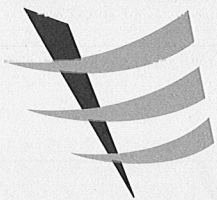


Annex D1

Calibration Certificates for Dust Monitoring Equipment



TEST REPORT

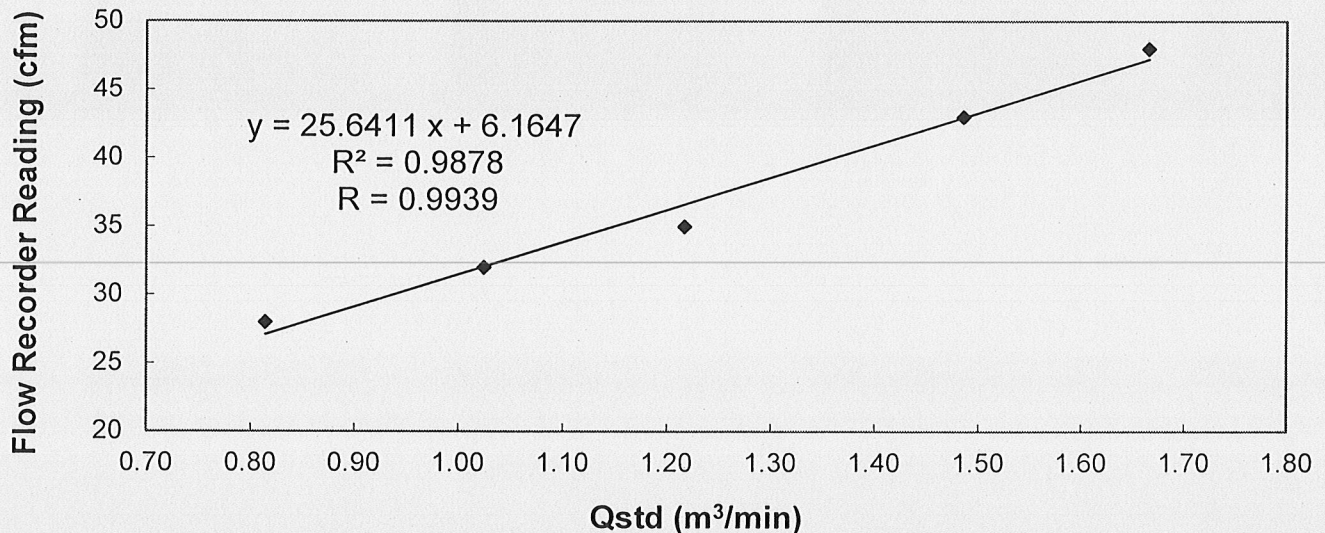
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby 105 **Date of Calibration** : 20 September 2021
Serial No. : 9795 (ET / EA / 003 / 18) **Calibration Due Date** : 19 November 2021
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the
Operations Manual

Results :


Flow recorder reading (cfm)	49	45	36	33	28
Qstd (Actual flow rate, m ³ /min)	1.66	1.49	1.23	1.04	0.83
Pressure : 757.56 mm Hg	Temp. : 302 K				


Sampler 9795 Calibration Curve
Site: Tseung Kwan O 137 (TKO-A1)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies* / ~~does not comply*~~ with the specified requirements and is deemed acceptable* / unacceptable* for use.

Calibrated by : 
LIAO, Yun Chao
(Technician)

Checked by : 
LAU, Chi Leung
(Environmental Team Leader)



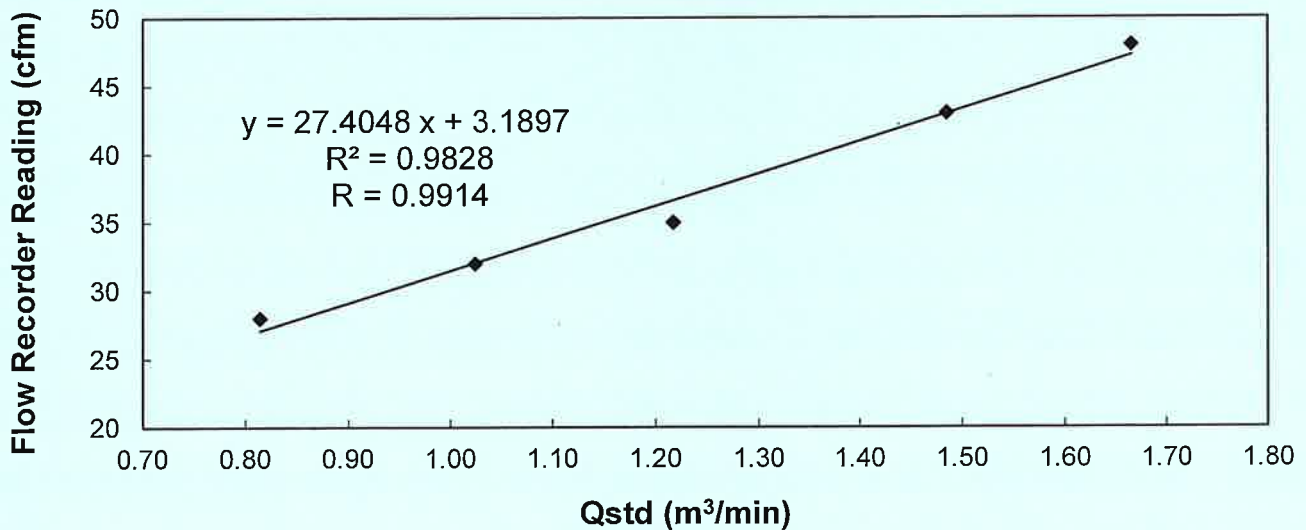
TEST REPORT

Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby 105 Date of Calibration : 19 November 2021
Serial No. : 9795 (ET / EA / 003 / 18) Calibration Due Date : 18 January 2022
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results	Flow recorder reading (cfm)	49	46	37	30	27
	Qstd (Actual flow rate, m ³ /min)	1.69	1.51	1.25	1.04	0.82
	Pressure : 759.06 mm Hg	Temp. : 296 K				

Sampler 9795 Calibration Curve
Site: Tseung Kwan O 137 (TKO-A1)

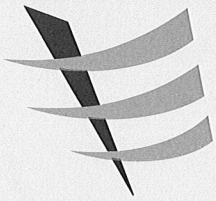


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies* / ~~does not comply*~~ with the specified requirements and is deemed acceptable* / ~~unacceptable*~~ for use.

Calibrated by : MAK, Kei Wai
(Assistant Supervisor)

Checked by : LAU, Chi Leung
(Environmental Team Leader)



TEST REPORT

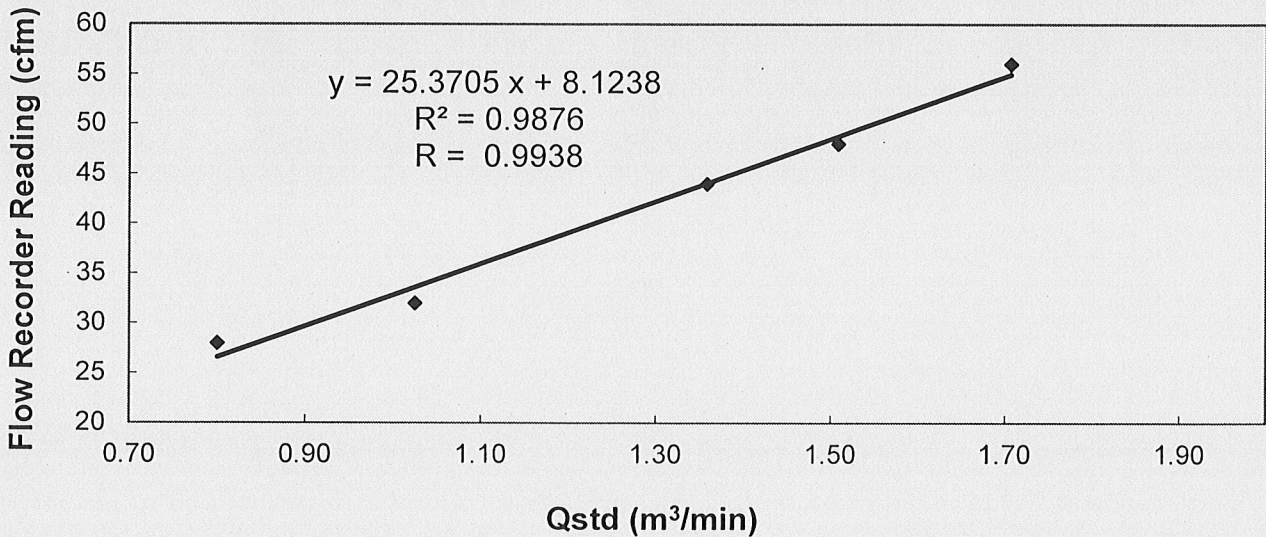
**Calibration Report
of
High Volume Air Sampler**

Manufacturer : Andersen G1051 **Date of Calibration** : 20 September 2021
Serial No. : 1176 (ET / EA / 003 / 05) **Calibration Due Date** : 19 November 2021
Method : Based on Operations Manual for the 5-point calibration using standard calibration kit
manufactured by Tisch TE-5025 A

Results :

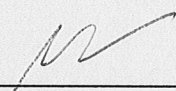
Flow recorder reading (cfm)	50	48	43	34	28
Qstd (Actual flow rate, m ³ /min)	1.70	1.51	1.37	1.02	0.80
Pressure :	757.56 mm Hg		Temp. :	302 K	

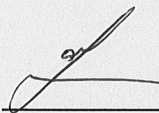
**Sampler 1176 Calibration Curve
Site: Tseung Kwan O 137 (TKO-A2a)**



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies* / does not comply* with the specified requirements and is deemed acceptable* / unacceptable* for use.

Calibrated by : 
LIAO, Yun Chao
(Technician)

Checked by : 
LAU, Chi Leung
(Environmental Team Leader)



TEST REPORT

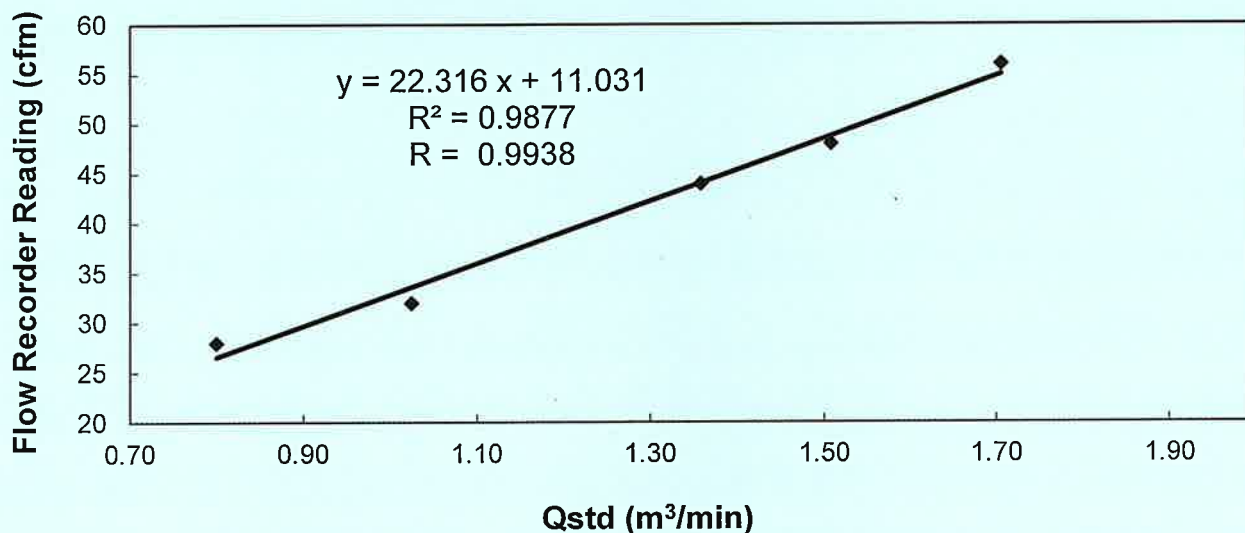
Calibration Report
of
High Volume Air Sampler

Manufacturer : Andersen G1051 **Date of Calibration** : 19 November 2021
Serial No. : 1176 (ET / EA / 003 / 05) **Calibration Due Date** : 18 January 2022
Method : Based on Operations Manual for the 5-point calibration using standard calibration kit manufactured by Tisch TE-5025 A

Results :

Flow recorder reading (cfm)	49	46	41	35	29
Qstd (Actual flow rate, m ³ /min)	1.71	1.52	1.39	1.04	0.82
Pressure :	759.06 mm Hg			Temp. :	296 K

Sampler 1176 Calibration Curve
Site: Tseung Kwan O 137 (TKO-A2a)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies* / ~~does not comply~~* with the specified requirements and is deemed acceptable* / unacceptable* for use.

Calibrated by : MAK, Kei Wai
MAK, Kei Wai
(Assistant Supervisor)

Checked by : LAU, Chi Leung
LAU, Chi Leung
(Environmental Team Leader)

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location ID : AM1	Date of Calibration: 24-Nov-21
Name and Model: TISCH HVS Model TE-5170	Next Calibration Date: 24-Jan-22
	Technician: Fai So

CONDITIONS

Sea Level Pressure (hPa)	1020.3	Corrected Pressure (mm Hg)	765.225
Temperature (°C)	19.0	Temperature (K)	292

CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 2.10574
Model-> 5025A	Qstd Intercept -> -0.00985
Serial # -> 1941	

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.20	6.20	12.4	1.700	59	60.42	Slope = 37.2995 Intercept = -2.4242 Corr. coeff. = 0.9993
13	4.70	4.70	9.4	1.481	52	53.25	
10	3.70	3.70	7.4	1.314	46	47.11	
7	2.40	2.40	4.8	1.059	36	36.87	
5	1.50	1.50	3.0	0.838	28	28.67	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))]-b$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

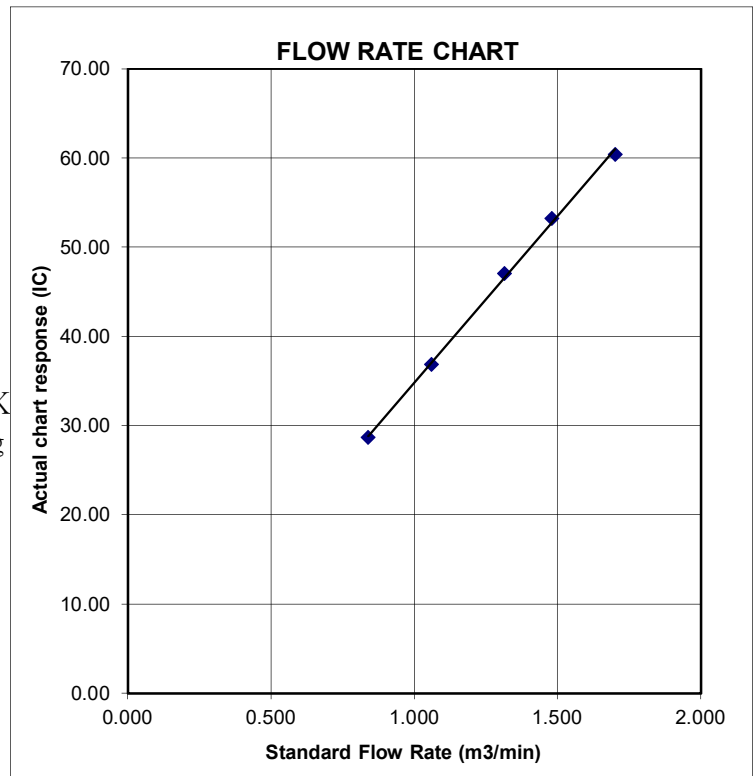
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location ID : AM2	Date of Calibration: 24-Nov-21
Name and Model: TISCH HVS Model TE-5170	Next Calibration Date: 24-Jan-22
	Technician: Fai So

CONDITIONS

Sea Level Pressure (hPa) 1020.3	Corrected Pressure (mm Hg) 765.225
Temperature (°C) 19.0	Temperature (K) 292

CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 2.10574
Model-> 5025A	Qstd Intercept -> -0.00985
Serial # -> 1941	

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	7.20	7.20	14.4	1.831	51	52.23	Slope = 30.7872 Intercept = -3.3292 Corr. coeff. = 0.9980
13	5.50	5.50	11.0	1.601	46	47.11	
10	4.40	4.40	8.8	1.433	40	40.96	
7	2.70	2.70	5.4	1.123	30	30.72	
5	1.50	1.50	3.0	0.838	22	22.53	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

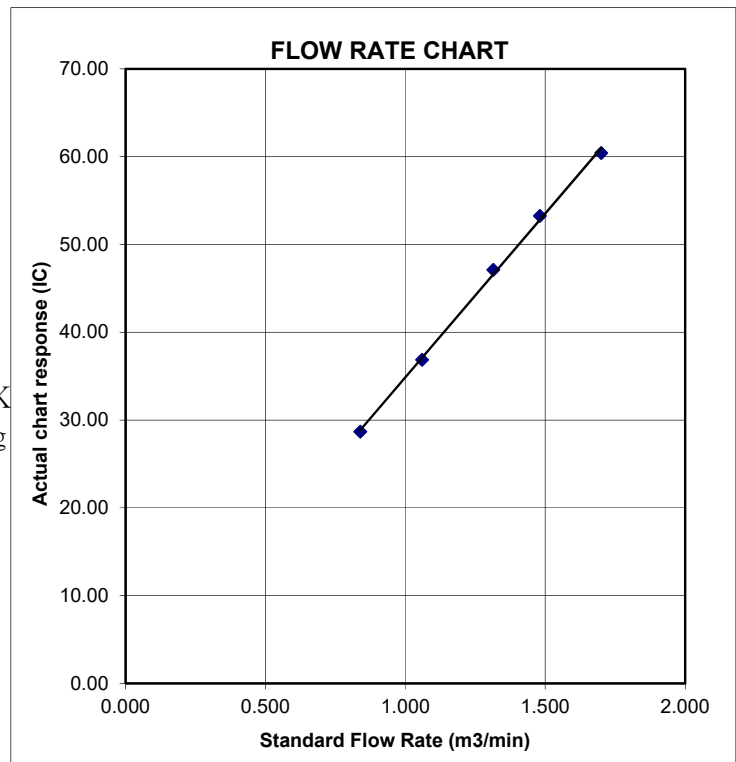
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location ID : AM3	Date of Calibration: 24-Nov-21
Name and Model: TISCH HVS Model TE-5170	Next Calibration Date: 24-Jan-22
	Technician: Fai So

CONDITIONS

Sea Level Pressure (hPa)	1020.3	Corrected Pressure (mm Hg)	765.225
Temperature (°C)	19.0	Temperature (K)	292

CALIBRATION ORIFICE

Make-> TISCH		Qstd Slope ->	2.10574
Model-> 5025A		Qstd Intercept ->	-0.00985
Serial # -> 1941			

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION		
							Slope =	Intercept =	Corr. coeff. =
18	6.80	6.80	13.6	1.780	54	55.30	35.7467	-6.9119	0.9944
13	5.50	5.50	11.0	1.601	50	51.20			
10	4.10	4.10	8.2	1.383	42	43.01			
7	2.70	2.70	5.4	1.123	34	34.82			
5	1.60	1.60	3.2	0.866	22	22.53			

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

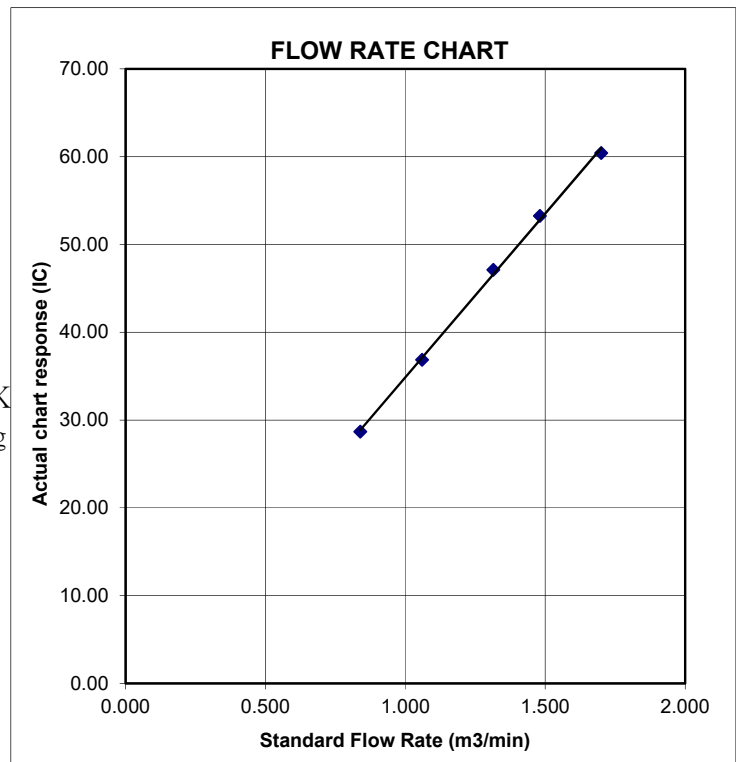
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location ID : AM4	Date of Calibration: 24-Nov-21
Name and Model: TISCH HVS Model TE-5170	Next Calibration Date: 24-Jan-22
	Technician: Fai So

CONDITIONS

Sea Level Pressure (hPa) 1020.3	Corrected Pressure (mm Hg) 765.225
Temperature (°C) 19.0	Temperature (K) 292

CALIBRATION ORIFICE

Make-> TISCH	Qstd Slope -> 2.10574
Model-> 5025A	Qstd Intercept -> -0.00985
Serial # -> 1941	

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.30	6.30	12.6	1.713	49	50.18	Slope = 30.9360 Intercept = -2.2579 Corr. coeff. = 0.9984
13	5.20	5.20	10.4	1.557	45	46.08	
10	3.80	3.80	7.6	1.332	39	39.94	
7	2.50	2.50	5.0	1.081	30	30.72	
5	1.50	1.50	3.0	0.838	23	23.55	

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart responses

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

