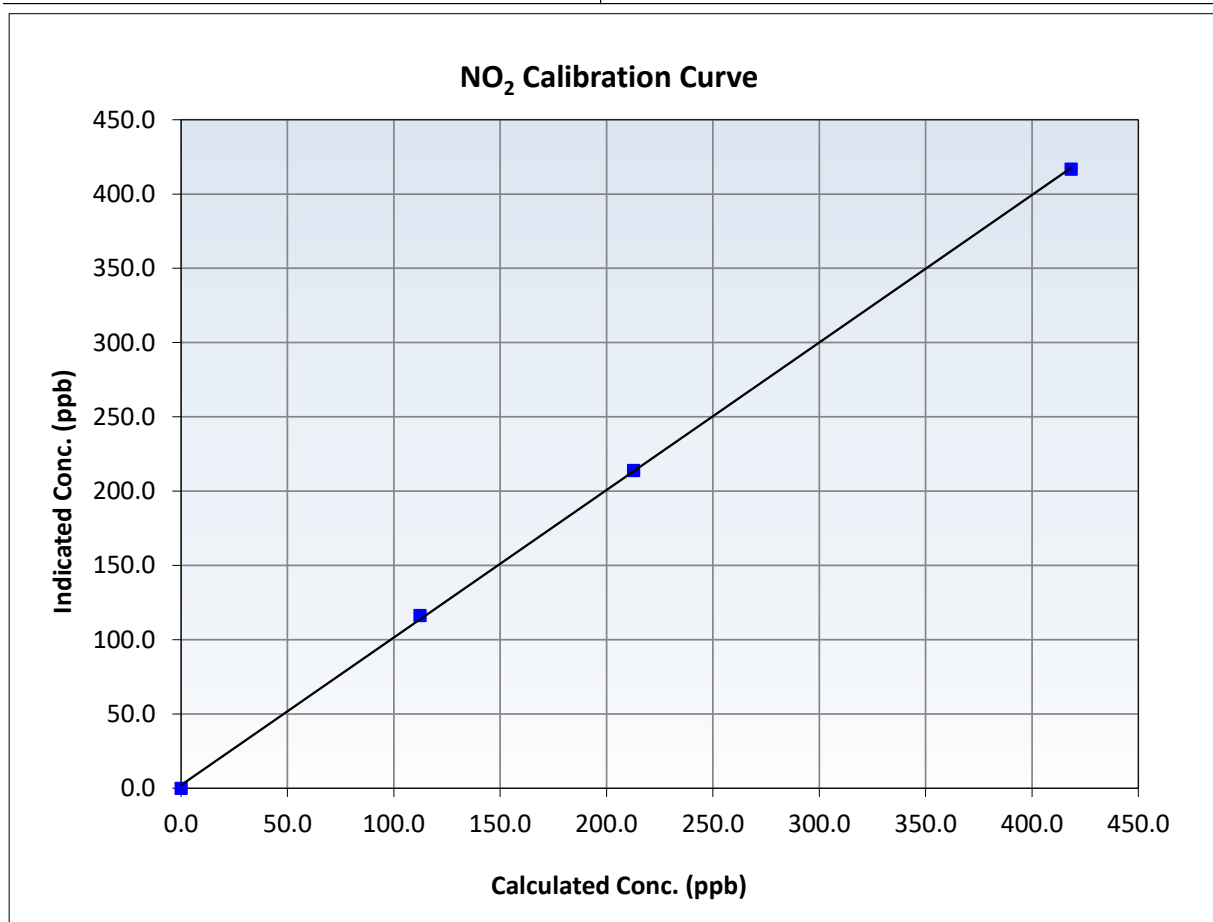
NO₂ Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 25, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:21	End Time (MST):	12:50
Analyzer make:	Thermo 42i	Analyzer serial #:	12400232071

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999871	≥ 0.995
418.4	416.7	1.0042	Slope	0.993078	$0.90 - 1.10$
212.7	213.9	0.9945	Intercept	2.112455	± 20
112.3	116.2	0.9667			





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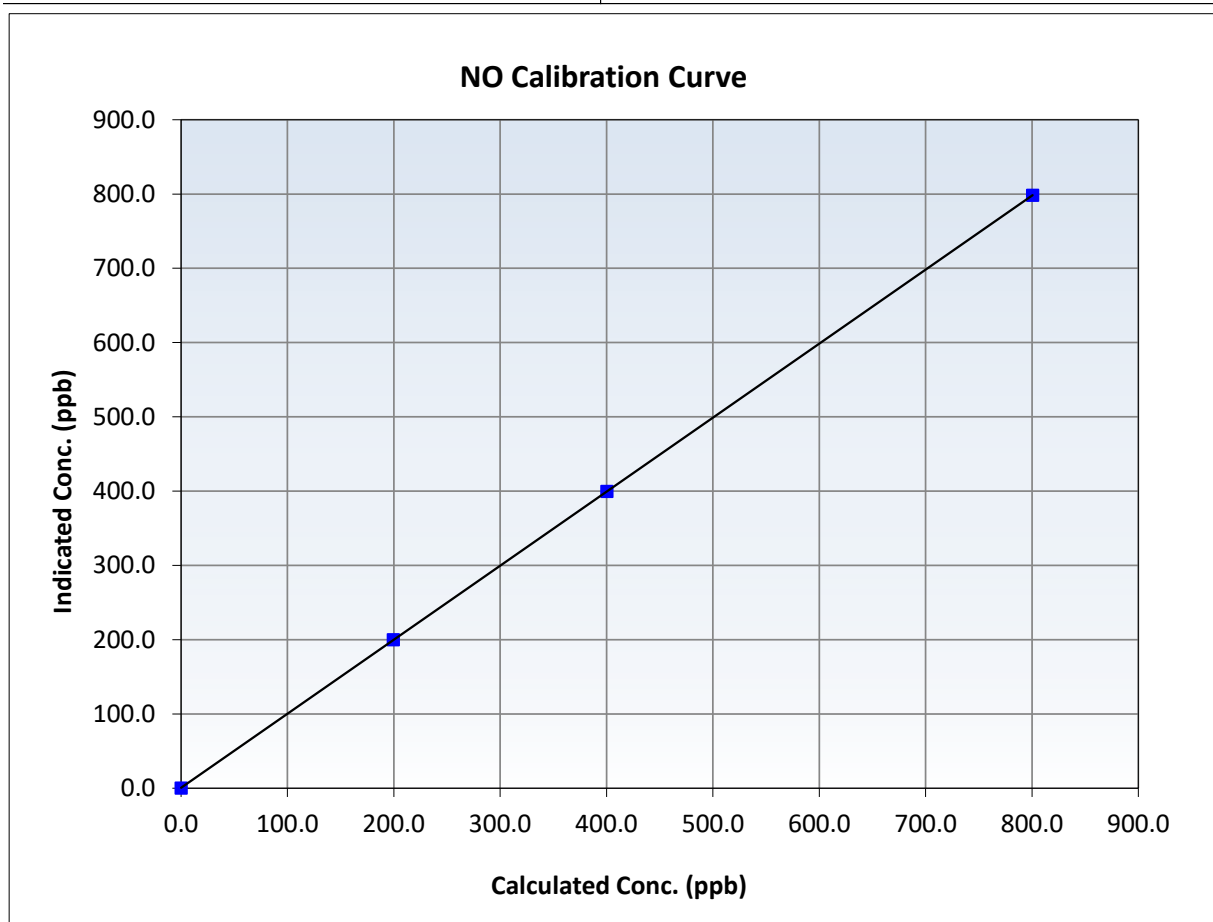
NO Calibration Summary

Station Information

Calibration Date:	March 25, 2025	Previous Calibration:	February 25, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:21	End Time (MST):	12:50
Analyzer make:	Thermo 42i	Analyzer serial #:	12400232071

Calibration Data

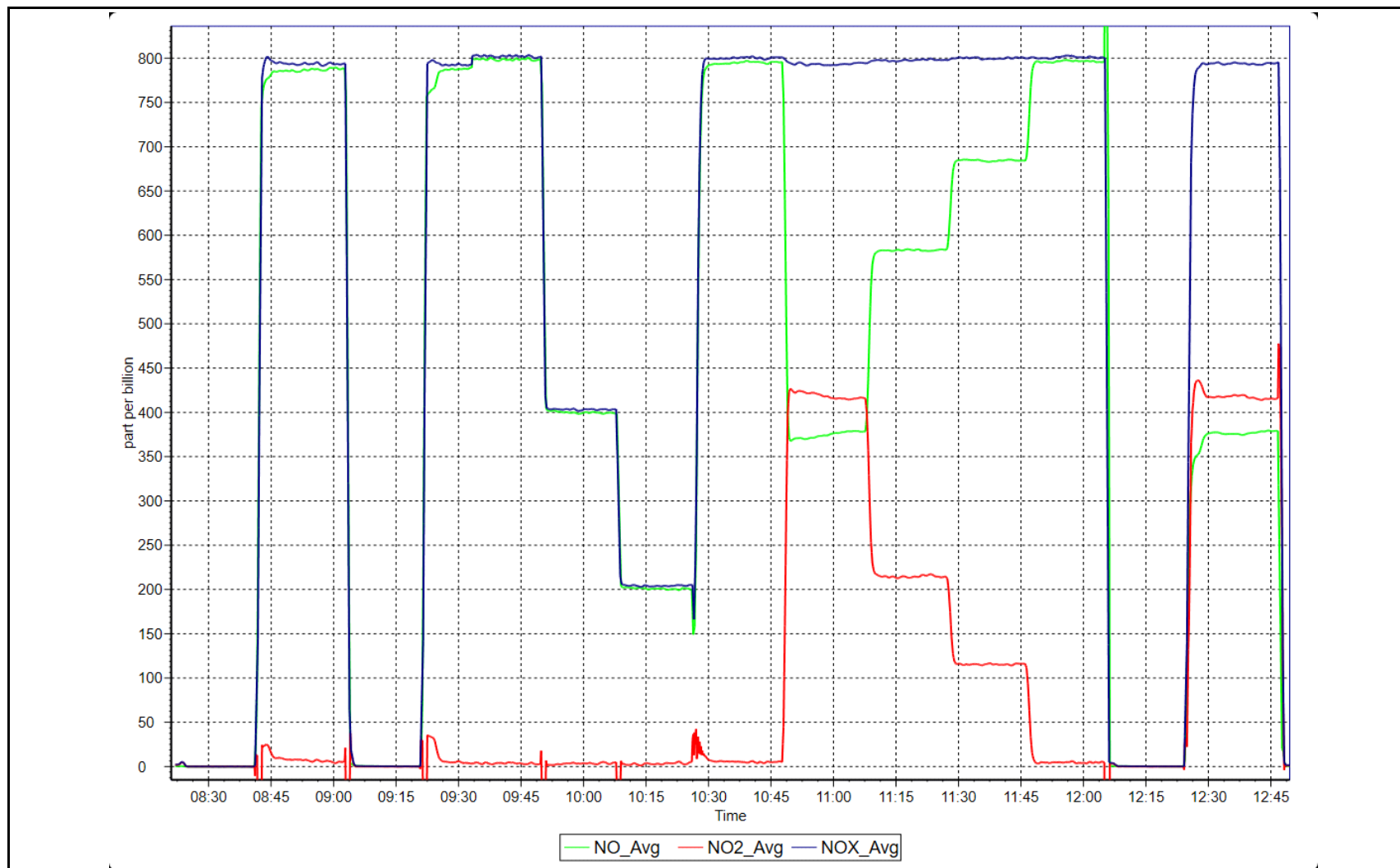
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.2	----	Correlation Coefficient	0.999999	≥ 0.995
800.6	798.2	1.0030	Slope	0.996494	$0.90 - 1.10$
400.2	399.7	1.0014	Intercept	0.631010	± 20
199.5	199.9	0.9982			



NO_x Calibration Plot

Date: March 25, 2025

Location: Jackfish 1





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS508
KIRBY NORTH
MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Kirby North Station number: AMS 508
Calibration Date: March 13, 2025 Last Cal Date: February 13, 2025
Start time (MST): 7:18 End time (MST): 10:34
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.74 ppm Cal Gas Exp Date: October 9, 2032
Cal Gas Cylinder #: CC255918
Removed Cal Gas Conc: 50.74 ppm Rem Gas Exp Date:
Removed Gas Cyl #: Diff between cyl:
Calibrator Model: Teledyne API T700 Serial Number: 5240
Zero Air Gen Model: Teledyne API T701H Serial Number: 880

Analyzer Information

Analyzer make: Thermo 43iQ Serial Number: 1182340007
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.000105	0.998619	Backgd or Offset:	28.0	29.1
Calibration intercept:	0.608022	0.327990	Coeff or Slope:	1.072	1.117

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4921	78.8	799.7	792.3	1.009
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	792.4	Previous response	800.4	*% change	-1.0%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4921	78.8	799.7	798.8	1.001
Mid point	4961	39.4	399.8	399.7	1.000
Low point	4980	19.7	199.9	200.2	0.999
As left zero	5000	0.0	0.0	0.0	----
As left span	4921	78.8	799.7	805.0	0.993
Average Correction Factor:					1.000

Notes: Changed sample inlet filter after as founds. Adjusted span.

Calibration Performed By: Braiden Boutillier



Wood Buffalo Environmental Association

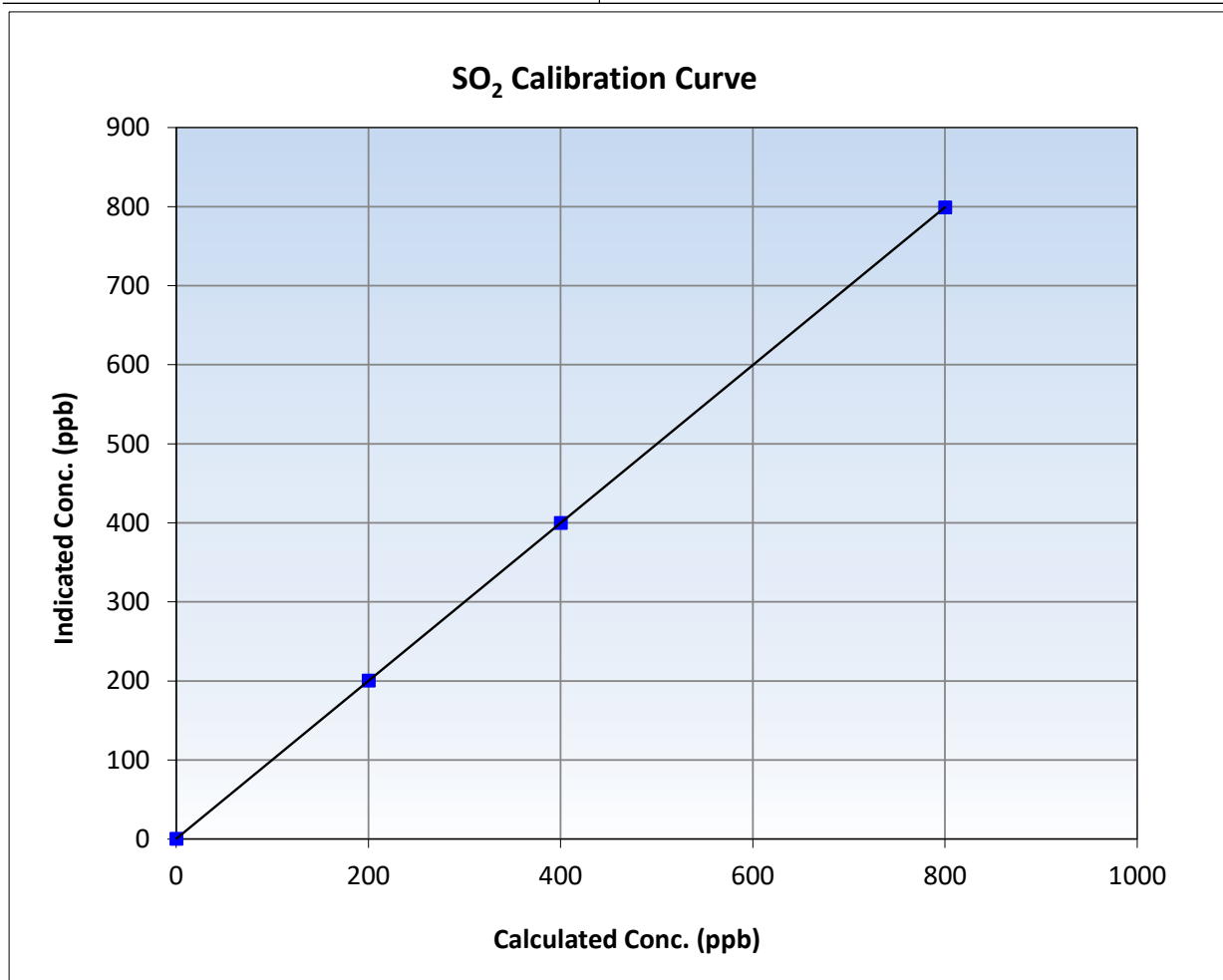
SO₂ Calibration Summary

Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 13, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	7:18	End Time (MST):	10:34
Analyzer make:	Thermo 43iQ	Analyzer serial #:	1182340007

Calibration Data

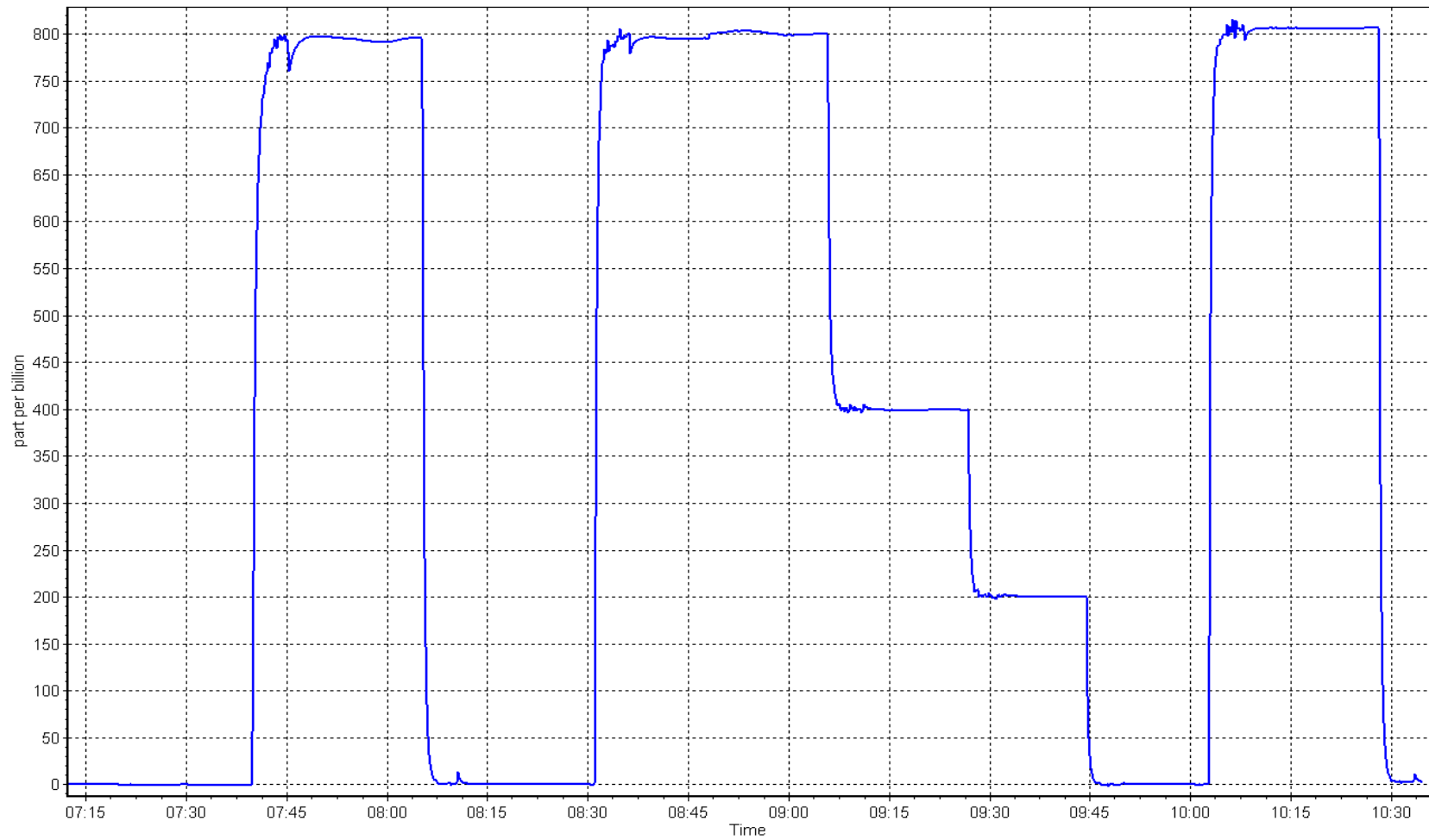
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.1	----	Correlation Coefficient	1.000000		≥0.995
799.7	798.8	1.0011	Slope	0.998619		0.90 - 1.10
399.8	399.7	1.0002	Intercept	0.327990		+/-30
199.9	200.2	0.9986				



SO2 Calibration Plot

Date: March 13, 2025

Location: Kirby North





Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name: Kirby North
Calibration Date: March 12, 2025
Start time (MST): 11:15
Reason: Routine

Station number: AMS 508
Last Cal Date: February 12, 2025
End time (MST): 18:13

Calibration Standards

Cal Gas Concentration: 5.05 ppm
Cal Gas Cylinder #: DT0019762
Removed Cal Gas Conc: 5.05 ppm
Removed Gas Cyl #: n/a
Calibrator Make/Model: Teledyne API T750
ZAG Make/Model: Teledyne API T701H

Cal Gas Exp Date: November 15, 2026
Rem Gas Exp Date: NA
Diff between cyl:
Serial Number: 282
Serial Number: 5613

Analyzer Information

Analyzer make: Thermo 43i-TLE
Converter make: Global
Analyzer Range: 0 - 100 ppb

Analyzer serial #: 1150840012
Converter serial #: 2022-197
Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	0.989955	1.006814	Backgd or Offset:	1.73	1.74
Calibration intercept:	-0.120950	-0.160959	Coeff or Slope:	1.041	1.035

H2S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.0	----
As found High point	4921	79.2	80.0	81.8	0.978
As found Mid point	4960	39.6	40.0	40.5	0.988
As found Low point	4980	19.8	20.0	19.8	1.010
New cylinder response					
Baseline Corr As found:	81.8	Prev response:	79.07	*% change:	3.3%
Baseline Corr 2nd AF pt:	40.5	AF Slope:	1.024815	AF Intercept:	-0.340976
Baseline Corr 3rd AF pt:	19.8	AF Correlation:	0.999921	* = > +/-5% change initiates investigation	

H2S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4921	79.2	80.0	80.5	0.994
Mid point	4960	39.6	40.0	39.9	1.002
Low point	4980	19.8	20.0	19.9	1.005
As left zero	5000	0.0	0.0	-0.1	----
As left span	4921	79.2	80.0	80.2	0.997
SO2 Scrubber Check	4919	80.0	800.2	0.0	----
Date of last scrubber change:		July 25, 2023		Ave Corr Factor	1.000
Date of last converter efficiency test:		n/a			

Notes: Changed sample inlet filter and conducted scrubber test after as founds. Adjusted span.

Calibration Performed By: Braiden Boutilier



Wood Buffalo Environmental Association

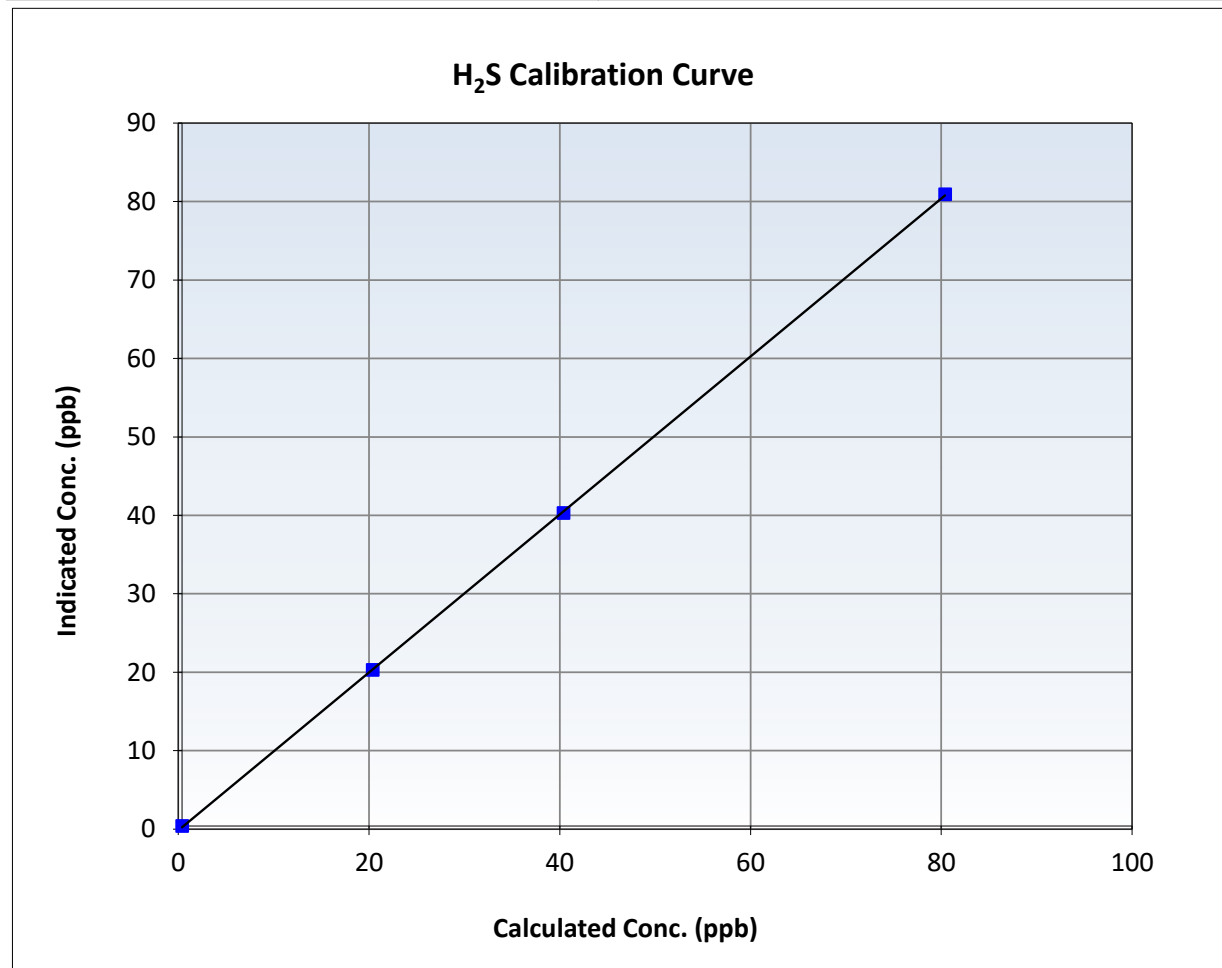
H2S Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 12, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	11:15	End Time (MST):	18:13
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1150840012

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999974	≥ 0.995
80.0	80.5	0.9937	Slope	1.006814	$0.90 - 1.10$
40.0	39.9	1.0025	Intercept	-0.160959	± 3
20.0	19.9	1.0050			



H2S Calibration Plot

Date: March 12, 2025

Location: Kirby North





Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name: Kirby North
Calibration Date: March 13, 2025
Start time (MST): 7:18
Reason: Routine

Station number: AMS 508
Last Cal Date: February 13, 2025
End time (MST): 10:34

Calibration Standards

Gas Cert Reference: CC255918
CH4 Cal Gas Conc. 506.4 ppm
C3H8 Cal Gas Conc. 205.0 ppm
Removed Gas Cert:
Removed CH4 Conc. 506.4 ppm
Removed C3H8 Conc. 205.0 ppm
Calibrator Make/Model: Teledyne API T700
ZAG Make/Model: Teledyne API T701H

Cal Gas Expiry Date: October 9, 2032
CH4 Equiv Conc. 1070.2 ppm
Removed Gas Expiry:
CH4 Equiv Conc. 1070.2 ppm
Diff between cyl:
Serial Number: 5240
Serial Number: 880

Analyzer Information

Analyzer make: Thermo 51i-LT
Analyzer Range: 0 - 20 ppm

Analyzer serial #: 1182340005

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
Calibration slope:	1.004944	1.000987	Background:	2.18	2.23
Calibration intercept:	-0.026229	-0.082032	Coefficient:	3.619	3.697

THC As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Baseline Adjusted
					Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.00	-0.07	----
As found High point	4921	78.8	16.87	16.55	1.015
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	16.62	Previous response	16.92	*% change	-1.9%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

THC Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)
					<i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.00	-0.04	
High point	4921	78.8	16.87	16.82	1.003
Mid point	4961	39.4	8.43	8.34	1.011
Low point	4980	19.7	4.22	4.10	1.029
As left zero	5000	0.0	0.00	-0.09	----
As left span	4921	78.8	16.87	16.95	0.995
Average Correction Factor					1.014

Notes:

Changed sample inlet filter after as founds. Adjusted span.

Calibration Performed By:

Braiden Boutilier



Wood Buffalo Environmental Association

THC Calibration Summary

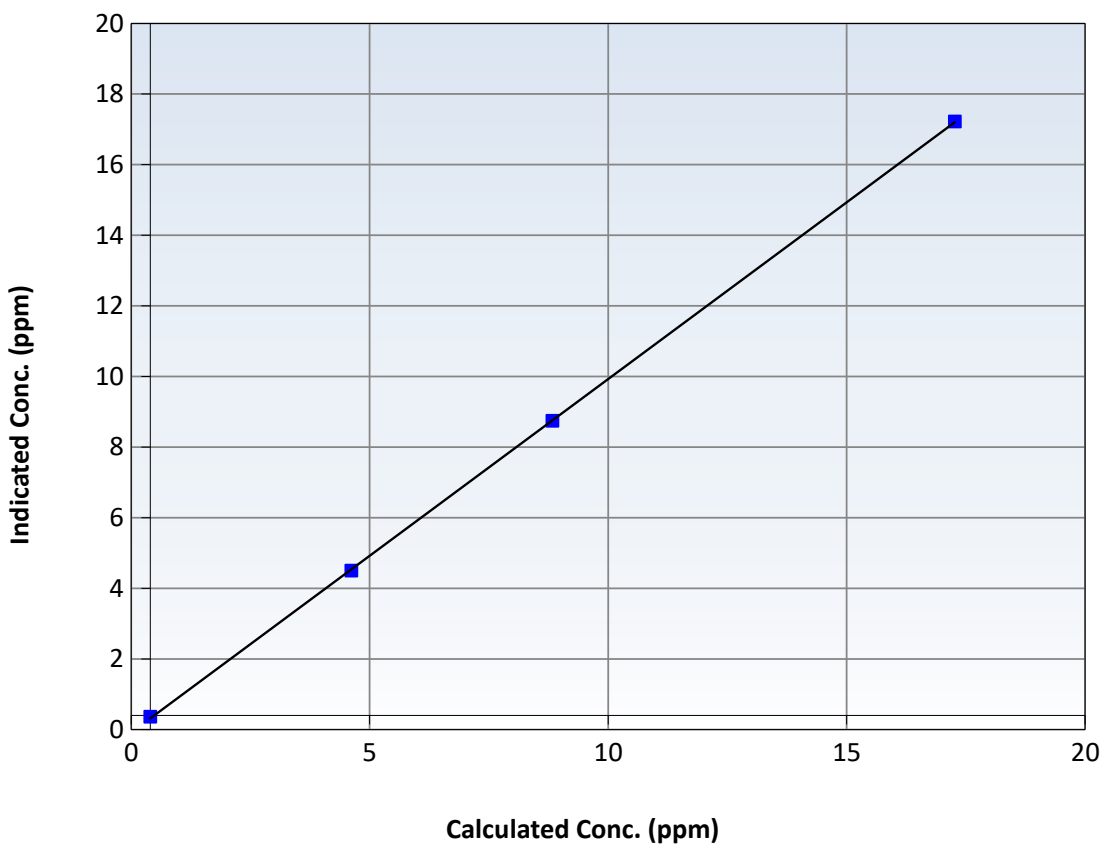
Station Information

Calibration Date:	March 13, 2025	Previous Calibration:	February 13, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	7:18	End Time (MST):	10:34
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1182340005

Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.00	-0.04	----	Correlation Coefficient	0.999976	≥ 0.995
16.87	16.82	1.0027	Slope	1.000987	$0.90 - 1.10$
8.43	8.34	1.0110	Intercept	-0.082032	± 1.5
4.22	4.10	1.0287			

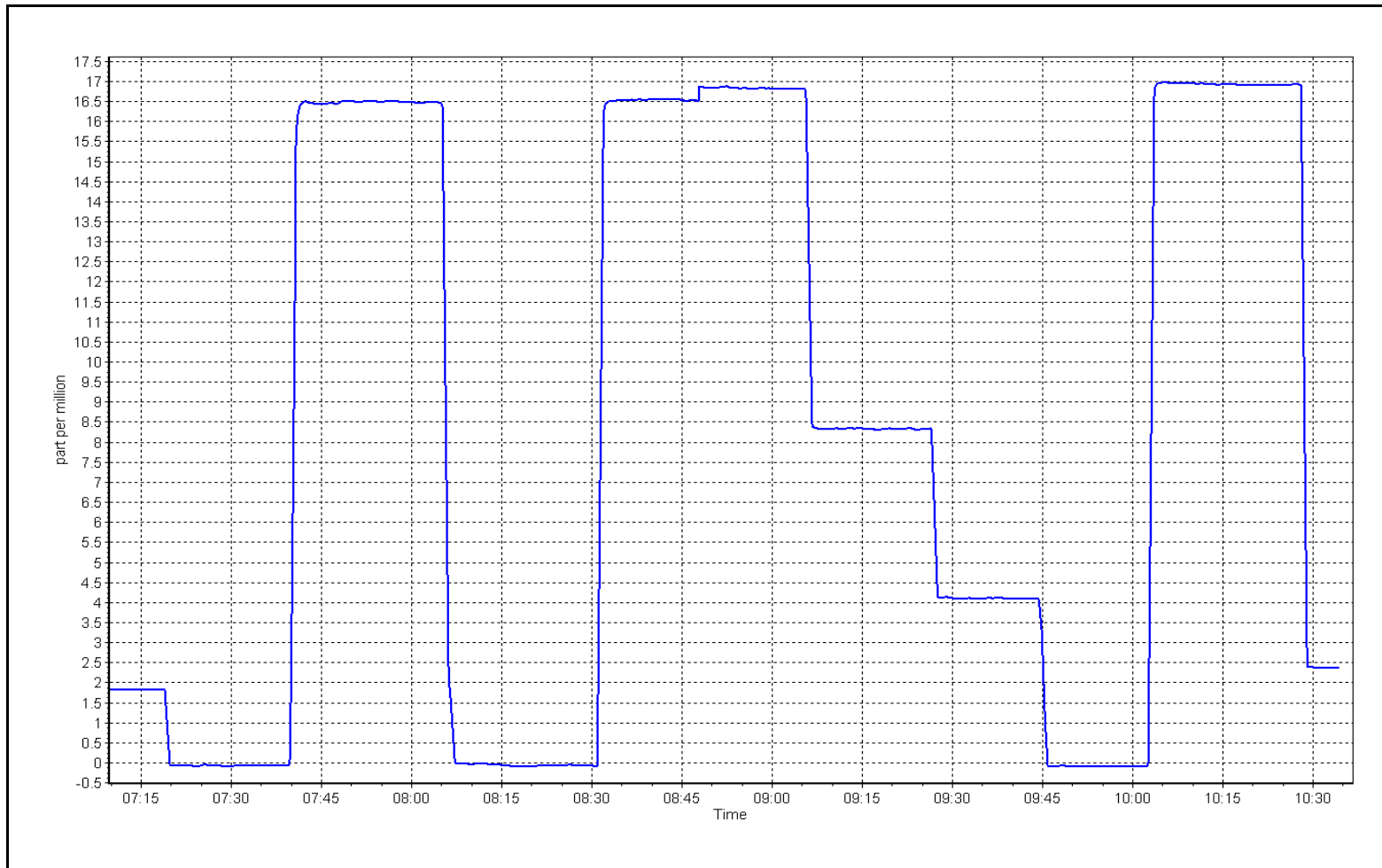
THC Calibration Curve



THC Calibration Plot

Date: March 13, 2025

Location: Kirby North





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Kirby North
Station number: AMS 508
Calibration Date: March 12, 2025
Last Cal Date: February 13, 2025
Start time (MST): 11:00
End time (MST): 18:14
Reason: Routine

Calibration Standards

NO Gas Cylinder #: DT0019572
NOX Cal Gas Conc: 60.00 ppm
Removed Cylinder #: T34ULGL
Removed Gas NOX Conc: 49.39 ppm
NOX gas Diff: -2.2%
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701H
Cal Gas Expiry Date: January 5, 2032
NO Cal Gas Conc: 59.90 ppm
Removed Gas Exp Date: March 8, 2025
Removed Gas NO Conc: 49.02 ppm
NO gas Diff: -3.8%
Serial Number: 5240
Serial Number: 880

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	----	----
AF High point	4918	81.6	806.1	800.1	6.0	804.0	796.7	7.8	1.0026	1.0042
AF Mid point										
AF Low point										
New cyl resp	4933	66.8	801.6	800.3	1.3	782.0	767.6	14.4	0.9971	1.0045
Previous Response	NO _x = 805.7 ppb	NO = 799.5 ppb	* = > +/-5% change initiates investigation			*Percent Change		NO _x = -0.2%		
Baseline Corr 1st pt	NO _x = 804.0 ppb	NO = 796.7 ppb	<u>As Found Statistics</u>			*Percent Change		NO = -0.3%		
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found NO _x r ² :			Nx SI:		Nx Int:		
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found NO r ² :			NO SI:		NO Int:		
			As found NO ₂ r ² :			NO2 SI:		NO ₂ Int:		

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 1118148496

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	1.000094	0.998604
NO _x Cal Offset:	-0.443894	-0.693582
NO Cal Slope:	1.000429	1.000714
NO Cal Offset:	-0.944034	-1.373584
NO ₂ Cal Slope:	0.986711	0.981281
NO ₂ Cal Offset:	2.305246	1.476756

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	0.696	0.707	NO bkgnd or offset:	7.9	8.0
NOX coeff or slope:	0.996	0.991	NOX bkgnd or offset:	8.0	8.1
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	147.7	147.1

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	----	----
High point	4933	66.8	801.6	800.3	1.3	799.4	799.2	0.3	1.0028	1.0014
Mid point	4967	33.4	400.8	400.1	0.7	401.5	401.3	0.2	0.9983	0.9971
Low point	4983	16.7	200.4	200.1	0.3	197.2	195.5	1.7	1.0162	1.0234
As left zero	5000	0.0	0.0	0.0	0.0	0.2	0.2	0.0	----	----
As left span	4933	66.8	801.6	405.0	396.6	788.6	405.0	383.5	1.0165	1.0000
Average Correction Factor									1.0058	1.0073

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.0	----	----
High GPT point	794.9	392.8	403.4	396.5	1.0175	98.3%
Mid GPT point	794.9	610.0	186.2	185.6	1.0034	99.7%
Low GPT point	794.9	701.3	94.9	95.6	0.9931	100.7%
Average Correction Factor					1.0047	99.5%

Notes:

Changed sample inlet filter and calibration gas after as founds. Adjusted span.

Calibration Performed By:

Braiden Boutilier



Wood Buffalo Environmental Association

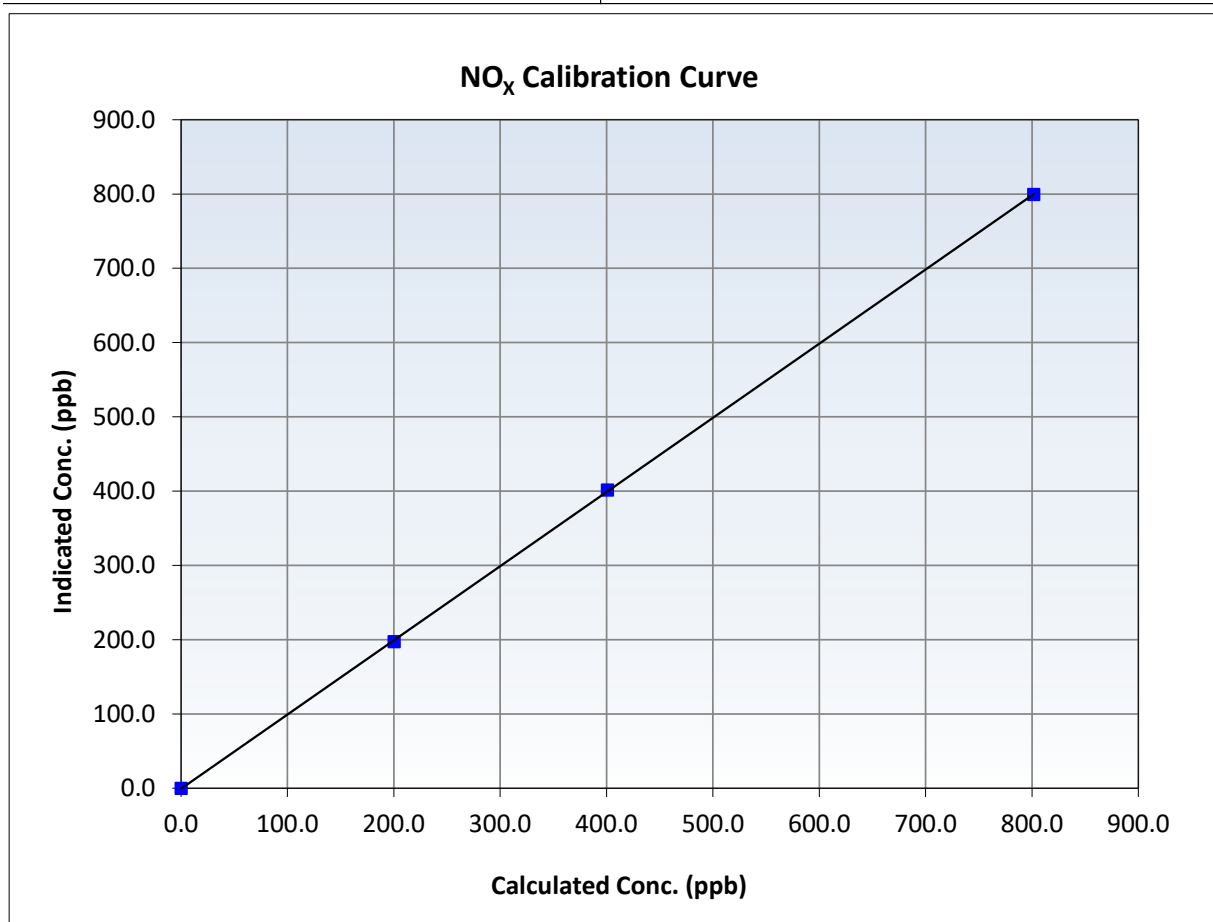
NO_x Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	11:00	End Time (MST):	18:14
Analyzer make:	Thermo 42i	Analyzer serial #:	1118148496

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999973	≥0.995
801.6	799.4	1.0028	Slope	0.998604	0.90 - 1.10
400.8	401.5	0.9983	Intercept	-0.693582	+/-20
200.4	197.2	1.0162			





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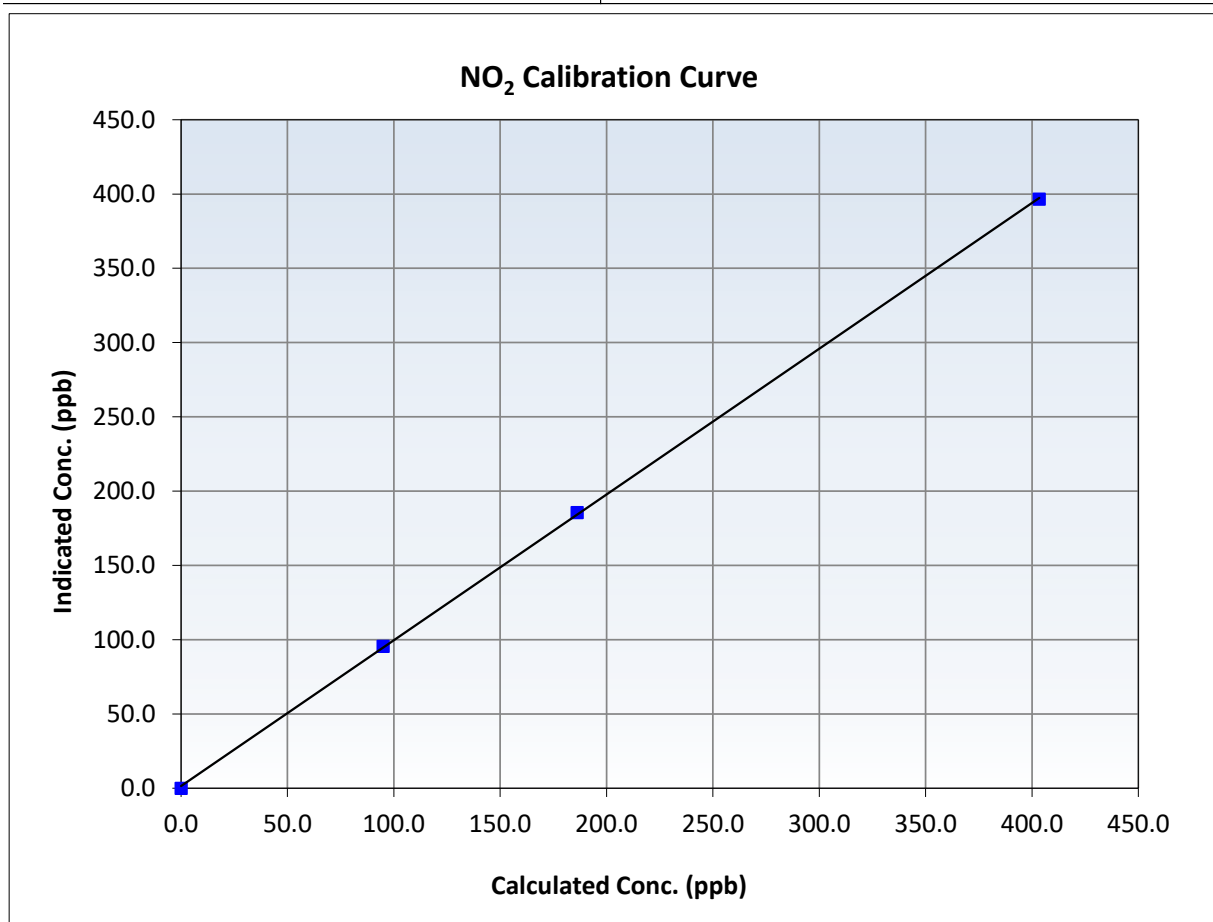
NO₂ Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	11:00	End Time (MST):	18:14
Analyzer make:	Thermo 42i	Analyzer serial #:	1118148496

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999933	≥0.995
403.4	396.5	1.0175	Slope	0.981281	0.90 - 1.10
186.2	185.6	1.0034	Intercept	1.476756	+/-20
94.9	95.6	0.9931			





Wood Buffalo Environmental Association

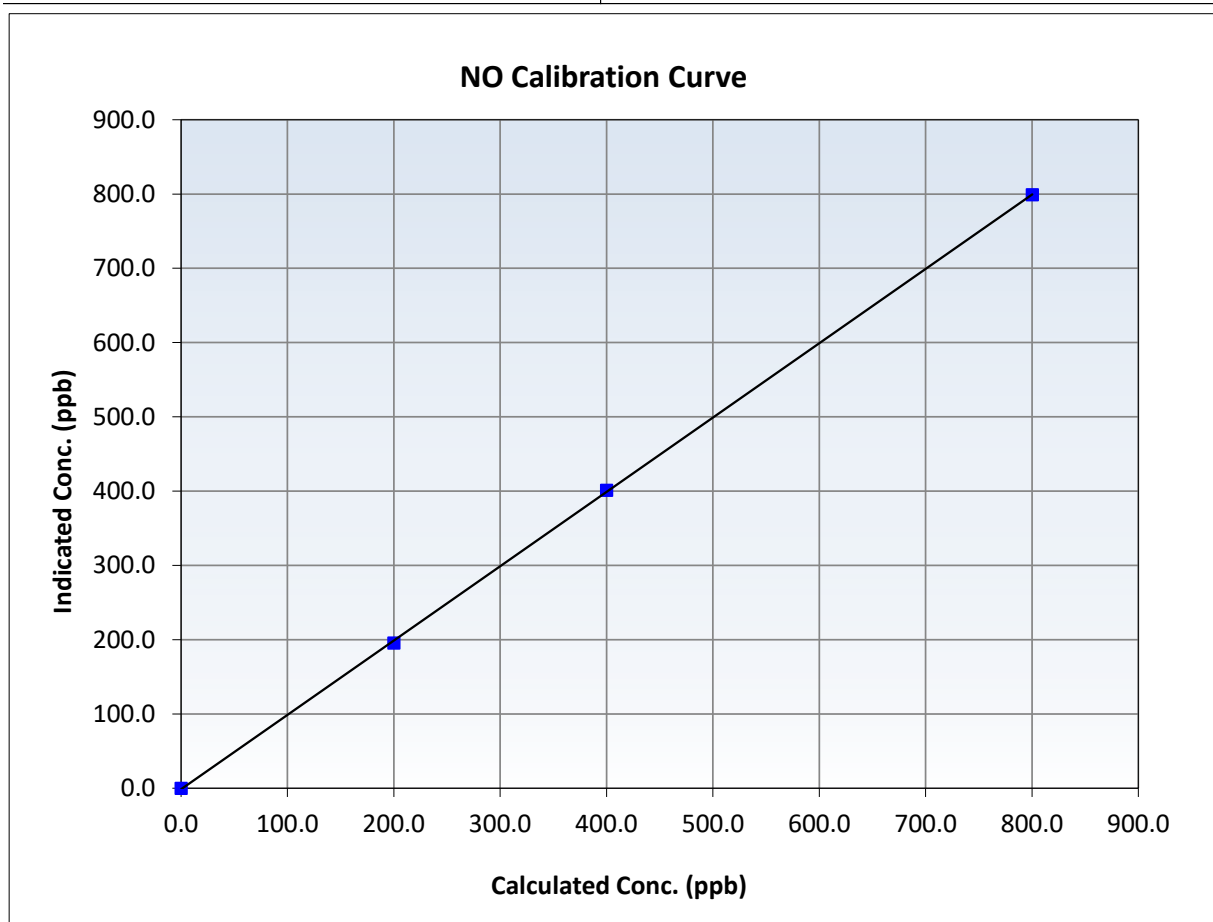
NO Calibration Summary

Station Information

Calibration Date:	March 12, 2025	Previous Calibration:	February 13, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	11:00	End Time (MST):	18:14
Analyzer make:	Thermo 42i	Analyzer serial #:	1118148496

Calibration Data

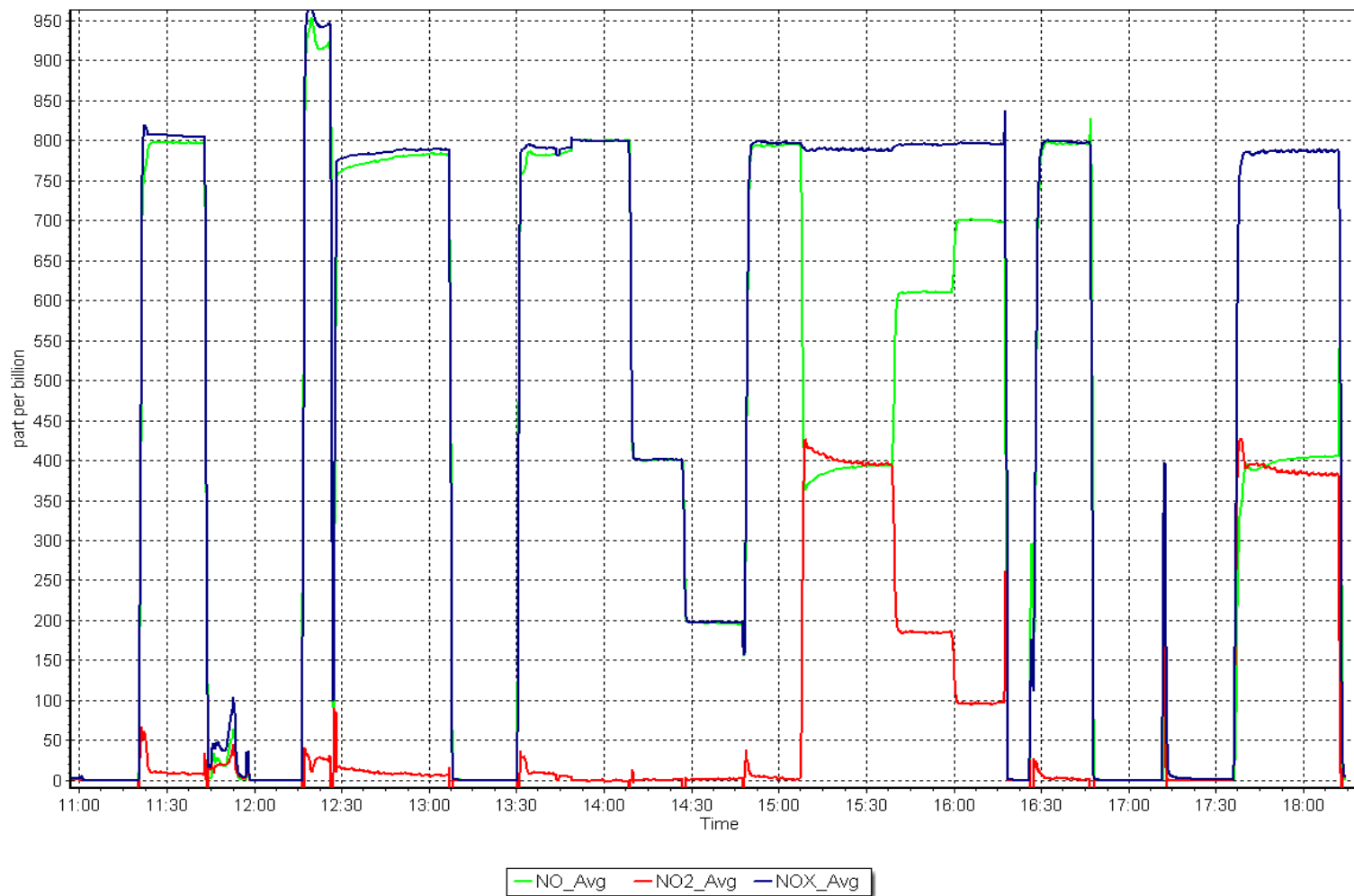
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999948	≥ 0.995
800.3	799.2	1.0014	Slope	1.000714	$0.90 - 1.10$
400.1	401.3	0.9971	Intercept	-1.373584	± 20
200.1	195.5	1.0234			



NO_x Calibration Plot

Date: March 12, 2025

Location: Kirby North





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS512 HANGINGSTONE EXPANSION MARCH 2025

Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

April 30, 2025



Wood Buffalo Environmental Association

SO₂ Calibration Report

Station Information

Station Name: Hangingstone Expansion Station number: AMS 512
Calibration Date: March 7, 2025 Last Cal Date: February 14, 2025
Start time (MST): 7:30 End time (MST): 9:55
Reason: Routine

Calibration Standards

Cal Gas Concentration: 50.06 ppm Cal Gas Exp Date: January 5, 2029
Cal Gas Cylinder #: CC147416
Removed Cal Gas Conc: 50.06 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Model: Teledyne API T700 Serial Number: 2445
Zero Air Gen Model: Teledyne API 701 Serial Number: 138

Analyzer Information

Analyzer make: Thermo scientific Serial Number: 1173410001
Analyzer Range: 0 - 1000 ppb

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.997551	1.006091	Backgd or Offset:	14.2
Calibration intercept:	-1.002821	-1.263661	Coeff or Slope:	1.175

SO₂ As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero) Limit = 0.90-1.10
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4920	79.8	799.0	804.6	0.993
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	804.8	Previous response	796.0	*% change	1.1%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO₂ Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) Limit = 0.95-1.05
Calibrator zero	5000	0.0	0.0	0.3	----
High point	4920	79.8	799.0	803.4	0.995
Mid point	4960	39.9	399.5	399.8	0.999
Low point	4987	20.0	200.0	198.4	1.008
As left zero	5000	0.0	0.0	0.2	----
As left span	4920	79.8	799.0	808.7	0.988
Average Correction Factor:					1.001

Notes: No adjustments or maintenance done.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

SO₂ Calibration Summary

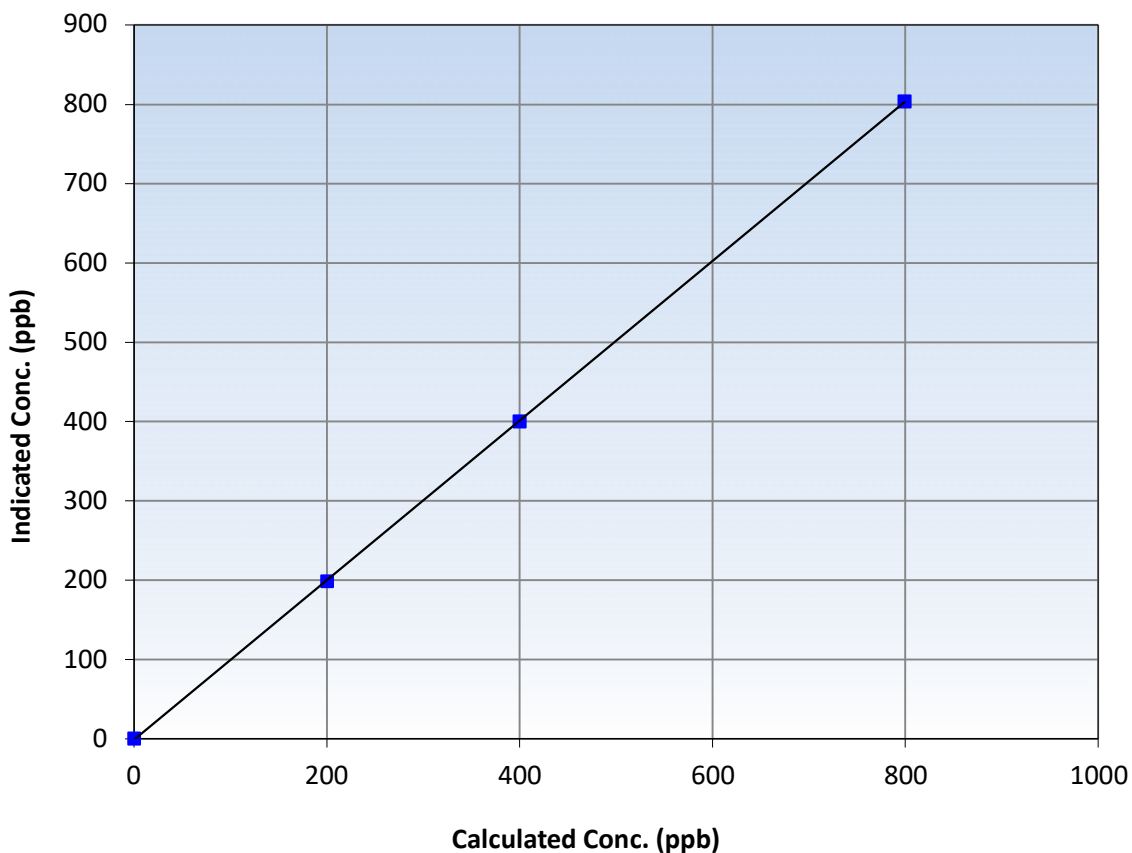
Station Information

Calibration Date:	March 7, 2025	Previous Calibration:	February 14, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	7:30	End Time (MST):	9:55
Analyzer make:	Thermo scientific	Analyzer serial #:	1173410001

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999983	≥0.995
799.0	803.4	0.9945	Slope	1.006091	0.90 - 1.10
399.5	399.8	0.9992	Intercept	-1.263661	+/-30
200.0	198.4	1.0079			

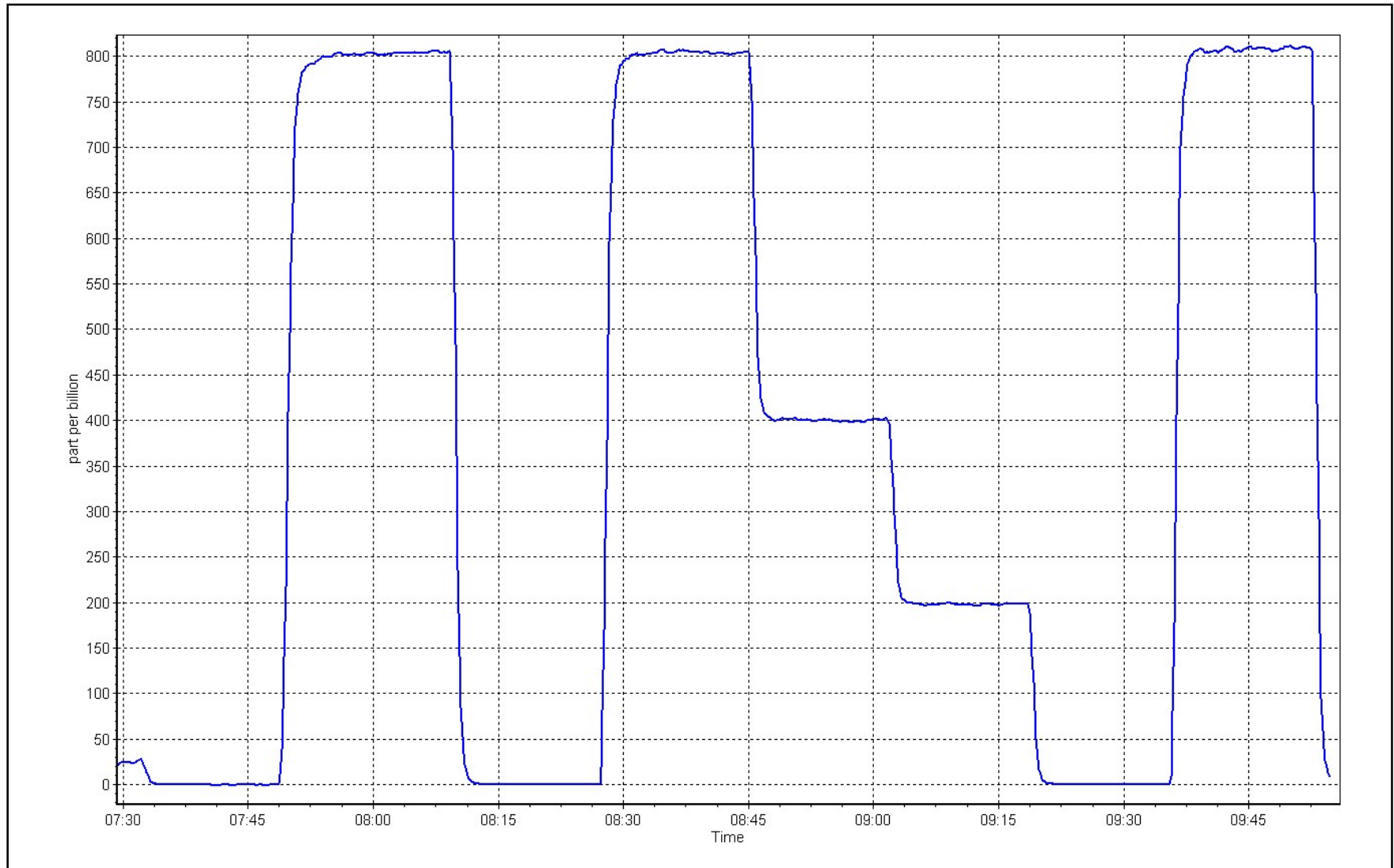
SO₂ Calibration Curve



SO2 Calibration Plot

Date: March 7, 2025

Location: Hangingstone Expansion





Wood Buffalo Environmental Association

H₂S Calibration Report

Station Information

Station Name: Hangingstone Expansion Station number: AMS 512
Calibration Date: 2025-02-213-13 Last Cal Date: February 21, 2025
Start time (MST): 6:30 End time (MST): 10:14
Reason: Routine

Calibration Standards

Cal Gas Concentration: 5.139 ppm Cal Gas Exp Date: January 3, 2026
Cal Gas Cylinder #: CC511397
Removed Cal Gas Conc: 5.139 ppm Rem Gas Exp Date: NA
Removed Gas Cyl #: NA Diff between cyl:
Calibrator Make/Model: API T700 Serial Number: 2445
ZAG Make/Model: API T701 Serial Number: 138

Analyzer Information

Analyzer make: Thermo 43i-LTE Analyzer serial #: 1336160090
Converter make: Global G150 Converter serial #: 2022-227
Analyzer Range: 0 - 100 ppb Converter Temp: 325 degC

	<u>Start</u>	<u>Finish</u>	<u>Start</u>	<u>Finish</u>
Calibration slope:	0.998058	0.995485	Backgd or Offset:	3.56
Calibration intercept:	0.120871	0.060913	Coeff or Slope:	1.235

H₂S As Found Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Baseline Adjusted Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90-1.10</i>
As found zero	5000	0.0	0.0	0.2	----
As found High point	4922	77.8	80.0	79.8	1.005
As found Mid point	4961	38.9	40.0	40.1	1.002
As found Low point	4981	19.5	20.0	20.1	1.007
New cylinder response					
Baseline Corr As found:	79.6	Prev response:	79.93	*% change:	-0.4%
Baseline Corr 2nd AF pt:	39.9	AF Slope:	0.995773	AF Intercept:	0.200835
Baseline Corr 3rd AF pt:	19.9	AF Correlation:	0.999997	* = > +/-5% change initiates investigation	

H₂S Calibration Data

Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Calibrator zero	5000	0.0	0.0	0.3	----
High point	4922	77.8	80.0	79.8	1.002
Mid point	4961	38.9	40.0	39.7	1.007
Low point	4981	19.5	20.0	19.8	1.012
As left zero	5000	0.0	0.0	0.4	----
As left span	4922	77.8	80.0	79.1	1.011
SO2 Scrubber Check	4920	80.0	800.0	0.0	----
Date of last scrubber change:				Ave Corr Factor	1.007
Date of last converter efficiency test:					

Notes: Sox scrubber checked after the calibrator zero. No adjustments done.

Calibration Performed By: Melissa Lemay



Wood Buffalo Environmental Association

H₂S Calibration Summary

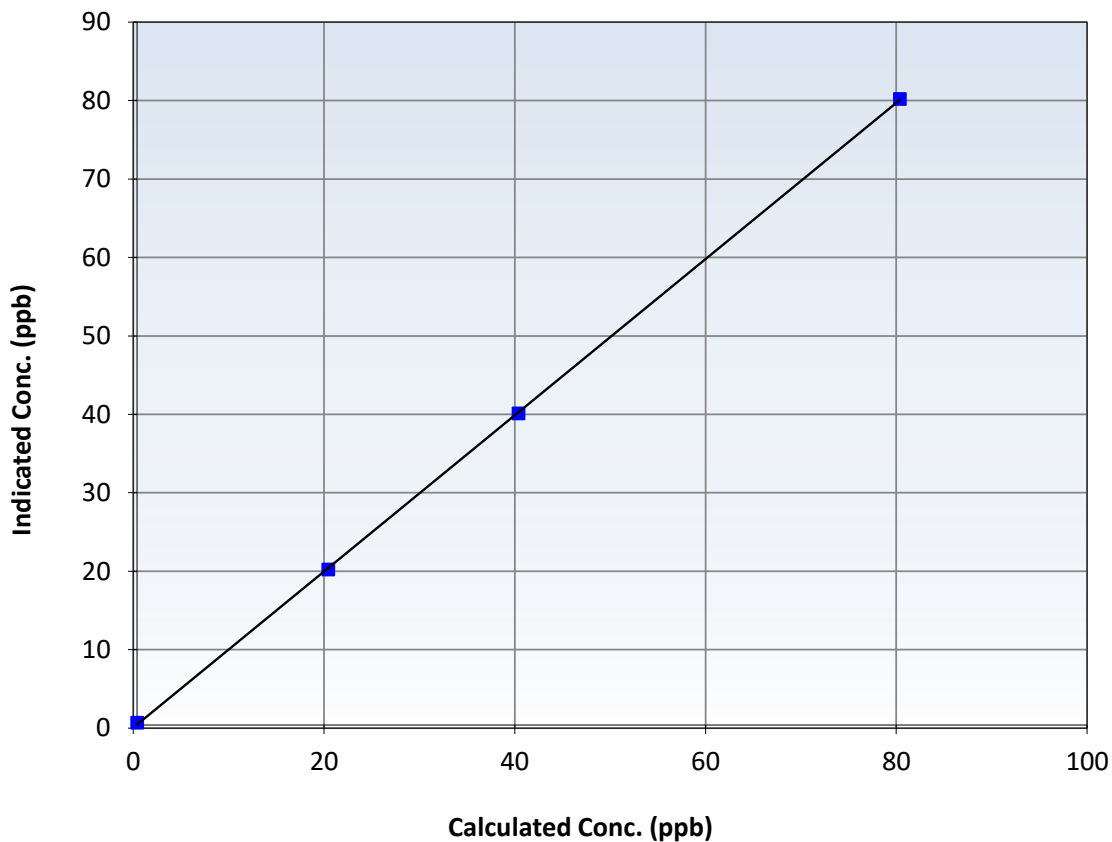
Station Information

Calibration Date:	2025-02-213-13	Previous Calibration:	February 21, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	6:30	End Time (MST):	10:14
Analyzer make:	Thermo 43i-LTE	Analyzer serial #:	1336160090

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			<u>Limits</u>
0.0	0.3	----	Correlation Coefficient	0.999958		≥0.995
80.0	79.8	1.0021	Slope	0.995485		0.90 - 1.10
40.0	39.7	1.0071	Intercept	0.060913		+/-3
20.0	19.8	1.0121				

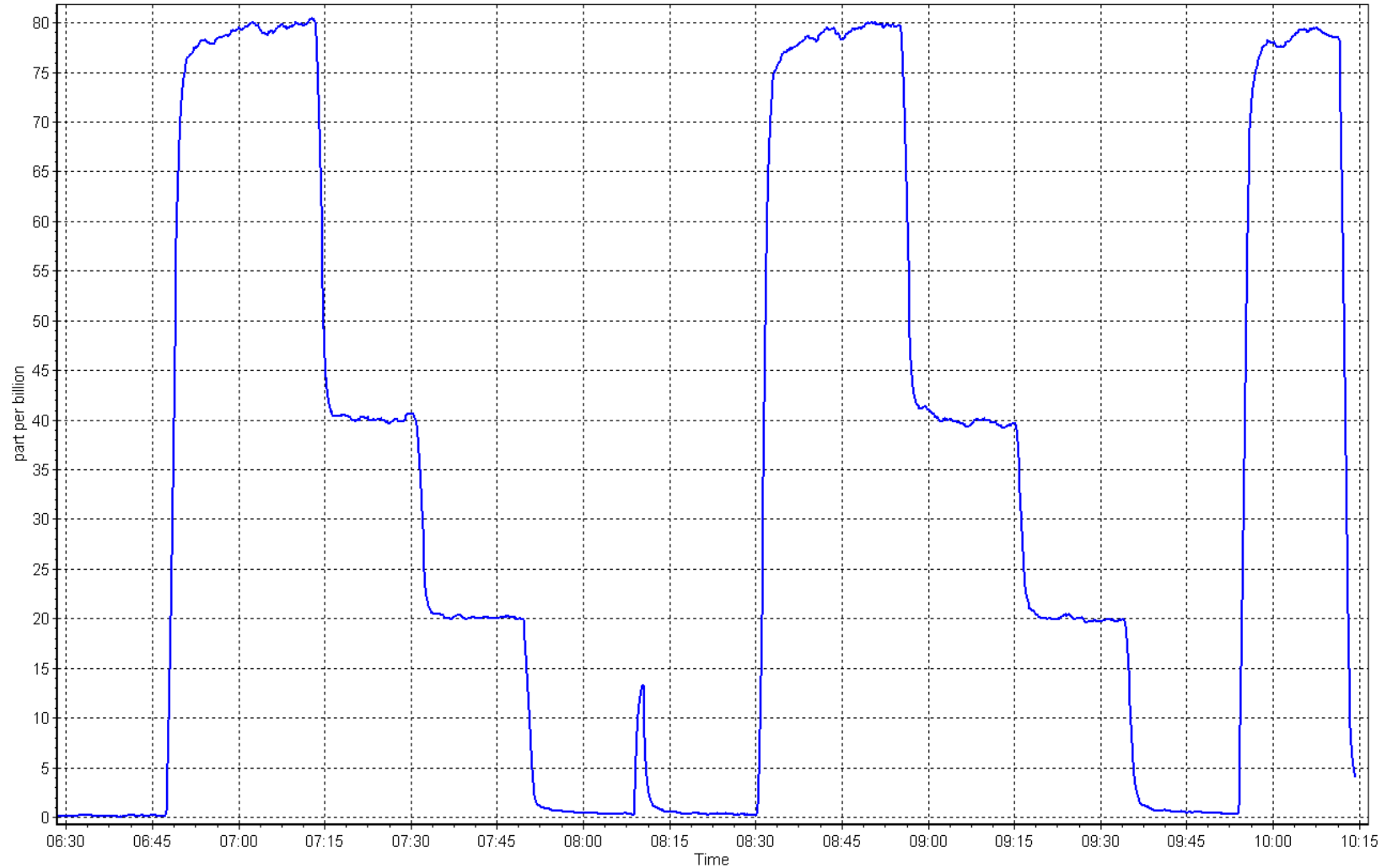
H₂S Calibration Curve



H₂S Calibration Plot

Date:

Location: Hangingstone Expansion





Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Station Information

Station Name: Hangingstone Expansion
Station number: AMS 512
Calibration Date: March 3, 2025
Last Cal Date: February 4, 2025
Start time (MST): 7:50
End time (MST): 11:57
Reason: Routine

Calibration Standards

NO Gas Cylinder #: TOF8P52
NOX Cal Gas Conc: 47.43 ppm
Removed Cylinder #: NA
Removed Gas NOX Conc: 47.43 ppm
NOX gas Diff:
Calibrator Model: Teledyne API T700
ZAG make/model: Teledyne API T701
Cal Gas Expiry Date: August 16, 2026
NO Cal Gas Conc: 47.43 ppm
Removed Gas Exp Date: NA
Removed Gas NO Conc: 47.43 ppm
NO gas Diff:
Serial Number: 2445
Serial Number: 138

As Found Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NOx Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>
As found zero	5000	0.0	0.0	0.0	0.0	-0.3	-0.2	-0.1	----	----
AF High point	4916	84.4	800.6	800.6	0.0	805.8	804.7	1.0	0.9931	0.9946
AF Mid point										
AF Low point										
New cyl resp										
Previous Response	NO _x = 798.1 ppb	NO = 798.9 ppb	* = > +/-5% change initiates investigation			*Percent Change	NO _x = 1.0%			
Baseline Corr 1st pt	NO _x = 806.1 ppb	NO = 804.9 ppb	<u>As Found Statistics</u>			*Percent Change	NO = 0.8%			
Baseline Corr 2nd pt	NO _x = NA ppb	NO = NA ppb	As found NO _x r ² :			Nx SI:	Nx Int:			
Baseline Corr 3rd pt	NO _x = NA ppb	NO = NA ppb	As found NO r ² :			NO SI:	NO Int:			
			As found NO ₂ r ² :			NO2 SI:	NO ₂ Int:			

As Found GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	Baseline Adjusted NO2 Correction factor (Cc/(Ic-AFzero)) <i>Limit = 0.90 - 1.10</i>	Converter Efficiency <i>Limit = 96-104%</i>
As Found GPT zero						
As found high GPT point						
As found mid GPT point						
As found low GPT point						



Wood Buffalo Environmental Association

NO_x \ NO \ NO₂ Calibration Report

Analyzer Information

Analyzer Make: Teledyne API T200
NOX Range (ppb): 0 - 1000 ppb

Serial Number: 7029

Instrument Settings

	<u>Start</u>	<u>Finish</u>		<u>Start</u>	<u>Finish</u>
NO coeff or slope:	1.056	1.056	NO bkgnd or offset:	0.2	0.2
NOX coeff or slope:	1.052	1.052	NOX bkgnd or offset:	0.4	0.4
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	4.7	4.7

Calibration Statistics

	<u>Start</u>	<u>Finish</u>
NO _x Cal Slope:	0.998867	1.008889
NO _x Cal Offset:	-1.532751	-0.392928
NO Cal Slope:	1.000337	1.010359
NO Cal Offset:	-1.972746	-1.632904
NO ₂ Cal Slope:	1.000858	0.999078
NO ₂ Cal Offset:	-0.441420	0.427715

Dilution Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated NO2 concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated NO2 concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	NO Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>
Cal zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	----	----
High point	4916	84.4	800.6	800.6	0.0	807.2	807.8	-0.3	0.9918	0.9910
Mid point	4958	42.2	400.3	400.3	0.0	404.1	402.7	1.4	0.9906	0.9941
Low point	4979	21.1	200.2	200.2	0.0	200.6	198.5	2.1	0.9978	1.0083
As left zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	----	----
As left span	4916	84.4	800.6	405.0	395.6	803.3	405.0	398.3	0.9966	1.0000
Average Correction Factor									0.9934	0.9978

GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) <i>Limit = 0.95-1.05</i>	Converter Efficiency <i>Limit = 96-104%</i>
Cal zero	----	----	0.0	0.0	----	----
High GPT point	806.1	409.7	396.4	396.3	1.0003	100.0%
Mid GPT point	806.1	628.6	177.5	177.9	0.9978	100.2%
Low GPT point	806.1	717.7	88.4	89.2	0.9910	100.9%
Average Correction Factor					0.9963	100.4%

Notes:

No adjustments and maintenance done.

Calibration Performed By:

Melissa Lemay



Wood Buffalo Environmental Association

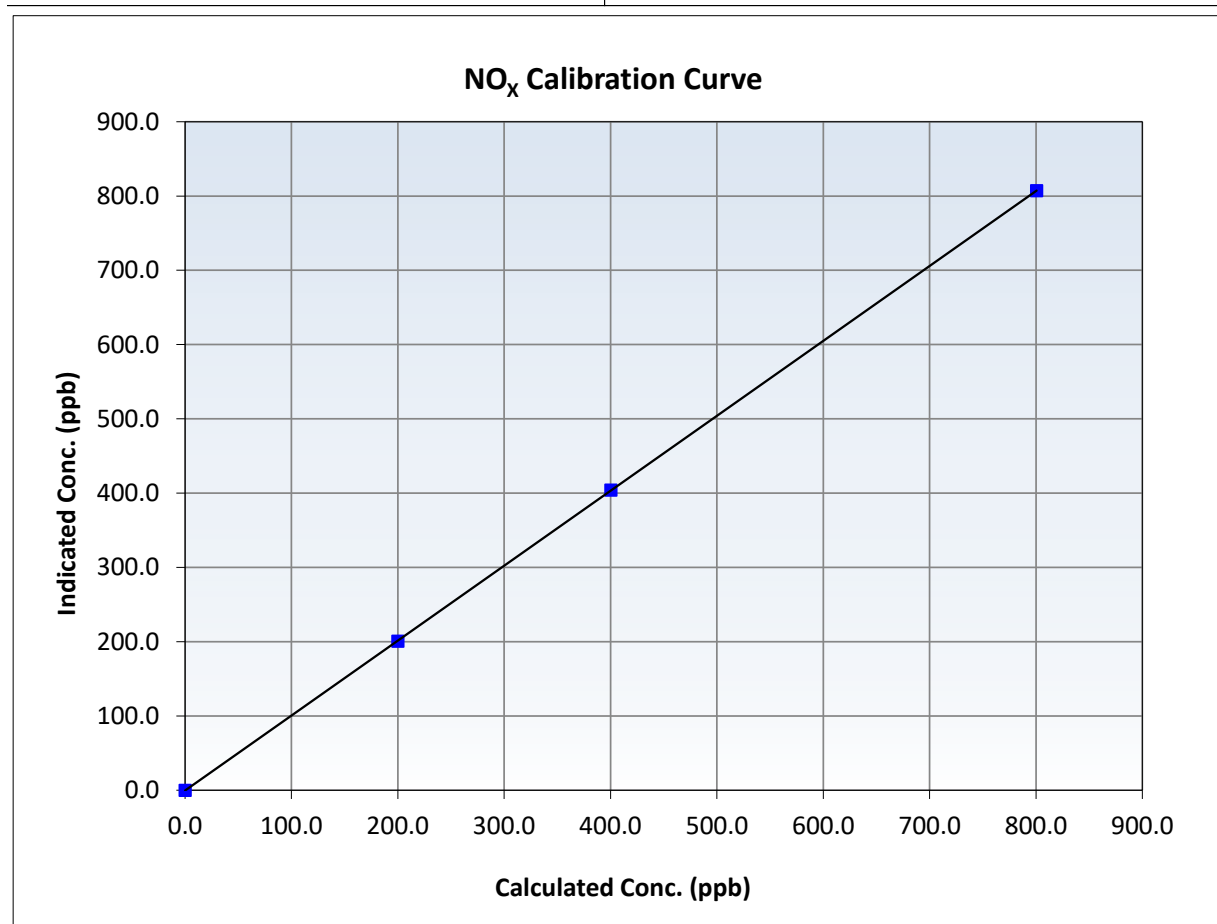
NO_x Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	7:50	End Time (MST):	11:57
Analyzer make:	Teledyne API T200	Analyzer serial #:	7029

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999996	≥0.995
800.6	807.2	0.9918	Slope	1.008889	0.90 - 1.10
400.3	404.1	0.9906	Intercept	-0.392928	+/-20
200.2	200.6	0.9978			





Wood Buffalo Environmental Association

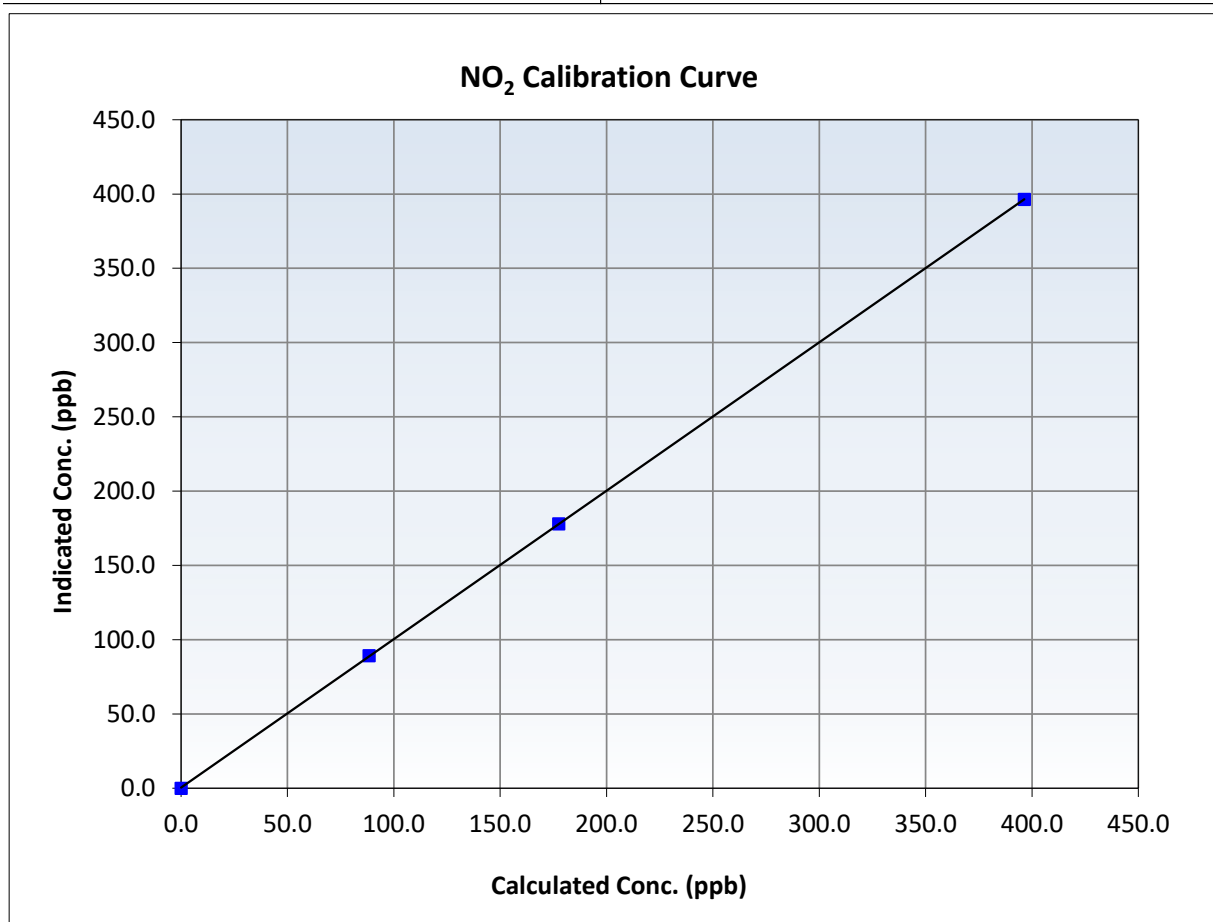
NO₂ Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	7:50	End Time (MST):	11:57
Analyzer make:	Teledyne API T200	Analyzer serial #:	7029

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999995	≥ 0.995
396.4	396.3	1.0003	Slope	0.999078	$0.90 - 1.10$
177.5	177.9	0.9978	Intercept	0.427715	± 20
88.4	89.2	0.9910			





Wood Buffalo Environmental Association

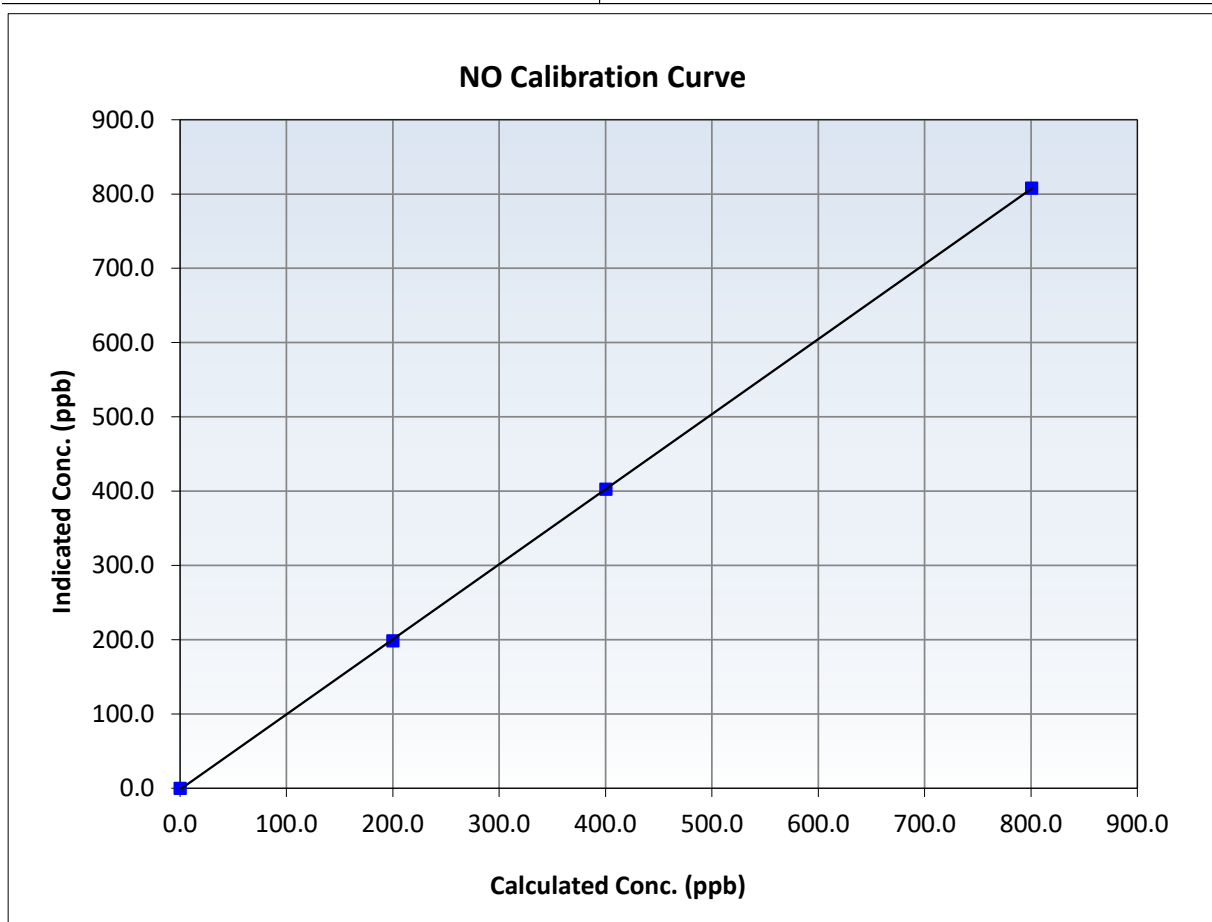
NO Calibration Summary

Station Information

Calibration Date:	March 3, 2025	Previous Calibration:	February 4, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	7:50	End Time (MST):	11:57
Analyzer make:	Teledyne API T200	Analyzer serial #:	7029

Calibration Data

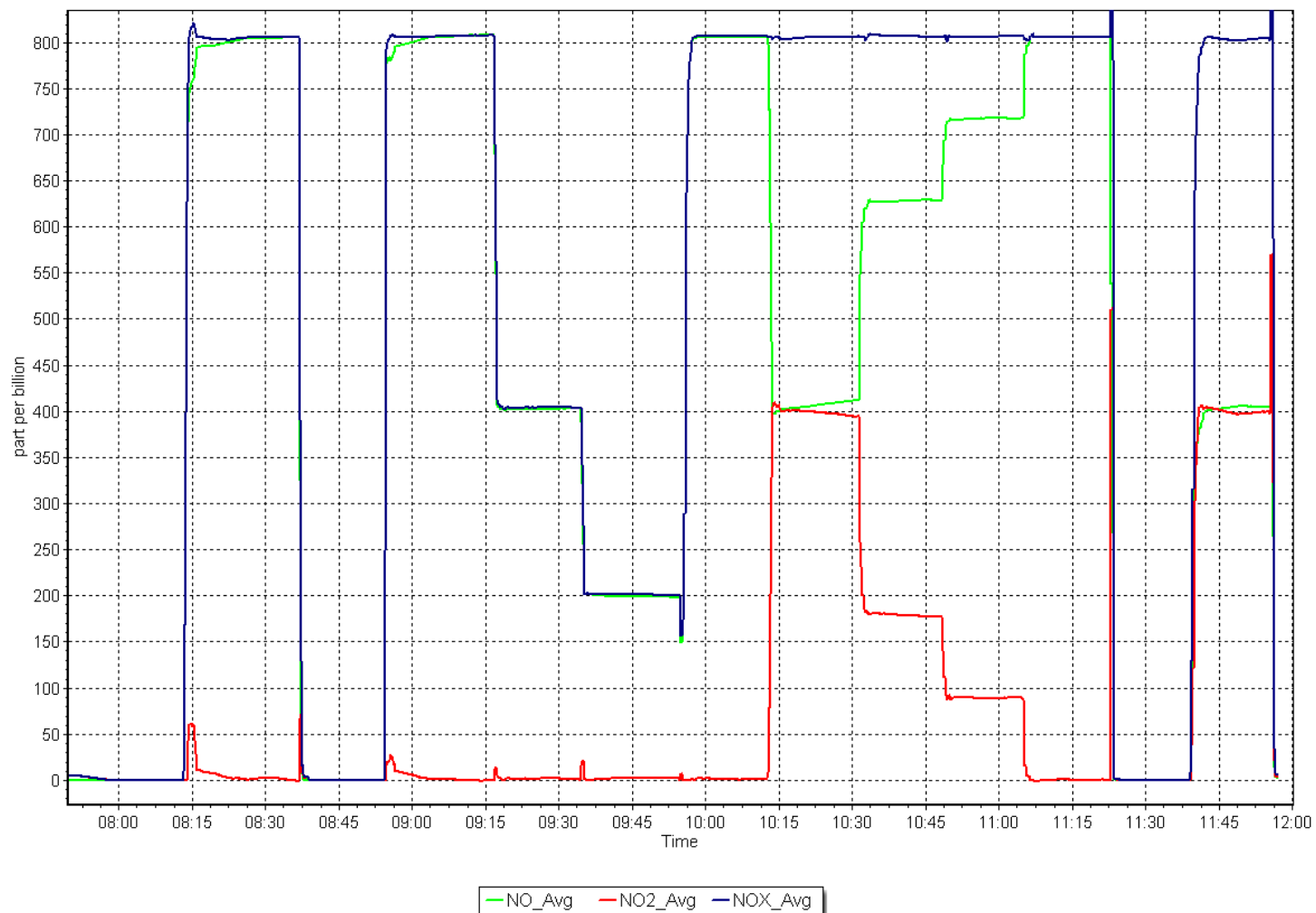
Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		<u>Limits</u>
0.0	0.0	----	Correlation Coefficient	0.999979	≥ 0.995
800.6	807.8	0.9910	Slope	1.010359	$0.90 - 1.10$
400.3	402.7	0.9941	Intercept	-1.632904	± 20
200.2	198.5	1.0083			



NO_x Calibration Plot

Date: March 3, 2025

Location: Hangingstone Expansion





End of Report