WOOD BUFFALO
ENVIRONMENTAL ASSOCIATION

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Wood Buffalo Environmental Association

APRIL 2025

MONTHLY CALIBRATION REPORT

CONTINUOUS MONITORING

May 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
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Bertha Ganter-Fort McKay	Station number:	AMS 01
Calibration Date:	April 9, 2025	Last Cal Date:	March 7, 2025
Start time (MST):	11:39	End time (MST):	15:18
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:	146

Analyzer Information

Analyzer make:	Thermo 43i		Serial Number:	JC1501301448	
Analyzer Range:	0 - 1000 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.001209	1.001108	Backgd or Offset:	20.8	21.7
Calibration intercept:	-0.193570	-0.433285	Coeff or Slope:	0.887	0.887

SO_2 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	0.8	----
As found High point	4918	81.3	800.3	802.6	0.998
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	801.8	Previous response	801.0	*% 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	

SO_2 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	81.3	800.3	801.1	0.999
Mid point	4959	40.7	400.6	399.9	1.002
Low point	4979	20.3	199.8	199.5	1.002
As left zero	5000	0.0	0.0	0.0	----
As left span	4918	81.3	800.3	801.7	0.998
				Average Correction Factor:	1.001

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

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

SO_2 Calibration Summary

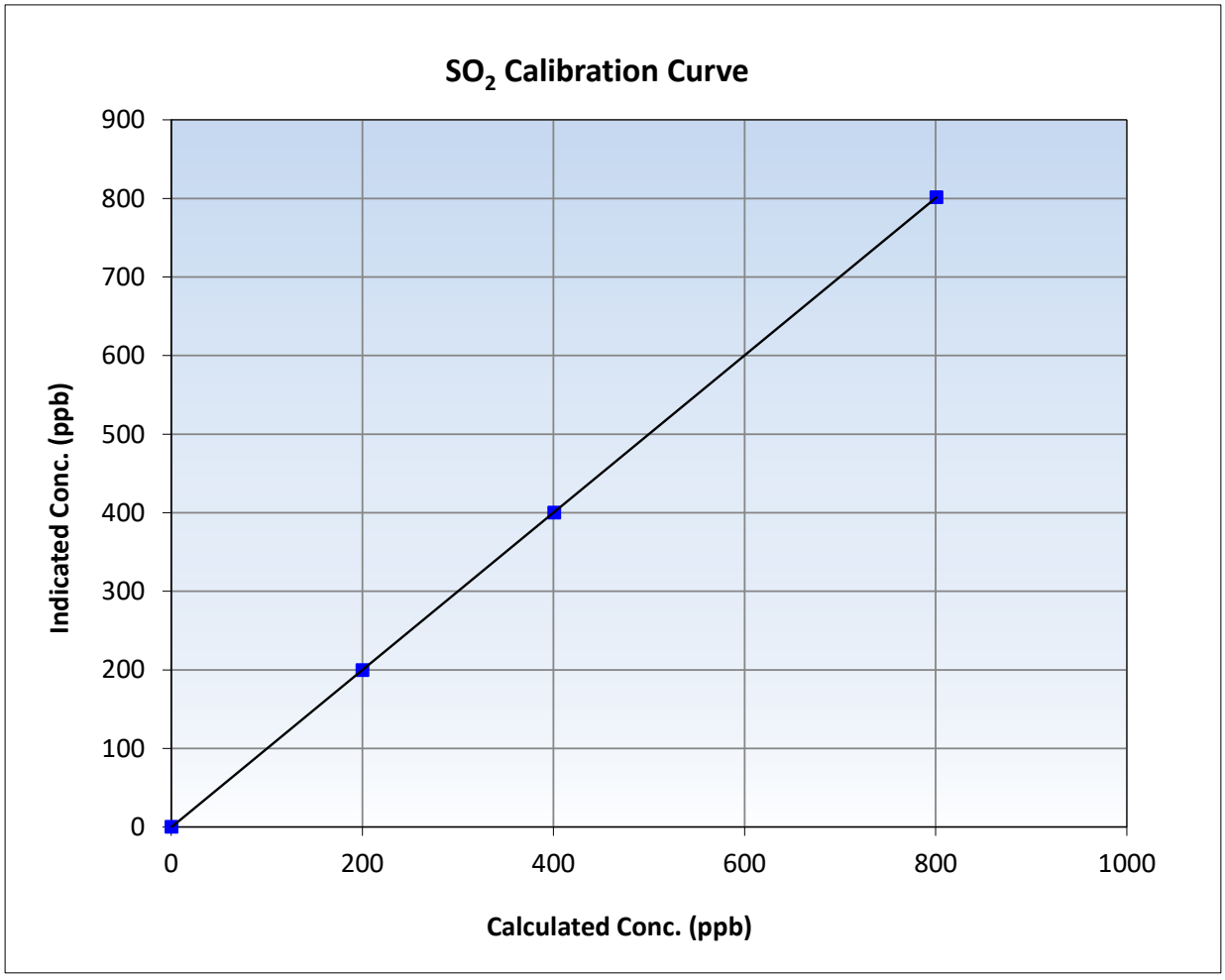
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	March 7, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:39	End Time (MST):	15:18
Analyzer make:	Thermo 43i	Analyzer serial #:	JC1501301448

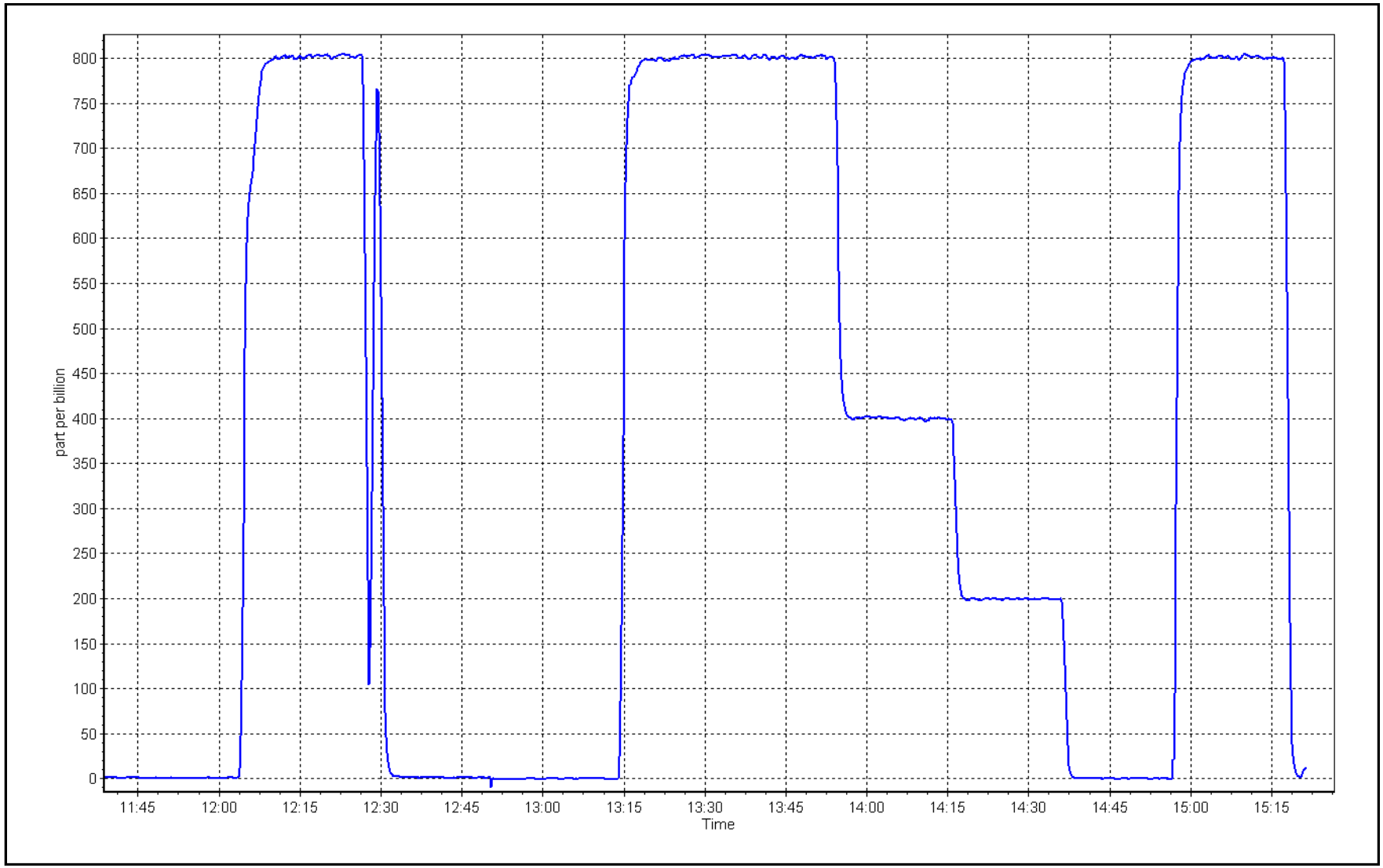
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
800.3	801.1	0.9990
400.6	399.9	1.0017
199.8	199.5	1.0016

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	1.001108	*0.90 - 1.10*
Intercept	-0.433285	*+/-30*



SO2 Calibration Plot Date: April 9, 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:	April 28, 2025	Last Cal Date:	March 27, 2025
Start time (MST):	10:09	End time (MST):	14:53
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-TLE		Analyzer serial #:	12113311966
Converter make:	CD Nova		Converter serial #:	470
Analyzer Range	0 - 100 ppb		Converter Temp:	800 degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.995103	1.001390	Backgd or Offset:	2.22	2.18
Calibration intercept:	0.201884	-0.118138	Coeff or Slope:	1.024	1.148

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4917	82.6	80.0	78.3	1.019
As found Mid point	4959	41.3	40.0	39.0	1.020
As found Low point	4979	20.7	20.0	19.6	1.012
New cylinder response					

Baseline Corr As found:	78.5	Prev response:	79.77	*% change:	-1.6%
Baseline Corr 2nd AF pt:	39.2	AF Slope:	0.981091	AF Intercept:	-0.157790
Baseline Corr 3rd AF pt:	19.8	AF Correlation:	0.999995	* = > +/-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) *Limit = 0.95-1.05*
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	39.8	1.004
Low point	4979	20.7	20.0	20.0	1.002
As left zero	5000	0.0	0.0	0.0	----
As left span	4917	82.6	80.0	79.0	1.012
SO2 Scrubber Check	4919	81.3	813.0	0.0	----

Date of last scrubber change:	December 17, 2021	Ave Corr Factor	1.002
Date of last converter efficiency test:			

Notes: Inlet filter change and scrubber check completed after as founds. Adjusted span only.

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

TRS Calibration Summary

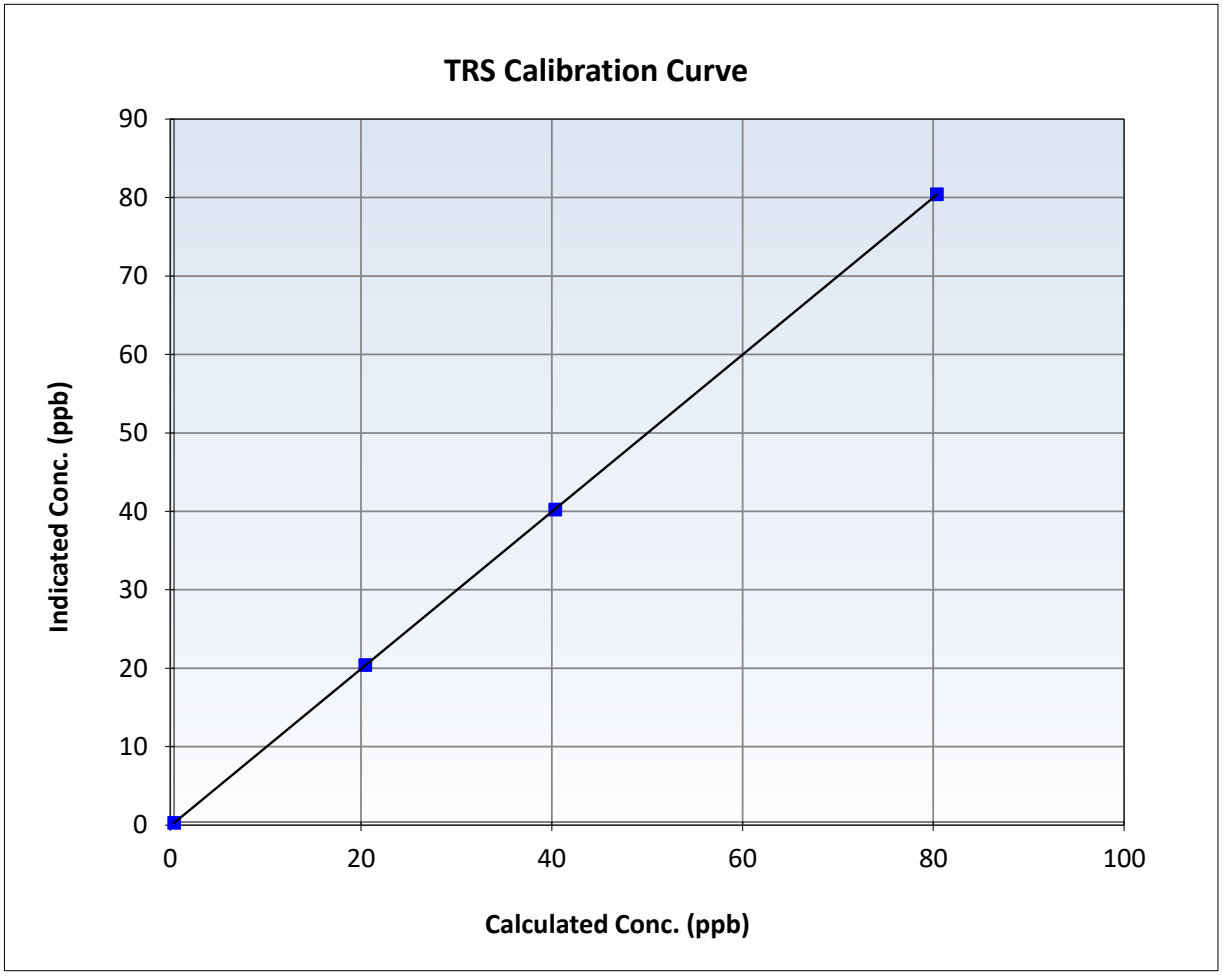
Station Information

Calibration Date:	April 28, 2025	Previous Calibration:	March 27, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:09	End Time (MST):	14:53
Analyzer make:	Thermo 43iQ-TLE	Analyzer serial #:	12113311966

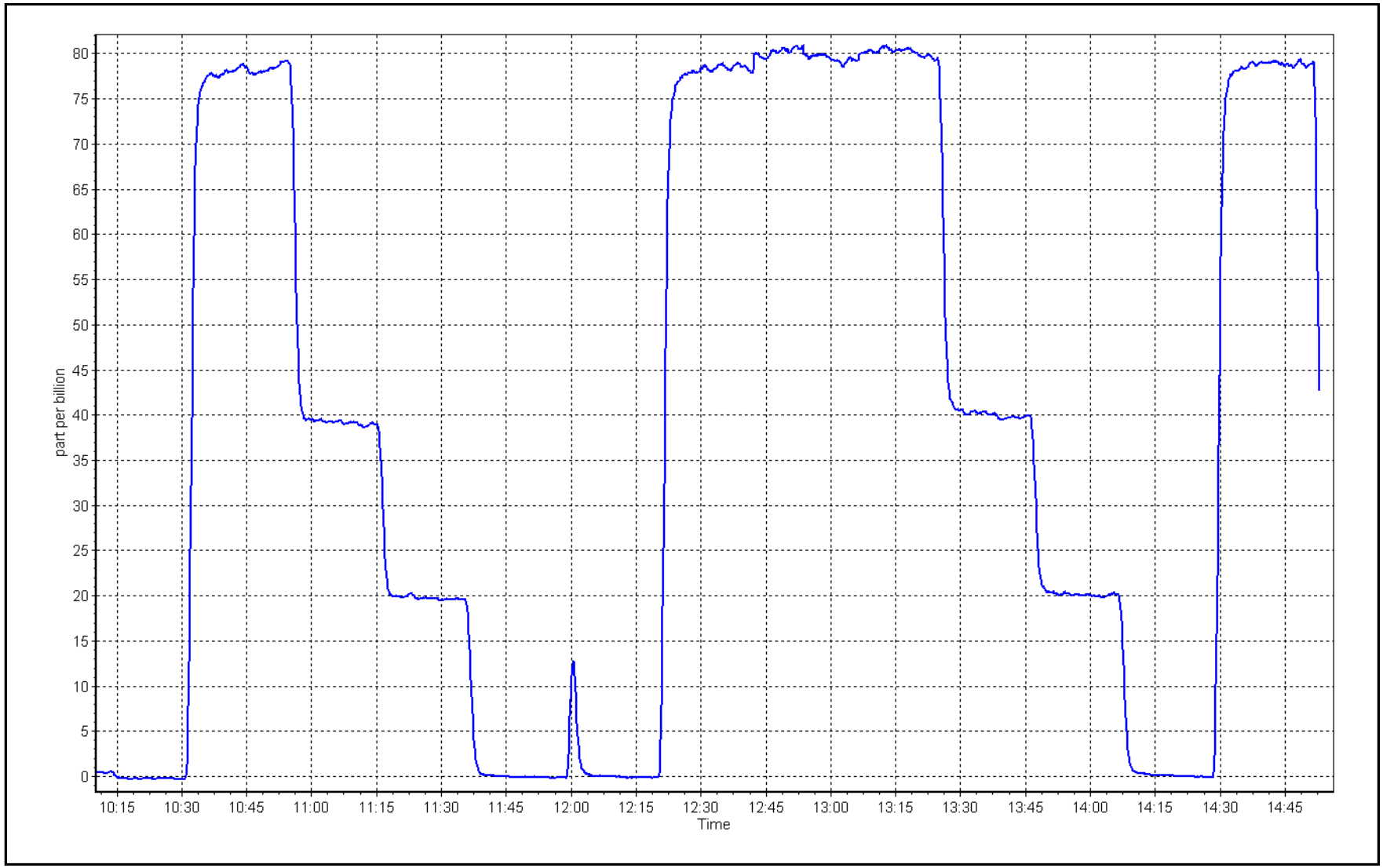
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
80.0	80.0	0.9995
40.0	39.8	1.0044
20.0	20.0	1.0019

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999995	*≥0.995*
Slope	1.001390	*0.90 - 1.10*
Intercept	-0.118138	*+/-3*



TRS Calibration Plot Date: April 28, 2025 Location: Bertha Ganter-Fort McKay



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	Bertha Ganter-Fort McKay	Station number:	AMS 01
Calibration Date:	April 28, 2025	Last Cal Date:	March 19, 2025
Start time (MST):	10:09	End time (MST):	14:53
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

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.000243	1.002388	Backgd or Offset:	2.03	2.03
Calibration intercept:	0.021999	-0.178072	Coeff or Slope:	0.983	0.983

H_2S 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	-0.1	----
As found High point	4917	82.6	80.0	80.3	0.995
As found Mid point	4959	41.3	40.0	40.1	0.994
As found Low point	4979	20.7	20.0	20.0	0.997
New cylinder response					

Baseline Corr As found:	80.4	Prev response:	80.00	*% change:	0.5%
Baseline Corr 2nd AF pt:	40.2	AF Slope:	1.005677	AF Intercept:	-0.118167
Baseline Corr 3rd AF pt:	20.1	AF Correlation:	1.000000	* = > +/-5% change initiates investigation	

H_2S 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	-0.1	----
High point	4917	82.6	80.0	80.0	1.000
Mid point	4959	41.3	40.0	39.9	1.002
Low point	4979	20.7	20.0	19.8	1.012
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	0.0	----

Date of last scrubber change:		January 25, 2024		Ave Corr Factor	1.005
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

H_2S Calibration Summary

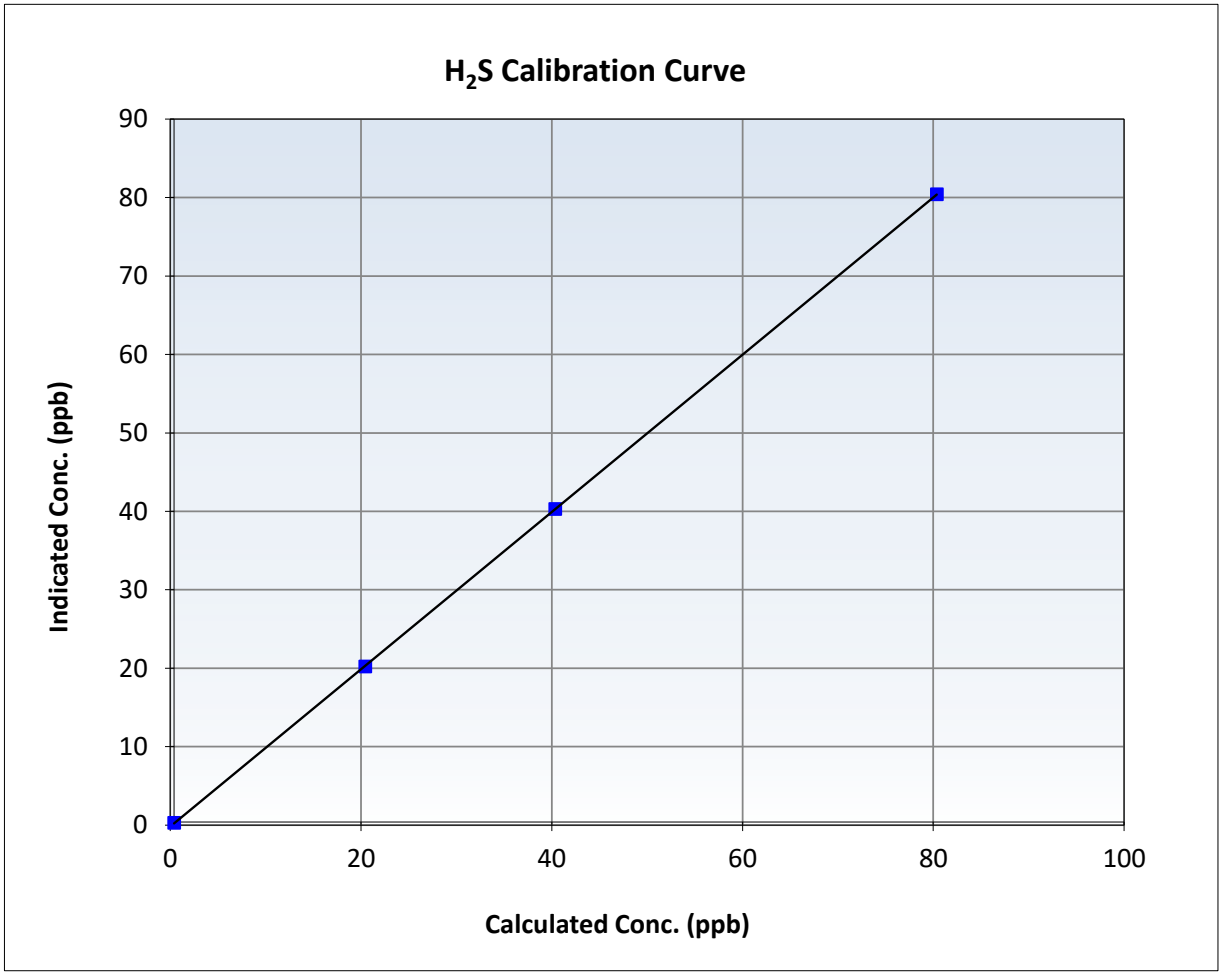
Station Information

Calibration Date:	April 28, 2025	Previous Calibration:	March 19, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:09	End Time (MST):	14:53
Analyzer make:	Thermo 43iQ-TL	Analyzer serial #:	1200326167

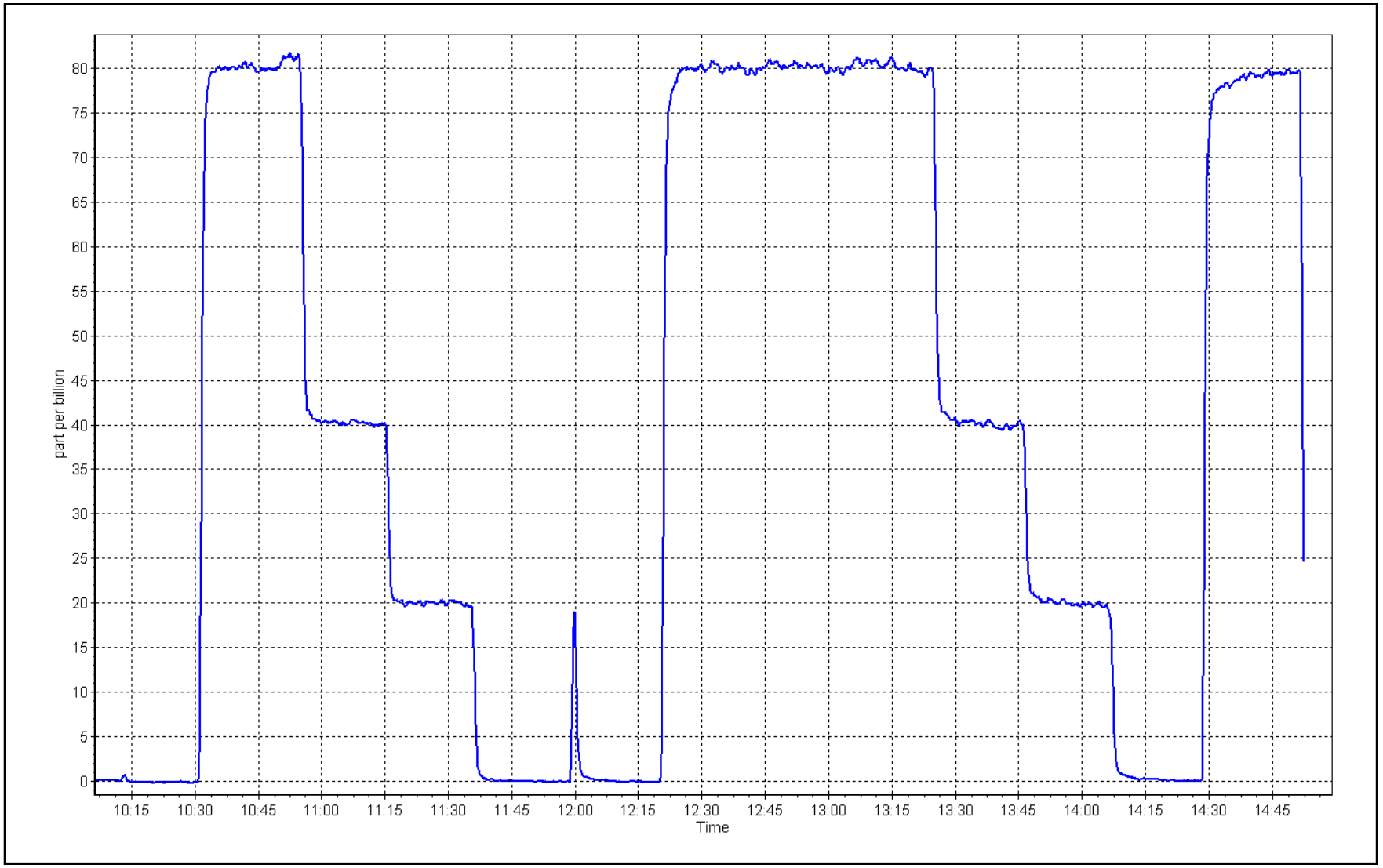
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
80.0	80.0	0.9995
40.0	39.9	1.0019
20.0	19.8	1.0121

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999995	*≥0.995*
Slope	1.002388	*0.90 - 1.10*
Intercept	-0.178072	*+/-3*



H_2S Calibration Plot Date: April 28, 2025 Location: Bertha Ganter-Fort McKay



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Bertha Ganter-Fort McKay	Station number:	AMS 01
Calibration Date:	April 9, 2025	Last Cal Date:	March 9, 2025
Start time (MST):	11:39	End time (MST):	15:18
Reason:	Routine		

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 (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/CH4 Range:	0 - 10 ppm	
	Start	***Finish***		***Start***	***Finish***
CH4 SP Ratio:	2.47E-04	2.53E-04	NMHC SP Ratio:	4.82E-05	4.89E-05
CH4 Retention time:	14.8	15.0	NMHC Peak Area:	190523	187657
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4918	81.3	17.27	16.99	1.016
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	16.99	Prev response	17.29	*% change	-1.8%
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	81.3	17.27	17.32	0.997
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	17.31	0.998
				Average Correction Factor	0.994

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

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4918	81.3	9.18	9.09	1.010
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.09	Prev response	9.17	*% change	-1.0%
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	81.3	9.18	9.22	0.996
Mid point	4959	40.7	4.60	4.65	0.989
Low point	4979	20.3	2.29	2.34	0.981
As left zero	5000	0.0	0.00	0.00	----
As left span	4918	81.3	9.18	9.22	0.996
				Average Correction Factor	0.989

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4918	81.3	8.09	7.91	1.023
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.91	Prev response	8.11	*% change	-2.6%
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	8.10	0.998
Mid point	4959	40.7	4.05	4.05	0.999
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	8.09	1.000
				Average Correction Factor	0.999

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	0.999822	1.002190
THC Cal Offset:	0.026931	0.021536
CH4 Cal Slope:	1.004040	1.001397
CH4 Cal Offset:	-0.003534	0.001066
NMHC Cal Slope:	0.995772	1.002902
NMHC Cal Offset:	0.031064	0.020670

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

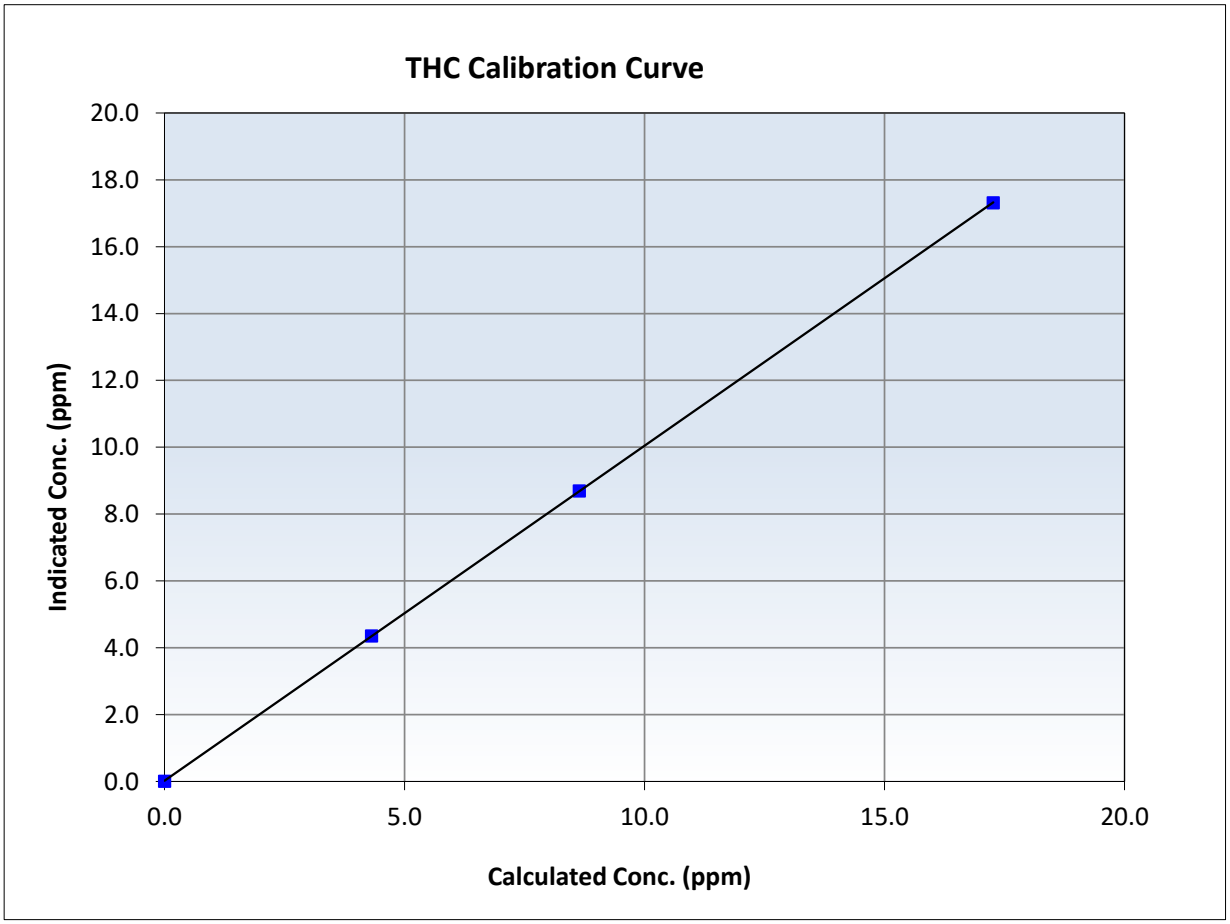
THC Calibration Summary

Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	March 9, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:39	End Time (MST):	15:18
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585648

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999995	≥0.995
17.27	17.32	0.9972	Slope	1.002190	0.90 - 1.10
8.64	8.70	0.9938			
4.31	4.36	0.9895	Intercept	0.021536	+/-0.5



Wood Buffalo Environmental Association

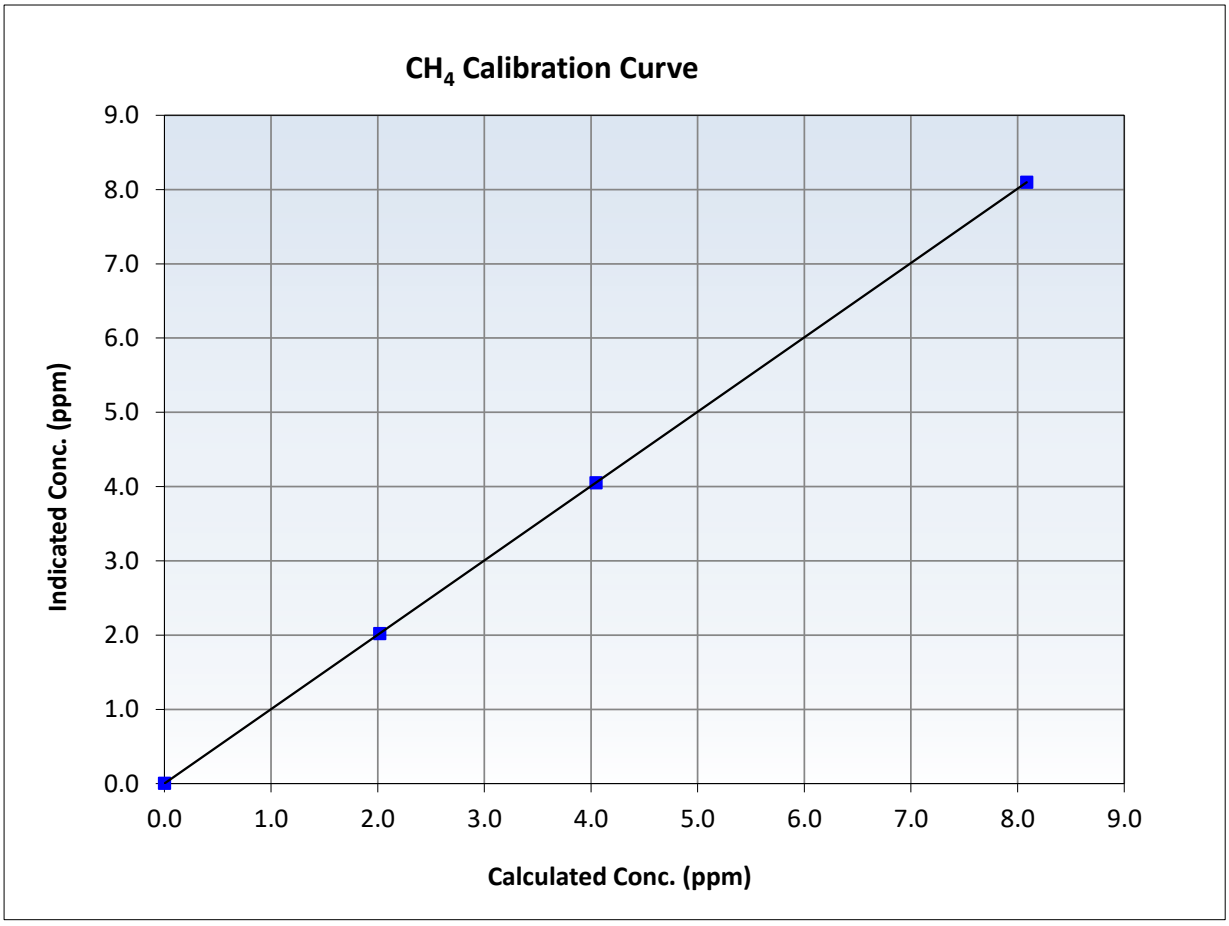
CH_4 Calibration Summary

Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	March 9, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:39	End Time (MST):	15:18
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585648

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.00	0.00	----	Correlation Coefficient	0.999999	*≥0.995*
8.09	8.10	0.9982	Slope	1.001397	*0.90 - 1.10*
4.05	4.05	0.9991	Intercept	0.001066	*+/-0.5*
2.02	2.02	0.9990			



Wood Buffalo Environmental Association

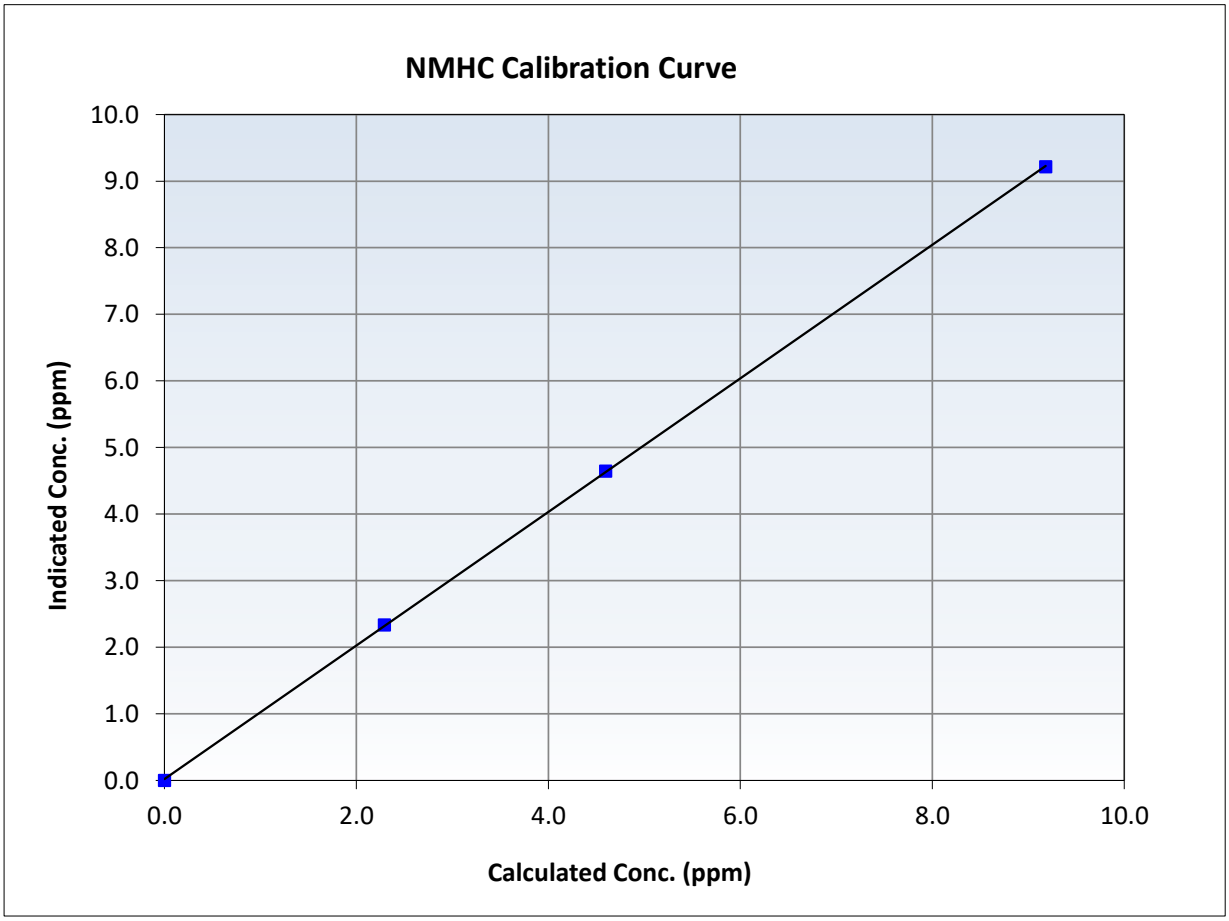
NMHC Calibration Summary

Station Information

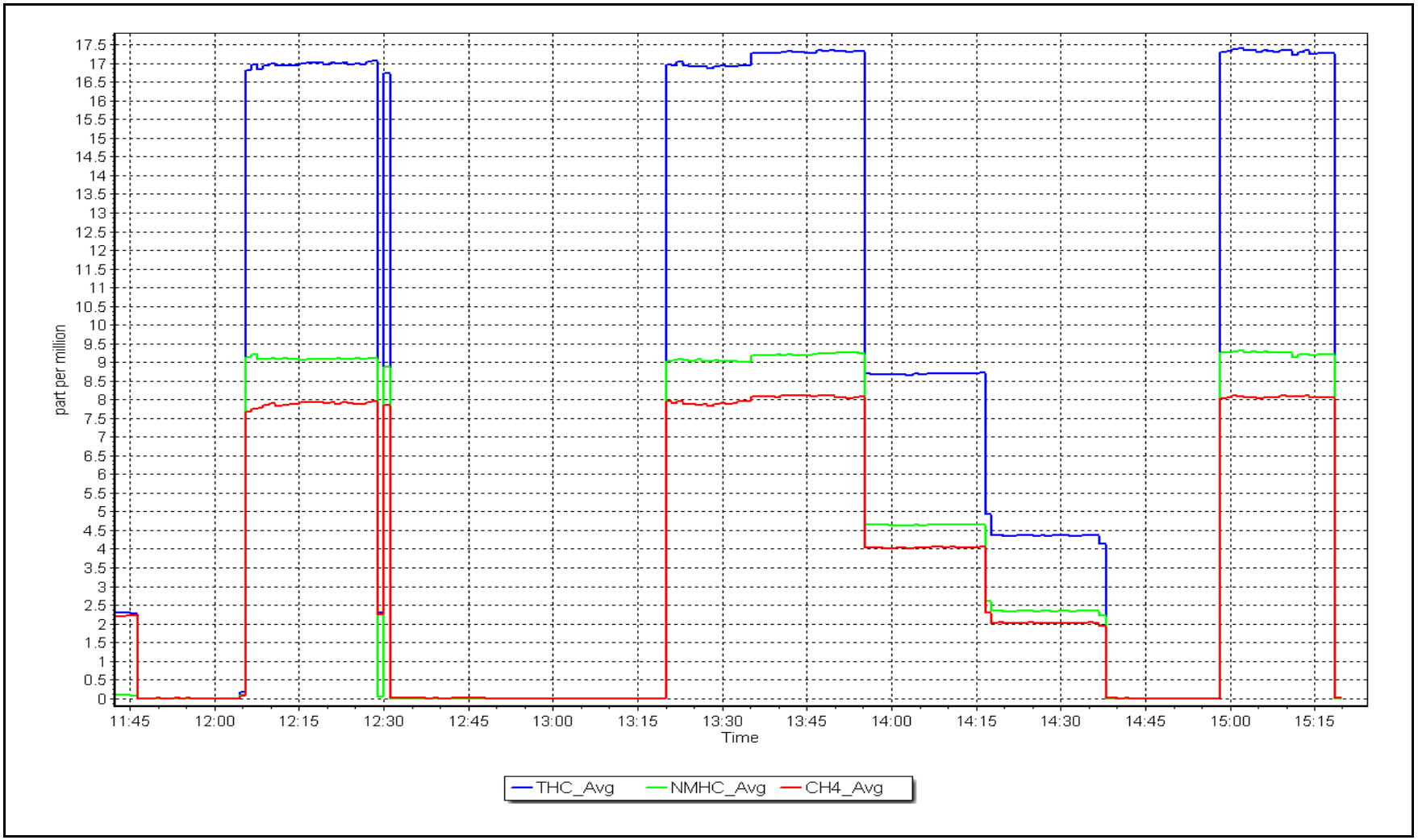
Calibration Date:	April 9, 2025	Previous Calibration:	March 9, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:39	End Time (MST):	15:18
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585648

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999975	≥0.995
9.18	9.22	0.9962	Slope	1.002902	0.90 - 1.10
4.60	4.65	0.9890			
2.29	2.34	0.9814	Intercept	0.020670	+/-0.5



NMHC Calibration Plot Date: April 9, 2025 Location: Bertha Ganter-Fort McKay



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Bertha Ganter-Fort McKay
Station number:	AMS 01
Calibration Date:	April 17, 2025
Last Cal Date:	March 11, 2025
Start time (MST):	10:36
End time (MST):	16:12
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	CC335700	Cal Gas Expiry Date:	September 1, 2032
NOX Cal Gas Conc:	59.40 ppm	NO Cal Gas Conc:	59.20 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	59.40 ppm	Removed Gas NO Conc:	59.20 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	3565
ZAG make/model:	Teledyne API T701	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-0.6	-0.5	-0.1	----	----
AF High point	4932	67.6	803.1	800.4	2.7	803.0	796.2	6.8	0.9994	1.0046
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 801.9 ppb	NO = 799.9 ppb
Baseline Corr 1st pt	NO_X = 803.6 ppb	NO = 796.7 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 = 0.2%		
*Percent Change	NO = -0.4%		

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Teledyne API T200 Serial Number: 7117

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	1.176	1.176	NO bkgnd or offset:	-3.1	-3.1
NOX coeff or slope:	1.178	1.178	NOX bkgnd or offset:	-2.9	-2.9
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	7.7	8.2

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.999328	1.001733
NO_X Cal Offset:	-0.640000	-0.160000
NO Cal Slope:	1.001476	1.003133
NO Cal Offset:	-1.660000	-1.240000
NO_2 Cal Slope:	1.000095	1.000579
NO_2 Cal Offset:	0.729865	-0.003919

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.2	0.1	0.0	----	----
High point	4932	67.6	803.1	800.4	2.7	804.6	802.4	2.3	0.9981	0.9975
Mid point	4966	33.8	401.5	400.2	1.4	401.6	399.3	2.3	0.9999	1.0022
Low point	4983	16.9	200.8	200.1	0.7	200.8	198.3	2.5	0.9999	1.0091
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	371.4	431.7	782.2	371.4	410.8	1.0267	1.0000
							Average Correction Factor		0.9993	1.0029

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	795.1	404.9	392.9	393.1	0.9995	100.0%
Mid GPT point	795.1	594.3	203.5	203.7	0.9990	100.1%
Low GPT point	795.1	696.7	101.1	101.1	1.0000	100.0%
				Average Correction Factor	0.9995	100.0%

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

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

NO_X Calibration Summary

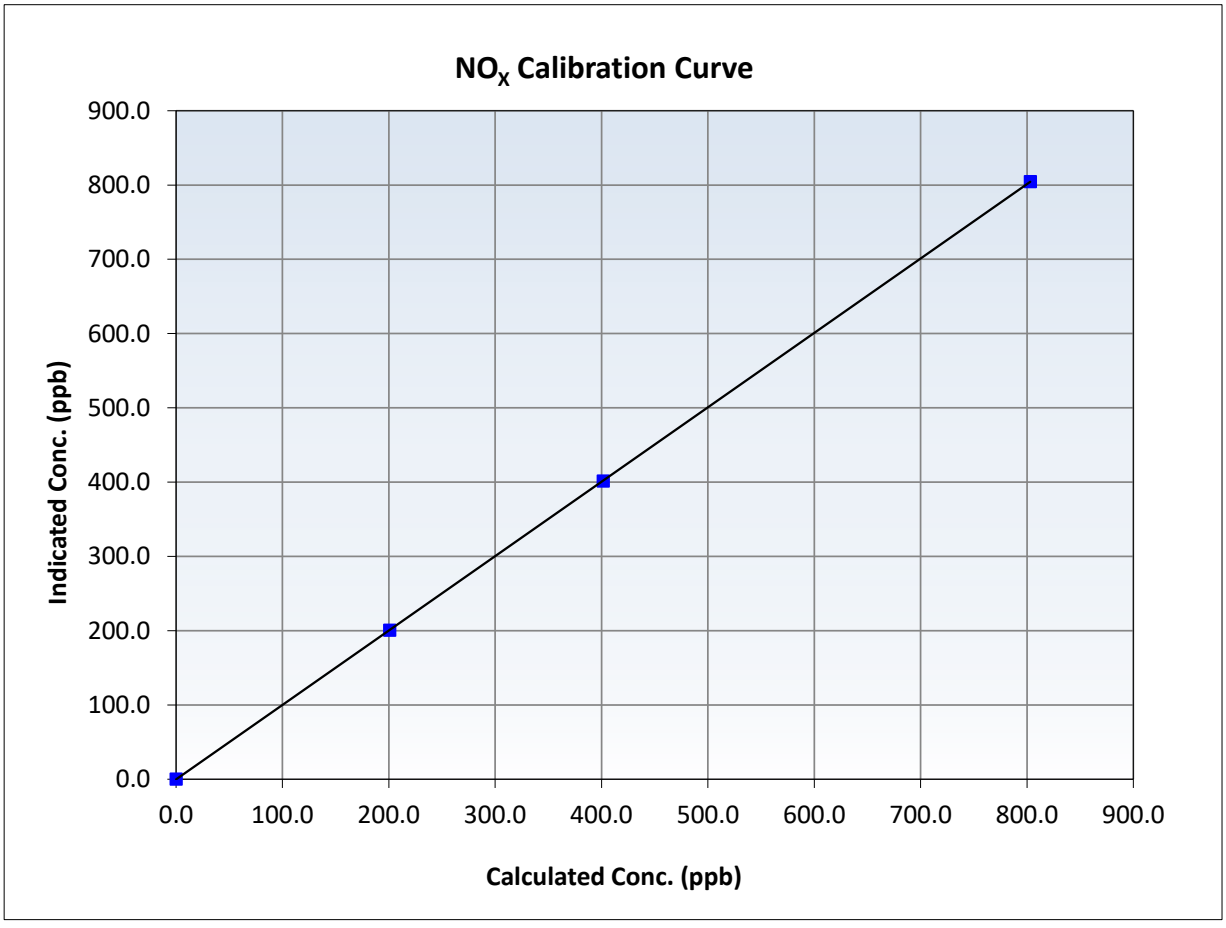
Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 11, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:36	End Time (MST):	16:12
Analyzer make:	Teledyne API T200	Analyzer serial #:	7117

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
803.1	804.6	0.9981
401.5	401.6	0.9999
200.8	200.8	0.9999

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999999	*≥0.995*
Slope	1.001733	*0.90 - 1.10*
Intercept	-0.160000	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

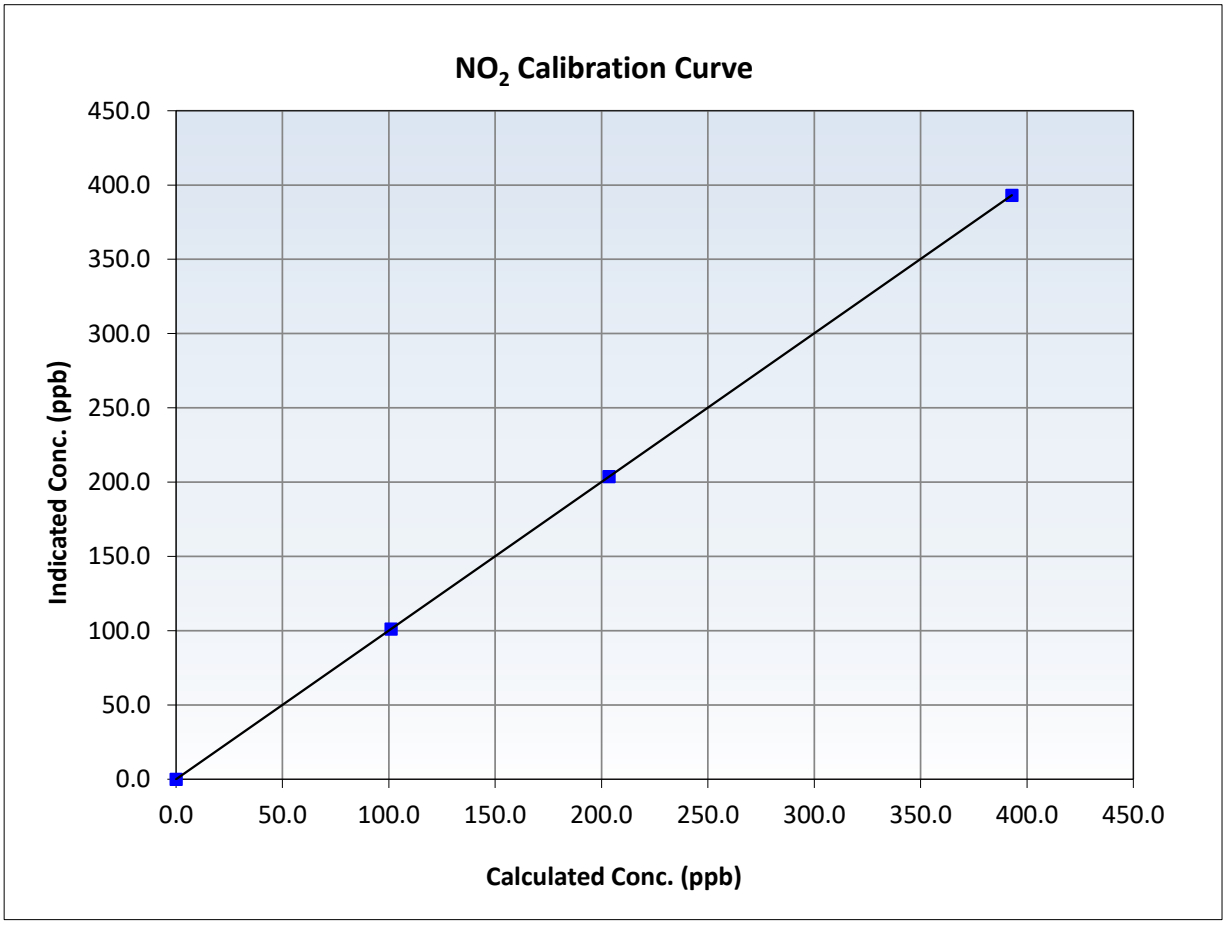
Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 11, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:36	End Time (MST):	16:12
Analyzer make:	Teledyne API T200	Analyzer serial #:	7117

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
392.9	393.1	0.9995
203.5	203.7	0.9990
101.1	101.1	1.0000

Statistical Evaluation		*Limits*
Correlation Coefficient	1.000000	*≥0.995*
Slope	1.000579	*0.90 - 1.10*
Intercept	-0.003919	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

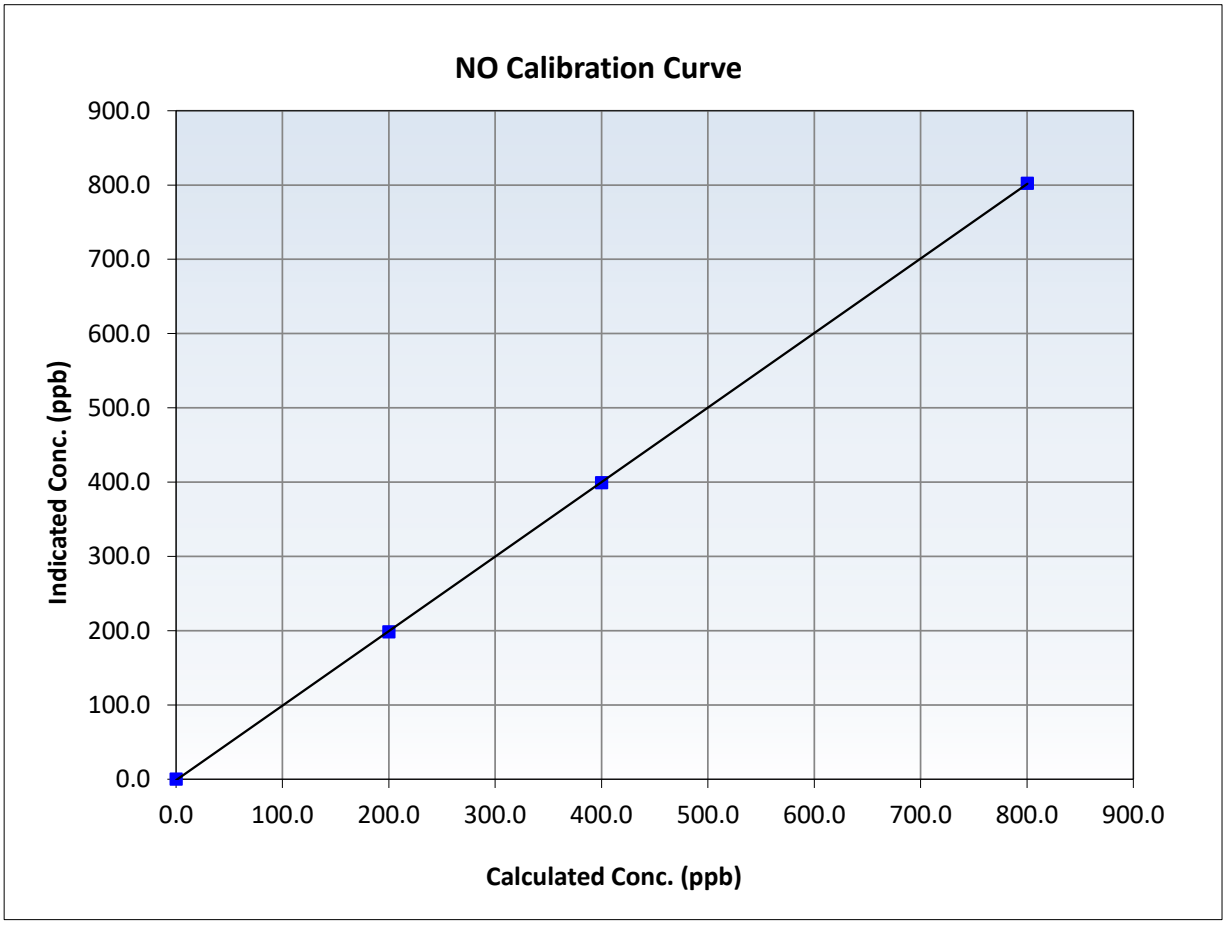
Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 11, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	10:36	End Time (MST):	16:12
Analyzer make:	Teledyne API T200	Analyzer serial #:	7117

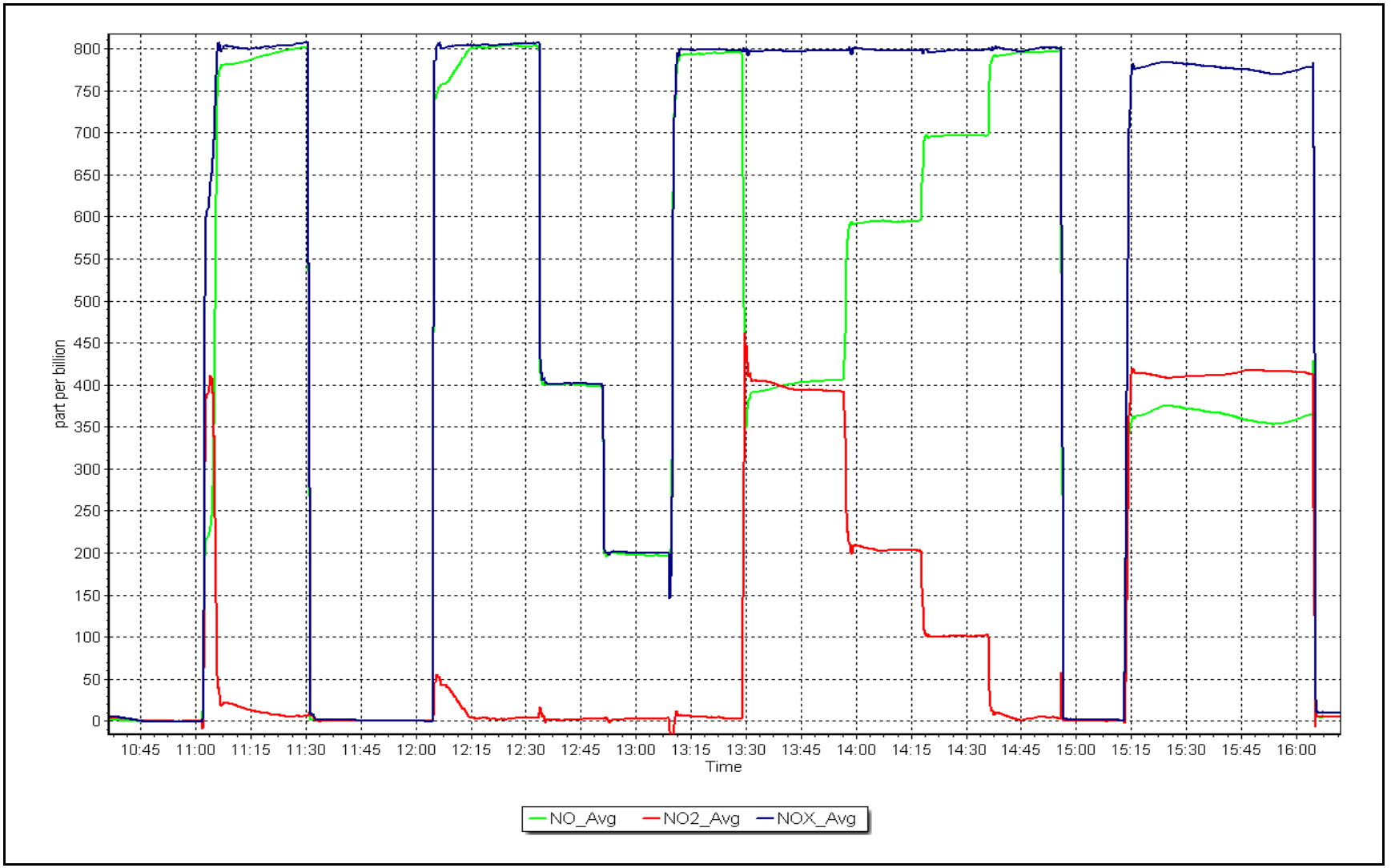
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
800.4	802.4	0.9975
400.2	399.3	1.0022
200.1	198.3	1.0091

Statistical Evaluation		Limits
Correlation Coefficient	0.999987	≥0.995
Slope	1.003133	0.90 - 1.10
Intercept	-1.240000	+/-20



NO_X Calibration Plot Date: April 17, 2025 Location: Bertha Ganter-Fort McKay



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Bertha Ganter-Fort McKay	Station number:	AMS 01
Calibration Date:	April 1, 2025	Last Cal Date:	March 5, 2025
Start time (MST):	11:02	End time (MST):	14:24
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:	146

Analyzer Information

Analyzer make:	Teledyne API T400		Analyzer serial #:	1107	
Analyzer Range	0 - 500 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.001943	0.996600	Backgd or Offset:	7.6	6.8
Calibration intercept:	0.260000	0.920000	Coeff or Slope:	1.021	1.031

O_3 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) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.6	----
As found High point	5000	863.1	400.0	395.7	1.009
As found Mid point					
As found Low point					
Baseline Corr As found:	396.3	Previous response	401.0	*% change	-1.2%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.1	----
High point	5000	863.1	400.0	399.2	1.002
Mid point	5000	744.0	200.0	200.5	0.998
Low point	5000	651.7	100.0	101.5	0.985
As left zero	5000	0.0	0.0	0.0	----
As left span	5000	863.1	400.0	400.2	1.000
				Average Correction Factor	0.995

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

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

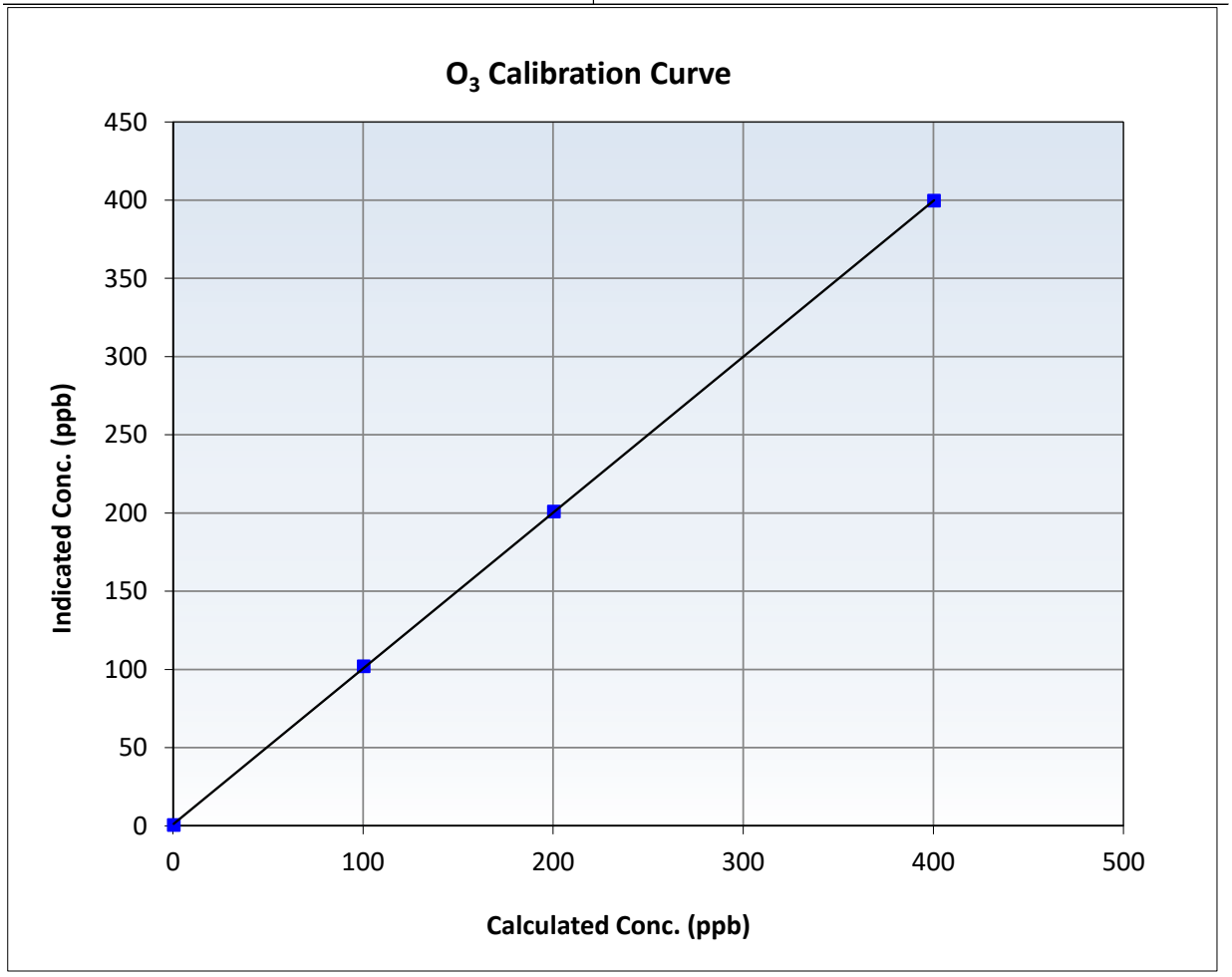
O_3 Calibration Summary

Station Information

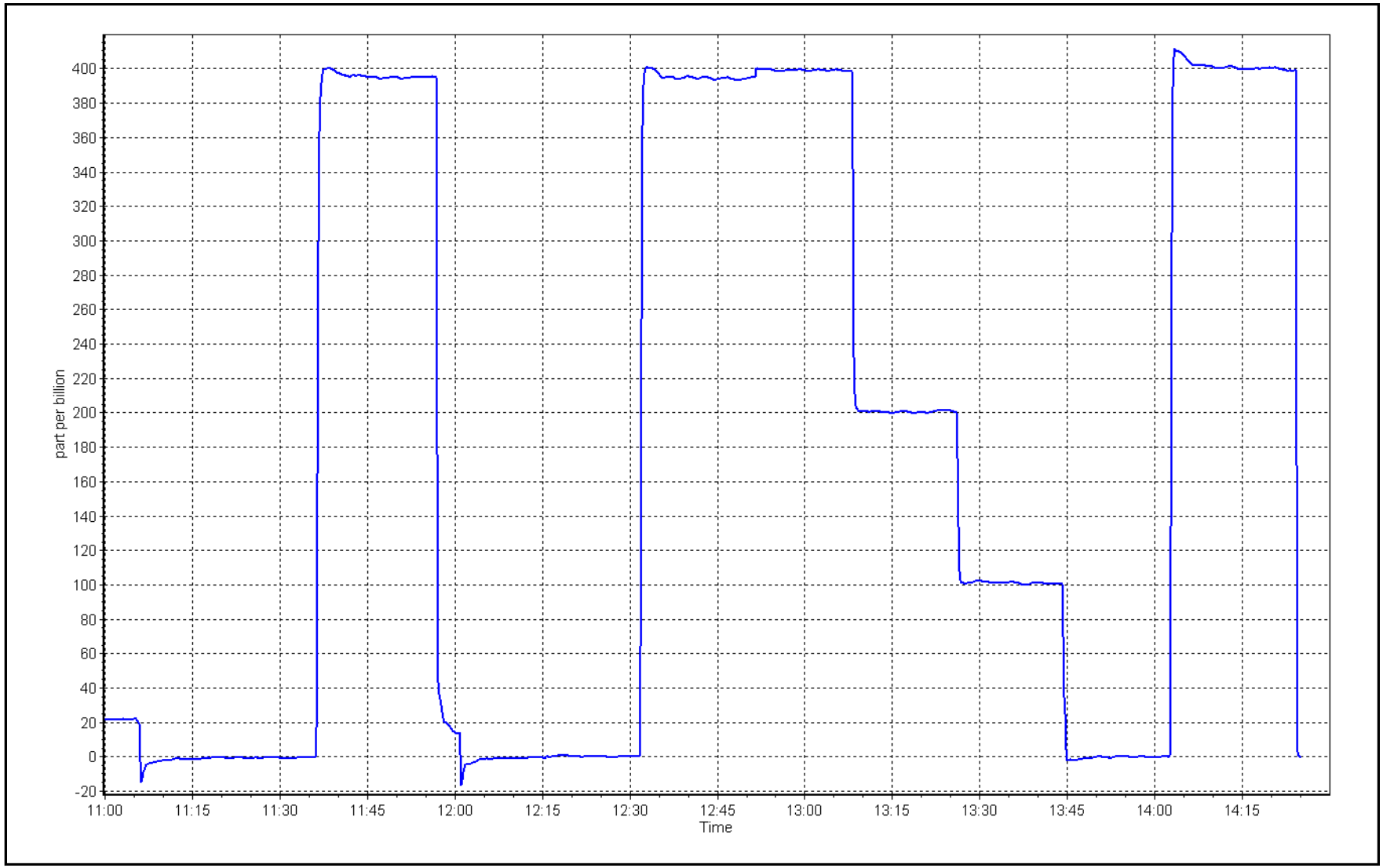
Calibration Date:	April 1, 2025	Previous Calibration:	March 5, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:02	End Time (MST):	14:24
Analyzer make:	Teledyne API T400	Analyzer serial #:	1107

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	0.1	----	Correlation Coefficient	0.999980	*≥0.995*
400.0	399.2	1.0020	Slope	0.996600	*0.90 - 1.10*
200.0	200.5	0.9975			
100.0	101.5	0.9852	Intercept	0.920000	*+/- 5*



O_3 Calibration Plot Date: April 1, 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:	April 2, 2025	Last Cal Date:	March 20, 2025
Start time (MST):	11:59	End time (MST):	14:17
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)	-0.4	-0.9	-0.4	☐	+/- 2 °C
P (mmHg)	728.2	730.53	728.2	☐	+/- 10 mmHg
Flow (LPM)	4.99	4.978	4.99	☐	+/- 0.25 LPM
PW% (pump)	39		39	☐	>80%
Zero Verification	PM w/o HEPA:	17.2	PM w/ HEPA:	17.2	<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	7.5	10.2	10.8	☑	10.9 +/- 0.5

Date Optical Chamber Cleaned: April 2, 2025

Date Disposable Filter Changed: April 2, 2025

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

Annual Maintenance

Date Sample Tube Cleaned: October 24, 2024

Date RH/T Sensor Cleaned: April 2, 2025

Notes: Flow, temperature, and pressure were verified. Initial leak check did not pass. Optical chamber and RH/T sensor cleaned. Disposable filter changed. PMT peak adjusted. Post maintenance 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:	April 2, 2025	Last Cal Date:	March 3, 2025
Start time (MST):	11:08	End time (MST):	14:45
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:	146

Analyzer Information

Analyzer make:	Teledyne API T300		Analyzer serial #:	3520	
Analyzer Range:	0 - 50 ppm				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.003849	1.002893	Backgd or Offset:	-0.015	-0.015
Calibration intercept:	0.071854	0.133812	Coeff or Slope:	0.994	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) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.1	----
As found High point	4933	66.7	40.6	41.0	0.992
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr As found:	40.89	Prev response:	40.78	*% 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	40.6	40.7	0.997
Mid point	4966	33.3	20.2	20.7	0.979
Low point	4983	16.7	10.2	10.3	0.983
As left zero	5000	0.0	0.0	0.0	----
As left span	2960	40.0	40.5	40.5	1.000
				Average Correction Factor	0.986

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

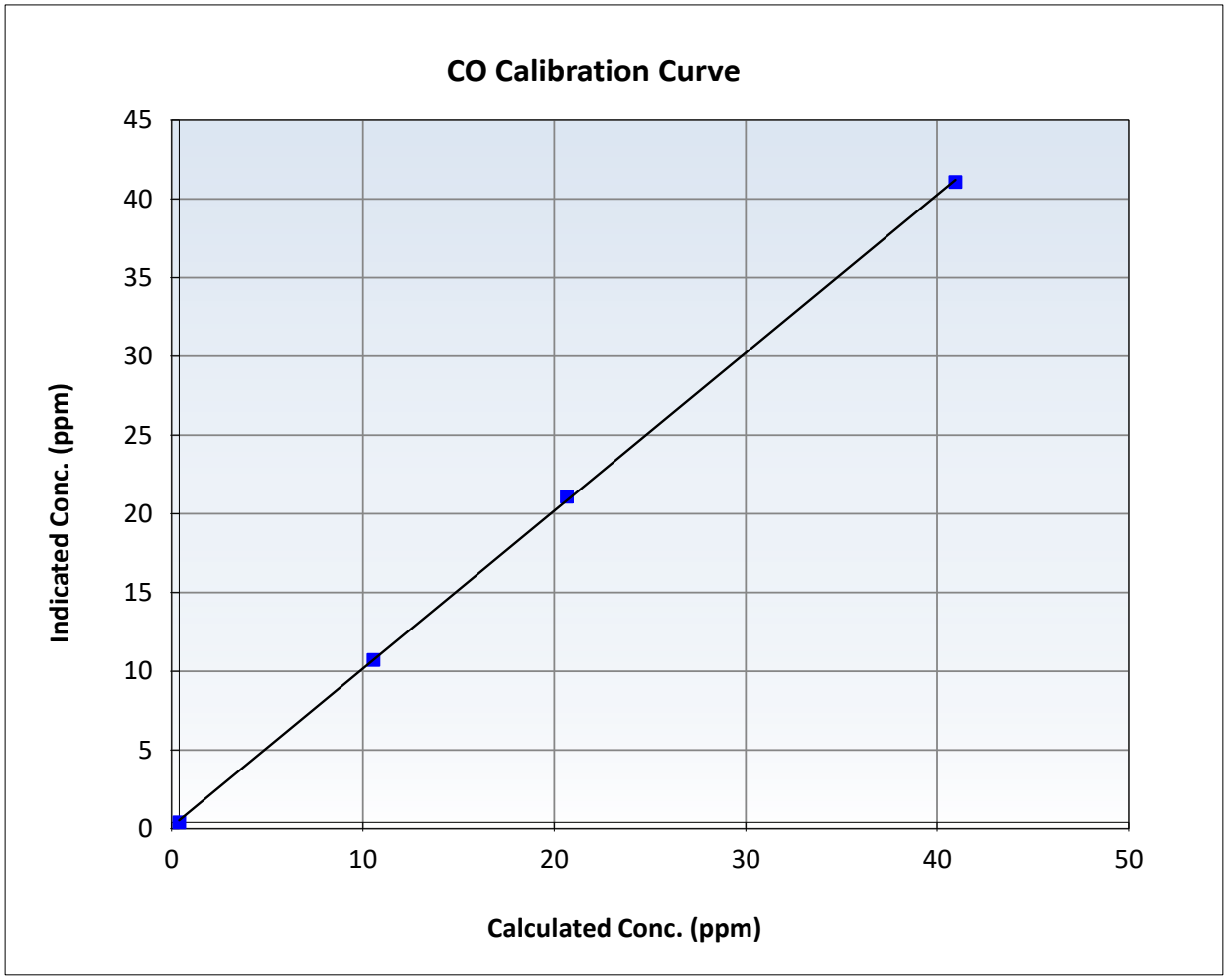
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	March 3, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:08	End Time (MST):	14:45
Analyzer make:	Teledyne API T300	Analyzer serial #:	3520

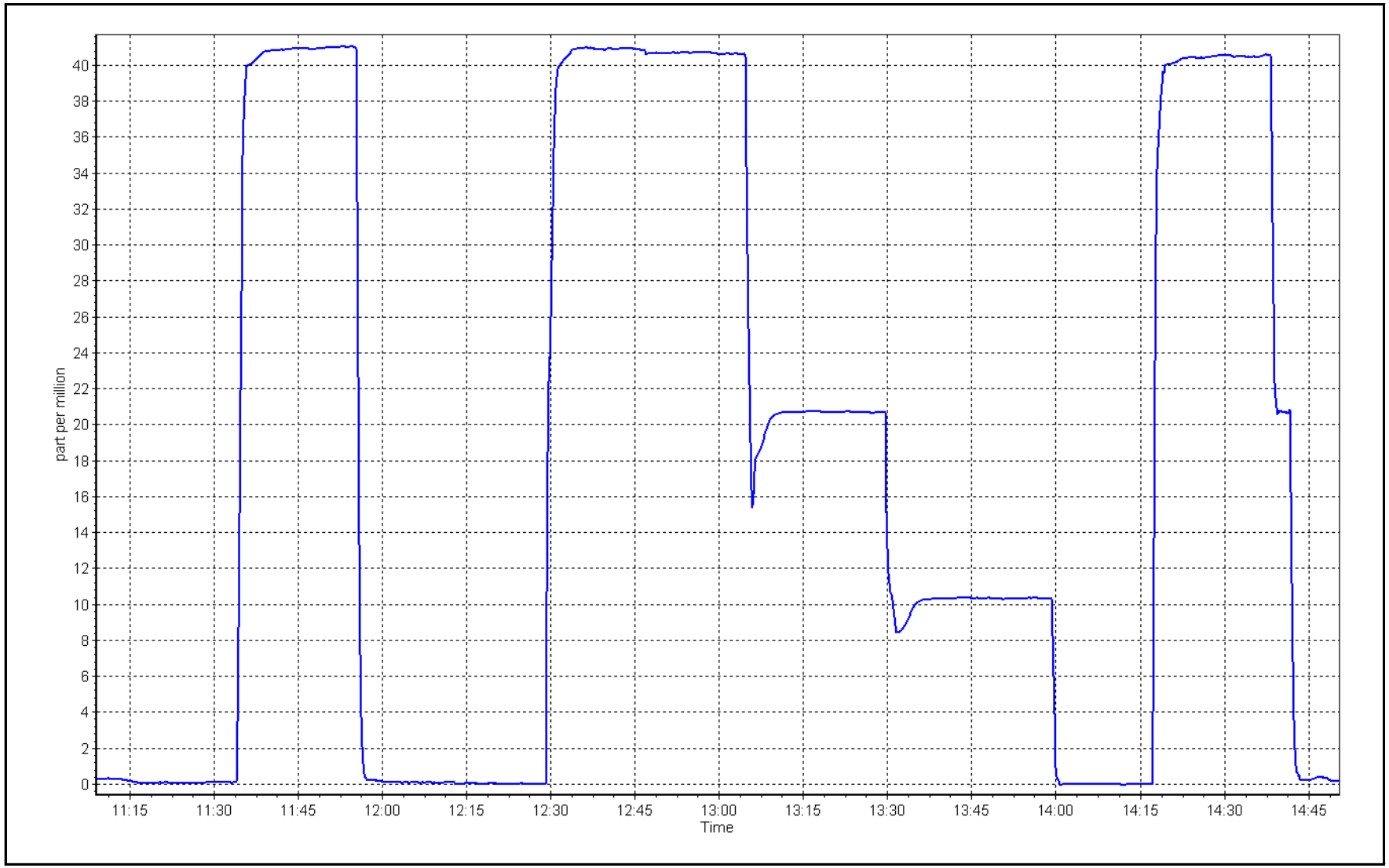
Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
40.6	40.7	0.9970
20.2	20.7	0.9787
10.2	10.3	0.9830

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999894	*≥0.995*
Slope	1.002893	*0.90 - 1.10*
Intercept	0.133812	*+/-1.5*



CO Calibration Plot Date: April 2, 2025 Location: Bertha Ganter-Fort McKay



Wood Buffalo Environmental Association

CO_2 Calibration Report

Station Information

Station Name:	Bertha Ganter-Fort McKay	Station number:	AMS 01
Calibration Date:	April 4, 2025	Last Cal Date:	March 4, 2025
Start time (MST):	10:58	End time (MST):	14:09
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.005093	1.000358	Backgd or Offset:	-0.011	-0.011
Calibration intercept:	-5.360000	-3.460000	Coeff or Slope:	0.922	0.922

CO_2 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	3000	0.0	0.0	0.5	----
As found High Point	2920	80.0	1605.3	1606.1	1.000
As found Mid Point					
As found Low Point					
New cylinder response					

Baseline Corr As found:	1605.6	Prev response:	1608.1	*% 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	

CO_2 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	3000	0.0	0.0	0.6	----
High point	2920	80.0	1605.3	1607.1	0.999
Mid point	2960	40.0	802.7	789.6	1.017
Low point	2980	20.0	401.3	399.2	1.005
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	1.007

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

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

CO_2 Calibration Summary

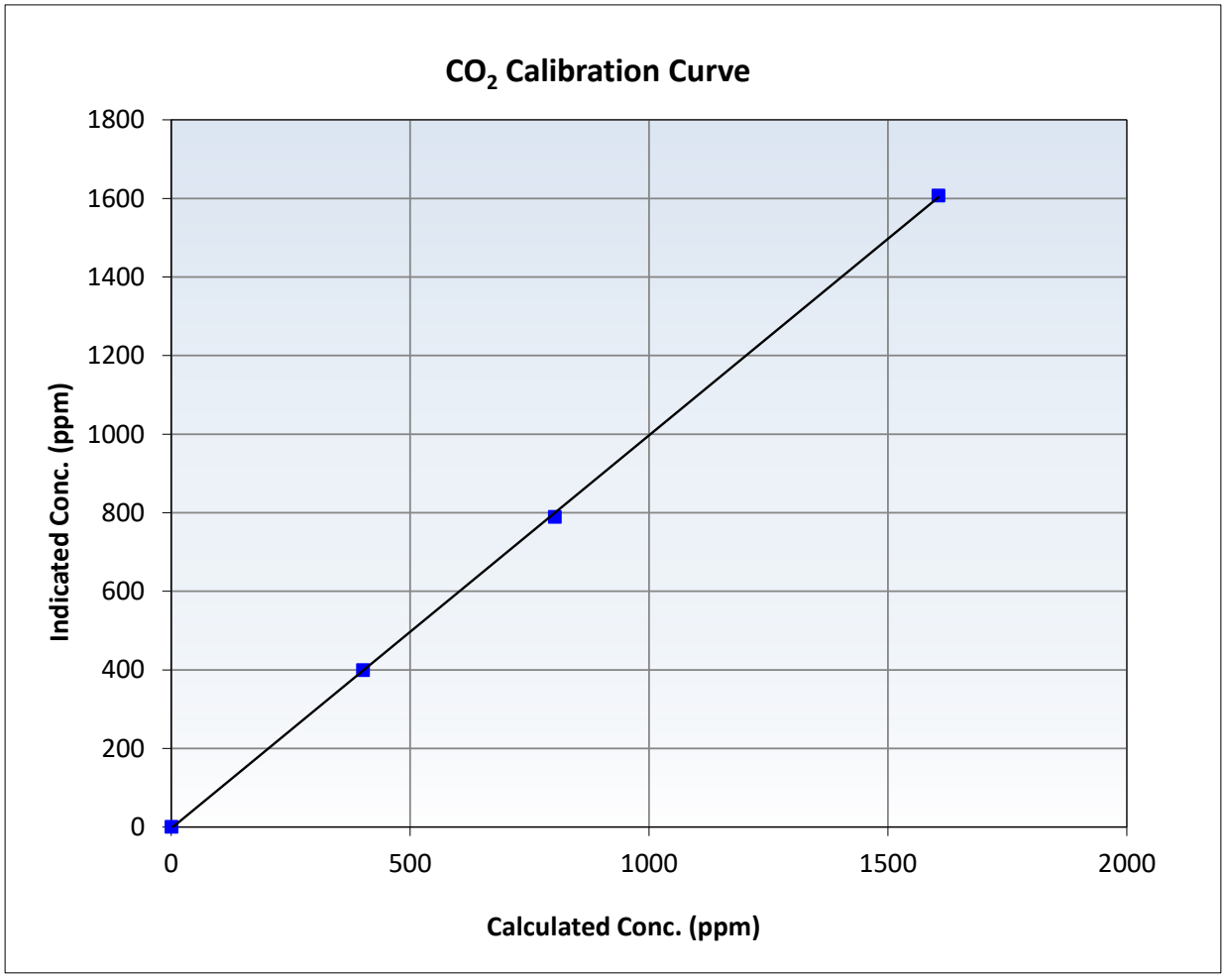
Station Information

Calibration Date	April 4, 2025	Previous Calibration	March 4, 2025
Station Name	Bertha Ganter-Fort McKay	Station Number	AMS 01
Start Time (MST)	10:58	End Time (MST)	14:09
Analyzer make	Teledyne API 360	Analyzer serial #	442

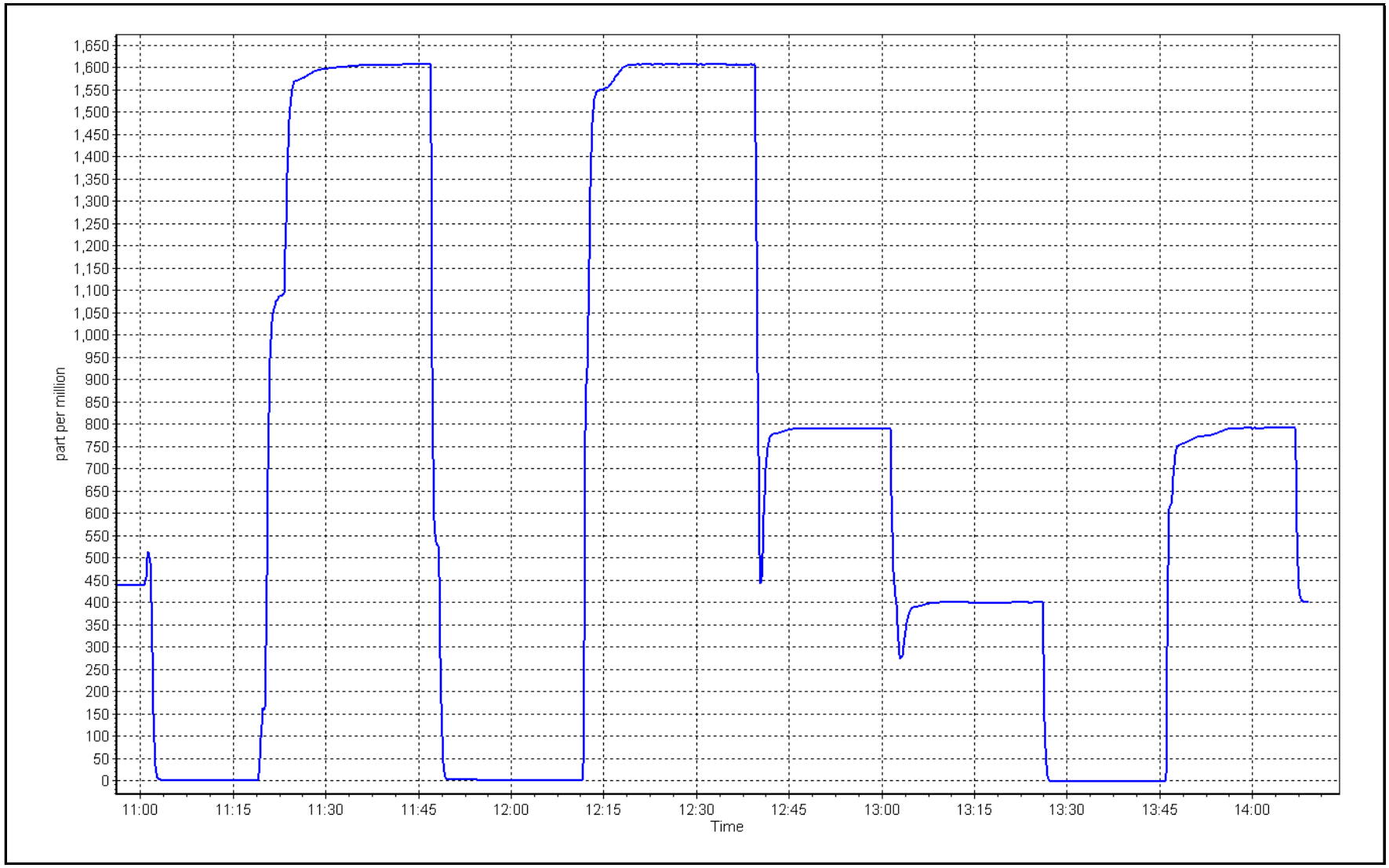
Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.0	0.6	----
1605.3	1607.1	0.9989
802.7	789.6	1.0165
401.3	399.2	1.0053

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999903	*≥0.995*
Slope	1.000358	*0.90 - 1.10*
Intercept	-3.5	*+/-20*



CO_2 Calibration Plot Date: April 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:	April 14, 2025	Last Cal Date:	March 12, 2025
Start time (MST):	11:00	End time (MST):	15:55
NH3 Cal Date:	April 15, 2025	Last Cal Date:	March 13, 2025
Start time (MST):	11:10	End time (MST):	15:00
Reason:	Routine		

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:	77.80	ppm	Removed Cylinder #:	NA
NH3 gas Diff:			Removed cyl Expiry:	NA
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:	4.40
NOX Range (ppb):	0 - 1000 ppb		Sample Flow:	393

	Start	*Finish*		*Start*	*Finish*
NO coefficient:	0.911	0.903	Nt coefficient:	0.918	0.907
NOX coefficient:	0.912	0.905	NO bkgrnd:	-1.8	0.5
NO2 coefficient:	1.000	1.000	NOX bkgrnd:	-1.7	0.8
NH3 coefficient:	0.983	0.983	Nt bkgrnd:	-0.6	2.9

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.998844	1.001577
NO_X Cal Offset:	-1.020000	-1.280000
NO Cal Slope:	1.001505	1.002933
NO Cal Offset:	-1.720000	-1.820000
NO_2 Cal Slope:	1.004855	1.002698
NO_2 Cal Offset:	-0.045831	-0.301647
NH3 Cal Slope:	0.998529	0.998379
NH3 Cal Offset:	1.260645	-6.890779
Nt Cal Slope:	1.002958	1.003583
Nt Cal Offset:	3.555325	-6.335266

Wood Buffalo Environmental Association

NO_X - NO - NO_2 Calibration Report

NOx / NO / Nt As Found Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated Nt concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated Nt concentration (ppb) (Ic)	Baseline corr NOx Correction factor (Cc/Ic) *Limit = 0.9 - 1.0*	Baseline corr NO Correction factor (Cc/Ic) *Limit = 0.9 - 1.0*
As found zero	5000	0.0	0.0	0.0	0.0	1.5	1.1	1.3	----	----
As found span	4932	67.6	803.1	800.4	803.1	814.7	803.7	817.0	0.9857	0.9959
AF GPT span	4932	67.6	803.1	-----	803.1	796.0	-----	795.6	1.0089	-----
new NO cyl rp										

Baseline Corr As Fd	Nt =	815.7	ppb	NO_X =	813.2	ppb	NO =	802.6	ppb
Previous Response	Nt =	809.02	ppb	NO_X =	801.1	ppb	NO =	799.9	ppb

**NO_X Δ (NO to GPT response) = -2.3%

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

*Percent Change	$Nt_{(NO)}$ =	0.8%
*Percent Change	NO_X =	1.5%
*Percent Change	NO =	0.3%

* = > +/-5% change initiates investigation

NOx / NO / Nt Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated Nt concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated Nt concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Calibration zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.1	----	----
High point	4932	67.6	803.1	800.4	803.1	803.9	801.8	804.0	0.9990	0.9982
Mid point	4966	33.8	401.5	400.2	401.5	399.5	398.5	401.1	1.0051	1.0042
Low point	4983	16.9	200.8	200.1	200.8	199.3	197.4	199.9	1.0074	1.0137
								Average Correction Factor	1.0038	1.0054

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Calibration zero	----	----	0.0	0.0	----	----
High GPT point (400 ppb O3)	797.2	403.6	396.3	397.4	0.9972	100.3%
Mid GPT point (200 ppb O3)	797.2	596.7	203.2	202.8	1.0020	99.8%
Low GPT point (100 ppb O3)	797.2	697.3	102.6	102.6	1.0000	100.0%
				Average Correction Factor	0.9998	100.0%

Wood Buffalo Environmental Association
NH_3 - 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)) *Limit = 0.9 - 1.1*	Baseline corr NH3 Correction factor (Cc/(Ic-zero)) *Limit = 0.9 - 1.1*
As found zero	5000	0.0	0.0	0.0	0.0	-0.8	-0.3	-0.6	----	----
AF High point	2929	70.5	1828.6	----	1828.6	1805.4	----	1795.9	1.012	1.018
AF Mid point							----			
AF Low point							----			
new NH3 cyl rp										

Baseline Corr As Fd Nt = 1806.2 ppb NH3 = 1796.5 ppb *Percent Change $Nt_{(NH3)}$ = -1.7%

Previous Response Nt = 1837.6 ppb NH3 = 1827.2 ppb * = > +/-5% change initiates investigation *Percent Change NH3 = -1.7%

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) *Limit = 0.95-1.05*	NH3 Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Calibration zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	----	----
High point	2931	69.4	1799.8	----	1799.8	1805.4	----	1795.9	0.997	1.002
Mid point	2961	38.6	1001.0	----	1001.0	990.2	----	984.1	1.011	1.017
Low point	2981	19.3	500.5	----	500.5	492.3	----	488.3	1.017	1.025
								Average Correction Factor	1.0082	1.0148

NH3 Previous Converter Efficiency = 98.3 %

NH3 Current Converter Efficiency = 98.3 %

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

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

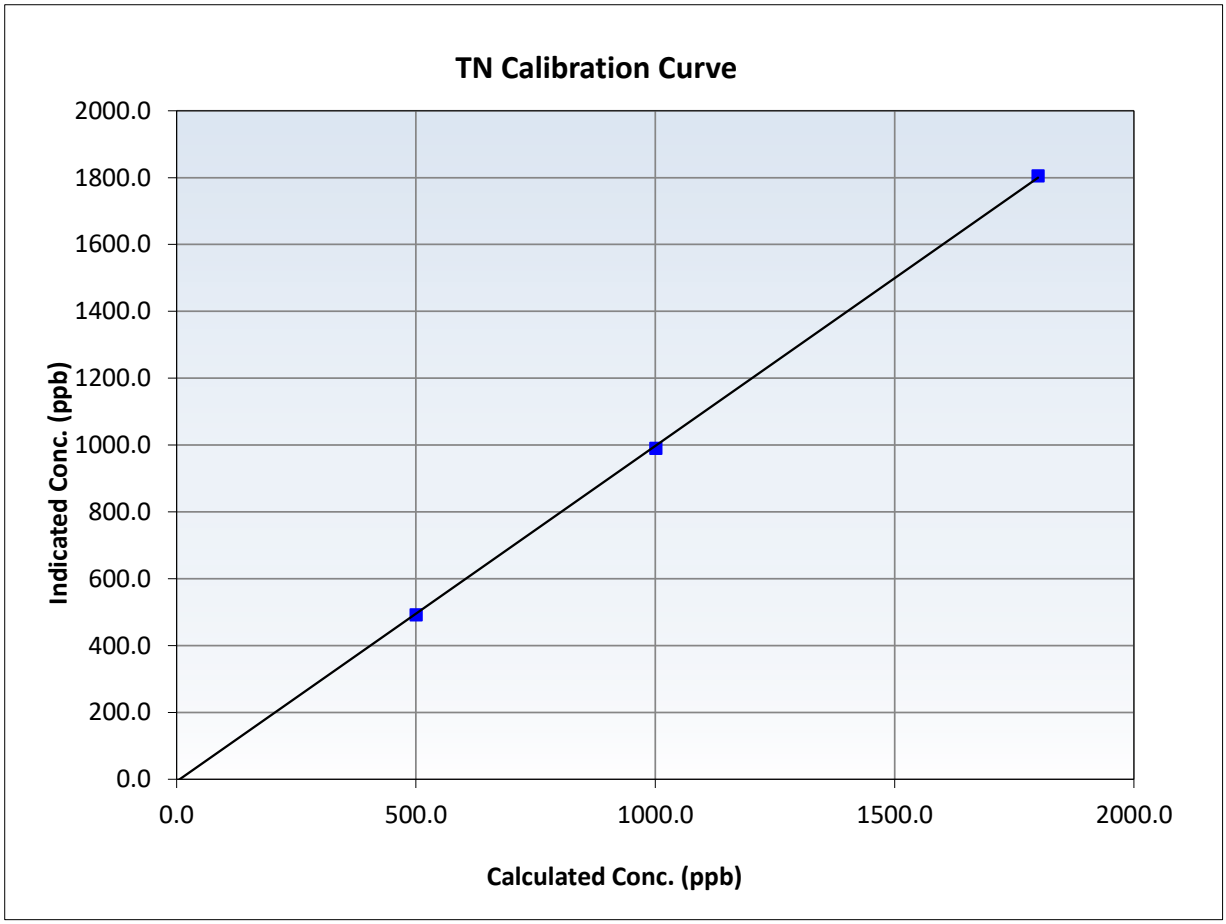
Nt Calibration Summary

Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 12, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:00	End Time (MST):	15:55
Analyzer make:	API T201	Analyzer serial #:	808

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	-0.1	----	Correlation Coefficient	0.999917	≥0.995
1799.8	1805.4	0.9969	Slope	1.003583	0.90 - 1.10
1001.0	990.2	1.0109			
500.5	492.3	1.0167	Intercept	-6.335266	+/-20



Wood Buffalo Environmental Association

NH_3 Calibration Summary

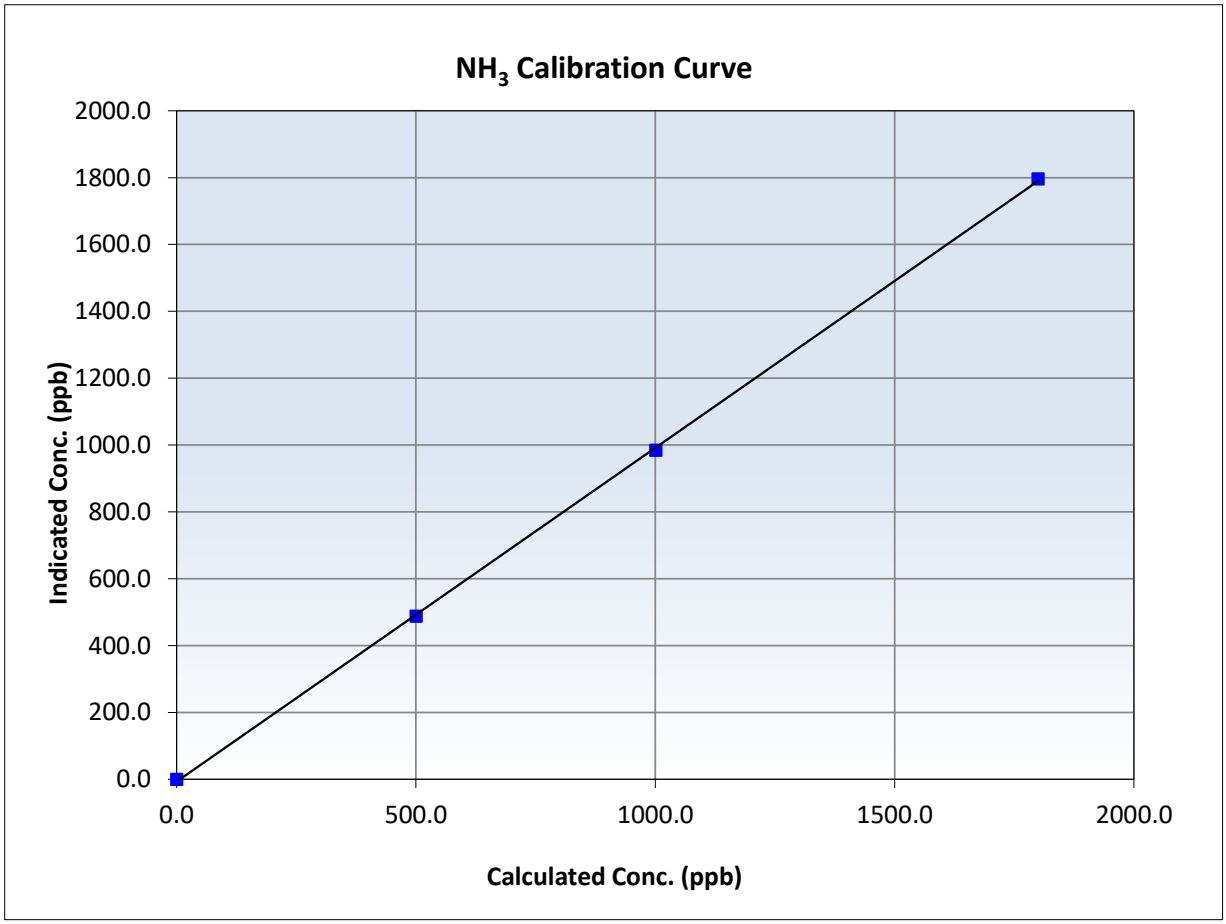
Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 12, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:00	End Time (MST):	15:55
Analyzer make:	API T201	Analyzer serial #:	808

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
1799.8	1795.9	1.0022
1001.0	984.1	1.0172
500.5	488.3	1.0250

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999901	*≥0.995*
Slope	0.998379	*0.90 - 1.10*
Intercept	-6.890779	*+/-20*



Wood Buffalo Environmental Association

NO_X Calibration Summary

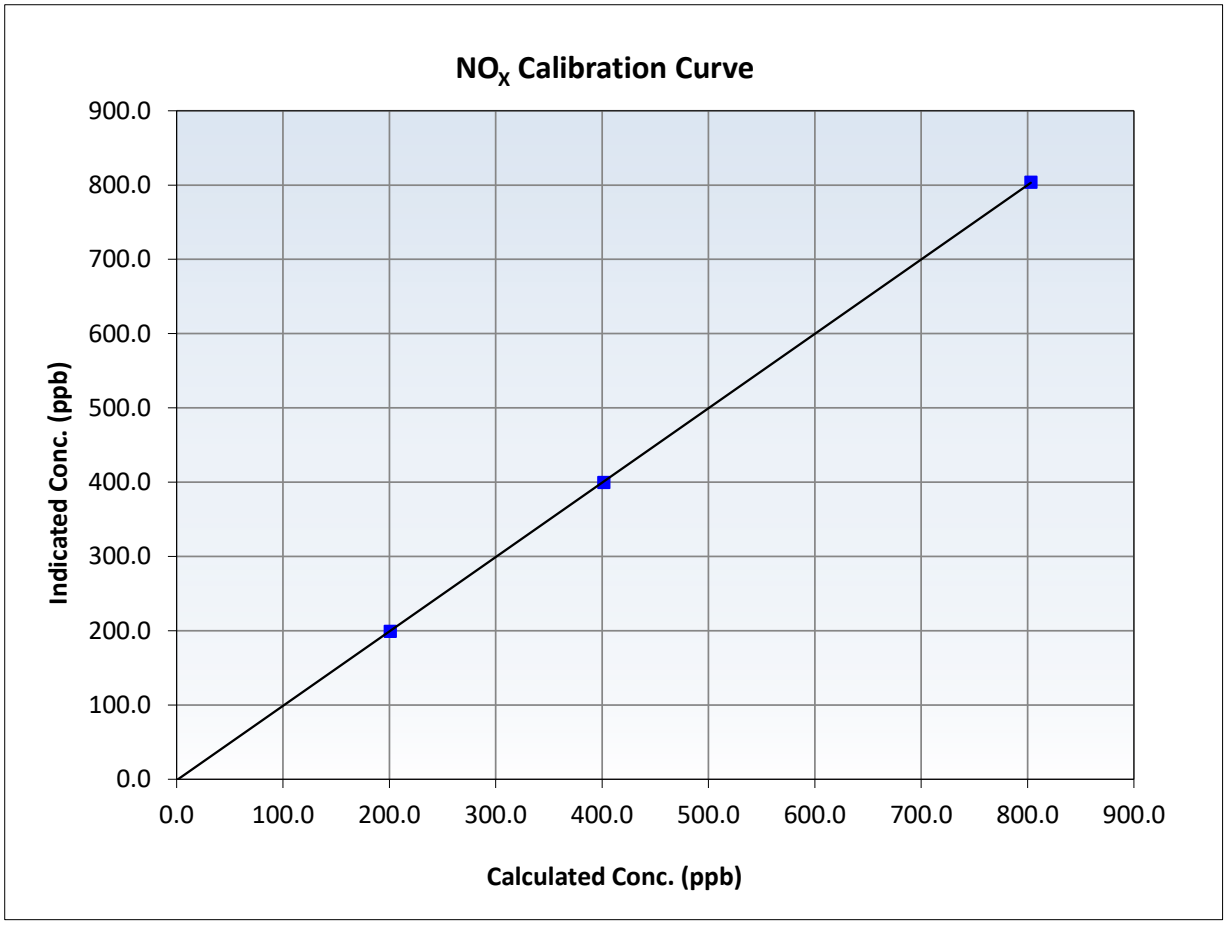
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 12, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:00	End Time (MST):	15:55
Analyzer make:	API T201	Analyzer serial #:	808

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.2	----
803.1	803.9	0.9990
401.5	399.5	1.0051
200.8	199.3	1.0074

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999989	*≥0.995*
Slope	1.001577	*0.90 - 1.10*
Intercept	-1.280000	*+/-20*



Wood Buffalo Environmental Association

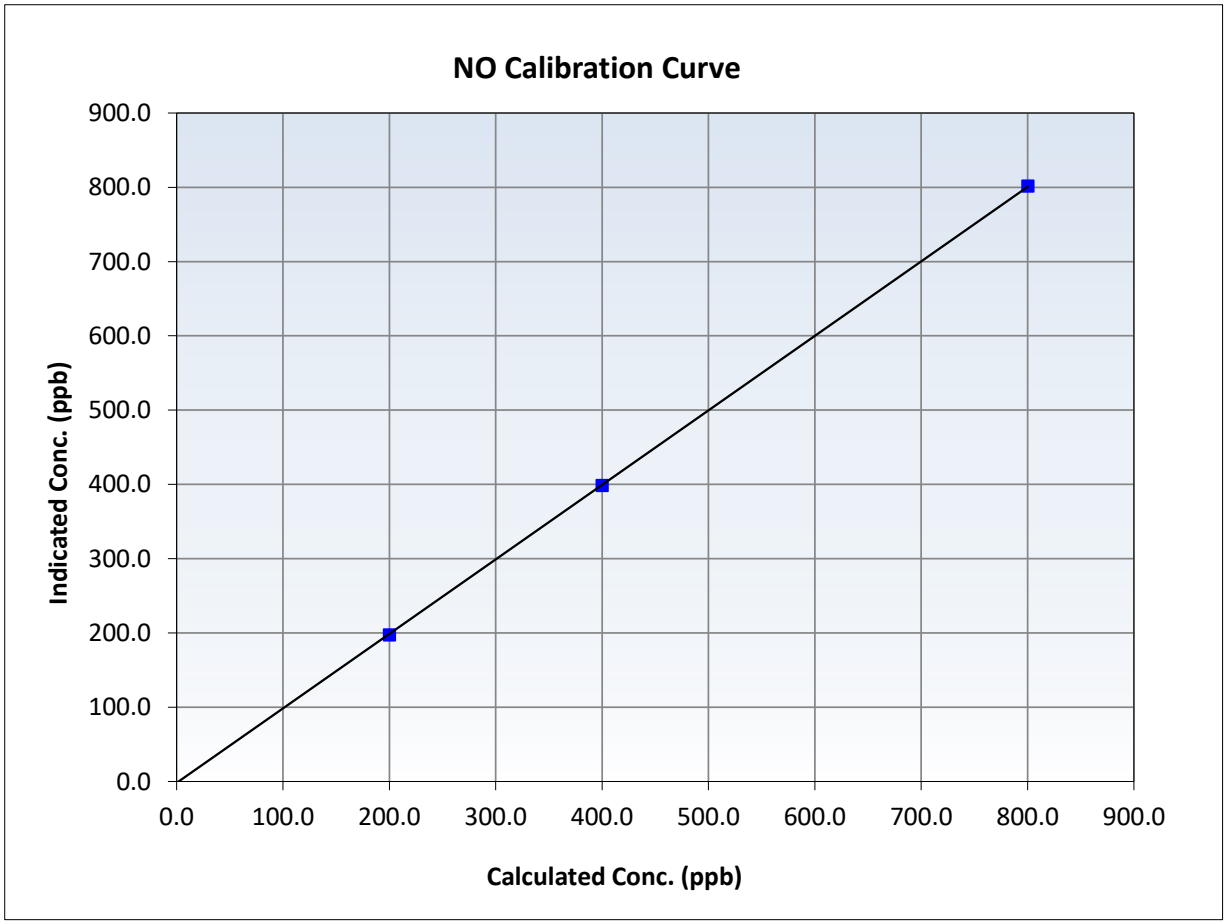
NO Calibration Summary

Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 12, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:00	End Time (MST):	15:55
Analyzer make:	API T201	Analyzer serial #:	808

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	-0.2	----	Correlation Coefficient	0.999981	*≥0.995*
800.4	801.8	0.9982	Slope	1.002933	*0.90 - 1.10*
400.2	398.5	1.0042	Intercept	-1.820000	*+/-20*
200.1	197.4	1.0137			



Wood Buffalo Environmental Association

NO_2 Calibration Summary

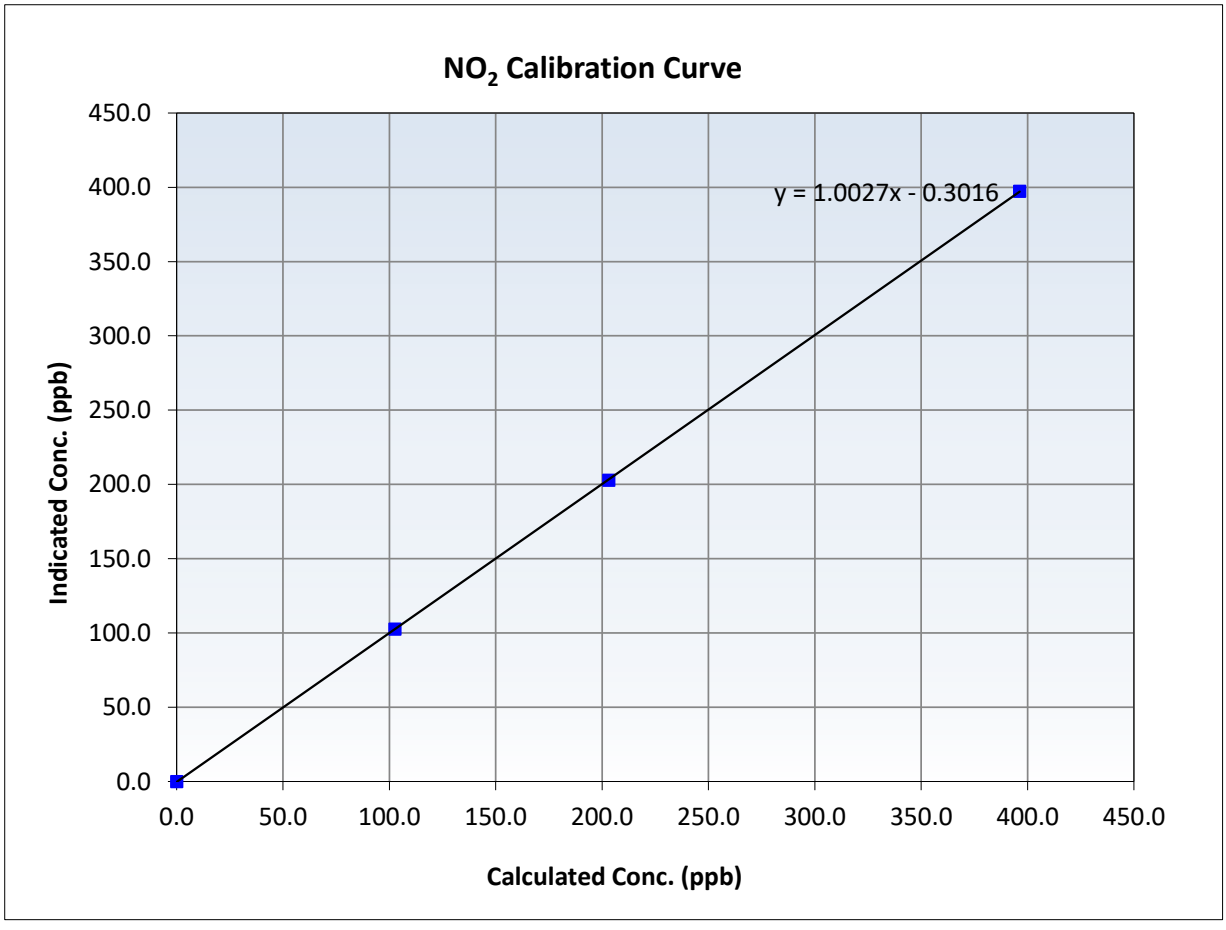
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 12, 2025
Station Name:	Bertha Ganter-Fort McKay	Station Number:	AMS 01
Start Time (MST):	11:00	End Time (MST):	15:55
Analyzer make:	API T201	Analyzer serial #:	808

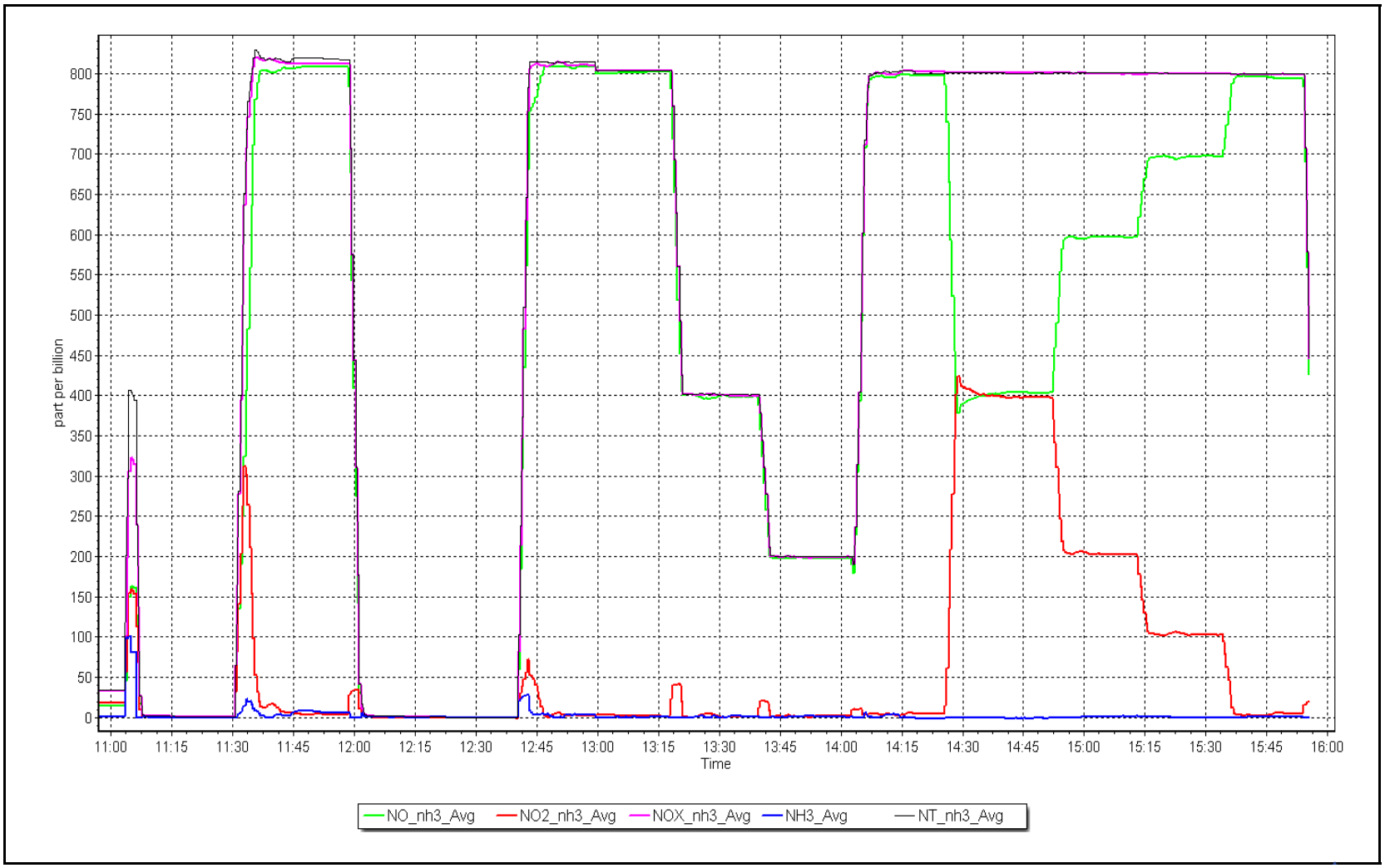
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
396.3	397.4	0.9972
203.2	202.8	1.0020
102.6	102.6	1.0000

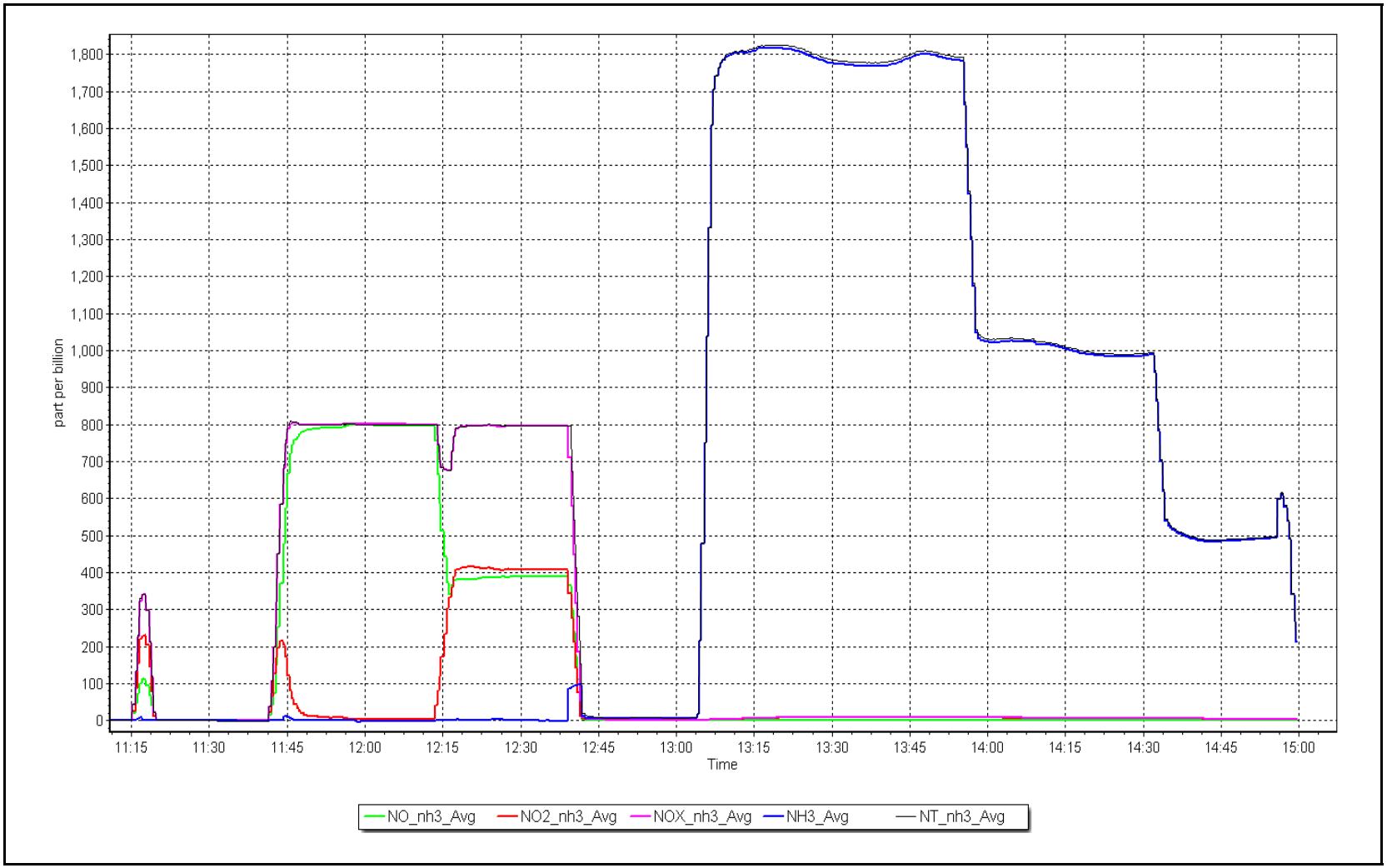
Statistical Evaluation		*Limits*
Correlation Coefficient	0.999993	*≥0.995*
Slope	1.002698	*0.90 - 1.10*
Intercept	-0.301647	*+/-20*



NO_X Calibration Plot Date: April 14, 2025 Location: Bertha Ganter-Fort McKay



NH_3 Calibration Plot Date: April 15, 2025 Location: Bertha Ganter-Fort McKay



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS02
MILDRED LAKE
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Mildred Lake	Station number:	AMS 02
Calibration Date:	April 17, 2025	Last Cal Date:	March 3, 2025
Start time (MST):	9:49	End time (MST):	13:24
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.004323	1.008050	Backgd or Offset:	24.4	24.0
Calibration intercept:	-1.490497	-1.170425	Coeff or Slope:	0.791	0.763

SO_2 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	0.7	----
As found High point	4913	78.6	803.0	830.0	0.968
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	829.3	Previous response	805.0	*% change	2.9%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO_2 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	4913	78.4	801.0	807.0	0.993
Mid point	4961	39.2	399.8	400.7	0.998
Low point	4980	19.6	199.9	199.5	1.002
As left zero	5000	0.0	0.0	0.3	----
As left span	4913	78.4	801.0	802.0	0.999
				Average Correction Factor:	0.997

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

SO_2 Calibration Summary

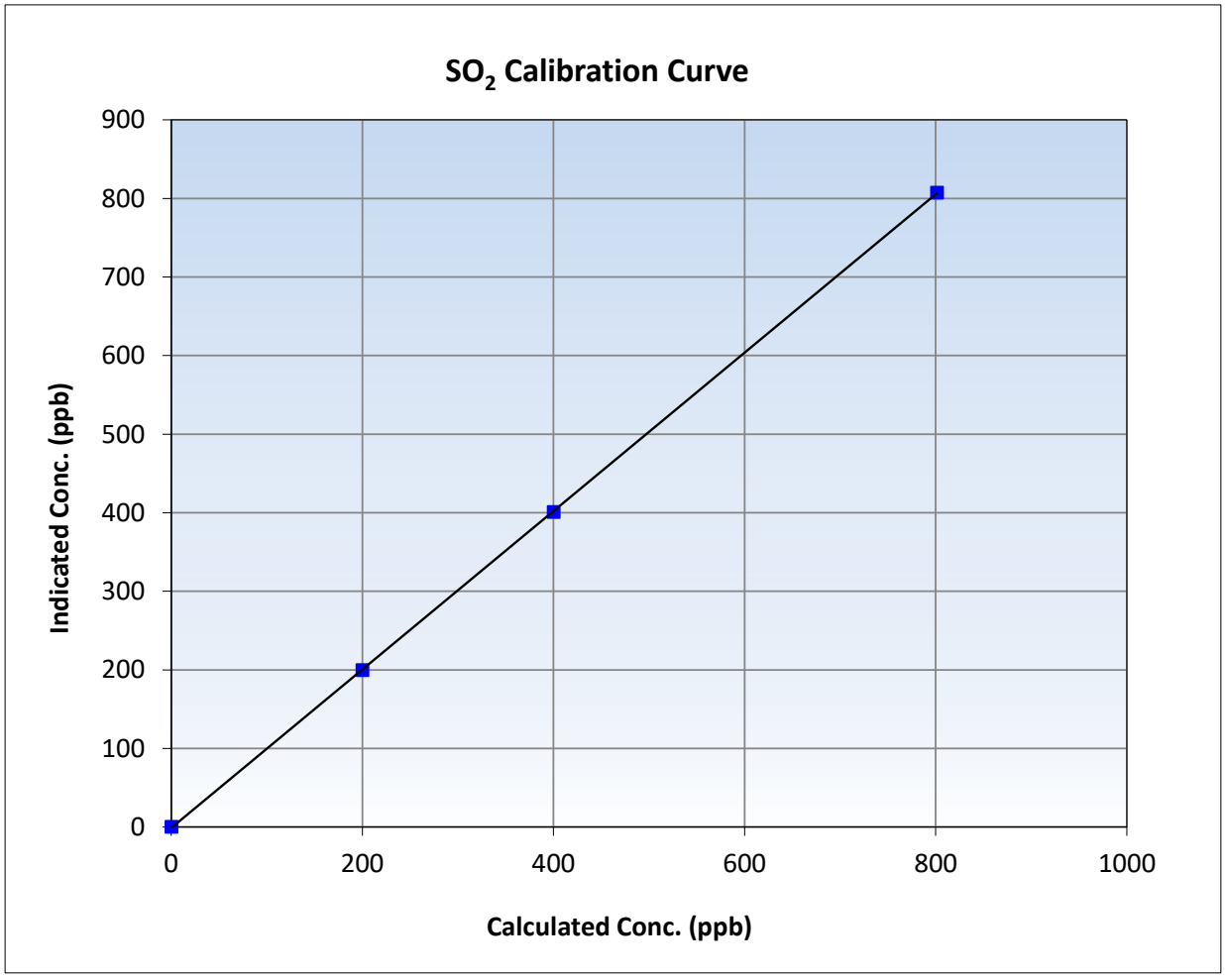
Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 3, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	9:49	End Time (MST):	13:24
Analyzer make:	Thermo 43i	Analyzer serial #:	JC1404901075

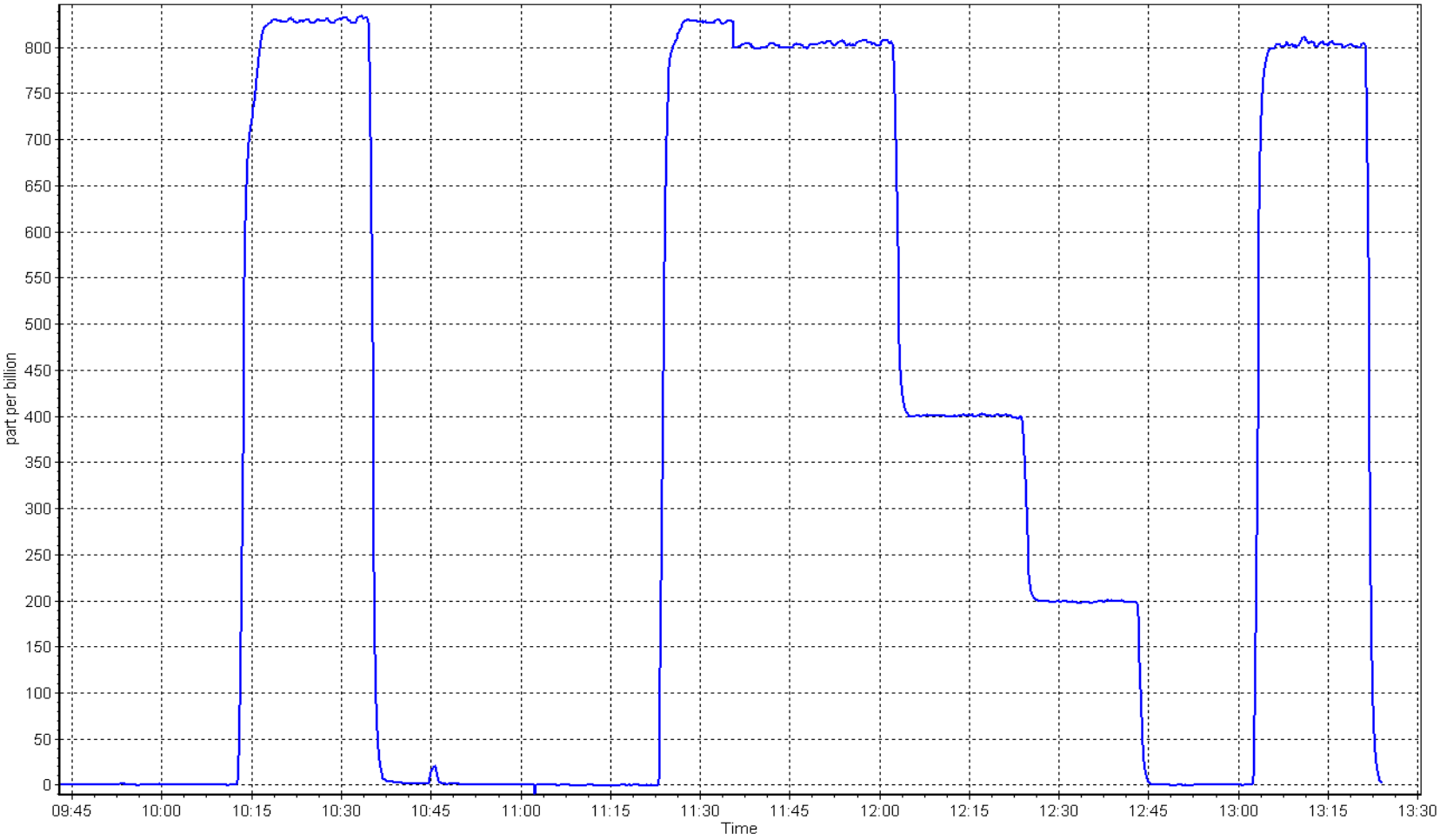
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
801.0	807.0	0.9925
399.8	400.7	0.9977
199.9	199.5	1.0019

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999989	*≥0.995*
Slope	1.008050	*0.90 - 1.10*
Intercept	-1.170425	*+/-30*



SO2 Calibration Plot Date: April 17, 2025 Location: Mildred Lake



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name:	Mildred Lake	Station number:	AMS 02
Calibration Date:	April 16, 2025	Last Cal Date:	March 28, 2025
Start time (MST):	10:23	End time (MST):	15:46
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	4.75	ppm	Cal Gas Exp Date:	August 28, 2027
Cal Gas Cylinder #:	CC700774			
Removed Cal Gas Conc:	4.75	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Make/Model:	Teledyne API T700		Serial Number:	1185
ZAG Make/Model:	Teledyne API T701		Serial Number:	4891

Analyzer Information

Analyzer make:	Thermo 43iQTL		Analyzer serial #:	12333331546	
Converter make:	Global G150		Converter serial #:	2023-267	
Analyzer Range	0 - 100 ppb		Converter Temp:	325	degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.999268	1.001840	Backgd or Offset:	1.41	1.42
Calibration intercept:	0.180000	0.240000	Coeff or Slope:	0.972	0.977

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.1	----
As found High point	4916	84.2	80.0	79.8	1.004
As found Mid point	4958	42.1	40.0	39.8	1.007
As found Low point	4979	21.1	20.0	19.9	1.010
New cylinder response					

Baseline Corr As found:	79.7	Prev response:	80.11	*% change:	-0.5%
Baseline Corr 2nd AF pt:	39.7	AF Slope:	0.996696	AF Intercept:	0.020000
Baseline Corr 3rd AF pt:	19.8	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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4916	84.2	80.0	80.3	0.996
Mid point	4958	42.1	40.0	40.4	0.990
Low point	4979	21.1	20.0	20.4	0.980
As left zero	5000	0.0	0.0	0.1	----
As left span	4916	84.2	80.0	81.2	0.985
SO2 Scrubber Check	4920	80.2	802.0	0.0	----
Date of last scrubber change:		July 16, 2024		Ave Corr Factor	0.989
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

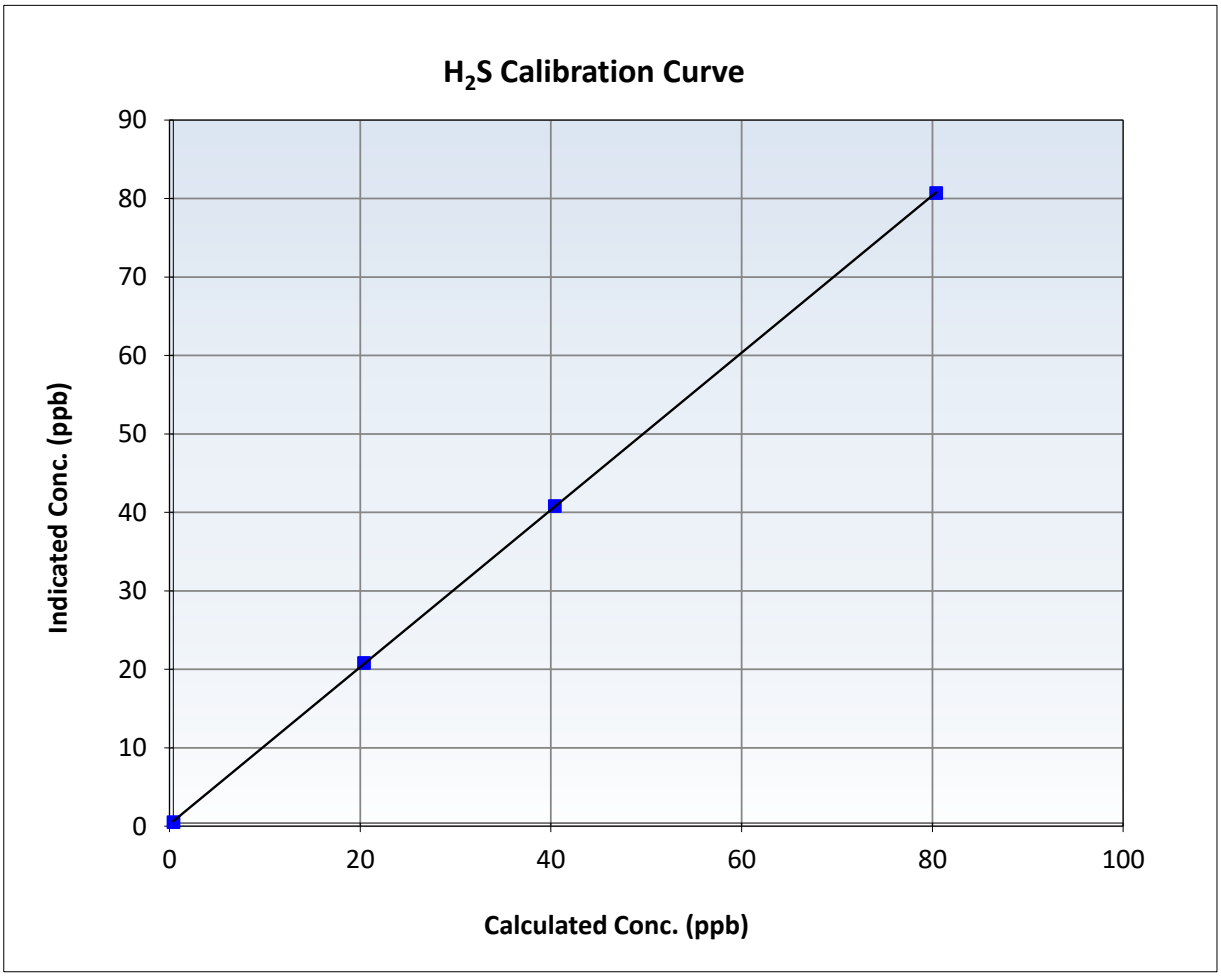
H2S Calibration Summary

Station Information

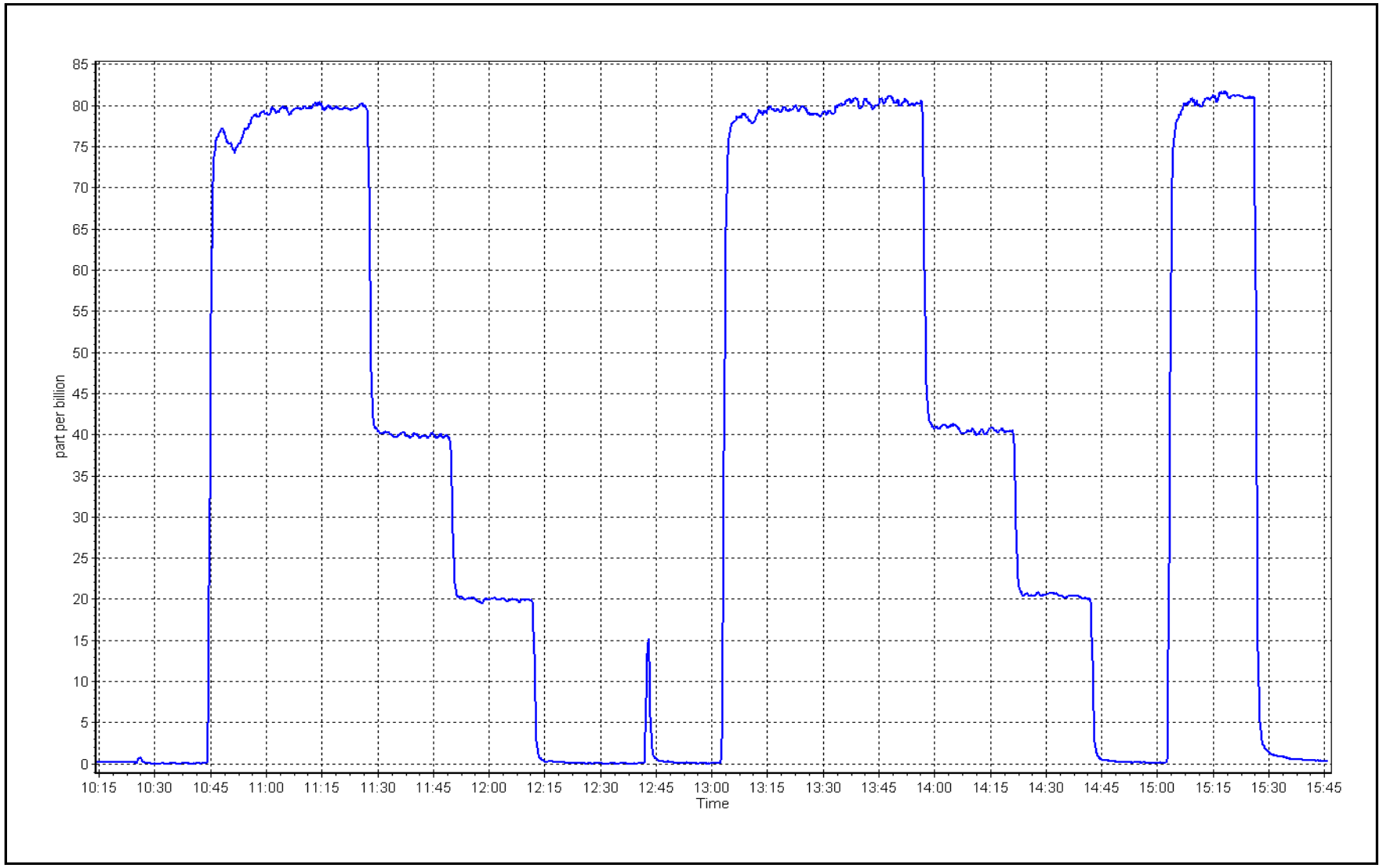
Calibration Date:	April 16, 2025	Previous Calibration:	March 28, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	10:23	End Time (MST):	15:46
Analyzer make:	Thermo 43iQTL	Analyzer serial #:	12333331546

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	0.1	----	Correlation Coefficient	0.999986	*≥0.995*
80.0	80.3	0.9961	Slope	1.001840	*0.90 - 1.10*
40.0	40.4	0.9900			
20.0	20.4	0.9803	Intercept	0.240000	*+/-3*



H2S Calibration Plot Date: April 16, 2025 Location: Mildred Lake



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Mildred Lake	Station number:	AMS 02
Calibration Date:	April 17, 2025	Last Cal Date:	March 6, 2025
Start time (MST):	9:49	End time (MST):	13:24
Reason:	Routine		

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/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	3.14E-04	3.17E-04	NMHC SP Ratio:	5.59E-05	5.66E-05
CH4 Retention time:	14.8	14.8	NMHC Peak Area:	158755	156929
Zero Chromatogram:	ON	ON	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	16.76	16.59	1.010
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.59	Prev response	16.82	*% 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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	
High point	4913	78.4	16.76	16.79	0.998
Mid point	4961	39.2	8.37	8.33	1.004
Low point	4980	19.6	4.18	4.10	1.021
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	16.76	16.78	0.999
				Average Correction Factor	1.008

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

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	8.86	8.76	1.011
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.76	Prev response	8.89	*% change	-1.5%
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	4913	78.4	8.86	8.88	0.998
Mid point	4961	39.2	4.42	4.43	0.998
Low point	4980	19.6	2.21	2.21	1.002
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	8.86	8.91	0.994
				Average Correction Factor	0.999

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	7.90	7.83	1.009
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.83	Prev response	7.93	*% change	-1.2%
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4913	78.4	7.90	7.91	0.999
Mid point	4961	39.2	3.94	3.90	1.011
Low point	4980	19.6	1.97	1.89	1.042
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	7.90	7.87	1.005
				Average Correction Factor	1.018

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	1.005204	1.003153
THC Cal Offset:	-0.033153	-0.046376
CH4 Cal Slope:	1.007405	1.003647
CH4 Cal Offset:	-0.033157	-0.042173
NMHC Cal Slope:	1.003755	1.002609
NMHC Cal Offset:	0.000006	-0.003803

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

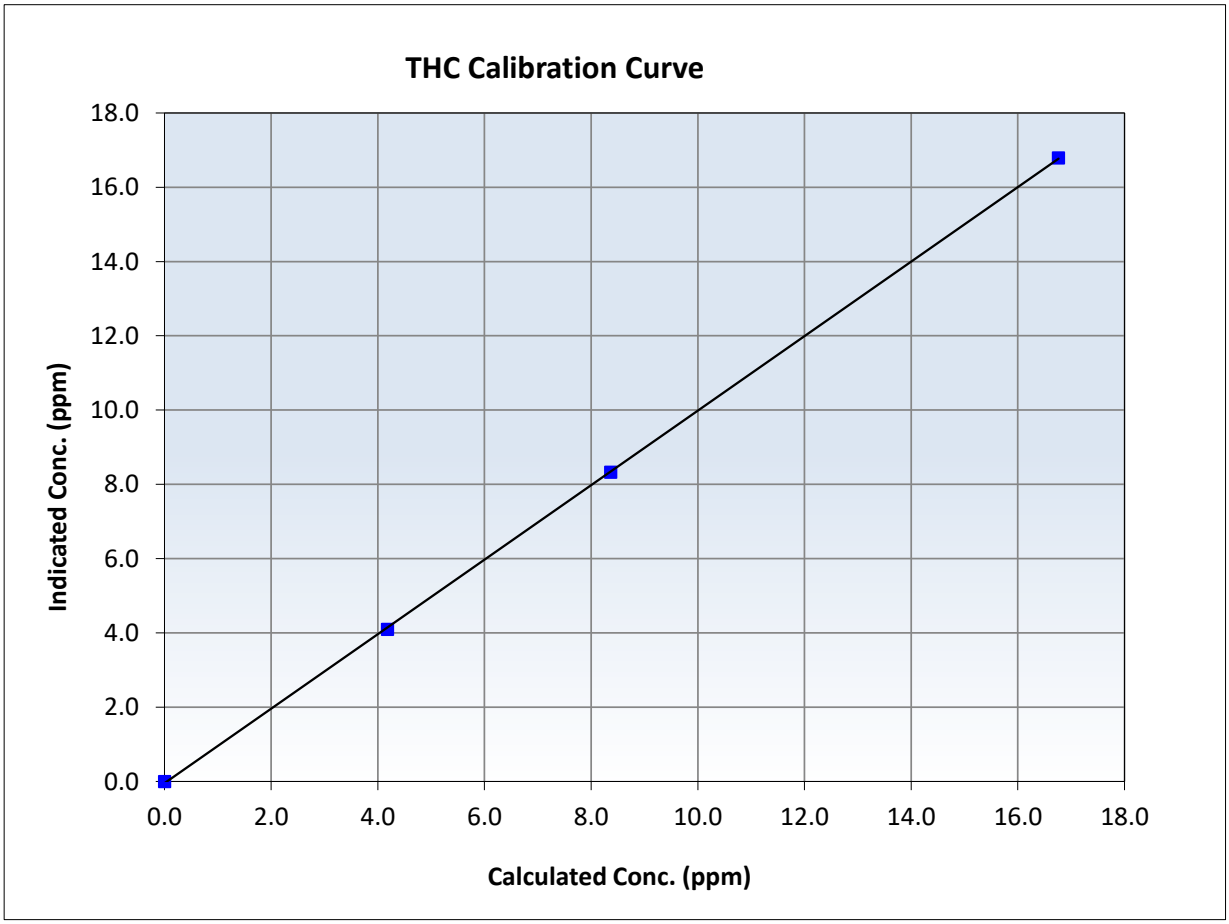
THC Calibration Summary

Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 6, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	9:49	End Time (MST):	13:24
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	16.79	0.9984	Slope	1.003153	0.90 - 1.10
8.37	8.33	1.0044			
4.18	4.10	1.0205	Intercept	-0.046376	+/-0.5



Wood Buffalo Environmental Association

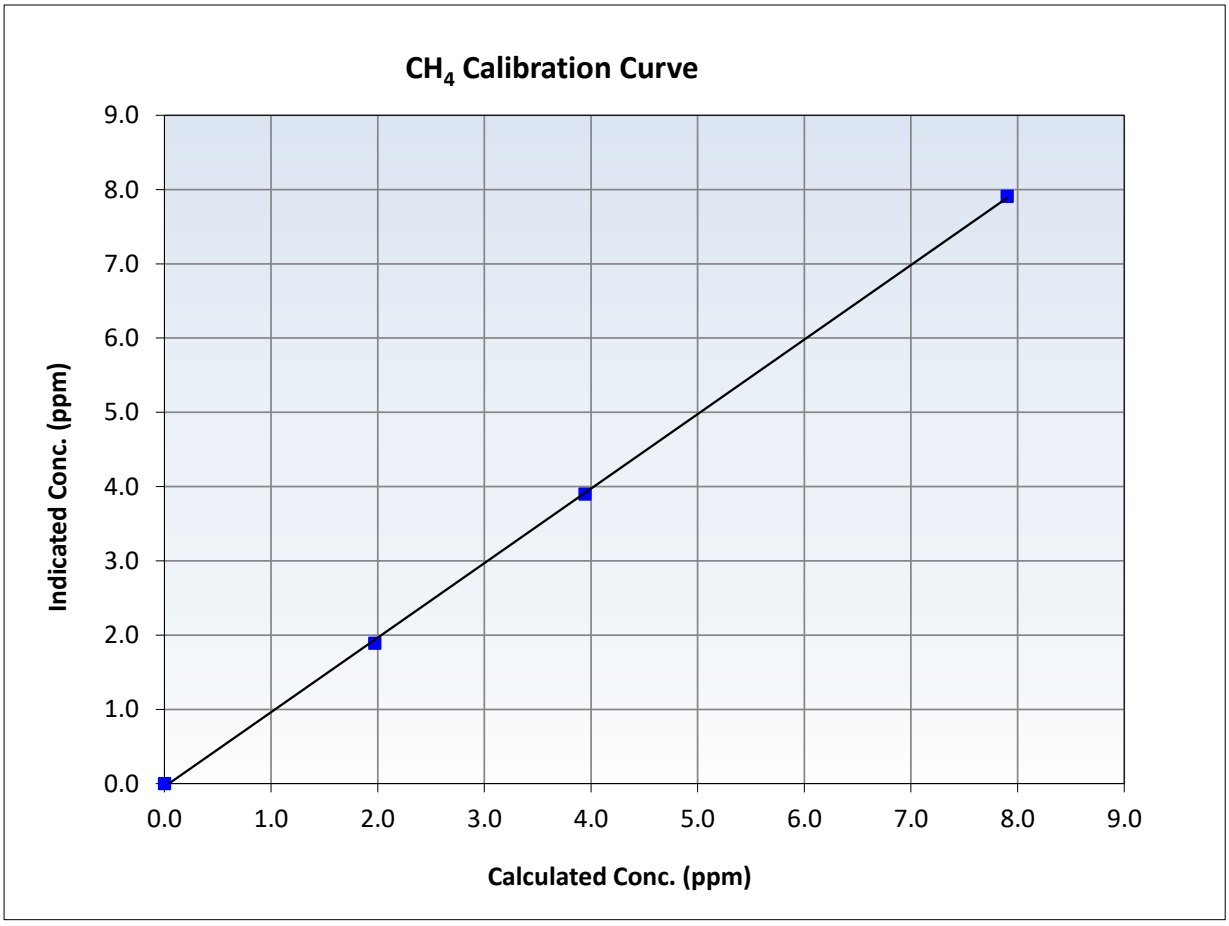
CH_4 Calibration Summary

Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 6, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	9:49	End Time (MST):	13:24
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	0.999870	*≥0.995*
7.90	7.91	0.9992	Slope	1.003647	*0.90 - 1.10*
3.94	3.90	1.0114			
1.97	1.89	1.0424	Intercept	-0.042173	*+/-0.5*



Wood Buffalo Environmental Association

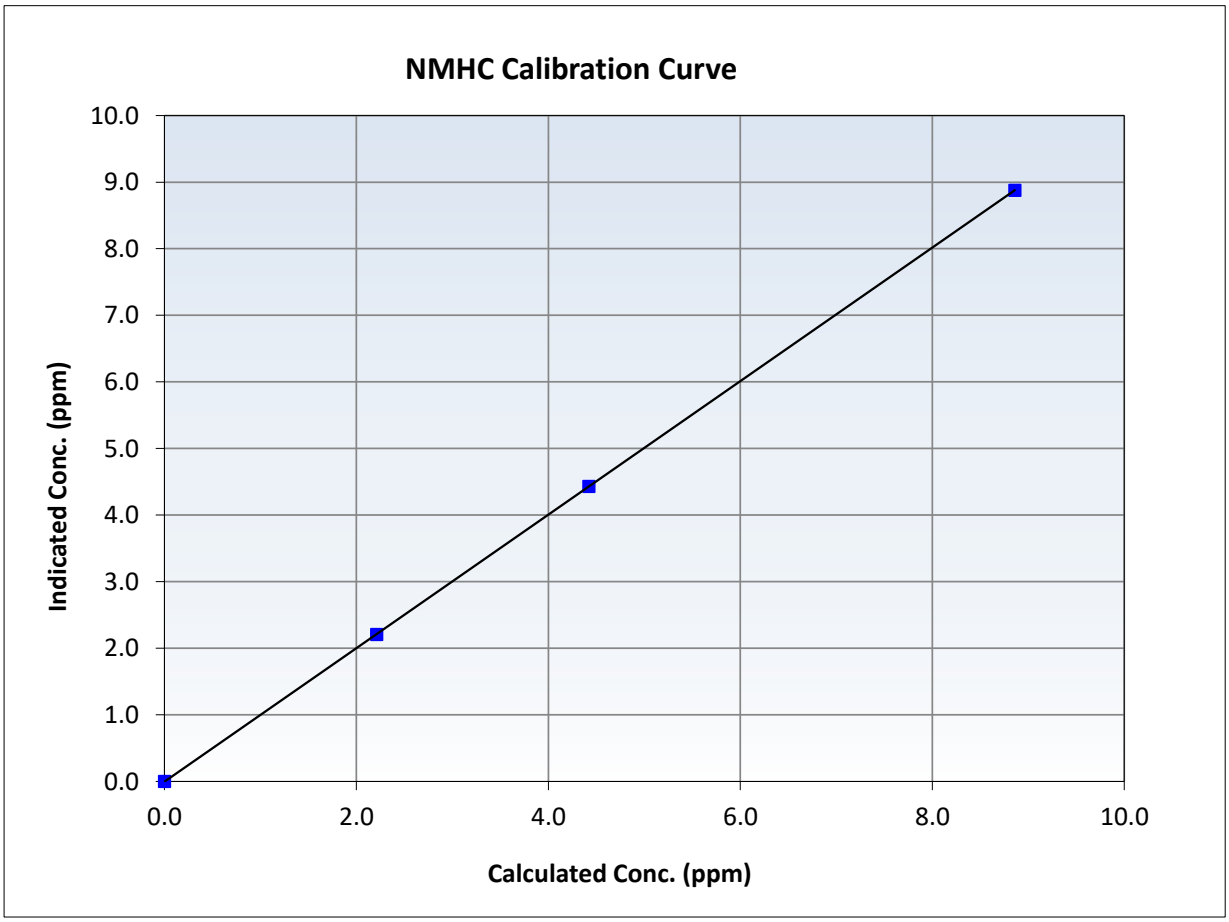
NMHC Calibration Summary

Station Information

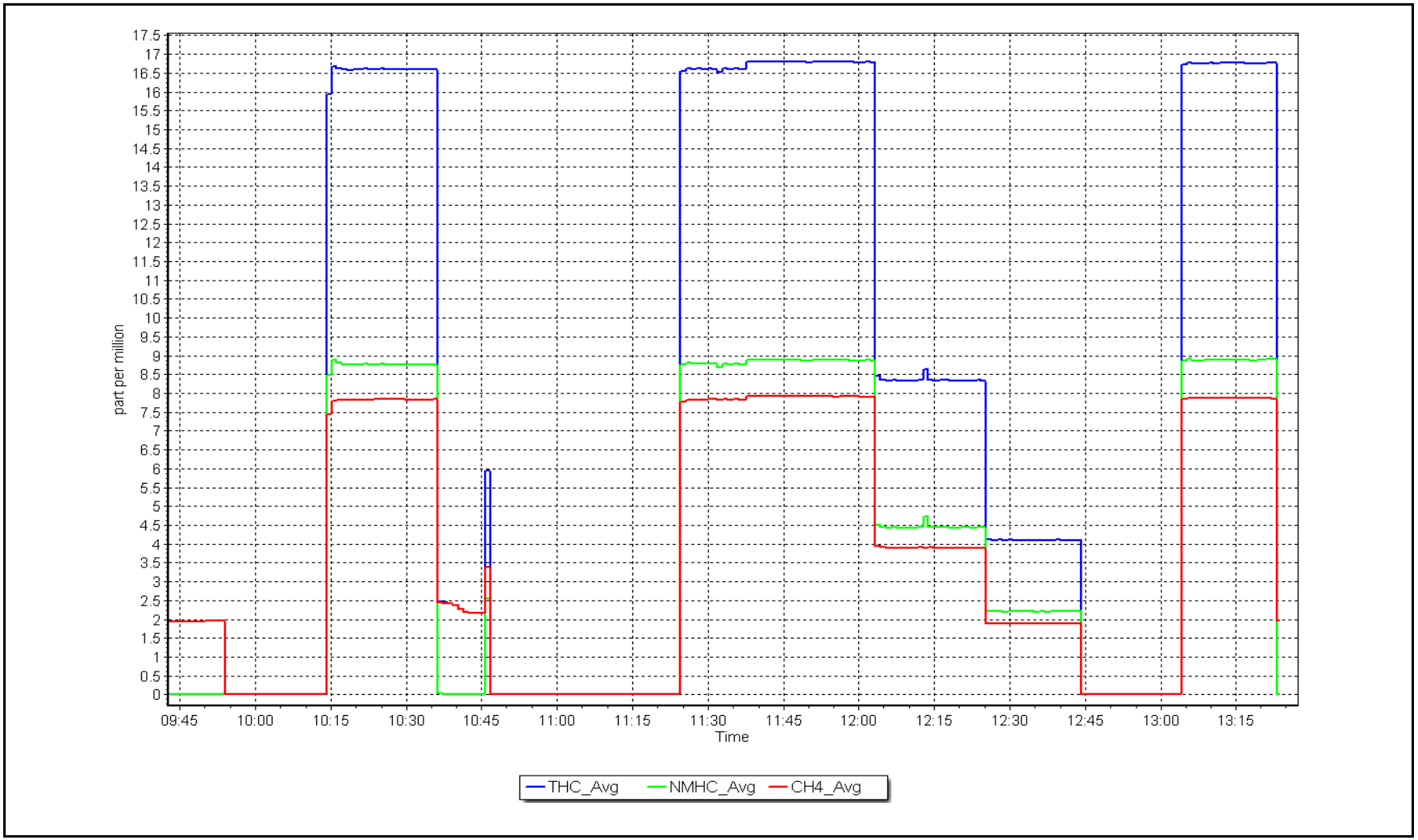
Calibration Date:	April 17, 2025	Previous Calibration:	March 6, 2025
Station Name:	Mildred Lake	Station Number:	AMS 02
Start Time (MST):	9:49	End Time (MST):	13:24
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620776

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999999	≥0.995
8.86	8.88	0.9977	Slope	1.002609	0.90 - 1.10
4.42	4.43	0.9980	Intercept	-0.003803	+/-0.5
2.21	2.21	1.0018			



NMHC Calibration Plot Date: April 17, 2025 Location: Mildred Lake



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Mildred Lake	Station number:	AMS 02
Calibration Date:	April 28, 2025	Last Cal Date:	April 17, 2025
Start time (MST):	10:15	End time (MST):	12:15
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/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	3.17E-04	3.17E-04	NMHC SP Ratio:	5.66E-05	5.66E-05
CH4 Retention time:	14.8	14.8	NMHC Peak Area:	156929	156929
Zero Chromatogram:	ON	ON	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	16.76	16.63	1.008
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.63	Prev response	16.77	*% change	-0.8%
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)) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	16.76	16.70	1.004
				Average Correction Factor	

Notes: Changed the H2 cylinder after as founds.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	8.86	8.77	1.011
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.77	Prev response	8.88	*% change	-1.3%
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) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	8.86	8.79	1.009
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4913	78.4	7.90	7.86	1.005
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.86	Prev response	7.89	*% 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

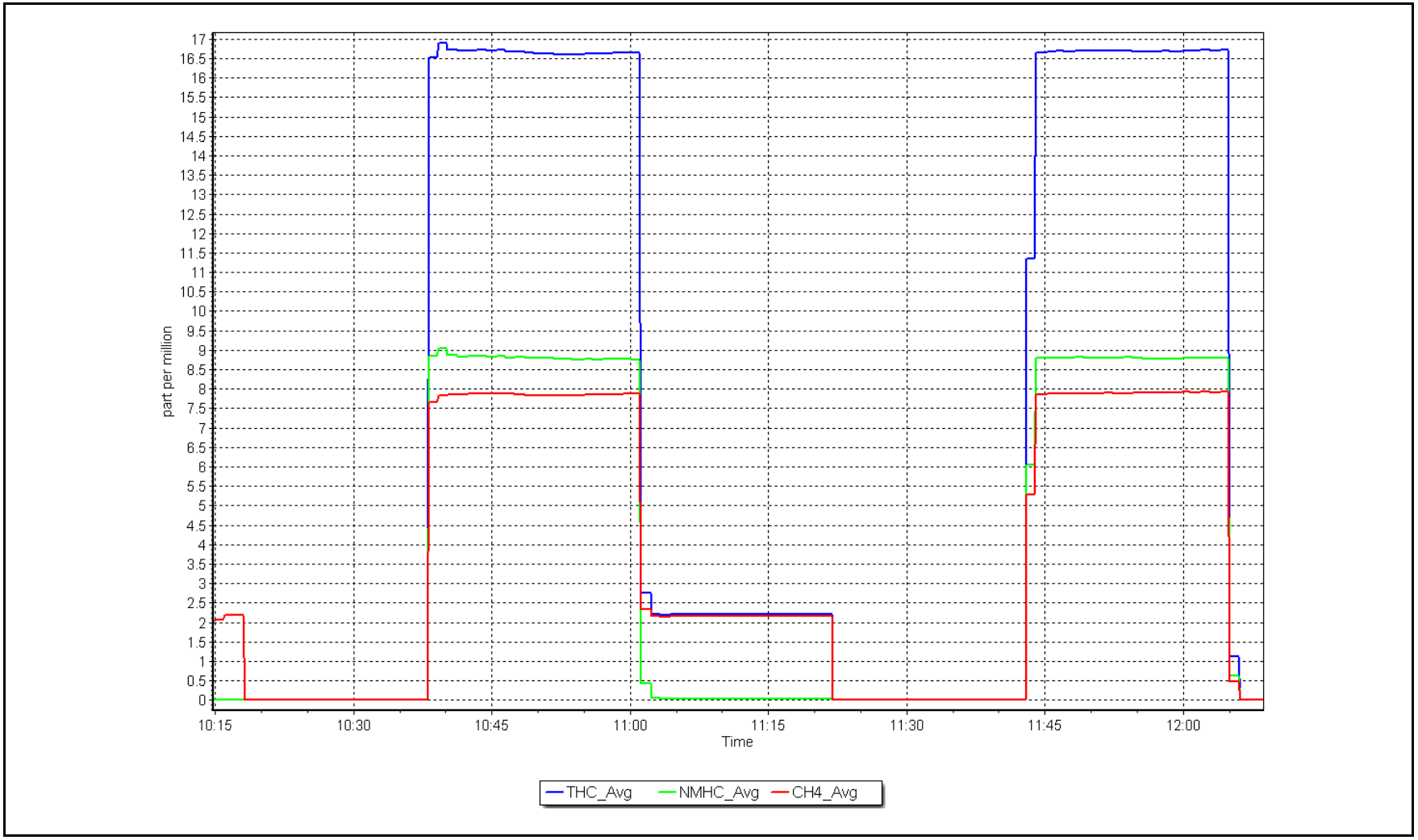
Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4913	78.4	7.90	7.92	0.998
				Average Correction Factor	

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	1.003153	
THC Cal Offset:	-0.046376	
CH4 Cal Slope:	1.003647	
CH4 Cal Offset:	-0.042173	
NMHC Cal Slope:	1.002609	
NMHC Cal Offset:	-0.003803	

Calibration Performed By: Max Farrell

NMHC Calibration Plot Date: April 28, 2025 Location: Mildred Lake



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS04
BUFFALO VIEWPOINT
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Buffalo Viewpoint	Station number:	AMS 04
Calibration Date:	April 24, 2025	Last Cal Date:	March 19, 2025
Start time (MST):	5:42	End time (MST):	8:05
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.008431	1.000030	Backgd or Offset:	28.0	27.2
Calibration intercept:	-0.643895	-0.005582	Coeff or Slope:	0.892	0.879

SO_2 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	4921	78.6	799.7	812.0	0.985
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	811.8	Previous response	805.8	*% 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	

SO_2 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	0.5	----
High point	4921	78.6	799.7	800.0	1.000
Mid point	4961	39.3	399.8	399.6	1.001
Low point	4980	19.6	199.4	198.9	1.003
As left zero	5000	0.0	0.0	0.2	----
As left span	4921	78.6	799.7	801.5	0.998
				Average Correction Factor:	1.001

Notes: No Maintenance done. Span adjusted.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

SO_2 Calibration Summary

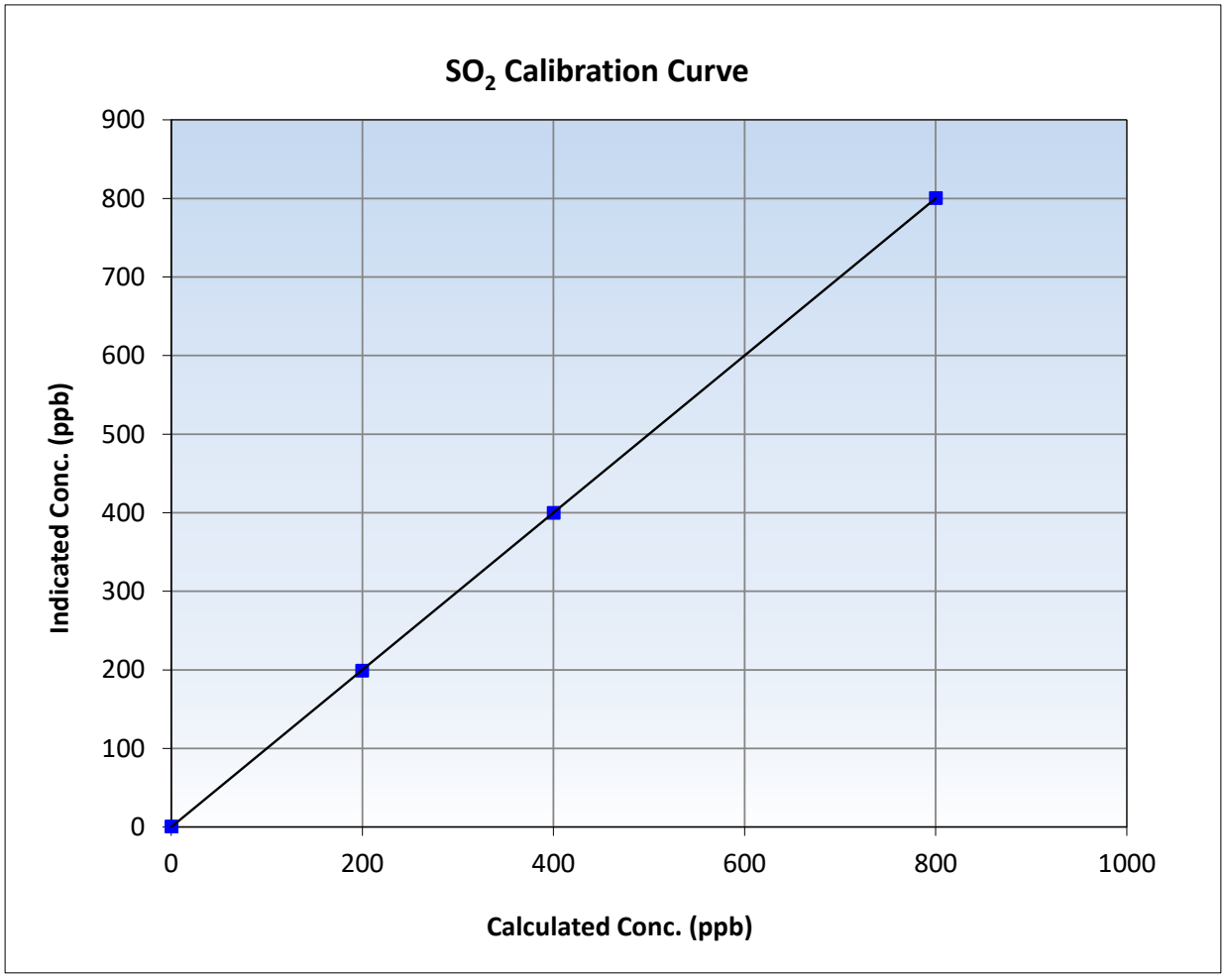
Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 19, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	5:42	End Time (MST):	8:05
Analyzer make:	Thermo 43i	Analyzer serial #:	JC1327300932

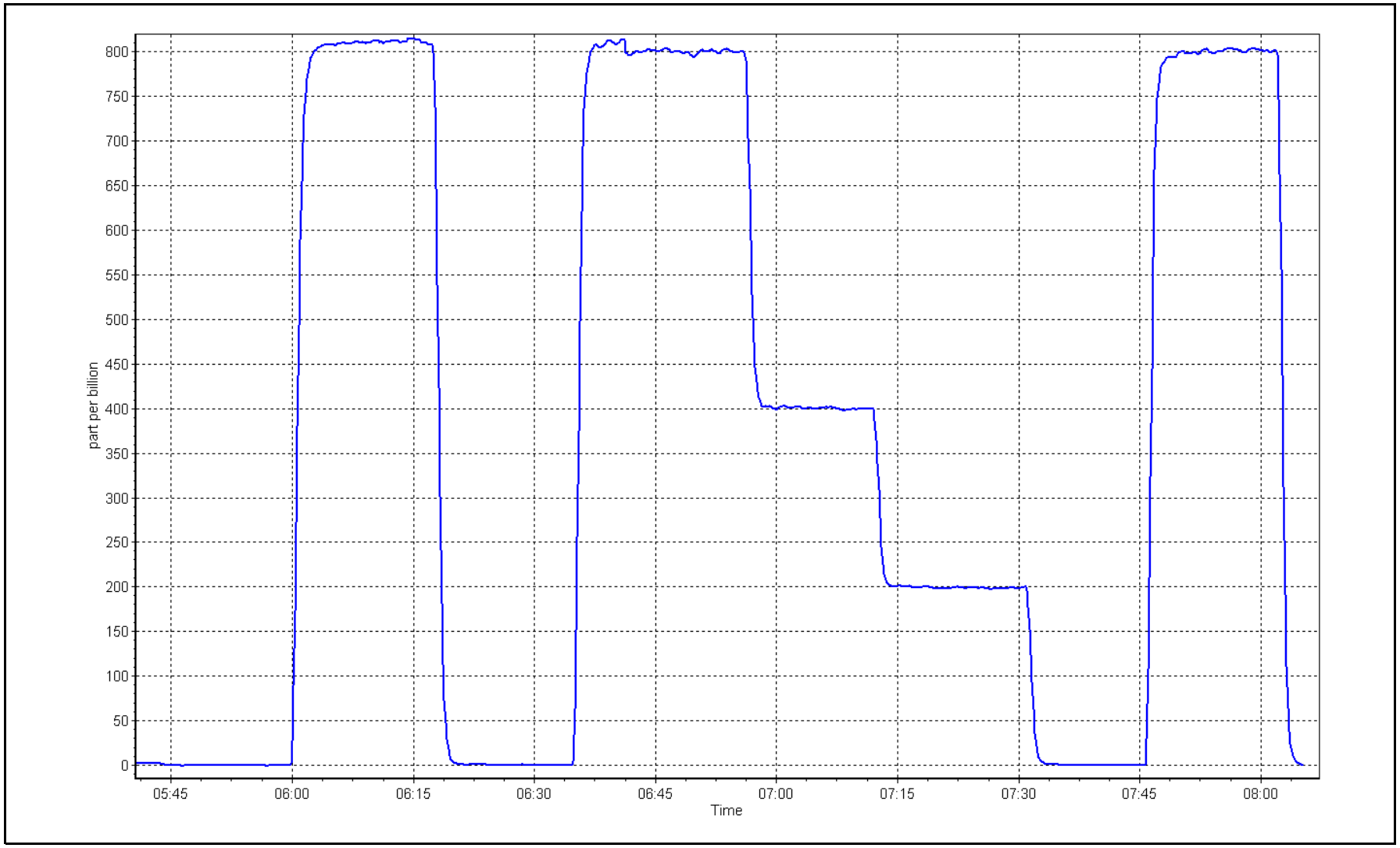
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.5	----
799.7	800.0	0.9997
399.8	399.6	1.0005
199.4	198.9	1.0026

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	1.000030	*0.90 - 1.10*
Intercept	-0.005582	*+/-30*



SO2 Calibration Plot Date: April 24, 2025 Location: Buffalo Viewpoint



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	Buffalo Viewpoint	Station number:	AMS 04
Calibration Date:	April 28, 2025	Last Cal Date:	March 18, 2025
Start time (MST):	7:28	End time (MST):	11:15
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

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.007150	0.999433	Backgd or Offset:	1.97	1.92
Calibration intercept:	0.158201	0.078228	Coeff or Slope:	1.130	1.110

H_2S 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	0.1	----
As found High point	4917	83.3	80.0	82.7	0.968
As found Mid point	4958	41.7	40.0	41.6	0.965
As found Low point	4979	20.8	20.0	20.8	0.965
New cylinder response					

Baseline Corr As found:	82.6	Prev response:	80.69	*% change:	2.3%
Baseline Corr 2nd AF pt:	41.5	AF Slope:	1.032872	AF Intercept:	0.158138
Baseline Corr 3rd AF pt:	20.7	AF Correlation:	0.999996	* = > +/-5% change initiates investigation	

H_2S 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	0.1	----
High point	4917	83.3	80.0	80.0	1.000
Mid point	4958	41.7	40.0	40.1	0.998
Low point	4979	20.8	20.0	20.0	0.998
As left zero	5000	0.0	0.0	0.2	----
As left span	4917	83.3	80.0	79.5	1.006
SO2 Scrubber Check	4920	80.0	800.0	0.0	----
Date of last scrubber change:		16-May-23		Ave Corr Factor	0.999
Date of last converter efficiency test:					

Notes: Sox scrubber checked after calibrator zero. Span adjusted.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

H_2S Calibration Summary

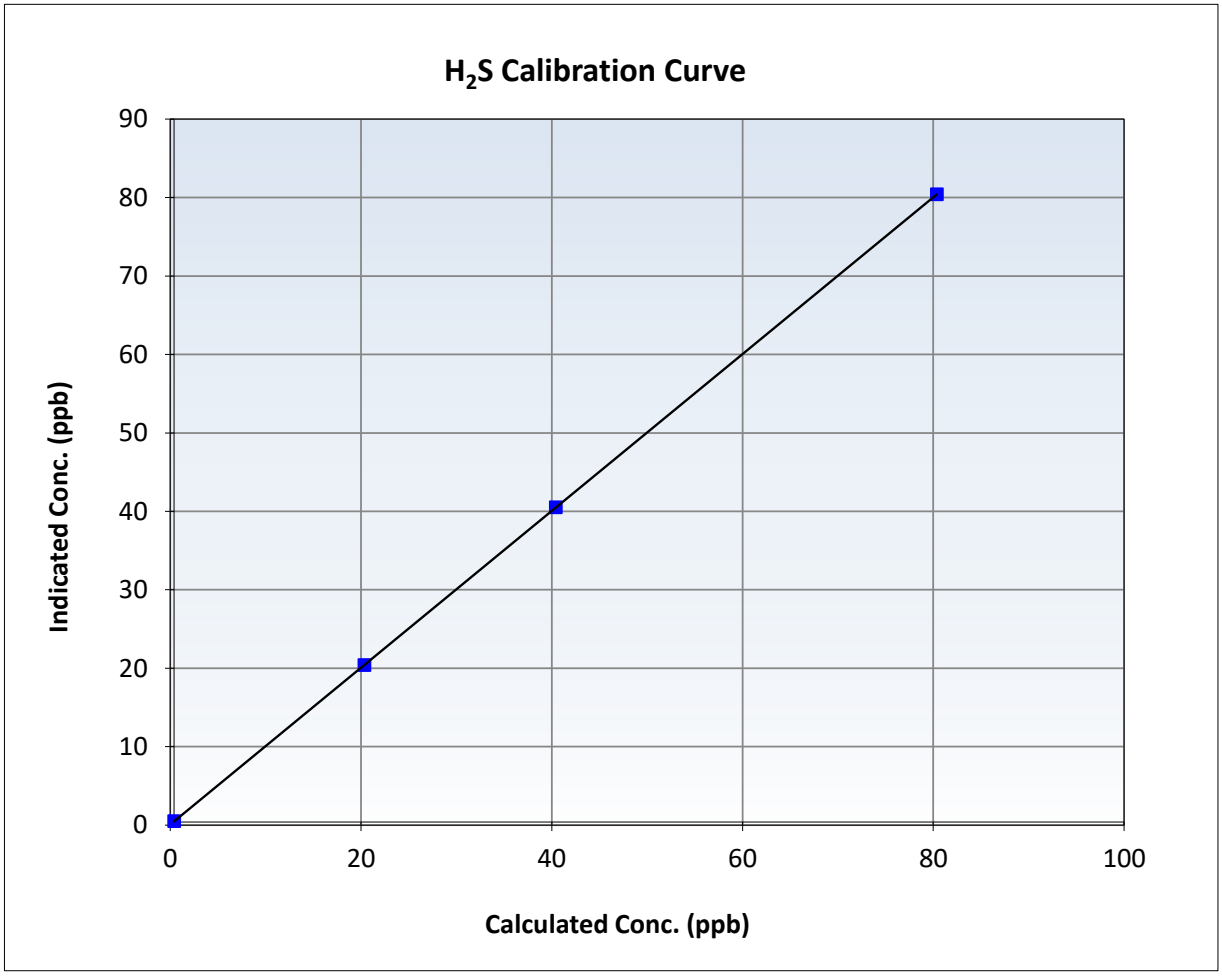
Station Information

Calibration Date:	April 28, 2025	Previous Calibration:	March 18, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	7:28	End Time (MST):	11:15
Analyzer make:	Thermo 43i-LTE	Analyzer serial #:	1008841400

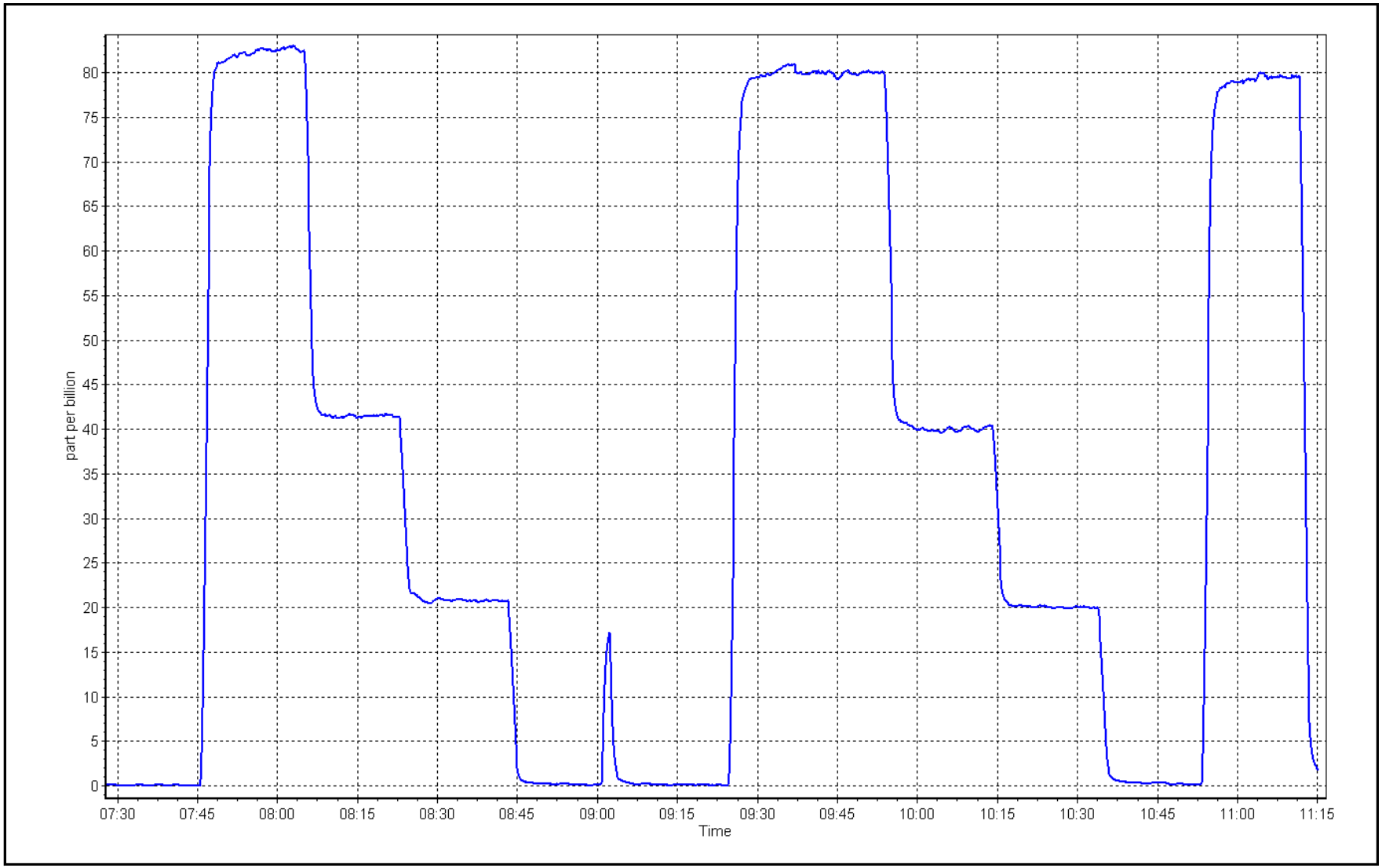
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
80.0	80.0	0.9995
40.0	40.1	0.9984
20.0	20.0	0.9984

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999999	*≥0.995*
Slope	0.999433	*0.90 - 1.10*
Intercept	0.078228	*+/-3*



H_2S Calibration Plot Date: April 28, 2025 Location: Buffalo Viewpoint



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Buffalo Viewpoint	Station number:	AMS 04
Calibration Date:	April 24, 2025	Last Cal Date:	March 19, 2025
Start time (MST):	5:42	End time (MST):	8:04
Reason:	Routine		

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 (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	Analyzer serial #:	1426262594
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	4.58E-04	4.79E-04	NMHC SP Ratio:	9.45E-04	9.37E-04
CH4 Retention time:	13.7	13.9	NMHC Peak Area:	93285	94114
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	78.6	16.64	16.52	1.007
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.52	Prev response	16.54	*% change	-0.1%
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)) *Limit = 0.95-1.05*
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	8.24	1.010
Low point	4980	19.6	4.15	4.07	1.019
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.6	16.64	16.57	1.004
				Average Correction Factor	1.011

Notes: No Maintenance done. Span adjusted.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	78.6	8.82	8.92	0.989
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.92	Prev response	8.76	*% change	1.7%
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	4921	78.6	8.82	8.77	1.005
Mid point	4961	39.3	4.41	4.38	1.007
Low point	4980	19.6	2.20	2.15	1.021
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.6	8.82	8.77	1.005
				Average Correction Factor	1.011

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	78.6	7.82	7.61	1.027
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.61	Prev response	7.77	*% change	-2.2%
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) *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	3.86	1.012
Low point	4980	19.6	1.95	1.92	1.016
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	1.011

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	0.997100	0.996742
THC Cal Offset:	-0.049569	-0.032965
CH4 Cal Slope:	0.997360	0.997448
CH4 Cal Offset:	-0.022114	-0.016913
NMHC Cal Slope:	0.996753	0.995910
NMHC Cal Offset:	-0.027256	-0.015253

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

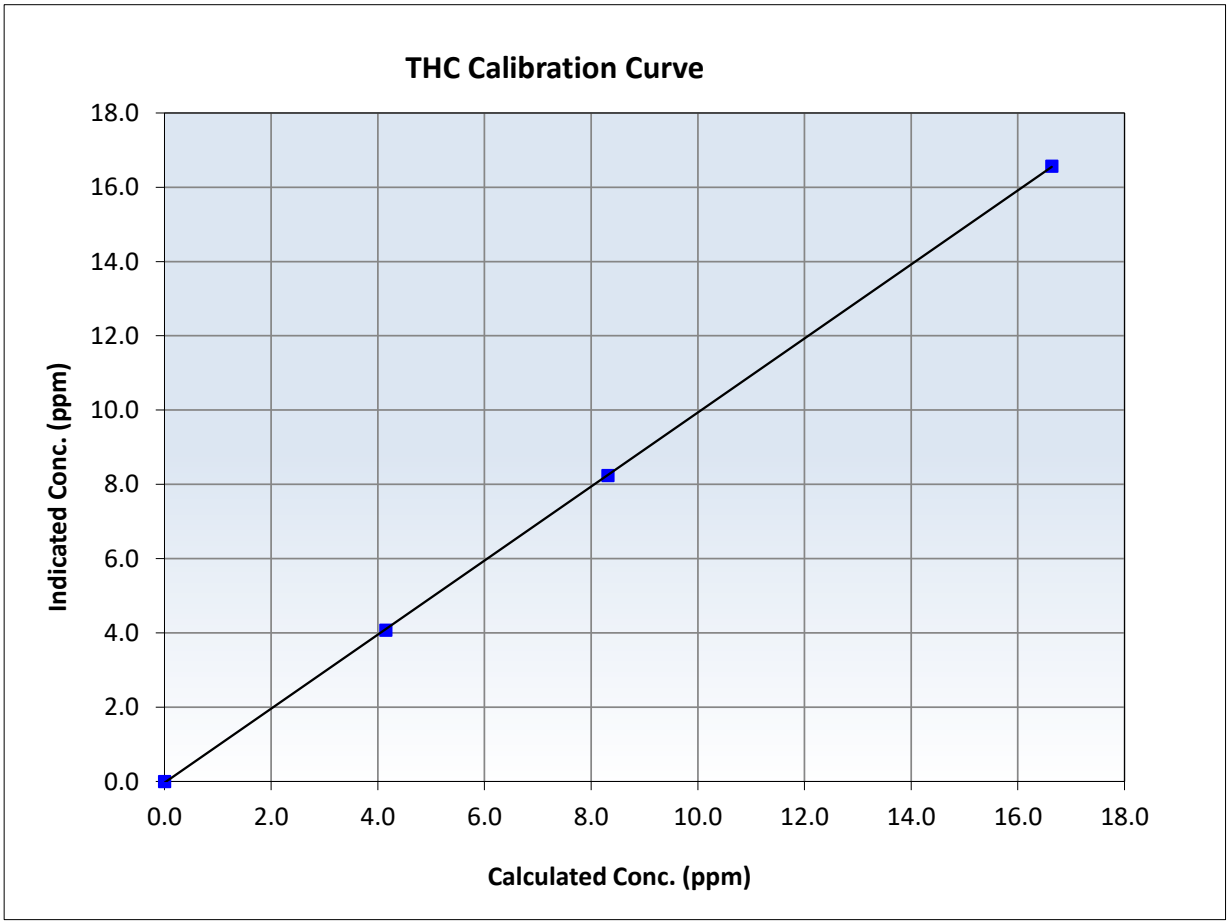
THC Calibration Summary

Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 19, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	5:42	End Time (MST):	8:04
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	0.999982	≥0.995
16.64	16.57	1.0042	Slope	0.996742	0.90 - 1.10
8.32	8.24	1.0098			
4.15	4.07	1.0188	Intercept	-0.032965	+/-0.5



Wood Buffalo Environmental Association

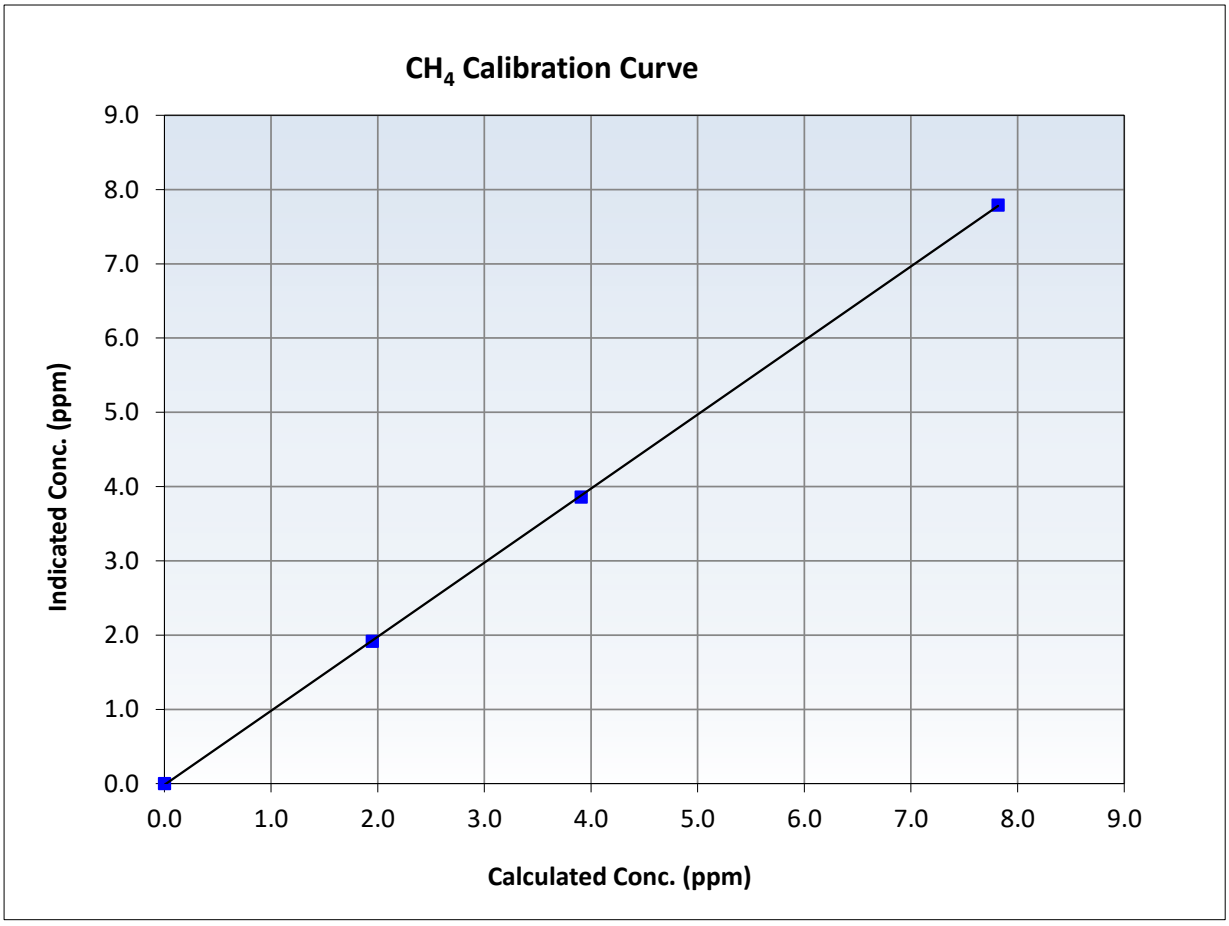
CH_4 Calibration Summary

Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 19, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	5:42	End Time (MST):	8:04
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	0.999972	≥0.995
7.82	7.79	1.0032	Slope	0.997448	0.90 - 1.10
3.91	3.86	1.0121	Intercept	-0.016913	+/-0.5
1.95	1.92	1.0163			



Wood Buffalo Environmental Association

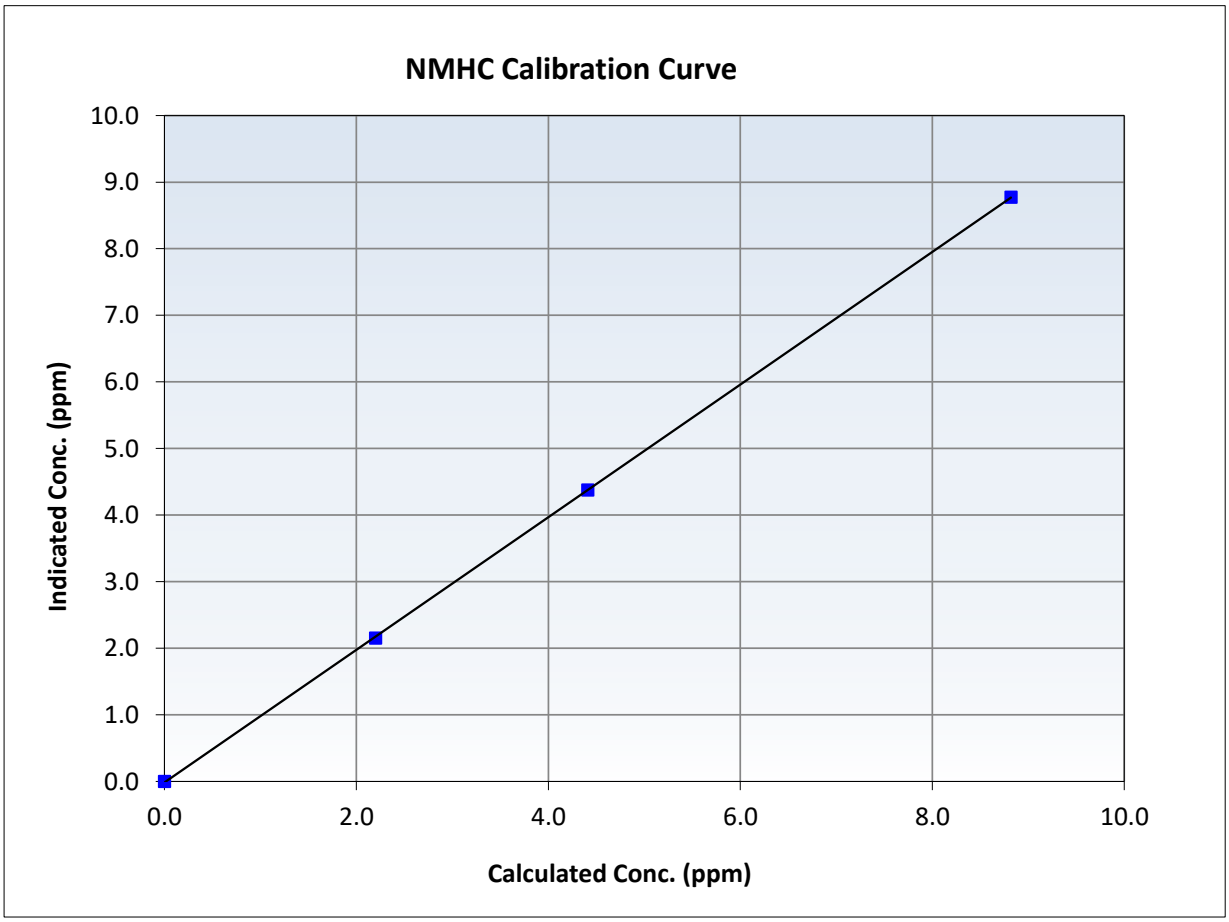
NMHC Calibration Summary

Station Information

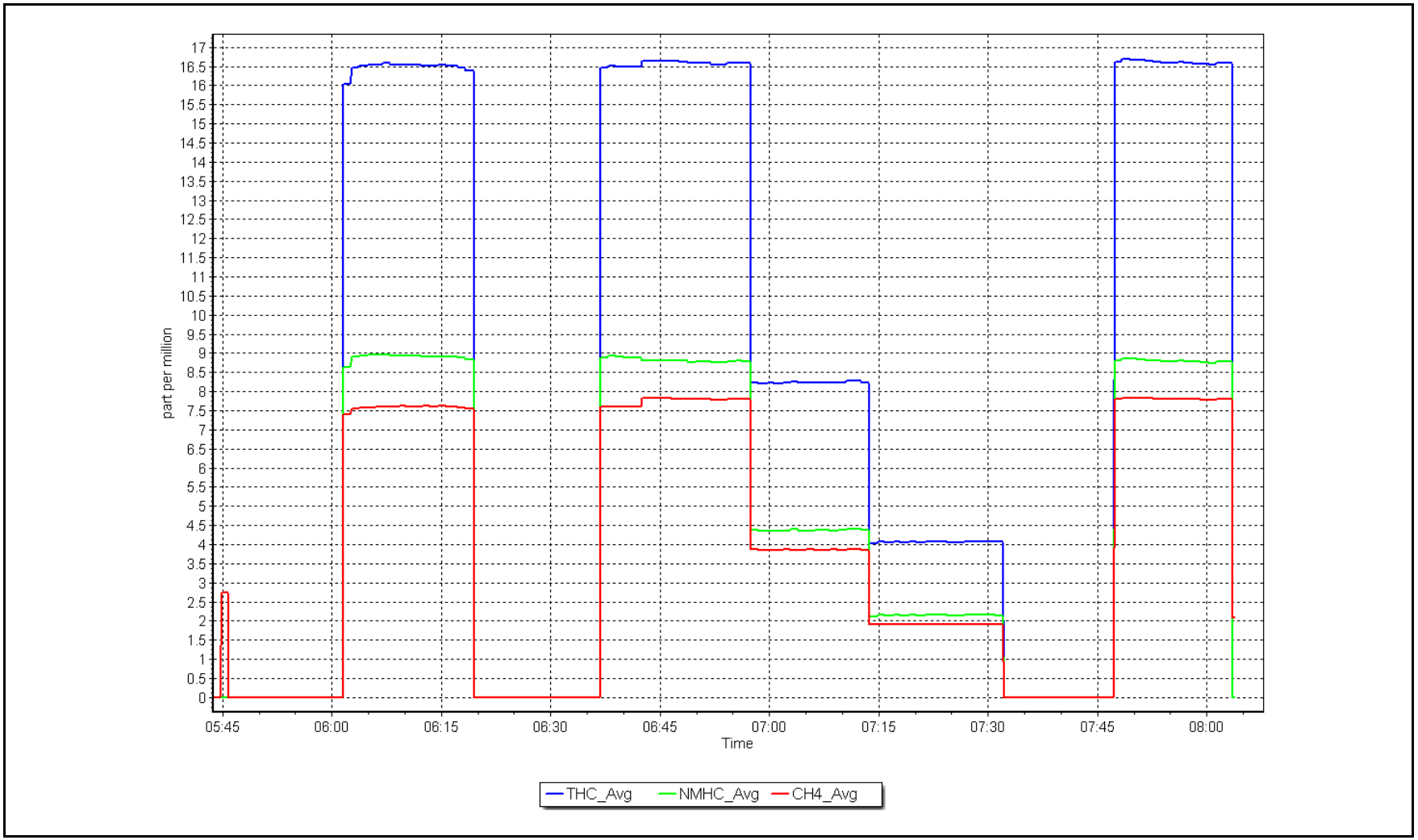
Calibration Date:	April 24, 2025	Previous Calibration:	March 19, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	5:42	End Time (MST):	8:04
Analyzer make:	Thermo 55i	Analyzer serial #:	1426262594

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999983	≥0.995
8.82	8.77	1.0053	Slope	0.995910	0.90 - 1.10
4.41	4.38	1.0074	Intercept	-0.015253	+/-0.5
2.20	2.15	1.0210			



NMHC Calibration Plot Date: April 24, 2025 Location: Buffalo Viewpoint



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Buffalo Viewpoint
Station number:	AMS 04
Calibration Date:	April 11, 2025
Last Cal Date:	March 14, 2025
Start time (MST):	5:55
End time (MST):	10:49
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	CC324979	Cal Gas Expiry Date:	November 3, 2032
NOX Cal Gas Conc:	48.90 ppm	NO Cal Gas Conc:	48.80 ppm
Removed Cylinder #:		Removed Gas Exp Date:	
Removed Gas NOX Conc:	48.90 ppm	Removed Gas NO Conc:	48.80 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	API T700	Serial Number:	3808
ZAG make/model:	APIT701	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	0.1	-0.2	0.3	----	----
AF High point	4918	81.8	800.0	798.4	1.6	791.0	788.4	2.6	1.0116	1.0124
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X =	801.5 ppb	NO =	798.2 ppb	* = > +/-5% change initiates investigation	*Percent Change	NO_X = -1.3%
Baseline Corr 1st pt	NO_X =	790.9 ppb	NO =	788.6 ppb	As Found Statistics	*Percent Change	NO = -1.2%
Baseline Corr 2nd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO_X r^2:	Nx Sl:	Nx Int:
Baseline Corr 3rd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO r^2:	NO Sl:	NO Int:
					As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Teledyne API T200 Serial Number: 721

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	1.276	1.291	NO bkgnd or offset:	0.2	0.2
NOX coeff or slope:	1.266	1.287	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

	Start	*Finish*
NO_X Cal Slope:	1.001880	1.003949
NO_X Cal Offset:	0.006724	1.107618
NO Cal Slope:	1.000957	1.000915
NO Cal Offset:	-0.954223	-0.414394
NO_2 Cal Slope:	0.992096	1.002895
NO_2 Cal Offset:	0.653706	1.450870

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.3	0.5	-0.1	----	----
High point	4918	81.8	800.0	798.4	1.6	803.5	798.7	4.6	0.9957	0.9996
Mid point	4959	40.9	400.0	399.2	0.8	404.3	400.1	4.2	0.9894	0.9977
Low point	4980	20.4	199.5	199.1	0.4	201.4	197.0	4.4	0.9905	1.0106
As left zero	5000	0.0	0.0	1.2	-1.2	0.8	1.2	-0.4	----	----
As left span	4918	81.8	800.0	404.7	800.0	799.7	404.7	395.0	1.0004	1.0000
							Average Correction Factor		0.9919	1.0027

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	-0.1	----	----
High GPT point	797.4	404.6	394.4	396.3	0.9953	100.5%
Mid GPT point	797.4	605.6	193.4	196.1	0.9864	101.4%
Low GPT point	797.4	700.0	99.0	102.4	0.9671	103.4%
				Average Correction Factor	0.9830	101.7%

Notes: No maintenance done. Span adjusted. Due to drifting during the GPT the 2nd NO ref point used.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

NO_X Calibration Summary

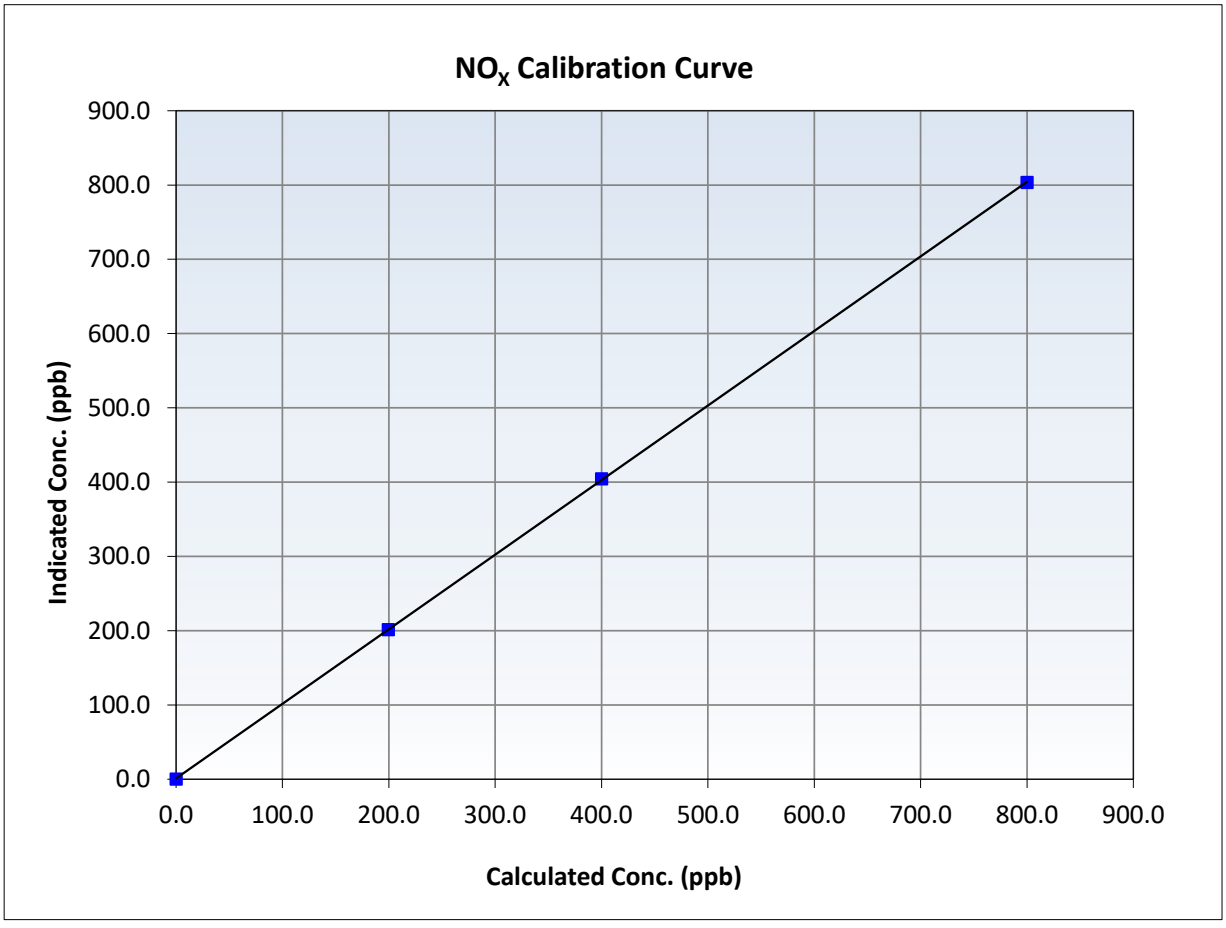
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 14, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	5:55	End Time (MST):	10:49
Analyzer make:	Teledyne API T200	Analyzer serial #:	721

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
800.0	803.5	0.9957
400.0	404.3	0.9894
199.5	201.4	0.9905

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999989	*≥0.995*
Slope	1.003949	*0.90 - 1.10*
Intercept	1.107618	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

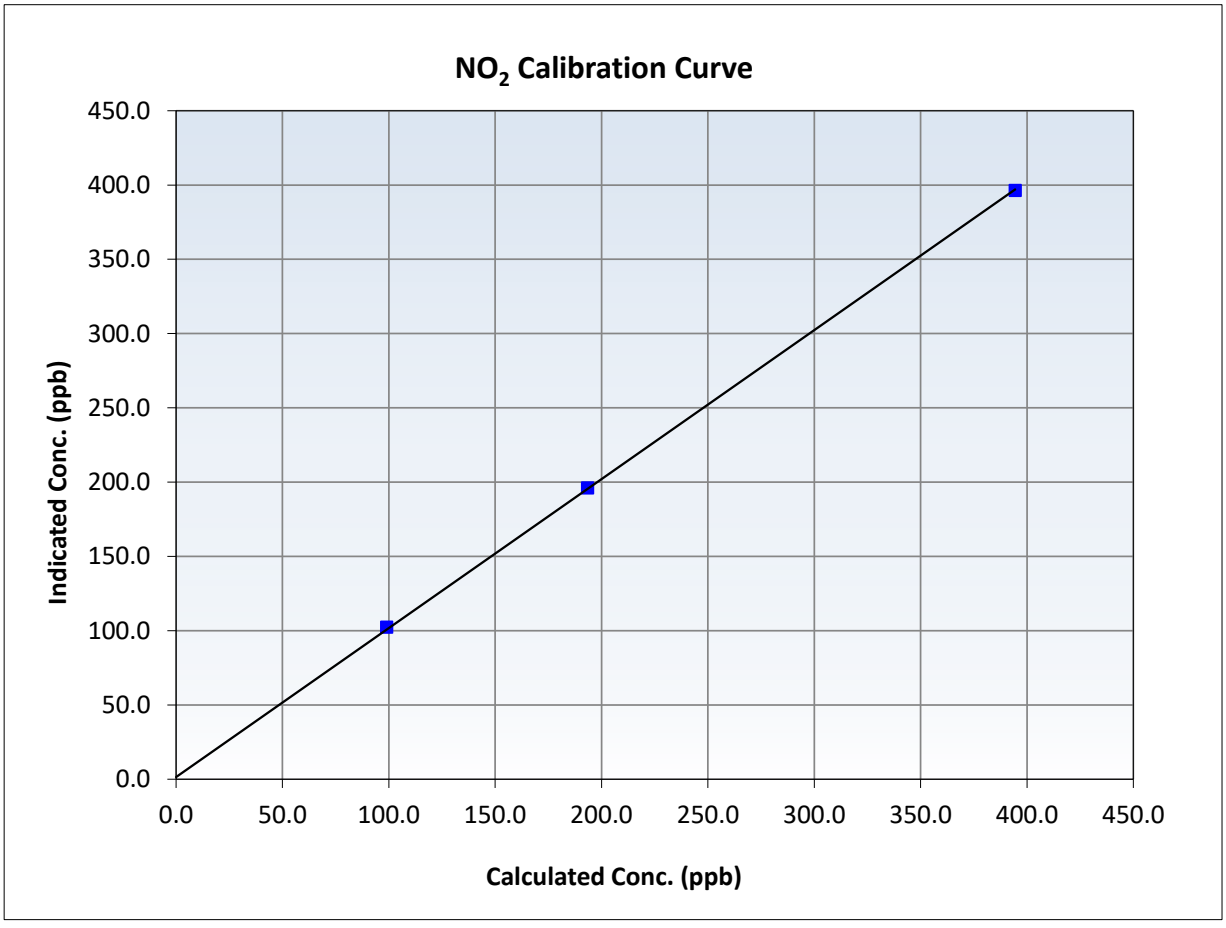
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 14, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	5:55	End Time (MST):	10:49
Analyzer make:	Teledyne API T200	Analyzer serial #:	721

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
394.4	396.3	0.9953
193.4	196.1	0.9864
99.0	102.4	0.9671

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999930	*≥0.995*
Slope	1.002895	*0.90 - 1.10*
Intercept	1.450870	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

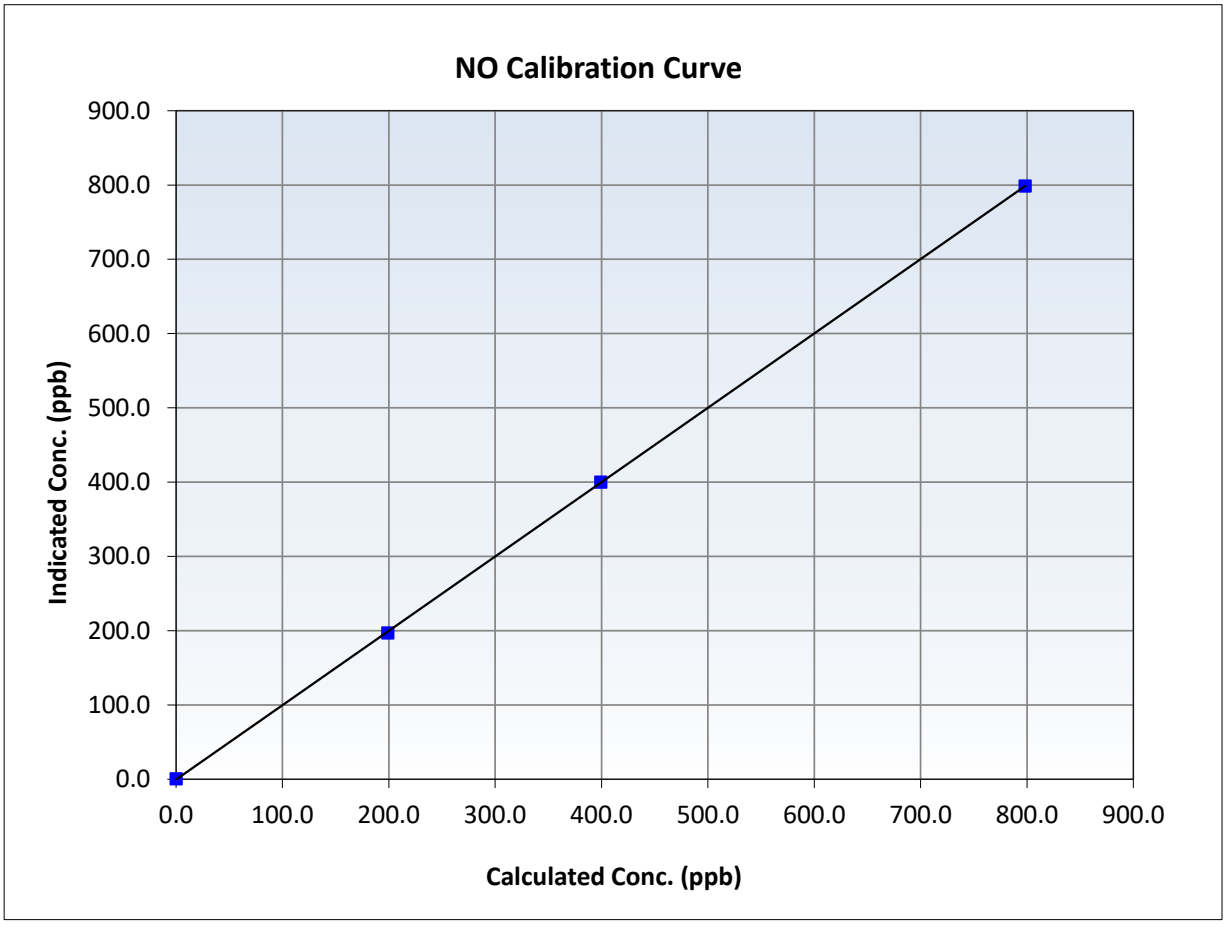
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 14, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	5:55	End Time (MST):	10:49
Analyzer make:	Teledyne API T200	Analyzer serial #:	721

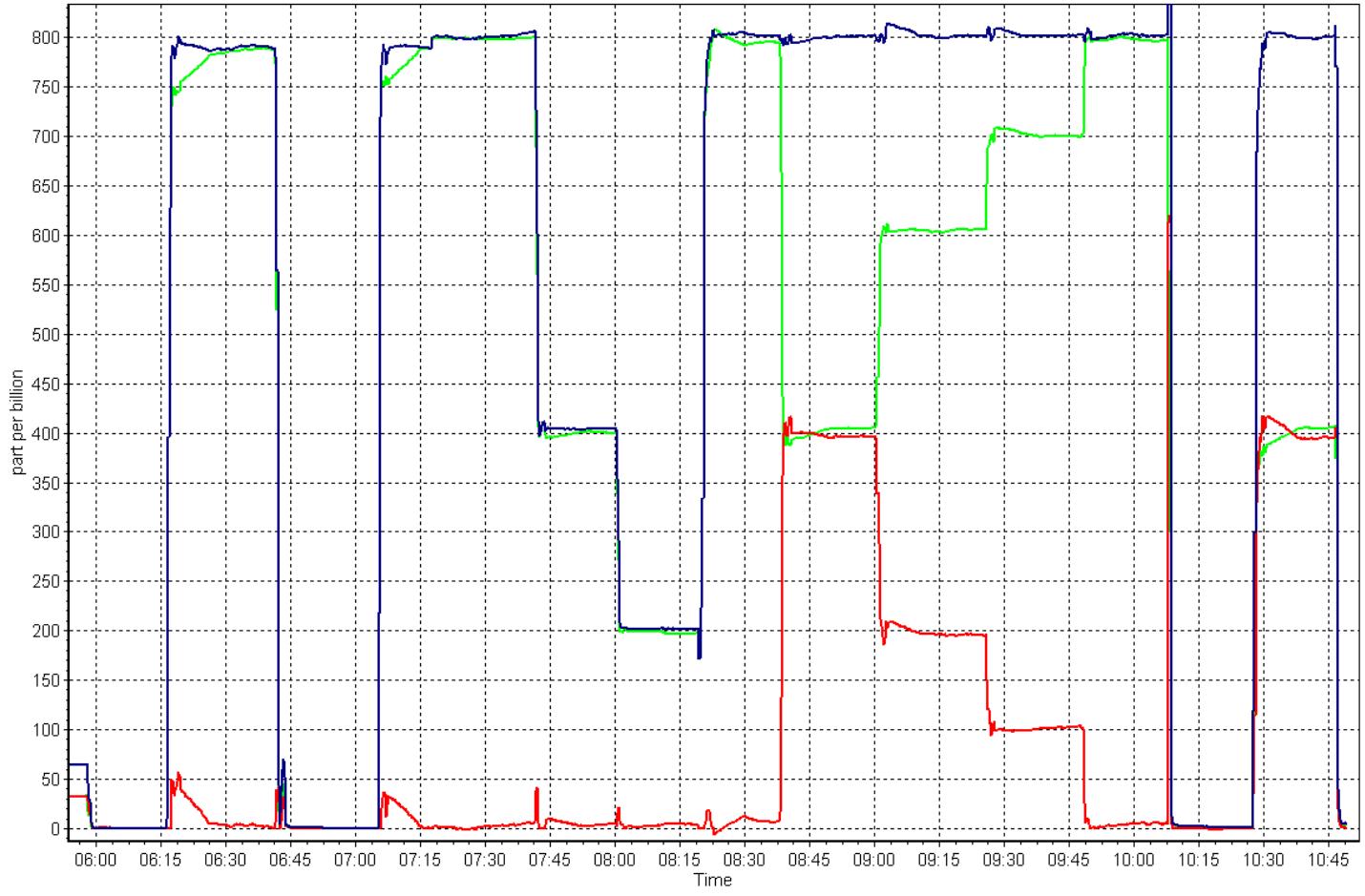
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.5	----
798.4	798.7	0.9996
399.2	400.1	0.9977
199.1	197.0	1.0106

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999985	*≥0.995*
Slope	1.000915	*0.90 - 1.10*
Intercept	-0.414394	*+/-20*



NO_X Calibration Plot Date: April 11, 2025 Location: Buffalo Viewpoint



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Buffalo Viewpoint	Station number:	AMS 04
Calibration Date:	April 24, 2025	Last Cal Date:	March 19, 2025
Start time (MST):	8:02	End time (MST):	10:15
Reason:	Routine		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	APIP T700	Serial Number:	3808
ZAG Make/Model:	API T701	Serial Number:	362

Analyzer Information

Analyzer make:	API T400		Analyzer serial #:	2961	
Analyzer Range	0 - 500 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.000914	0.995971	Backgd or Offset:	-1.2	-1.2
Calibration intercept:	0.640000	-0.020000	Coeff or Slope:	1.054	1.022

O_3 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) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-1.3	----
As found High point	5000	1003.6	400.0	412.0	0.968
As found Mid point					
As found Low point					
Baseline Corr As found:	413.3	Previous response	401.0	*% change	3.0%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	-0.7	----
High point	5000	1005.9	400.0	397.9	1.005
Mid point	5000	827.4	200.0	199.9	1.001
Low point	5000	714.8	100.0	100.0	1.000
As left zero	5000	0.0	0.0	0.0	----
As left span	5000	1005.0	400.0	396.7	1.008
				Average Correction Factor	1.002

Notes: No Maintenance done. Span adjusted.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

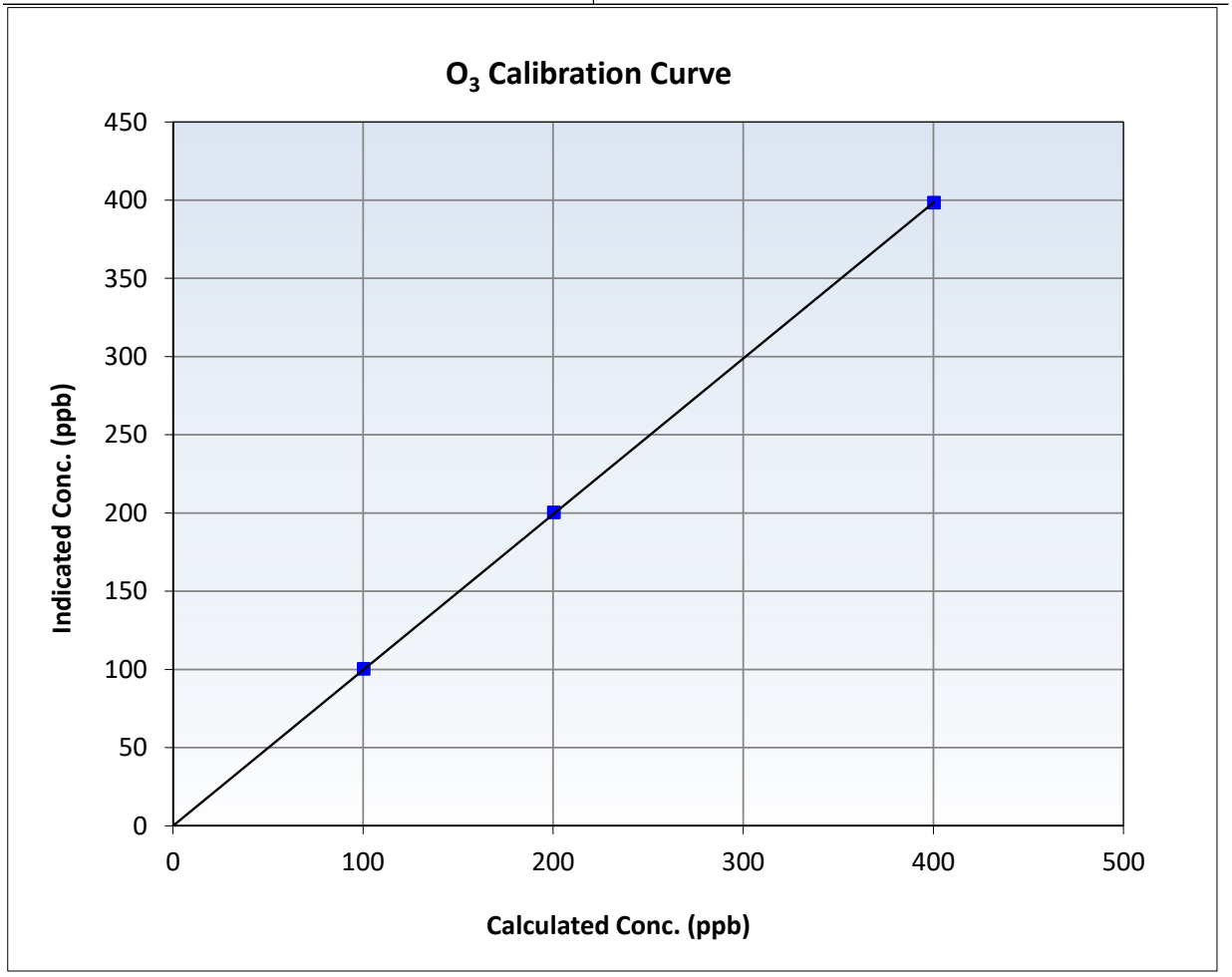
O_3 Calibration Summary

Station Information

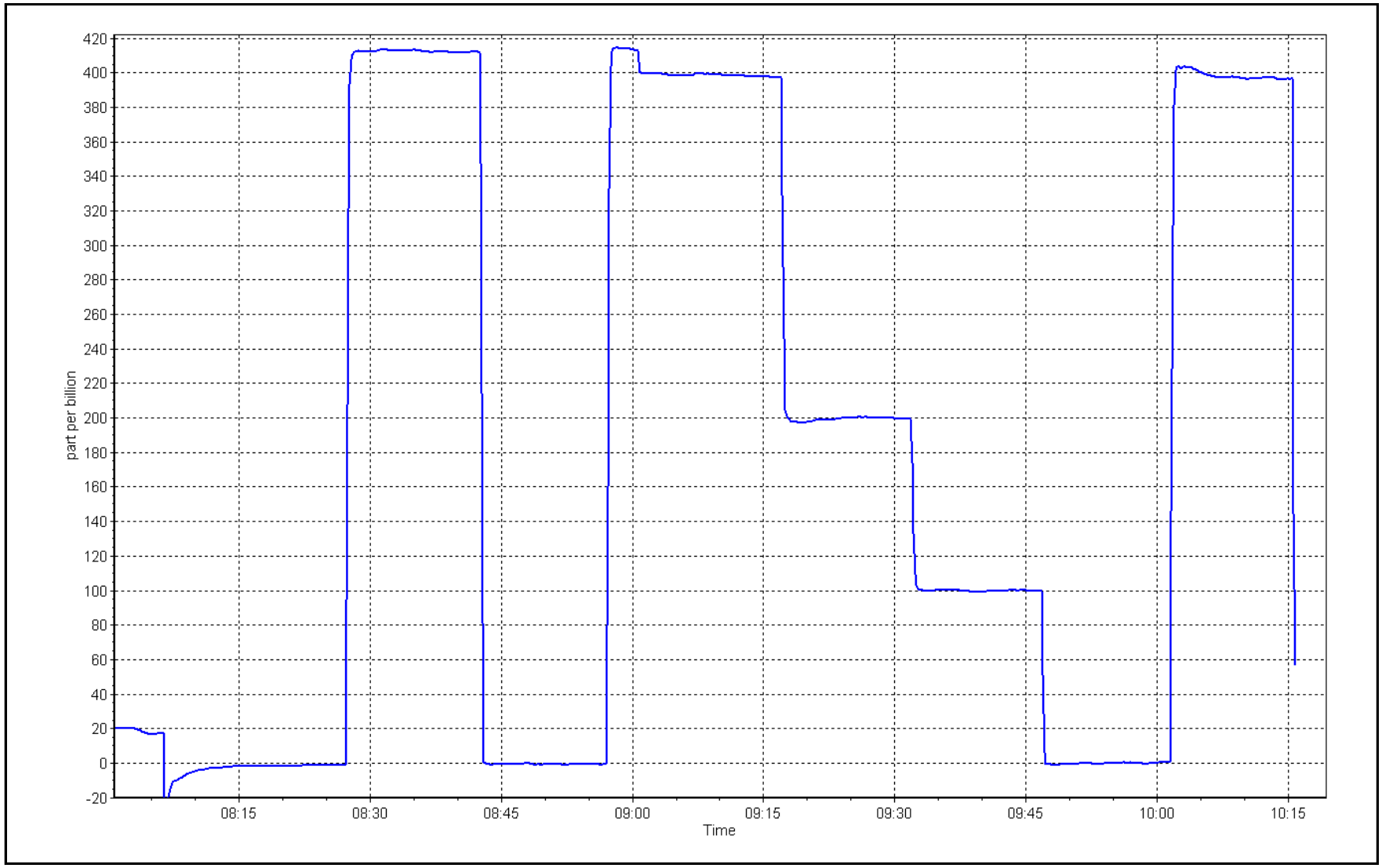
Calibration Date:	April 24, 2025	Previous Calibration:	March 19, 2025
Station Name:	Buffalo Viewpoint	Station Number:	AMS 04
Start Time (MST):	8:02	End Time (MST):	10:15
Analyzer make:	API T400	Analyzer serial #:	2961

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	-0.7	----	Correlation Coefficient	0.999984	*≥0.995*
400.0	397.9	1.0053	Slope	0.995971	*0.90 - 1.10*
200.0	199.9	1.0005			
100.0	100.0	1.0000	Intercept	-0.020000	*+/- 5*



O_3 Calibration Plot Date: April 24, 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:	April 28, 2025	Last Cal Date:	March 26, 2025
Start time (MST):	6:19	End time (MST):	6:49
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)	-2.6	-2.7	-2.6	☐	+/- 2 °C
P (mmHg)	730.9	733.0	730.9	☐	+/- 10 mmHg
Flow (LPM)	4.94	5.10	4.94	☐	+/- 0.25 LPM
PW% (pump)	39	-----	39	☐	>80%
Zero Verification	PM w/o HEPA:	8.2	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: 16-Jul-26 — Lot No.: 100128-050-050

Parameter	As found	Post maintenance	As left	Adjusted	*(Limits)*
PMT Peak Test				☐	+/- 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

No adjustments done.

Notes:

Calibration by: Melissa Lemay

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS05
MANNIX
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Mannix	Station number:	AMS 05
Calibration Date:	April 15, 2025	Last Cal Date:	March 12, 2025
Start time (MST):	9:39	End time (MST):	13:45
Reason:	Routine		

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		Serial Number:	1008841399	
Analyzer Range:	1000 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.006894	1.005853	Backgd or Offset:	10.3	10.3
Calibration intercept:	-0.937958	0.001847	Coeff or Slope:	0.950	0.950

SO_2 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	4920	79.9	800.0	805.8	0.993
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	805.5	Previous response	804.6	*% 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	

SO_2 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	0.4	----
High point	4920	79.9	800.0	804.7	0.994
Mid point	4960	40.0	400.5	403.1	0.994
Low point	4980	20.0	200.2	200.7	0.998
As left zero	5000	0.0	0.0	0.5	----
As left span	4920	79.9	800.0	808.6	0.989
				Average Correction Factor:	0.995

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

Calibration Performed By: Max Farrell

Wood Buffalo Environmental Association

SO_2 Calibration Summary

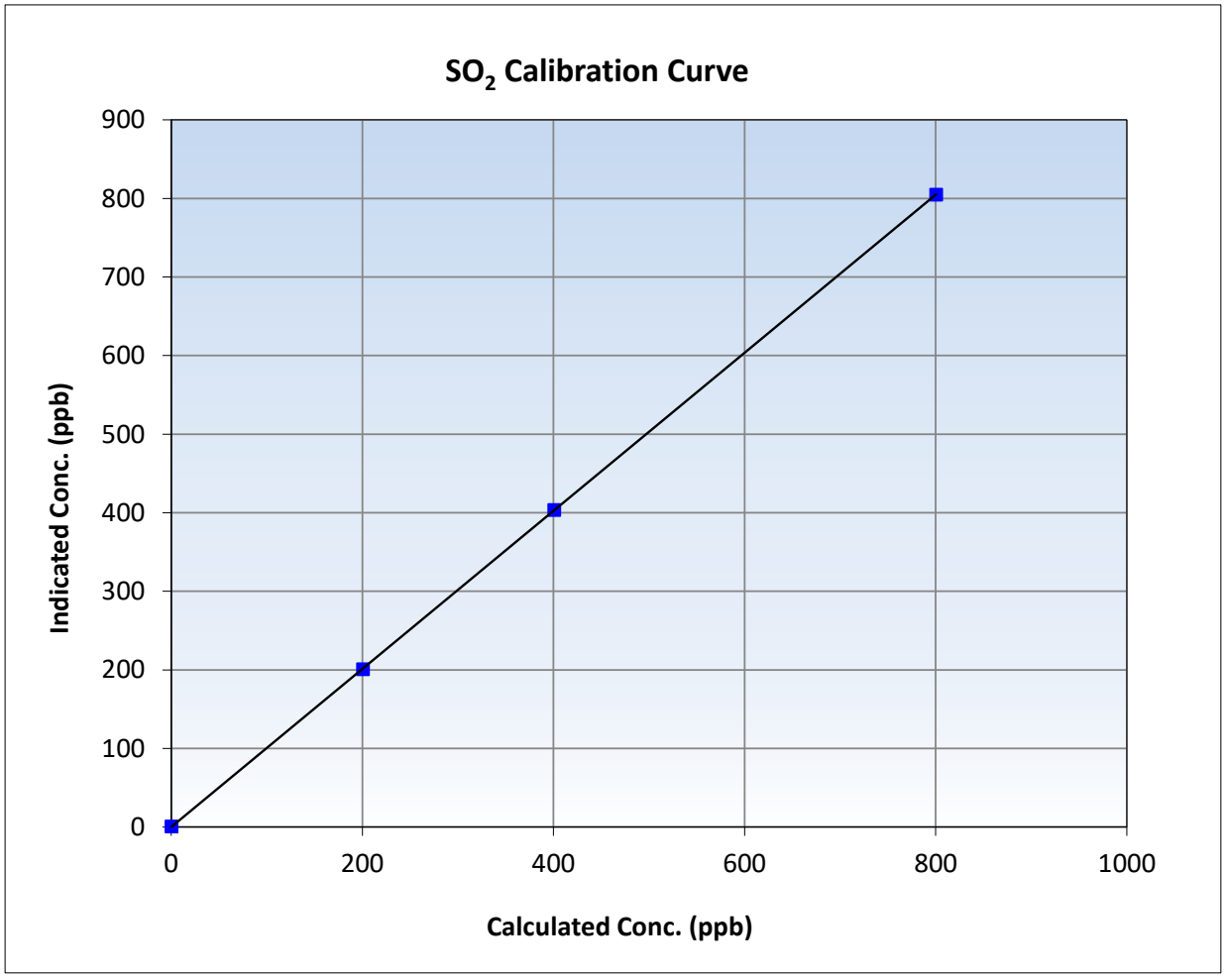
Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 12, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	9:39	End Time (MST):	13:45
Analyzer make:	Thermo 43i	Analyzer serial #:	1008841399

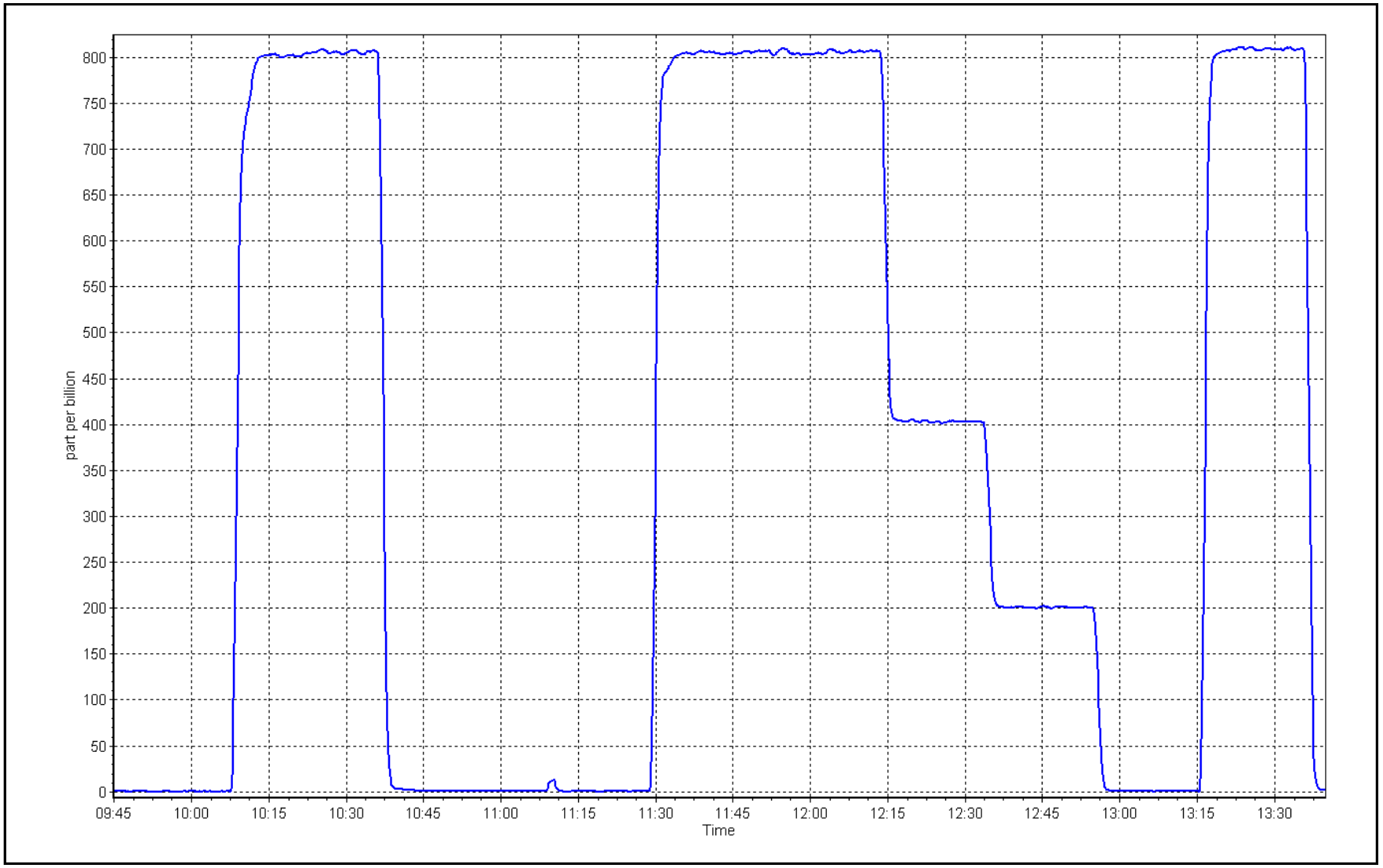
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.4	----
800.0	804.7	0.9941
400.5	403.1	0.9935
200.2	200.7	0.9977

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	1.005853	*0.90 - 1.10*
Intercept	0.001847	*+/-30*



SO2 Calibration Plot Date: April 15, 2025 Location: Mannix



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	Mannix	Station number:	AMS 05
Calibration Date:	April 2, 2025	Last Cal Date:	March 5, 2025
Start time (MST):	9:23	End time (MST):	14:00
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	4.96	ppm	Cal Gas Exp Date:	November 15, 2026
Cal Gas Cylinder #:	DT0037363			
Removed Cal Gas Conc:	4.96	ppm	Rem Gas Exp Date:	N/A
Removed Gas Cyl #:	N/A		Diff between cyl:	
Calibrator Make/Model:	API T700		Serial Number:	5470
ZAG Make/Model:	API T701		Serial Number:	361

Analyzer Information

Analyzer make:	Thermo 43iQ		Analyzer serial #:	1200326169	
Converter make:	Global		Converter serial #:	2022-225	
Analyzer Range	0 - 100 ppb		Converter Temp:	325	degC
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.005120	0.999974	Backgd or Offset:	1.25	1.25
Calibration intercept:	0.102228	-0.017707	Coeff or Slope:	1.029	1.029

H_2S 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	4919	80.6	80.0	79.9	1.001
As found Mid point	4960	40.3	40.0	40.2	0.994
As found Low point	4980	20.2	20.0	19.9	1.007
New cylinder response					

Baseline Corr As found:	79.9	Prev response:	80.47	*% change:	-0.7%
Baseline Corr 2nd AF pt:	40.2	AF Slope:	1.000117	AF Intercept:	0.002317
Baseline Corr 3rd AF pt:	19.9	AF Correlation:	0.999979	* = > +/-5% change initiates investigation	

H_2S 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	0.1	----
High point	4919	80.6	80.0	80.0	1.000
Mid point	4960	40.3	40.0	39.9	1.002
Low point	4980	20.2	20.0	19.9	1.007
As left zero	5000	0.0	0.0	0.2	----
As left span	4919	80.6	80.0	79.2	1.010
SO2 Scrubber Check	4920	80.3	803.0	0.0	----
Date of last scrubber change:				Ave Corr Factor	1.003
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

H_2S Calibration Summary

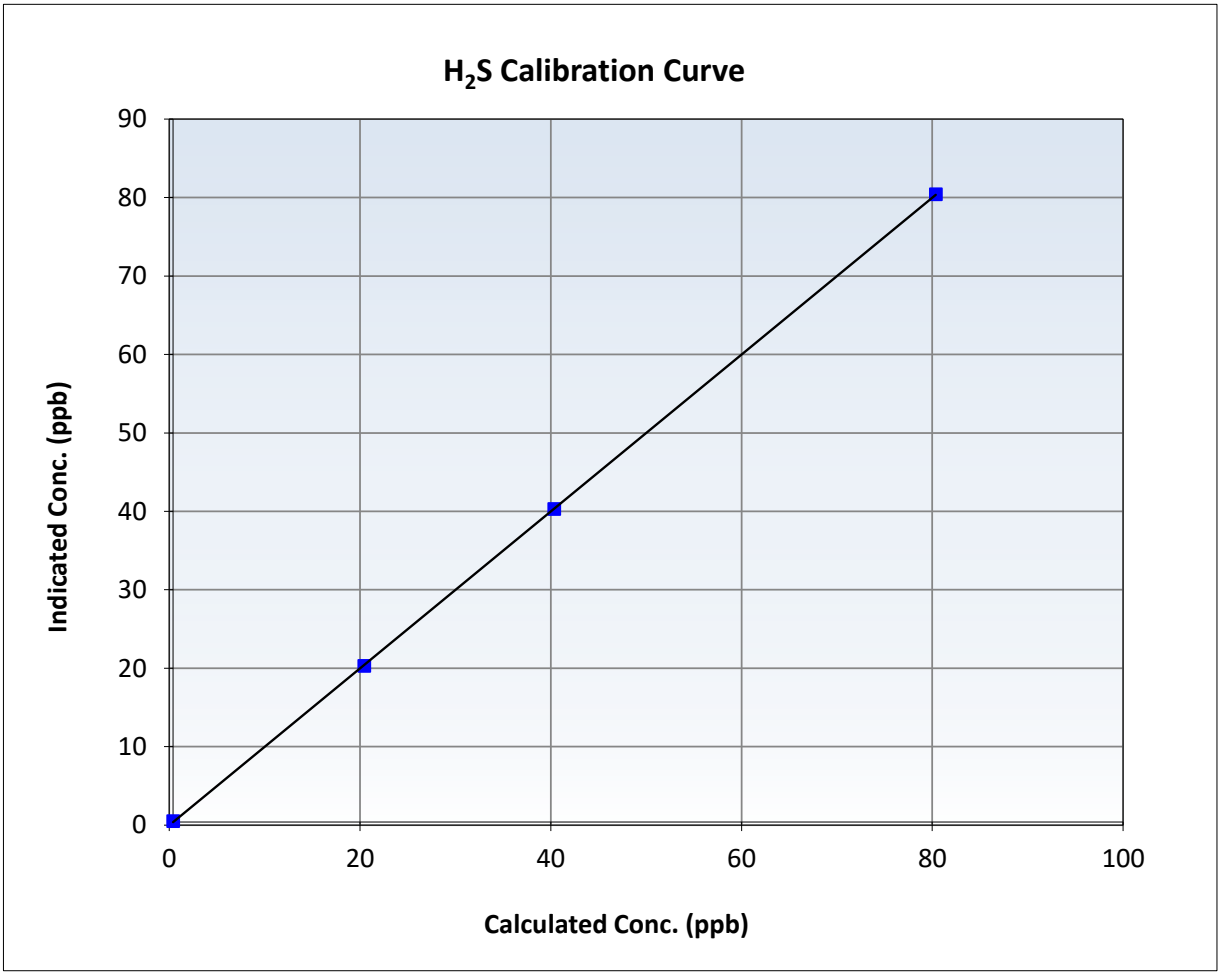
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	March 5, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	9:23	End Time (MST):	14:00
Analyzer make:	Thermo 43iQ	Analyzer serial #:	1200326169

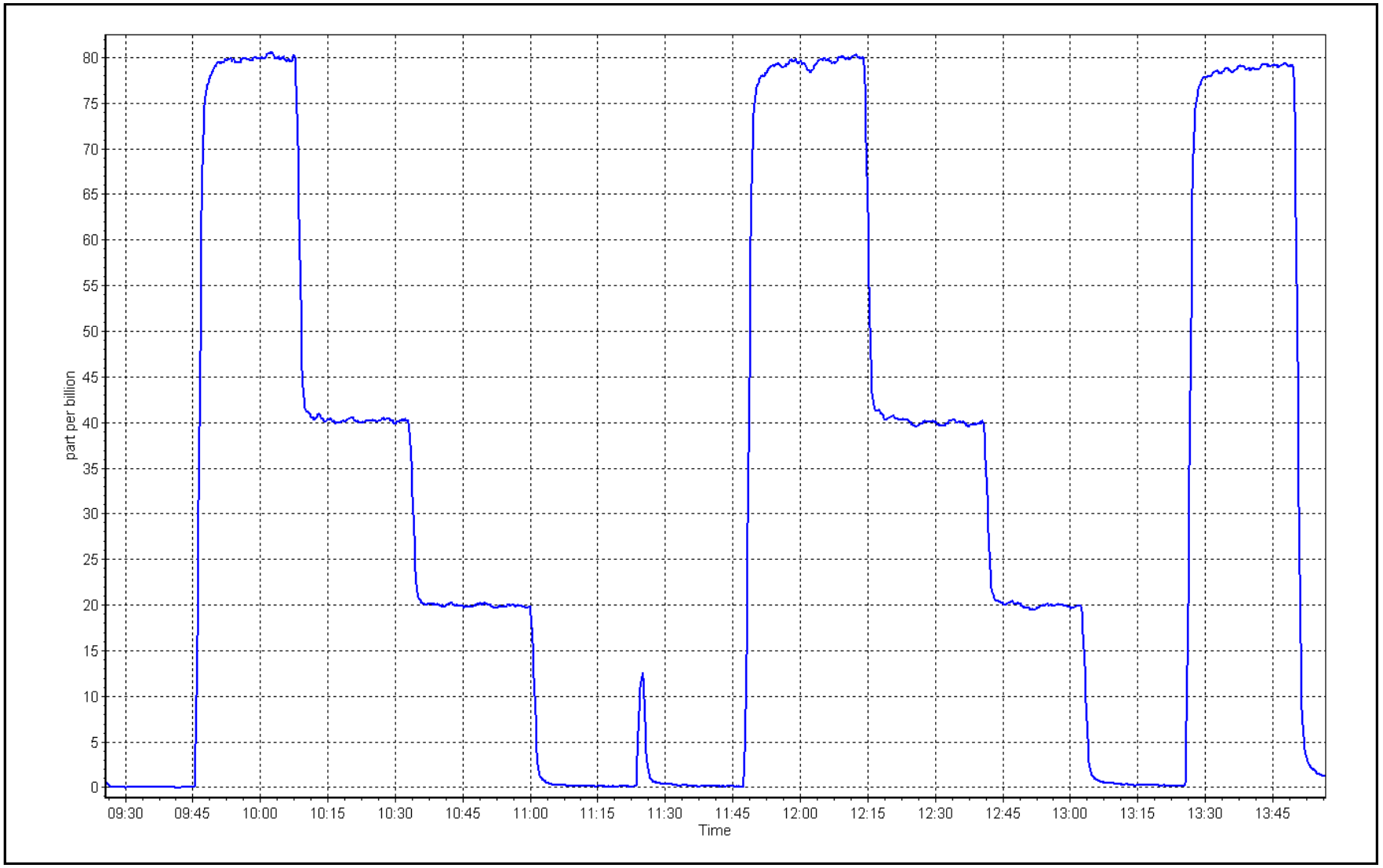
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
80.0	80.0	0.9995
40.0	39.9	1.0019
20.0	19.9	1.0069

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999990	*≥0.995*
Slope	0.999974	*0.90 - 1.10*
Intercept	-0.017707	*+/-3*



H_2S Calibration Plot Date: April 2, 2025 Location: Mannix



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Mannix	Station number:	AMS 05
Calibration Date:	April 15, 2025	Last Cal Date:	March 12, 2025
Start time (MST):	9:38	End time (MST):	13:50
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC308040	Cal Gas Expiry Date:	October 22, 2032
CH4 Cal Gas Conc.	500.3 ppm	CH4 Equiv Conc.	1047.6 ppm
C3H8 Cal Gas Conc.	199.0 ppm		
Removed Gas Cert:		Removed Gas Expiry:	
Removed CH4 Conc.	500.3 ppm	CH4 Equiv Conc.	1047.6 ppm
Removed C3H8 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/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	3.79E-04	3.74E-04	NMHC SP Ratio:	7.45E-05	7.39E-05
CH4 Retention time:	15.6	15.6	NMHC Peak Area:	117387	118483
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.9	16.74	16.63	1.007
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	16.63	Prev response	16.64	*% change	-0.1%
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.9	16.74	16.65	1.005
Mid point	4960	40.0	8.38	8.20	1.022
Low point	4980	20.0	4.19	4.05	1.035
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.9	16.74	16.52	1.013
				Average Correction Factor	1.021

Notes: Changed the inlet filter and the H2/N2 cylinders after as founds. Adjusted the span.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.9	8.75	8.68	1.008
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.68	Prev response	8.73	*% 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	4920	79.9	8.75	8.70	1.006
Mid point	4960	40.0	4.38	4.32	1.014
Low point	4980	20.0	2.19	2.14	1.025
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.9	8.75	8.61	1.016
				Average Correction Factor	1.015

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.9	7.99	7.95	1.006
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.95	Prev response	7.91	*% 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.9	7.99	7.96	1.005
Mid point	4960	40.0	4.00	3.88	1.032
Low point	4980	20.0	2.00	1.91	1.047
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.9	7.99	7.91	1.011
				Average Correction Factor	1.028

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	0.996286	0.996242
THC Cal Offset:	-0.038478	-0.075658
CH4 Cal Slope:	0.994597	0.997482
CH4 Cal Offset:	-0.040730	-0.053327
NMHC Cal Slope:	0.997646	0.995382
NMHC Cal Offset:	0.002452	-0.023131

Calibration Performed By: Max Farrell

Wood Buffalo Environmental Association

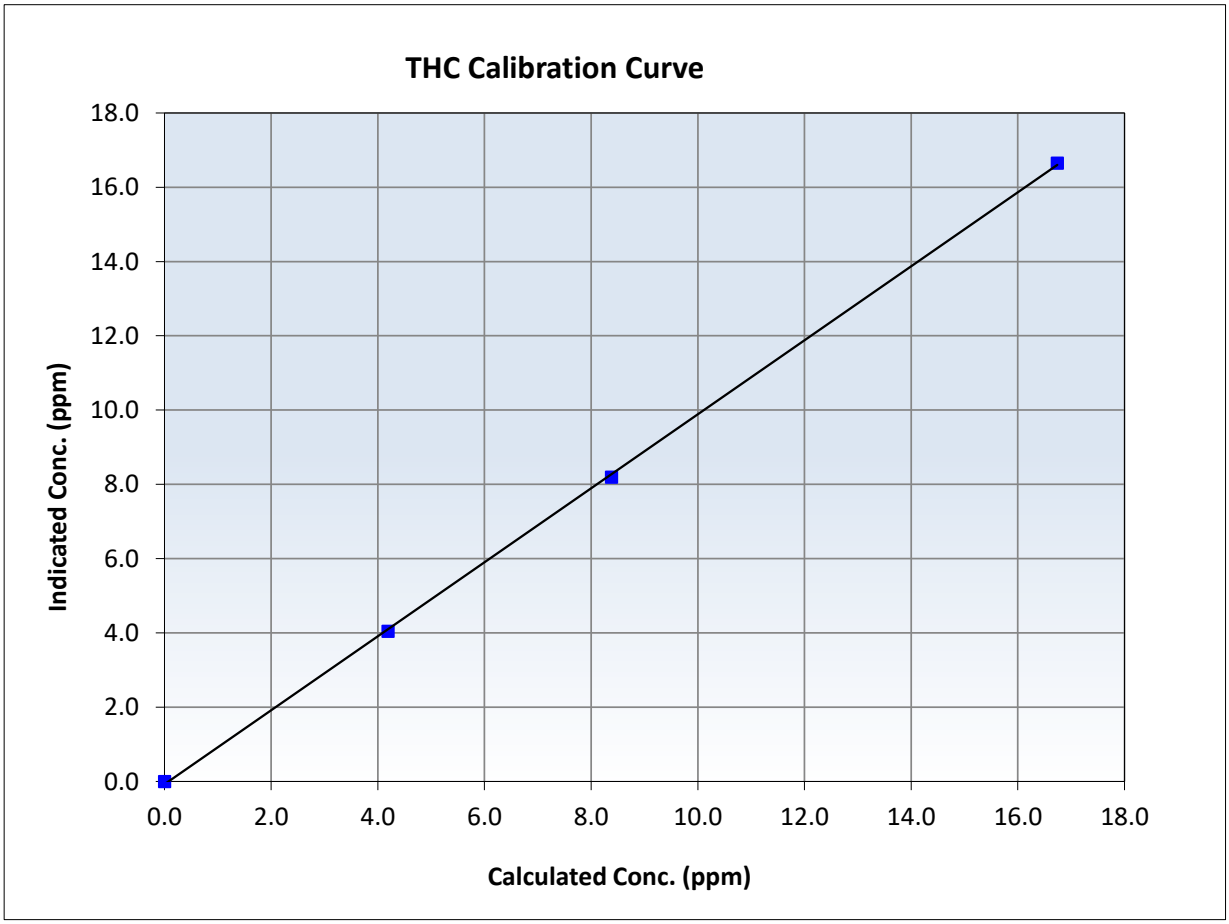
THC Calibration Summary

Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 12, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	9:38	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	0.999891	≥0.995
16.74	16.65	1.0053	Slope	0.996242	0.90 - 1.10
8.38	8.20	1.0222			
4.19	4.05	1.0351	Intercept	-0.075658	+/-0.5



Wood Buffalo Environmental Association

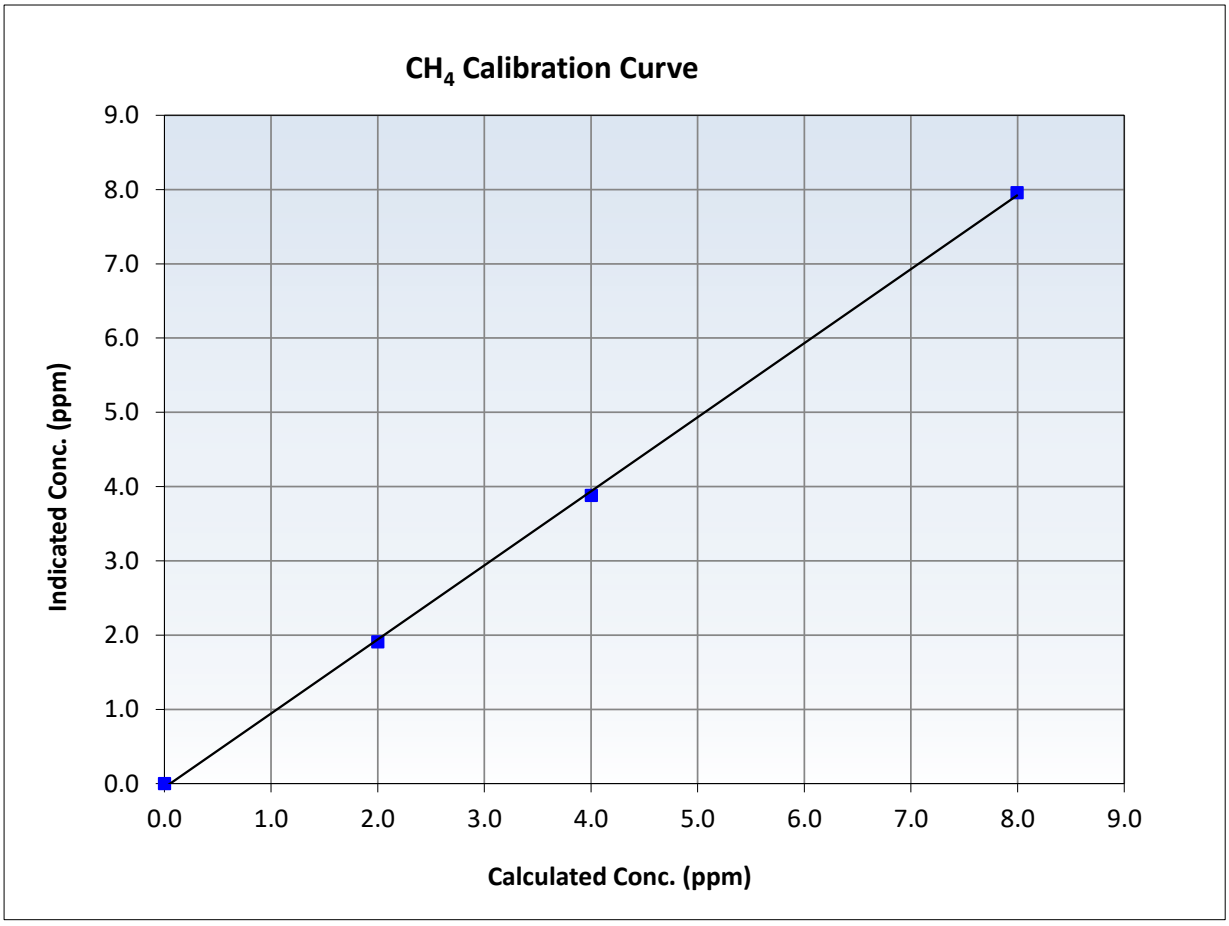
CH_4 Calibration Summary

Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 12, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	9:38	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	0.999749	*≥0.995*
7.99	7.96	1.0045	Slope	0.997482	*0.90 - 1.10*
4.00	3.88	1.0315			
2.00	1.91	1.0472	Intercept	-0.053327	*+/-0.5*



Wood Buffalo Environmental Association

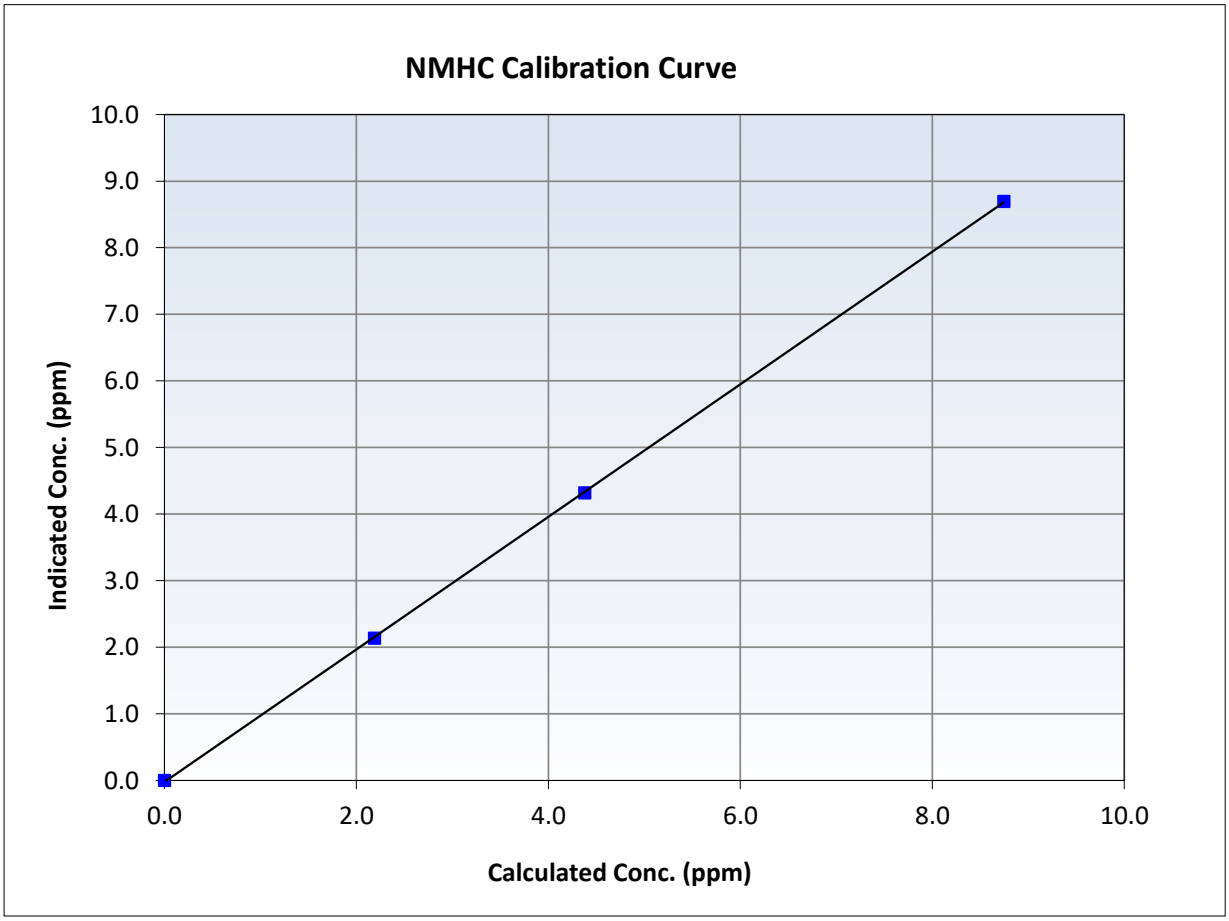
NMHC Calibration Summary

Station Information

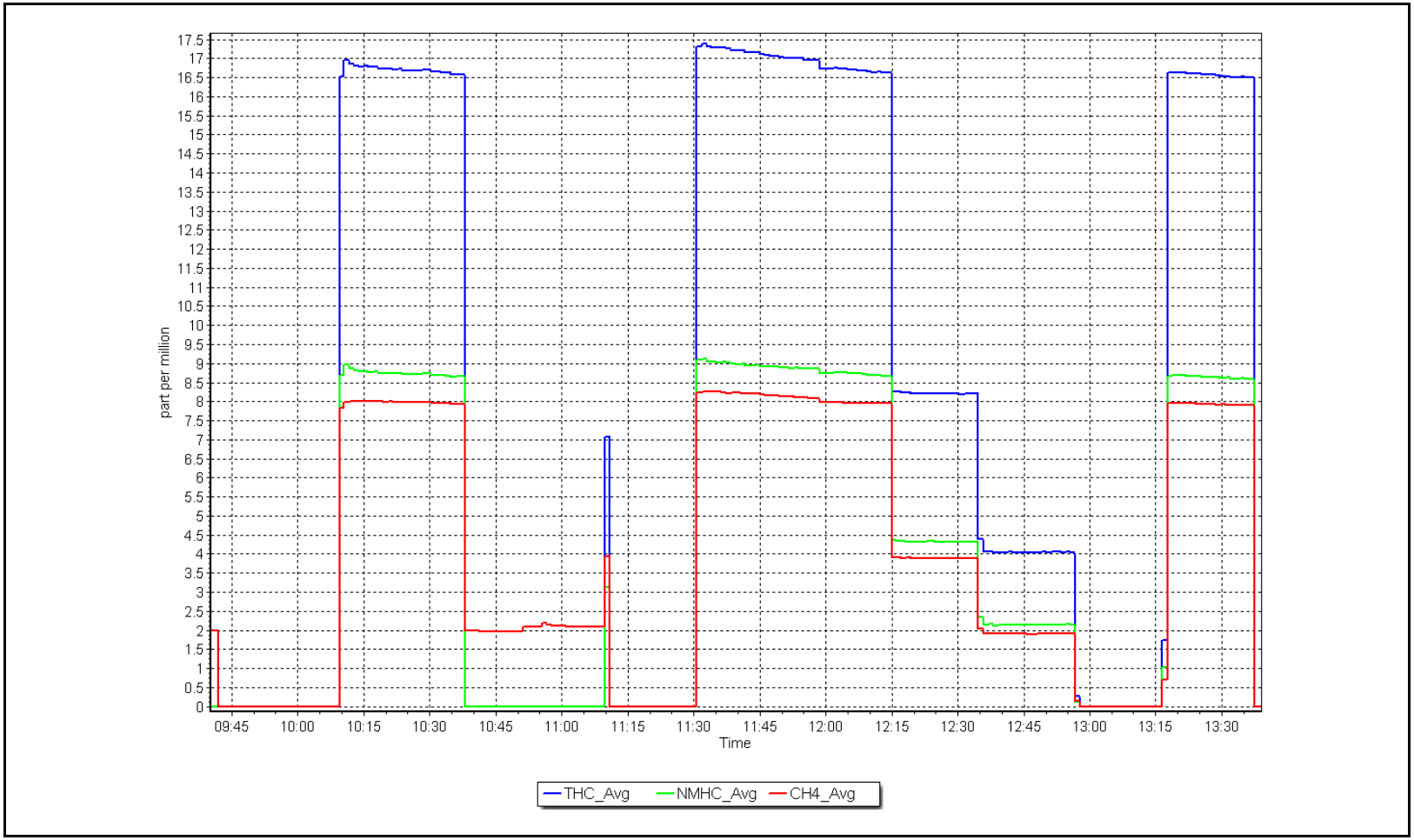
Calibration Date:	April 15, 2025	Previous Calibration:	March 12, 2025
Station Name:	Mannix	Station Number:	AMS 05
Start Time (MST):	9:38	End Time (MST):	13:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585649

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999967	≥0.995
8.75	8.70	1.0058	Slope	0.995382	0.90 - 1.10
4.38	4.32	1.0139			
2.19	2.14	1.0248	Intercept	-0.023131	+/-0.5



NMHC Calibration Plot Date: April 15, 2025 Location: Mannix



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS06
PATRICIA MCINNES
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Patricia McInnes	Station number:	AMS 06
Calibration Date:	April 11, 2025	Last Cal Date:	March 13, 2025
Start time (MST):	8:40	End time (MST):	12:00
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	50.08	ppm	Cal Gas Exp Date:	October 22, 2032
Cal Gas Cylinder #:	CC255448			
Removed Cal Gas Conc:	50.08	ppm	Rem Gas Exp Date:	
Removed Gas Cyl #:			Diff between cyl:	
Calibrator Model:	API T700		Serial Number:	3566
Zero Air Gen Model:	API T701		Serial Number:	4602

Analyzer Information

Analyzer make:	Thermo 43i		Serial Number:	1160290013	
Analyzer Range:	0 - 1000 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.001008	1.001251	Backgd or Offset:	18.5	18.4
Calibration intercept:	1.638757	1.678702	Coeff or Slope:	0.928	0.920

SO_2 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	4920.2	79.8	799.3	807.7	0.989
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	807.9	Previous response	801.7	*% 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	

SO_2 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	4920.2	79.8	799.3	801.0	0.998
Mid point	4960.1	39.9	399.6	403.0	0.992
Low point	4980	20.0	200.3	203.7	0.983
As left zero	5000	0.0	0.0	-0.1	----
As left span	4919.7	80.3	804.3	805.1	0.999
				Average Correction Factor:	0.991

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

Calibration Performed By: Max Farrell

Wood Buffalo Environmental Association

SO_2 Calibration Summary

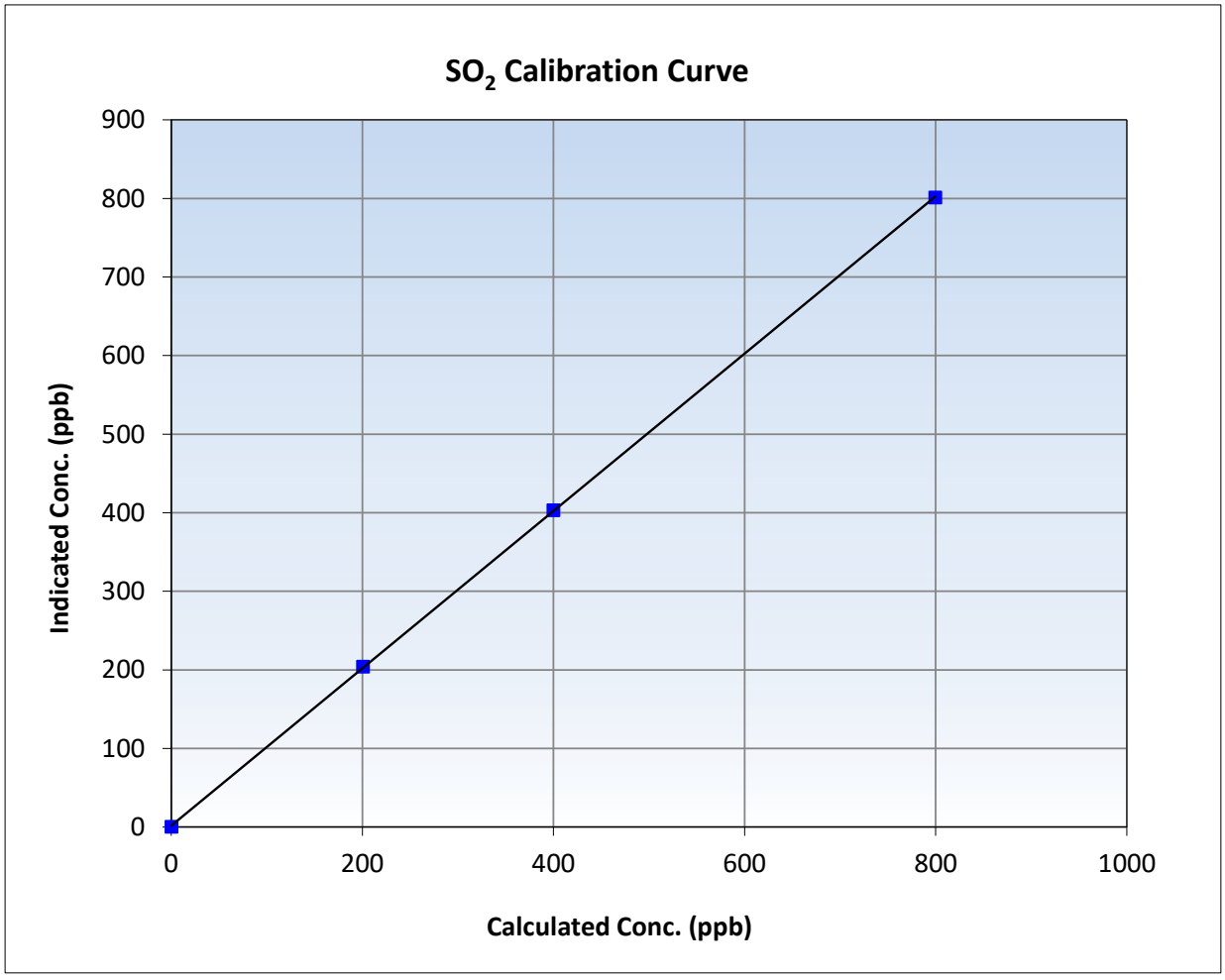
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 13, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:40	End Time (MST):	12:00
Analyzer make:	Thermo 43i	Analyzer serial #:	1160290013

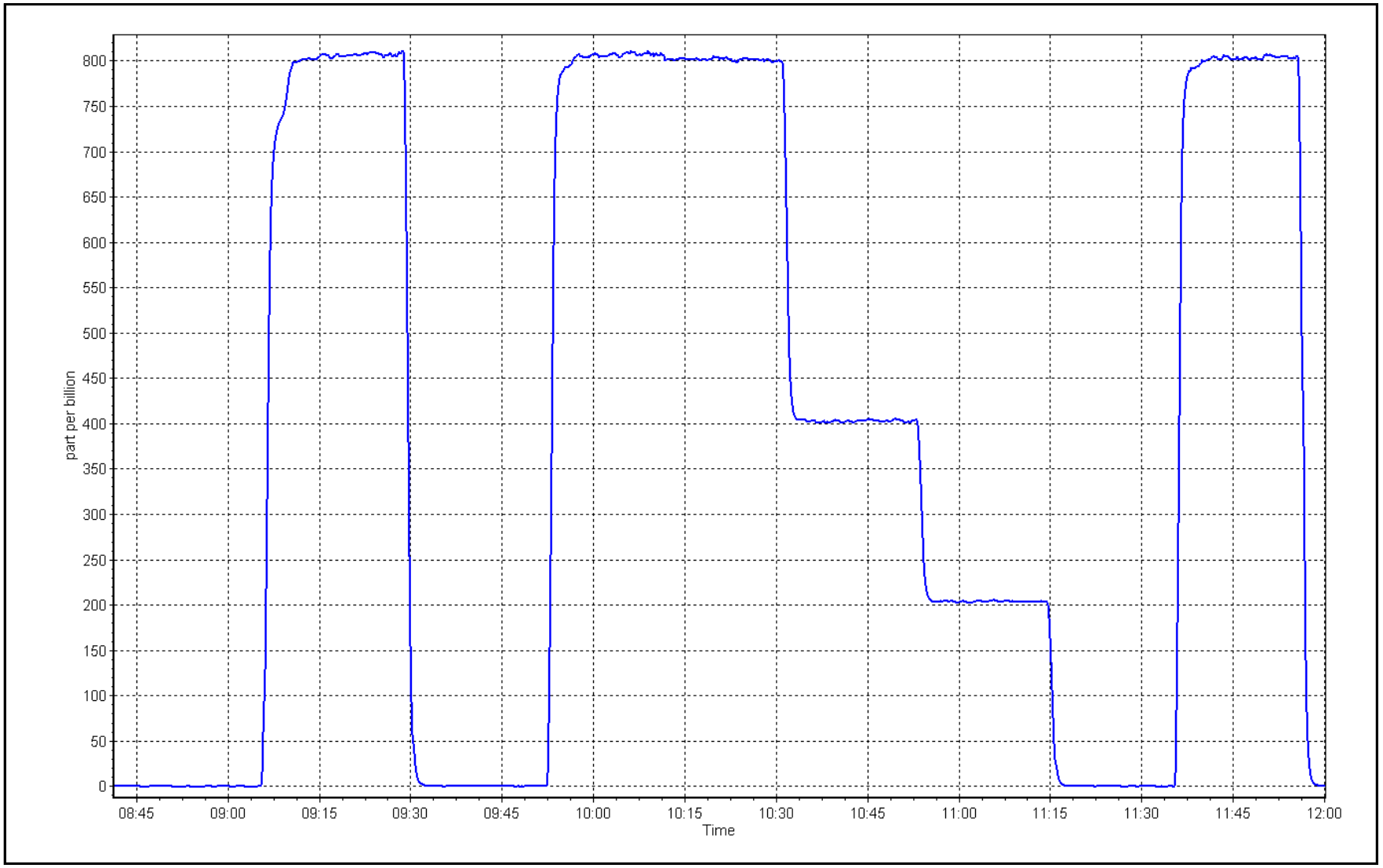
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
799.3	801.0	0.9978
399.6	403.0	0.9917
200.3	203.7	0.9834

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999979	*≥0.995*
Slope	1.001251	*0.90 - 1.10*
Intercept	1.678702	*+/-30*



SO2 Calibration Plot Date: April 11, 2025 Location: Patricia McInnes



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Patricia McInnes	Station number:	AMS 06
Calibration Date:	April 16, 2025	Last Cal Date:	March 20, 2025
Start time (MST):	9:03	End time (MST):	15:00
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	4.760	ppm	Cal Gas Exp Date:	August 28, 2027
Cal Gas Cylinder #:	DT0014585			
Removed Cal Gas Conc:	5.328	ppm	Rem Gas Exp Date:	February 14, 2025
Removed Gas Cyl #:	CC506659		Diff between cyl:	
Calibrator Make/Model:	API T700		Serial Number:	3566
ZAG Make/Model:	API T701		Serial Number:	4602

Analyzer Information

Analyzer make:	Thermo 43i TLE		Analyzer serial #:	1218153358
Converter make:	CDN-101		Converter serial #:	517
Analyzer Range	0 - 100 ppb		Converter Temp:	800 degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.001258	1.002115	Backgd or Offset:	1.94	1.99
Calibration intercept:	0.120000	0.340000	Coeff or Slope:	1.117	1.146

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.1	----
As found High point	4925	75.1	80.0	78.7	1.018
As found Mid point	4963	37.5	40.0	40.0	1.001
As found Low point	4981	18.8	20.0	20.1	1.002
New cylinder response					

Baseline Corr As found:	78.6	Prev response:	80.25	*% change:	-2.1%
Baseline Corr 2nd AF pt:	39.9	AF Slope:	0.981741	AF Intercept:	0.360369
Baseline Corr 3rd AF pt:	20.0	AF Correlation:	0.999913	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.2	----
High point	4916	84.0	80.0	80.3	0.996
Mid point	4958	42.0	40.0	40.8	0.980
Low point	4979	21.0	20.0	20.3	0.985
As left zero	5000	0.0	0.0	0.4	----
As left span	4916	84.0	80.0	79.1	1.011
SO2 Scrubber Check				0.0	
Date of last scrubber change:		December 20, 2021		Ave Corr Factor	0.987
Date of last converter efficiency test:					

Notes: Changed the inlet filter after as founds. Ran a SO2 scrubber check after calibrator zero. Adjusted the span only.

Calibration Performed By: Max Farrell

Wood Buffalo Environmental Association

TRS Calibration Summary

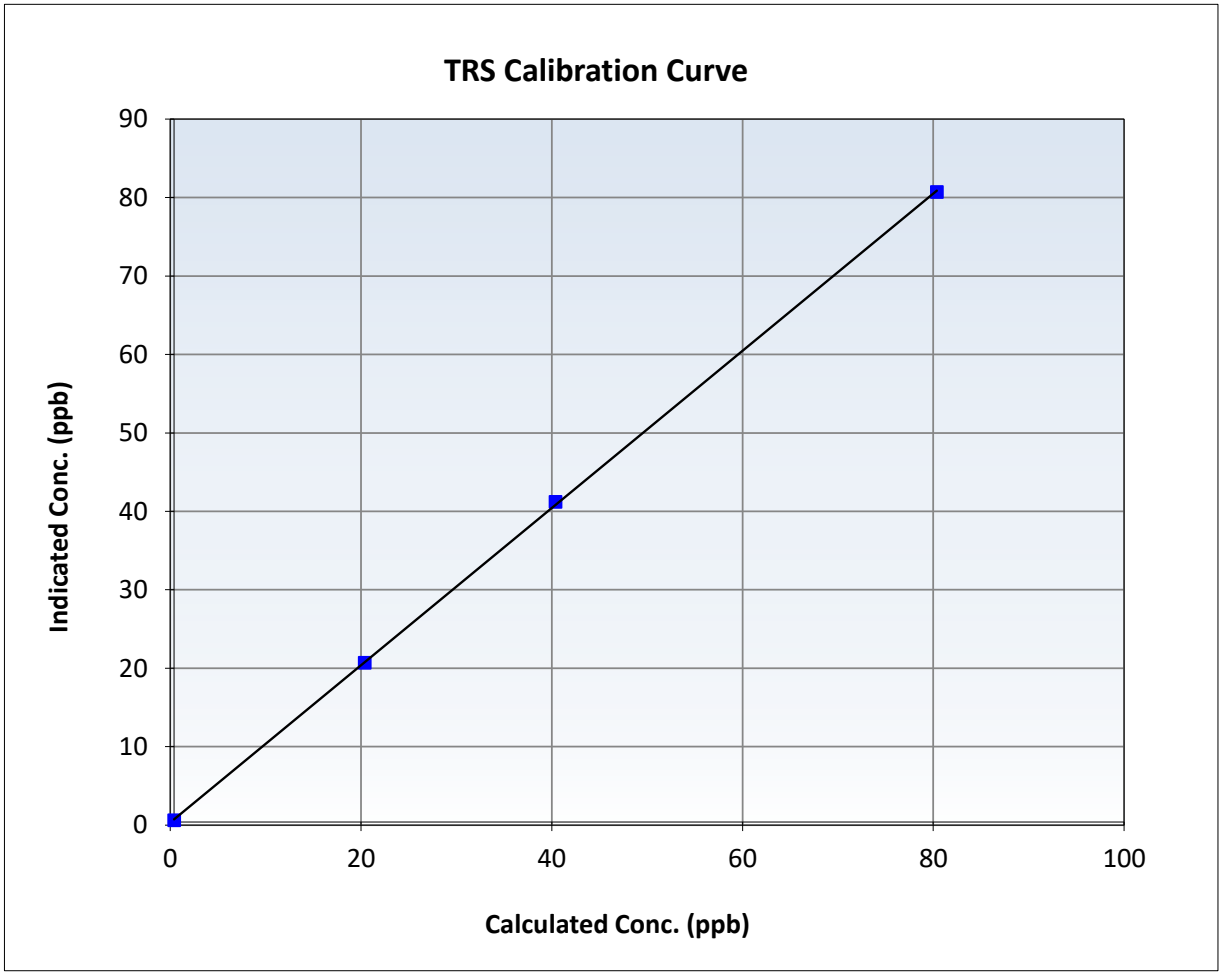
Station Information

Calibration Date:	April 16, 2025	Previous Calibration:	March 20, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	9:03	End Time (MST):	15:00
Analyzer make:	Thermo 43i TLE	Analyzer serial #:	1218153358

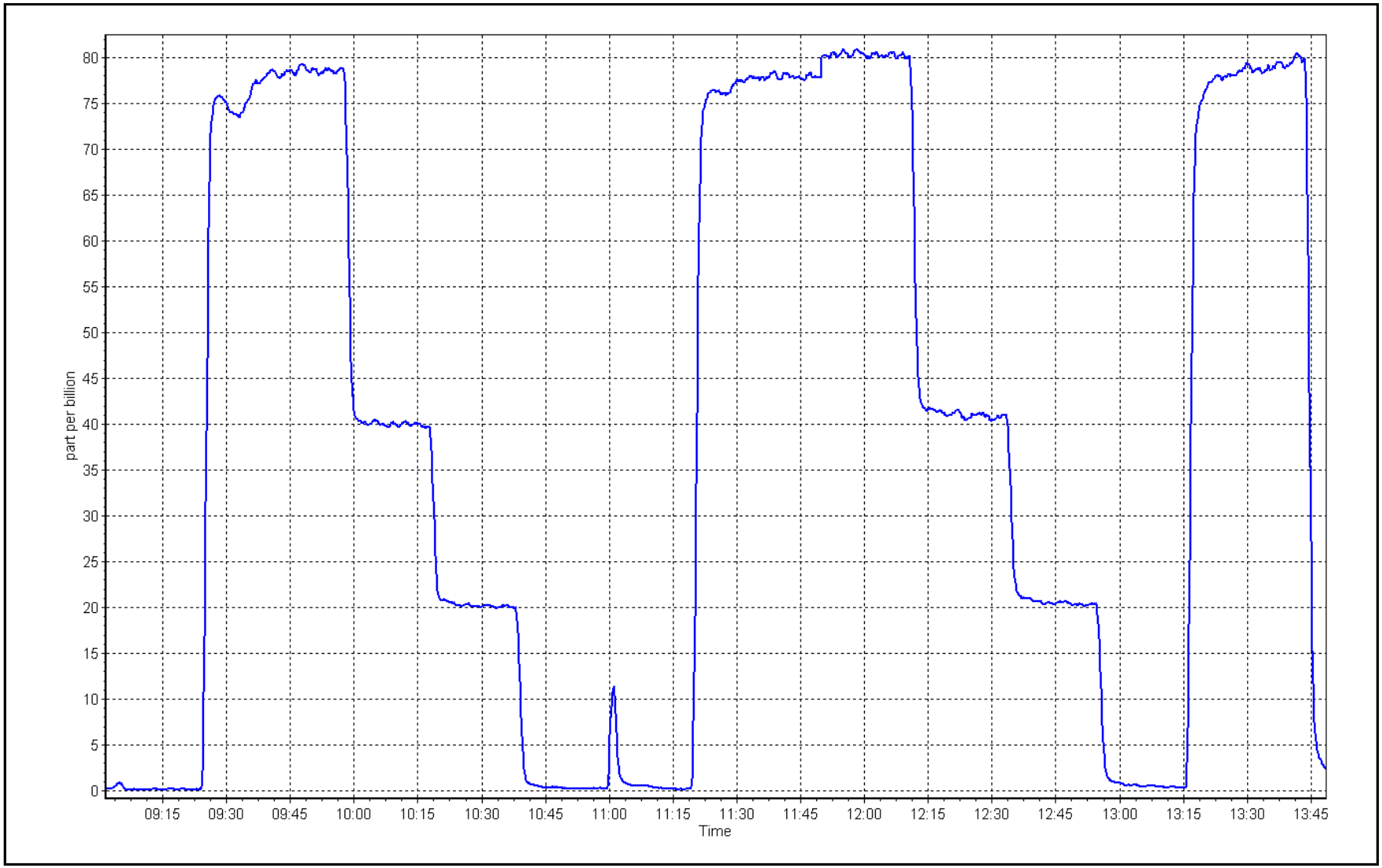
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
80.0	80.3	0.9959
40.0	40.8	0.9800
20.0	20.3	0.9848

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999940	*≥0.995*
Slope	1.002115	*0.90 - 1.10*
Intercept	0.340000	*+/-3*



TRS Calibration Plot Date: April 16, 2025 Location: Patricia McInnes



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Patricia McInnes	Station number:	AMS 06
Calibration Date:	April 11, 2025	Last Cal Date:	March 14, 2025
Start time (MST):	8:40	End time (MST):	12:00
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	AAL070632		Cal Gas Expiry Date:	September 9, 2024	
CH4 Cal Gas Conc.	501.4	ppm	CH4 Equiv Conc.	1049.5	ppm
C3H8 Cal Gas Conc.	199.3	ppm			
Removed Gas Cert:			Removed Gas Expiry:		
Removed CH4 Conc.	501.4	ppm	CH4 Equiv Conc.	1049.5	ppm
Removed C3H8 Conc.	199.3	ppm	Diff between cyl (THC):		
Diff between cyl (CH_4):			Diff between cyl (NM):		
Calibrator Model:	API T700		Serial Number:	3566	
Zero Air Gen model:	API T701		Serial Number:	4602	

Analyzer Information

Analyzer make:	Thermo 55i		Analyzer serial #:	1118148494	
THC Range:	0 - 20 ppm		NMHC/CH4 Range:	0 - 10 ppm	
	Start	***Finish***		***Start***	***Finish***
CH4 SP Ratio:	4.25E-04	4.46E-04	NMHC SP Ratio:	4.12E-05	4.23E-05
CH4 Retention time:	14.0	14.2	NMHC Peak Area:	212421	207068
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	16.75	16.20	1.034
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.20	Prev response	16.84	*% change	-4.0%
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)) *Limit = 0.95-1.05*
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	8.49	0.987
Low point	4980	20.0	4.20	4.32	0.972
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	16.75	16.82	0.996
				Average Correction Factor	0.985

Notes: Instrument was installed last month. Chnaged the inlet filter after as founds. Adjusted the span.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	8.75	8.56	1.022
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.56	Prev response	8.78	*% change	-2.6%
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	4920	79.8	8.75	8.77	0.997
Mid point	4960.1	39.9	4.37	4.43	0.987
Low point	4980	20.0	2.19	2.26	0.971
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	8.75	8.77	0.998
				Average Correction Factor	0.985

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	8.00	7.64	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	0.00	----
High point	4920	79.8	8.00	8.04	0.995
Mid point	4960.1	39.9	4.00	4.06	0.986
Low point	4980	20.0	2.01	2.06	0.973
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	8.00	8.05	0.994
				Average Correction Factor	0.984

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	1.002148	1.001964
THC Cal Offset:	0.059170	0.059767
CH4 Cal Slope:	1.003496	1.003725
CH4 Cal Offset:	0.028976	0.026176
NMHC Cal Slope:	1.000667	1.000863
NMHC Cal Offset:	0.031394	0.033391

Calibration Performed By: Max Farrell

Wood Buffalo Environmental Association

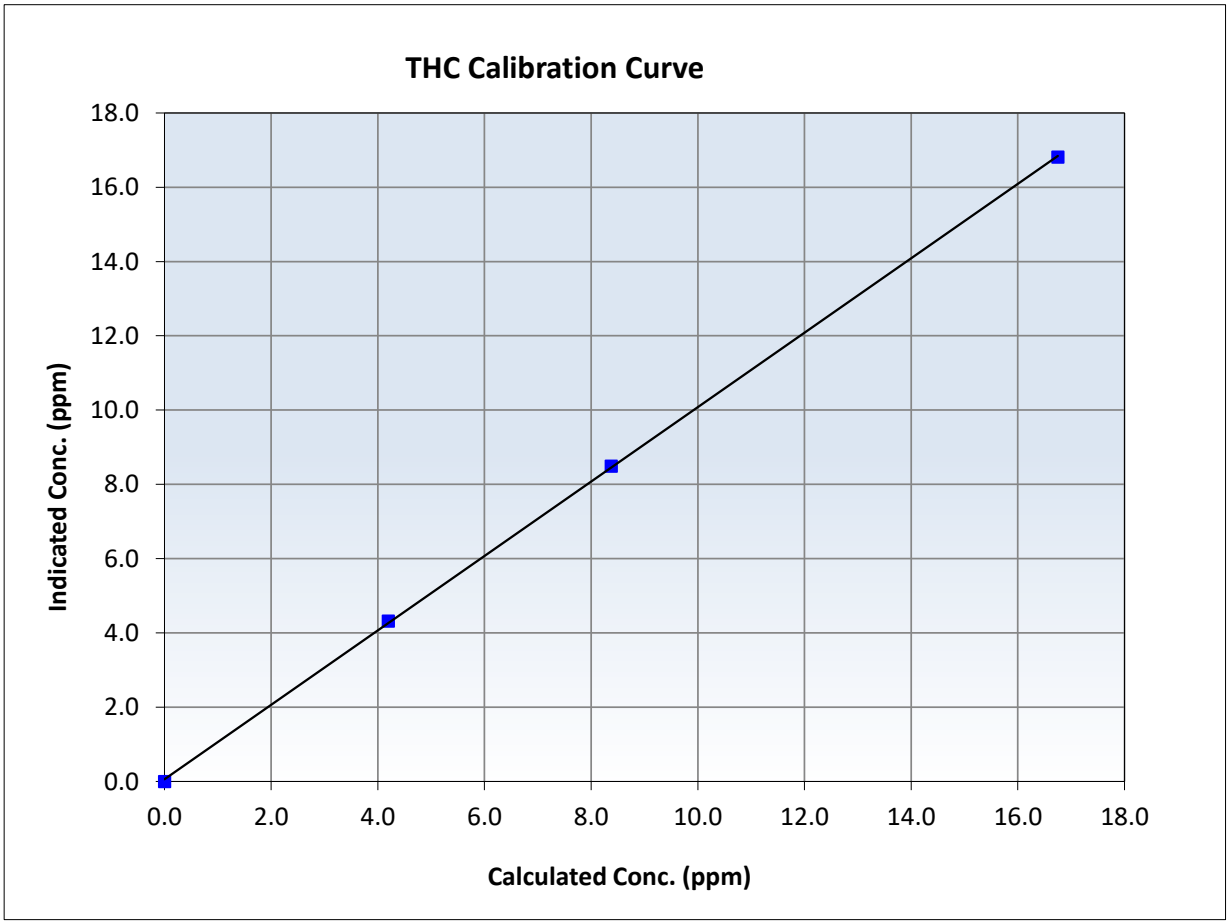
THC Calibration Summary

Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 14, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:40	End Time (MST):	12:00
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148494

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999943	≥0.995
16.75	16.81	0.9964	Slope	1.001964	0.90 - 1.10
8.37	8.49	0.9865			
4.20	4.32	0.9720	Intercept	0.059767	+/-0.5



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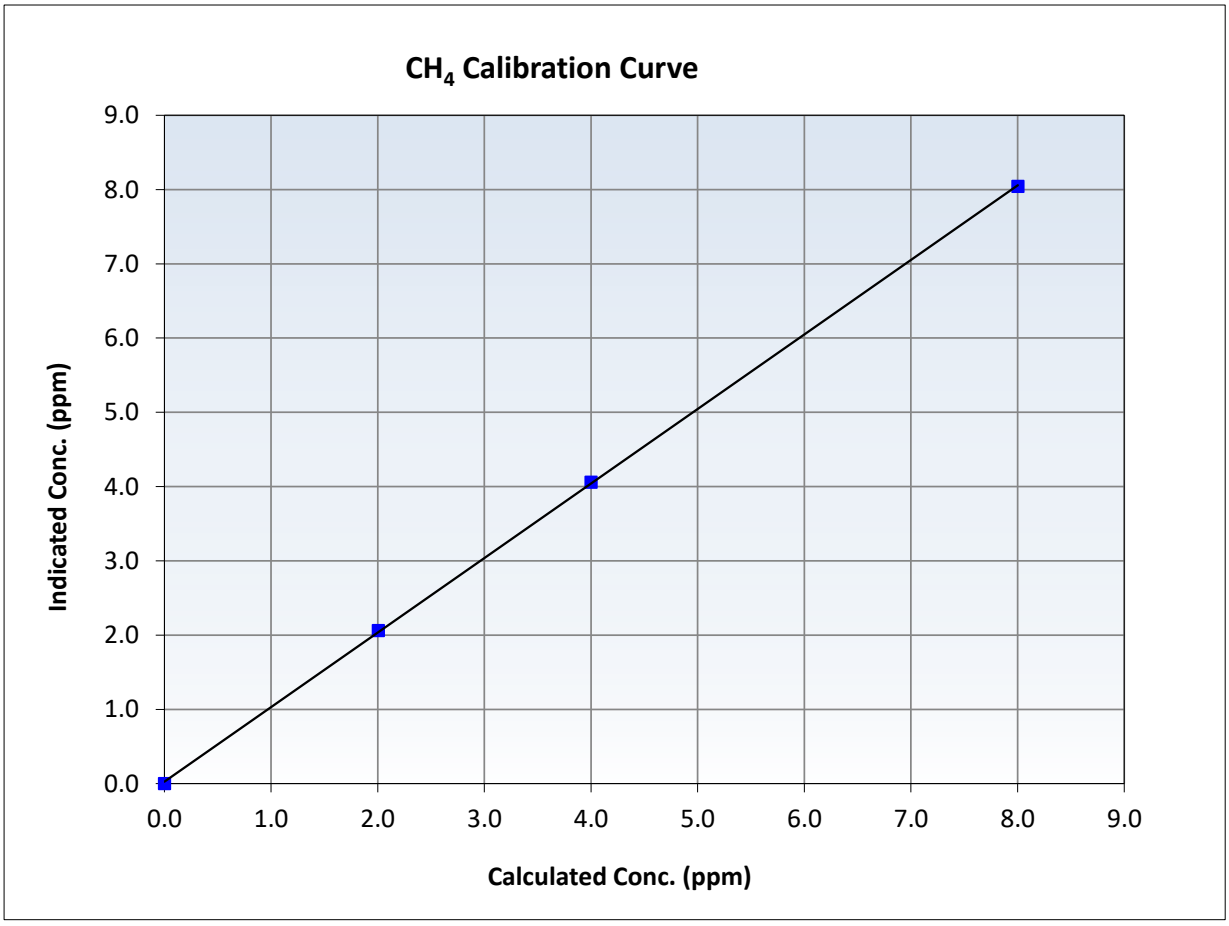
CH_4 Calibration Summary

Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 14, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:40	End Time (MST):	12:00
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148494

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999954	≥0.995
8.00	8.04	0.9948	Slope	1.003725	0.90 - 1.10
4.00	4.06	0.9855			
2.01	2.06	0.9731	Intercept	0.026176	+/-0.5



Wood Buffalo Environmental Association

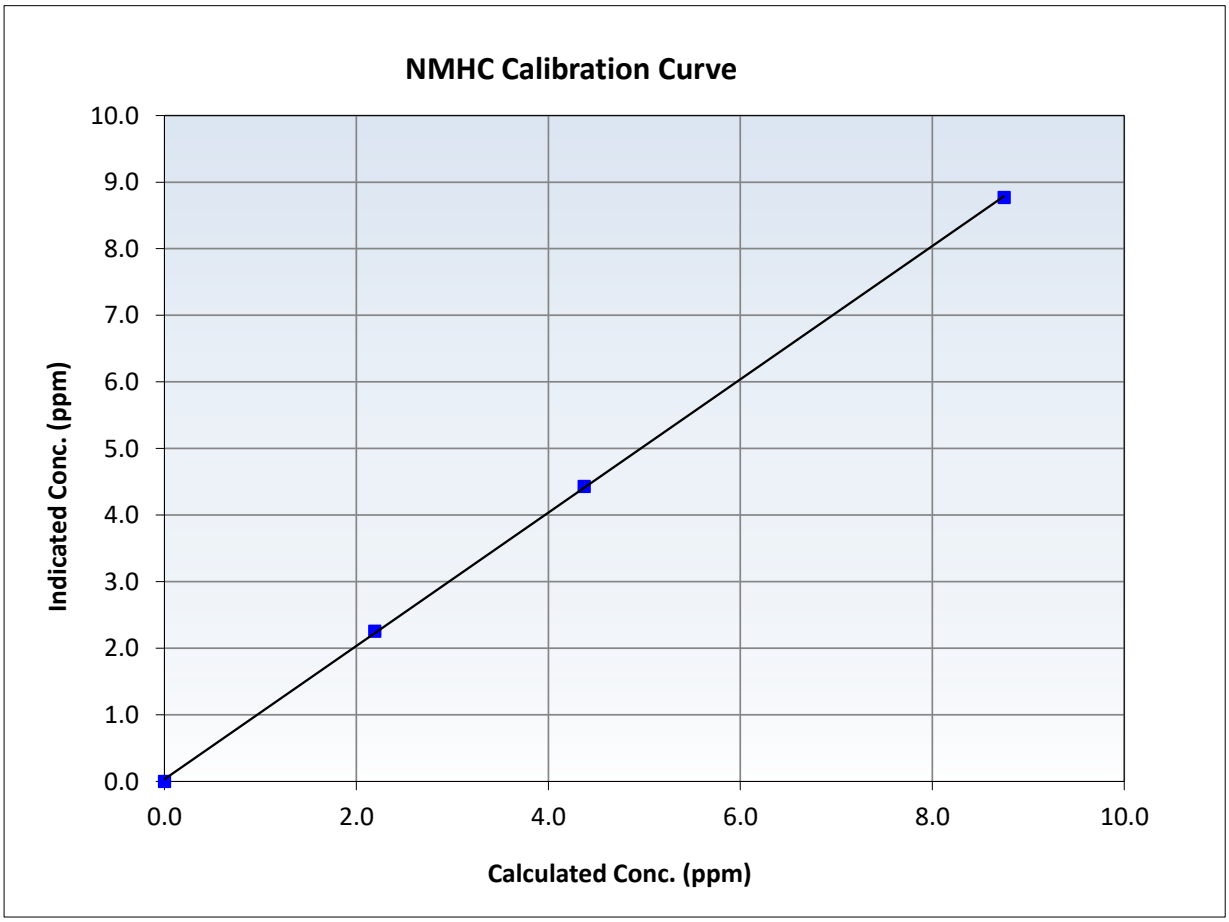
NMHC Calibration Summary

Station Information

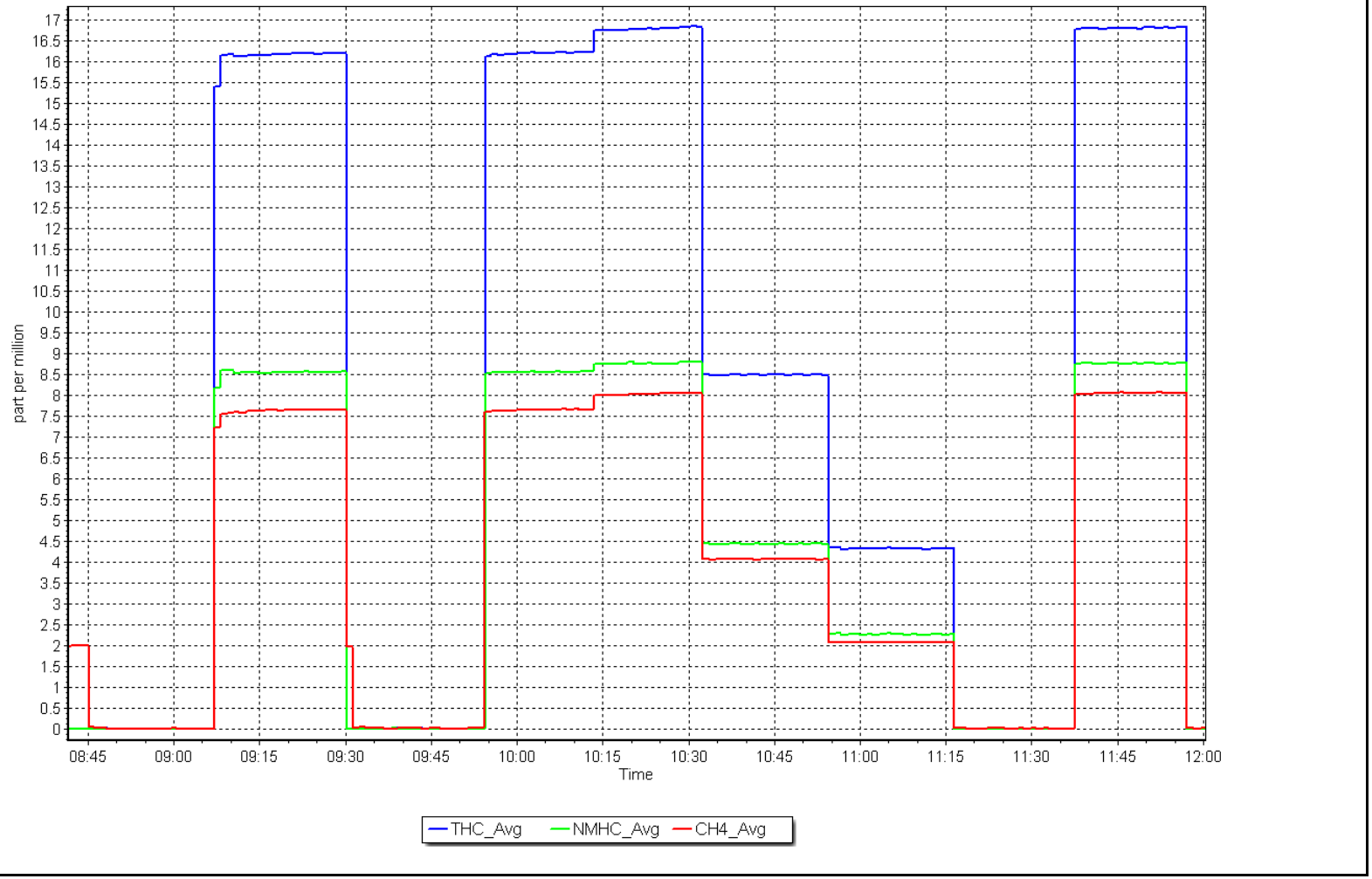
Calibration Date:	April 11, 2025	Previous Calibration:	March 14, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:40	End Time (MST):	12:00
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148494

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999933	≥0.995
8.75	8.77	0.9974	Slope	1.000863	0.90 - 1.10
4.37	4.43	0.9868	Intercept	0.033391	+/-0.5
2.19	2.26	0.9709			



NMHC Calibration Plot Date: April 11, 2025 Location: Patricia McInnes



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THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Patricia McInnes	Station number:	AMS 06
Calibration Date:	April 17, 2025	Last Cal Date:	April 11, 2025
Start time (MST):	9:44	End time (MST):	11:42
Reason:	Cylinder Change		

Calibration Standards

Gas Cert Reference:	AAL070632		Cal Gas Expiry Date:	September 9, 2024	
CH4 Cal Gas Conc.	501.4	ppm	CH4 Equiv Conc.	1049.5	ppm
C3H8 Cal Gas Conc.	199.3	ppm			
Removed Gas Cert:			Removed Gas Expiry:		
Removed CH4 Conc.	501.4	ppm	CH4 Equiv Conc.	1049.5	ppm
Removed C3H8 Conc.	199.3	ppm	Diff between cyl (THC):		
Diff between cyl (CH_4):			Diff between cyl (NM):		
Calibrator Model:	API T700		Serial Number:	3566	
Zero Air Gen model:	API T701		Serial Number:	4602	

Analyzer Information

Analyzer make:	Thermo 55i		Analyzer serial #:	1118148494	
THC Range:	0 - 20 ppm		NMHC/CH4 Range:	0 - 10 ppm	
	Start	***Finish***		***Start***	***Finish***
CH4 SP Ratio:	4.46E-04	4.46E-04	NMHC SP Ratio:	4.23E-05	4.23E-05
CH4 Retention time:	14.2	14.2	NMHC Peak Area:	207068	207068
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	16.75	16.74	1.001
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	16.74	Prev response	16.84	*% 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)) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.02	----
As left span	4920	79.8	16.75	16.77	0.999
				Average Correction Factor	

Notes: Changed the H2 cylinder after as founds.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	8.75	8.80	0.994
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.80	Prev response	8.79	*% 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) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	8.75	8.78	0.996
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	8.00	7.94	1.008
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.94	Prev response	8.06	*% change	-1.5%
Baseline Corr 2nd AF:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

CH4 Calibration Data

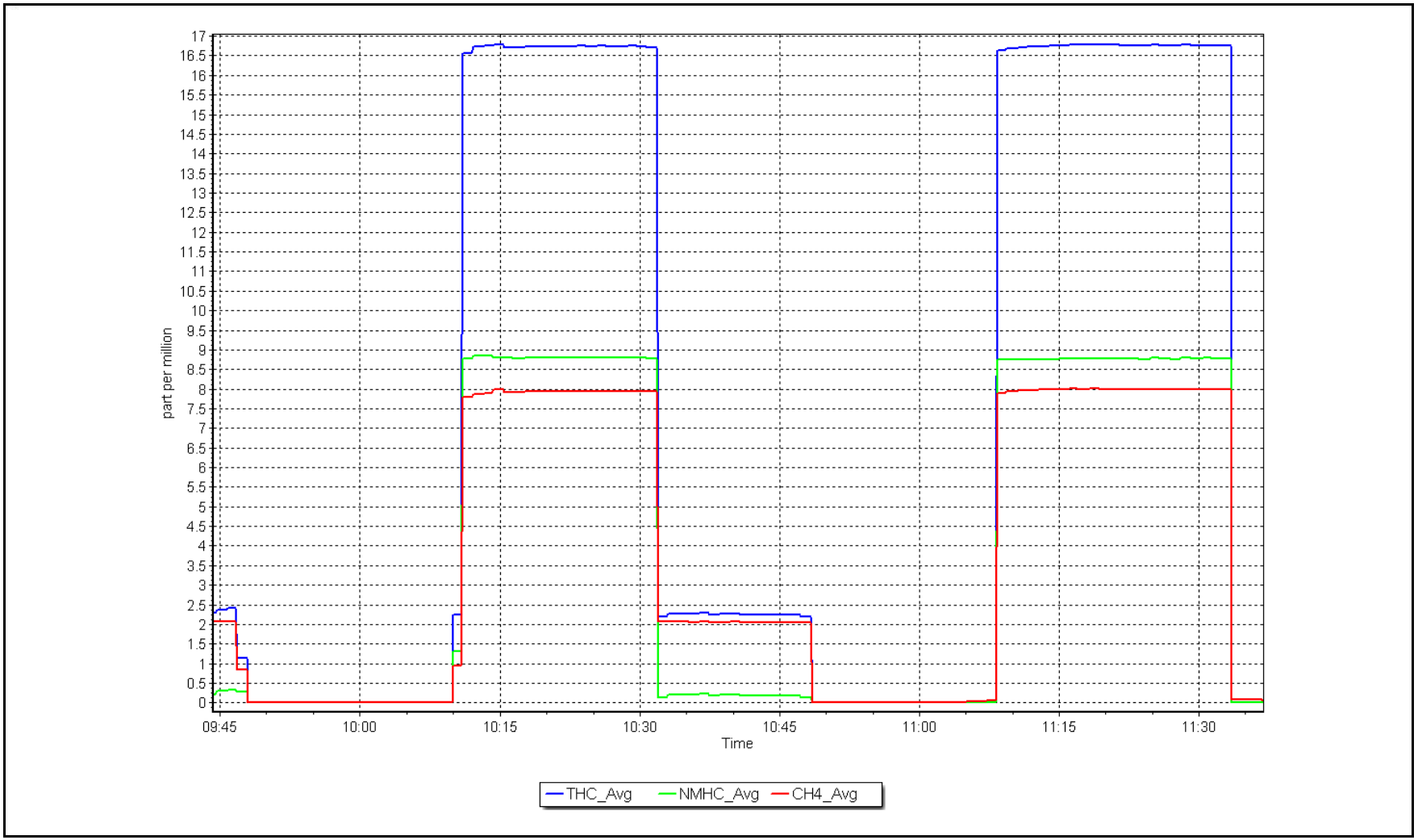
Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.02	----
As left span	4920	79.8	8.00	7.99	1.002
				Average Correction Factor	

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	1.001964	
THC Cal Offset:	0.059767	
CH4 Cal Slope:	1.003725	
CH4 Cal Offset:	0.026176	
NMHC Cal Slope:	1.000863	
NMHC Cal Offset:	0.033391	

Calibration Performed By: Max Farrell

NMHC Calibration Plot Date: April 17, 2025 Location: Patricia McInnes



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Patricia McInnes
Station number:	AMS 06
Calibration Date:	April 3, 2025
Last Cal Date:	March 4, 2025
Start time (MST):	8:39
End time (MST):	14:30
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	T30YCWN	Cal Gas Expiry Date:	April 11, 2025
NOX Cal Gas Conc:	47.94 ppm	NO Cal Gas Conc:	46.39 ppm
Removed Cylinder #:	N/A	Removed Gas Exp Date:	N/A
Removed Gas NOX Conc:	47.94 ppm	Removed Gas NO Conc:	46.39 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	3566
ZAG make/model:	Teledyne API T701	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-1.4	-0.5	-0.9	----	----
AF High point	4914	86.2	826.5	799.7	26.7	831.4	803.6	27.8	0.9924	0.9946
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 828.6 ppb	NO = 801.9 ppb
Baseline Corr 1st pt	NO_X = 832.8 ppb	NO = 804.1 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 = 0.5%

*Percent Change NO = 0.3%

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1172750022

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:	0.841	0.841	NO bkgnd or offset:	3.8	3.5
NOX coeff or slope:	0.990	0.990	NOX bkgnd or offset:	4.7	3.8
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	155.1	155.1

Calibration Statistics

	Start	Finish
NO_X Cal Slope:	1.000894	1.002857
NO_X Cal Offset:	1.375479	1.615390
NO Cal Slope:	1.001960	1.004732
NO Cal Offset:	0.582447	0.662208
NO_2 Cal Slope:	1.000905	1.000499
NO_2 Cal Offset:	-0.618864	-0.488997

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal 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	26.7	829.4	803.7	25.7	0.9964	0.9951
Mid point	4957	43.1	413.2	399.9	13.4	417.4	403.3	14.1	0.9900	0.9915
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	0.1	0.1	0.0	----	----
As left span	4914	86.2	826.5	402.8	423.7	827.8	402.8	425.0	0.9984	1.0000
							Average Correction Factor		0.9898	0.9926

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	-0.1	----	----
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. Adjusted the zero only.

Calibration Performed By: Max Farrell

Wood Buffalo Environmental Association

NO_X Calibration Summary

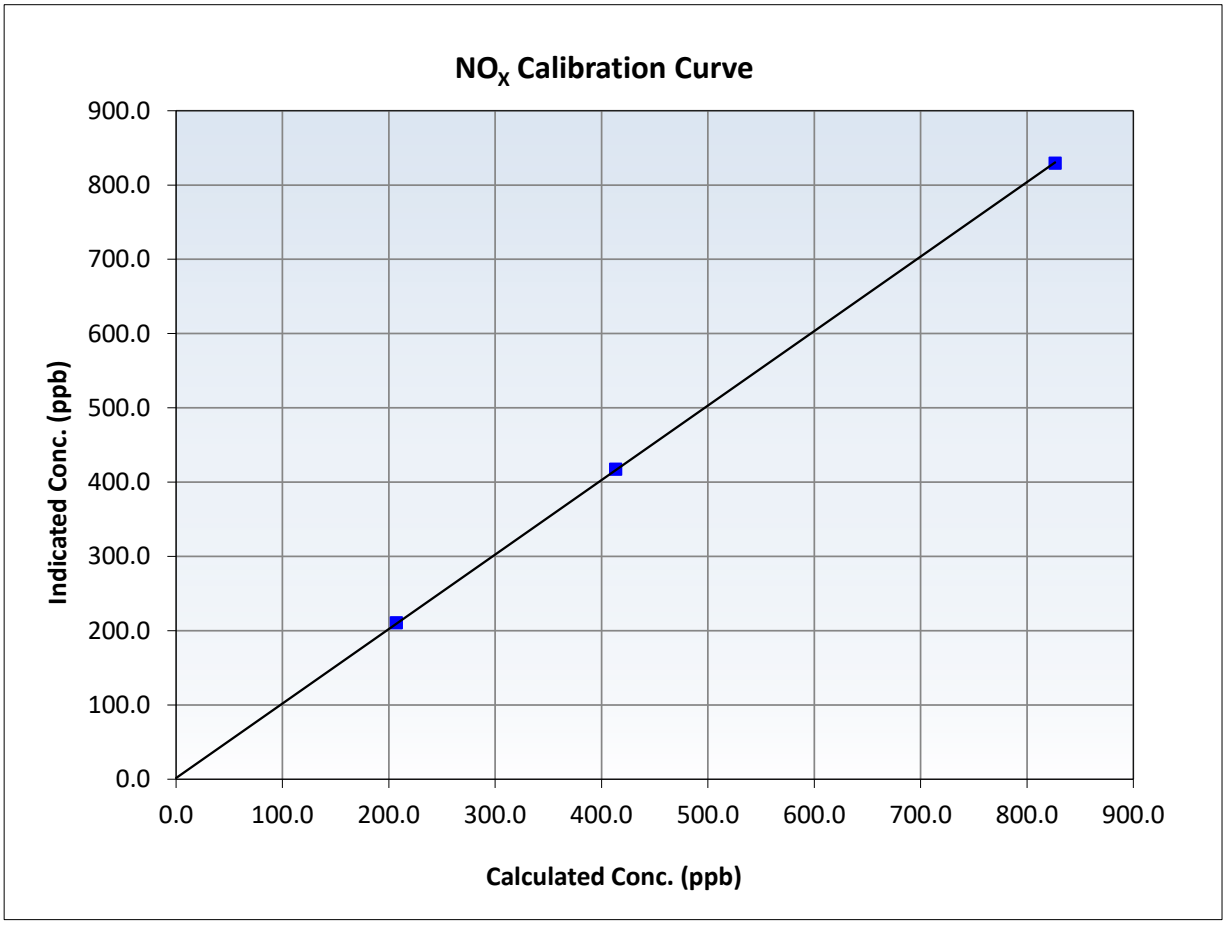
Station Information

Calibration Date:	April 3, 2025	Previous Calibration:	March 4, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:39	End Time (MST):	14:30
Analyzer make:	Thermo 42i	Analyzer serial #:	1172750022

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
826.5	829.4	0.9964
413.2	417.4	0.9900
207.1	210.7	0.9830

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999979	*≥0.995*
Slope	1.002857	*0.90 - 1.10*
Intercept	1.615390	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

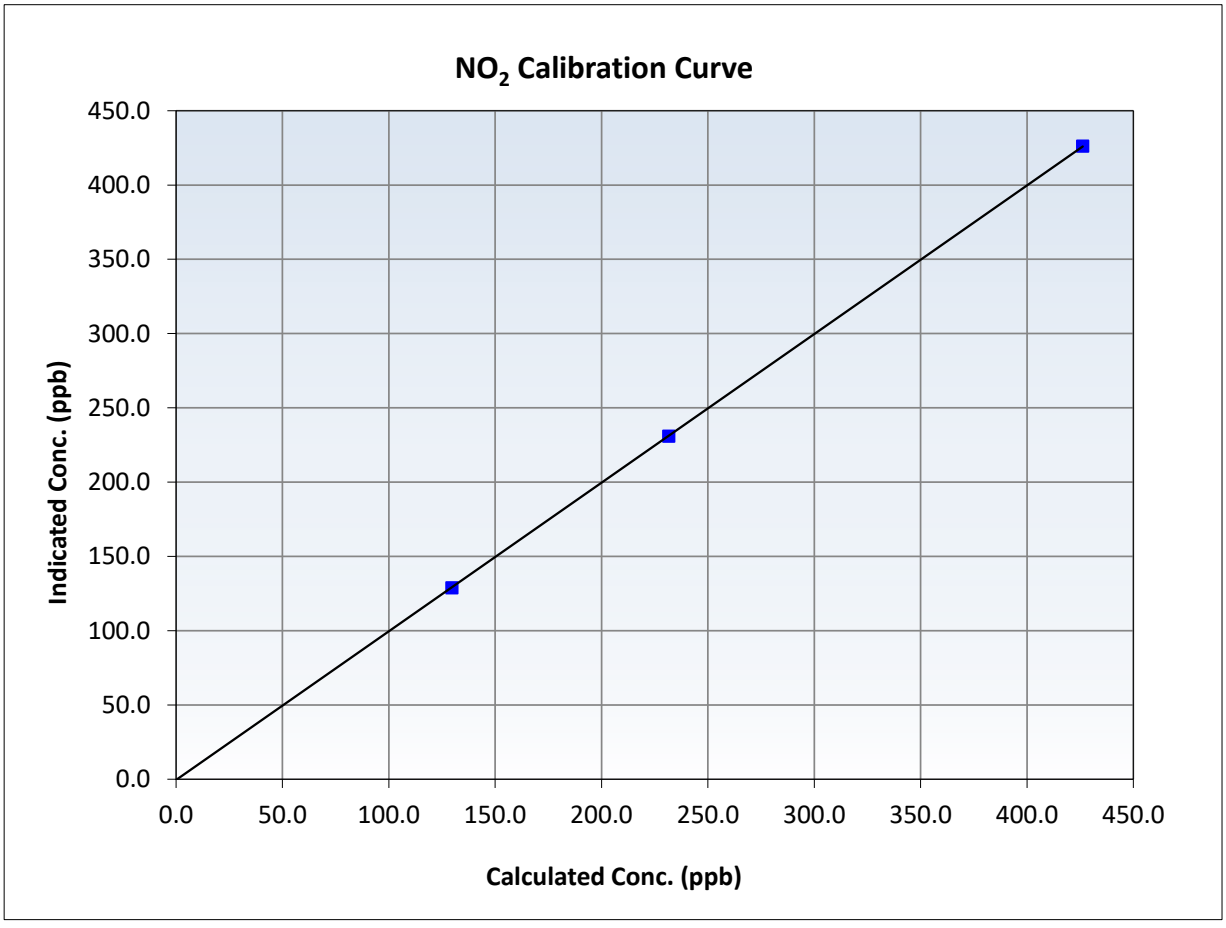
Station Information

Calibration Date:	April 3, 2025	Previous Calibration:	March 4, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:39	End Time (MST):	14:30
Analyzer make:	Thermo 42i	Analyzer serial #:	1172750022

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
426.2	426.2	1.0000
231.6	231.0	1.0027
129.7	128.9	1.0064

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999996	*≥0.995*
Slope	1.000499	*0.90 - 1.10*
Intercept	-0.488997	*+/-20*



Wood Buffalo Environmental Association

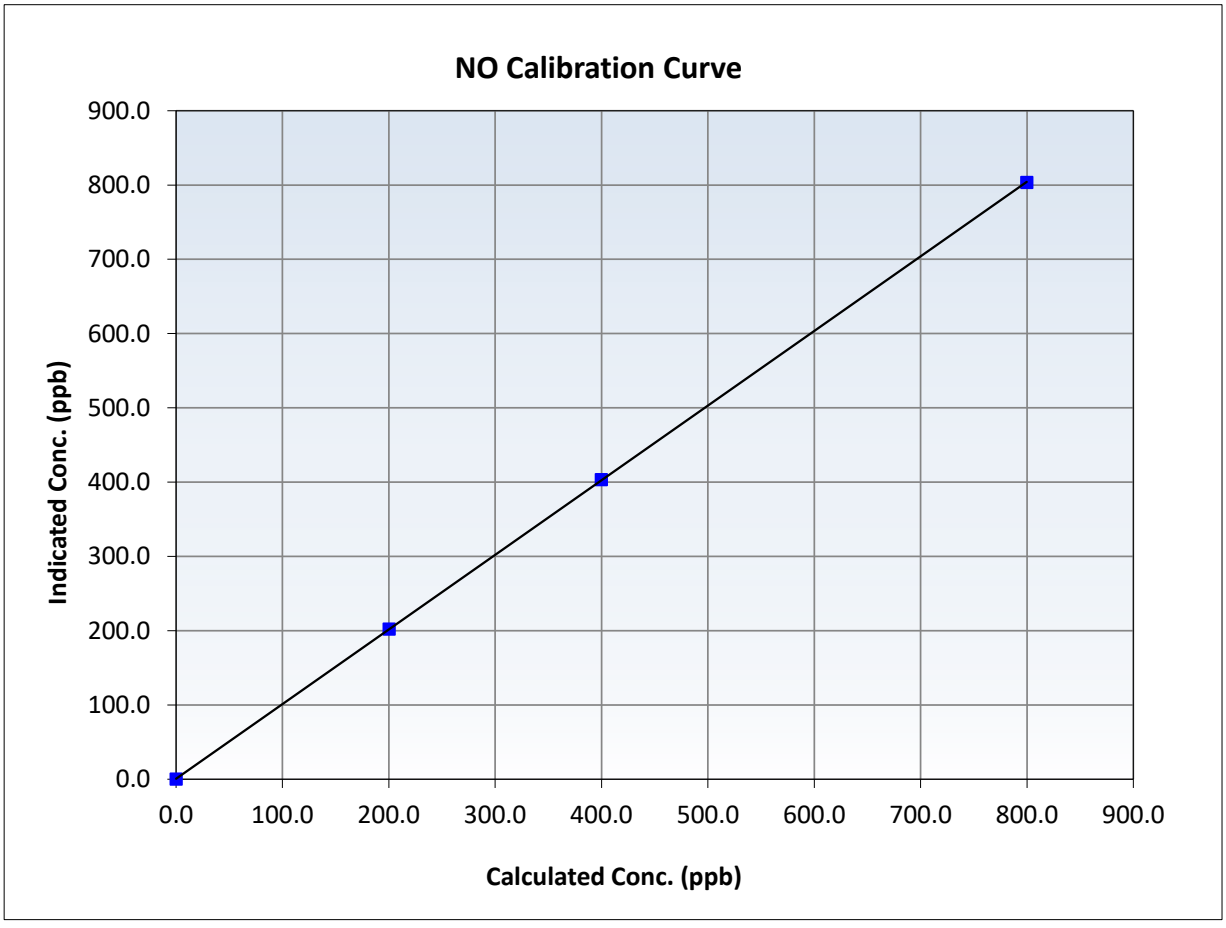
NO Calibration Summary

Station Information

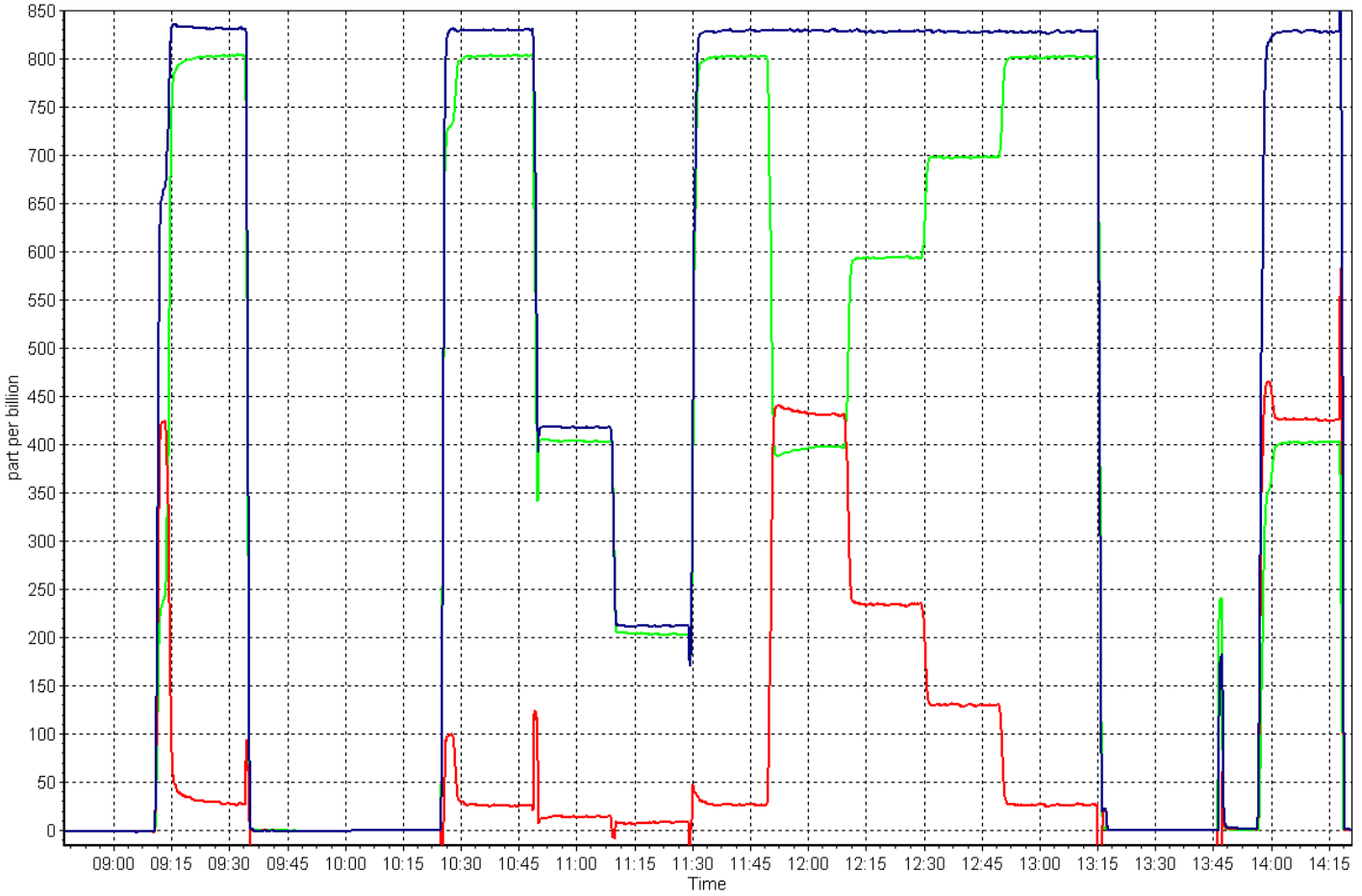
Calibration Date:	April 3, 2025	Previous Calibration:	March 4, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:39	End Time (MST):	14:30
Analyzer make:	Thermo 42i	Analyzer serial #:	1172750022

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.1	----	Correlation Coefficient	0.999996	≥0.995
799.7	803.7	0.9951	Slope	1.004732	0.90 - 1.10
399.9	403.3	0.9915	Intercept	0.662208	+/-20
200.4	202.2	0.9912			



NO_X Calibration Plot Date: April 3, 2025 Location: Patricia McInnes



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Patricia McInnes	Station number:	AMS 06
Calibration Date:	April 4, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	8:14	End time (MST):	11:30
Reason:	Routine		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	API T700	Serial Number:	3566
ZAG Make/Model:	API T701	Serial Number:	4602

Analyzer Information

Analyzer make:	Thermo 49i		Analyzer serial #:	1300156234	
Analyzer Range	0 - 500 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.001200	1.000714	Backgd or Offset:	-0.5	-0.5
Calibration intercept:	0.340000	0.200000	Coeff or Slope:	1.020	1.020

O_3 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) *Limit = 0.90-1.10*
As found zero	5000	800.0	0.0	0.0	----
As found High point	5000	1031.0	400.0	400.9	0.998
As found Mid point					
As found Low point					
Baseline Corr As found:	400.9	Previous response	400.8	*% 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	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	800.0	0.0	0.3	----
High point	5000	1031.0	400.0	400.5	0.999
Mid point	5000	821.4	200.0	200.4	0.998
Low point	5000	699.5	100.0	100.1	0.999
As left zero	5000	800.0	0.0	0.4	----
As left span	5000	1031.0	400.0	402.2	0.995
				Average Correction Factor	0.999

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

Calibration Performed By: Max Farrell

Wood Buffalo Environmental Association

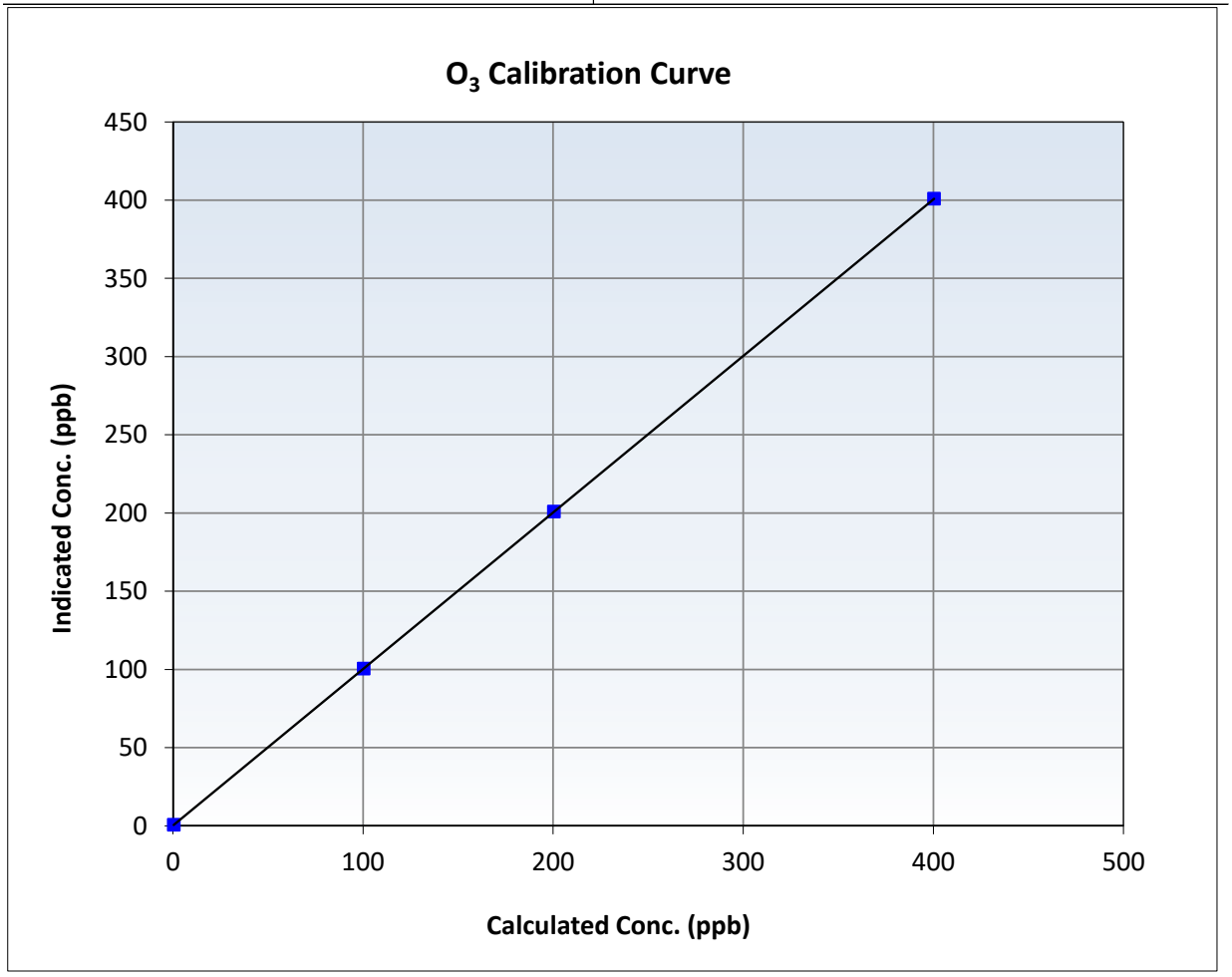
O_3 Calibration Summary

Station Information

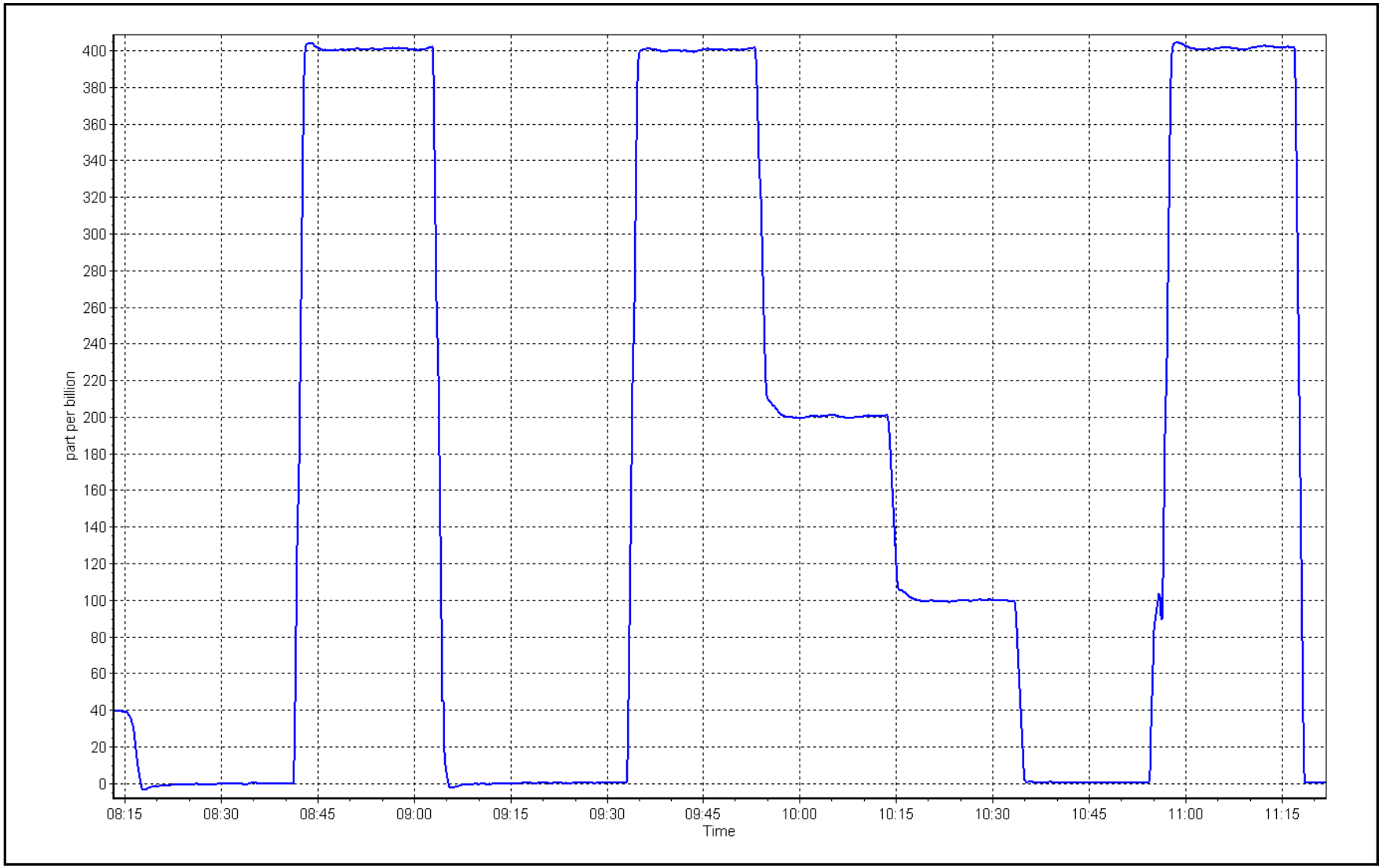
Calibration Date:	April 4, 2025	Previous Calibration:	March 17, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:14	End Time (MST):	11:30
Analyzer make:	Thermo 49i	Analyzer serial #:	1300156234

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	0.3	----	Correlation Coefficient	1.000000	*≥0.995*
400.0	400.5	0.9988	Slope	1.000714	*0.90 - 1.10*
200.0	200.4	0.9980			
100.0	100.1	0.9990	Intercept	0.200000	*+/- 5*



O_3 Calibration Plot Date: April 4, 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:	April 4, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	11:56	End time (MST):	13:37
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)	2.9	3.1	2.9	☐	+/- 2 °C
P (mmHg)	732.50	734.80	732.50	☐	+/- 10 mmHg
Flow (LPM)	4.99	5.11	4.99	☐	+/- 0.25 LPM
PW% (pump)	86	-----	38	☑	>80%
Zero Verification	PM w/o HEPA:	5.7	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: 07-16-2026 — Lot No.: 100128-050-050

Parameter	As found	Post maintenance	As left	Adjusted	*(Limits)*
PMT Peak Test	10.8	10.8	10.8	☐	+/- 0.5

Date Optical Chamber Cleaned: April 4, 2025

Date Disposable Filter Changed: April 4, 2025

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

Annual Maintenance

Date Sample Tube Cleaned: April 4, 2025

Date RH/T Sensor Cleaned: April 4, 2025

Notes: Replaced the pump. Completed both quarterly and annual maintenance. No issues.

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:	April 7, 2025	Last Cal Date:	March 10, 2025
Start time (MST):	8:30	End time (MST):	12:54
NH3 Cal Date:	April 7, 2025	Last Cal Date:	March 11, 2025
Start time (MST):	12:56	End time (MST):	15:22
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:	75.0	ppm	Removed Cylinder #:	
NH3 gas Diff:			Removed cyl Expiry:	
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

	Start	*Finish*		*Start*	*Finish*
NO coefficient:	1.002	1.027	Nt coefficient:	0.995	1.019
NOX coefficient:	0.993	1.017	NO bkgrnd:	0.2	0.2
NO2 coefficient:	1.000	1.000	NOX bkgrnd:	-0.1	-0.1
NH3 coefficient:	0.922	0.922	Nt bkgrnd:	1.7	1.7

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.996053	0.998888
NO_X Cal Offset:	1.276664	1.376032
NO Cal Slope:	0.991297	0.998531
NO Cal Offset:	0.864516	0.982601
NO_2 Cal Slope:	1.003410	0.999928
NO_2 Cal Offset:	-0.382664	0.923159
NH3 Cal Slope:	1.005770	1.004786
NH3 Cal Offset:	4.646188	9.258156
Nt Cal Slope:	1.009569	1.008514
Nt Cal Offset:	4.888735	9.809090

Wood Buffalo Environmental Association

NO_X - NO - NO_2 Calibration Report

NOx / NO / Nt As Found Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated Nt concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated Nt concentration (ppb) (Ic)	Baseline corr NOx Correction factor (Cc/Ic) *Limit = 0.9 - 1.0*	Baseline corr NO Correction factor (Cc/Ic) *Limit = 0.9 - 1.0*
As found zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.7	----	----
As found span	4914	86.2	826.5	799.7	826.5	803.5	776.6	808.9	1.0286	1.0298
AF GPT span										
new NO cyl rp										

Baseline Corr As Fd	Nt =	809.6	ppb	NO_X =	803.6	ppb	NO =	776.9 ppb
Previous Response	Nt =	839.25	ppb	NO_X =	824.5	ppb	NO =	793.6 ppb

**NO_X Δ (NO to GPT response) =

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

*Percent Change $Nt_{(NO)}$ = -3.7%

*Percent Change NO_X = -2.6%

*Percent Change NO = -2.2%

* = > +/-5% change initiates investigation

NOx / NO / Nt Calibration Data

Set Point	Dilution flow rate (sccm)	Source gas flow rate (sccm)	Calculated NOx concentration (ppb) (Cc)	Calculated NO concentration (ppb) (Cc)	Calculated Nt concentration (ppb) (Cc)	Indicated NOx concentration (ppb) (Ic)	Indicated NO concentration (ppb) (Ic)	Indicated Nt concentration (ppb) (Ic)	NOx Correction factor (Cc/Ic) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Calibration zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	0.5	----	----
High point	4914	86.2	826.5	799.7	826.5	826.5	799.5	826.4	0.9999	1.0003
Mid point	4957	43.1	413.2	399.9	413.2	414.1	399.4	414.8	0.9979	1.0012
Low point	4978	21.6	207.1	200.4	207.1	210.0	203.0	210.2	0.9863	0.9873
								Average Correction Factor	0.9947	0.9963

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
As Found zero	----	----	0.0	0.2	----	----
Calibration zero	----	----	0.0	0.1	----	----
High GPT point (400 ppb O3)	797.8	397.7	426.8	427.5	0.9984	100.2%
Mid GPT point (200 ppb O3)	797.8	603.2	221.3	221.8	0.9978	100.2%
Low GPT point (100 ppb O3)	797.8	697.6	126.9	129.3	0.9816	101.9%
				Average Correction Factor	0.9926	100.8%

Wood Buffalo Environmental Association
NH_3 - 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)) *Limit = 0.9 - 1.1*	Baseline corr NH3 Correction factor (Cc/(Ic-zero)) *Limit = 0.9 - 1.1*
As found zero	5000	0.0	0.0	0.0	0.0	-0.7	-0.1	-0.6	----	----
AF High point	3416	84.0	1799.0	0.0	1799.0	1827.4	7.8	1819.6	0.984	0.988
AF Mid point										
AF Low point										
new NH3 cyl rp										

Baseline Corr As Fd Nt = 1828.1 ppb NH3 = 1820.2 ppb *Percent Change $Nt_{(NH3)}$ = 0.4%

Previous Response Nt = 1821.1 ppb NH3 = 1814.1 ppb * = > +/-5% change initiates investigation *Percent Change NH3 = 0.3%

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) *Limit = 0.95-1.05*	NH3 Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Calibration zero	5000	0.0	0.0	0.0	0.0	0.5	0.1	0.4	----	----
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	1023.5	4.5	1019.0	0.977	0.982
Low point	3477	23.3	499.0	0.0	499.0	522.9	2.8	520.0	0.954	0.960
								Average Correction Factor	0.9736	0.9781

NH3 Previous Converter Efficiency = 92.2 %
NH3 Current Converter Efficiency = 92.2 %

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

Calibration Performed By: Max Farrell

Wood Buffalo Environmental Association

Nt Calibration Summary

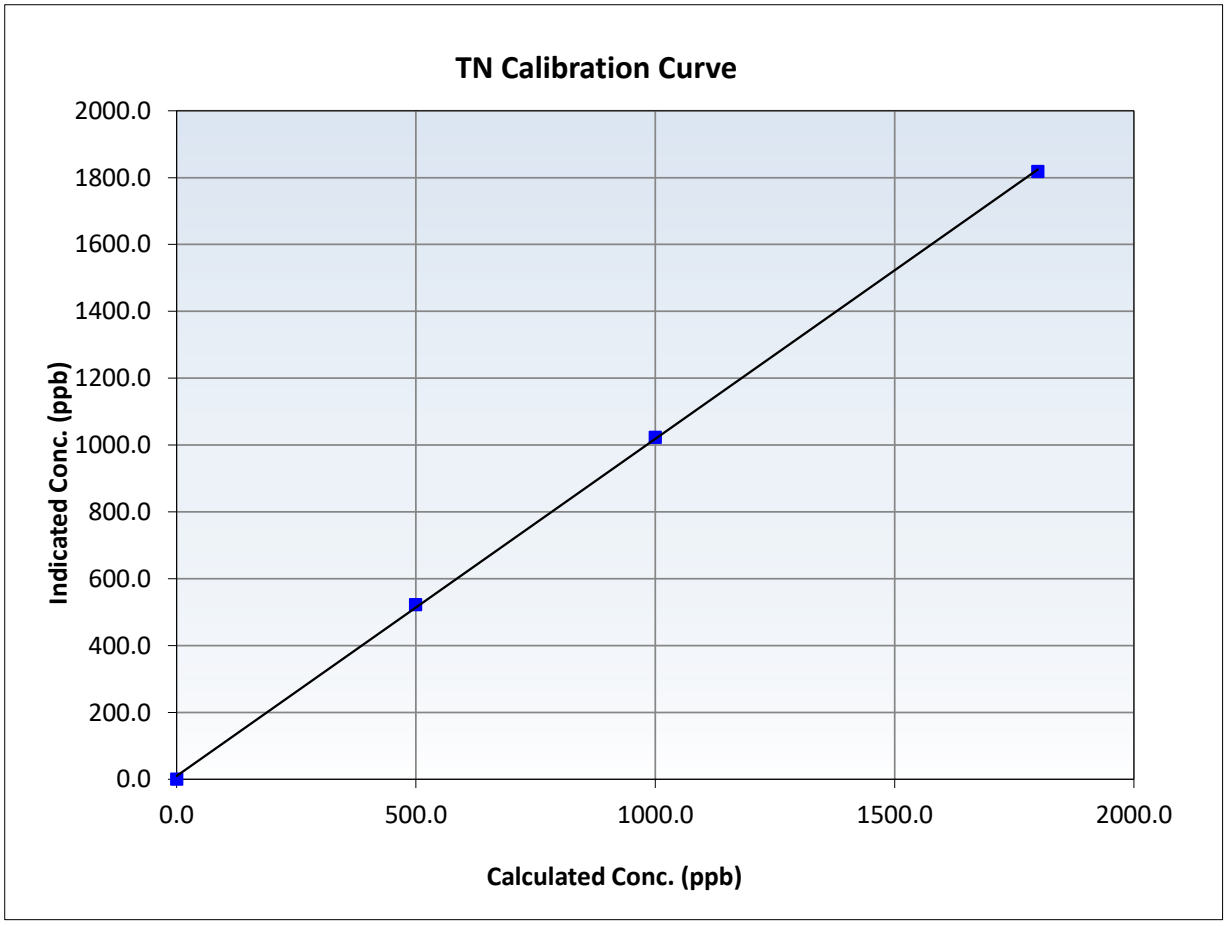
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:30	End Time (MST):	12:54
Analyzer make:	API T201	Analyzer serial #:	215

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.5	----
1799.0	1818.7	0.9892
1000.3	1023.5	0.9773
499.0	522.9	0.9542

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999868	*≥0.995*
Slope	1.008514	*0.90 - 1.10*
Intercept	9.809090	*+/-20*



Wood Buffalo Environmental Association

NH_3 Calibration Summary

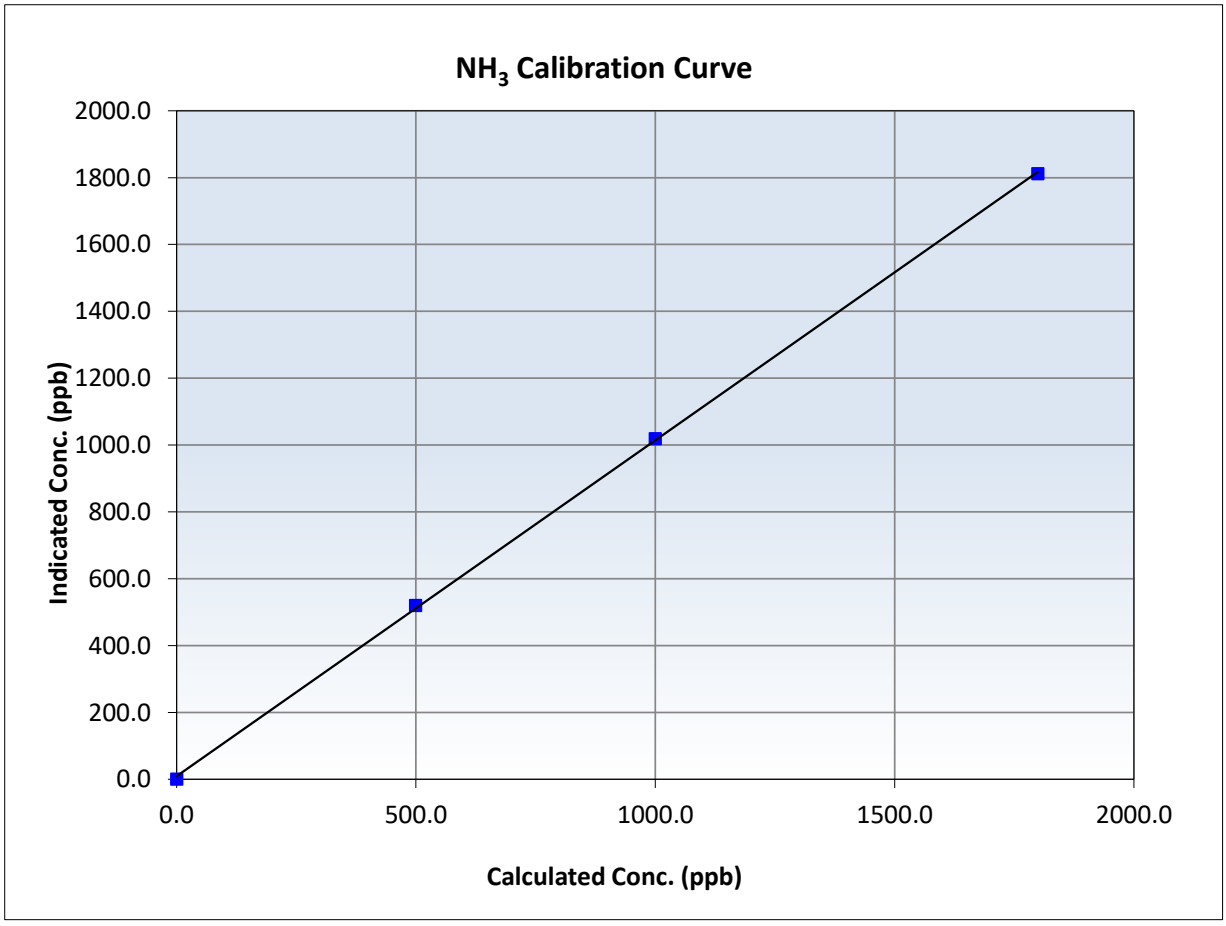
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:30	End Time (MST):	12:54
Analyzer make:	API T201	Analyzer serial #:	215

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.4	----
1799.0	1811.7	0.9930
1000.3	1019.0	0.9816
499.0	520.0	0.9596

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999879	*≥0.995*
Slope	1.004786	*0.90 - 1.10*
Intercept	9.258156	*+/-20*



Wood Buffalo Environmental Association

NO_X Calibration Summary

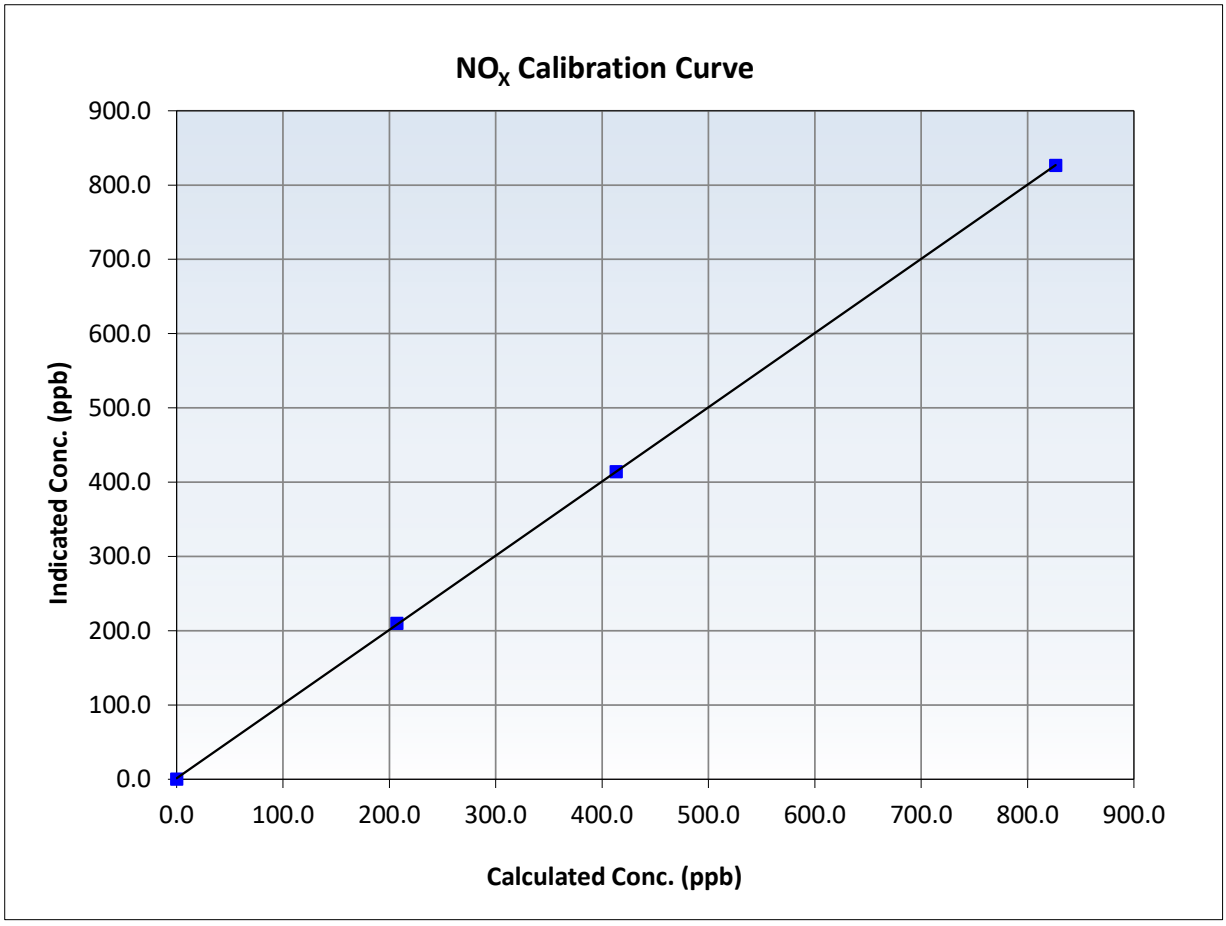
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:30	End Time (MST):	12:54
Analyzer make:	API T201	Analyzer serial #:	215

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
826.5	826.5	0.9999
413.2	414.1	0.9979
207.1	210.0	0.9863

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999987	*≥0.995*
Slope	0.998888	*0.90 - 1.10*
Intercept	1.376032	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

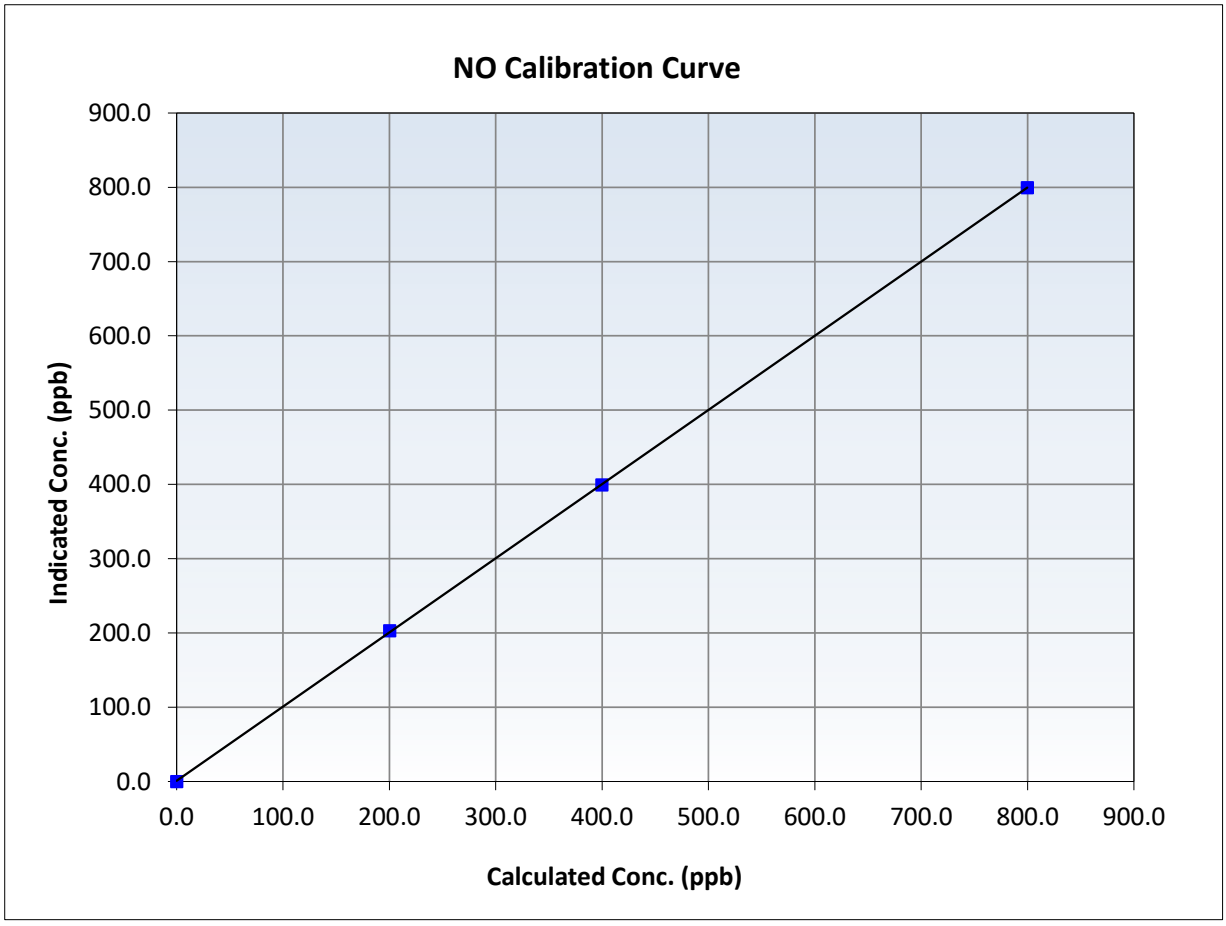
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:30	End Time (MST):	12:54
Analyzer make:	API T201	Analyzer serial #:	215

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
799.7	799.5	1.0003
399.9	399.4	1.0012
200.4	203.0	0.9873

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999985	*≥0.995*
Slope	0.998531	*0.90 - 1.10*
Intercept	0.982601	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

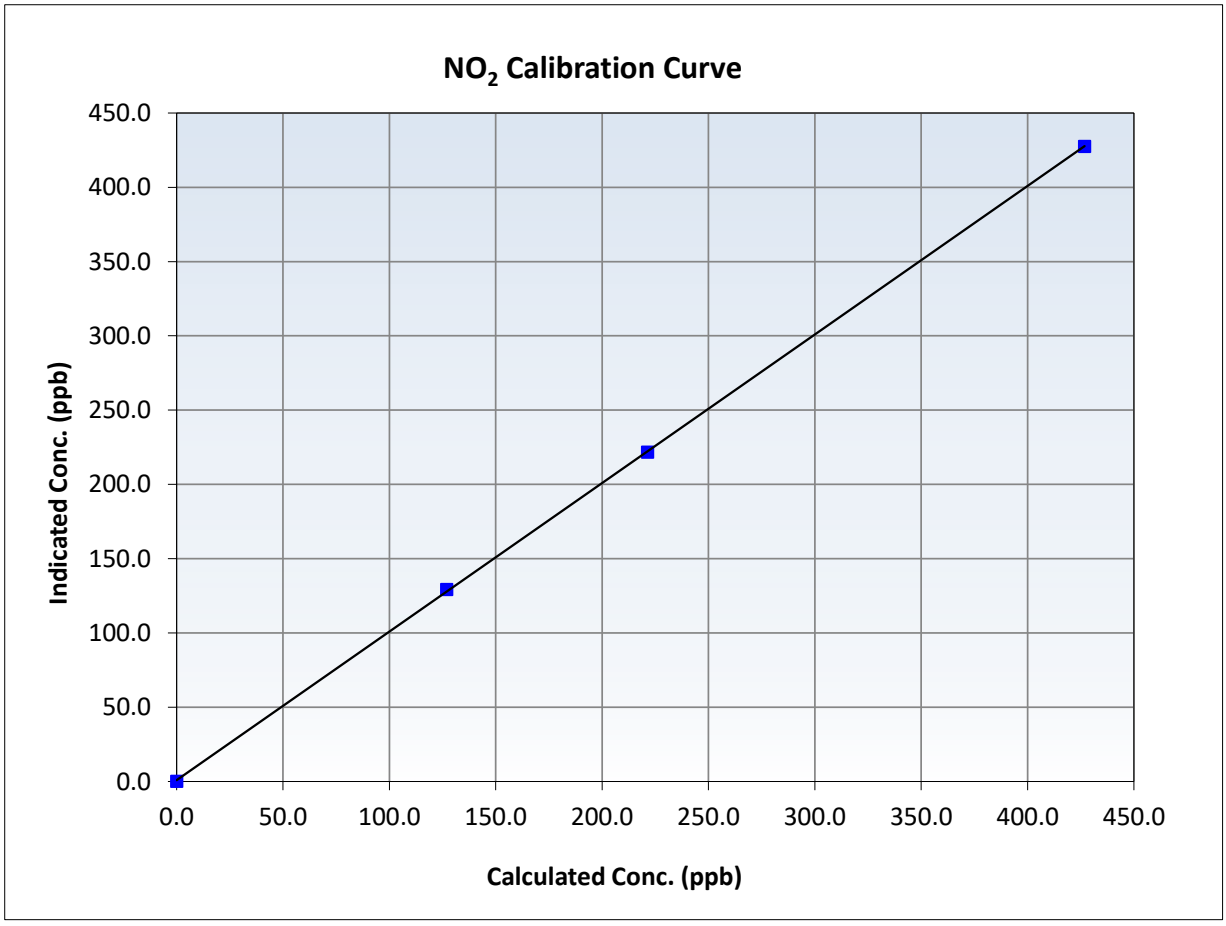
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 10, 2025
Station Name:	Patricia McInnes	Station Number:	AMS 06
Start Time (MST):	8:30	End Time (MST):	12:54
Analyzer make:	API T201	Analyzer serial #:	215

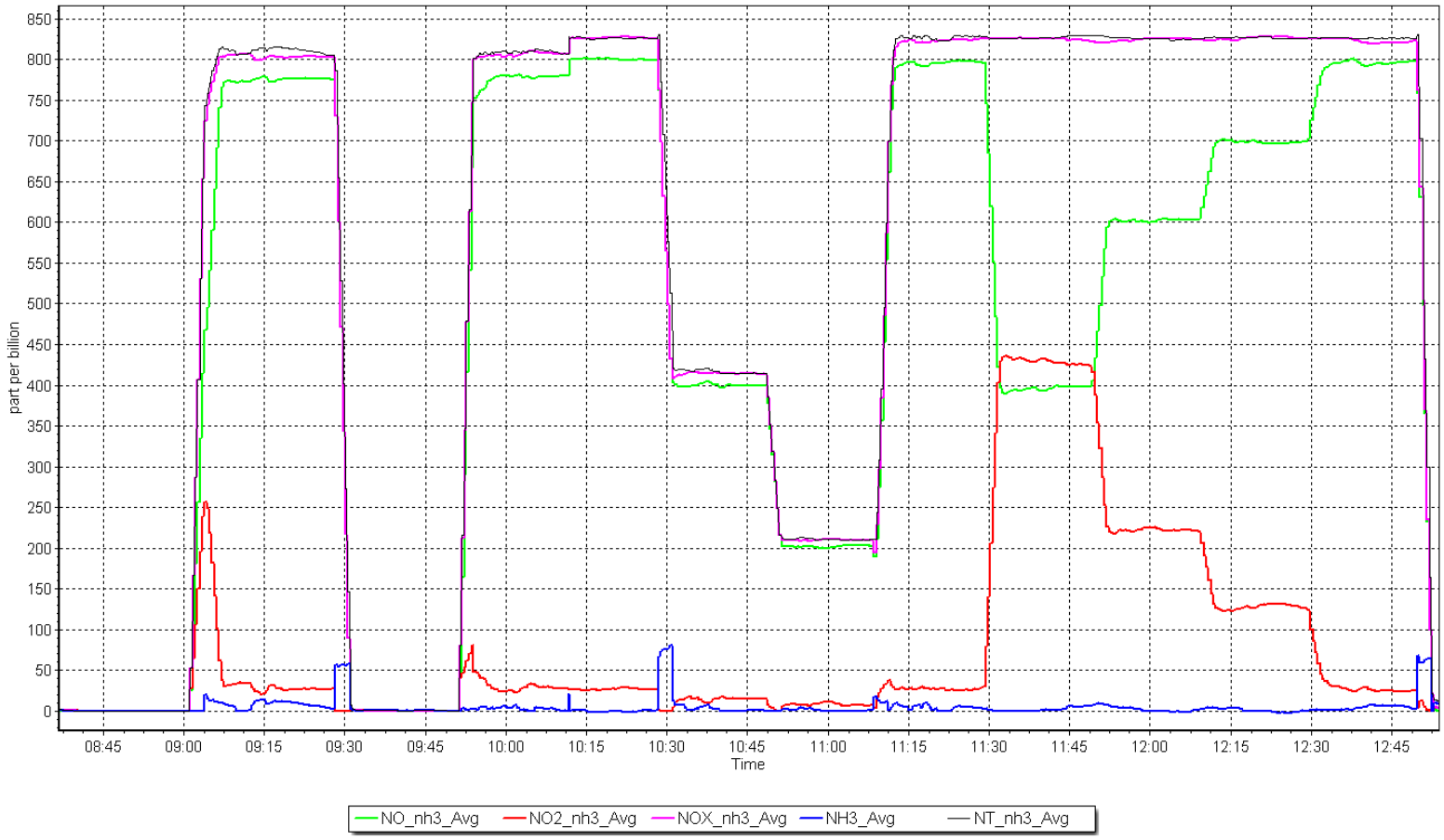
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
426.8	427.5	0.9984
221.3	221.8	0.9978
126.9	129.3	0.9816

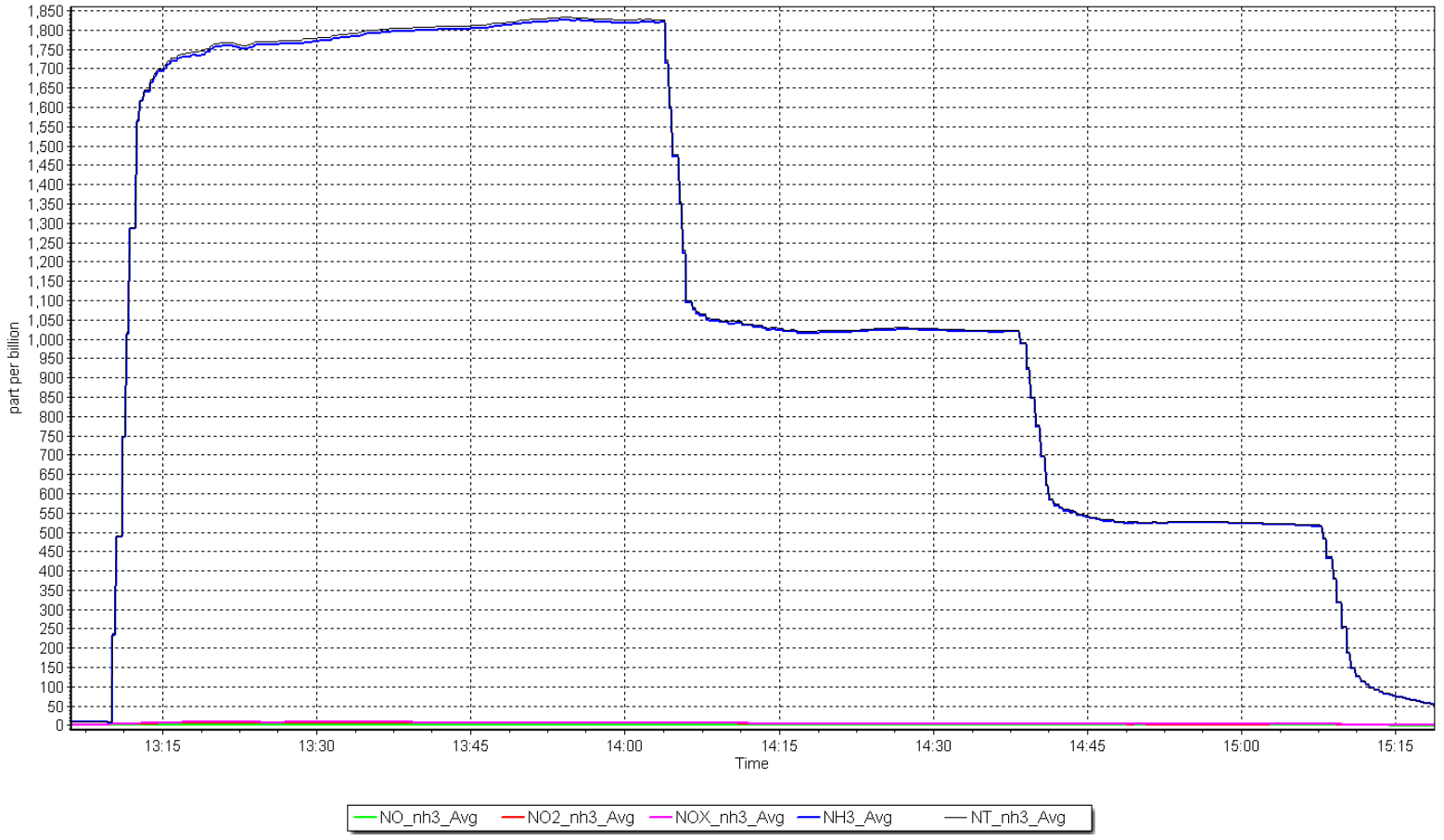
Statistical Evaluation		*Limits*
Correlation Coefficient	0.999969	*≥0.995*
Slope	0.999928	*0.90 - 1.10*
Intercept	0.923159	*+/-20*



NO_X Calibration Plot Date: April 7, 2025 Location: Patricia McInnes



NH_3 Calibration Plot Date: April 7, 2025 Location: Patricia McInnes



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS07
ATHABASCA VALLEY
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Athabasca Valley	Station number:	AMS07
Calibration Date:	April 8, 2025	Last Cal Date:	March 11, 2025
Start time (MST):	8:20	End time (MST):	11:30
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.997988	0.999033	Backgd or Offset:	2.70	2.73
Calibration intercept:	2.224556	2.384086	Coeff or Slope:	0.859	0.866

SO_2 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	4920	79.8	799.0	793.8	1.007
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	793.8	Previous response	799.6	*% 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	

SO_2 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	0.2	----
High point	4920	79.8	799.0	799.1	1.000
Mid point	4960	39.9	399.5	403.8	0.989
Low point	4980	20.0	200.2	203.8	0.983
As left zero	5000	0.0	0.0	0.1	----
As left span	4920	79.8	799.0	799.2	1.000
				Average Correction Factor:	0.991

Notes: Inlet filter changed after as founds. Span adjusted.

Calibration Performed By: Devin Russell

Wood Buffalo Environmental Association

SO_2 Calibration Summary

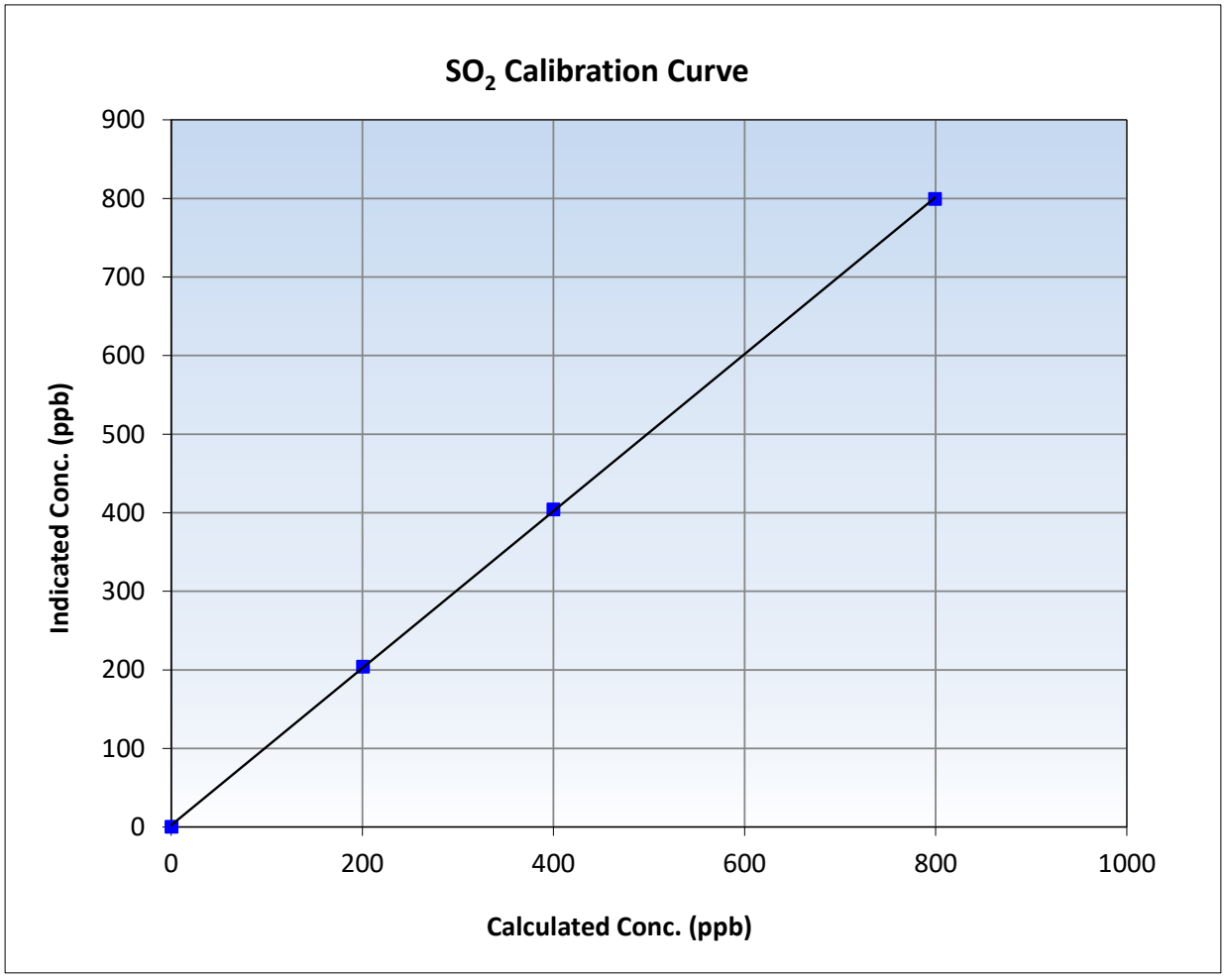
Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 11, 2025
Station Name:	Athabasca Valley	Station Number:	AMS07
Start Time (MST):	8:20	End Time (MST):	11:30
Analyzer make:	Thermo 43i-LTE	Analyzer serial #:	1507864683

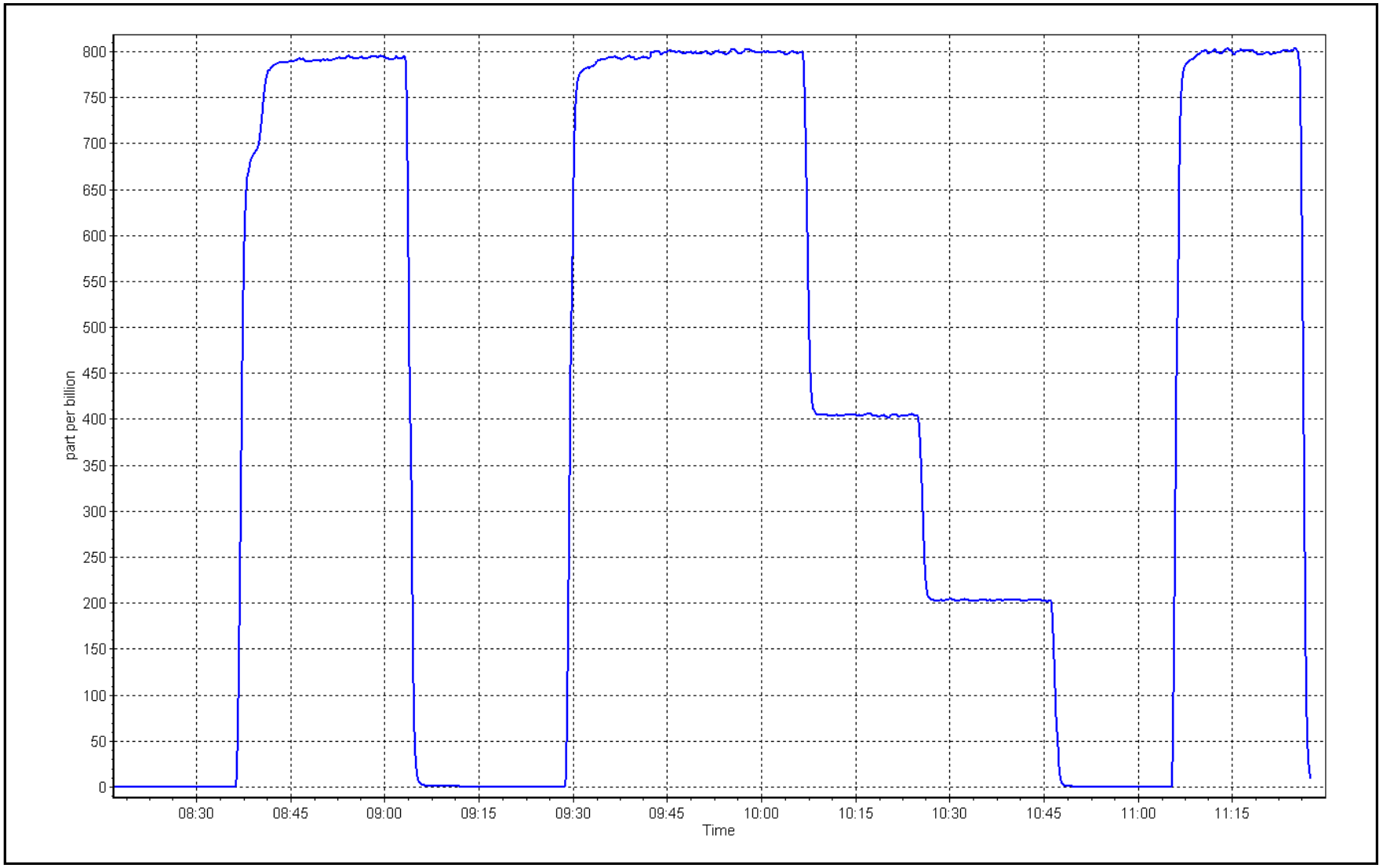
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
799.0	799.1	0.9999
399.5	403.8	0.9893
200.2	203.8	0.9825

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999959	*≥0.995*
Slope	0.999033	*0.90 - 1.10*
Intercept	2.384086	*+/-30*



SO2 Calibration Plot Date: April 8, 2025 Location: Athabasca Valley



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Athabasca Valley	Station number:	AMS07
Calibration Date:	April 4, 2025	Last Cal Date:	March 5, 2025
Start time (MST):	9:52	End time (MST):	14:16
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	5.25	ppm	Cal Gas Exp Date:	January 3, 2026
Cal Gas Cylinder #:	CC504080			
Removed Cal Gas Conc:	5.25	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Make/Model:	API T700		Serial Number:	3805
ZAG Make/Model:	API T701H		Serial Number:	198

Analyzer Information

Analyzer make:	Thermo 43i LTE		Analyzer serial #:	1180540018
Converter make:	CDN-101		Converter serial #:	551
Analyzer Range	0 - 100 ppb		Converter Temp:	840 degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.011167	1.013763	Backgd or Offset:	2.7	2.7
Calibration intercept:	-0.282221	-0.122264	Coeff or Slope:	0.908	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4925	75.5	79.3	80.1	0.987
As found Mid point	4962	37.7	39.6	40.0	0.985
As found Low point	4981	18.9	19.8	19.7	0.997
New cylinder response					

Baseline Corr As found:	80.3	Prev response:	79.87	*% change:	0.5%
Baseline Corr 2nd AF pt:	40.2	AF Slope:	1.014050	AF Intercept:	-0.262148
Baseline Corr 3rd AF pt:	19.9	AF Correlation:	0.999987	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4925	75.5	79.3	80.3	0.988
Mid point	4962	37.7	39.6	40.0	0.990
Low point	4981	18.9	19.9	20.0	0.993
As left zero	5000	0.0	0.0	0.2	----
As left span	4925	75.5	79.3	79.9	0.993
SO2 Scrubber Check	4920	79.2	792.1	0.2	----
Date of last scrubber change:		21-Feb-25		Ave Corr Factor	0.990
Date of last converter efficiency test:		April 22, 2022			

Notes: No adjusments needed.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

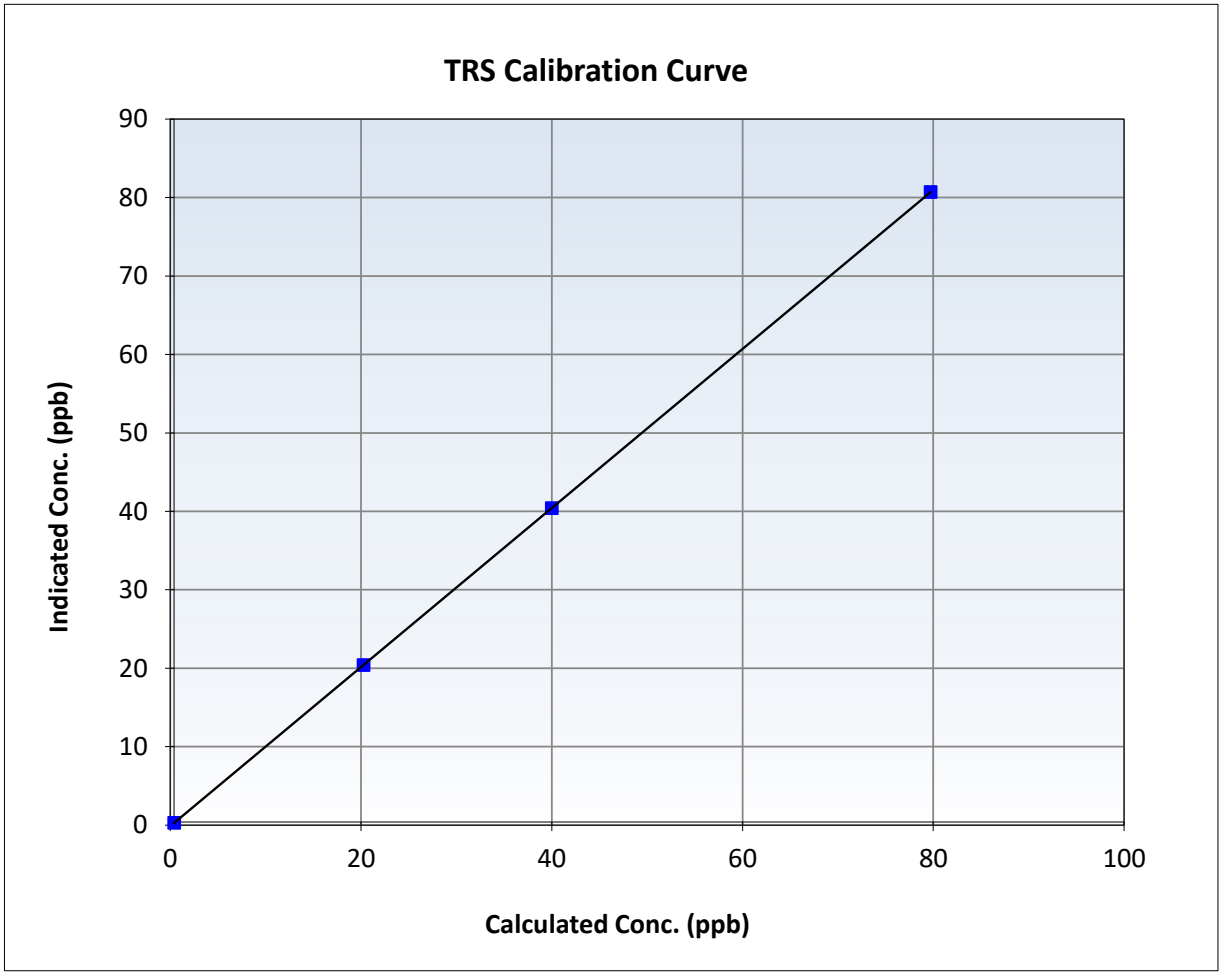
TRS Calibration Summary

Station Information

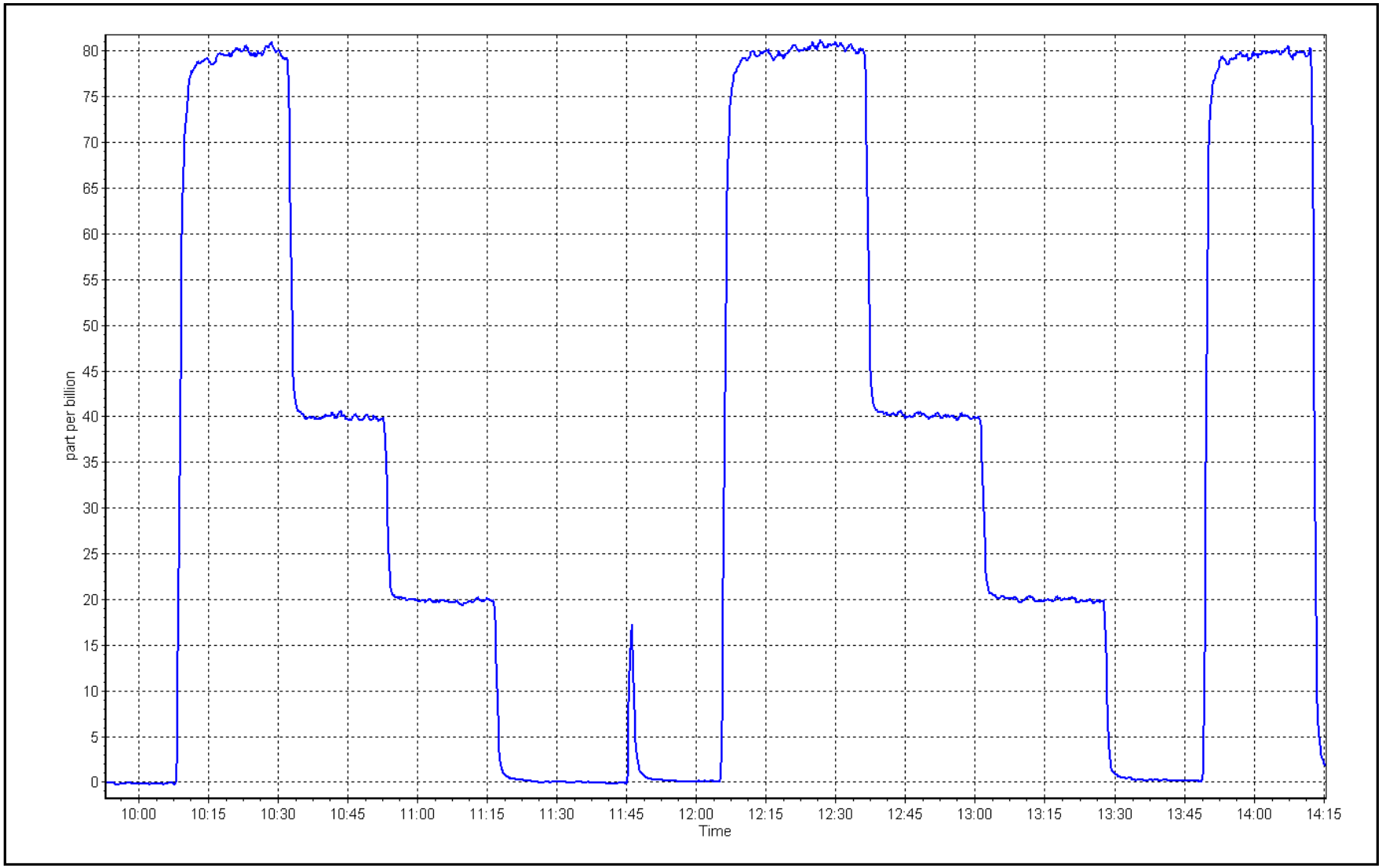
Calibration Date:	April 4, 2025	Previous Calibration:	March 5, 2025
Station Name:	Athabasca Valley	Station Number:	AMS07
Start Time (MST):	9:52	End Time (MST):	14:16
Analyzer make:	Thermo 43i LTE	Analyzer serial #:	1180540018

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	-0.1	----	Correlation Coefficient	0.999999	*≥0.995*
79.3	80.3	0.9877	Slope	1.013763	*0.90 - 1.10*
39.6	40.0	0.9902			
19.9	20.0	0.9928	Intercept	-0.122264	*+/-3*



TRS Calibration Plot Date: April 4, 2025 Location: Athabasca Valley



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Athabasca Valley	Station number:	AMS 07
Calibration Date:	April 8, 2025	Last Cal Date:	March 11, 2025
Start time (MST):	8:20	End time (MST):	11:30
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC320556	Cal Gas Expiry Date:	March 10, 2031
CH4 Cal Gas Conc.	496.0 ppm	CH4 Equiv Conc.	1059.8 ppm
C3H8 Cal Gas Conc.	205.0 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH4 Conc.	496.0 ppm	CH4 Equiv Conc.	1059.8 ppm
Removed C3H8 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	Analyzer serial #:	1331259520
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	2.99E-03	3.02E-03	NMHC SP Ratio:	5.57E-05	5.65E-05
CH4 Retention time:	14.4	14.4	NMHC Peak Area:	161721	159257
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	16.91	16.72	1.012
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	16.72	Prev response	16.92	*% 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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	16.91	16.93	0.999
Mid point	4960	39.9	8.46	8.51	0.994
Low point	4980	20.0	4.24	4.31	0.984
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	16.91	17.00	0.995
				Average Correction Factor	0.992

Notes: Inlet filter changed after as founds. Span adjusted.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	9.00	8.90	1.012
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.90	Prev response	9.00	*% 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	4920	79.8	9.00	9.03	0.997
Mid point	4960	39.9	4.50	4.55	0.988
Low point	4980	20.0	2.26	2.31	0.977
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	9.00	9.07	0.993
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	7.92	7.82	1.012
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.82	Prev response	7.91	*% change	-1.2%
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	7.92	7.90	1.002
Mid point	4960	39.9	3.96	3.95	1.001
Low point	4980	20.0	1.98	2.00	0.993
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	7.92	7.93	0.999
				Average Correction Factor	0.999

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	0.998416	1.000066
THC Cal Offset:	0.030657	0.033446
CH4 Cal Slope:	0.998146	0.997613
CH4 Cal Offset:	0.012263	0.006863
NMHC Cal Slope:	0.998641	1.002237
NMHC Cal Offset:	0.018194	0.025783

Calibration Performed By: Devin Russell

Wood Buffalo Environmental Association

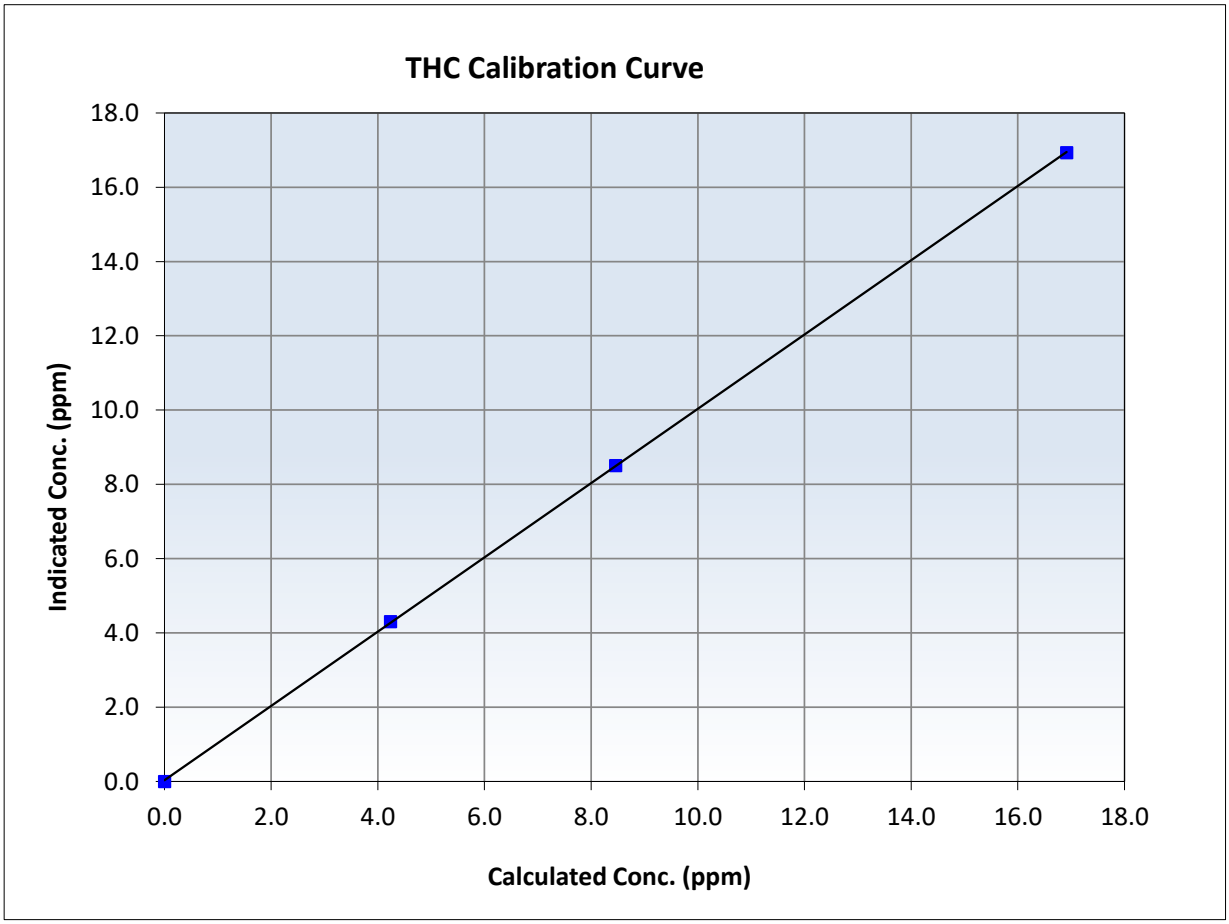
THC Calibration Summary

Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 11, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	8:20	End Time (MST):	11:30
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	0.999982	≥0.995
16.91	16.93	0.9990	Slope	1.000066	0.90 - 1.10
8.46	8.51	0.9940	Intercept	0.033446	+/-0.5
4.24	4.31	0.9844			



Wood Buffalo Environmental Association

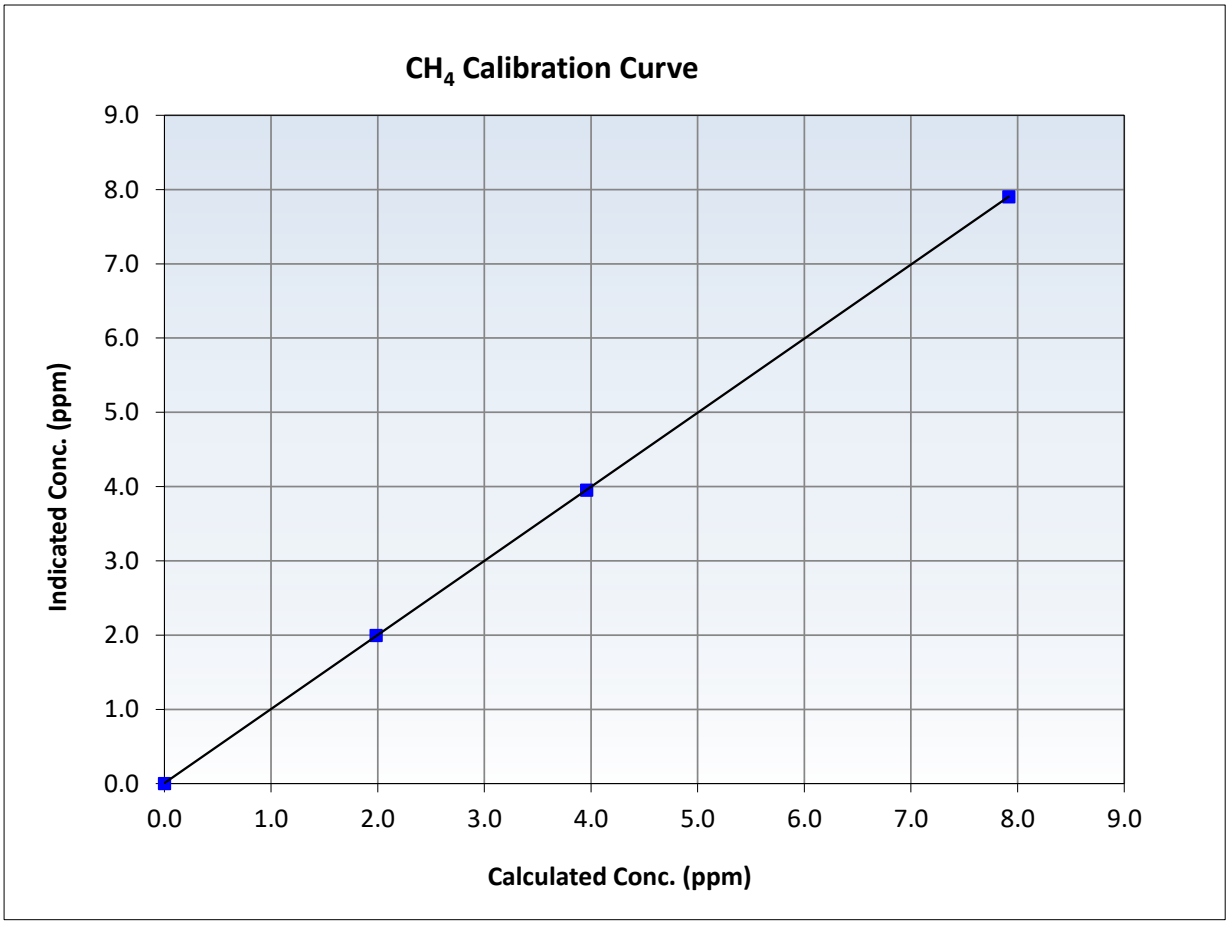
CH_4 Calibration Summary

Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 11, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	8:20	End Time (MST):	11:30
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	0.999995	*≥0.995*
7.92	7.90	1.0017	Slope	0.997613	*0.90 - 1.10*
3.96	3.95	1.0013			
1.98	2.00	0.9935	Intercept	0.006863	*+/-0.5*



Wood Buffalo Environmental Association

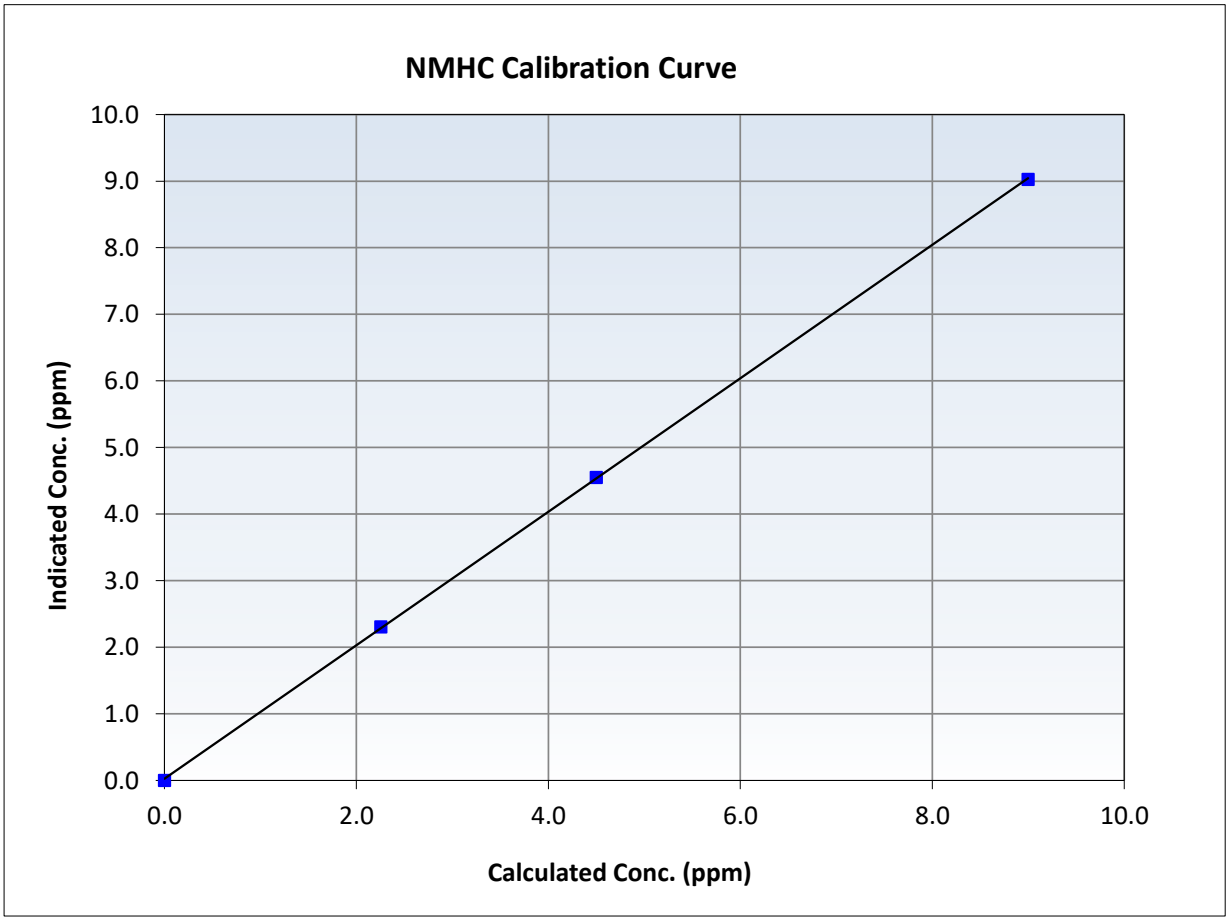
NMHC Calibration Summary

Station Information

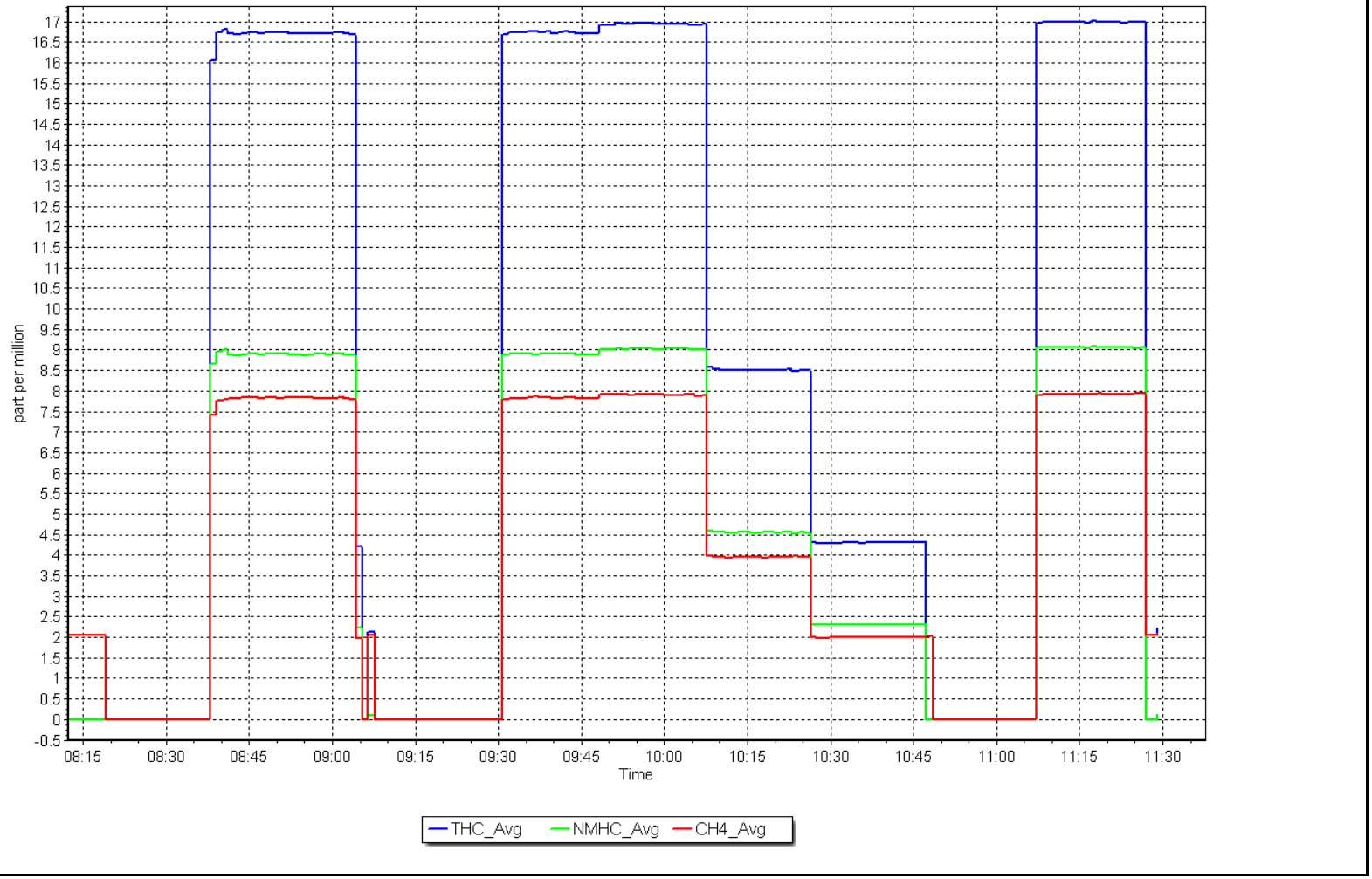
Calibration Date:	April 8, 2025	Previous Calibration:	March 11, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	8:20	End Time (MST):	11:30
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259520

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999962	≥0.995
9.00	9.03	0.9965	Slope	1.002237	0.90 - 1.10
4.50	4.55	0.9881			
2.26	2.31	0.9770	Intercept	0.025783	+/-0.5



NMHC Calibration Plot Date: April 8, 2025 Location: Athabasca Valley



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Athabasca Valley	Station number:	AMS 07
Calibration Date:	April 17, 2025	Last Cal Date:	April 8, 2025
Start time (MST):	9:30	End time (MST):	11:00
Reason:	Cylinder Change		

Calibration Standards

Gas Cert Reference:	CC320556	Cal Gas Expiry Date:	March 10, 2031
CH4 Cal Gas Conc.	496.0 ppm	CH4 Equiv Conc.	1059.8 ppm
C3H8 Cal Gas Conc.	205.0 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH4 Conc.	496.0 ppm	CH4 Equiv Conc.	1059.8 ppm
Removed C3H8 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	Analyzer serial #:	1331259520
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	3.02E-03	3.02E-03	NMHC SP Ratio:	5.65E-05	5.65E-05
CH4 Retention time:	14.4	14.4	NMHC Peak Area:	159257	159257
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	16.91	17.12	0.988
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	17.12	Prev response	16.95	*% 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)) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	16.91	16.71	1.012
				Average Correction Factor	

Notes: H2 cylinder change, minimal change in response.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	9.00	9.15	0.984
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.15	Prev response	9.04	*% change	1.1%
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) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	9.00	8.91	1.010
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	7.92	7.97	0.993
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.97	Prev response	7.90	*% 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) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	7.92	7.79	1.016
				Average Correction Factor	

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	1.000066	
THC Cal Offset:	0.033446	
CH4 Cal Slope:	0.997613	
CH4 Cal Offset:	0.006863	
NMHC Cal Slope:	1.002237	
NMHC Cal Offset:	0.025783	

Calibration Performed By: Ryan Power

NMHC Calibration Plot Date: April 17, 2025 Location: Athabasca Valley

Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Athabasca Valley
Station number:	AMS 07
Calibration Date:	April 1, 2025
Last Cal Date:	March 10, 2025
Start time (MST):	8:44
End time (MST):	14:44
Reason:	Routine

Calibration Standards

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

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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	----	----
AF High point	4933	66.8	803.0	800.3	2.7	804.4	801.3	3.2	0.9982	0.9987
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X =	802.9 ppb	NO =	801.2 ppb	* = > +/-5% change initiates investigation	*Percent Change	NO_X = 0.2%
Baseline Corr 1st pt	NO_X =	804.4 ppb	NO =	801.3 ppb	As Found Statistics	*Percent Change	NO = 0.0%
Baseline Corr 2nd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO_X r^2:	Nx Sl:	Nx Int:
Baseline Corr 3rd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO r^2:	NO Sl:	NO Int:
					As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1160120024

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:	1.155	1.161	NO bkgnd or offset:	8.3	8.3
NOX coeff or slope:	1.004	1.004	NOX bkgnd or offset:	8.6	8.6
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	229.8	226.7

Calibration Statistics

	Start	Finish
NO_X Cal Slope:	0.997767	1.001766
NO_X Cal Offset:	1.751943	2.271883
NO Cal Slope:	0.999427	1.004283
NO Cal Offset:	1.411957	1.711898
NO_2 Cal Slope:	1.002402	0.997518
NO_2 Cal Offset:	1.579936	0.612052

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.3	0.2	0.1	----	----
High point	4933	66.8	803.0	800.3	2.7	805.3	804.3	1.0	0.9971	0.9950
Mid point	4966	33.4	401.5	400.2	1.3	406.6	405.5	1.1	0.9875	0.9869
Low point	4983	16.7	200.7	200.1	0.7	204.6	203.4	1.2	0.9812	0.9837
As left zero	5000	0.0	0.0	0.0	0.0	0.0	0.1	0.0	----	----
As left span	4933	66.8	803.0	395.4	407.6	806.7	395.4	411.4	0.9954	1.0000
							Average Correction Factor		0.9886	0.9885

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.1	----	----
High GPT point	800.0	396.5	406.2	405.9	1.0007	99.9%
Mid GPT point	800.0	599.3	203.4	202.6	1.0038	99.6%
Low GPT point	800.0	701.3	101.4	103.0	0.9842	101.6%
				Average Correction Factor	0.9962	100.4%

Notes: Span adjusted.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

NO_X Calibration Summary

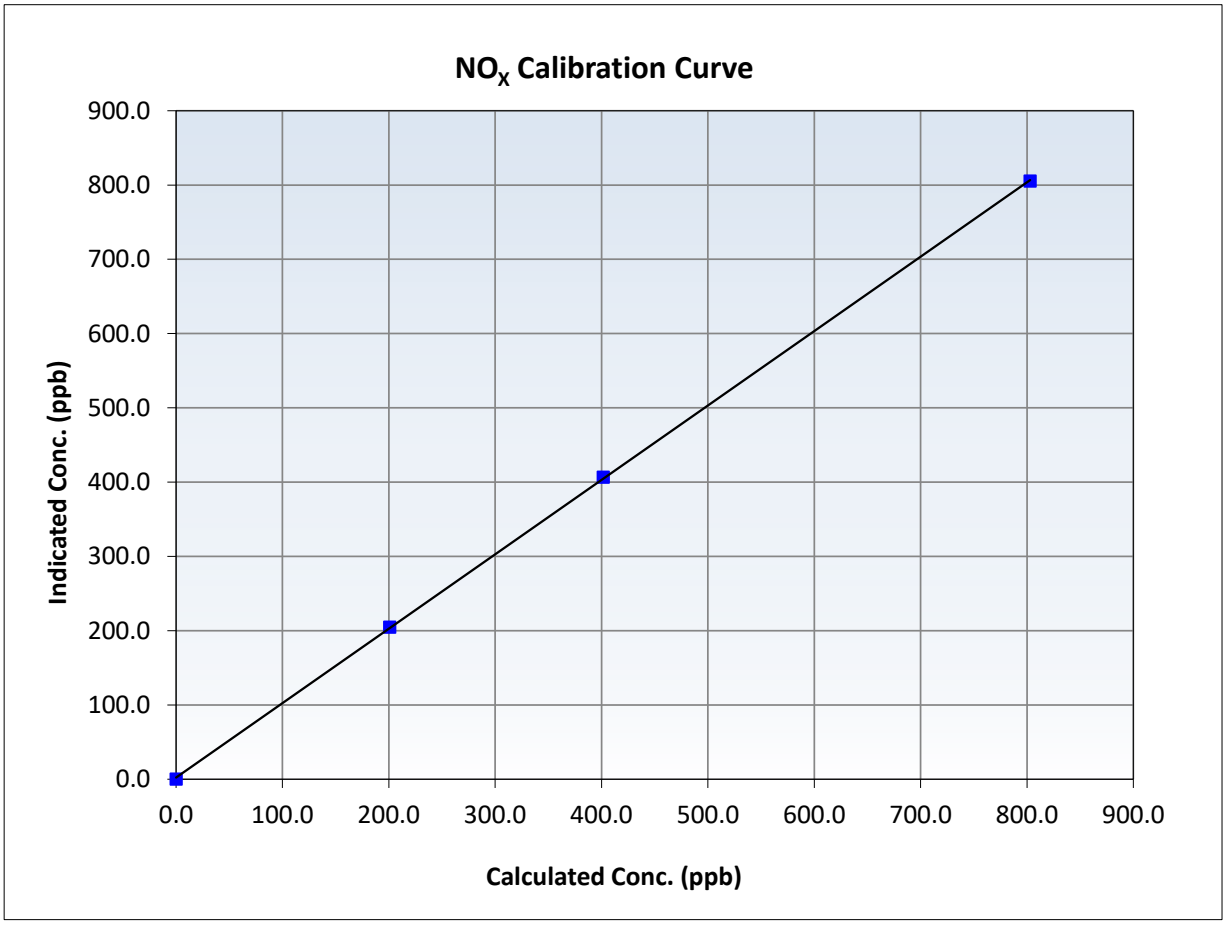
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 10, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	8:44	End Time (MST):	14:44
Analyzer make:	Thermo 42i	Analyzer serial #:	1160120024

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
803.0	805.3	0.9971
401.5	406.6	0.9875
200.7	204.6	0.9812

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999967	*≥0.995*
Slope	1.001766	*0.90 - 1.10*
Intercept	2.271883	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

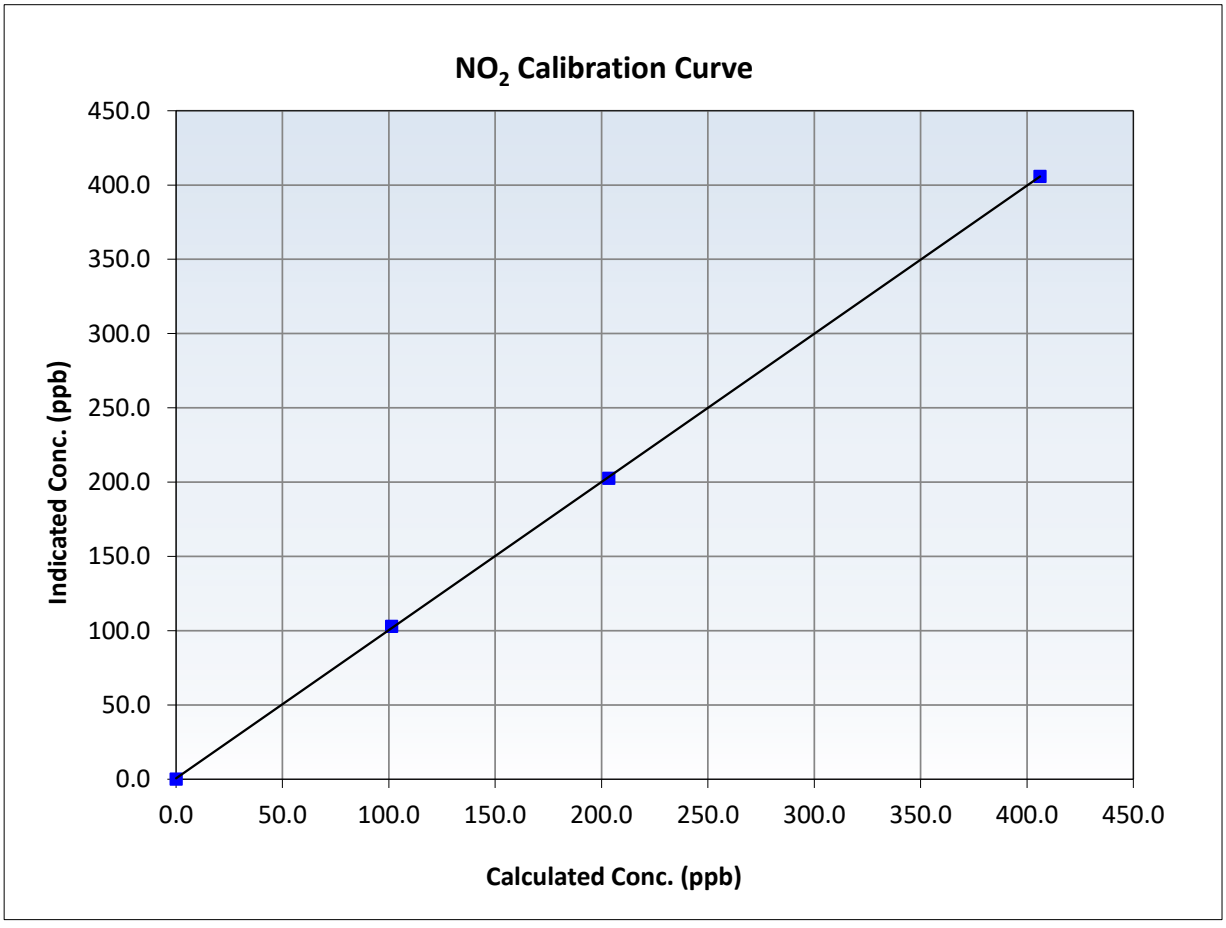
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 10, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	8:44	End Time (MST):	14:44
Analyzer make:	Thermo 42i	Analyzer serial #:	1160120024

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
406.2	405.9	1.0007
203.4	202.6	1.0038
101.4	103.0	0.9842

Statistical Evaluation		Limits
Correlation Coefficient	0.999970	≥0.995
Slope	0.997518	0.90 - 1.10
Intercept	0.612052	+/-20



Wood Buffalo Environmental Association

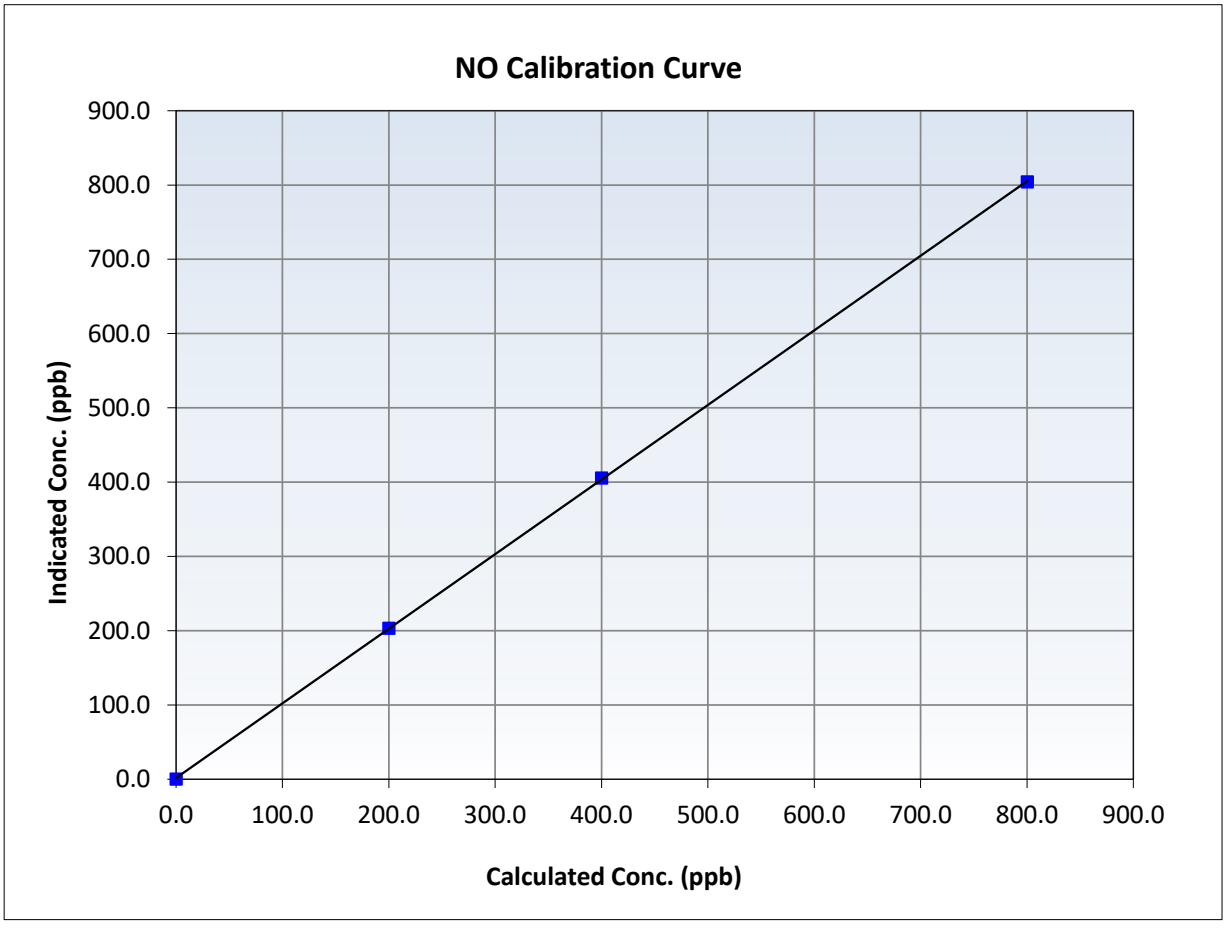
NO Calibration Summary

Station Information

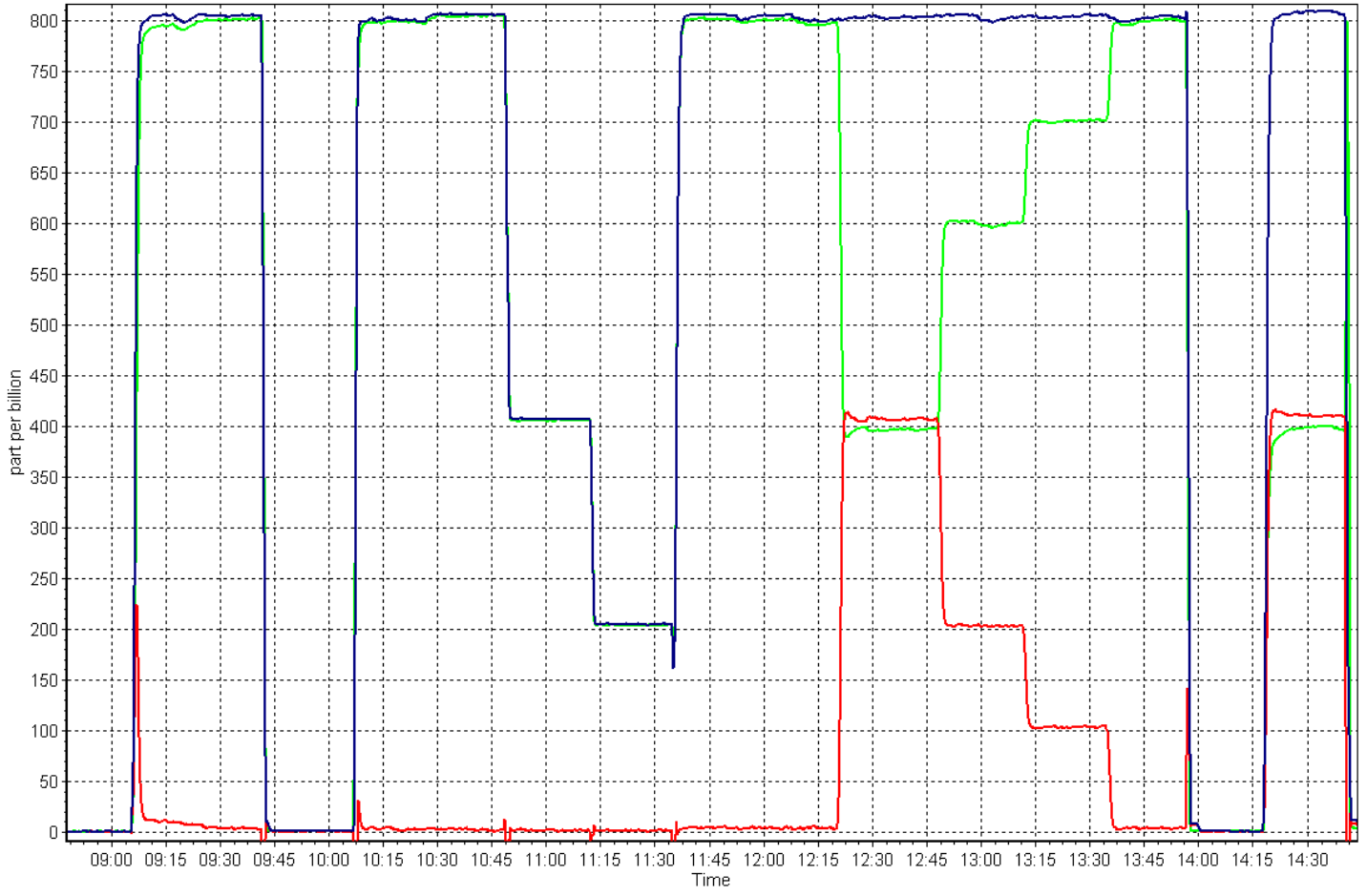
Calibration Date:	April 1, 2025	Previous Calibration:	March 10, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	8:44	End Time (MST):	14:44
Analyzer make:	Thermo 42i	Analyzer serial #:	1160120024

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.2	----	Correlation Coefficient	0.999978	≥0.995
800.3	804.3	0.9950	Slope	1.004283	0.90 - 1.10
400.2	405.5	0.9869	Intercept	1.711898	+/-20
200.1	203.4	0.9837			



NO_X Calibration Plot Date: April 1, 2025 Location: Athabasca Valley



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Athabasca Valley	Station number:	AMS07
Calibration Date:	April 7, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	9:05	End time (MST):	12:40
Reason:	Routine		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	T700	Serial Number:	3805
ZAG Make/Model:	T701H	Serial Number:	198

Analyzer Information

Analyzer make:	Thermo 49i	Analyzer serial #:	1152220023
Analyzer Range	0 - 500 ppb		

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.001457	0.999600	Backgd or Offset:	-1.2	-1.1
Calibration intercept:	0.820000	1.020000	Coeff or Slope:	1.605	1.556

O_3 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)) *Limit = 0.90-1.10*
As found zero	5000	800.0	0.0	0.1	----
As found High point	5000	1704.0	400.0	412.7	0.969
As found Mid point					
As found Low point					
Baseline Corr As found:	412.6	Previous response	401.4	*% change	2.7%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	800.0	0.0	0.1	----
High point	5000	1706.0	400.0	400.4	0.999
Mid point	5000	1175.0	200.0	201.4	0.993
Low point	5000	926.0	100.0	101.9	0.981
As left zero	5000	1652.9	0.0	0.1	----
As left span	5000	1582.6	400.0	402.8	0.993
				Average Correction Factor	0.991

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

Calibration Performed By: Devin Russell

Wood Buffalo Environmental Association

O_3 Calibration Summary

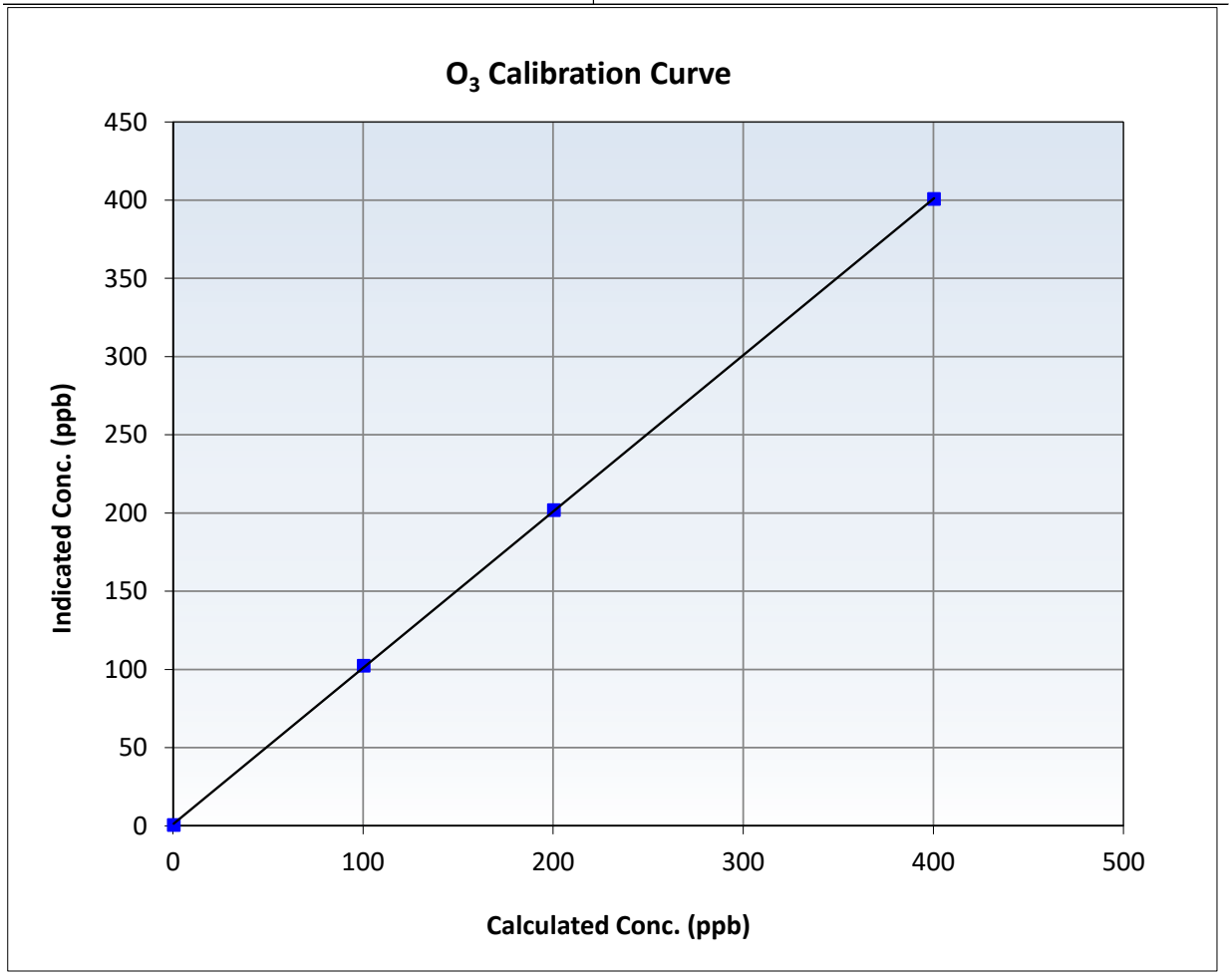
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 17, 2025
Station Name:	Athabasca Valley	Station Number:	AMS07
Start Time (MST):	9:05	End Time (MST):	12:40
Analyzer make:	Thermo 49i	Analyzer serial #:	1152220023

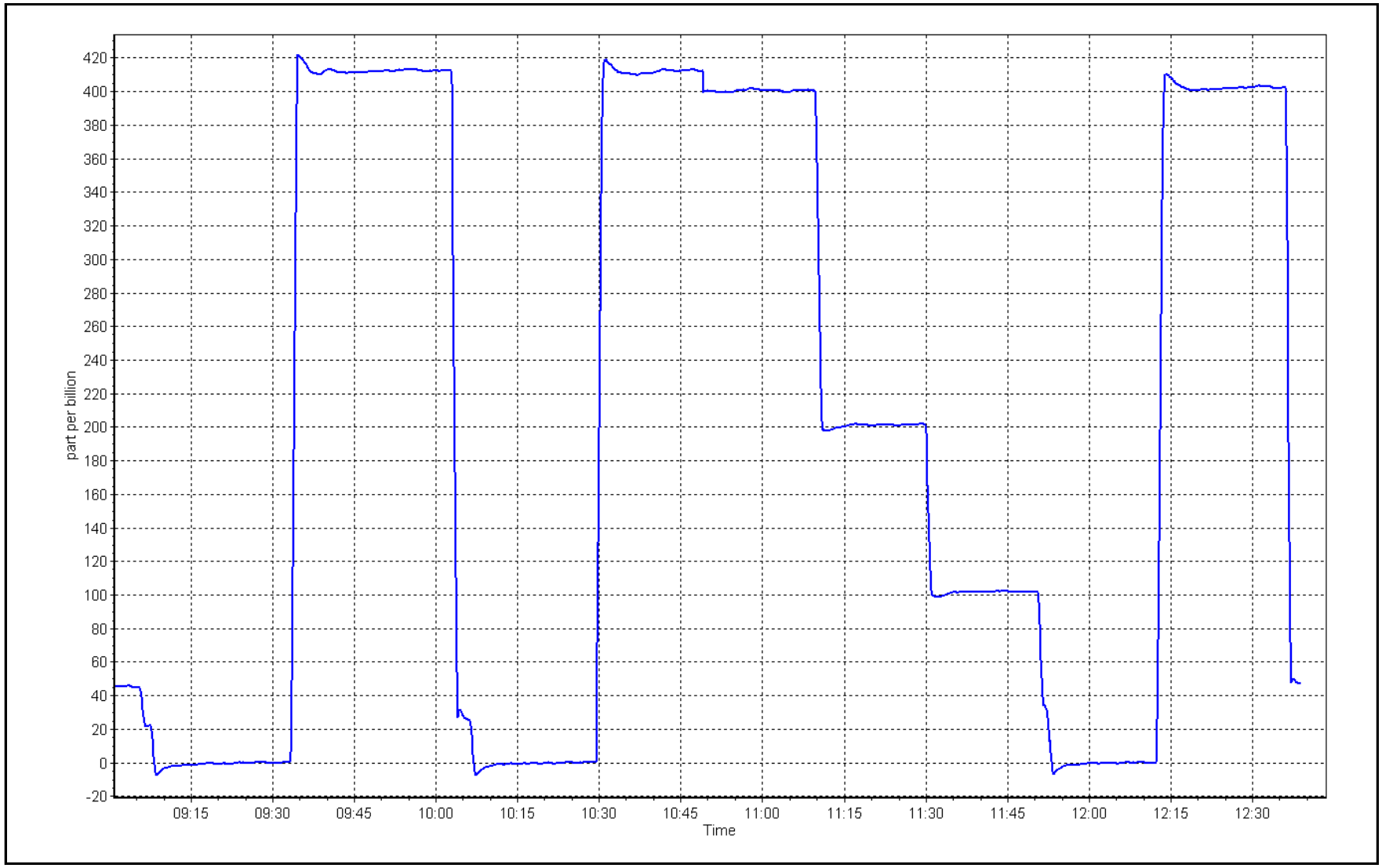
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
400.0	400.4	0.9990
200.0	201.4	0.9930
100.0	101.9	0.9814

Statistical Evaluation		Limits
Correlation Coefficient	0.999976	≥0.995
Slope	0.999600	0.90 - 1.10
Intercept	1.020000	+/- 5



O_3 Calibration Plot Date: April 7, 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:	April 1, 2025	Last Cal Date:	March 24, 2025
Start time (MST):	8:43	End time (MST):	9:45
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 (^{o}C)	-2.4	-2.9		☐	+/- 2 ^{o}C
P (mmHg)	729.6	729.1		☐	+/- 10 mmHg
Flow (LPM)	5.00	4.75		☐	+/- 0.25 LPM
PW% (pump)	38	-----		☐	>80%
Zero Verification	PM w/o HEPA:	12.2	PM w/ HEPA:	10.7	<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				☐	+/- 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: Removal calibration. Flow, temp and pressure checked. Leak check failed.

Calibration by: Aswin Sasi Kumar

Wood Buffalo Environmental Association

T640 $PM_{2.5}$ CALIBRATION

Version-01-2024

Station Information

Station Name:	Athabasca Valley	Station number:	AMS 07
Calibration Date:	April 1, 2025	Last Cal Date:	N/A
Start time (MST):	12:05	End time (MST):	13:54
Analyzer Make:	API T640	S/N:	2235
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 (^{o}C)	3.5	3.5	3.5	☐	+/- 2 ^{o}C
P (mmHg)	729.0	727.9	729.0	☐	+/- 10 mmHg
Flow (LPM)	4.95	4.78	5.05	☑	+/- 0.25 LPM
PW% (pump)	38	-----	38	☐	>80%
Zero Verification	PM w/o HEPA:	5.4	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	10.9		10.9	☐	+/- 0.5

Date Optical Chamber Cleaned: April 1, 2025

Date Disposable Filter Changed: April 1, 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: Install calibration completed. Flow adjusted. Nothing else to note.

Calibration by: Aswin Sasi Kumar

Wood Buffalo Environmental Association

CO Calibration Report

Station Information

Station Name:	Athabasca Valley	Station number:	AMS 07
Calibration Date:	April 25, 2025	Last Cal Date:	March 24, 2025
Start time (MST):	10:42	End time (MST):	14:07
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.997952	1.002518	Backgd or Offset:	5.450	5.450
Calibration intercept:	0.154017	0.164069	Coeff or Slope:	1.073	1.073

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.1	----
As found High point	4932	67.8	40.0	40.2	1.000
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr As found:	40.05	Prev response:	40.12	*% 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	

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	4932	67.8	40.0	40.2	0.996
Mid point	4966	33.9	20.0	20.4	0.981
Low point	4983	16.9	10.0	10.3	0.971
As left zero	5000	0.0	0.0	0.1	----
As left span	4932	67.8	40.0	40.0	1.001
				Average Correction Factor	0.983

Notes: No adjustments made.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

CO Calibration Summary

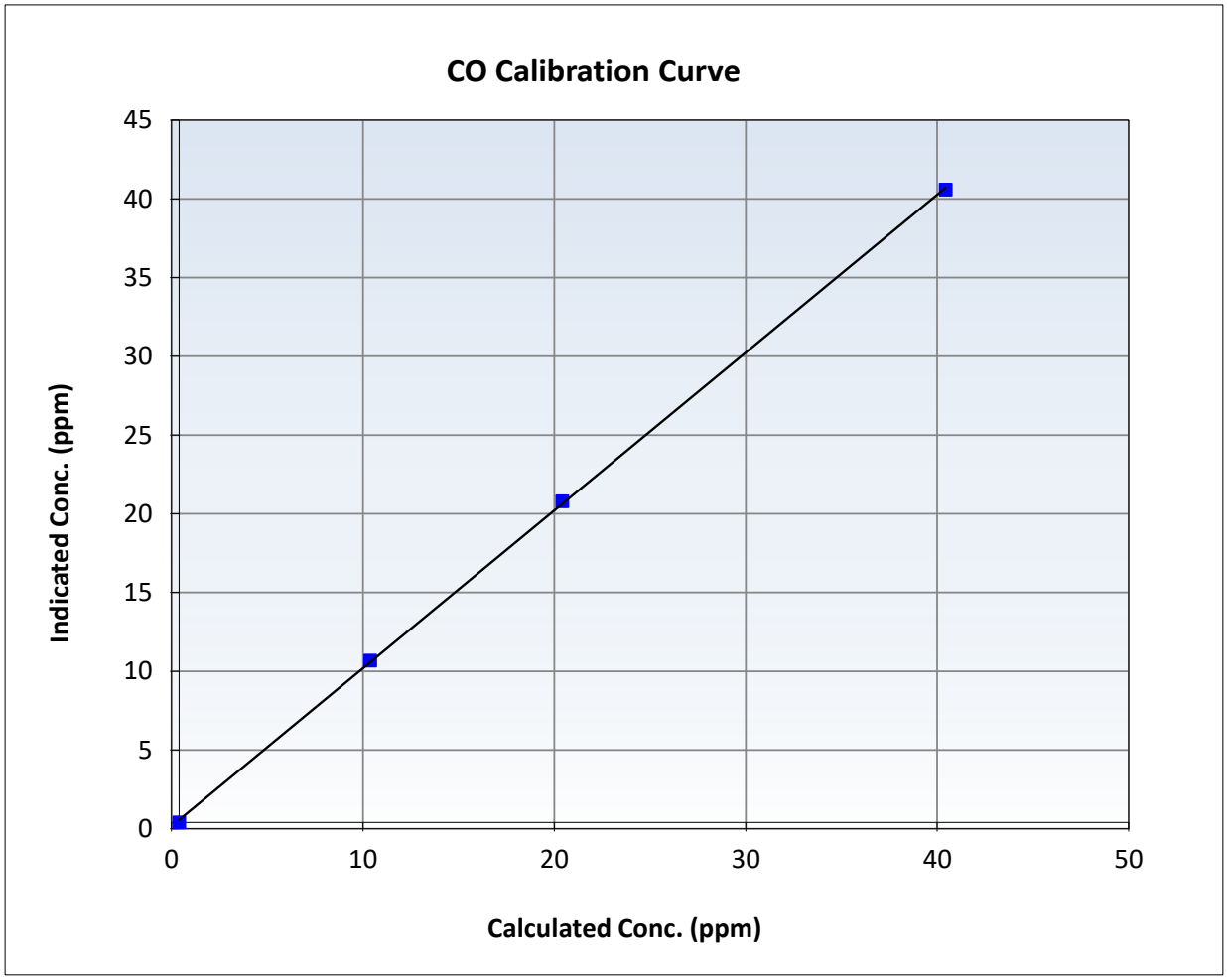
Station Information

Calibration Date:	April 25, 2025	Previous Calibration:	March 24, 2025
Station Name:	Athabasca Valley	Station Number:	AMS 07
Start Time (MST):	10:42	End Time (MST):	14:07
Analyzer make:	Thermo 48i-TLE	Analyzer serial #:	1408761381

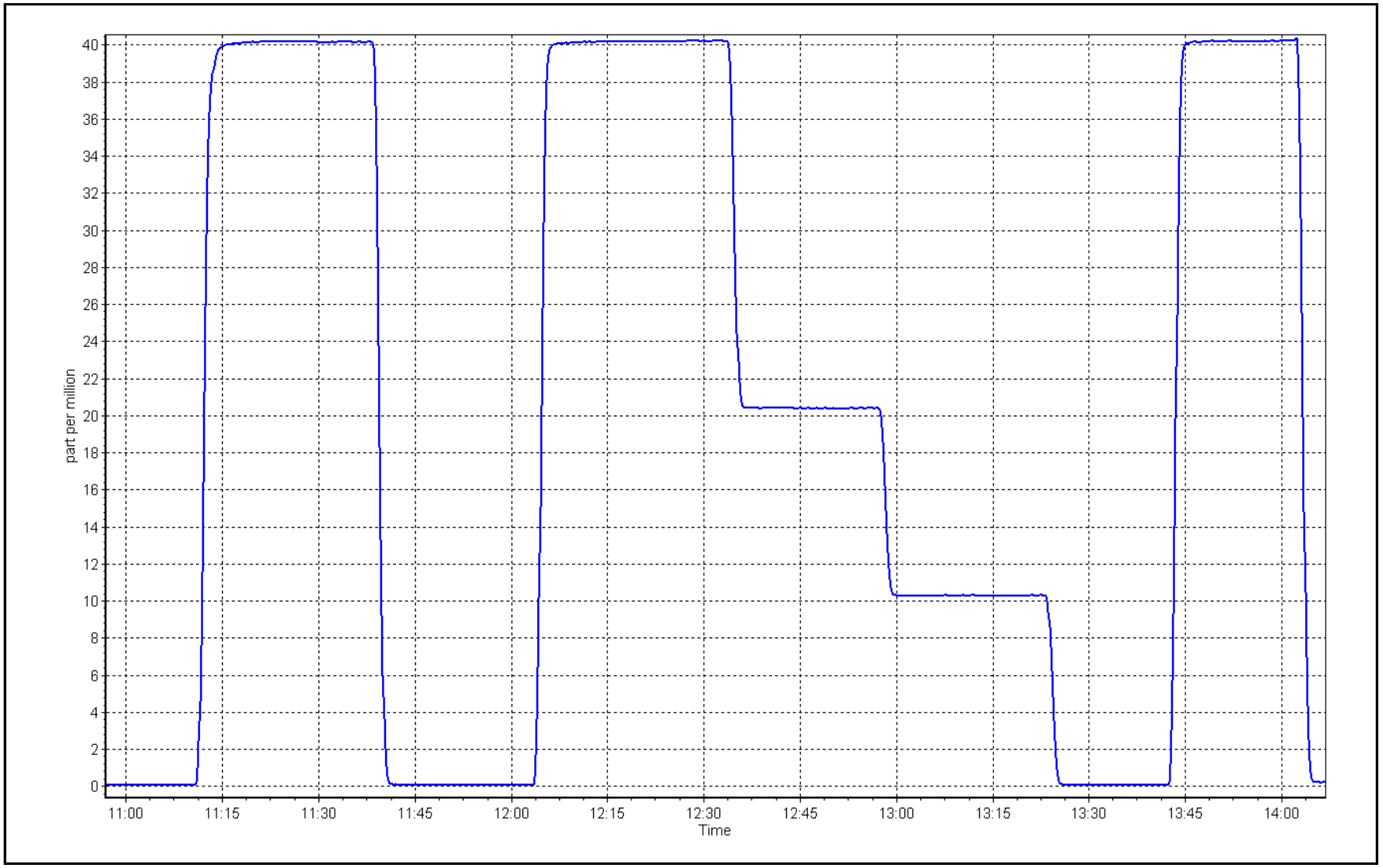
Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
40.0	40.2	0.9961
20.0	20.4	0.9815
10.0	10.3	0.9709

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999912	*≥0.995*
Slope	1.002518	*0.90 - 1.10*
Intercept	0.164069	*+/-1.5*



CO Calibration Plot Date: April 25, 2025 Location: Athabasca Valley



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS08
FORT CHIPEWYAN
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Fort Chipewyan	Station number:	AMS08
Calibration Date:	April 9, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	12:23	End time (MST):	14:38
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.001018	1.005001	Backgd or Offset:	2.0	2.0
Calibration intercept:	0.635300	0.414722	Coeff or Slope:	1.048	1.480

SO_2 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	0.1	----
As found High point	4920	80.3	800.4	804.4	0.995
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	804.3	Previous response	801.8	*% 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	

SO_2 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	80.3	800.4	804.7	0.995
Mid point	4960	40.2	400.7	403.3	0.994
Low point	4980	20.1	200.4	201.8	0.993
As left zero	5000	0.0	0.0	0.2	----
As left span	4920	80.3	800.4	807.0	0.992
				Average Correction Factor:	0.994

Notes: Changed out inlet filter after as founds.

Calibration Performed By: Sabian V, Jeremy C, Morgan V,

Wood Buffalo Environmental Association

SO_2 Calibration Summary

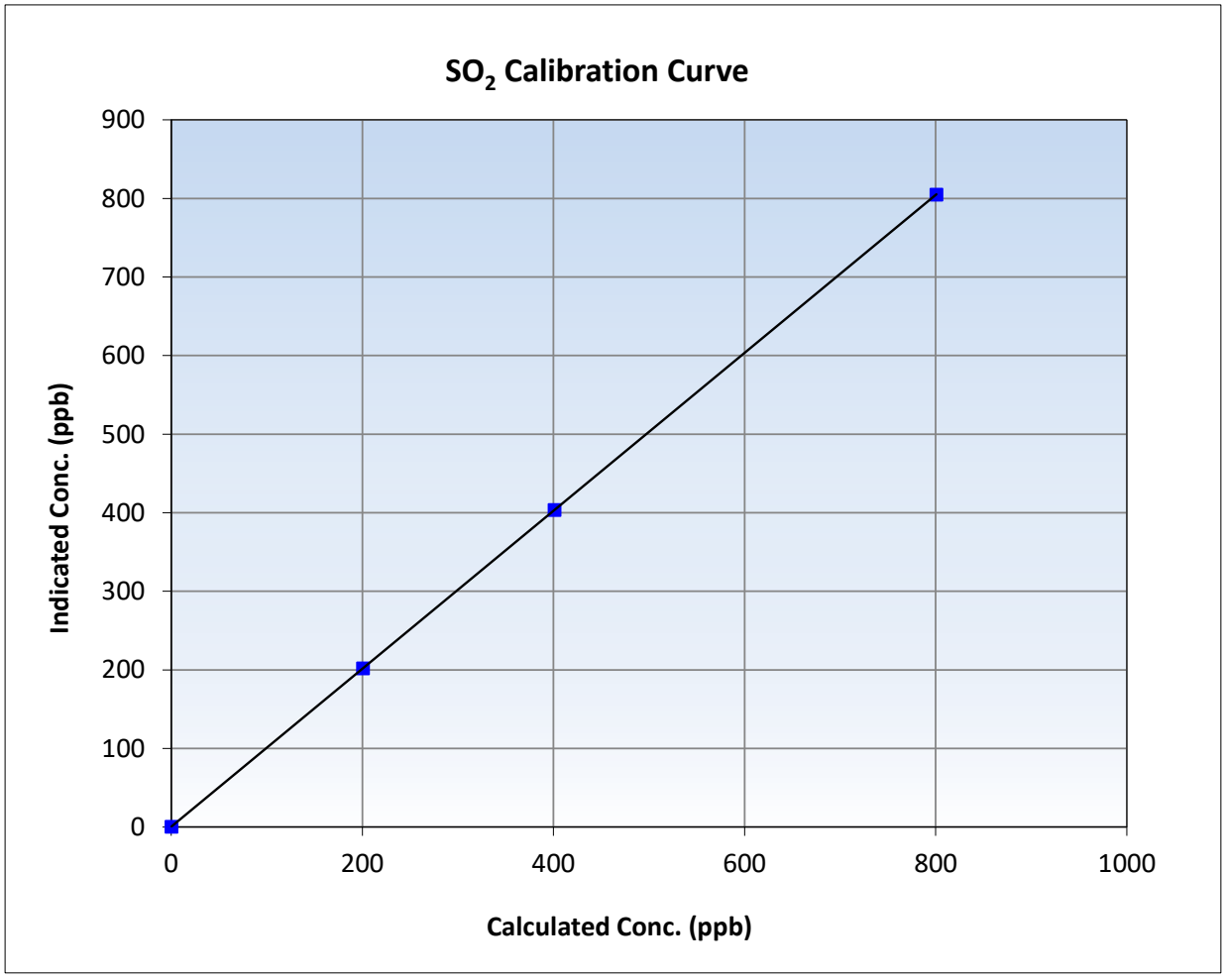
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	March 17, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS08
Start Time (MST):	12:23	End Time (MST):	14:38
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1236656116

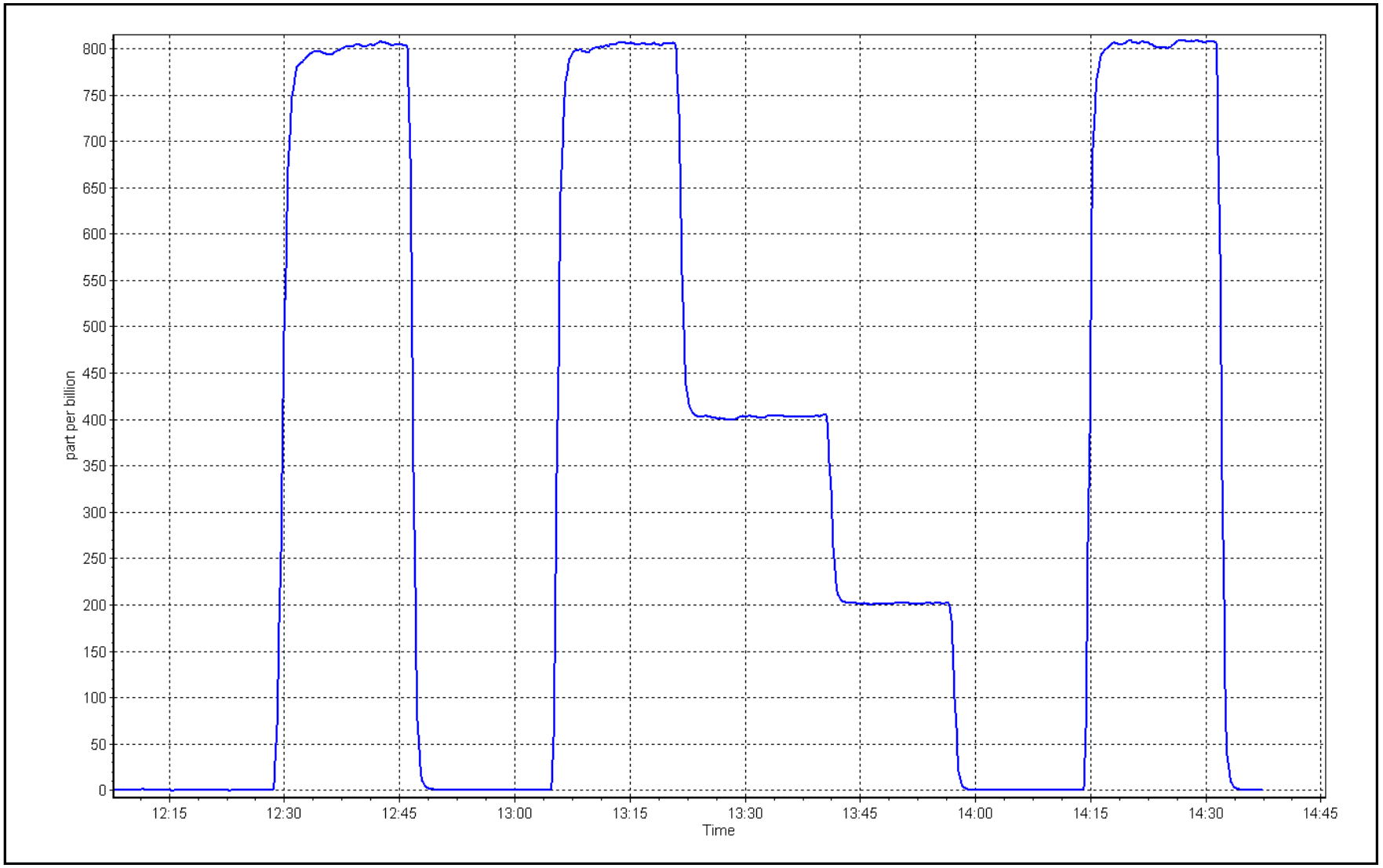
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
800.4	804.7	0.9946
400.7	403.3	0.9935
200.4	201.8	0.9928

Statistical Evaluation		*Limits*
Correlation Coefficient	1.000000	*≥0.995*
Slope	1.005001	*0.90 - 1.10*
Intercept	0.414722	*+/-30*



SO2 Calibration Plot Date: April 9, 2025 Location: Fort Chipewyan



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Fort Chipewyan	Station number:	AMS 08
Calibration Date:	April 11, 2025	Last Cal Date:	March 10, 2025
Start time (MST):	7:38	End time (MST):	11:26
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

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.005392	0.982087	Backgd or Offset:	2.0	2.0
Calibration intercept:	-0.058192	-0.317646	Coeff or Slope:	0.779	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4917	82.6	80.0	76.4	1.044
As found Mid point	4959	41.3	40.0	38.0	1.046
As found Low point	4979	20.7	20.0	18.6	1.066
New cylinder response					

Baseline Corr As found:	76.6	Prev response:	80.34	*% change:	-4.9%
Baseline Corr 2nd AF pt:	38.2	AF Slope:	0.959500	AF Intercept:	-0.377228
Baseline Corr 3rd AF pt:	18.8	AF Correlation:	0.999970	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4917	82.6	80.0	78.4	1.020
Mid point	4959	41.3	40.0	38.7	1.033
Low point	4979	20.7	20.0	19.1	1.049
As left zero	5000	0.0	0.0	-0.1	----
As left span	4917	82.6	80.0	79.0	1.012
SO2 Scrubber Check	4919.7	80.3	803.0	-0.1	----

Date of last scrubber change:		March 7, 2022		Ave Corr Factor	1.034
Date of last converter efficiency test:		March 15, 2022		103.4%	efficiency

Notes: Changed inlet filter after as founds. Scrubber check passed no issues. No Adjustments made.

Calibration Performed By: Sabian Voyageur Jeremy Cardinal

Wood Buffalo Environmental Association

TRS Calibration Summary

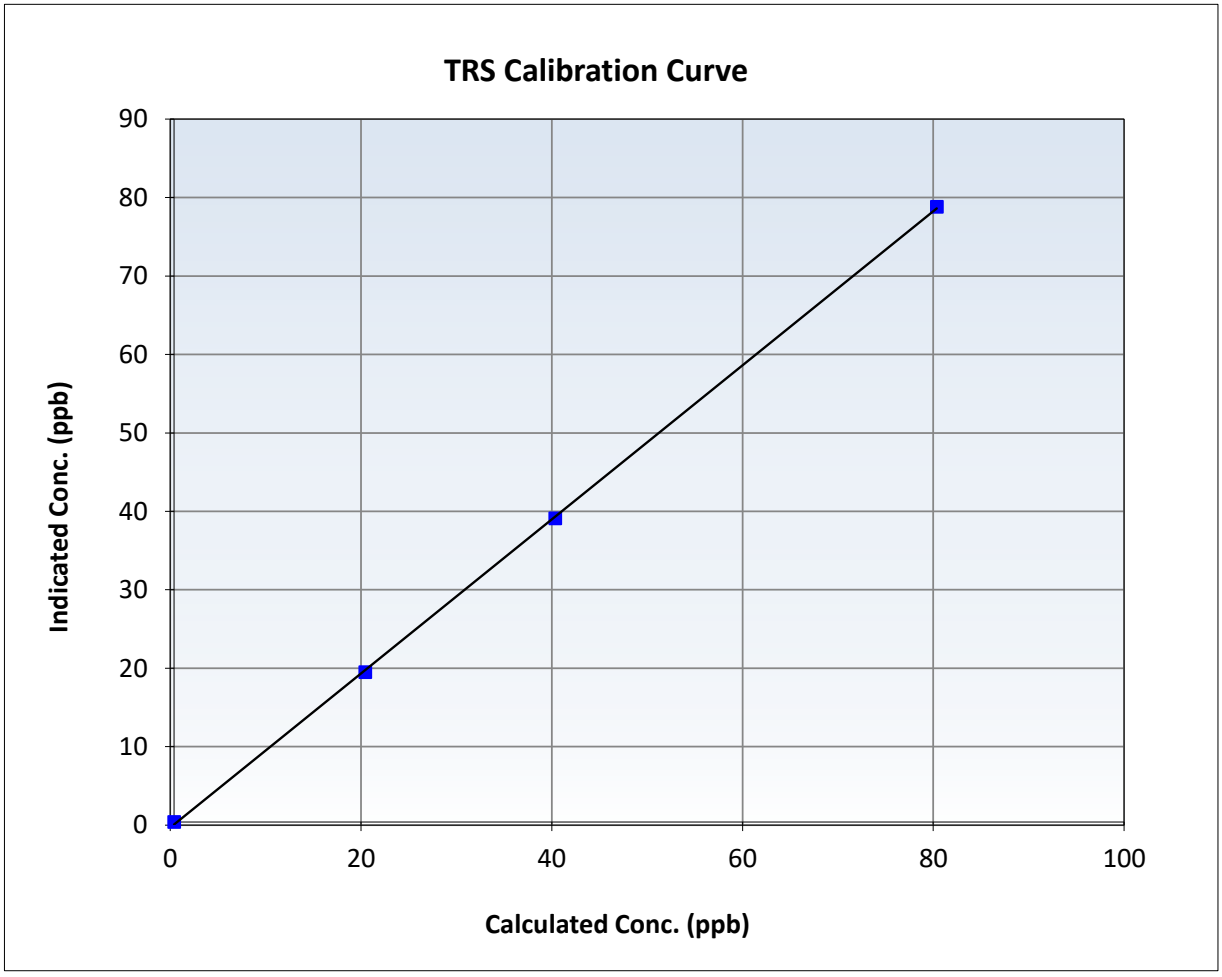
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 10, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	7:38	End Time (MST):	11:26
Analyzer make:	Thermo 43iQ-TL	Analyzer serial #:	1203169744

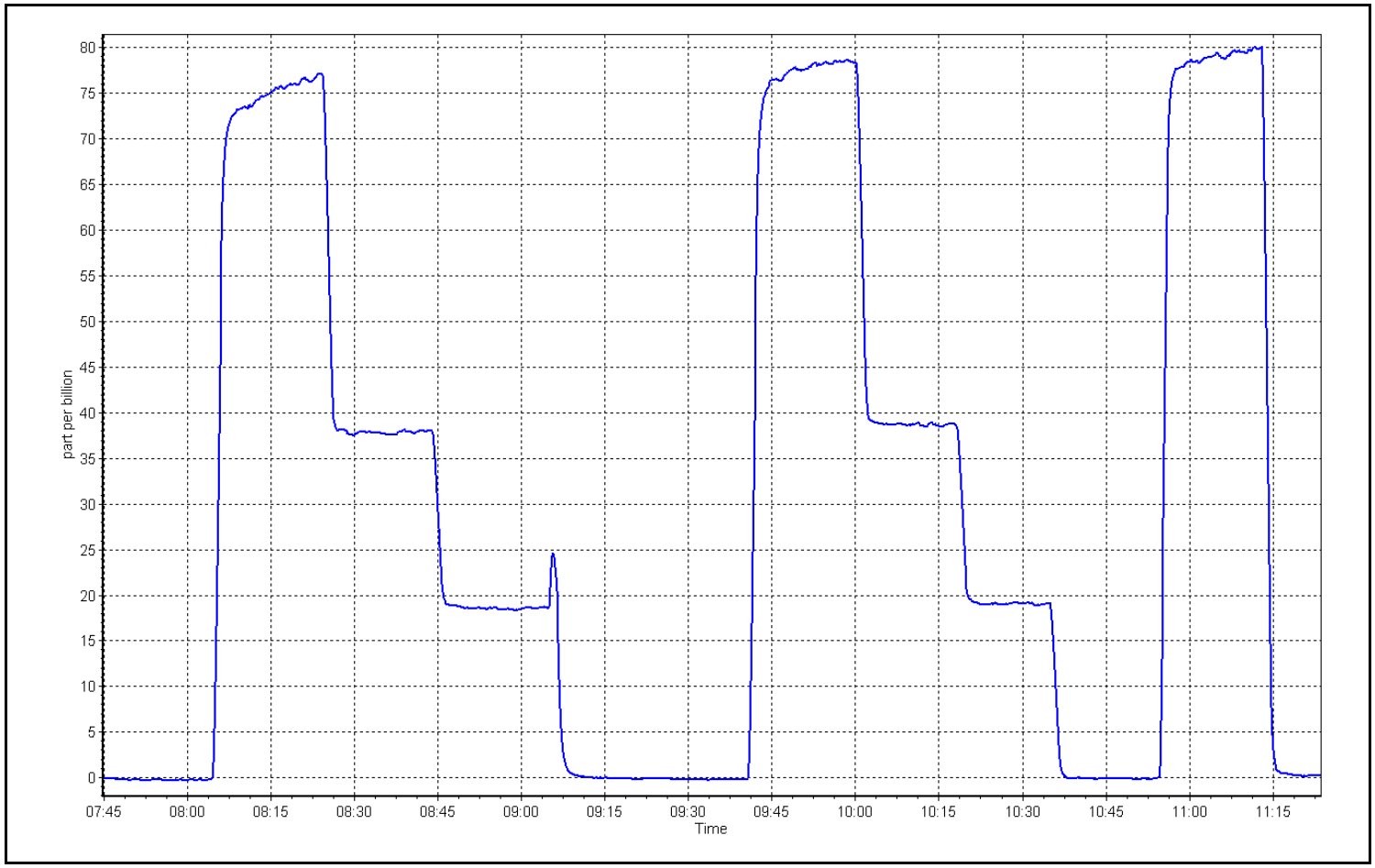
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
80.0	78.4	1.0199
40.0	38.7	1.0330
20.0	19.1	1.0492

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999922	*≥0.995*
Slope	0.982087	*0.90 - 1.10*
Intercept	-0.317646	*+/-3*



TRS Calibration Plot Date: April 11, 2025 Location: Fort Chipewyan



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Fort Chipewyan	Station number:	AMS 08
Calibration Date:	April 15, 2025	Last Cal Date:	April 11, 2025
Start time (MST):	9:16	End time (MST):	11:58
Reason:	Maintenance		

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

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.982087	1.015539	Backgd or Offset:	2.0	2.2
Calibration intercept:	-0.317646	-0.538270	Coeff or Slope:	0.779	0.853

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.3	----
As found High point	4917	82.6	80.0	72.8	1.094
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr As found:	73.1	Prev response:	78.21	*% change:	-7.0%
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	-0.3	----
High point	4917	82.6	80.0	80.8	0.990
Mid point	4959	41.3	40.0	39.9	1.002
Low point	4979	20.7	20.0	19.6	1.022
As left zero	5000	0.0	0.0	-0.2	----
As left span	4917	82.6	80.0	81.8	0.978
SO2 Scrubber Check	4919.7	80.3	803.0		----

Date of last scrubber change:	March 7, 2022	Ave Corr Factor	1.005
Date of last converter efficiency test:	March 15, 2022	103.4%	efficiency

Notes: Redid calibration span was out of range. Adjusted span.

Calibration Performed By: Morgan Voyageur

Wood Buffalo Environmental Association

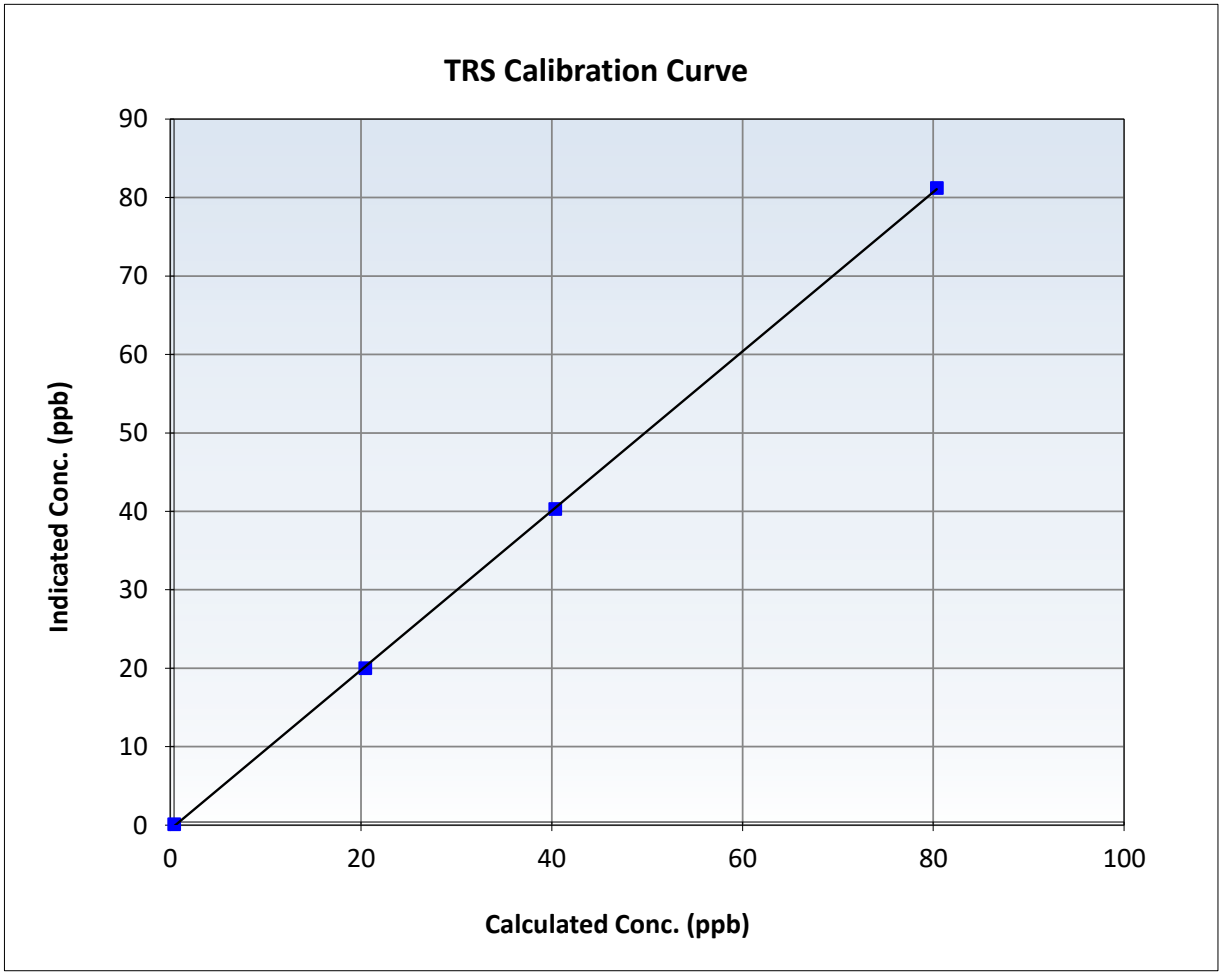
TRS Calibration Summary

Station Information

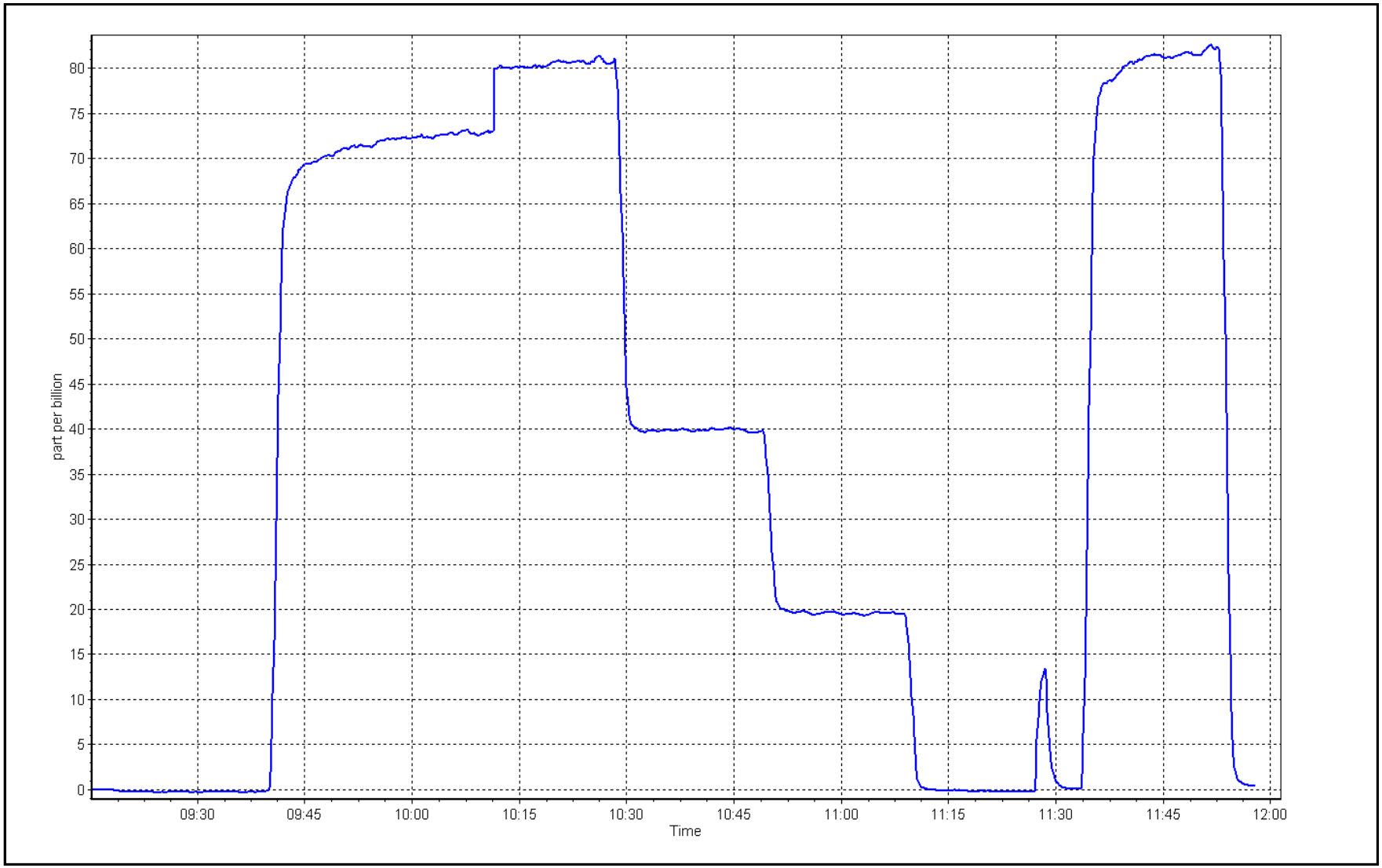
Calibration Date:	April 15, 2025	Previous Calibration:	April 11, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	9:16	End Time (MST):	11:58
Analyzer make:	Thermo 43iQ-TL	Analyzer serial #:	1203169744

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	-0.3	----	Correlation Coefficient	0.999960	*≥0.995*
80.0	80.8	0.9896	Slope	1.015539	*0.90 - 1.10*
40.0	39.9	1.0019			
20.0	19.6	1.0224	Intercept	-0.538270	*+/-3*



TRS Calibration Plot Date: April 15, 2025 Location: Fort Chipewyan



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Fort Chipewyan
Station number:	AMS 08
Calibration Date:	April 8, 2025
Last Cal Date:	March 20, 2025
Start time (MST):	9;11
End time (MST):	12:09
Reason:	Removal

Calibration Standards

NO Gas Cylinder #:	DT0046831	Cal Gas Expiry Date:	January 9,2032
NOX Cal Gas Conc:	60.20 ppm	NO Cal Gas Conc:	60.00 ppm
Removed Cylinder #:	DT0046831	Removed Gas Exp Date:	January 9,2032
Removed Gas NOX Conc:	60.20 ppm	Removed Gas NO Conc:	60.00 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	3810
ZAG make/model:	Teledyne API T701H	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-0.5	-0.2	-0.2	----	----
AF High point	4933	66.7	803.1	800.4	2.7	781.2	778.1	3.1	1.0273	1.0285
AF Mid point	4967	33.3	400.9	399.6	1.3	392.5	389.4	3.1	1.0200	1.0256
AF Low point	4983	16.7	201.1	200.4	0.7	198.2	195.1	3.1	1.0117	1.0261
New cyl resp										

Previous Response	NO_X = 801.8 ppb	NO = 799.3 ppb
Baseline Corr 1st pt	NO_X = 781.7 ppb	NO = 778.3 ppb
Baseline Corr 2nd pt	NO_X = 393.0 ppb	NO = 389.6 ppb
Baseline Corr 3rd pt	NO_X = 198.7 ppb	NO = 195.3 ppb

* = > +/-5% change initiates investigation

As Found Statistics

As found	NO_X r^2: 0.999975	*Percent Change	NO_X = -2.6%
As found	NO r^2: 0.999998	*Percent Change	NO = -2.7%
As found	NO_2 r^2: 0.999986	Nx Sl: 0.972490	Nx Int: 1.231
		NO Sl: 0.972293	NO Int: 0.194
		NO2 Sl: 0.961115	NO_2 Int: 0.164

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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
As Found GPT zero	----	----	0.0	-0.2	----	----
As found high GPT point	773.4	377.0	399.1	383.3	1.0411	96.0%
As found mid GPT point	773.4	575.3	200.8	194.0	1.0349	96.6%
As found low GPT point	773.4	669.7	106.4	102.3	1.0398	96.2%

Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42iQ

Serial Number: 12400232072

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	0.727		NO bkgnd or offset:	0.8	
NOX coeff or slope:	0.996		NOX bkgnd or offset:	1.1	
NO2 coeff or slope:	1.000		Reaction cell Press:	113.7	

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.996890	
NO_X Cal Offset:	1.194493	
NO Cal Slope:	0.997843	
NO Cal Offset:	0.574281	
NO_2 Cal Slope:	0.971567	
NO_2 Cal Offset:	1.371312	

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero										
High point										
Mid point										
Low point										
As left zero										
As left span										
								Average Correction Factor		

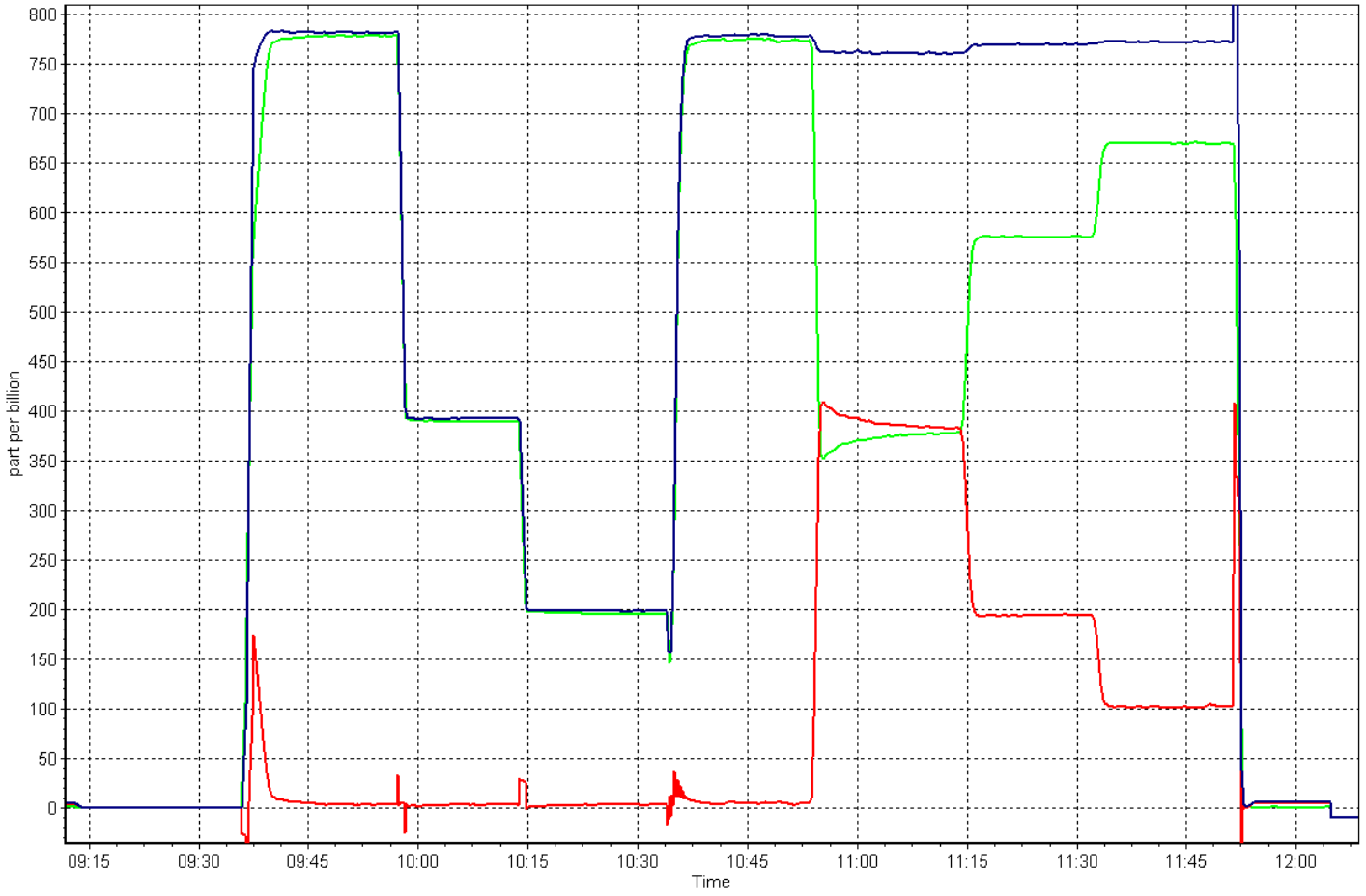
GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero						
High GPT point						
Mid GPT point						
Low GPT point						
				Average Correction Factor		

Notes: No adjustments or maintenance performed.

Calibration Performed By: Sabian Voyageur, Jermey Cardinal, Morgan Voyageur.

NO_X Calibration Plot Date: April 8, 2025 Location: Fort Chipewyan



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Fort Chipewyan
Station number:	AMS 08
Calibration Date:	April 9, 2025
Last Cal Date:	N/A
Start time (MST):	7:53
End time (MST):	12:07
Reason:	Install

Calibration Standards

NO Gas Cylinder #:	DT0046831	Cal Gas Expiry Date:	January 9,2032
NOX Cal Gas Conc:	60.20 ppm	NO Cal Gas Conc:	60.00 ppm
Removed Cylinder #:	DT0046831	Removed Gas Exp Date:	January 9,2032
Removed Gas NOX Conc:	60.20 ppm	Removed Gas NO Conc:	60.00 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	3810
ZAG make/model:	Teledyne API T701H	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
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	As Found Statistics	*Percent Change	NO =	NA
Baseline Corr 2nd pt	NO_X = NA	ppb	NO = NA	ppb	As found NO_X r^2:	Nx Sl:	Nx Int:	
Baseline Corr 3rd pt	NO_X = NA	ppb	NO = NA	ppb	As found NO r^2:	NO Sl:	NO Int:	
					As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42iQ Serial Number: 12124313137

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:		1.023	NO bkgnd or offset:		1.5
NOX coeff or slope:		0.993	NOX bkgnd or offset:		1.5
NO2 coeff or slope:		1.000	Reaction cell Press:		113.7

Calibration Statistics

	Start	Finish
NO_X Cal Slope:		1.000364
NO_X Cal Offset:		-0.525927
NO Cal Slope:		1.002985
NO Cal Offset:		-2.025916
NO_2 Cal Slope:		1.001492
NO_2 Cal Offset:		1.255111

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	-0.8	-0.9	0.0	----	----
High point	4933	66.7	803.1	800.4	2.7	802.9	801.5	1.4	1.0003	0.9987
Mid point	4967	33.3	400.9	399.6	1.3	400.2	397.8	2.4	1.0018	1.0045
Low point	4983	16.7	201.1	200.4	0.7	201.2	198.1	3.0	0.9993	1.0116
As left zero	5000	0.0	0.0	0.0	0.0	-0.6	-0.7	0.1	----	----
As left span	4933	66.7	803.1	393.4	409.7	804.8	393.4	411.3	0.9979	1.0000
							Average Correction Factor		1.0005	1.0049

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	798.8	389.6	411.9	412.9	0.9975	100.3%
Mid GPT point	798.8	598.6	202.9	205.7	0.9862	101.4%
Low GPT point	798.8	695.7	105.8	108.0	0.9793	102.1%
				Average Correction Factor	0.9877	101.3%

Notes: Adjustments made to span. Changed filter before the start of the calibration.

Calibration Performed By: Sabian V, Jermey C, Morgan V.

Wood Buffalo Environmental Association

NO_X Calibration Summary

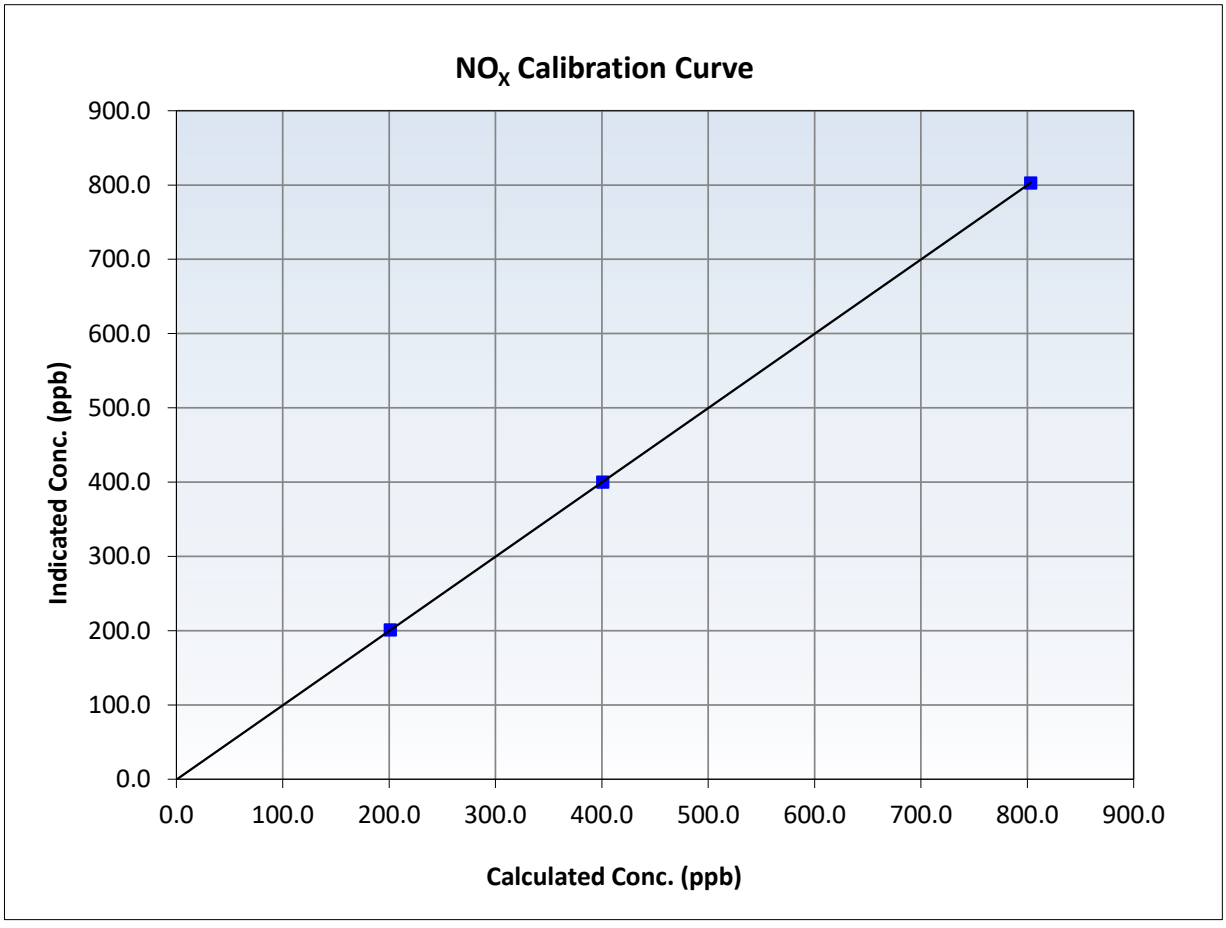
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	N/A
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	7:53	End Time (MST):	12:07
Analyzer make:	Thermo 42iQ	Analyzer serial #:	12124313137

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.8	----
803.1	802.9	1.0003
400.9	400.2	1.0018
201.1	201.2	0.9993

Statistical Evaluation		Limits
Correlation Coefficient	0.999999	≥0.995
Slope	1.000364	0.90 - 1.10
Intercept	-0.525927	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

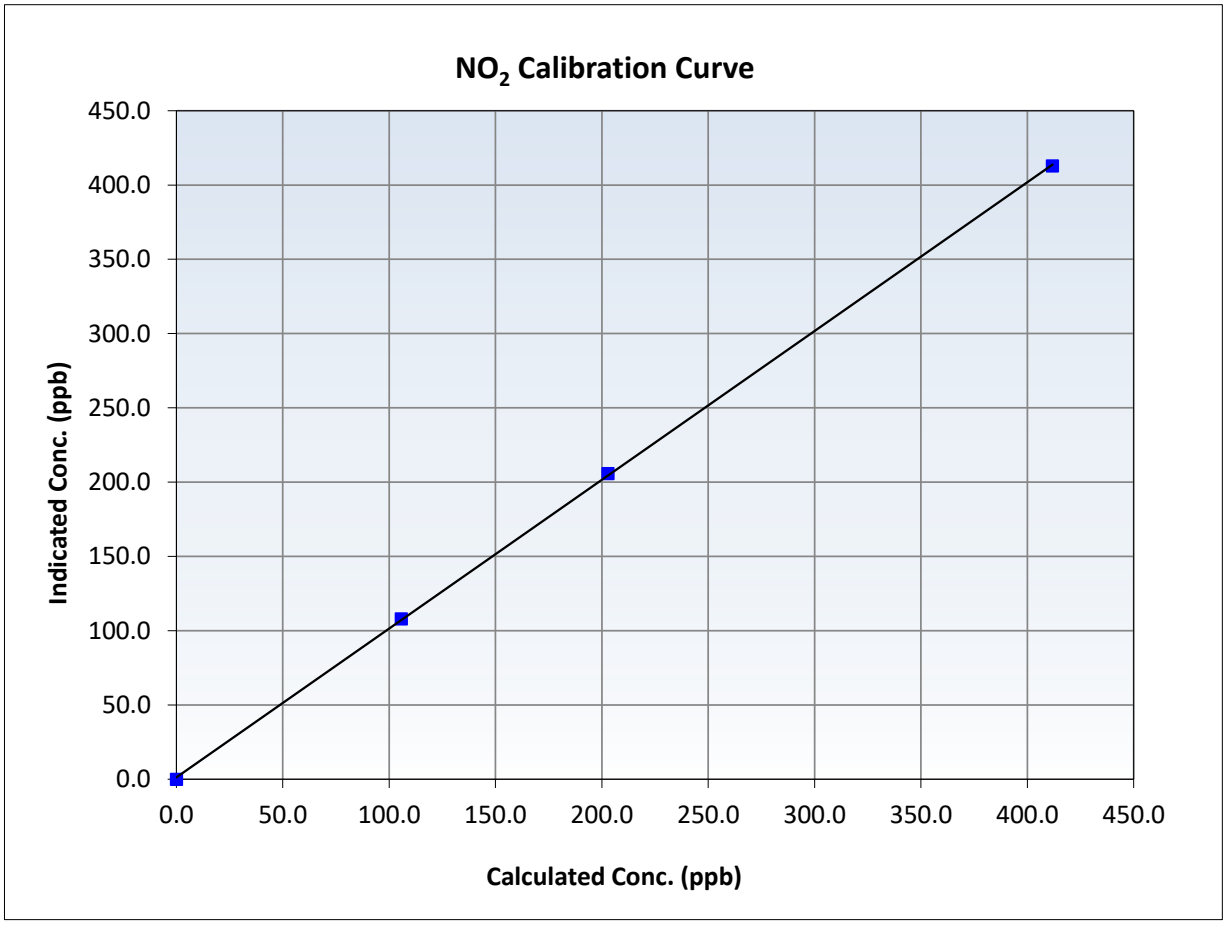
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	N/A
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	7:53	End Time (MST):	12:07
Analyzer make:	Thermo 42iQ	Analyzer serial #:	12124313137

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
411.9	412.9	0.9975
202.9	205.7	0.9862
105.8	108.0	0.9793

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999951	*≥0.995*
Slope	1.001492	*0.90 - 1.10*
Intercept	1.255111	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

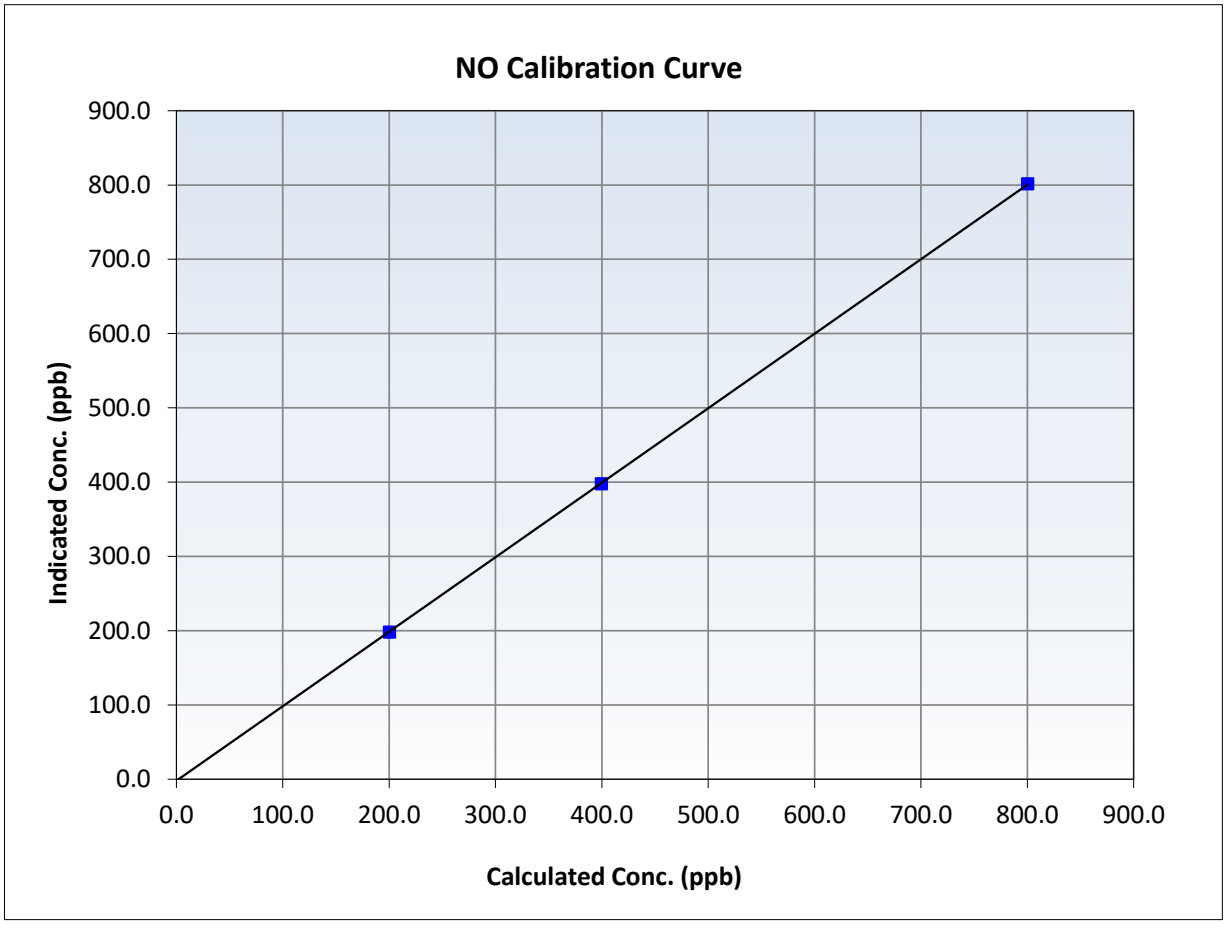
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	N/A
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	7:53	End Time (MST):	12:07
Analyzer make:	Thermo 42iQ	Analyzer serial #:	12124313137

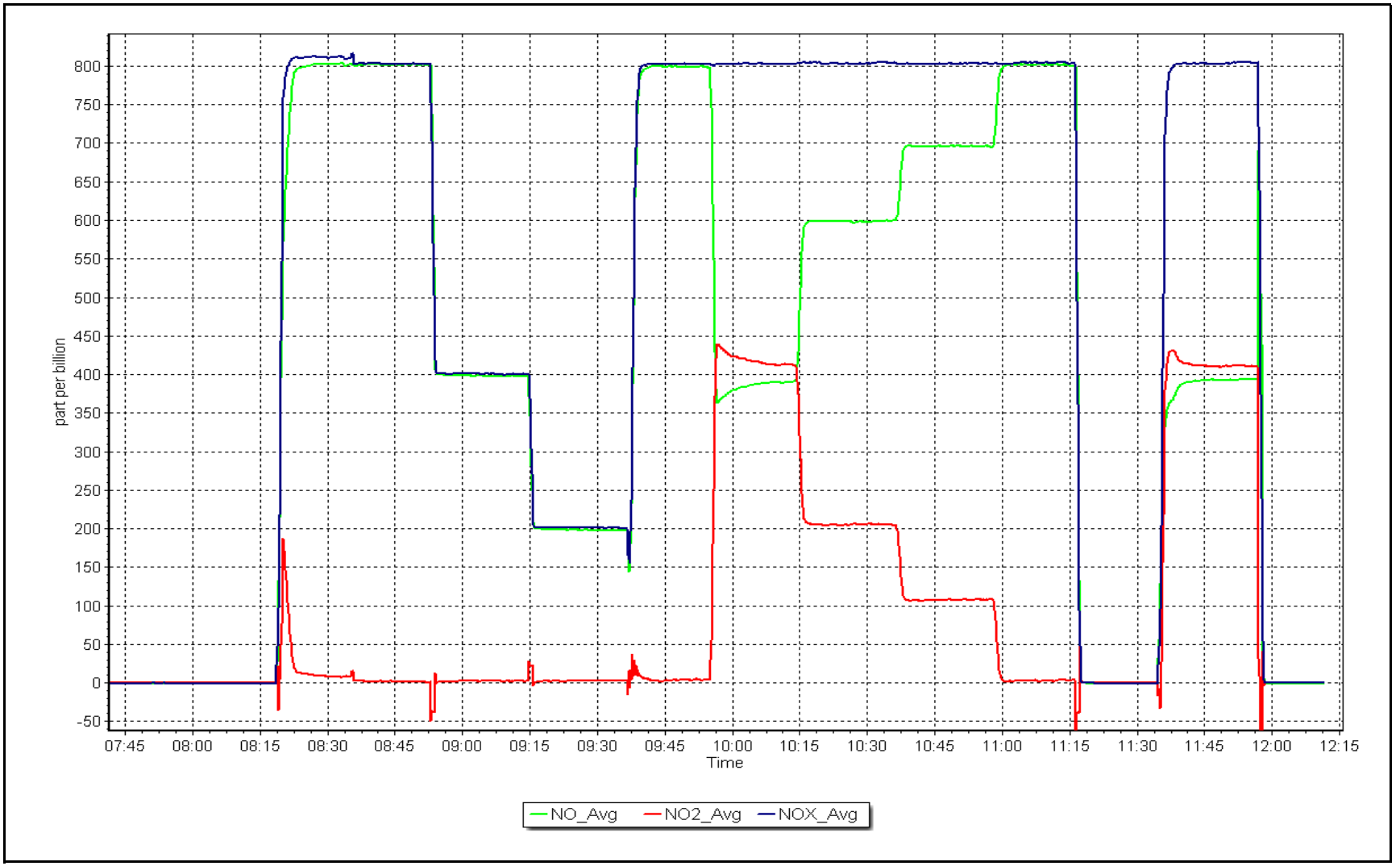
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.9	----
800.4	801.5	0.9987
399.6	397.8	1.0045
200.4	198.1	1.0116

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999990	*≥0.995*
Slope	1.002985	*0.90 - 1.10*
Intercept	-2.025916	*+/-20*



NO_X Calibration Plot Date: April 9, 2025 Location: Fort Chipewyan



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Fort Chipewyan	Station number:	AMS 08
Calibration Date:	April 7, 2025	Last Cal Date:	March 11, 2025
Start time (MST):	12:11	End time (MST):	15:22
Reason:	Routine		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	Teledyne API T700	Serial Number:	3810
ZAG Make/Model:	Teledyne API T701	Serial Number:	135

Analyzer Information

Analyzer make:	Thermo 49i		Analyzer serial #:	1152220026	
Analyzer Range	0 - 500 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.993514	0.986800	Backgd or Offset:	-0.3	-0.3
Calibration intercept:	0.060000	0.260000	Coeff or Slope:	1.005	1.005

O_3 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) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.3	----
As found High point	5000	968.7	400.0	395.4	1.012
As found Mid point					
As found Low point					
Baseline Corr As found:	395.1	Previous response	397.5	*% 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	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.4	----
High point	5000	968.7	400.0	395.1	1.012
Mid point	5000	820.5	200.0	197.4	1.013
Low point	5000	720.0	100.0	98.9	1.011
As left zero	5000	0.0	0.0	0.2	----
As left span	5000	968.7	400.0	396.1	1.010
				Average Correction Factor	1.012

Notes: Changed Filter after asfound. No adjustments needed.

Calibration Performed By: Sabian Voyageur, Jermey Cardinal, Morgan Voyageur.

Wood Buffalo Environmental Association

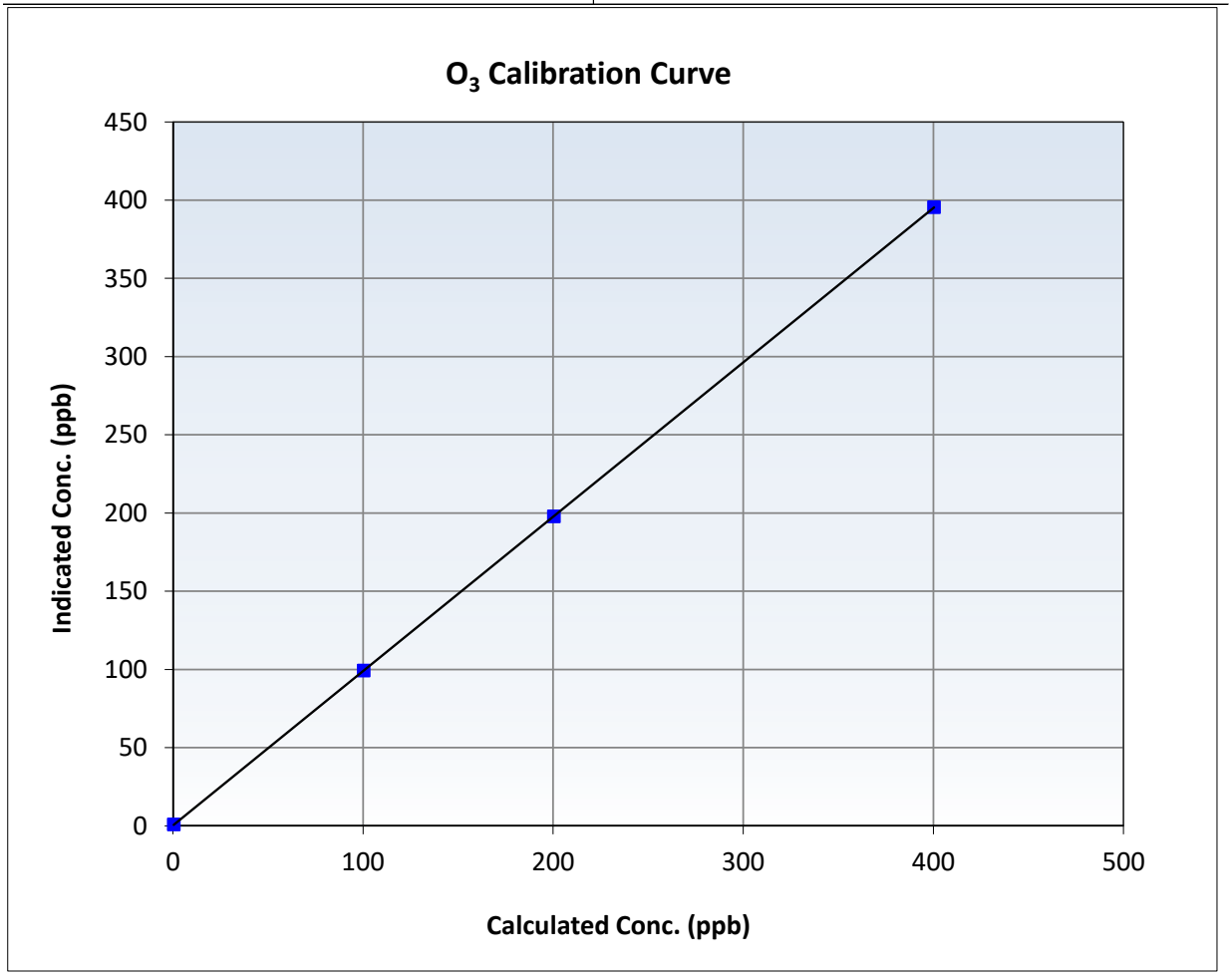
O_3 Calibration Summary

Station Information

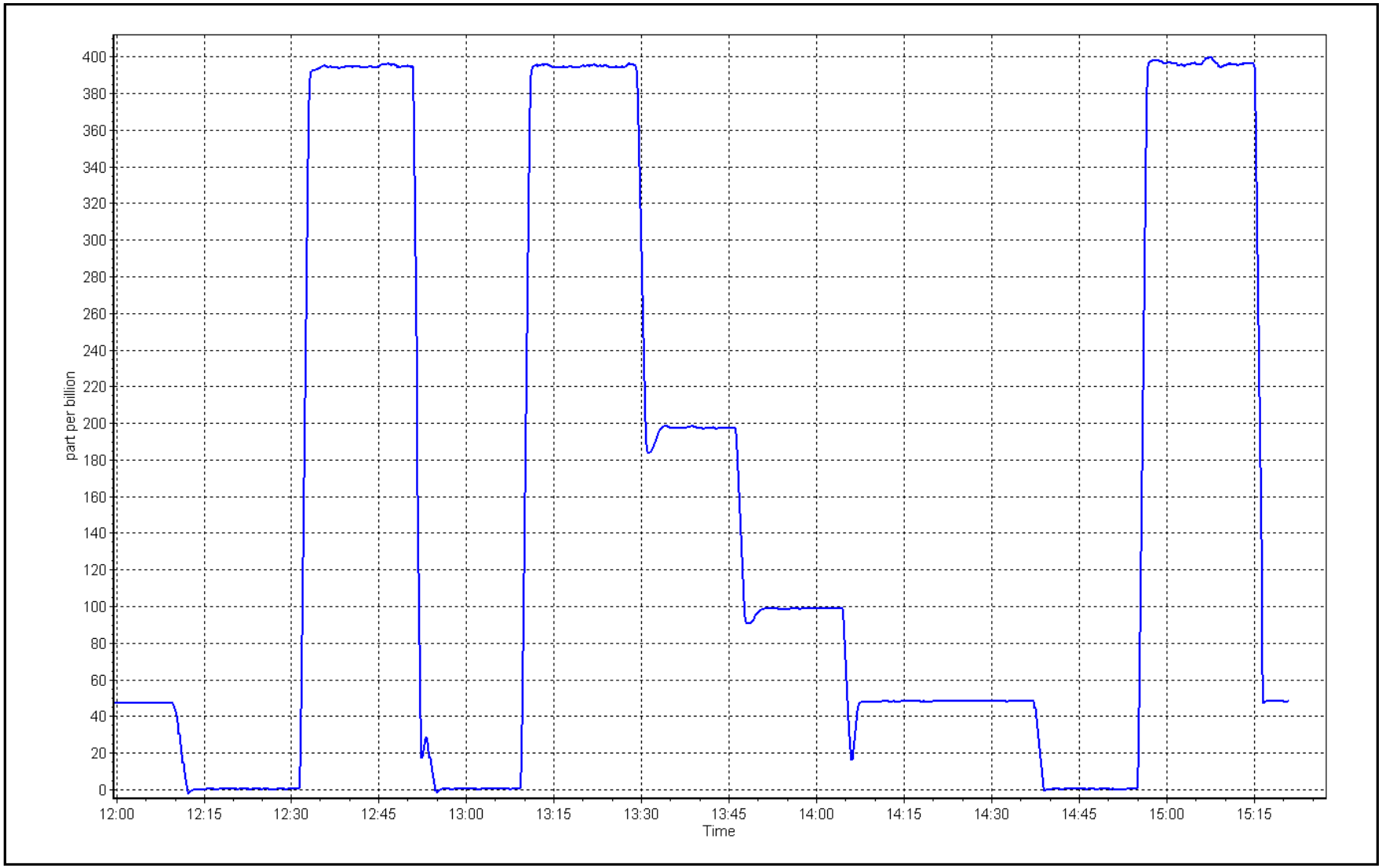
Calibration Date:	April 7, 2025	Previous Calibration:	March 11, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	12:11	End Time (MST):	15:22
Analyzer make:	Thermo 49i	Analyzer serial #:	1152220026

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.4	----	Correlation Coefficient	0.999999	≥0.995
400.0	395.1	1.0124	Slope	0.986800	0.90 - 1.10
200.0	197.4	1.0132			
100.0	98.9	1.0111	Intercept	0.260000	+/- 5



O_3 Calibration Plot Date: April 7, 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:	April 25, 2025	Last Cal Date:	March 11, 2025
Start time (MST):	8:10	End time (MST):	8:43
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)	9.30	8.75	9.30	☐	+/- 2 °C
P (mmHg)	736.30	738.5	736.30	☐	+/- 10 mmHg
Flow (LPM)	5.01	4.74	5.02	☐	+/- 0.25 LPM
PW% (pump)	49%		49%	☐	>80%
Zero Verification	PM w/o HEPA:	5.10	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	☐	+/- 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: Jeremy Cardinal, Morgan Voyageur

Wood Buffalo Environmental Association

CO Calibration Report

Station Information

Station Name:	Fort Chipewyan	Station number:	AMS 08
Calibration Date:	April 10, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	11:57	End time (MST):	14:37
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.998216	0.998612	Backgd or Offset:	-0.016	-0.016
Calibration intercept:	0.172906	0.100910	Coeff or Slope:	1.003	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.1	----
As found High point	4934	66.7	40.4	40.5	1.000
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr As found:	40.42	Prev response:	40.52	*% 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	

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	4934	66.7	40.4	40.4	1.000
Mid point	4966.7	33.3	20.2	20.3	0.992
Low point	4983.3	16.7	10.1	10.2	0.989
As left zero	5000	0.0	0.0	0.2	----
As left span	2960	40.0	40.4	40.2	1.004
				Average Correction Factor	0.994

Notes: Changed inlet filter after as found. No Adjustments made

Calibration Performed By: Sabian V, Jeremy C,

Wood Buffalo Environmental Association

CO Calibration Summary

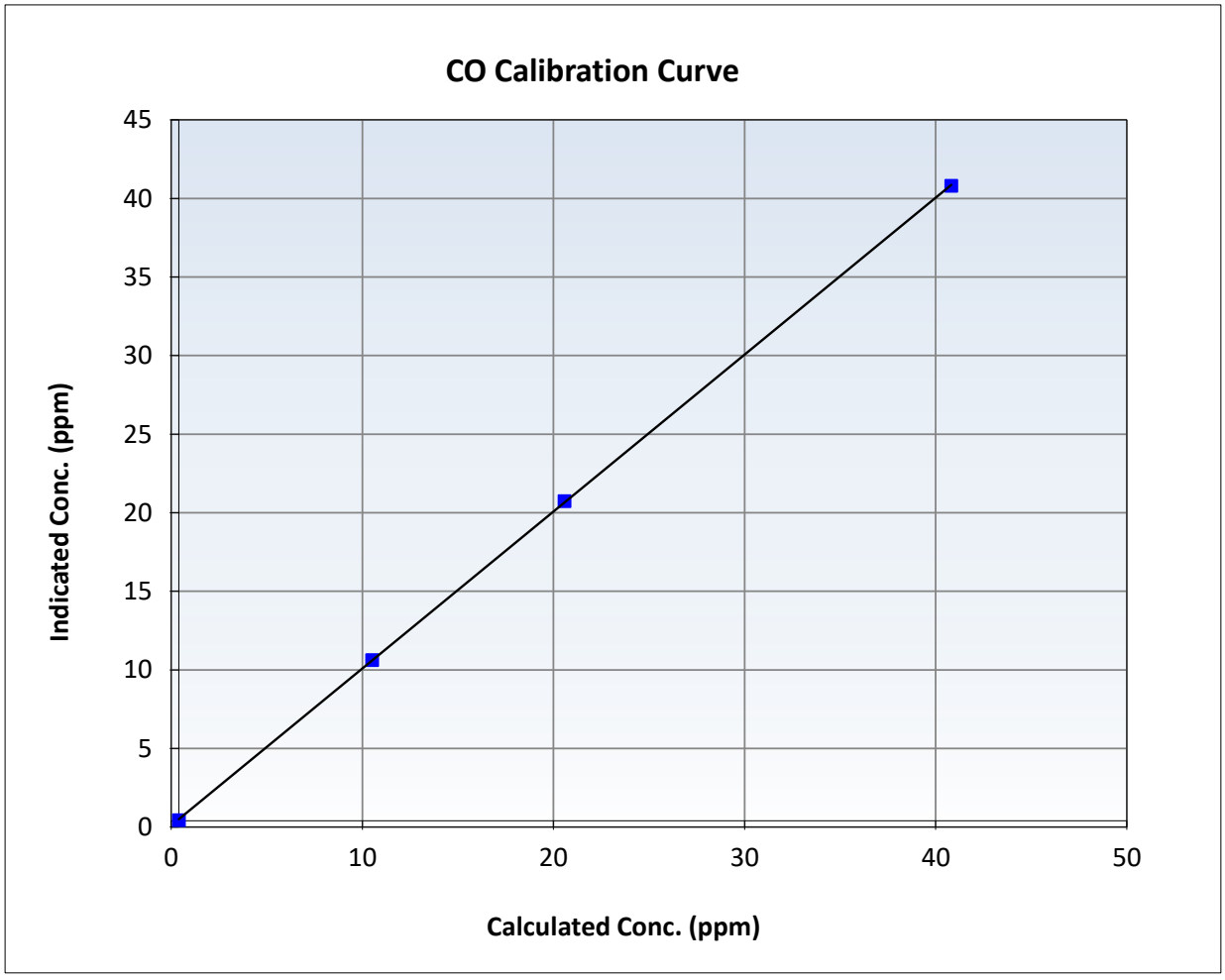
Station Information

Calibration Date:	April 10, 2025	Previous Calibration:	March 17, 2025
Station Name:	Fort Chipewyan	Station Number:	AMS 08
Start Time (MST):	11:57	End Time (MST):	14:37
Analyzer make:	Teledyne API T300	Analyzer serial #:	3505

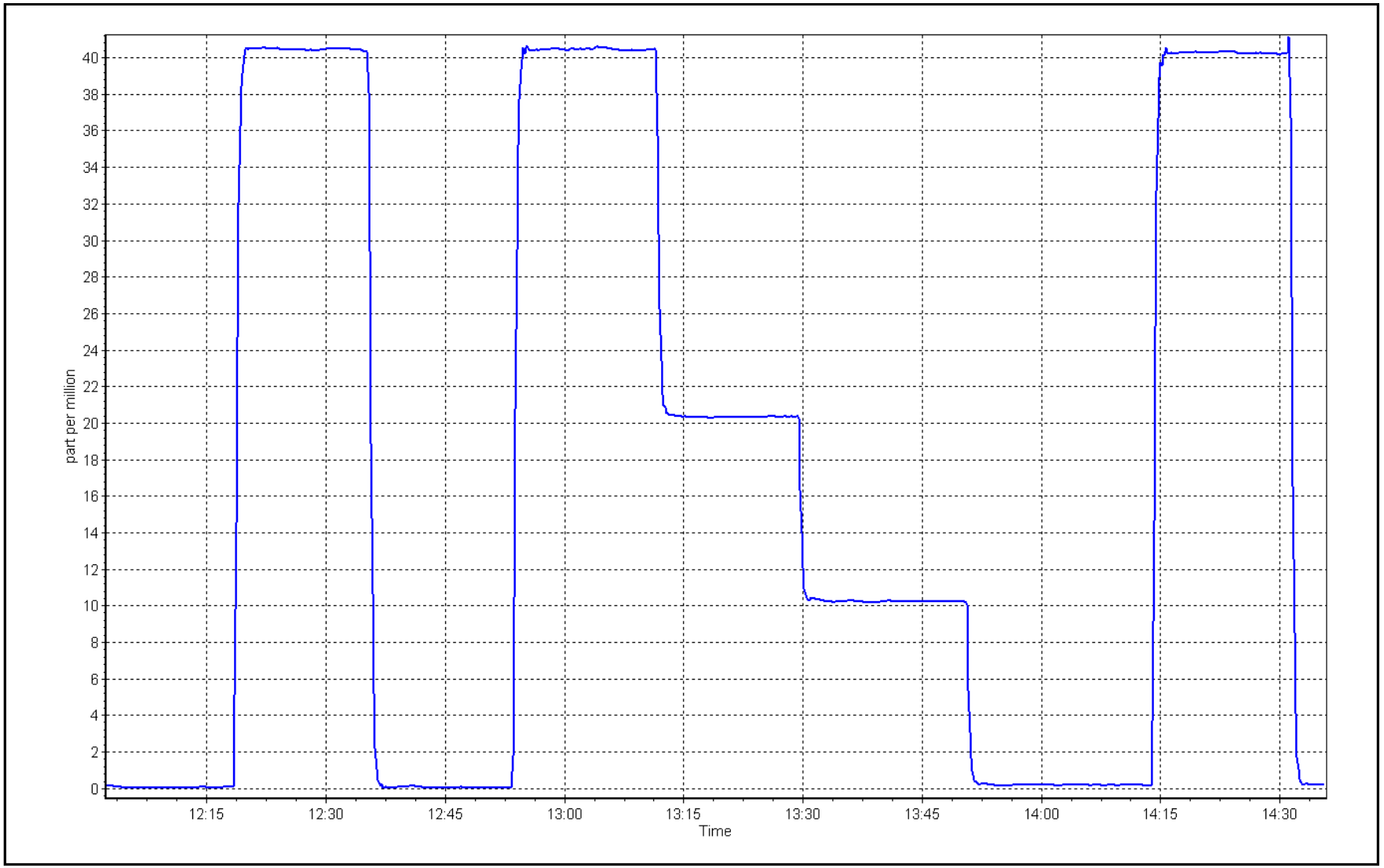
Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
40.4	40.4	1.0001
20.2	20.3	0.9921
10.1	10.2	0.9893

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999984	*≥0.995*
Slope	0.998612	*0.90 - 1.10*
Intercept	0.100910	*+/-1.5*



CO Calibration Plot Date: April 10, 2025 Location: Fort Chipewyan



Wood Buffalo Environmental Association

CO_2 Calibration Report

Station Information

Station Name:	Fort Chipewyan	Station number:	AMS 08
Calibration Date:	April 10, 2025	Last Cal Date:	March 19, 2025
Start time (MST):	8:19	End time (MST):	11:37
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.998354	1.004061	Backgd or Offset:	-0.014	-0.014
Calibration intercept:	-4.560000	-5.320000	Coeff or Slope:	1.033	1.033

CO_2 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	3000	0.0	0.0	0.1	----
As found High Point	2920	80.0	1605.9	1608.0	0.999
As found Mid Point					
As found Low Point					
New cylinder response					

Baseline Corr As found:	1607.9	Prev response:	1598.7	*% 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	

CO_2 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	3000	0.0	0.0	0.4	----
High point	2920	80.0	1605.9	1613.7	0.995
Mid point	2960	40.0	802.9	786.7	1.021
Low point	2980	20.0	401.5	399.6	1.005
As left zero	3000	0.0	0.0	0.2	----
As left span	2960	40.0	802.9	787.8	1.019
				Average Correction Factor	1.007

Notes: Changed inlet filter after as found, no adjustments made

Calibration Performed By: Sabian V, Jeremy C

Wood Buffalo Environmental Association

CO_2 Calibration Summary

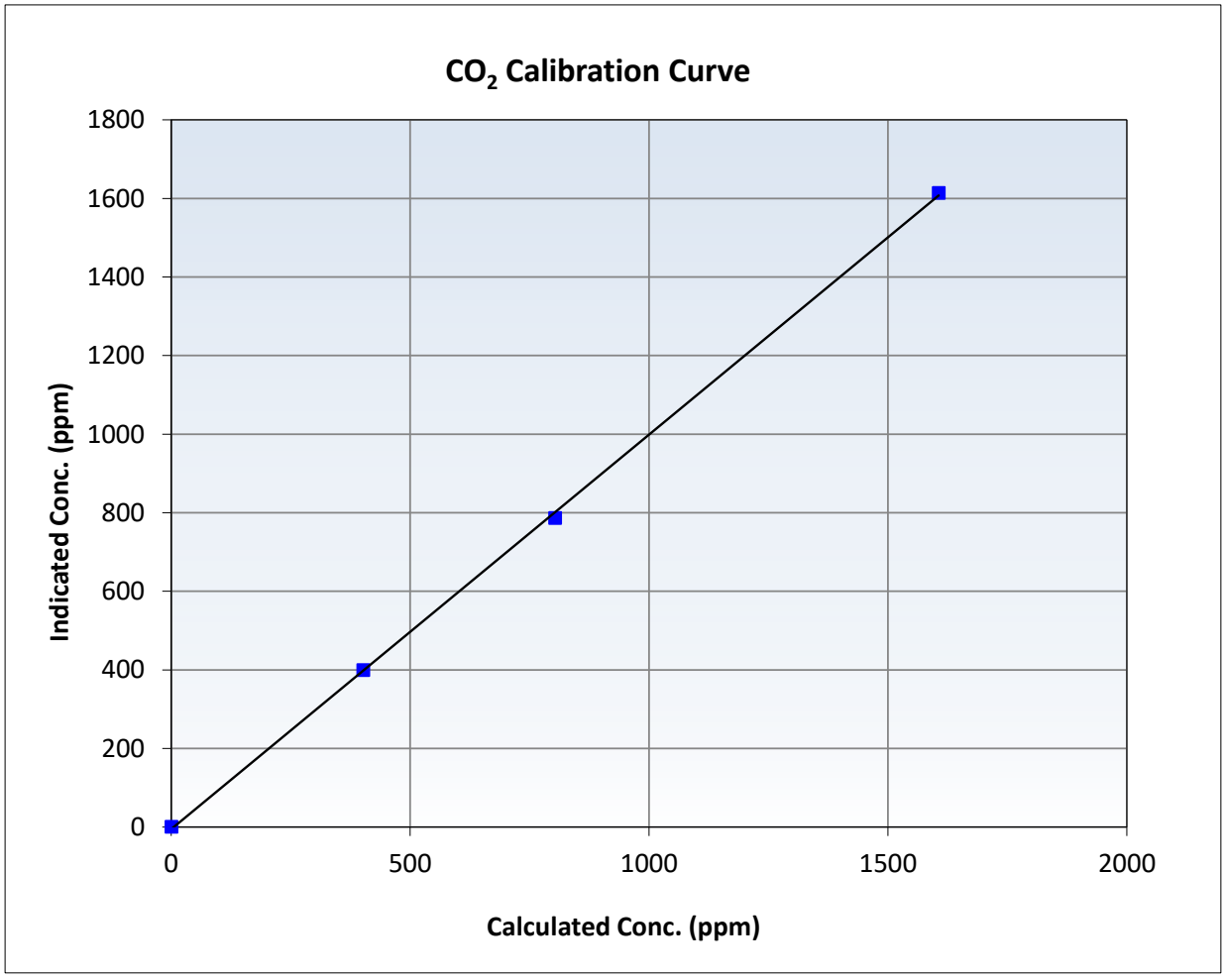
Station Information

Calibration Date	April 10, 2025	Previous Calibration	March 19, 2025
Station Name	Fort Chipewyan	Station Number	AMS 08
Start Time (MST)	8:19	End Time (MST)	11:37
Analyzer make	Teledyne API T360	Analyzer serial #	289

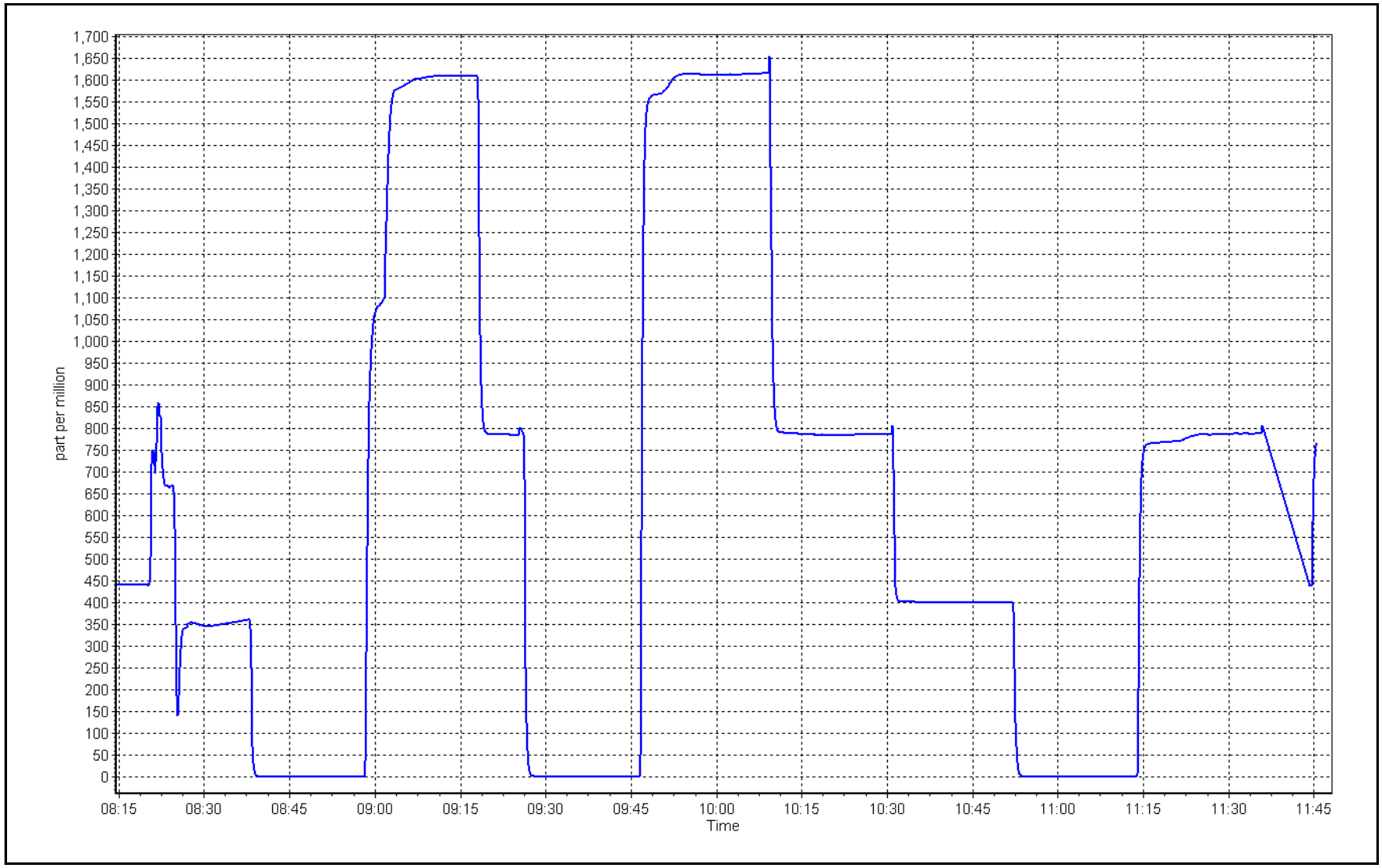
Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.0	0.4	----
1605.9	1613.7	0.9951
802.9	786.7	1.0206
401.5	399.6	1.0047

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999802	*≥0.995*
Slope	1.004061	*0.90 - 1.10*
Intercept	-5.3	*+/-20*



CO_2 Calibration Plot Date: April 10, 2025 Location: Fort Chipewyan



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS09
BARGE LANDING
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Barge Landing	Station number:	AMS 09
Calibration Date:	April 7, 2025	Last Cal Date:	March 6, 2025
Start time (MST):	9:09	End time (MST):	12:05
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	50.56	ppm	Cal Gas Exp Date:	October 9, 2032
Cal Gas Cylinder #:	CC705748			
Removed Cal Gas Conc:	50.56	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Model:	API T700		Serial Number:	3812
Zero Air Gen Model:	APIT701		Serial Number:	4888

Analyzer Information

Analyzer make:	Thermo 43i		Serial Number:	1118148498	
Analyzer Range:	0 - 1000 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.999602	1.006817	Backgd or Offset:	11.4	11.5
Calibration intercept:	-0.799117	-0.598200	Coeff or Slope:	0.998	1.010

SO_2 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	0.1	----
As found High point	4921	79.1	799.8	792.9	1.009
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	792.8	Previous response	798.7	*% 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	

SO_2 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	0.2	----
High point	4921	79.1	799.8	805.0	0.994
Mid point	4961	39.5	399.4	401.4	0.995
Low point	4980	19.8	200.2	200.0	1.001
As left zero	5000	0.0	0.0	0.1	----
As left span	4921	79.1	799.8	806.4	0.992
				Average Correction Factor:	0.997

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

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

SO_2 Calibration Summary

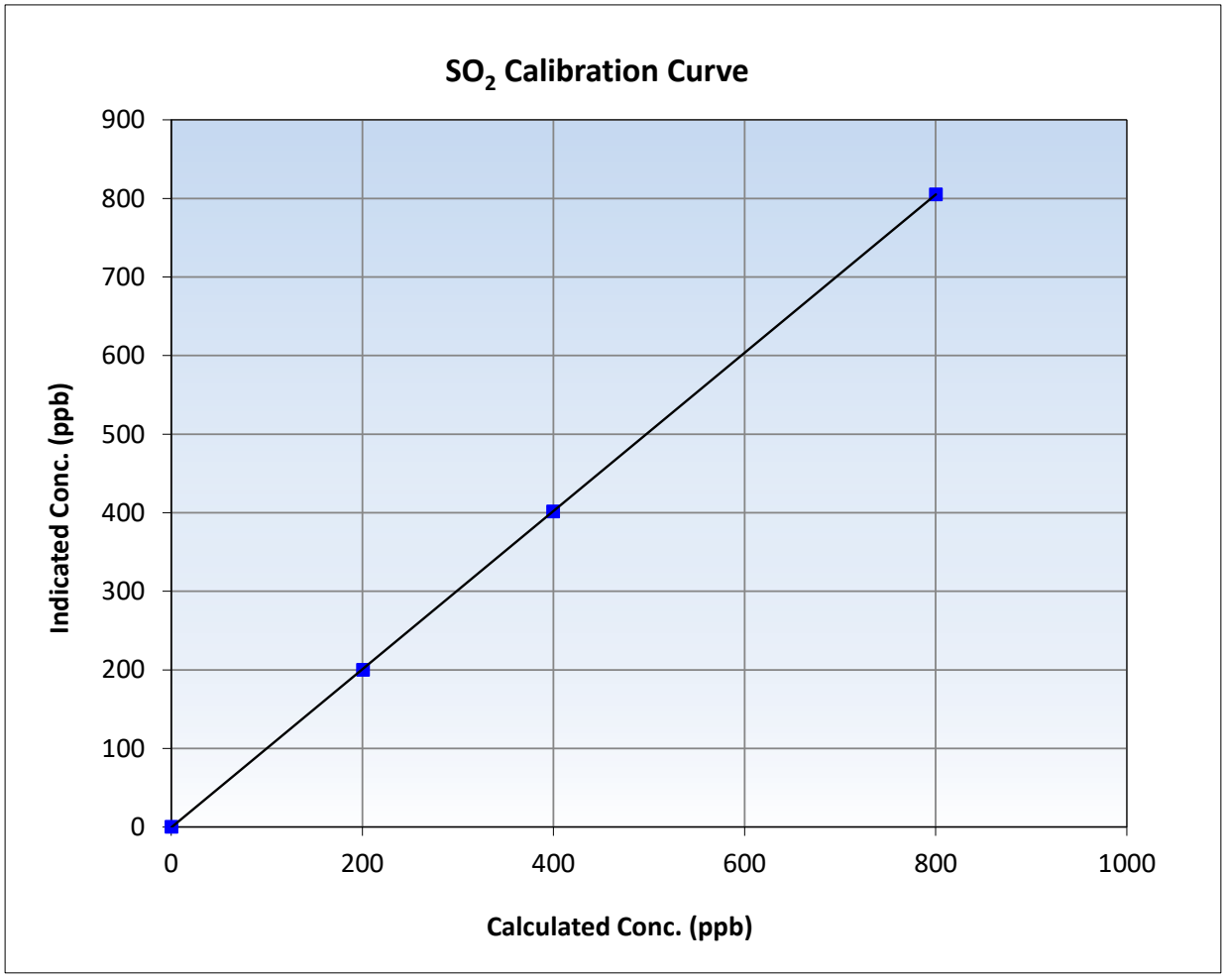
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 6, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:09	End Time (MST):	12:05
Analyzer make:	Thermo 43i	Analyzer serial #:	1118148498

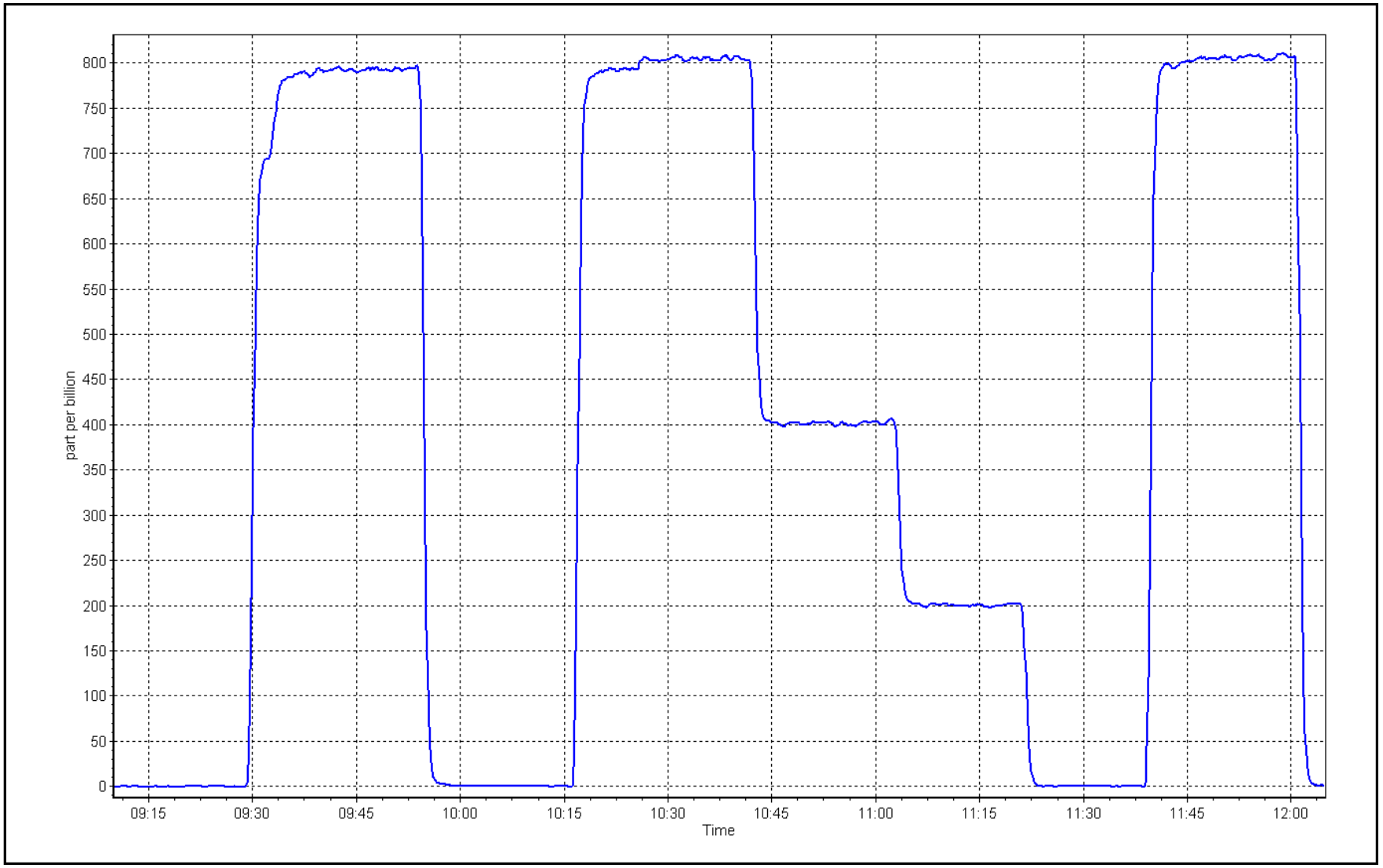
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
799.8	805.0	0.9936
399.4	401.4	0.9950
200.2	200.0	1.0011

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999995	*≥0.995*
Slope	1.006817	*0.90 - 1.10*
Intercept	-0.598200	*+/-30*



SO2 Calibration Plot Date: April 7, 2025 Location: Barge Landing



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Barge Landing	Station number:	AMS 09
Calibration Date:	April 1, 2025	Last Cal Date:	March 24, 2025
Start time (MST):	8:54	End time (MST):	12:56
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	5.17	ppm	Cal Gas Exp Date:	August 22, 2026
Cal Gas Cylinder #:	CC511415			
Removed Cal Gas Conc:	5.17	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Make/Model:	API T700		Serial Number:	3812
ZAG Make/Model:	API T701		Serial Number:	4888

Analyzer Information

Analyzer make:	Thermo 43i-TLE		Analyzer serial #:	12426335708
Converter make:	CDN-101		Converter serial #:	519
Analyzer Range	0 - 100 ppb		Converter Temp:	830 degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.999979	0.999833	Backgd or Offset:	2.130	2.130
Calibration intercept:	-0.280625	0.099474	Coeff or Slope:	1.069	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.8	----
As found High point	4923	77.4	80.0	72.3	1.095
As found Mid point	4961	38.7	40.0	35.8	1.094
As found Low point	4981	19.3	20.0	17.6	1.085
New cylinder response					

Baseline Corr As found:	73.1	Prev response:	79.76	*% change:	-9.1%
Baseline Corr 2nd AF pt:	36.6	AF Slope:	0.912612	AF Intercept:	-0.722238
Baseline Corr 3rd AF pt:	18.4	AF Correlation:	0.999994	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4923	77.4	80.0	80.1	0.999
Mid point	4961	38.7	40.0	40.1	0.998
Low point	4981	19.3	20.0	20.2	0.988
As left zero	5000	0.0	0.0	0.1	----
As left span	4923	77.4	80.0	80.5	0.994
SO2 Scrubber Check	4920	80.2	802.0	0.1	----
Date of last scrubber change:				Ave Corr Factor	0.995
Date of last converter efficiency test:					

Notes: Low span response probably due to drift. Diagnostics seems fine. Adjusted zero and span.

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

TRS Calibration Summary

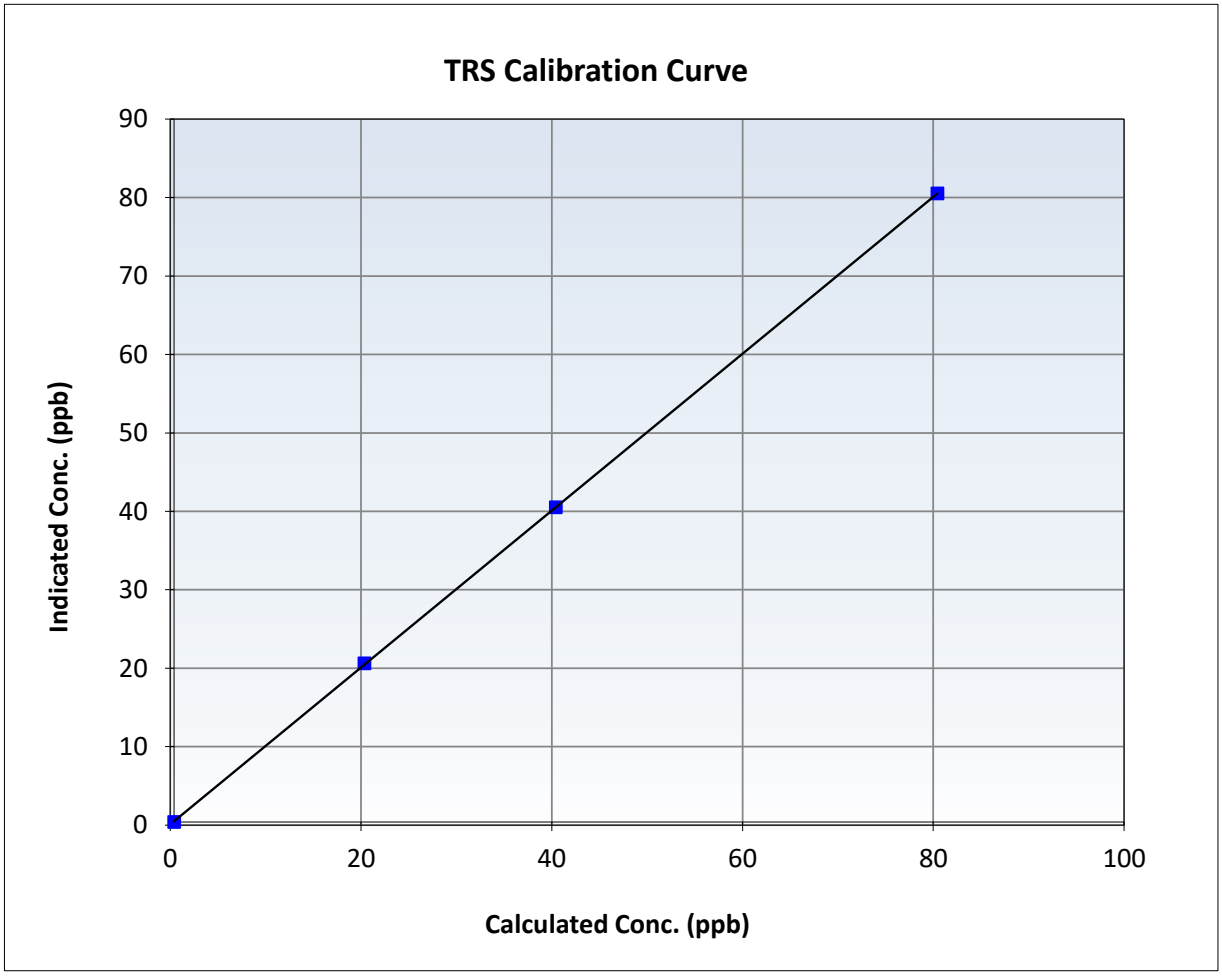
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 24, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	8:54	End Time (MST):	12:56
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	12426335708

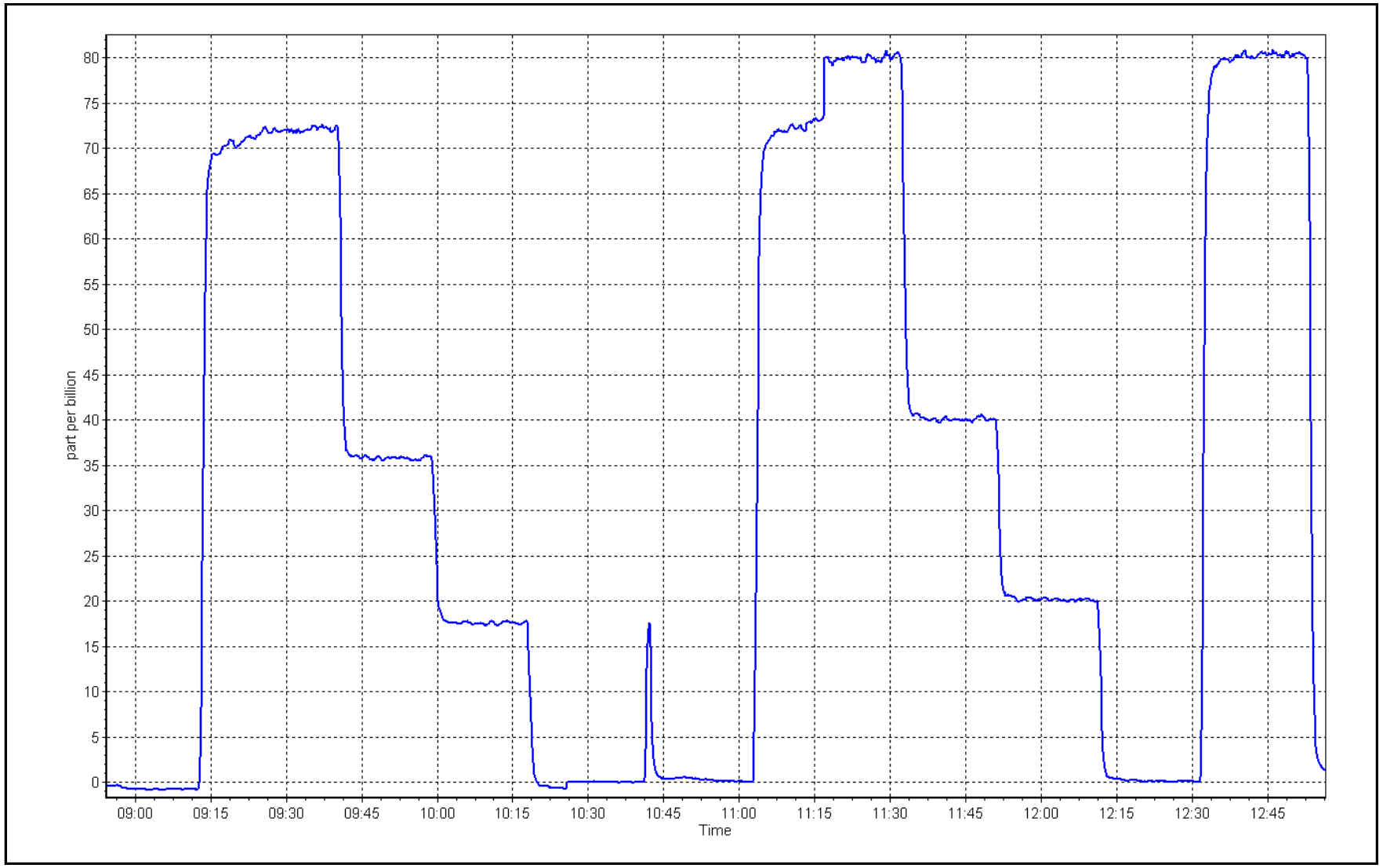
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
80.0	80.1	0.9993
40.0	40.1	0.9982
20.0	20.2	0.9881

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999991	*≥0.995*
Slope	0.999833	*0.90 - 1.10*
Intercept	0.099474	*+/-3*



TRS Calibration Plot Date: April 1, 2025 Location: Barge Landing



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Barge Landing	Station number:	AMS 09
Calibration Date:	April 5, 2025	Last Cal Date:	March 6, 2025
Start time (MST):	12:05	End time (MST):	14:50
Reason:	Install		

Calibration Standards

Gas Cert Reference:	CC705748	Cal Gas Expiry Date:	October 9, 2032
CH4 Cal Gas Conc.	505.6 ppm	CH4 Equiv Conc.	1068.8 ppm
C3H8 Cal Gas Conc.	204.8 ppm		
Removed Gas Cert:	CC151285	Removed Gas Expiry:	January 5, 2025
Removed CH4 Conc.	505.6 ppm	CH4 Equiv Conc.	1068.8 ppm
Removed C3H8 Conc.	204.8 ppm	Diff between cyl (THC):	
Diff between cyl (CH_4):		Diff between cyl (NM):	
Calibrator Model:	API T700	Serial Number:	3812
Zero Air Gen model:	APIT701	Serial Number:	5613

Analyzer Information

Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	N/A	2.31E-04	NMHC SP Ratio:	N/A	4.90E+05
CH4 Retention time:	N/A	15.2	NMHC Peak Area:	N/A	181998
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)) *Limit = 0.90-1.10*
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	16.91	16.96	0.997
Mid point	4961	39.5	8.44	8.46	0.998
Low point	4980	19.8	4.23	4.22	1.004
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	16.91	17.05	0.991
				Average Correction Factor	1.000

Notes: Install calibration. Span adjusted.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	8.91	8.96	0.995
Mid point	4961	39.5	4.45	4.48	0.994
Low point	4980	19.8	2.23	2.24	0.994
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	8.91	9.03	0.987
				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)) *Limit = 0.90-1.10*
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	8.00	8.01	0.998
Mid point	4961	39.5	3.99	3.98	1.004
Low point	4980	19.8	2.00	1.97	1.015
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	8.00	8.02	0.997
				Average Correction Factor	1.006

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	N/A	1.003755
THC Cal Offset:	N/A	-0.014363
CH4 Cal Slope:	N/A	1.002645
CH4 Cal Offset:	N/A	-0.017384
NMHC Cal Slope:	N/A	1.005407
NMHC Cal Offset:	N/A	0.001219

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

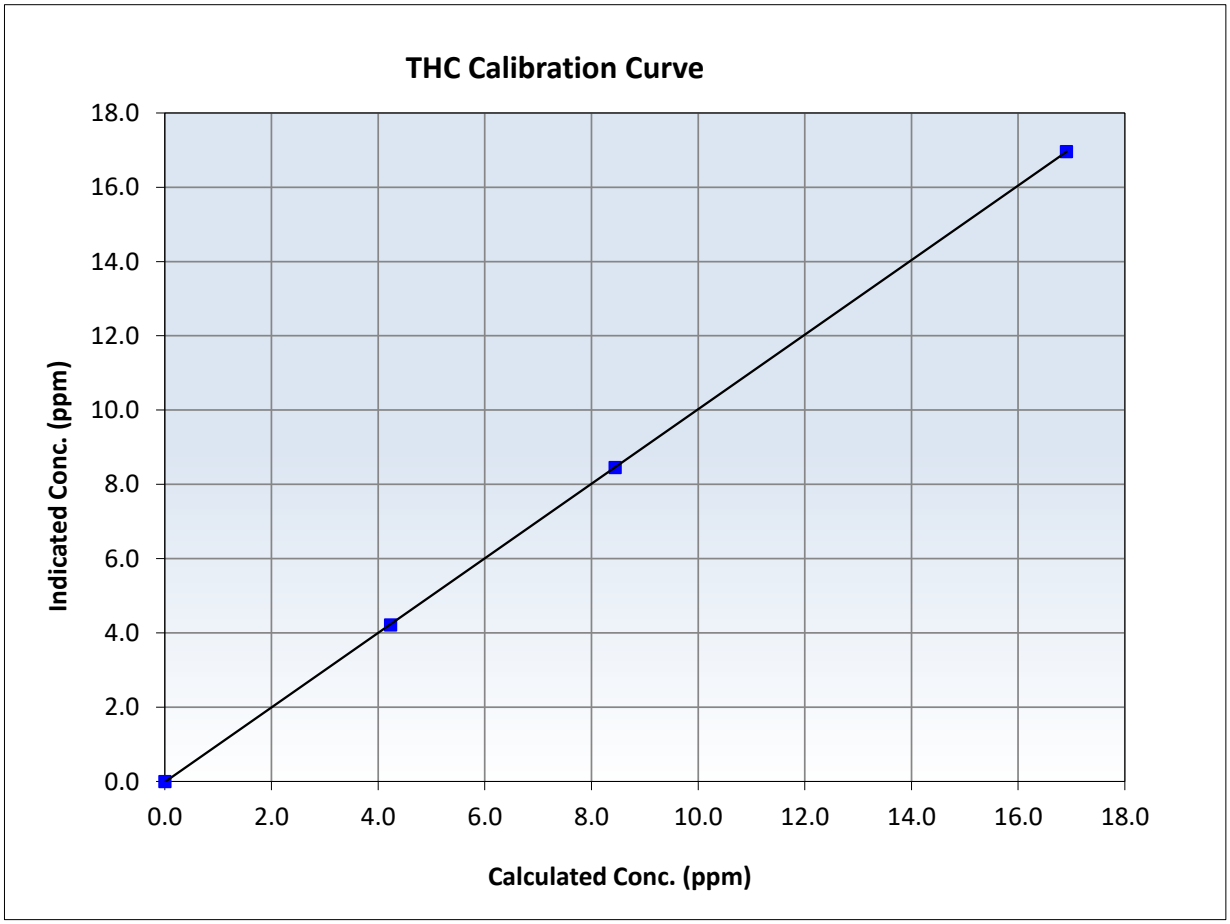
THC Calibration Summary

Station Information

Calibration Date:	April 5, 2025	Previous Calibration:	March 6, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	12:05	End Time (MST):	14:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999997	≥0.995
16.91	16.96	0.9968	Slope	1.003755	0.90 - 1.10
8.44	8.46	0.9983	Intercept	-0.014363	+/-0.5
4.23	4.22	1.0037			



Wood Buffalo Environmental Association

CH_4 Calibration Summary

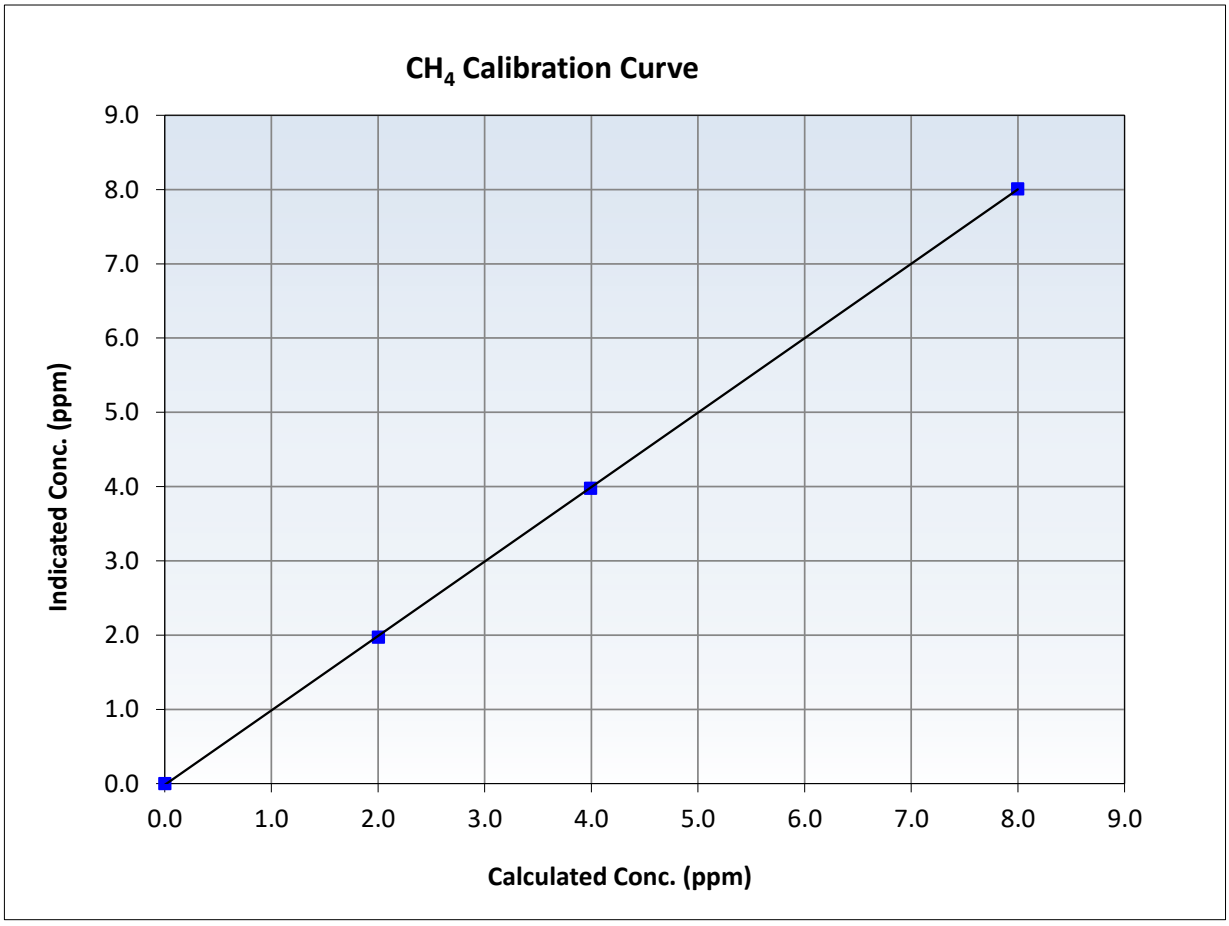
Station Information

Calibration Date:	April 5, 2025	Previous Calibration:	March 6, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	12:05	End Time (MST):	14:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
8.00	8.01	0.9984
3.99	3.98	1.0040
2.00	1.97	1.0148

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999979	*≥0.995*
Slope	1.002645	*0.90 - 1.10*
Intercept	-0.017384	*+/-0.5*



Wood Buffalo Environmental Association

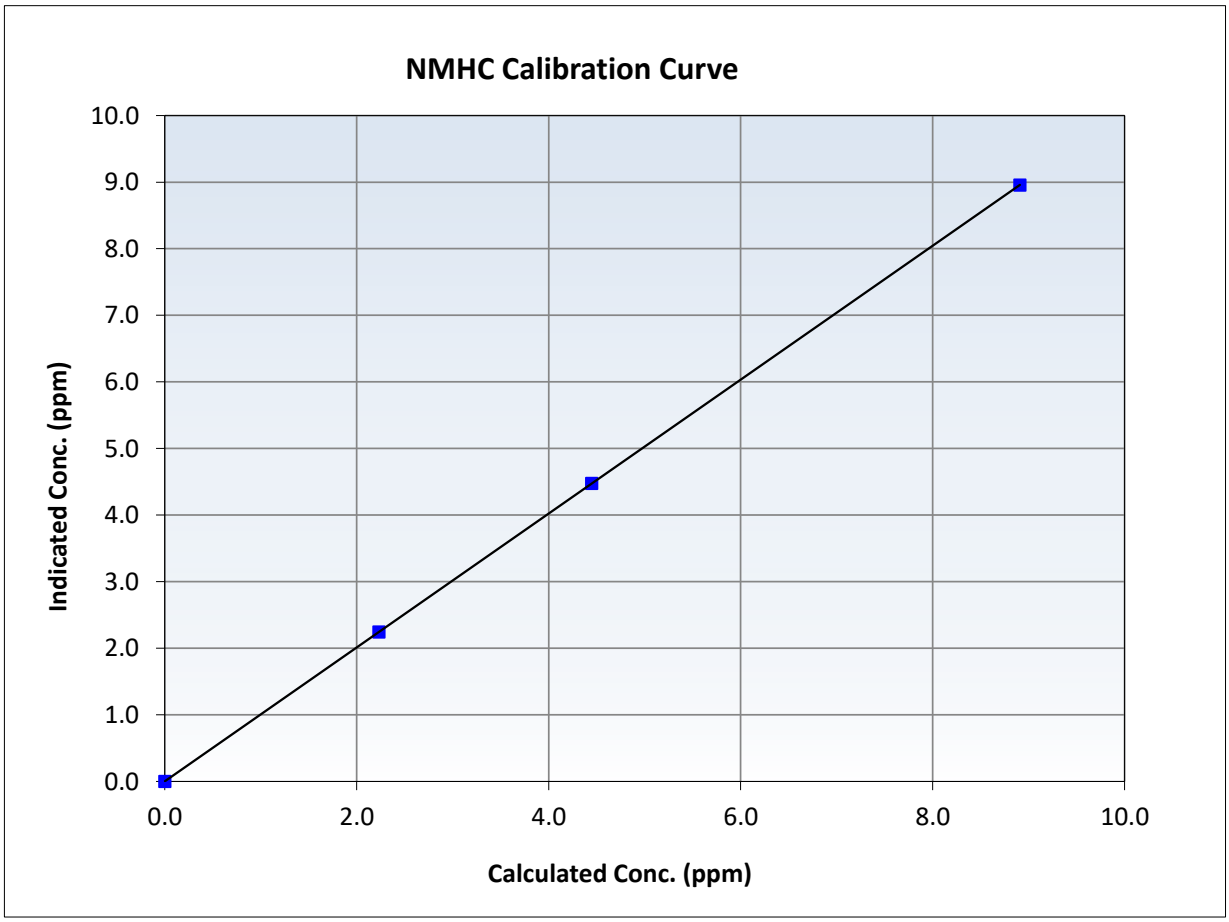
NMHC Calibration Summary

Station Information

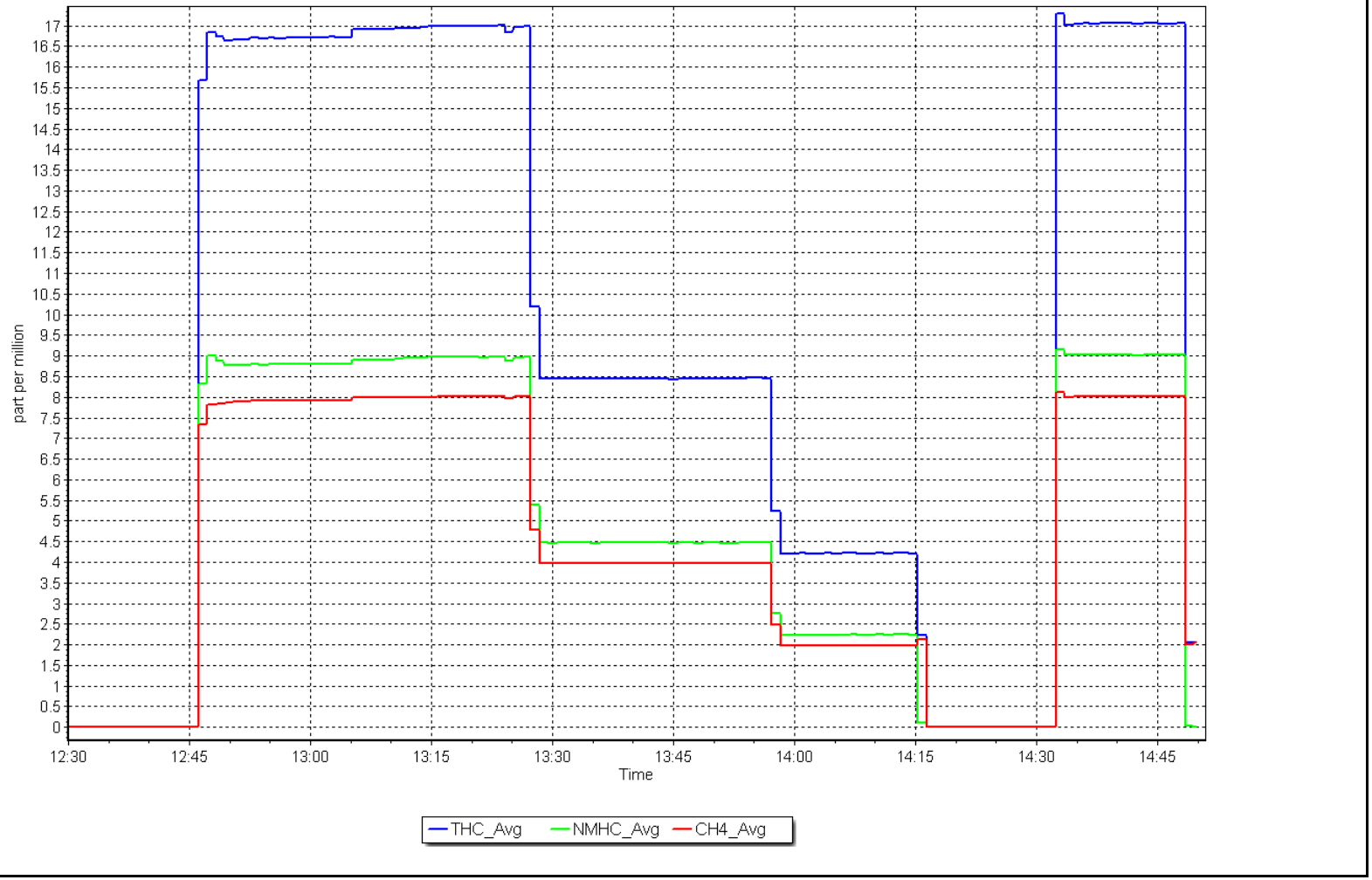
Calibration Date:	April 5, 2025	Previous Calibration:	March 6, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	12:05	End Time (MST):	14:50
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	1.000000	≥0.995
8.91	8.96	0.9946	Slope	1.005407	0.90 - 1.10
4.45	4.48	0.9939	Intercept	0.001219	+/-0.5
2.23	2.24	0.9939			



NMHC Calibration Plot Date: April 5, 2025 Location: Barge Landing



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Barge Landing	Station number:	AMS 09
Calibration Date:	April 21, 2025	Last Cal Date:	April 5, 2025
Start time (MST):	6:25	End time (MST):	8:40
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC705748	Cal Gas Expiry Date:	October 9, 2032
CH4 Cal Gas Conc.	505.6 ppm	CH4 Equiv Conc.	1068.8 ppm
C3H8 Cal Gas Conc.	204.8 ppm		
Removed Gas Cert:		Removed Gas Expiry:	
Removed CH4 Conc.	505.6 ppm	CH4 Equiv Conc.	1068.8 ppm
Removed C3H8 Conc.	204.8 ppm	Diff between cyl (THC):	
Diff between cyl (CH_4):		Diff between cyl (NM):	
Calibrator Model:	API T700	Serial Number:	3812
Zero Air Gen model:	APIT701	Serial Number:	5613

Analyzer Information

Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	N/A	2.31E-04	NMHC SP Ratio:	N/A	4.90E+00
CH4 Retention time:	N/A	15.2	NMHC Peak Area:	N/A	181998
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.1	16.91	16.05	1.053
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	16.05	Prev response	16.96	*% change	-5.6%
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	16.91	17.01	0.994
Mid point	4961	39.5	8.44	8.41	1.004
Low point	4980	19.8	4.23	4.15	1.020
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	16.91	16.85	1.003
				Average Correction Factor	1.006

Notes: CH4 channel baseline dipping. RT has moved. Span adjusted.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.1	8.91	8.12	1.098
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.12	Prev response	8.96	*% change	-10.4%
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	79.1	8.91	9.00	0.991
Mid point	4961	39.5	4.45	4.45	0.999
Low point	4980	19.8	2.23	2.19	1.018
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	8.91	8.92	0.999
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.1	8.00	7.94	1.008
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.94	Prev response	8.00	*% 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	8.00	8.02	0.998
Mid point	4961	39.5	3.99	3.96	1.010
Low point	4980	19.8	2.00	1.96	1.023
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	8.00	7.94	1.008
				Average Correction Factor	1.010

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	1.003755	1.007610
THC Cal Offset:	-0.014363	-0.060372
CH4 Cal Slope:	1.002645	1.003661
CH4 Cal Offset:	-0.017384	-0.029190
NMHC Cal Slope:	1.005407	1.011373
NMHC Cal Offset:	0.001219	-0.031782

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

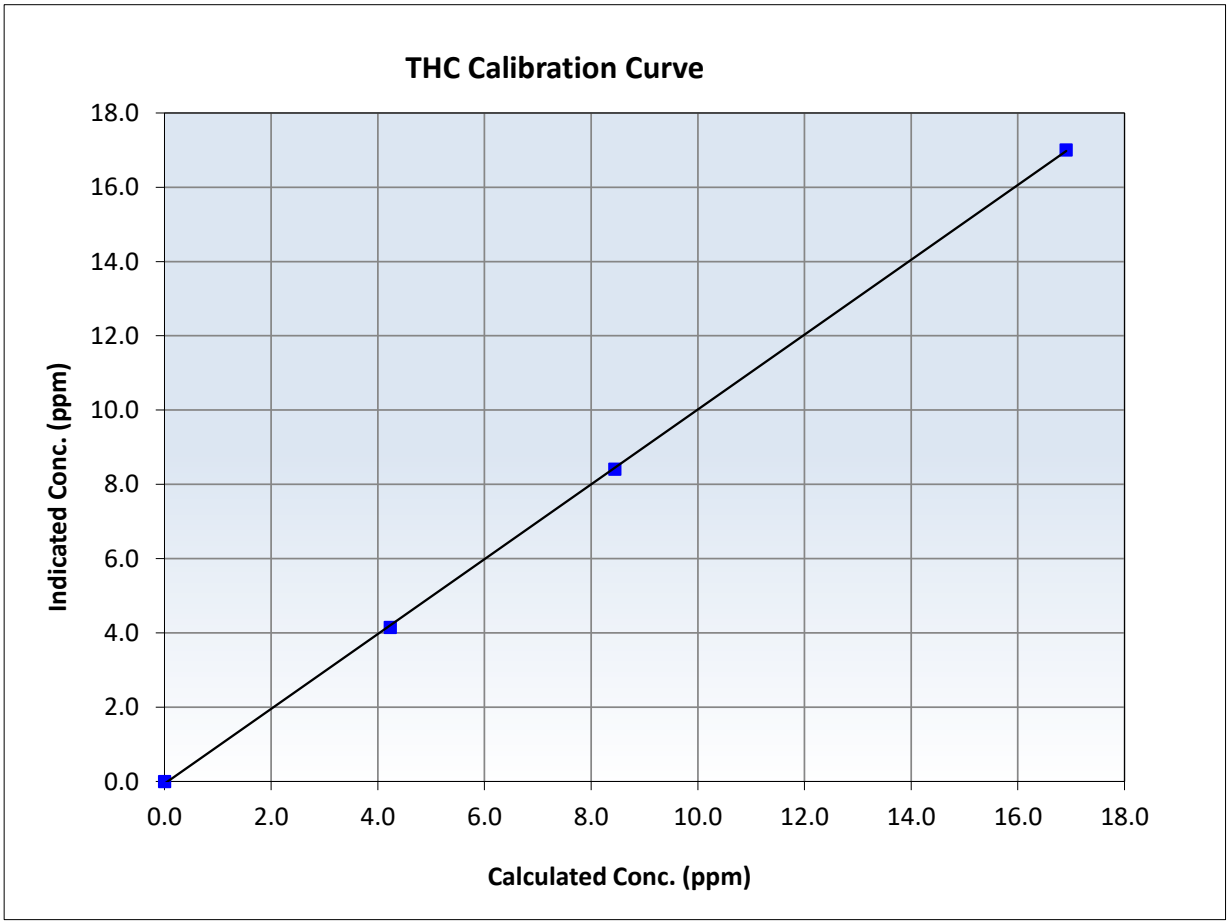
THC Calibration Summary

Station Information

Calibration Date:	April 21, 2025	Previous Calibration:	April 5, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	6:25	End Time (MST):	8:40
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999942	≥0.995
16.91	17.01	0.9941	Slope	1.007610	0.90 - 1.10
8.44	8.41	1.0040			
4.23	4.15	1.0202	Intercept	-0.060372	+/-0.5



Wood Buffalo Environmental Association

CH_4 Calibration Summary

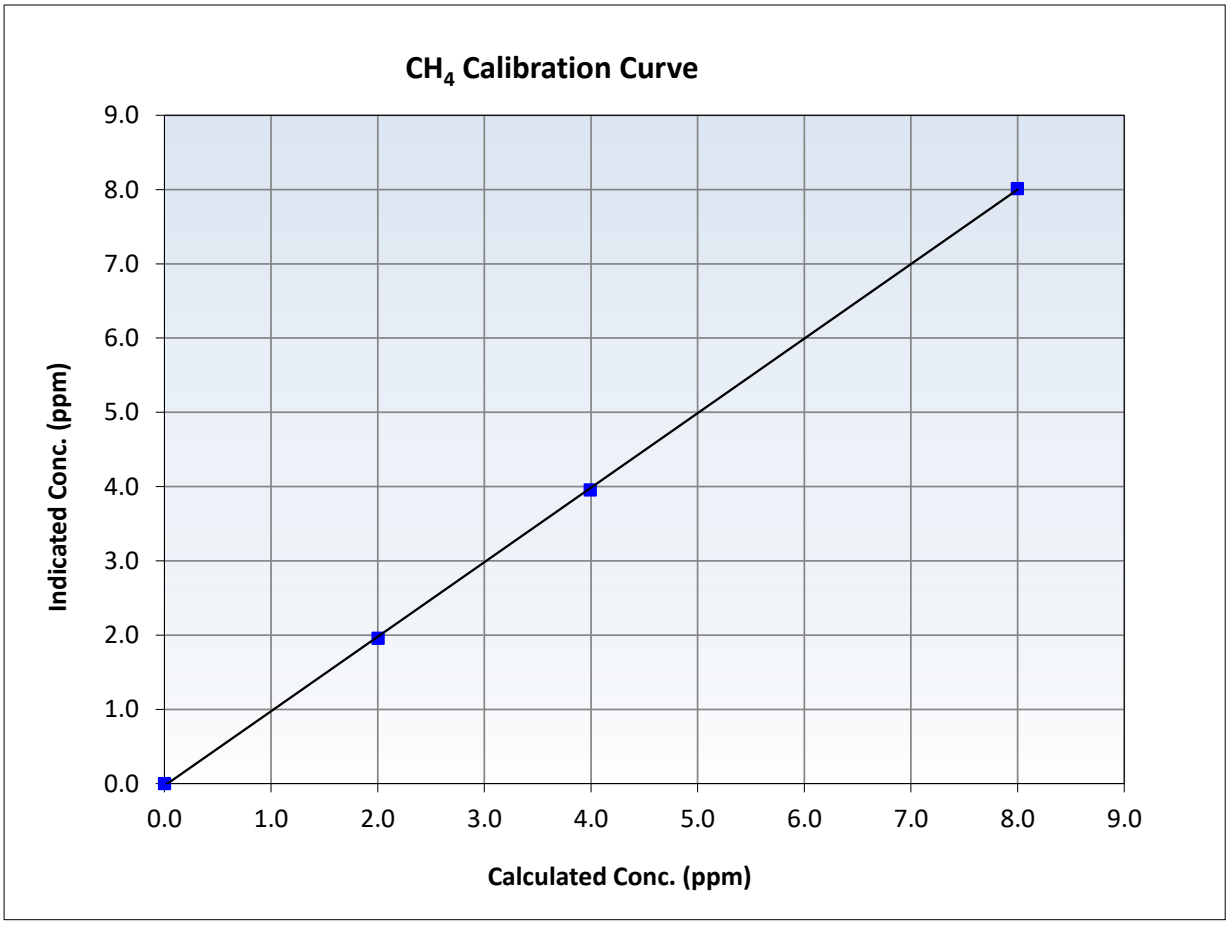
Station Information

Calibration Date:	April 21, 2025	Previous Calibration:	April 5, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	6:25	End Time (MST):	8:40
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
8.00	8.02	0.9978
3.99	3.96	1.0096
2.00	1.96	1.0231

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999936	*≥0.995*
Slope	1.003661	*0.90 - 1.10*
Intercept	-0.029190	*+/-0.5*



Wood Buffalo Environmental Association

NMHC Calibration Summary

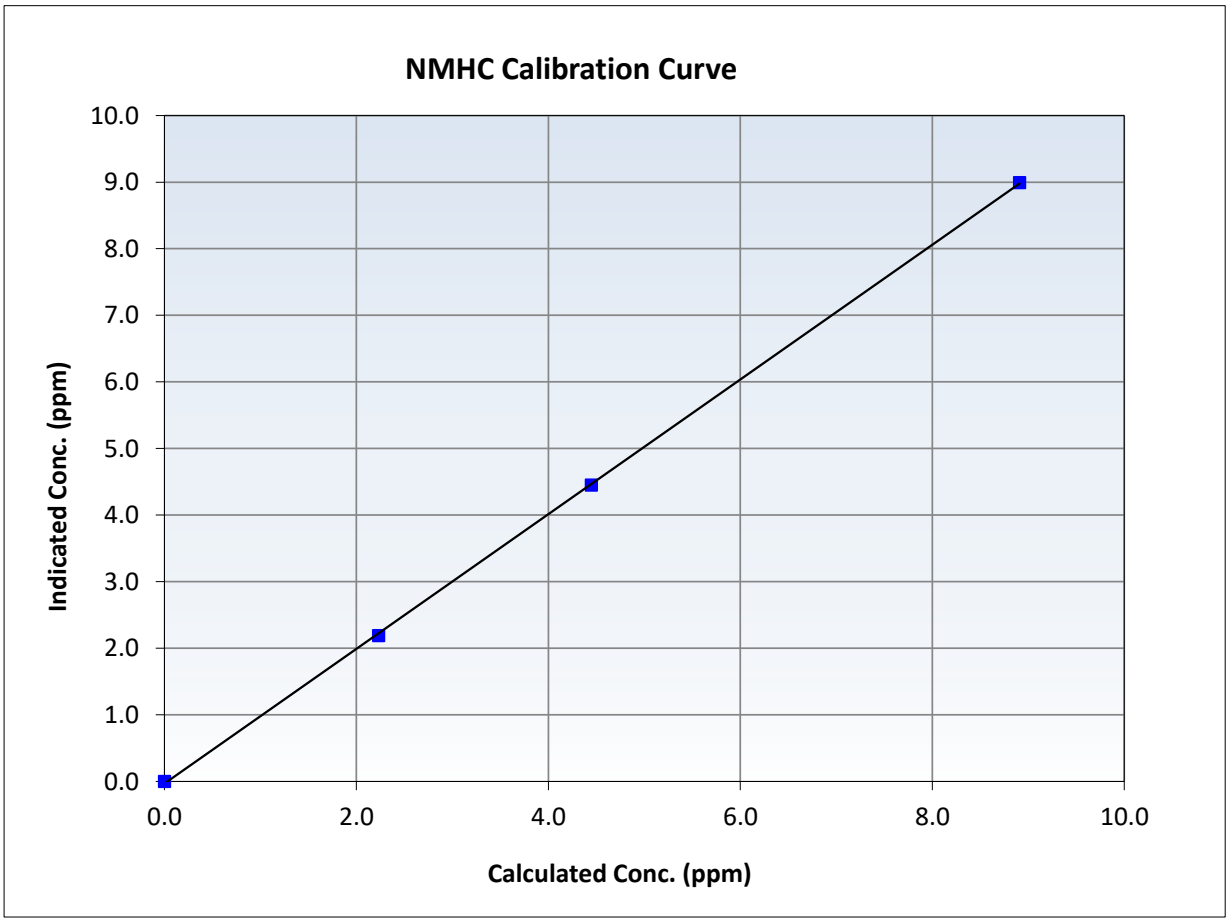
Station Information

Calibration Date:	April 21, 2025	Previous Calibration:	April 5, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	6:25	End Time (MST):	8:40
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650

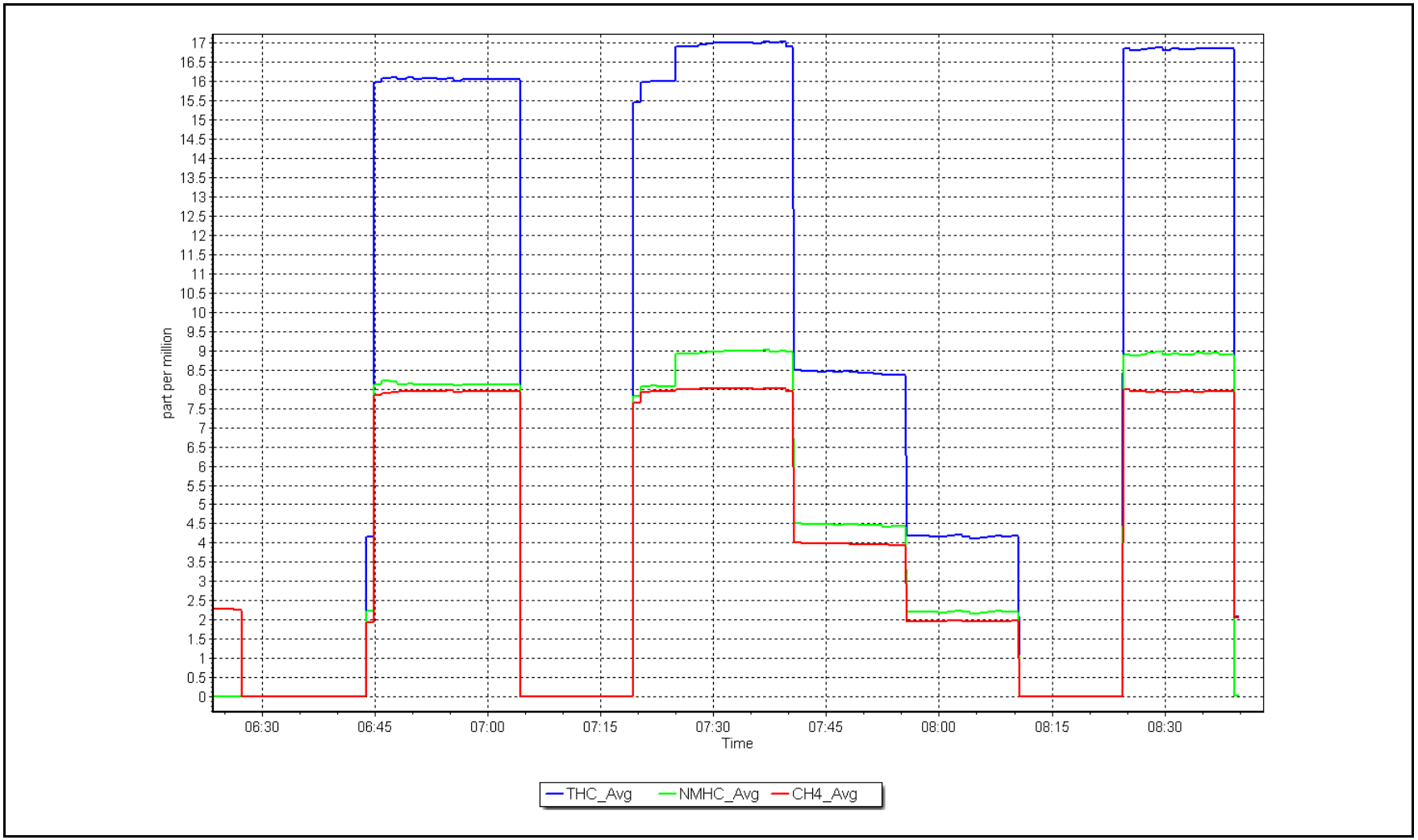
Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
8.91	9.00	0.9905
4.45	4.45	0.9993
2.23	2.19	1.0175

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999943	*≥0.995*
Slope	1.011373	*0.90 - 1.10*
Intercept	-0.031782	*+/-0.5*



NMHC Calibration Plot Date: April 21, 2025 Location: Barge Landing



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Barge Landing	Station number:	AMS 09
Calibration Date:	April 29, 2025	Last Cal Date:	April 21, 2025
Start time (MST):	9:08	End time (MST):	12:22
Reason:	Maintenance		

Calibration Standards

Gas Cert Reference:	CC705748	Cal Gas Expiry Date:	October 9, 2032
CH4 Cal Gas Conc.	505.6 ppm	CH4 Equiv Conc.	1068.8 ppm
C3H8 Cal Gas Conc.	204.8 ppm		
Removed Gas Cert:	CC151285	Removed Gas Expiry:	January 5, 2025
Removed CH4 Conc.	505.6 ppm	CH4 Equiv Conc.	1068.8 ppm
Removed C3H8 Conc.	204.8 ppm	Diff between cyl (THC):	
Diff between cyl (CH_4):		Diff between cyl (NM):	
Calibrator Model:	API T700	Serial Number:	3812
Zero Air Gen model:	APIT701	Serial Number:	5613

Analyzer Information

Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	2.31E-04	2.28E-04	NMHC SP Ratio:	4.90E+05	4.76E+05
CH4 Retention time:	15.2	14.2	NMHC Peak Area:	181998	187033
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.1	16.91	17.38	0.973
As found Mid point	4961	39.5	8.44	8.65	0.976
As found Low point	4980	19.8	4.23	4.31	0.981
New cylinder response					
Baseline Corr AF:	17.38	Prev response	16.98	*% change	2.3%
Baseline Corr 2nd AF:	8.65	AF Slope:	1.028459	AF Intercept:	-0.020568
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.1	16.91	16.96	0.997
Mid point	4961	39.5	8.44	8.40	1.005
Low point	4980	19.8	4.23	4.17	1.014
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	16.91	17.00	0.995
				Average Correction Factor	1.005

Notes: Few dips. Carrier pressure increased. Span adjusted. RT moved.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.1	8.91	9.39	0.949
As found Mid point	4961	39.5	4.45	4.68	0.951
As found Low point	4980	19.8	2.23	2.34	0.955
New cylinder response					
Baseline Corr AF:	9.39	Prev response	8.98	*% change	4.4%
Baseline Corr 2nd AF:	4.68	AF Slope:	1.054634	AF Intercept:	-0.008381
Baseline Corr 3rd AF:	2.34	AF Correlation:	0.999996	* = > +/-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	79.1	8.91	8.93	0.998
Mid point	4961	39.5	4.45	4.43	1.004
Low point	4980	19.8	2.23	2.20	1.012
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	8.91	8.96	0.994
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.1	8.00	7.99	1.001
As found Mid point	4961	39.5	3.99	3.97	1.007
As found Low point	4980	19.8	2.00	1.98	1.012
New cylinder response					
Baseline Corr AF:	7.99	Prev response	8.00	*% change	-0.1%
Baseline Corr 2nd AF:	3.97	AF Slope:	0.999458	AF Intercept:	-0.012987
Baseline Corr 3rd AF:	1.98	AF Correlation:	0.999987	* = > +/-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	79.1	8.00	8.03	0.997
Mid point	4961	39.5	3.99	3.97	1.006
Low point	4980	19.8	2.00	1.97	1.016
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.1	8.00	8.04	0.995
				Average Correction Factor	1.006

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	1.007610	1.003757
THC Cal Offset:	-0.060372	-0.041375
CH4 Cal Slope:	1.003661	1.004447
CH4 Cal Offset:	-0.029190	-0.023190
NMHC Cal Slope:	1.011373	1.003150
NMHC Cal Offset:	-0.031782	-0.018986

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

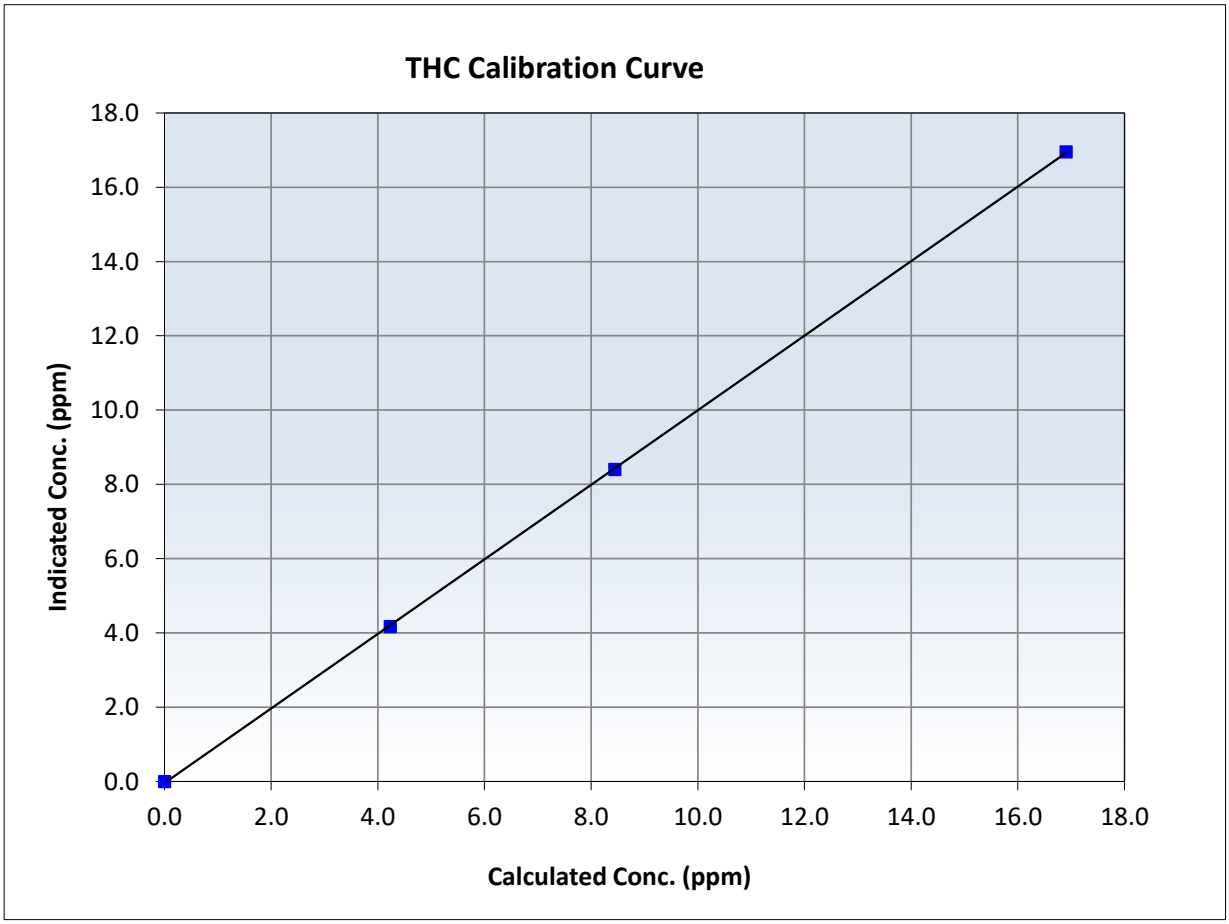
THC Calibration Summary

Station Information

Calibration Date:	April 29, 2025	Previous Calibration:	April 21, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:08	End Time (MST):	12:22
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999971	≥0.995
16.91	16.96	0.9972	Slope	1.003757	0.90 - 1.10
8.44	8.40	1.0051			
4.23	4.17	1.0140	Intercept	-0.041375	+/-0.5



Wood Buffalo Environmental Association

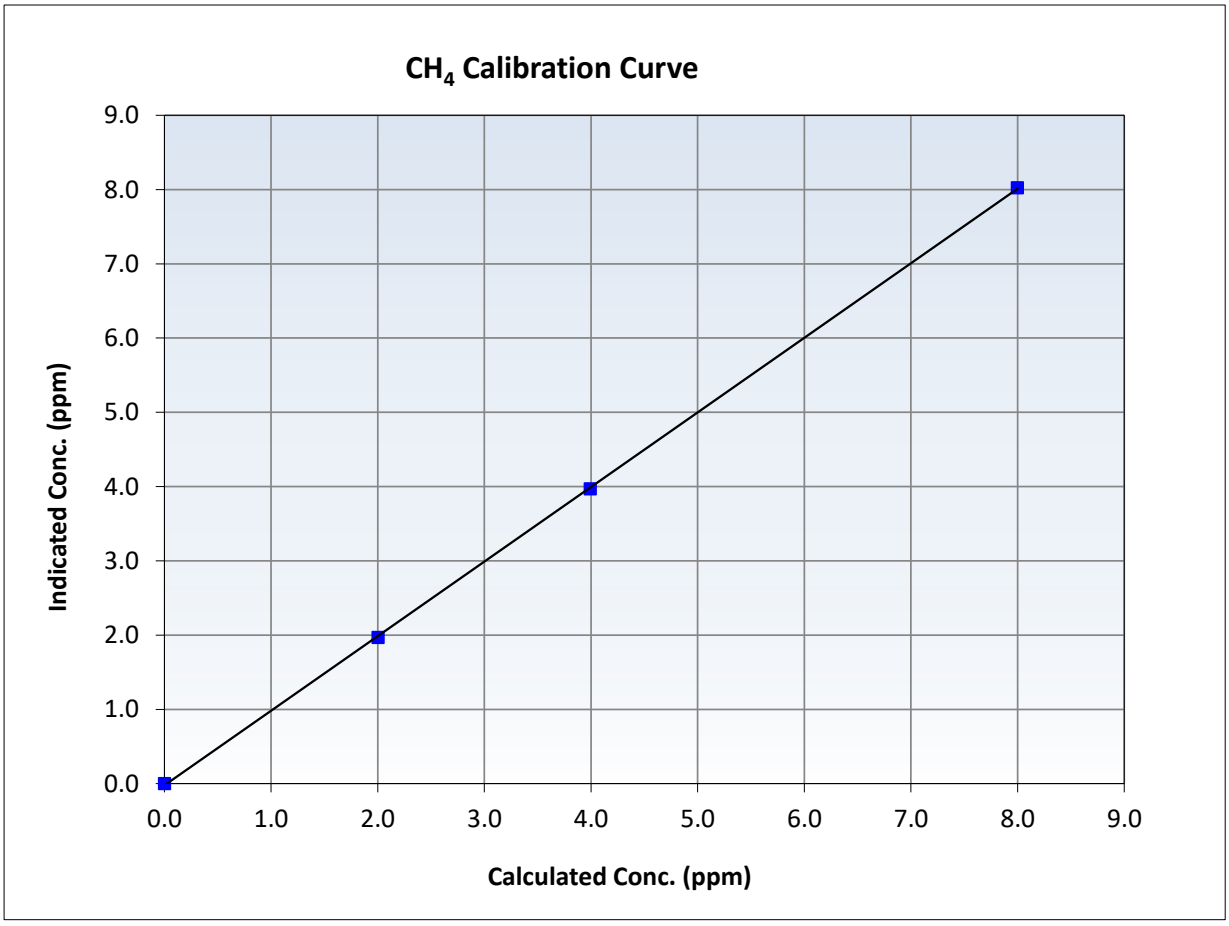
CH_4 Calibration Summary

Station Information

Calibration Date:	April 29, 2025	Previous Calibration:	April 21, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:08	End Time (MST):	12:22
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999959	≥0.995
8.00	8.03	0.9967	Slope	1.004447	0.90 - 1.10
3.99	3.97	1.0063			
2.00	1.97	1.0164	Intercept	-0.023190	+/-0.5



Wood Buffalo Environmental Association

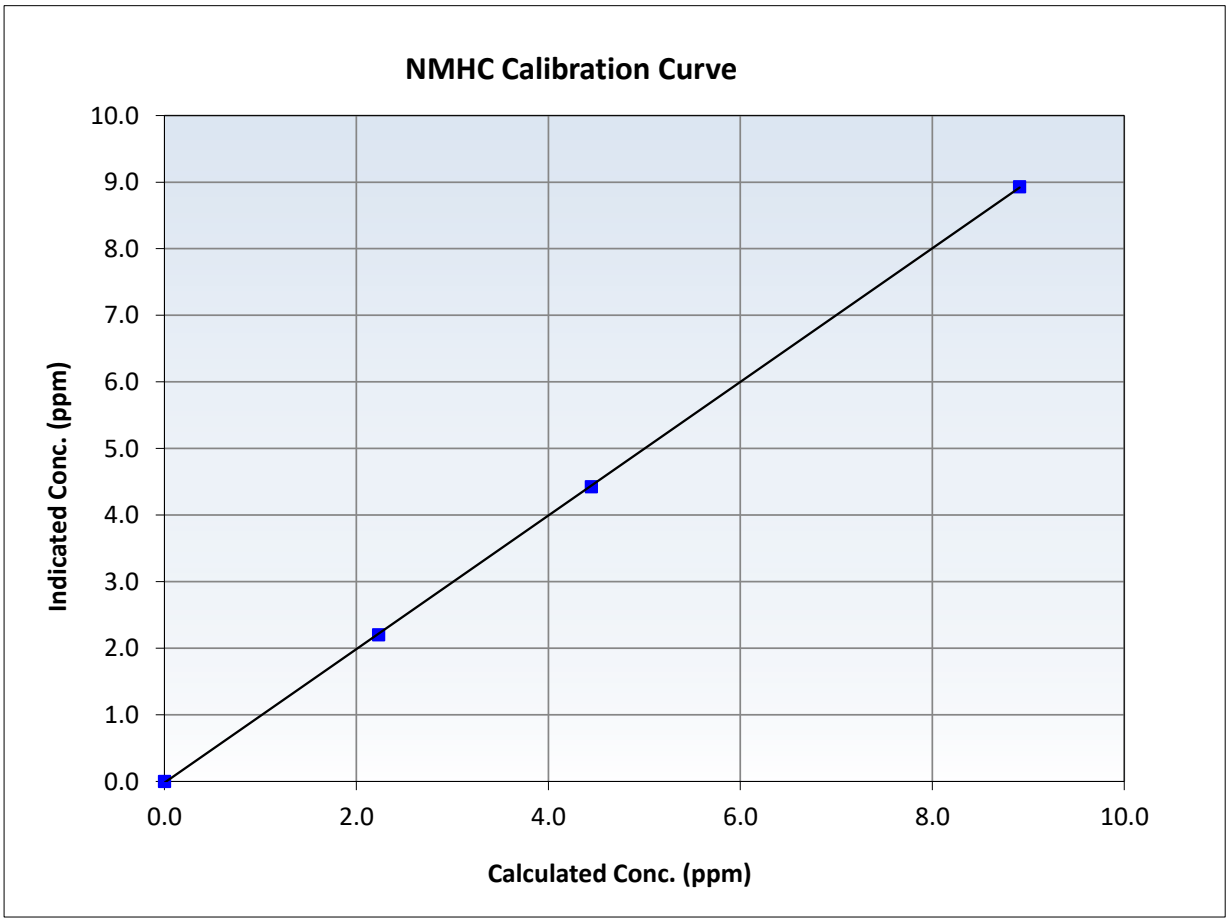
NMHC Calibration Summary

Station Information

Calibration Date:	April 29, 2025	Previous Calibration:	April 21, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:08	End Time (MST):	12:22
Analyzer make:	Thermo 55i	Analyzer serial #:	1193585650

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999978	≥0.995
8.91	8.93	0.9977	Slope	1.003150	0.90 - 1.10
4.45	4.43	1.0045	Intercept	-0.018986	+/-0.5
2.23	2.20	1.0124			



NMHC Calibration Plot Date: April 29, 2025 Location: Barge Landing

Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Barge Landing
Station number:	AMS 09
Calibration Date:	April 11, 2025
Last Cal Date:	March 17, 2025
Start time (MST):	9:09
End time (MST):	13:16
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	T2Y1KDH	Cal Gas Expiry Date:	November 17, 2026
NOX Cal Gas Conc:	47.38 ppm	NO Cal Gas Conc:	46.94 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	47.38 ppm	Removed Gas NO Conc:	46.94 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	API T700	Serial Number:	3812
ZAG make/model:	Api T701	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-0.3	-0.2	-0.2	----	----
AF High point	4915	85.3	808.3	800.7	7.5	810.0	798.5	11.5	0.9975	1.0026
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 807.3 ppb	NO = 799.0 ppb
Baseline Corr 1st pt	NO_X = 810.3 ppb	NO = 798.7 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

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	NO_2 Int:

*Percent Change	NO_X =	0.4%
*Percent Change	NO =	0.0%

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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1426262593

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:	1.124	1.124	NO bkgnd or offset:	10.3	10.3
NOX coeff or slope:	0.999	0.999	NOX bkgnd or offset:	10.6	10.6
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	176.8	176.8

Calibration Statistics

	Start	Finish
NO_X Cal Slope:	0.998427	0.997861
NO_X Cal Offset:	0.358142	1.058268
NO Cal Slope:	0.998439	0.998054
NO Cal Offset:	-0.543944	-0.083947
NO_2 Cal Slope:	1.002354	1.025270
NO_2 Cal Offset:	-0.248929	-0.569655

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
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	799.3	7.8	1.0014	1.0018
Mid point	4957	42.6	403.7	400.0	3.7	404.1	398.6	5.5	0.9990	1.0034
Low point	4979	21.3	201.8	200.0	1.9	204.0	199.7	4.2	0.9893	1.0013
As left zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.1	----	----
As left span	4915	85.3	808.3	438.2	370.1	801.2	438.2	362.9	1.0088	1.0000
							Average Correction Factor		0.9966	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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	-0.2	----	----
High GPT point	791.9	442.0	357.4	366.2	0.9760	102.5%
Mid GPT point	791.9	618.5	180.9	184.3	0.9816	101.9%
Low GPT point	791.9	706.1	93.3	95.0	0.9822	101.8%
				Average Correction Factor	0.9799	102.1%

Notes: Inlet filter changed after as founds.No adjustment. 2nd NO reference point was used due to drift.

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

NO_X Calibration Summary

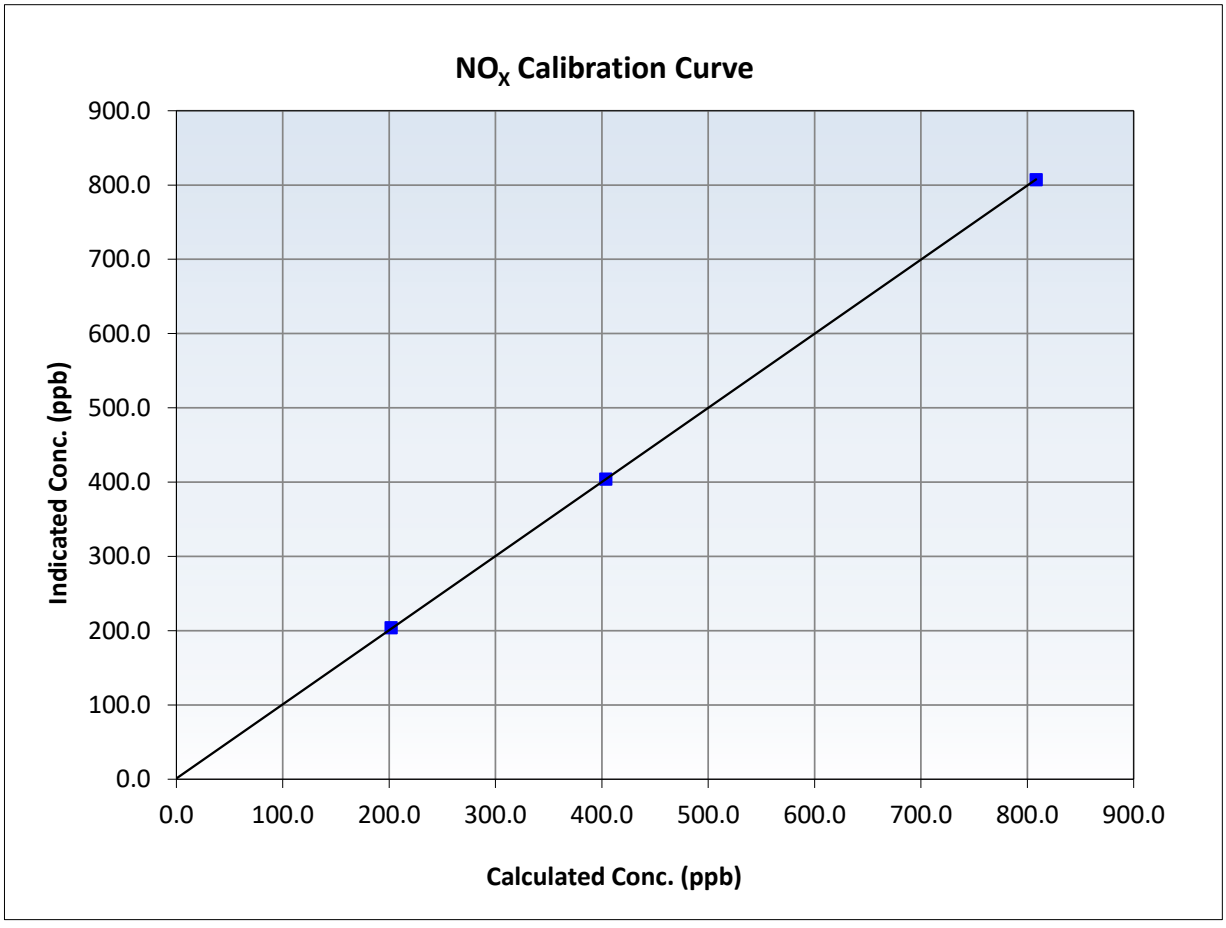
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 17, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:09	End Time (MST):	13:16
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262593

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.2	----
808.3	807.1	1.0014
403.7	404.1	0.9990
201.8	204.0	0.9893

Statistical Evaluation		Limits
Correlation Coefficient	0.999988	≥0.995
Slope	0.997861	0.90 - 1.10
Intercept	1.058268	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

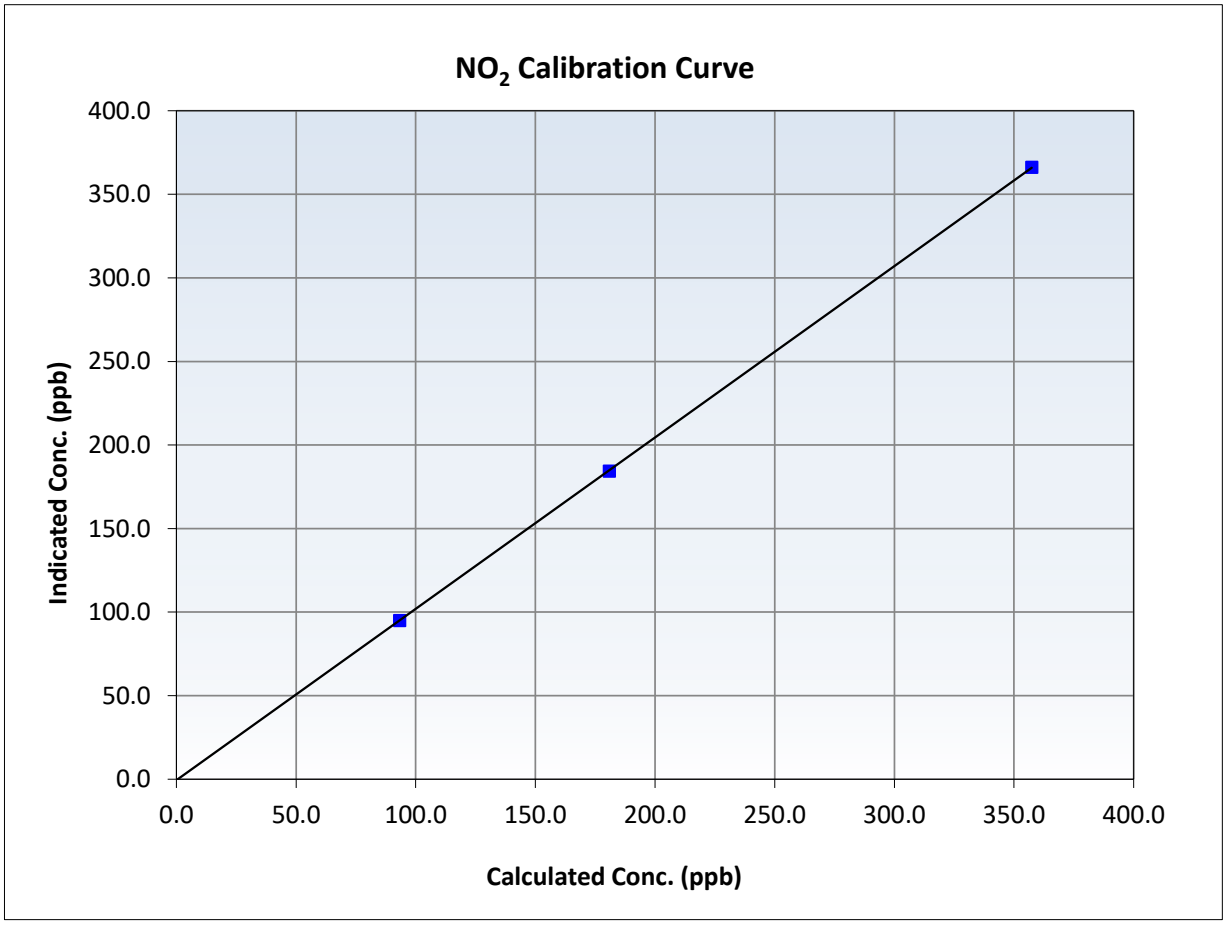
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 17, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:09	End Time (MST):	13:16
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262593

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.2	----
357.4	366.2	0.9760
180.9	184.3	0.9816
93.3	95.0	0.9822

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999991	*≥0.995*
Slope	1.025270	*0.90 - 1.10*
Intercept	-0.569655	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

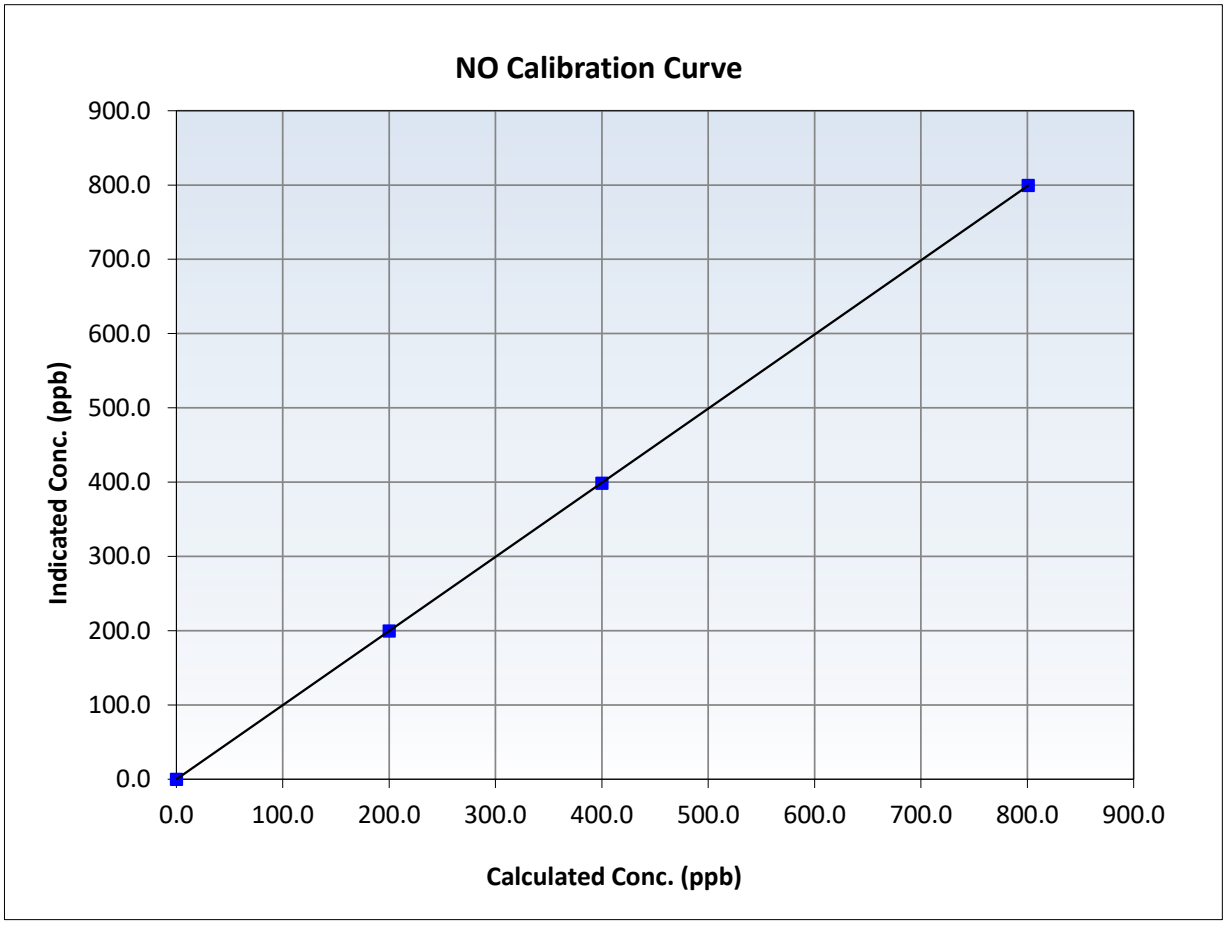
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 17, 2025
Station Name:	Barge Landing	Station Number:	AMS 09
Start Time (MST):	9:09	End Time (MST):	13:16
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262593

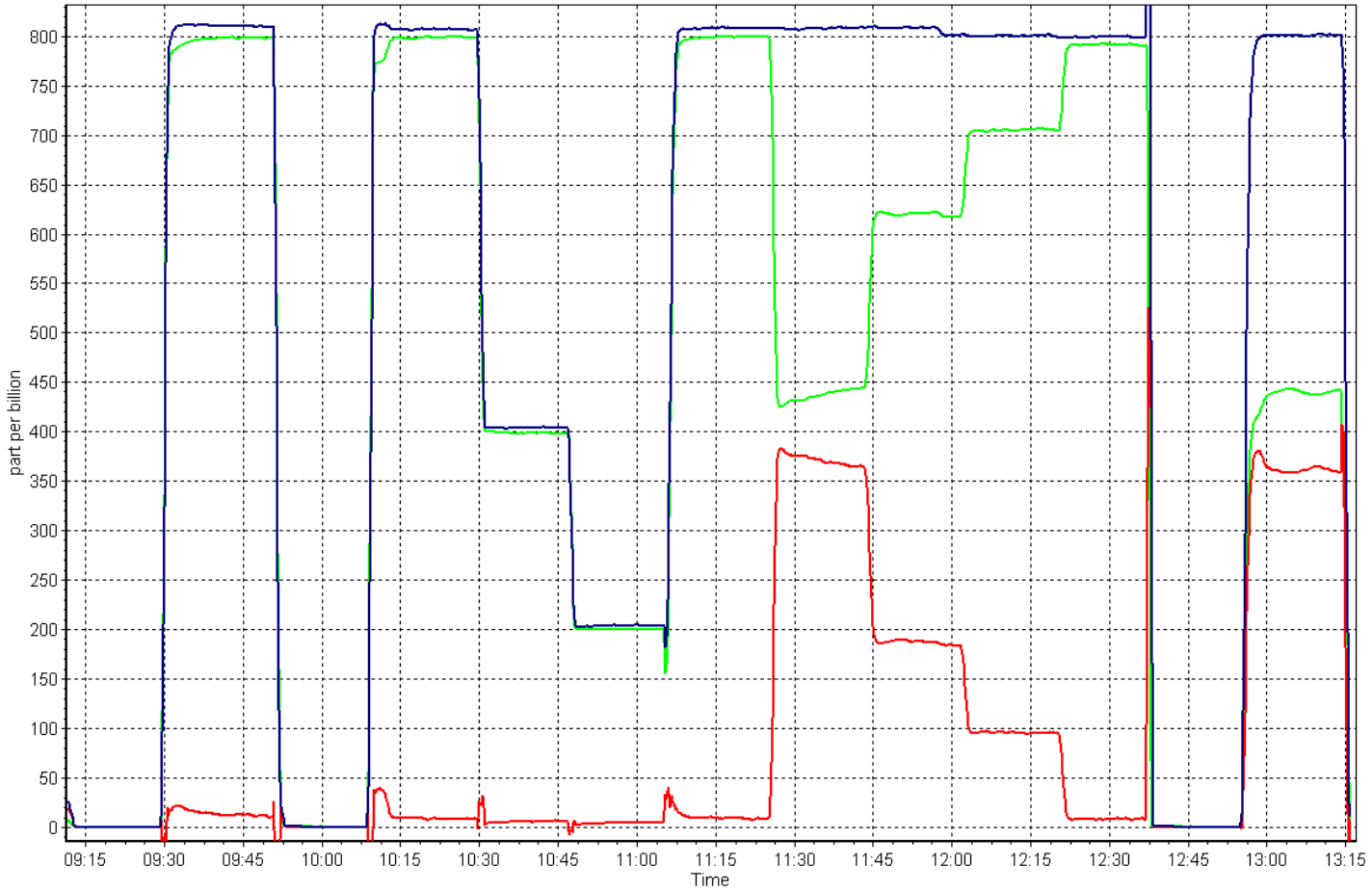
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
800.7	799.3	1.0018
400.0	398.6	1.0034
200.0	199.7	1.0013

Statistical Evaluation		Limits
Correlation Coefficient	0.999999	≥0.995
Slope	0.998054	0.90 - 1.10
Intercept	-0.083947	+/-20



NO_X Calibration Plot Date: April 11, 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:	April 9, 2025	Last Cal Date:	March 24, 2025
Start time (MST):	14:15	End time (MST):	14:30
Analyzer Make:	API T640	S/N:	844
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)	16.10	16.10	16.10	☐	+/- 2 °C
P (mmHg)	724.00	732.50	724.00	☐	+/- 10 mmHg
Flow (LPM)	5.03	4.90	5.03	☐	+/- 0.25 LPM
PW% (pump)	36	-----	36	☐	>80%
Zero Verification	PM w/o HEPA:	36.40	PM w/ HEPA:	21.60	<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	NA	NA	NA	☐	+/- 0.5

Date Optical Chamber Cleaned: March 24, 2025

Date Disposable Filter Changed: March 7, 2025

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

Annual Maintenance

Date Sample Tube Cleaned: October 18, 2024

Date RH/T Sensor Cleaned: October 18, 2024

Notes: Removal calibration due to erroneous readings. PMT check showed no response, and leak check failed.

Calibration by: Devin Russell

Wood Buffalo Environmental Association

T640 $PM_{2.5}$ CALIBRATION

Version-01-2024

Station Information

Station Name:	Barge Landing	Station number:	AMS 09
Calibration Date:	April 10, 2025	Last Cal Date:	NA
Start time (MST):	8:50	End time (MST):	9:10
Analyzer Make:	API T640	S/N:	2237
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)	9.10	8.88	9.10	☐	+/- 2 °C
P (mmHg)	739.20	737.70	739.20	☐	+/- 10 mmHg
Flow (LPM)	5.02	4.97	5.02	☐	+/- 0.25 LPM
PW% (pump)	34	-----	34	☐	>80%

Zero Verification — PM w/o HEPA: 3.80 — 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: January 30, 2027 — Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	*(Limits)*
PMT Peak Test	11.00	11.00	11.00	☐	+/- 0.5

Date Optical Chamber Cleaned: April 10, 2025

Date Disposable Filter Changed: April 10, 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: Install calibration. Flow, temperature, pressure, and PMT verified.

Calibration by: Devin Russell

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS11
LOWER CAMP
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Lower Camp	Station number:	AMS 11
Calibration Date:	April 9, 2025	Last Cal Date:	March 3, 2025
Start time (MST):	12:07	End time (MST):	15:46
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:	48.75	ppm	Rem Gas Exp Date:	
Removed Gas Cyl #:	CC741503		Diff between cyl:	
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.003845	1.018981	Backgd or Offset:	16.2	16.2
Calibration intercept:	-0.495900	0.056971	Coeff or Slope:	1.005	1.005

SO_2 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	0.6	----
As found High point	4939	81.5	791.4	804.4	0.985
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	803.8	Previous response	793.9	*% change	1.2%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO_2 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	0.8	----
High point	4939	81.5	791.4	807.2	0.980
Mid point	4972	40.8	396.8	402.9	0.985
Low point	4990	20.4	198.5	202.3	0.981
As left zero	5000	0.0	0.0	0.7	----
As left span	4939	81.5	791.4	807.4	0.980
				Average Correction Factor:	0.982

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

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

SO_2 Calibration Summary

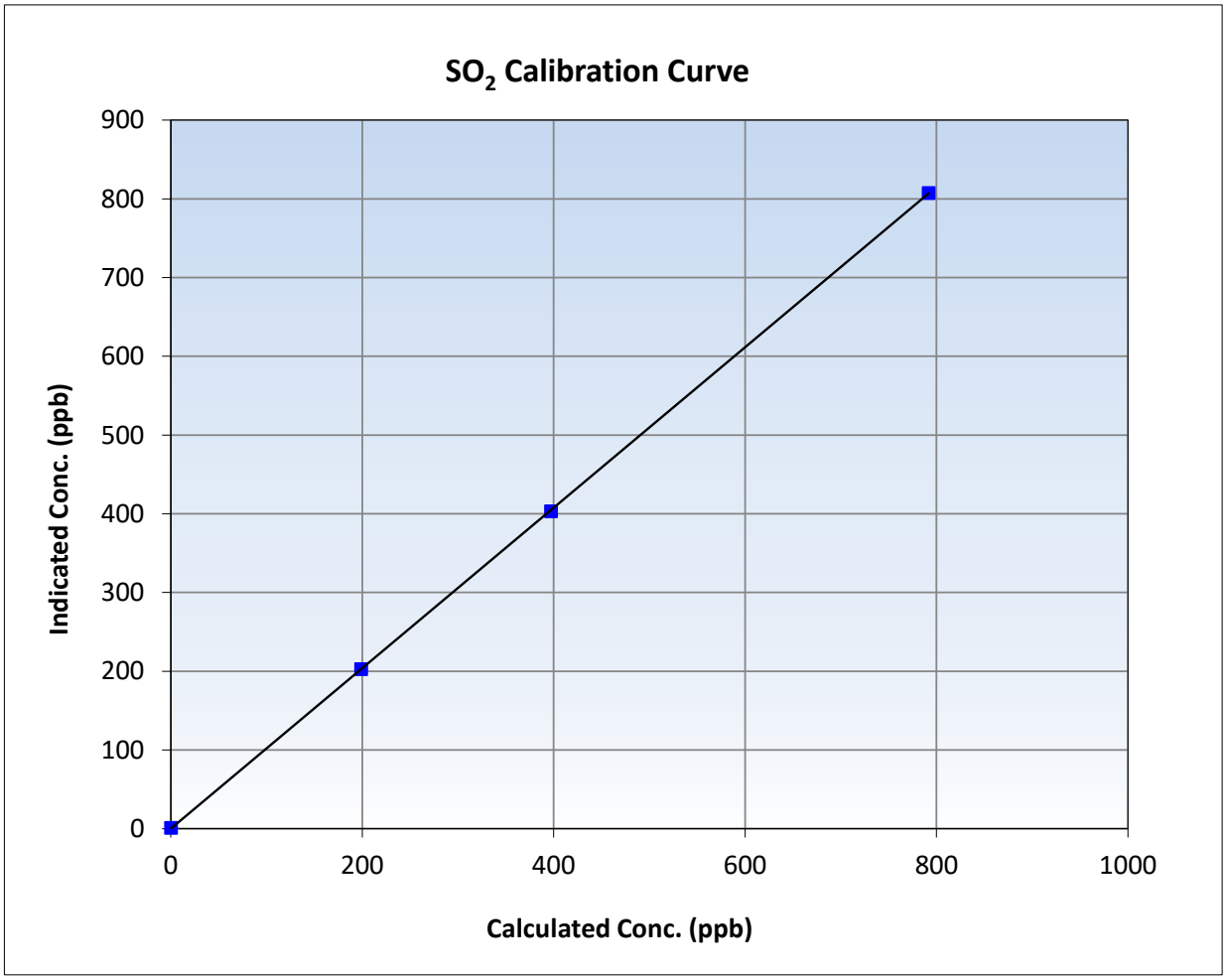
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	March 3, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:07	End Time (MST):	15:46
Analyzer make:	Thermo 43i	Analyzer serial #:	100841398

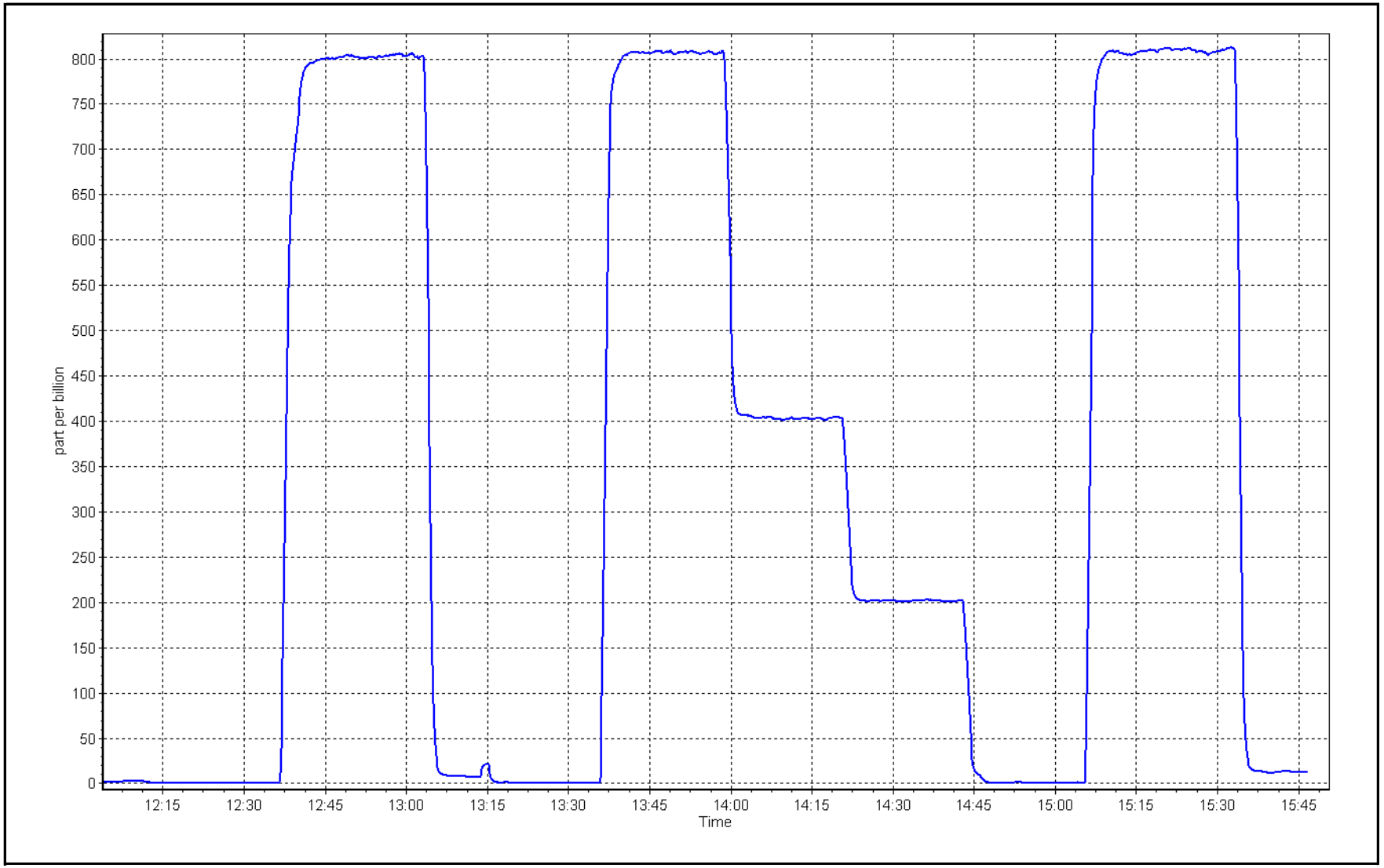
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.8	----
791.4	807.2	0.9804
396.8	402.9	0.9848
198.5	202.3	0.9812

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999991	*≥0.995*
Slope	1.018981	*0.90 - 1.10*
Intercept	0.056971	*+/-30*



SO2 Calibration Plot Date: April 9, 2025 Location: Lower Camp



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	Lower Camp	Station number:	AMS 11
Calibration Date:	April 22, 2025	Last Cal Date:	March 24, 2025
Start time (MST):	10:31	End time (MST):	14:50
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

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.000358	1.003220	Backgd or Offset:	2.6	2.6
Calibration intercept:	-0.202641	-0.202864	Coeff or Slope:	0.752	0.752

H_2S 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	4935	83.0	79.9	80.1	0.995
As found Mid point	4977	41.6	40.0	40.1	0.993
As found Low point	4993	20.9	20.1	20.0	0.997
New cylinder response					

Baseline Corr As found:	80.3	Prev response:	79.72	*% change:	0.7%
Baseline Corr 2nd AF pt:	40.3	AF Slope:	1.005367	AF Intercept:	-0.203054
Baseline Corr 3rd AF pt:	20.2	AF Correlation:	0.999999	* = > +/-5% change initiates investigation	

H_2S 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	-0.2	----
High point	4935	83.0	79.9	79.9	1.000
Mid point	4977	41.6	40.0	40.1	0.998
Low point	4993	20.9	20.1	19.9	1.012
As left zero	5000	0.0	0.0	-0.2	----
As left span	4935	83.0	79.9	79.3	1.007
SO2 Scrubber Check	4935	81.5	812.3	0.0	----
Date of last scrubber change:				Ave Corr Factor	1.003
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

H_2S Calibration Summary

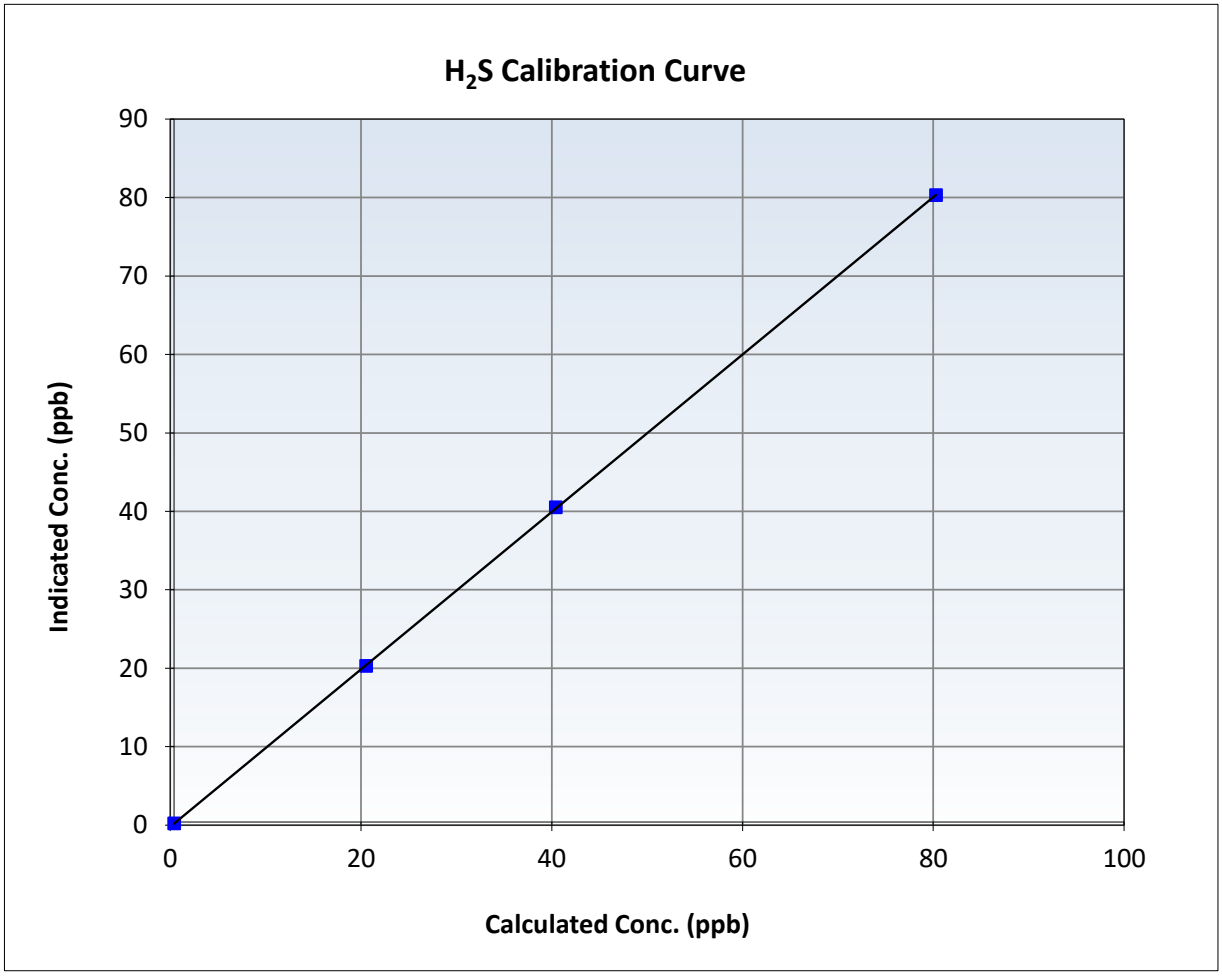
Station Information

Calibration Date:	April 22, 2025	Previous Calibration:	March 24, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	10:31	End Time (MST):	14:50
Analyzer make:	Thermo 43iQ	Analyzer serial #:	1203169745

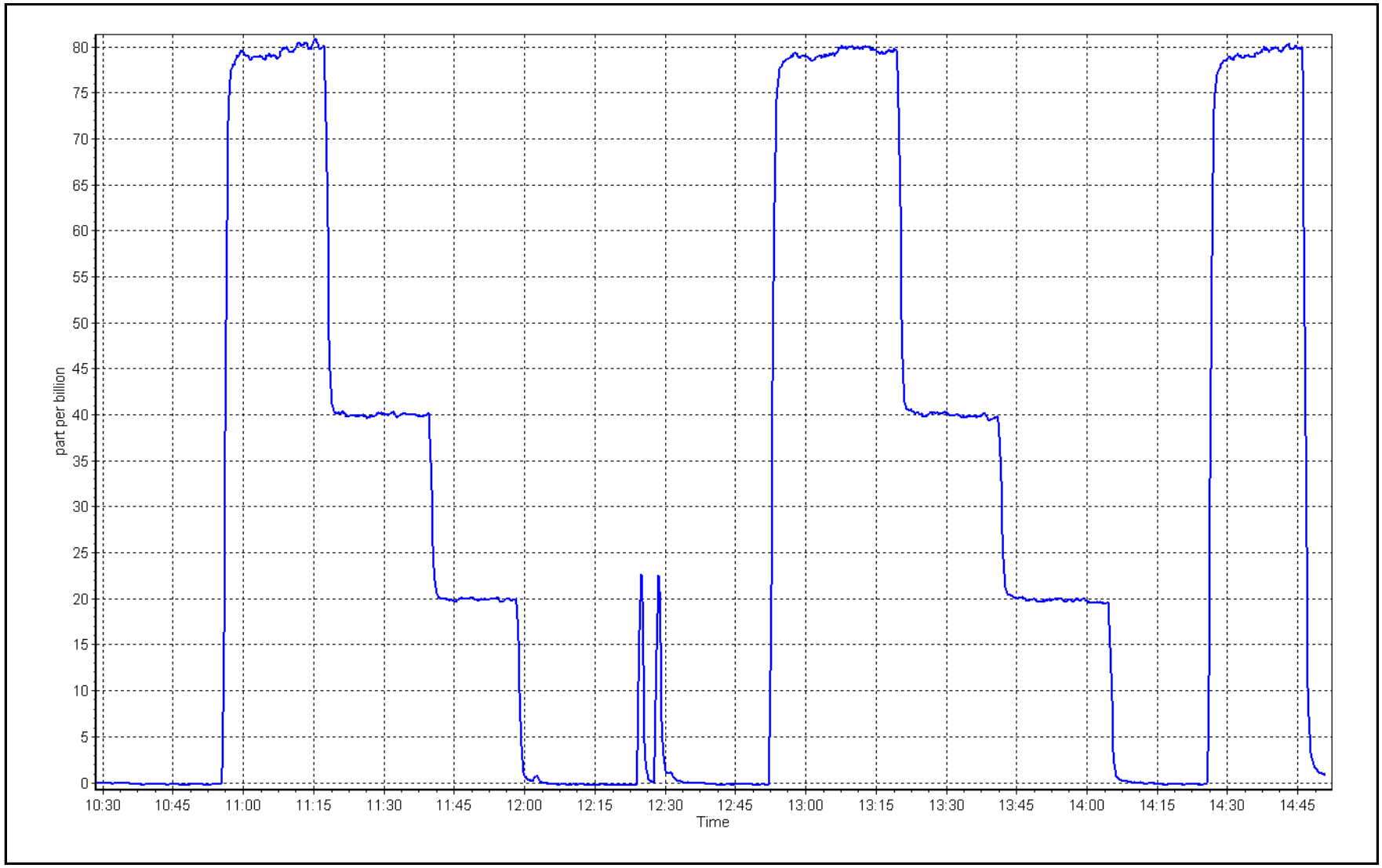
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.2	----
79.9	79.9	0.9999
40.0	40.1	0.9984
20.1	19.9	1.0117

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999991	*≥0.995*
Slope	1.003220	*0.90 - 1.10*
Intercept	-0.202864	*+/-3*



H_2S Calibration Plot Date: April 22, 2025 Location: Lower Camp



Wood Buffalo Environmental Association

THC / CH4 / NMHC Calibration Report

Station Information

Station Name:	Lower Camp	Station number:	AMS 11
Calibration Date:	April 9, 2025	Last Cal Date:	March 16, 2025
Start time (MST):	12:07	End time (MST):	15:46
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC741503	Cal Gas Expiry Date:	October 9, 2032	
CH4 Cal Gas Conc.	504.8 ppm	CH4 Equiv Conc.	1071.9	ppm
C3H8 Cal Gas Conc.	206.2 ppm			
Removed Gas Cert:		Removed Gas Expiry:		
Removed CH4 Conc.	504.8 ppm	CH4 Equiv Conc.	1071.9	ppm
Removed C3H8 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	Analyzer serial #:	1118148495	
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm	
	Start	***Finish***	***Start***	***Finish***
CH4 SP Ratio:	2.04E-04	2.04E-04	NMHC SP Ratio:	4.27E-05	4.27E-05
CH4 Retention time:	14.3	14.3	NMHC Peak Area:	215713	215713
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4939	81.5	17.40	16.94	1.027
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.94	Prev response	17.39	*% change	-2.6%
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4939	81.5	17.40	16.85	1.033
Mid point	4972	40.8	8.72	8.43	1.035
Low point	4990	20.4	4.36	4.25	1.028
As left zero	5000	0.0	0.00	0.00	----
As left span	4939	81.5	17.40	16.88	1.031
				Average Correction Factor	1.032

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

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4939	81.5	9.21	8.86	1.039
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.86	Prev response	9.23	*% change	-4.1%
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4939	81.5	9.21	8.80	1.046
Mid point	4972	40.8	4.62	4.43	1.042
Low point	4990	20.4	2.31	2.25	1.027
As left zero	5000	0.0	0.00	0.00	----
As left span	4939	81.5	9.21	8.83	1.042
				Average Correction Factor	1.038

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4939	81.5	8.19	8.08	1.014
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.08	Prev response	8.16	*% change	-1.1%
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	4939	81.5	8.19	8.04	1.019
Mid point	4972	40.8	4.11	4.00	1.027
Low point	4990	20.4	2.06	2.00	1.029
As left zero	5000	0.0	0.00	0.00	----
As left span	4939	81.5	8.19	8.05	1.018
				Average Correction Factor	1.025

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	0.998443	0.967607
THC Cal Offset:	0.017156	0.004689
CH4 Cal Slope:	0.998463	0.981979
CH4 Cal Offset:	-0.017882	-0.014211
NMHC Cal Slope:	0.998401	0.954688
NMHC Cal Offset:	0.035637	0.019898

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

THC Calibration Summary

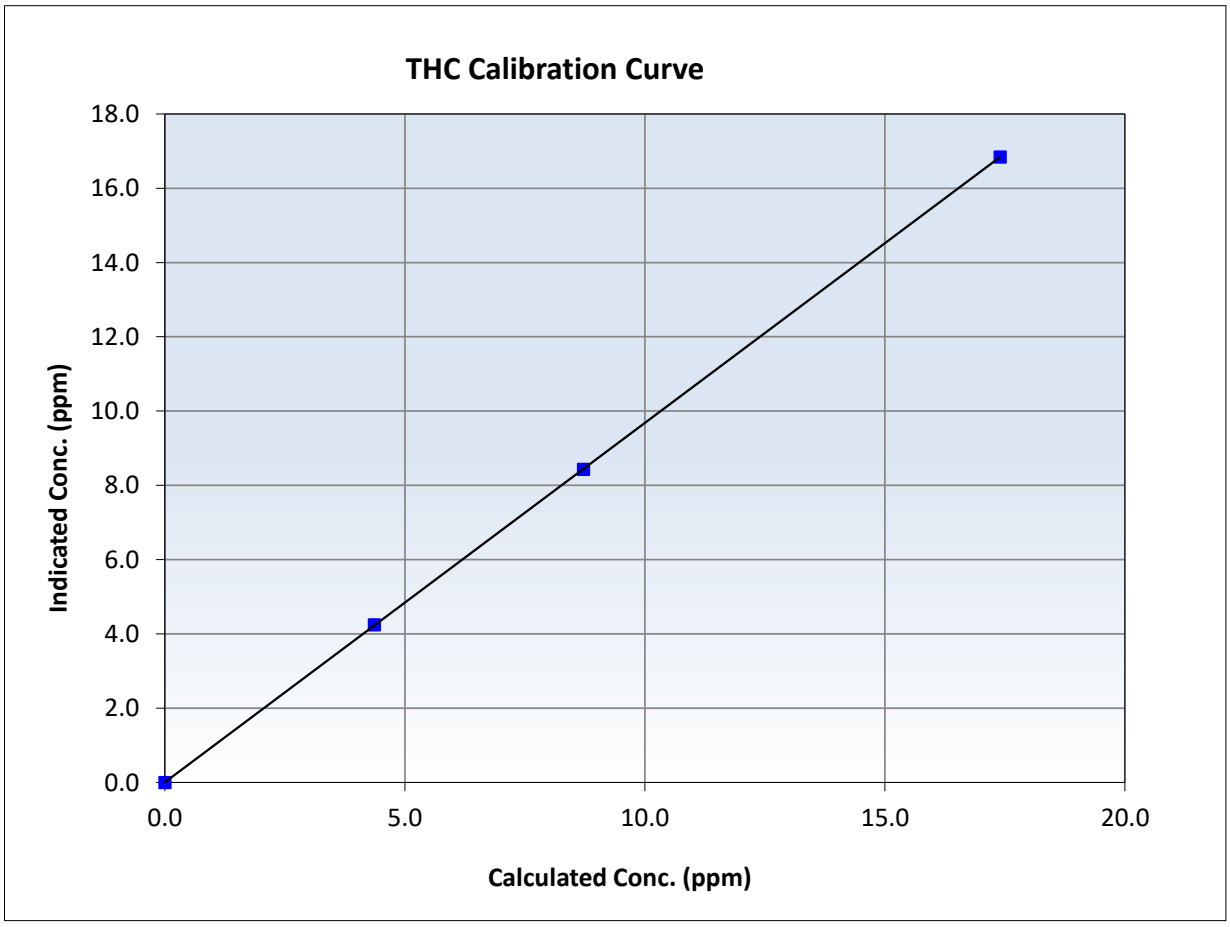
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	March 16, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:07	End Time (MST):	15:46
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148495

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
17.40	16.85	1.0329
8.72	8.43	1.0350
4.36	4.25	1.0280

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999996	*≥0.995*
Slope	0.967607	*0.90 - 1.10*
Intercept	0.004689	*+/-0.5*



Wood Buffalo Environmental Association

CH_4 Calibration Summary

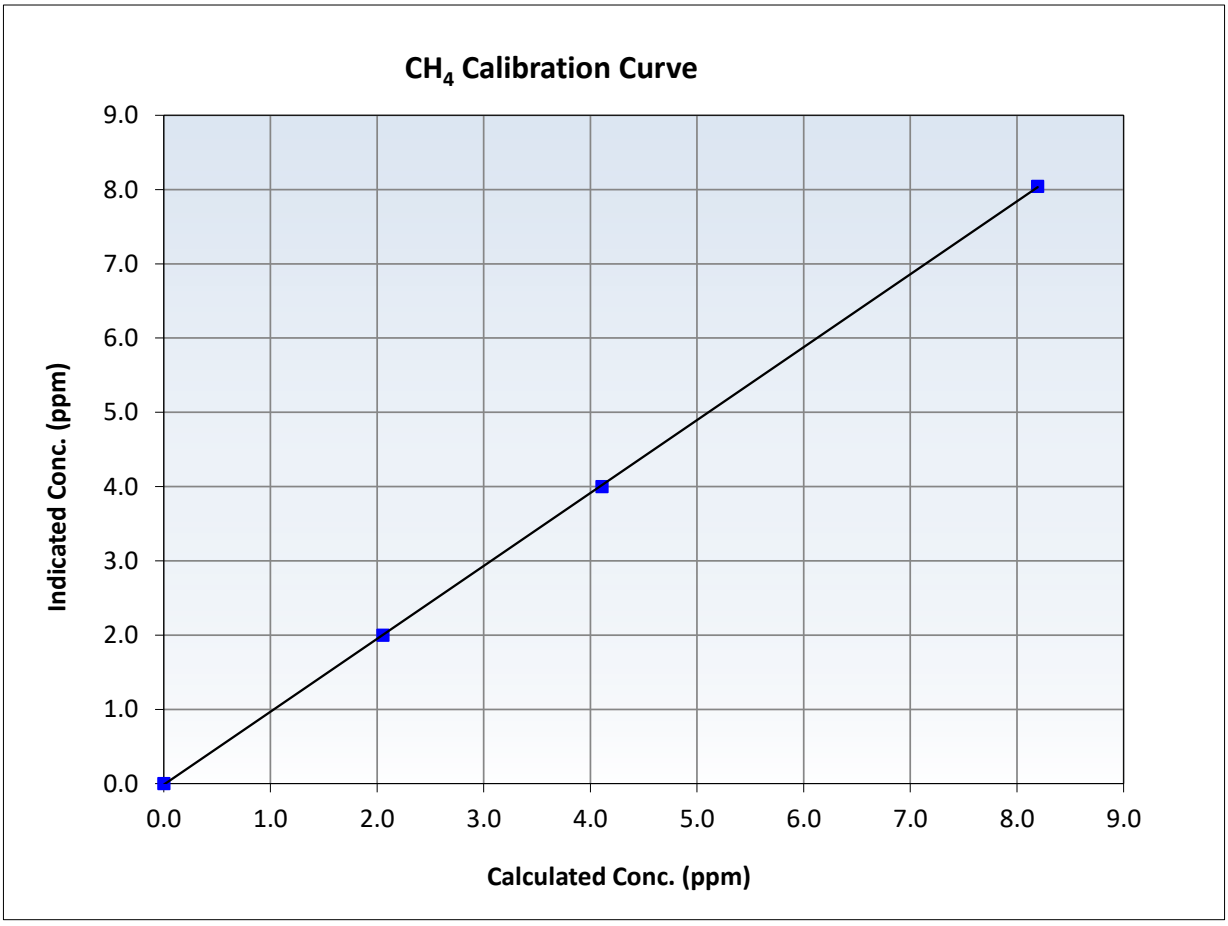
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	March 16, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:07	End Time (MST):	15:46
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148495

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
8.19	8.04	1.0187
4.11	4.00	1.0269
2.06	2.00	1.0287

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999979	*≥0.995*
Slope	0.981979	*0.90 - 1.10*
Intercept	-0.014211	*+/-0.5*



Wood Buffalo Environmental Association

NMHC Calibration Summary

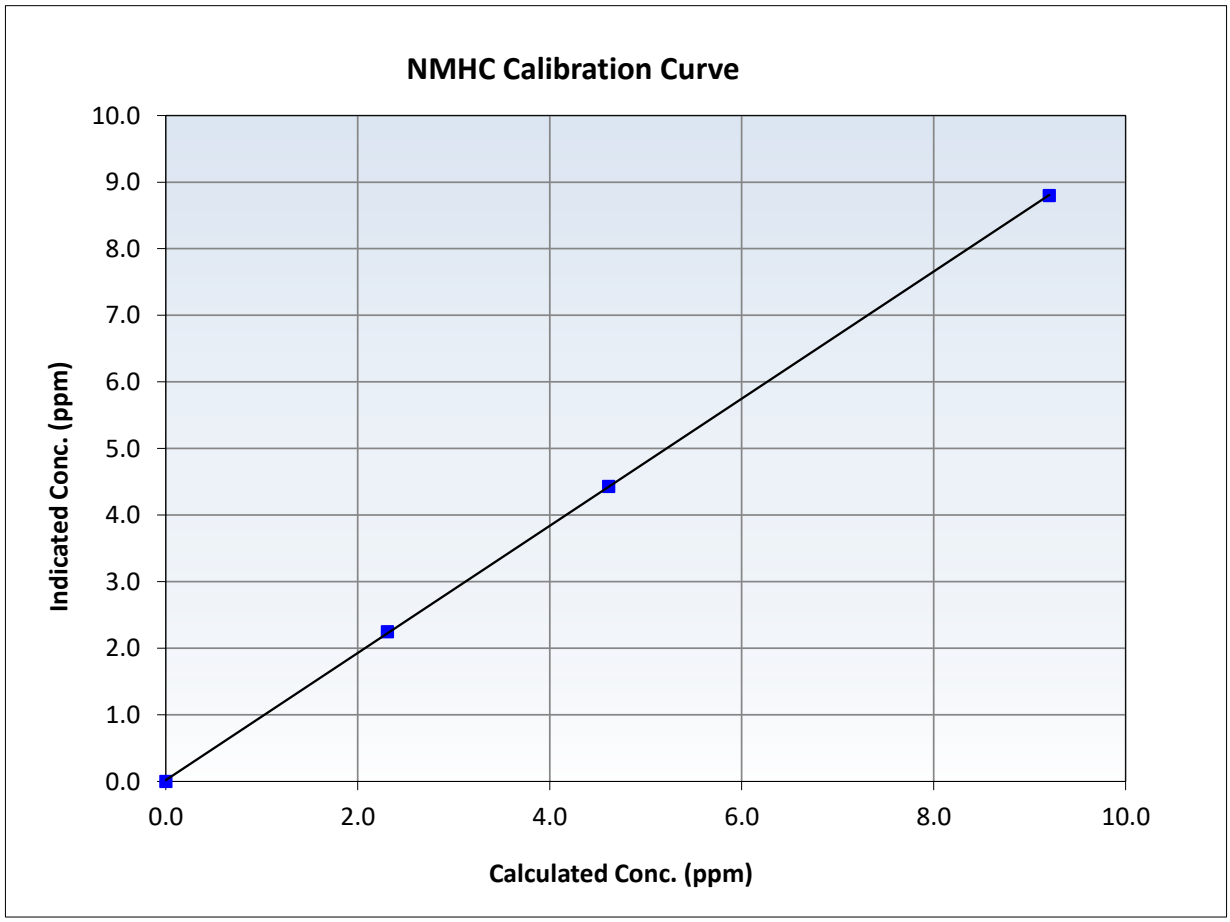
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	March 16, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	12:07	End Time (MST):	15:46
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148495

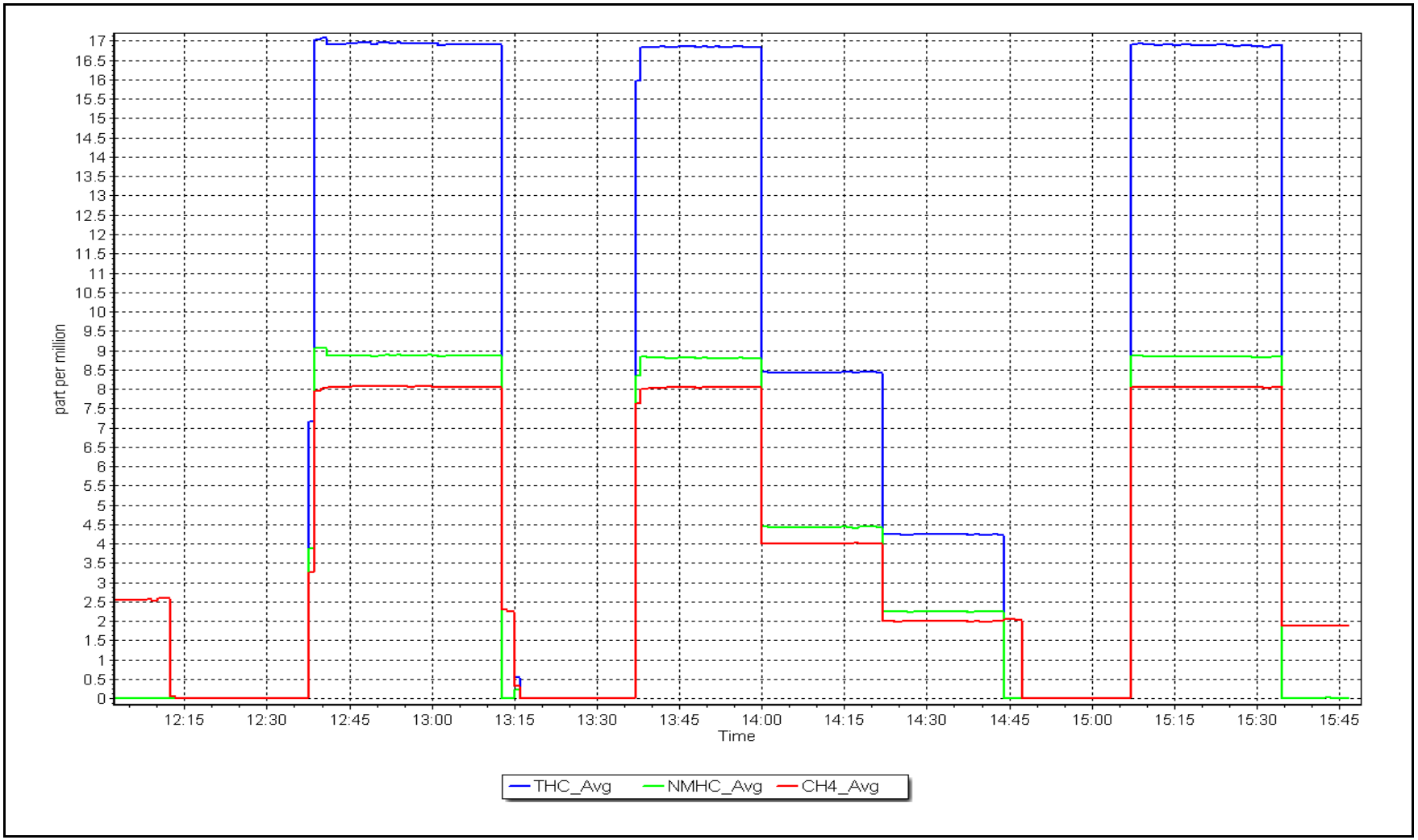
Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
9.21	8.80	1.0460
4.62	4.43	1.0418
2.31	2.25	1.0270

Statistical Evaluation		Limits
Correlation Coefficient	0.999975	≥0.995
Slope	0.954688	0.90 - 1.10
Intercept	0.019898	+/-0.5



NMHC Calibration Plot Date: April 9, 2025 Location: Lower Camp



Wood Buffalo Environmental Association

THC / CH4 / NMHC Calibration Report

Station Information

Station Name:	Lower Camp	Station number:	AMS 11
Calibration Date:	April 25, 2025	Last Cal Date:	April 9, 2025
Start time (MST):	13:47	End time (MST):	17:13
Reason:	Maintenance		

Calibration Standards

Gas Cert Reference:	CC741503	Cal Gas Expiry Date:	October 9, 2032	
CH4 Cal Gas Conc.	504.8 ppm	CH4 Equiv Conc.	1071.9	ppm
C3H8 Cal Gas Conc.	206.2 ppm			
Removed Gas Cert:		Removed Gas Expiry:		
Removed CH4 Conc.	504.8 ppm	CH4 Equiv Conc.	1071.9	ppm
Removed C3H8 Conc.	206.2 ppm	Diff between cyl (THC):		
Diff between cyl (CH_4):		Diff between cyl (NM):		
Calibrator Model:	API T700	Serial Number:	3811	
Zero Air Gen model:	API T701	Serial Number:	196	

Analyzer Information

Analyzer make:	Thermo 55i	Analyzer serial #:	1118148495	
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm	
	Start	***Finish***	***Start***	***Finish***
CH4 SP Ratio:	2.04E-04	2.27E-04	NMHC SP Ratio:	4.27E-05	4.96E-05
CH4 Retention time:	14.3	14.3	NMHC Peak Area:	215713	185572
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4932	82.2	17.57	15.32	1.147
As found Mid point	4971	41.2	8.81	7.64	1.153
As found Low point	4996	20.6	4.40	3.85	1.143
New cylinder response					
Baseline Corr AF:	15.32	Prev response	17.01	*% change	-11.0%
Baseline Corr 2nd AF:	7.64	AF Slope:	0.871265	AF Intercept:	-0.002098
Baseline Corr 3rd AF:	3.85	AF Correlation:	0.999987	* = > +/-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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4932	82.2	17.57	17.45	1.007
Mid point	4971	41.2	8.81	8.72	1.010
Low point	4996	20.6	4.40	4.40	1.001
As left zero	5000	0.0	0.00	0.00	----
As left span	4932	82.2	17.57	17.26	1.018
				Average Correction Factor	1.006

Notes: No alarms were detected during the investigation. Diagnostics were consistent, and the chromatograms showed no discrepancies, aside from a slight alignment drift. The issue is likely due to the new calibrator, prompting only a span adjustment.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4932	82.2	9.30	7.96	1.167
As found Mid point	4971	41.2	4.66	3.99	1.168
As found Low point	4996	20.6	2.33	2.03	1.148
New cylinder response					
Baseline Corr AF:	7.96	Prev response	8.89	*% change	-11.7%
Baseline Corr 2nd AF:	3.99	AF Slope:	0.855410	AF Intercept:	0.012797
Baseline Corr 3rd AF:	2.03	AF Correlation:	0.999975	* = > +/-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	4932	82.2	9.30	9.24	1.006
Mid point	4971	41.2	4.66	4.65	1.002
Low point	4996	20.6	2.33	2.36	0.985
As left zero	5000	0.0	0.00	0.00	----
As left span	4932	82.2	9.30	9.14	1.017
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4932	82.2	8.28	7.35	1.125
As found Mid point	4971	41.2	4.15	3.65	1.136
As found Low point	4996	20.6	2.07	1.82	1.137
New cylinder response					
Baseline Corr AF:	7.35	Prev response	8.11	*% change	-10.3%
Baseline Corr 2nd AF:	3.65	AF Slope:	0.888951	AF Intercept:	-0.014694
Baseline Corr 3rd AF:	1.82	AF Correlation:	0.999971	* = > +/-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	4932	82.2	8.28	8.21	1.009
Mid point	4971	41.2	4.15	4.07	1.020
Low point	4996	20.6	2.07	2.04	1.018
As left zero	5000	0.0	0.00	0.00	----
As left span	4932	82.2	8.28	8.12	1.019
				Average Correction Factor	1.015

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	0.967607	0.992250
THC Cal Offset:	0.004689	0.006074
CH4 Cal Slope:	0.981979	0.991671
CH4 Cal Offset:	-0.014211	-0.016495
NMHC Cal Slope:	0.954688	0.992864
NMHC Cal Offset:	0.019898	0.022170

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

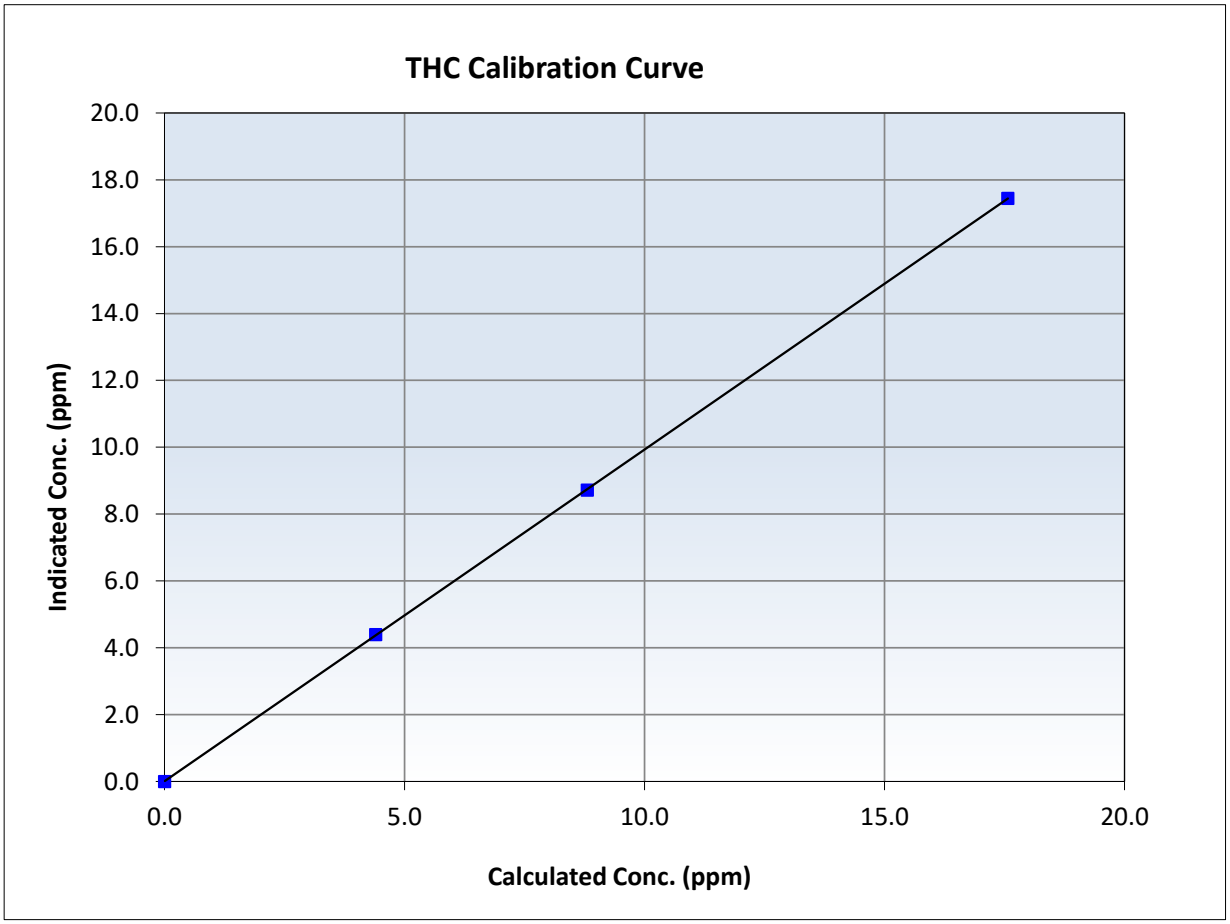
THC Calibration Summary

Station Information

Calibration Date:	April 25, 2025	Previous Calibration:	April 9, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	13:47	End Time (MST):	17:13
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	0.999991	*≥0.995*
17.57	17.45	1.0071	Slope	0.992250	*0.90 - 1.10*
8.81	8.72	1.0102	Intercept	0.006074	*+/-0.5*
4.40	4.40	1.0005			



Wood Buffalo Environmental Association

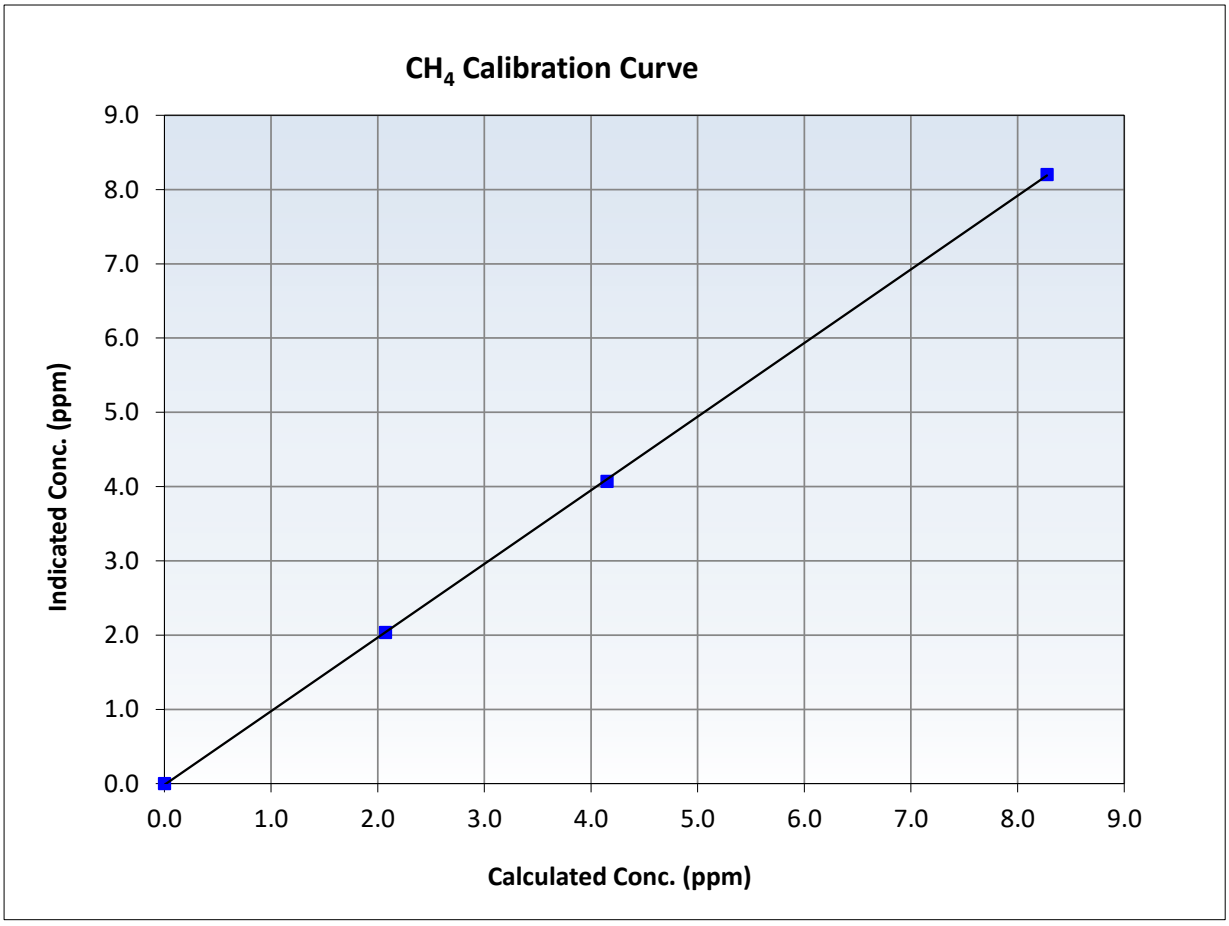
CH_4 Calibration Summary

Station Information

Calibration Date:	April 25, 2025	Previous Calibration:	April 9, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	13:47	End Time (MST):	17:13
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	0.999964	≥0.995
8.28	8.21	1.0086	Slope	0.991671	0.90 - 1.10
4.15	4.07	1.0195			
2.07	2.04	1.0181	Intercept	-0.016495	+/-0.5



Wood Buffalo Environmental Association

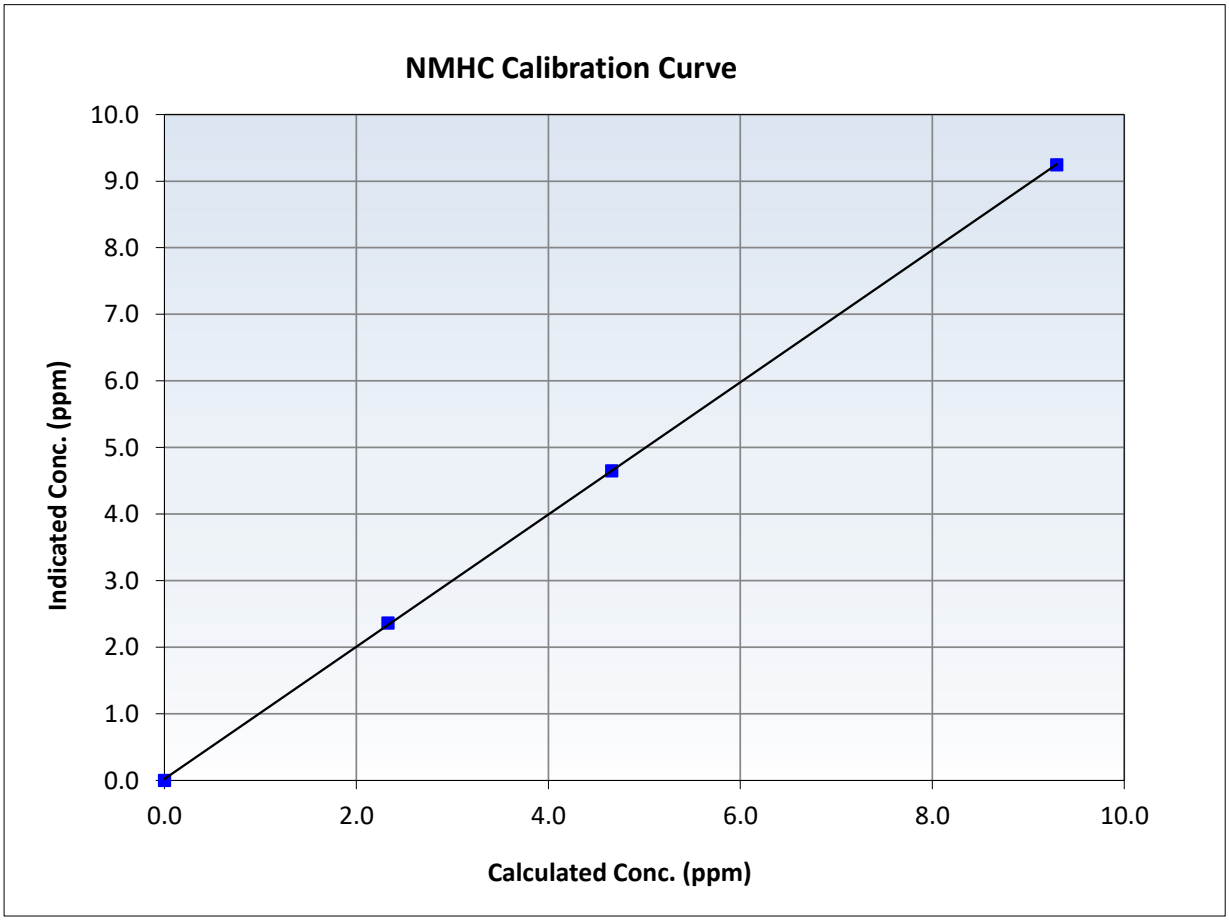
NMHC Calibration Summary

Station Information

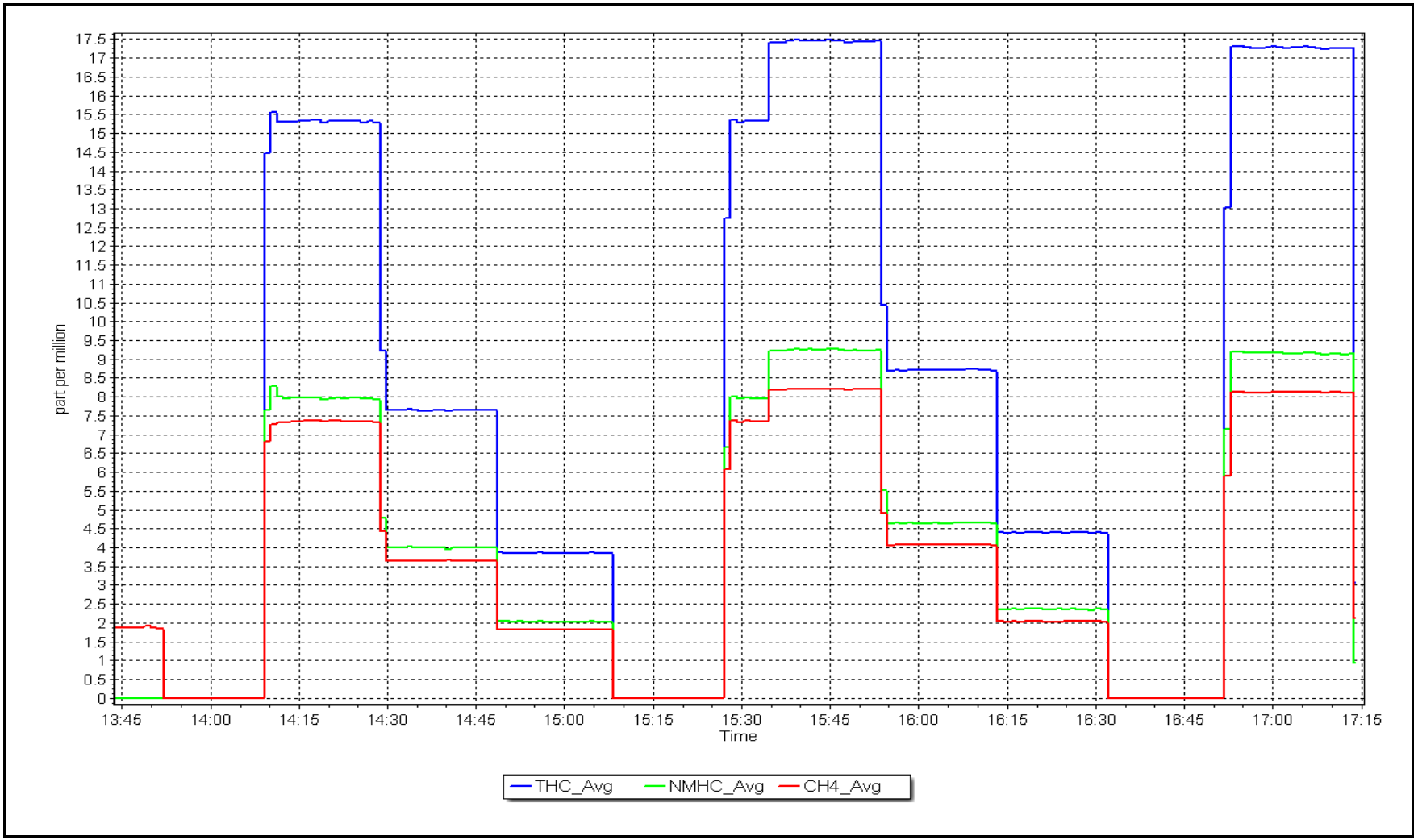
Calibration Date:	April 25, 2025	Previous Calibration:	April 9, 2025
Station Name:	Lower Camp	Station Number:	AMS 11
Start Time (MST):	13:47	End Time (MST):	17:13
Analyzer make:	Thermo 55i	Analyzer serial #:	1118148495

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.00	0.00	----	Correlation Coefficient	0.999970	*≥0.995*
9.30	9.24	1.0056	Slope	0.992864	*0.90 - 1.10*
4.66	4.65	1.0022			
2.33	2.36	0.9854	Intercept	0.022170	*+/-0.5*



NMHC Calibration Plot Date: April 25, 2025 Location: Lower Camp



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS13
FORT MCKAY SOUTH
APRIL 2025

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

May 30, 2025

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS14
ANZAC
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Anzac	Station number:	AMS 14
Calibration Date:	April 7, 2025	Last Cal Date:	March 5, 2025
Start time (MST):	10:08	End time (MST):	14:46
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.004124	0.995812	Backgd or Offset:	24.4	24.8
Calibration intercept:	-0.860151	-1.079277	Coeff or Slope:	1.074	1.074

SO_2 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	0.8	----
As found High point	4941	79.7	798.8	792.4	1.009
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	791.6	Previous response	801.2	*% change	-1.2%
Baseline Corr 2nd AF pt:	NA	AF Slope:		AF Intercept:	
Baseline Corr 3rd AF pt:	NA	AF Correlation:		* = > +/-5% change initiates investigation	

SO_2 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	0.9	----
High point	4941	79.7	798.8	795.7	1.004
Mid point	4980	39.9	400.0	395.2	1.012
Low point	4994	19.9	199.7	196.5	1.016
As left zero	5000	0.0	0.0	0.7	----
As left span	4941	79.7	798.8	796.7	1.003
				Average Correction Factor:	1.011

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

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

SO_2 Calibration Summary

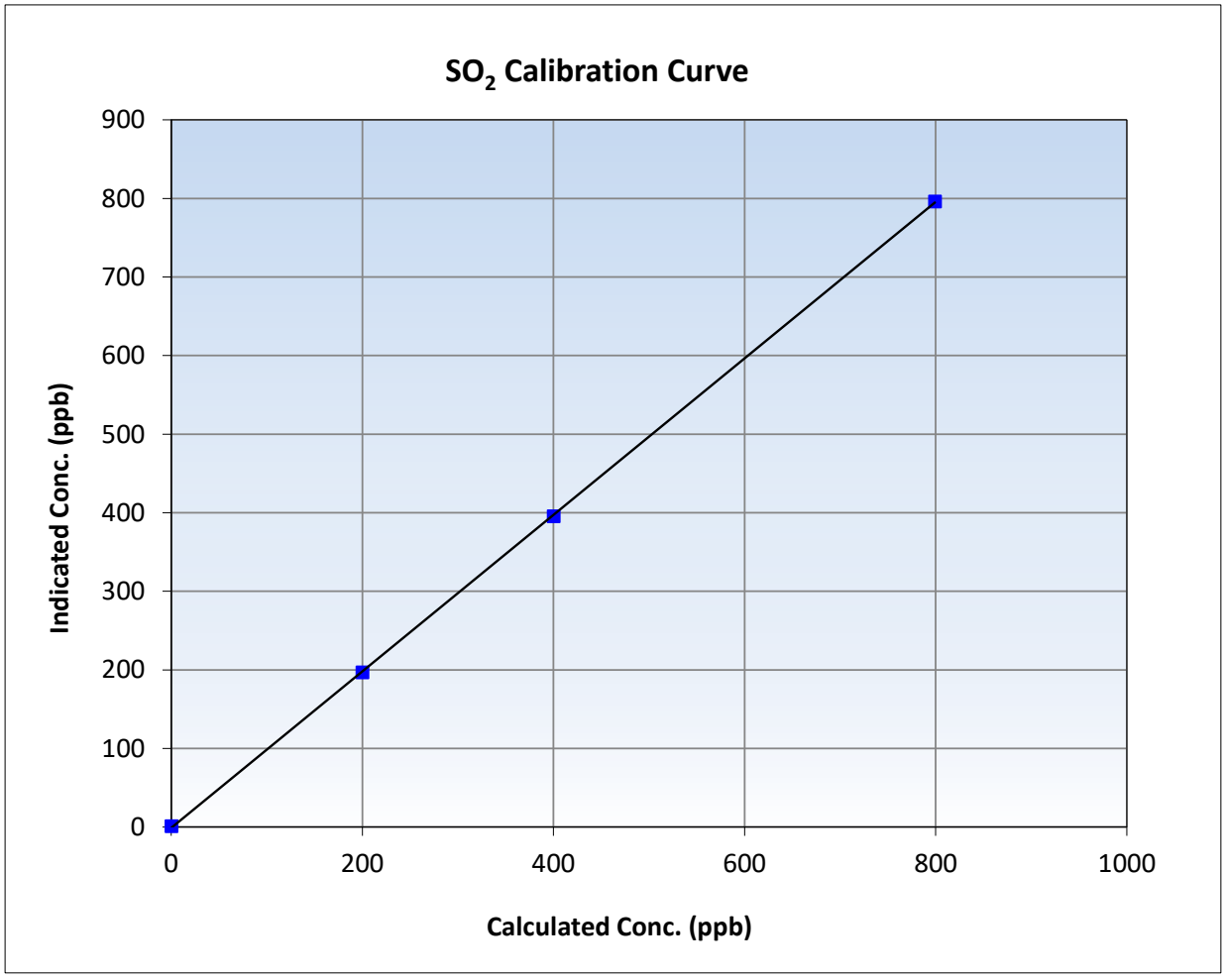
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 5, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:08	End Time (MST):	14:46
Analyzer make:	Thermo 43i	Analyzer serial #:	0710321322

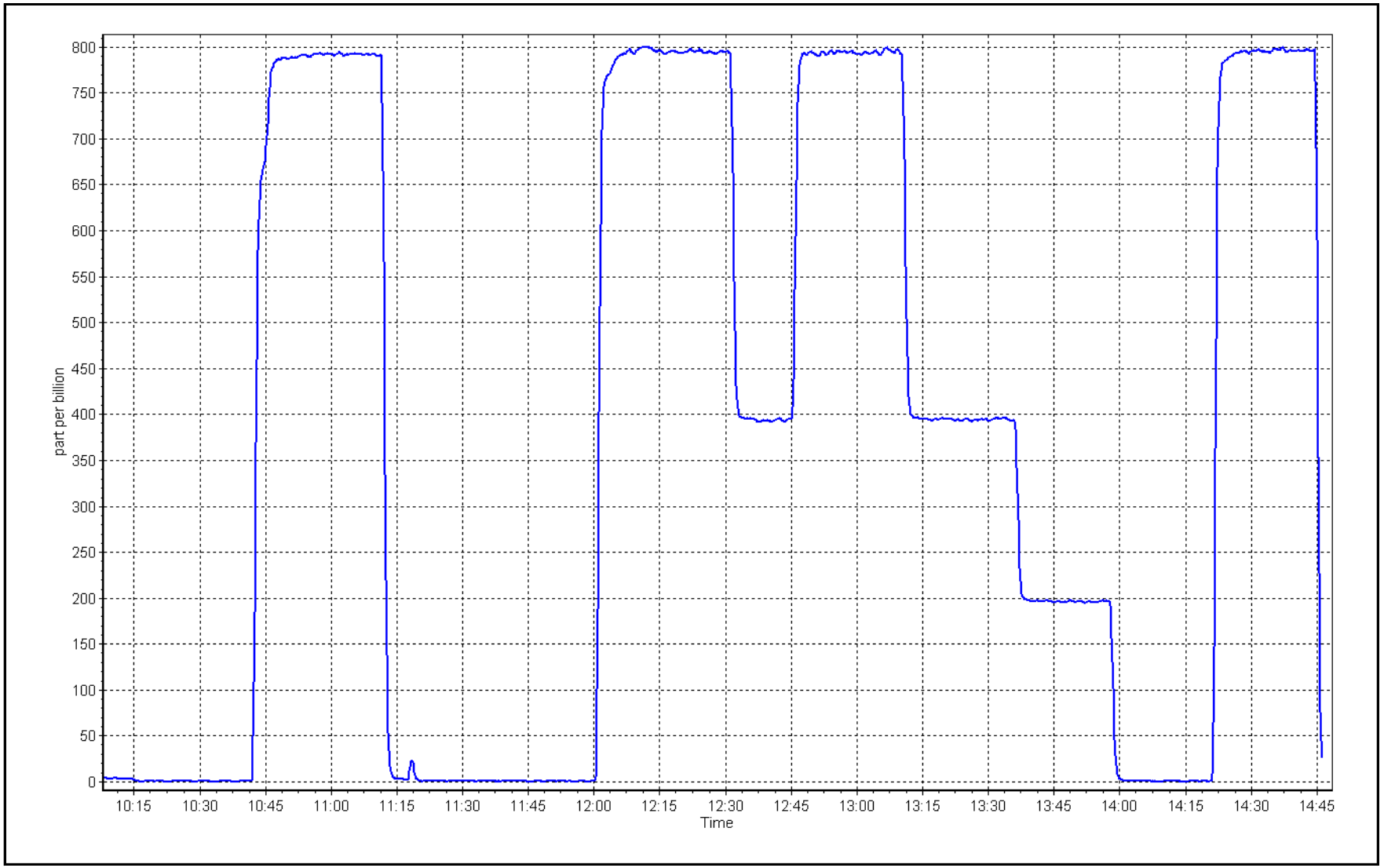
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.9	----
798.8	795.7	1.0039
400.0	395.2	1.0120
199.7	196.5	1.0164

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999967	*≥0.995*
Slope	0.995812	*0.90 - 1.10*
Intercept	-1.079277	*+/-30*



SO2 Calibration Plot Date: April 7, 2025 Location: Anzac



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Anzac	Station number:	AMS 14
Calibration Date:	April 16, 2025	Last Cal Date:	March 11, 2025
Start time (MST):	11:08	End time (MST):	18:45
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	5.15	ppm	Cal Gas Exp Date:	January 3, 2026
Cal Gas Cylinder #:	CC510379			
Removed Cal Gas Conc:	5.15	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Make/Model:	API T700		Serial Number:	3060
ZAG Make/Model:	API 701H		Serial Number:	357

Analyzer Information

Analyzer make:	Thermo 43i-TLE		Analyzer serial #:	1218153582	
Converter make:	CD Nova CDN-101		Converter serial #:	503	
Analyzer Range	0 - 100 ppb		Converter Temp:	800	degC
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.981575	1.010026	Backgd or Offset:	2.4	2.4
Calibration intercept:	-0.085266	-0.005494	Coeff or Slope:	1.027	1.026

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4938	77.9	80.0	82.1	0.973
As found Mid point	4973	38.9	40.0	41.3	0.966
As found Low point	4997	19.5	20.0	20.5	0.972
New cylinder response					
Baseline Corr As found:	82.2	Prev response:	78.42	*% change:	4.6%
Baseline Corr 2nd AF pt:	41.4	AF Slope:	1.028067	AF Intercept:	-0.025511
Baseline Corr 3rd AF pt:	20.6	AF Correlation:	0.999980	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.2	----
High point	4938	77.9	80.0	80.9	0.988
Mid point	4973	38.9	40.0	40.1	0.996
Low point	4997	19.5	20.0	20.1	0.996
As left zero	5000	0.0	0.0	0.3	----
As left span	4938	77.9	80.0	78.9	1.013
SO2 Scrubber Check	4936	80.3	800.4	-0.1	----
Date of last scrubber change:				Ave Corr Factor	0.993
Date of last converter efficiency test:		April 16, 2025		86.9%	efficiency

Notes: Changed the sample inlet filter and performed converter efficiency test(13:00 to 16:00) after as founds. Completed a SO2 scrubber check after calibrator zero. Adjusted span only.

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

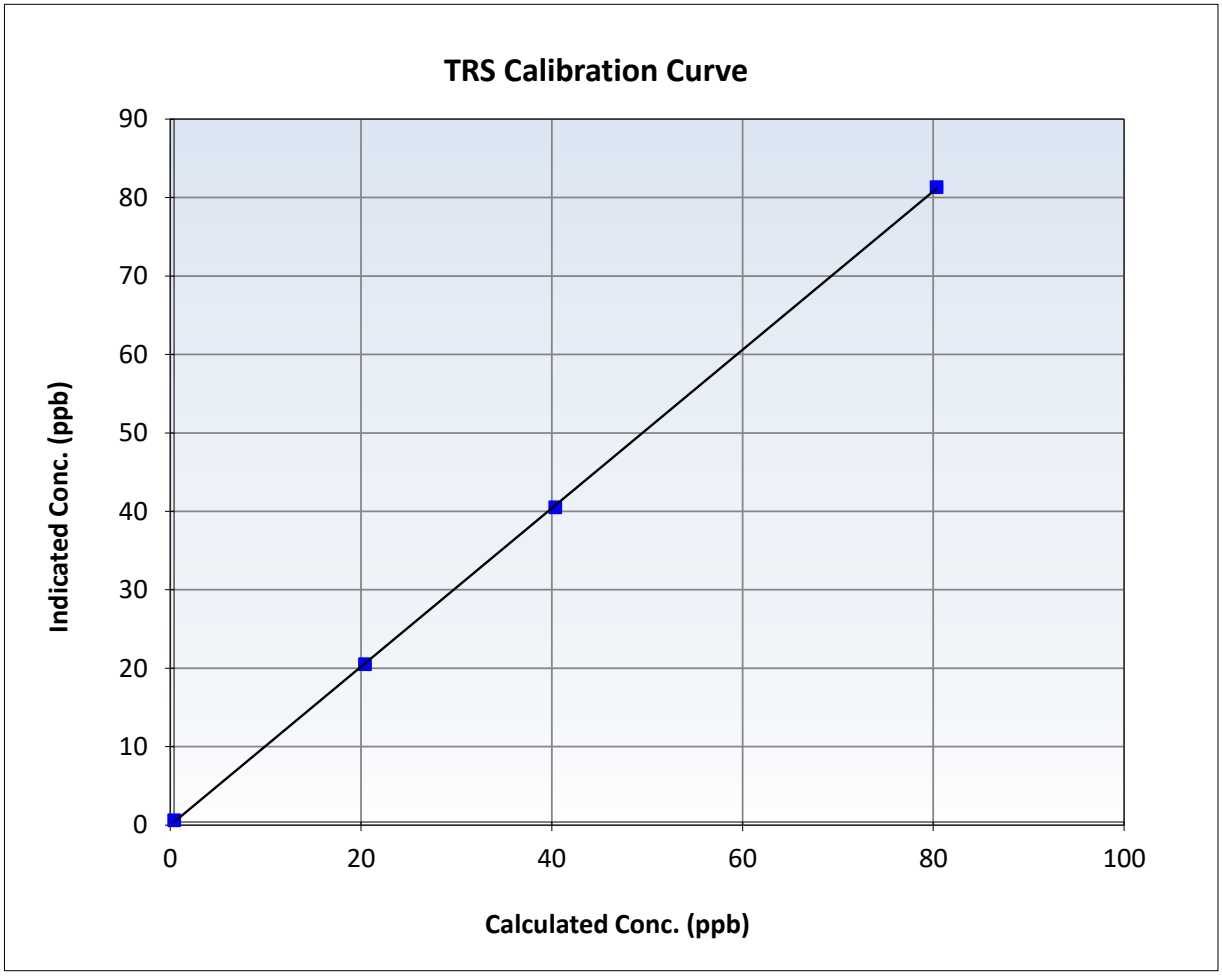
TRS Calibration Summary

Station Information

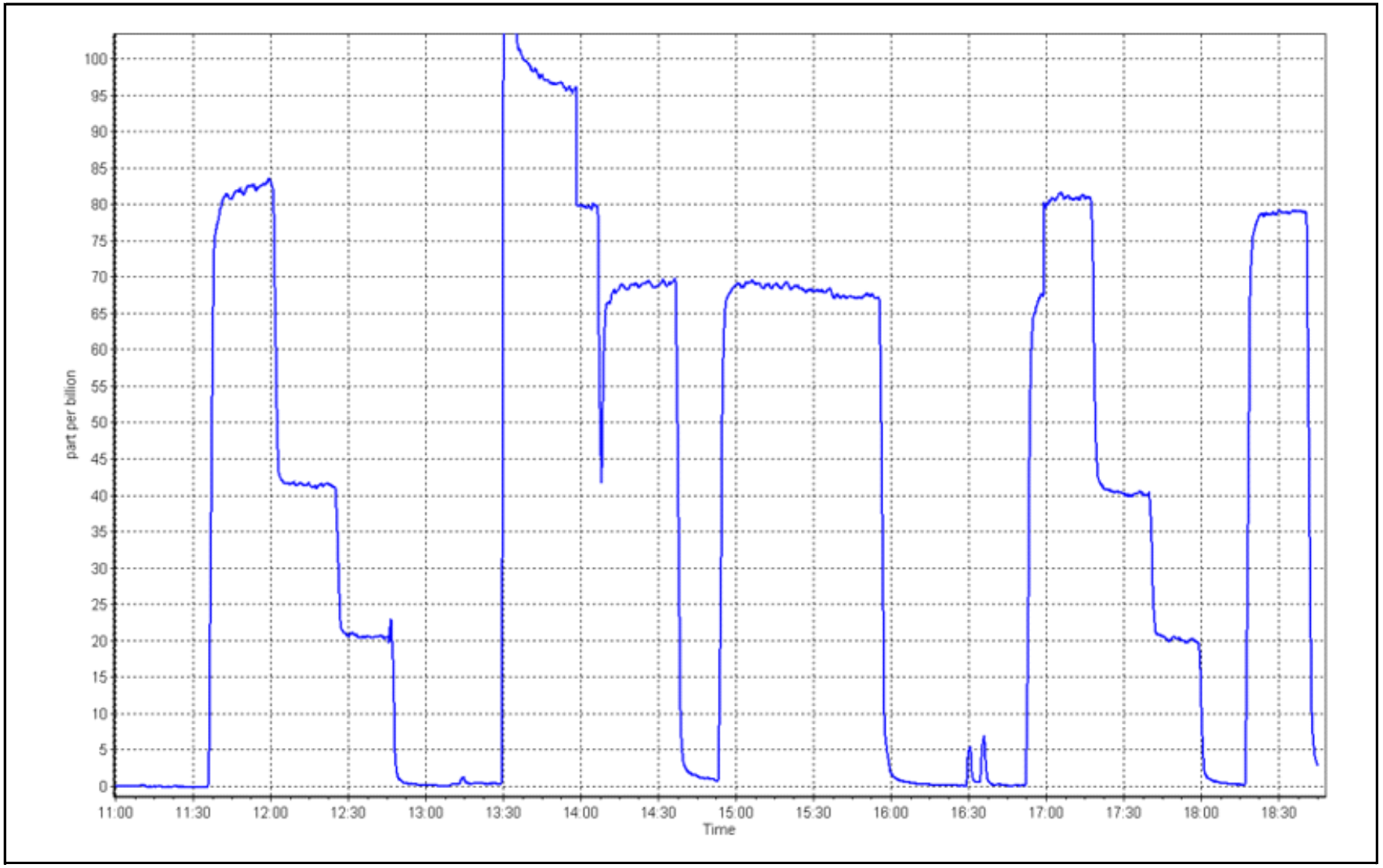
Calibration Date:	April 16, 2025	Previous Calibration:	March 11, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	11:08	End Time (MST):	18:45
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1218153582

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	0.2	----	Correlation Coefficient	0.999961	*≥0.995*
80.0	80.9	0.9883	Slope	1.010026	*0.90 - 1.10*
40.0	40.1	0.9964			
20.0	20.1	0.9956	Intercept	-0.005494	*+/-3*



TRS Calibration Plot Date: April 16, 2025 Location: Anzac



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Anzac	Station number:	AMS 14
Calibration Date:	April 7, 2025	Last Cal Date:	March 5, 2025
Start time (MST):	10:08	End time (MST):	14:46
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC462030	Cal Gas Expiry Date:	October 9, 2032
CH4 Cal Gas Conc.	505.3 ppm	CH4 Equiv Conc.	1068.8 ppm
C3H8 Cal Gas Conc.	204.9 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH4 Conc.	505.3 ppm	CH4 Equiv Conc.	1068.8 ppm
Removed C3H8 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	Analyzer serial #:	1331259521
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	2.92E-04	2.88E-04	NMHC SP Ratio:	5.51E-05	5.62E-05
CH4 Retention time:	14.9	14.9	NMHC Peak Area:	162132	159092
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4941	79.7	16.97	16.98	0.999
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	16.98	Prev response	16.85	*% change	0.7%
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4941	79.7	16.97	16.95	1.001
Mid point	4980	39.9	8.50	8.30	1.024
Low point	4994	19.9	4.24	4.09	1.037
As left zero	5000	0.0	0.00	0.00	----
As left span	4941	79.7	16.97	16.96	1.000
				Average Correction Factor	1.021

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

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4941	79.7	8.94	8.81	1.015
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.81	Prev response	8.81	*% change	0.0%
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4941	79.7	8.94	8.93	1.002
Mid point	4980	39.9	4.48	4.39	1.020
Low point	4994	19.9	2.24	2.17	1.030
As left zero	5000	0.0	0.00	0.00	----
As left span	4941	79.7	8.94	8.93	1.001
				Average Correction Factor	1.017

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4941	79.7	8.02	8.17	0.982
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.17	Prev response	8.04	*% change	1.5%
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4941	79.7	8.02	8.02	1.001
Mid point	4980	39.9	4.02	3.91	1.029
Low point	4994	19.9	2.01	1.92	1.045
As left zero	5000	0.0	0.00	0.00	----
As left span	4941	79.7	8.02	8.03	0.999
				Average Correction Factor	1.025

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	0.998574	1.000487
THC Cal Offset:	-0.092906	-0.096108
CH4 Cal Slope:	1.008920	1.001383
CH4 Cal Offset:	-0.051592	-0.055381
NMHC Cal Slope:	0.989475	0.999223
NMHC Cal Offset:	-0.041514	-0.039928

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

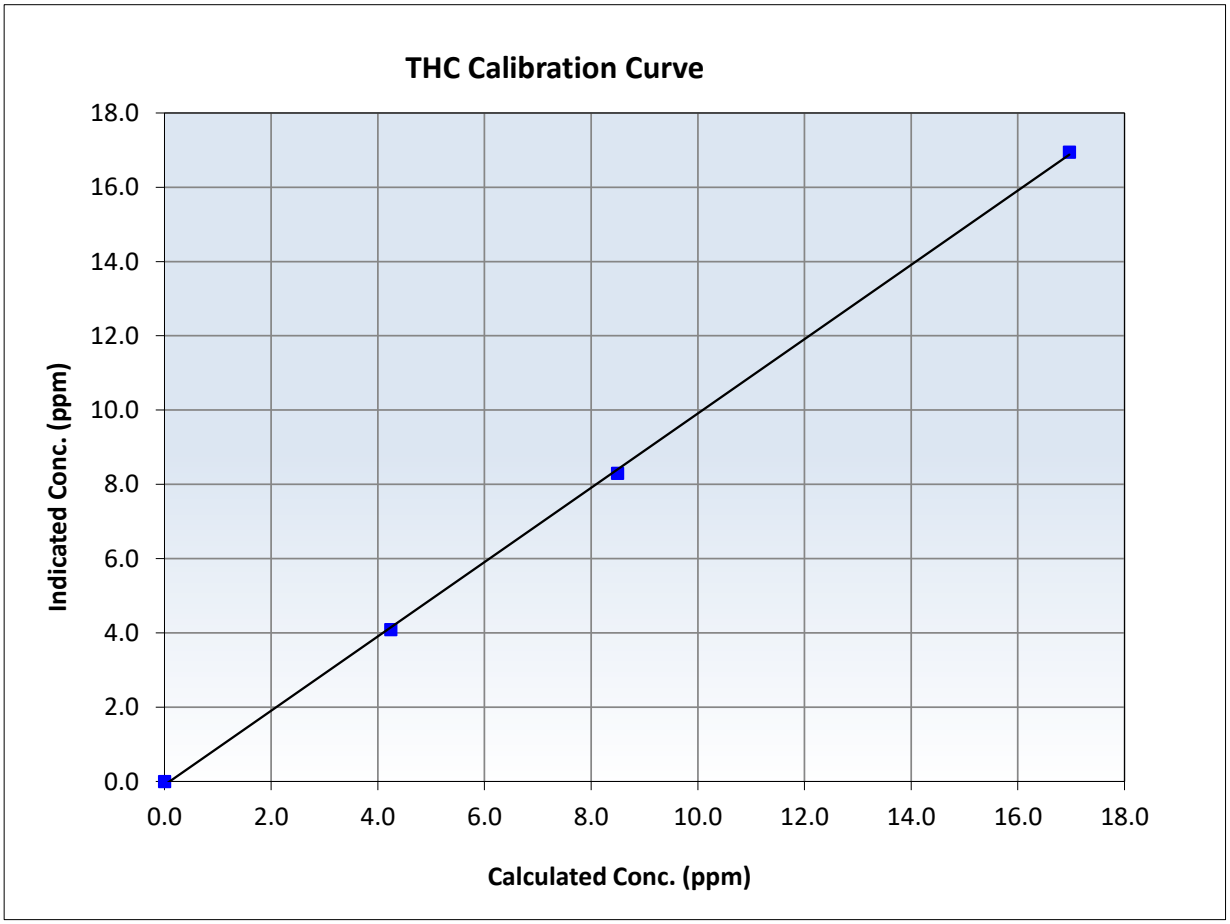
THC Calibration Summary

Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 5, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:08	End Time (MST):	14:46
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259521

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999819	≥0.995
16.97	16.95	1.0012	Slope	1.000487	0.90 - 1.10
8.50	8.30	1.0240			
4.24	4.09	1.0369	Intercept	-0.096108	+/-0.5



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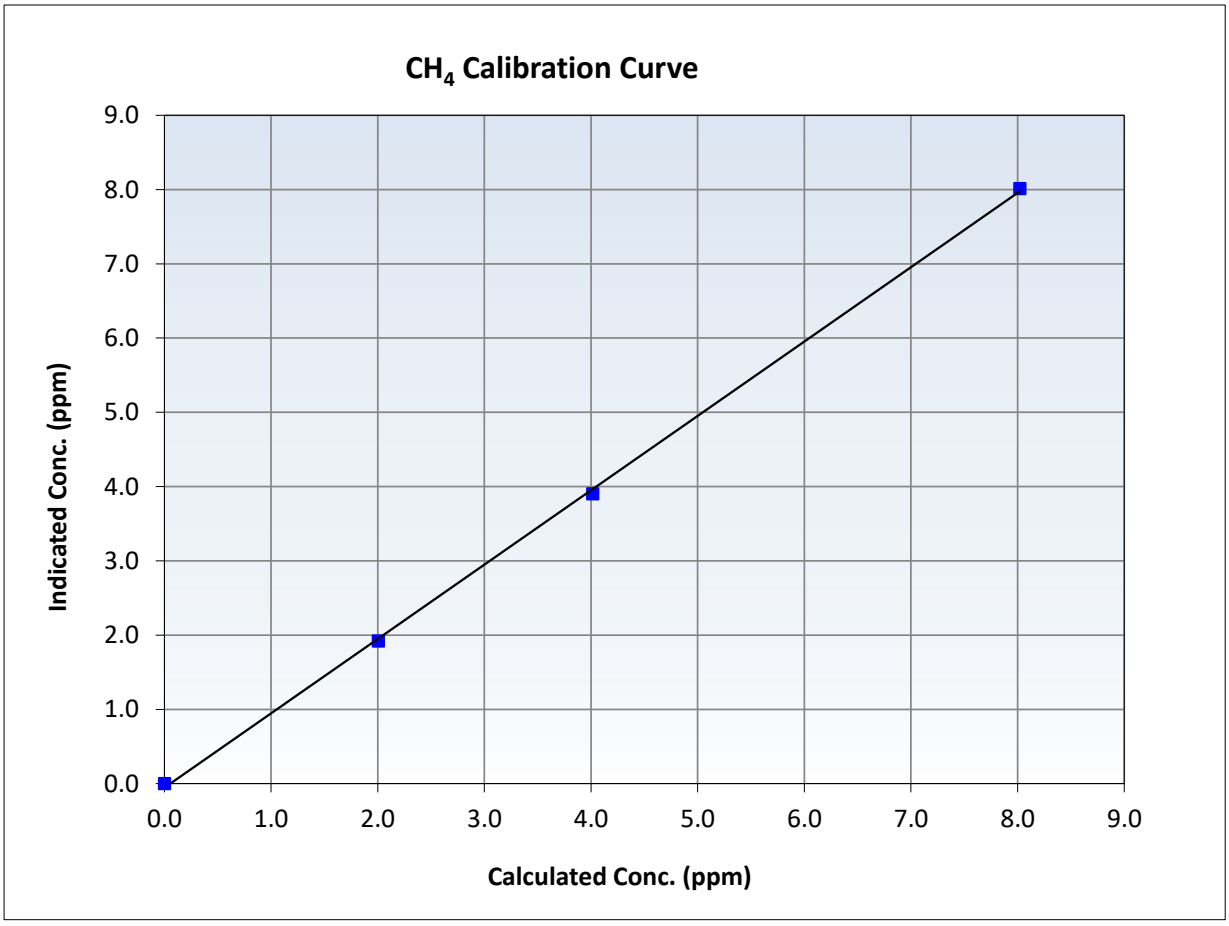
CH_4 Calibration Summary

Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 5, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:08	End Time (MST):	14:46
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259521

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999732	≥0.995
8.02	8.02	1.0007	Slope	1.001383	0.90 - 1.10
4.02	3.91	1.0285	Intercept	-0.055381	+/-0.5
2.01	1.92	1.0445			



Wood Buffalo Environmental Association

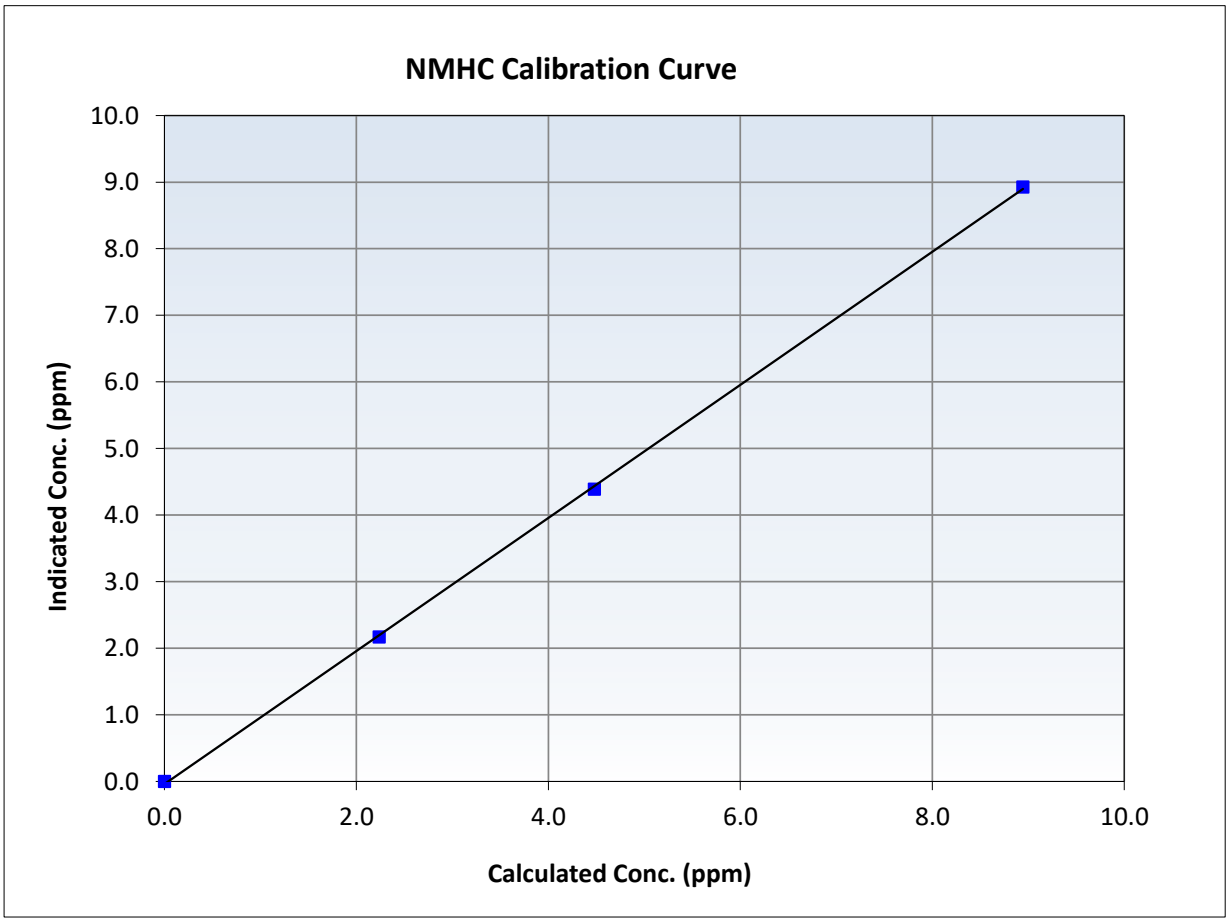
NMHC Calibration Summary

Station Information

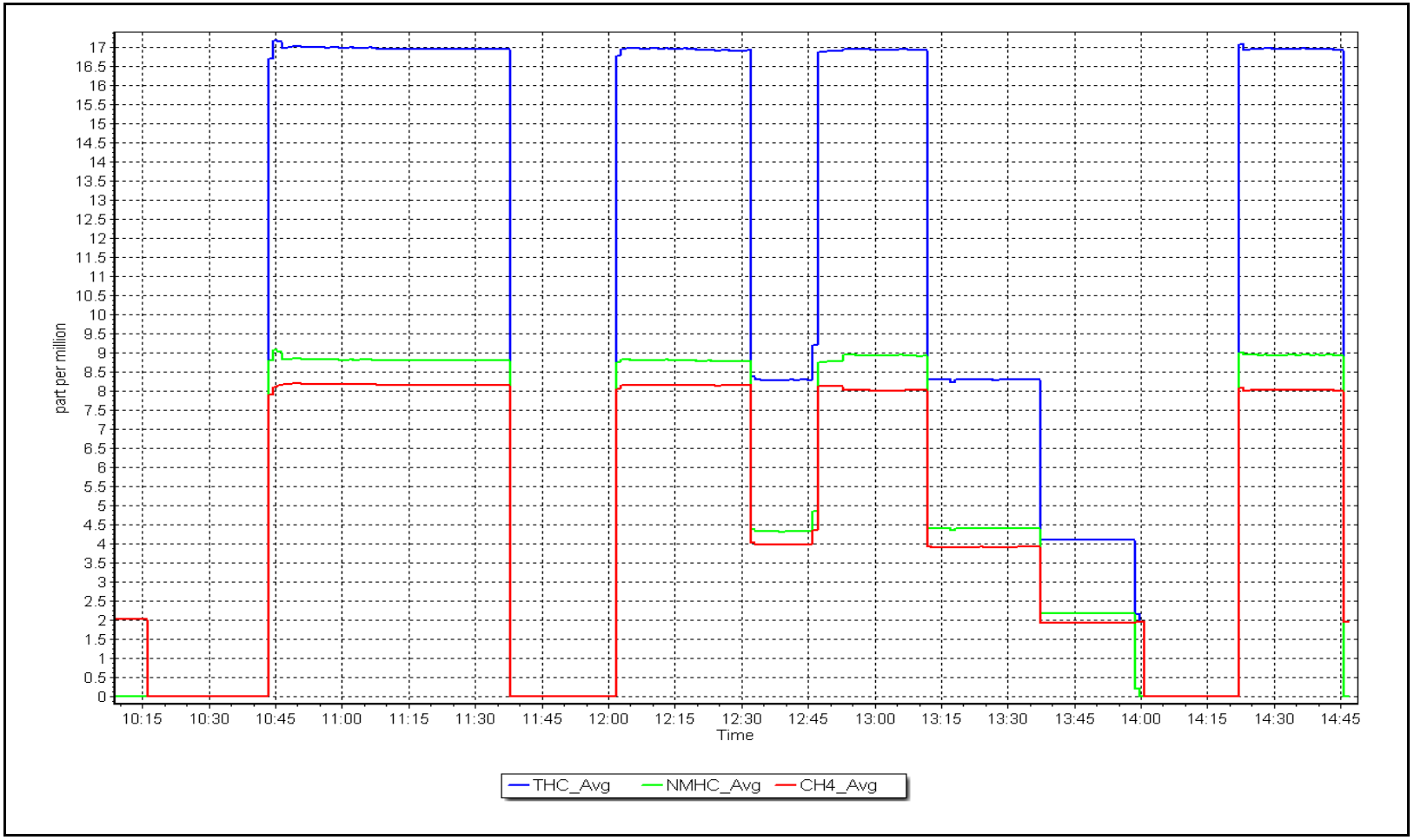
Calibration Date:	April 7, 2025	Previous Calibration:	March 5, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:08	End Time (MST):	14:46
Analyzer make:	Thermo 55i	Analyzer serial #:	1331259521

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999888	≥0.995
8.94	8.93	1.0021	Slope	0.999223	0.90 - 1.10
4.48	4.39	1.0200			
2.24	2.17	1.0301	Intercept	-0.039928	+/-0.5



NMHC Calibration Plot Date: April 7, 2025 Location: Anzac



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Anzac
Station number:	AMS 14
Calibration Date:	April 4, 2025
Last Cal Date:	March 6, 2025
Start time (MST):	10:16
End time (MST):	14:50
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	DT0037092		Cal Gas Expiry Date:	May 16, 2031	
NOX Cal Gas Conc:	60.7	ppm	NO Cal Gas Conc:	60.40	ppm
Removed Cylinder #:	NA		Removed Gas Exp Date:	NA	
Removed Gas NOX Conc:	60.70	ppm	Removed Gas NO Conc:	60.40	ppm
NOX gas Diff:			NO gas Diff:		
Calibrator Model:	Teledyne API T700		Serial Number:	3060	
ZAG make/model:	Teledyne API T700H		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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
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	806.2	801.0	5.0	0.9982	0.9996
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 800.5 ppb	NO = 798.4 ppb	* = > +/-5% change initiates investigation	*Percent Change	NO_X = 0.7%
Baseline Corr 1st pt	NO_X = 806.3 ppb	NO = 801.2 ppb	As Found Statistics	*Percent Change	NO = 0.3%
Baseline Corr 2nd pt	NO_X = NA ppb	NO = NA ppb	As found NO_X r^2:	Nx Sl:	Nx Int:
Baseline Corr 3rd pt	NO_X = NA ppb	NO = NA ppb	As found NO r^2:	NO Sl:	NO Int:
			As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1152430008

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
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:	156.9	159.4

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.995143	0.998863
NO_X Cal Offset:	-0.470500	-0.430260
NO Cal Slope:	0.999427	1.002566
NO Cal Offset:	-1.989787	-2.089249
NO_2 Cal Slope:	0.994537	0.994974
NO_2 Cal Offset:	-1.309208	-1.530514

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.2	0.1	0.1	----	----
High point	4934	66.3	804.8	800.9	4.0	803.6	801.6	1.9	1.0015	0.9991
Mid point	4985	33.2	401.6	399.6	2.0	401.0	398.4	2.5	1.0015	1.0030
Low point	5004	16.7	201.9	200.9	1.0	200.2	196.5	3.6	1.0085	1.0224
As left zero	5000	0.0	0.0	0.0	0.0	0.2	0.1	0.1	----	----
As left span	4934	66.3	804.8	416.8	388.0	801.9	416.8	385.0	1.0037	1.0000
								Average Correction Factor	1.0038	1.0082

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.1	----	----
High GPT point	800.6	411.8	392.8	390.0	1.0071	99.3%
Mid GPT point	800.6	601.7	202.9	199.9	1.0149	98.5%
Low GPT point	800.6	701.6	103.0	99.0	1.0402	96.1%
				Average Correction Factor	1.0207	98.0%

Notes: Sample inlet filter changed after as founds. No adjustments made.

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

NO_X Calibration Summary

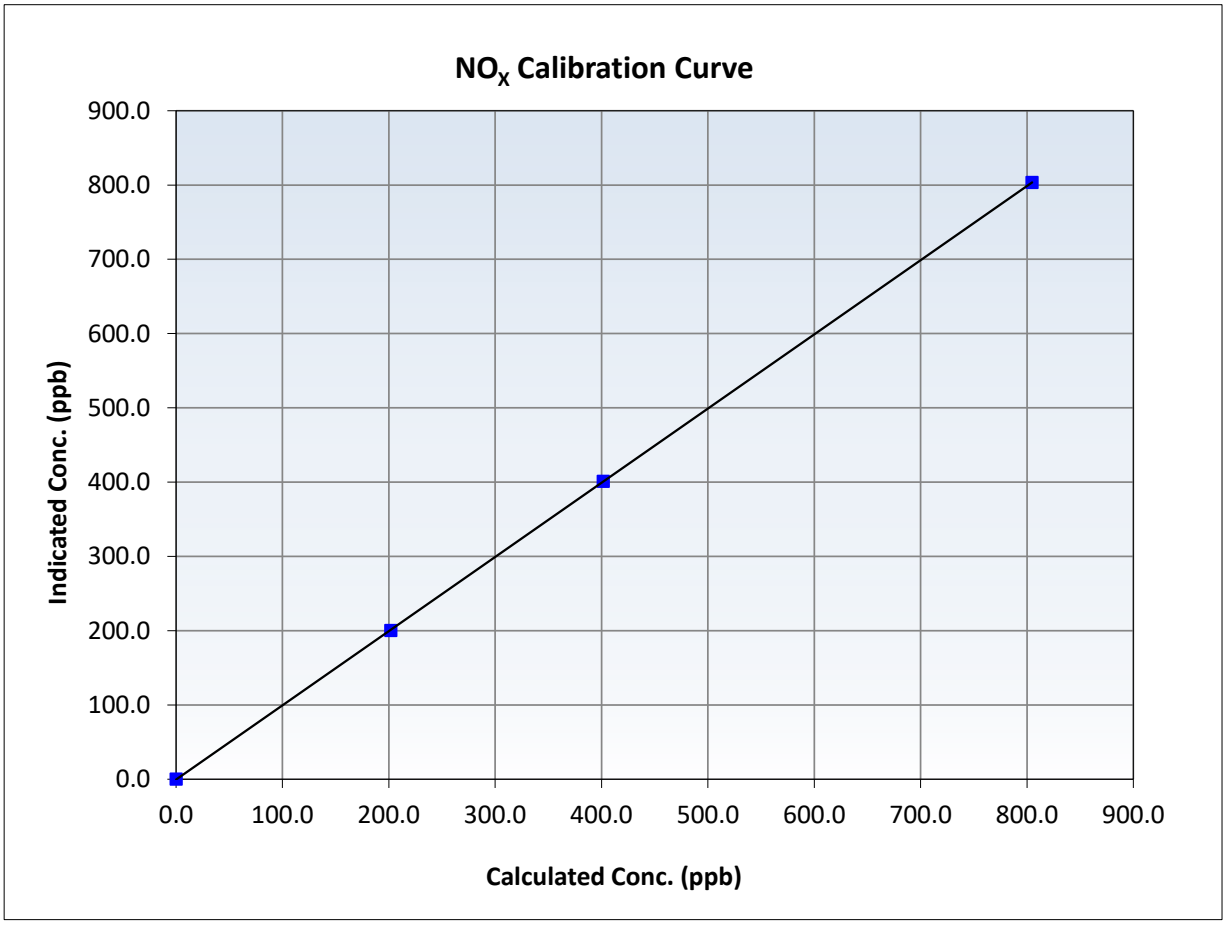
Station Information

Calibration Date:	April 4, 2025	Previous Calibration:	March 6, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:16	End Time (MST):	14:50
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430008

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
804.8	803.6	1.0015
401.6	401.0	1.0015
201.9	200.2	1.0085

Statistical Evaluation		Limits
Correlation Coefficient	0.999996	≥0.995
Slope	0.998863	0.90 - 1.10
Intercept	-0.430260	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

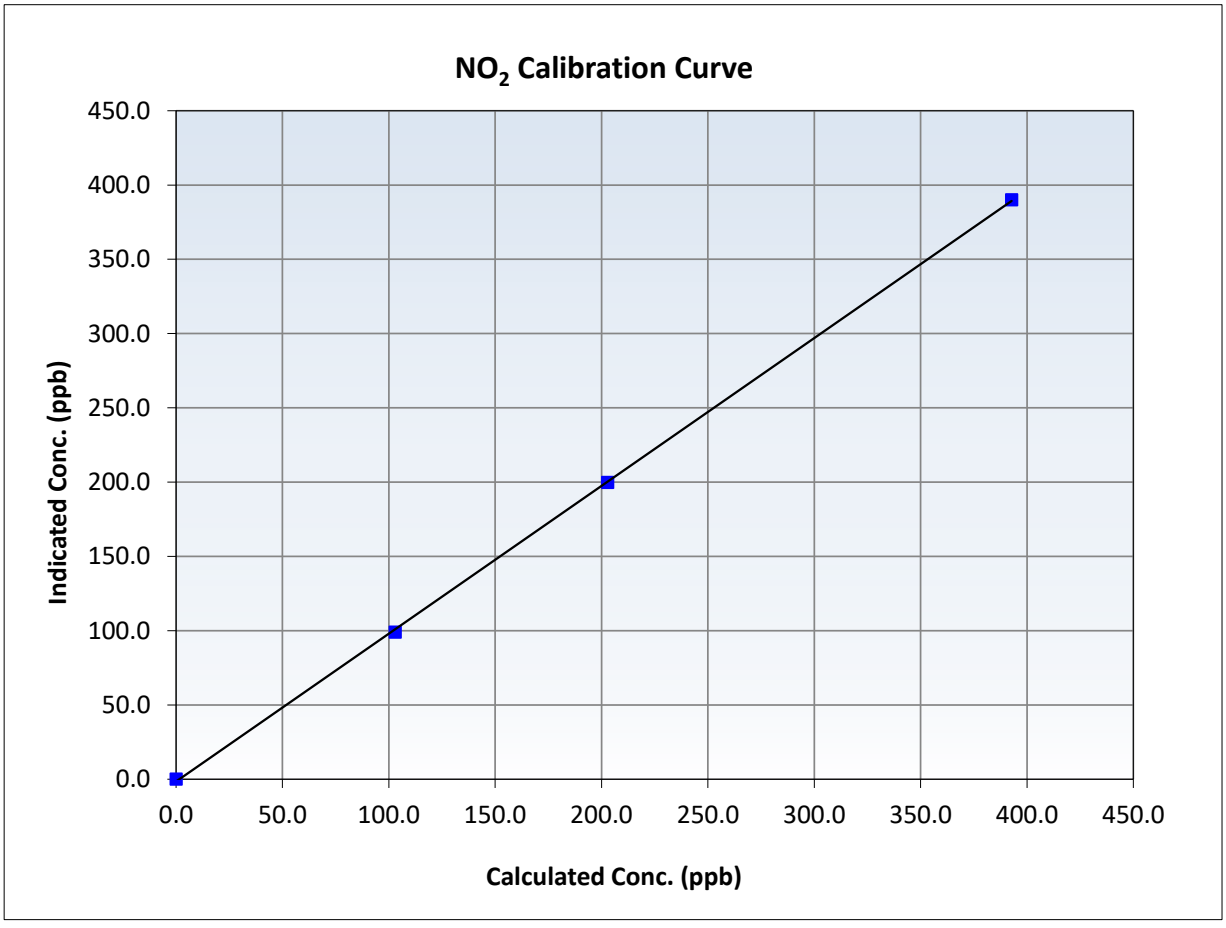
Station Information

Calibration Date:	April 4, 2025	Previous Calibration:	March 6, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:16	End Time (MST):	14:50
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430008

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
392.8	390.0	1.0071
202.9	199.9	1.0149
103.0	99.0	1.0402

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999915	*≥0.995*
Slope	0.994974	*0.90 - 1.10*
Intercept	-1.530514	*+/-20*



Wood Buffalo Environmental Association

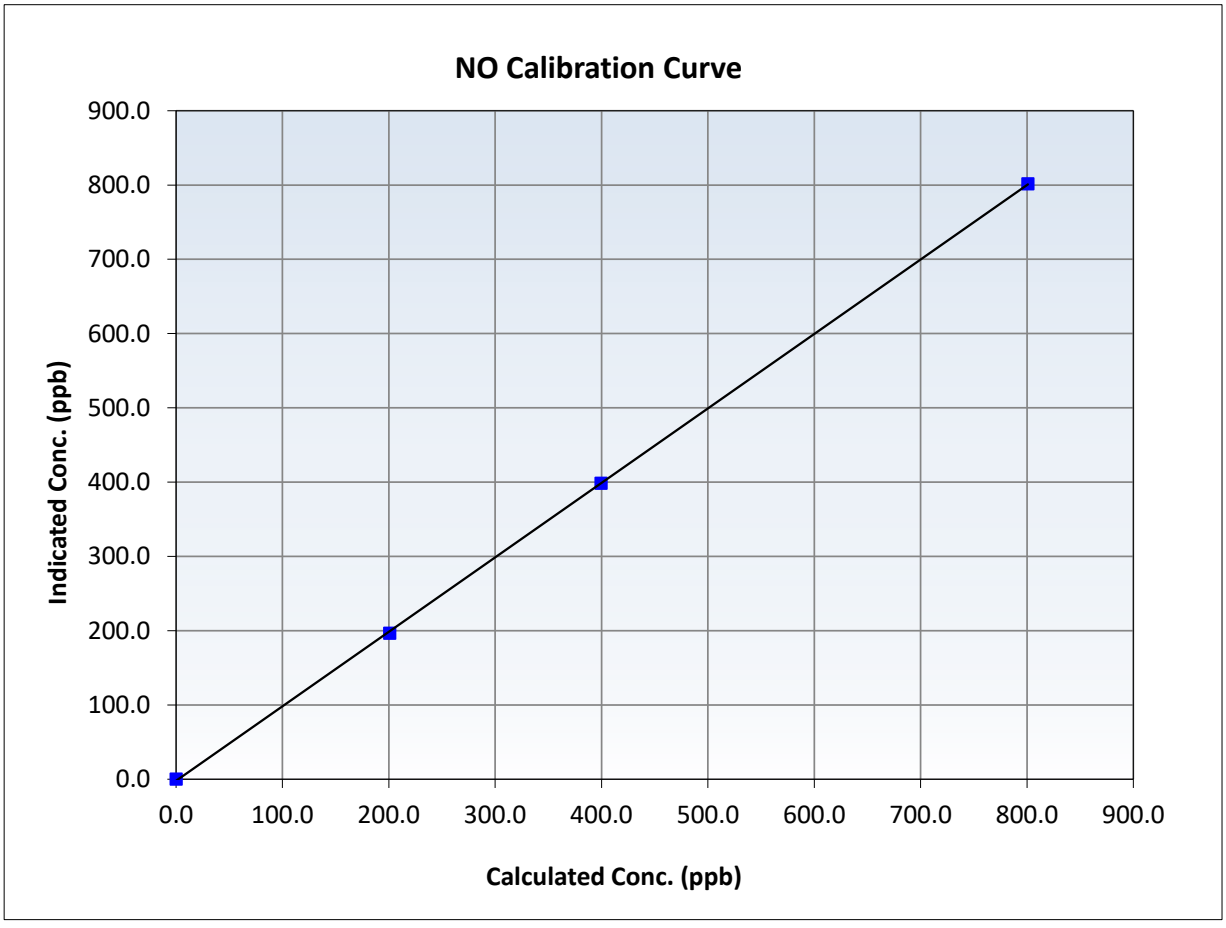
NO Calibration Summary

Station Information

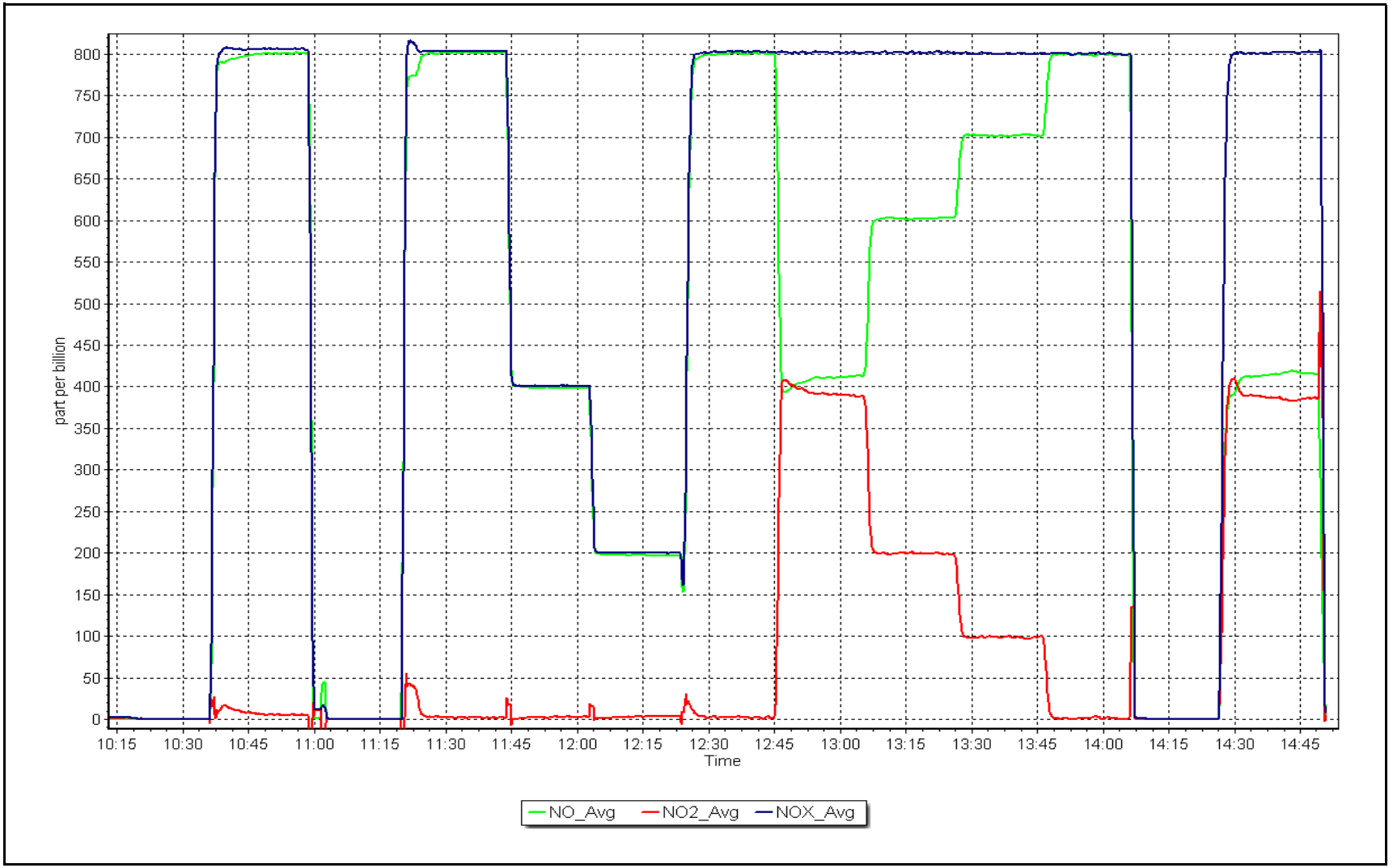
Calibration Date:	April 4, 2025	Previous Calibration:	March 6, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:16	End Time (MST):	14:50
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430008

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.1	----	Correlation Coefficient	0.999962	≥0.995
800.9	801.6	0.9991	Slope	1.002566	0.90 - 1.10
399.6	398.4	1.0030			
200.9	196.5	1.0224	Intercept	-2.089249	+/-20



NO_X Calibration Plot Date: April 4, 2025 Location: Anzac



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Anzac	Station number:	AMS 14
Calibration Date:	April 1, 2025	Last Cal Date:	March 4, 2025
Start time (MST):	10:56	End time (MST):	14:06
Reason:	Routine		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	API T700	Serial Number:	3060
ZAG Make/Model:	API 701H	Serial Number:	357

Analyzer Information

Analyzer make:	Thermo 49i	Analyzer serial #:	1426262595
Analyzer Range	0 - 500 ppb		

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.991800	0.990971	Backgd or Offset:	1.5	1.6
Calibration intercept:	0.060000	0.380000	Coeff or Slope:	1.668	1.668

O_3 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.9	----
As found High point	5000	935.9	400.0	397.8	1.008
As found Mid point					
As found Low point					
Baseline Corr As found:	396.9	Previous response	396.8	*% 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	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.3	----
High point	5000	935.9	400.0	396.7	1.008
Mid point	5000	817.5	200.0	198.7	1.007
Low point	5000	722.8	100.0	99.5	1.005
As left zero	5000	0.0	0.0	0.3	----
As left span	5000	935.9	400.0	401.4	0.997
				Average Correction Factor	1.007

Notes: Sample inlet filter changed after asfounds. No adjustment made.

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

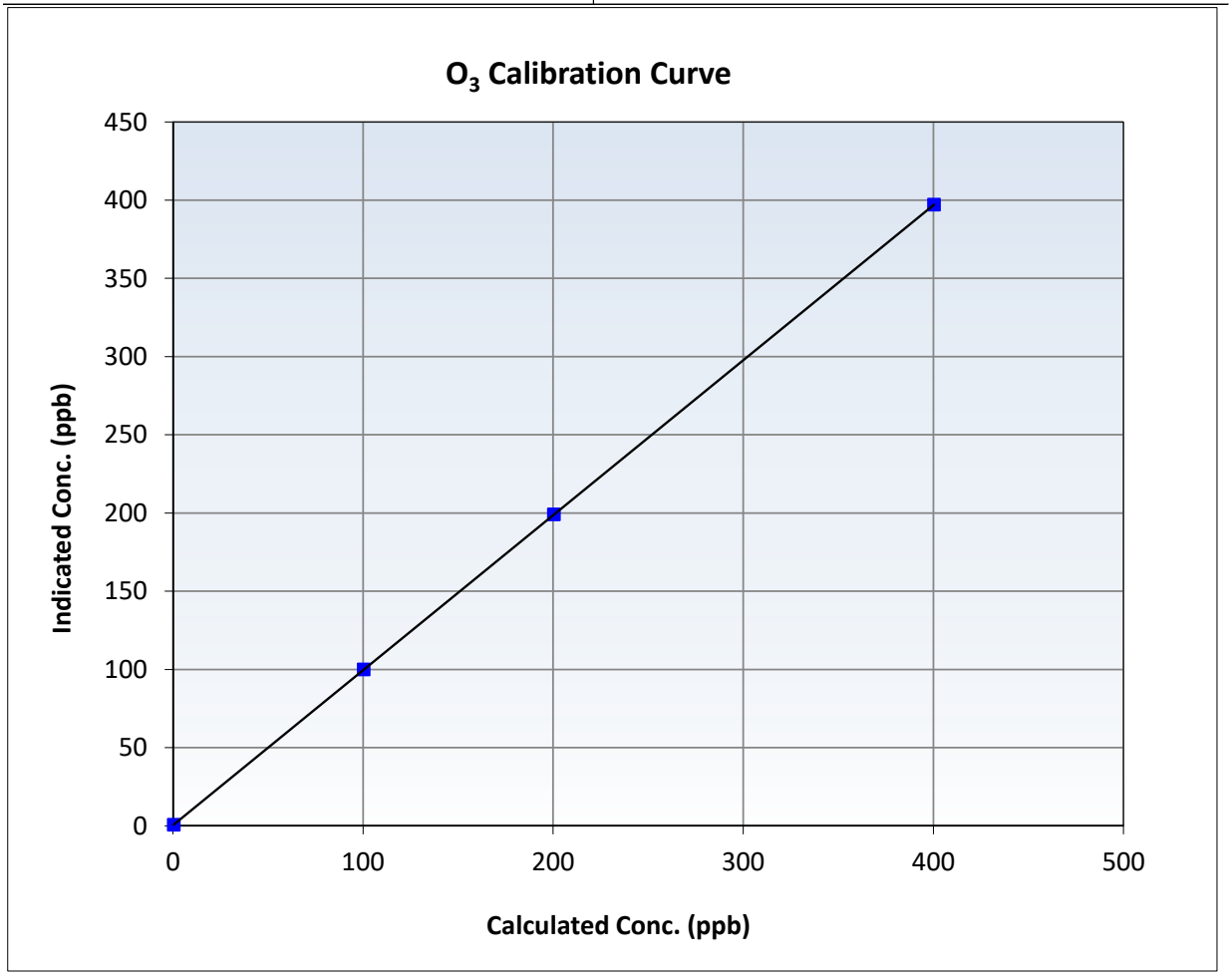
O_3 Calibration Summary

Station Information

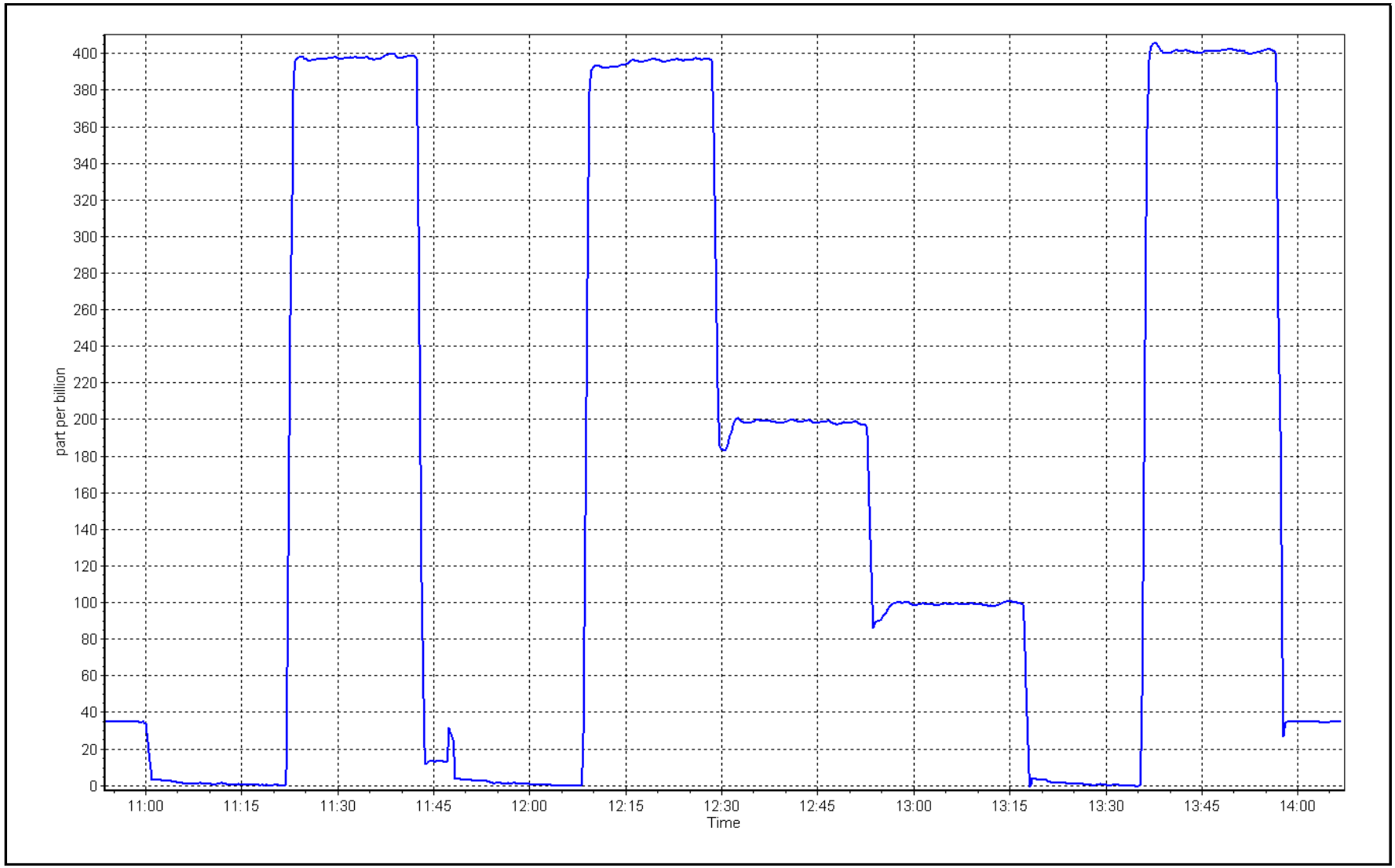
Calibration Date:	April 1, 2025	Previous Calibration:	March 4, 2025
Station Name:	Anzac	Station Number:	AMS 14
Start Time (MST):	10:56	End Time (MST):	14:06
Analyzer make:	Thermo 49i	Analyzer serial #:	1426262595

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.3	----	Correlation Coefficient	1.000000	≥0.995
400.0	396.7	1.0083	Slope	0.990971	0.90 - 1.10
200.0	198.7	1.0065			
100.0	99.5	1.0050	Intercept	0.380000	+/- 5



O_3 Calibration Plot Date: April 1, 2025 Location: Anzac



Wood Buffalo Environmental Association

T640 $PM_{2.5}$ CALIBRATION

Version-01-2024

Station Information

Station Name:	Anzac	Station number:	AMS 14
Calibration Date:	April 29, 2025	Last Cal Date:	March 14, 2025
Start time (MST):	11:50	End time (MST):	12:12
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 (^{o}C)	8.6	8.18	8.5	☐	+/- 2 ^{o}C
P (mmHg)	705.4	706.1	705.4	☐	+/- 10 mmHg
Flow (LPM)	5.000	4.95	5.000	☐	+/- 0.25 LPM
PW% (pump)	36	-----	36	☐	>80%
Zero Verification	PM w/o HEPA:	0.3	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: — Lot No.: — Expiry Date:

Parameter	As found	Post maintenance	As left	Adjusted	*(Limits)*
PMT Peak Test				☐	+/- 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
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Wapasu	Station number:	AMS17
Calibration Date:	April 7, 2025	Last Cal Date:	March 4, 2025
Start time (MST):	10:15	End time (MST):	13:59
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	50.38	ppm	Cal Gas Exp Date:	January 12, 2029
Cal Gas Cylinder #:	ALM066507			
Removed Cal Gas Conc:	50.38	ppm	Rem Gas Exp Date:	N/A
Removed Gas Cyl #:	N/A		Diff between cyl:	
Calibrator Model:	Teledyne API T700		Serial Number:	2449
Zero Air Gen Model:	Teledyne API 701H		Serial Number:	1238

Analyzer Information

Analyzer make:	Thermo 43i		Serial Number:	1218153459	
Analyzer Range:	0 - 1000 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.994240	0.995597	Backgd or Offset:	14.0	14.0
Calibration intercept:	-1.540718	-1.540479	Coeff or Slope:	1.109	1.109

SO_2 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	4921	79.4	800.0	794.8	1.007
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	794.8	Previous response	793.8	*% 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	

SO_2 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	4921	79.4	800.0	796.2	1.005
Mid point	4960	39.7	400.0	394.7	1.014
Low point	4980	19.8	199.5	196.0	1.018
As left zero	5000	0.0	0.0	0.3	----
As left span	4920	79.4	800.1	797.9	1.003
				Average Correction Factor:	1.012

Notes: No adjustments needed.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

SO_2 Calibration Summary

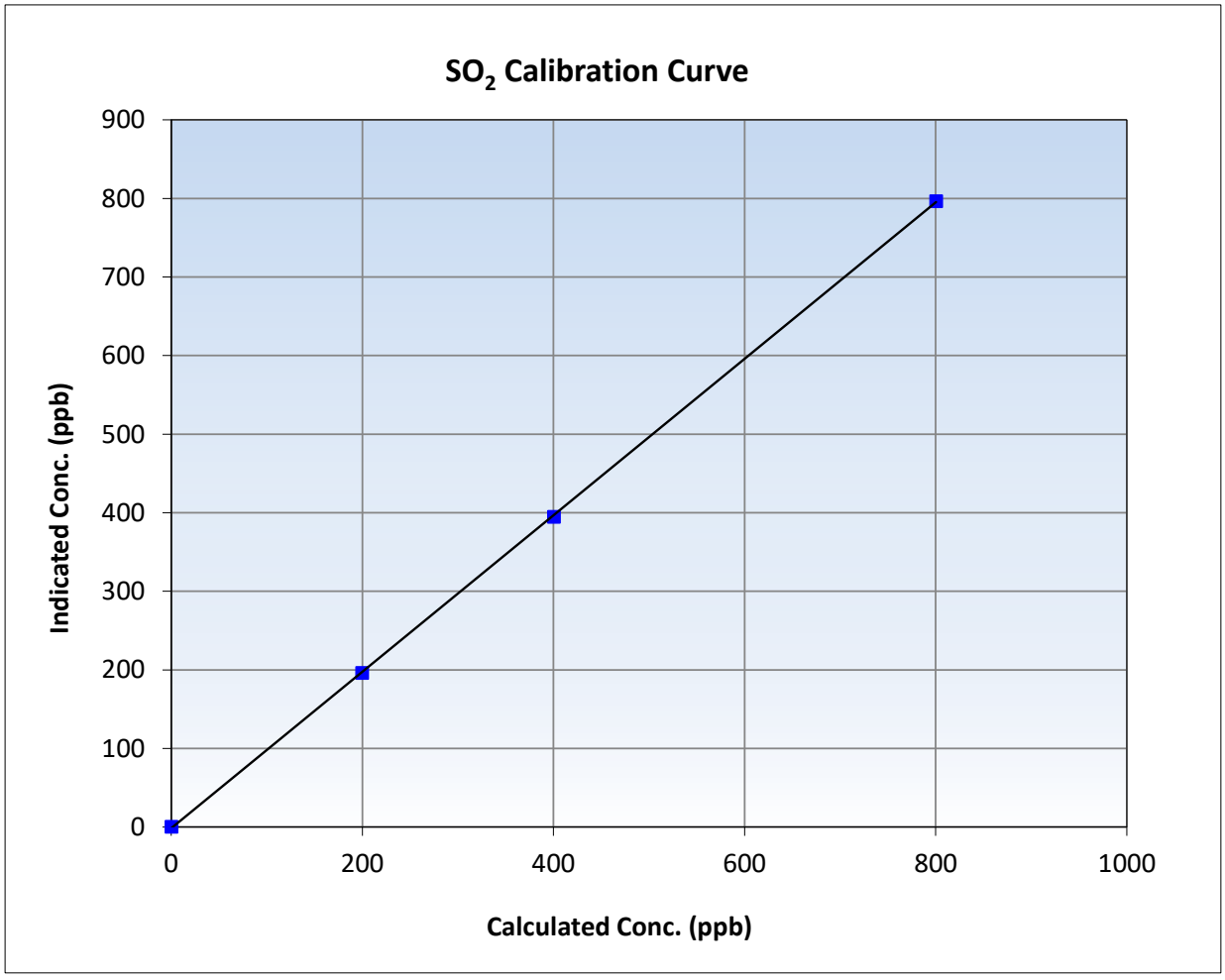
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 4, 2025
Station Name:	Wapasu	Station Number:	AMS17
Start Time (MST):	10:15	End Time (MST):	13:59
Analyzer make:	Thermo 43i	Analyzer serial #:	1218153459

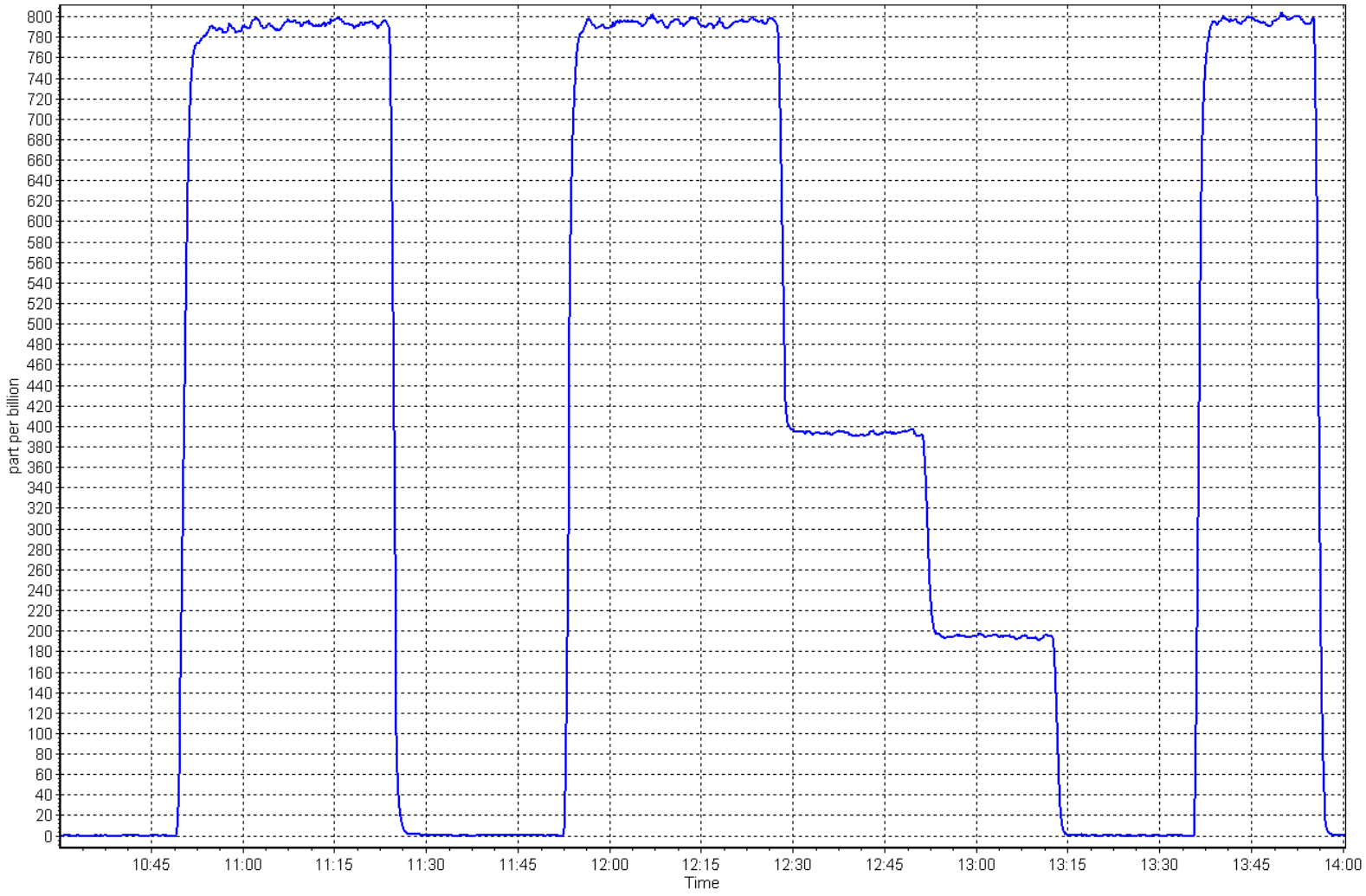
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
800.0	796.2	1.0047
400.0	394.7	1.0135
199.5	196.0	1.0179

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999970	*≥0.995*
Slope	0.995597	*0.90 - 1.10*
Intercept	-1.540479	*+/-30*



SO2 Calibration Plot Date: April 7, 2025 Location: Wapasu



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	Wapasu	Station number:	AMS 17
Calibration Date:	April 15, 2025	Last Cal Date:	March 20, 2025
Start time (MST):	10:33	End time (MST):	15:20
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	4.77	ppm	Cal Gas Exp Date:	August 28, 2027
Cal Gas Cylinder #:	DT20029267			
Removed Cal Gas Conc:	4.77	ppm	Rem Gas Exp Date:	
Removed Gas Cyl #:			Diff between cyl:	
Calibrator Make/Model:	API T700		Serial Number:	2449
ZAG Make/Model:	API T701H		Serial Number:	359

Analyzer Information

Analyzer make:	Thermo 450i		Analyzer serial #:	1218153583	
Converter make:	CD Nova		Converter serial #:	N/A	
Analyzer Range	0 - 100 ppb		Converter Temp:	340	degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.997355	1.001218	Backgd or Offset:	13.1	13.1
Calibration intercept:	0.680200	-0.180032	Coeff or Slope:	1.099	1.099

H_2S 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	4921	83.9	80.0	80.7	0.988
As found Mid point	4961	41.9	39.9	40.5	0.982
As found Low point	4980	21.0	20.0	19.7	1.007
New cylinder response					

Baseline Corr As found:	80.9	Prev response:	80.43	*% change:	0.6%
Baseline Corr 2nd AF pt:	40.7	AF Slope:	1.013690	AF Intercept:	-0.289348
Baseline Corr 3rd AF pt:	19.9	AF Correlation:	0.999945	* = > +/-5% change initiates investigation	

H_2S 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	0.1	----
High point	4916	83.9	80.0	80.2	0.998
Mid point	4958	41.9	40.0	39.4	1.015
Low point	4979	21.0	20.0	19.8	1.012
As left zero	5000	0.0	0.0	0.2	----
As left span	4916	83.9	80.0	78.3	1.022
SO2 Scrubber Check	4921	79.4	793.9	0.1	----
Date of last scrubber change:		N/A		Ave Corr Factor	1.008
Date of last converter efficiency test:		N/A			

Notes: No adjustments needed.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

H_2S Calibration Summary

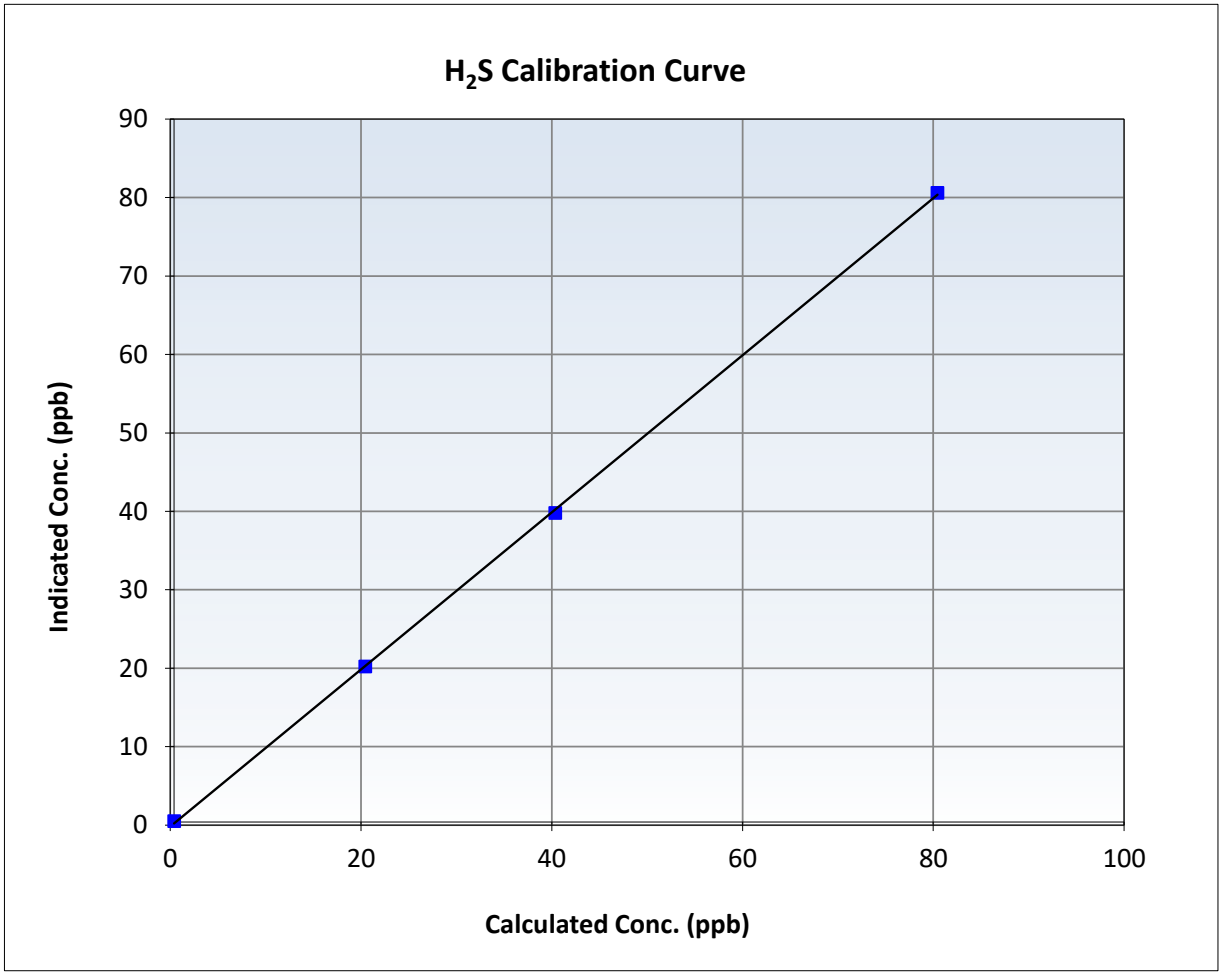
Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 20, 2025
Station Name:	Wapasu	Station Number:	AMS 17
Start Time (MST):	10:33	End Time (MST):	15:20
Analyzer make:	Thermo 450i	Analyzer serial #:	1218153583

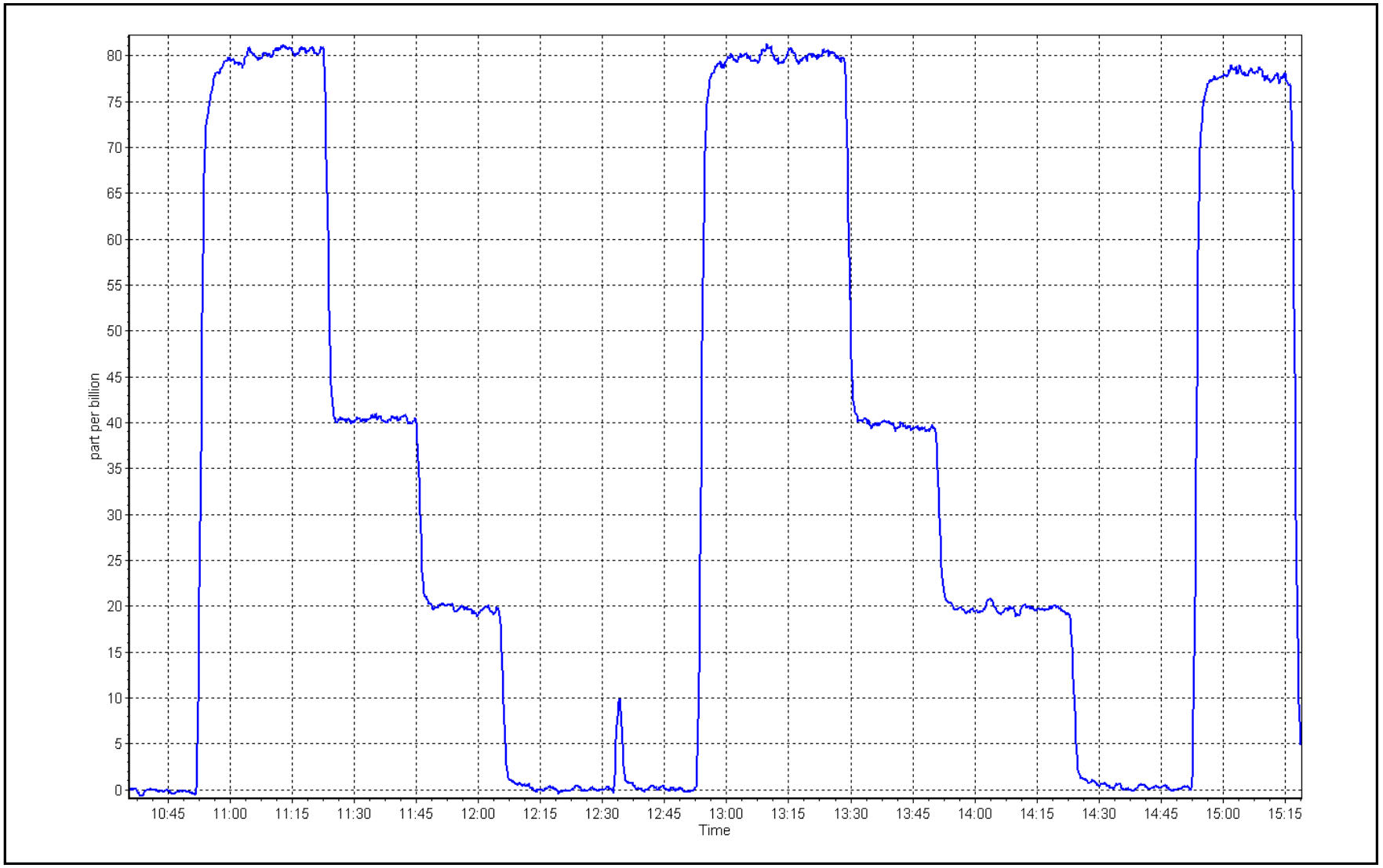
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
80.0	80.2	0.9980
40.0	39.4	1.0146
20.0	19.8	1.0118

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999904	*≥0.995*
Slope	1.001218	*0.90 - 1.10*
Intercept	-0.180032	*+/-3*



H_2S Calibration Plot Date: April 15, 2025 Location: Wapasu



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name:	Wapasu	Station number:	AMS17
Calibration Date:	April 7, 2025	Last Cal Date:	March 4, 2025
Start time (MST):	10:15	End time (MST):	13:59
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

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.993740	1.003335	Background:	3.230	3.340
Calibration intercept:	-0.053360	-0.176337	Coefficient:	4.337	4.476

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	-0.15	----
As found High point	4921	79.4	17.09	16.50	1.027
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	16.65	Previous response	16.93	*% 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	

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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	-0.13	----
High point	4921	79.4	17.09	17.01	1.005
Mid point	4960	39.7	8.55	8.34	1.025
Low point	4980	19.8	4.26	4.07	1.047
As left zero	5000	0.0	0.00	-0.16	----
As left span	4921	79.4	17.09	17.03	1.004
				Average Correction Factor	1.026

Notes: Span adjusted.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

THC Calibration Summary

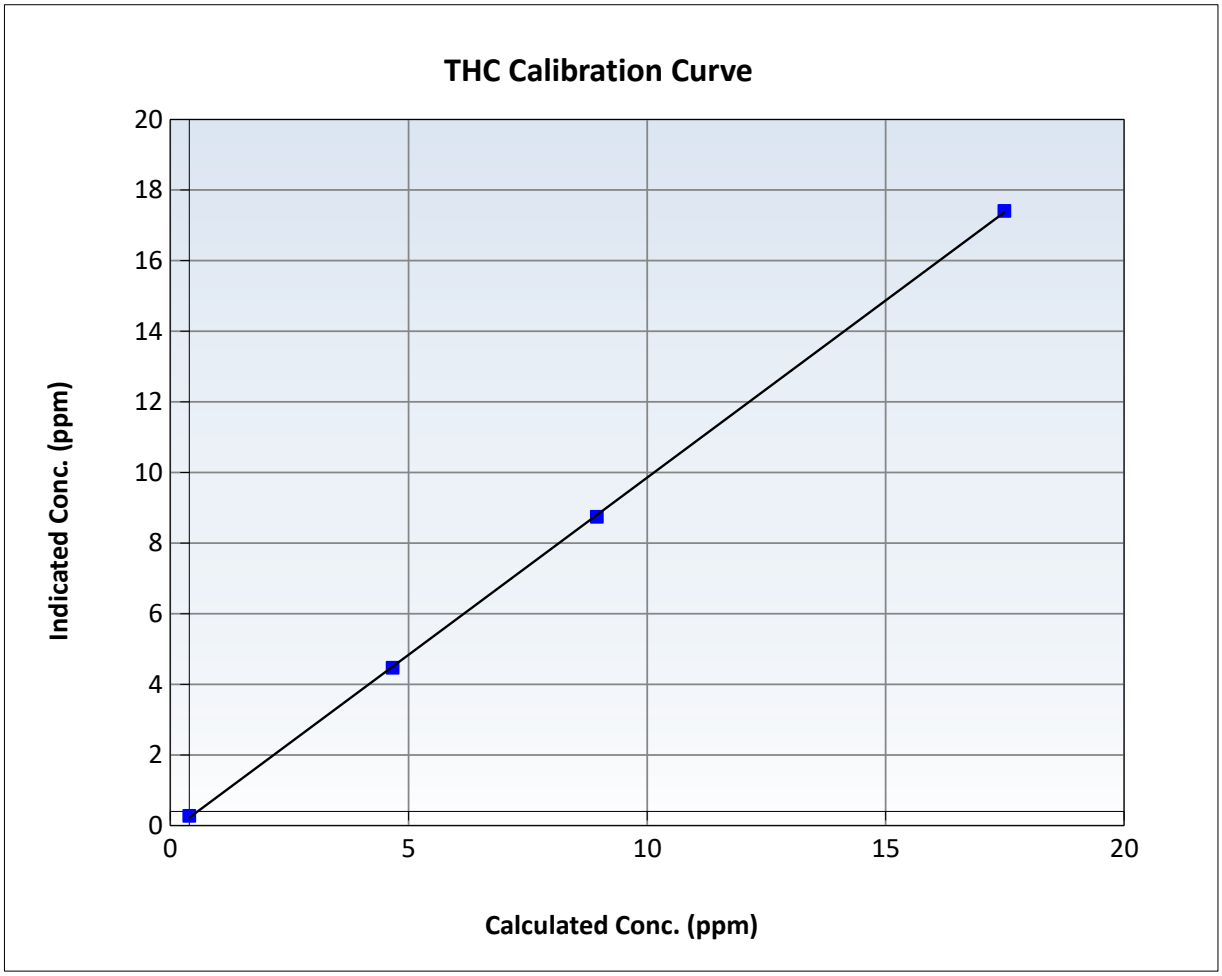
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 4, 2025
Station Name:	Wapasu	Station Number:	AMS17
Start Time (MST):	10:15	End Time (MST):	13:59
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1218153352

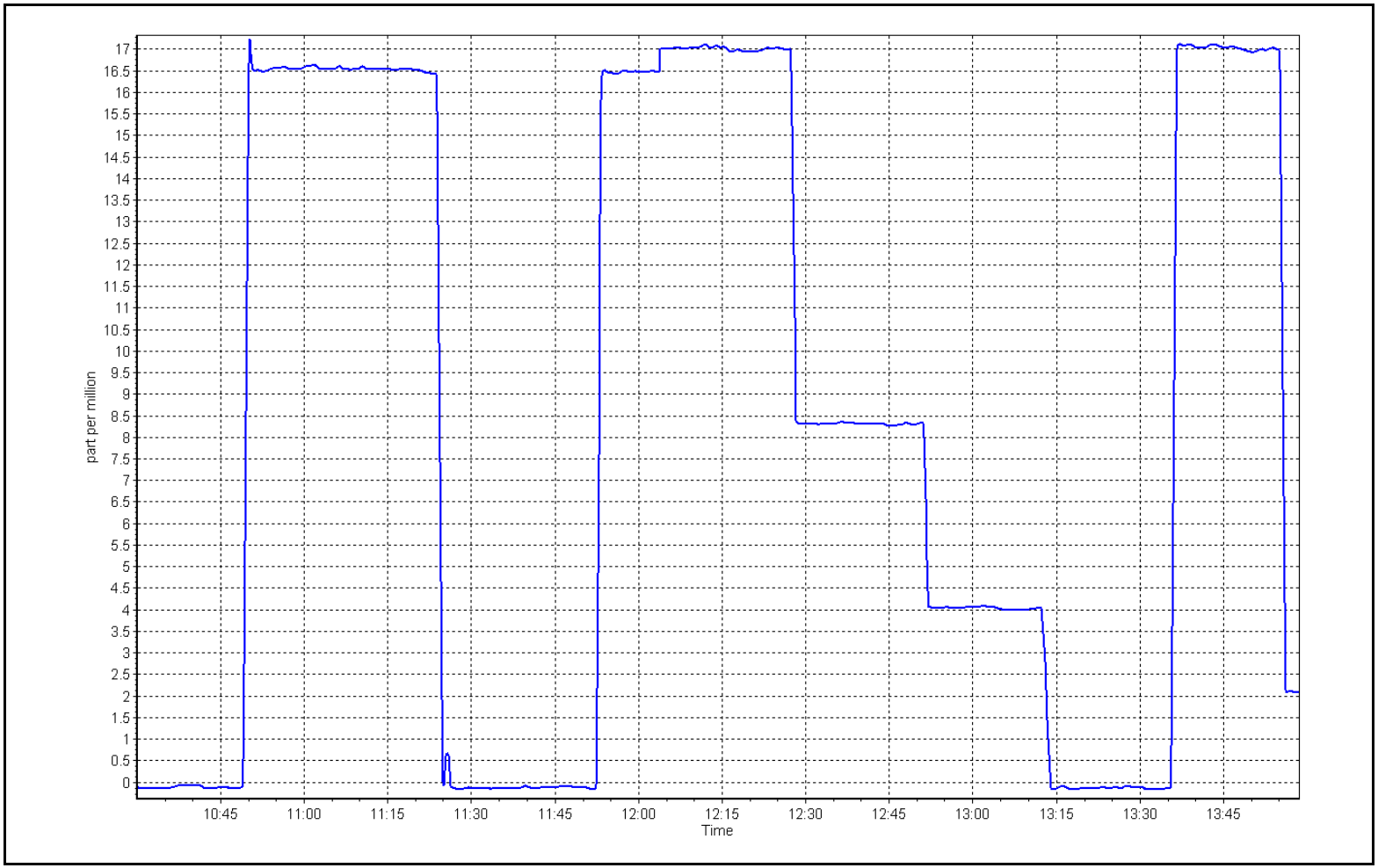
Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	-0.13	----
17.09	17.01	1.0049
8.55	8.34	1.0248
4.26	4.07	1.0470

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999949	*≥0.995*
Slope	1.003335	*0.90 - 1.10*
Intercept	-0.176337	*+/-1.5*



THC Calibration Plot Date: April 7, 2025 Location: Wapasu



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Wapasu
Station number:	AMS 17
Calibration Date:	April 8, 2025
Last Cal Date:	March 19, 2025
Start time (MST):	10:25
End time (MST):	15:44
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	T375YK8	Cal Gas Expiry Date:	April 13, 2025
NOX Cal Gas Conc:	49.11 ppm	NO Cal Gas Conc:	48.07 ppm
Removed Cylinder #:	N/A	Removed Gas Exp Date:	N/A
Removed Gas NOX Conc:	49.11 ppm	Removed Gas NO Conc:	48.07 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	API T700	Serial Number:	2449
ZAG make/model:	API T701H	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
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	818.4	798.2	20.2	0.9978	1.0019
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X =	817.0 ppb	NO =	797.9 ppb	* = > +/-5% change initiates investigation	*Percent Change	NO_X = 0.2%
Baseline Corr 1st pt	NO_X =	819.0 ppb	NO =	798.4 ppb	As Found Statistics	*Percent Change	NO = 0.1%
Baseline Corr 2nd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO_X r^2:	Nx Sl:	Nx Int:
Baseline Corr 3rd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO r^2:	NO Sl:	NO Int:
					As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo Scientific 42i
Serial Number: 1218153460
NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	1.084	1.084	NO bkgnd or offset:	3.8	3.8
NOX coeff or slope:	0.996	0.996	NOX bkgnd or offset:	4.2	4.2
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	240.6	238.6

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	1.001354	0.999201
NO_X Cal Offset:	-1.280000	-1.360000
NO Cal Slope:	0.999687	0.999815
NO Cal Offset:	-1.740000	-1.860000
NO_2 Cal Slope:	1.002988	0.998689
NO_2 Cal Offset:	0.366820	-0.611431

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
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	815.8	798.9	17.0	1.0017	1.0012
Mid point	4958	41.6	408.6	399.9	8.7	406.0	396.8	9.2	1.0064	1.0079
Low point	4979	20.8	204.3	200.0	4.3	202.1	196.4	5.7	1.0109	1.0182
As left zero	5000	0.0	0.0	0.0	0.0	-0.4	-0.1	-0.4	----	----
As left span	4917	83.2	817.2	396.7	420.5	814.5	396.7	417.8	1.0033	1.0000
							Average Correction Factor		1.0063	1.0091

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	-0.4	----	----
High GPT point	796.3	398.9	414.7	413.8	1.0022	99.8%
Mid GPT point	796.3	600.8	212.8	211.4	1.0066	99.3%
Low GPT point	796.3	700.5	113.1	112.4	1.0063	99.4%
				Average Correction Factor	1.0050	99.5%

Notes: Sample inlet filter changed after as founds. Span adjusted.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

NO_X Calibration Summary

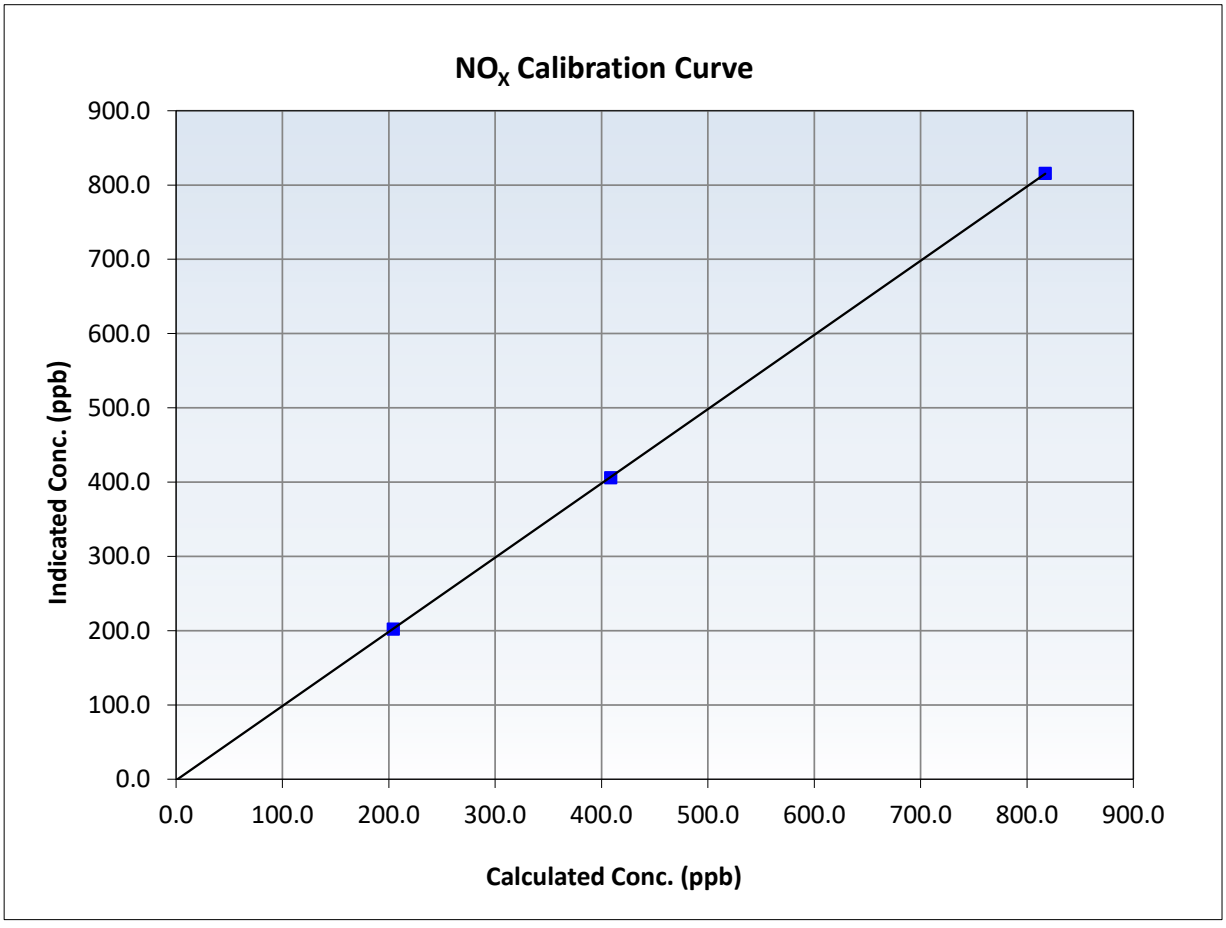
Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 19, 2025
Station Name:	Wapasu	Station Number:	AMS 17
Start Time (MST):	10:25	End Time (MST):	15:44
Analyzer make:	Thermo Scientific 42i	Analyzer serial #:	1218153460

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.4	----
817.2	815.8	1.0017
408.6	406.0	1.0064
204.3	202.1	1.0109

Statistical Evaluation		Limits
Correlation Coefficient	0.999993	≥0.995
Slope	0.999201	0.90 - 1.10
Intercept	-1.360000	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

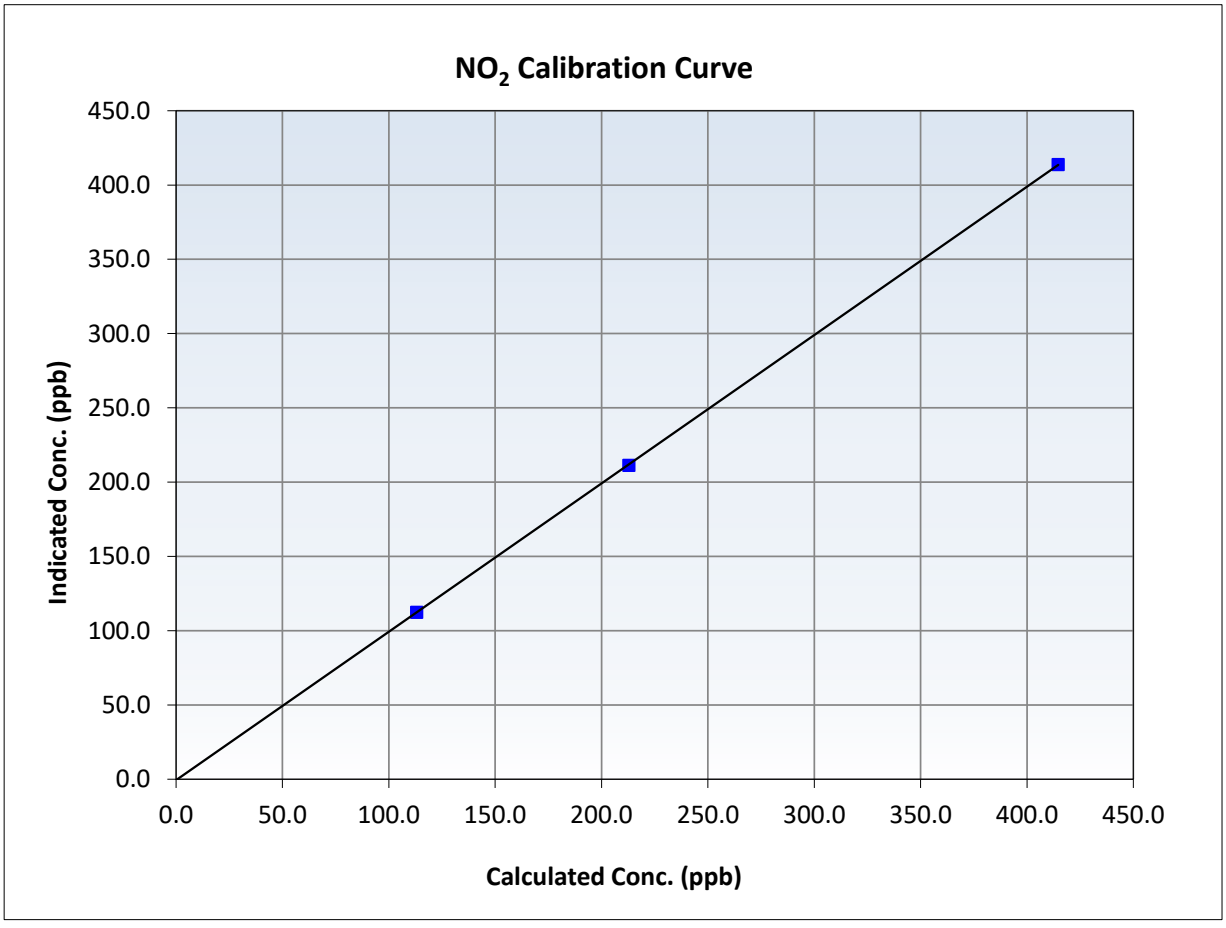
Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 19, 2025
Station Name:	Wapasu	Station Number:	AMS 17
Start Time (MST):	10:25	End Time (MST):	15:44
Analyzer make:	Thermo Scientific 42i	Analyzer serial #:	1218153460

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.4	----
414.7	413.8	1.0022
212.8	211.4	1.0066
113.1	112.4	1.0063

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999996	*≥0.995*
Slope	0.998689	*0.90 - 1.10*
Intercept	-0.611431	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

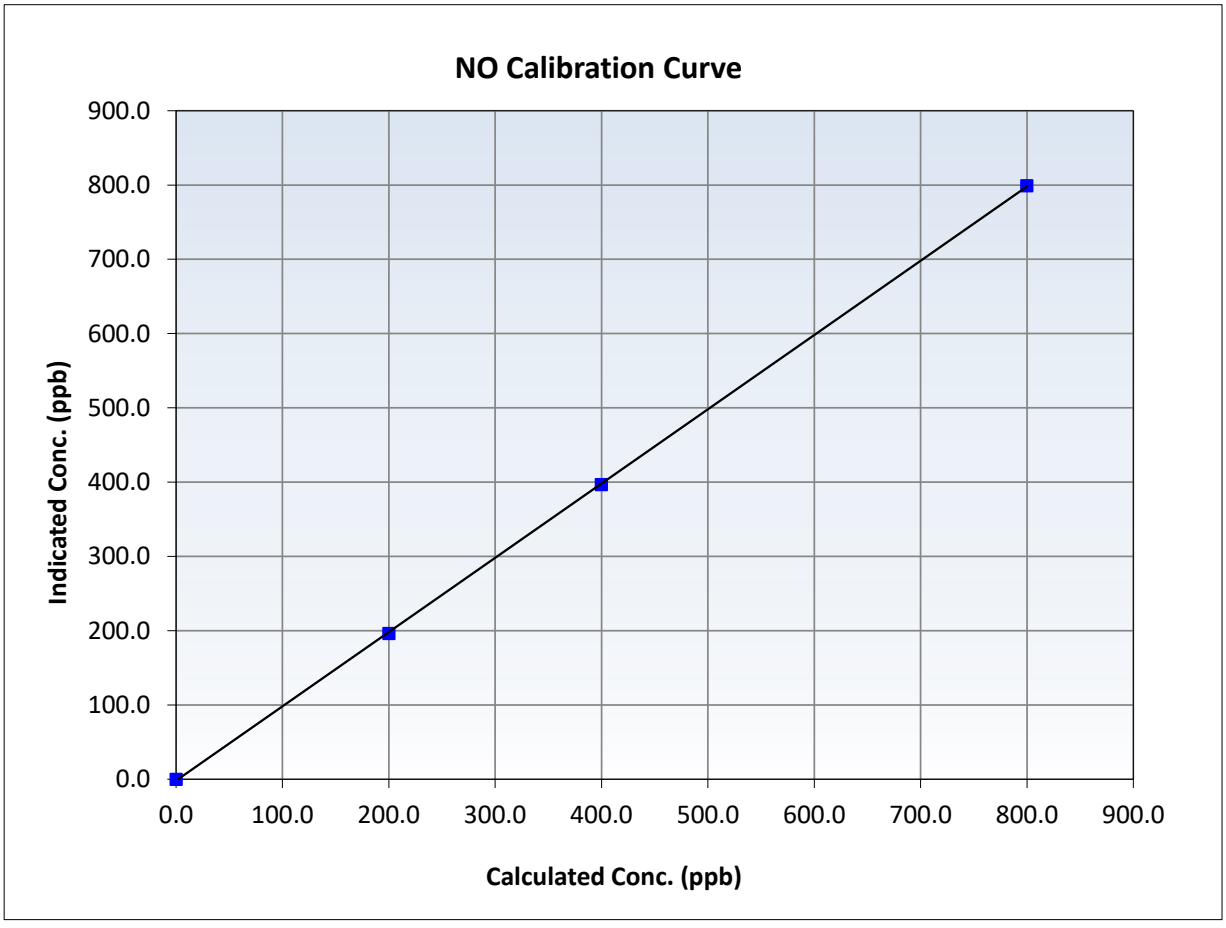
Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 19, 2025
Station Name:	Wapasu	Station Number:	AMS 17
Start Time (MST):	10:25	End Time (MST):	15:44
Analyzer make:	Thermo Scientific 42i	Analyzer serial #:	1218153460

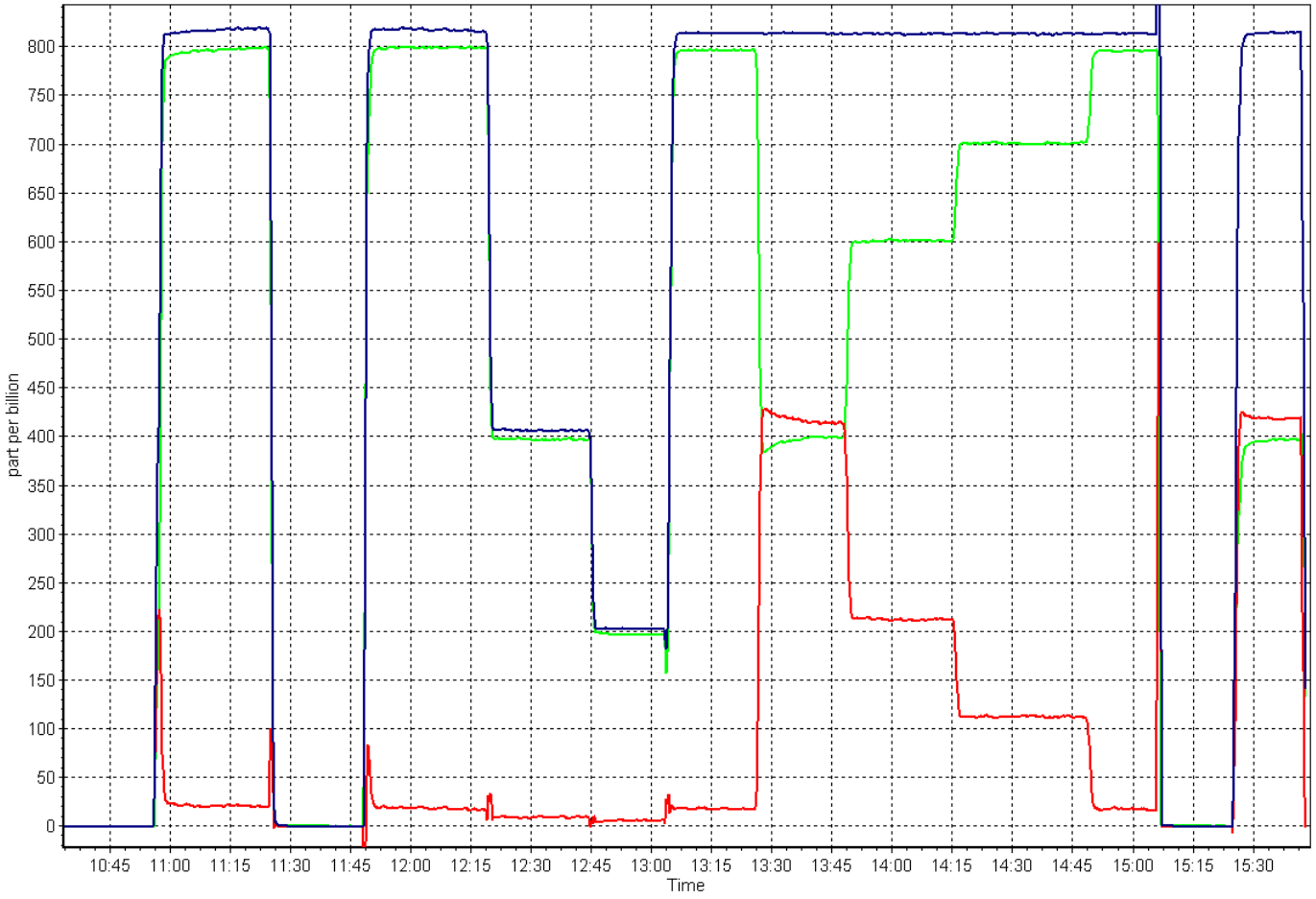
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
799.9	798.9	1.0012
399.9	396.8	1.0079
200.0	196.4	1.0182

Statistical Evaluation		Limits
Correlation Coefficient	0.999975	≥0.995
Slope	0.999815	0.90 - 1.10
Intercept	-1.860000	+/-20



NO_X Calibration Plot Date: April 8, 2025 Location: Wapasu



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Wapasu	Station number:	AMS17
Calibration Date:	April 3, 2025	Last Cal Date:	March 13, 2025
Start time (MST):	10:35	End time (MST):	14:25
Reason:	Routine		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	API T700	Serial Number:	2449
ZAG Make/Model:	API T701H	Serial Number:	359

Analyzer Information

Analyzer make:	API T400	Analyzer serial #:	7045
Analyzer Range	0 - 500 ppb		

	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.010314	0.995943	Backgd or Offset:	0.6	0.6
Calibration intercept:	-0.280000	0.160000	Coeff or Slope:	1.046	1.027

O_3 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) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.2	----
As found High point	5000	1104.7	400.0	406.7	0.983
As found Mid point					
As found Low point					
Baseline Corr As found:	406.9	Previous response	403.8	*% 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	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.0	----
High point	5000	1104.7	400.0	398.6	1.004
Mid point	5000	917.3	200.0	199.0	1.005
Low point	5000	797.9	100.0	100.2	0.998
As left zero	5000	0.0	0.0	0.7	----
As left span	5000	1104.0	400.0	399.4	1.002
				Average Correction Factor	1.002

Notes: Span adjusted.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

O_3 Calibration Summary

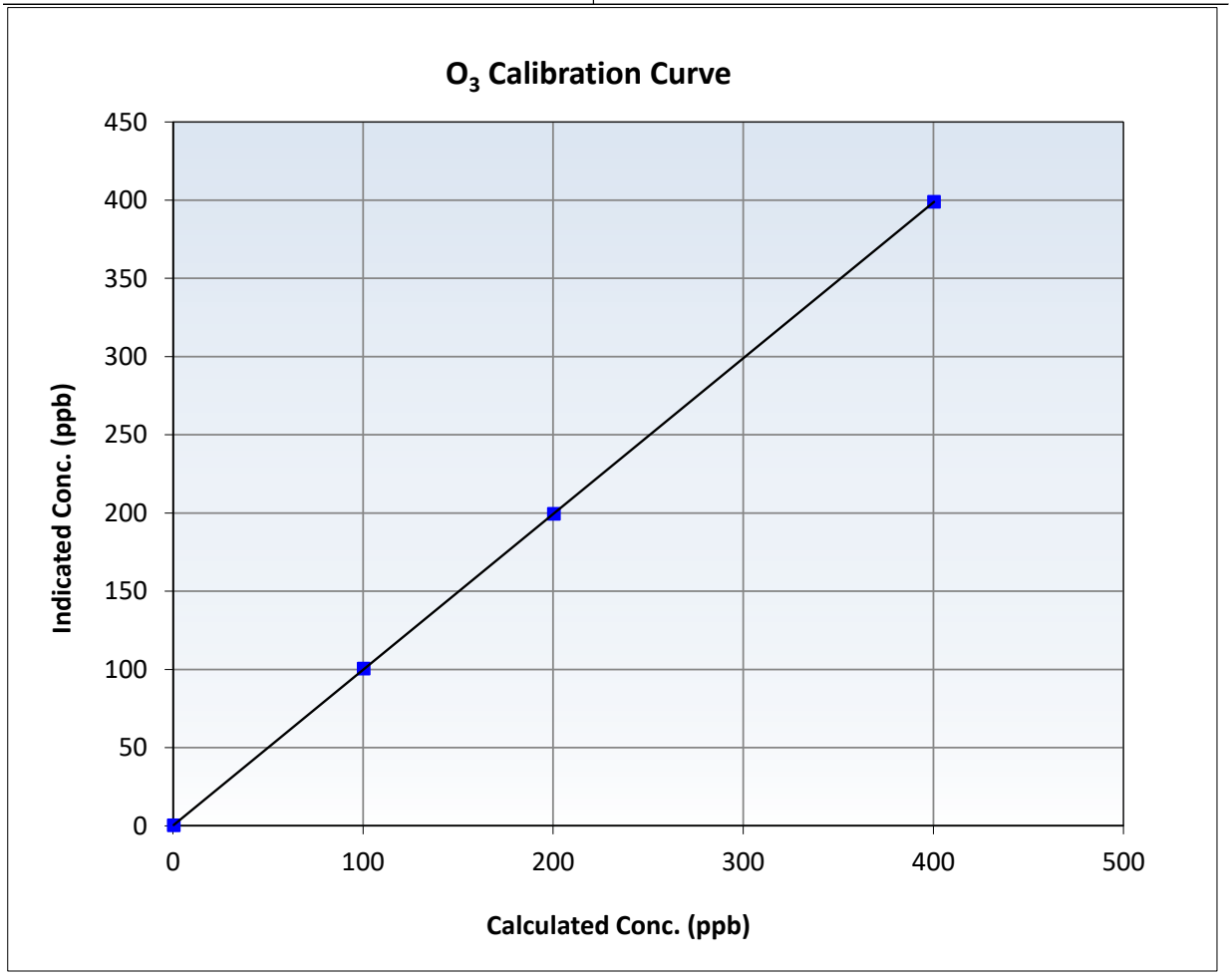
Station Information

Calibration Date:	April 3, 2025	Previous Calibration:	March 13, 2025
Station Name:	Wapasu	Station Number:	AMS17
Start Time (MST):	10:35	End Time (MST):	14:25
Analyzer make:	API T400	Analyzer serial #:	7045

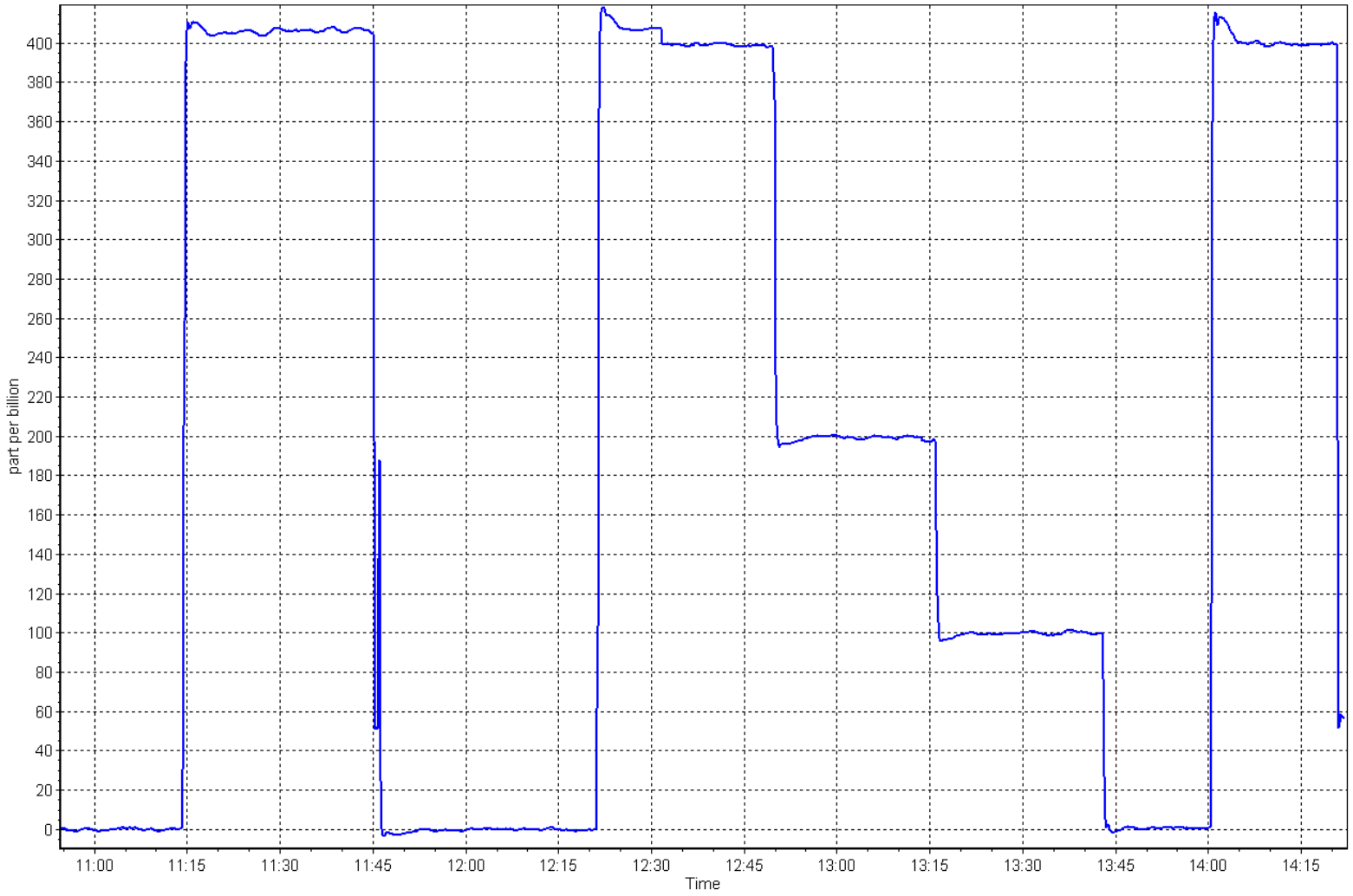
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
400.0	398.6	1.0035
200.0	199.0	1.0050
100.0	100.2	0.9980

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999996	*≥0.995*
Slope	0.995943	*0.90 - 1.10*
Intercept	0.160000	*+/- 5*



O_3 Calibration Plot Date: April 3, 2025 Location: Wapasu



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Wapasu	Station number:	AMS17
Calibration Date:	April 13, 2025	Last Cal Date:	April 3, 2025
Start time (MST):	11:20	End time (MST):	13:50
Reason:	Maintenance		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	API T700	Serial Number:	2449
ZAG Make/Model:	API T701H	Serial Number:	359

Analyzer Information

Analyzer make:	API T400		Analyzer serial #:	7045	
Analyzer Range	0 - 500 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.995943	1.001457	Backgd or Offset:	0.6	0.6
Calibration intercept:	0.160000	-0.680000	Coeff or Slope:	1.027	1.025

O_3 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) *Limit = 0.90-1.10*
As found zero					
As found High point					
As found Mid point					
As found Low point					
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	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	-0.2	----
High point	5000	1104.7	400.0	400.1	1.000
Mid point	5000	917.3	200.0	199.5	1.003
Low point	5000	797.9	100.0	98.9	1.011
As left zero	5000	0.0	0.0	0.1	----
As left span	5000	1104.0	400.0	400.3	0.999
				Average Correction Factor	1.004

Notes: O3 Reference was below limits causing no readings. No as founds as the instrument was not operating upon arrival. Adjusted the lamp to increase the O3 ref. Adjusted the span.

Calibration Performed By: Max Farrell

Wood Buffalo Environmental Association

O_3 Calibration Summary

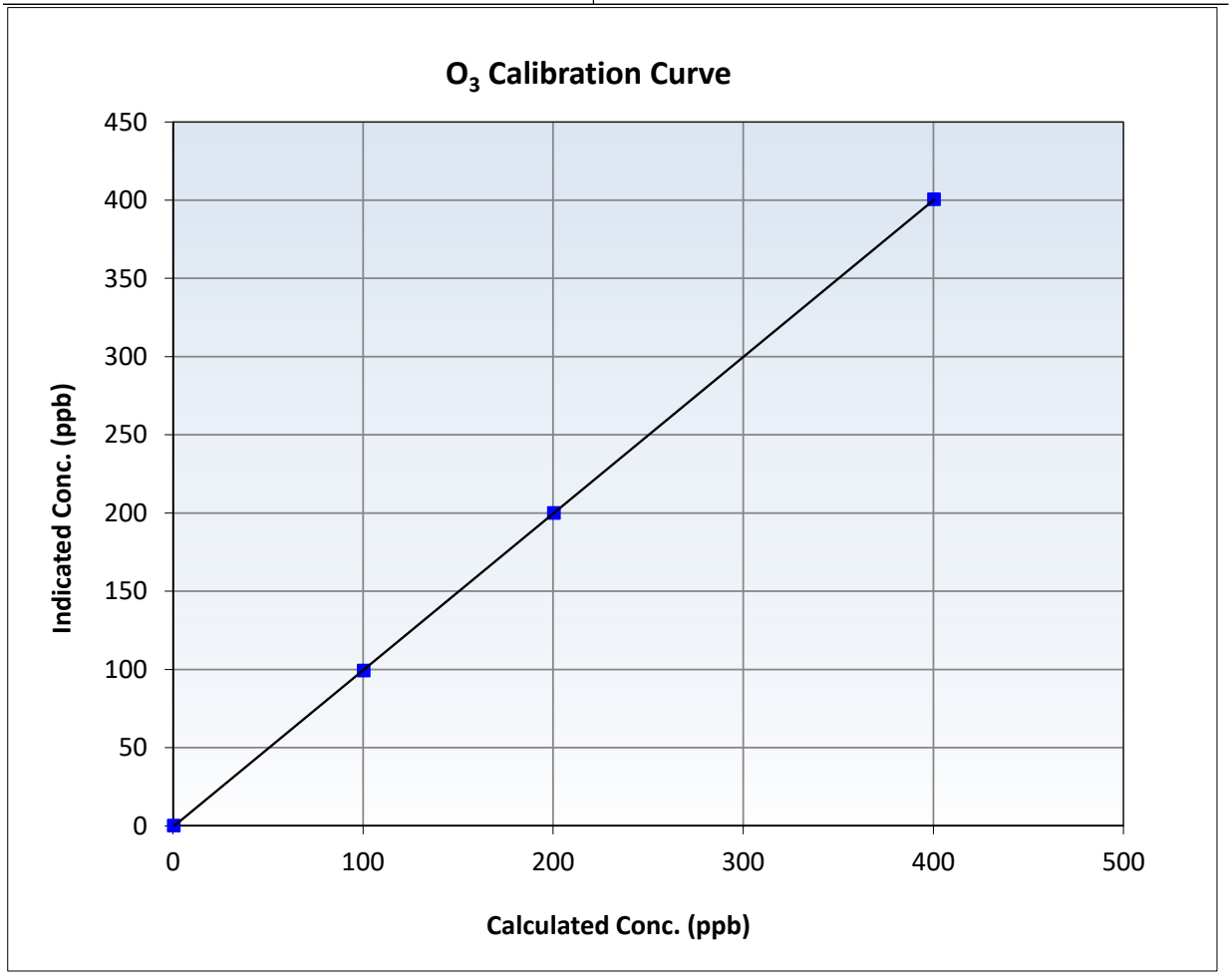
Station Information

Calibration Date:	April 13, 2025	Previous Calibration:	April 3, 2025
Station Name:	Wapasu	Station Number:	AMS17
Start Time (MST):	11:20	End Time (MST):	13:50
Analyzer make:	API T400	Analyzer serial #:	7045

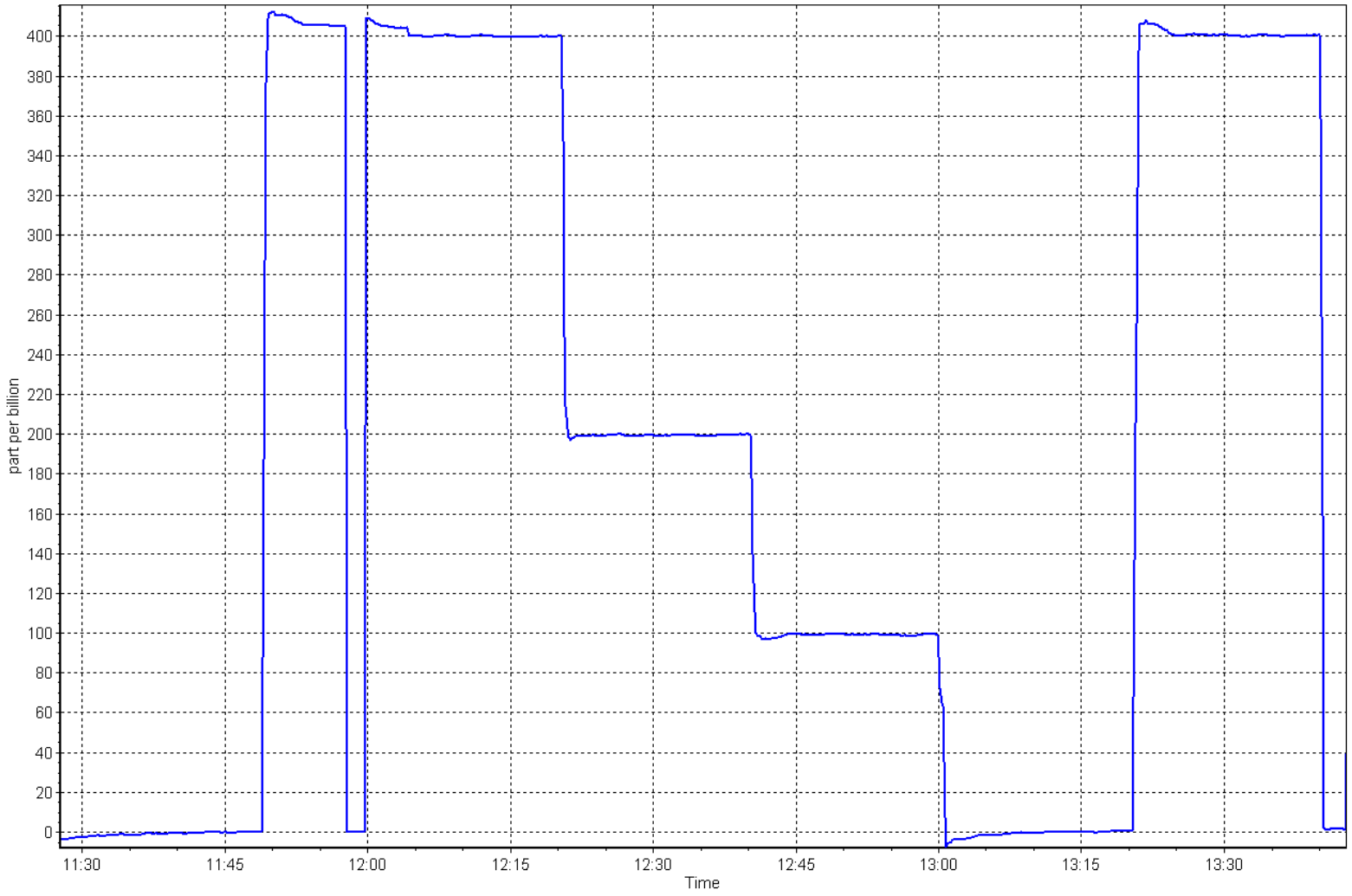
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.2	----
400.0	400.1	0.9998
200.0	199.5	1.0025
100.0	98.9	1.0111

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999993	*≥0.995*
Slope	1.001457	*0.90 - 1.10*
Intercept	-0.680000	*+/- 5*



O_3 Calibration Plot Date: April 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:	April 15, 2025	Last Cal Date:	March 20, 2025
Start time (MST):	14:31	End time (MST):	15:12
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)	10.20	9.80	10.20	☐	+/- 2 °C
P (mmHg)	705.40	706.80	705.40	☐	+/- 10 mmHg
Flow (LPM)	5.00	4.98	5.00	☐	+/- 0.25 LPM
PW% (pump)	33	-----	36	☐	>80%
Zero Verification	PM w/o HEPA:	0.2	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: October 6, 2024 — Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	*(Limits)*
PMT Peak Test	N/A	N/A	N/A	☐	+/- 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.

Calibration by: Aswin Sasi Kumar

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS18
STONY MOUNTAIN
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Stony Mountain	Station number:	AMS 18
Calibration Date:	April 28, 2025	Last Cal Date:	March 12, 2025
Start time (MST):	11:05	End time (MST):	14:59
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:	51.22	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	CC417455		Diff between cyl:	
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.003718	1.008274	Backgd or Offset:	25.6	25.3
Calibration intercept:	-3.279867	-2.906028	Coeff or Slope:	0.830	0.818

SO_2 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	4921	78.1	800.2	814.1	0.983
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	813.8	Previous response	799.9	*% 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	

SO_2 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	0.4	----
High point	4921	78.1	800.2	804.6	0.995
Mid point	4960	39.1	400.6	402.4	0.996
Low point	4980	20.0	204.9	198.3	1.033
As left zero	5000	0.0	0.0	0.6	----
As left span	4921	78.1	800.2	805.4	0.994
				Average Correction Factor:	1.008

Notes: Changed sample inlet filter. Span adjusted.

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

SO_2 Calibration Summary

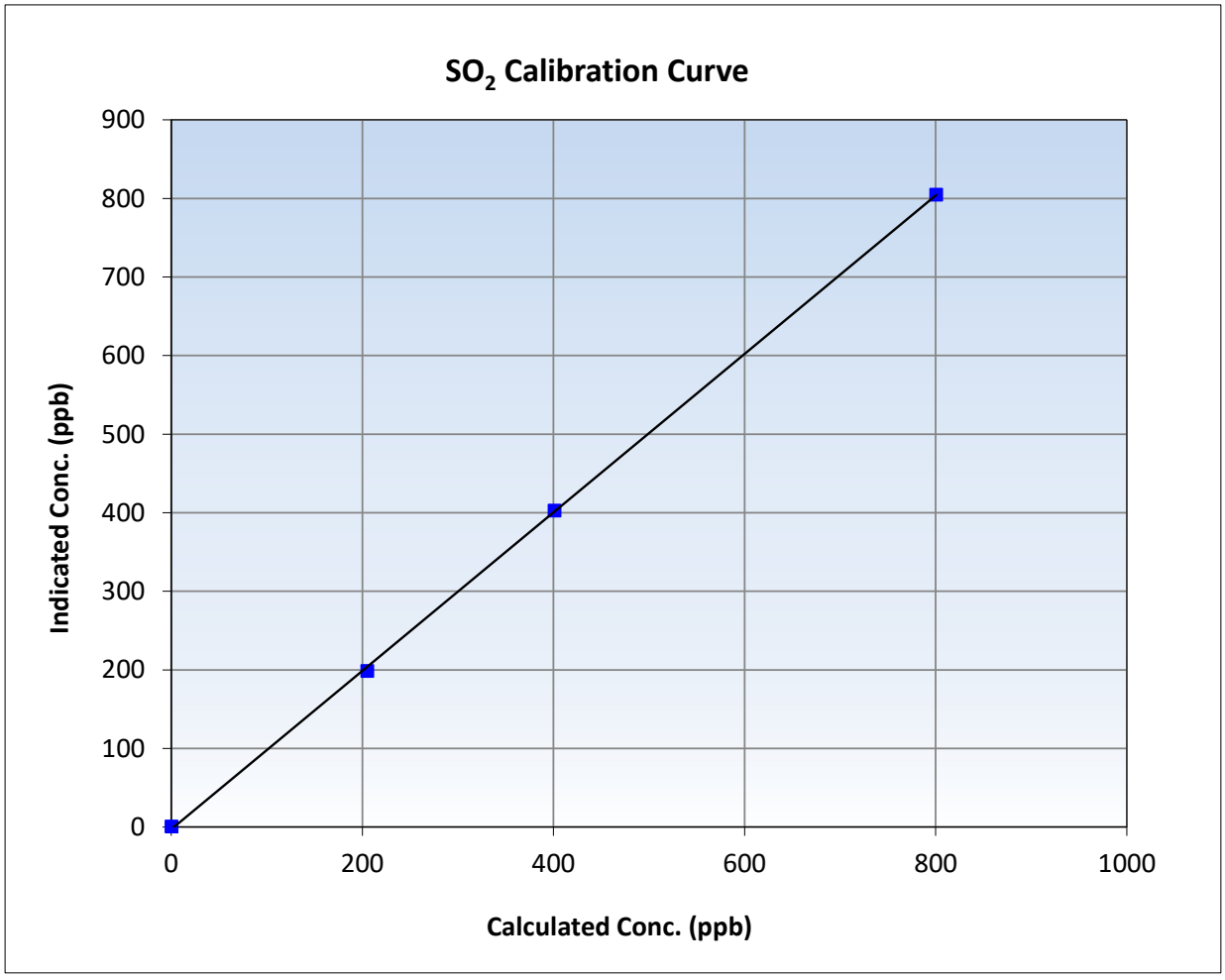
Station Information

Calibration Date:	April 28, 2025	Previous Calibration:	March 12, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	11:05	End Time (MST):	14:59
Analyzer make:	Thermo 43i	Analyzer serial #:	JC1501301453

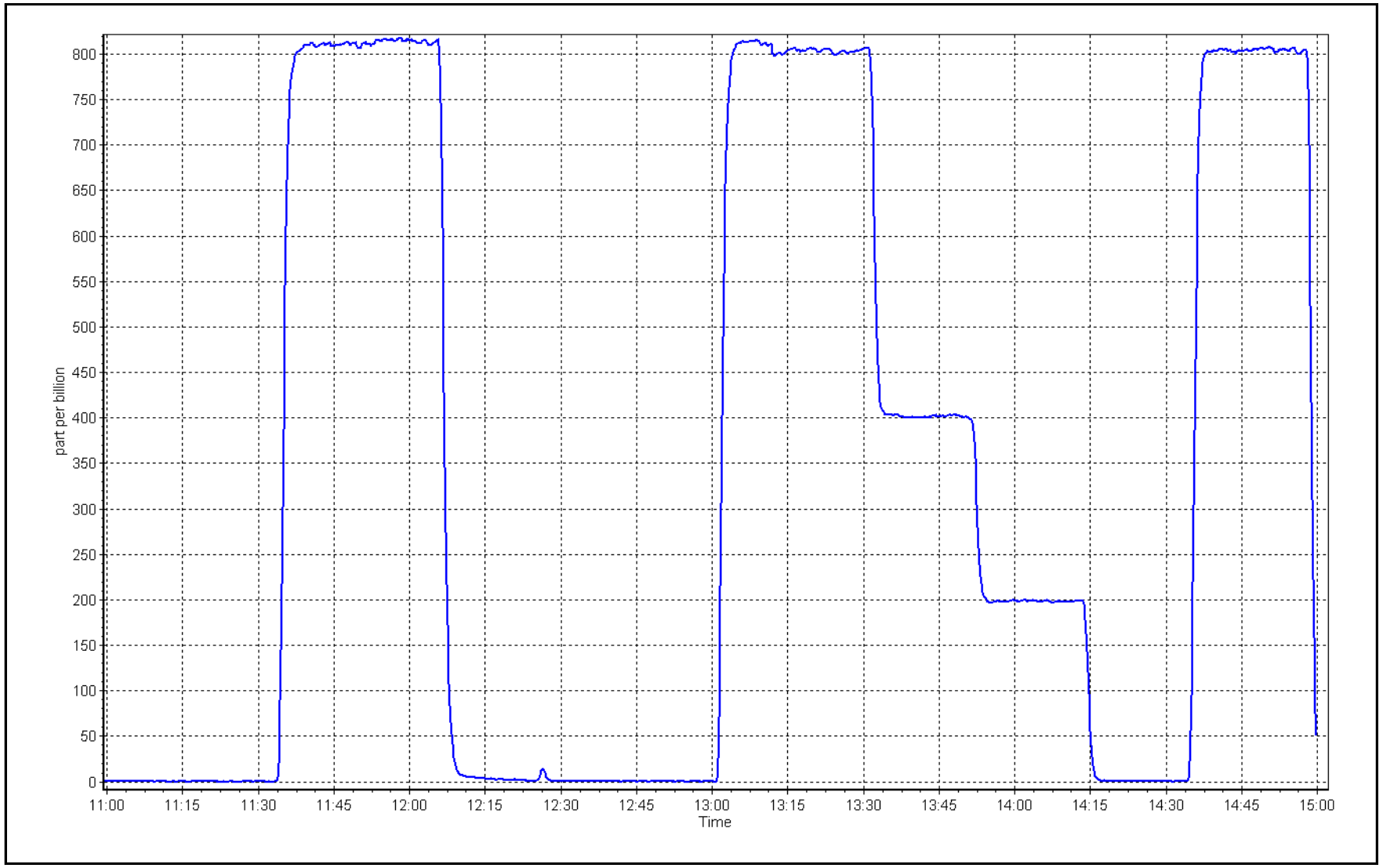
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.4	----
800.2	804.6	0.9945
400.6	402.4	0.9956
204.9	198.3	1.0332

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999881	*≥0.995*
Slope	1.008274	*0.90 - 1.10*
Intercept	-2.906028	*+/-30*



SO2 Calibration Plot Date: April 28, 2025 Location: Stony Mountain



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Stony Mountain	Station number:	AMS18
Calibration Date:	April 24, 2025	Last Cal Date:	March 25, 2025
Start time (MST):	11:00	End time (MST):	16:06
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

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.007792	1.002370	Backgd or Offset:	2.9	2.90
Calibration intercept:	-0.218991	0.020908	Coeff or Slope:	1.172	1.181

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.1	----
As found High point	4917	82.3	80.0	82.7	0.969
As found Mid point	4958	41.2	40.1	41.3	0.972
As found Low point	4979	20.6	20.0	20.4	0.986
New cylinder response					

Baseline Corr As found:	82.6	Prev response:	80.41	*% change:	2.6%
Baseline Corr 2nd AF pt:	41.2	AF Slope:	1.033797	AF Intercept:	-0.079704
Baseline Corr 3rd AF pt:	20.3	AF Correlation:	0.999977	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.3	----
High point	4917	82.3	80.0	80.3	0.996
Mid point	4958	41.2	40.1	40.2	0.996
Low point	4979	20.6	20.0	19.7	1.016
As left zero	5000	0.0	0.0	0.4	----
As left span	4917	82.3	80.0	80.4	0.995
SO2 Scrubber Check	4923	77.1	771.0	0.1	----
Date of last scrubber change:		17-Dec-21		Ave Corr Factor	1.003
Date of last converter efficiency test:					

Notes: Span adjusted.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

TRS Calibration Summary

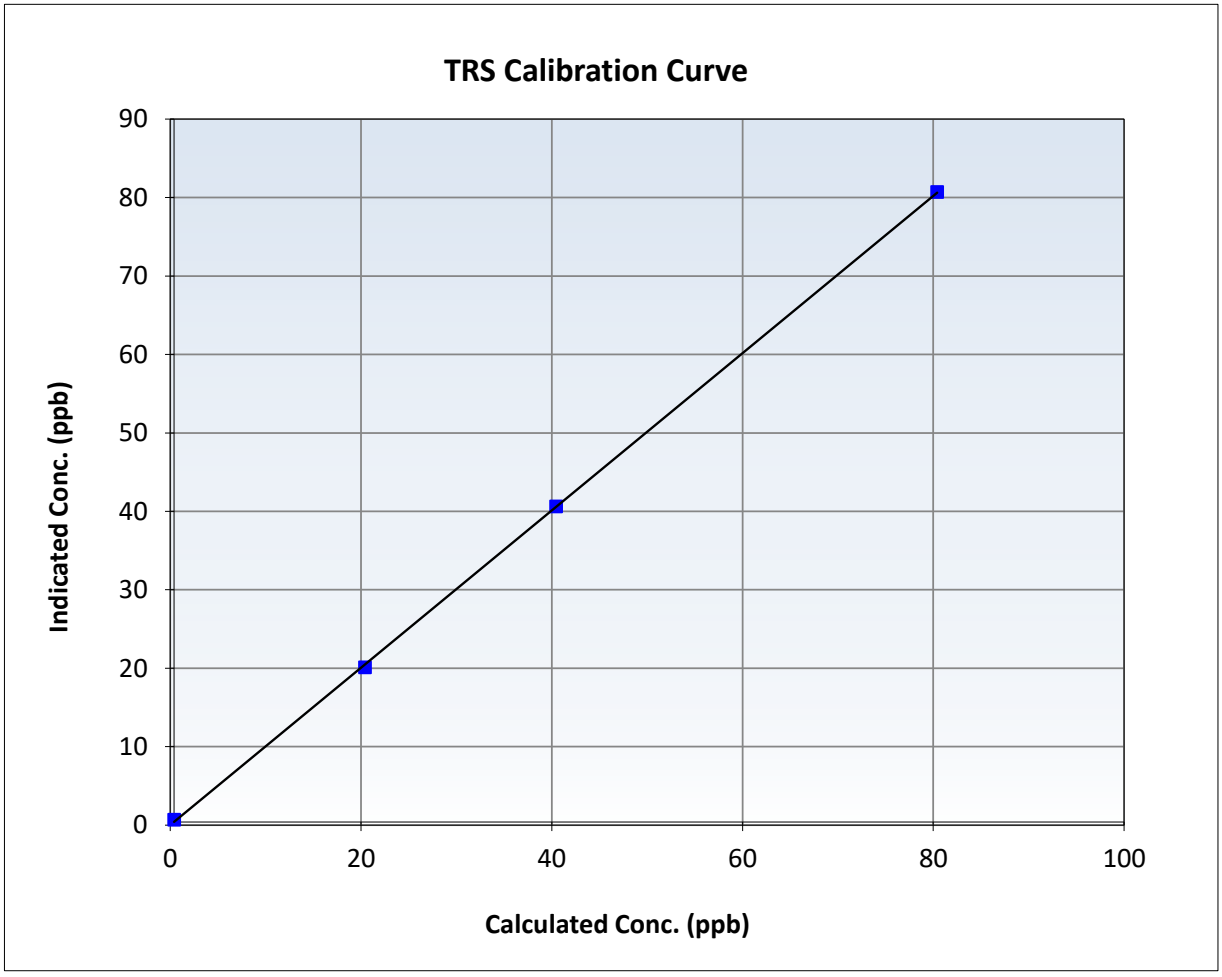
Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 25, 2025
Station Name:	Stony Mountain	Station Number:	AMS18
Start Time (MST):	11:00	End Time (MST):	16:06
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1218153359

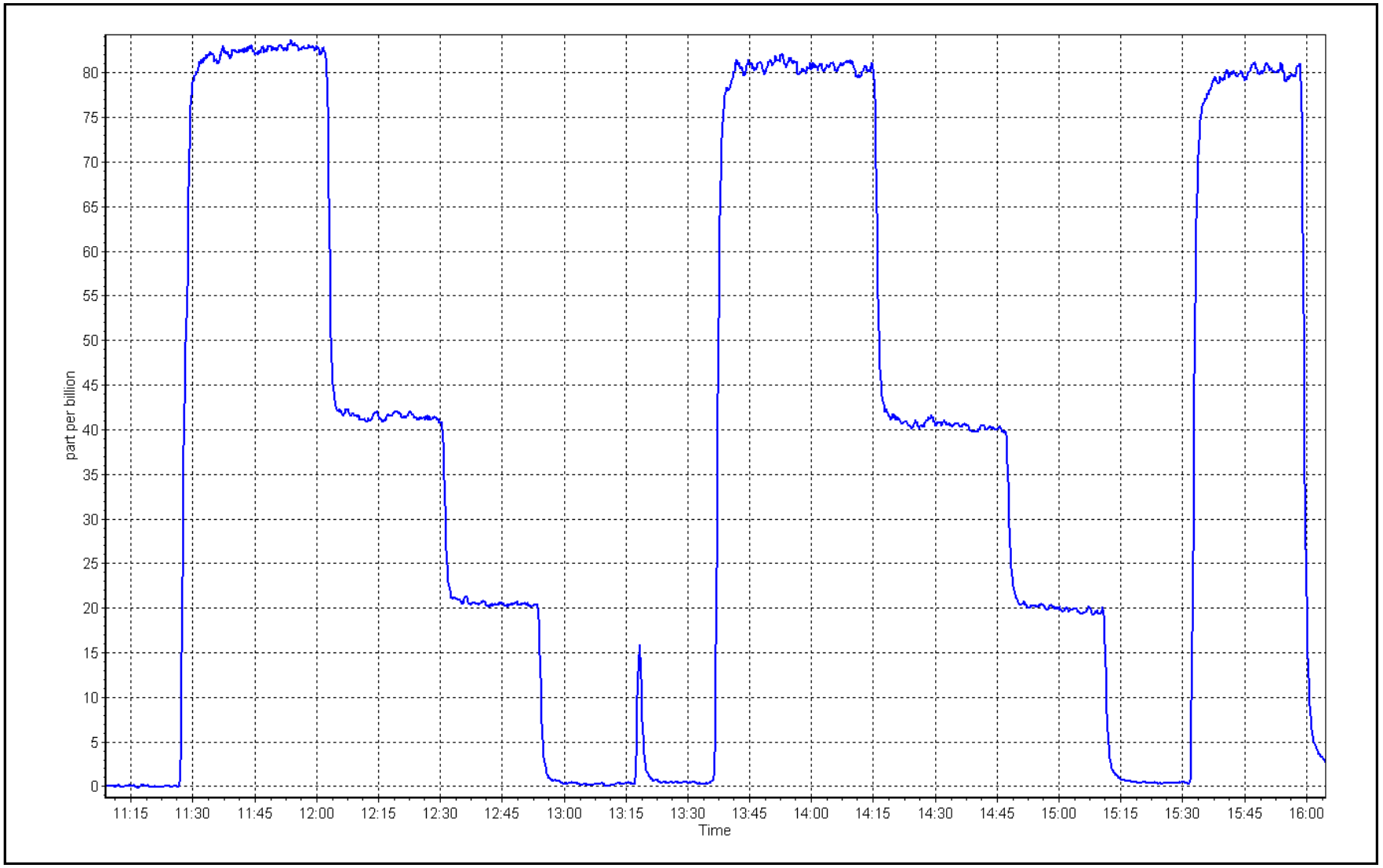
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
80.0	80.3	0.9963
40.1	40.2	0.9963
20.0	19.7	1.0165

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999932	*≥0.995*
Slope	1.002370	*0.90 - 1.10*
Intercept	0.020908	*+/-3*



TRS Calibration Plot Date: April 24, 2025 Location: Stony Mountain



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Stony Mountain	Station number:	AMS 18
Calibration Date:	April 17, 2025	Last Cal Date:	March 18, 2025
Start time (MST):	11:30	End time (MST):	16:05
Reason:	Cylinder Change	N2 cylinder change out	

Calibration Standards

Gas Cert Reference:	XC026809B	Cal Gas Expiry Date:	January 12, 2029
CH4 Cal Gas Conc.	504.9 ppm	CH4 Equiv Conc.	1076.6 ppm
C3H8 Cal Gas Conc.	207.9 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH4 Conc.	504.9 ppm	CH4 Equiv Conc.	1076.6 ppm
Removed C3H8 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	Analyzer serial #:	1218153355
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	2.17E-04	N/A	NMHC SP Ratio:	4.10E-05	N/A
CH4 Retention time:	14.2	N/A	NMHC Peak Area:	217649	N/A
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	78.1	16.82	16.49	1.020
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	16.49	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)) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	16.82	16.52	1.018
				Average Correction Factor	

Notes: N2 cylinder changed out after as founds.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	78.1	8.93	8.73	1.023
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.73	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) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	8.93	8.74	1.022
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	78.1	7.89	7.76	1.016
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.76	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

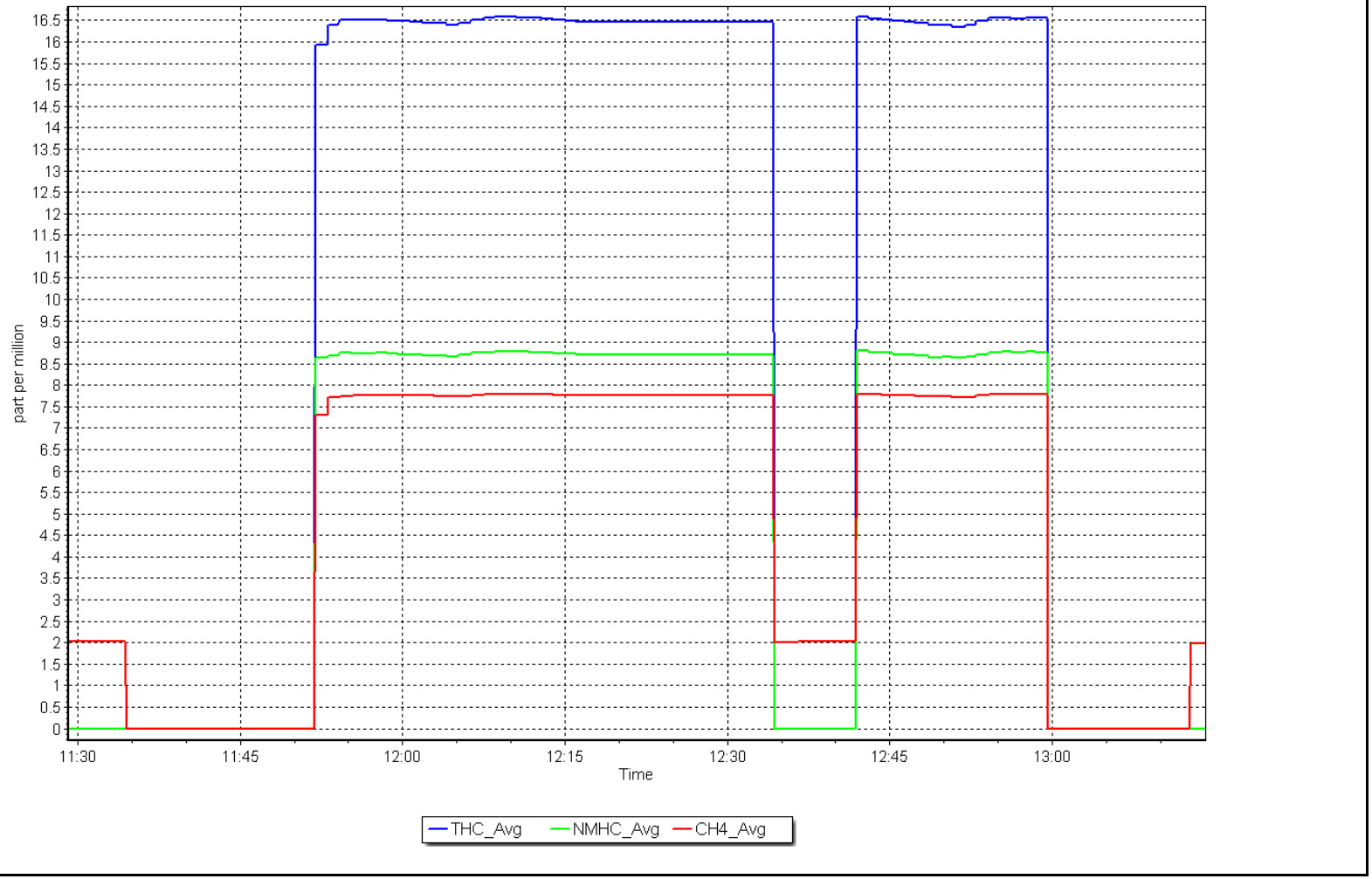
Set Point	Dilution air flow rate (sccm)	Source gas flow rate (sccm)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Calibrator zero					
High point					
Mid point					
Low point					
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	7.89	7.77	1.015
				Average Correction Factor	

Calibration Statistics

	Start	***Finish***
THC Cal Slope:		
THC Cal Offset:		
CH4 Cal Slope:		
CH4 Cal Offset:		
NMHC Cal Slope:		
NMHC Cal Offset:		

Calibration Performed By: Aswin Sasi Kumar

NMHC Calibration Plot Date: April 17, 2025 Location: Stony Mountain



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Stony Mountain	Station number:	AMS 18
Calibration Date:	April 28, 2025	Last Cal Date:	March 18, 2025
Start time (MST):	11:05	End time (MST):	14:59
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	XC026809B	Cal Gas Expiry Date:	January 12, 2029
CH4 Cal Gas Conc.	504.9 ppm	CH4 Equiv Conc.	1076.6 ppm
C3H8 Cal Gas Conc.	207.9 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH4 Conc.	504.9 ppm	CH4 Equiv Conc.	1076.6 ppm
Removed C3H8 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	Analyzer serial #:	1218153355
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	2.17E-04	2.21E-04	NMHC SP Ratio:	4.10E-05	4.15E-05
CH4 Retention time:	14.2	14.4	NMHC Peak Area:	217649	215036
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.02	----
As found High point	4921	78.1	16.82	16.38	1.028
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	16.36	Prev response	16.83	*% change	-2.9%
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	78.1	16.82	16.82	1.000
Mid point	4960	39.1	8.42	8.39	1.004
Low point	4980	20.0	4.31	4.17	1.032
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	16.82	16.80	1.001
				Average Correction Factor	1.012

Notes: Changed H2 cylinder and sample inlet filter. Adjusted zero and span.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	78.1	8.93	8.66	1.032
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.66	Prev response	8.96	*% change	-3.5%
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	78.1	8.93	8.92	1.001
Mid point	4960	39.1	4.47	4.46	1.002
Low point	4980	20.0	2.29	2.23	1.027
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	8.93	8.96	0.997
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.02	----
As found High point	4921	78.1	7.89	7.72	1.024
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.70	Prev response	7.87	*% change	-2.3%
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	4921	78.1	7.89	7.89	0.999
Mid point	4960	39.1	3.95	3.92	1.006
Low point	4980	20.0	2.02	1.95	1.038
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	78.1	7.89	7.84	1.007
				Average Correction Factor	1.015

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	1.003220	1.001998
THC Cal Offset:	-0.041072	-0.057041
CH4 Cal Slope:	1.001011	1.003000
CH4 Cal Offset:	-0.021650	-0.033289
NMHC Cal Slope:	1.005632	1.000998
NMHC Cal Offset:	-0.020230	-0.023550

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

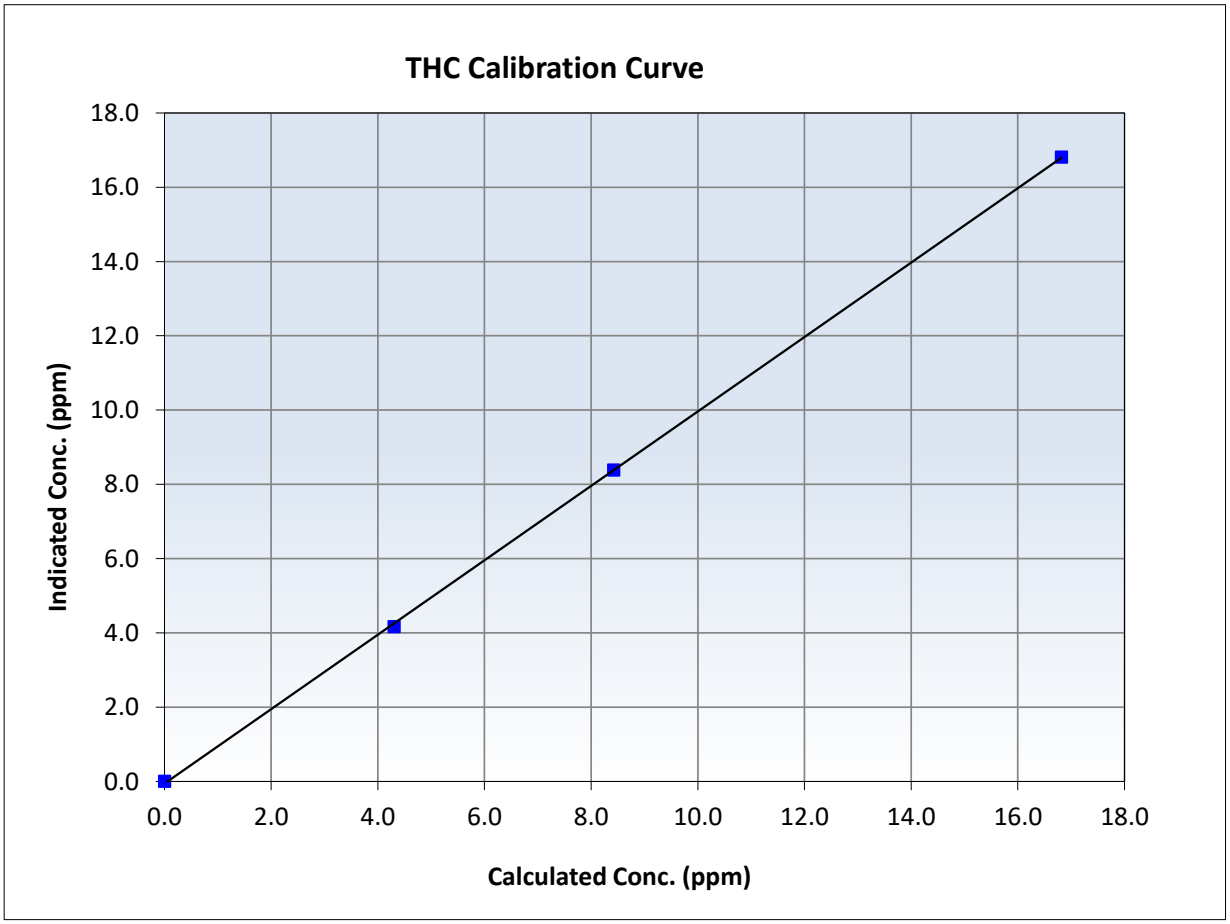
THC Calibration Summary

Station Information

Calibration Date:	April 28, 2025	Previous Calibration:	March 18, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	11:05	End Time (MST):	14:59
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	0.00	----	Correlation Coefficient	0.999927	≥0.995
16.82	16.82	1.0003	Slope	1.001998	0.90 - 1.10
8.42	8.39	1.0040	Intercept	-0.057041	+/-0.5
4.31	4.17	1.0320			



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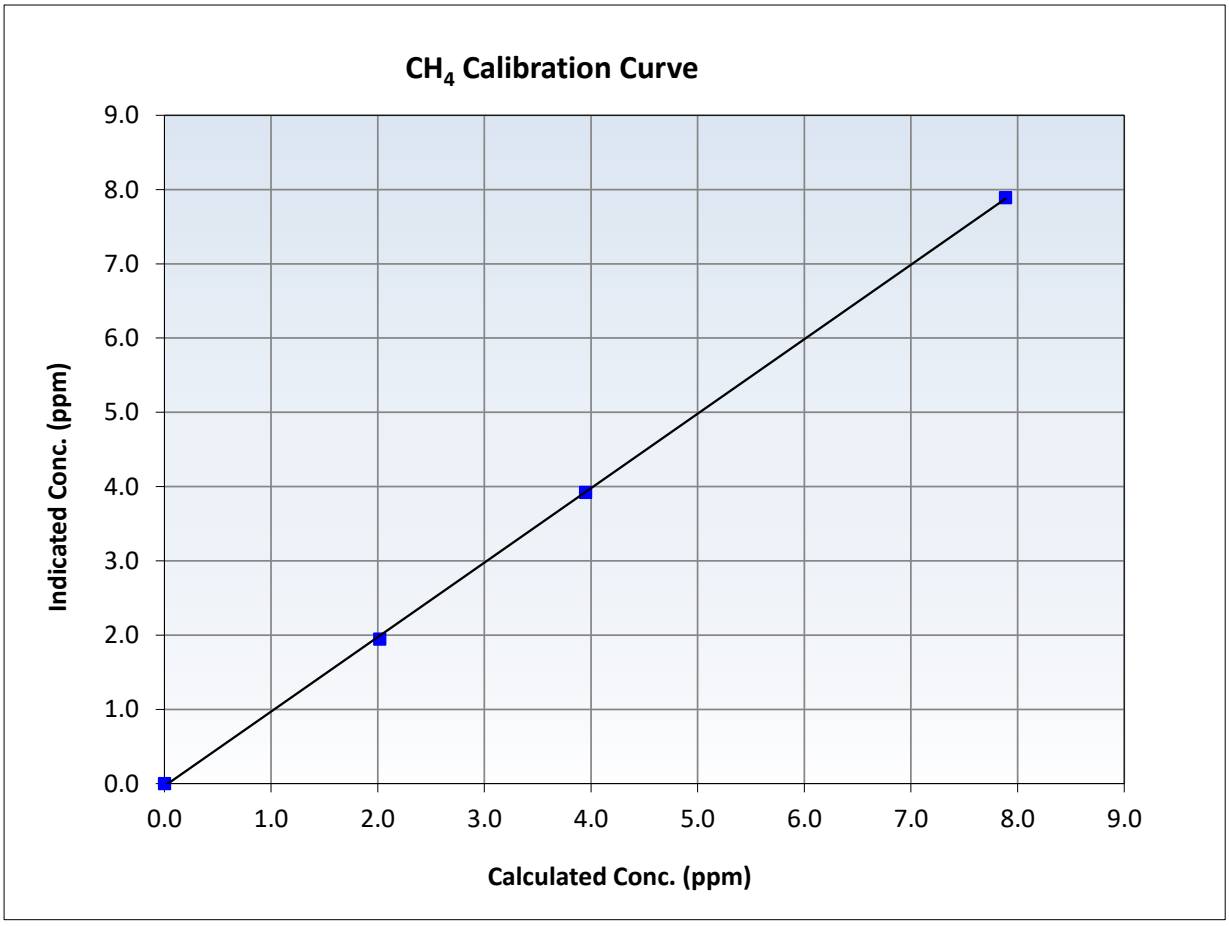
CH_4 Calibration Summary

Station Information

Calibration Date:	April 28, 2025	Previous Calibration:	March 18, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	11:05	End Time (MST):	14:59
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	0.00	----	Correlation Coefficient	0.999892	≥0.995
7.89	7.89	0.9995	Slope	1.003000	0.90 - 1.10
3.95	3.92	1.0064	Intercept	-0.033289	+/-0.5
2.02	1.95	1.0378			



Wood Buffalo Environmental Association

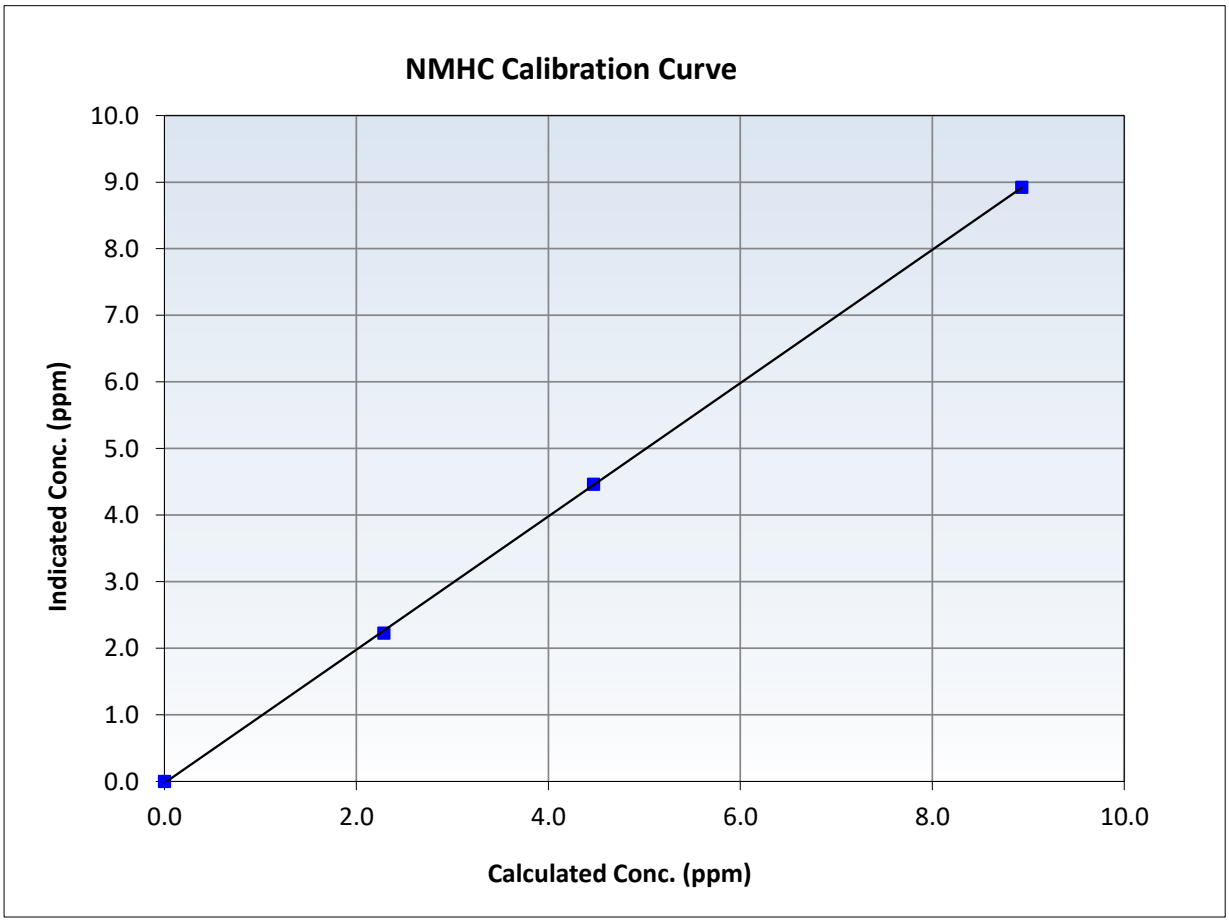
NMHC Calibration Summary

Station Information

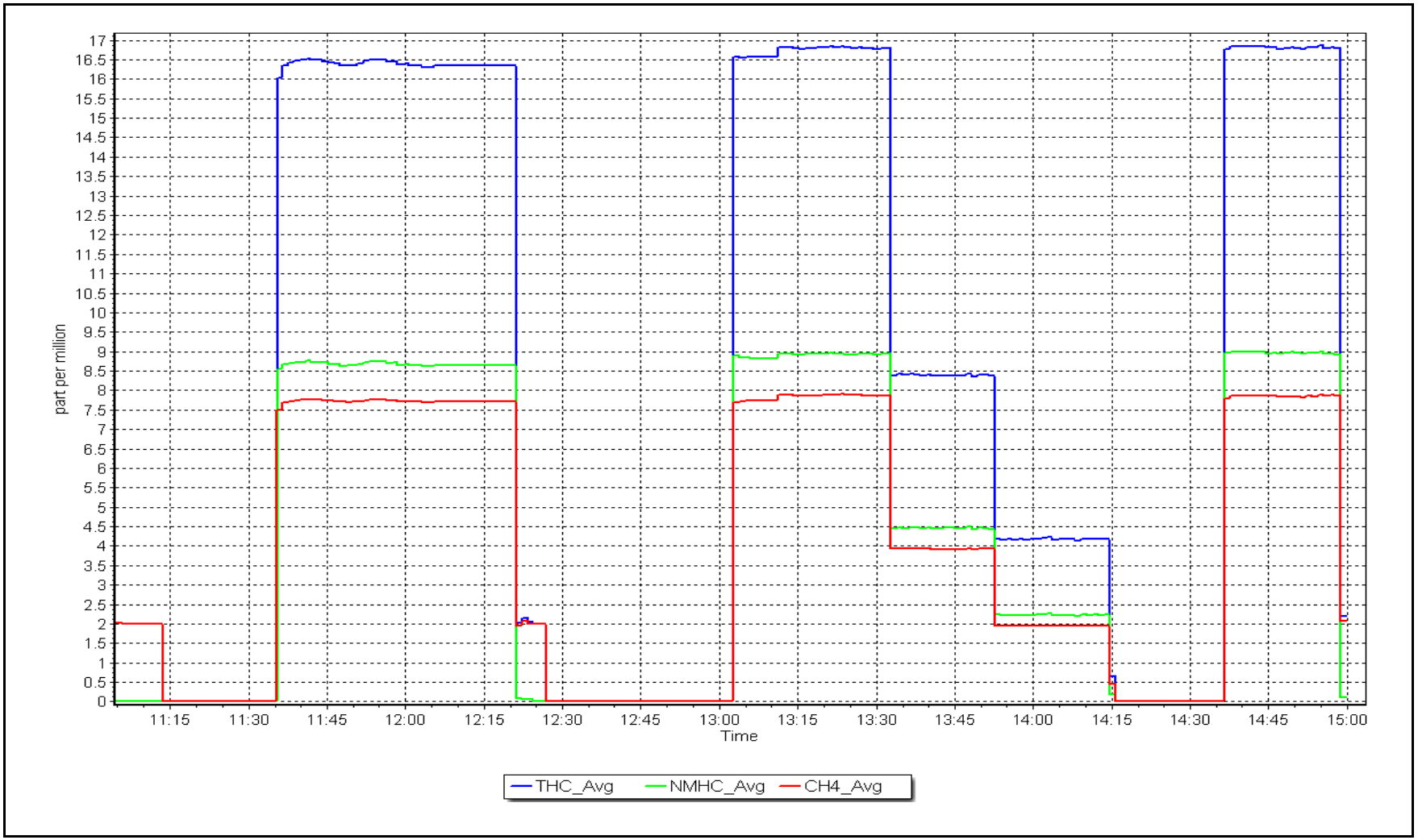
Calibration Date:	April 28, 2025	Previous Calibration:	March 18, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	11:05	End Time (MST):	14:59
Analyzer make:	Thermo 55i	Analyzer serial #:	1218153355

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.00	0.00	----	Correlation Coefficient	0.999950	*≥0.995*
8.93	8.92	1.0011	Slope	1.000998	*0.90 - 1.10*
4.47	4.46	1.0019			
2.29	2.23	1.0269	Intercept	-0.023550	*+/-0.5*



NMHC Calibration Plot Date: April 28, 2025 Location: Stony Mountain



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Stony Mountain
Station number:	AMS 18
Calibration Date:	April 24, 2025
Last Cal Date:	March 25, 2025
Start time (MST):	11:00
End time (MST):	16:55
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	DT0045516	Cal Gas Expiry Date:	November 17, 2026
NOX Cal Gas Conc:	60.30 ppm	NO Cal Gas Conc:	60.10 ppm
Removed Cylinder #:	N/A	Removed Gas Exp Date:	N/A
Removed Gas NOX Conc:	60.30 ppm	Removed Gas NO Conc:	60.10 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T750	Serial Number:	282
ZAG make/model:	Teledyne API 751H	Serial Number:	321

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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-1.0	-0.9	-0.1	----	----
AF High point	4933	66.6	803.3	800.6	2.7	792.0	795.3	-3.3	1.0129	1.0055
AF Mid point										
AF Low point										
New cyl resp										

Previous Respo	4933	NO_X =	801.8 ppb	NO =	801.9 ppb		
Baseline Corr 1st pt		NO_X =	793.0 ppb	NO =	796.2 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 =	-1.1%	
*Percent Change	NO =	-0.7%	

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Teledyne API T200 Serial Number: 1035

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	0.938	0.949	NO bkgnd or offset:	-28.3	-25.9
NOX coeff or slope:	0.935	0.941	NOX bkgnd or offset:	-28.0	-25.4
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	7.3	7.3

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.999208	0.995141
NO_X Cal Offset:	-0.808436	-1.829828
NO Cal Slope:	1.003246	1.002849
NO Cal Offset:	-1.307881	-2.669053
NO_2 Cal Slope:	0.987109	0.990662
NO_2 Cal Offset:	-0.087128	-1.030634

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.1	----	----
High point	4933	66.6	803.3	800.6	2.7	798.3	801.7	-3.4	1.0062	0.9986
Mid point	4967	33.3	401.6	400.2	1.3	397.1	396.8	0.3	1.0113	1.0087
Low point	4983	16.6	200.2	199.5	0.7	195.7	195.3	0.4	1.0231	1.0218
As left zero	5000	0.0	0.0	0.0	0.0	0.5	0.7	-0.2	----	----
As left span	4933	66.6	803.3	345.5	457.8	787.5	345.5	442.0	1.0200	1.0000
							Average Correction Factor		1.0135	1.0097

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	-0.1	----	----
High GPT point	802.1	404.2	400.6	396.3	1.0108	98.9%
Mid GPT point	802.1	604.8	200.0	196.5	1.0176	98.3%
Low GPT point	802.1	701.7	103.1	100.2	1.0286	97.2%
				Average Correction Factor	1.0190	98.1%

Notes: Portable calibration system used. Zero and Span adjusted.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

NO_X Calibration Summary

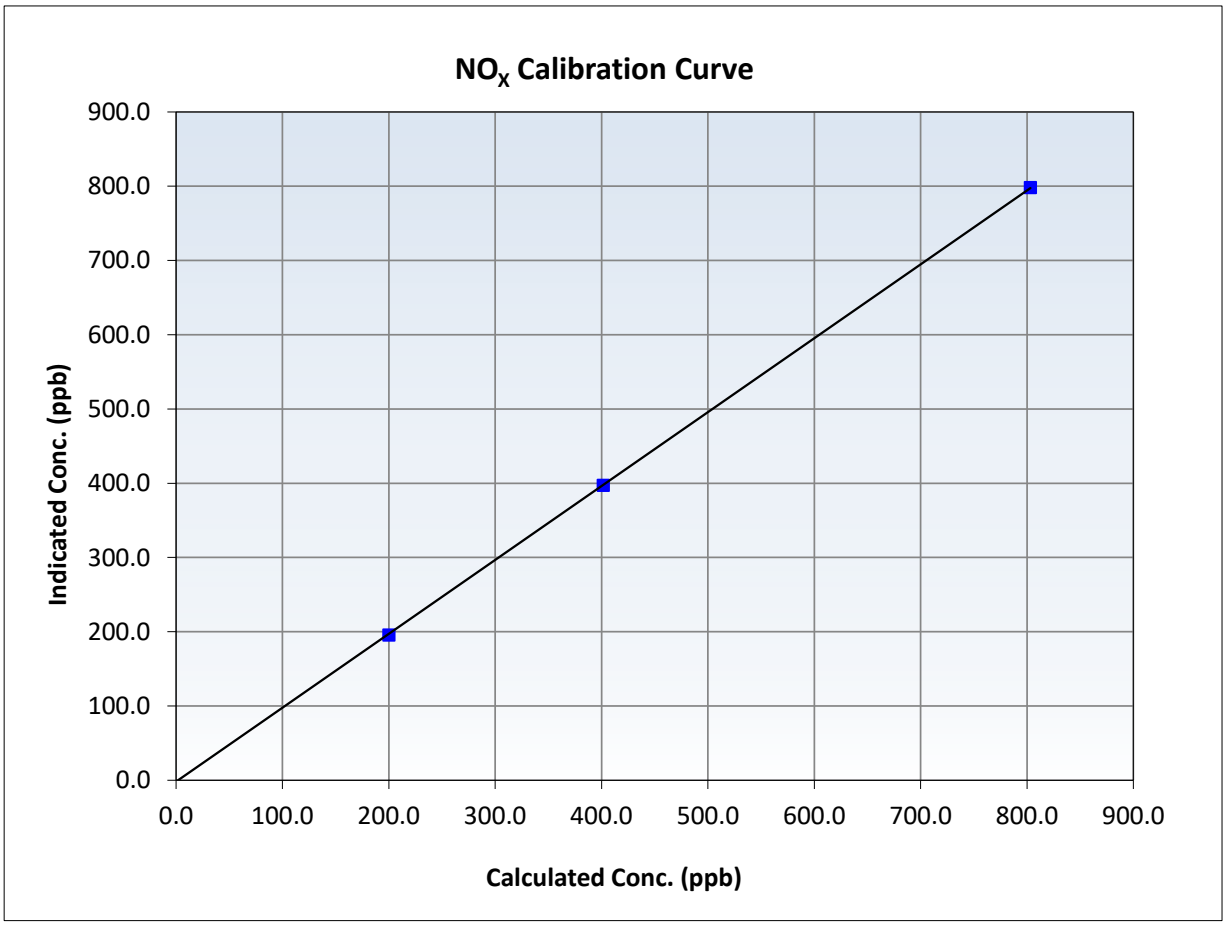
Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 25, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	11:00	End Time (MST):	16:55
Analyzer make:	Teledyne API T200	Analyzer serial #:	1035

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.2	----
803.3	798.3	1.0062
401.6	397.1	1.0113
200.2	195.7	1.0231

Statistical Evaluation		Limits
Correlation Coefficient	0.999981	≥0.995
Slope	0.995141	0.90 - 1.10
Intercept	-1.829828	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

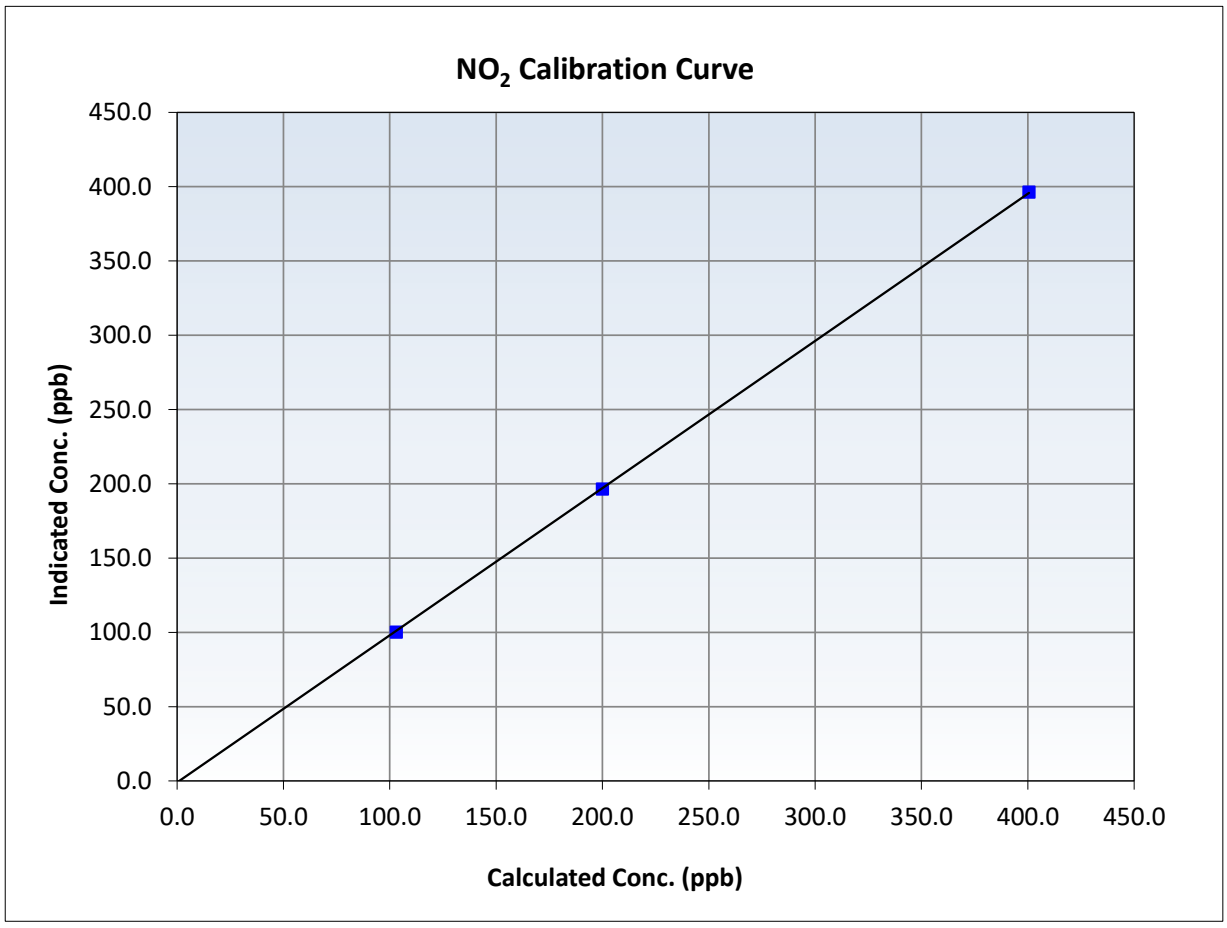
Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 25, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	11:00	End Time (MST):	16:55
Analyzer make:	Teledyne API T200	Analyzer serial #:	1035

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
400.6	396.3	1.0108
200.0	196.5	1.0176
103.1	100.2	1.0286

Statistical Evaluation		Limits
Correlation Coefficient	0.999974	≥0.995
Slope	0.990662	0.90 - 1.10
Intercept	-1.030634	+/-20



Wood Buffalo Environmental Association

NO Calibration Summary

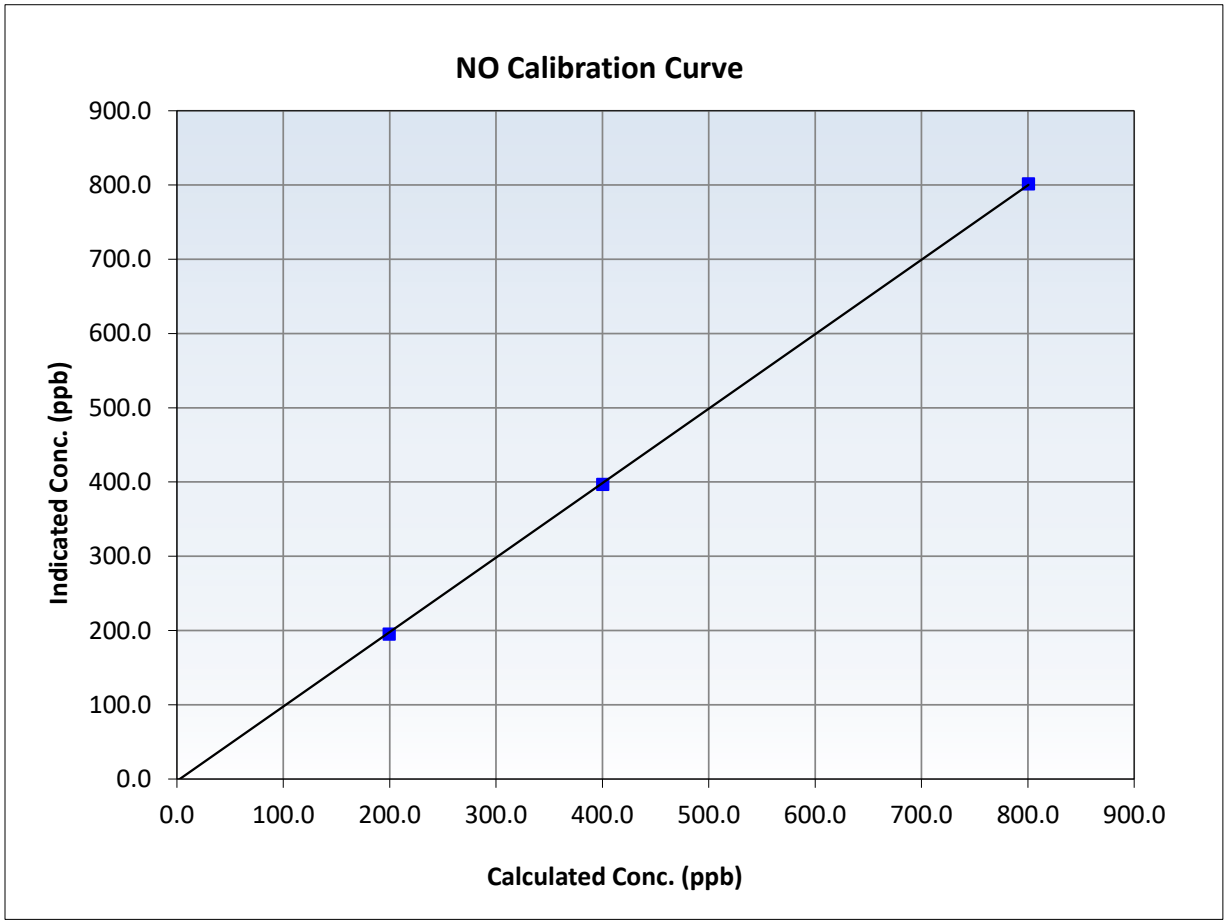
Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 25, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	11:00	End Time (MST):	16:55
Analyzer make:	Teledyne API T200	Analyzer serial #:	1035

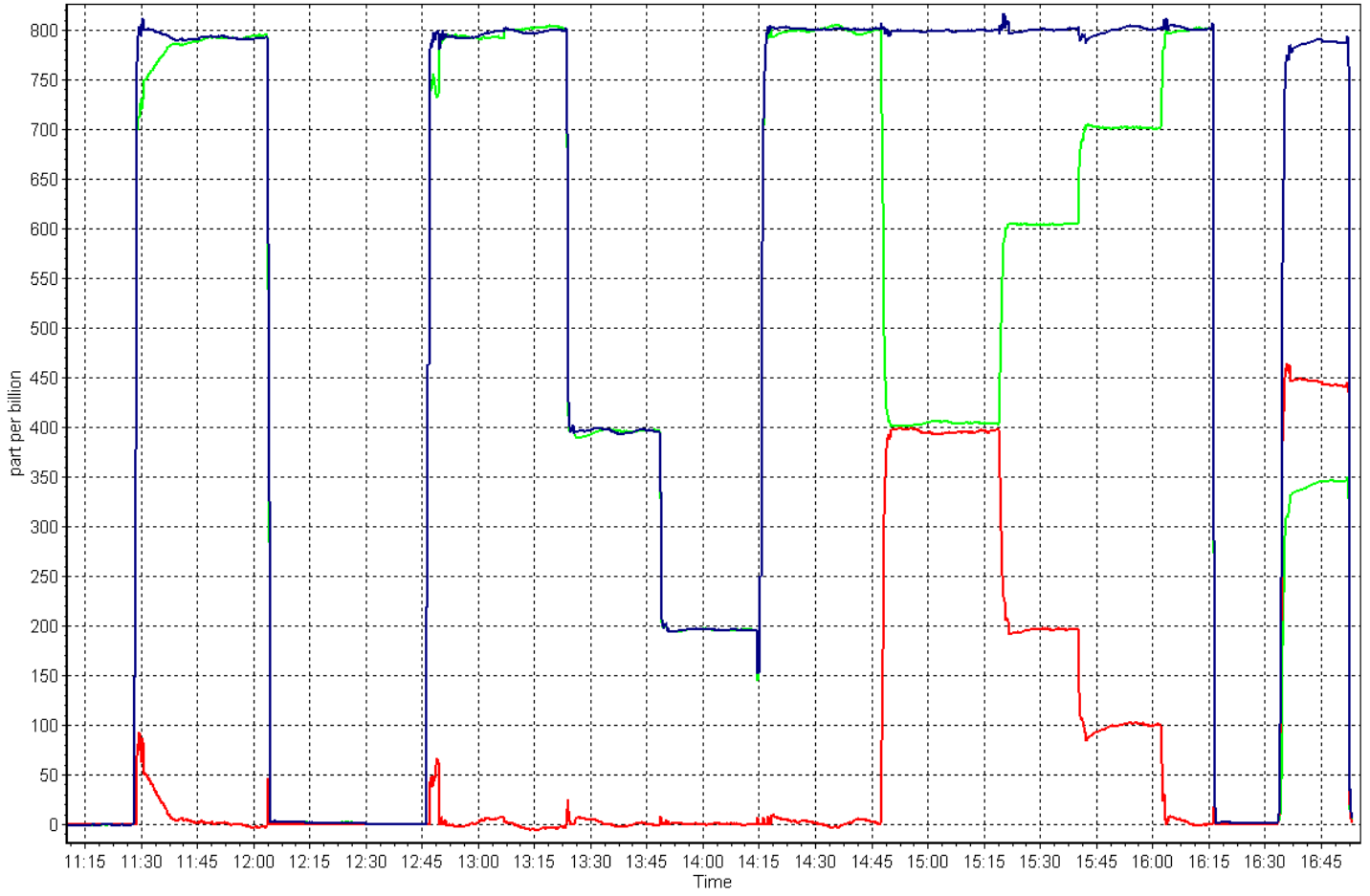
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
800.6	801.7	0.9986
400.2	396.8	1.0087
199.5	195.3	1.0218

Statistical Evaluation		Limits
Correlation Coefficient	0.999952	≥0.995
Slope	1.002849	0.90 - 1.10
Intercept	-2.669053	+/-20



NO_X Calibration Plot Date: April 24, 2025 Location: Stony Mountain



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Stony Mountain	Station number:	AMS 18
Calibration Date:	April 16, 2025	Last Cal Date:	March 6, 2025
Start time (MST):	10:57	End time (MST):	14:38
Reason:	Routine		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	Teledyne API T700	Serial Number:	2658
ZAG Make/Model:	Teledyne API 701H	Serial Number:	355

Analyzer Information

Analyzer make:	API T400		Analyzer serial #:	825	
Analyzer Range	0 - 500 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.997629	0.997657	Backgd or Offset:	2.0	2.0
Calibration intercept:	0.840000	0.960000	Coeff or Slope:	1.027	1.012

O_3 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) *Limit = 0.90-1.10*
As found zero	5000	NA	0.0	0.0	----
As found High point	4888	1138.1	400.0	407.0	0.983
As found Mid point					
As found Low point					
Baseline Corr As found:	407.0	Previous response	399.9	*% 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	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	NA	0.0	0.4	----
High point	4888	1138.1	400.0	399.5	1.001
Mid point	4888	884.5	200.0	201.5	0.993
Low point	4888	741.4	100.0	100.8	0.992
As left zero	5000	NA	0.0	0.4	----
As left span	4812	1097.9	400.0	399.8	1.001
				Average Correction Factor	0.995

Notes: Span adjusted.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

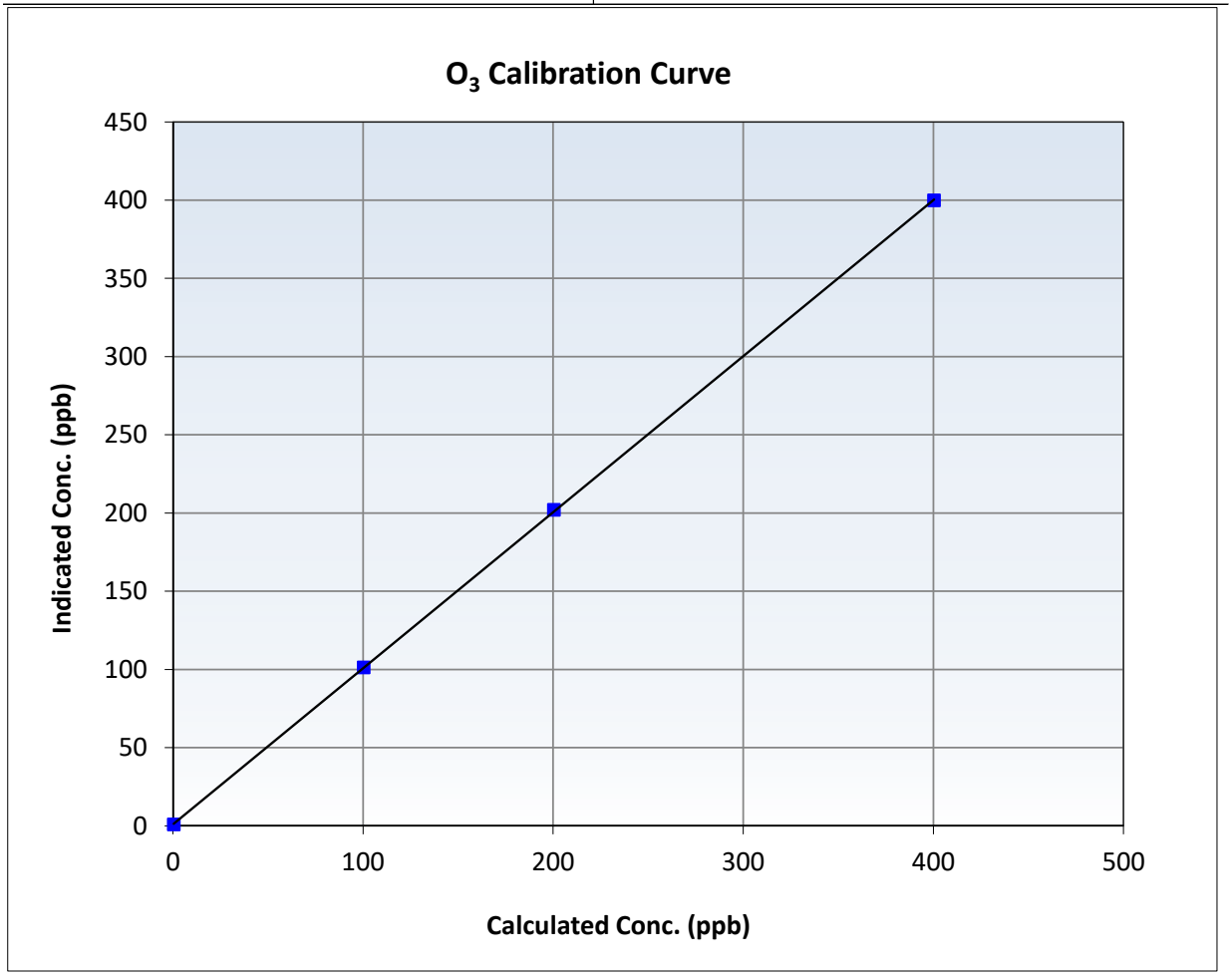
O_3 Calibration Summary

Station Information

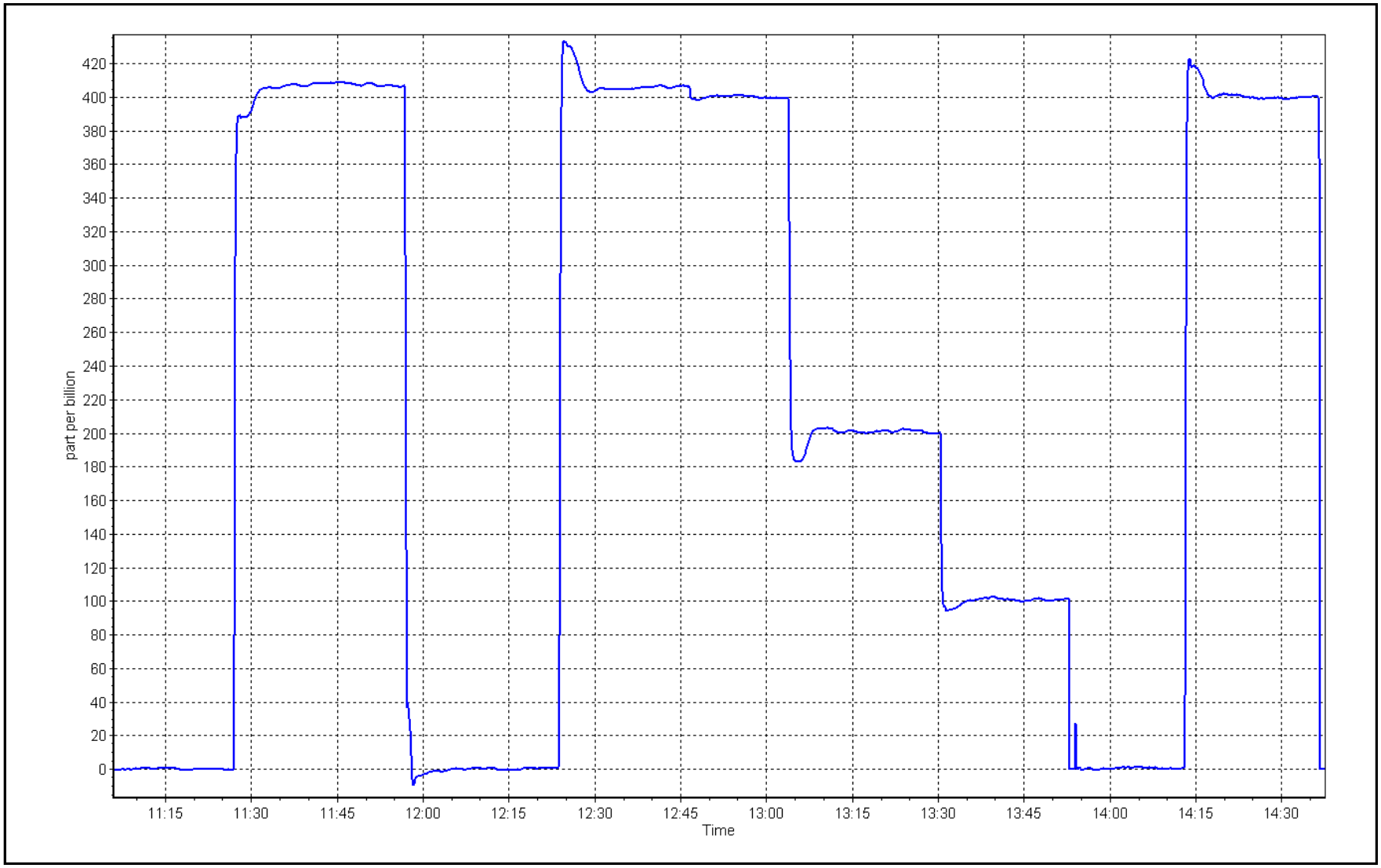
Calibration Date:	April 16, 2025	Previous Calibration:	March 6, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	10:57	End Time (MST):	14:38
Analyzer make:	API T400	Analyzer serial #:	825

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.4	----	Correlation Coefficient	0.999982	≥0.995
400.0	399.5	1.0013	Slope	0.997657	0.90 - 1.10
200.0	201.5	0.9926			
100.0	100.8	0.9921	Intercept	0.960000	+/- 5



O_3 Calibration Plot Date: April 16, 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:	April 28, 2025	Last Cal Date:	March 27, 2025
Start time (MST):	15:00	End time (MST):	15:13
Analyzer Make:	API T640	S/N:	324
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)	13.9	13.7	13.9	☐	+/- 2 °C
P (mmHg)	697.8	697.51	697.8	☐	+/- 10 mmHg
Flow (LPM)	5.02	5.123	5.02	☐	+/- 0.25 LPM
PW% (pump)	71	-----	71	☐	>80%

Zero Verification — PM w/o HEPA: 2.2 — 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: 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	☐	+/- 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: Mohammed Kashif

Wood Buffalo Environmental Association

CO Calibration Report

Station Information

Station Name:	Stony Mountain	Station number:	AMS 18
Calibration Date:	April 23, 2025	Last Cal Date:	March 3, 2025
Start time (MST):	10:50	End time (MST):	13:37
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.997355	1.002362	Backgd or Offset:	-0.012	-0.012
Calibration intercept:	0.081757	0.201757	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	0.1	----
As found High point	4933	66.7	41.1	41.3	0.998
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr As found:	41.16	Prev response:	41.06	*% 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	

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	0.2	----
High point	4933	66.7	41.1	41.3	0.994
Mid point	4966	33.3	20.5	20.9	0.982
Low point	4983	16.7	10.3	10.5	0.982
As left zero	5000	0.0	0.0	0.2	----
As left span	4933	66.7	41.1	41.5	0.991
				Average Correction Factor	0.986

Notes: No adjustments made.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

CO Calibration Summary

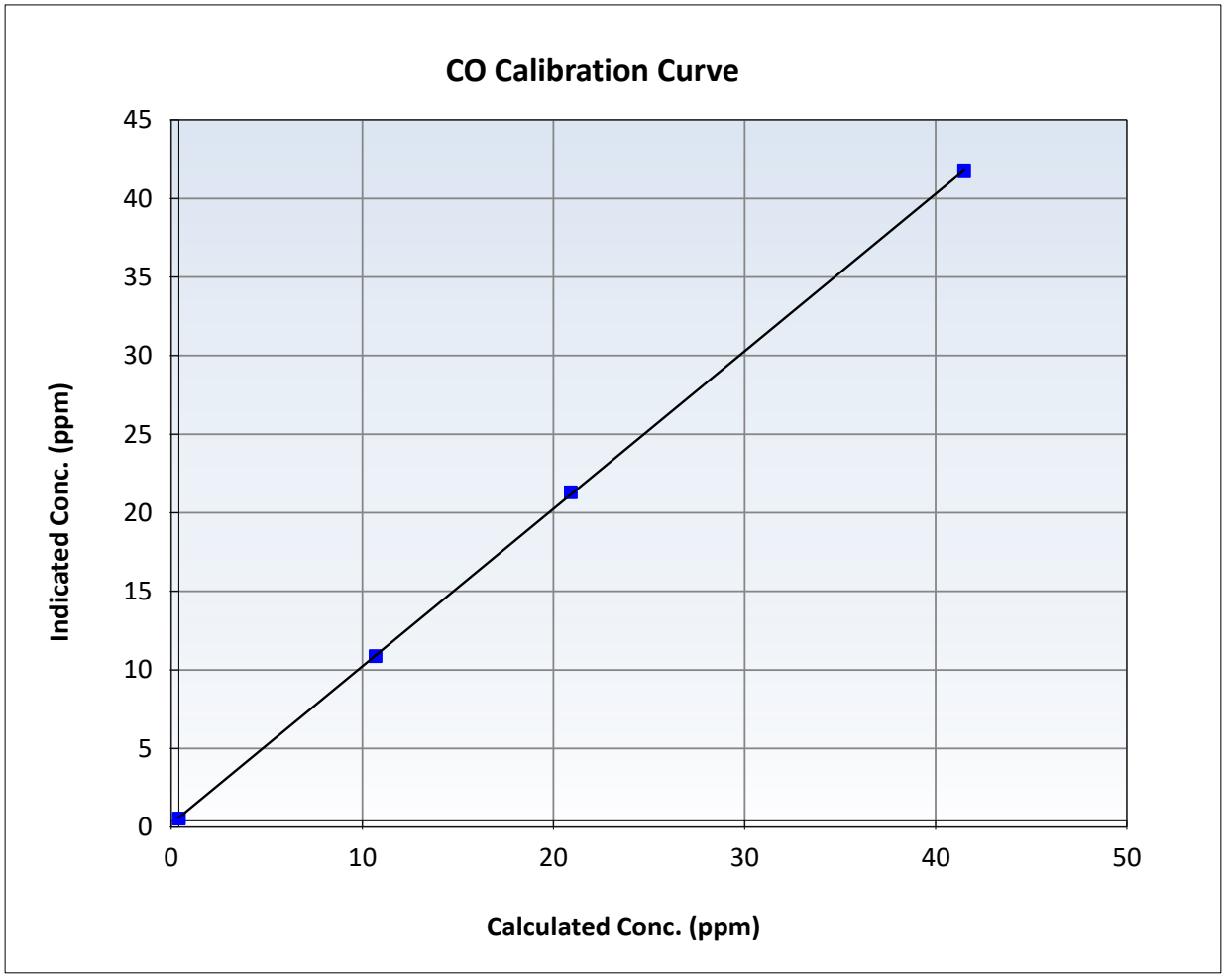
Station Information

Calibration Date:	April 23, 2025	Previous Calibration:	March 3, 2025
Station Name:	Stony Mountain	Station Number:	AMS 18
Start Time (MST):	10:50	End Time (MST):	13:37
Analyzer make:	Teledyne API T300	Analyzer serial #:	3504

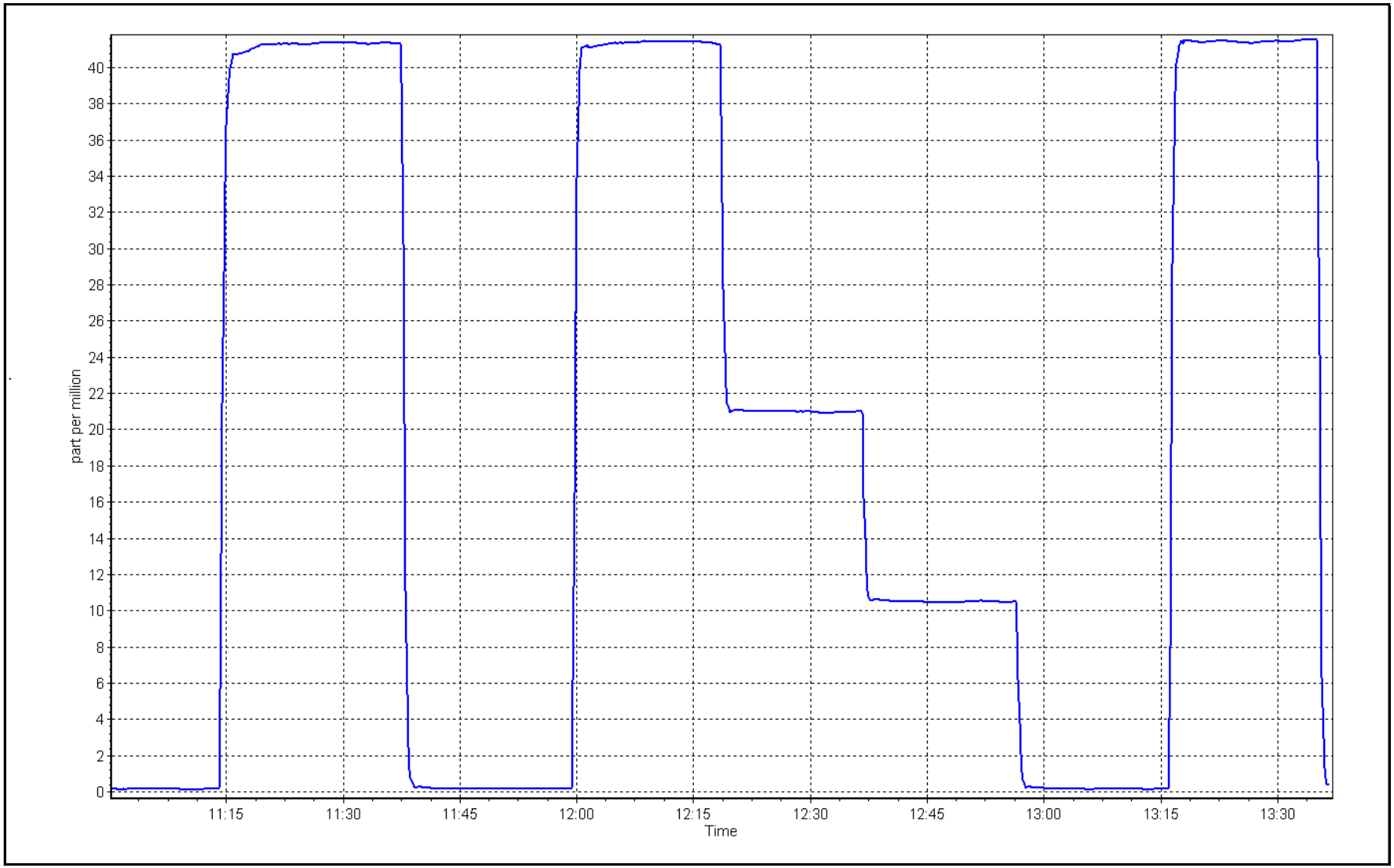
Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
41.1	41.3	0.9942
20.5	20.9	0.9816
10.3	10.5	0.9817

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999974	*≥0.995*
Slope	1.002362	*0.90 - 1.10*
Intercept	0.201757	*+/-1.5*



CO Calibration Plot Date: April 23, 2025 Location: Stony Mountain



Wood Buffalo Environmental Association

CO_2 Calibration Report

Station Information

Station Name:	Stony Mountain	Station number:	AMS 18
Calibration Date:	April 22, 2025	Last Cal Date:	March 27, 2025
Start time (MST):	10:46	End time (MST):	14:03
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	59,100	ppm	Cal Gas Exp Date:	November 4, 2028
Cal Gas Cylinder #:	EB0065608			
Removed Cal Gas Conc:	59,100	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Make/Model:	Teledyne API T700		Serial Number:	2658
N2 Gen Make/Model:	Peak Scientific		Serial Number:	771048318

Analyzer Information

Analyzer make:	API T360		Analyzer serial #:	489	
Analyzer Range	0 - 2,000 ppm				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.998644	1.001298	Backgd or Offset:	-0.068	-0.068
Calibration intercept:	-1.640000	-2.520000	Coeff or Slope:	0.960	0.960

CO_2 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	3000	0.0	0.0	0.0	----
As found High Point	2920	80.0	1576.0	1571.6	1.003
As found Mid Point					
As found Low Point					
New cylinder response					

Baseline Corr As found:	1571.6	Prev response:	1572.2	*% 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_2 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	3000	0.0	0.0	0.4	----
High point	2920	80.0	1576.0	1578.5	0.998
Mid point	2960	40.0	788.0	780.5	1.010
Low point	2980	20.0	394.0	392.1	1.005
As left zero	3000	0.0	0.0	0.0	----
As left span	2930	80.0	1570.8	1578.9	0.995
				Average Correction Factor	1.004

Notes: No adjustments needed.

Calibration Performed By: Aswin Sasi Kumar

Wood Buffalo Environmental Association

CO_2 Calibration Summary

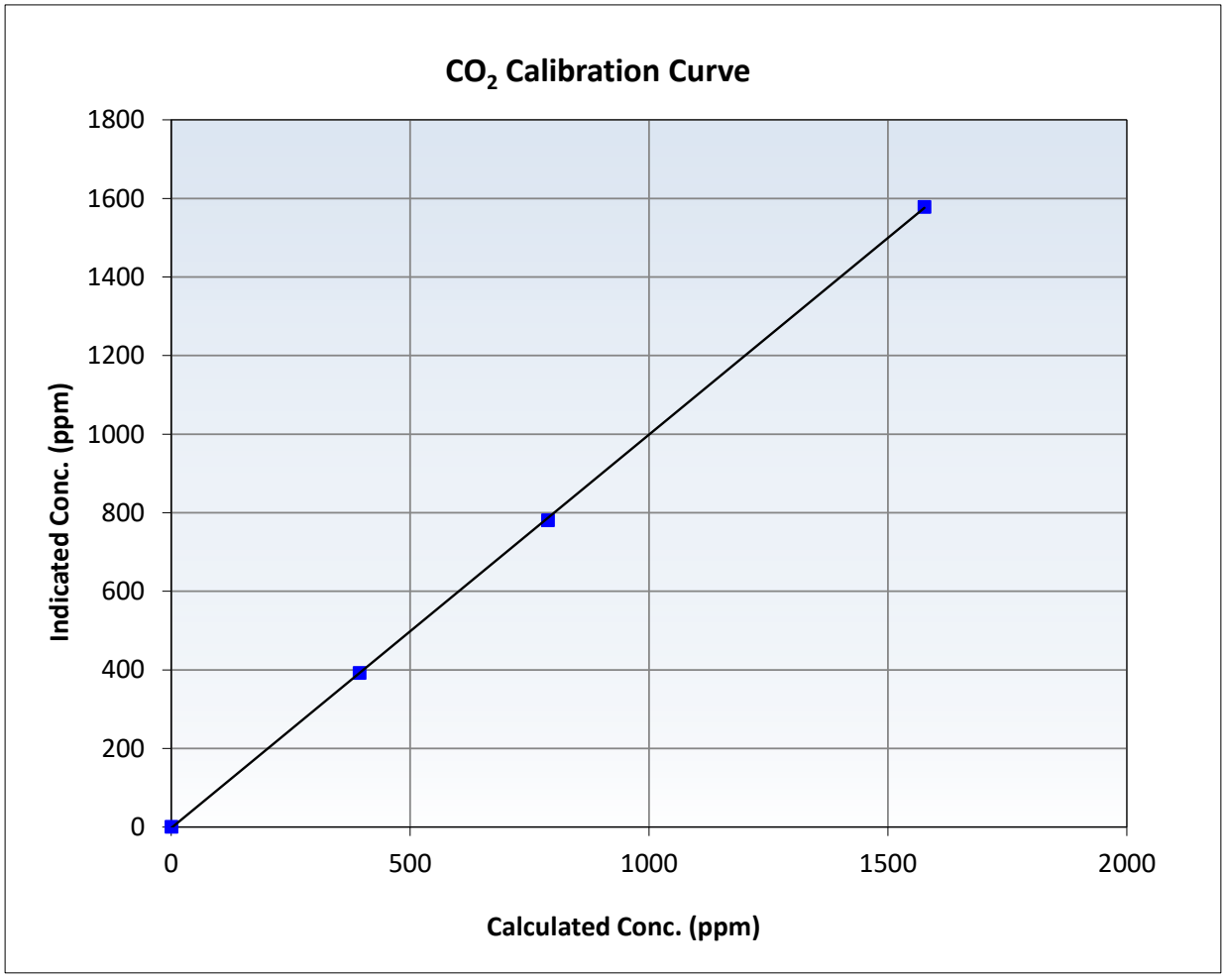
Station Information

Calibration Date	April 22, 2025	Previous Calibration	March 27, 2025
Station Name	Stony Mountain	Station Number	AMS 18
Start Time (MST)	10:46	End Time (MST)	14:03
Analyzer make	API T360	Analyzer serial #	489

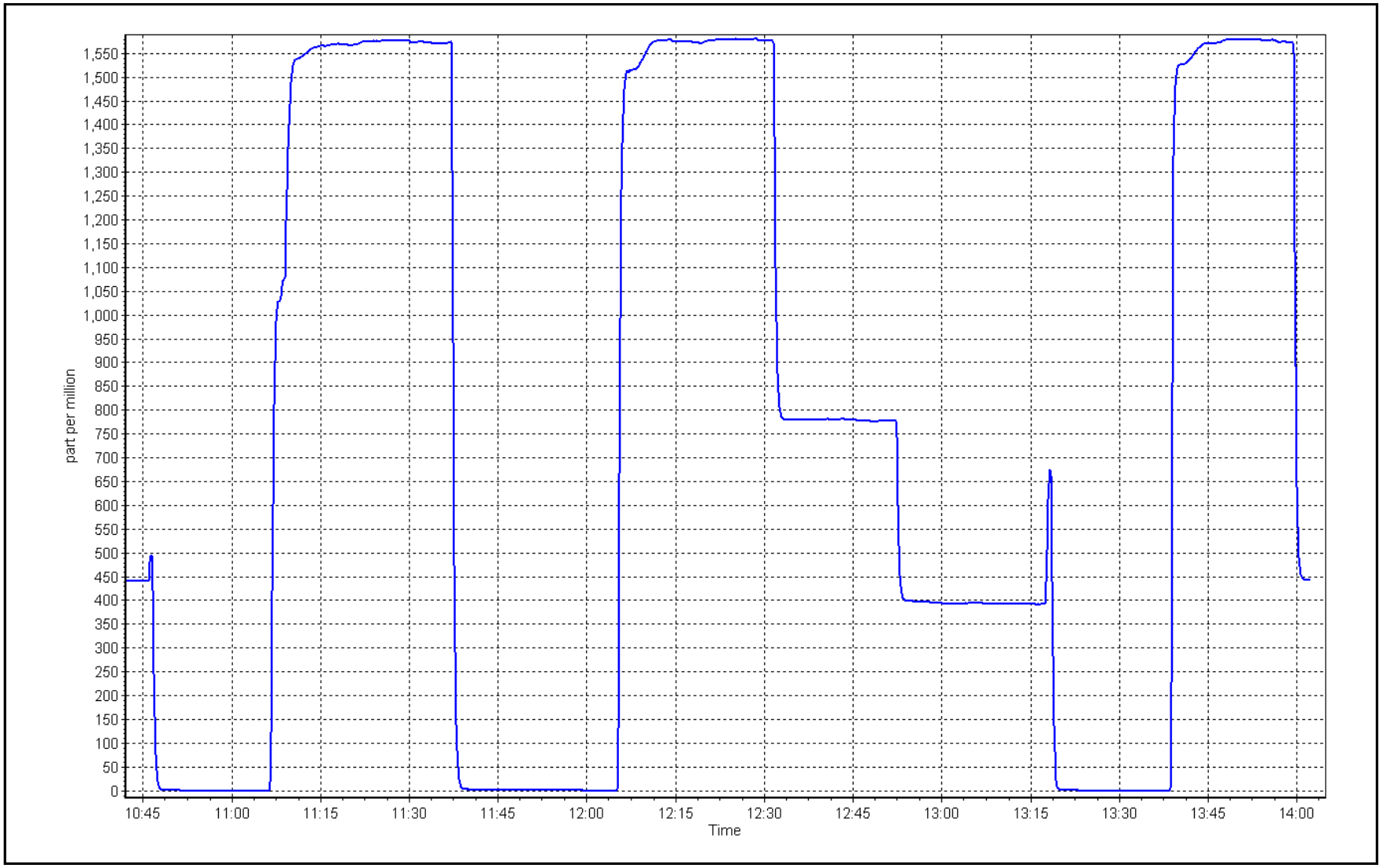
Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.0	0.4	----
1576.0	1578.5	0.9984
788.0	780.5	1.0096
394.0	392.1	1.0048

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999961	*≥0.995*
Slope	1.001298	*0.90 - 1.10*
Intercept	-2.5	*+/-20*



CO_2 Calibration Plot Date: April 22, 2025 Location: Stony Mountain



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS19
FIREBAG
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Firebag	Station number:	AMS 19
Calibration Date:	April 28, 2025	Last Cal Date:	March 15, 2025
Start time (MST):	10:55	End time (MST):	14:09
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.002848	0.994511	Backgd or Offset:	10.9	10.8
Calibration intercept:	0.800000	0.940000	Coeff or Slope:	1.005	1.005

SO_2 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	4999	0.0	0.0	0.3	----
As found High point	4922	78.4	799.2	796.3	1.004
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	796.0	Previous response	802.3	*% 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	

SO_2 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	4999	0.0	0.0	0.4	----
High point	4922	78.4	799.2	795.5	1.005
Mid point	4961	39.2	399.6	398.6	1.003
Low point	4980	19.6	199.8	200.2	0.998
As left zero	4999	0.0	0.0	0.2	----
As left span	4922	78.4	799.2	797.6	1.002
				Average Correction Factor:	1.002

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

SO_2 Calibration Summary

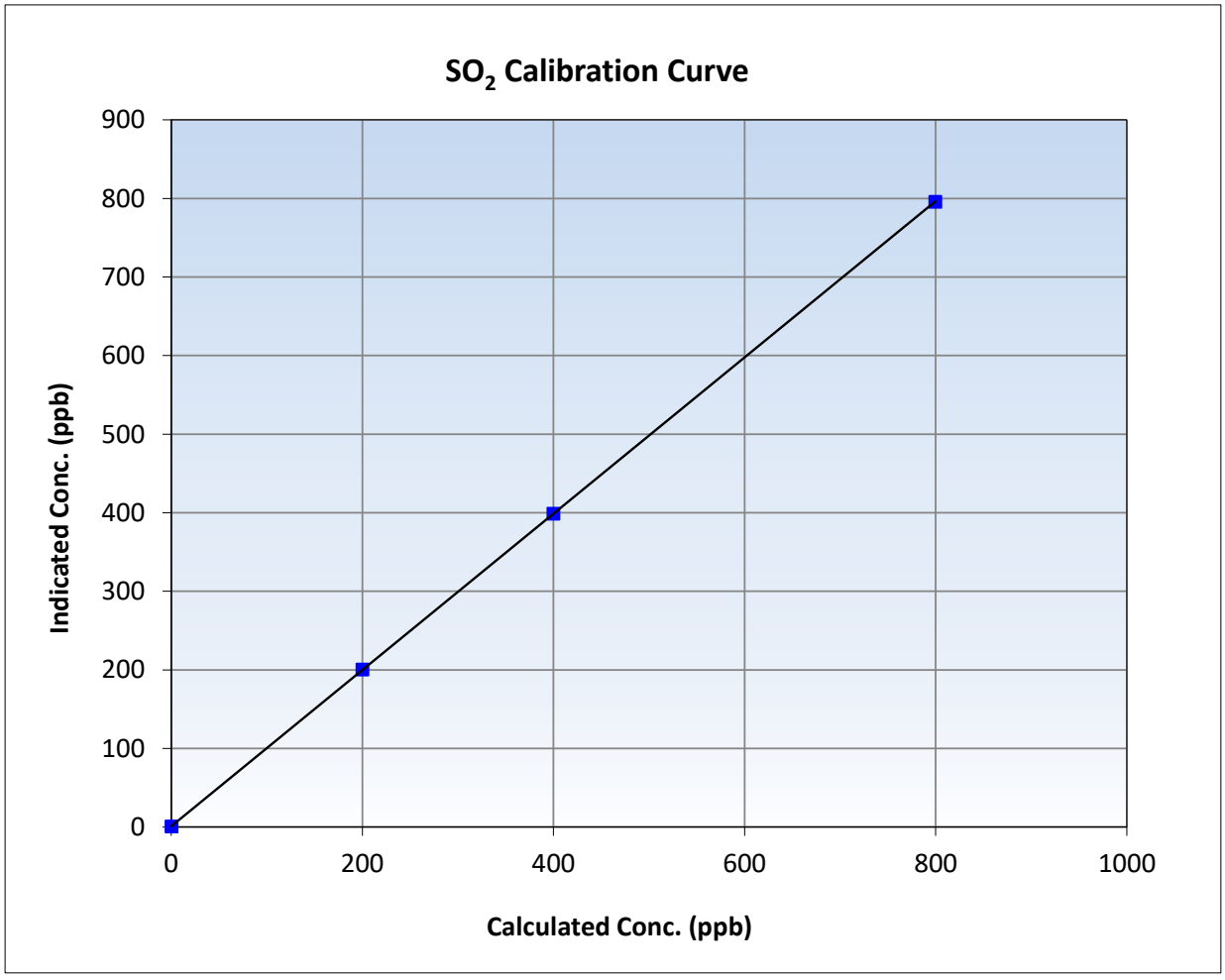
Station Information

Calibration Date:	April 28, 2025	Previous Calibration:	March 15, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	10:55	End Time (MST):	14:09
Analyzer make:	Thermo 43i	Analyzer serial #:	1410661308

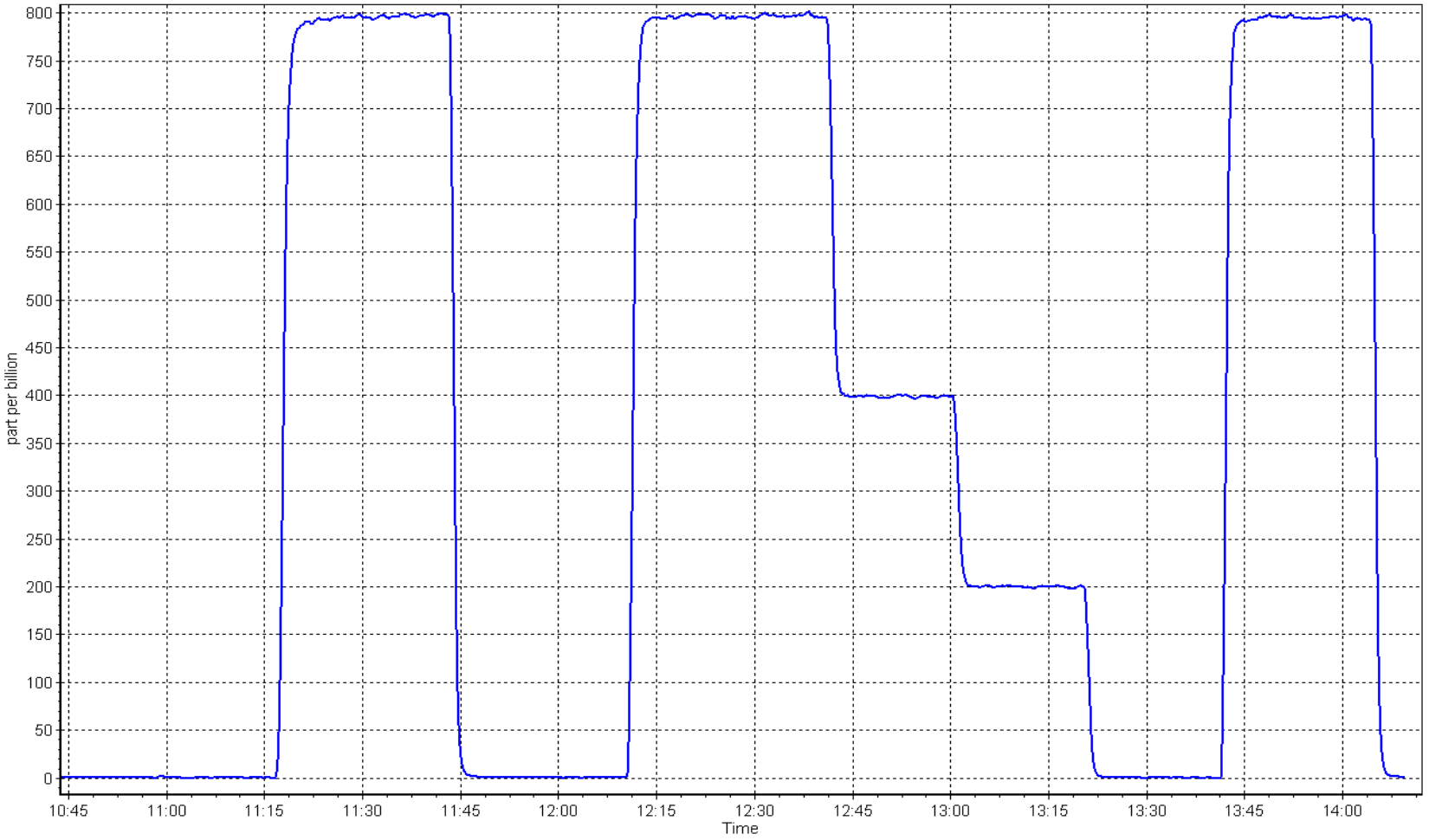
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.4	----
799.2	795.5	1.0047
399.6	398.6	1.0025
199.8	200.2	0.9980

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	0.994511	*0.90 - 1.10*
Intercept	0.940000	*+/-30*



SO2 Calibration Plot Date: April 28, 2025 Location: Firebag



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name:	Firebag	Station number:	AMS 19
Calibration Date:	April 29, 2025	Last Cal Date:	March 4, 2025
Start time (MST):	10:30	End time (MST):	14:54
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	5.29	ppm	Cal Gas Exp Date:	March 19, 2027
Cal Gas Cylinder #:	DT0010492			
Removed Cal Gas Conc:	5.29	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Make/Model:	Teledyne API T700		Serial Number:	1607
ZAG Make/Model:	Teledyne API T701		Serial Number:	201

Analyzer Information

Analyzer make:	Thermo 43i-TLE		Analyzer serial #:	1151680032
Converter make:	Global		Converter serial #:	2022-222
Analyzer Range	0 - 100 ppb		Converter Temp:	325 degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.001762	1.007763	Backgd or Offset:	3.07	3.09
Calibration intercept:	0.020000	-0.040000	Coeff or Slope:	1.214	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.2	----
As found High point	4924	75.6	80.0	81.7	0.977
As found Mid point	4962	37.8	40.0	40.9	0.973
As found Low point	4981	18.9	20.0	20.1	0.985
New cylinder response					

Baseline Corr As found:	81.9	Prev response:	80.15	*% change:	2.1%
Baseline Corr 2nd AF pt:	41.1	AF Slope:	1.024909	AF Intercept:	-0.240000
Baseline Corr 3rd AF pt:	20.3	AF Correlation:	0.999986	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	-0.2	----
High point	4924	75.6	80.0	80.4	0.995
Mid point	4962	37.8	40.0	40.6	0.985
Low point	4981	18.9	20.0	20.1	0.995
As left zero	5000	0.0	0.0	-0.1	----
As left span	4924	75.6	80.0	79.8	1.002
SO2 Scrubber Check	4922	78.4	784.0	0.0	----

Date of last scrubber change:	18-Jan-23	Ave Corr Factor	0.992
Date of last converter efficiency test:	November 26, 2024	106.2%	efficiency

Notes: Changed sample inlet filter after as founds. No adjustments made. SOx scrubber check done after cal zero.

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

H2S Calibration Summary

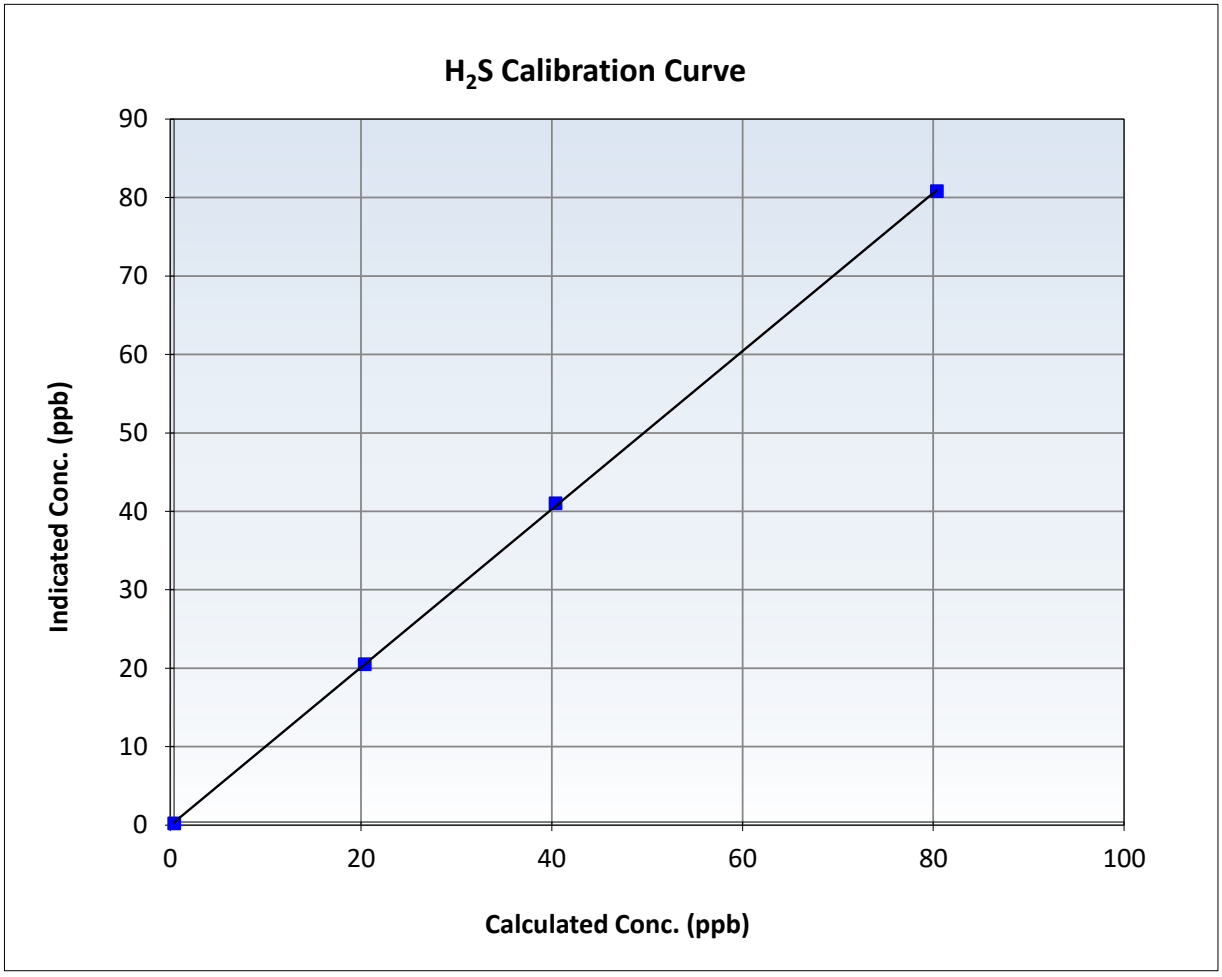
Station Information

Calibration Date:	April 29, 2025	Previous Calibration:	March 4, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	10:30	End Time (MST):	14:54
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1151680032

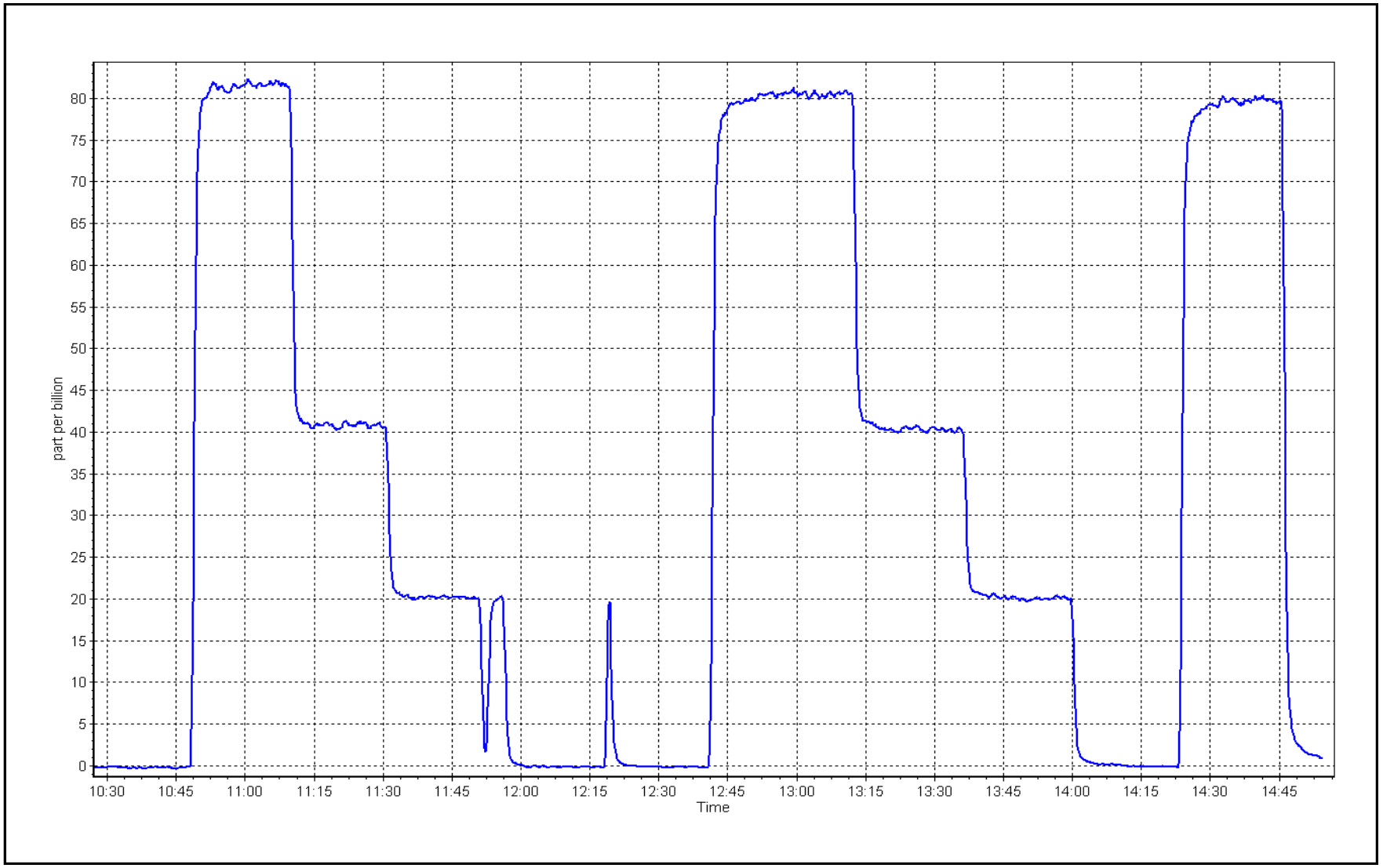
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.2	----
80.0	80.4	0.9948
40.0	40.6	0.9850
20.0	20.1	0.9948

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999953	*≥0.995*
Slope	1.007763	*0.90 - 1.10*
Intercept	-0.040000	*+/-3*



H2S Calibration Plot Date: April 29, 2025 Location: Firebag



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name:	Firebag	Station number:	AMS 19
Calibration Date:	April 28, 2025	Last Cal Date:	March 15, 2025
Start time (MST):	10:55	End time (MST):	14:08
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.992690	0.993468	Background:	1.99	2.04
Calibration intercept:	-0.023933	0.013867	Coefficient:	3.718	3.818

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)) *Limit = 0.90-1.10*
As found zero	4999	0.0	0.00	0.03	----
As found High point	4922	78.4	16.73	16.25	1.031
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	16.22	Previous response	16.58	*% change	-2.2%
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) *Limit = 0.95-1.05*
Calibrator zero	4999	0.0	0.00	0.02	----
High point	4922	78.4	16.73	16.64	1.005
Mid point	4961	39.2	8.36	8.31	1.007
Low point	4980	19.6	4.18	4.17	1.002
As left zero	4999	0.0	0.00	0.04	----
As left span	4922	78.4	16.73	16.80	0.996
				Average Correction Factor	1.005

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

THC Calibration Summary

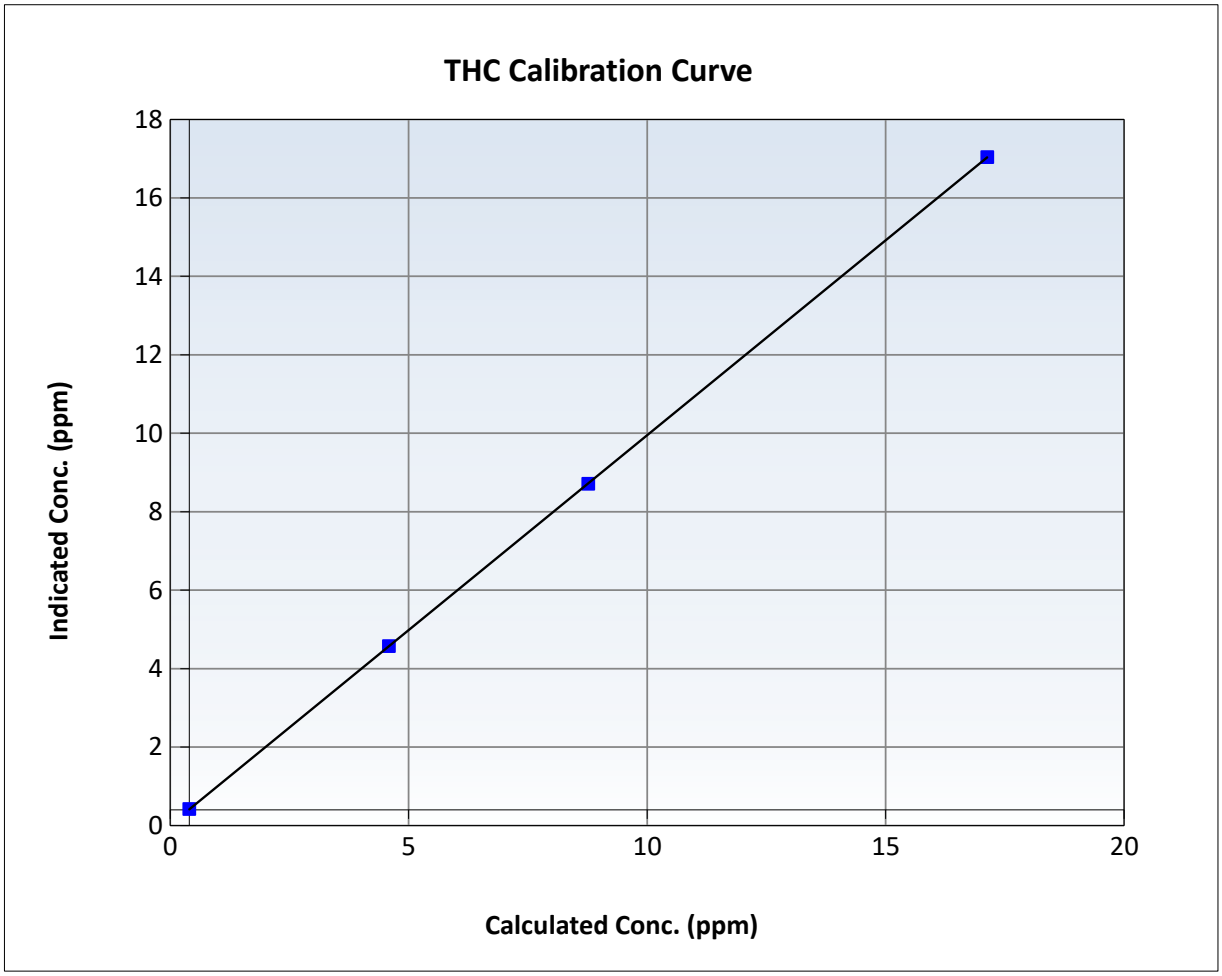
Station Information

Calibration Date:	April 28, 2025	Previous Calibration:	March 15, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	10:55	End Time (MST):	14:08
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1336160089

Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.02	----
16.73	16.64	1.0054
8.36	8.31	1.0066
4.18	4.17	1.0023

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	0.993468	*0.90 - 1.10*
Intercept	0.013867	*+/-1.5*



THC Calibration Plot Date: April 28, 2025 Location: Firebag

Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Firebag
Station number:	AMS 19
Calibration Date:	April 1, 2025
Last Cal Date:	March 11, 2025
Start time (MST):	9:48
End time (MST):	14:43
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	DT0044018	Cal Gas Expiry Date:	November 3, 2031
NOX Cal Gas Conc:	48.90 ppm	NO Cal Gas Conc:	48.70 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	48.90 ppm	Removed Gas NO Conc:	48.70 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	1607
ZAG make/model:	Teledyne API T701H	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	----	----
AF High point	4918	82.1	802.9	799.7	3.3	796.2	791.3	4.8	1.0085	1.0106
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 798.3 ppb	NO = 793.9 ppb
Baseline Corr 1st pt	NO_X = 796.2 ppb	NO = 791.3 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

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	NO_2 Int:

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

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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1410661309

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	0.905	0.916	NO bkgnd or offset:	4.5	4.6
NOX coeff or slope:	0.994	0.993	NOX bkgnd or offset:	4.5	4.6
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	160.5	160.8

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.993178	0.998046
NO_X Cal Offset:	0.800270	1.240021
NO Cal Slope:	0.992470	1.001402
NO Cal Offset:	0.300227	0.500049
NO_2 Cal Slope:	1.001499	0.997186
NO_2 Cal Offset:	-0.313391	-0.688529

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	----	----
High point	4918	82.1	802.9	799.7	3.3	802.0	801.0	1.4	1.0012	0.9983
Mid point	4959	41.1	402.0	400.3	1.6	403.0	401.6	1.4	0.9974	0.9968
Low point	4980	20.5	200.5	199.7	0.8	202.6	201.1	1.5	0.9896	0.9929
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	418.9	384.0	802.0	418.9	382.8	1.0012	1.0000
								Average Correction Factor	0.9961	0.9960

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.1	----	----
High GPT point	798.9	418.2	384.0	382.6	1.0036	99.6%
Mid GPT point	798.9	609.1	193.1	191.5	1.0083	99.2%
Low GPT point	798.9	704.9	97.3	95.5	1.0187	98.2%
				Average Correction Factor	1.0102	99.0%

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

NO_X Calibration Summary

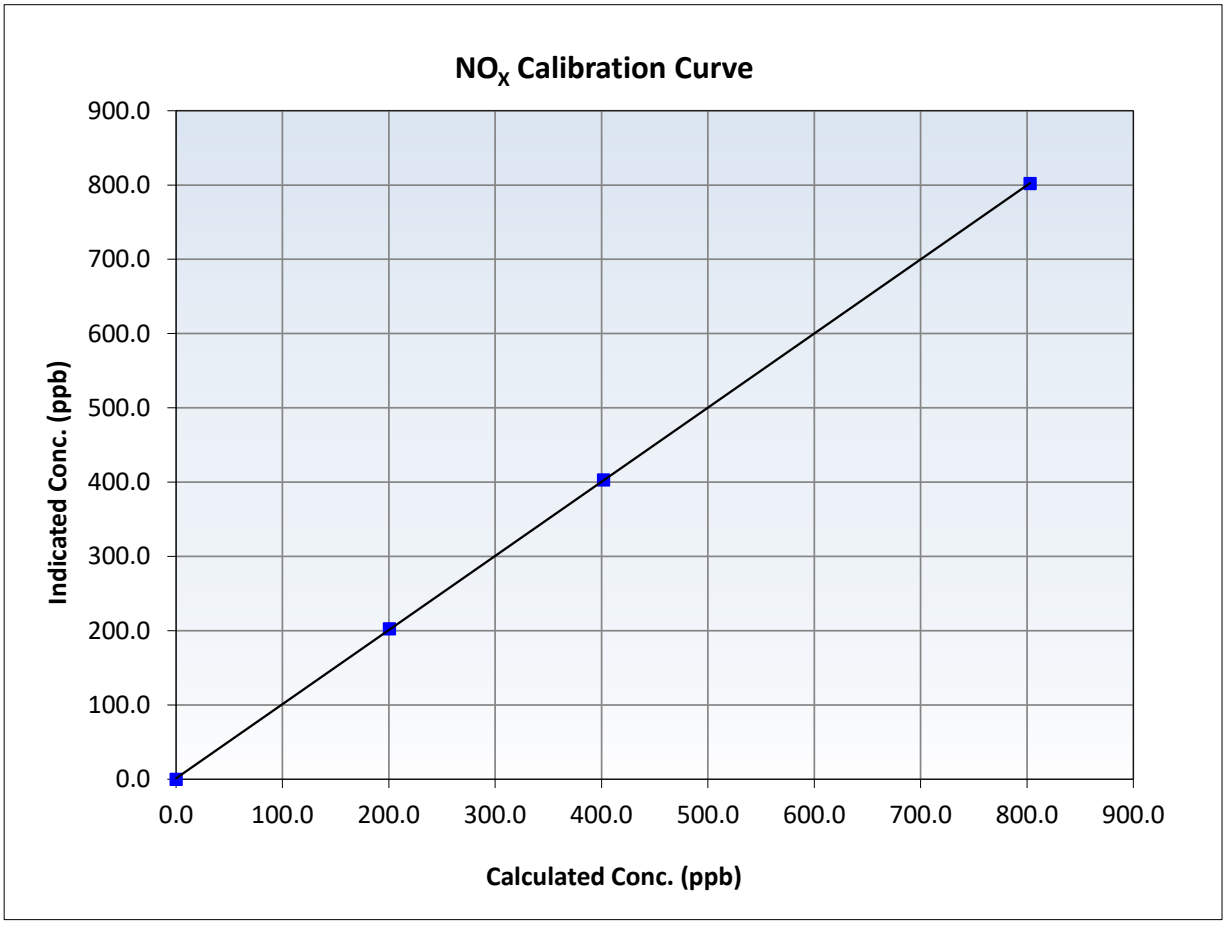
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 11, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	9:48	End Time (MST):	14:43
Analyzer make:	Thermo 42i	Analyzer serial #:	1410661309

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
802.9	802.0	1.0012
402.0	403.0	0.9974
200.5	202.6	0.9896

Statistical Evaluation		Limits
Correlation Coefficient	0.999989	≥0.995
Slope	0.998046	0.90 - 1.10
Intercept	1.240021	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

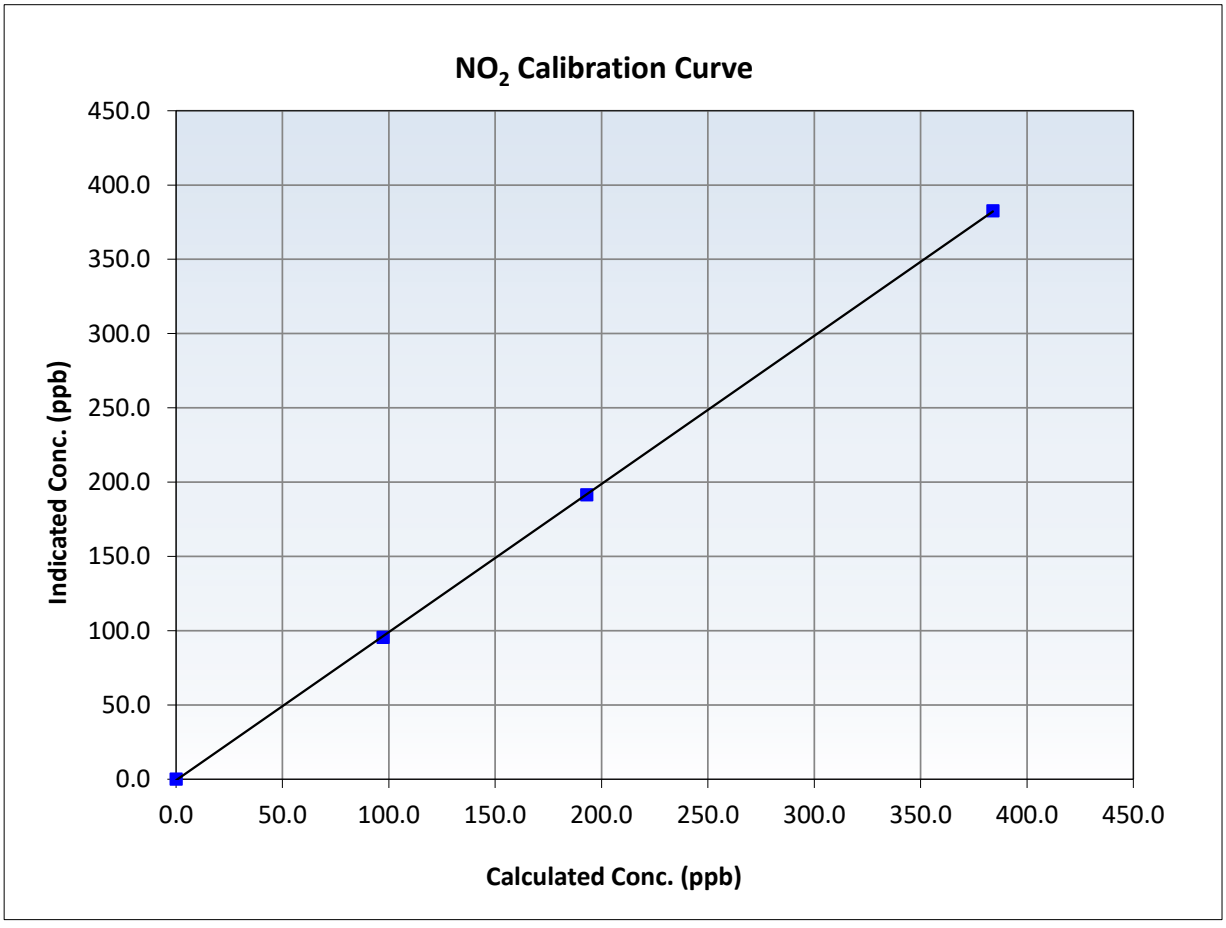
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 11, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	9:48	End Time (MST):	14:43
Analyzer make:	Thermo 42i	Analyzer serial #:	1410661309

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
384.0	382.6	1.0036
193.1	191.5	1.0083
97.3	95.5	1.0187

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999980	*≥0.995*
Slope	0.997186	*0.90 - 1.10*
Intercept	-0.688529	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

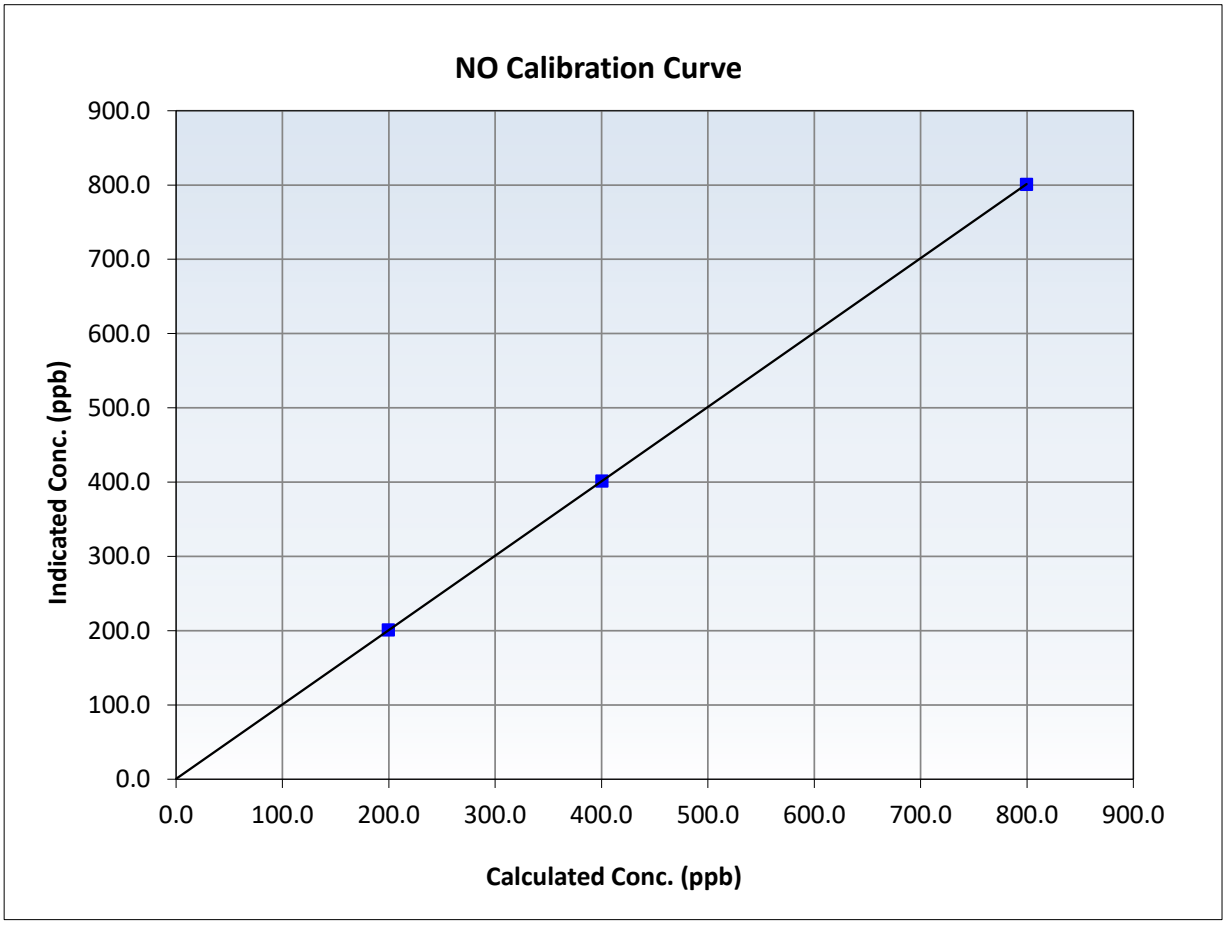
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 11, 2025
Station Name:	Firebag	Station Number:	AMS 19
Start Time (MST):	9:48	End Time (MST):	14:43
Analyzer make:	Thermo 42i	Analyzer serial #:	1410661309

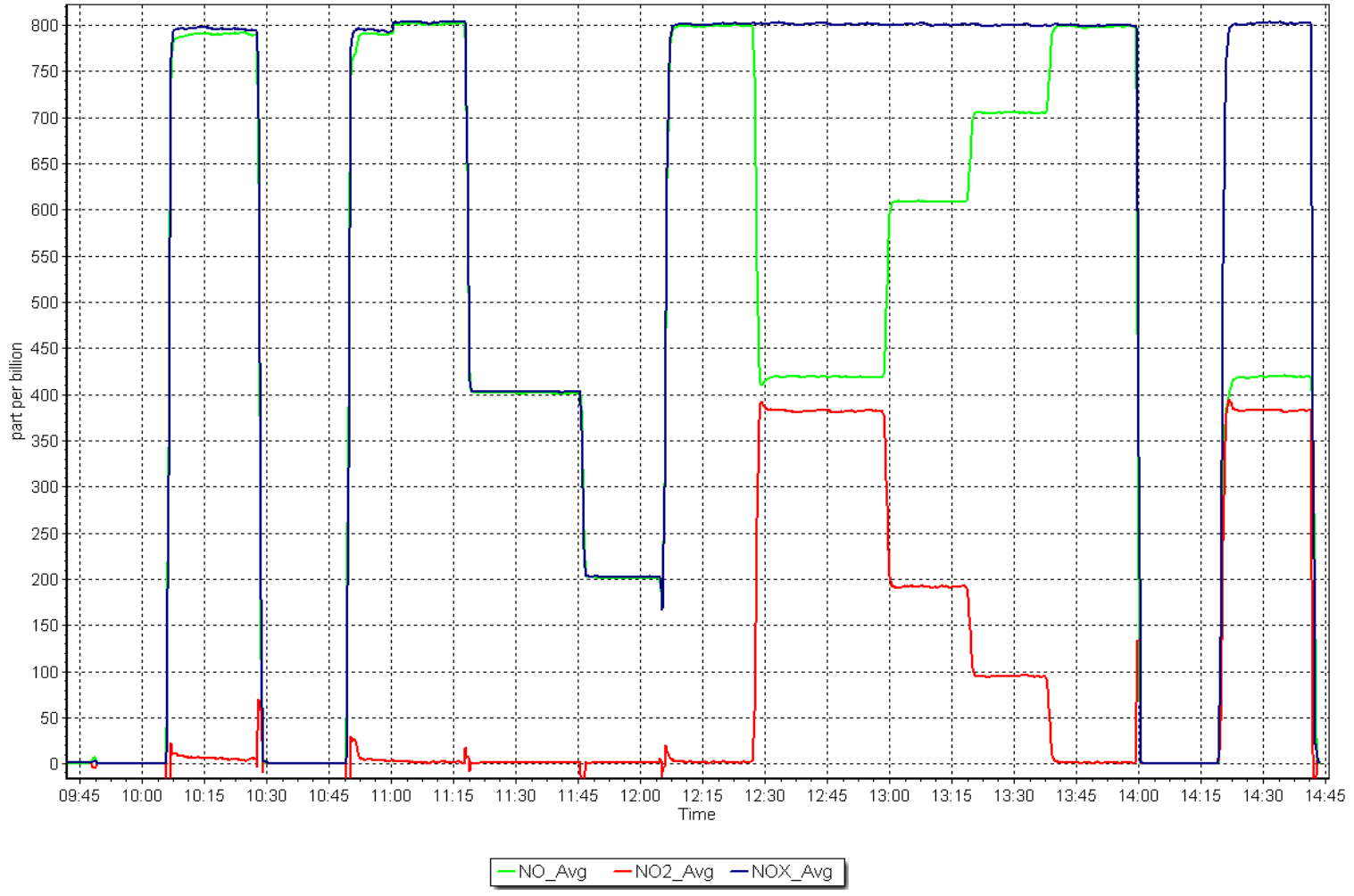
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
799.7	801.0	0.9983
400.3	401.6	0.9968
199.7	201.1	0.9929

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999997	*≥0.995*
Slope	1.001402	*0.90 - 1.10*
Intercept	0.500049	*+/-20*



NO_X Calibration Plot Date: April 1, 2025 Location: Firebag



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS20
MACKAY RIVER
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	MacKay River	Station number:	AMS 20
Calibration Date:	April 14, 2025	Last Cal Date:	March 10, 2025
Start time (MST):	7:40	End time (MST):	10:26
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.009842	0.997962	Backgd or Offset:	20.5	19.9
Calibration intercept:	-0.254232	-0.196724	Coeff or Slope:	0.961	0.945

SO_2 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	4919	81.4	800.1	811.5	0.986
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	811.2	Previous response	807.7	*% 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	

SO_2 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	4919	81.4	800.1	798.6	1.002
Mid point	4959	40.7	400.1	398.6	1.004
Low point	4980	20.3	199.5	198.6	1.005
As left zero	5000	0.0	0.0	0.2	----
As left span	4919	81.4	800.1	799.9	1.000
				Average Correction Factor:	1.003

Notes: No Maintenance done. Span adjusted.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

SO_2 Calibration Summary

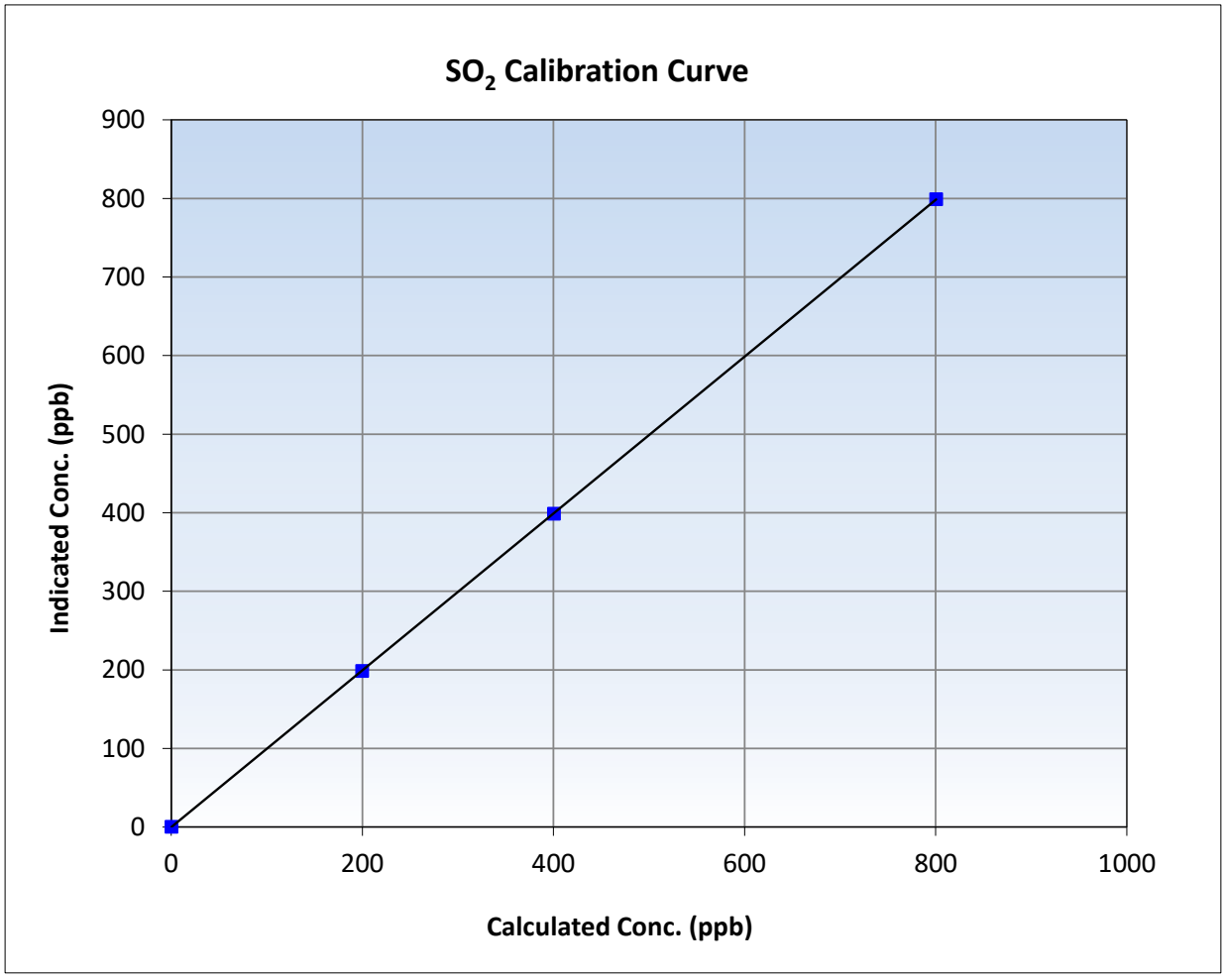
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 10, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	7:40	End Time (MST):	10:26
Analyzer make:	Thermo 43i	Analyzer serial #:	1501301450

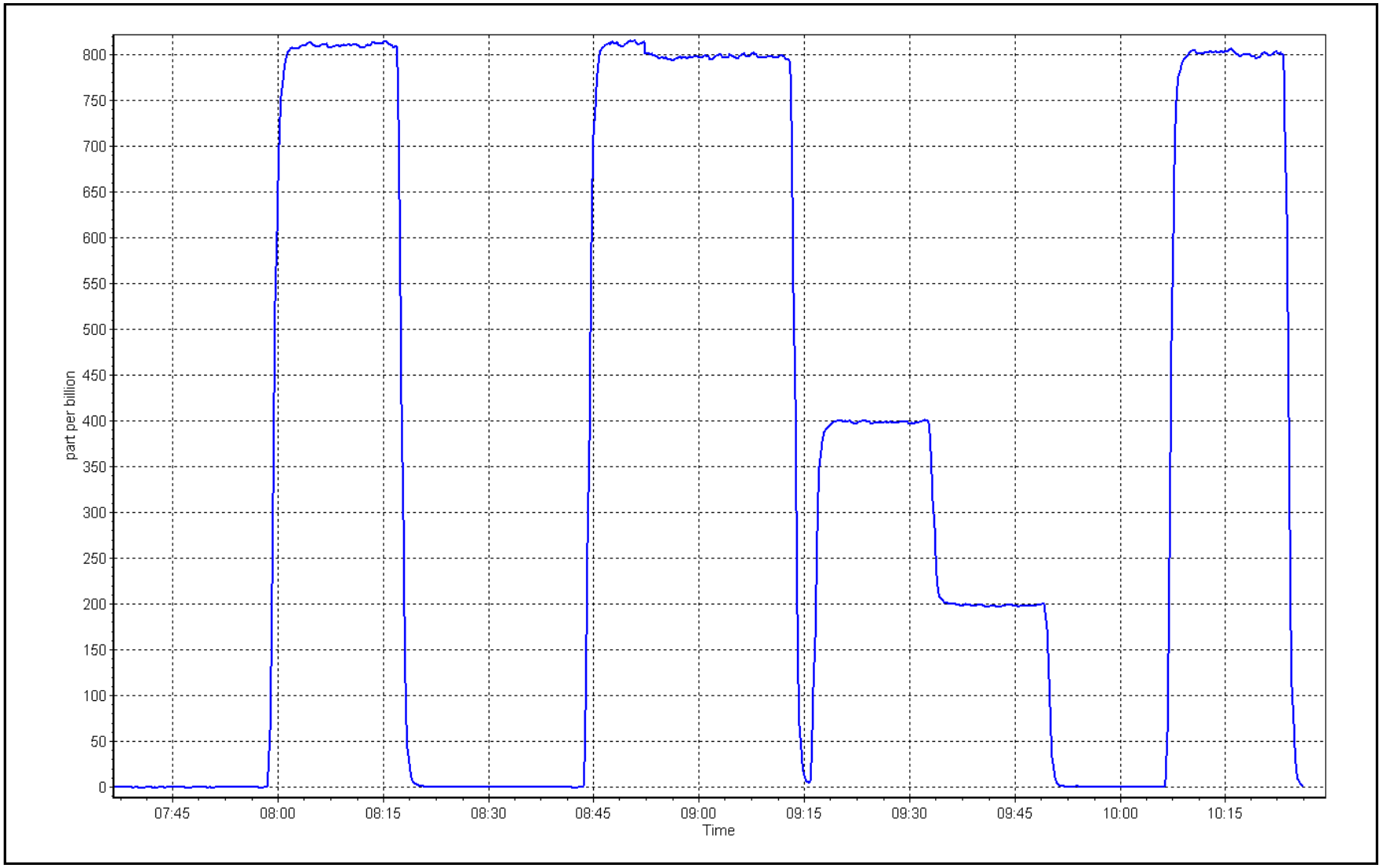
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
800.1	798.6	1.0019
400.1	398.6	1.0038
199.5	198.6	1.0047

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	0.997962	*0.90 - 1.10*
Intercept	-0.196724	*+/-30*



SO2 Calibration Plot Date: April 14, 2025 Location: MacKay River



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	MacKay River	Station number:	AMS 20
Calibration Date:	April 3, 2025	Last Cal Date:	March 6, 2025
Start time (MST):	6:48	End time (MST):	10:56
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	5.12	ppm	Cal Gas Exp Date:	January 3, 2026
Cal Gas Cylinder #:	CC515997			
Removed Cal Gas Conc:	5.12	ppm	Rem Gas Exp Date:	
Removed Gas Cyl #:			Diff between cyl:	
Calibrator Make/Model:	API T700		Serial Number:	5706
ZAG Make/Model:	API 701		Serial Number:	4522

Analyzer Information

Analyzer make:	Thermo 43i TLE		Analyzer serial #:	1236656117	
Converter make:	Global		Converter serial #:	2022-226	
Analyzer Range	0 - 100 ppb		Converter Temp:	325	degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.004456	0.999883	Backgd or Offset:	3.84	3.84
Calibration intercept:	-0.100522	-0.040619	Coeff or Slope:	1.086	1.086

H_2S 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	-0.1	----
As found High point	4922	78.1	80.0	80.7	0.990
As found Mid point	4961	39.0	39.9	40.3	0.989
As found Low point	4980	19.5	20.0	20.0	0.994
New cylinder response					

Baseline Corr As found:	80.8	Prev response:	80.23	*% change:	0.7%
Baseline Corr 2nd AF pt:	40.4	AF Slope:	1.010744	AF Intercept:	-0.120418
Baseline Corr 3rd AF pt:	20.1	AF Correlation:	0.999998	* = > +/-5% change initiates investigation	

H_2S 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	-0.1	----
High point	4922	78.1	80.0	79.9	1.001
Mid point	4961	39.0	39.9	39.9	1.001
Low point	4980	19.5	20.0	20.0	0.998
As left zero	5000	0.0	0.0	0.0	----
As left span	4922	78.1	80.0	79.7	1.003
SO2 Scrubber Check	4982	81.3	802.8	0.1	----
Date of last scrubber change:		25-May-23		Ave Corr Factor	1.000
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

H_2S Calibration Summary

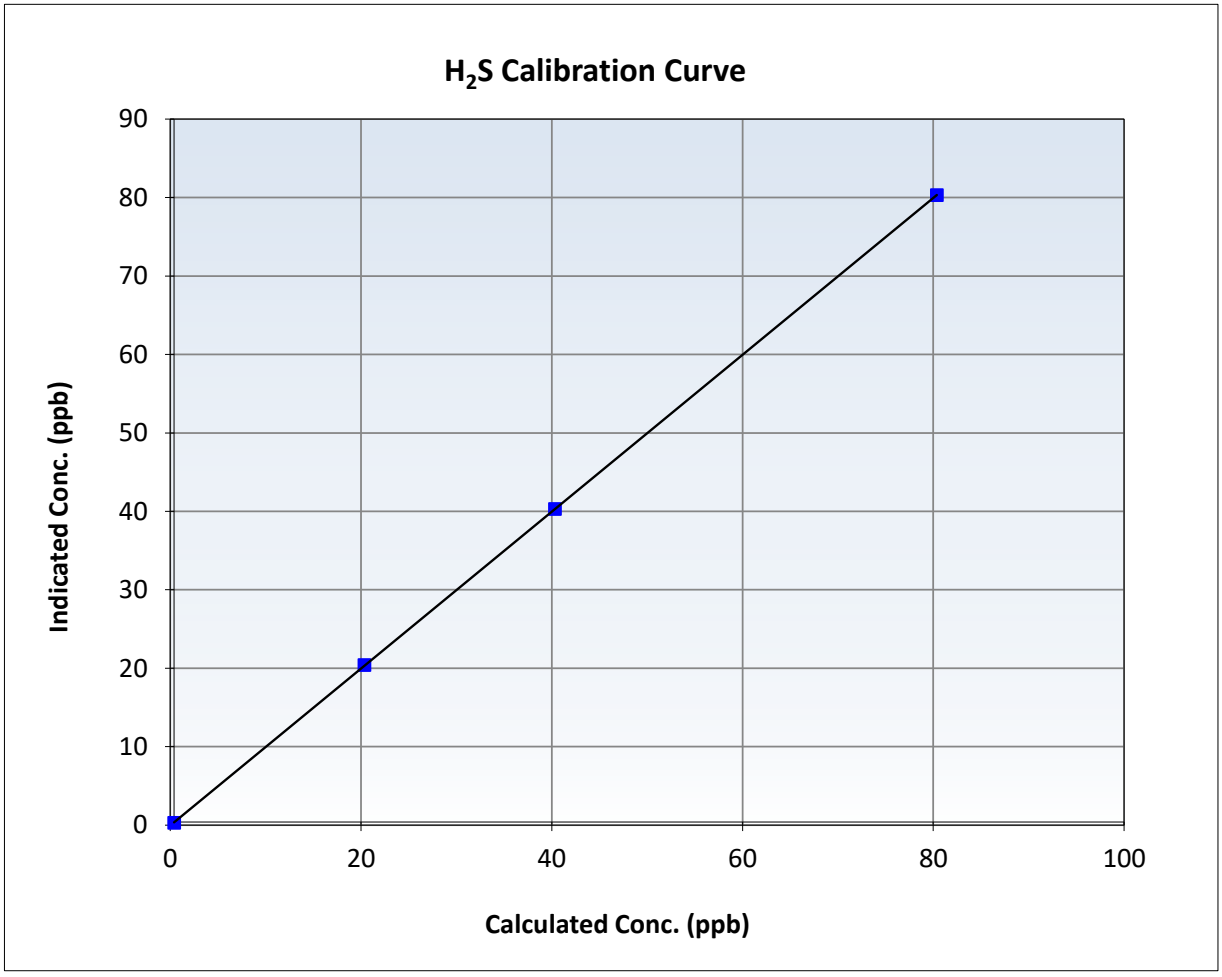
Station Information

Calibration Date:	April 3, 2025	Previous Calibration:	March 6, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	6:48	End Time (MST):	10:56
Analyzer make:	Thermo 43i TLE	Analyzer serial #:	1236656117

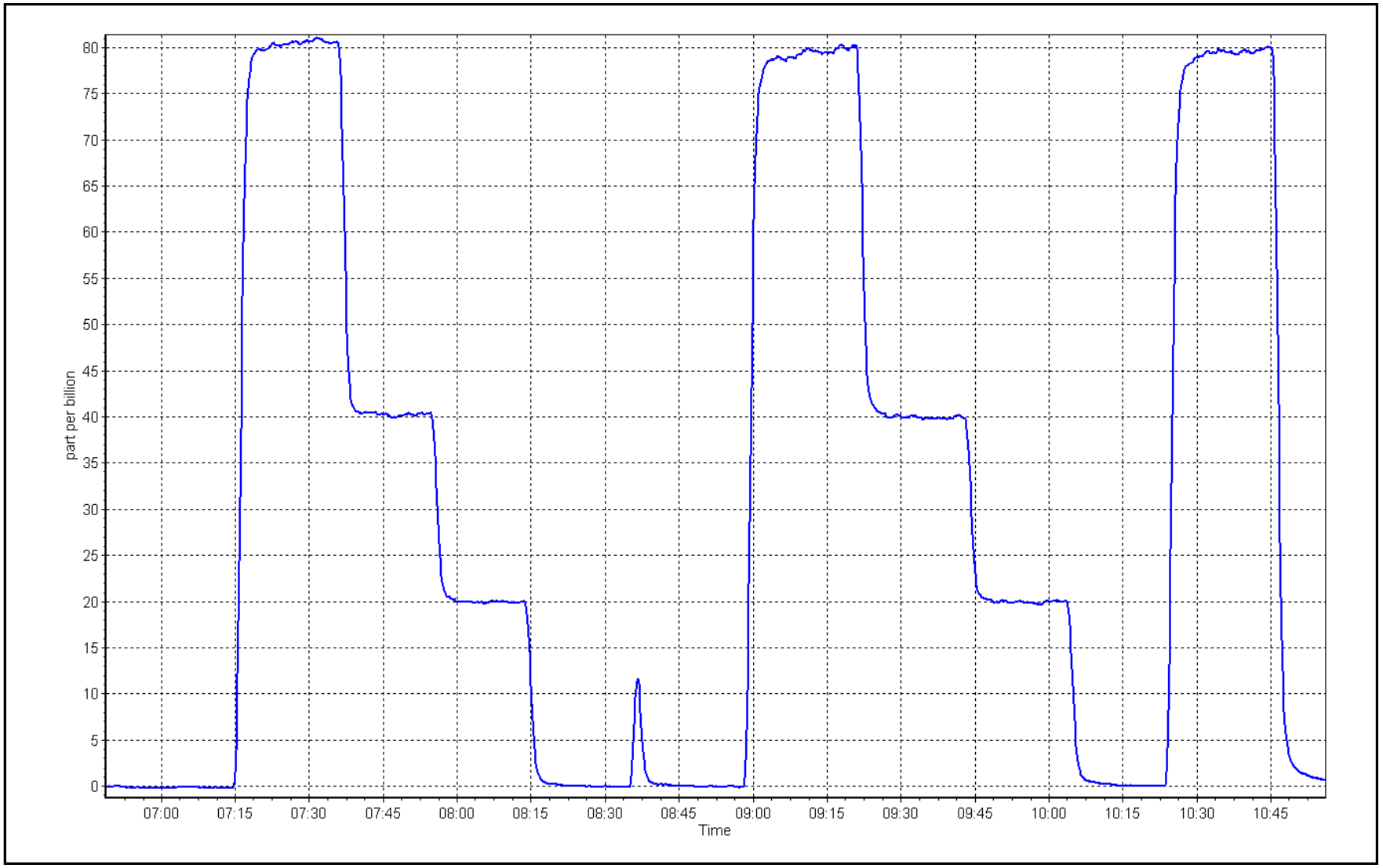
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
80.0	79.9	1.0009
39.9	39.9	1.0009
20.0	20.0	0.9985

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999997	*≥0.995*
Slope	0.999883	*0.90 - 1.10*
Intercept	-0.040619	*+/-3*



H_2S Calibration Plot Date: April 3, 2025 Location: MacKay River



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name:	MacKay River	Station number:	AMS 20
Calibration Date:	April 14, 2025	Last Cal Date:	March 21, 2025
Start time (MST):	7:40	End time (MST):	10:25
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC409669		Cal Gas Expiry Date:	October 9, 2032	
CH4 Cal Gas Conc.	505.1	ppm	CH4 Equiv Conc.	1072.7	ppm
C3H8 Cal Gas Conc.	206.4	ppm			
Removed Gas Cert:			Removed Gas Expiry:		
Removed CH4 Conc.	505.1	ppm	CH4 Equiv Conc.	1072.7	ppm
Removed C3H8 Conc.	206.4	ppm	Diff between cyl:		
Calibrator Make/Model:	API T700		Serial Number:	5706	
ZAG Make/Model:	API 701		Serial Number:	4522	

Analyzer Information

Analyzer make: Thermo 51i-LT Analyzer serial #: 1501663727

Analyzer Range: 0 - 20 ppm

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.999215	0.997991	Background:	3.140	2.990
Calibration intercept:	0.020404	0.016001	Coefficient:	4.900	4.871

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	-0.10	----
As found High point	4919	81.4	17.46	17.38	0.999
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	17.48	Previous response	17.47	*% 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	

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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.03	----
High point	4919	81.4	17.46	17.46	1.000
Mid point	4959	40.7	8.73	8.71	1.003
Low point	4980	20.3	4.35	4.36	1.000
As left zero	5000	0.0	0.00	0.00	----
As left span	4919	81.4	17.46	17.56	0.995
				Average Correction Factor	1.001

Notes: Zero and Span adjusted. No maintenance done.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

THC Calibration Summary

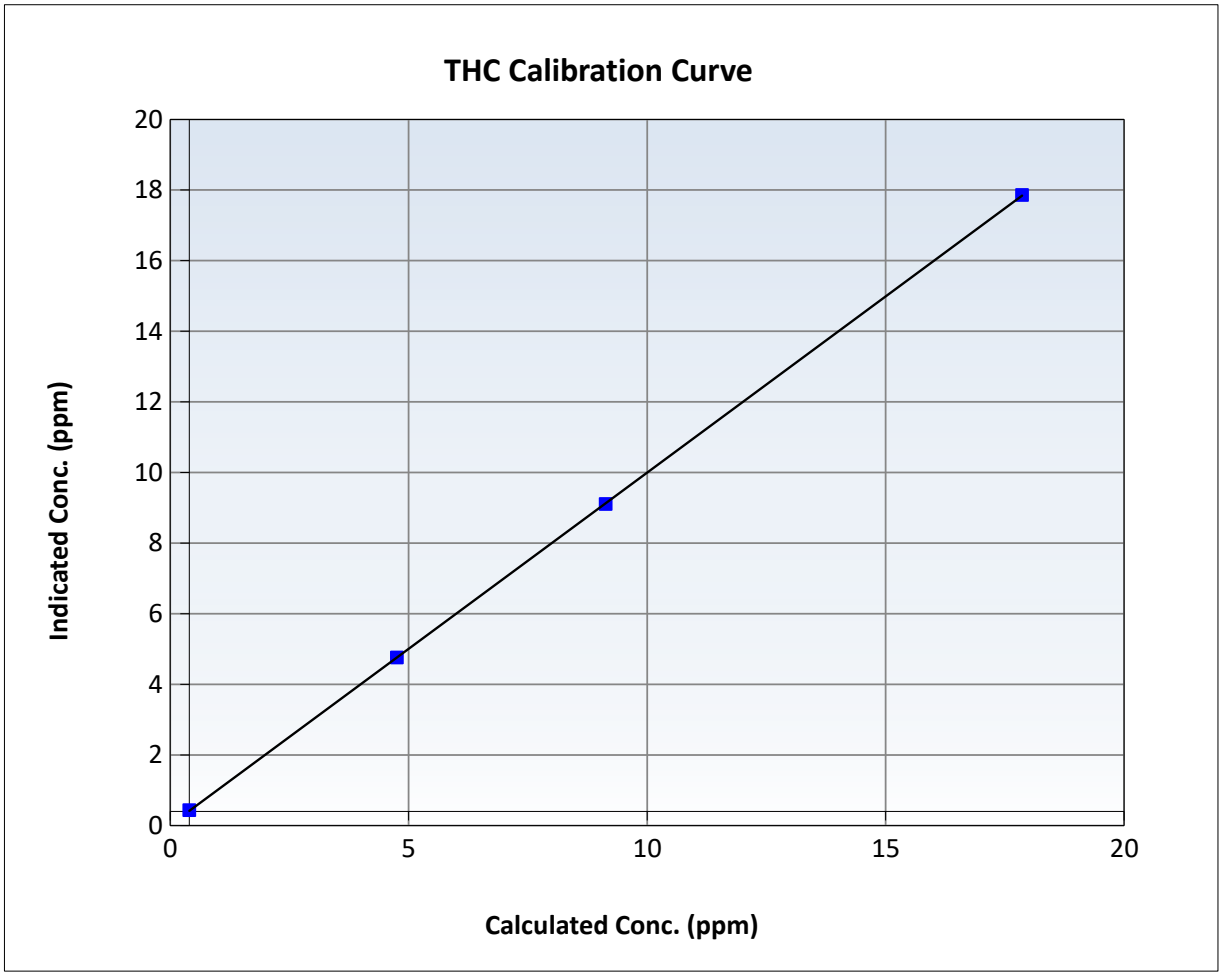
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 21, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	7:40	End Time (MST):	10:25
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1501663727

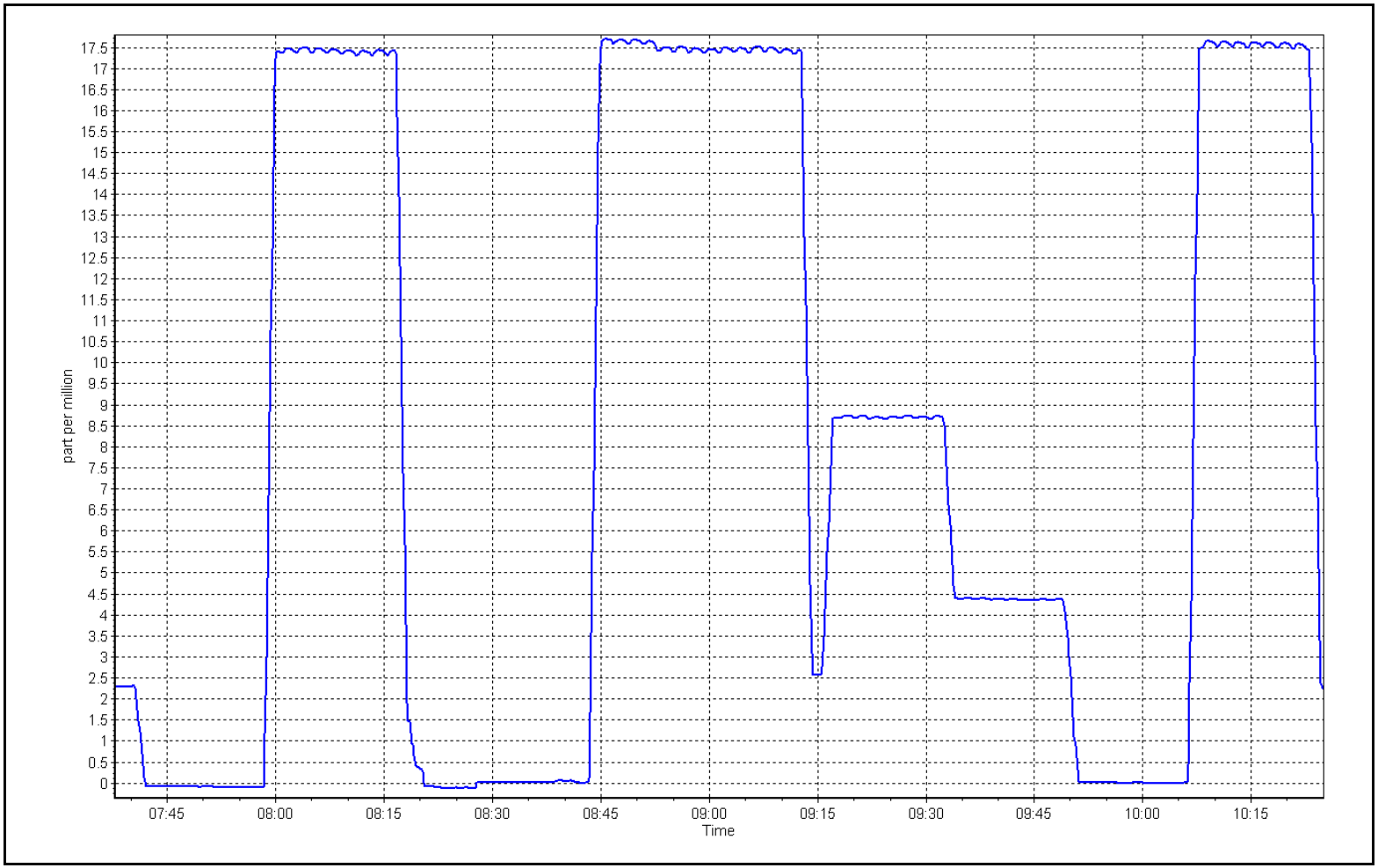
Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.03	----
17.46	17.46	1.0003
8.73	8.71	1.0030
4.35	4.36	0.9997

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999993	*≥0.995*
Slope	0.997991	*0.90 - 1.10*
Intercept	0.016001	*+/-1.5*



THC Calibration Plot Date: April 14, 2025 Location: MacKay River



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	MacKay River
Station number:	AMS 20
Calibration Date:	April 2, 2025
Last Cal Date:	March 5, 2025
Start time (MST):	6:50
End time (MST):	10:55
Reason:	

Calibration Standards

NO Gas Cylinder #:	T376265		Cal Gas Expiry Date:	April 13, 2025	
NOX Cal Gas Conc:	49.19	ppm	NO Cal Gas Conc:	48.04	ppm
Removed Cylinder #:			Removed Gas Exp Date:		
Removed Gas NOX Conc:	49.19	ppm	Removed Gas NO Conc:	48.04	ppm
NOX gas Diff:			NO gas Diff:		
Calibrator Model:	API T700		Serial Number:	5706	
ZAG make/model:	API T701		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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
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	826.3	806.2	20.0	0.9915	0.9927
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X =	817.4	ppb	NO =	798.9	ppb	
Baseline Corr 1st pt	NO_X =	826.5	ppb	NO =	806.2	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 =	1.1%	
*Percent Change	NO =	0.9%	

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1505164379

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	0.285	1.002	NO bkgnd or offset:	2.8	2.8
NOX coeff or slope:	0.991	0.991	NOX bkgnd or offset:	3.0	3.0
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	159.4	159.4

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.996966	1.005402
NO_X Cal Offset:	0.422044	0.721954
NO Cal Slope:	0.998643	1.006853
NO Cal Offset:	-0.357427	-0.357714
NO_2 Cal Slope:	0.997985	0.997243
NO_2 Cal Offset:	-1.492859	-1.552636

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
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	824.3	805.7	18.5	0.9941	0.9933
Mid point	4958	41.7	410.3	400.7	9.6	413.4	402.8	10.5	0.9924	0.9947
Low point	4979	20.8	204.6	199.9	4.8	207.3	200.3	7.0	0.9872	0.9978
As left zero	5000	0.0	0.0	0.0	0.0	0.0	0.2	-0.2	----	----
As left span	4917	83.3	819.5	409.7	409.8	818.2	409.7	408.5	1.0015	1.0000
								Average Correction Factor	0.9912	0.9953

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	-0.2	----	----
High GPT point	799.6	407.9	410.9	408.9	1.0048	99.5%
Mid GPT point	799.6	601.2	217.6	214.9	1.0124	98.8%
Low GPT point	799.6	698.8	120.0	116.5	1.0297	97.1%
				Average Correction Factor	1.0156	98.5%

Notes: No maintenance or adjustments done.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

NO_X Calibration Summary

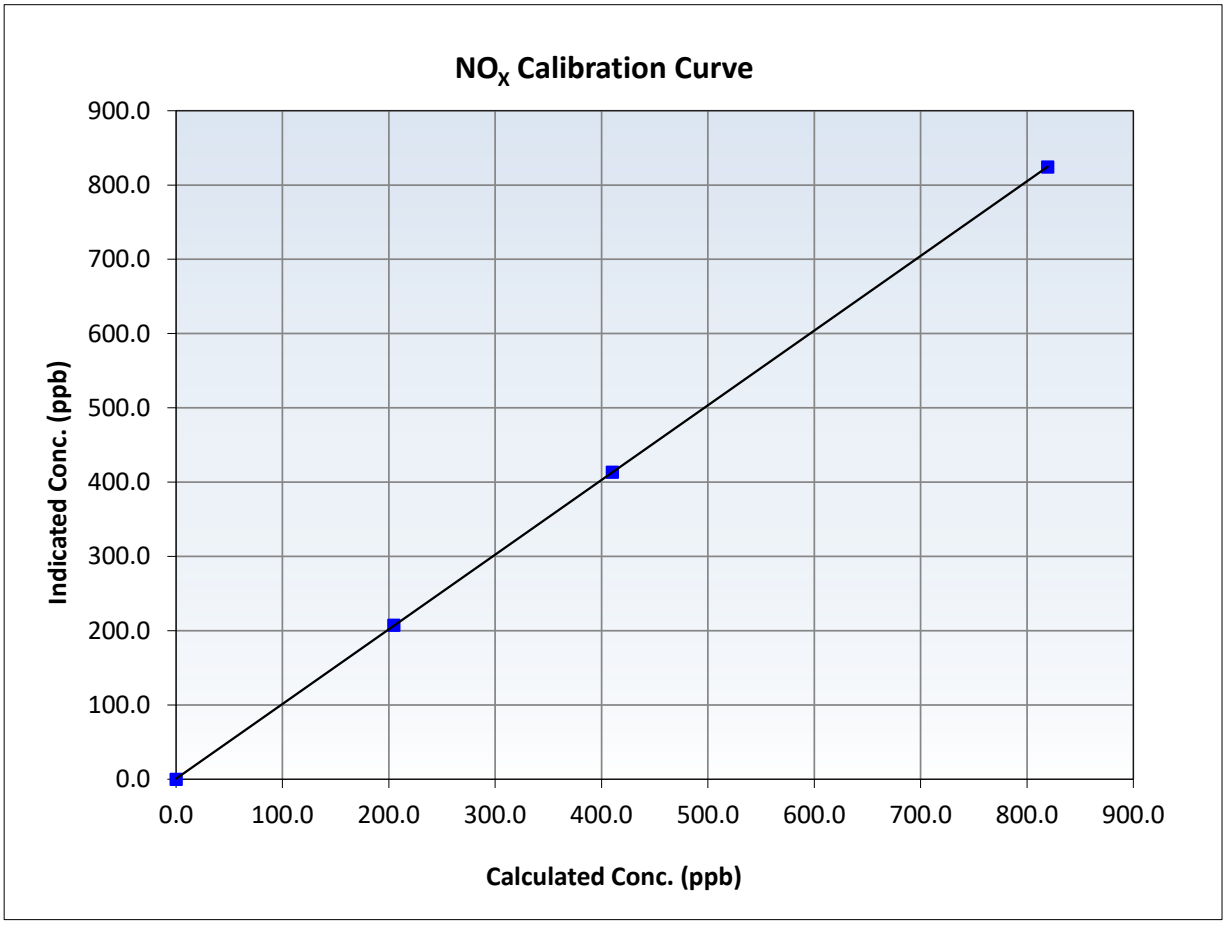
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	March 5, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	6:50	End Time (MST):	10:55
Analyzer make:	Thermo 42i	6:50:00 AM	1505164379

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
819.5	824.3	0.9941
410.3	413.4	0.9924
204.6	207.3	0.9872

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999996	*≥0.995*
Slope	1.005402	*0.90 - 1.10*
Intercept	0.721954	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

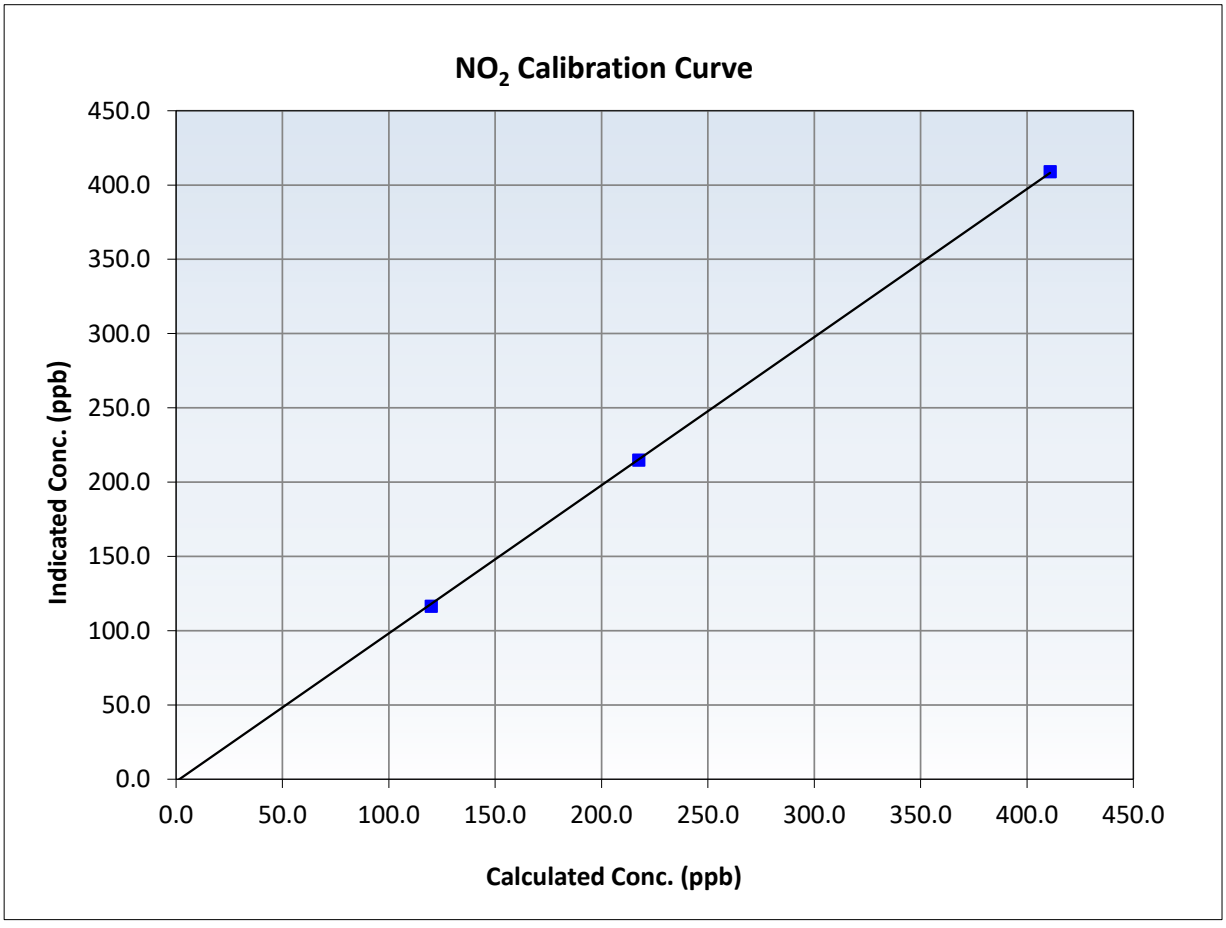
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	March 5, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	6:50	End Time (MST):	10:55
Analyzer make:	Thermo 42i	6:50:00 AM	1505164379

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.2	----
410.9	408.9	1.0048
217.6	214.9	1.0124
120.0	116.5	1.0297

Statistical Evaluation		Limits
Correlation Coefficient	0.999943	≥0.995
Slope	0.997243	0.90 - 1.10
Intercept	-1.552636	+/-20



Wood Buffalo Environmental Association

NO Calibration Summary

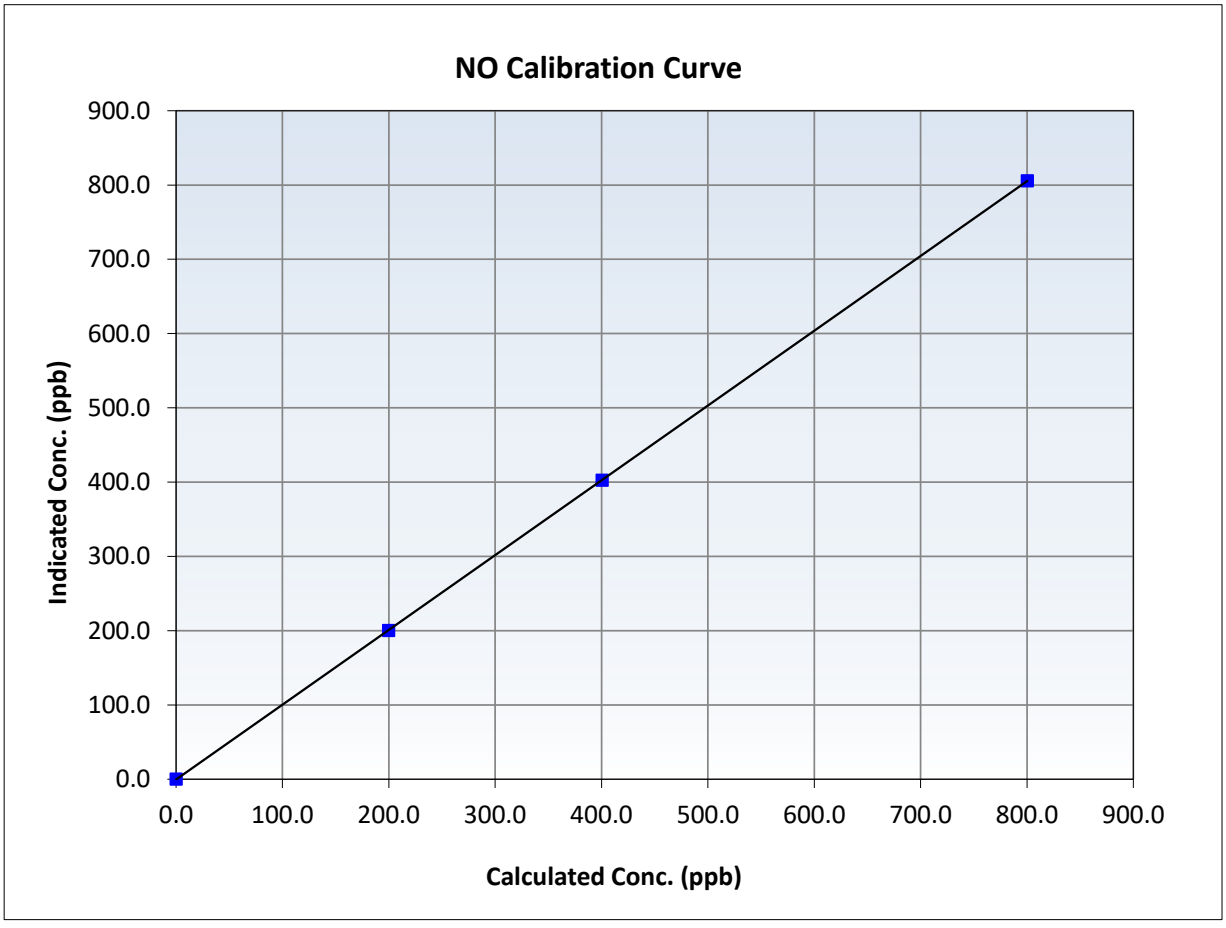
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	March 5, 2025
Station Name:	MacKay River	Station Number:	AMS 20
Start Time (MST):	6:50	End Time (MST):	10:55
Analyzer make:	Thermo 42i	6:50:00 AM	1505164379

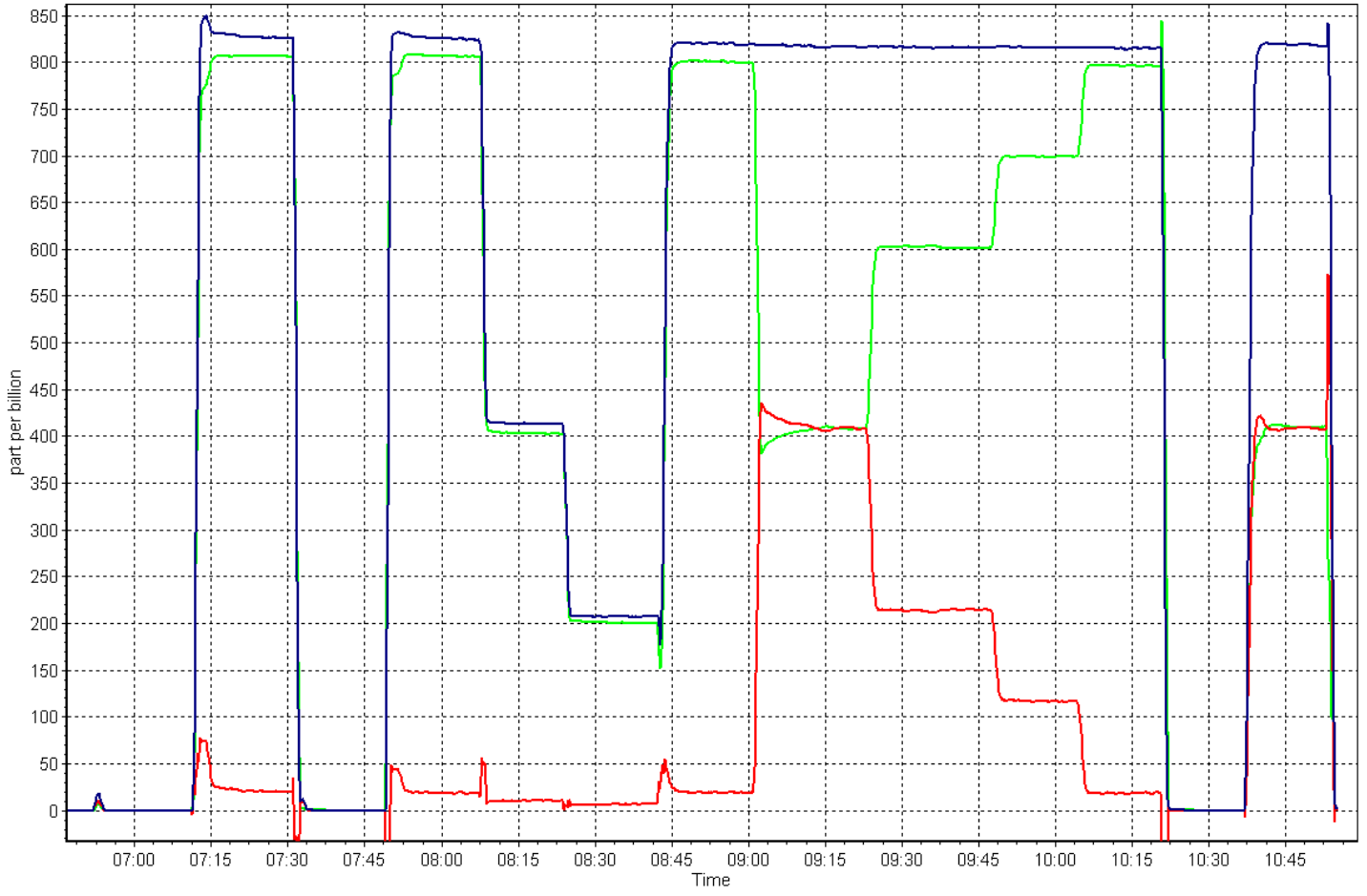
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
800.3	805.7	0.9933
400.7	402.8	0.9947
199.9	200.3	0.9978

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	1.006853	*0.90 - 1.10*
Intercept	-0.357714	*+/-20*



NO_X Calibration Plot Date: April 2, 2025 Location: MacKay River



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS21
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Conklin	Station number:	AMS 21
Calibration Date:	April 4, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	9:50	End time (MST):	13:00
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	50.34	ppm	Cal Gas Exp Date:	October 9, 2032
Cal Gas Cylinder #:	CC340840			
Removed Cal Gas Conc:	50.34	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Model:	Teledyne API T700P		Serial Number:	2659
Zero Air Gen Model:	Teledyne API T701		Serial Number:	953

Analyzer Information

Analyzer make:	Thermo 43i		Serial Number:	1428701363	
Analyzer Range:	0 - 1000 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.995774	1.000944	Backgd or Offset:	29.3	29.3
Calibration intercept:	-0.820824	-1.182060	Coeff or Slope:	0.899	0.899

SO_2 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	0.5	----
As found High point	4921	79.5	800.3	801.0	1.000
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	800.5	Previous response	796.1	*% 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	

SO_2 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	0.5	----
High point	4921	79.5	800.3	800.2	1.000
Mid point	4960	39.8	400.7	400.7	1.000
Low point	4980	19.9	200.4	196.6	1.019
As left zero	5000	0.0	0.0	0.6	----
As left span	4921	79.5	800.3	800.0	1.000
				Average Correction Factor:	1.006

Notes: Sample inlet filter and H2/N2 was changed after as founds. No adjustment made.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

SO_2 Calibration Summary

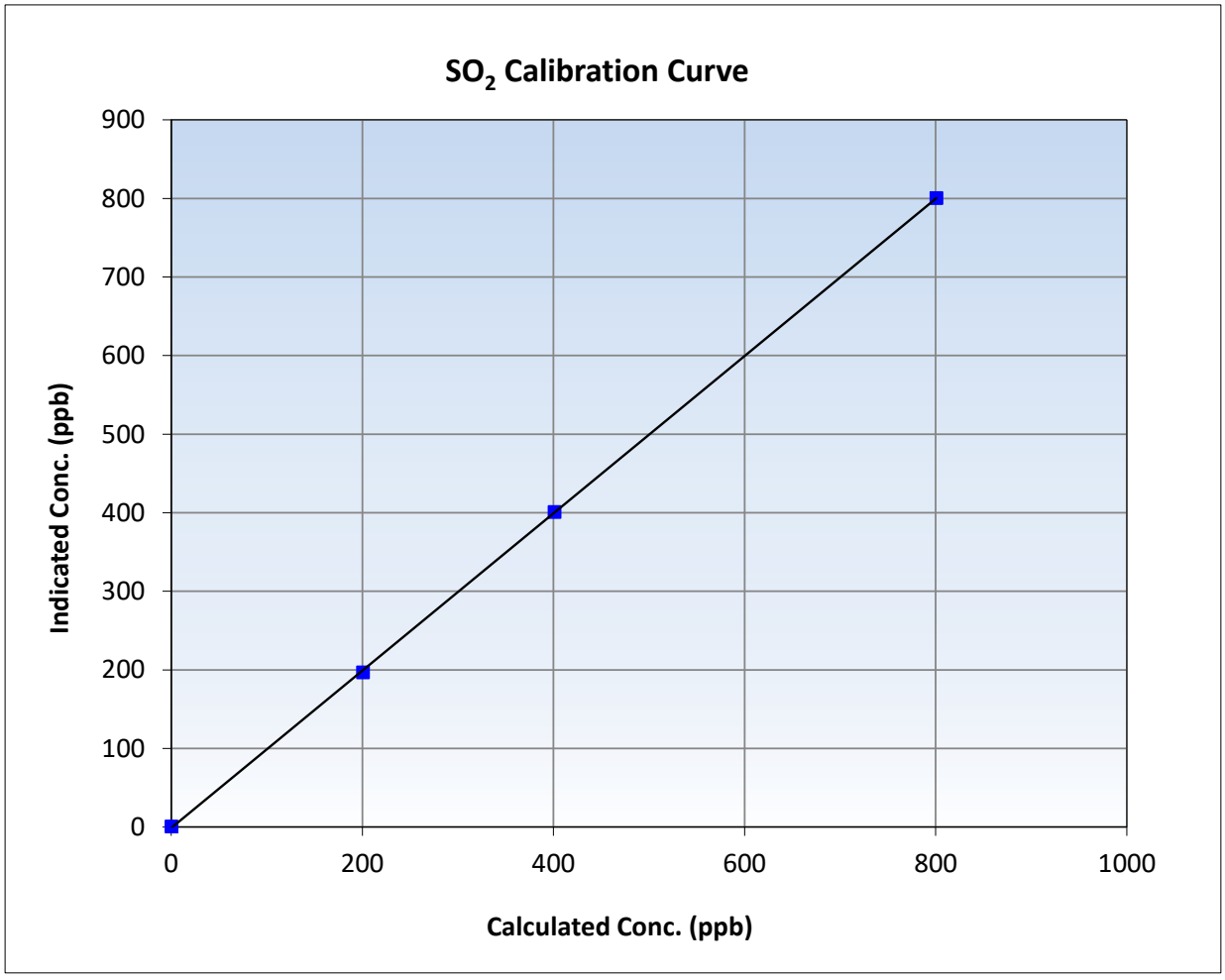
Station Information

Calibration Date:	April 4, 2025	Previous Calibration:	March 17, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:50	End Time (MST):	13:00
Analyzer make:	Thermo 43i	Analyzer serial #:	1428701363

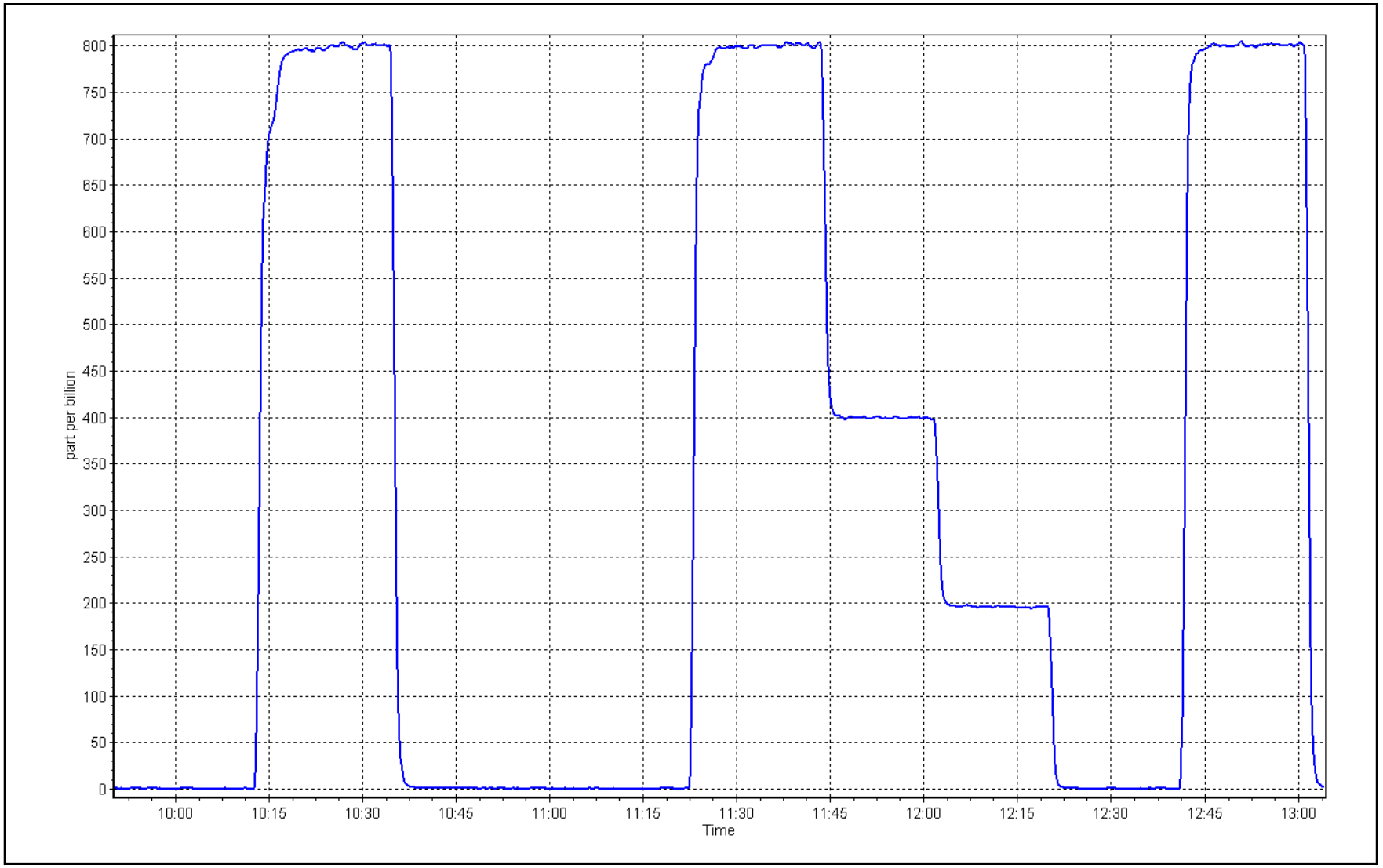
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.5	----
800.3	800.2	1.0002
400.7	400.7	1.0001
200.4	196.6	1.0191

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999968	*≥0.995*
Slope	1.000944	*0.90 - 1.10*
Intercept	-1.182060	*+/-30*



SO2 Calibration Plot Date: April 4, 2025 Location: Conklin



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Conklin	Station number:	AMS 21
Calibration Date:	April 9, 2025	Last Cal Date:	March 6, 2025
Start time (MST):	9:33	End time (MST):	13:20
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	5.14	ppm	Cal Gas Exp Date:	January 3, 2026
Cal Gas Cylinder #:	CC501204			
Removed Cal Gas Conc:	5.14	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Make/Model:	Teledyne T700P		Serial Number:	2659
ZAG Make/Model:	Teledyne T701		Serial Number:	953

Analyzer Information

Analyzer make:	Thermo 43i-QTL		Analyzer serial #:	12228021058
Converter make:	CD-Nova 101		Converter serial #:	565
Analyzer Range	0 - 100 ppb		Converter Temp:	850 degC

	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.006000	1.000789	Backgd or Offset:	3.3	3.3
Calibration intercept:	-0.160000	-0.061610	Coeff or Slope:	1.545	1.571

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4922	78.4	80.6	80.2	1.004
As found Mid point	4961	39.2	40.3	40.1	1.002
As found Low point	4980	19.6	20.2	20.0	1.003
New cylinder response					

Baseline Corr As found:	80.3	Prev response:	80.91	*% change:	-0.8%
Baseline Corr 2nd AF pt:	40.2	AF Slope:	0.996393	AF Intercept:	-0.081607
Baseline Corr 3rd AF pt:	20.1	AF Correlation:	1.000000	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4922	78.4	80.6	80.6	1.000
Mid point	4961	39.2	40.3	40.3	1.000
Low point	4980	19.6	20.2	20.0	1.008
As left zero	5000	0.0	0.0	0.0	----
As left span	4922	78.4	80.6	81.1	0.994
SO2 Scrubber Check	4921	79.5	794.9	0.0	----

Date of last scrubber change:	November 13, 2024	Ave Corr Factor	1.002
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

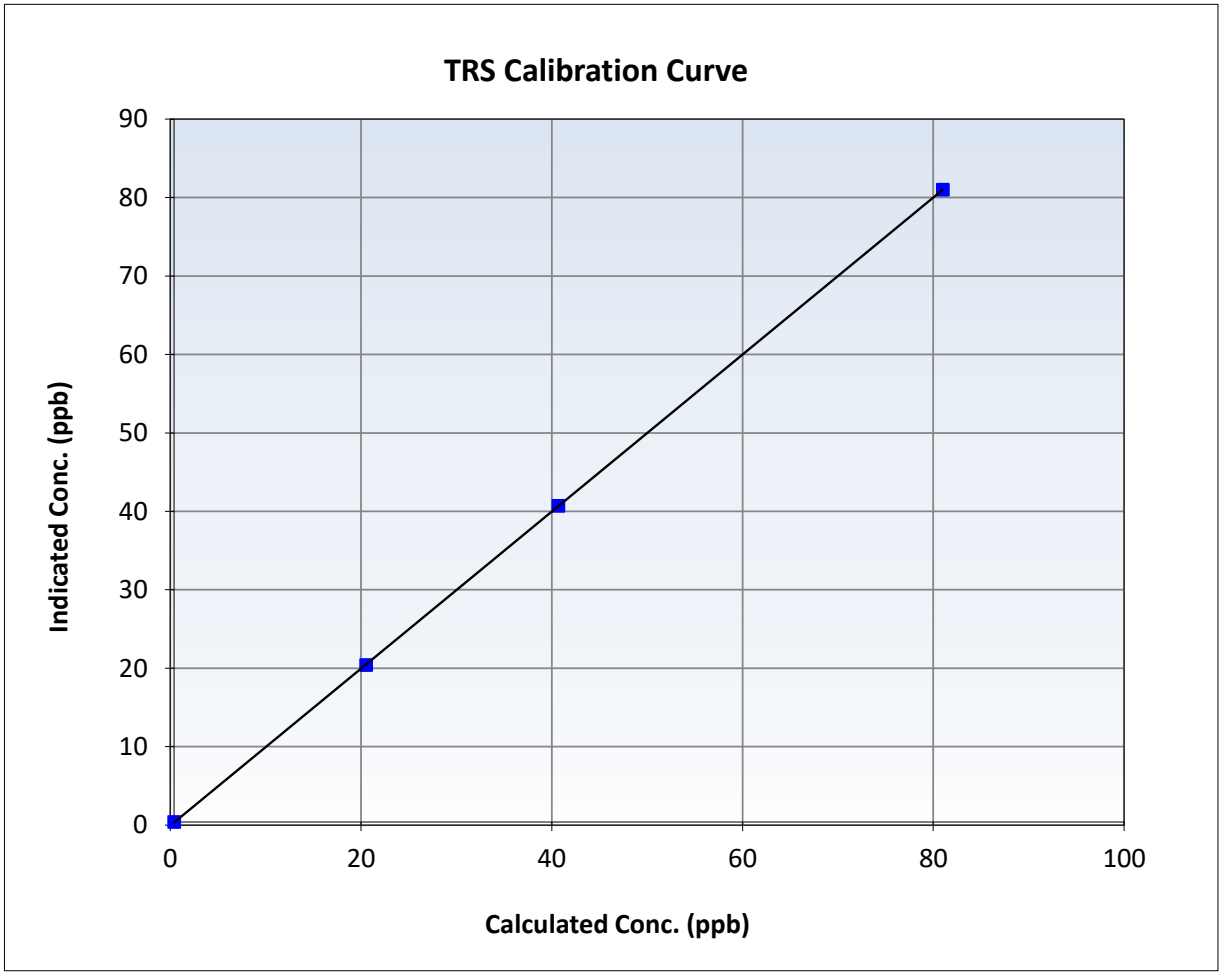
TRS Calibration Summary

Station Information

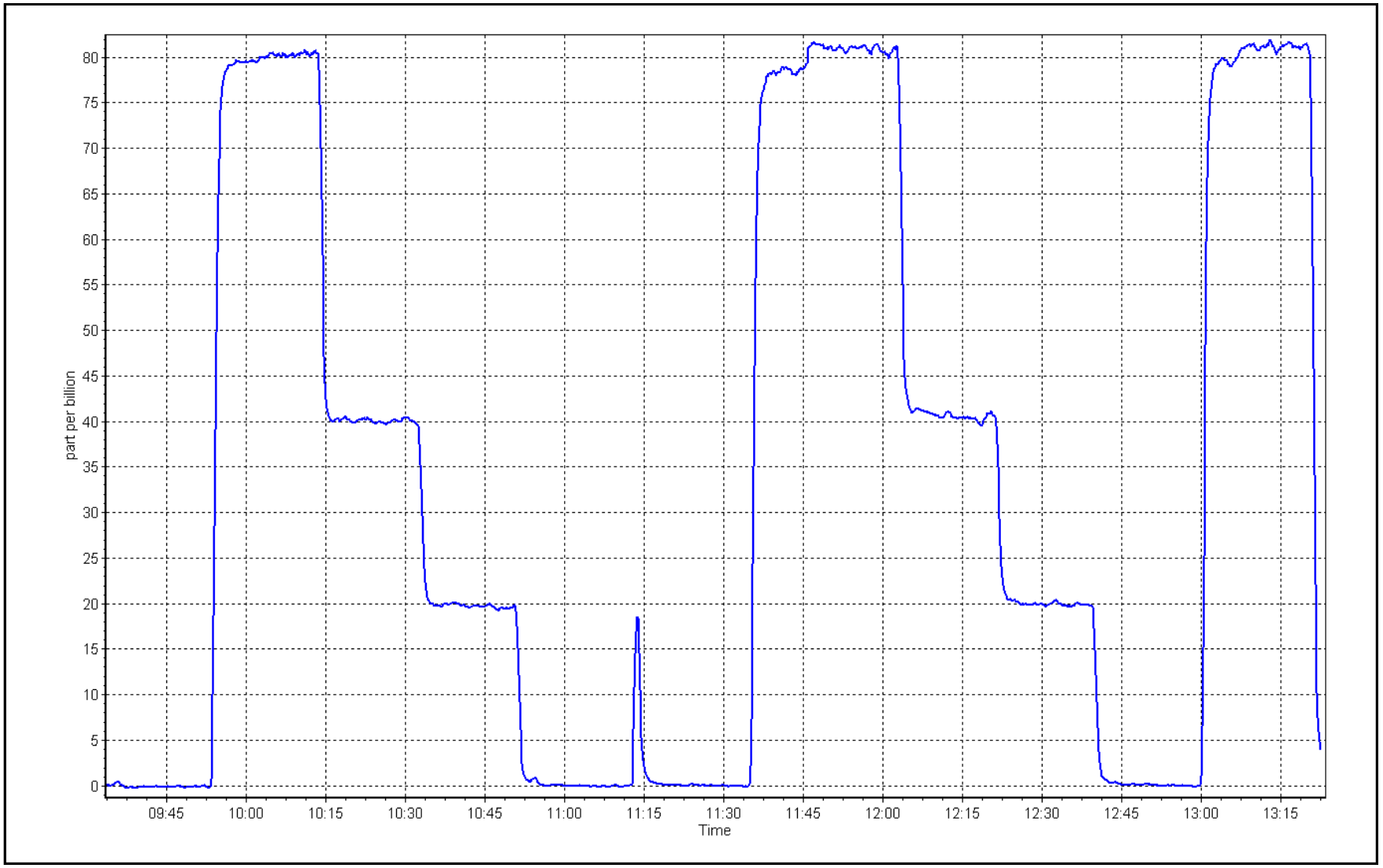
Calibration Date:	April 9, 2025	Previous Calibration:	March 6, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:33	End Time (MST):	13:20
Analyzer make:	Thermo 43i-QTL	Analyzer serial #:	12228021058

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	0.0	----	Correlation Coefficient	0.999996	*≥0.995*
80.6	80.6	0.9999	Slope	1.000789	*0.90 - 1.10*
40.3	40.3	0.9999	Intercept	-0.061610	*+/-3*
20.2	20.0	1.0075			



TRS Calibration Plot Date: April 9, 2025 Location: Conklin



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Conklin	Station number:	AMS 21
Calibration Date:	April 4, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	9:50	End time (MST):	13:00
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC340840	Cal Gas Expiry Date:	October 9, 2032
CH4 Cal Gas Conc.	503.8 ppm	CH4 Equiv Conc.	1067.6 ppm
C3H8 Cal Gas Conc.	205.0 ppm		
Removed Gas Cert:	NA	Removed Gas Expiry:	NA
Removed CH4 Conc.	503.8 ppm	CH4 Equiv Conc.	1067.6 ppm
Removed C3H8 Conc.	205.0 ppm	Diff between cyl (THC):	
Diff between cyl (CH_4):		Diff between cyl (NM):	
Calibrator Model:	Teledyne API T700P	Serial Number:	2659
Zero Air Gen model:	Teledyne API T701	Serial Number:	953

Analyzer Information

Analyzer make:	Thermo 55i	Analyzer serial #:	1180320039
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	2.30E-04	2.30E-04	NMHC SP Ratio:	4.73E-05	4.73E-05
CH4 Retention time:	15.2	15.2	NMHC Peak Area:	190954	190954
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.5	16.97	17.05	0.995
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	17.05	Prev response	17.00	*% 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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.5	16.97	17.08	0.994
Mid point	4960	39.8	8.50	8.52	0.998
Low point	4980	19.9	4.25	4.19	1.015
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.5	16.97	17.10	0.993
				Average Correction Factor	1.002

Notes: Sample inlet filter and H2/N2 was changed after as founds. No adjustment made.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.5	8.96	9.00	0.996
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.00	Prev response	8.98	*% 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.5	8.96	9.00	0.996
Mid point	4960	39.8	4.49	4.51	0.996
Low point	4980	19.9	2.24	2.23	1.008
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.5	8.96	9.04	0.992
				Average Correction Factor	1.000

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.5	8.01	8.05	0.994
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	8.05	Prev response	8.03	*% 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.5	8.01	8.07	0.993
Mid point	4960	39.8	4.01	4.01	1.000
Low point	4980	19.9	2.01	1.96	1.023
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.5	8.01	8.06	0.993
				Average Correction Factor	1.005

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	1.004359	1.007955
THC Cal Offset:	-0.043713	-0.042932
CH4 Cal Slope:	1.005753	1.009706
CH4 Cal Offset:	-0.029221	-0.029831
NMHC Cal Slope:	1.003137	1.005229
NMHC Cal Offset:	-0.015091	-0.011299

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

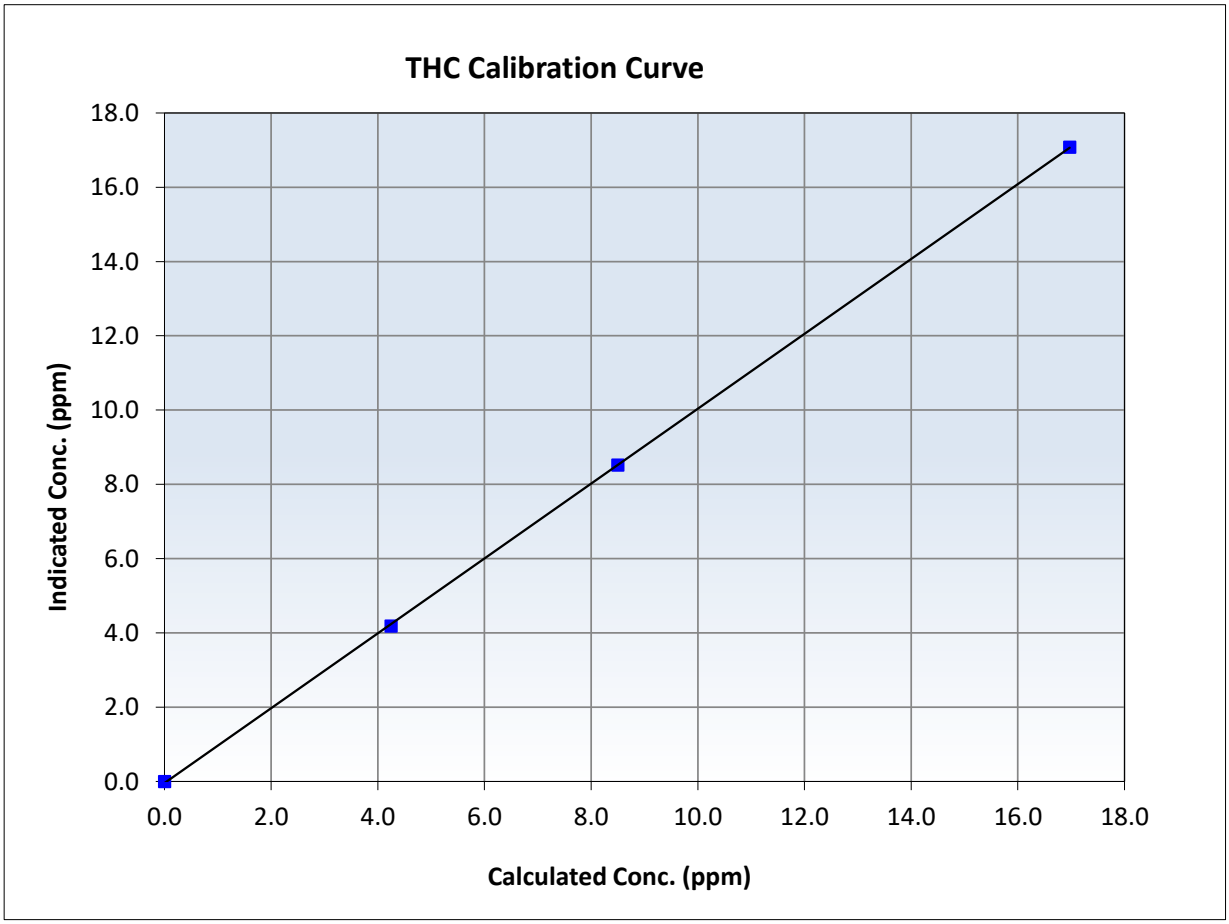
THC Calibration Summary

Station Information

Calibration Date:	April 4, 2025	Previous Calibration:	March 17, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:50	End Time (MST):	13:00
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	0.999968	≥0.995
16.97	17.08	0.9937	Slope	1.007955	0.90 - 1.10
8.50	8.52	0.9975			
4.25	4.19	1.0153	Intercept	-0.042932	+/-0.5



Wood Buffalo Environmental Association

CH_4 Calibration Summary

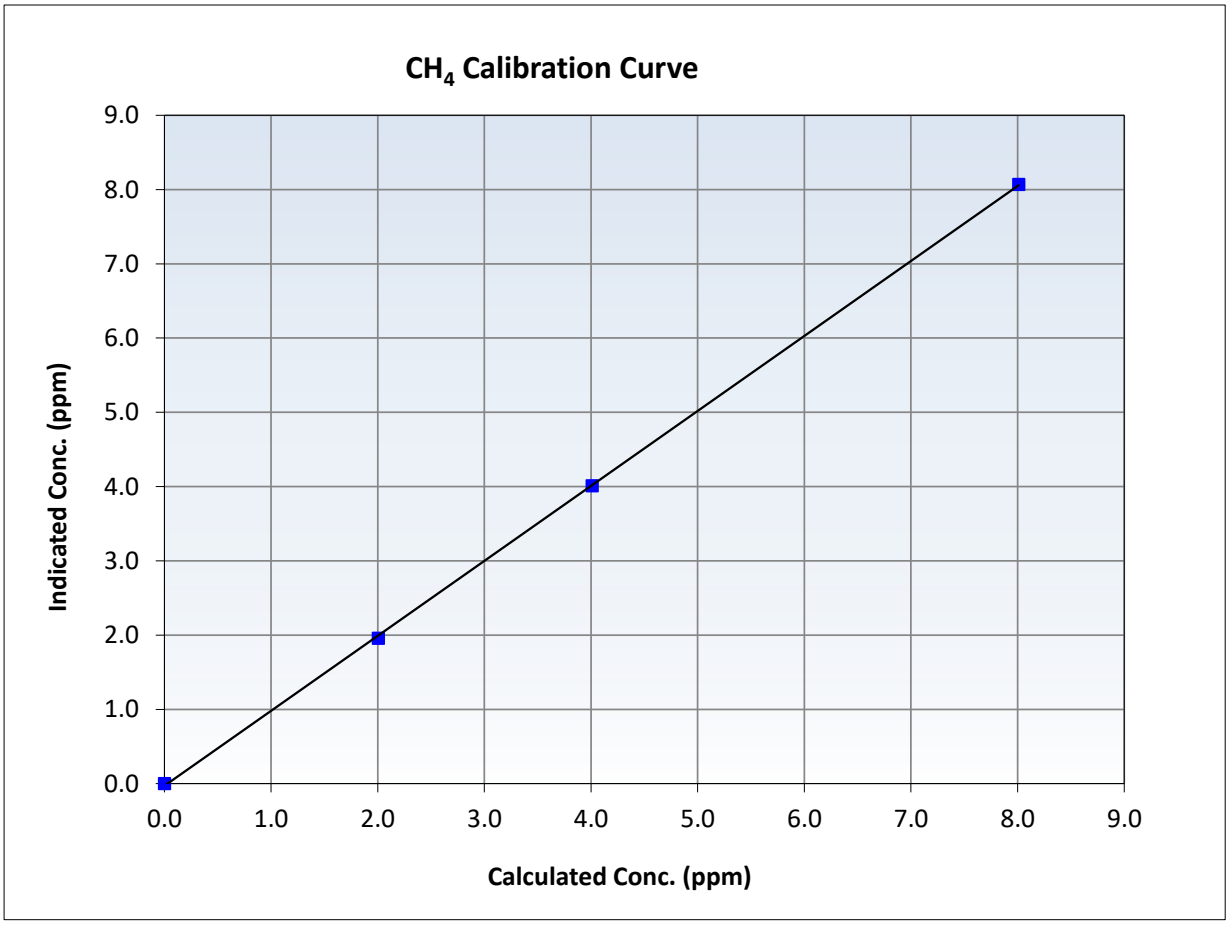
Station Information

Calibration Date:	April 4, 2025	Previous Calibration:	March 17, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:50	End Time (MST):	13:00
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320039

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
8.01	8.07	0.9925
4.01	4.01	0.9996
2.01	1.96	1.0230

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999935	*≥0.995*
Slope	1.009706	*0.90 - 1.10*
Intercept	-0.029831	*+/-0.5*



Wood Buffalo Environmental Association

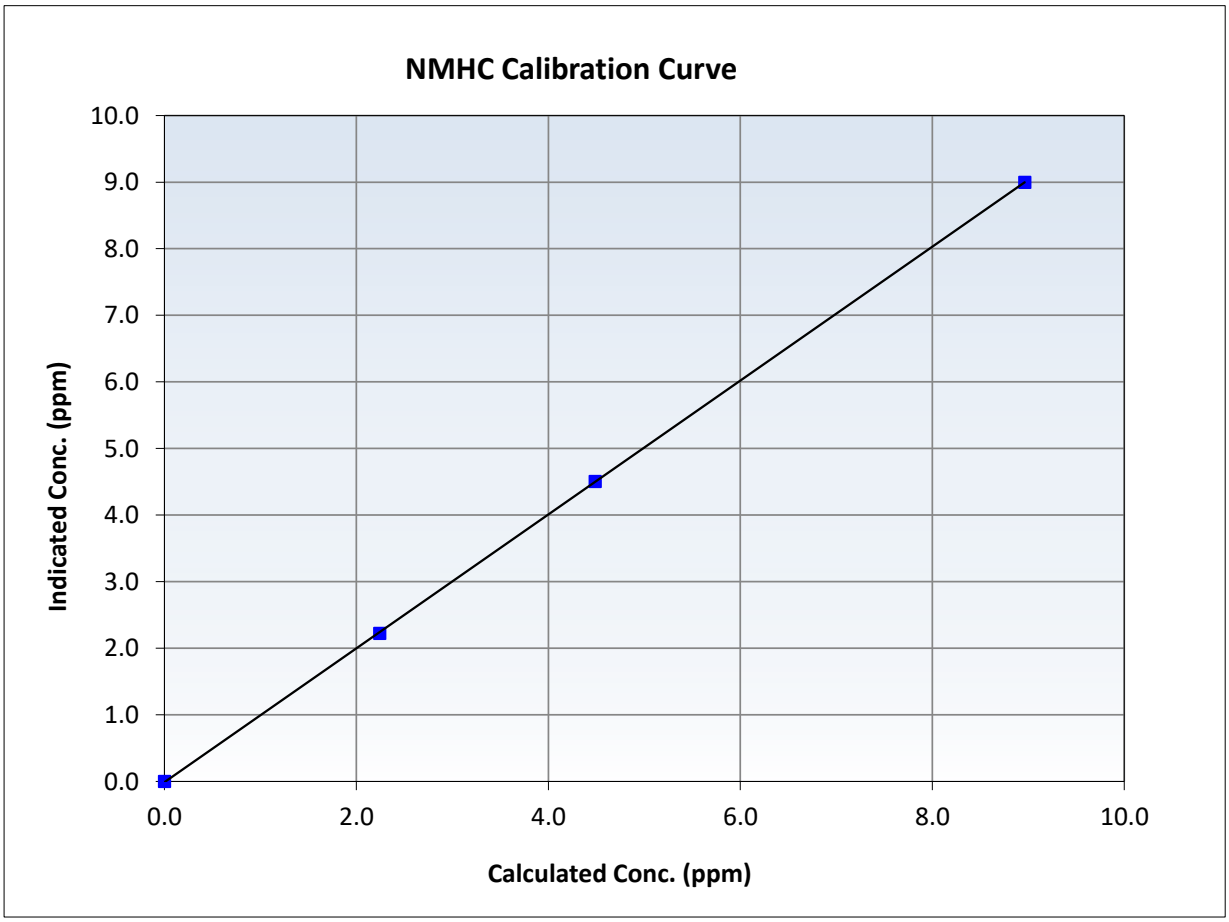
NMHC Calibration Summary

Station Information

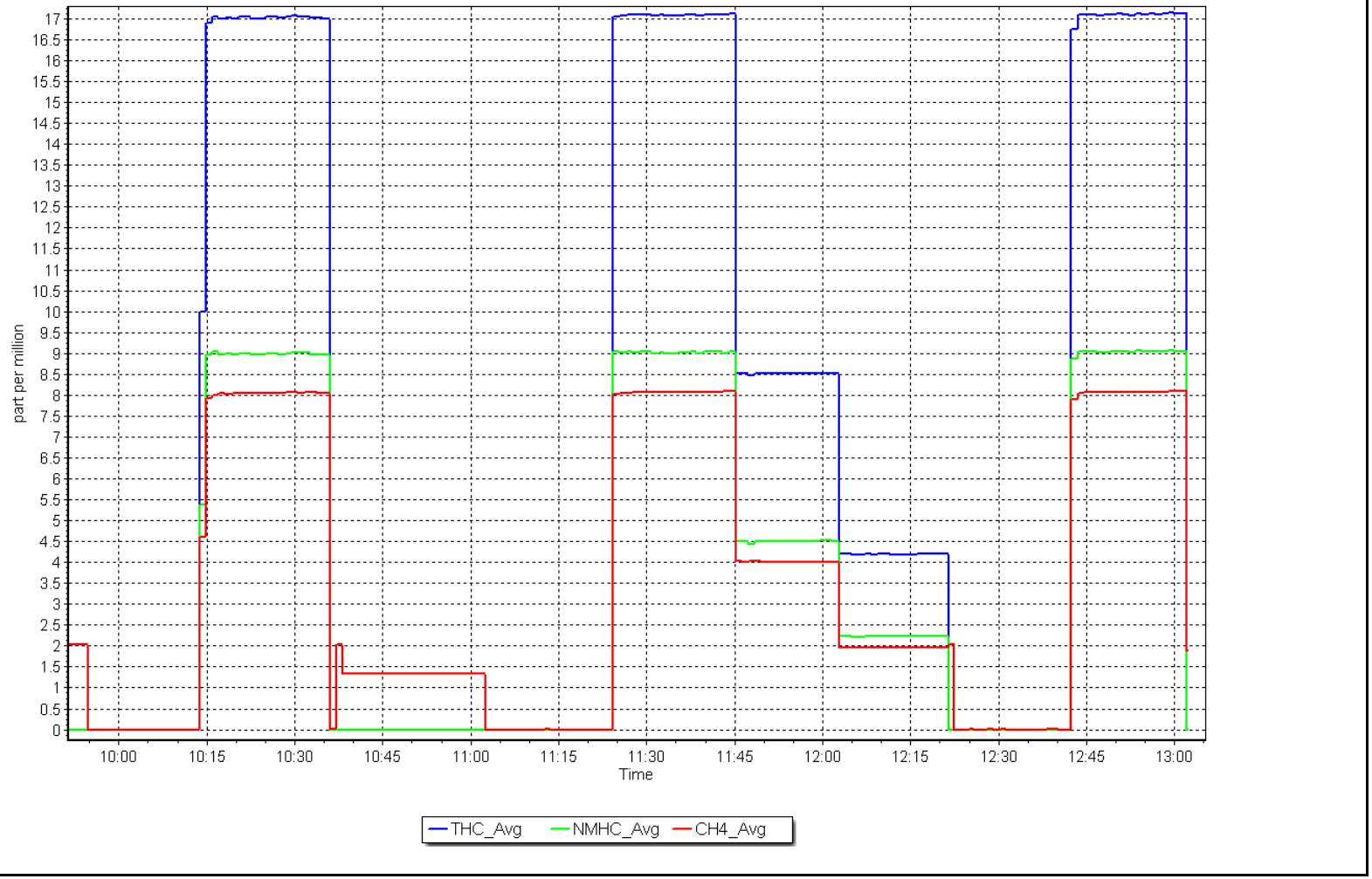
Calibration Date:	April 4, 2025	Previous Calibration:	March 17, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:50	End Time (MST):	13:00
Analyzer make:	Thermo 55i	Analyzer serial #:	1180320039

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.00	0.00	----	Correlation Coefficient	0.999988	*≥0.995*
8.96	9.00	0.9959	Slope	1.005229	*0.90 - 1.10*
4.49	4.51	0.9959	Intercept	-0.011299	*+/-0.5*
2.24	2.23	1.0084			



NMHC Calibration Plot Date: April 4, 2025 Location: Conklin



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Conklin
Station number:	AMS 21
Calibration Date:	April 24, 2025
Last Cal Date:	March 18, 2025
Start time (MST):	9:45
End time (MST):	14:00
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	SA18828	Cal Gas Expiry Date:	November 3, 2031
NOX Cal Gas Conc:	48.90 ppm	NO Cal Gas Conc:	48.80 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	48.90 ppm	Removed Gas NO Conc:	48.80 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700P	Serial Number:	2659
ZAG make/model:	Teledyne API T701	Serial Number:	953

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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.3	0.1	----	----
AF High point	4918	82.0	802.0	800.3	1.6	790.5	787.2	3.3	1.0142	1.0163
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X =	801.3 ppb	NO =	800.1 ppb	* = > +/-5% change initiates investigation	*Percent Change	NO_X = -1.3%
Baseline Corr 1st pt	NO_X =	790.7 ppb	NO =	787.5 ppb	As Found Statistics	*Percent Change	NO = -1.6%
Baseline Corr 2nd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO_X r^2:	Nx Sl:	Nx Int:
Baseline Corr 3rd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO r^2:	NO Sl:	NO Int:
					As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1501663731

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:	1.043	1.060	NO bkgnd or offset:	10.1	10.3
NOX coeff or slope:	0.995	0.995	NOX bkgnd or offset:	10.1	10.3
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	148.5	150.0

Calibration Statistics

	Start	Finish
NO_X Cal Slope:	1.000027	0.998189
NO_X Cal Offset:	-0.712016	-0.392024
NO Cal Slope:	1.002448	0.999592
NO Cal Offset:	-2.192041	-1.692057
NO_2 Cal Slope:	1.001058	0.996573
NO_2 Cal Offset:	-0.135051	-0.812981

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
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	799.7	798.5	1.2	1.0028	1.0023
Mid point	4959	41.0	401.0	400.2	0.8	401.4	399.3	2.2	0.9990	1.0022
Low point	4980	20.5	200.5	200.1	0.4	198.3	195.5	2.8	1.0109	1.0233
As left zero	5000	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	----	----
As left span	4918	82.0	802.0	403.8	398.2	793.4	403.8	389.6	1.0108	1.0000
							Average Correction Factor		1.0042	1.0093

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.1	----	----
High GPT point	795.8	402.3	395.1	393.1	1.0052	99.5%
Mid GPT point	795.8	601.0	196.4	195.5	1.0048	99.5%
Low GPT point	795.8	698.1	99.3	96.6	1.0284	97.2%
				Average Correction Factor	1.0128	98.7%

Notes: Sample inlet filter was changed after as founds. Adjusted span only.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

NO_X Calibration Summary

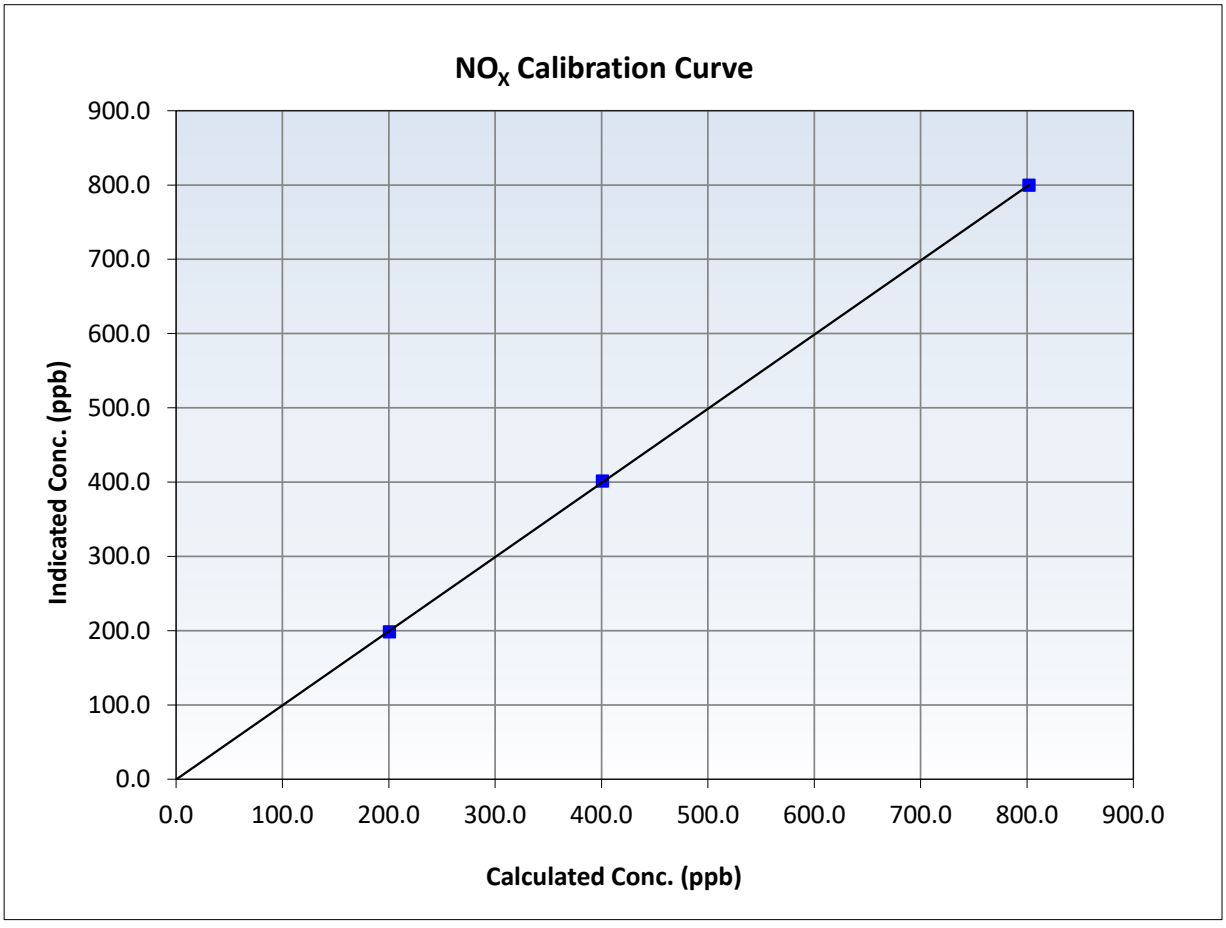
Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 18, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:45	End Time (MST):	14:00
Analyzer make:	Thermo 42i	Analyzer serial #:	1501663731

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
802.0	799.7	1.0028
401.0	401.4	0.9990
200.5	198.3	1.0109

Statistical Evaluation		Limits
Correlation Coefficient	0.999987	≥0.995
Slope	0.998189	0.90 - 1.10
Intercept	-0.392024	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

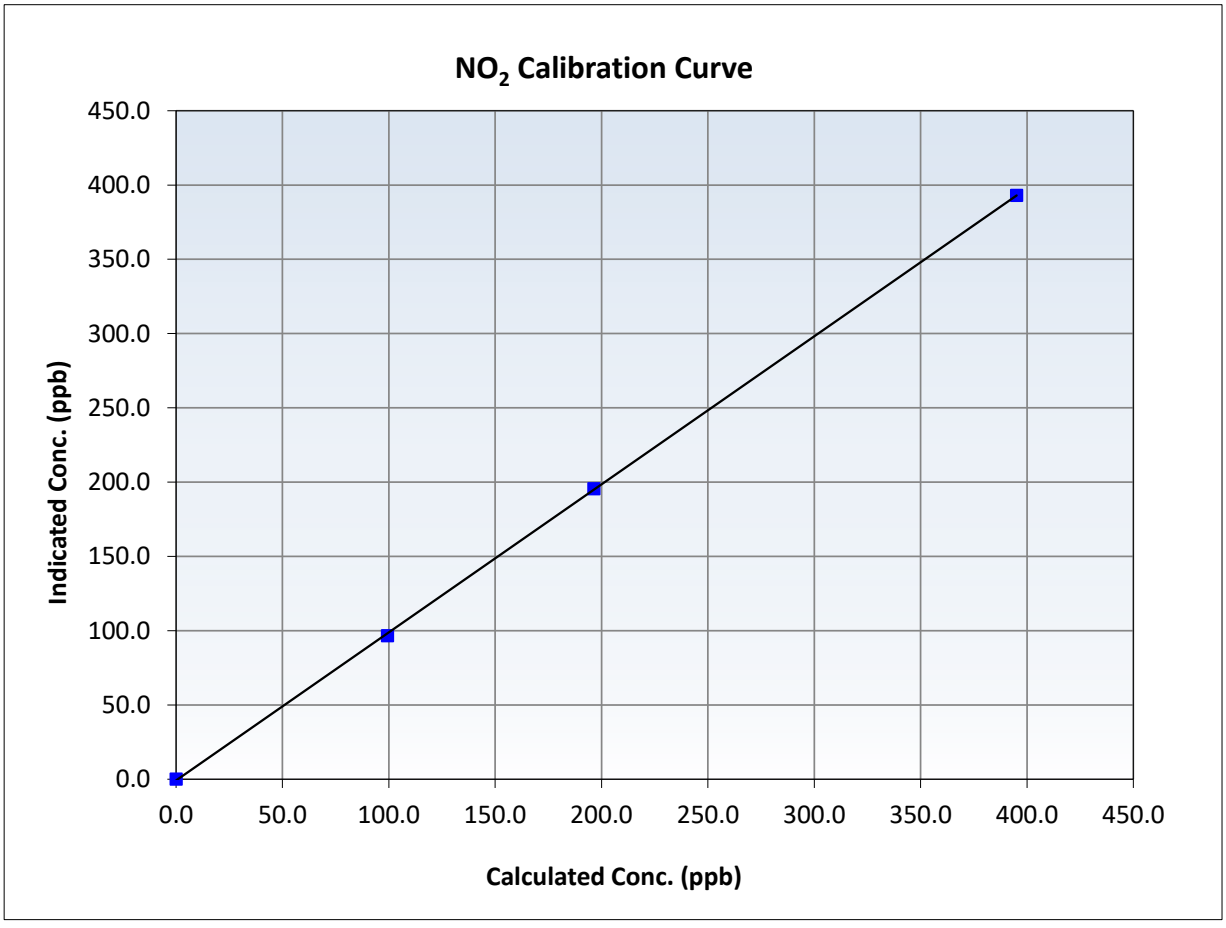
Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 18, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:45	End Time (MST):	14:00
Analyzer make:	Thermo 42i	Analyzer serial #:	1501663731

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
395.1	393.1	1.0052
196.4	195.5	1.0048
99.3	96.6	1.0284

Statistical Evaluation		Limits
Correlation Coefficient	0.999957	≥0.995
Slope	0.996573	0.90 - 1.10
Intercept	-0.812981	+/-20



Wood Buffalo Environmental Association

NO Calibration Summary

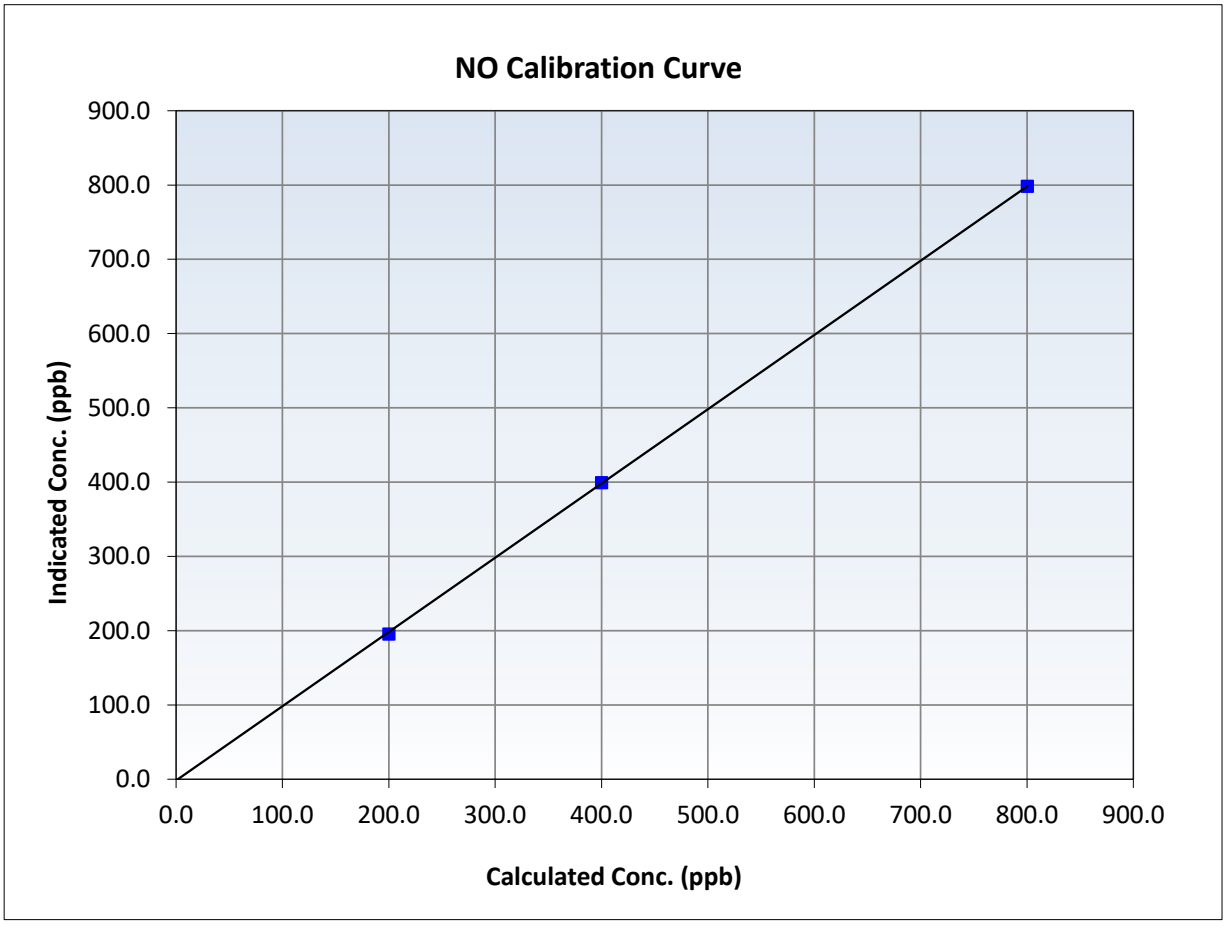
Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 18, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	9:45	End Time (MST):	14:00
Analyzer make:	Thermo 42i	Analyzer serial #:	1501663731

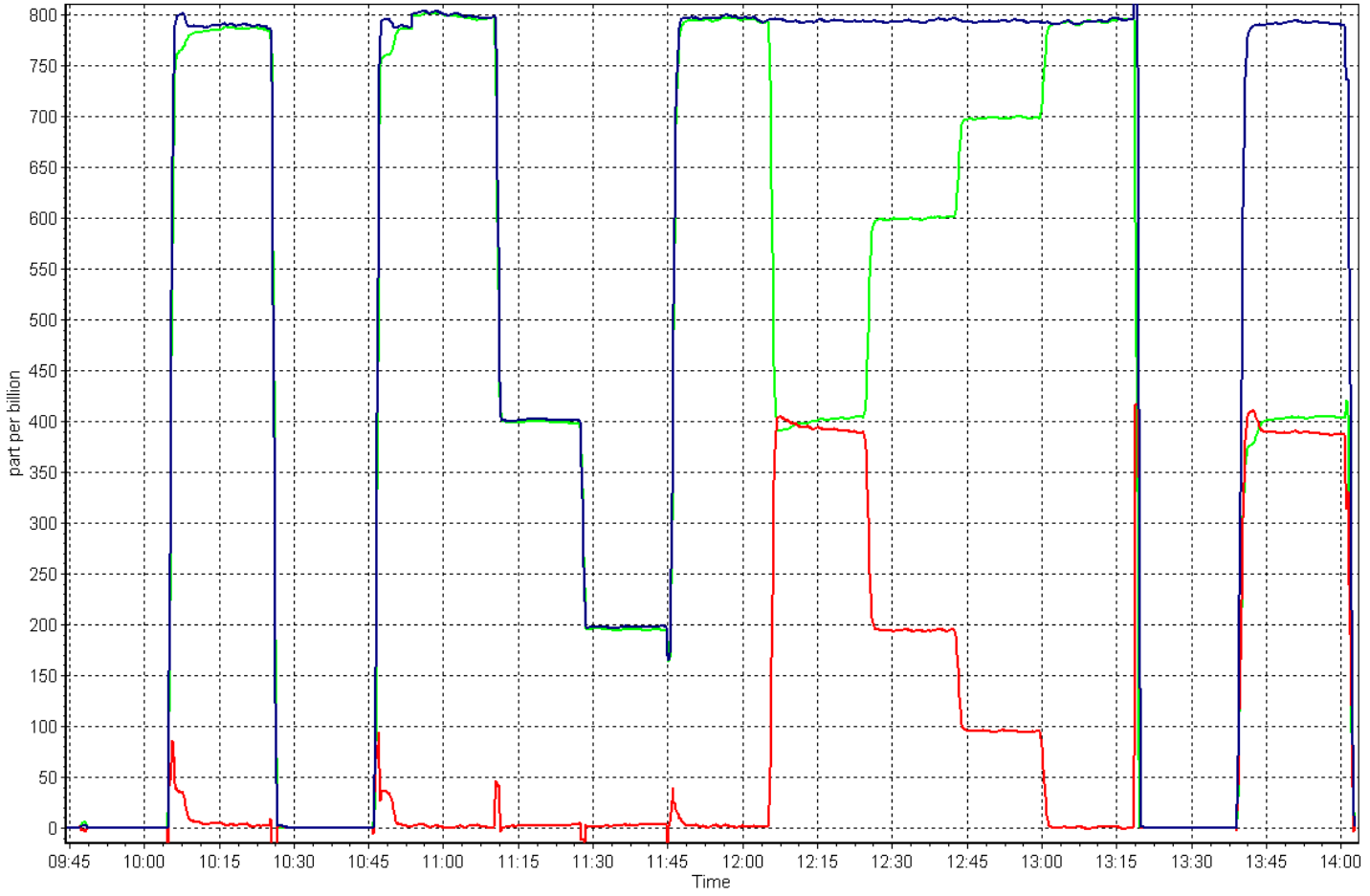
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
800.3	798.5	1.0023
400.2	399.3	1.0022
200.1	195.5	1.0233

Statistical Evaluation		Limits
Correlation Coefficient	0.999968	≥0.995
Slope	0.999592	0.90 - 1.10
Intercept	-1.692057	+/-20



NO_X Calibration Plot Date: April 24, 2025 Location: Conklin



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Conklin	Station number:	AMS 21
Calibration Date:	April 14, 2025	Last Cal Date:	March 3, 2025
Start time (MST):	11:14	End time (MST):	14:26
Reason:	Routine		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	Teledyne API T700P	Serial Number:	2659
ZAG Make/Model:	Teledyne API T701	Serial Number:	953

Analyzer Information

Analyzer make:	Thermo 49i		Analyzer serial #:	1501663734	
Analyzer Range	0 - 500 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.003886	1.005686	Backgd or Offset:	1.9	2.0
Calibration intercept:	-0.480000	-0.120000	Coeff or Slope:	1.100	1.113

O_3 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)) *Limit = 0.90-1.10*
As found zero	5000	800.0	0.0	0.4	----
As found High point	5000	918.9	400.0	399.5	1.002
As found Mid point					
As found Low point					
Baseline Corr As found:	399.1	Previous response	401.1	*% 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	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	800.0	0.0	0.4	----
High point	5000	921.1	400.0	402.4	0.994
Mid point	5000	757.7	200.0	200.8	0.996
Low point	5000	653.1	100.0	99.9	1.001
As left zero	5000	800.0	0.0	-0.6	----
As left span	5000	921.9	400.0	418.6	0.956
				Average Correction Factor	0.997

Notes: Sample inlet filter was changed after as founds. Adjusted span only.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

O_3 Calibration Summary

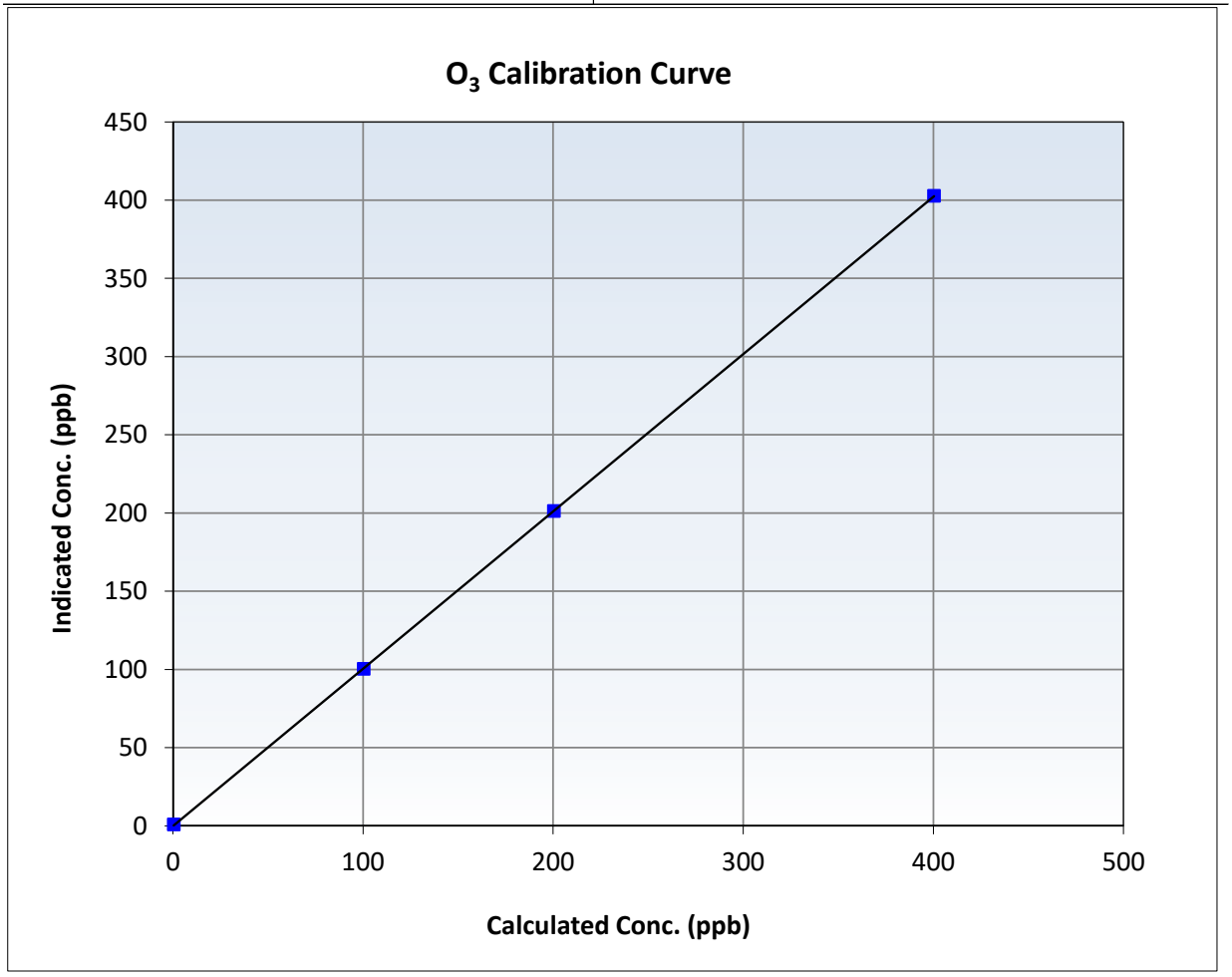
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 3, 2025
Station Name:	Conklin	Station Number:	AMS 21
Start Time (MST):	11:14	End Time (MST):	14:26
Analyzer make:	Thermo 49i	Analyzer serial #:	1501663734

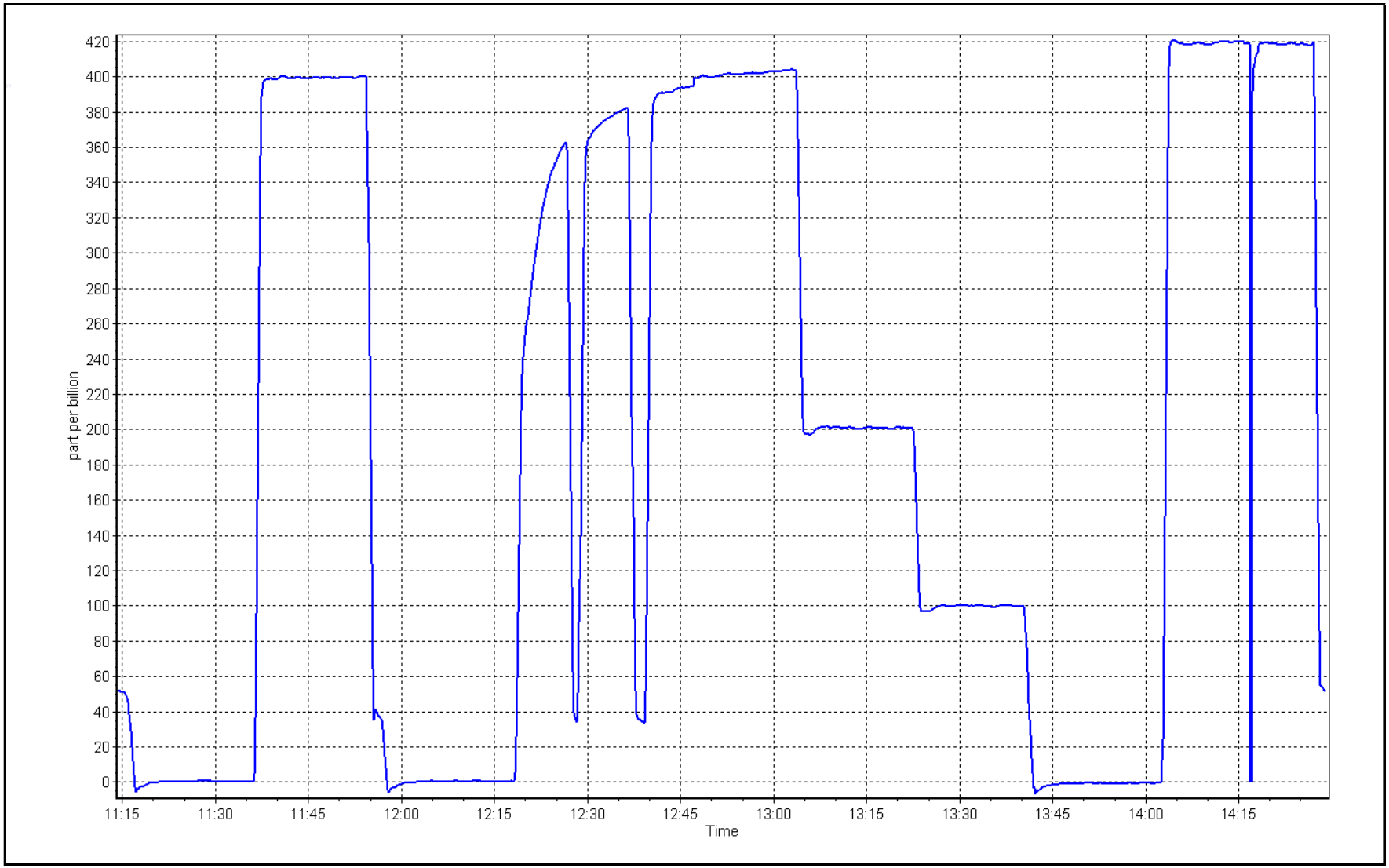
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.4	----
400.0	402.4	0.9940
200.0	200.8	0.9960
100.0	99.9	1.0010

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999992	*≥0.995*
Slope	1.005686	*0.90 - 1.10*
Intercept	-0.120000	*+/- 5*



O_3 Calibration Plot Date: April 14, 2025 Location: Conklin



Wood Buffalo Environmental Association

T640 $PM_{2.5}$ CALIBRATION

Version-01-2024

Station Information

Station Name:	Conklin	Station number:	AMS 21
Calibration Date:	April 14, 2025	Last Cal Date:	March 6, 2025
Start time (MST):	12:01	End time (MST):	12:17
Analyzer Make:	API T640	S/N:	326
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)	13.00	12.97	13.00	☐	+/- 2 °C
P (mmHg)	711.10	713.50	711.10	☐	+/- 10 mmHg
Flow (LPM)	5.00	5.08	5.00	☐	+/- 0.25 LPM
PW% (pump)	38	-----	38	☐	>80%
Zero Verification	PM w/o HEPA:	3.50	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				☐	+/- 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
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Janvier	Station number:	AMS 22
Calibration Date:	April 11, 2025	Last Cal Date:	March 26, 2025
Start time (MST):	12:00	End time (MST):	15:24
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.999521	0.999692	Backgd or Offset:	26.1	26.4
Calibration intercept:	1.164268	0.304361	Coeff or Slope:	1.017	1.017

SO_2 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	1.0	----
As found High point	4920	79.8	799.8	798.5	1.003
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	797.5	Previous response	800.6	*% 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	

SO_2 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	0.2	----
High point	4920	79.8	799.8	799.8	1.000
Mid point	4960	39.9	399.9	400.1	0.999
Low point	4980	20.0	200.4	200.8	0.998
As left zero	5000	0.0	0.0	0.3	----
As left span	4920	79.8	799.8	797.3	1.003
				Average Correction Factor:	0.999

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

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

SO_2 Calibration Summary

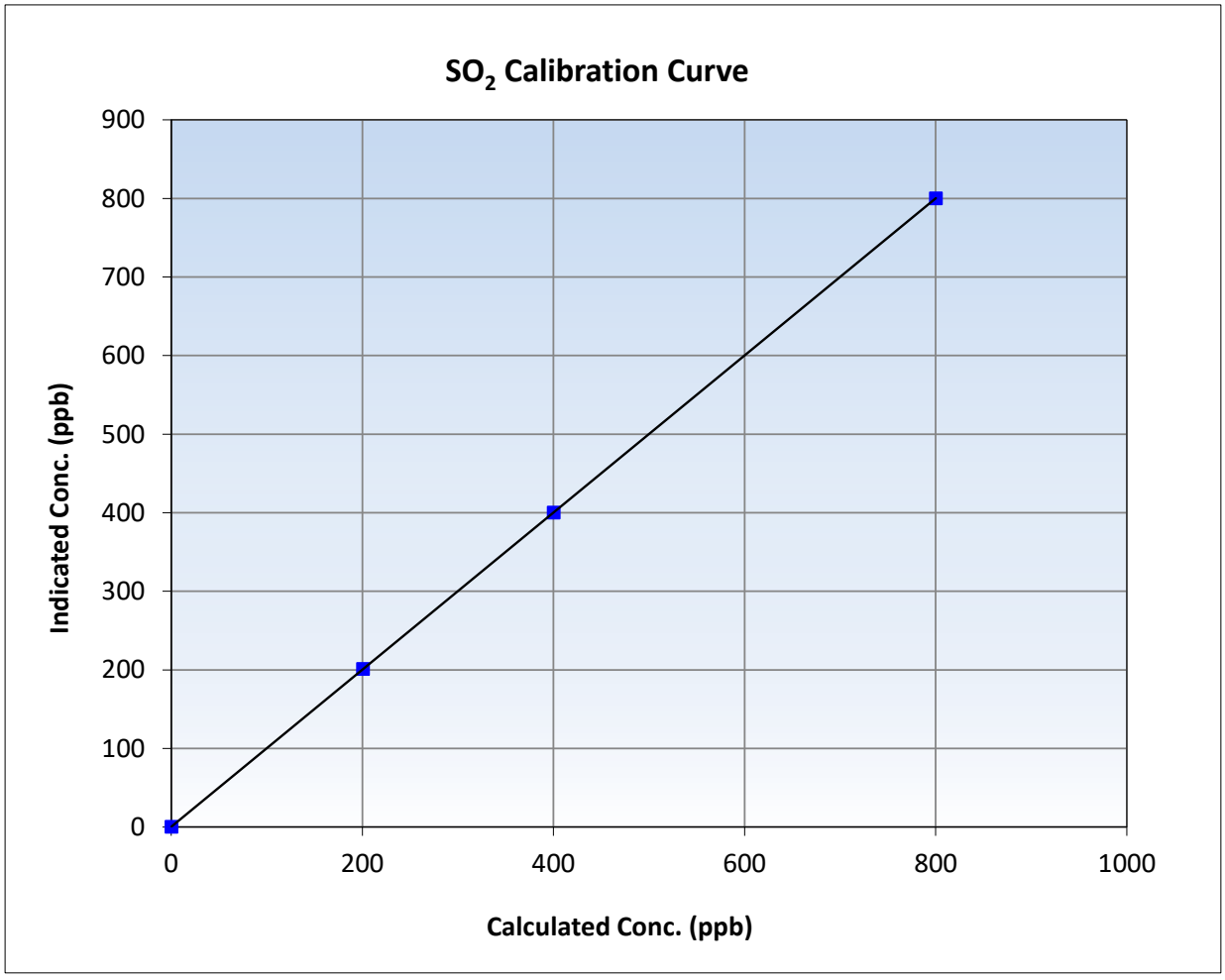
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 26, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	12:00	End Time (MST):	15:24
Analyzer make:	Thermo 43i	Analyzer serial #:	1152430006

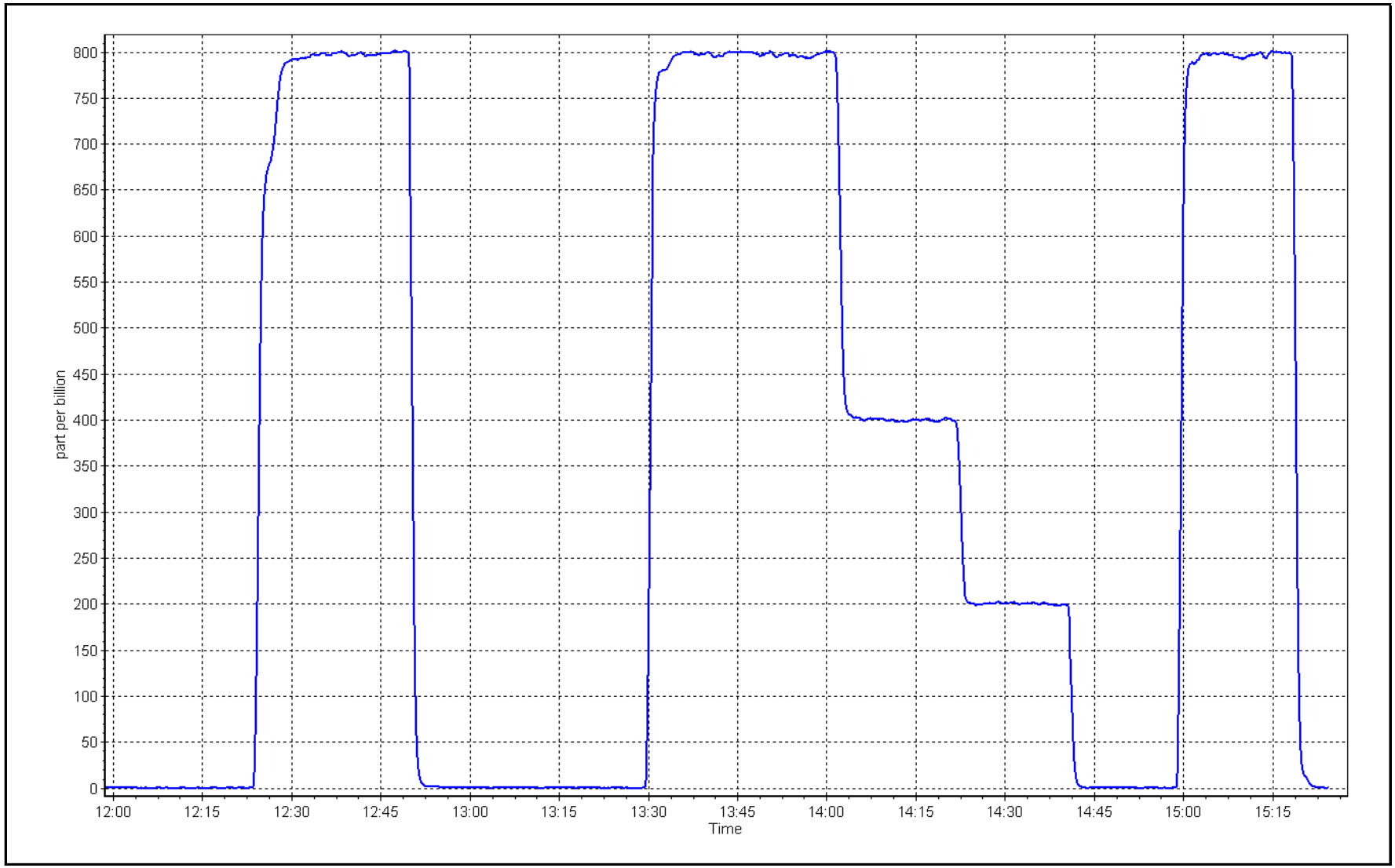
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
799.8	799.8	1.0000
399.9	400.1	0.9995
200.4	200.8	0.9982

Statistical Evaluation		*Limits*
Correlation Coefficient	1.000000	*≥0.995*
Slope	0.999692	*0.90 - 1.10*
Intercept	0.304361	*+/-30*



SO2 Calibration Plot Date: April 11, 2025 Location: Janvier



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Janvier	Station number:	AMS 22
Calibration Date:	April 29, 2025	Last Cal Date:	March 27, 2025
Start time (MST):	11:50	End time (MST):	16:30
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

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.970959	0.999093	Backgd or Offset:	3.77	3.98
Calibration intercept:	0.300065	0.140635	Coeff or Slope:	1.197	1.251

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.0	----
As found High point	4920	79.7	80.0	77.5	1.033
As found Mid point	4960	39.8	40.0	38.9	1.027
As found Low point	4980	19.9	20.0	19.4	1.030
New cylinder response					

Baseline Corr As found:	77.5	Prev response:	78.00	*% change:	-0.6%
Baseline Corr 2nd AF pt:	38.9	AF Slope:	0.968533	AF Intercept:	0.059981
Baseline Corr 3rd AF pt:	19.4	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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4920	79.7	80.0	80.0	1.000
Mid point	4960	39.8	40.0	40.3	0.992
Low point	4980	19.9	20.0	20.0	0.999
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	0.997
Date of last converter efficiency test:					

Notes: Changed the inlet filter after as founds. Scrubber test performed after zero point, no issues. Adjusted the span.

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

TRS Calibration Summary

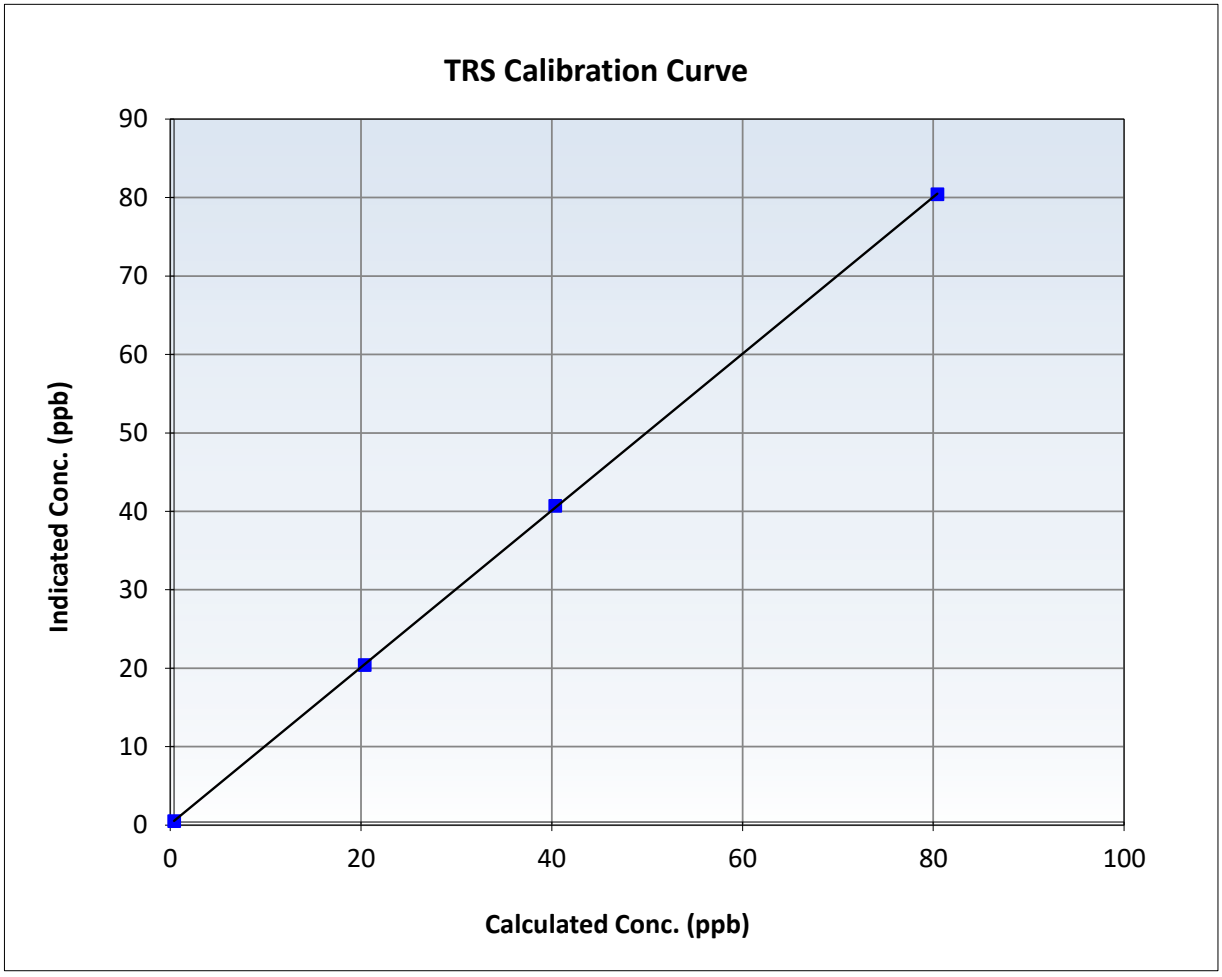
Station Information

Calibration Date:	April 29, 2025	Previous Calibration:	March 27, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:50	End Time (MST):	16:30
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1151680031

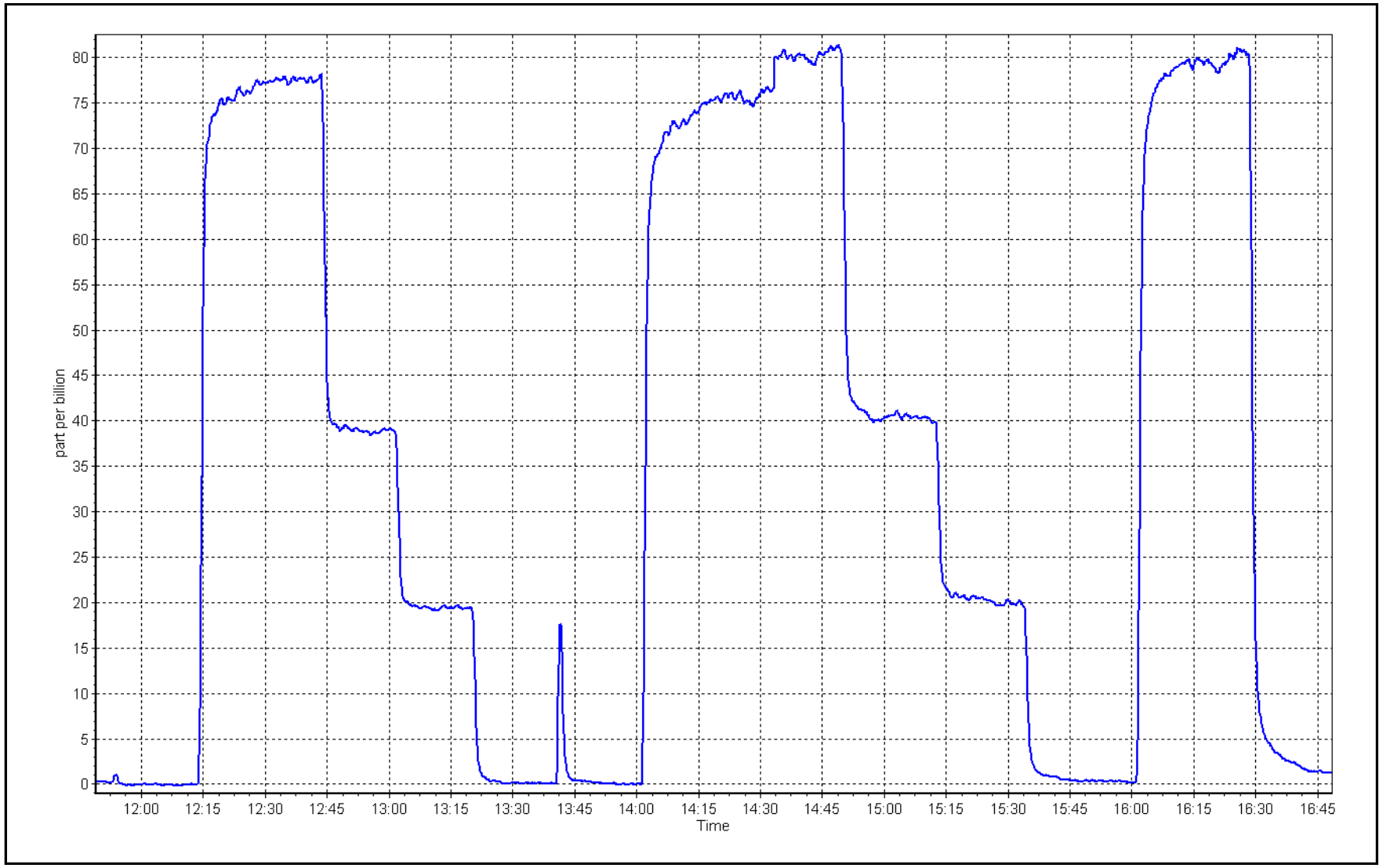
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
80.0	80.0	1.0003
40.0	40.3	0.9916
20.0	20.0	0.9990

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999978	*≥0.995*
Slope	0.999093	*0.90 - 1.10*
Intercept	0.140635	*+/-3*



TRS Calibration Plot Date: April 29, 2025 Location: Janvier



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Janvier	Station number:	AMS 22
Calibration Date:	April 11, 2025	Last Cal Date:	March 26, 2025
Start time (MST):	12:00	End time (MST):	15:24
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC281519		Cal Gas Expiry Date:	January 18, 2029	
CH4 Cal Gas Conc.	502.8	ppm	CH4 Equiv Conc.	1075.9	ppm
C3H8 Cal Gas Conc.	208.4	ppm			
Removed Gas Cert:	NA		Removed Gas Expiry:	NA	
Removed CH4 Conc.	502.8	ppm	CH4 Equiv Conc.	1075.9	ppm
Removed C3H8 Conc.	208.4	ppm	Diff between cyl (THC):		
Diff between cyl (CH_4):			Diff between cyl (NM):		
Calibrator Model:	Teledyne API 700		Serial Number:	3806	
Zero Air Gen model:	Teledyne API 701		Serial Number:	691	

Analyzer Information

Analyzer make:	Thermo 55i		Analyzer serial #:	1317958219	
THC Range:	0 - 20 ppm		NMHC/CH4 Range:	0 - 10 ppm	
	Start	***Finish***		***Start***	***Finish***
CH4 SP Ratio:	2.51E-04	2.54E-04	NMHC SP Ratio:	6.02E-05	6.12E-05
CH4 Retention time:	11.6	11.6	NMHC Peak Area:	152054	149432
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	17.17	17.01	1.009
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	17.01	Prev response	17.15	*% change	-0.8%
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	17.17	17.20	0.999
Mid point	4960	39.9	8.59	8.51	1.009
Low point	4980	20.0	4.30	4.27	1.008
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	17.17	17.21	0.998
				Average Correction Factor	1.005

Notes: Changed the inlet filter and H2 cylinder after as founds. Adjusted span only.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	9.15	9.04	1.012
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.04	Prev response	9.14	*% change	-1.1%
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) *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	1.006
Low point	4980	20.0	2.29	2.29	1.000
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	9.15	9.16	0.999
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4920	79.8	8.03	7.97	1.007
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.97	Prev response	8.01	*% 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4920	79.8	8.03	8.05	0.997
Mid point	4960	39.9	4.01	3.96	1.013
Low point	4980	20.0	2.01	1.98	1.018
As left zero	5000	0.0	0.00	0.00	----
As left span	4920	79.8	8.03	8.06	0.996
				Average Correction Factor	1.009

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	1.000628	1.001574
THC Cal Offset:	-0.035596	-0.034204
CH4 Cal Slope:	1.001452	1.003860
CH4 Cal Offset:	-0.029759	-0.028964
NMHC Cal Slope:	0.999880	0.999793
NMHC Cal Offset:	-0.006237	-0.005640

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

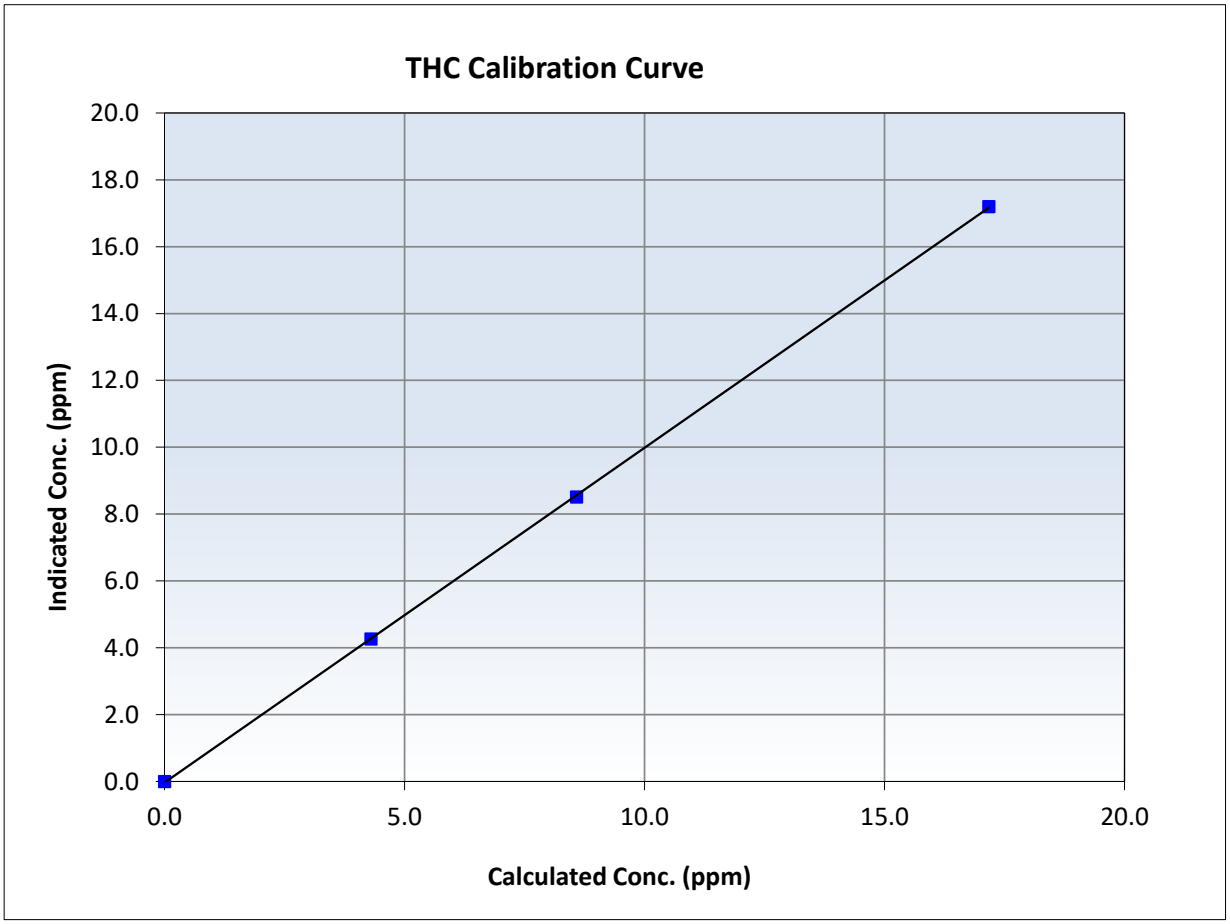
THC Calibration Summary

Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 26, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	12:00	End Time (MST):	15:24
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	0.999967	≥0.995
17.17	17.20	0.9987	Slope	1.001574	0.90 - 1.10
8.59	8.51	1.0090	Intercept	-0.034204	+/-0.5
4.30	4.27	1.0083			



Wood Buffalo Environmental Association

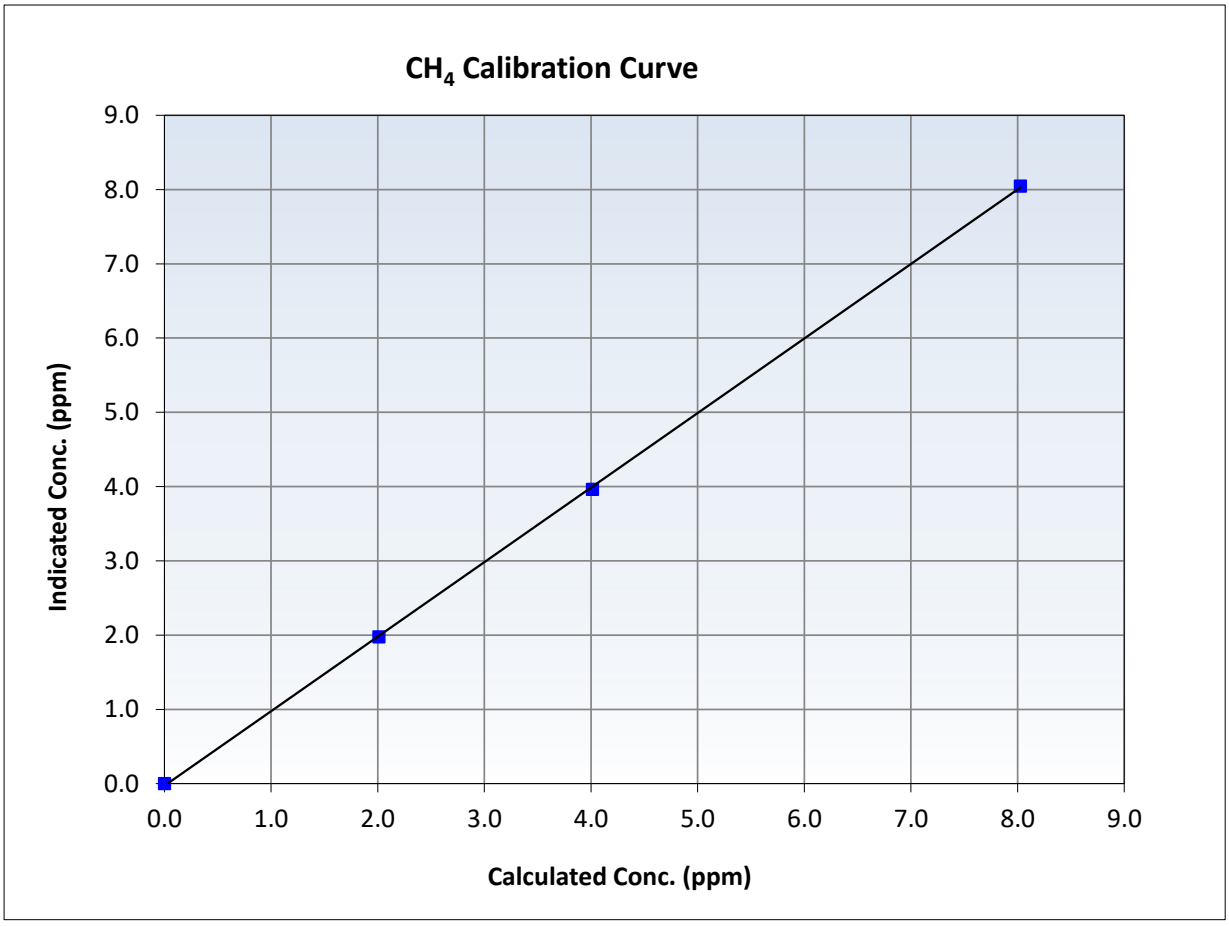
CH_4 Calibration Summary

Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 26, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	12:00	End Time (MST):	15:24
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	0.999919	≥0.995
8.03	8.05	0.9970	Slope	1.003860	0.90 - 1.10
4.01	3.96	1.0127			
2.01	1.98	1.0178	Intercept	-0.028964	+/-0.5



Wood Buffalo Environmental Association

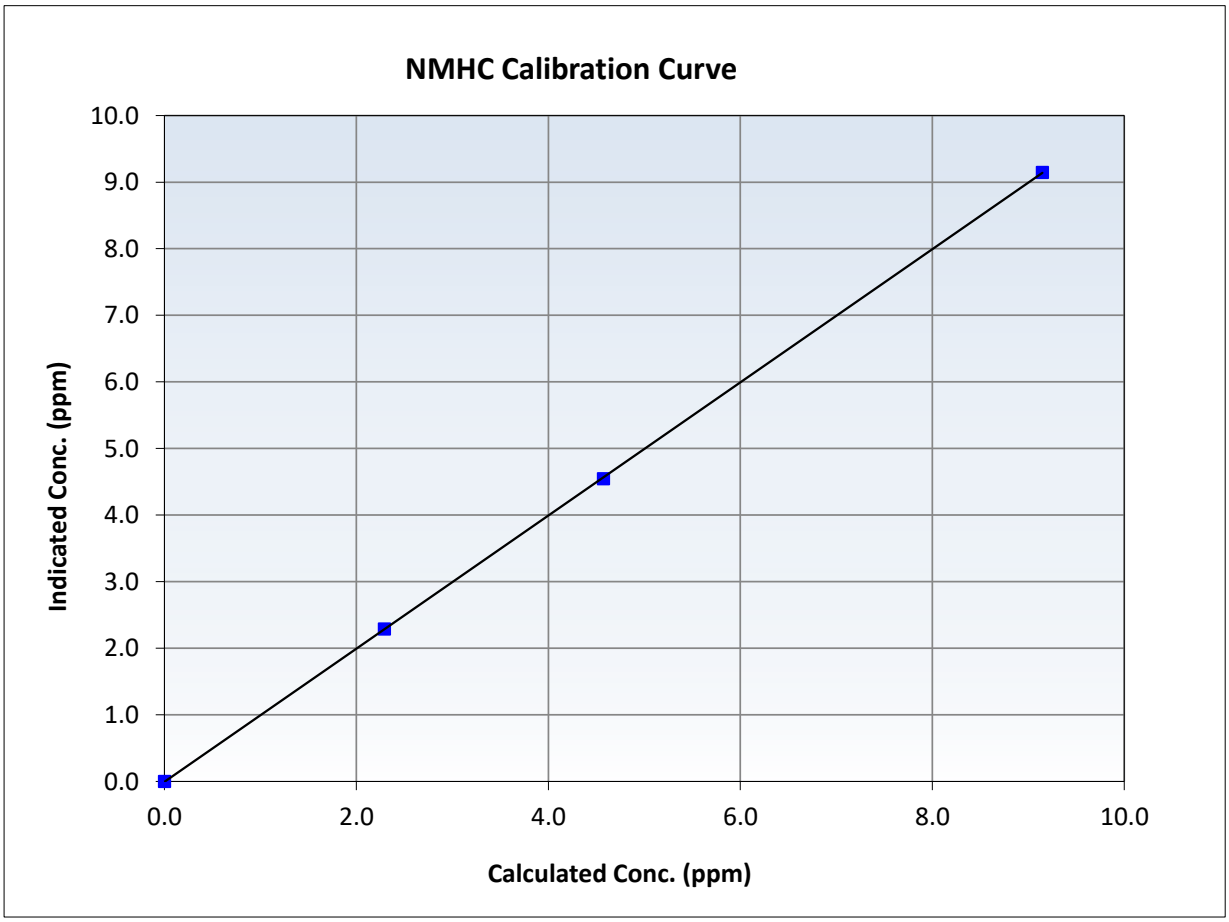
NMHC Calibration Summary

Station Information

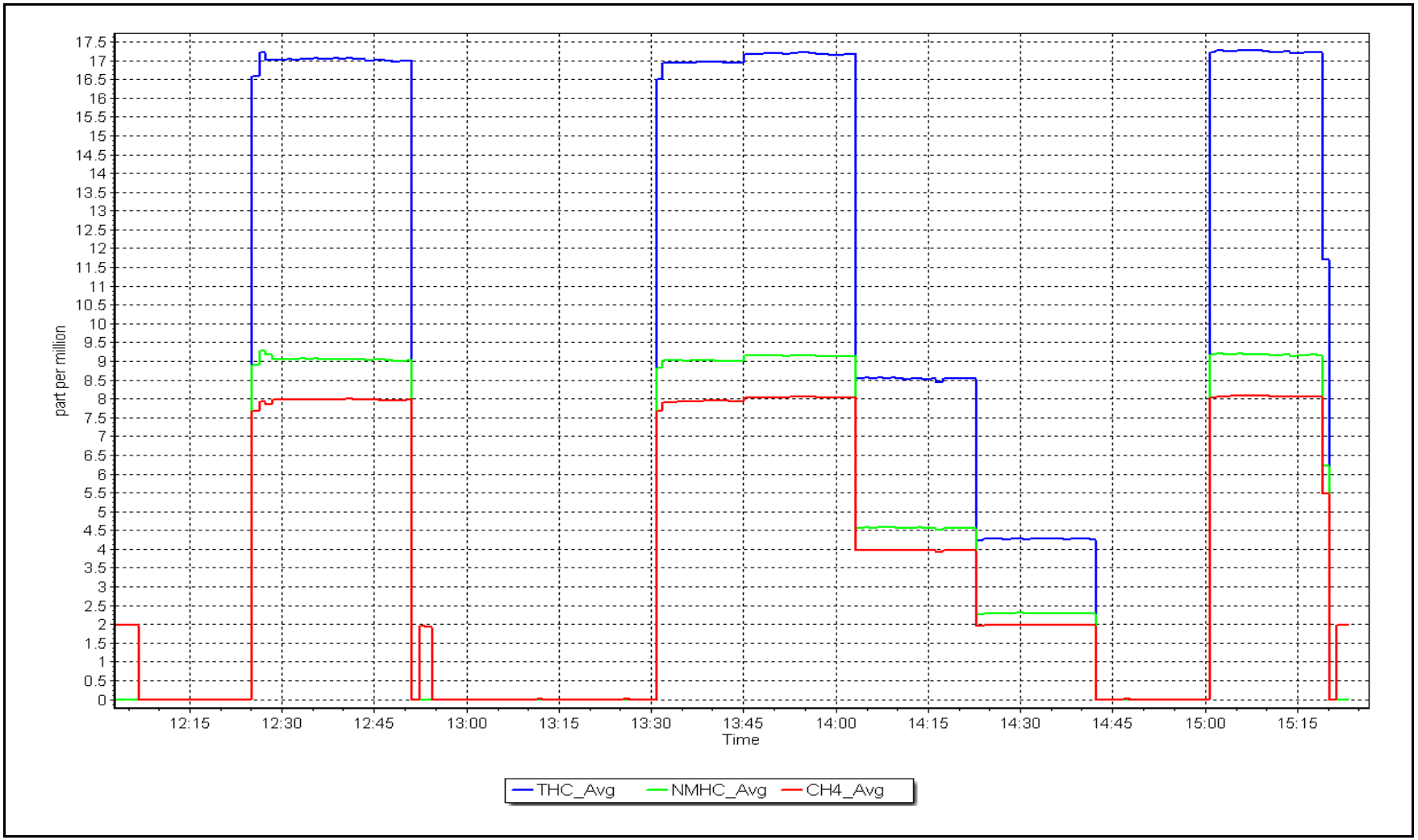
Calibration Date:	April 11, 2025	Previous Calibration:	March 26, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	12:00	End Time (MST):	15:24
Analyzer make:	Thermo 55i	Analyzer serial #:	1317958219

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999988	≥0.995
9.15	9.15	0.9999	Slope	0.999793	0.90 - 1.10
4.57	4.55	1.0058			
2.29	2.29	1.0002	Intercept	-0.005640	+/-0.5



NMHC Calibration Plot Date: April 11, 2025 Location: Janvier



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Janvier
Station number:	AMS 22
Calibration Date:	April 30, 2025
Last Cal Date:	March 25, 2025
Start time (MST):	11:41
End time (MST):	16:17
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	DT0047765	Cal Gas Expiry Date:	March 11, 2031
NOX Cal Gas Conc:	48.90 ppm	NO Cal Gas Conc:	48.80 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	48.90 ppm	Removed Gas NO Conc:	48.80 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	3806
ZAG make/model:	Teledyne API T701	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.2	0.0	----	----
AF High point	4918	82.0	802.0	800.3	1.6	771.4	764.6	6.7	1.0393	1.0464
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 802.5 ppb	NO = 799.9 ppb
Baseline Corr 1st pt	NO_X = 771.6 ppb	NO = 764.8 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 = -4.0%

*Percent Change NO = -4.6%

As Found Statistics

As found NO_X r^2: Nx Sl: Nx Int:

As found NO r^2: NO Sl: NO Int:

As found NO_2 r^2: NO2 Sl: 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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1229254994

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:	0.950	0.988	NO bkgnd or offset:	2.6	2.7
NOX coeff or slope:	0.996	0.998	NOX bkgnd or offset:	2.7	2.8
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	173.8	172.9

Calibration Statistics

	Start	Finish
NO_X Cal Slope:	1.001849	1.001321
NO_X Cal Offset:	-0.955969	0.204103
NO Cal Slope:	1.001603	1.000003
NO Cal Offset:	-1.676088	-0.716024
NO_2 Cal Slope:	1.004645	1.004611
NO_2 Cal Offset:	-1.110485	0.607262

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	----	----
High point	4918	82.0	802.0	800.3	1.6	803.1	799.9	3.1	0.9986	1.0005
Mid point	4960	41.0	400.9	400.1	0.8	401.8	399.2	2.5	0.9978	1.0022
Low point	4980	20.5	200.5	200.1	0.4	201.1	198.5	2.7	0.9969	1.0079
As left zero	5000	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	----	----
As left span	4918	82.0	802.0	398.1	403.9	800.8	398.1	402.7	1.0014	1.0000
								Average Correction Factor	0.9977	1.0035

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	797.9	396.1	403.4	405.4	0.9952	100.5%
Mid GPT point	797.9	599.7	199.8	202.3	0.9878	101.2%
Low GPT point	797.9	697.8	101.7	103.0	0.9878	101.2%
				Average Correction Factor	0.9903	101.0%

Notes: Inlet filter was changed after as founds. Adjusted the span.

Calibration Performed By: Rene Chamberland

Wood Buffalo Environmental Association

NO_X Calibration Summary

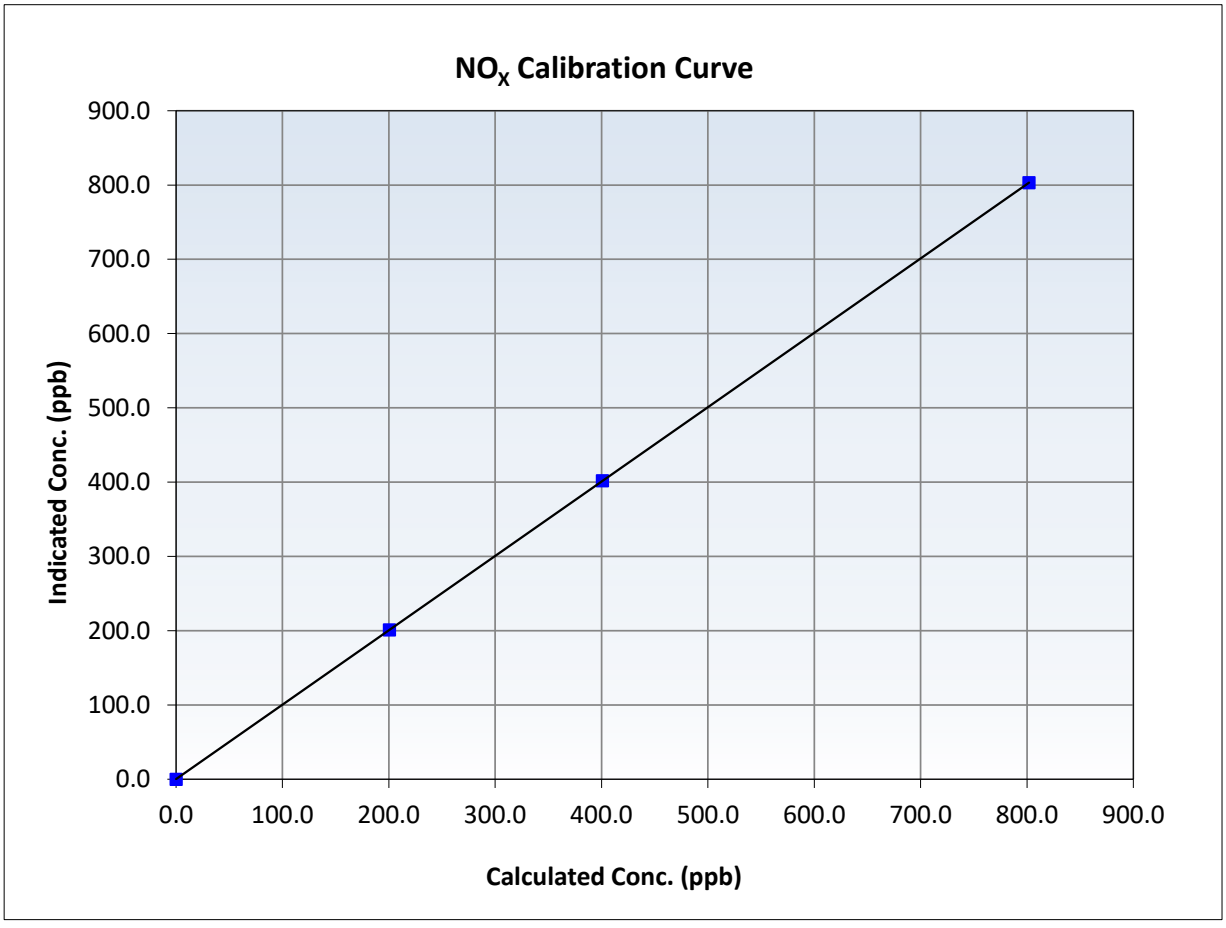
Station Information

Calibration Date:	April 30, 2025	Previous Calibration:	March 25, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:41	End Time (MST):	16:17
Analyzer make:	Thermo 42i	Analyzer serial #:	1229254994

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
802.0	803.1	0.9986
400.9	401.8	0.9978
200.5	201.1	0.9969

Statistical Evaluation		*Limits*
Correlation Coefficient	1.000000	*≥0.995*
Slope	1.001321	*0.90 - 1.10*
Intercept	0.204103	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

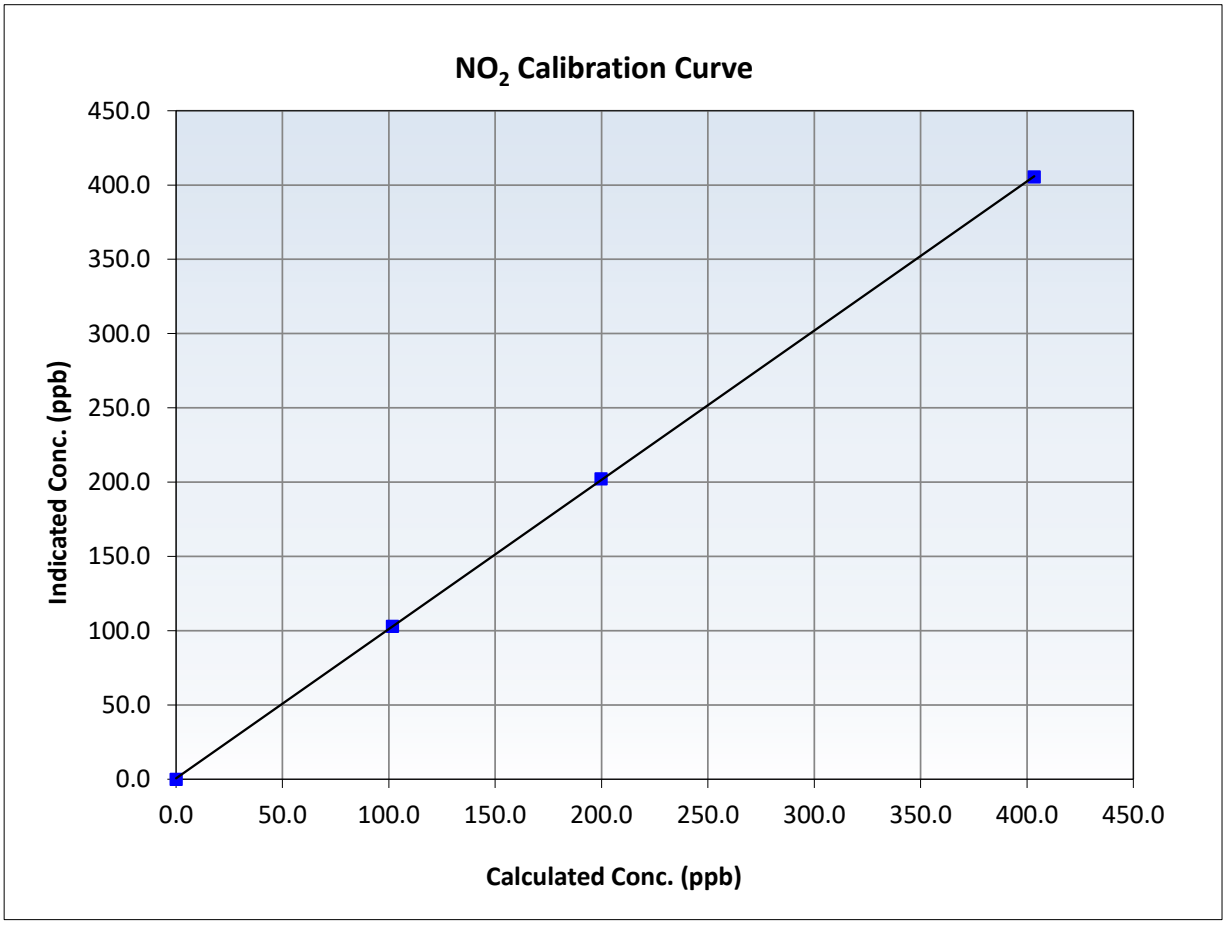
Station Information

Calibration Date:	April 30, 2025	Previous Calibration:	March 25, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:41	End Time (MST):	16:17
Analyzer make:	Thermo 42i	Analyzer serial #:	1229254994

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
403.4	405.4	0.9952
199.8	202.3	0.9878
101.7	103.0	0.9878

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999983	*≥0.995*
Slope	1.004611	*0.90 - 1.10*
Intercept	0.607262	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

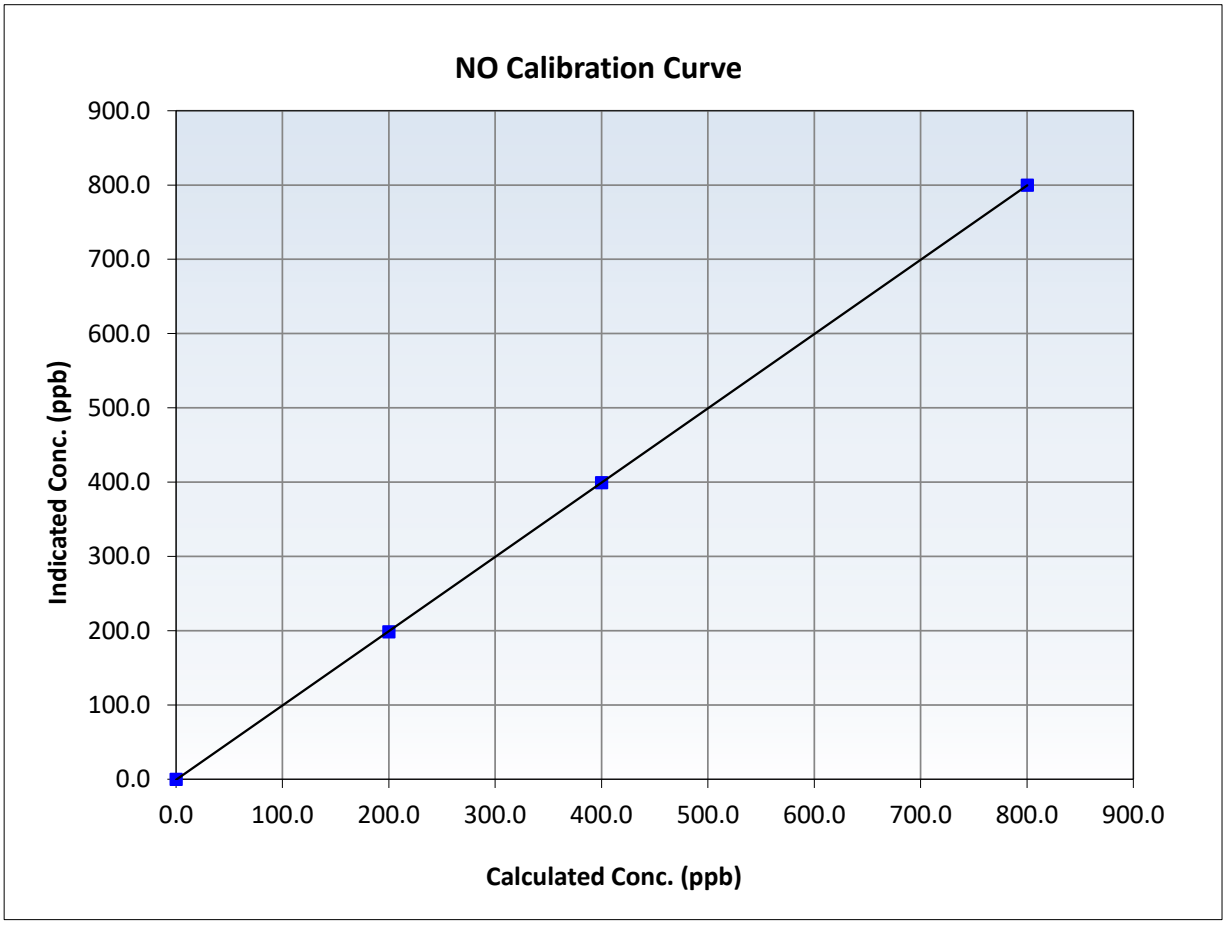
Station Information

Calibration Date:	April 30, 2025	Previous Calibration:	March 25, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	11:41	End Time (MST):	16:17
Analyzer make:	Thermo 42i	Analyzer serial #:	1229254994

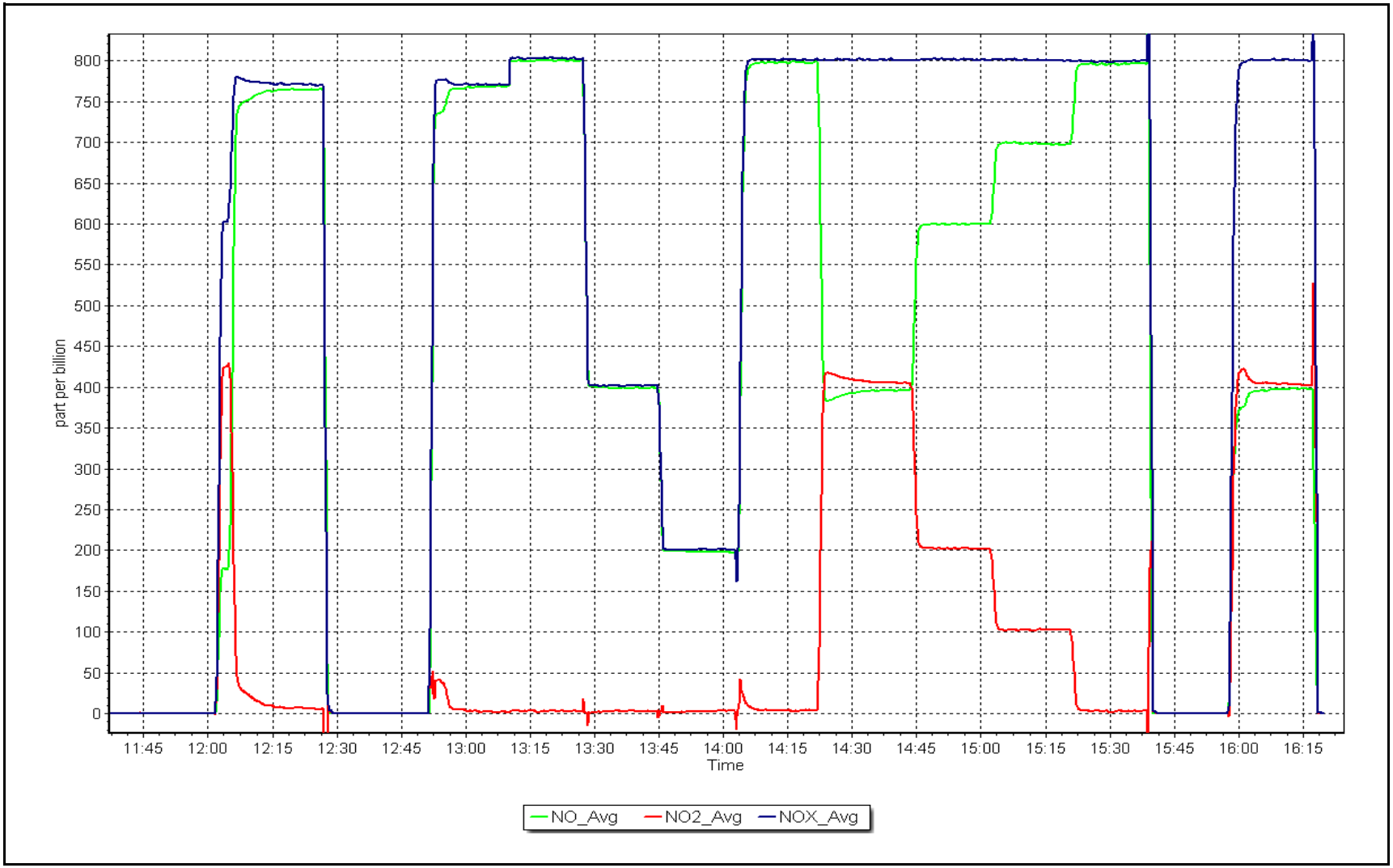
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
800.3	799.9	1.0005
400.1	399.2	1.0022
200.1	198.5	1.0079

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999996	*≥0.995*
Slope	1.000003	*0.90 - 1.10*
Intercept	-0.716024	*+/-20*



NO_X Calibration Plot Date: April 30, 2025 Location: Janvier



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Station Name:	Janvier	Station number:	AMS 22
Calibration Date:	April 22, 2025	Last Cal Date:	March 18, 2025
Start time (MST):	9:51	End time (MST):	12:42
Reason:	Routine		

Calibration Standards

O3 generation mode:	Photometer		
Calibrator Make/Model:	Teledyne API T700	Serial Number:	3806
ZAG Make/Model:	Teledyne API T701H	Serial Number:	691

Analyzer Information

Analyzer make:	Teledyne API T400		Analyzer serial #:	7046	
Analyzer Range	0 - 500 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.000486	0.996029	Backgd or Offset:	1.5	1.5
Calibration intercept:	1.040000	1.320000	Coeff or Slope:	1.011	1.011

O_3 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) *Limit = 0.90-1.10*
As found zero	5000	800.0	0.0	0.3	----
As found High point	5000	922.9	400.0	399.0	1.003
As found Mid point					
As found Low point					
Baseline Corr As found:	398.7	Previous response	401.2	*% 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	

O_3 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) *Limit = 0.95-1.05*
Calibrator zero	5000	800.0	0.0	0.6	----
High point	5000	922.9	400.0	399.2	1.002
Mid point	5000	768.8	200.0	201.4	0.993
Low point	5000	656.1	100.0	101.3	0.987
As left zero	5000	800.0	0.0	0.6	----
As left span	5000	916.2	400.0	401.2	0.997
				Average Correction Factor	0.994

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

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

O_3 Calibration Summary

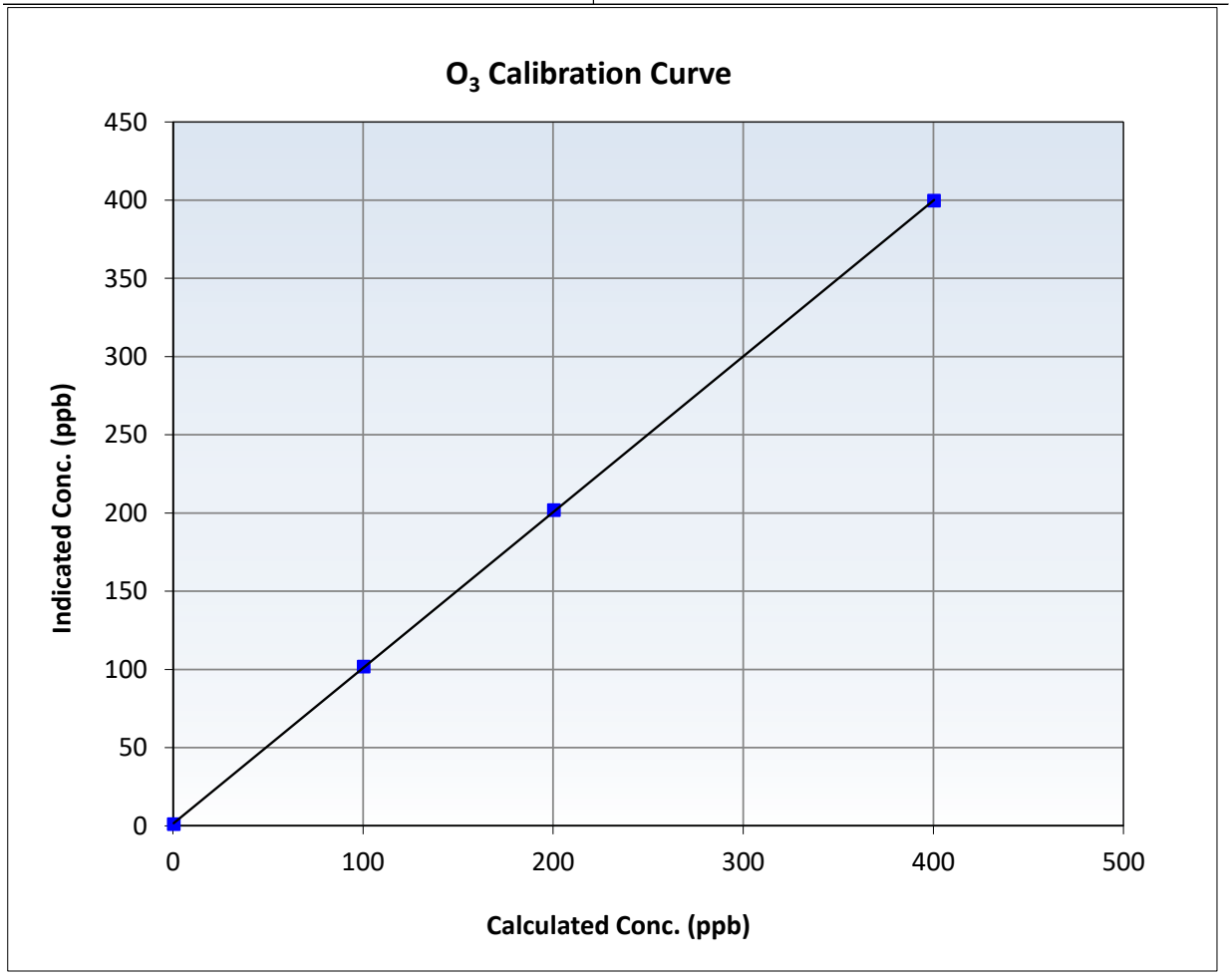
Station Information

Calibration Date:	April 22, 2025	Previous Calibration:	March 18, 2025
Station Name:	Janvier	Station Number:	AMS 22
Start Time (MST):	9:51	End Time (MST):	12:42
Analyzer make:	Teledyne API T400	Analyzer serial #:	7046

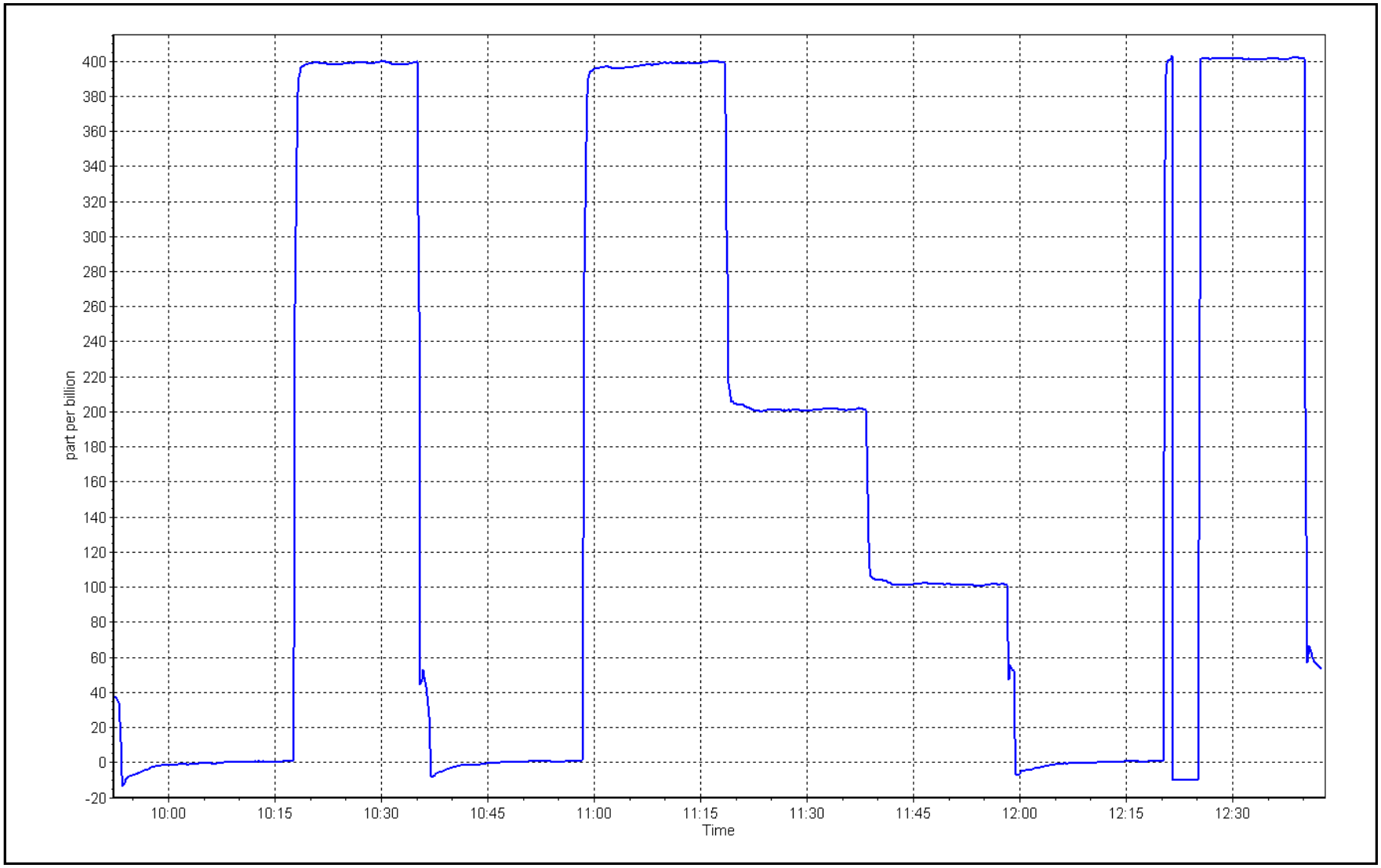
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.6	----
400.0	399.2	1.0020
200.0	201.4	0.9930
100.0	101.3	0.9872

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999980	*≥0.995*
Slope	0.996029	*0.90 - 1.10*
Intercept	1.320000	*+/- 5*



O_3 Calibration Plot Date: April 22, 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:	April 30, 2025	Last Cal Date:	March 24, 2025
Start time (MST):	12:27	End time (MST):	14:19
Analyzer Make:	Teledyne API T640	S/N:	325
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)	12.3	11.51	12.3	☐	+/- 2 °C
P (mmHg)	713.7	714.94	713.7	☐	+/- 10 mmHg
Flow (LPM)	5.04	4.896	5.04	☐	+/- 0.25 LPM
PW% (pump)	37	-----	37	☐	>80%
Zero Verification	PM w/o HEPA:	1.1	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: June 10, 2024 — Lot No.: 100128-050-042

Parameter	As found	Post maintenance	As left	Adjusted	*(Limits)*
PMT Peak Test				☐	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
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Fort Hills	Station number:	AMS 23
Calibration Date:	April 17, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	6:30	End time (MST):	9:05
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:	50.35	ppm	Rem Gas Exp Date:	
Removed Gas Cyl #:			Diff between cyl:	
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.988558	0.998705	Backgd or Offset:	18.9	18.9
Calibration intercept:	-0.121868	0.080120	Coeff or Slope:	1.071	1.071

SO_2 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	4921	79.4	799.5	797.8	1.002
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	797.6	Previous response	790.2	*% 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	

SO_2 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	4921	79.4	799.5	798.5	1.001
Mid point	4960	39.7	399.8	399.7	1.000
Low point	4980	19.8	199.4	198.7	1.003
As left zero	5000	0.0	0.0	0.4	----
As left span	4921	79.4	799.5	798.5	1.001
				Average Correction Factor:	1.002

Notes: Calibration gas changed out. No adjustments done.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

SO_2 Calibration Summary

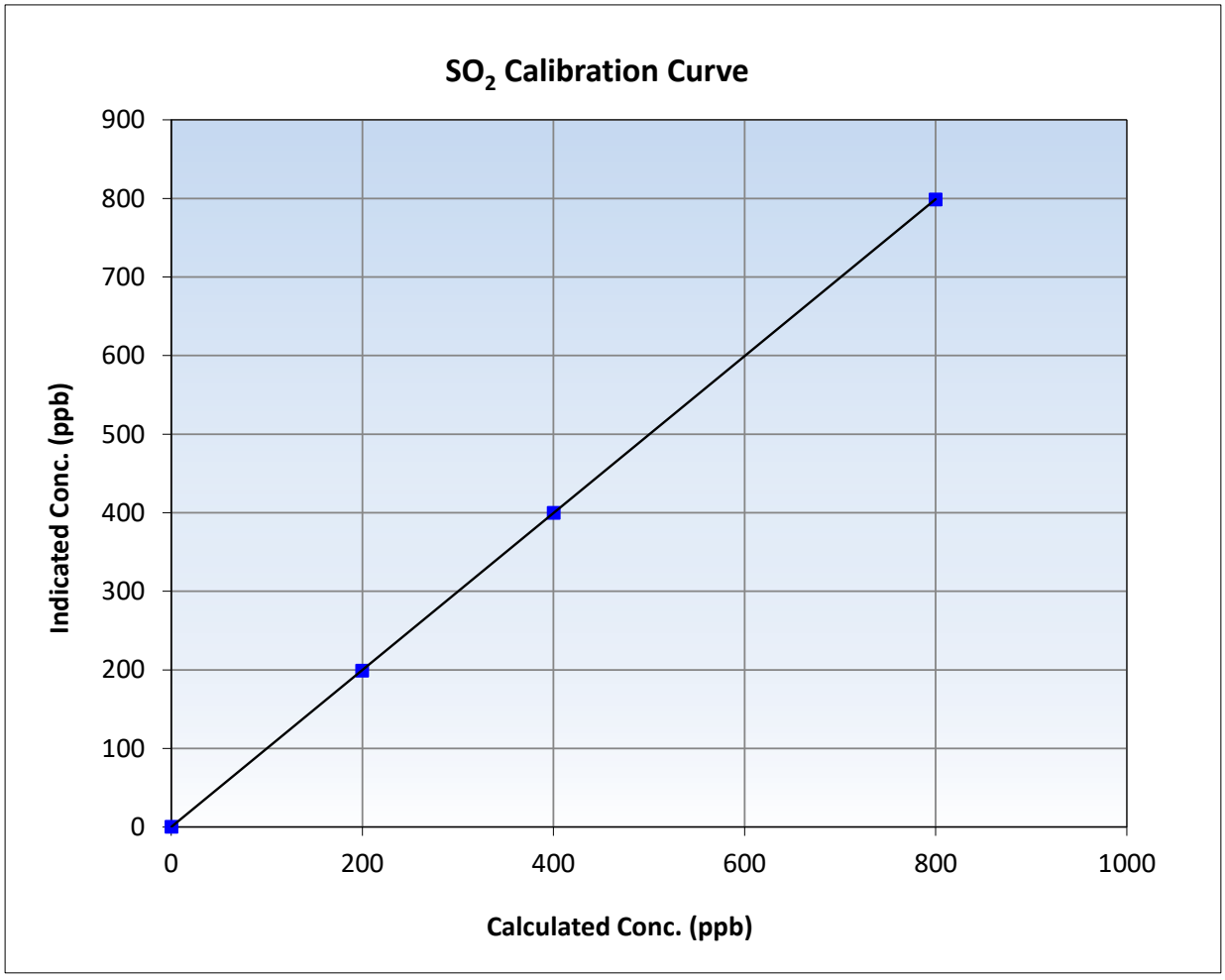
Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 17, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:30	End Time (MST):	9:05
Analyzer make:	Thermo 43i	Analyzer serial #:	1160290012

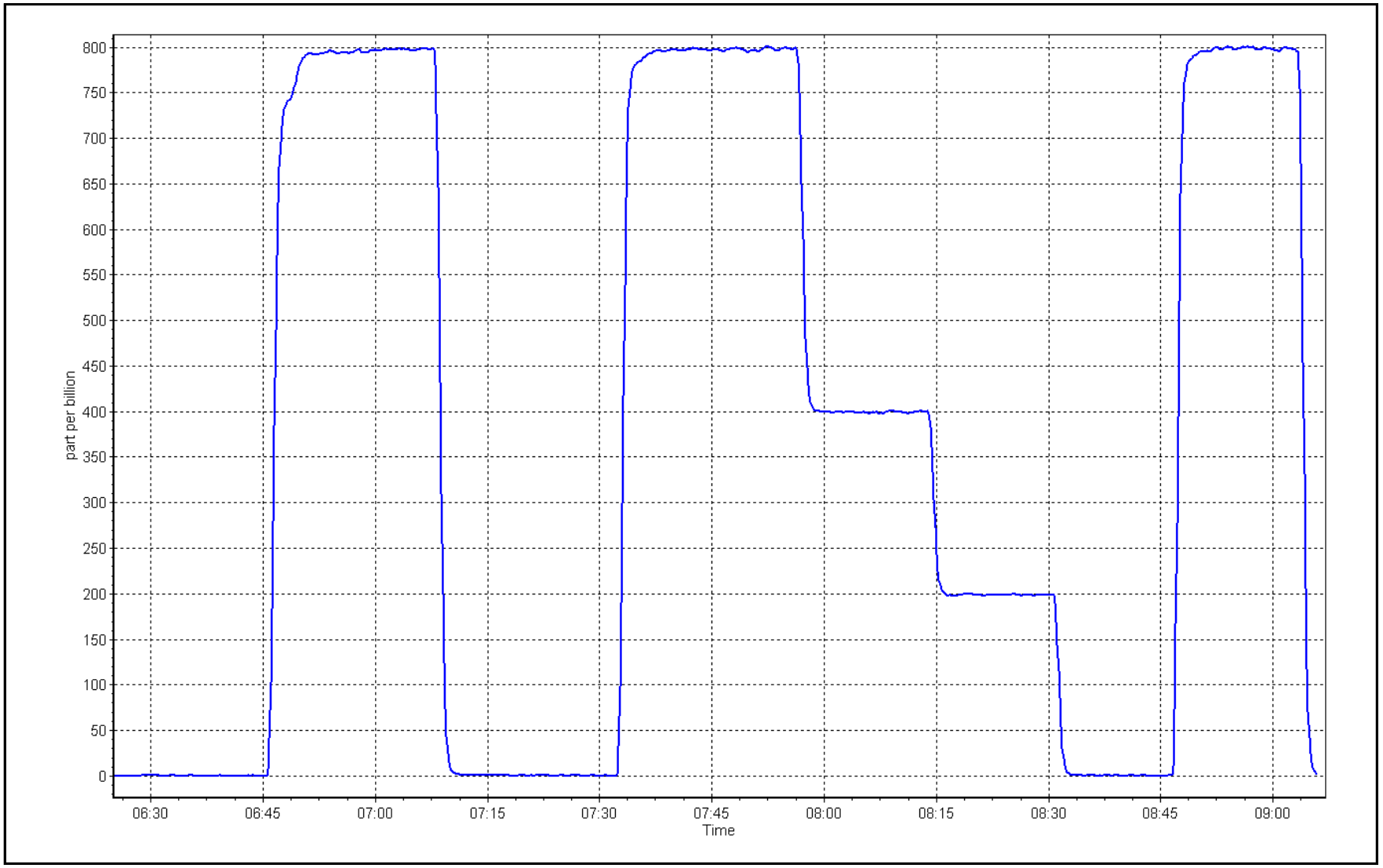
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
799.5	798.5	1.0012
399.8	399.7	1.0003
199.4	198.7	1.0035

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999999	*≥0.995*
Slope	0.998705	*0.90 - 1.10*
Intercept	0.080120	*+/-30*



SO2 Calibration Plot Date: April 17, 2025 Location: Fort Hills



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Fort Hills	Station number:	AMS 23
Calibration Date:	April 16, 2025	Last Cal Date:	March 11, 2025
Start time (MST):	6:32	End time (MST):	10:19
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	4.84	ppm	Cal Gas Exp Date:	August 28, 2027
Cal Gas Cylinder #:	DT0021910			
Removed Cal Gas Conc:	4.84	ppm	Rem Gas Exp Date:	
Removed Gas Cyl #:			Diff between cyl:	
Calibrator Make/Model:	API T700		Serial Number:	451
ZAG Make/Model:	API T701		Serial Number:	1117

Analyzer Information

Analyzer make:	Thermo 43i TLE		Analyzer serial #:	1300156232
Converter make:	CDN-101		Converter serial #:	594
Analyzer Range	0 - 100 ppb		Converter Temp:	800 degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.001247	1.002388	Backgd or Offset:	2.06	2.06
Calibration intercept:	-0.038151	-0.078072	Coeff or Slope:	1.160	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4917	82.6	80.0	79.7	1.002
As found Mid point	4959	41.3	40.0	39.6	1.007
As found Low point	4979	20.7	20.0	19.4	1.028
New cylinder response					

Baseline Corr As found:	79.8	Prev response:	80.02	*% change:	-0.3%
Baseline Corr 2nd AF pt:	39.7	AF Slope:	0.999812	AF Intercept:	-0.337937
Baseline Corr 3rd AF pt:	19.5	AF Correlation:	0.999956	* = > +/-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) *Limit = 0.95-1.05*
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	40.0	0.999
Low point	4979	20.7	20.0	19.9	1.007
As left zero	5000	0.0	0.0	-0.1	----
As left span	4917	82.6	80.0	82.1	0.974
SO2 Scrubber Check	4920	80.3	803.0	0.0	----
Date of last scrubber change:				Ave Corr Factor	1.002
Date of last converter efficiency test:		March 13, 2024		110.3%	efficiency

Notes: SOx scrubber checked after the calibrator zero. No adjustments done.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

TRS Calibration Summary

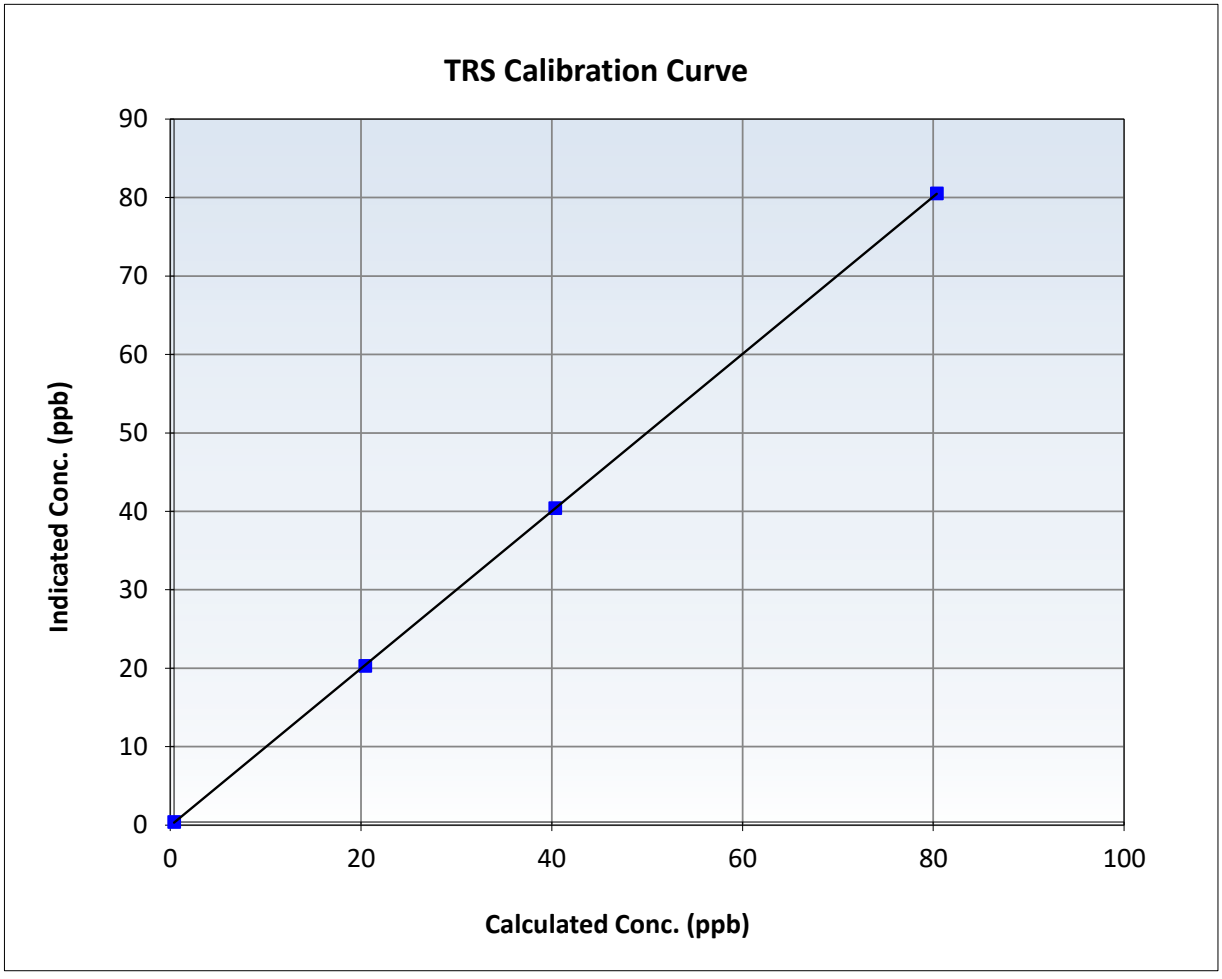
Station Information

Calibration Date:	April 16, 2025	Previous Calibration:	March 11, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:32	End Time (MST):	10:19
Analyzer make:	Thermo 43i TLE	Analyzer serial #:	1300156232

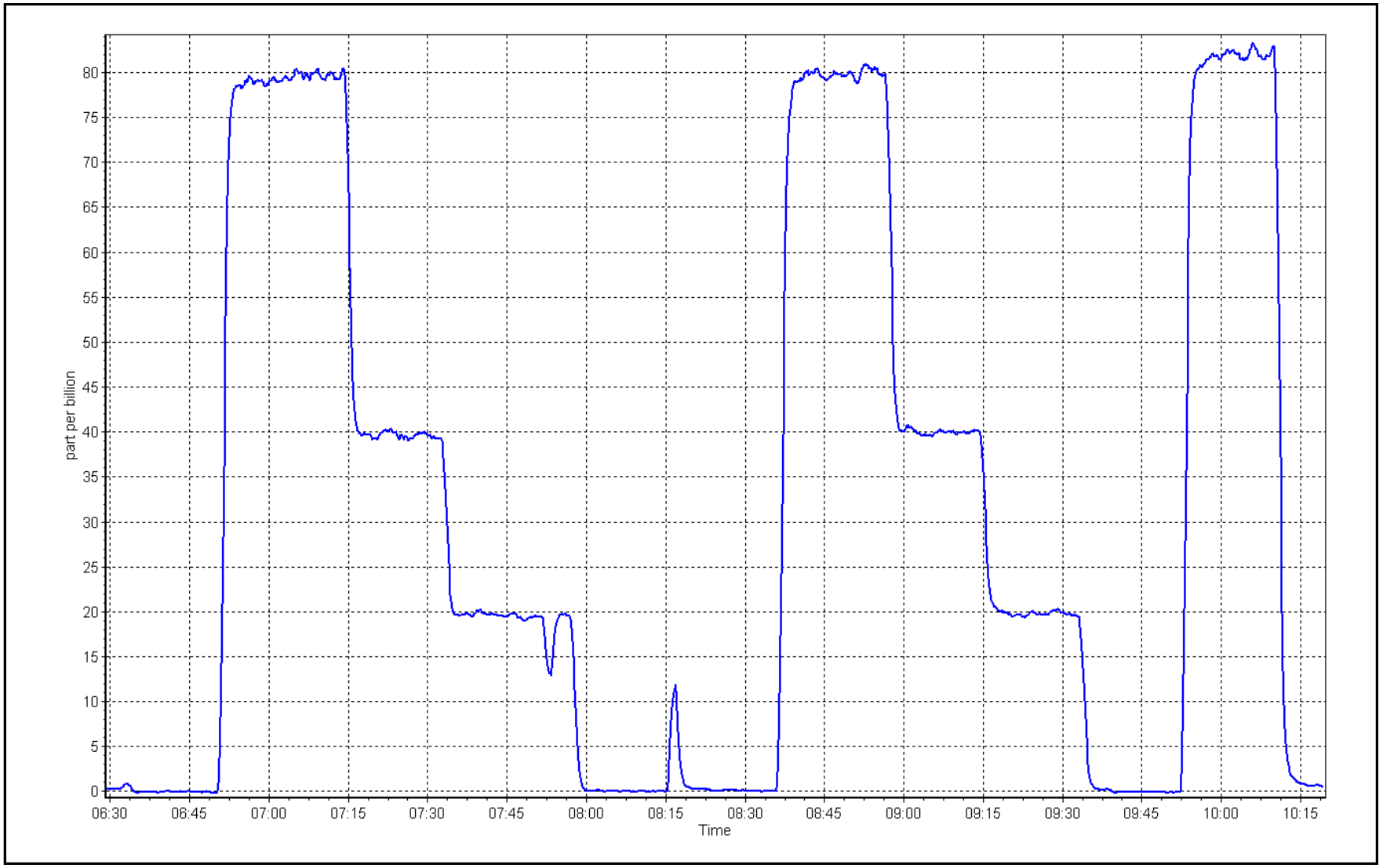
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
80.0	80.1	0.9983
40.0	40.0	0.9994
20.0	19.9	1.0070

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999995	*≥0.995*
Slope	1.002388	*0.90 - 1.10*
Intercept	-0.078072	*+/-3*



TRS Calibration Plot Date: April 16, 2025 Location: Fort Hills



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Fort Hills	Station number:	AMS 23
Calibration Date:	April 17, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	6:30	End time (MST):	9:05
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC484463	Cal Gas Expiry Date:	October 9, 2032
CH4 Cal Gas Conc.	504.3 ppm	CH4 Equiv Conc.	1065.6 ppm
C3H8 Cal Gas Conc.	204.1 ppm		
Removed Gas Cert:		Removed Gas Expiry:	
Removed CH4 Conc.	504.3 ppm	CH4 Equiv Conc.	1065.6 ppm
Removed C3H8 Conc.	204.1 ppm	Diff between cyl (THC):	
Diff between cyl (CH_4):		Diff between cyl (NM):	
Calibrator Model:	API T700	Serial Number:	451
Zero Air Gen model:	API T701	Serial Number:	1117

Analyzer Information

Analyzer make:	Thermo 55i	Analyzer serial #:	12227620777
THC Range:	0 - 20 ppm	NMHC/CH4 Range:	0 - 10 ppm

	Start	*Finish*		*Start*	*Finish*
CH4 SP Ratio:	3.55E-04	3.55E-04	NMHC SP Ratio:	5.42E-05	5.42E-05
CH4 Retention time:	15.2	15.2	NMHC Peak Area:	164497	164497
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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.4	16.92	17.00	0.996
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	17.00	Prev response	16.86	*% change	0.8%
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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.4	16.92	16.90	1.001
Mid point	4960	39.7	8.46	8.40	1.007
Low point	4980	19.8	4.22	4.21	1.003
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.4	16.92	16.85	1.004
				Average Correction Factor	1.004

Notes: Calibration Gas changed out. Span adjusted.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.4	8.91	9.00	0.990
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	9.00	Prev response	8.90	*% 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	79.4	8.91	8.95	0.996
Mid point	4960	39.7	4.46	4.47	0.997
Low point	4980	19.8	2.22	2.25	0.987
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.4	8.91	8.90	1.002
				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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4921	79.4	8.01	7.99	1.002
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr AF:	7.99	Prev response	7.97	*% 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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4921	79.4	8.01	7.95	1.007
Mid point	4960	39.7	4.00	3.93	1.019
Low point	4980	19.8	2.00	1.96	1.021
As left zero	5000	0.0	0.00	0.00	----
As left span	4921	79.4	8.01	7.95	1.007
				Average Correction Factor	1.016

Calibration Statistics

	Start	***Finish***
THC Cal Slope:	0.997066	0.998551
THC Cal Offset:	-0.009783	-0.012778
CH4 Cal Slope:	0.997435	0.993810
CH4 Cal Offset:	-0.021799	-0.020604
NMHC Cal Slope:	0.996952	1.003055
NMHC Cal Offset:	0.011416	0.006627

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

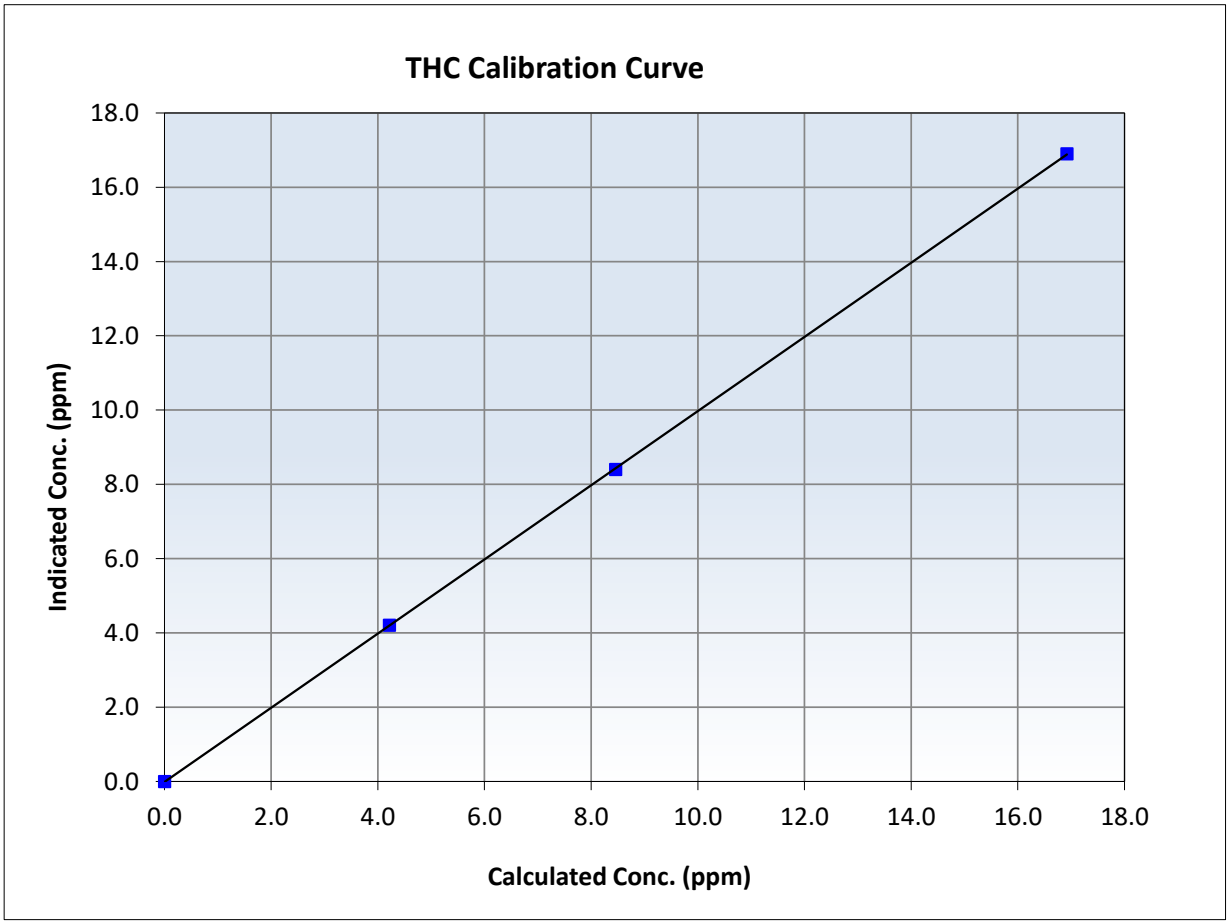
THC Calibration Summary

Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 17, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:30	End Time (MST):	9:05
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620777

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999989	≥0.995
16.92	16.90	1.0012	Slope	0.998551	0.90 - 1.10
8.46	8.40	1.0073	Intercept	-0.012778	+/-0.5
4.22	4.21	1.0028			



Wood Buffalo Environmental Association

CH_4 Calibration Summary

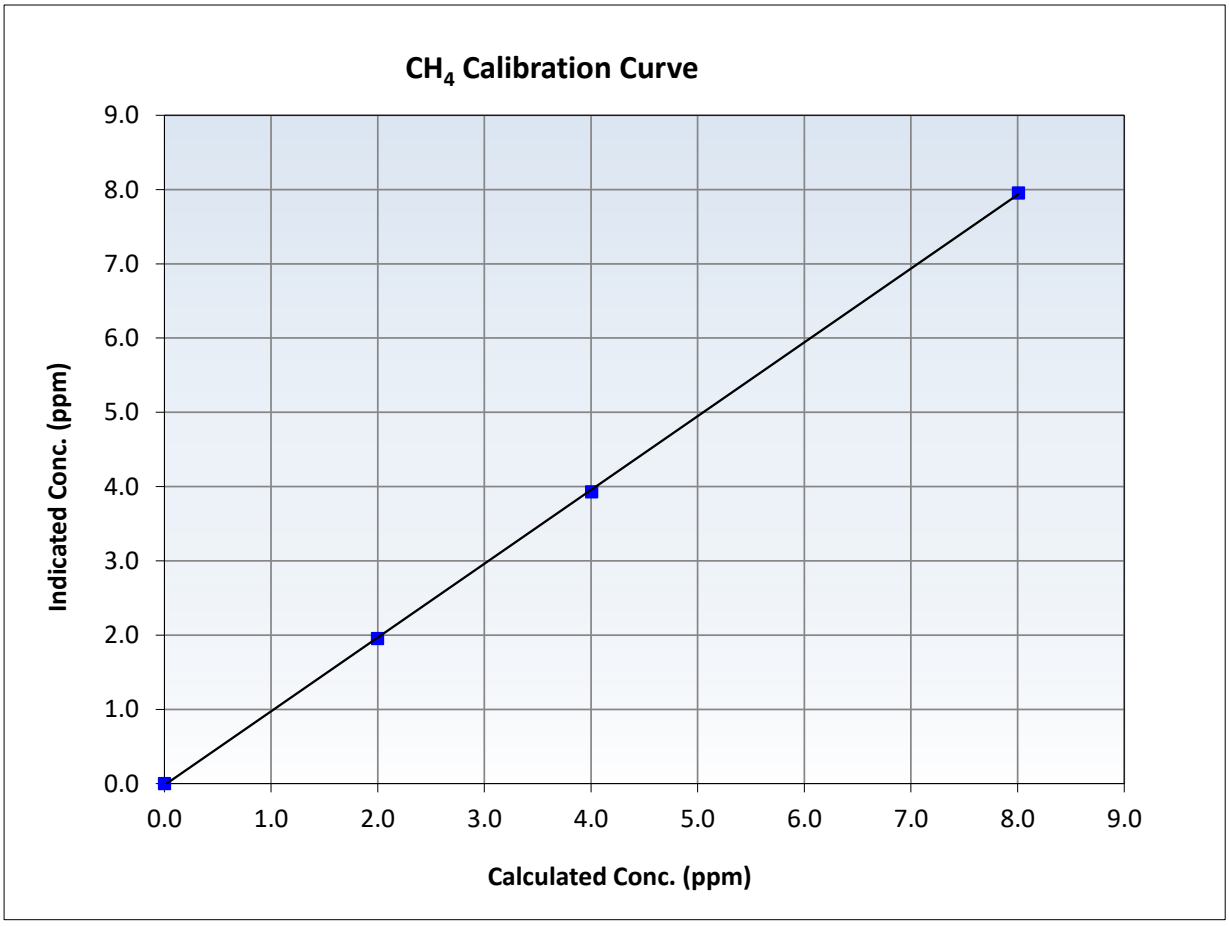
Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 17, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:30	End Time (MST):	9:05
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620777

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
8.01	7.95	1.0067
4.00	3.93	1.0189
2.00	1.96	1.0210

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999954	*≥0.995*
Slope	0.993810	*0.90 - 1.10*
Intercept	-0.020604	*+/-0.5*



Wood Buffalo Environmental Association

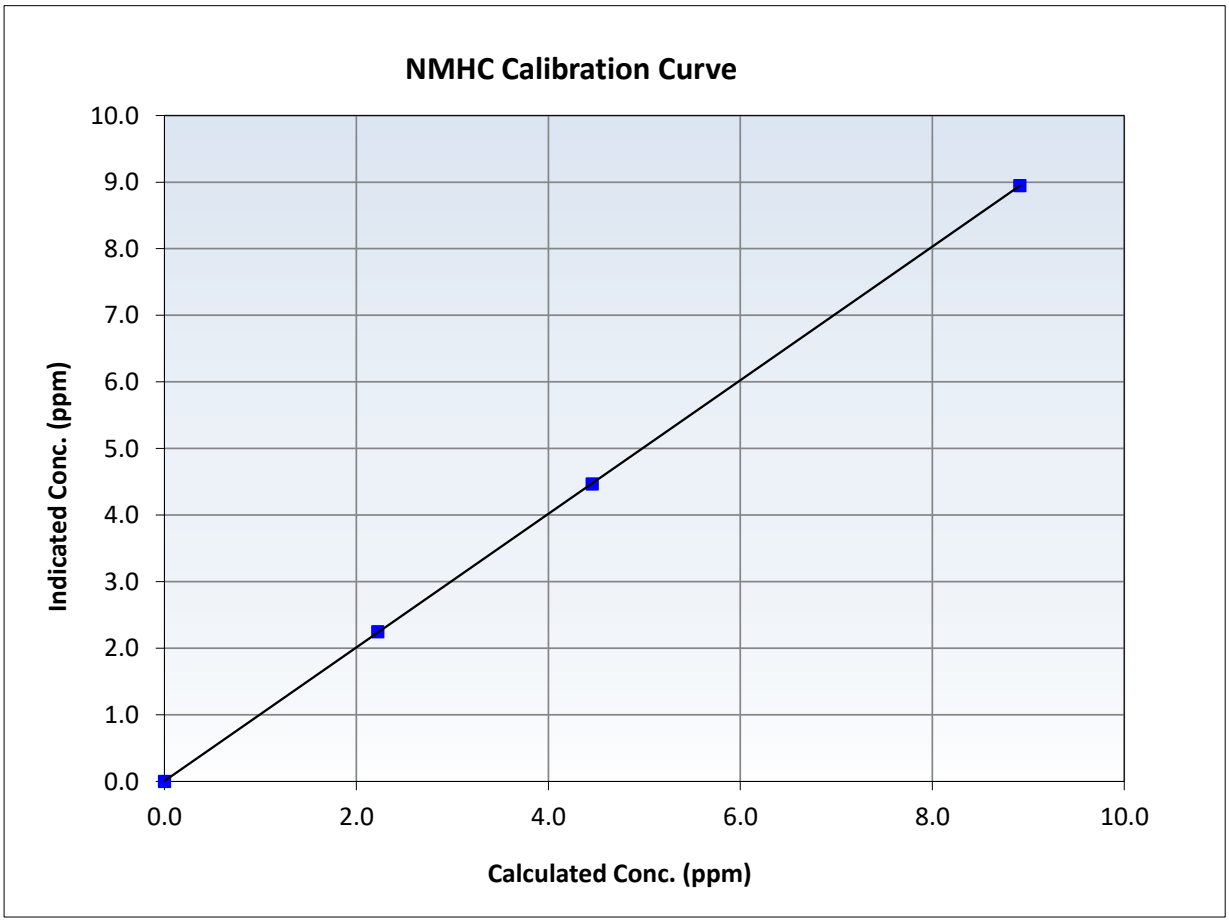
NMHC Calibration Summary

Station Information

Calibration Date:	April 17, 2025	Previous Calibration:	March 17, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:30	End Time (MST):	9:05
Analyzer make:	Thermo 55i	Analyzer serial #:	12227620777

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.00	0.00	----	Correlation Coefficient	0.999992	≥0.995
8.91	8.95	0.9961	Slope	1.003055	0.90 - 1.10
4.46	4.47	0.9975	Intercept	0.006627	+/-0.5
2.22	2.25	0.9874			



NMHC Calibration Plot Date: April 17, 2025 Location: Fort Hills

Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Fort Hills
Station number:	AMS 23
Calibration Date:	April 15, 2025
Last Cal Date:	March 12, 2025
Start time (MST):	6:50
End time (MST):	11:33
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	CC358149	Cal Gas Expiry Date:	January 5, 2032
NOX Cal Gas Conc:	60.30 ppm	NO Cal Gas Conc:	60.10 ppm
Removed Cylinder #:		Removed Gas Exp Date:	
Removed Gas NOX Conc:	60.30 ppm	Removed Gas NO Conc:	60.10 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	API T700	Serial Number:	451
ZAG make/model:	API T701	Serial Number:	1117

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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-0.4	-0.4	0.0	----	----
AF High point	4934	66.3	799.5	796.9	2.7	775.0	770.9	4.0	1.0311	1.0332
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 794.8 ppb	NO = 793.8 ppb
Baseline Corr 1st pt	NO_X = 775.4 ppb	NO = 771.3 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

As Found Statistics

As found	NO_X r^2:	*Percent Change	NO_X = -2.5%
As found	NO r^2:	*Percent Change	NO = -2.9%
As found	NO_2 r^2:	Nx Sl:	Nx Int:
		NO Sl:	NO Int:
		NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1152430007

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:	0.940	0.970	NO bkgnd or offset:	2.8	2.5
NOX coeff or slope:	0.990	0.990	NOX bkgnd or offset:	3.0	2.7
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	146.3	146.3

Calibration Statistics

	Start	Finish
NO_X Cal Slope:	0.995194	0.999841
NO_X Cal Offset:	-0.872416	0.026011
NO Cal Slope:	0.999005	1.002405
NO Cal Offset:	-2.271408	-1.432704
NO_2 Cal Slope:	0.998438	0.997503
NO_2 Cal Offset:	-1.622293	-1.163127

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.1	0.2	0.0	----	----
High point	4934	66.3	799.5	796.9	2.7	799.4	798.2	1.2	1.0002	0.9983
Mid point	4967	33.2	400.4	399.0	1.3	400.5	397.7	2.7	0.9997	1.0034
Low point	4983	16.6	200.2	199.5	0.7	200.0	197.0	3.0	1.0011	1.0129
As left zero	5000	0.0	0.0	0.0	0.0	0.1	0.2	-0.1	----	----
As left span	4934	66.3	799.5	410.8	388.7	796.8	410.8	386.0	1.0034	1.0000
								Average Correction Factor	1.0003	1.0049

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	795.0	411.1	386.6	384.9	1.0043	99.6%
Mid GPT point	795.0	603.0	194.7	192.8	1.0096	99.0%
Low GPT point	795.0	696.9	100.8	97.9	1.0291	97.2%
				Average Correction Factor	1.0143	98.6%

Notes: Zero and Span Adjusted. During second point the NOx and NO were spiking down, Blow out inside of analyzer. Continued Calibration.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

NO_X Calibration Summary

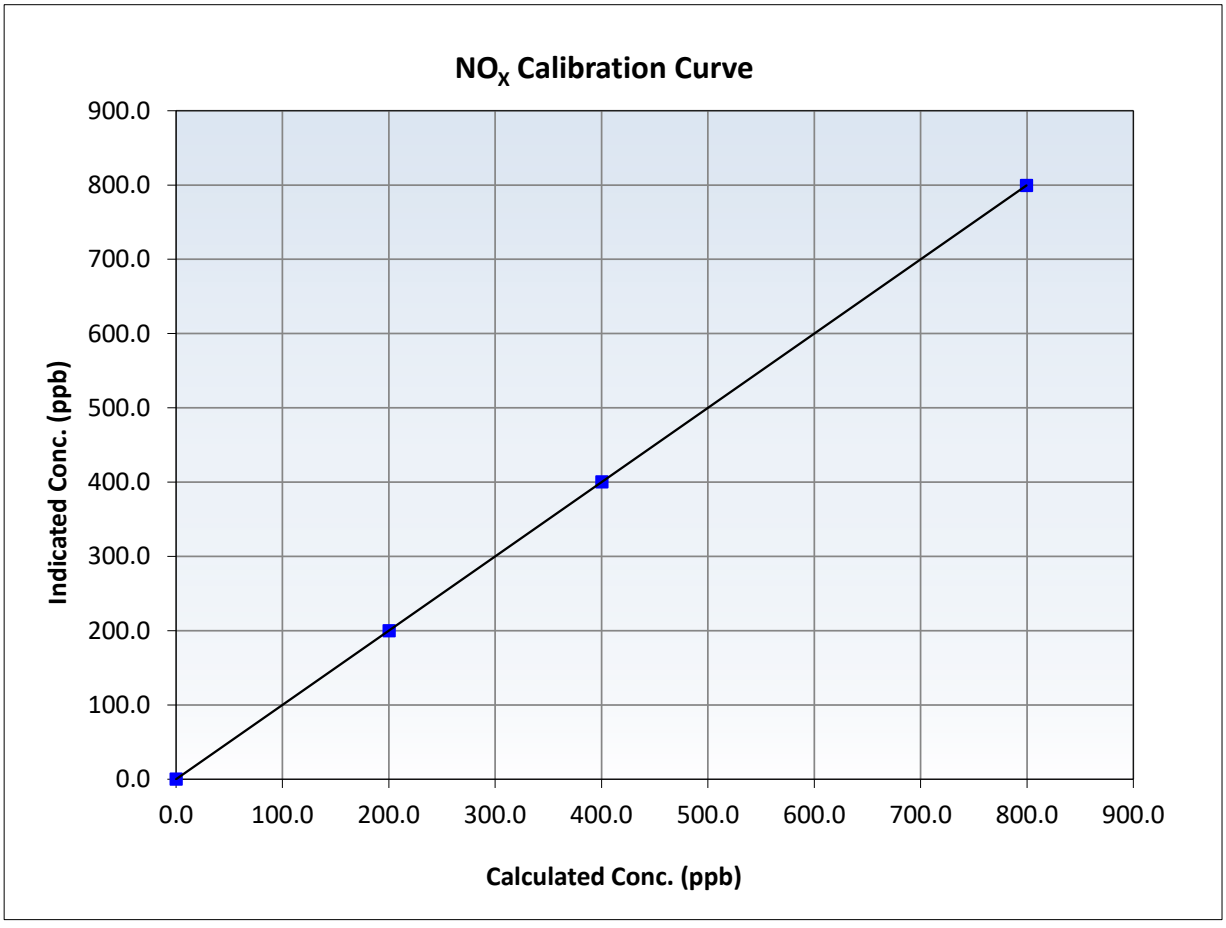
Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 12, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:50	End Time (MST):	11:33
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430007

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
799.5	799.4	1.0002
400.4	400.5	0.9997
200.2	200.0	1.0011

Statistical Evaluation		Limits
Correlation Coefficient	1.000000	≥0.995
Slope	0.999841	0.90 - 1.10
Intercept	0.026011	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

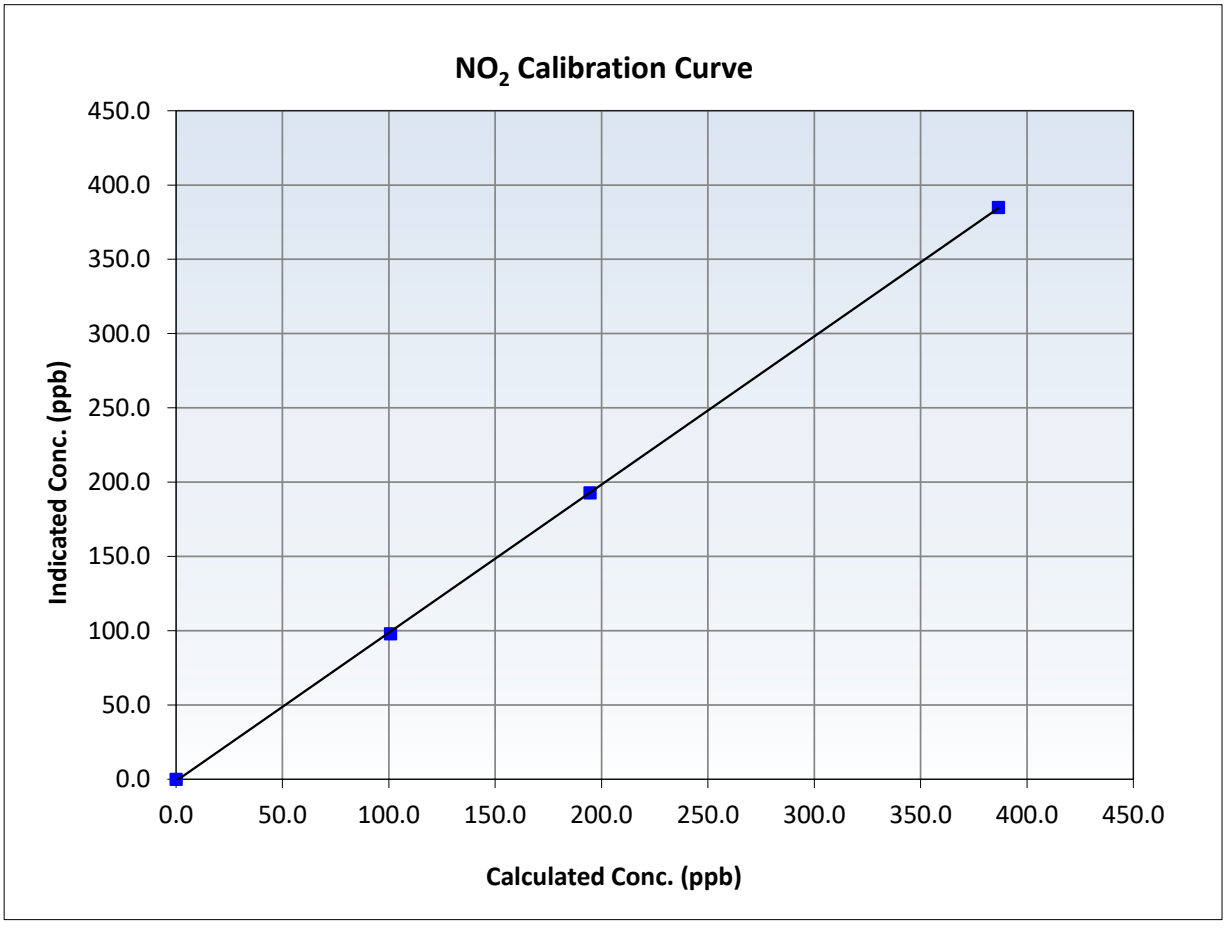
Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 12, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:50	End Time (MST):	11:33
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430007

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
386.6	384.9	1.0043
194.7	192.8	1.0096
100.8	97.9	1.0291

Statistical Evaluation		Limits
Correlation Coefficient	0.999954	≥0.995
Slope	0.997503	0.90 - 1.10
Intercept	-1.163127	+/-20



Wood Buffalo Environmental Association

NO Calibration Summary

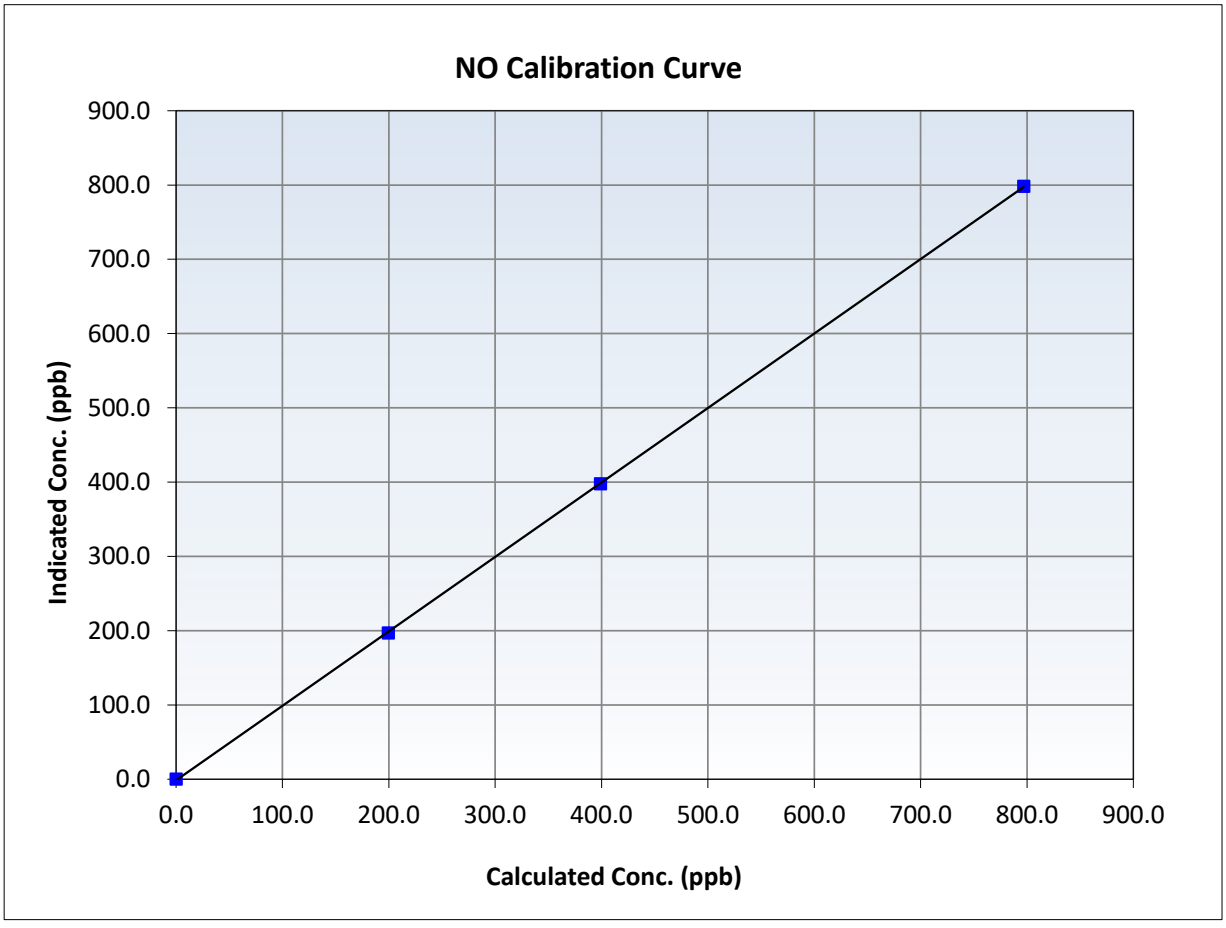
Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 12, 2025
Station Name:	Fort Hills	Station Number:	AMS 23
Start Time (MST):	6:50	End Time (MST):	11:33
Analyzer make:	Thermo 42i	Analyzer serial #:	1152430007

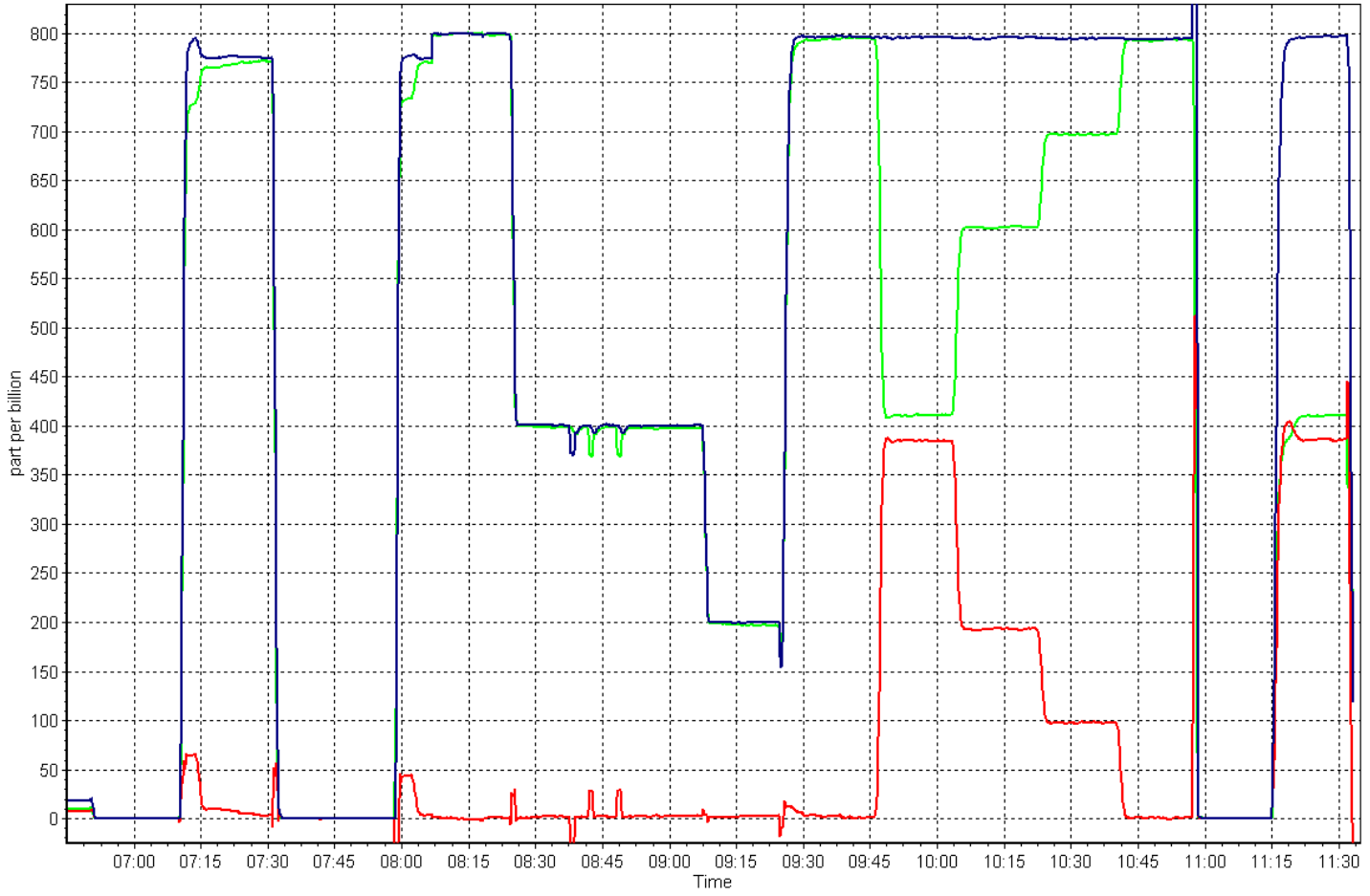
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
796.9	798.2	0.9983
399.0	397.7	1.0034
199.5	197.0	1.0129

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999981	*≥0.995*
Slope	1.002405	*0.90 - 1.10*
Intercept	-1.432704	*+/-20*



NO_X Calibration Plot Date: April 15, 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:	April 17, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	7:00	End time (MST):	7:52
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)	-3.8	-4.1	-3.8	☐	+/- 2 °C
P (mmHg)	740.4	739.4	740.4	☐	+/- 10 mmHg
Flow (LPM)	4.98	4.96	4.98	☐	+/- 0.25 LPM
PW% (pump)	55	-----	55	☐	>80%
Zero Verification	PM w/o HEPA:	4.7	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: 16-Jul-26 — Lot No.: 100128-050-050

Parameter	As found	Post maintenance	As left	Adjusted	*(Limits)*
PMT Peak Test	8	11.2	11.2	☐	+/- 0.5

Date Optical Chamber Cleaned: April 17, 2025

Date Disposable Filter Changed: April 17, 2025

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

Annual Maintenance

Date Sample Tube Cleaned: April 17, 2025

Date RH/T Sensor Cleaned: April 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
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Waskow ohci Pimatisiwin	Station number:	AMS 25
Calibration Date:	April 9, 2025	Last Cal Date:	March 25, 2025
Start time (MST):	7:04	End time (MST):	9:50
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.003113	1.007511	Backgd or Offset:	11.3	11.3
Calibration intercept:	-0.352267	0.109107	Coeff or Slope:	1.065	1.065

SO_2 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	0.1	----
As found High point	4920	80.5	800.1	802.9	0.997
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	802.8	Previous response	802.2	*% 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	

SO_2 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	0.2	----
High point	4920	80.5	800.1	806.1	0.993
Mid point	4960	40.2	399.6	403.1	0.991
Low point	4980	20.1	199.8	201.0	0.994
As left zero	5000	0.0	0.0	0.2	----
As left span	4920	80.5	800.1	807.2	0.991
				Average Correction Factor:	0.993

Notes: No Maintenance or adjustments done.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

SO_2 Calibration Summary

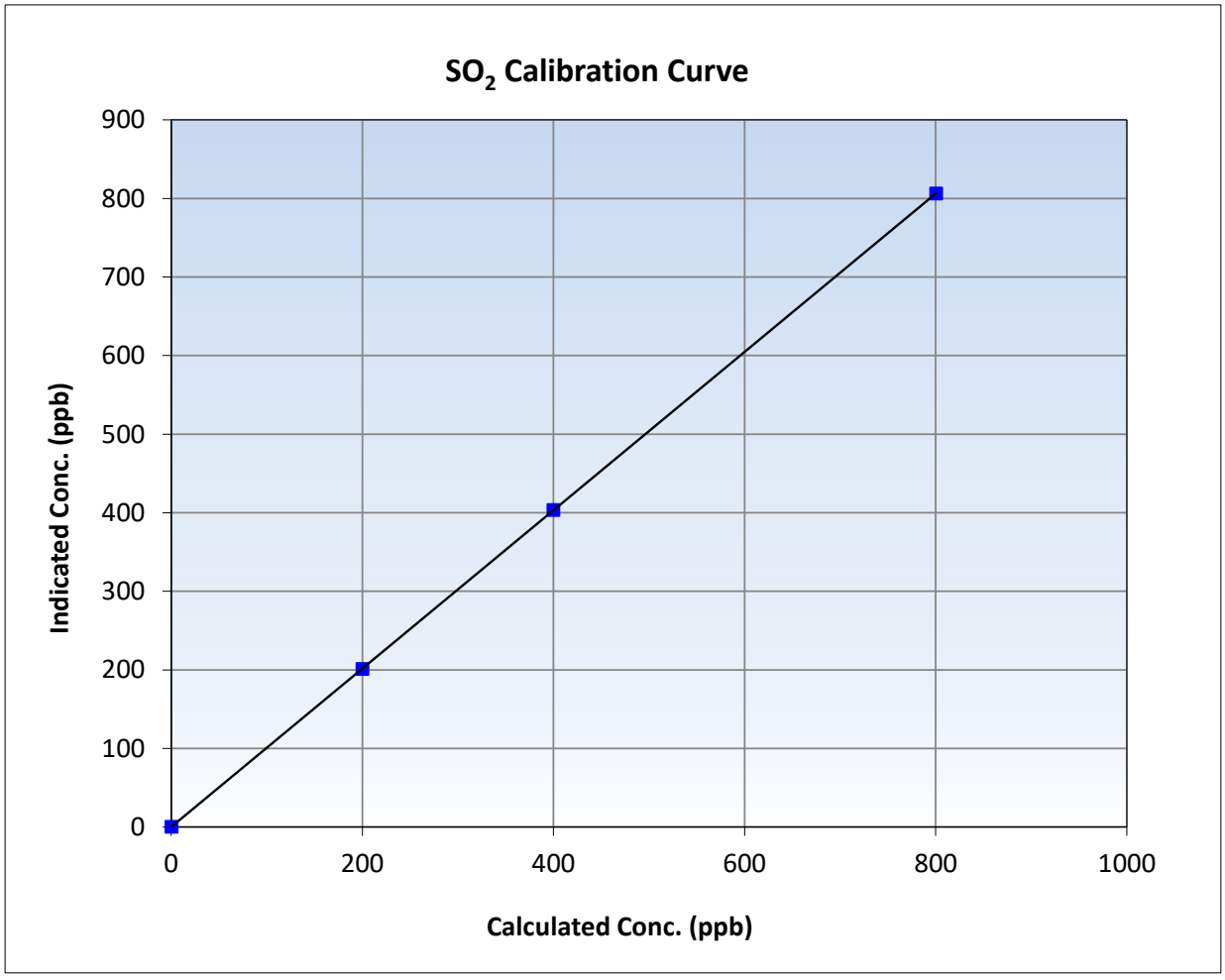
Station Information

Calibration Date:	April 9, 2025	Previous Calibration:	March 25, 2025
Station Name:	Waskow ohci Pimatisiwin	Station Number:	AMS 25
Start Time (MST):	7:04	End Time (MST):	9:50
Analyzer make:	Thermo 43i	Analyzer serial #:	1118148497

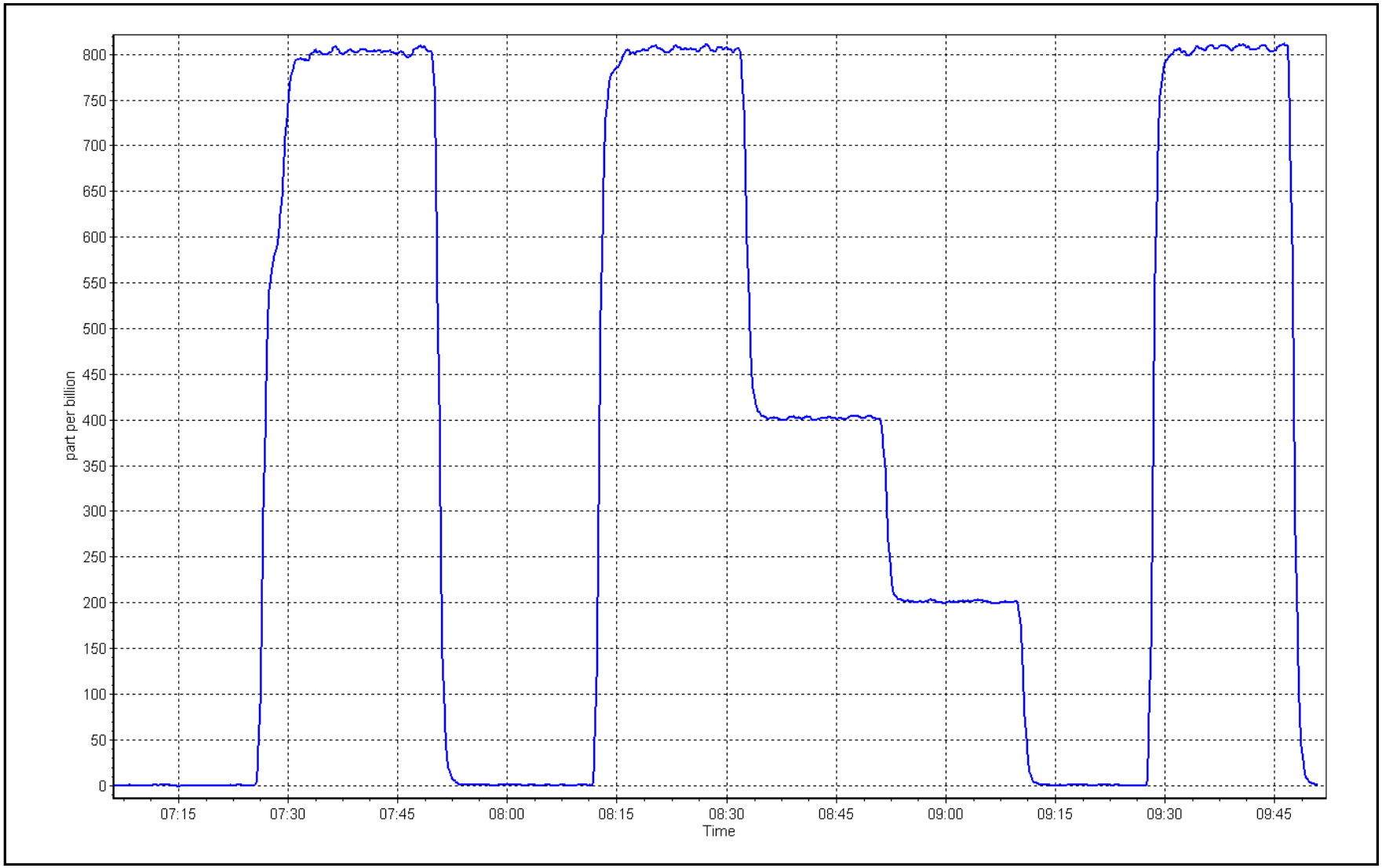
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
800.1	806.1	0.9925
399.6	403.1	0.9912
199.8	201.0	0.9940

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999999	*≥0.995*
Slope	1.007511	*0.90 - 1.10*
Intercept	0.109107	*+/-30*



SO2 Calibration Plot Date: April 9, 2025 Location: Waskow ohci Pimatisiwin



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	Waskow ohci Pimatisiwin	Station number:	AMS 25
Calibration Date:	April 23, 2025	Last Cal Date:	March 24, 2025
Start time (MST):	7:10	End time (MST):	11:07
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

	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.011498	1.007473	Backgd or Offset:	3.50	3.50
Calibration intercept:	-0.140000	0.000000	Coeff or Slope:	1.108	1.086

H_2S 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	-0.1	----
As found High point	4920	80.0	79.5	82.8	0.959
As found Mid point	4960	40.0	39.8	41.4	0.958
As found Low point	4980	20.0	19.9	20.6	0.960
New cylinder response					

Baseline Corr As found:	82.9	Prev response:	80.29	*% change:	3.1%
Baseline Corr 2nd AF pt:	41.5	AF Slope:	1.042685	AF Intercept:	-0.100000
Baseline Corr 3rd AF pt:	20.7	AF Correlation:	0.999999	* = > +/-5% change initiates investigation	

H_2S 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	4920	80.0	79.5	80.1	0.993
Mid point	4960	40.0	39.8	40.1	0.992
Low point	4980	20.0	19.9	20.0	0.994
As left zero	5000	0.0	0.0	0.1	----
As left span	4920	80.0	800.0	811.7	0.986
SO2 Scrubber Check	4920	80.0	800.0	0.0	----
Date of last scrubber change:				Ave Corr Factor	0.993
Date of last converter efficiency test:		February 12, 2025		111.0%	efficiency

Notes: SOx Scrubber checked after the calibrator zero. Span adjusted.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

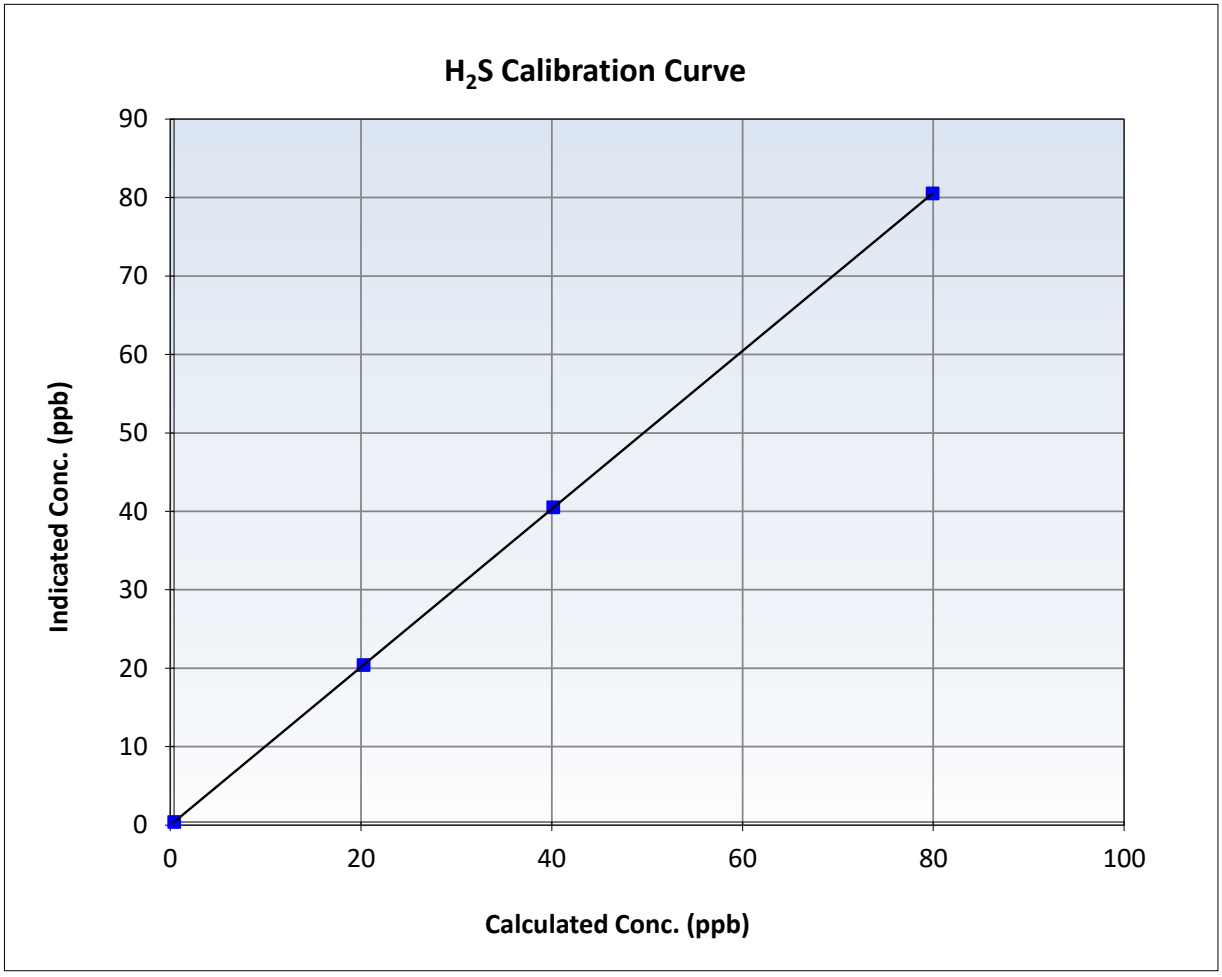
H_2S Calibration Summary

Station Information

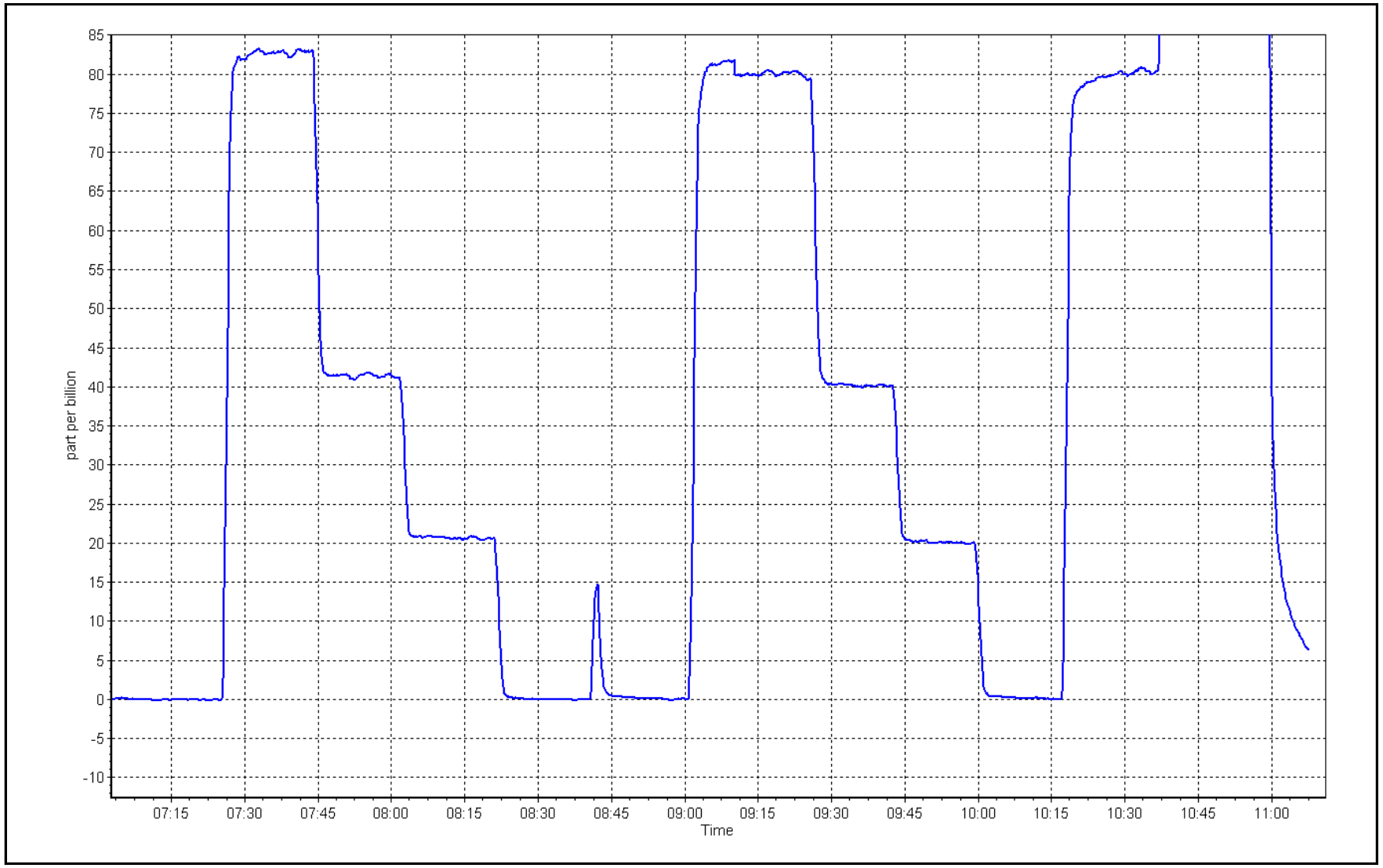
Calibration Date:	April 23, 2025	Previous Calibration:	March 24, 2025
Station Name:	Waskow ohci Pimatisiwin	Station Number:	10:47:00 AM
Start Time (MST):	7:10	End Time (MST):	11:07
Analyzer make:	Thermo 43i-LTE	Analyzer serial #:	1170050146

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	0.0	----	Correlation Coefficient	0.999999	*≥0.995*
79.5	80.1	0.9928	Slope	1.007473	*0.90 - 1.10*
39.8	40.1	0.9915			
19.9	20.0	0.9940	Intercept	0.000000	*+/-3*



H_2S Calibration Plot Date: April 23, 2025 Location: Waskow ohci Pimatisiwin



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS27
JACKFISH 2/3
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Jackfish 2/3	Station number:	AMS 27
Calibration Date:	April 11, 2025	Last Cal Date:	March 13, 2025
Start time (MST):	10:47	End time (MST):	14:04
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:	5252
Zero Air Gen Model:	API 701		Serial Number:	268

Analyzer Information

Analyzer make:	Thermo 43iQ-TL		Serial Number:	12124313138	
Analyzer Range:	0 - 1000 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.997385	1.010079	Backgd or Offset:	8.5	8.4
Calibration intercept:	-0.546041	0.842963	Coeff or Slope:	0.947	0.947

SO_2 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	1.2	----
As found High point	4913	78.9	799.4	808.6	0.990
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	807.4	Previous response	796.8	*% 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	

SO_2 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	1.3	----
High point	4913	78.9	799.4	808.8	0.988
Mid point	4955	39.5	400.0	404.0	0.990
Low point	4971	19.7	199.7	202.5	0.986
As left zero	5000	0.0	0.0	1.3	----
As left span	4913	78.9	799.4	807.3	0.990
				Average Correction Factor:	0.988

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

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

SO_2 Calibration Summary

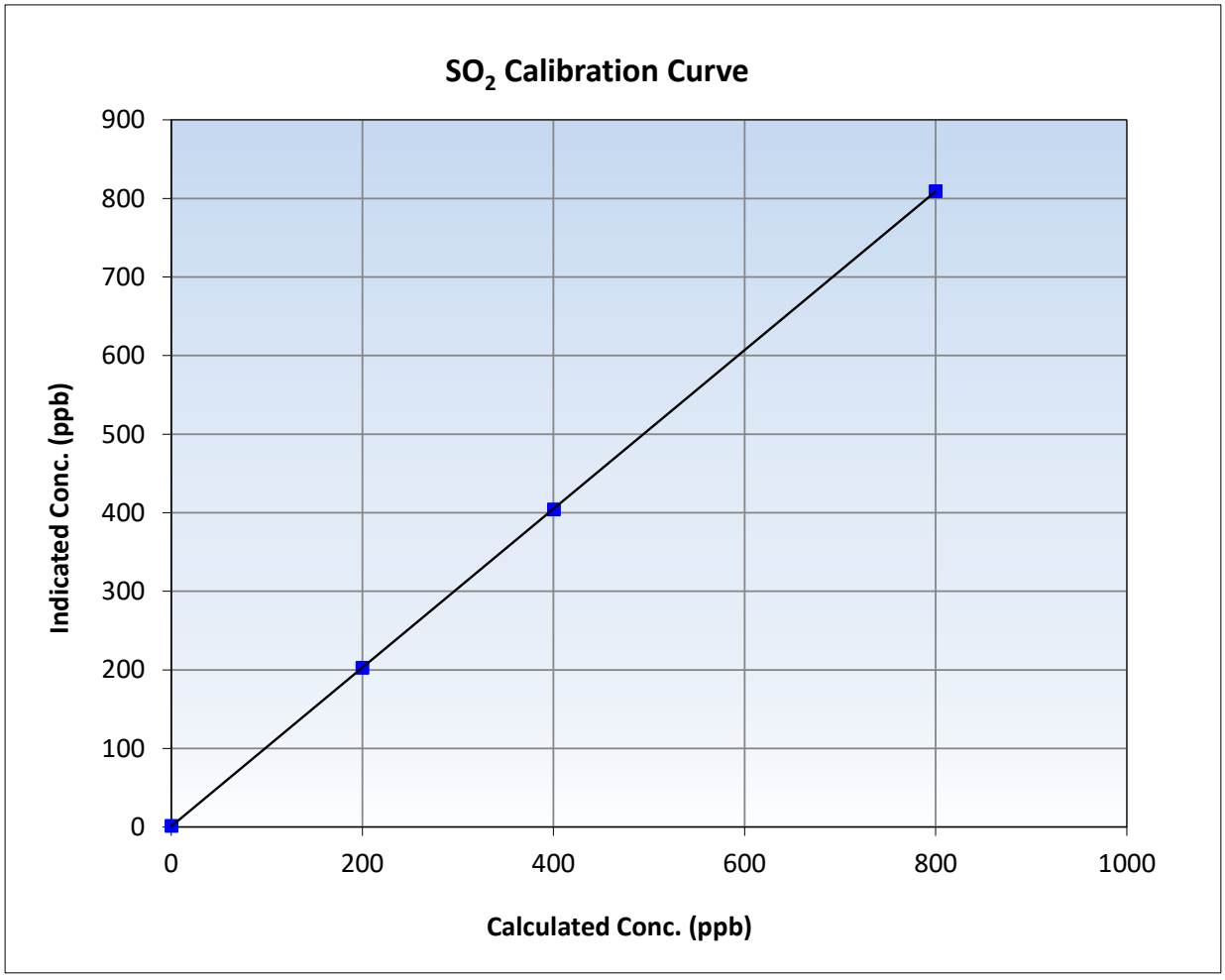
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 13, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	10:47	End Time (MST):	14:04
Analyzer make:	Thermo 43iQ-TL	Analyzer serial #:	12124313138

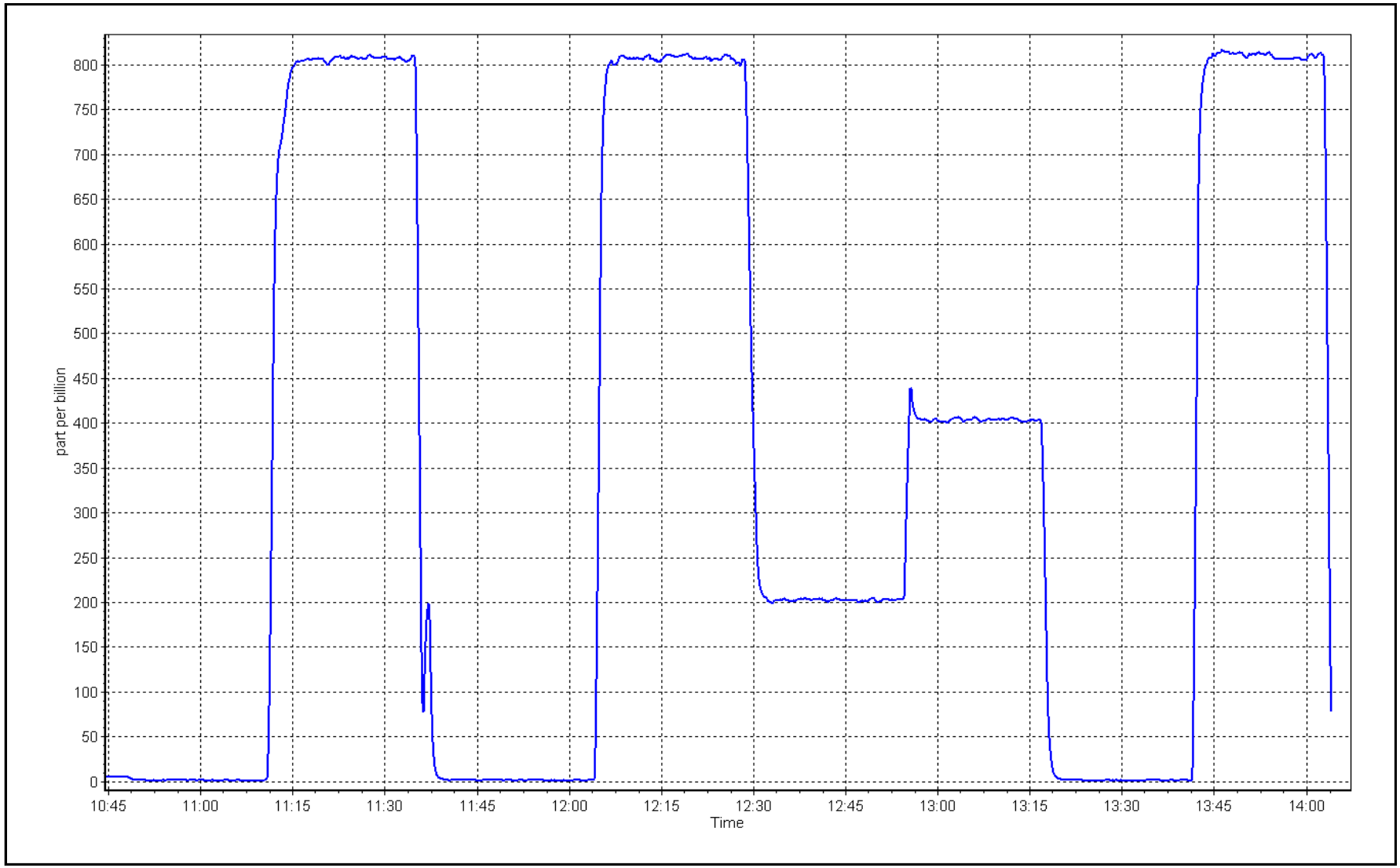
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	1.3	----
799.4	808.8	0.9884
400.0	404.0	0.9902
199.7	202.5	0.9860

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999997	*≥0.995*
Slope	1.010079	*0.90 - 1.10*
Intercept	0.842963	*+/-30*



SO2 Calibration Plot Date: April 11, 2025 Location: Jackfish 2/3



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	Jackfish 2/3	Station number:	AMS 27
Calibration Date:	April 23, 2025	Last Cal Date:	March 19, 2025
Start time (MST):	11:48	End time (MST):	18:33
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	4.87	ppm	Cal Gas Exp Date:	September 5, 2027	
Cal Gas Cylinder #:	CC523090				
Removed Cal Gas Conc:	4.87	ppm	Rem Gas Exp Date:	NA	
Removed Gas Cyl #:	NA		Diff between cyl:		
Calibrator Make/Model:	API T700		Serial Number:	5252	
ZAG Make/Model:	API T701H		Serial Number:	268	

Analyzer Information

Analyzer make:	Thermo 43iQ		Analyzer serial #:	12228021055	
Converter make:	Global G150		Converter serial #:	2022-195	
Analyzer Range	0 - 100 ppb		Converter Temp:	325	degC

	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.011680	1.004231	Backgd or Offset:	3.6	3.6
Calibration intercept:	-0.227800	0.159197	Coeff or Slope:	1.136	1.150

H_2S 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	4911	82.0	80.0	81.1	0.983
As found Mid point	4951	41.0	40.0	40.1	0.990
As found Low point	4973	20.5	20.0	19.7	1.000
New cylinder response					

Baseline Corr As found:	81.4	Prev response:	80.69	*% change:	0.9%
Baseline Corr 2nd AF pt:	40.4	AF Slope:	1.018806	AF Intercept:	-0.500808
Baseline Corr 3rd AF pt:	20.0	AF Correlation:	0.999971	* = > +/-5% change initiates investigation	

H_2S 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	0.2	----
High point	4911	82.0	80.0	80.5	0.994
Mid point	4951	41.0	40.0	40.3	0.993
Low point	4973	20.5	20.0	20.2	0.990
As left zero	5000	0.0	0.0	0.2	----
As left span	4911	82.0	80.0	79.2	1.010
SO2 Scrubber Check	4915	78.9	790.0	-0.2	----

Date of last scrubber change:		21-Feb-25		Ave Corr Factor	0.992
Date of last converter efficiency test:		April 23, 2025		91.4%	efficiency

Notes: Performed a converter efficiency test. Changed sample inlet filter after as founds. Ran scrubber check after calibrator zero and it passed. Adjusted span only.

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

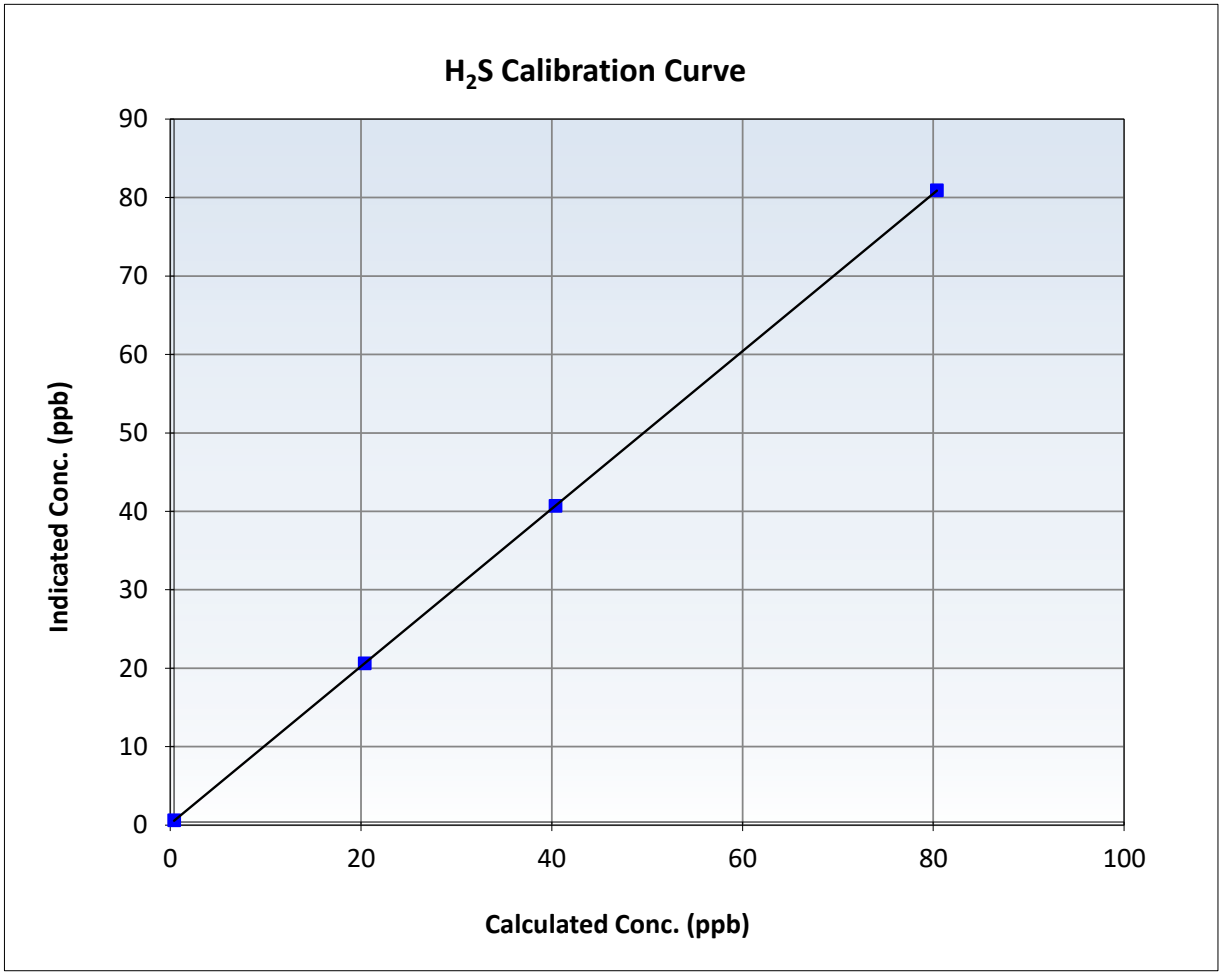
H_2S Calibration Summary

Station Information

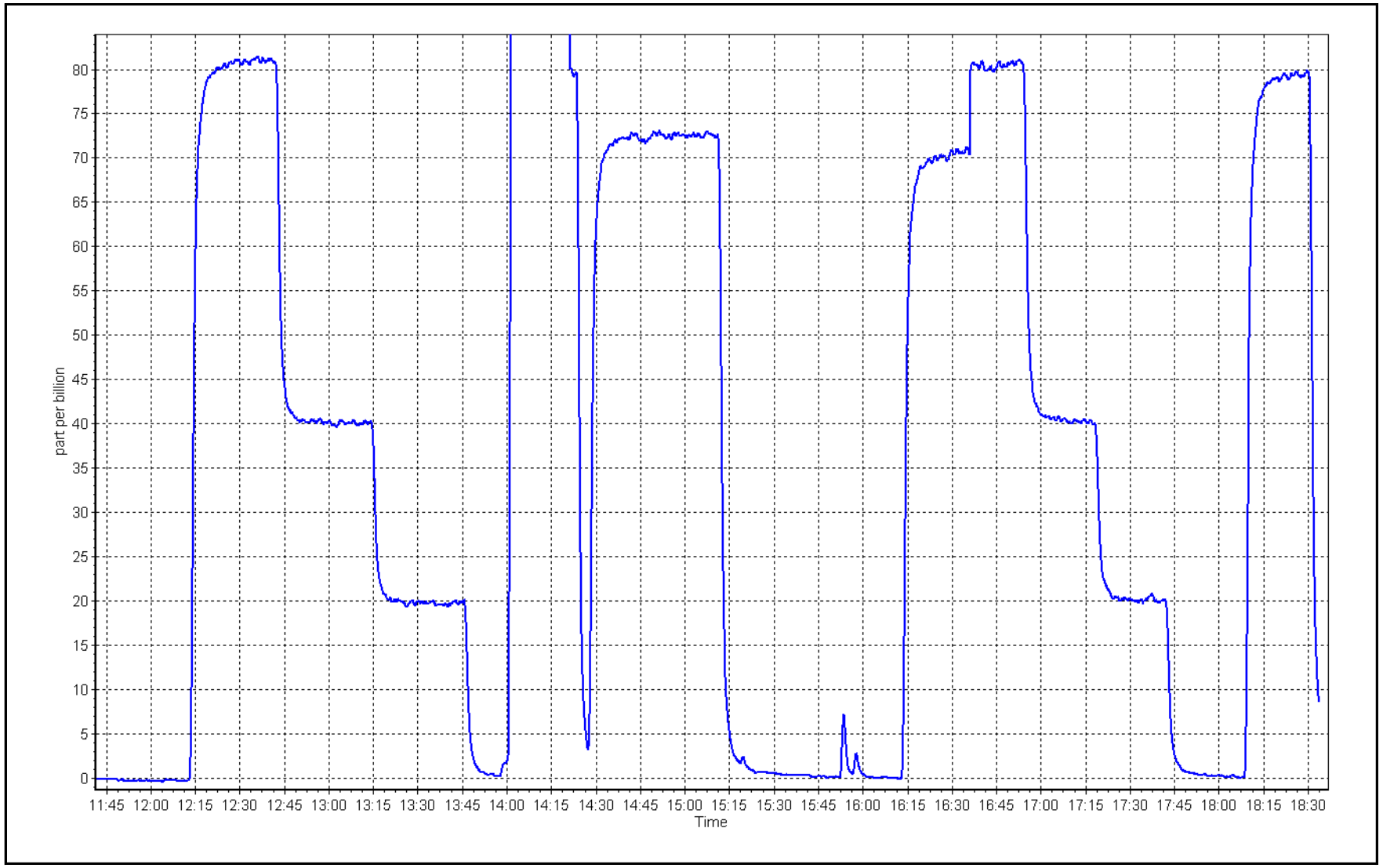
Calibration Date:	April 23, 2025	Previous Calibration:	March 19, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	11:48	End Time (MST):	18:33
Analyzer make:	Thermo 43iQ	Analyzer serial #:	12228021055

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	0.2	----	Correlation Coefficient	0.999999	*≥0.995*
80.0	80.5	0.9935	Slope	1.004231	*0.90 - 1.10*
40.0	40.3	0.9925			
20.0	20.2	0.9898	Intercept	0.159197	*+/-3*



H_2S Calibration Plot Date: April 23, 2025 Location: Jackfish 2/3



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Jackfish 2/3
Station number:	AMS 27
Calibration Date:	April 14, 2025
Last Cal Date:	March 18, 2025
Start time (MST):	11:12
End time (MST):	16:28
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	CC757838	Cal Gas Expiry Date:	January 9, 2032
NOX Cal Gas Conc:	60.30 ppm	NO Cal Gas Conc:	60.20 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	60.30 ppm	Removed Gas NO Conc:	60.20 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	5252
ZAG make/model:	Teledyne API T701	Serial Number:	268

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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	0.4	0.5	-0.1	----	----
AF High point	4924	66.3	801.1	799.8	1.3	810.2	804.9	5.4	0.9893	0.9943
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 799.3 ppb	NO = 796.9 ppb
Baseline Corr 1st pt	NO_X = 809.8 ppb	NO = 804.4 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

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	NO_2 Int:

*Percent Change	NO_X = 1.3%
*Percent Change	NO = 0.9%

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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1218153357

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	1.279	1.272	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:	158.1	159.3

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	1.000532	0.996775
NO_X Cal Offset:	-2.295044	1.250382
NO Cal Slope:	1.001195	0.999158
NO Cal Offset:	-3.895489	-0.729210
NO_2 Cal Slope:	1.000485	0.999829
NO_2 Cal Offset:	-0.127047	0.510255

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	1.2	0.6	0.5	----	----
High point	4924	66.3	801.1	799.8	1.3	799.8	799.0	0.8	1.0017	1.0010
Mid point	4958	33.2	401.1	400.4	0.7	401.0	398.9	2.1	1.0002	1.0038
Low point	4976	16.6	200.5	200.2	0.3	201.2	197.8	3.4	0.9965	1.0119
As left zero	5000	0.0	0.0	0.0	0.0	2.9	0.8	2.1	----	----
As left span	4924	66.3	801.1	374.4	426.7	796.8	374.4	422.4	1.0054	1.0000
								Average Correction Factor	0.9995	1.0056

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.5	----	----
High GPT point	793.4	373.0	421.7	422.2	0.9989	100.1%
Mid GPT point	793.4	577.3	217.4	217.8	0.9983	100.2%
Low GPT point	793.4	691.7	103.0	103.6	0.9945	100.6%
				Average Correction Factor	0.9972	100.3%

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

Calibration Performed By: Mohammed Kashif

Wood Buffalo Environmental Association

NO_X Calibration Summary

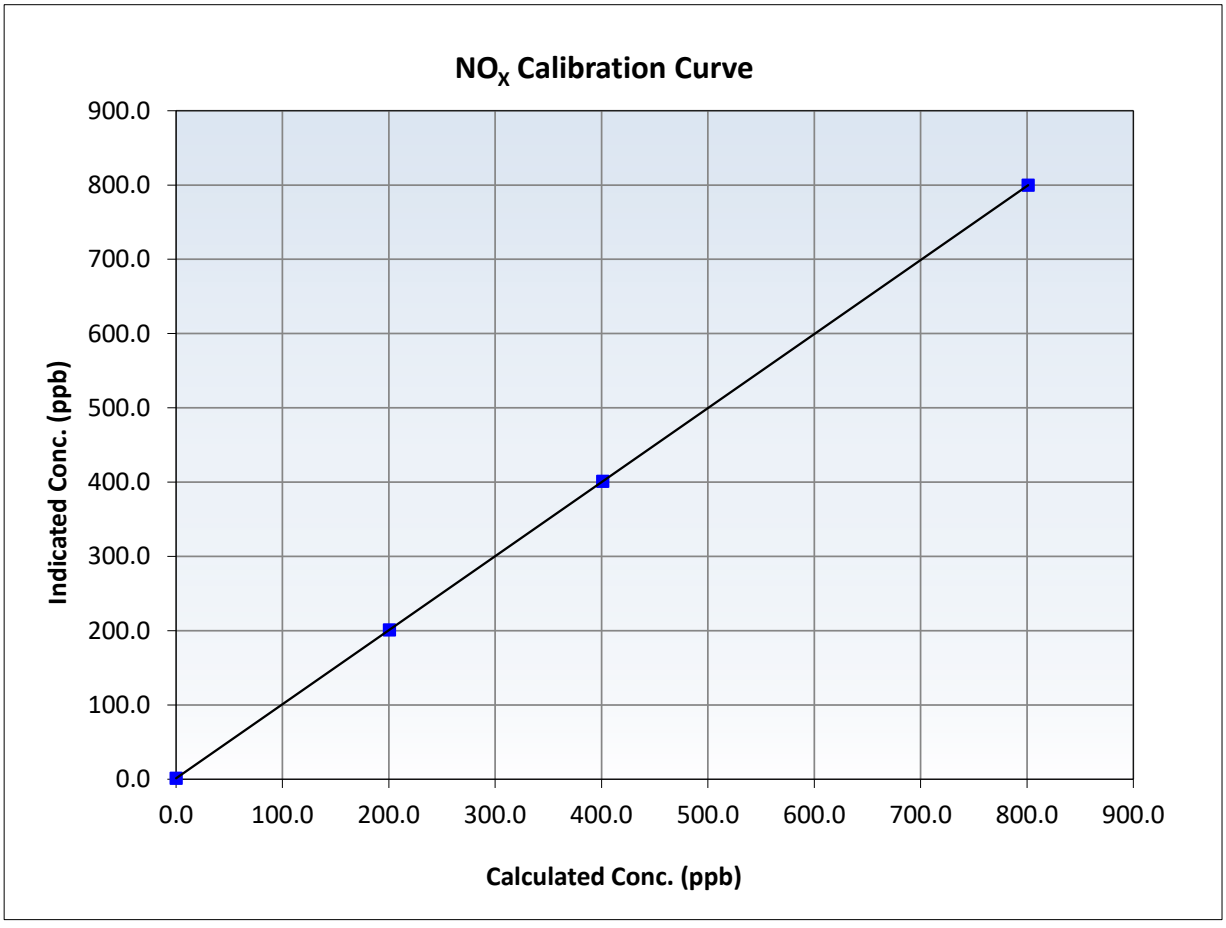
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 18, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	11:12	End Time (MST):	16:28
Analyzer make:	Thermo 42i	Analyzer serial #:	1218153357

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	1.2	----
801.1	799.8	1.0017
401.1	401.0	1.0002
200.5	201.2	0.9965

Statistical Evaluation		Limits
Correlation Coefficient	1.000000	≥0.995
Slope	0.996775	0.90 - 1.10
Intercept	1.250382	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

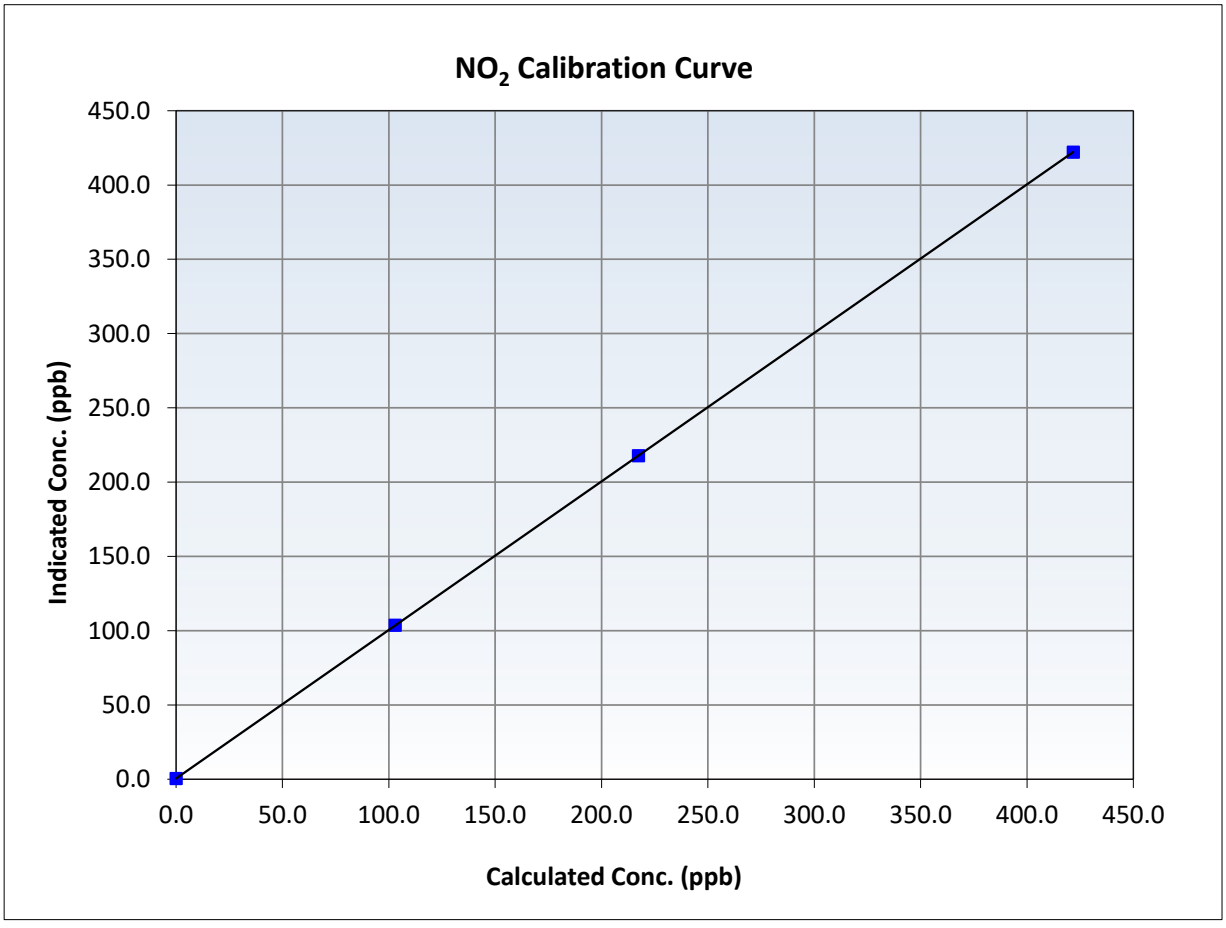
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 18, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	11:12	End Time (MST):	16:28
Analyzer make:	Thermo 42i	Analyzer serial #:	1218153357

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.5	----
421.7	422.2	0.9989
217.4	217.8	0.9983
103.0	103.6	0.9945

Statistical Evaluation		Limits
Correlation Coefficient	1.000000	≥0.995
Slope	0.999829	0.90 - 1.10
Intercept	0.510255	+/-20



Wood Buffalo Environmental Association

NO Calibration Summary

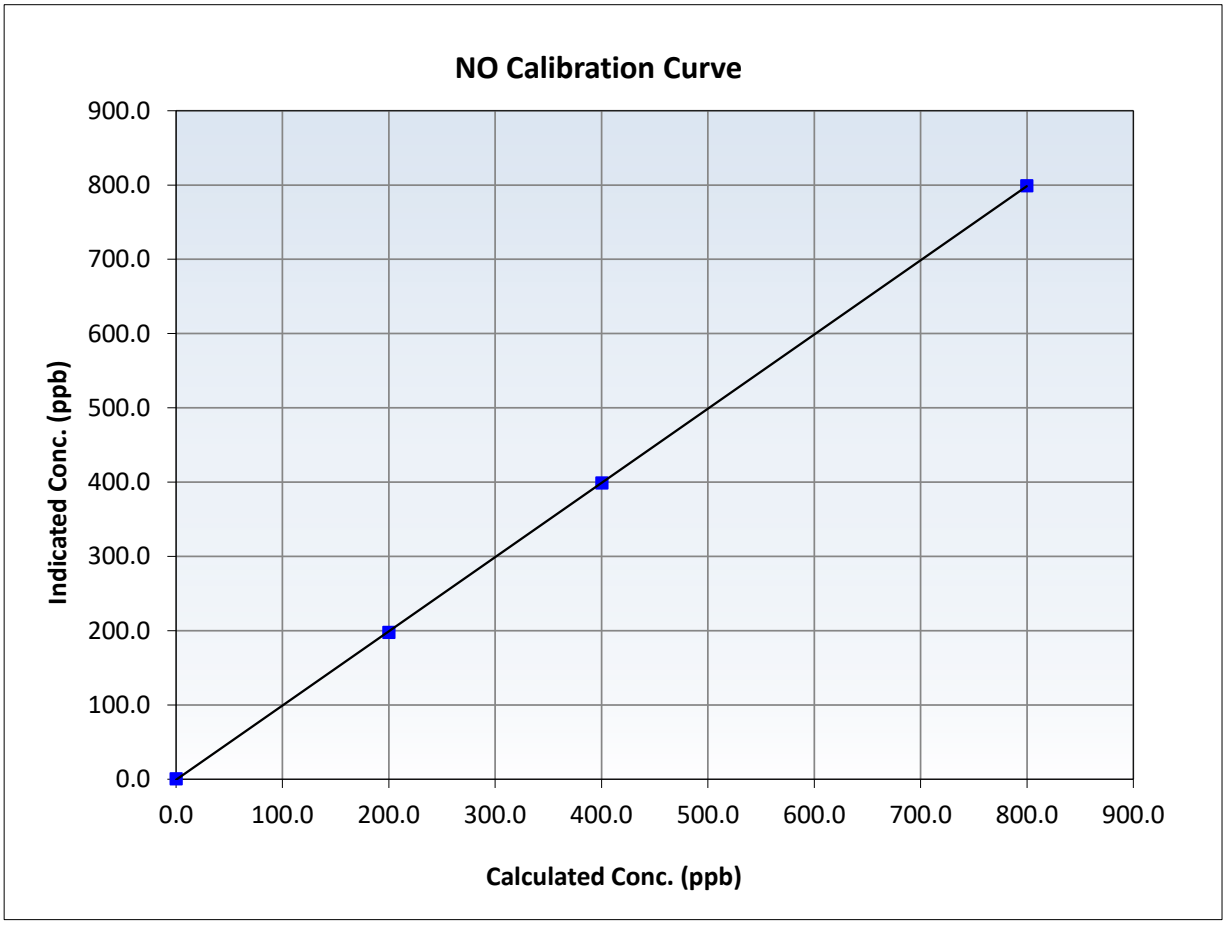
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 18, 2025
Station Name:	Jackfish 2/3	Station Number:	AMS 27
Start Time (MST):	11:12	End Time (MST):	16:28
Analyzer make:	Thermo 42i	Analyzer serial #:	1218153357

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.6	----
799.8	799.0	1.0010
400.4	398.9	1.0038
200.2	197.8	1.0119

Statistical Evaluation		Limits
Correlation Coefficient	0.999987	≥0.995
Slope	0.999158	0.90 - 1.10
Intercept	-0.729210	+/-20



NO_X Calibration Plot Date: April 14, 2025 Location: Jackfish 2/3

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS29
SURMONT 2
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Surmont 2	Station number:	AMS 29
Calibration Date:	April 14, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	10:28	End time (MST):	14:14
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:	49.95	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.000431	1.006144	Backgd or Offset:	14.5	14.3
Calibration intercept:	-1.000571	-1.799656	Coeff or Slope:	0.962	0.956

SO_2 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	4919.9	80.1	800.2	806.0	0.992
As found Mid point					
As found Low point					
New cylinder response	4920	80.1	800.2		
Baseline Corr As found:	806.3	Previous response	799.5	*% 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	

SO_2 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	0.2	----
High point	4920	80.1	800.2	804.0	0.995
Mid point	4960	40.0	399.6	400.2	0.999
Low point	4980	20.0	199.8	196.6	1.016
As left zero	5000	0.0	0.0	-0.2	----
As left span	4920	80.1	800.2	798.1	1.003
				Average Correction Factor:	1.003

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

SO_2 Calibration Summary

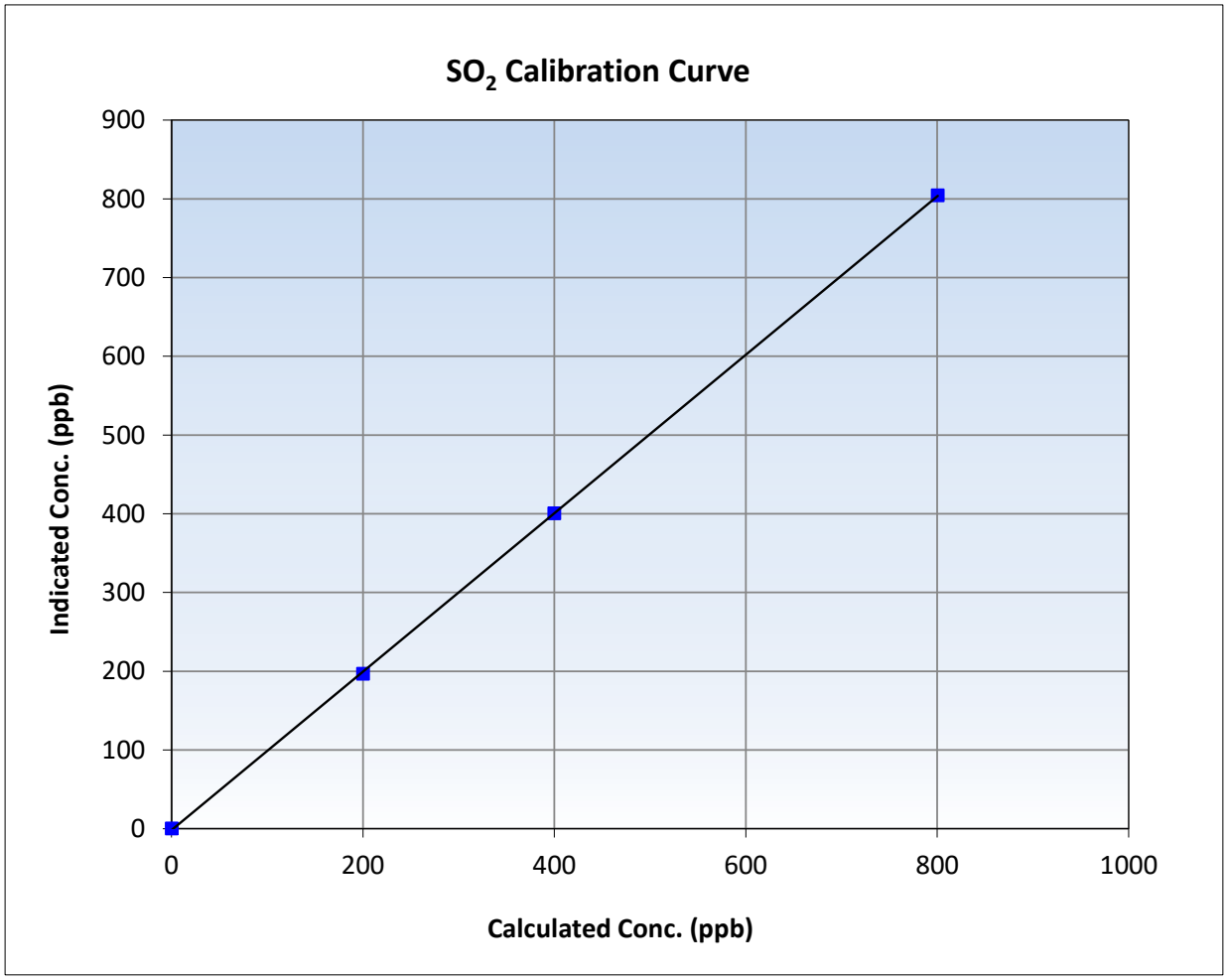
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 17, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	10:28	End Time (MST):	14:14
Analyzer make:	Thermo 43i	Analyzer serial #:	1170050150

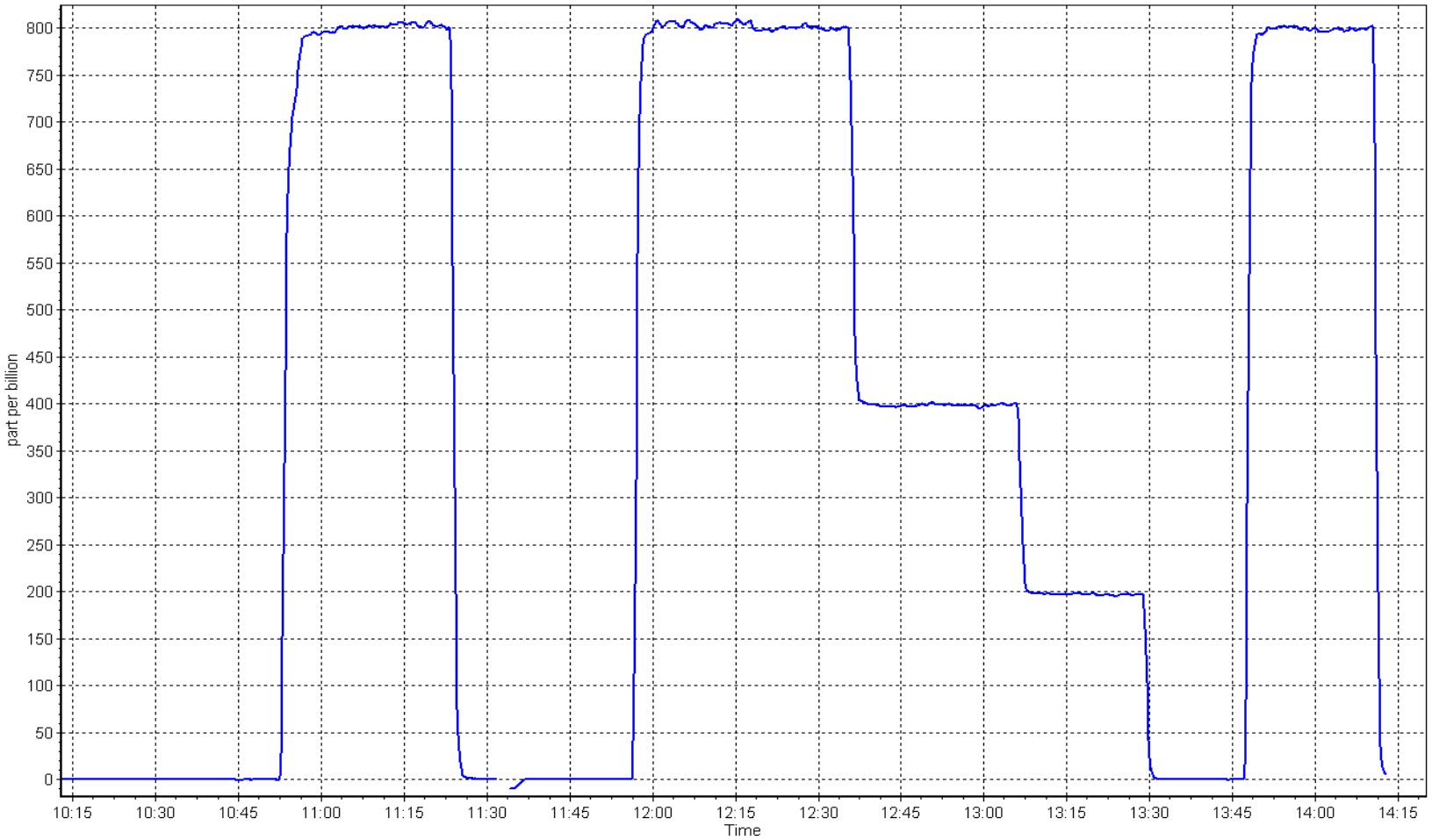
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
800.2	804.0	0.9953
399.6	400.2	0.9985
199.8	196.6	1.0163

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999968	*≥0.995*
Slope	1.006144	*0.90 - 1.10*
Intercept	-1.799656	*+/-30*



SO2 Calibration Plot Date: April 14, 2025 Location: Surmont 2



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name:	Surmont 2	Station number:	AMS 29
Calibration Date:	April 8, 2025	Last Cal Date:	March 26, 2025
Start time (MST):	9:59	End time (MST):	15:34
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

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.006025	1.003882	Backgd or Offset:	0.94	0.95
Calibration intercept:	-0.080482	-0.180480	Coeff or Slope:	1.039	1.031

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4916	84.2	80.0	81.7	0.978
As found Mid point	4958	42.1	40.0	40.5	0.985
As found Low point	4979	21.1	20.0	20.4	0.975
New cylinder response					

Baseline Corr As found:	81.8	Prev response:	80.39	*% change:	1.7%
Baseline Corr 2nd AF pt:	40.6	AF Slope:	1.022028	AF Intercept:	-0.140489
Baseline Corr 3rd AF pt:	20.5	AF Correlation:	0.999979	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4916	84.2	80.0	80.2	0.997
Mid point	4958	42.1	40.0	39.8	1.005
Low point	4979	21.1	20.0	19.9	1.005
As left zero	5000	0.0	0.0	0.1	----
As left span	4916	84.2	80.0	79.1	1.011
SO2 Scrubber Check	4919	81.3	813.0	0.1	----

Date of last scrubber change:				Ave Corr Factor	1.002
Date of last converter efficiency test:		December 5, 2024		108.1%	efficiency

Notes: Changed sample inlet filter after as founds. Ran SOx scrubber check after cal zero, passed. Adjusted span.

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

H2S Calibration Summary

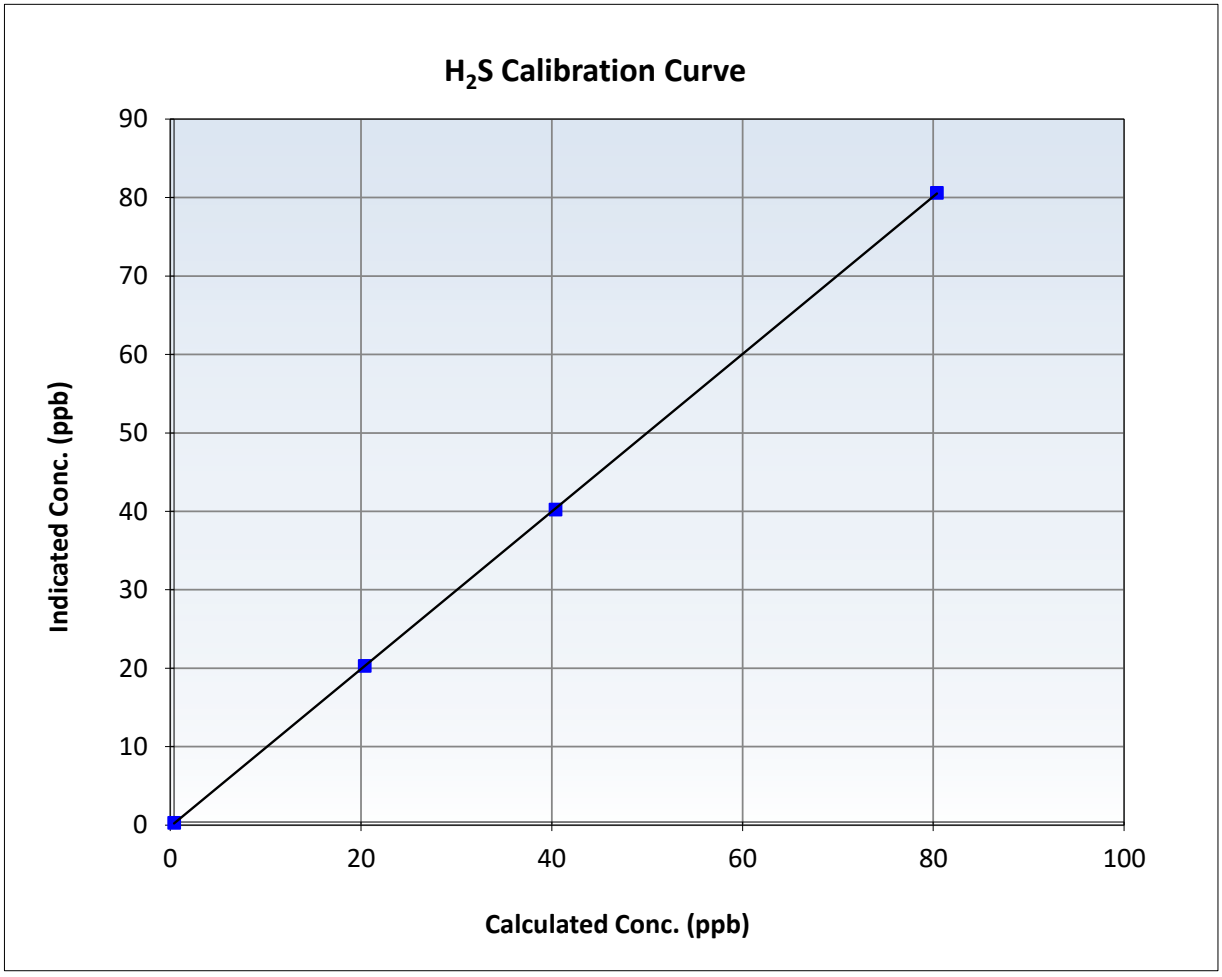
Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 26, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	9:59	End Time (MST):	15:34
Analyzer make:	Thermo 43iQ-TLE	Analyzer serial #:	1200326170

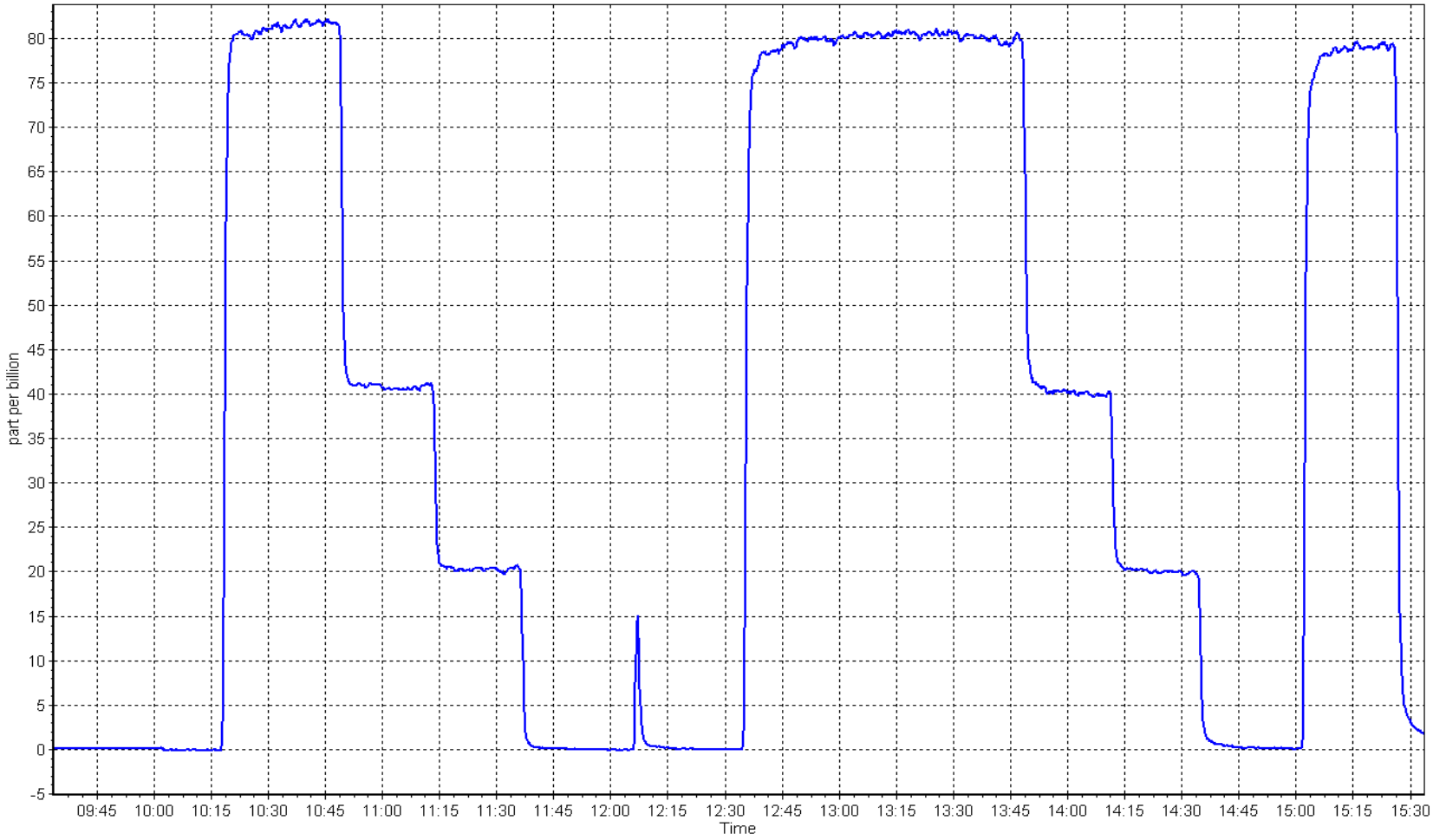
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
80.0	80.2	0.9973
40.0	39.8	1.0049
20.0	19.9	1.0049

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999988	*≥0.995*
Slope	1.003882	*0.90 - 1.10*
Intercept	-0.180480	*+/-3*



H2S Calibration Plot Date: April 8, 2025 Location: Surmont 2



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name:	Surmont 2	Station number:	AMS 29
Calibration Date:	April 14, 2025	Last Cal Date:	March 17, 2025
Start time (MST):	10:28	End time (MST):	14:14
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:	NA		Removed Gas Expiry:	NA	
Removed CH4 Conc.	503.7	ppm	CH4 Equiv Conc.	1066.9	ppm
Removed C3H8 Conc.	204.8	ppm	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 51i-LT Analyzer serial #: 1170050149

Analyzer Range: 0 - 20 ppm

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	0.999635	1.001408	Background:	3.45	3.54
Calibration intercept:	-0.017156	-0.029160	Coefficient:	3.890	3.872

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.07	----
As found High point	4920	80.1	17.09	17.21	0.997
As found Mid point					
As found Low point					
New cylinder response	4920	80.1	17.09		
Baseline Corr As found:	17.14	Previous response	17.07	*% 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	

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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.03	----
High point	4920	80.1	17.09	17.12	0.998
Mid point	4960	40.0	8.54	8.48	1.007
Low point	4980	20.0	4.27	4.19	1.019
As left zero	5000	0.0	0.00	-0.02	----
As left span	4920	80.1	17.09	17.14	0.997
				Average Correction Factor	1.008

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

THC Calibration Summary

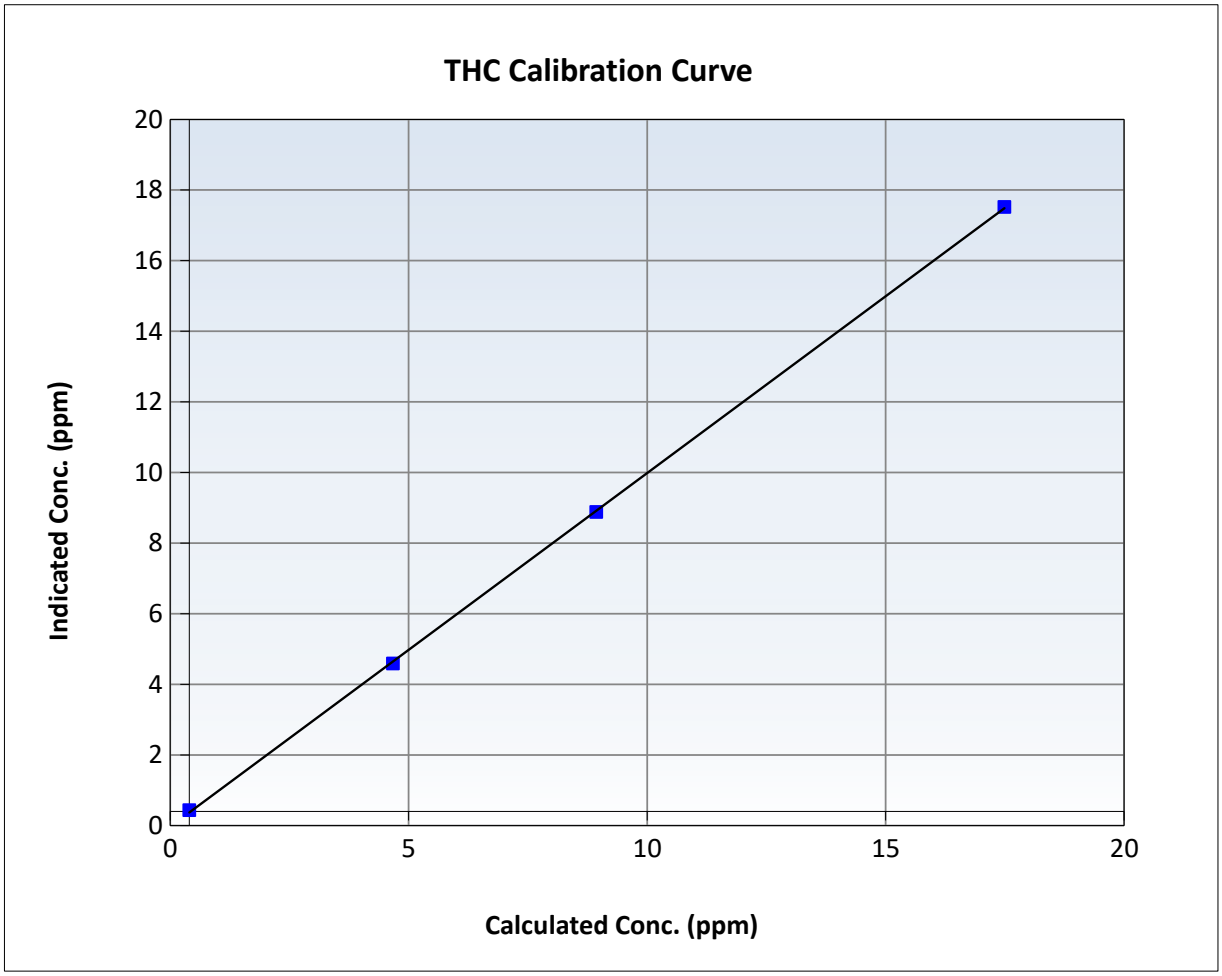
Station Information

Calibration Date:	April 14, 2025	Previous Calibration:	March 17, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	10:28	End Time (MST):	14:14
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1170050149

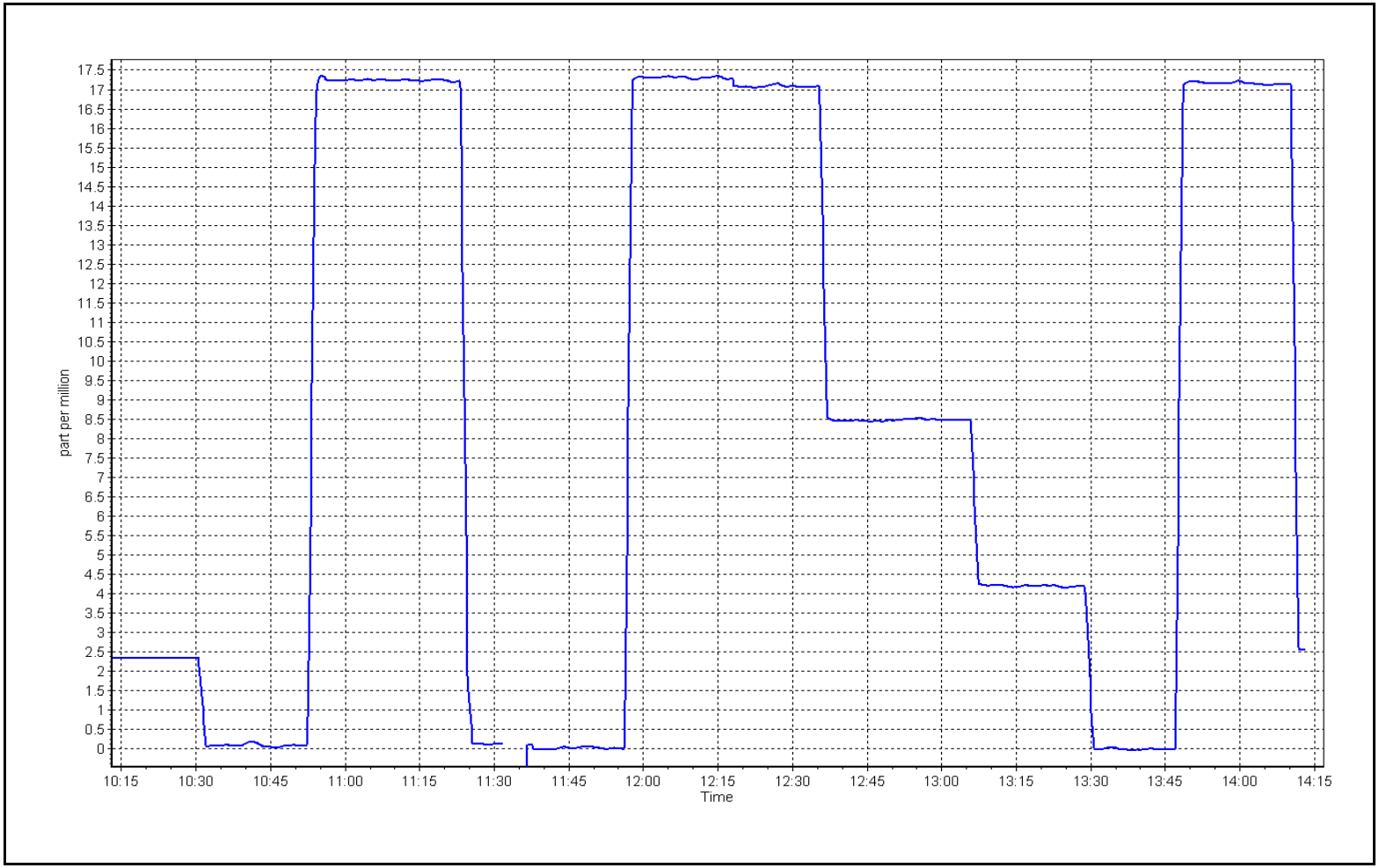
Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.03	----
17.09	17.12	0.9983
8.54	8.48	1.0065
4.27	4.19	1.0193

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999939	*≥0.995*
Slope	1.001408	*0.90 - 1.10*
Intercept	-0.029160	*+/-1.5*



THC Calibration Plot Date: April 14, 2025 Location: Surmont 2



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Surmont 2
Station number:	AMS 29
Calibration Date:	April 7, 2025
Last Cal Date:	March 25, 2025
Start time (MST):	10:20
End time (MST):	14:32
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	CC218007	Cal Gas Expiry Date:	January 9, 2032
NOX Cal Gas Conc:	60.00 ppm	NO Cal Gas Conc:	60.00 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	60.00 ppm	Removed Gas NO Conc:	60.00 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	5472
ZAG make/model:	Teledyne API T701	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0	0.0	0.0	0.0	0.0	-0.1	0.1	----	----
AF High point	4933	66.7	800.4	800.4	0.0	790.1	788.2	1.9	1.0131	1.0154
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 799.5 ppb	NO = 798.3 ppb
Baseline Corr 1st pt	NO_X = 790.1 ppb	NO = 788.3 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 = -1.2%		
*Percent Change	NO = -1.3%		

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1170050148

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:	1.001	1.001	NO bkgnd or offset:	1.2	1.2
NOX coeff or slope:	0.989	0.989	NOX bkgnd or offset:	1.2	1.2
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	150.2	148.7

Calibration Statistics

	Start	Finish
NO_X Cal Slope:	0.999329	0.997004
NO_X Cal Offset:	-0.449184	-0.809963
NO Cal Slope:	0.999498	0.994903
NO Cal Offset:	-1.708431	-2.049505
NO_2 Cal Slope:	0.995539	1.002832
NO_2 Cal Offset:	-0.464424	0.553598

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.1	0.1	0.0	----	----
High point	4933	66.7	800.4	800.4	0.0	797.5	795.0	2.6	1.0037	1.0069
Mid point	4967	33.3	399.6	399.6	0.0	397.7	395.6	2.1	1.0047	1.0101
Low point	4983	16.7	200.4	200.4	0.0	197.7	194.4	3.4	1.0137	1.0309
As left zero	5000	0.0	0.0	0.0	0.0	0.1	0.1	0.0	----	----
As left span	4933	66.7	800.4	403.2	397.2	791.4	403.2	388.2	1.0114	1.0000
							Average Correction Factor		1.0074	1.0159

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	788.8	401.8	387.0	388.5	0.9961	100.4%
Mid GPT point	788.8	602.8	186.0	187.0	0.9947	100.5%
Low GPT point	788.8	695.9	92.9	94.5	0.9831	101.7%
				Average Correction Factor	0.9913	100.9%

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

NO_X Calibration Summary

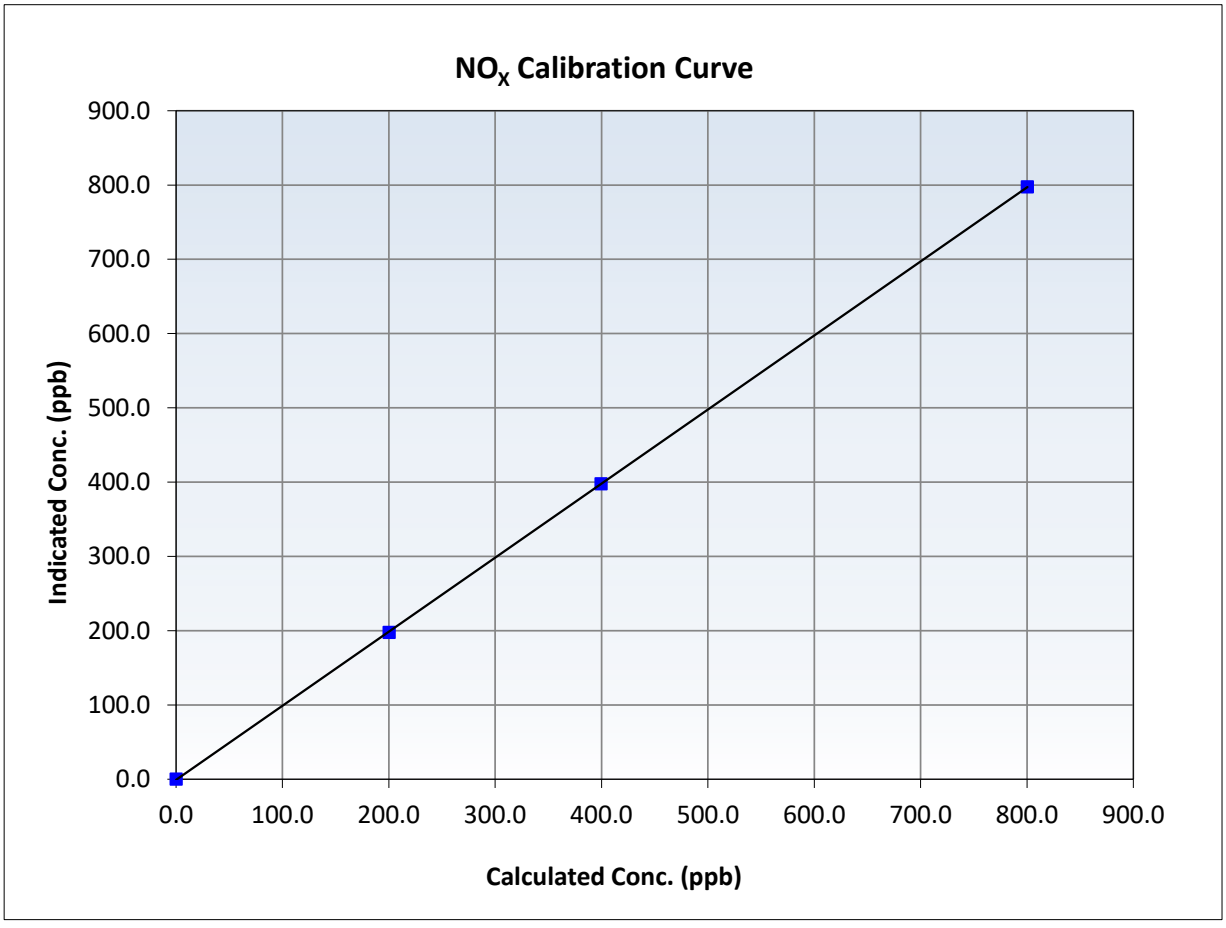
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 25, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	10:20	End Time (MST):	14:32
Analyzer make:	Thermo 42i	Analyzer serial #:	1170050148

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
800.4	797.5	1.0037
399.6	397.7	1.0047
200.4	197.7	1.0137

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999993	*≥0.995*
Slope	0.997004	*0.90 - 1.10*
Intercept	-0.809963	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

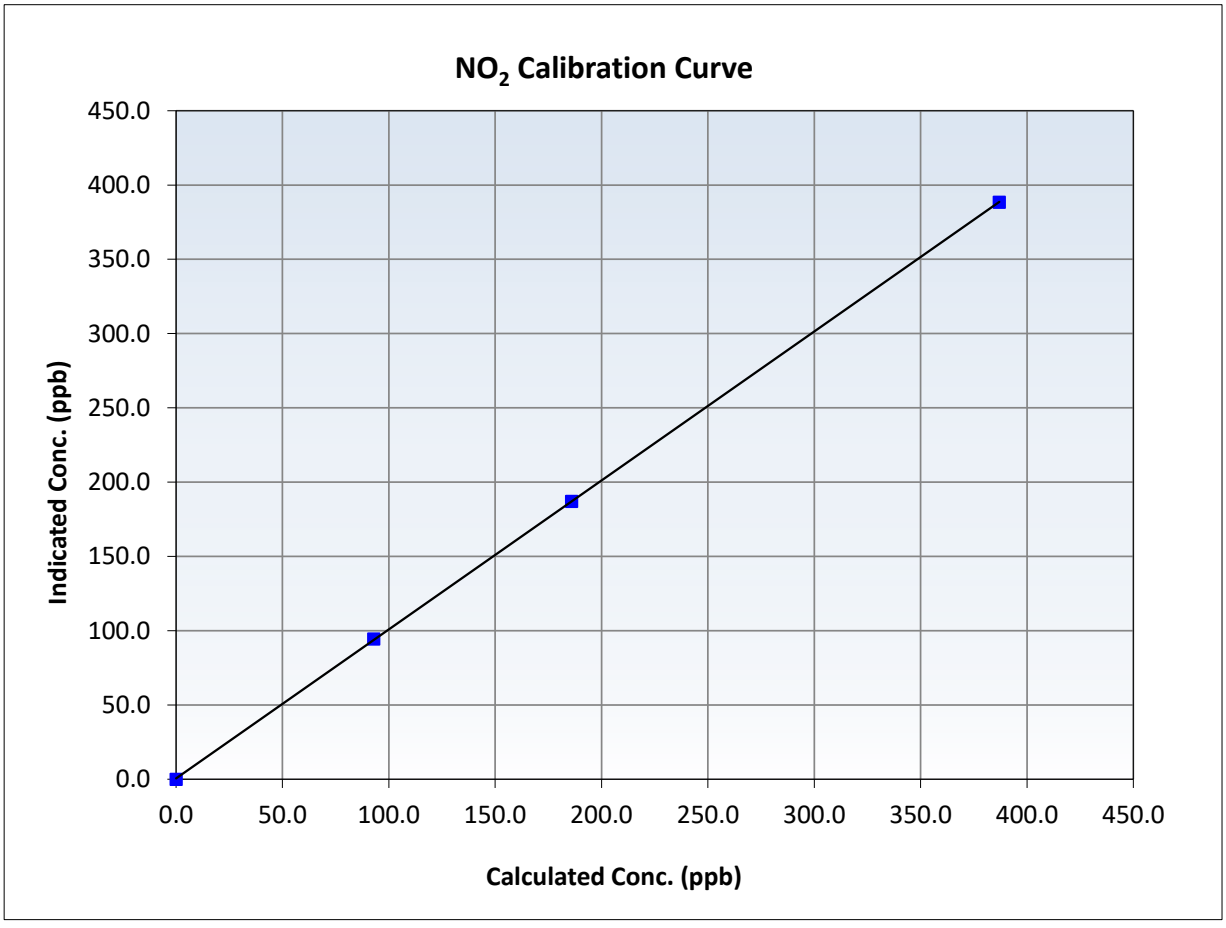
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 25, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	10:20	End Time (MST):	14:32
Analyzer make:	Thermo 42i	Analyzer serial #:	1170050148

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
387.0	388.5	0.9961
186.0	187.0	0.9947
92.9	94.5	0.9831

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999989	*≥0.995*
Slope	1.002832	*0.90 - 1.10*
Intercept	0.553598	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

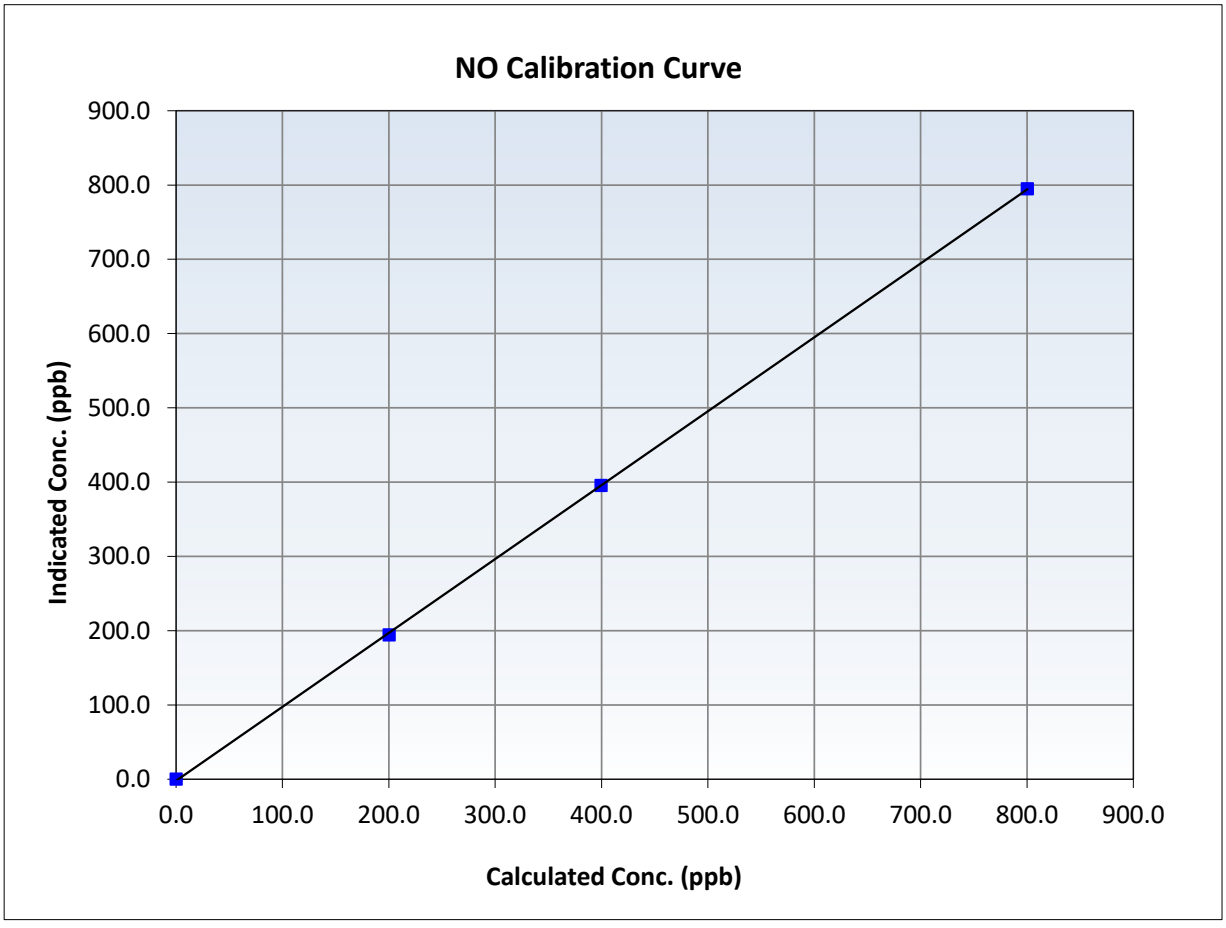
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 25, 2025
Station Name:	Surmont 2	Station Number:	AMS 29
Start Time (MST):	10:20	End Time (MST):	14:32
Analyzer make:	Thermo 42i	Analyzer serial #:	1170050148

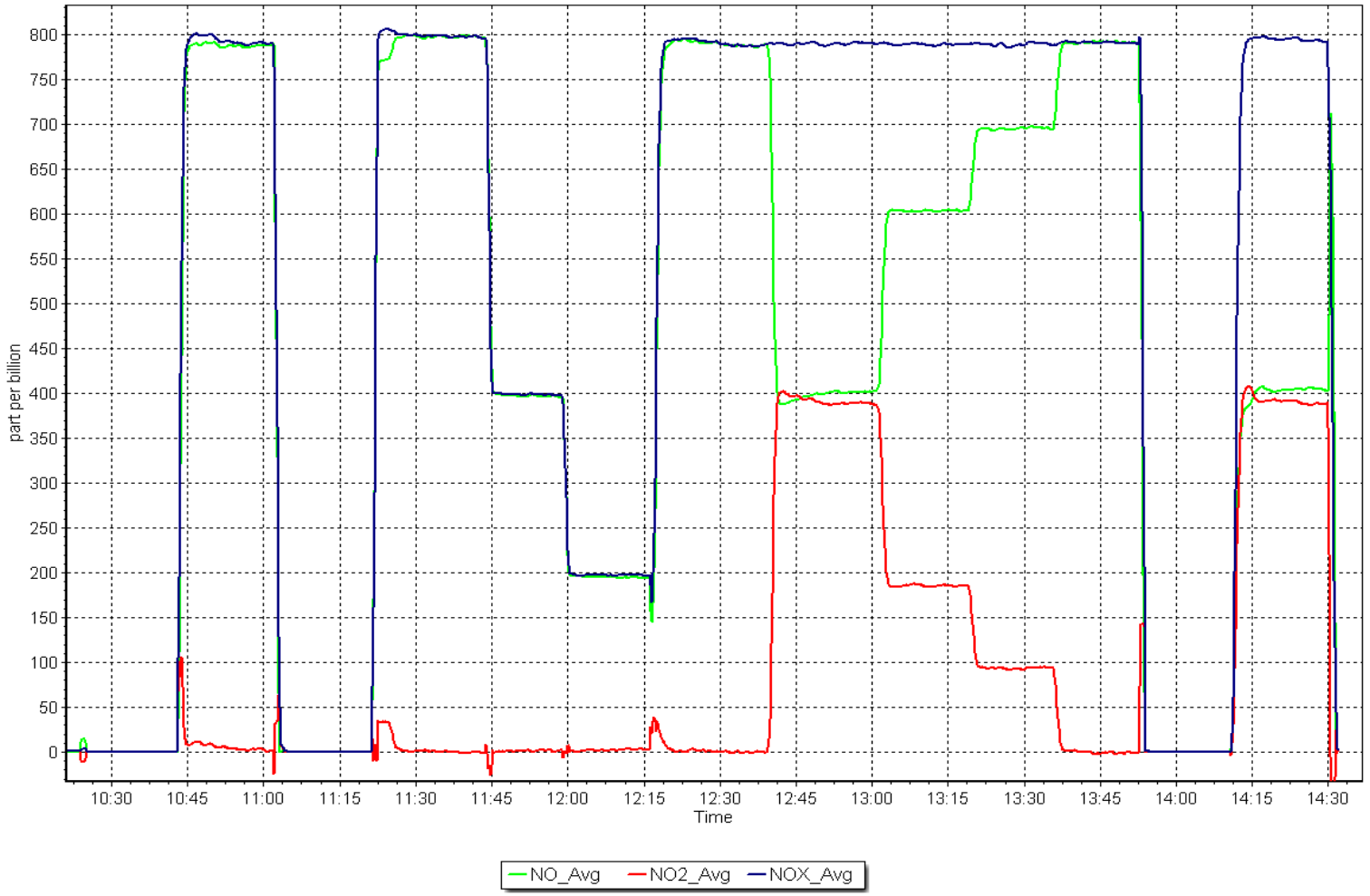
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
800.4	795.0	1.0069
399.6	395.6	1.0101
200.4	194.4	1.0309

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999960	*≥0.995*
Slope	0.994903	*0.90 - 1.10*
Intercept	-2.049505	*+/-20*



NO_X Calibration Plot Date: April 7, 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:	April 14, 2025	Last Cal Date:	March 24, 2025
Start time (MST):	10:36	End time (MST):	13:57
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)	10.4	10.17	10.4	☐	+/- 2 °C
P (mmHg)	715.5	714.43	715.5	☐	+/- 10 mmHg
Flow (LPM)	5.00	4.931	5.00	☐	+/- 0.25 LPM
PW% (pump)	37	-----	37	☐	>80%
Zero Verification	PM w/o HEPA:	2.7	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	10.8			☐	+/- 0.5

Date Optical Chamber Cleaned: April 14, 2025

Date Disposable Filter Changed: April 14, 2025

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

Annual Maintenance

Date Sample Tube Cleaned: April 14, 2025

Date RH/T Sensor Cleaned: October 30, 2024

Notes: Verified temperature, pressure and flow. Leak check passed. After cleaning optical chamber, analyzer can no longer run the PMT peak test. Will replace tomorrow.

Calibration by: Braiden Boutilier

Wood Buffalo Environmental Association

T640 $PM_{2.5}$ CALIBRATION

Version-01-2024

Station Information

Station Name:	Surmont 2	Station number:	AMS 29
Calibration Date:	April 15, 2025	Last Cal Date:	April 14, 2025
Start time (MST):	10:26	End time (MST):	12:07
Analyzer Make:	API T640	S/N:	2236
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)	10.7	11.21	10.7	☐	+/- 2 °C
P (mmHg)	707.3	705.61	707.3	☐	+/- 10 mmHg
Flow (LPM)	4.97	5.041	4.97	☐	+/- 0.25 LPM
PW% (pump)	33	-----	33	☐	>80%
Zero Verification	PM w/o HEPA:	2.7	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			11.2	☑	+/- 0.5

Date Optical Chamber Cleaned: April 15, 2025

Date Disposable Filter Changed: April 15, 2025

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

Annual Maintenance

Date Sample Tube Cleaned: April 14, 2025

Date RH/T Sensor Cleaned: October 30, 2024

Notes: Installed T640. Verified pressure, temperature, and flow. Conducted PMT peak test, adjusted and passed.

Calibration by: Braiden Boutilier

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS30
ELLS RIVER
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Ells River	Station number:	AMS 30
Calibration Date:	April 11, 2025	Last Cal Date:	March 11, 2025
Start time (MST):	9:25	End time (MST):	12:33
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.002175	1.000403	Backgd or Offset:	10.1	10.1
Calibration intercept:	-3.212042	-2.892063	Coeff or Slope:	0.991	0.991

SO_2 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	795.6	1.005
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	795.9	Previous response	798.0	*% 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	

SO_2 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	-0.1	----
High point	4918	82.0	799.5	798.2	1.002
Mid point	4959	41.0	399.8	396.0	1.009
Low point	4980	20.5	199.9	194.0	1.030
As left zero	5000	0.0	0.0	0.1	----
As left span	4918	82.0	799.5	798.9	1.001
				Average Correction Factor:	1.014

Notes: Sample inlet filter and N2 cylinder was changed after as founds. No adjustment made.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

SO_2 Calibration Summary

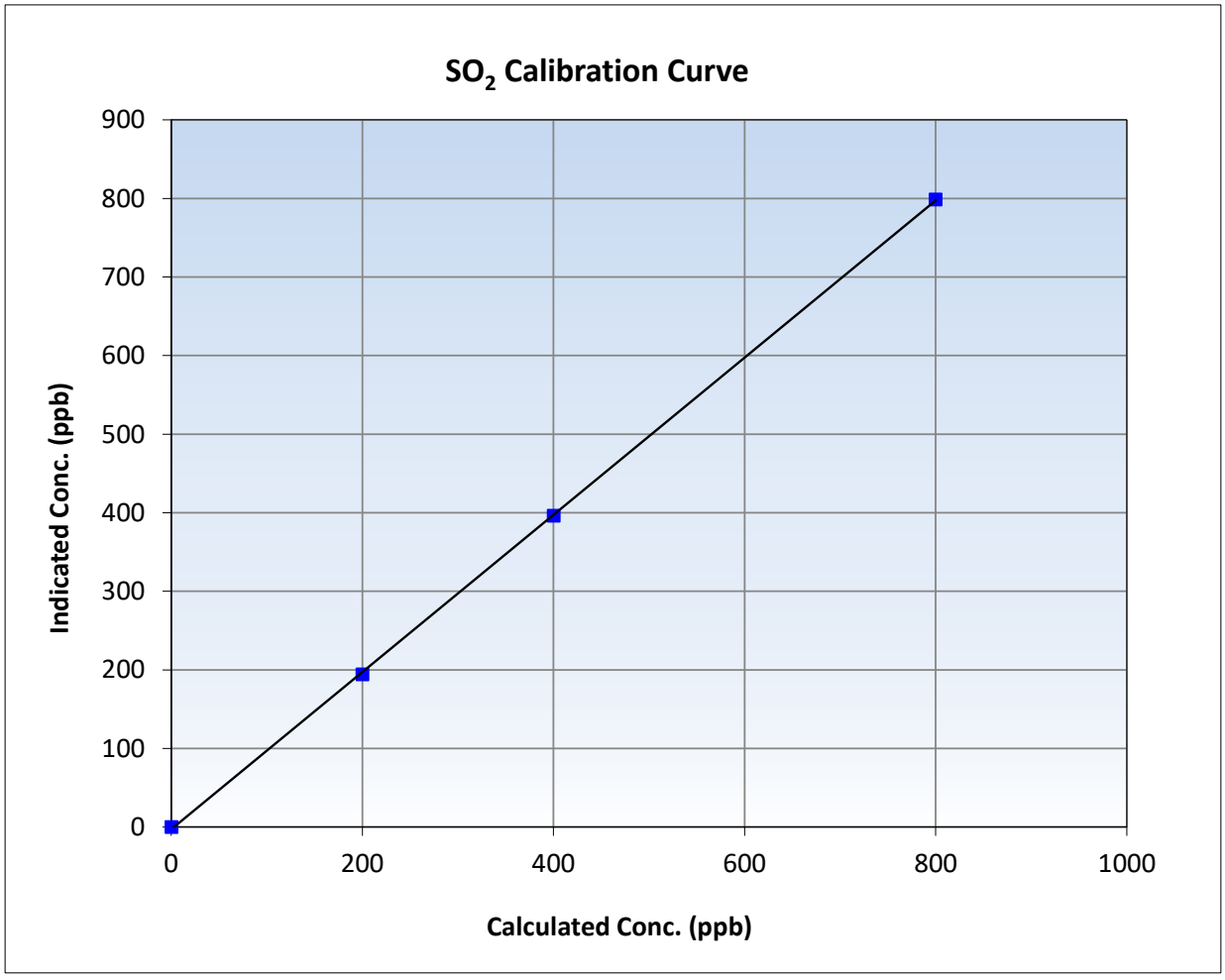
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 11, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:25	End Time (MST):	12:33
Analyzer make:	Thermo 43i	Analyzer serial #:	1008841397

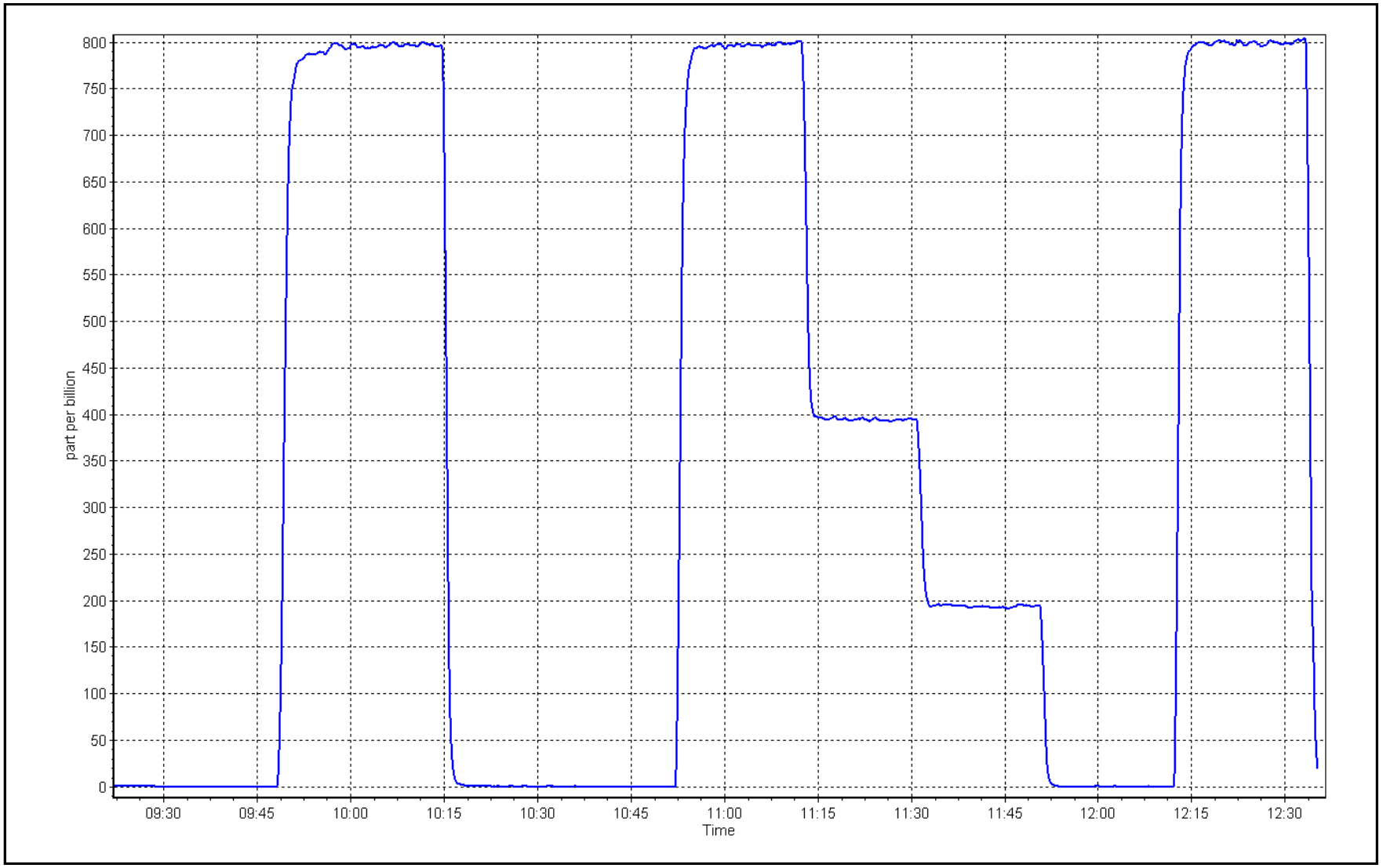
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
799.5	798.2	1.0016
399.8	396.0	1.0095
199.9	194.0	1.0302

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999944	*≥0.995*
Slope	1.000403	*0.90 - 1.10*
Intercept	-2.892063	*+/-30*



SO2 Calibration Plot Date: April 11, 2025 Location: Ells River



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Station Name:	Ells River	Station number:	AMS 30
Calibration Date:	April 1, 2025	Last Cal Date:	March 14, 2025
Start time (MST):	8:38	End time (MST):	12:27
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
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.007901	0.999336	Backgd or Offset:	1.7	1.7
Calibration intercept:	-0.180432	-0.180614	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4920	80.2	80.0	80.0	0.999
As found Mid point	4960	40.1	40.0	39.6	1.008
As found Low point	4980	20.0	20.0	19.5	1.018
New cylinder response					
Baseline Corr As found:	80.1	Prev response:	80.49	*% change:	-0.5%
Baseline Corr 2nd AF pt:	39.7	AF Slope:	1.001906	AF Intercept:	-0.320569
Baseline Corr 3rd AF pt:	19.6	AF Correlation:	0.999964	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4920	80.2	80.0	79.9	1.002
Mid point	4960	40.1	40.0	39.7	1.008
Low point	4980	20.0	20.0	19.6	1.018
As left zero	5000	0.0	0.0	0.0	----
As left span	4920	80.2	80.0	79.9	1.002
SO2 Scrubber Check	4918	82.0	820.0	0.0	----
Date of last scrubber change:		14-Mar-25		Ave Corr Factor	1.009
Date of last converter efficiency test:					

Notes: Changed sample inlet filter 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

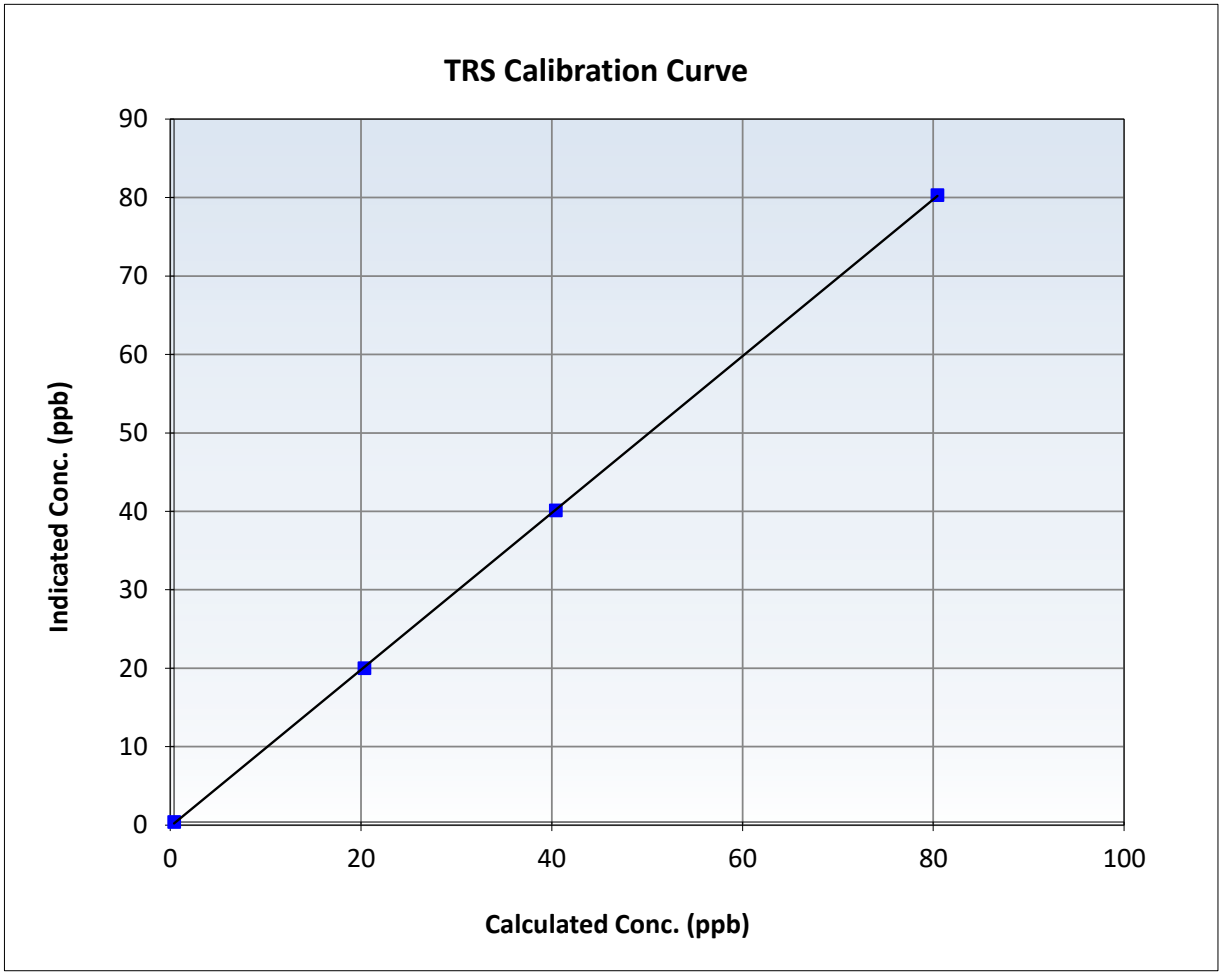
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 14, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	8:38	End Time (MST):	12:27
Analyzer make:	Thermo 43i TLE	Analyzer serial #:	1410661331

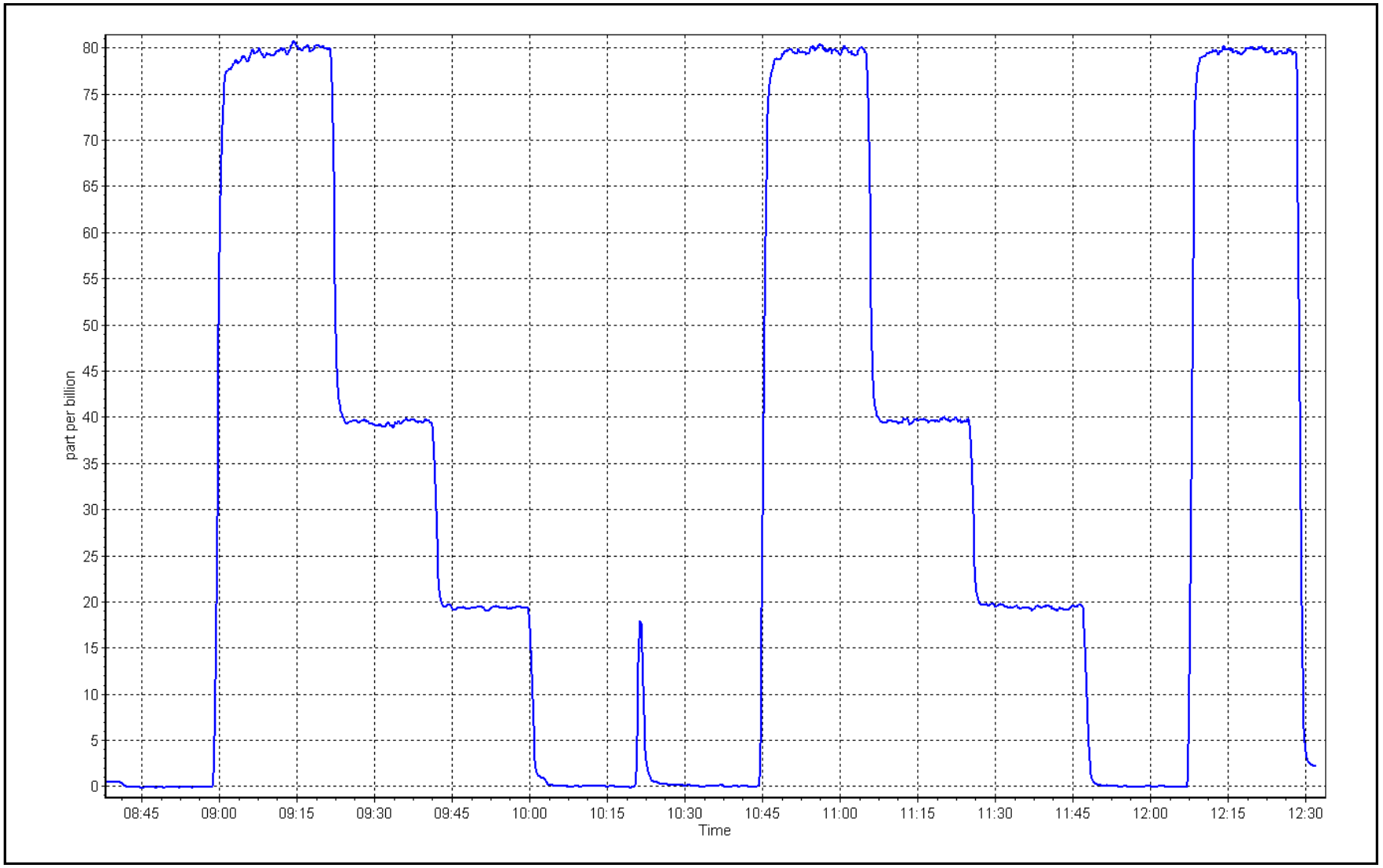
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
80.0	79.9	1.0017
40.0	39.7	1.0080
20.0	19.6	1.0184

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999977	*≥0.995*
Slope	0.999336	*0.90 - 1.10*
Intercept	-0.180614	*+/-3*



TRS Calibration Plot Date: April 1, 2025 Location: Ells River



Wood Buffalo Environmental Association

THC / CH_4 / NMHC Calibration Report

Station Information

Station Name:	Ells River	Station number:	AMS 30
Calibration Date:	April 11, 2025	Last Cal Date:	March 10, 2025
Start time (MST):	9:25	End time (MST):	12:33
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC350110		Cal Gas Expiry Date:	March 10, 2031	
CH4 Cal Gas Conc.	496.6	ppm	CH4 Equiv Conc.	1066.4	ppm
C3H8 Cal Gas Conc.	207.2	ppm			
Removed Gas Cert:	NA		Removed Gas Expiry:	NA	
Removed CH4 Conc.	496.6	ppm	CH4 Equiv Conc.	1066.4	ppm
Removed C3H8 Conc.	207.2	ppm	Diff between cyl (THC):		
Diff between cyl (CH_4):			Diff between cyl (NM):		
Calibrator Model:	API T700		Serial Number:	3061	
Zero Air Gen model:	API T701H		Serial Number:	358	

Analyzer Information

Analyzer make:	Thermo 55i		Analyzer serial #:	1152430011	
THC Range:	0 - 20 ppm		NMHC/CH4 Range:	0 - 10 ppm	
	Start	***Finish***		***Start***	***Finish***
CH4 SP Ratio:	3.11E-04	3.11E-04	NMHC SP Ratio:	5.96E-05	5.96E-05
CH4 Retention time:	17.4	17.4	NMHC Peak Area:	156612	156612
Zero Chromatogram:	ON	ON	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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4918	82.0	17.49	17.40	1.005
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	17.40	Prev response	17.45	*% 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)) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	----
High point	4918	82.0	17.49	17.44	1.003
Mid point	4959	41.0	8.74	8.63	1.013
Low point	4980	20.5	4.37	4.25	1.028
As left zero	5000	0.0	0.00	0.00	----
As left span	4918	82.0	17.49	17.45	1.002
				Average Correction Factor	1.015

Notes: Sample inlet filter and N2 cylinder was changed after as founds. No adjustment made.

Wood Buffalo Environmental Association

THC / CH_4 / 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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4918	82.0	9.34	9.26	1.009
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	9.26	Prev response	9.33	*% change	-0.9%
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	82.0	9.34	9.31	1.003
Mid point	4959	41.0	4.67	4.63	1.010
Low point	4980	20.5	2.34	2.29	1.019
As left zero	5000	0.0	0.00	0.00	----
As left span	4918	82.0	9.34	9.31	1.004
				Average Correction Factor	1.011

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	0.00	----
As found High point	4918	82.0	8.14	8.13	1.002
As found Mid point					
As found Low point					
New cylinder response					

Baseline Corr AF:	8.13	Prev response	8.12	*% 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	4918	82.0	8.14	8.13	1.002
Mid point	4959	41.0	4.07	4.01	1.016
Low point	4980	20.5	2.04	1.96	1.039
As left zero	5000	0.0	0.00	0.00	----
As left span	4918	82.0	8.14	8.14	1.001
				Average Correction Factor	1.019

Calibration Statistics

	Start	*Finish*
THC Cal Slope:	1.001453	0.998643
THC Cal Offset:	-0.062426	-0.060426
CH4 Cal Slope:	1.001772	1.000159
CH4 Cal Offset:	-0.039119	-0.040119
NMHC Cal Slope:	1.001382	0.997542
NMHC Cal Offset:	-0.023907	-0.020707

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

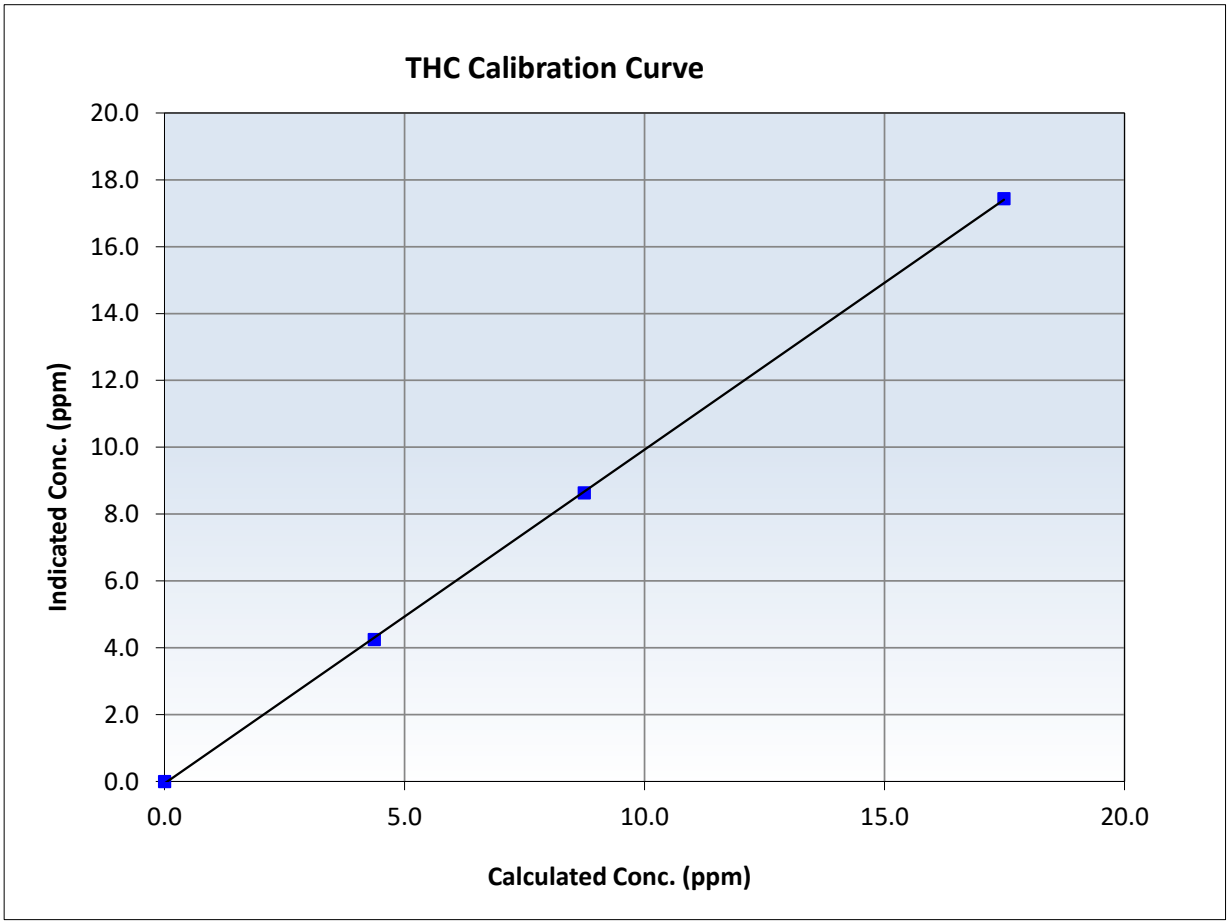
THC Calibration Summary

Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 10, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:25	End Time (MST):	12:33
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	0.999945	≥0.995
17.49	17.44	1.0029	Slope	0.998643	0.90 - 1.10
8.74	8.63	1.0129	Intercept	-0.060426	+/-0.5
4.37	4.25	1.0284			



Wood Buffalo Environmental Association

CH_4 Calibration Summary

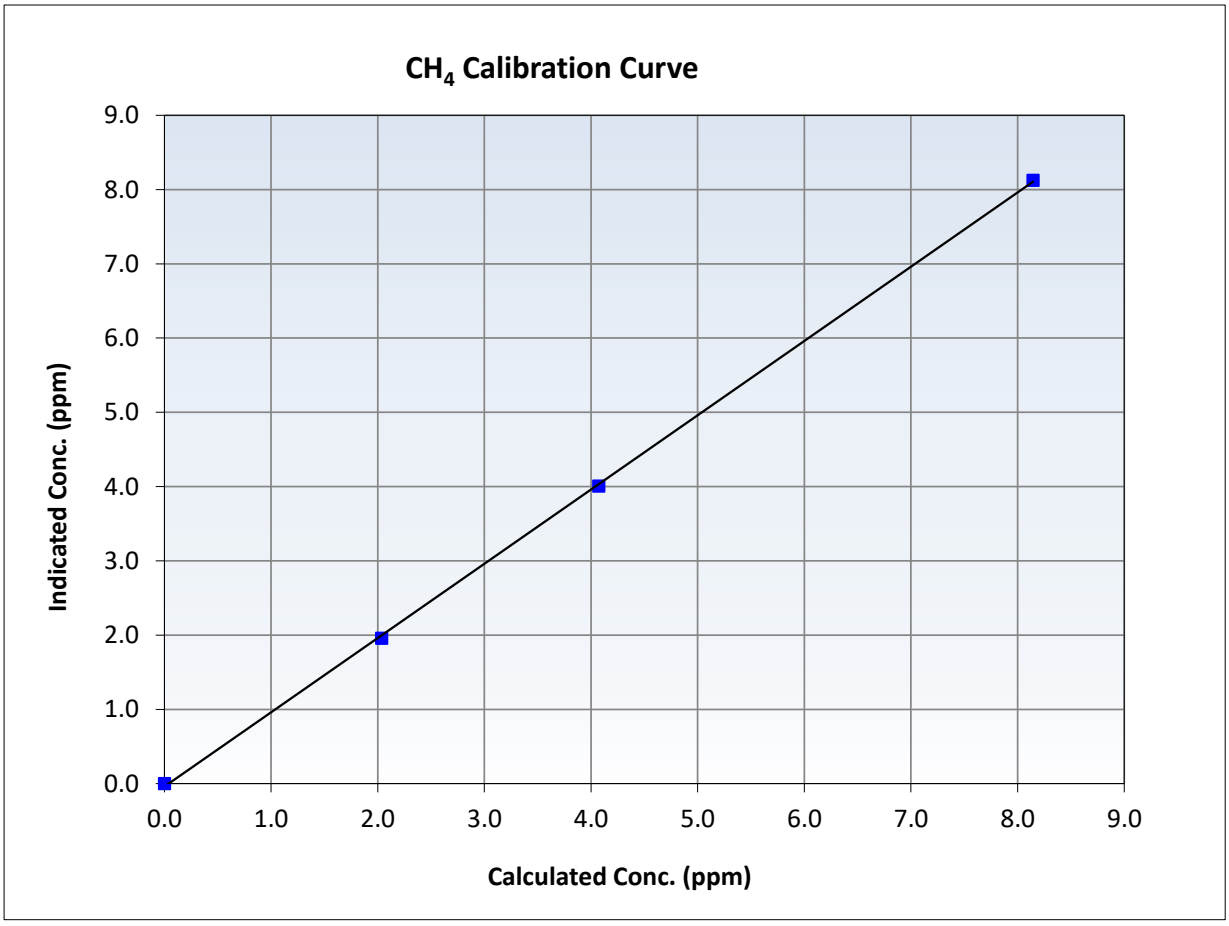
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 10, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:25	End Time (MST):	12:33
Analyzer make:	Thermo 55i	Analyzer serial #:	1152430011

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
8.14	8.13	1.0021
4.07	4.01	1.0160
2.04	1.96	1.0392

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999888	*≥0.995*
Slope	1.000159	*0.90 - 1.10*
Intercept	-0.040119	*+/-0.5*



Wood Buffalo Environmental Association

NMHC Calibration Summary

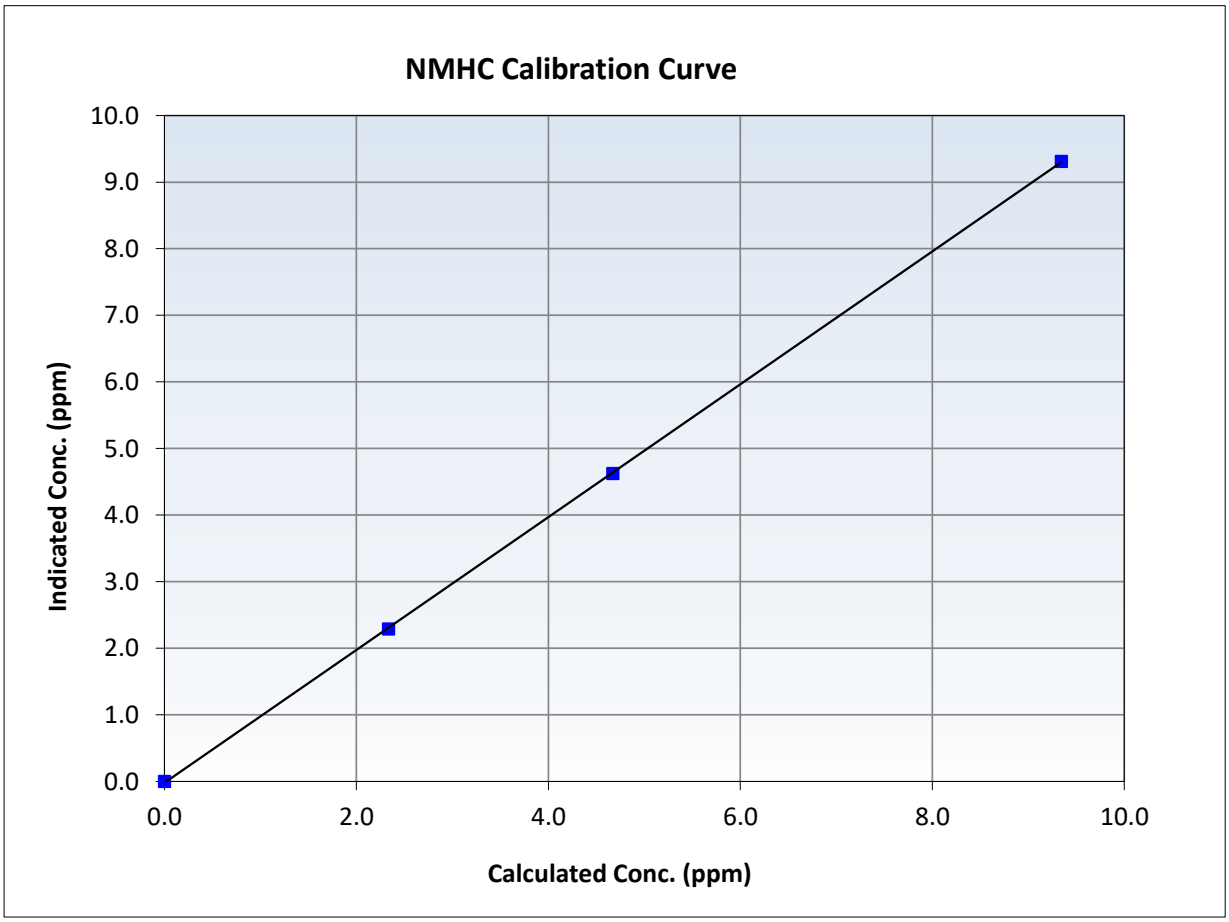
Station Information

Calibration Date:	April 11, 2025	Previous Calibration:	March 10, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:25	End Time (MST):	12:33
Analyzer make:	Thermo 55i	Analyzer serial #:	1152430011

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
9.34	9.31	1.0034
4.67	4.63	1.0102
2.34	2.29	1.0192

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999977	*≥0.995*
Slope	0.997542	*0.90 - 1.10*
Intercept	-0.020707	*+/-0.5*



NMHC Calibration Plot Date: April 11, 2025 Location: Ells River

Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Ells River
Station number:	AMS 30
Calibration Date:	April 16, 2025
Last Cal Date:	March 13, 2025
Start time (MST):	9:45
End time (MST):	14:00
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	DT0027487	Cal Gas Expiry Date:	January 9, 2032
NOX Cal Gas Conc:	59.30 ppm	NO Cal Gas Conc:	59.10 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	59.30 ppm	Removed Gas NO Conc:	59.10 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	API T700	Serial Number:	3061
ZAG make/model:	API T701H	Serial Number:	358

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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	----	----
AF High point	4932	67.7	803.0	800.3	2.7	782.1	777.0	5.1	1.0267	1.0301
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X =	800.6 ppb	NO =	797.6 ppb	* = > +/-5% change initiates investigation	*Percent Change	NO_X = -2.4%
Baseline Corr 1st pt	NO_X =	782.1 ppb	NO =	776.9 ppb	As Found Statistics	*Percent Change	NO = -2.7%
Baseline Corr 2nd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO_X r^2:	Nx Sl:	Nx Int:
Baseline Corr 3rd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO r^2:	NO Sl:	NO Int:
					As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 710321429

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	1.053	1.092	NO bkgnd or offset:	12.3	12.7
NOX coeff or slope:	0.994	0.993	NOX bkgnd or offset:	12.4	12.7
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	181.8	186.3

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	1.000203	1.001140
NO_X Cal Offset:	-2.519480	-1.398323
NO Cal Slope:	1.001320	1.003617
NO Cal Offset:	-3.700986	-2.779401
NO_2 Cal Slope:	0.985498	1.001702
NO_2 Cal Offset:	0.120532	-0.164440

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.2	0.3	0.0	----	----
High point	4932	67.7	803.0	800.3	2.7	803.0	801.6	1.4	1.0000	0.9983
Mid point	4966	33.8	400.9	399.5	1.4	400.0	397.6	2.4	1.0022	1.0049
Low point	4983	16.9	200.4	199.8	0.7	197.1	194.0	3.1	1.0169	1.0297
As left zero	5000	0.0	0.0	0.0	0.0	0.3	0.4	0.0	----	----
As left span	4932	67.7	803.0	428.9	374.1	802.5	428.9	373.6	1.0006	1.0000
							Average Correction Factor		1.0064	1.0110

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	799.0	424.6	377.1	377.6	0.9987	100.1%
Mid GPT point	799.0	611.4	190.3	190.6	0.9985	100.2%
Low GPT point	799.0	703.3	98.4	98.1	1.0031	99.7%
				Average Correction Factor	1.0001	100.0%

Notes: Sample inlet filter changed after as founds. Adjusted span only.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

NO_X Calibration Summary

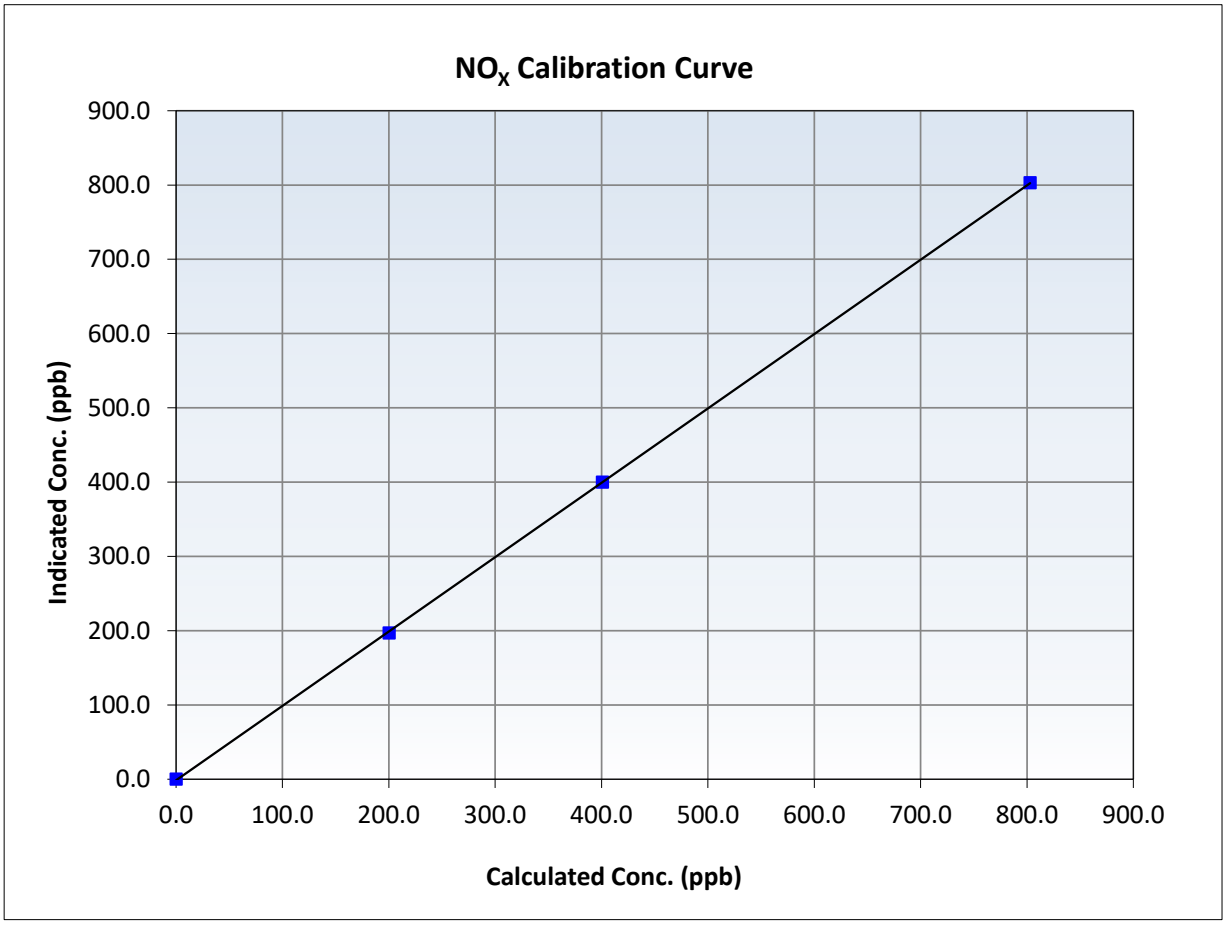
Station Information

Calibration Date:	April 16, 2025	Previous Calibration:	March 13, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:45	End Time (MST):	14:00
Analyzer make:	Thermo 42i	Analyzer serial #:	710321429

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
803.0	803.0	1.0000
400.9	400.0	1.0022
200.4	197.1	1.0169

Statistical Evaluation		Limits
Correlation Coefficient	0.999979	≥0.995
Slope	1.001140	0.90 - 1.10
Intercept	-1.398323	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

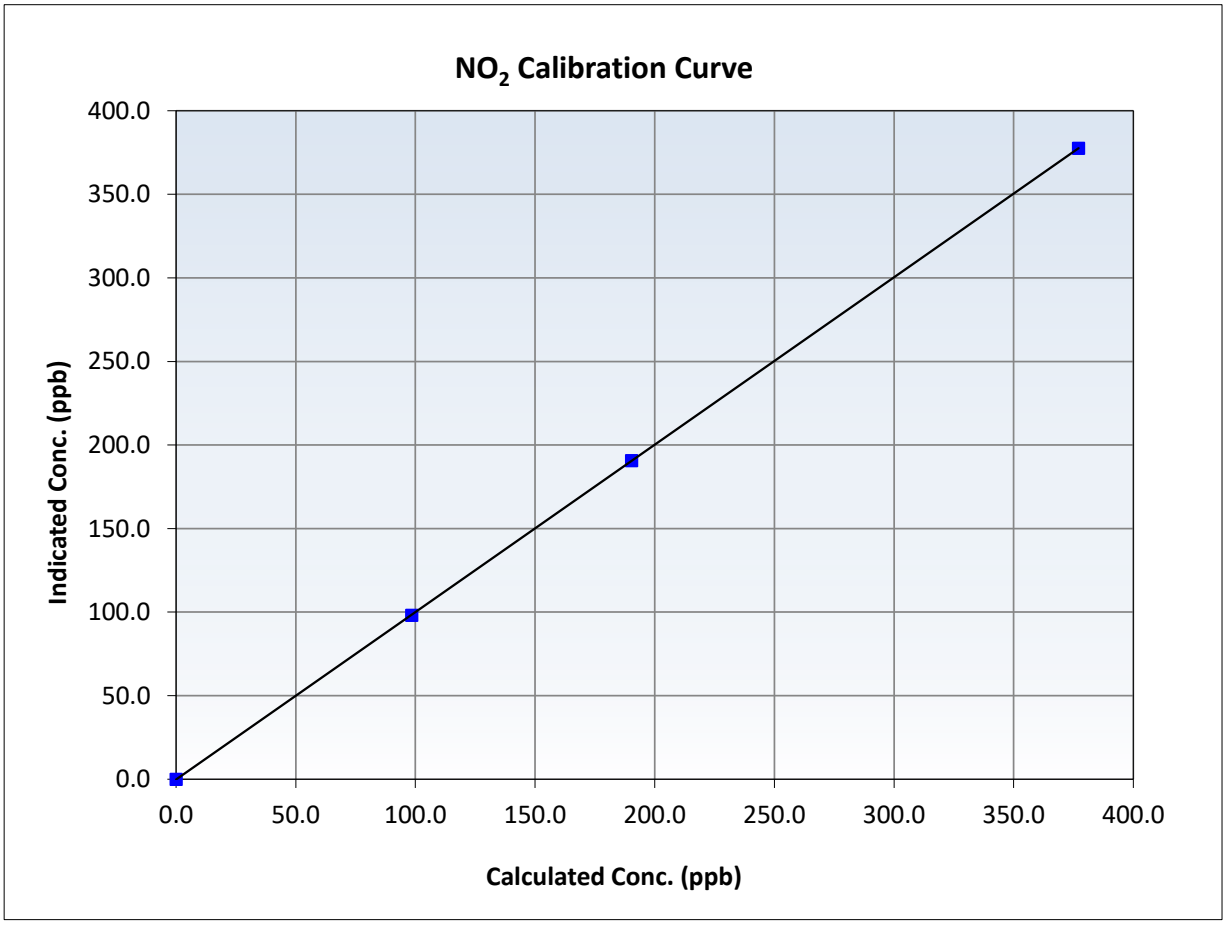
Station Information

Calibration Date:	April 16, 2025	Previous Calibration:	March 13, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:45	End Time (MST):	14:00
Analyzer make:	Thermo 42i	Analyzer serial #:	710321429

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
377.1	377.6	0.9987
190.3	190.6	0.9985
98.4	98.1	1.0031

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	1.001702	*0.90 - 1.10*
Intercept	-0.164440	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

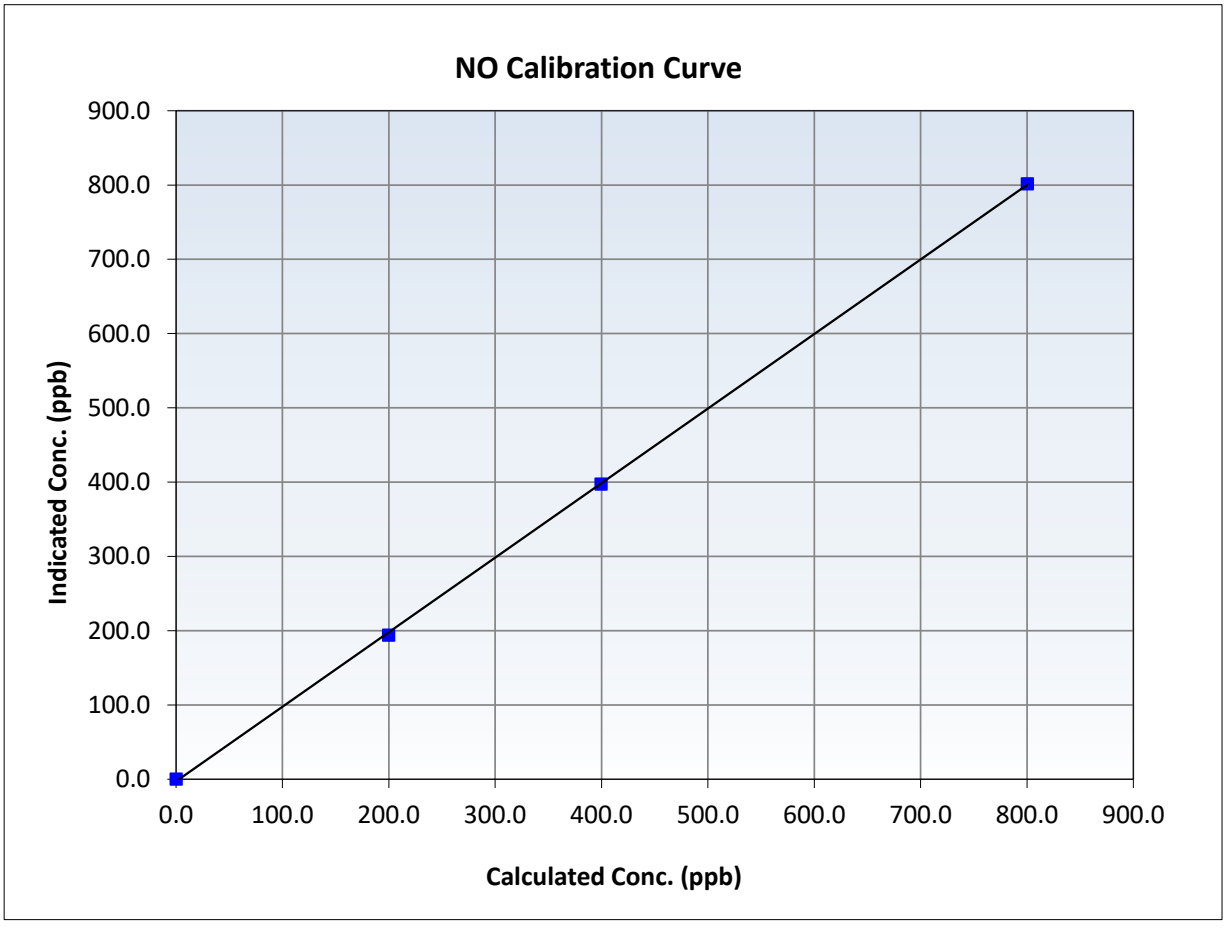
Station Information

Calibration Date:	April 16, 2025	Previous Calibration:	March 13, 2025
Station Name:	Ells River	Station Number:	AMS 30
Start Time (MST):	9:45	End Time (MST):	14:00
Analyzer make:	Thermo 42i	Analyzer serial #:	710321429

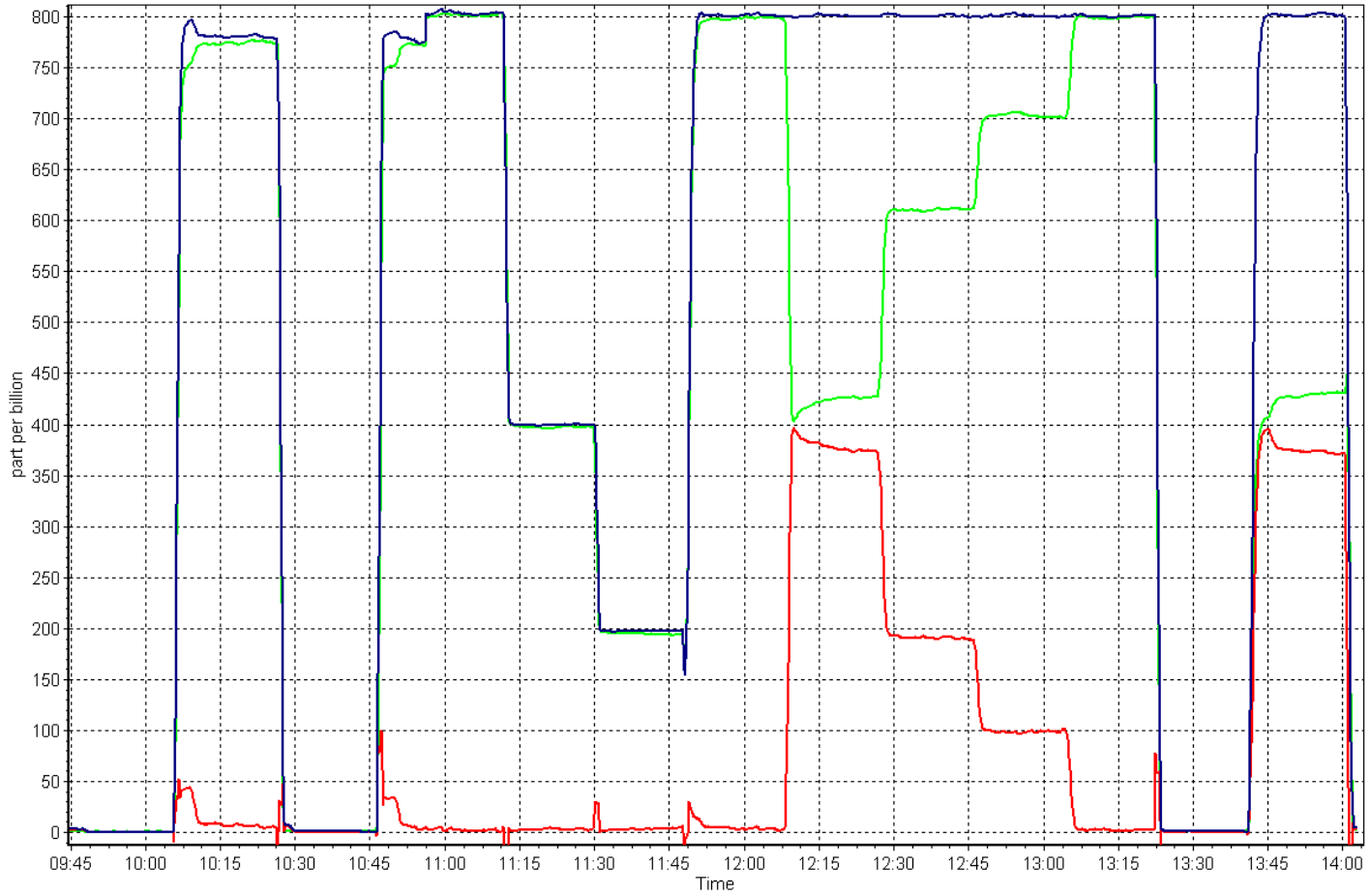
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
800.3	801.6	0.9983
399.5	397.6	1.0049
199.8	194.0	1.0297

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999929	*≥0.995*
Slope	1.003617	*0.90 - 1.10*
Intercept	-2.779401	*+/-20*



NO_X Calibration Plot Date: April 16, 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:	April 16, 2025	Last Cal Date:	March 14, 2025
Start time (MST):	10:46	End time (MST):	11:51
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 (^{o}C)	3.80	3.30	3.80	☐	+/- 2 ^{o}C
P (mmHg)	728.70	730.47	728.70	☐	+/- 10 mmHg
Flow (LPM)	5.01	5.05	5.01	☐	+/- 0.25 LPM
PW% (pump)	33	-----	33	☐	>80%

Zero Verification — PM w/o HEPA: 4.10 — 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	9.00	11.00	11.00	☐	+/- 0.5

Date Optical Chamber Cleaned: April 16, 2025

Date Disposable Filter Changed: April 16, 2025

Post- maintenance Zero Verification: PM w/ HEPA: 0.00 <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
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Blackrod	Station number:	AMS 31
Calibration Date:	April 7, 2025	Last Cal Date:	March 26, 2025
Start time (MST):	13:29	End time (MST):	16:05
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.999971	0.998942	Backgd or Offset:	39.1	39.5
Calibration intercept:	-0.052005	0.007990	Coeff or Slope:	1.019	1.019

SO_2 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	-0.1	----
As found High point	4920	79.6	800.0	799.0	1.001
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	799.1	Previous response	800.0	*% 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	

SO_2 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	79.6	800.0	799.2	1.001
Mid point	4960	39.8	400.0	399.9	1.000
Low point	4980	19.9	200.0	199.2	1.004
As left zero	5000	0.0	0.0	0.2	----
As left span	4920	79.6	800.0	800.0	1.000
				Average Correction Factor:	1.002

Notes: Sample inlet filter was changed after as founds. No adjustment made.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

SO_2 Calibration Summary

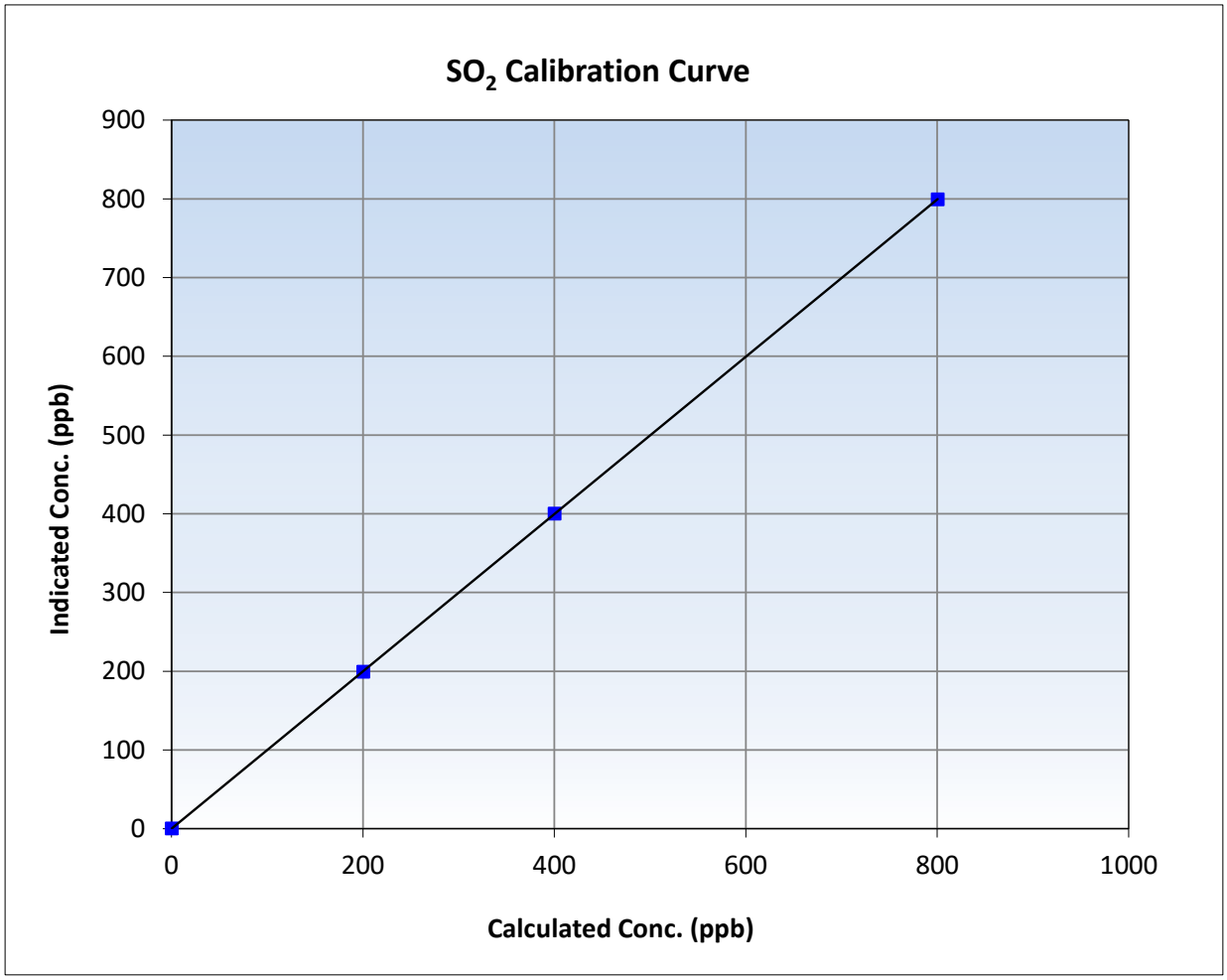
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 26, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	13:29	End Time (MST):	16:05
Analyzer make:	Thermo 43i	Analyzer serial #:	1160290014

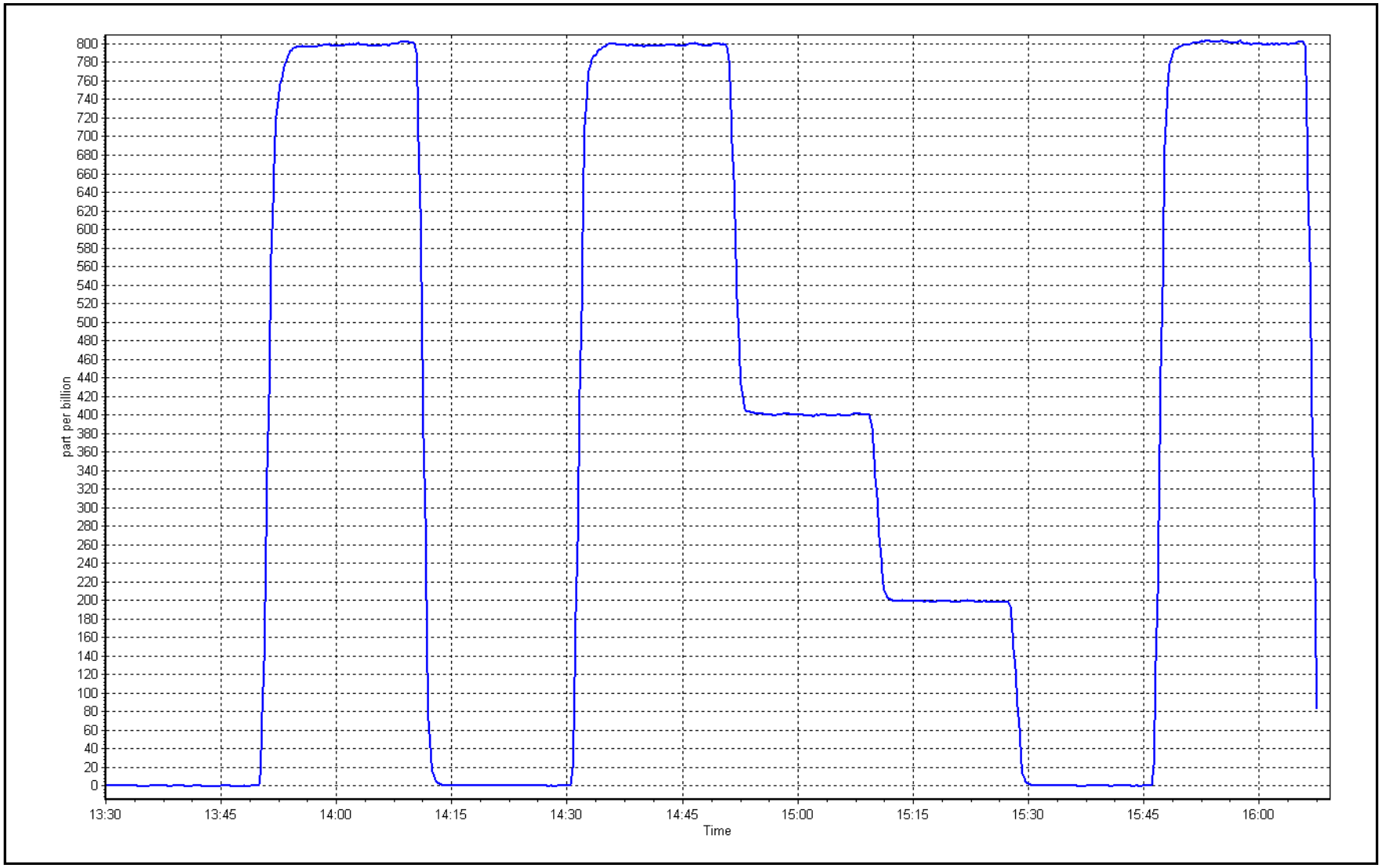
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
800.0	799.2	1.0011
400.0	399.9	1.0003
200.0	199.2	1.0040

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	0.998942	*0.90 - 1.10*
Intercept	0.007990	*+/-30*



SO2 Calibration Plot Date: April 7, 2025 Location: Blackrod



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	Blackrod	Station number:	AMS 31
Calibration Date:	April 7, 2025	Last Cal Date:	March 24, 2025
Start time (MST):	9:38	End time (MST):	13:29
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

	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.010620	1.007906	Backgd or Offset:	2.77	2.77
Calibration intercept:	-0.060561	-0.140523	Coeff or Slope:	1.030	1.030

H_2S 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	-0.1	----
As found High point	4926	73.8	80.0	80.3	0.995
As found Mid point	4963	36.9	40.0	40.6	0.983
As found Low point	4982	18.5	20.1	20.0	0.998
New cylinder response					

Baseline Corr As found:	80.4	Prev response:	80.79	*% change:	-0.5%
Baseline Corr 2nd AF pt:	40.7	AF Slope:	1.005905	AF Intercept:	-0.020438
Baseline Corr 3rd AF pt:	20.1	AF Correlation:	0.999944	* = > +/-5% change initiates investigation	

H_2S 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	-0.1	----
High point	4926	73.8	80.0	80.5	0.994
Mid point	4963	36.9	40.0	40.2	0.995
Low point	4982	18.5	20.1	20.0	1.003
As left zero	5000	0.0	0.0	0.1	----
As left span	4926	73.8	80.0	80.2	0.998
SO2 Scrubber Check	4920	79.6	796.1	0.1	----
Date of last scrubber change:				Ave Corr Factor	0.997
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. No adjustment made.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

H_2S Calibration Summary

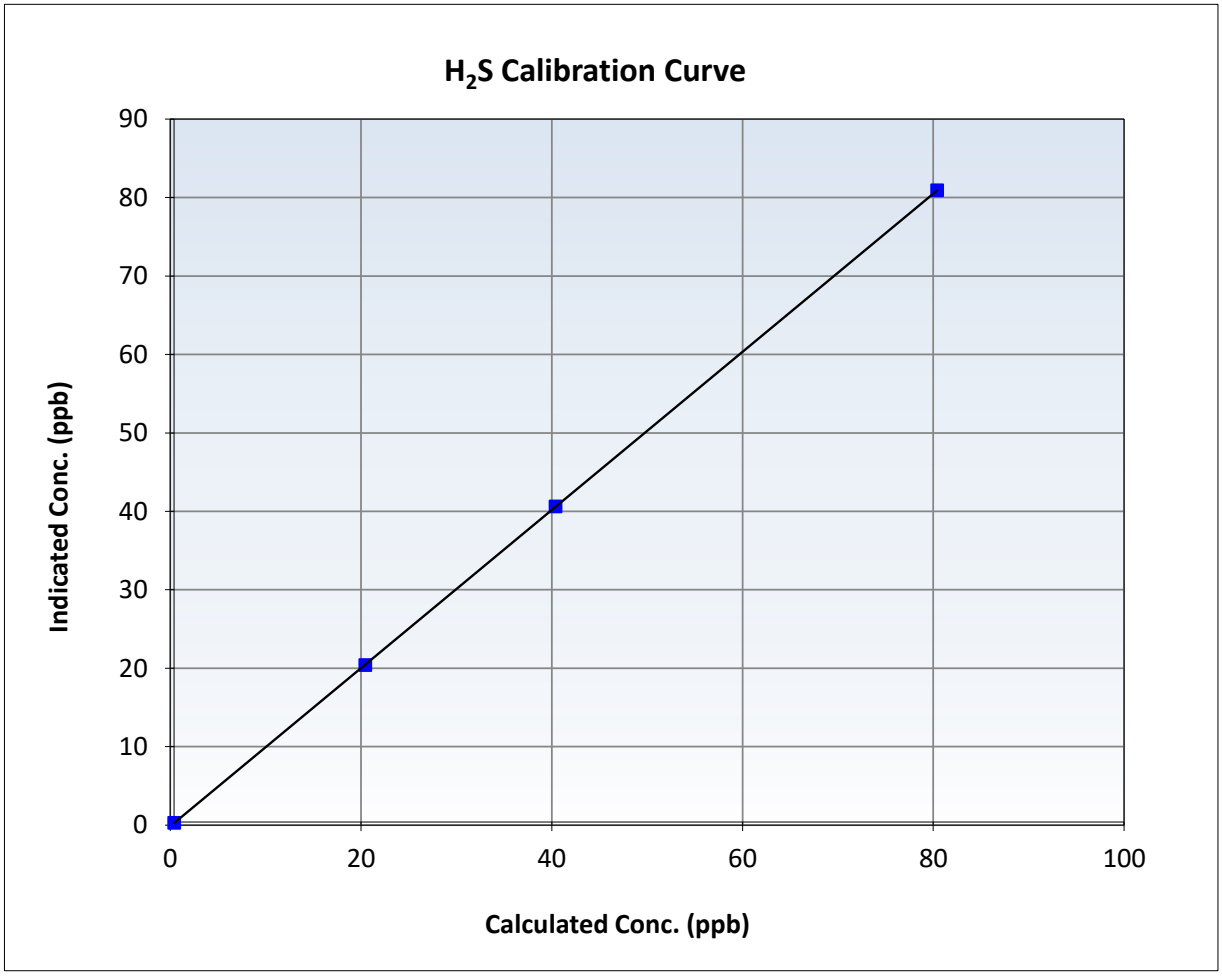
Station Information

Calibration Date:	April 7, 2025	Previous Calibration:	March 24, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	9:38	End Time (MST):	13:29
Analyzer make:	Thermo 43iQTL	Analyzer serial #:	12228021056

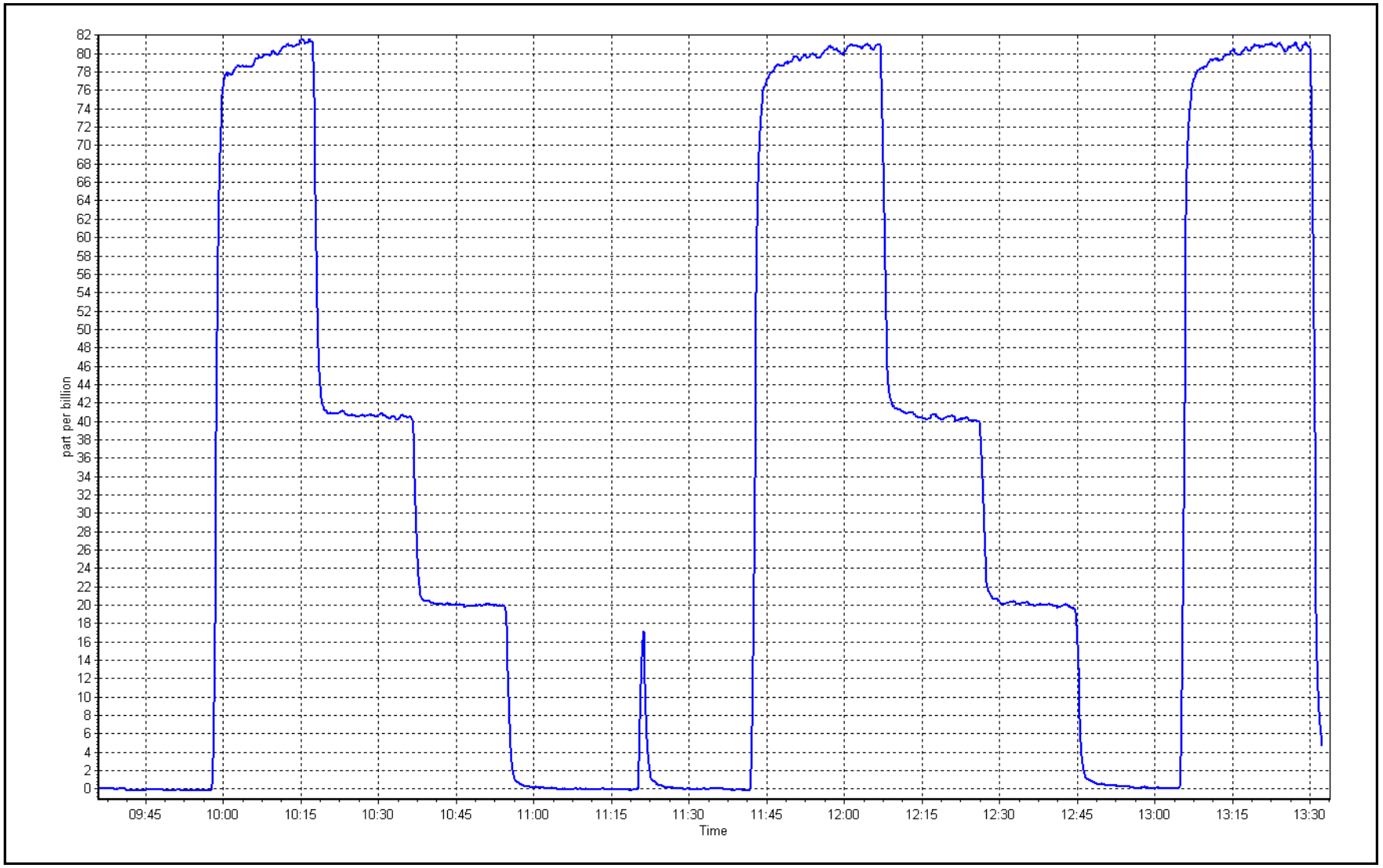
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
80.0	80.5	0.9938
40.0	40.2	0.9950
20.1	20.0	1.0026

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	1.007906	*0.90 - 1.10*
Intercept	-0.140523	*+/-3*



H_2S Calibration Plot Date: April 7, 2025 Location: Blackrod



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Blackrod
Station number:	AMS 31
Calibration Date:	April 8, 2025
Last Cal Date:	March 25, 2025
Start time (MST):	7:17
End time (MST):	11:36
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	DT0035071	Cal Gas Expiry Date:	January 9, 2032
NOX Cal Gas Conc:	59.30 ppm	NO Cal Gas Conc:	59.10 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	59.30 ppm	Removed Gas NO Conc:	59.10 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	5762
ZAG make/model:	Teledyne API N701H	Serial Number:	72

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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	----	----
AF High point	4932	67.7	803.0	800.3	2.7	793.6	790.8	2.8	1.0118	1.0121
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 799.3 ppb	NO = 796.8 ppb
Baseline Corr 1st pt	NO_X = 793.6 ppb	NO = 790.7 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

As Found Statistics

As found	NO_X r^2:	*Percent Change	NO_X = -0.7%
As found	NO r^2:	*Percent Change	NO = -0.8%
As found	NO_2 r^2:	Nx Sl:	Nx Int:
		NO Sl:	NO Int:
		NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1426262592

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:	0.959	0.974	NO bkgnd or offset:	12.4	12.5
NOX coeff or slope:	0.996	0.998	NOX bkgnd or offset:	12.8	12.9
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	200.4	192.8

Calibration Statistics

	Start	Finish
NO_X Cal Slope:	0.995387	1.002729
NO_X Cal Offset:	0.021490	0.743770
NO Cal Slope:	0.996585	1.003697
NO Cal Offset:	-0.719133	-0.157471
NO_2 Cal Slope:	1.000119	1.005362
NO_2 Cal Offset:	-0.101363	0.109061

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.1	0.3	-0.2	----	----
High point	4932	67.7	803.0	800.3	2.7	805.0	802.7	2.3	0.9975	0.9970
Mid point	4966	33.8	400.9	399.5	1.4	404.8	402.4	2.4	0.9903	0.9929
Low point	4983	16.9	200.4	199.8	0.7	201.2	198.7	2.5	0.9962	1.0053
As left zero	5000	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	----	----
As left span	4932	67.7	803.0	394.0	409.0	795.1	394.0	401.1	1.0099	1.0000
								Average Correction Factor	0.9947	0.9984

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	-0.2	----	----
High GPT point	794.7	385.9	411.5	413.4	0.9954	100.5%
Mid GPT point	794.7	595.7	201.7	203.9	0.9893	101.1%
Low GPT point	794.7	694.6	102.8	103.2	0.9962	100.4%
				Average Correction Factor	0.9936	100.6%

Notes: Sample inlet filter was changed after as founds. Adjusted span only.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

NO_X Calibration Summary

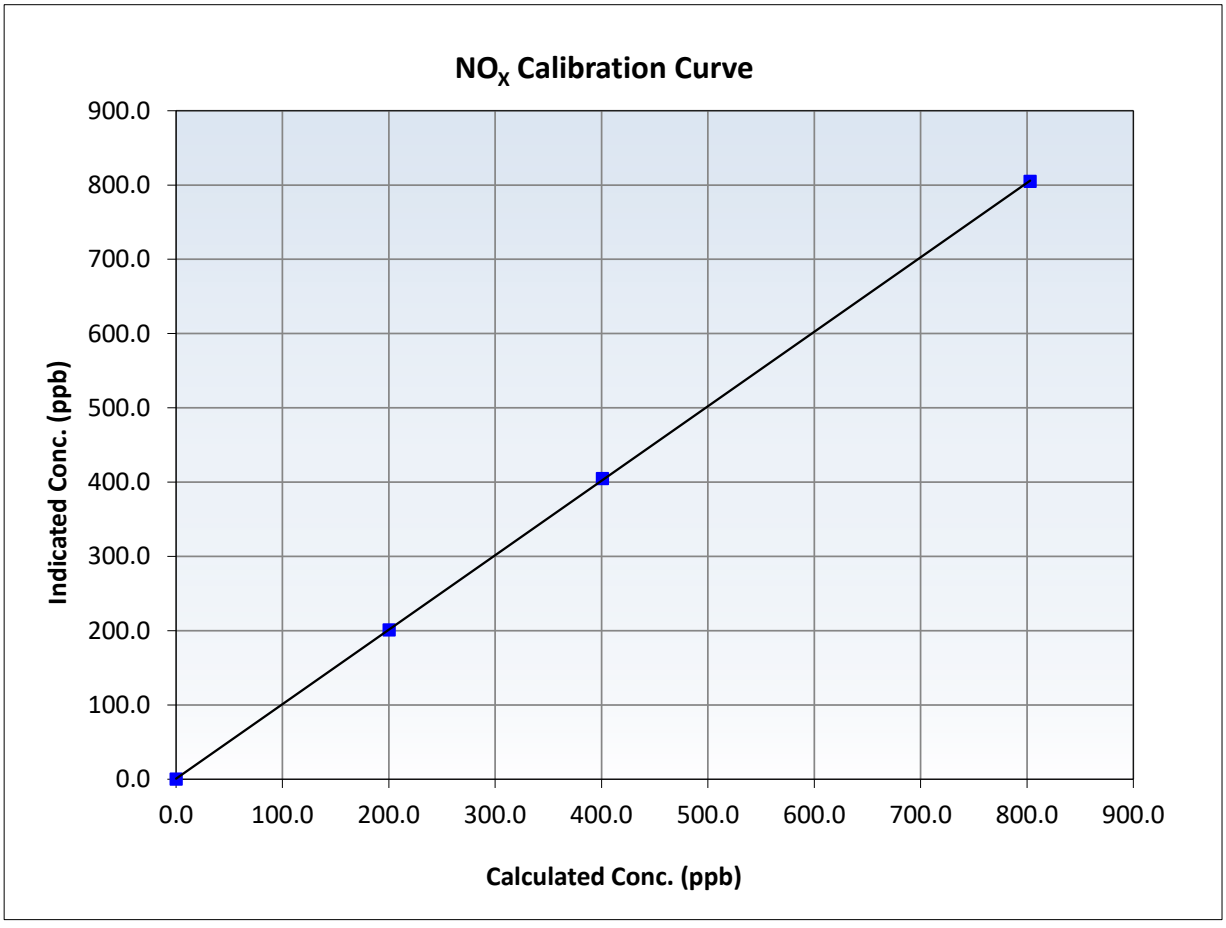
Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 25, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	7:17	End Time (MST):	11:36
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262592

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
803.0	805.0	0.9975
400.9	404.8	0.9903
200.4	201.2	0.9962

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999984	*≥0.995*
Slope	1.002729	*0.90 - 1.10*
Intercept	0.743770	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

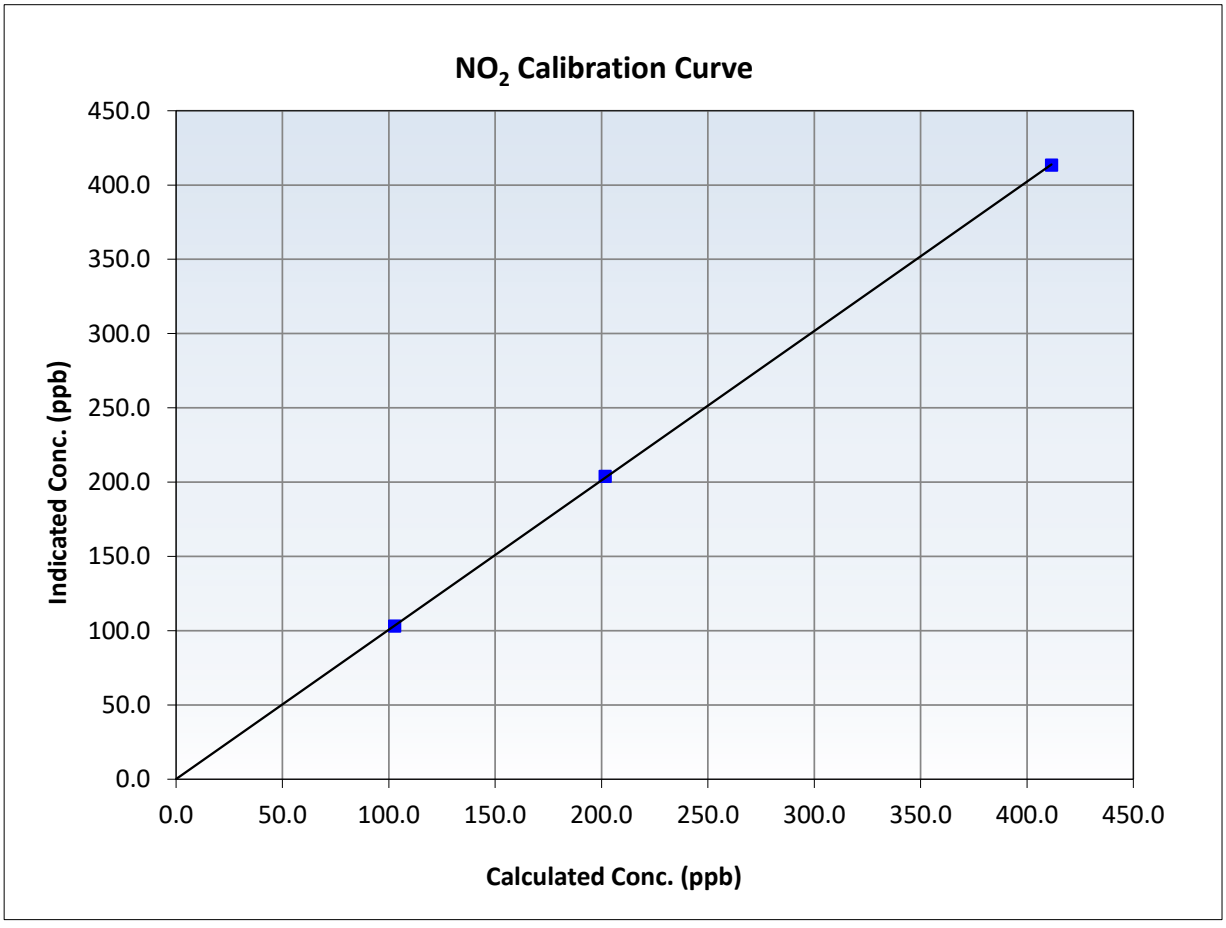
Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 25, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	7:17	End Time (MST):	11:36
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262592

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.2	----
411.5	413.4	0.9954
201.7	203.9	0.9893
102.8	103.2	0.9962

Statistical Evaluation		Limits
Correlation Coefficient	0.999986	≥0.995
Slope	1.005362	0.90 - 1.10
Intercept	0.109061	+/-20



Wood Buffalo Environmental Association

NO Calibration Summary

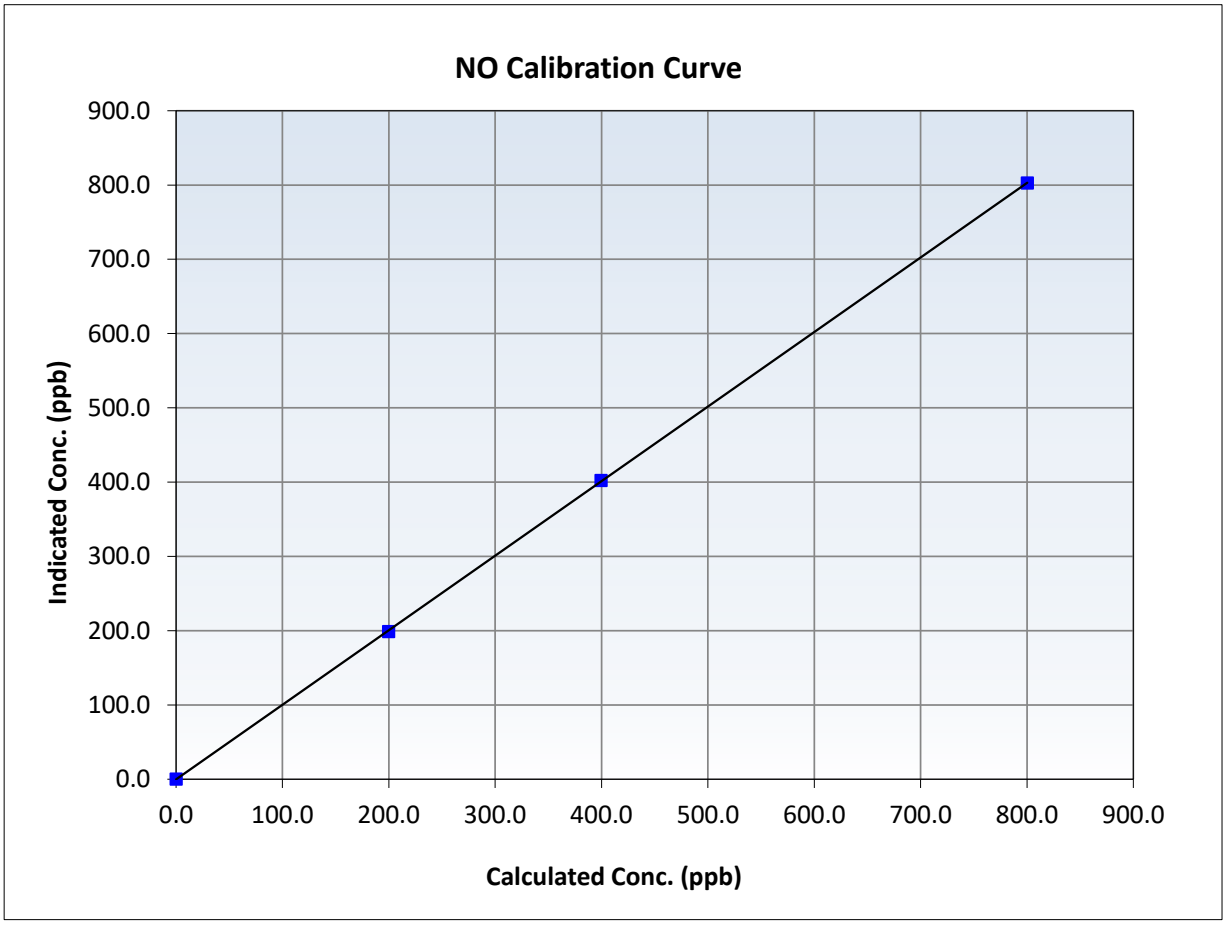
Station Information

Calibration Date:	April 8, 2025	Previous Calibration:	March 25, 2025
Station Name:	Blackrod	Station Number:	AMS 31
Start Time (MST):	7:17	End Time (MST):	11:36
Analyzer make:	Thermo 42i	Analyzer serial #:	1426262592

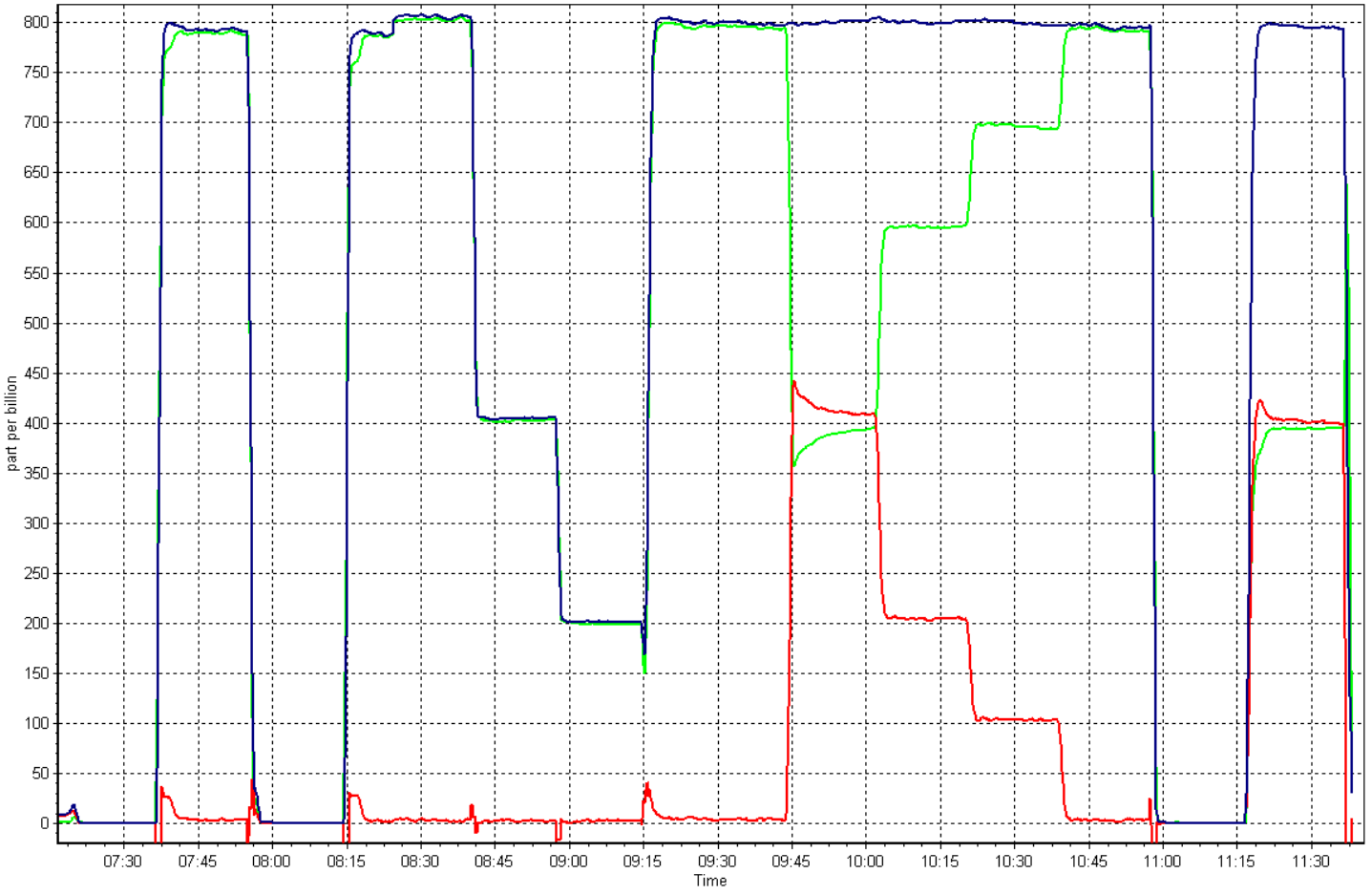
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
800.3	802.7	0.9970
399.5	402.4	0.9929
199.8	198.7	1.0053

Statistical Evaluation		Limits
Correlation Coefficient	0.999985	≥0.995
Slope	1.003697	0.90 - 1.10
Intercept	-0.157471	+/-20



NO_X Calibration Plot Date: April 8, 2025 Location: Blackrod



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS33
MONDAY CREEK
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Monday Creek	Station number:	AMS 33
Calibration Date:	April 2, 2025	Last Cal Date:	March 5, 2025
Start time (MST):	12:44	End time (MST):	15:35
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.997815	1.005166	Backgd or Offset:	30.7	31.2
Calibration intercept:	-0.238150	-0.537953	Coeff or Slope:	0.988	1.001

SO_2 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	-0.6	----
As found High point	4921	79.1	800.8	791.2	1.011
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	791.8	Previous response	798.8	*% 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	

SO_2 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	-0.5	----
High point	4921	79.1	800.8	804.2	0.996
Mid point	4961	39.5	399.9	402.0	0.995
Low point	4980	19.8	200.5	200.5	1.000
As left zero	5000	0.0	0.0	-0.3	----
As left span	4921	79.1	800.8	803.5	0.997
				Average Correction Factor:	0.997

Notes: Sample inlet filter was changed after as founds. Adjusted span only.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

SO_2 Calibration Summary

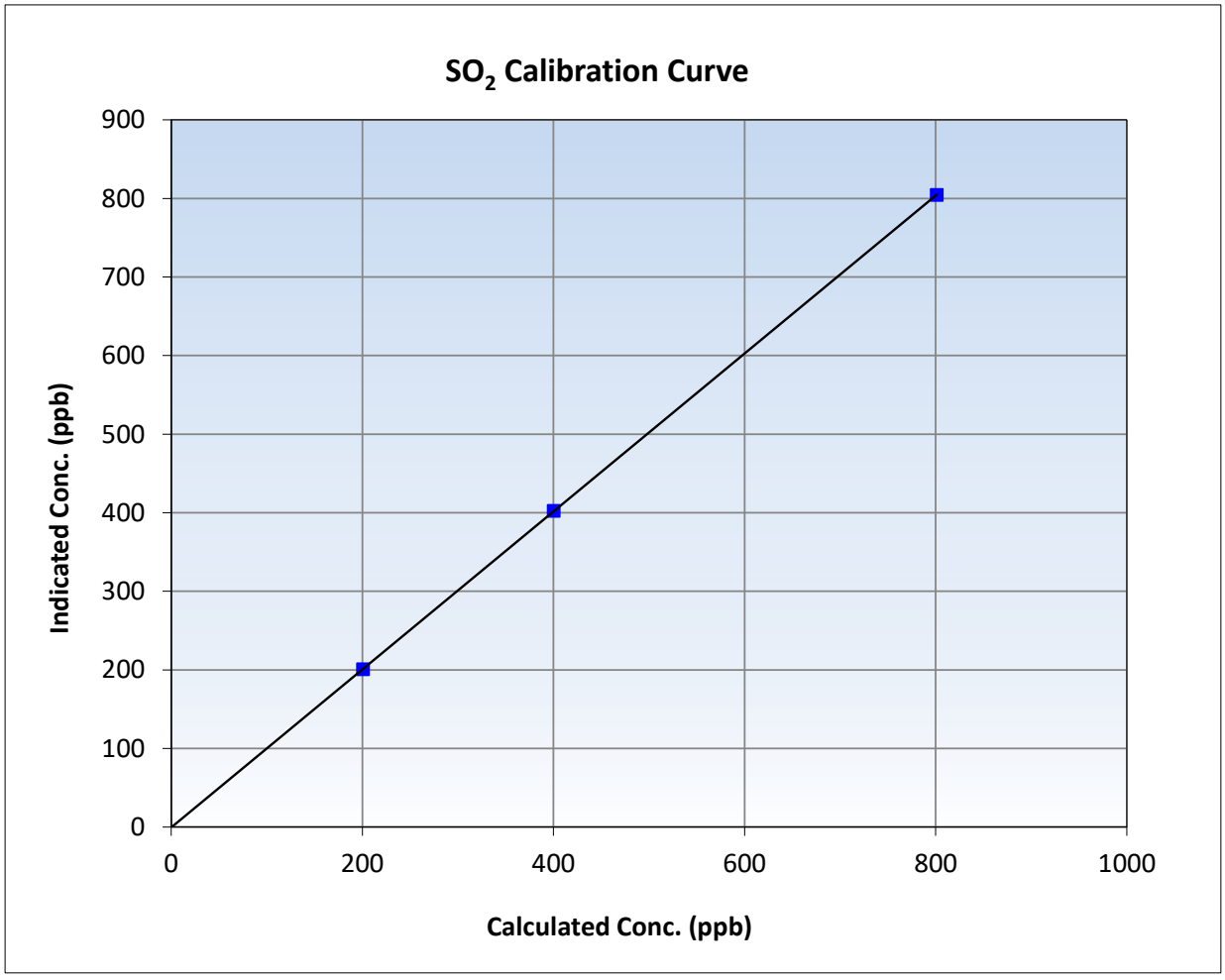
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	March 5, 2025
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	12:44	End Time (MST):	15:35
Analyzer make:	Thermo 43i	Analyzer serial #:	1152430005

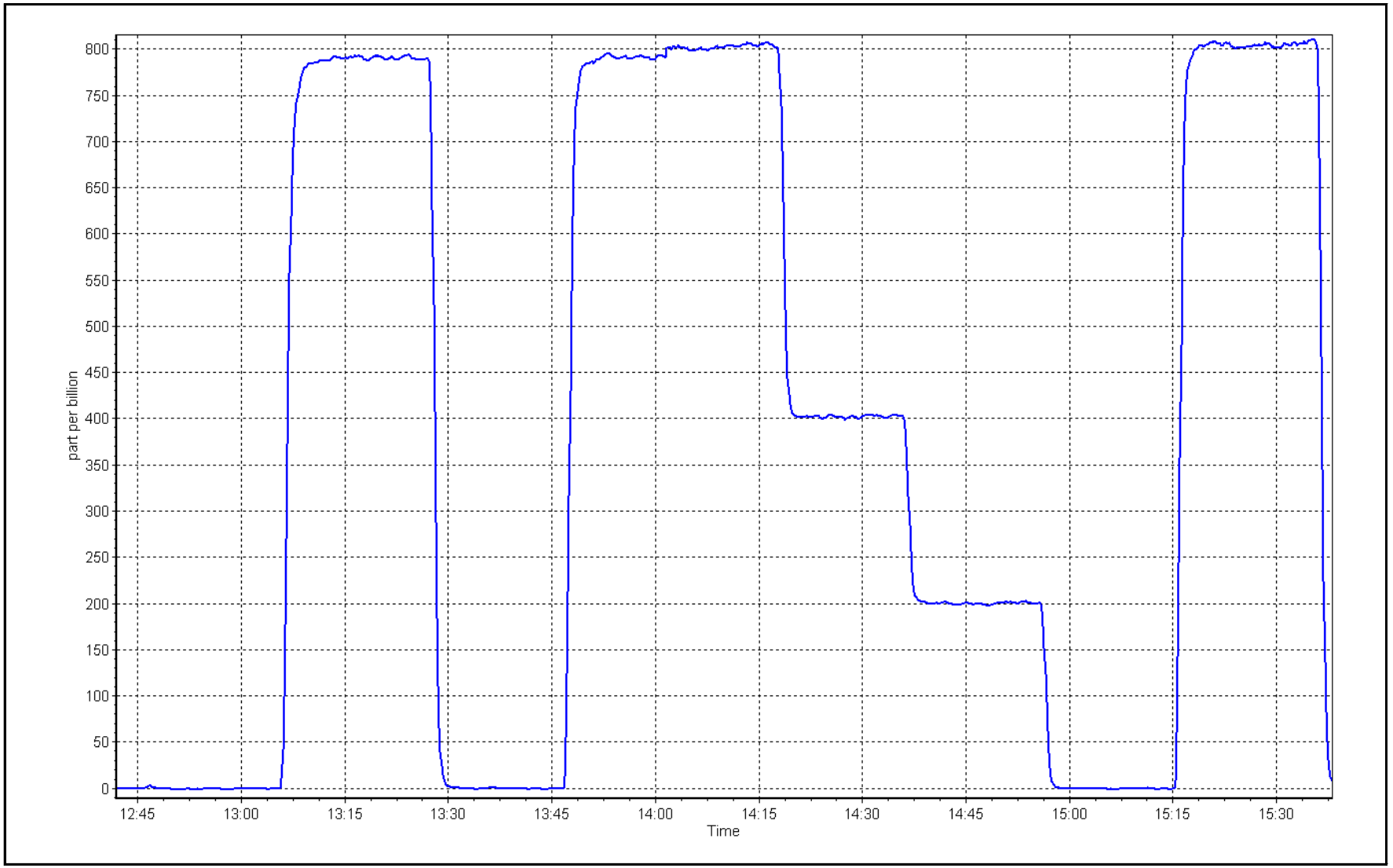
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.5	----
800.8	804.2	0.9958
399.9	402.0	0.9947
200.5	200.5	0.9998

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	1.005166	*0.90 - 1.10*
Intercept	-0.537953	*+/-30*



SO2 Calibration Plot Date: April 2, 2025 Location: Monday Creek



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name:	Monday Creek	Station number:	AMS 33
Calibration Date:	April 15, 2025	Last Cal Date:	March 4, 2025
Start time (MST):	9:44	End time (MST):	13:18
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	5.05	ppm	Cal Gas Exp Date:	November 15, 2026
Cal Gas Cylinder #:	DT0014831			
Removed Cal Gas Conc:	5.05	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Make/Model:	Teledyne API T700		Serial Number:	3253
ZAG Make/Model:	Teledyne T701H		Serial Number:	832

Analyzer Information

Analyzer make:	Thermo 43iQTL		Analyzer serial #:	12333331547
Converter make:	Global 150		Converter serial #:	2022-196
Analyzer Range	0 - 100 ppb		Converter Temp:	325 degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.006570	0.999283	Backgd or Offset:	1.6	1.6
Calibration intercept:	-0.101612	-0.021599	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)) *Limit = 0.90-1.10*
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:	80.41	*% change:	-0.1%
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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4921	79.2	80.0	79.9	1.001
Mid point	4960	39.6	40.0	39.9	1.002
Low point	4980	19.8	20.0	20.1	0.995
As left zero	5000	0.0	0.0	0.0	----
As left span	4921	79.2	80.0	79.7	1.004
SO2 Scrubber Check	4921	79.1	791.0	0.1	----
Date of last scrubber change:		11-Apr-24		Ave Corr Factor	1.000
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

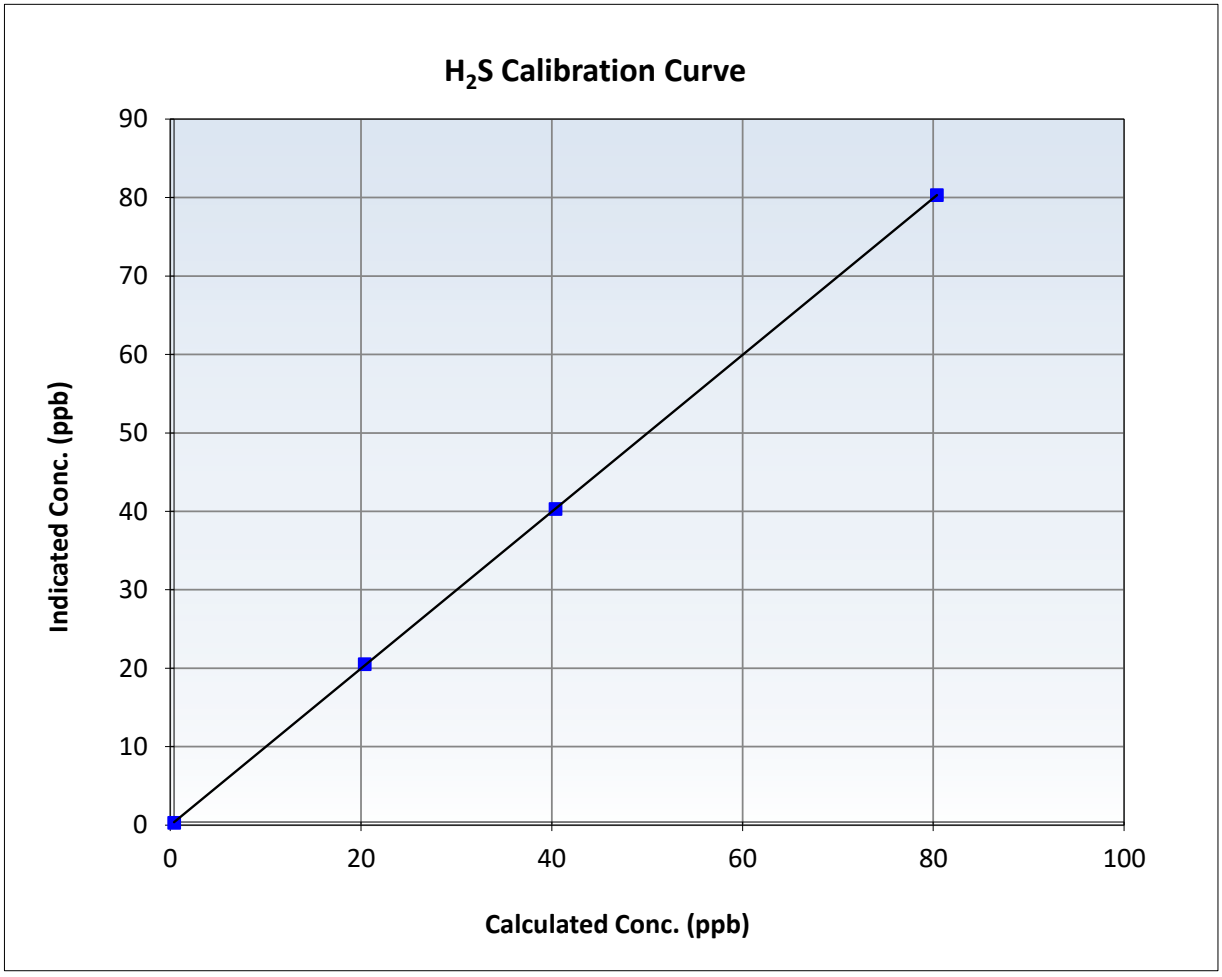
Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 4, 2025
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	9:44	End Time (MST):	13:18
Analyzer make:	Thermo 43iQTL	Analyzer serial #:	12333331547

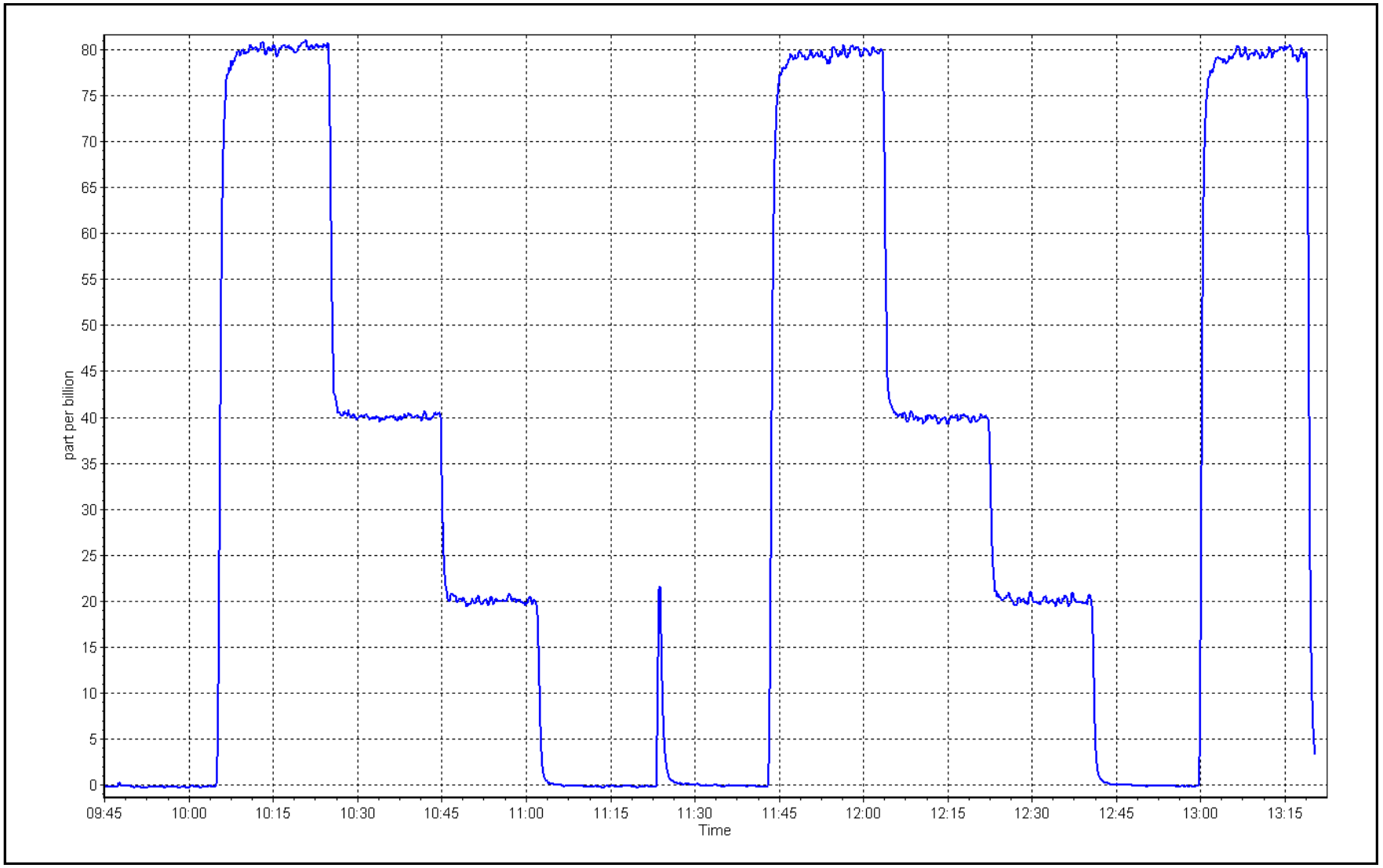
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
80.0	79.9	1.0011
40.0	39.9	1.0025
20.0	20.1	0.9950

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999992	*≥0.995*
Slope	0.999283	*0.90 - 1.10*
Intercept	-0.021599	*+/-3*



H2S Calibration Plot Date: April 15, 2025 Location: Monday Creek



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Monday Creek
Station number:	AMS 33
Calibration Date:	April 2, 2025
Last Cal Date:	March 13, 2025
Start time (MST):	10:15
End time (MST):	12:44
Reason:	Removal

Calibration Standards

NO Gas Cylinder #:	CC755290	Cal Gas Expiry Date:	January 3, 2031
NOX Cal Gas Conc:	48.90 ppm	NO Cal Gas Conc:	48.70 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	48.90 ppm	Removed Gas NO Conc:	48.70 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	3253
ZAG make/model:	Teledyne API T701H	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-0.7	-0.6	-0.1	----	----
AF High point	4918	82.1	802.9	799.6	3.3	799.2	794.3	4.9	1.0038	1.0060
AF Mid point	4959	41.1	401.9	400.3	1.6	396.9	393.4	3.4	1.0109	1.0160
AF Low point	4980	20.5	200.5	199.7	0.8	196.8	194.0	2.8	1.0150	1.0260
New cyl resp										

Previous Response	NO_X = 797.5 ppb	NO = 792.9 ppb
Baseline Corr 1st pt	NO_X = 799.9 ppb	NO = 794.9 ppb
Baseline Corr 2nd pt	NO_X = 397.6 ppb	NO = 394.0 ppb
Baseline Corr 3rd pt	NO_X = 197.5 ppb	NO = 194.6 ppb

* = > +/-5% change initiates investigation

As Found Statistics

As found	NO_X r^2: 0.999982	*Percent Change	NO_X = 0.3%
As found	NO r^2: 0.999957	*Percent Change	NO = 0.3%
As found	NO_2 r^2: 0.999985	Nx Sl: 0.996777	Nx Int: -2.153
		NO Sl: 0.995169	NO Int: -2.933
		NO2 Sl: 0.995165	NO_2 Int: 0.586

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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
As Found GPT zero	----	----	0.0	-0.1	----	----
As found high GPT point	792.7	381.2	414.8	412.9	1.0046	99.5%
As found mid GPT point	792.7	590.4	205.6	205.9	0.9985	100.2%
As found low GPT point	792.7	693.0	103.0	103.5	0.9950	100.5%

Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42iQ

Serial Number: 1182340006

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	1.202	NA	NO bkgnd or offset:	1.0	NA
NOX coeff or slope:	0.992	NA	NOX bkgnd or offset:	1.2	NA
NO2 coeff or slope:	1.000	NA	Reaction cell Press:	104.9	NA

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.994870	
NO_X Cal Offset:	-1.333022	
NO Cal Slope:	0.994154	
NO Cal Offset:	-2.053068	
NO_2 Cal Slope:	0.980054	
NO_2 Cal Offset:	2.225929	

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero										
High point										
Mid point										
Low point										
As left zero										
As left span										
Average Correction Factor										

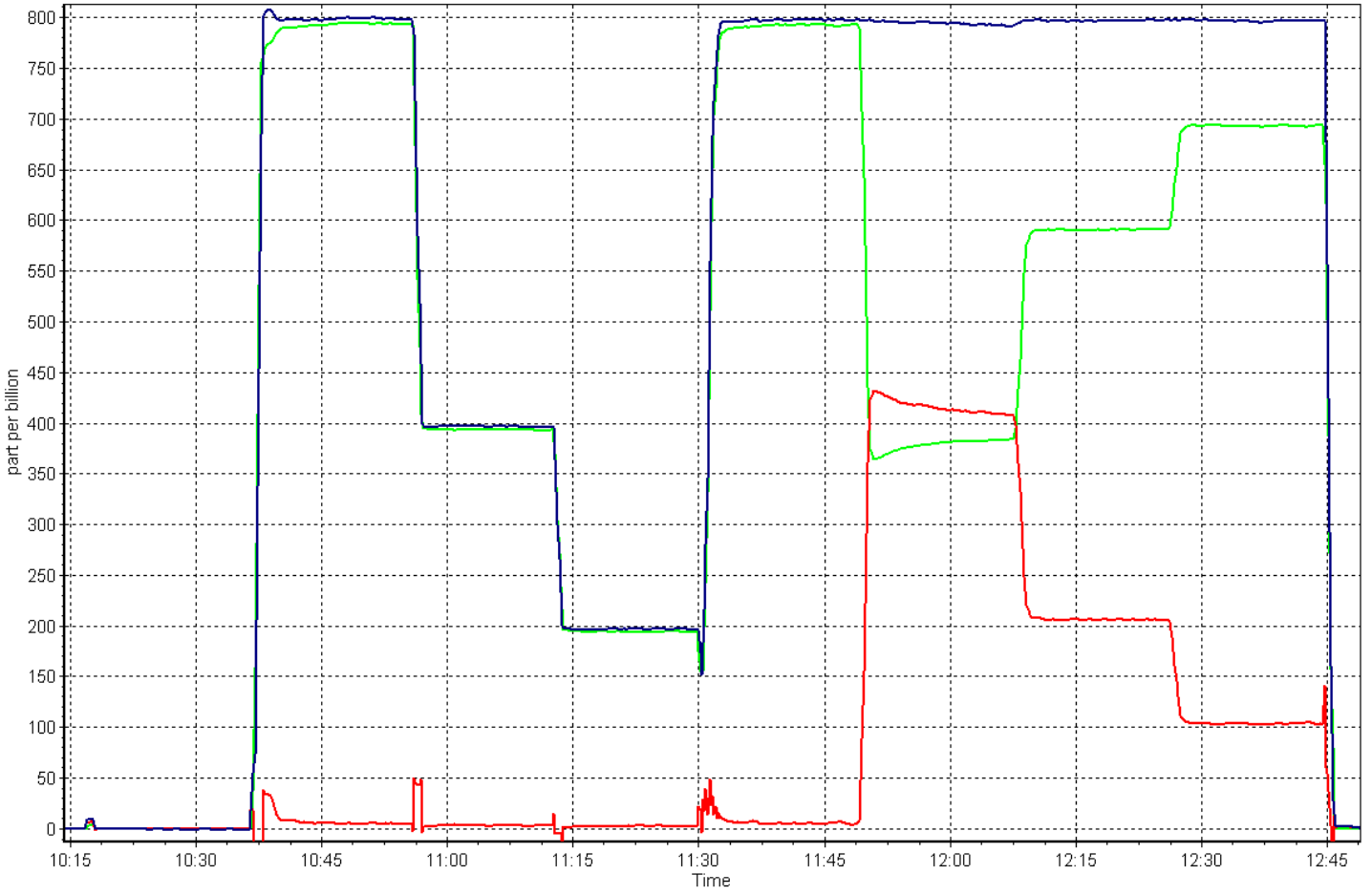
GPT Calibration Data

O3 Setpoint (ppb)	Indicated NO Reference concentration (ppb)	Indicated NO Drop concentration (ppb)	Calculated NO2 concentration (ppb) (Cc)	Indicated NO2 concentration (ppb) (Ic)	NO2 Correction factor (Cc/Ic) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero						
High GPT point						
Mid GPT point						
Low GPT point						
Average Correction Factor						

Notes: Removing the instrument to do further troubleshooting at the shop.

Calibration Performed By: Jan Castro

NO_X Calibration Plot Date: April 2, 2025 Location: Monday Creek



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Monday Creek
Station number:	AMS 33
Calibration Date:	April 3, 2025
Last Cal Date:	NA
Start time (MST):	7:19
End time (MST):	12:27
Reason:	Install

Calibration Standards

NO Gas Cylinder #:	CC755290	Cal Gas Expiry Date:	March 11, 2031
NOX Cal Gas Conc:	48.90 ppm	NO Cal Gas Conc:	48.70 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	48.90 ppm	Removed Gas NO Conc:	48.70 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	3253
ZAG make/model:	Teledyne API T701H	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
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	As Found Statistics	*Percent Change	NO =	NA
Baseline Corr 2nd pt	NO_X = NA	ppb	NO = NA	ppb	As found NO_X r^2:	Nx Sl:	Nx Int:	
Baseline Corr 3rd pt	NO_X = NA	ppb	NO = NA	ppb	As found NO r^2:	NO Sl:	NO Int:	
					As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42iQ

Serial Number: 12426335704

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	NA	1.096	NO bkgnd or offset:	NA	1.6
NOX coeff or slope:	NA	0.998	NOX bkgnd or offset:	NA	1.7
NO2 coeff or slope:	NA	0.990	Reaction cell Press:	NA	149.0

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:		0.999496
NO_X Cal Offset:		-0.133286
NO Cal Slope:		1.004314
NO Cal Offset:		-0.933140
NO_2 Cal Slope:		0.975877
NO_2 Cal Offset:		0.255076

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	-0.6	-0.5	-0.1	----	----
High point	4918	82.1	802.9	799.6	3.3	802.3	802.6	-0.3	1.0008	0.9963
Mid point	4959	41.1	401.9	400.3	1.6	401.4	400.2	1.3	1.0014	1.0003
Low point	4980	20.5	200.5	199.7	0.8	201.0	199.6	1.5	0.9974	1.0003
As left zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	----	----
As left span	4918	82.1	802.9	390.8	412.1	785.2	390.8	394.4	1.0226	1.0000
								Average Correction Factor	0.9998	0.9989

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	-0.1	----	----
High GPT point	799.8	394.8	408.3	398.0	1.0258	97.5%
Mid GPT point	799.8	606.1	197.0	194.3	1.0138	98.6%
Low GPT point	799.8	704.8	98.3	95.4	1.0302	97.1%
				Average Correction Factor	1.0233	97.7%

Notes: Sample inlet filter and charcoal was changed before calibrator zero. Adjusted zero and span.

Calibration Performed By: Jan Castro

Wood Buffalo Environmental Association

NO_X Calibration Summary

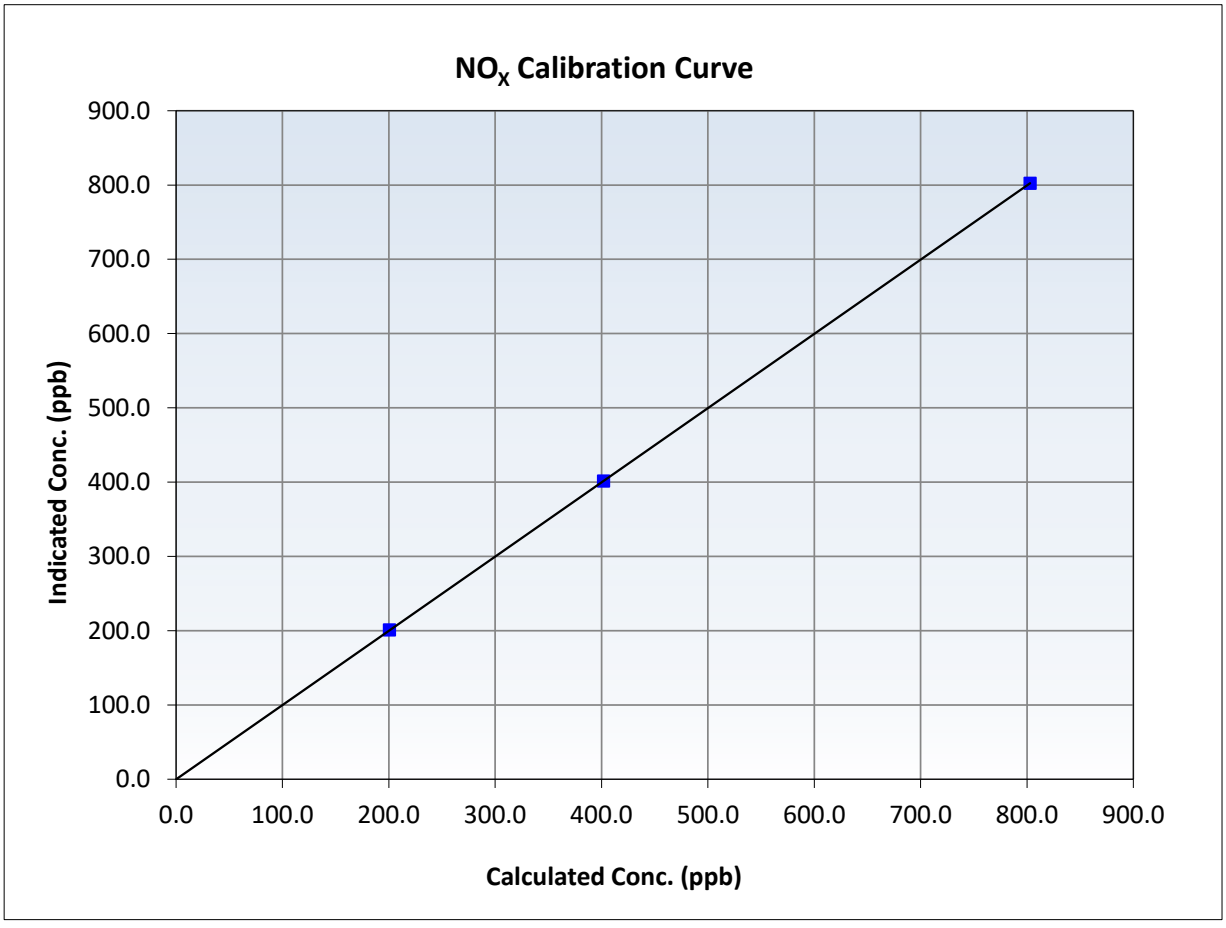
Station Information

Calibration Date:	April 3, 2025	Previous Calibration:	NA
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	7:19	End Time (MST):	12:27
Analyzer make:	Thermo 42iQ	Analyzer serial #:	12426335704

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.6	----
802.9	802.3	1.0008
401.9	401.4	1.0014
200.5	201.0	0.9974

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	0.999496	*0.90 - 1.10*
Intercept	-0.133286	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

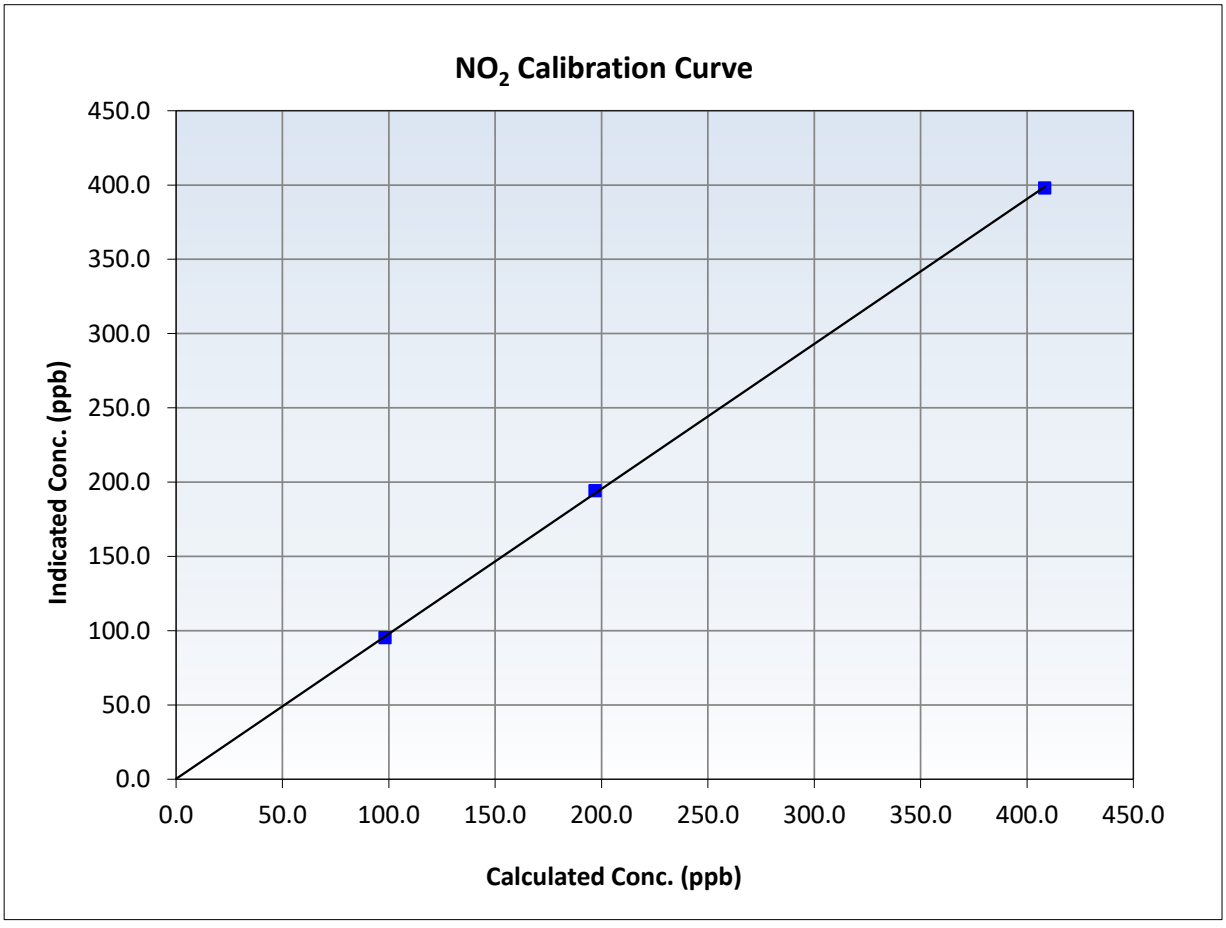
Station Information

Calibration Date:	April 3, 2025	Previous Calibration:	NA
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	7:19	End Time (MST):	12:27
Analyzer make:	Thermo 42iQ	Analyzer serial #:	12426335704

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
408.3	398.0	1.0258
197.0	194.3	1.0138
98.3	95.4	1.0302

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999949	*≥0.995*
Slope	0.975877	*0.90 - 1.10*
Intercept	0.255076	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

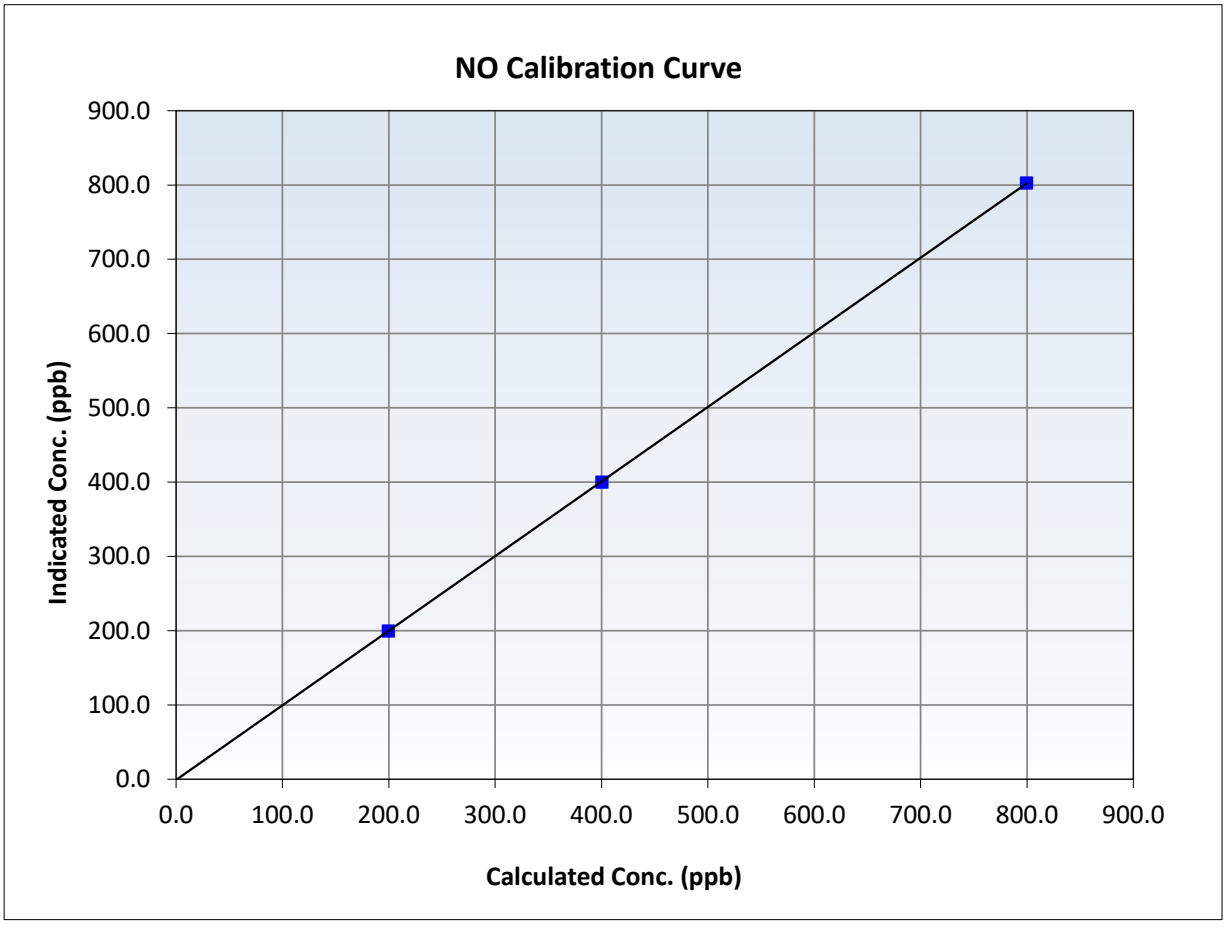
Station Information

Calibration Date:	April 3, 2025	Previous Calibration:	NA
Station Name:	Monday Creek	Station Number:	AMS 33
Start Time (MST):	7:19	End Time (MST):	12:27
Analyzer make:	Thermo 42iQ	Analyzer serial #:	12426335704

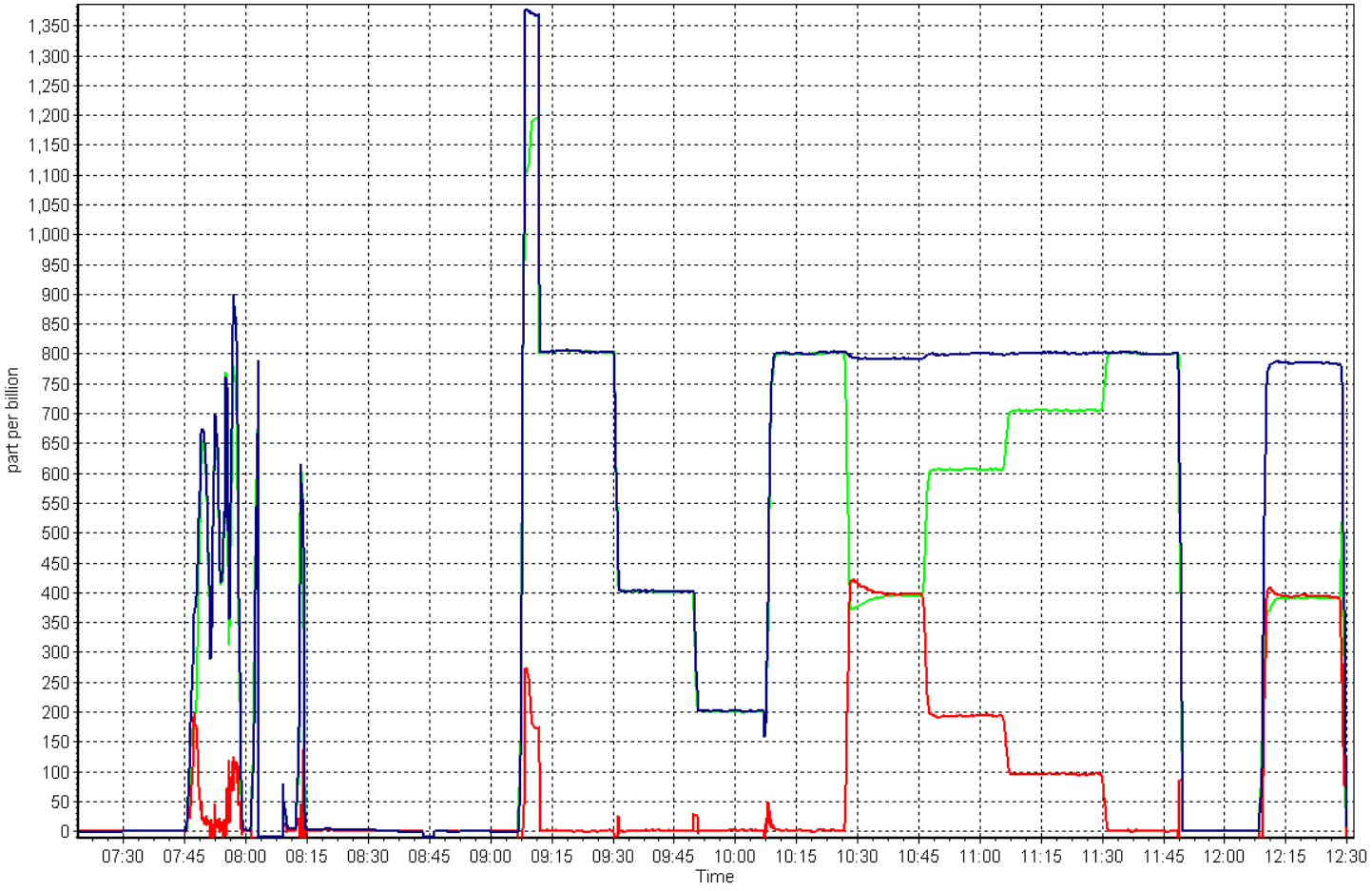
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.5	----
799.6	802.6	0.9963
400.3	400.2	1.0003
199.7	199.6	1.0003

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999997	*≥0.995*
Slope	1.004314	*0.90 - 1.10*
Intercept	-0.933140	*+/-20*



NO_X Calibration Plot Date: April 3, 2025 Location: Monday Creek



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS505
SAWBONES BAY
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Sawbones Bay	Station number:	AMS 505
Calibration Date:	March 28, 2025	Last Cal Date:	NA
Start time (MST):	9:30	End time (MST):	11:42
Reason:	Install		

Calibration Standards

Cal Gas Concentration:	51.40	ppm	Cal Gas Exp Date:	February 15, 2029
Cal Gas Cylinder #:	EY0000672			
Removed Cal Gas Conc:	51.40	ppm	Rem Gas Exp Date:	February 15, 2029
Removed Gas Cyl #:	EY0000672		Diff between cyl:	
Calibrator Model:	Teledyne API T700		Serial Number:	5112
Zero Air Gen Model:	Teledyne API T701		Serial Number:	690

Analyzer Information

Analyzer make:	Thermo 43i		Serial Number:	710321323	
Analyzer Range:	0 - 1000 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:		1.000238	Backgd or Offset:		19.8
Calibration intercept:		-0.072137	Coeff or Slope:		1.020

SO_2 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					
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	

SO_2 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	0.7	----
High point	4922	77.8	799.8	800.0	1.000
Mid point	4961	38.9	399.9	400.5	0.999
Low point	4981	19.5	200.4	199.0	1.007
As left zero	5000	0.0	0.0	1.2	----
As left span	4922	77.8	799.8	809.1	0.989
				Average Correction Factor:	1.002

Notes: Install calibration. Adjusted span and zero.

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

SO_2 Calibration Summary

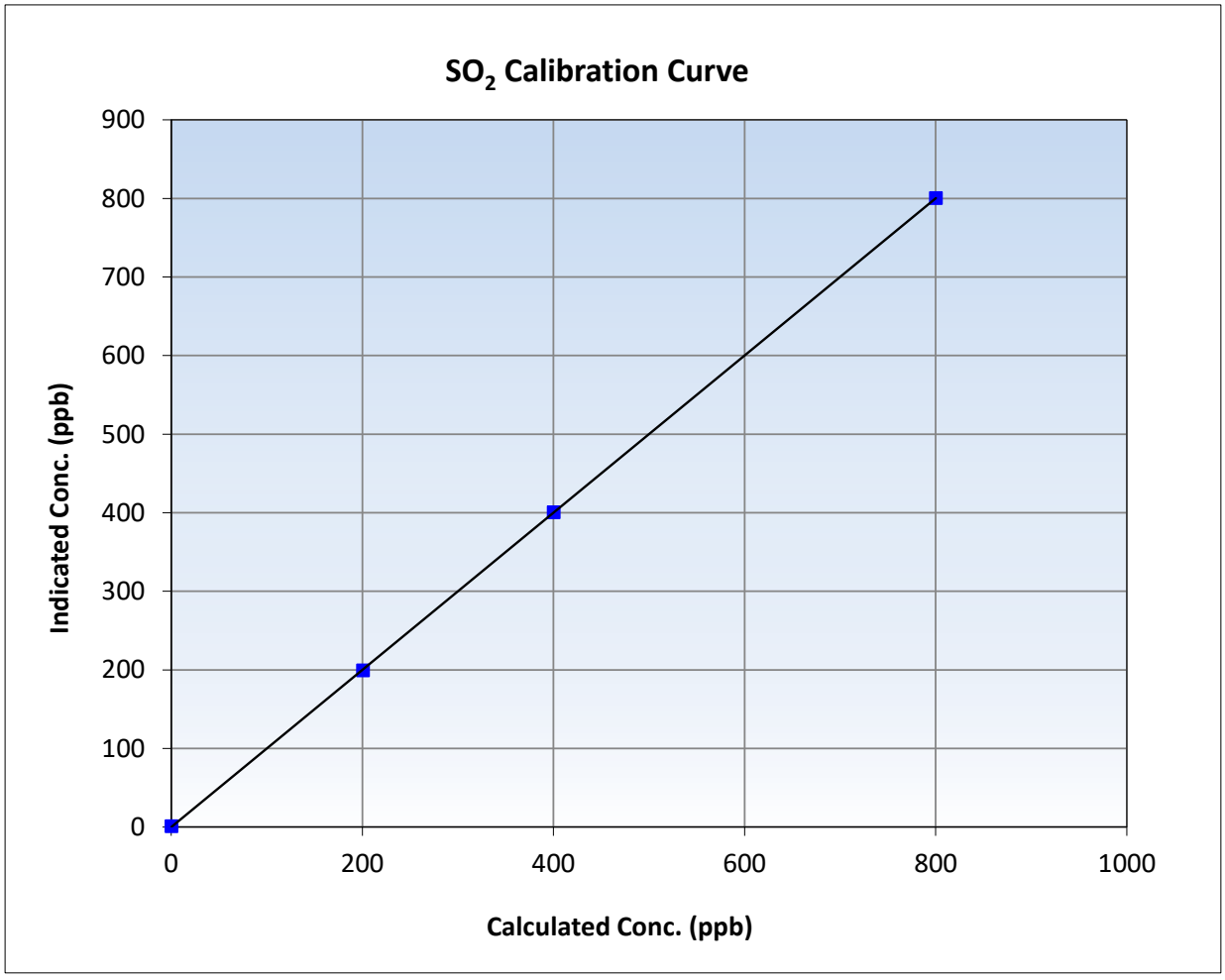
Station Information

Calibration Date:	March 28, 2025	Previous Calibration:	NA
Station Name:	Sawbones Bay	Station Number:	AMS 505
Start Time (MST):	9:30	End Time (MST):	11:42
Analyzer make:	Thermo 43i	Analyzer serial #:	710321323

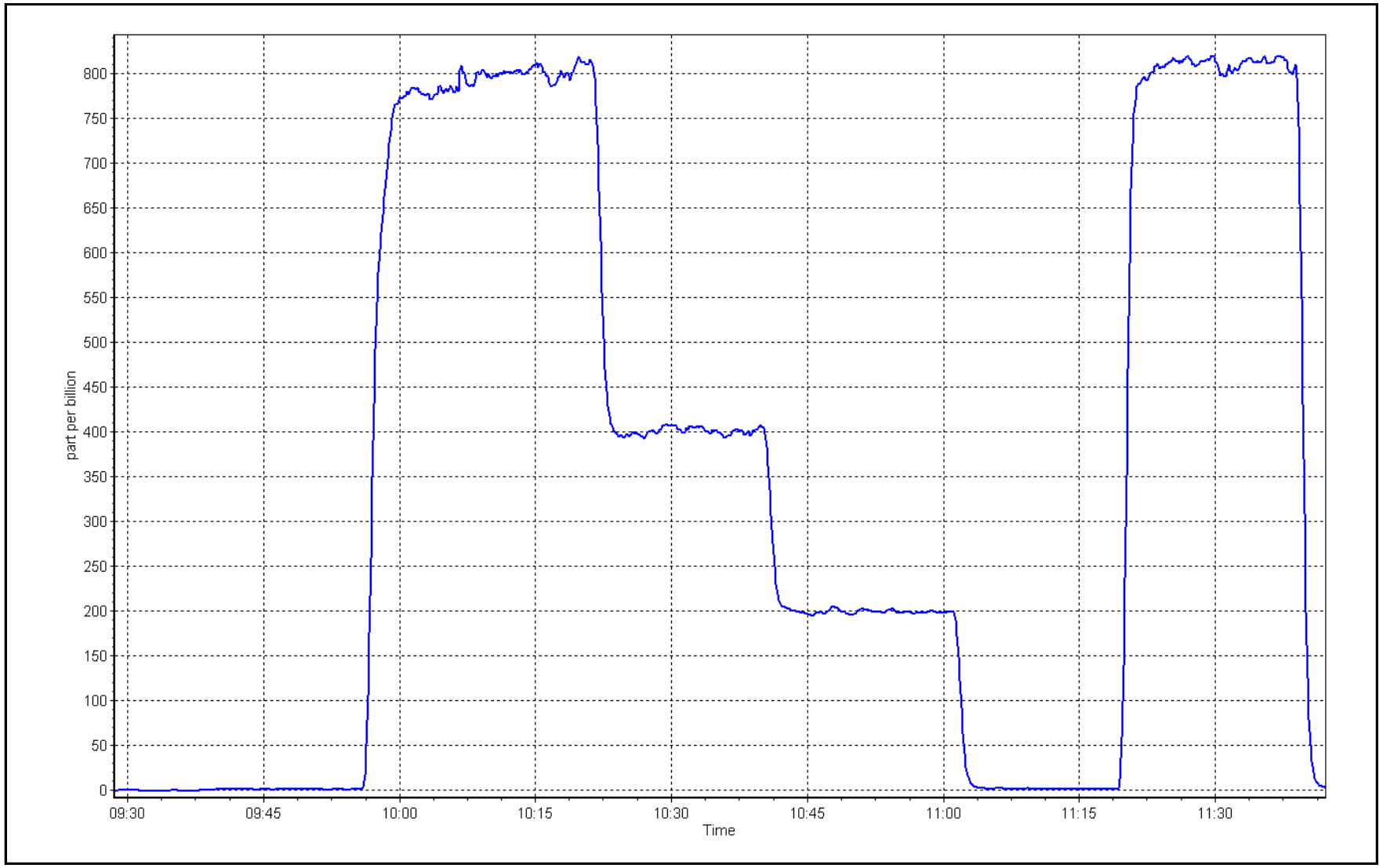
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.7	----
799.8	800.0	0.9998
399.9	400.5	0.9985
200.4	199.0	1.0072

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999992	*≥0.995*
Slope	1.000238	*0.90 - 1.10*
Intercept	-0.072137	*+/-30*



SO2 Calibration Plot Date: March 28, 2025 Location: Sawbones Bay



Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Sawbones Bay	Station number:	AMS 505
Calibration Date:	April 25, 2025	Last Cal Date:	March 28, 2025
Start time (MST):	8:22	End time (MST):	11:04
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	51.40	ppm	Cal Gas Exp Date:	February 15, 2029
Cal Gas Cylinder #:	EY0000672			
Removed Cal Gas Conc:	51.40	ppm	Rem Gas Exp Date:	February 15, 2029
Removed Gas Cyl #:	EY0000672		Diff between cyl:	
Calibrator Model:	Teledyne API T700		Serial Number:	5112
Zero Air Gen Model:	Teledyne API T701		Serial Number:	690

Analyzer Information

Analyzer make:	Thermo 43i		Serial Number:	710321323	
Analyzer Range:	0 - 1000 ppb				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.000238	0.999694	Backgd or Offset:	19.8	19.8
Calibration intercept:	-0.072137	0.168148	Coeff or Slope:	1.020	1.020

SO_2 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	0.8	----
As found High point	4922	77.8	799.8	803.9	0.996
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	803.1	Previous response	799.9	*% 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	

SO_2 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	4922	77.8	799.8	798.7	1.001
Mid point	4961	38.9	399.9	402.9	0.993
Low point	4981	19.5	200.4	198.8	1.008
As left zero	5000	0.0	0.0	-0.1	----
As left span	4922	77.8	799.8	809.7	0.988
				Average Correction Factor:	1.001

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

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

SO_2 Calibration Summary

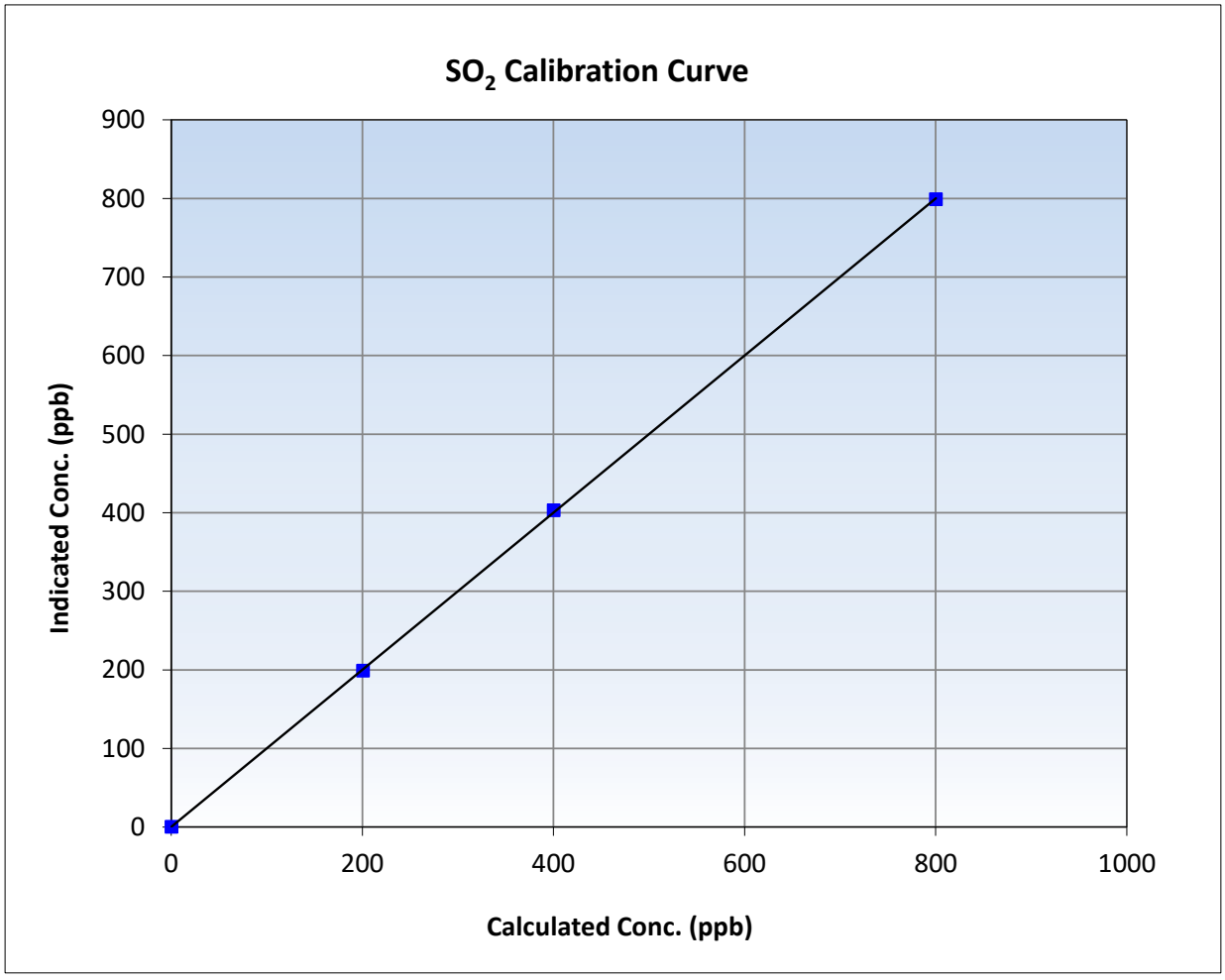
Station Information

Calibration Date:	April 25, 2025	Previous Calibration:	March 28, 2025
Station Name:	Sawbones Bay	Station Number:	AMS 505
Start Time (MST):	8:22	End Time (MST):	11:04
Analyzer make:	Thermo 43i	Analyzer serial #:	710321323

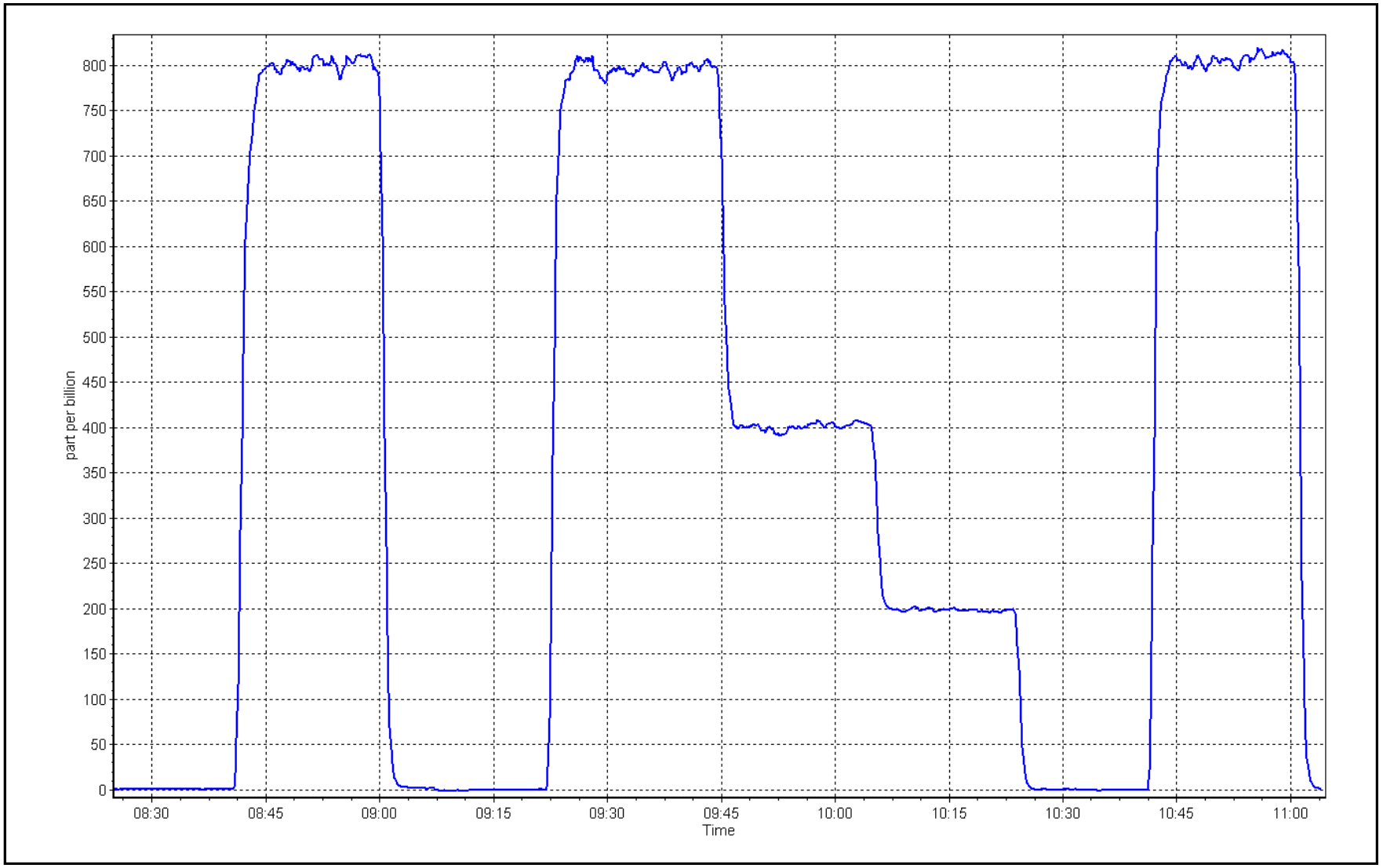
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
799.8	798.7	1.0014
399.9	402.9	0.9926
200.4	198.8	1.0082

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999963	*≥0.995*
Slope	0.999694	*0.90 - 1.10*
Intercept	0.168148	*+/-30*



SO2 Calibration Plot Date: April 25, 2025 Location: Sawbones Bay



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name:	Sawbones Bay	Station number:	AMS 505
Calibration Date:	March 26, 2025	Last Cal Date:	NA
Start time (MST):	10:30	End time (MST):	13:13
Reason:	Install		

Calibration Standards

Cal Gas Concentration:	5.26	ppm	Cal Gas Exp Date:	March 19, 2027
Cal Gas Cylinder #:	DT0034141			
Removed Cal Gas Conc:	5.26	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 T751H		Serial Number:	321

Analyzer Information

Analyzer make:	Thermo 43iQTL		Analyzer serial #:	12113311965
Converter make:	Global 150		Converter serial #:	2022-224
Analyzer Range	0 - 100 ppb		Converter Temp:	325 degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:		0.992596	Backgd or Offset:		0.920
Calibration intercept:		-0.020000	Coeff or Slope:		1.105

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)) *Limit = 0.90-1.10*
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	

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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4924	76.0	80.0	79.4	1.007
Mid point	4962	38.0	40.0	39.5	1.012
Low point	4981	19.0	20.0	19.9	1.004
As left zero	5000	0.0	0.0	0.1	----
As left span	4924	76.0	80.0	79.0	1.012
SO2 Scrubber Check	4922	77.8	778.0	0.0	----
Date of last scrubber change:				Ave Corr Factor	1.008
Date of last converter efficiency test:					

Notes: Install calibration.

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

H2S Calibration Summary

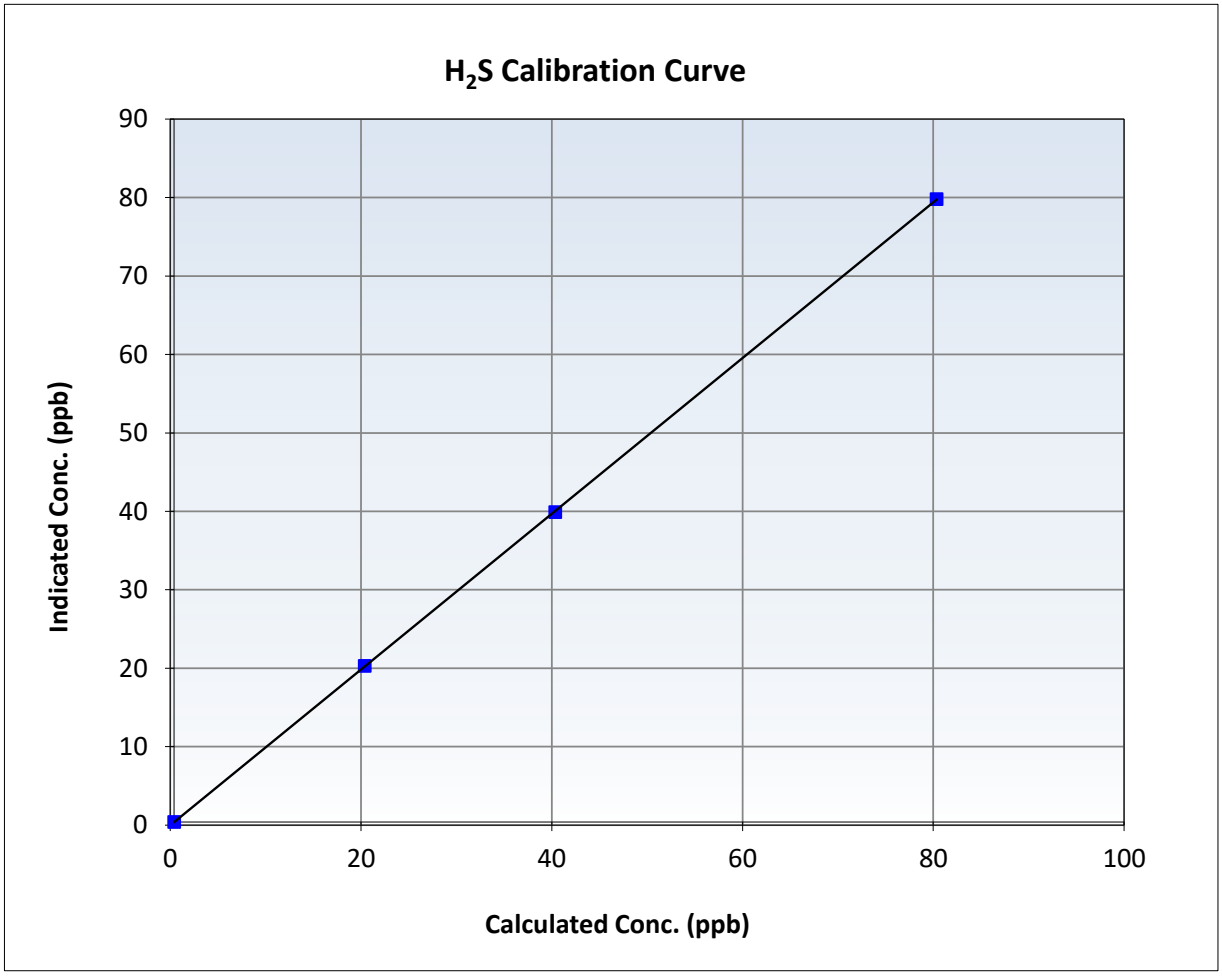
Station Information

Calibration Date:	March 26, 2025	Previous Calibration:	NA
Station Name:	Sawbones Bay	Station Number:	AMS 505
Start Time (MST):	10:30	End Time (MST):	13:13
Analyzer make:	Thermo 43iQTL	Analyzer serial #:	12113311965

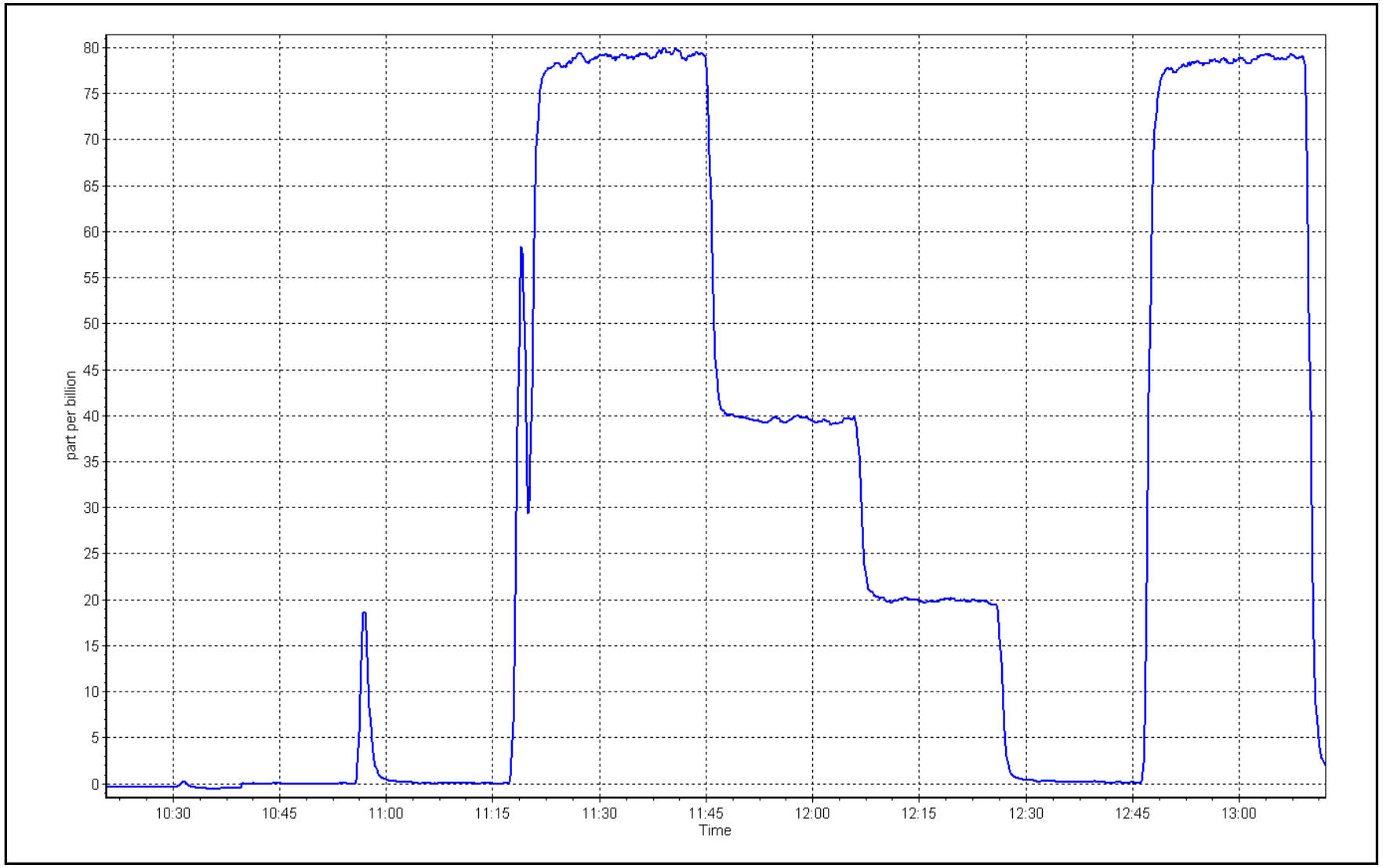
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
80.0	79.4	1.0070
40.0	39.5	1.0121
20.0	19.9	1.0044

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999990	*≥0.995*
Slope	0.992596	*0.90 - 1.10*
Intercept	-0.020000	*+/-3*



H2S Calibration Plot Date: March 26, 2025 Location: Sawbones Bay



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name:	Sawbones Bay	Station number:	AMS 505
Calibration Date:	April 24, 2025	Last Cal Date:	March 26, 2025
Start time (MST):	8:09	End time (MST):	11:56
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	5.26	ppm	Cal Gas Exp Date:	March 19, 2027
Cal Gas Cylinder #:	DT0034141			
Removed Cal Gas Conc:	5.26	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 T751H		Serial Number:	321

Analyzer Information

Analyzer make:	Thermo 43iQ		Analyzer serial #:	12113311965
Converter make:	Global 150		Converter serial #:	2022-224
Analyzer Range	0 - 100 ppb		Converter Temp:	325 degC

	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.992596	0.994025	Backgd or Offset:	0.920	0.920
Calibration intercept:	-0.020000	-0.020000	Coeff or Slope:	1.105	1.105

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	0.0	----
As found High point	4924	76.0	80.0	79.3	1.008
As found Mid point	4962	38.0	40.0	39.6	1.009
As found Low point	4981	19.0	20.0	19.6	1.020
New cylinder response					

Baseline Corr As found:	79.3	Prev response:	79.34	*% change:	-0.1%
Baseline Corr 2nd AF pt:	39.6	AF Slope:	0.992739	AF Intercept:	-0.100000
Baseline Corr 3rd AF pt:	19.6	AF Correlation:	0.999991	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.1	----
High point	4924	76.0	80.0	79.5	1.006
Mid point	4962	38.0	40.0	39.7	1.007
Low point	4981	19.0	20.0	19.7	1.015
As left zero	5000	0.0	0.0	0.1	----
As left span	4924	76.0	80.0	79.1	1.011
SO2 Scrubber Check	4922	77.8	778.0	-0.1	----
Date of last scrubber change:				Ave Corr Factor	1.009
Date of last converter efficiency test:					

Notes: Changed inlet filter after as founds. Scrubber test was done after calibrator zero. No adjustment made.

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

H2S Calibration Summary

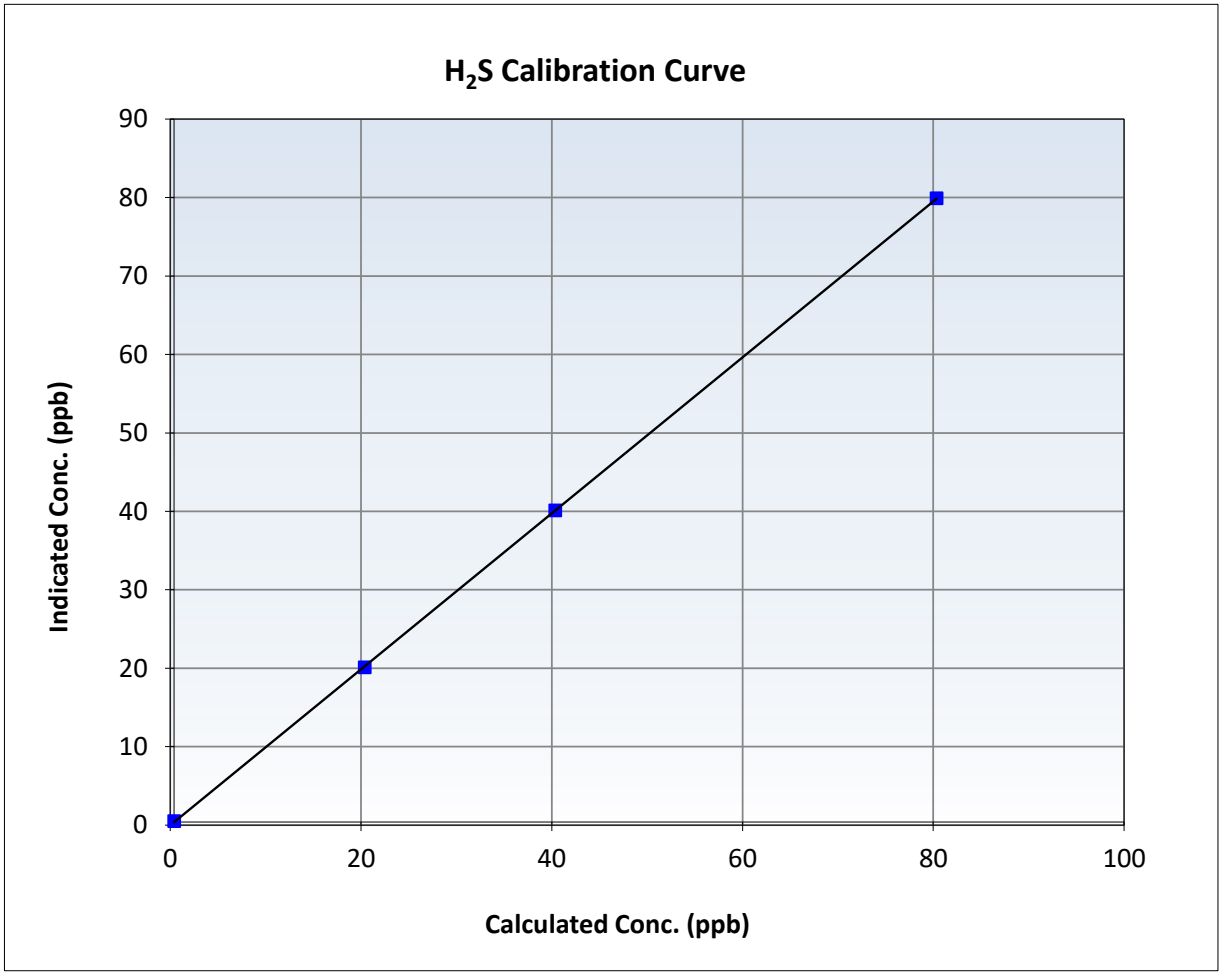
Station Information

Calibration Date:	April 24, 2025	Previous Calibration:	March 26, 2025
Station Name:	Sawbones Bay	Station Number:	AMS 505
Start Time (MST):	8:09	End Time (MST):	11:56
Analyzer make:	Thermo 43iQ	Analyzer serial #:	12113311965

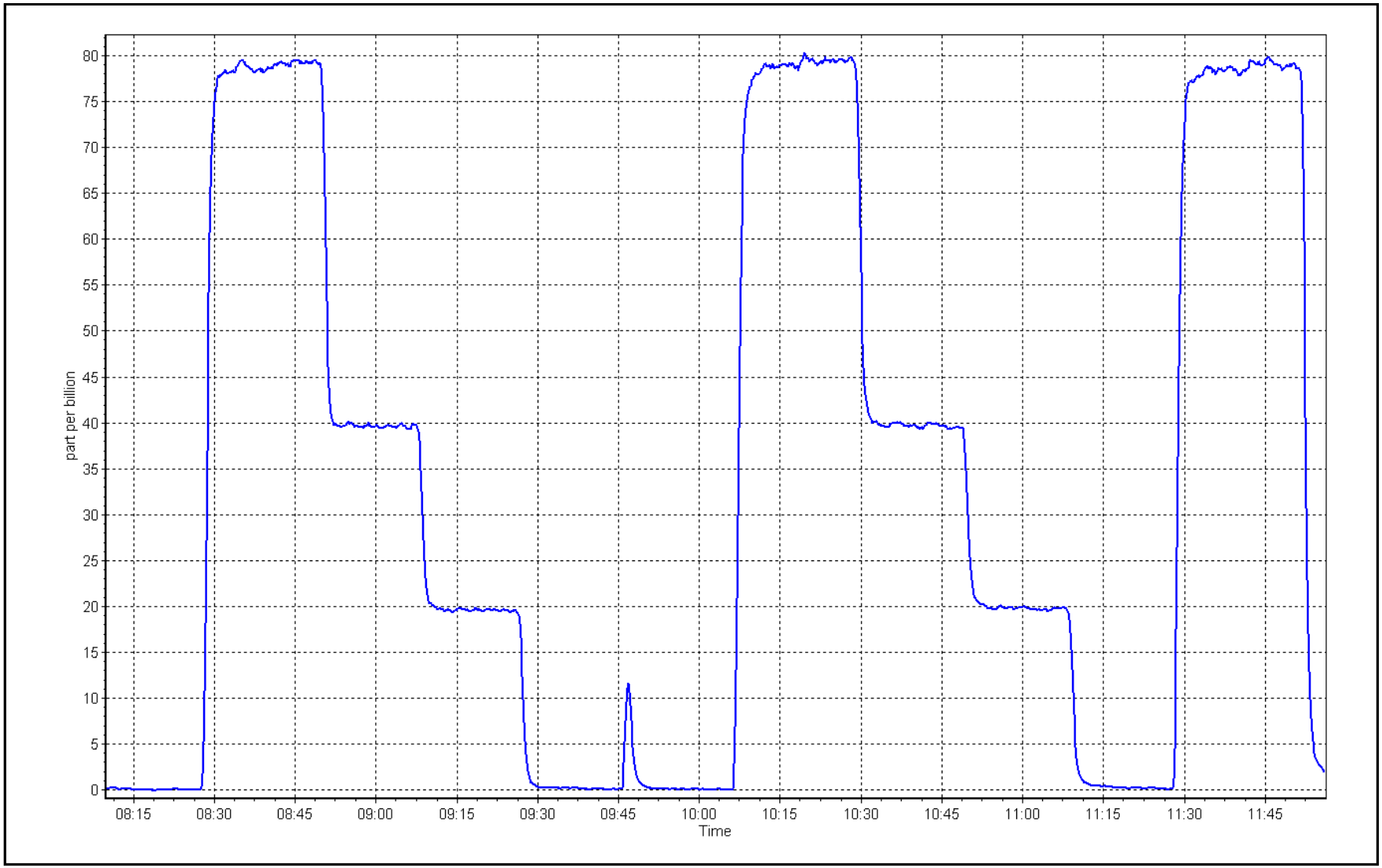
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.1	----
80.0	79.5	1.0057
40.0	39.7	1.0070
20.0	19.7	1.0146

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999989	*≥0.995*
Slope	0.994025	*0.90 - 1.10*
Intercept	-0.020000	*+/-3*



H2S Calibration Plot Date: April 24, 2025 Location: Sawbones Bay



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Sawbones Bay
Station number:	AMS 505
Calibration Date:	April 2, 2025
Last Cal Date:	NA
Start time (MST):	8:49
End time (MST):	12:42
Reason:	Install

Calibration Standards

NO Gas Cylinder #:	DT0009786	Cal Gas Expiry Date:	January 5, 2032
NOX Cal Gas Conc:	60.10 ppm	NO Cal Gas Conc:	60.00 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	60.10 ppm	Removed Gas NO Conc:	60.00 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	API T700	Serial Number:	5112
ZAG make/model:	API T701H	Serial Number:	690

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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
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	As Found Statistics	*Percent Change	NO =	NA
Baseline Corr 2nd pt	NO_X = NA	ppb	NO = NA	ppb	As found NO_X r^2:	Nx Sl:	Nx Int:	
Baseline Corr 3rd pt	NO_X = NA	ppb	NO = NA	ppb	As found NO r^2:	NO Sl:	NO Int:	
					As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: API T200 Serial Number: 4259

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:		0.941	NO bkgnd or offset:		3.4
NOX coeff or slope:		0.941	NOX bkgnd or offset:		3.8
NO2 coeff or slope:		1.000	Reaction cell Press:		3.8

Calibration Statistics

	Start	Finish
NO_X Cal Slope:		1.003271
NO_X Cal Offset:		-3.589772
NO Cal Slope:		1.003045
NO Cal Offset:		-4.150059
NO_2 Cal Slope:		0.998577
NO_2 Cal Offset:		0.523117

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	-0.5	-0.5	0.0	----	----
High point	4933	66.7	801.8	800.4	1.3	802.1	800.4	1.7	0.9996	1.0001
Mid point	4967	33.3	400.2	399.6	0.7	397.2	395.3	1.9	1.0077	1.0108
Low point	4983	16.7	200.7	200.4	0.3	194.2	192.9	1.3	1.0337	1.0389
As left zero	5000	0.0	0.0	0.0	0.0	-1.6	-1.7	0.1	----	----
As left span	4933	66.7	801.8	355.4	446.4	794.6	355.4	439.3	1.0090	1.0000
							Average Correction Factor		1.0137	1.0166

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	794.0	348.4	446.9	446.5	1.0010	99.9%
Mid GPT point	794.0	551.0	244.3	244.7	0.9985	100.1%
Low GPT point	794.0	646.9	148.4	149.4	0.9935	100.7%
				Average Correction Factor	0.9977	100.2%

Notes: Install Calibration.

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

NO_X Calibration Summary

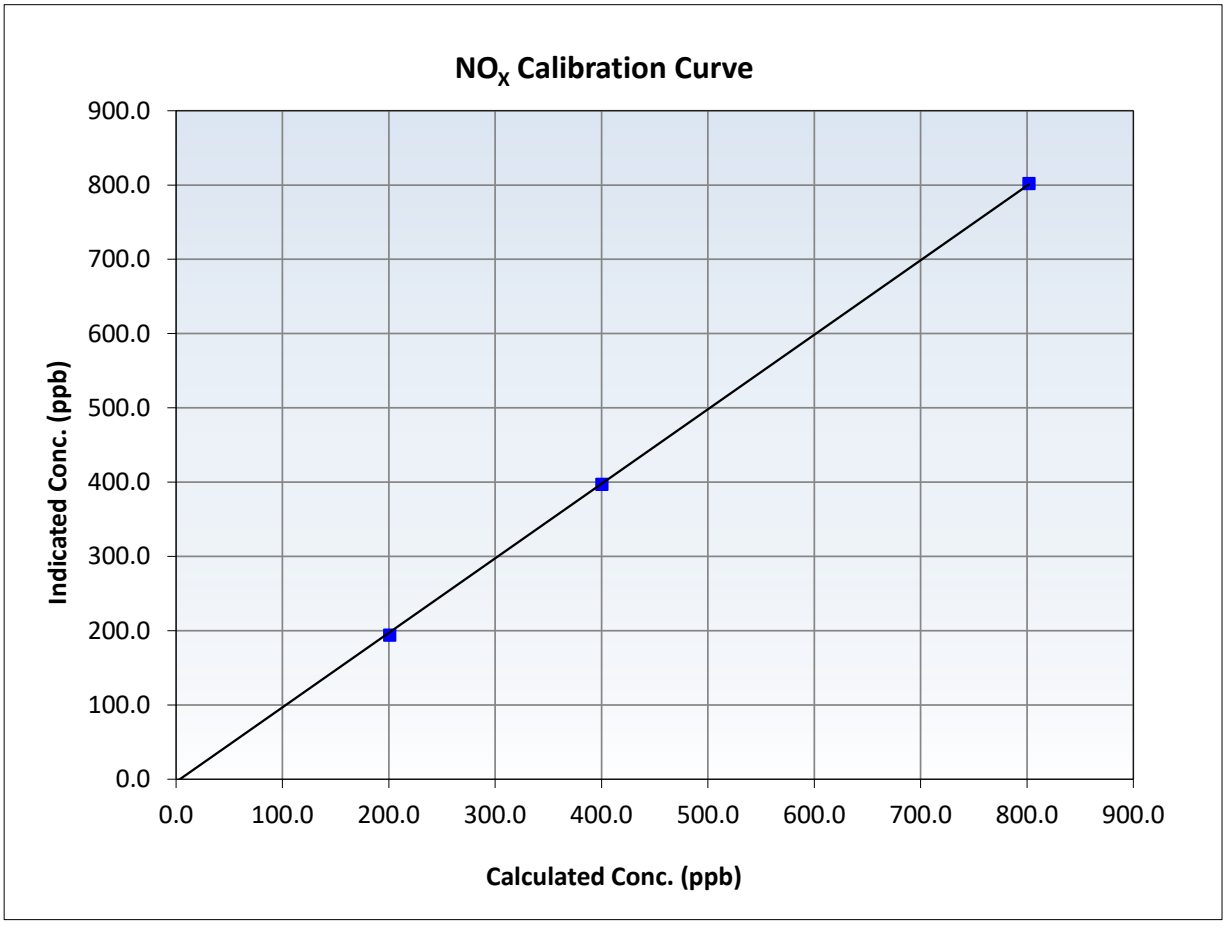
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	NA
Station Name:	Sawbones Bay	Station Number:	AMS 505
Start Time (MST):	8:49	End Time (MST):	12:42
Analyzer make:	API T200	Analyzer serial #:	4259

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.5	----
801.8	802.1	0.9996
400.2	397.2	1.0077
200.7	194.2	1.0337

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999930	*≥0.995*
Slope	1.003271	*0.90 - 1.10*
Intercept	-3.589772	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

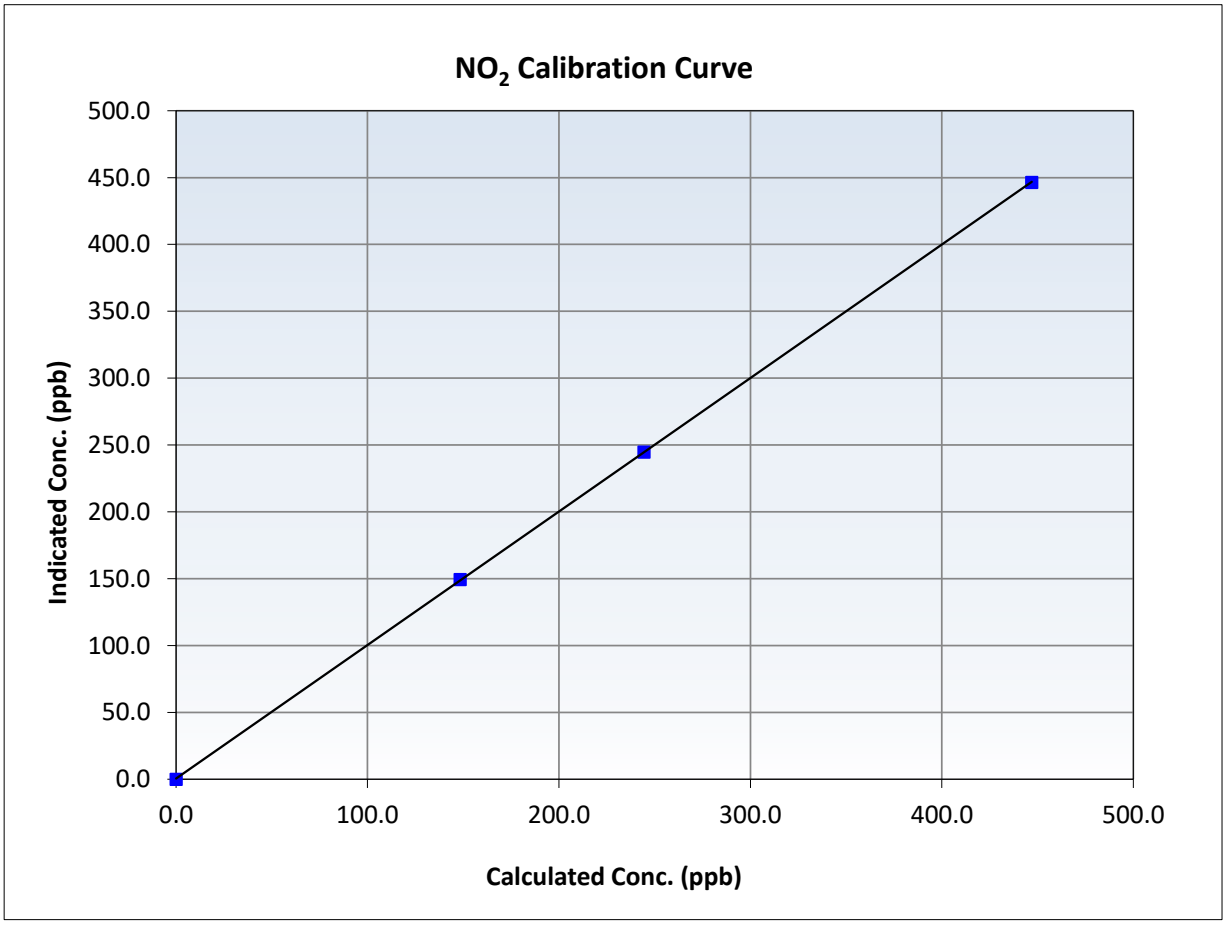
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	NA
Station Name:	Sawbones Bay	Station Number:	AMS 505
Start Time (MST):	8:49	End Time (MST):	12:42
Analyzer make:	API T200	Analyzer serial #:	4259

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
446.9	446.5	1.0010
244.3	244.7	0.9985
148.4	149.4	0.9935

Statistical Evaluation		Limits
Correlation Coefficient	0.999992	≥0.995
Slope	0.998577	0.90 - 1.10
Intercept	0.523117	+/-20



Wood Buffalo Environmental Association

NO Calibration Summary

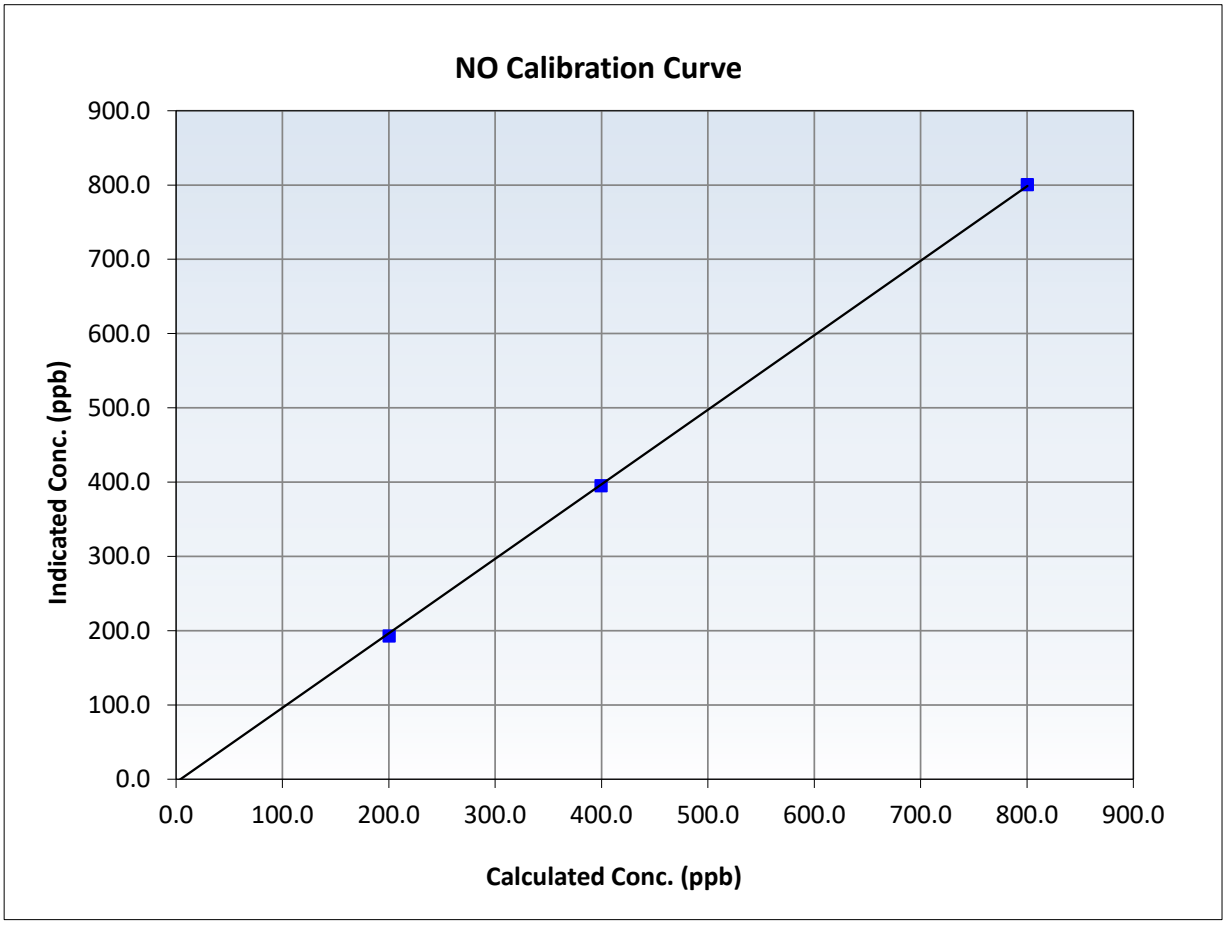
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	NA
Station Name:	Sawbones Bay	Station Number:	AMS 505
Start Time (MST):	8:49	End Time (MST):	12:42
Analyzer make:	API T200	Analyzer serial #:	4259

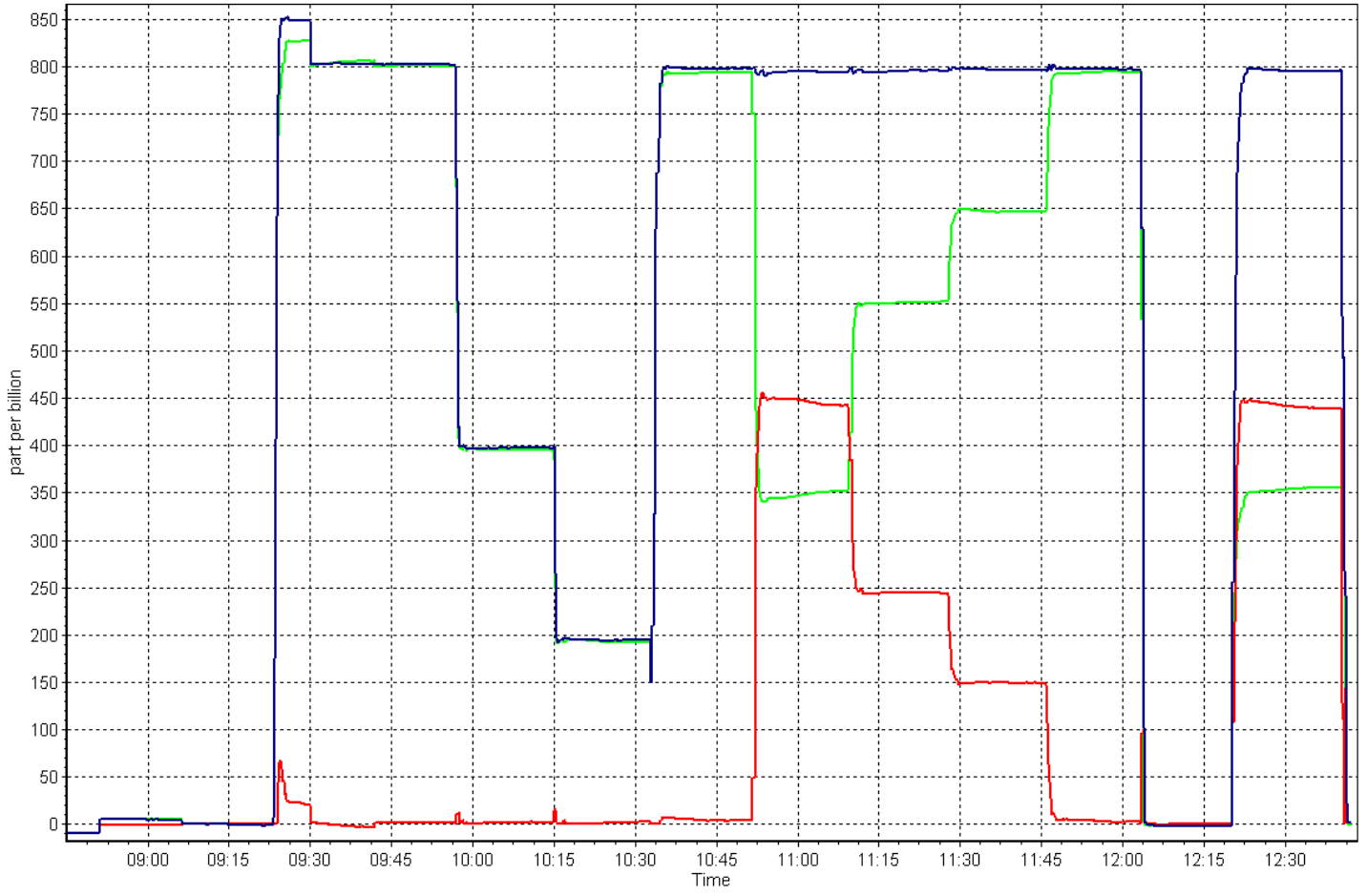
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.5	----
800.4	800.4	1.0001
399.6	395.3	1.0108
200.4	192.9	1.0389

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999904	*≥0.995*
Slope	1.003045	*0.90 - 1.10*
Intercept	-4.150059	*+/-20*



NO_X Calibration Plot Date: April 2, 2025 Location: Sawbones Bay



Wood Buffalo Environmental Association

Wind Speed/Direction Calibration Report

Station Information

Station Name:	Sawbones Bay	Station Number:	AMS 505
Calibration Date:	March 27, 2025	Prev Cal Date:	NA
Start Time (MST):	9:36	End Time (MST):	12:50
Tower Height (m):	10.0	Reason:	Install

Wind Speed Calibration

Sensor make/model:	Met One 010C-1	Serial Number:	P10040
WS Calibrator:	MetOne 053	Serial Number:	CA 03845

Shaft RPM (Hz)	Calculated Speed (K/hr) (Cv)	Indicated Speed (K/hr) (Iv)	% Error *Limit = +/- 1.5%*
0	0.0	0.0	---
200	20.2	20.3	0.7%
400	39.4	39.4	0.1%
600	58.6	58.7	0.2%
800	77.8	77.8	0.1%

	Start	***Finish***	*Limits*
Correl Coeff (r^2)		0.999998	*≥0.9995*
Calculated slope		0.999451	*0.98 - 1.02*
Calculated intercept		-0.052868	*+/- 2*

Wind Direction Calibration

Sensor make/model:	Met One 020C-1	Serial Number:	B4693	
As Found Declination (deg east of True North):	NA	As Left Declination (deg east of True North):	13	
Solar noon (MST):	12:28	Calc Declination*:	12.72	Degrees
WD Calibrator:	Met One 040			

* - calculated declination as per NOAA website

Physical Direction (Degrees) (Cv)	Indicated Direction (Degrees) (Iv)	% Error (based on 360° FS) *Limit = +/- 1%*
0	0.8	0.2%
90	86.3	-1.0%
180	177.6	-0.7%
270	270.5	0.1%
355	356.3	0.4%

	Start	***Finish***	*Limits*
Correl Coeff (r^2)		0.999894	*≥0.9995*
Calculated slope		0.994042	*0.97 - 1.03*
Calculated intercept		1.762340	*+/- 5*

Notes: Install Calibration.

Calibration Performed By: Sean Bala

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS506
JACKFISH 1
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Jackfish 1	Station number:	AMS 506
Calibration Date:	April 23, 2025	Last Cal Date:	March 19, 2025
Start time (MST):	8:58	End time (MST):	11:39
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.001515	0.999944	Backgd or Offset:	20.2	20.2
Calibration intercept:	0.763956	0.664017	Coeff or Slope:	0.985	0.985

SO_2 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	0.4	----
As found High point	4921	79.2	800.2	797.1	1.004
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	796.7	Previous response	802.2	*% 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	

SO_2 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	0.6	----
High point	4921	79.2	800.2	801.0	0.999
Mid point	4960	39.6	400.2	400.2	1.000
Low point	4980	19.8	200.1	201.2	0.994
As left zero	5000	0.0	0.0	0.3	----
As left span	4921	79.2	800.2	801.0	0.999
				Average Correction Factor:	0.998

Notes: Changed inlet filter after as founds. No adjustment made.

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

SO_2 Calibration Summary

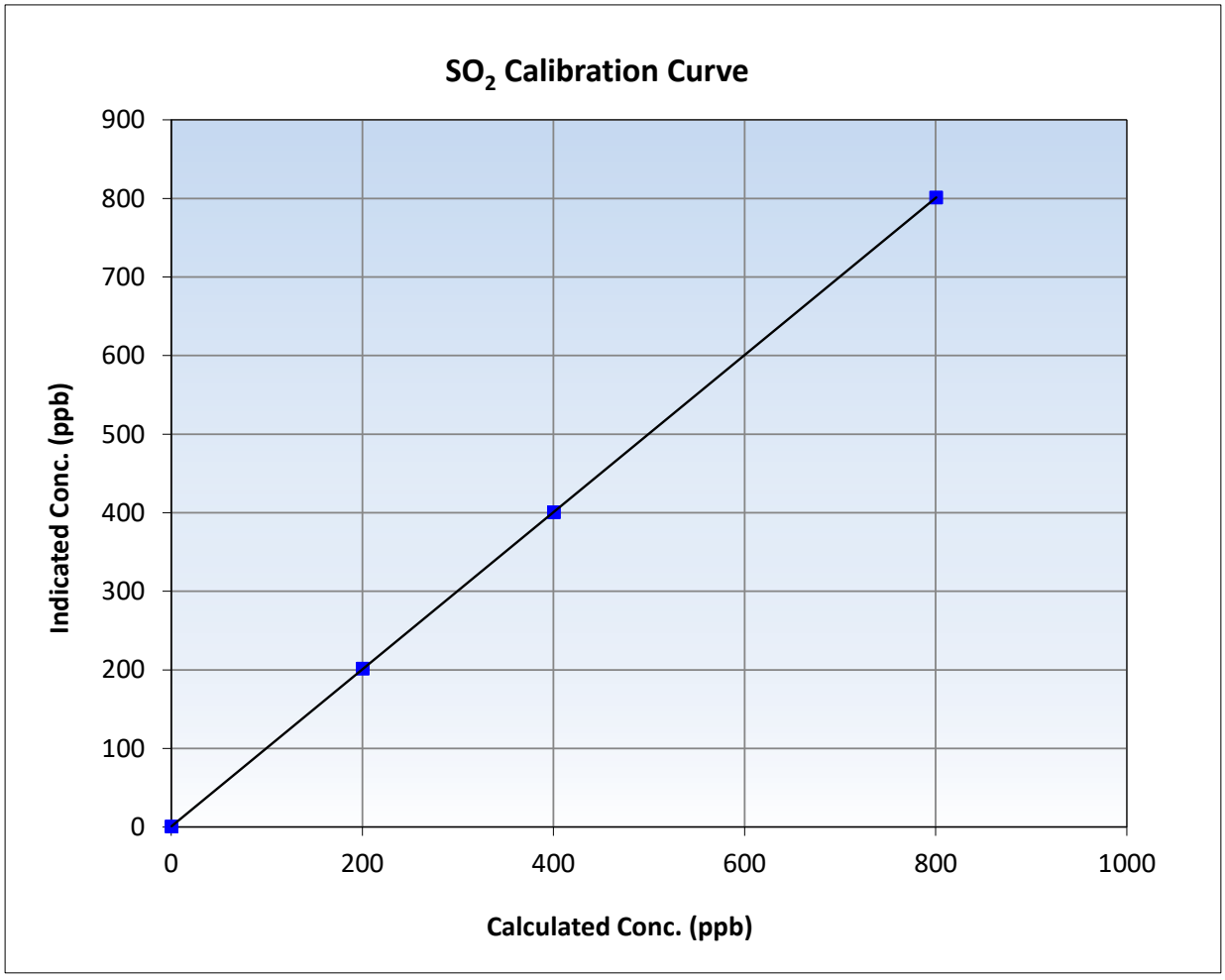
Station Information

Calibration Date:	April 23, 2025	Previous Calibration:	March 19, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:58	End Time (MST):	11:39
Analyzer make:	Thermo 43i	Analyzer serial #:	1160290011

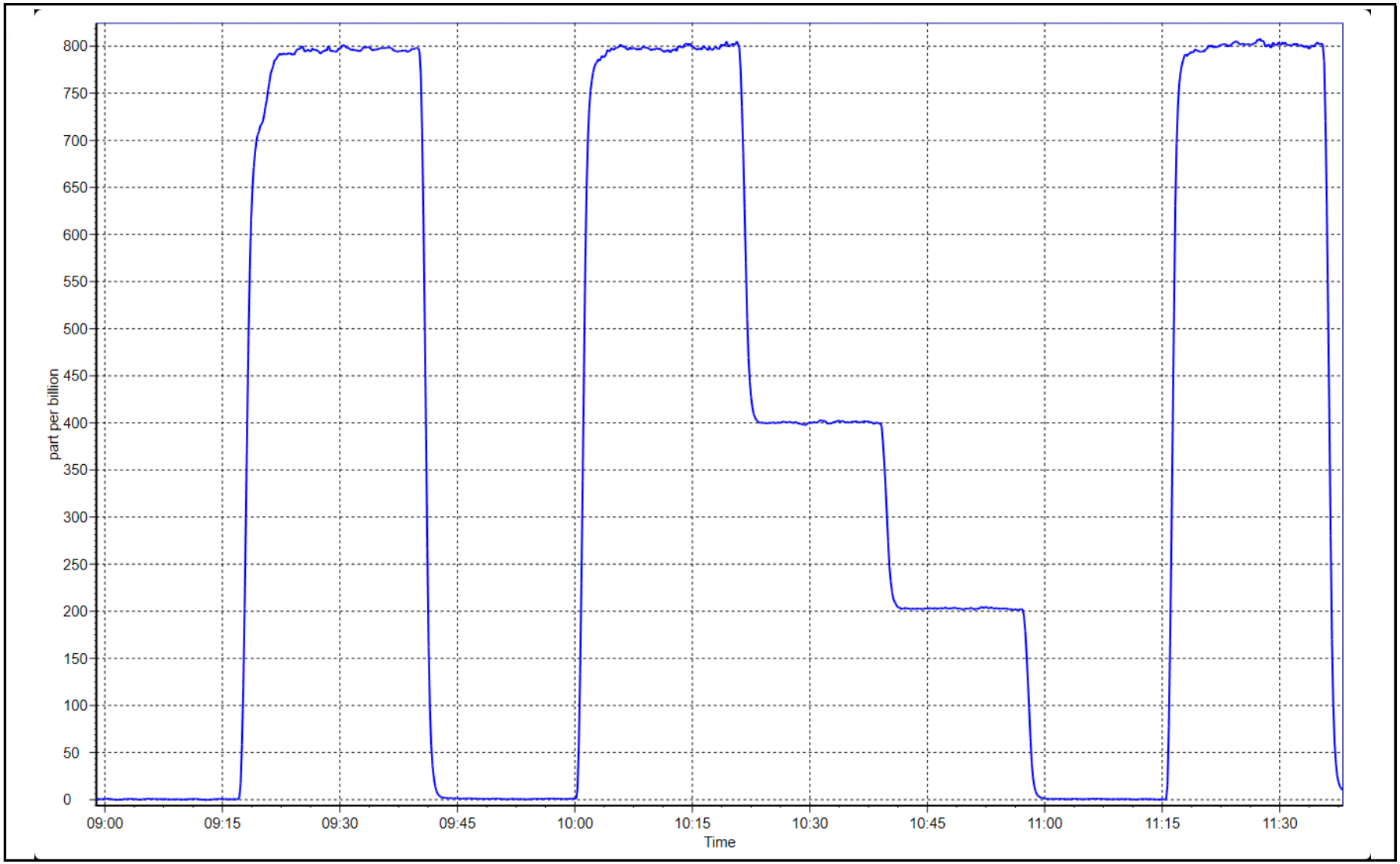
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.6	----
800.2	801.0	0.9990
400.2	400.2	0.9999
200.1	201.2	0.9944

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999998	*≥0.995*
Slope	0.999944	*0.90 - 1.10*
Intercept	0.664017	*+/-30*



SO2 Calibration Plot Date: April 23, 2025 Location: Jackfish 1



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name:	Jackfish 1	Station number:	AMS 506
Calibration Date:	April 15, 2025	Last Cal Date:	March 20, 2025
Start time (MST):	8:59	End time (MST):	12:53
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	4.89	ppm	Cal Gas Exp Date:	September 5, 2027
Cal Gas Cylinder #:	CC737971			
Removed Cal Gas Conc:	4.89	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	NA		Diff between cyl:	
Calibrator Make/Model:	Teledyne 750		Serial Number:	282
ZAG Make/Model:	Teledyne 751H		Serial Number:	321

Analyzer Information

Analyzer make:	Thermo 43i-TLE		Analyzer serial #:	1180540020
Converter make:	Global G150		Converter serial #:	2022-218
Analyzer Range	0 - 100 ppb		Converter Temp:	325.0 degC

	Start	*Finish*		*Start*	*Finish*
Calibration slope:	1.005447	0.993022	Backgd or Offset:	3.72	3.66
Calibration intercept:	0.020854	0.080592	Coeff or Slope:	1.179	1.156

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.3	----
As found High point	4918	81.8	80.0	81.5	0.978
As found Mid point	4959	40.9	40.0	40.2	0.988
As found Low point	4980	20.4	19.9	20.2	0.973
New cylinder response					

Baseline Corr As found:	81.8	Prev response:	80.46	*% change:	1.6%
Baseline Corr 2nd AF pt:	40.5	AF Slope:	1.021443	AF Intercept:	-0.338798
Baseline Corr 3rd AF pt:	20.5	AF Correlation:	0.999961	* = > +/-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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	-0.1	----
High point	4918	81.8	80.0	79.4	1.008
Mid point	4959	40.9	40.0	40.0	1.000
Low point	4980	20.4	19.9	20.0	0.997
As left zero	5000	0.0	0.0	-0.1	----
As left span	4918	81.8	80.0	79.8	1.003
SO2 Scrubber Check	4921	79.2	800.2	0.0	----
Date of last scrubber change:				Ave Corr Factor	1.002
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

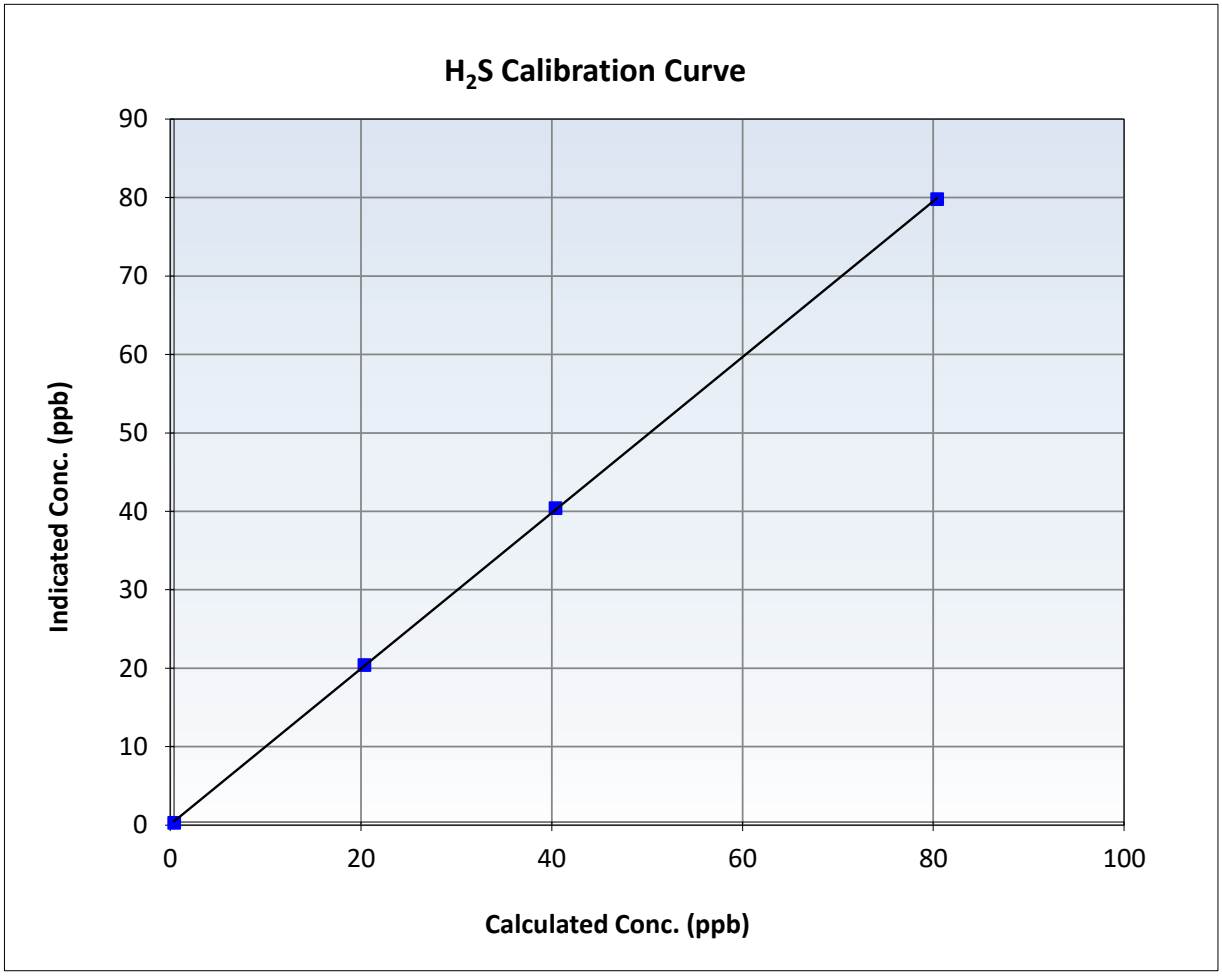
Station Information

Calibration Date:	April 15, 2025	Previous Calibration:	March 20, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:59	End Time (MST):	12:53
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1180540020

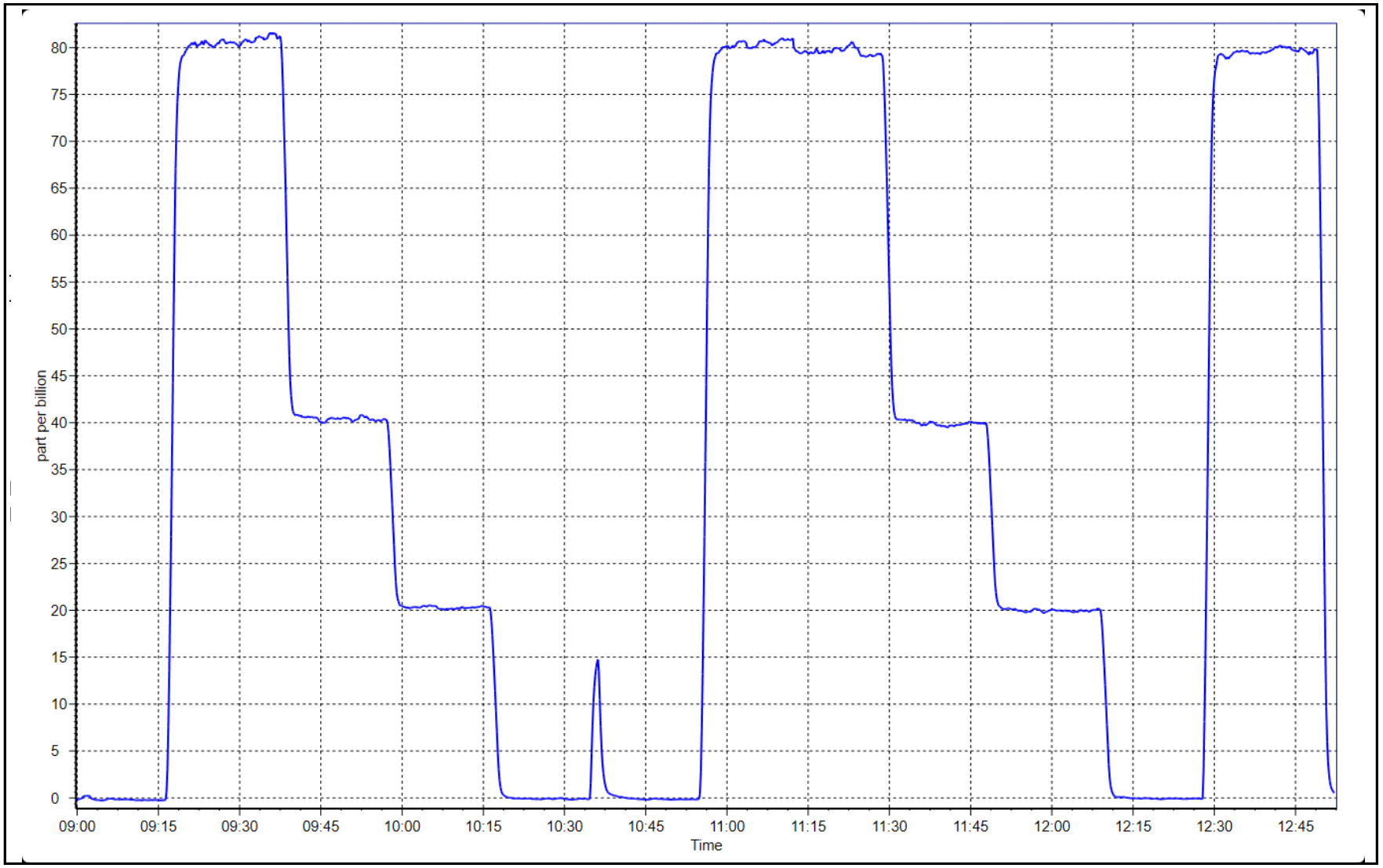
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
80.0	79.4	1.0076
40.0	40.0	1.0000
19.9	20.0	0.9975

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999971	*≥0.995*
Slope	0.993022	*0.90 - 1.10*
Intercept	0.080592	*+/-3*



H2S Calibration Plot Date: April 15, 2025 Location: Jackfish 1



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Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Jackfish 1
Station number:	AMS 506
Calibration Date:	April 16, 2025
Last Cal Date:	March 25, 2025
Start time (MST):	8:30
End time (MST):	12:44
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	DT0022706	Cal Gas Expiry Date:	January 5, 2032
NOX Cal Gas Conc:	60.20 ppm	NO Cal Gas Conc:	60.10 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	60.20 ppm	Removed Gas NO Conc:	60.10 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	3252
ZAG make/model:	Teledyne API 701	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
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	802.0	797.1	5.0	0.9998	1.0044
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X =	802.1 ppb	NO =	798.4 ppb	* = > +/-5% change initiates investigation	*Percent Change	NO_X = 0.0%
Baseline Corr 1st pt	NO_X =	802.1 ppb	NO =	797.1 ppb	As Found Statistics	*Percent Change	NO = -0.2%
Baseline Corr 2nd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO_X r^2:	Nx Sl:	Nx Int:
Baseline Corr 3rd pt	NO_X =	NA ppb	NO =	NA ppb	As found NO r^2:	NO Sl:	NO Int:
					As found NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 12400232071

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	Finish		Start	Finish
NO coeff or slope:	0.912	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:	194.7	192.9

Calibration Statistics

	Start	Finish
NO_X Cal Slope:	0.996743	0.995577
NO_X Cal Offset:	2.813160	2.172098
NO Cal Slope:	0.996494	0.996708
NO Cal Offset:	0.631010	0.231152
NO_2 Cal Slope:	0.993078	0.985570
NO_2 Cal Offset:	2.112455	1.533148

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	0.2	0.2	0.0	----	----
High point	4933	66.6	801.9	800.6	1.3	799.5	798.5	1.0	1.0030	1.0026
Mid point	4967	33.3	400.9	400.2	0.7	402.5	398.2	4.3	0.9960	1.0051
Low point	4983	16.6	199.9	199.5	0.3	203.0	199.8	3.2	0.9846	0.9987
As left zero	5000	0.0	0.0	0.0	0.0	0.1	0.1	0.0	----	----
As left span	4933	66.6	801.9	380.4	421.5	789.5	380.4	409.1	1.0157	1.0000
							Average Correction Factor		0.9946	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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	794.4	380.7	415.0	409.7	1.0130	98.7%
Mid GPT point	794.4	585.8	209.9	209.4	1.0025	99.7%
Low GPT point	794.4	684.1	111.6	113.0	0.9879	101.2%
				Average Correction Factor	1.0012	99.9%

Notes: Changed inlet filter. No adjustment made.

Calibration Performed By: Sean Bala

Wood Buffalo Environmental Association

NO_X Calibration Summary

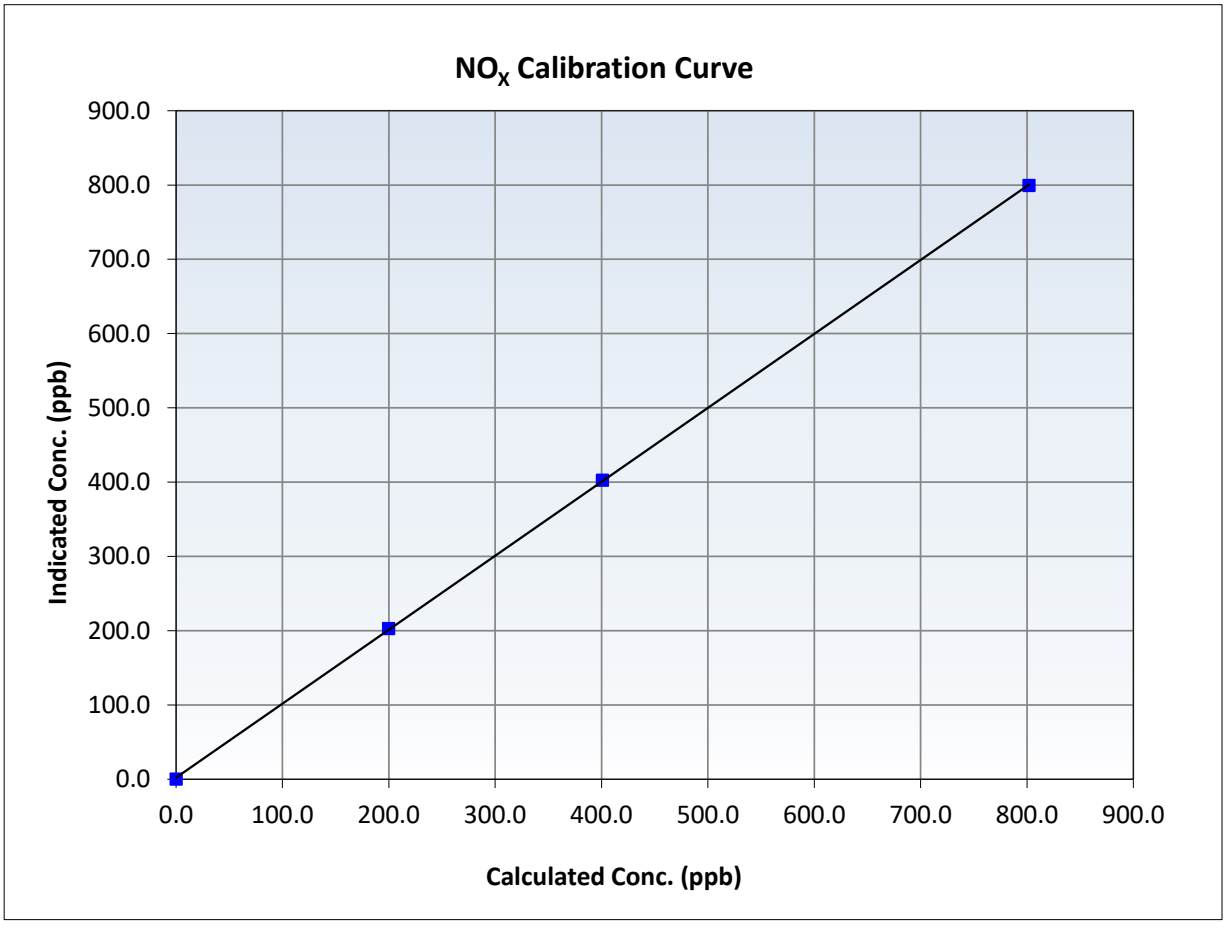
Station Information

Calibration Date:	April 16, 2025	Previous Calibration:	March 25, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:30	End Time (MST):	12:44
Analyzer make:	Thermo 42i	Analyzer serial #:	12400232071

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
801.9	799.5	1.0030
400.9	402.5	0.9960
199.9	203.0	0.9846

Statistical Evaluation		Limits
Correlation Coefficient	0.999972	≥0.995
Slope	0.995577	0.90 - 1.10
Intercept	2.172098	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

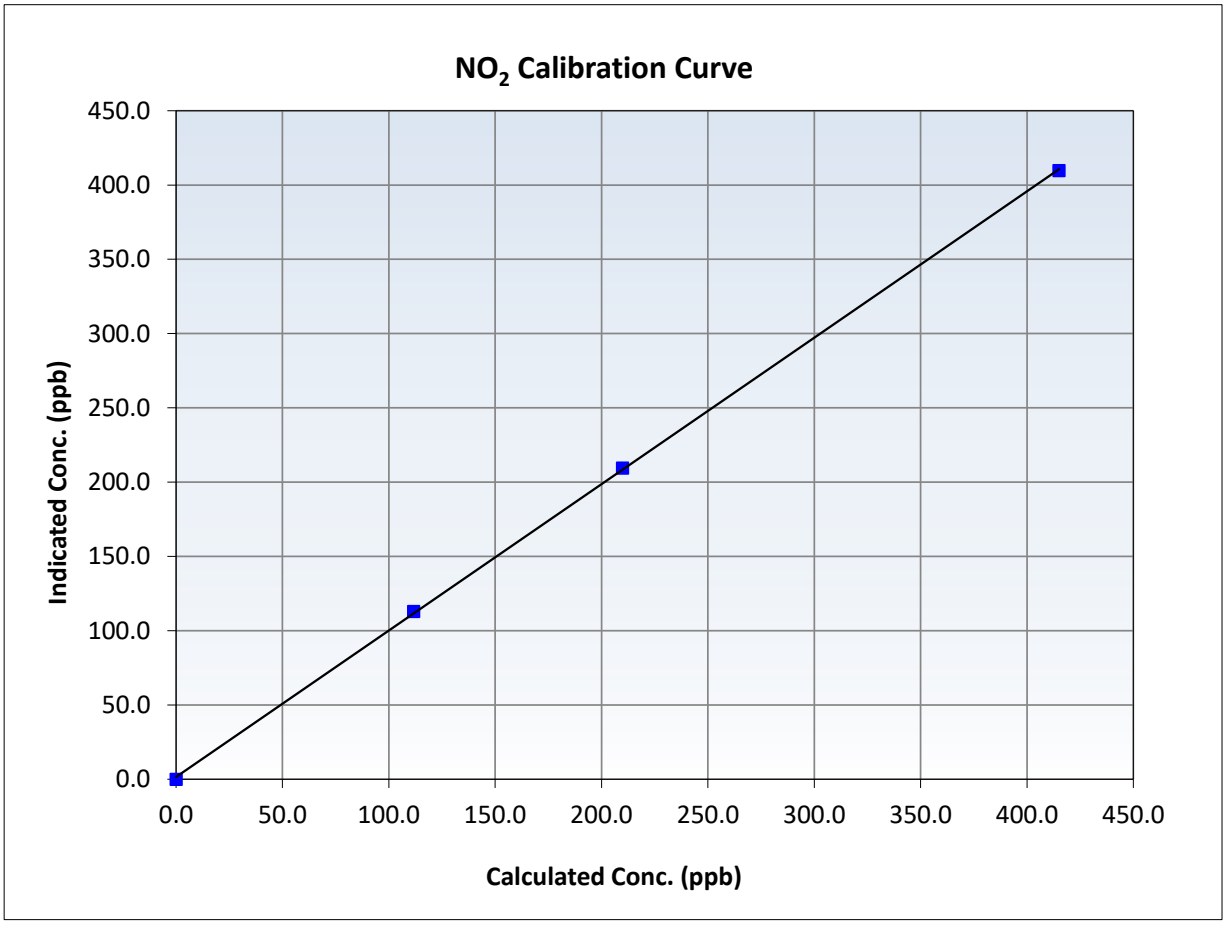
Station Information

Calibration Date:	April 16, 2025	Previous Calibration:	March 25, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:30	End Time (MST):	12:44
Analyzer make:	Thermo 42i	Analyzer serial #:	12400232071

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
415.0	409.7	1.0130
209.9	209.4	1.0025
111.6	113.0	0.9879

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999932	*≥0.995*
Slope	0.985570	*0.90 - 1.10*
Intercept	1.533148	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

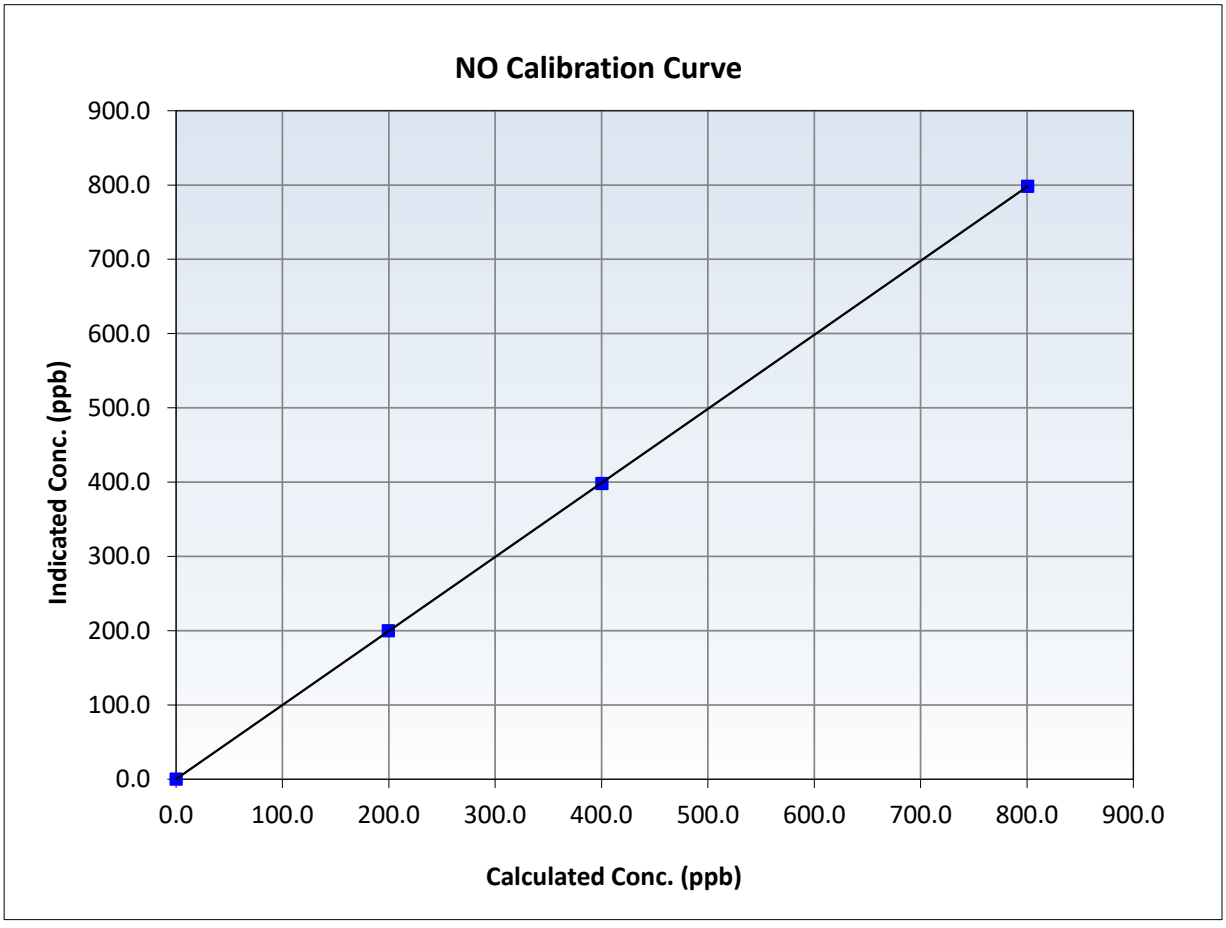
Station Information

Calibration Date:	April 16, 2025	Previous Calibration:	March 25, 2025
Station Name:	Jackfish 1	Station Number:	AMS 506
Start Time (MST):	8:30	End Time (MST):	12:44
Analyzer make:	Thermo 42i	Analyzer serial #:	12400232071

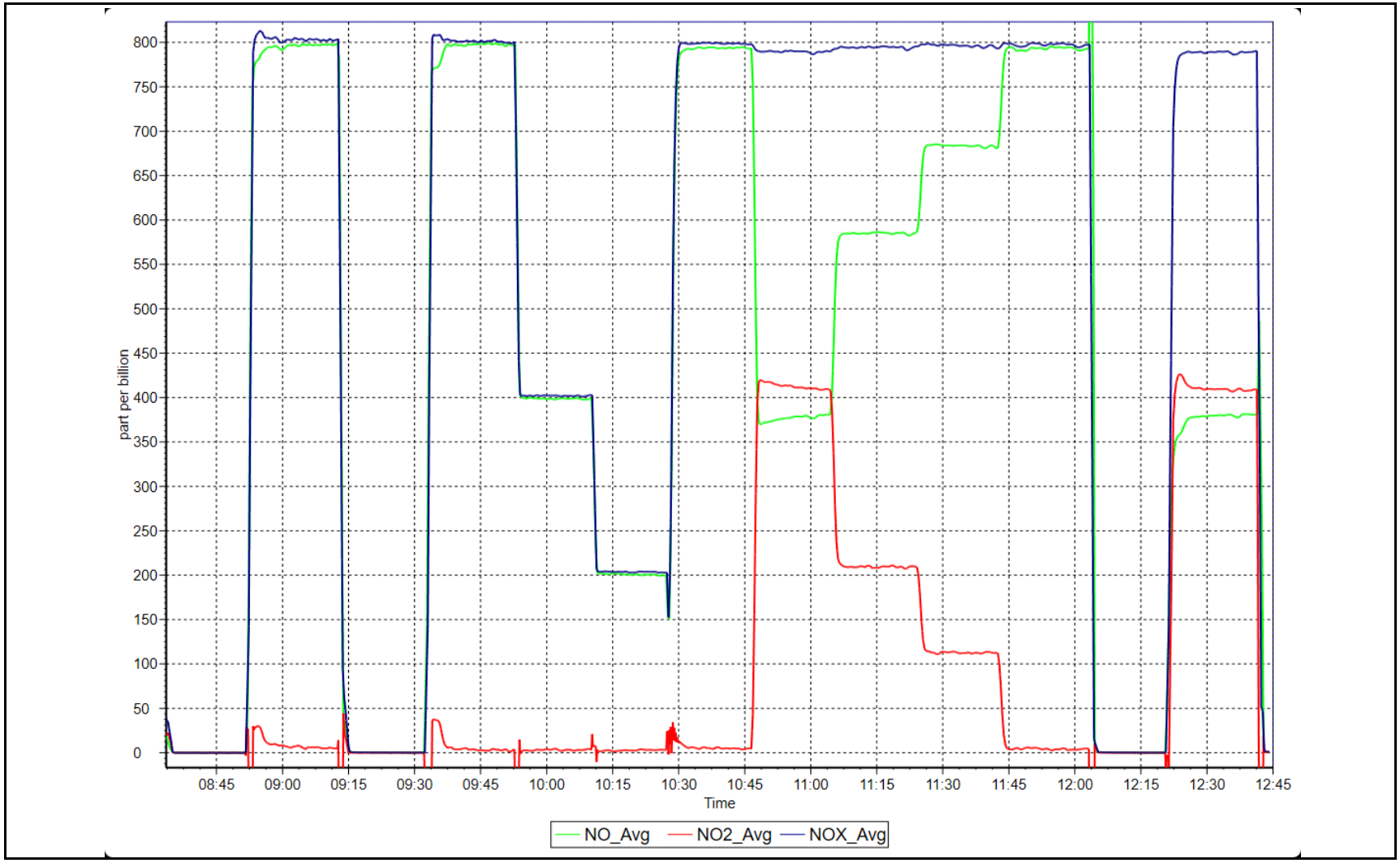
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.2	----
800.6	798.5	1.0026
400.2	398.2	1.0051
199.5	199.8	0.9987

Statistical Evaluation		Limits
Correlation Coefficient	0.999996	≥0.995
Slope	0.996708	0.90 - 1.10
Intercept	0.231152	+/-20



NO_X Calibration Plot Date: April 16, 2025 Location: Jackfish 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS508
KIRBY NORTH
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Kirby North	Station number:	AMS 508
Calibration Date:	April 3, 2025	Last Cal Date:	March 13, 2025
Start time (MST):	10:54	End time (MST):	13:58
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.998619	1.002663	Backgd or Offset:	29.1	29.0
Calibration intercept:	0.327990	-0.512059	Coeff or Slope:	1.117	1.117

SO_2 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	0.1	----
As found High point	4921	78.8	799.7	803.0	0.996
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	802.9	Previous response	798.9	*% 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	

SO_2 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	4921	78.8	799.7	802.0	0.997
Mid point	4961	39.4	399.8	398.8	1.003
Low point	4980	19.7	199.9	200.3	0.998
As left zero	5000	0.0	0.0	-0.2	----
As left span	4921	78.8	799.7	804.0	0.995
				Average Correction Factor:	0.999

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

SO_2 Calibration Summary

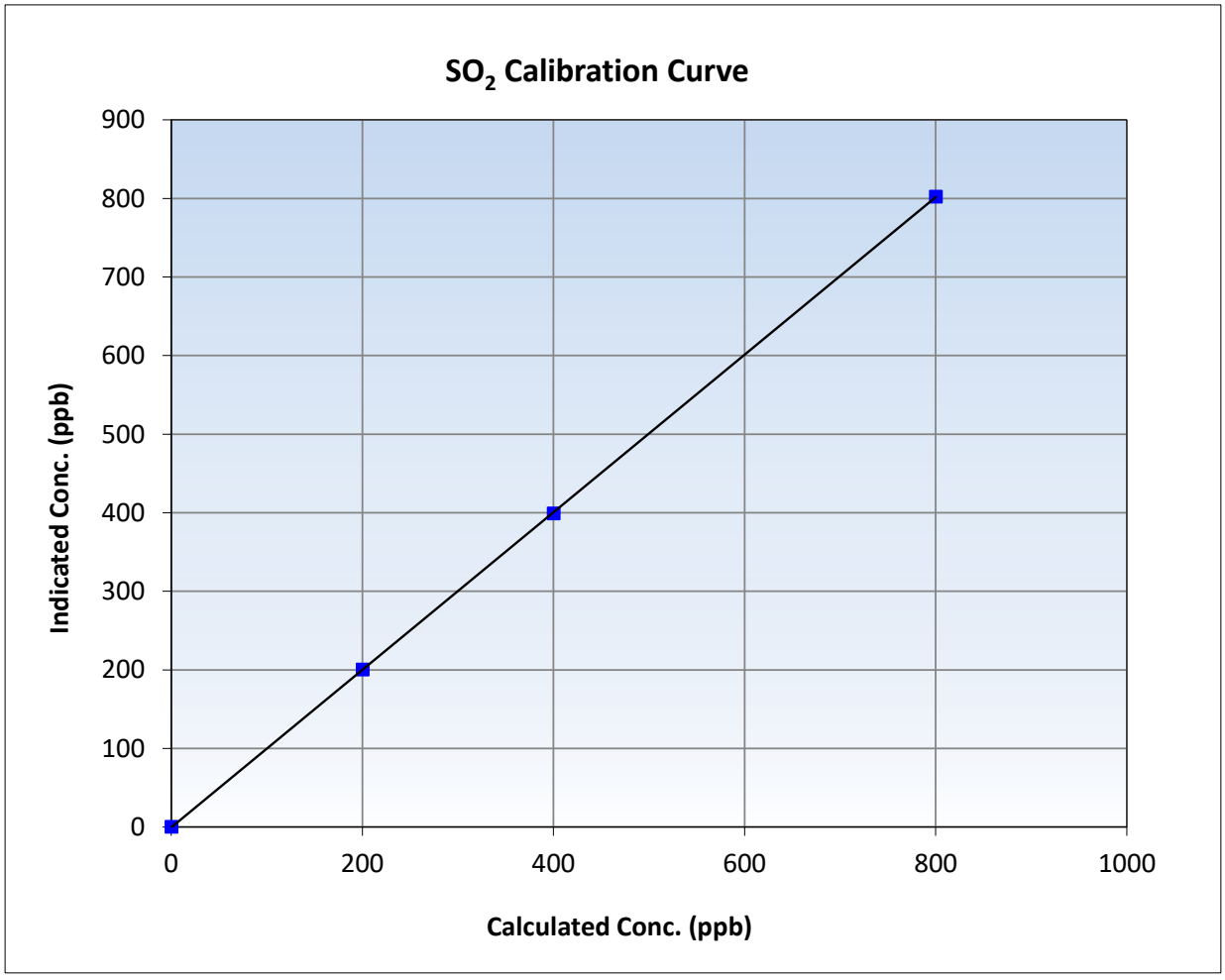
Station Information

Calibration Date:	April 3, 2025	Previous Calibration:	March 13, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	10:54	End Time (MST):	13:58
Analyzer make:	Thermo 43iQ	Analyzer serial #:	1182340007

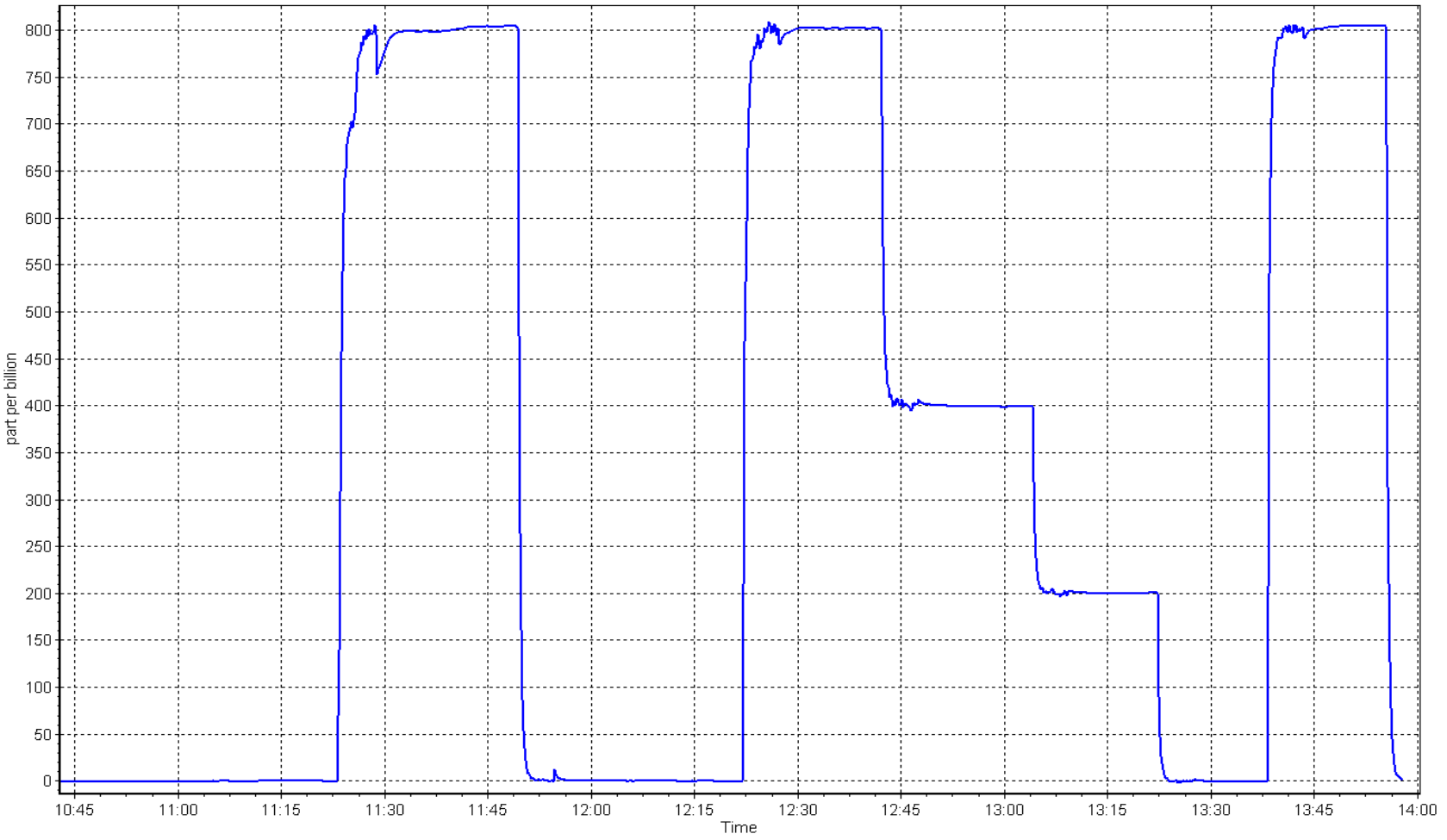
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
799.7	802.0	0.9971
399.8	398.8	1.0025
199.9	200.3	0.9981

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999991	*≥0.995*
Slope	1.002663	*0.90 - 1.10*
Intercept	-0.512059	*+/-30*



SO2 Calibration Plot Date: April 3, 2025 Location: Kirby North



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Station Name:	Kirby North	Station number:	AMS 508
Calibration Date:	April 2, 2025	Last Cal Date:	March 12, 2025
Start time (MST):	9:25	End time (MST):	14:40
Reason:	Routine		

Calibration Standards

Cal Gas Concentration:	5.05	ppm	Cal Gas Exp Date:	November 15, 2026
Cal Gas Cylinder #:	DT0019762			
Removed Cal Gas Conc:	5.05	ppm	Rem Gas Exp Date:	NA
Removed Gas Cyl #:	n/a		Diff between cyl:	
Calibrator Make/Model:	Teledyne API T750		Serial Number:	282
ZAG Make/Model:	Teledyne API T751H		Serial Number:	321

Analyzer Information

Analyzer make:	Thermo 43i-TLE		Analyzer serial #:	1150840012	
Converter make:	Global		Converter serial #:	2022-197	
Analyzer Range	0 - 100 ppb		Converter Temp:	325	degC
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.006814	0.999956	Backgd or Offset:	1.74	1.76
Calibration intercept:	-0.160959	-0.120959	Coeff or Slope:	1.035	1.043

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.0	-0.1	----
As found High point	4921	79.2	80.0	80.3	0.995
As found Mid point	4960	39.6	40.0	40.2	0.993
As found Low point	4980	19.8	20.0	19.6	1.015
New cylinder response					

Baseline Corr As found:	80.4	Prev response:	80.38	*% change:	0.0%
Baseline Corr 2nd AF pt:	40.3	AF Slope:	1.006957	AF Intercept:	-0.240970
Baseline Corr 3rd AF pt:	19.7	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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.0	0.0	----
High point	4921	79.2	80.0	79.9	1.001
Mid point	4960	39.6	40.0	39.9	1.002
Low point	4980	19.8	20.0	19.7	1.015
As left zero	5000	0.0	0.0	0.1	----
As left span	4921	79.2	80.0	78.9	1.014
SO2 Scrubber Check	4919	80.0	800.2	0.0	----
Date of last scrubber change:		July 25, 2023		Ave Corr Factor	1.006
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

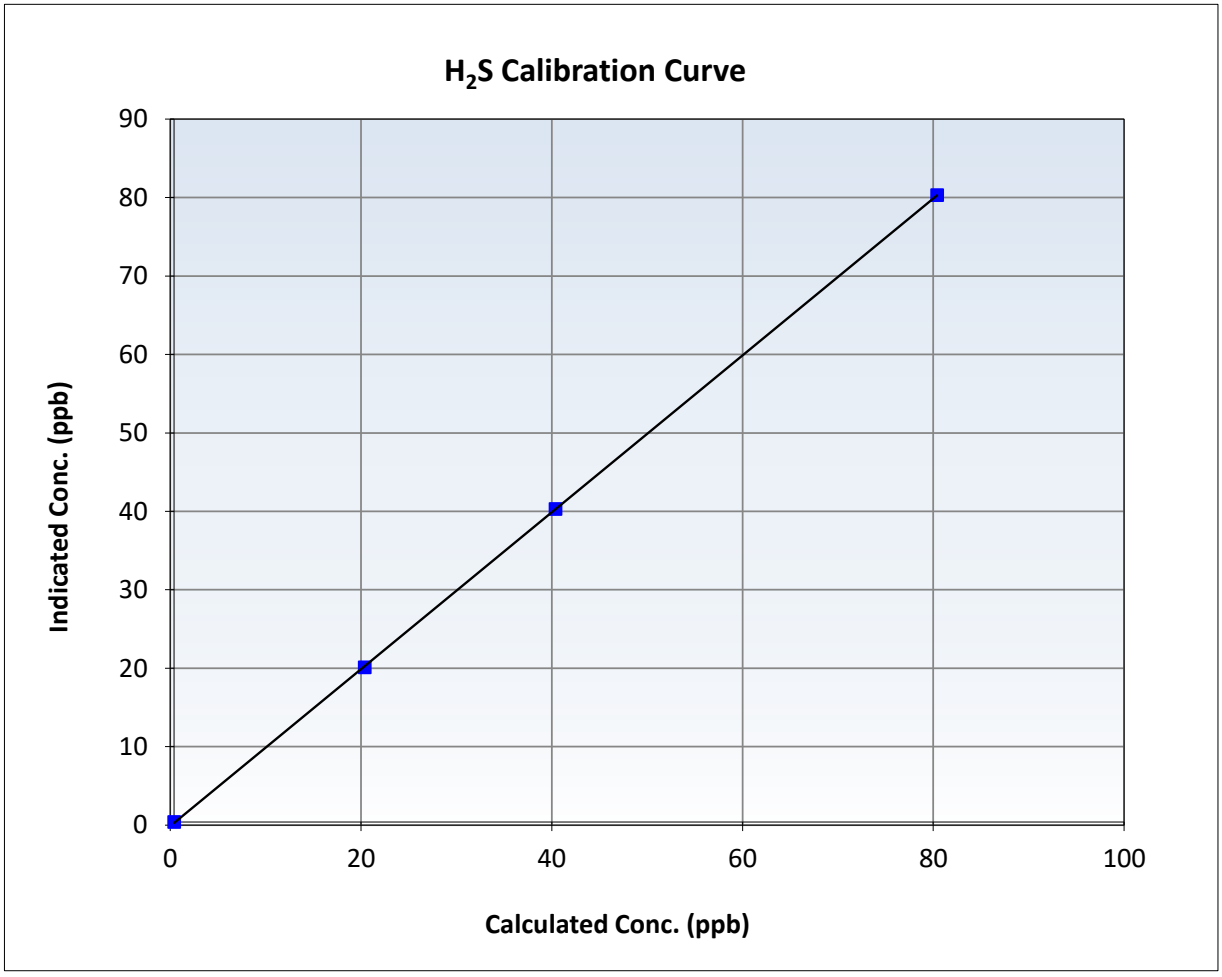
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	March 12, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	9:25	End Time (MST):	14:40
Analyzer make:	Thermo 43i-TLE	Analyzer serial #:	1150840012

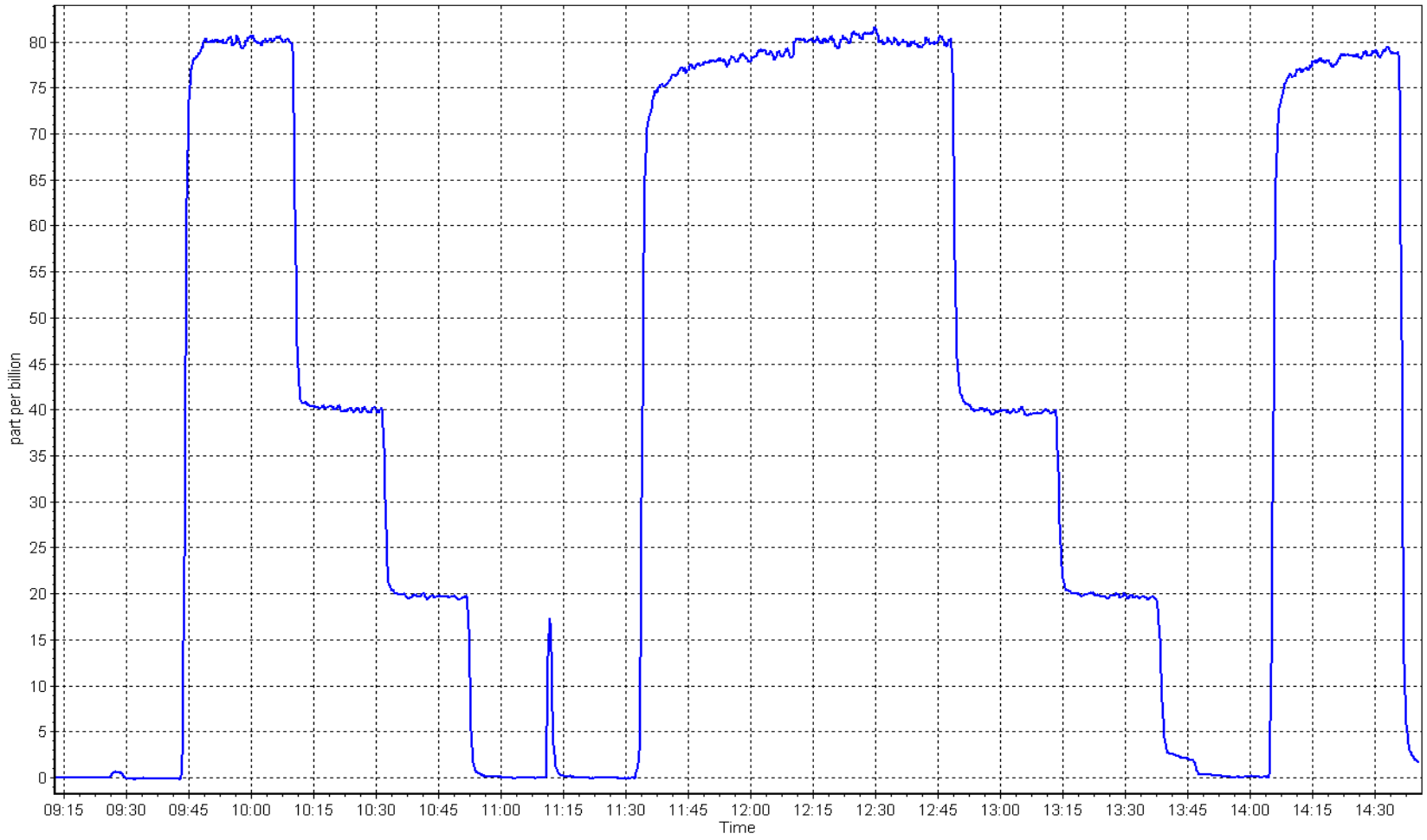
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
80.0	79.9	1.0012
40.0	39.9	1.0025
20.0	19.7	1.0152

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999986	*≥0.995*
Slope	0.999956	*0.90 - 1.10*
Intercept	-0.120959	*+/-3*



H2S Calibration Plot Date: April 2, 2025 Location: Kirby North



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Station Name:	Kirby North	Station number:	AMS 508
Calibration Date:	April 3, 2025	Last Cal Date:	March 13, 2025
Start time (MST):	10:54	End time (MST):	13:58
Reason:	Routine		

Calibration Standards

Gas Cert Reference:	CC255918		Cal Gas Expiry Date:	October 9, 2032	
CH4 Cal Gas Conc.	506.4	ppm	CH4 Equiv Conc.	1070.2	ppm
C3H8 Cal Gas Conc.	205.0	ppm			
Removed Gas Cert:			Removed Gas Expiry:		
Removed CH4 Conc.	506.4	ppm	CH4 Equiv Conc.	1070.2	ppm
Removed C3H8 Conc.	205.0	ppm	Diff between cyl:		
Calibrator Make/Model:	Teledyne API T700		Serial Number:	5240	
ZAG Make/Model:	Teledyne API T701H		Serial Number:	880	

Analyzer Information

Analyzer make:	Thermo 51i-LT		Analyzer serial #:	1182340005	
Analyzer Range:	0 - 20 ppm				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.000987	0.994170	Background:	2.23	1.96
Calibration intercept:	-0.082032	0.019768	Coefficient:	3.697	3.644

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)) *Limit = 0.90-1.10*
As found zero	5000	0.0	0.00	-0.20	----
As found High point	4921	78.8	16.87	16.77	0.994
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	16.97	Previous response	16.80	*% 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	

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) *Limit = 0.95-1.05*
Calibrator zero	5000	0.0	0.00	0.00	
High point	4921	78.8	16.87	16.78	1.005
Mid point	4961	39.4	8.43	8.41	1.003
Low point	4980	19.7	4.22	4.23	0.997
As left zero	5000	0.0	0.00	0.06	----
As left span	4921	78.8	16.87	16.83	1.002
				Average Correction Factor	1.002

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

THC Calibration Summary

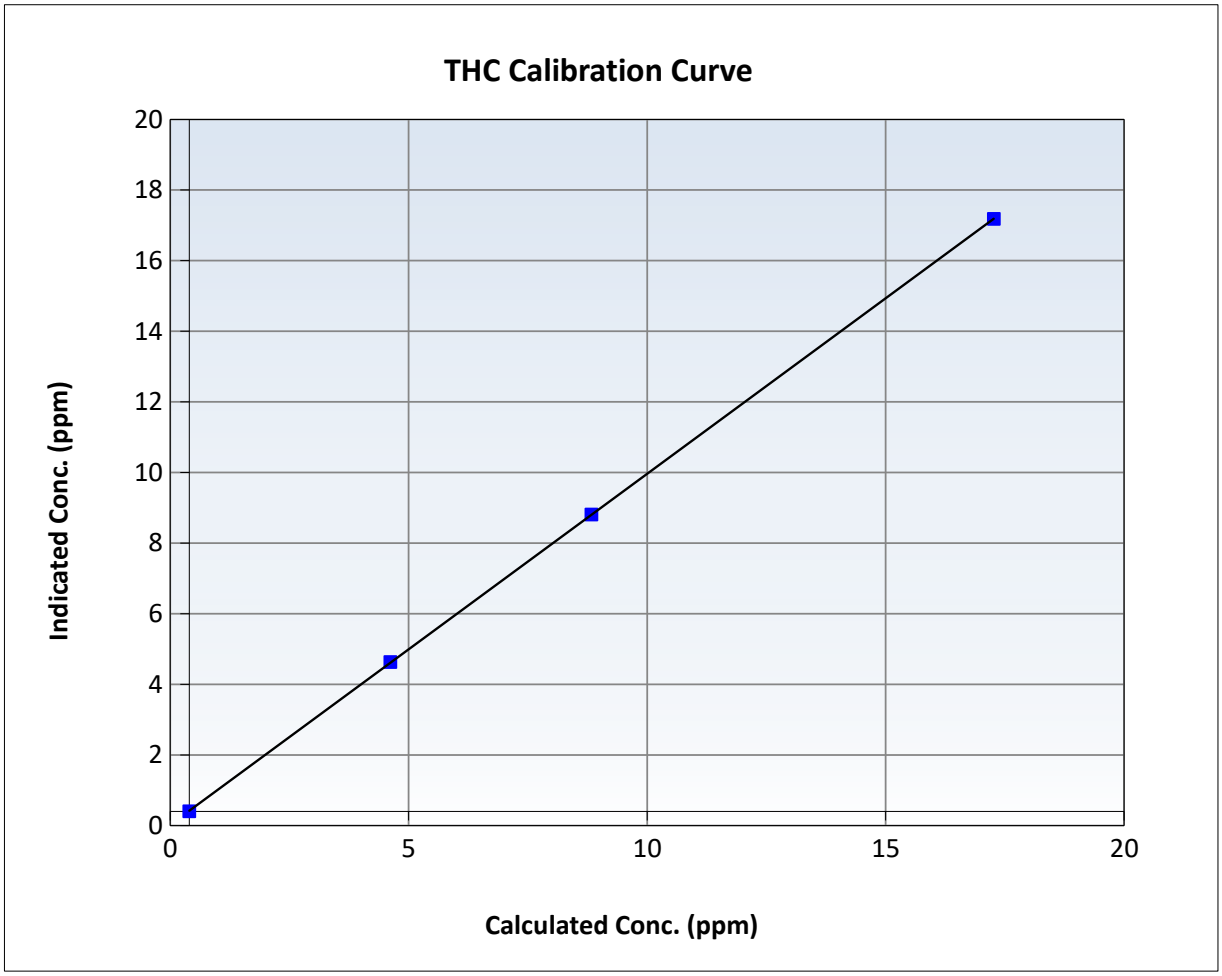
Station Information

Calibration Date:	April 3, 2025	Previous Calibration:	March 13, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	10:54	End Time (MST):	13:58
Analyzer make:	Thermo 51i-LT	Analyzer serial #:	1182340005

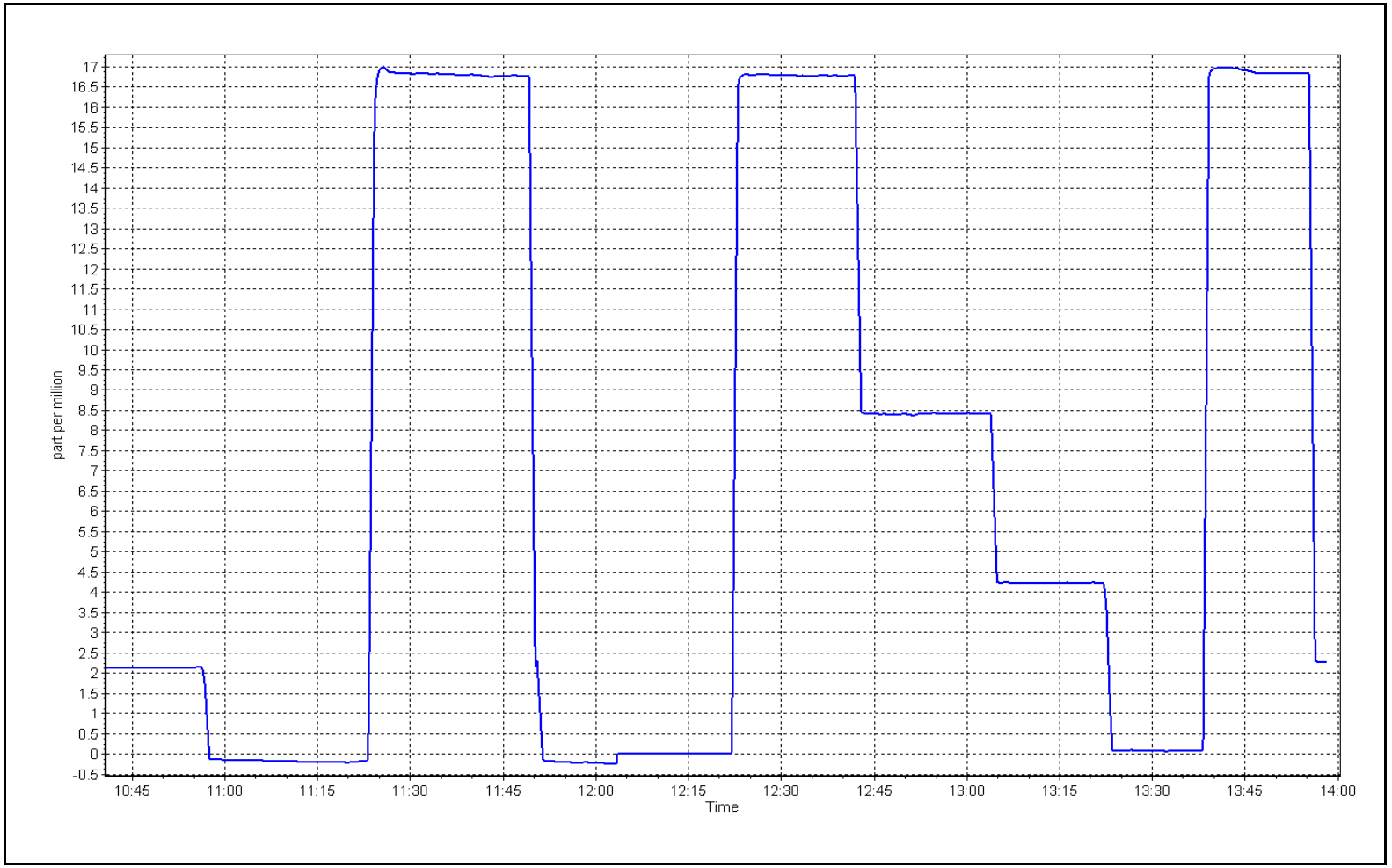
Calibration Data

Calculated Concentration (ppm) (Cc)	Indicated Concentration (ppm) (Ic)	Correction factor (Cc/Ic)
0.00	0.00	----
16.87	16.78	1.0051
8.43	8.41	1.0026
4.22	4.23	0.9973

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999996	*≥0.995*
Slope	0.994170	*0.90 - 1.10*
Intercept	0.019768	*+/-1.5*



THC Calibration Plot Date: April 3, 2025 Location: Kirby North



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Kirby North
Station number:	AMS 508
Calibration Date:	April 2, 2025
Last Cal Date:	March 12, 2025
Start time (MST):	9:05
End time (MST):	13:49
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	DT0019572	Cal Gas Expiry Date:	January 5, 2032
NOX Cal Gas Conc:	60.00 ppm	NO Cal Gas Conc:	59.90 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	60.00 ppm	Removed Gas NO Conc:	59.90 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	5240
ZAG make/model:	Teledyne API T701H	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	----	----
AF High point	4933	66.8	801.6	800.3	1.3	805.0	804.0	1.1	0.9958	0.9954
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 799.8 ppb	NO = 799.5 ppb
Baseline Corr 1st pt	NO_X = 805.0 ppb	NO = 804.0 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 = 0.6%

*Percent Change NO = 0.6%

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Thermo 42i Serial Number: 1118148496

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
NO coeff or slope:	0.707	0.703	NO bkgnd or offset:	8.0	8.0
NOX coeff or slope:	0.991	0.991	NOX bkgnd or offset:	8.1	8.1
NO2 coeff or slope:	1.000	1.000	Reaction cell Press:	147.1	146.2

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	0.998604	0.993215
NO_X Cal Offset:	-0.693582	-0.053616
NO Cal Slope:	1.000714	0.997815
NO Cal Offset:	-1.373584	-0.933611
NO_2 Cal Slope:	0.981281	0.977286
NO_2 Cal Offset:	1.476756	0.360528

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
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	795.7	797.6	-1.8	1.0075	1.0034
Mid point	4967	33.4	400.8	400.1	0.7	399.4	399.3	0.1	1.0035	1.0021
Low point	4983	16.7	200.4	200.1	0.3	198.0	196.8	1.2	1.0121	1.0166
As left zero	5000	0.0	0.0	0.0	0.0	0.1	0.2	-0.1	----	----
As left span	4933	66.8	801.6	381.9	419.7	788.0	381.9	406.1	1.0173	1.0000
							Average Correction Factor		1.0077	1.0074

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	794.8	385.6	410.5	401.4	1.0228	97.8%
Mid GPT point	794.8	610.9	185.2	181.6	1.0200	98.0%
Low GPT point	794.8	698.5	97.6	96.1	1.0160	98.4%
				Average Correction Factor	1.0196	98.1%

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

Calibration Performed By: Braiden Boutilier

Wood Buffalo Environmental Association

NO_X Calibration Summary

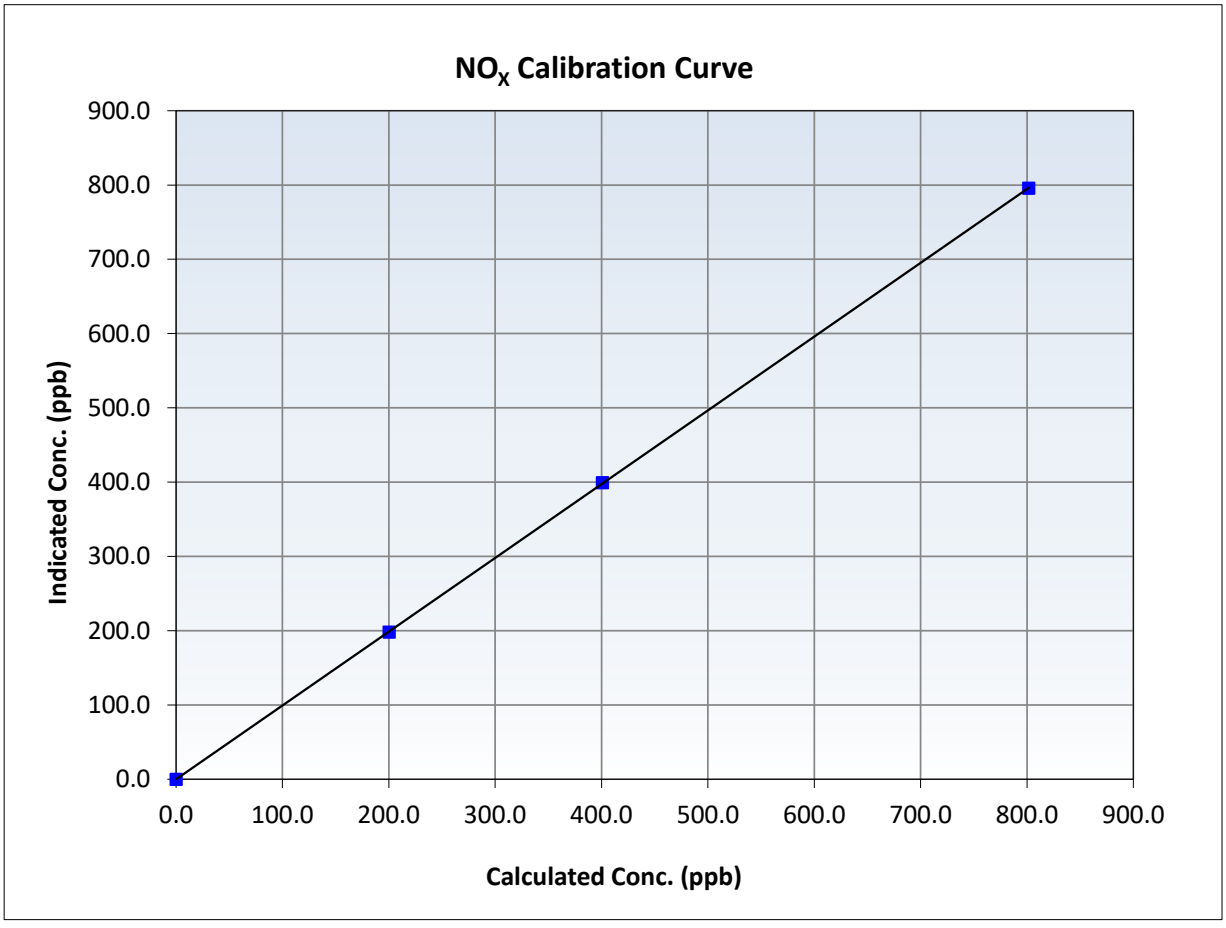
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	March 12, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	9:05	End Time (MST):	13:49
Analyzer make:	Thermo 42i	Analyzer serial #:	1118148496

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
801.6	795.7	1.0075
400.8	399.4	1.0035
200.4	198.0	1.0121

Statistical Evaluation		Limits
Correlation Coefficient	0.999991	≥0.995
Slope	0.993215	0.90 - 1.10
Intercept	-0.053616	+/-20



Wood Buffalo Environmental Association

NO_2 Calibration Summary

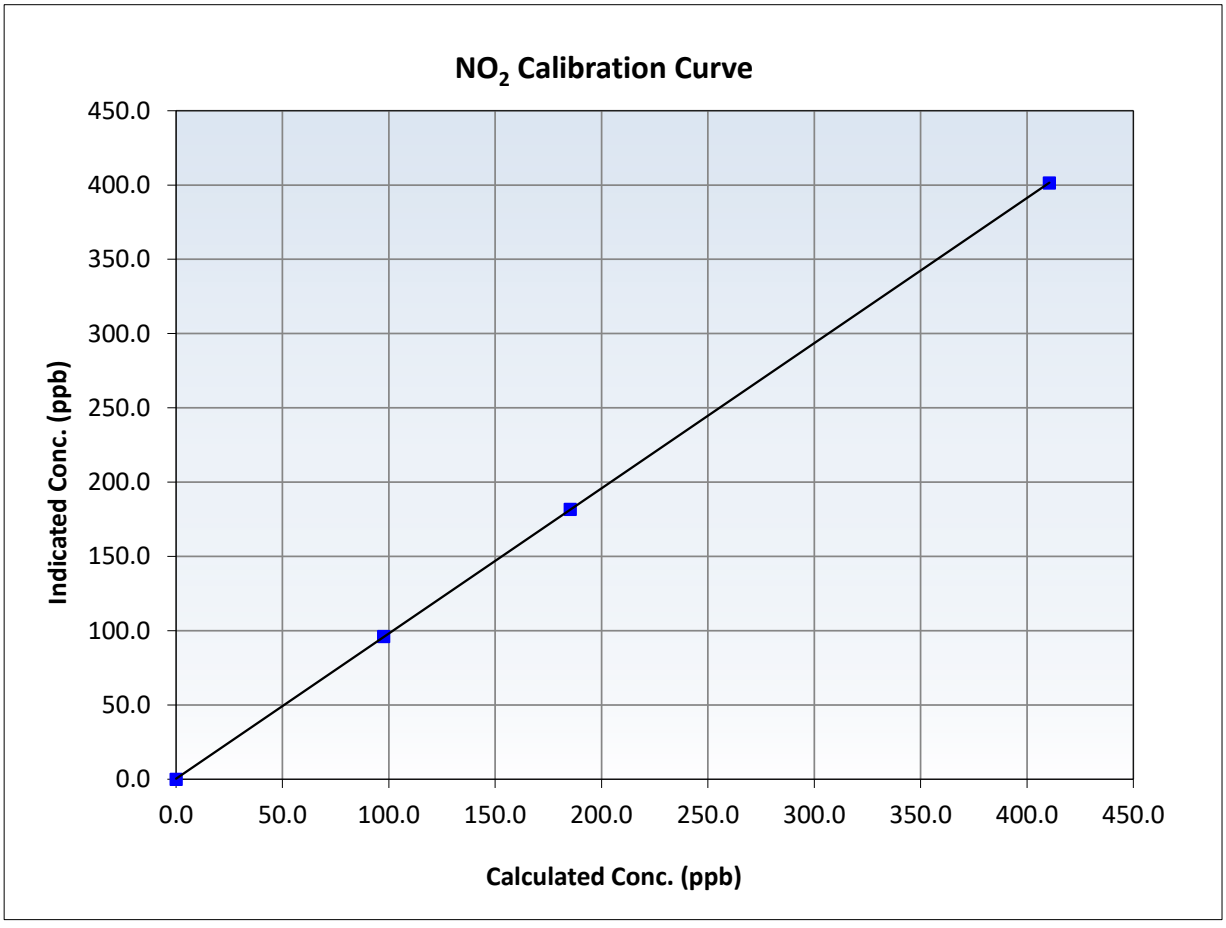
Station Information

Calibration Date:	April 2, 2025	Previous Calibration:	March 12, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	9:05	End Time (MST):	13:49
Analyzer make:	Thermo 42i	Analyzer serial #:	1118148496

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
410.5	401.4	1.0228
185.2	181.6	1.0200
97.6	96.1	1.0160

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999997	*≥0.995*
Slope	0.977286	*0.90 - 1.10*
Intercept	0.360528	*+/-20*



Wood Buffalo Environmental Association

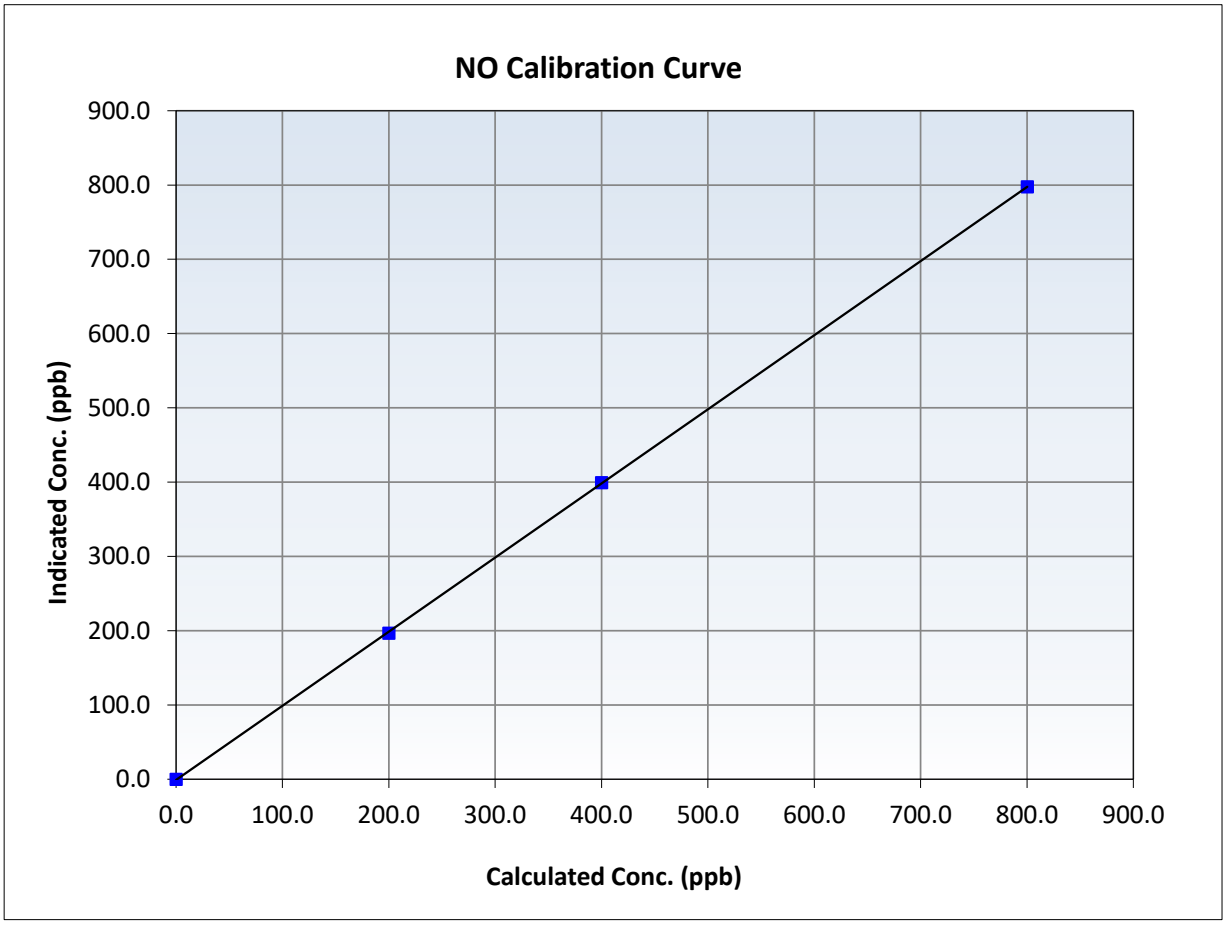
NO Calibration Summary

Station Information

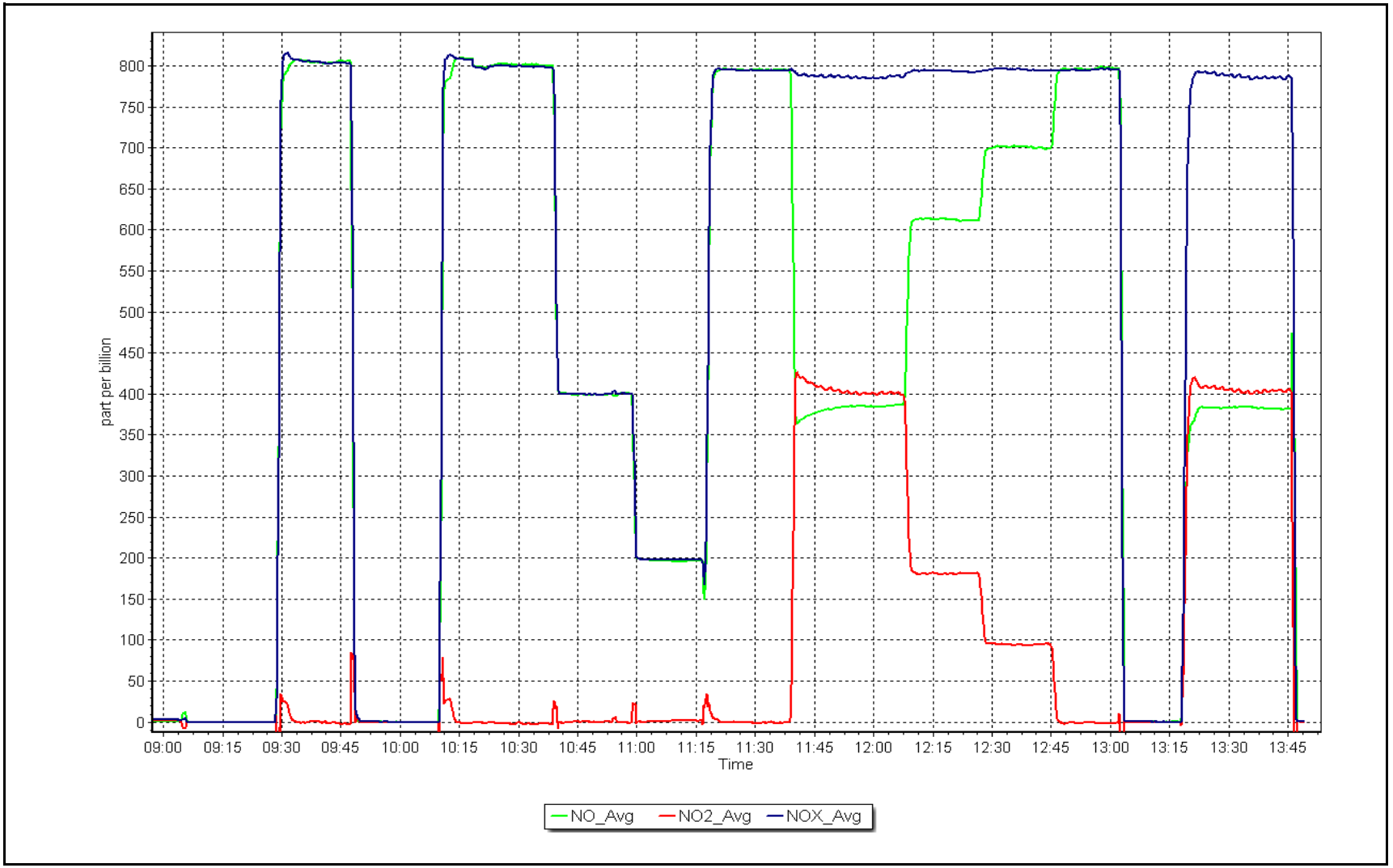
Calibration Date:	April 2, 2025	Previous Calibration:	March 12, 2025
Station Name:	Kirby North	Station Number:	AMS 508
Start Time (MST):	9:05	End Time (MST):	13:49
Analyzer make:	Thermo 42i	Analyzer serial #:	1118148496

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		Limits
0.0	0.0	----	Correlation Coefficient	0.999984	≥0.995
800.3	797.6	1.0034	Slope	0.997815	0.90 - 1.10
400.1	399.3	1.0021			
200.1	196.8	1.0166	Intercept	-0.933611	+/-20



NO_X Calibration Plot Date: April 2, 2025 Location: Kirby North



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
CALIBRATION REPORT

AMS512
HANGINGSTONE EXPANSION
APRIL 2025

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

May 30, 2025

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Station Name:	Hangingstone Expansion	Station number:	AMS 512
Calibration Date:	April 10, 2025	Last Cal Date:	March 7, 2025
Start time (MST):	6:10	End time (MST):	8:38
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				
	Start	***Finish***		***Start***	***Finish***
Calibration slope:	1.006091	1.009553	Backgd or Offset:	14.2	14.2
Calibration intercept:	-1.263661	-1.623881	Coeff or Slope:	1.175	1.175

SO_2 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	0.1	----
As found High point	4920	79.8	799.0	806.4	0.991
As found Mid point					
As found Low point					
New cylinder response					
Baseline Corr As found:	806.3	Previous response	802.6	*% 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	

SO_2 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	806.0	0.991
Mid point	4960	39.9	399.5	400.6	0.997
Low point	4987	20.0	200.0	198.4	1.008
As left zero	5000	0.0	0.0	0.1	----
As left span	4920	79.8	799.0	809.6	0.987
				Average Correction Factor:	0.999

Notes: No adjustments or maintenance done.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

SO_2 Calibration Summary

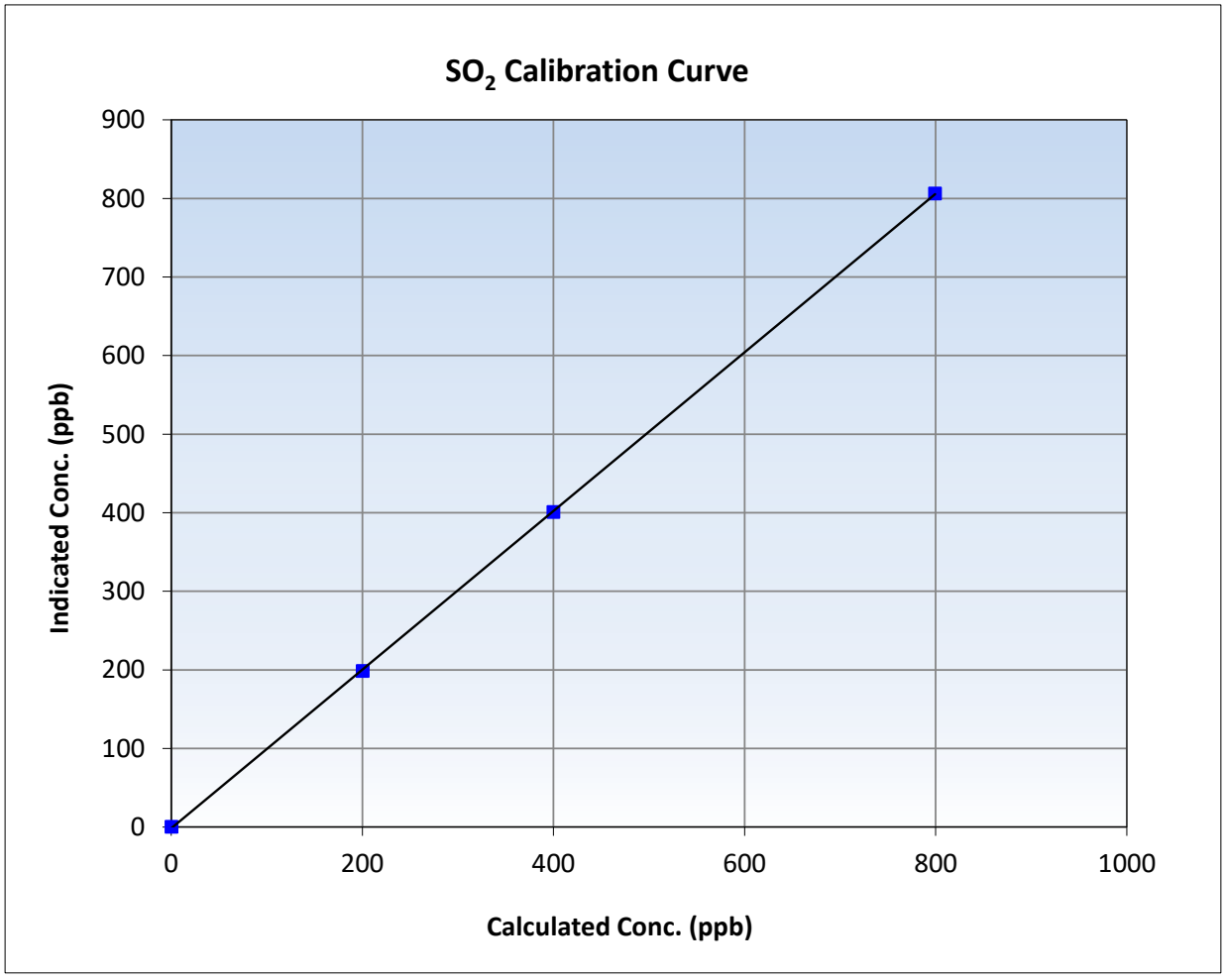
Station Information

Calibration Date:	April 10, 2025	Previous Calibration:	March 7, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	6:10	End Time (MST):	8:38
Analyzer make:	Thermo scientific	Analyzer serial #:	1173410001

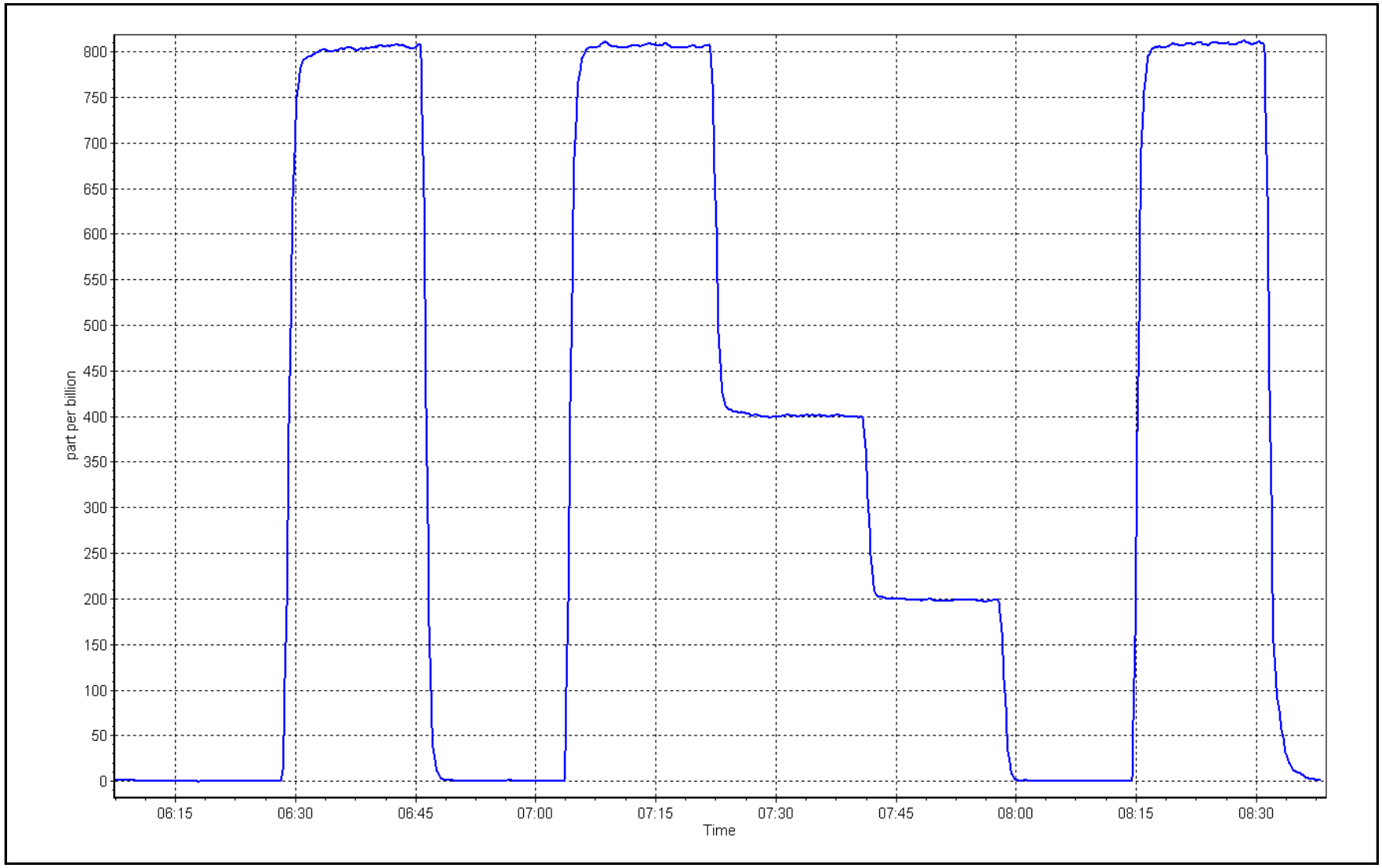
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.3	----
799.0	806.0	0.9913
399.5	400.6	0.9972
200.0	198.4	1.0079

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999974	*≥0.995*
Slope	1.009553	*0.90 - 1.10*
Intercept	-1.623881	*+/-30*



SO2 Calibration Plot Date: April 10, 2025 Location: Hangingstone Expansion



Wood Buffalo Environmental Association

H_2S Calibration Report

Station Information

Station Name:	Hangingstone Expansion	Station number:	AMS 512
Calibration Date:	April 4, 2025	Last Cal Date:	March 13, 2025
Start time (MST):	6:27	End time (MST):	10:38
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

	Start	***Finish***		***Start***	***Finish***
Calibration slope:	0.995485	1.000488	Backgd or Offset:	3.56	3.56
Calibration intercept:	0.060913	0.160819	Coeff or Slope:	1.235	1.235

H_2S 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	4922	77.8	80.0	79.8	1.005
As found Mid point	4961	38.9	40.0	40.3	0.997
As found Low point	4981	19.5	20.0	20.1	1.007
New cylinder response					

Baseline Corr As found:	79.6	Prev response:	79.67	*% change:	-0.1%
Baseline Corr 2nd AF pt:	40.1	AF Slope:	0.996058	AF Intercept:	0.240853
Baseline Corr 3rd AF pt:	19.9	AF Correlation:	0.999978	* = > +/-5% change initiates investigation	

H_2S 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	4922	77.8	80.0	80.2	0.997
Mid point	4961	38.9	40.0	40.2	0.995
Low point	4981	19.5	20.0	20.0	1.002
As left zero	5000	0.0	0.0	0.4	----
As left span	4922	77.8	80.0	80.0	1.000
SO2 Scrubber Check	4920	80.0	800.0	0.0	----
Date of last scrubber change:				Ave Corr Factor	0.998
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

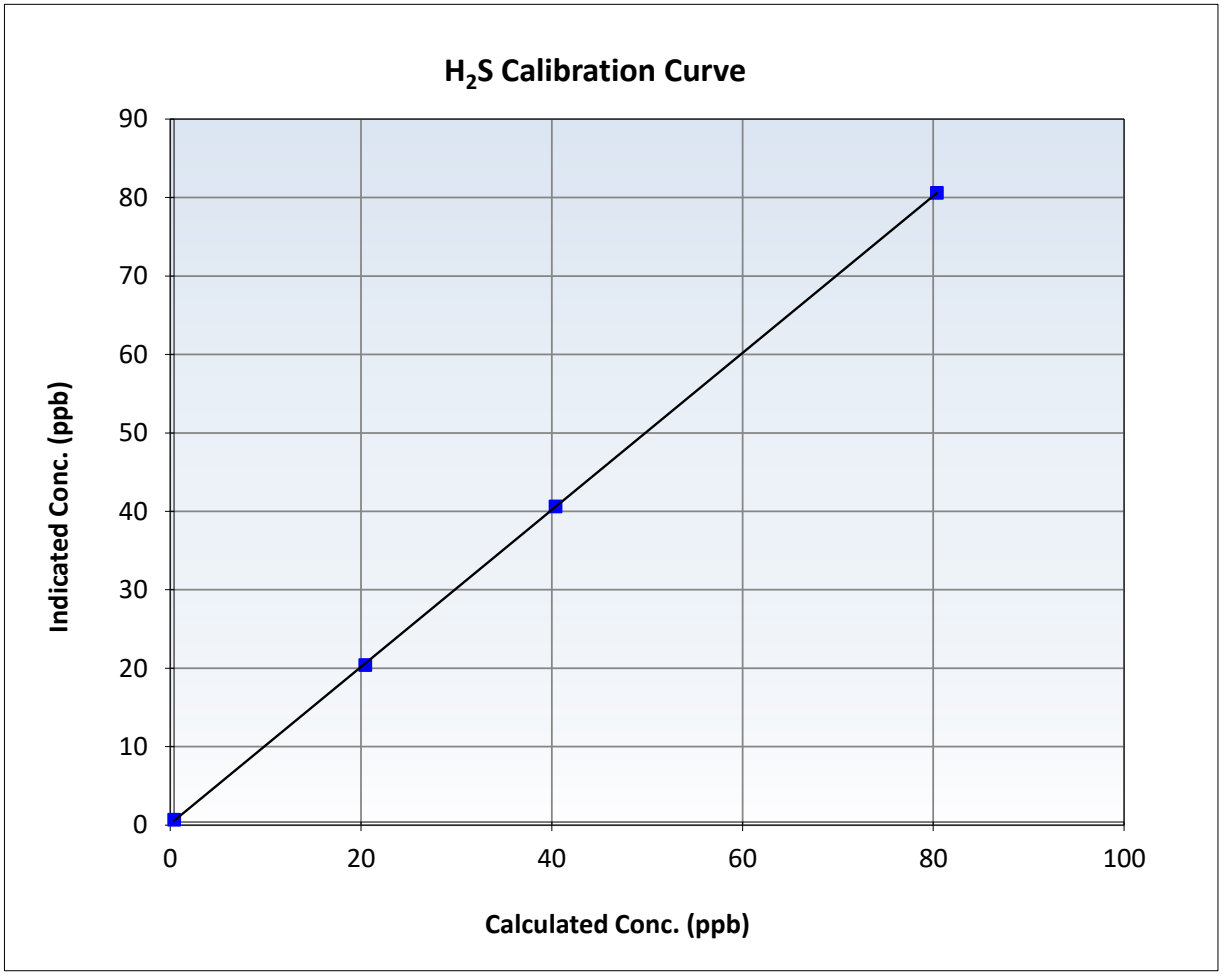
H_2S Calibration Summary

Station Information

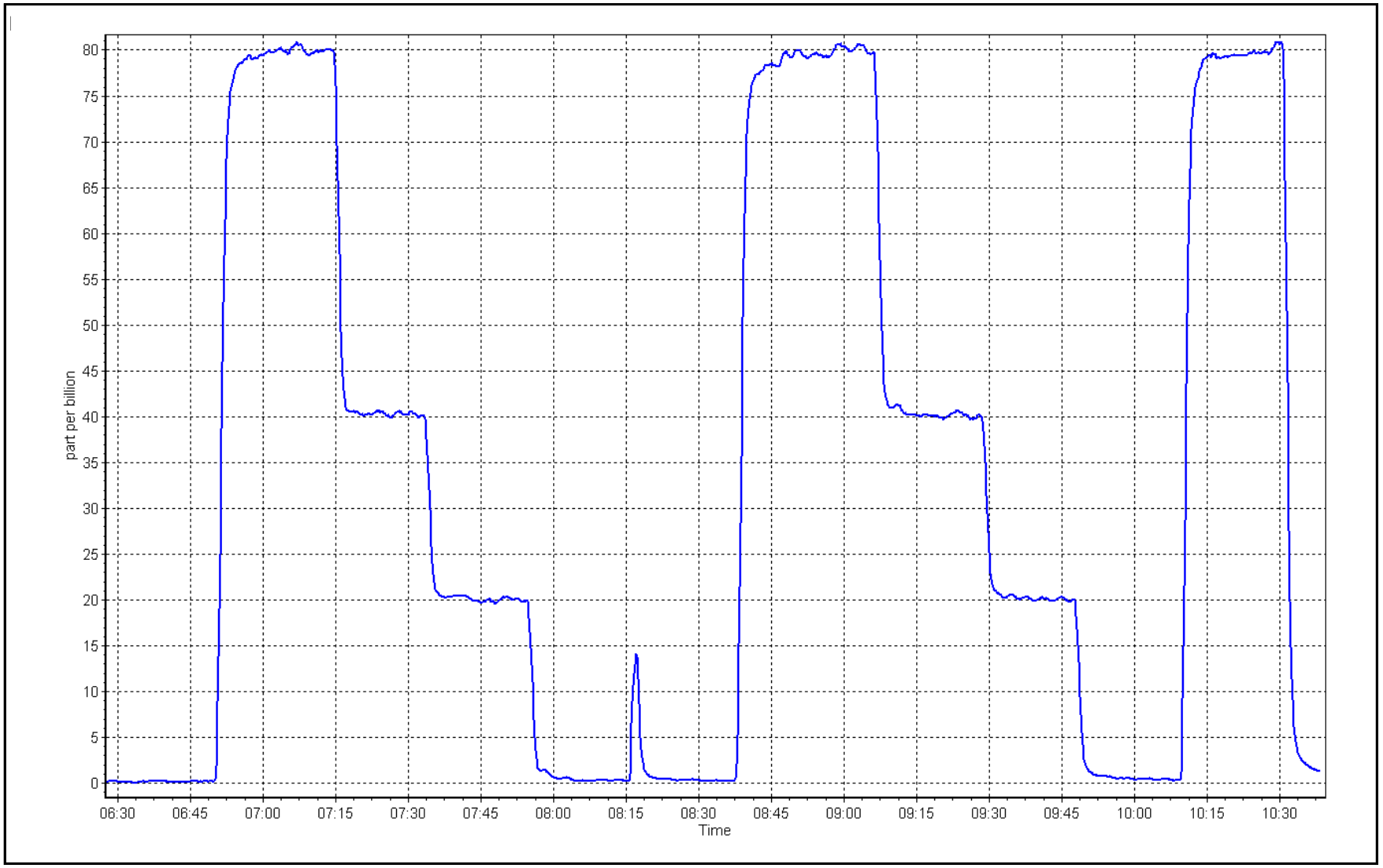
Calibration Date:	April 4, 2025	Previous Calibration:	March 13, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	6:27	End Time (MST):	10:38
Analyzer make:	Thermo 43i-LTE	Analyzer serial #:	1336160090

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation		*Limits*
0.0	0.3	----	Correlation Coefficient	0.999981	*≥0.995*
80.0	80.2	0.9971	Slope	1.000488	*0.90 - 1.10*
40.0	40.2	0.9946	Intercept	0.160819	*+/-3*
20.0	20.0	1.0020			



H_2S Calibration Plot Date: April 4, 2025 Location: Hangingstone Expansion



Wood Buffalo Environmental Association

NO_X \ NO \ NO_2 Calibration Report

Station Information

Station Name:	Hangingstone Expansion
Station number:	AMS 512
Calibration Date:	April 1, 2025
Last Cal Date:	March 3, 2025
Start time (MST):	6:28
End time (MST):	10:43
Reason:	Routine

Calibration Standards

NO Gas Cylinder #:	T0F8P52	Cal Gas Expiry Date:	August 16, 2026
NOX Cal Gas Conc:	47.43 ppm	NO Cal Gas Conc:	47.43 ppm
Removed Cylinder #:	NA	Removed Gas Exp Date:	NA
Removed Gas NOX Conc:	47.43 ppm	Removed Gas NO Conc:	47.43 ppm
NOX gas Diff:		NO gas Diff:	
Calibrator Model:	Teledyne API T700	Serial Number:	2445
ZAG make/model:	Teledyne API T701	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)) *Limit = 0.90 - 1.10*	Baseline Adjusted NO Correction factor (Cc/(Ic-AFzero)) *Limit = 0.90 - 1.10*
As found zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.2	0.0	----	----
AF High point	4916	84.4	800.6	800.6	0.0	801.9	801.2	0.5	0.9981	0.9989
AF Mid point										
AF Low point										
New cyl resp										

Previous Response	NO_X = 807.3 ppb	NO = 807.2 ppb
Baseline Corr 1st pt	NO_X = 802.1 ppb	NO = 801.4 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 = -0.6%		
*Percent Change	NO = -0.7%		

As Found Statistics

As found	NO_X r^2:	Nx Sl:	Nx Int:
As found	NO r^2:	NO Sl:	NO Int:
As found	NO_2 r^2:	NO2 Sl:	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)) *Limit = 0.90 - 1.10*	Converter Efficiency *Limit = 96-104%*
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 \ NO_2 Calibration Report

Analyzer Information

Analyzer Make: Teledyne API T200 Serial Number: 7029

NOX Range (ppb): 0 - 1000 ppb

Instrument Settings

	Start	*Finish*		*Start*	*Finish*
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:	4.6	4.6

Calibration Statistics

	Start	*Finish*
NO_X Cal Slope:	1.008889	1.005306
NO_X Cal Offset:	-0.392928	-0.812870
NO Cal Slope:	1.010359	1.005634
NO Cal Offset:	-1.632904	-1.552843
NO_2 Cal Slope:	0.999078	0.999674
NO_2 Cal Offset:	0.427715	0.103787

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) *Limit = 0.95-1.05*	NO Correction factor (Cc/Ic) *Limit = 0.95-1.05*
Cal zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	----	----
High point	4916	84.4	800.6	800.6	0.0	804.1	804.1	0.2	0.9956	0.9956
Mid point	4958	42.2	400.3	400.3	0.0	402.0	400.7	1.3	0.9958	0.9990
Low point	4979	21.1	200.2	200.2	0.0	199.2	198.0	1.2	1.0048	1.0109
As left zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	----	----
As left span	4916	84.4	800.6	406.9	393.7	799.9	406.9	393.0	1.0008	1.0000
							Average Correction Factor		0.9987	1.0018

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) *Limit = 0.95-1.05*	Converter Efficiency *Limit = 96-104%*
Cal zero	----	----	0.0	0.0	----	----
High GPT point	802.1	410.9	391.2	391.1	1.0003	100.0%
Mid GPT point	802.1	624.1	178.0	178.2	0.9989	100.1%
Low GPT point	802.1	712.2	89.9	90.0	0.9989	100.1%
				Average Correction Factor	0.9993	100.1%

Notes: No adjustments and maintenance done.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

NO_X Calibration Summary

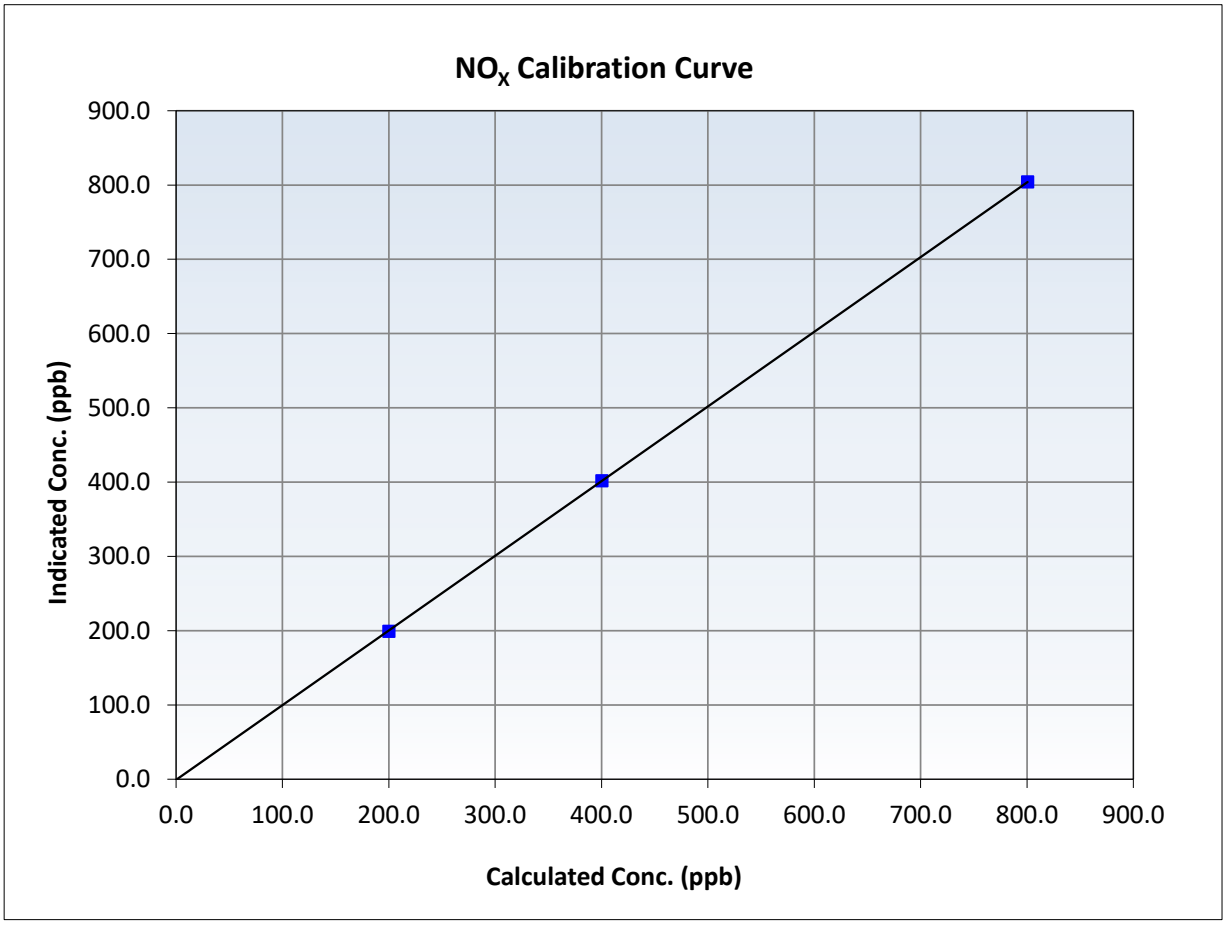
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 3, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	6:28	End Time (MST):	10:43
Analyzer make:	Teledyne API T200	Analyzer serial #:	7029

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
800.6	804.1	0.9956
400.3	402.0	0.9958
200.2	199.2	1.0048

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999994	*≥0.995*
Slope	1.005306	*0.90 - 1.10*
Intercept	-0.812870	*+/-20*



Wood Buffalo Environmental Association

NO_2 Calibration Summary

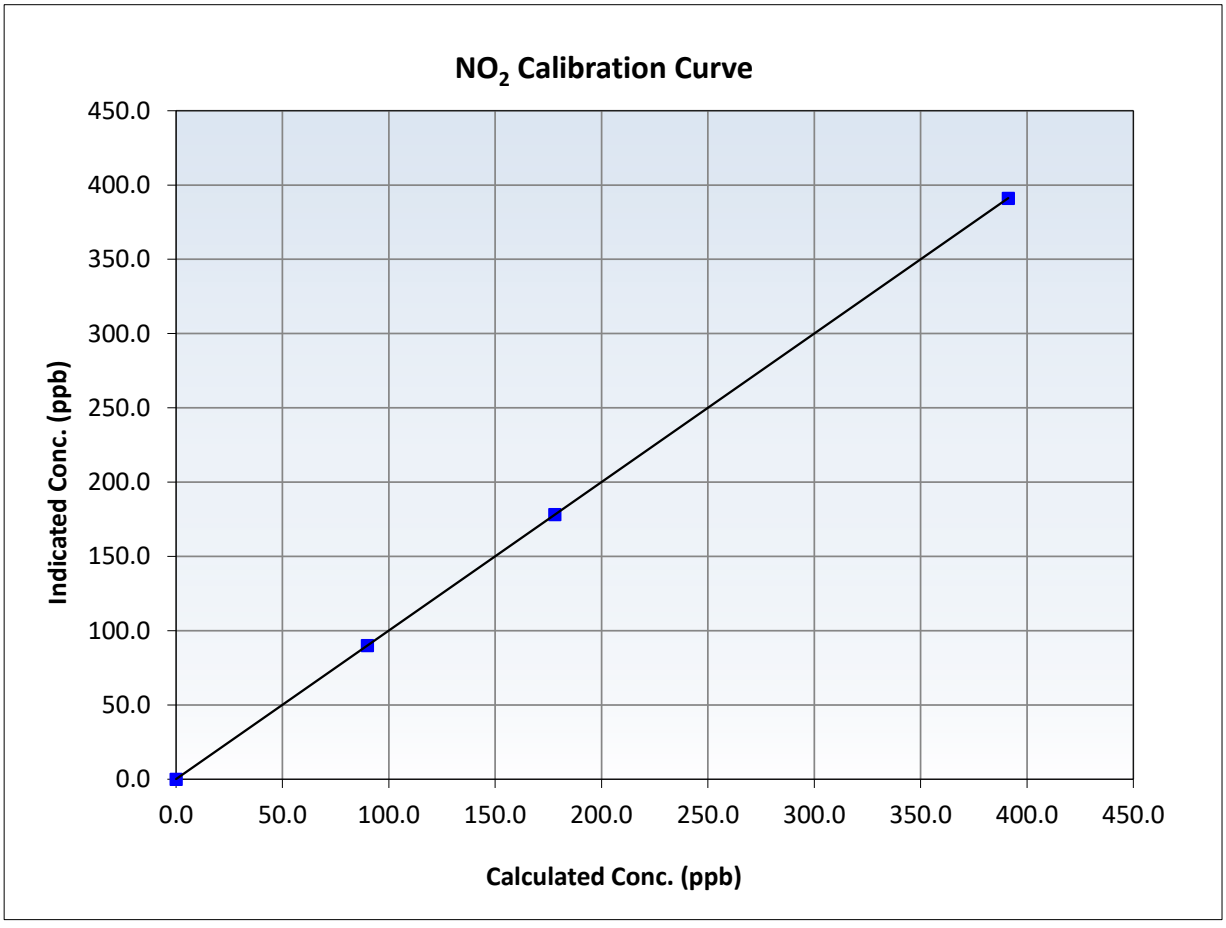
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 3, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	6:28	End Time (MST):	10:43
Analyzer make:	Teledyne API T200	Analyzer serial #:	7029

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	0.0	----
391.2	391.1	1.0003
178.0	178.2	0.9989
89.9	90.0	0.9989

Statistical Evaluation		*Limits*
Correlation Coefficient	1.000000	*≥0.995*
Slope	0.999674	*0.90 - 1.10*
Intercept	0.103787	*+/-20*



Wood Buffalo Environmental Association

NO Calibration Summary

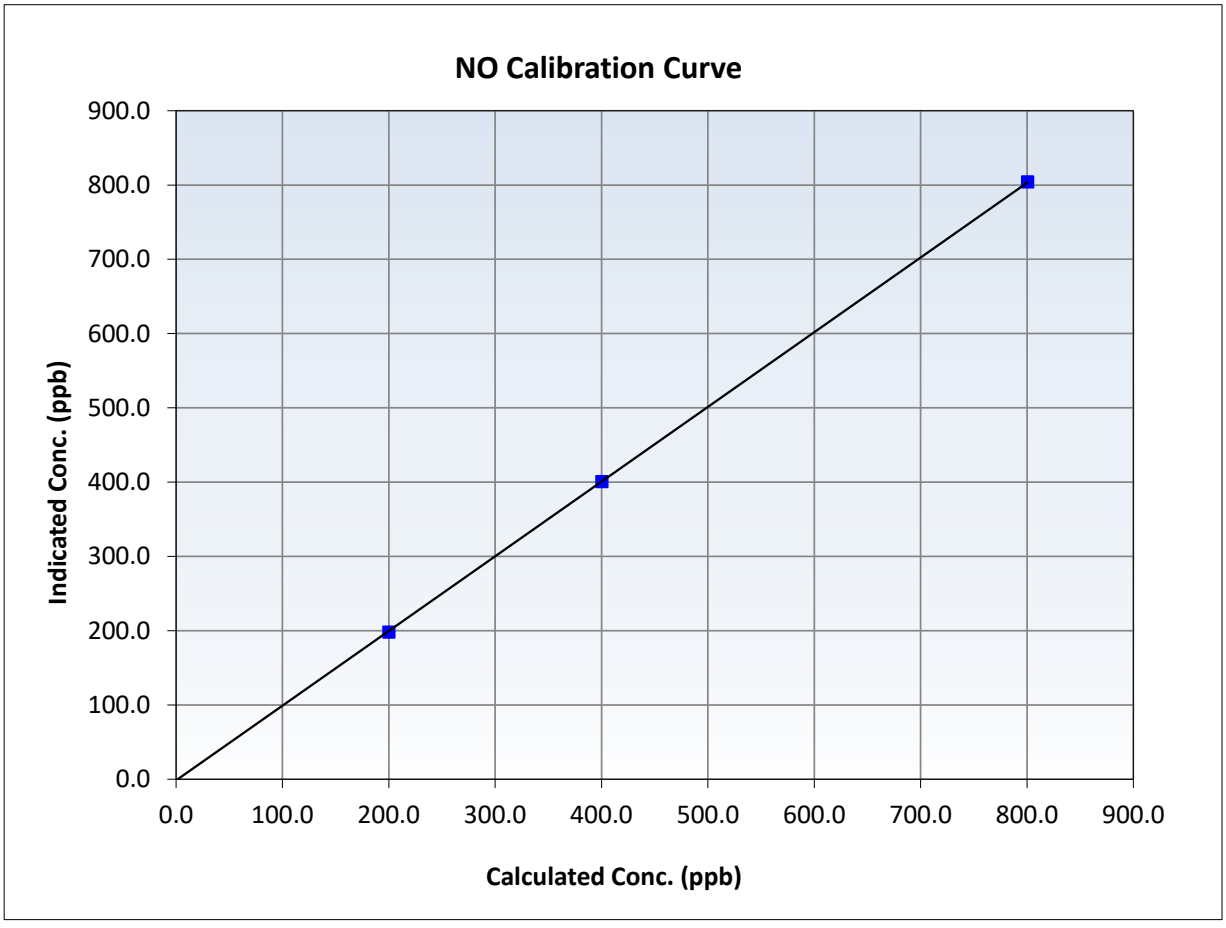
Station Information

Calibration Date:	April 1, 2025	Previous Calibration:	March 3, 2025
Station Name:	Hangingstone Expansion	Station Number:	AMS 512
Start Time (MST):	6:28	End Time (MST):	10:43
Analyzer make:	Teledyne API T200	Analyzer serial #:	7029

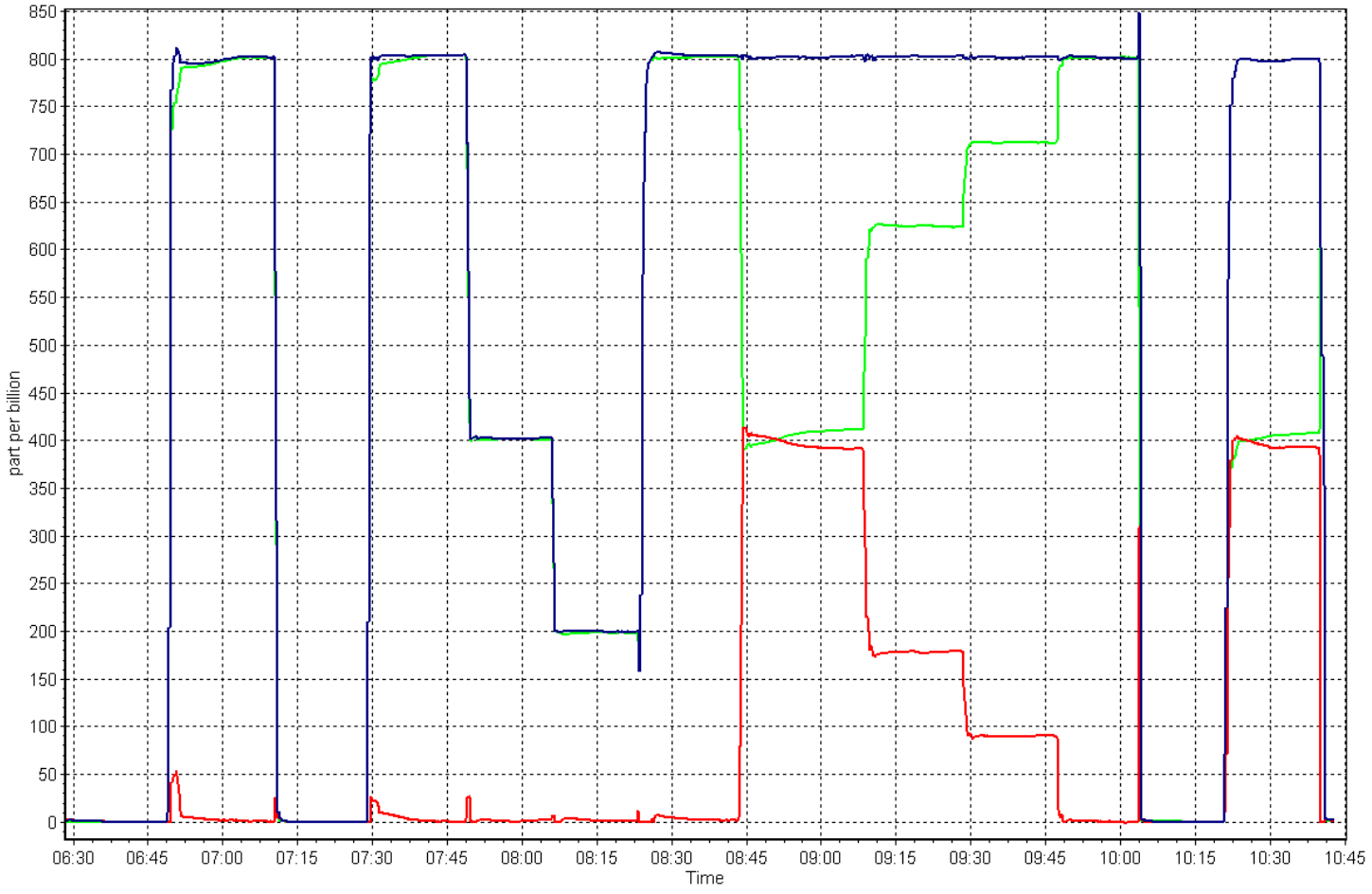
Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
0.0	-0.1	----
800.6	804.1	0.9956
400.3	400.7	0.9990
200.2	198.0	1.0109

Statistical Evaluation		*Limits*
Correlation Coefficient	0.999984	*≥0.995*
Slope	1.005634	*0.90 - 1.10*
Intercept	-1.552843	*+/-20*



NO_X Calibration Plot Date: April 1, 2025 Location: Hangingstone Expansion



End of Report