High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.   CKL 1 - Flat 121 Cha Kwo Ling Village

Date:	6-Jan-22	Next Due Date:	6-Mar-22	Operator:	SK
Equipment No.:	A-01-18	Model No.:	TE 5170	Serial No.	0723

Ambient Condition			
Temperature, Ta (K)	294	Pressure, Pa (mmHg)	763

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Jan-22	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.0	3.64	62.27	9.8	3.16
2	10.3	3.24	55.43	8.0	2.85
3	8.5	2.94	50.36	5.9	2.45
4	6.2	2.51	43.02	4.0	2.02
5	3.4	1.86	31.87	1.9	1.39

By Linear Regression of Y on X

Slope , mw = __0.0595__   Intercept, bw = __-0.5157__

Correlation coefficient* = __0.9980__

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)² x (760 / Pa) x (Ta / 298) = __4.10__

Remarks: _____

Conducted by:	Wong Shing Kwai	Signature:		Date:	6-Jan-22
Checked by:	Henry Leung	Signature:		Date:	6-Jan-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.   CKL 2 - Flat 103 Cha Kwo Ling Village

Date:	6-Jan-22	Next Due Date:	6-Mar-22	Operator:	SK
Equipment No.:	A-01-55	Model No.:	TE 5170	Serial No.	1956

Ambient Condition			
Temperature, Ta (K)	294	Pressure, Pa (mmHg)	762

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21				
Next Calibration Date:	11-Jan-22				

$$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$$

$$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$$

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.9	3.62	61.99	10.0	3.19
2	10.7	3.30	56.46	7.6	2.78
3	8.4	2.92	50.03	6.0	2.47
4	5.5	2.36	40.50	3.6	1.91
5	2.9	1.72	29.42	1.9	1.39

By Linear Regression of Y on X

   Slope , mw =   **0.0546**   Intercept, bw =   **-0.2557**

   Correlation coefficient* =   **0.9977**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.31**

Remarks: _____

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Conducted by:	Wong Shing Kwai	Signature:		Date:	6-Jan-22
Checked by:	Henry Leung	Signature:		Date:	6-Jan-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.   KER 1 - Future Residential Development at Kerry Godown

Date: 11-Jan-22   Next Due Date: 11-Mar-22   Operator: SK

Equipment No.:   A-01-04   Model No.:   TE 5170   Serial No.   10595

Ambient Condition			
Temperature, Ta (K)	293	Pressure, Pa (mmHg)	764

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	\multicolumn{4}{c}{$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$}
Next Calibration Date:	11-Jan-22	\multicolumn{4}{c}{$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$}

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Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.1	3.66	62.66	9.2	3.07
2	10.4	3.26	55.83	7.0	2.68
3	8.2	2.90	49.58	5.6	2.39
4	5.2	2.31	39.50	3.2	1.81
5	3.0	1.75	30.01	2.1	1.47

By Linear Regression of Y on X

Slope , mw = 0.0497   Intercept, bw = -0.0803

Correlation coefficient* = 0.9970

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) =   4.14

Remarks:

Conducted by: Wong Shing Kwai   Signature: Date: 11-Jan-22

Checked by: Henry Leung   Signature: Date: 11-Jan-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No.   MA20003/44/0011

Project No.   KTD1 - Centre of Excellence in Paediatrics (Children's Hospital)

Date: 11-Jan-22   Next Due Date: 11-Mar-22   Operator: SK

Equipment No.:   A-01-44   Model No.:   TE-5170   Serial No.   1316

Ambient Condition			
Temperature, Ta (K)	294	Pressure, Pa (mmHg)	763

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$			
Next Calibration Date:	11-Jan-22	Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc			

$$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$$
$$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$$

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.2	3.67	62.75	9.6	3.13
2	11.0	3.35	57.28	7.4	2.74
3	8.4	2.92	50.07	5.6	2.39
4	5.6	2.39	40.89	3.3	1.83
5	3.2	1.80	30.92	1.8	1.35

By Linear Regression of Y on X

Slope , mw =   0.0554   Intercept, bw =   -0.3926

Correlation coefficient* =   0.9985

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

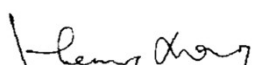From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) =   3.89

Remarks:

Conducted by: Wong Shing Kwai   Signature: Date: 11-Jan-22

Checked by: Henry Leung   Signature: Date: 11-Jan-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.   KTD 2D - Next to the SOR Office of Trunk Road T2 in Kai Tak Area

Date:	11-Jan-22	Next Due Date:	11-Mar-22	Operator:	SK
Equipment No.:	A-01-41	Model No.:	TE 5170	Serial No.	5280

Ambient Condition			
Temperature, Ta (K)	293	Pressure, Pa (mmHg)	764

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05846	Intercept, bc	-0.00313
Last Calibration Date:	11-Jan-21	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	11-Jan-22	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.1	3.66	62.66	9.2	3.07
2	11.4	3.41	58.45	7.4	2.75
3	8.2	2.90	49.58	5.9	2.46
4	6.0	2.48	42.42	4.4	2.12
5	3.0	1.75	30.01	2.3	1.53

By Linear Regression of Y on X

Slope , mw =   0.0452   **Intercept, bw =**   0.1869

Correlation coefficient* =   0.9966

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) =   **4.44**

Remarks: _____

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Conducted by:	Wong Shing Kwai	Signature:		Date:	11-Jan-22
Checked by:	Henry Leung	Signature:		Date:	11-Jan-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.	CKL 1 - Flat 121 Cha Kwo Ling Village				
Date:	5-Mar-22	Next Due Date:	5-May-22	Operator:	SK
Equipment No.:	A-01-18	Model No.:	TE 5170	Serial No.	0723

Ambient Condition			
Temperature, Ta (K)	293.6	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	\multicolumn{4}{c}{$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$}
Next Calibration Date:	31-Jan-23	\multicolumn{4}{c}{$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$}

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Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.0	3.63	61.75	9.8	3.15
2	10.3	3.23	55.01	8.0	2.85
3	8.5	2.94	50.01	5.9	2.45
4	6.2	2.51	42.77	4.0	2.01
5	3.4	1.86	31.78	1.8	1.35

By Linear Regression of Y on X

Slope , mw =   0.0614   Intercept, bw =   -0.5993

Correlation coefficient* =   0.9982

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) =   4.10

Remarks:

Conducted by:	Wong Shing Kwai	Signature:		Date: 5-Mar-22
Checked by:	Henry Leung	Signature:		Date: 5-Mar-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.   CKL 2 - Flat 103 Cha Kwo Ling Village

Date: 5-Mar-22   Next Due Date: 5-May-22   Operator: SK

Equipment No.:   A-01-55   Model No.:   TE 5170   Serial No.   1956

Ambient Condition			
Temperature, Ta (K)	293.6	Pressure, Pa (mmHg)	760

Orifice Transfer Standard Information			
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$			
Next Calibration Date:	31-Jan-23	Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc			

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Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	12.8	3.60	61.27	9.8	3.15
2	10.8	3.31	56.32	7.6	2.78
3	8.4	2.92	49.71	6.0	2.47
4	5.5	2.36	40.31	3.4	1.86
5	2.9	1.72	29.38	1.8	1.35

By Linear Regression of Y on X

Slope , mw =   0.0563   Intercept, bw =   -0.3460

Correlation coefficient* =   0.9973

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \text{ x } Qstd + bw = [ΔW \text{ x } (Pa/760) \text{ x } (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) =   4.24

Remarks:

Conducted by: Wong Shing Kwai   Signature: Date: 5-Mar-22

Checked by: Henry Leung   Signature: Date: 5-Mar-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

Project No.	KER 1 - Future Residential Development at Kerry Godown				
Date:	11-Mar-22	Next Due Date:	11-May-22	Operator:	SK
Equipment No.:	A-01-04	Model No.:	TE 5170	Serial No.	10595

Ambient Condition

Temperature, Ta (K)	295.1	Pressure, Pa (mmHg)	760.4

Orifice Transfer Standard Information

Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22		$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$		
Next Calibration Date:	31-Jan-23		$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$		

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Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.0	3.62	61.61	9.4	3.08
2	10.4	3.24	55.15	7.0	2.66
3	8.2	2.88	49.01	5.6	2.38
4	5.2	2.29	39.11	3.2	1.80
5	3.0	1.74	29.81	2.0	1.42

By Linear Regression of Y on X

Slope , mw = 0.0523   **Intercept, bw =** -0.1873

Correlation coefficient* = 0.9972

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.21

Remarks:

Conducted by:	Wong Shing Kwai	Signature:		Date:	11-Mar-22
Checked by:	Henry Leung	Signature:		Date:	11-Mar-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA20003/44/0012

Project No. KTD1 - Centre of Excellence in Paediatrics (Children's Hospital)

Date: 11-Mar-22   Next Due Date: 11-May-22   Operator: SK

Equipment No.: A-01-44   Model No.: TE-5170   Serial No. 1316

Ambient Condition			
Temperature, Ta (K)	295.1	Pressure, Pa (mmHg)	760.4

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	31-Jan-23	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.0	3.62	61.61	9.6	3.11
2	11.0	3.33	56.70	7.4	2.73
3	8.4	2.91	49.60	5.6	2.38
4	5.6	2.38	40.58	3.3	1.83
5	3.2	1.80	30.77	1.8	1.35

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By Linear Regression of Y on X

  Slope , mw =   0.0567   Intercept, bw =   -0.4326

  Correlation coefficient* =   0.9979

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) =   3.98

Remarks:

Conducted by: Wong Shing Kwai   Signature: Date: 11-Mar-22

Checked by: Henry Leung   Signature: Date: 11-Mar-22

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

Project No.   KTD 2D - Next to the SOR Office of Trunk Road T2 in Kai Tak Area

Date:	11-Mar-22	Next Due Date:	11-May-22	Operator:	SK
Equipment No.:	A-01-41	Model No.:	TE 5170	Serial No.	5280

Ambient Condition			
Temperature, Ta (K)	295.1	Pressure, Pa (mmHg)	760.4

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05922	Intercept, bc	-0.02420
Last Calibration Date:	31-Jan-22		$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$		
Next Calibration Date:	31-Jan-23		$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$		

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Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.0	3.62	61.61	9.8	3.15
2	10.3	3.23	54.88	8.0	2.84
3	8.5	2.93	49.89	5.9	2.44
4	6.2	2.50	42.67	4.0	2.01
5	3.4	1.85	31.71	2.0	1.42

By Linear Regression of Y on X

Slope , mw =   0.0591   Intercept, bw =   -0.4743

Correlation coefficient* =   0.9976

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) =   **4.23**

Remarks: _____

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Conducted by:	Wong Shing Kwai	Signature:		Date:	11-Mar-22
Checked by:	Henry Leung	Signature:		Date:	11-Mar-22

TISCH Environmental

Certificate of Calibration

Calibration Certification Information

Cal. Date: January 11, 2021	**Rootsmeter S/N:** 438320	**Ta:** 297 °K
Operator: Jim Tisch		**Pa:** 750.1 mm Hg
Calibration Model #: TE-5025A	**Calibrator S/N: 3864**	

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4470	3.2	2.00
2	3	4	1	1.0210	6.4	4.00
3	5	6	1	0.9140	8.0	5.00
4	7	8	1	0.8670	8.8	5.50
5	9	10	1	0.7140	12.9	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9860	0.6814	1.4073	0.9957	0.6881	0.8899
0.9818	0.9616	1.9902	0.9915	0.9711	1.2585
0.9797	1.0719	2.2251	0.9893	1.0824	1.4071
0.9786	1.1288	2.3337	0.9883	1.1399	1.4757
0.9732	1.3630	2.8146	0.9828	1.3765	1.7798
QSTD m=	2.06566		**QA** m=	1.29348	
b=	0.00315		b=	0.00199	
r=	0.99996		r=	0.99996	

Calculations

Vstd= ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=** ΔVol((Pa-ΔP)/Pa)
Qstd= Vstd/ΔTime	**Qa=** Va/ΔTime

For subsequent flow rate calculations:

$$Qstd= \frac{1}{m}\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$$

$$Qa= \frac{1}{m}\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$$

Standard Conditions

Tstd:	298.15 °K
Pstd:	760 mm Hg

Key

ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric pressure (mm Hg)
b: intercept
m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

TISCH Environmental

Certificate of Calibration

Calibration Certification Information

Cal. Date: January 31, 2022	**Rootsmeter S/N:** 438320	**Ta:** 294	°K
Operator: Jim Tisch		**Pa:** 752.6	mm Hg
Calibration Model #: TE-5025A	**Calibrator S/N: 3864**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4490	3.2	2.00
2	3	4	1	1.0320	6.4	4.00
3	5	6	1	0.9160	7.9	5.00
4	7	8	1	0.8730	8.8	5.50
5	9	10	1	0.7230	12.7	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9995	0.6898	1.4169	0.9957	0.6872	0.8839
0.9952	0.9643	2.0037	0.9915	0.9608	1.2500
0.9932	1.0843	2.2402	0.9895	1.0802	1.3976
0.9920	1.1363	2.3496	0.9883	1.1321	1.4658
0.9868	1.3649	2.8337	0.9831	1.3598	1.7678

QSTD			QA		
	m=	2.09281		m=	1.31048
	b=	-0.02426		b=	-0.01514
	r=	0.99993		r=	0.99993

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	Va=	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime

For subsequent flow rate calculations:

$$Qstd = \frac{1}{m}\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right) - b\right)$$

$$Qa = \frac{1}{m}\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right) - b\right)$$

Standard Conditions

Tstd:	298.15 °K
Pstd:	760 mm Hg

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Certificate of Calibration - Wind Monitoring Station

Description:	Yau Lai Estate, Bik Lai House
Manufacturer:	Davis Instruments
Model No.:	Davis7440
Serial No.:	MC01010A44
Equipment No.:	SA-03-04
Date of Calibration	19-Feb-2022
Next Due Date	19-Aug-2022

1. Performance check of Wind Speed

Wind Speed, m/s		Difference D (m/s)
Wind Speed Reading (V1)	Anemometer Value (V2)	D = V1 – V2
0.0	0.0	0.0
1.5	1.5	0.0
2.5	2.5	0.0
4.2	4.3	-0.1

2. Performance check of Wind Direction
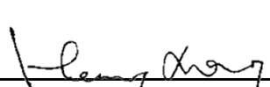
Wind Direction (^{o})		Difference D (^{o})
Wind Direction Reading (W1)	Marine Compass Value (W2)	D = W1 - W2
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

Test Specification:

1. Performance Wind Speed Test - The wind meter was on-site calibrated against the anemometer

2. Performance Wind Direction Test - The wind meter was on-site calibrated against the marine compass at four direction

Calibrated by: _____   Approved by: _____
                    Wong Shing Kwai   Henry Leung