AECOM Asia Company Limited TSP High Volume Sampler Field Calibration Report

| Station | Tuna Chuna Dev | elopment Pier (Al | MS2) | Operator: | perator: Choi Wing Ho | | | | |
|--|-------------------------------|---------------------|--|---|--------------------------------|--|--------------|--|--|
| Cal. Date: | 14-Mar-12 | | | Next Due Date: | 14-Ma | ay-12 | | | |
| quipment No.: | A-001-78T | | | Serial No. | 338 | 83 | _ | | |
| • | | | | | | | | | |
| | | | | Condition | | | | | |
| Temperatu | re, Ta (K) | 291.3 | Pressure, F | a (mmHg) | | 754.7 | | | |
| | | | Orifice Transfer St | andard Informatio | n | | | | |
| Serial | l No: | 988 | Slope, mc | 2.01182 | Interce | ept, bc | -0.02516 | | |
| Last Calibra | | 17-May-11 | | mc x Qstd + bc | = [DH x (Pa/760) x | (298/Ta)] ^{1/2} | | | |
| Next Calibra | | 17-May-12 | | Qstd = {[DH x (Pa/760) x (298/Ta)] ^{1/2} -bc} / mc | | | | | |
| 110/11 54/10/1 | | , | | | | | | | |
| | | | Calibration o | f TSP Sampler | | | | | |
| | | 0 | rfice | | HV | S Flow Record | er | | |
| Resistance Plate No. | DH (orifice), in. of water | [DH x (Pa/76 | 60) x (298/Ta)] ^{1/2} | Qstd (m³/min) X - axis | Flow Recorder Reading (CFM) | Continuous Flow Record Reading IC (CFM) Y-av | | | |
| 18 | 8.1 | | 2.87 | | 45.0 | 45.36 | | | |
| 13 | 7.4 | | 2.74 | | 40.0 | 4 | 0.32 | | |
| 10 | 5.4 | 2.34 | | 1.18 | 34.0 | 3. | 4.27 | | |
| 7 | 3.7 | | 1.94 | 0.98 | 24.0 | 2 | 4.19 | | |
| 5 | 2.2 | | 1.49 | 0.76 | 15.0 | 1 | 5.12 | | |
| By Linear Regre Slope , mw = Correlation Coe | 43.0821 | _ | 9931 | Intercept, bw = | -17. | 4550 | | | |
| | | , check and recali | | - | | | | | |
| II Correlation Co | oomolone siest | , | | | | | | | |
| | | | Set Point | Calculation | | | | | |
| From the TSP F | ield Calibration C | urve, take Qstd = | 1.30m ³ /min | 6 | | | | | |
| From the Regres | ssion Equation, th | ne "Y" value accor | ding to | | | | | | |
| | | | Table Color and Country Countr | | - 1/2 | | | | |
| | | mw | x Qstd + bw = IC | x [(Pa/760) x (298/ | (a)] " | | | | |
| Thorofore Set F | Point: IC = (mw x | Ostd + bw \ x [(7 | 760 / Pa) x (Ta / 2 | 98)] 1/2= | | 38.25 | | | |
| Therefore, oct i | Oint, 10 - (11111 X | dota - bii / x [(· | | /1 | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Remarks: | | | | | | | | | |
| | | | | | | | | | |
| | 1 | 1 1 | | l:u | | 1/1 | Nar 10 | | |
| QC Reviewer: _ | tlike e | nek | Signature: | TIKE | | Date:14 | · 1101 - 12. | | |

AECOM Asia Company Limited TSP High Volume Sampler Field Calibration Report

| Cal. Date: Equipment No.: Temperature | 15-Mar-12 A-001-79T | | | Next Due Date: | 15-Ma | ay-12 | - | | |
|---|-------------------------------|---------------------|--------------------------------|---|--------------------------------|-------------------------|---|--|--|
| | A-001-79T | | | | 15-May-12 | | _ | | |
| Temperature | | | | Serial No. | 338 | 34 | - | | |
| Temperature | | | Ambient | Condition | | | | | |
| | , Ta (K) | 293.3 | Pressure, F | Pa (mmHg) | | 751.6 | | | |
| | | | | | | | | | |
| | | (| Prifice Transfer St | tandard Informatio | | | | | |
| Serial N | lo: | 988 | Slope, mc | 2.01182 | Intercept, bc -0.0251 | | | | |
| Last Calibration | on Date: | 17-May-11 | | mc x Qstd + bc = $[DH \times (Pa/760) \times (298/Ta)]^{1/2}$ | | | | | |
| Next Calibration | on Date: | 17-May-12 | | Qstd = {[DH x (F | Pa/760) x (298/Ta)] | ^{/2} -bc} / mc | | | |
| ¥ | | | | | | | | | |
| | | | | f TSP Sampler | | | | | |
| | | . 0 | rfice | | HVS | Flow Recorder | | | |
| Resistance Plate No. | DH (orifice), in. of water | [DH x (Pa/76 | 60) x (298/Ta)] ^{1/2} | Qstd (m³/min) X axis | Flow Recorder Reading (CFM) | Continuous Flow Reco | | | |
| 18 | 7.9 | | 2.82 | | 44.0 | 44.11 | | | |
| 13 | 6.6 | 2.58 | | 1.29 | 40.0 | 40.10 |) | | |
| 10 | 5.4 | 2.33 | | 1.17 | 32.0 | 32.08 | 3 | | |
| 7 | 3.7 | | 1.93 | 0.97 | 24.0 | 24.06 | | | |
| 5 | 2.3 | | 1.52 | 0.77 | 16.0 | 16.04 | 1 | | |
| By Linear Regress Slope , mw = Correlation Coeffi If Correlation Coef | 44.5203 icient* = | | 9927 | Intercept, bw = | -18.7 | 7205 | - | | |
| TI CONCIDENT COOL | moone volucity | oriook and rooding | | | | | | | |
| | | | | Calculation | | | | | |
| From the TSP Field | | | | | | | | | |
| From the Regression | on Equation, the | e "Y" value accord | ding to | | | | | | |
| | | | Oatel 1 h = IC | x [(Pa/760) x (298/1 | To 11/2 | | | | |
| | | IIIW | x QSta + bw - IC | x [(Pai100) x (2901) | (a)] | | | | |
| Therefore Cat Dair | nt: IC = (mw x (| Qstd + bw) x [(76 | 60 / Pa) x (Ta / 29 | 98)] ^{1/2} = | | 39.06 | | | |
| nereiore, Set Poir | | , | , , | | | - | - | | |
| | nt, ic - (niw x t | Sig + DW) X [(/ | 00/Fa)X(1a/28 | ,0)] – | | 35.00 | - | | |

AECOM Asia Company Limited TSP High Volume Sampler Field Calibration Report

| -0.02516 | |
|-----------------------------------|--|
| -0.02516 | |
| -0.02516 | |
| -0.02516 | |
| -0.02516 | |
| -0.02516 | |
| -0.02510 | |
| | |
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| | |
| | |
| rder | |
| | |
| s Flow Recorder C (CFM) Y-axis | |
| 42.33 | |
| 36.28 | |
| 30.24 | |
| 24.19 | |
| 22.17 | |
| | |
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TISCH ENVIROMENTAL, INC. 145 SOUTH MIAMI AVE. VILLAGE OF CLEVES, OH 45002 513.467.9000 877.263.7610 TOLL FREE 513.467.9009 FAX WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

| | ay 17, 2011 Tisch | 438320 0988 | Ta (K) - Pa (mm) - | 294 - 748.03 | | |
|-----------------------|-------------------------|----------------------------|------------------------------|--|----------------------------------|--------------------------------------|
| PLATE OR Run # | VOLUME START (m3) | VOLUME STOP (m3) | DIFF VOLUME (m3) | DIFF TIME (min) | METER DIFF Hg (mm) | ORFICE DIFF H2O (in.) |
| 1 2 3 4 5 | NA NA NA NA | NA NA NA NA NA | 1.00 1.00 1.00 1.00 | 1.3900 0.9830 0.8800 0.8380 0.6920 | 3.2 6.4 7.9 8.8 12.7 | 2.00 4.00 5.00 5.50 8.00 |

DATA TABULATION

| Vstd | (x axis) Qstd | (y axis) | | Va | (x axis) Qa | (y axis) |
|--|--|--|------|--|--|--|
| 0.9934 0.9891 0.9870 0.9859 0.9807 | 0.7146 1.0062 1.1216 1.1765 1.4172 | 1.4125 1.9976 2.2334 2.3424 2.8251 | | 0.9957 0.9915 0.9893 0.9882 0.9830 | 0.7163 1.0086 1.1243 1.1793 1.4205 | 0.8866 1.2538 1.4018 1.4703 1.7732 |
| Qstd slop intercept coefficie | t (b) = | 2.01182 -0.02516 0.99999 | 320 | Qa slope intercep coefficie | t (b) = | 1.25977 -0.01579 0.99999 |
| y axis = | SQRT[H2O(I | 2a/760)(298/ | Ta)] | y axis = | SQRT [H2O (1 | Ta/Pa)] |

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]

Qa = Va/Time

For subsequent flow rate calculations:

Qstd = $1/m\{ [SQRT (H2O(Pa/760) (298/Ta))] - b \}$ Qa = $1/m\{ [SQRT H2O(Ta/Pa)] - b \}$

| Type: | acturer/Brand: | | | Laser Du SIBATA | ıst Monii | tor | | | | |
|-------------------------------------|--|-------------|---------------------------------------|--------------------|-------------|---------------------------------------|--------------------|---------------------|--|--|
| Model | | | · · · · · · · · · · · · · · · · · · · | LD-3 | | | | | | |
| | nent No.: | | | A.005.07 | a | | | | | |
| | ivity Adjustment | Scale Setti | | 557 CPN | | | | | | |
| OCHSIL | ivity Adjustment | Ocaic Octi | <u>'</u> | 007 01 11 | | · · · · · · · · · · · · · · · · · · · | | | | |
| Opera | tor: | | AMMARA | Mike Shek (MSKM) | | | | | | |
| Standa | rd Equipment | | | | | | | | | |
| Equipr | ment: | Rupj | orecht & Pat | tashnick | TEOM® | | | | | |
| Venue | : | | erport (Pui Y | 'ing Seco | ndary Sc | chool) | | | | |
| Model | | _Serie | es 1400AB | | | | | | | |
| Serial | No: | Cont | | AB21989 | | | | | | |
| | | Sens | | 00C14365 | 59803 | K₀: <u>12500</u> | | | | |
| Last Calibration Date*: 4 June 2011 | | | | | | | | | | |
| *Remar | ks: Recommend | ed interval | for hardwar | e calibrat | tion is 1 y | /ear | | | | |
| Calibra | tion Result | | | | | | | | | |
| Seneit | ivity Adjustment | Scale Sett | ing /Rofore i | Calibratio | m). | <i>557</i> CP | ħΛ | | | |
| | ivity Adjustment | | • | | , | 557 CP | | | | |
| OCHSIL | avity Adjustment | Ocale Octi | ing (Aiter O | anoration, | | | | | | |
| Hour | Date | Ti | me | Amh | pient | Concentration ¹ | Total | Count/ | | |
| , 1001 | (dd-mm-yy) | | , , , , | Cond | | (mg/m ³) | Count ² | Minute ³ | | |
| | (22))) | | | Temp | R.H. | Y-axis | | X-axis | | |
| | | , | | (°C) | (%) | | | | | |
| 1 | 05-06-11 | 09:30 | - 10:30 | 31.3 | 67 | 0.04118 | 1540 | 25.67 | | |
| 2 | 05-06-11 | 10:30 | - 11:30 | 31.3 | 67 | 0.04354 | 1637 | 27.28 | | |
| 3 | 05-06-11 | 11:30 | - 12:30 | 31.3 | 67 | 0.04633 | 1730 | 28.83 | | |
| 4 | 05-06-11 | 12:30 | - 13:30 | 31.4 | 66 | 0.04271 | 1603 | 26.72 | | |
| Note: | 1. Monitoring of | lata was m | easured by | Rupprecl | ht & Pata | shnick TEOM® | | | | |
| | Total Count | | | | | | | | | |
| | 3. Count/minut | te was calc | ulated by (T | otal Cou | nt/60) | | | | | |
| D 17. | , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | | | | | | | |
| | ar Regression of | Y or X | 0.0040 | | | | , | | | |
| | (K-factor): | | 0.0016 | | | | | | | |
| Correi | ation coefficient: | | 0.9958 | | | | | | | |
| Validit | y of Calibration F | Record: | 4 June 20 |)12 | - | | | | | |
| Remark | (S) | | _ | | | | | | | |
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| | | | | | _ | | | | | |
| QC Re | eviewer: YW F | - ung | Signa | ture: 🖖 | $\sqrt{}$ | Date | e: <u>8 June</u> | 2011 | | |
| | | | | | | | | | | |

| Type: | | | | Laser Di | ist Mon | itor | | |
|-----------|-------------------------------------|---|--------------------------|------------|-----------------|-----------------------------|--------------------|-------------------------------|
| Manufa | cturer/Brand: | | | SIBATA | | | | |
| Model N | Vo.: | | • | LD-3 | | | * | |
| | ent No.: | | **** | A.005.08 | | | | |
| Sensitiv | vity Adjustment | Scale Setting | g: _ | 702 CP | VI | | | |
| Operato | or: | · | | Mike She | k (MSK | (M) | • | |
| Standard | d Equipment | | | | | | | |
| | | _ | | | | | | |
| Equipm | | *************************************** | | tashnick | | | · | |
| Venue: | | | | Ying Seco | ondary S | School) | | |
| Model N | | | 1400AB | 0400400 | 00000 | | | |
| Serial N | 10: | Contro | | 0AB2198 | | V . 400 | 200 | |
| Look Co | libration Data*: | Senso | | 00C1436 | 59803 | K _o : <u>125</u> | 000 | |
| Last Ca | Last Calibration Date*: 4 June 2011 | | | | | | | |
| *Remark | s: Recommend | ed interval fo | or h <mark>ardw</mark> a | re calibra | tion is 1 | year | | |
| Calibrati | on Result | F - | • | | , | | | |
| | | _, | | | | | | www. |
| | ity Adjustment | | | | | | CPM | |
| Sensitiv | ity Adjustment | Scale Setting | g (After C | alibration |): | 702 | CPM | |
| Hour | Date | Tim | | Amb | iont | Concentration ¹ | Total | (C |
| noui | (dd-mm-yy) | 1 11 1 1 | e | Cond | | (mg/m ³) | Count ² | Count/ Minute ³ |
| | (uu-mm-yy) | | | Temp | R.H. | Y-axis | Count | X-axis |
| | | | | (°C) | (%) | I-axis | | A-axis |
| 1 | 02-07-1 | 09:00 - | 10:00 | 31.1 | 70 | 0.04313 | 1607 | 26.78 |
| 2 | 02-07-11 | 10:00 - | 11:00 | 31.1 | 70 | 0.04137 | 1550 | 25.83 |
| 3 , | 02-07-11 | 11:00 - | 12:00 | 31.2 | 71 | 0.04552 | 1713 | 28.55 |
| 4 | 02-07-11 | 12:00 - | 13:00 | 31.2 | 71 | 0.04736 | 1771 | 29.51 |
| Note: | | | | | | tashnick TEOM® | | |
| | 2. Total Count | | | | | | | |
| | 3. Count/minut | te was calcul | ated by (| Total Cou | int/60) | | | |
| Rylinea | r Regression of | YorX | | | | | | |
| | K-factor): | | 0.0016 | | | | | |
| | tion coefficient: | | 0.9949 | | | | | |
| | of Calibration F | - | 1 July 20 | 12 | | | | |
| | | | | | | • | | |
| Remarks | : | | | | • | | | |
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| | | , | | ******* | | | | · |
| | * | | | | Μ | | | |
| QC Rev | viewer: YW I | ≖ипg | Signa | ature: | v_{\parallel} | ' | Date: 4 | July 2011 |

| Type: | facturer/Brand: | | Laser Du SIBATA | st Monit | for | | | | |
|---------|--|------------|--------------------|------------------|-------------|--|--------------------|---|--|
| Model | | | _ | LD-3 | | | | | |
| | ment No.: | | | A.005.09 | a | <u> </u> | | | |
| | tivity Adjustment | Scale Set | | 797 CPN | | | | | |
| Opera | itor: | | | Mike Shek (MSKM) | | | | | |
| Standa | rd Equipment | | | | | Annual Control of the | | | |
| Equip | ment: | Rup | precht & Pat | ashnick : | TEOM® | | | | |
| Venue | | | erport (Pui Y | | | chool) | | | |
| Model | • | | es 1400AB | | | | | | |
| Serial | | Con | | AB21989 | 99803 | | | | |
| Ochai | 140. | Sen | | OC14365 | | K _o : 12500 | | nerve e e e e e e e e e e e e e e e e e e | |
| Last C | Last Calibration Date*: 4 June 2011 | | | | | | | | |
| *Remar | ks: Recommend | ed interva | l for hardwar | e calibrat | ion is 1 y | /ear | | | |
| Calibra | tion Result | | | | | | | | |
| Sensif | tivity Adjustment | Scale Set | ting (Before (| Calibratio | n): | <i>7</i> 97 CF | ·Μ | | |
| | tivity Adjustment | | | | | CF | M | | |
| Hour | Hour Date Time | | ime | | pient | Concentration 1 | Total | Count/ | |
| | (dd-mm-yy) | | | | dition | (mg/m³) | Count ² | Minute ³ | |
| | | | | Temp (°C) | R.H. (%) | Y-axis | | X-axis | |
| 1 | 05-06-11 | 13:30 | - 14:30 | 31.4 | 66 | 0.04416 | 1758 | 29.30 | |
| 2 | 05-06-11 | 14:30 | - 15:30 | 31.5 | 66 | 0.04752 | 1889 | 31.48 | |
| 3 | 05-06-11 | 15:30 | - 16:30 | 31.5 | 66 | 0.04371 | 1748 | 29.13 | |
| 4 | 05-06-11 | 16:30 | - 17:30 | 31.5 | 67 | 0.04543 | 1808 | 30.13 | |
| Note: | Monitoring of 2. Total Count Count/minut | was logge | ed by Laser D | Dust Mon | itor | ashnick TEOM® | | | |
| By Line | ar Regression of | Y or X | | | | | | | |
| | (K-factor): | | 0.0015 | | | | | | |
| Correl | lation coefficient: | | 0.9953 | | | | | | |
| Validit | y of Calibration F | Record: | 4 June 20 | 12 | | | | • | |
| Remark | (S: | | | | | | | | |
| | | | | - | | | | | |
| | | | | | | | | | |
| QC R | eviewer: <u>YW F</u> | -ung | Signa | ture: | | Date | e: 8Jun | e 2011 | |

| Type: | | | _1 | Laser Dust Monitor | | | | | |
|---------|--|--------------------------|---|--------------------|-------------|----------------------------|---|--------|--|
| Manuf | acturer/Brand: | | | SIBATA | | | | | |
| Model | No.: | | | LD-3 | | | | | |
| Equipr | nent No.: | | *************************************** | 4.005.11 | | | | | |
| Sensit | ivity Adjustment | Scale Settin | ng: | 799 CPM | | | | | |
| Opera | tor: | | | Mike She | k (MSKN | 1) | | | |
| Standaı | rd Equipment | | | | | | | | |
| Equipr | nent: | Rupe | recht & Pat | ashnick ' | TEOM® | | | | |
| Venue | | | rport (Pui Y | | ~~~~~ | :hool) | | | |
| Model | No.: | v | s 1400AB | | | ··· | | | |
| Serial | No: | Conti | ~~~~ | AB21989 | 9803 | | | - | |
| | | Sens | *************************************** | OC14365 | | K _o : 12500 | | | |
| Last C | alibration Date*: | | ne 2011 | | | | | | |
| *Remar | ks: Recommend | ed interval | for hardwar | e calibra | tion is 1 y | /ear | | | |
| Calibra | tion Result | | | | | | *************************************** | | |
| | | n 1 n w | 'D f | O 10 12 | | 700 05 | 28.4 | | |
| | ivity Adjustment | | | | | 799 CF | | | |
| Sensit | ivity Adjustment | Scale Setti | ing (Aπer Ca | alibration |): | CF | 11/1 | | |
| Hour | Date | Ti | me | Aml | pient | Concentration ¹ | Total | Count | |
| 11001 | (dd-mm-yy) | | | 1 | dition | (mg/m ³) | Count ² | Minute | |
| | (dd-iiiii-yy) | | | Temp | R.H. | Y-axis | | X-axis | |
| | | | • | (°C) | (%) | | | | |
| 1 | 02-07-11 | 09:30 | - 10:30 | 31.1 | 70 | 0.04305 | 1718 | 28.63 | |
| 2 | 02-07-11 | 10:30 | - 11:30 | 31.1 | 71 | 0.04257 | 1703 | 28.38 | |
| 3 | 02-07-11 | 11:30 | - 12:30 | 31.2 | 71 | 0.04424 | 1763 | 29.38 | |
| 4 | 02-07-11 | 12:30 | - 13:30 | 31.2 | 71 | 0.04632 | 1855 | 30.92 | |
| Slope | 2. Total Count 3. Count/minu ar Regression of (K-factor); ation coefficient: | was logge te was calc | d by Laser I | Dust Mor | itor | ashnick TEOM [®] | | | |
| | y of Calibration I | | 1 July 20 | 12 | | | | | |
| Remark | (S: | | | | | | - amuvii | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 0C P | eviewer: YW | Fung | Signa | iture: | n, | Dat | te: 4 July | , 2011 | |
| OLO IV | | , जारज | | | | | .coury | | |

| Type. | | | | Laser Du | ıst Moni | tor | | | |
|--|--|----------------|-------------|-------------------|-------------|---|--------------------|---------------------|--|
| Model | facturer/Brand: | | _ | SIBATA LD-3B | | · | | | |
| | ment No.: | | _ | LD-3B A.005.12 | | | | | |
| | tivity Adjustment | Scale Setting | _ | 805 CPI | | | | | |
| Opera | ator: | | | Mike Shek (MSKM) | | | | | |
| Standa | rd Equipment | | | | | | | | |
| | | 4.000 | - | | | | | | |
| Equip | | | echt & Pa | | | | | <u>_</u> | |
| Venue | | | oort (Pui \ | ing Seco | ndary Sc | chool) | | | |
| Model | | | 1400AB | | 2000 | | | | |
| Serial | No: | Contro | | DAB21989 | | 1/ 40500 | | | |
| Sensor: <u>1200C143659803</u> K _o : <u>12500</u> Last Calibration Date*: 4 June 2011 | | | | | | | | | |
| Last C | Calibration Date*: | 4 June | 2011 | | | | | | |
| *Remar | ks: Recommend | ed interval fo | or hardwar | e calibra | tion is 1 y | /ear | | | |
| Calibra | tion Result | | | | | | **** | | |
| Canbra | uon Kesuk | | | | | | | | |
| | tivity Adjustment | | | | | 805 CF 805 CF | | | |
| Sensi | tivity Adjustment | Scale Setting | g (After C | anbration |): | 805 CF | 'IVI | | |
| Hour | Hour Date Time | | e | 1 | pient | Concentration | Total | Count/ | |
| | (dd-mm-yy) | | | | dition | (mg/m ³) | Count ² | Minute ³ | |
| - | | | | Temp (°C) | R.H. (%) | Y-axis | | X-axis | |
| 1 | 02-07-11 | 09:30 - | 10:30 | 31.1 | 70 | 0.04305 | 1843 | 30.72 | |
| 2 | 02-07-11 | 10:30 - | 11:30 | 31.1 | 71 | 0.04257 | 1826 | 30.43 | |
| 3 | 02-07-11 | 11:30 - | 12:30 | 31.2 | 71 | 0.04424 | 1893 | 31.55 | |
| 4 | 02-07-11 | 12:30 - | 13:30 | 31.2 | 71 | 0.04632 | 1994 | 33.23 | |
| Note: | Monitoring of 2. Total Count Count/minut | was logged | by Laser I | Dust Mon | itor | shnick TEOM [®] | | | |
| | ar Regression of | Y or X | | | | | | | |
| | (K-factor): | _ | 0.0014 | | | | | | |
| Correl | lation coefficient: | سب | 0.9947 | | | | | | |
| Validit | ty of Calibration F | Record: | 1 July 20 | 12 | | | | | |
| Remark | (e: | | | | | | | | |
| Cinair | | | | | | | | | |
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| | | | • | | | - MAN | | | |
| | | | | | 1/ | | | | |
| QC R | eviewer: YW F | -una | Signa | ture: | 1 | Date | e: 4 July | 2011 | |

| Туре: | | | Las | ser Du | st Monit | or | | | |
|-------------------------------------|-------------------------------|---|----------|---------|---------------------------------------|---|--------------------|---------------------|--|
| | acturer/Brand: | | SIB | BATA | | | | | |
| Model | No.: | | LD- | -3B | | | | | |
| Equipr | ment No.: | | A.0 | 05.13a | | : | | | |
| Sensit | ivity Adjustment | Scale Setting: | 643 | CPN | | *************************************** | | | |
| Opera | tor: | | _Mik | e Shel | (MSKN | 0 | | | |
| Standa | rd Equipment | | | | | | | | |
| | | - | | • | <i>a</i> . | | | | |
| Equipr | | Rupprecht | | | | | | | |
| Venue | | Cyberport | | , Secol | ndary Sc | hool) | VIII. | **** | |
| Model | | Series 140 | | | 0000 | | | | |
| Serial | No: | Control: | | | | | | | |
| | | Sensor: | W | 14365 | 9803 | K _o : <u>12500</u> | | | |
| Last Calibration Date*: 4 June 2011 | | | | | | | | | |
| *Remar | ks: Recommend | ed interval for ha | rdware c | alibrat | ion is 1 y | ear | | | |
| Calibra | tion Result | | | | | | | | |
| | | Scale Setting (Bo Scale Setting (A | | | | 643 CP | | | |
| Hour | Date | Time | | Amb | ient | Concentration ¹ | Total | Count/ | |
| ,,,,,,, | (dd-mm-yy) | | | Cond | ition | (mg/m ³) | Count ² | Minute ³ | |
| | (| | T | emp | R.H. | Y-axis | | X-axis | |
| | | | | (°C) | (%) | | | | |
| 1 | 05-06-11 | 11:00 - 1 | 2:00 ; | 31.4 | 67 | 0.04513 | 1933 | 32.21 | |
| 2 | 05-06-11 | 12:00 - 1. | | 31.4 | 67 | 0.04392 | 1833 | 31.38 | |
| 3 | 05-06-11 | | | 31.5 | 66 | 0.04751 | 2042 | 34.03 | |
| 4 | 05-06-11 | | | 31.5 | 66 | 0.04476 | 1918 | 31.97 | |
| Note: | Total Count | data was measur was logged by L te was calculated | aser Dus | st Moni | tor | ashnick leom [®] | | | |
| | (K-factor): | 0.00 |)14 | | | | | | |
| | lation coefficient: | | | | | | | | |
| Validit | y of Calibration I | Record: 4 Ju | ıne 2012 | | reecon front them to the construction | | | | |
| Remark | (S: | - | | | * | | | | |
| | | | | | (1)/ | | | | |
| OC R | eviewer: YW i | Funa | Signatur | e: | 1 | Date | e: 8 June | e 2011 | |



G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. 香港黃竹坑道37號利達中心地下,9樓,12樓,13樓及20樓 E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

11CA0711 01-02

Page

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Item tested

Description:

Sound Level Meter (Type 1)

Microphone

B&K

Manufacturer: Type/Model No.: B & K

Serial/Equipment No .:

2238

4188

Adaptors used:

2255680 / N.009.01

2250447

Item submitted by

Customer Name:

AECOM ASIA CO., LTD.

Address of Customer:

Request No.: Date of receipt:

11-Jul-2011

Date of test:

12-Jul-2011

Reference equipment used in the calibration

Description:

Model:

Serial No.

Expiry Date:

Traceable to:

Multi function sound calibrator Signal generator

B&K 4226 DS 360

2288444 33873

09-May-2012 30-May-2012 CIGISMEC CEPREI

Signal generator

DS 360

61227

30-May-2012

CEPREI

Ambient conditions

Temperature:

(22 ± 1) °C

Relative humidity:

(55 ± 5) %

Air pressure:

(995 ± 5) hPa

Test specifications

The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

The electrical tests were performed using an electrical signal substituted for the microphone which was removed and 2, replaced by an equivalent capacitance within a tolerance of ±20%.

The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference 3, between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

n Min/Feng Jun Qi

Actual Measurement data are documented on worksheets.

Approved Signatory:

The results reported in this certificate refer to the condition of the instrument on the date of calibration and Comments: carry no implication regarding the long-term stability of the instrument.

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Form No CARP152-1/Issue 1/Rev.C/01/02/2007



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CERTIFICATE OF CALIBRATION

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11CA0711 01-02

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1. Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

| Test: | Subtest: | Status: | Uncertanity (dB) / Cover | age Factor |
|-------------------------|--|---------|--------------------------|------------|
| | | _ | | |
| Self-generated noise | Α | Pass | 0.3 | |
| | С | Pass | | 2.1 |
| | Lin | Pass | 115 | 2.2 |
| Linearity range for Leq | At reference range, Step 5 dB at 4 kHz | Pass | 0.3 | |
| | Reference SPL on all other ranges | Pass. | 0.3 | |
| | 2 dB below upper limit of each range | Pass | 0.3 | |
| | 2 dB above lower limit of each range | Pass | 0.3 | |
| Linearity range for SPL | At reference range, Step 5 dB at 4 kHz | Pass | 0.3 | |
| Frequency weightings | A | Pass | 0.3 | |
| | С | Pass | 0.3 | |
| | Lin. | Pass | 0.3 | |
| Time weightings | Single Burst Fast | Pass | 0.3 | |
| 5 5 | Single Burst Slow | Pass | 0.3 | |
| Peak response | Single 100µs rectangular pulse | Pass | 0.3 | |
| R.M.S. accuracy | Crest factor of 3 | Pass | 0.3 | |
| Time weighting I | Single burst 5 ms at 2000 Hz | Pass | 0.3 | |
| 5 0 | Repeated at frequency of 100 Hz | Pass | 0.3 | |
| Time averaging | 1 ms burst duty factor 1/10 ³ at 4kHz | Pass | 0.3 | |
| | 1 ms burst duty factor 1/104 at 4kHz | Pass | 0.3 | |
| Pulse range | Single burst 10 ms at 4 kHz | Pass | 0.4 | |
| Sound exposure level | Single burst 10 ms at 4 kHz | Pass | 0.4 | |
| Overload indication | SPL | Pass | 0.3 | |
| | Leq. | Pass | 0.4 | |
| | | | | |

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

| Test: | Subtest | Status | Uncertanity (dB) / Coverage Factor |
|-------------------|------------------------|--------|------------------------------------|
| Acoustic response | Weighting A at 125 Hz | Pass | 0.3 |
| | Weighting A at 8000 Hz | Pass | 0.5 |

3, Response to associated sound calibrator

N/A

The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date:

End

Fung Chi Yip 12-Jul-2011

Checked by:

Chan Chun Lam

e: 13-Jul-2011

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No.CARP152-2/Issue 1/Rev.C/01/02/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

11CA0830 02

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of

Item tested

Description: Manufacturer: Sound Level Meter (Type 1)

Rion Co., Ltd.

N1 -31

Microphone Rion Co., Ltd. Preamo Rion Co., Ltd.

2

Serial/Equipment No.:

Type/Model No.:

00320528 / N.007.03A

UC-53A 90565

NH-19 75883

Adaptors used: Item submitted by

Customer Name:

AECOM ASIA CO., LTD.

Address of Customer:

Request No.:

Date of receipt:

30-Aug-2011

Date of test:

31-Aug-2011

Reference equipment used in the calibration

Description:

Multi function sound calibrator

Signal generator

Signal generator

Model: B&K 4226

DS 360

DS 360

2288444 33873 61227

Serial No.

Expiry Date:

09-May-2012 30-May-2012 30-May-2012 Traceable to: CIGISMEC CEPREL **CEPREI**

Ambient conditions

Temperature:

 (23 ± 1) °C $(60 \pm 5) \%$

Relative humidity: Air pressure:

 $(1000 \pm 5) hPa$

Test specifications

- The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 1, and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and 2. replaced by an equivalent capacitance within a tolerance of ±20%.
- The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference 3, between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

ng Jun Qi

31-Aug-2011 Date:

Company Chop:

The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

C Soils & Materials Engineering Co., Ltd.

Form No.CARP152-1/Issue 1/Rev.C/01/02/2007



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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

11CA0830 02

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2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

| Test: | Subtest: | Status: | Uncertanity (dB) / Coverage Fact |
|-------------------------|--|---------|----------------------------------|
| Self-generated noise | A | Pass | 0.3 |
| oon generaled nelec | Ċ | Pass | 0.8 2.1 |
| | Lin | Pass | 1.6 2.2 |
| Linearity range for Leq | At reference range , Step 5 dB at 4 kHz | Pass | 0.3 |
| | Reference SPL on all other ranges | Pass | 0.3 |
| | 2 dB below upper limit of each range | Pass | 0.3 |
| | 2 dB above lower limit of each range | Pass | 0.3 |
| Linearity range for SPL | At reference range, Step 5 dB at 4 kHz | Pass | 0.3 |
| Frequency weightings | Α | Pass | 0.3 |
| | C | Pass | 0.3 |
| | Lin | Pass | 0.3 |
| Time weightings | Single Burst Fast | Pass | 0.3 |
| | Single Burst Slow | Pass | 0.3 |
| Peak response | Single 100µs rectangular pulse | Pass | 0.3 |
| R.M.S. accuracy | Crest factor of 3 | Pass | 0.3 |
| Time weighting I | Single burst 5 ms at 2000 Hz | N/A | N/A |
| | Repeated at frequency of 100 Hz | N/A | N/A |
| Time averaging | 1 ms burst duty factor 1/103 at 4kHz | Pass | 0.3 |
| , in a consisting | 1 ms burst duty factor 1/10 ⁴ at 4kHz | Pass | 0.3 |
| Pulse range | Single burst 10 ms at 4 kHz | Pass. | 0.4 |
| Sound exposure level | Single burst 10 ms at 4 kHz | Pass | 0.4 |
| Overload indication | SPL | Pass | 0.3 |
| | Leg | Pass | 0.4 |

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

| Test: | Subtest | Status | Uncertanity (dB) / Coverage Factor |
|-------------------|------------------------|--------|------------------------------------|
| Acoustic response | Weighting A at 125 Hz | Pass | 0.3 |
| | Weighting A at 8000 Hz | Pass | 0.5 |

3, Response to associated sound calibrator

N/A

The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date:

Fung Chi Yip 31-Aug-2011

- End -

Checked by:

Date:

J.Q. reng / 31-Aud-20/11

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No.CARP152-2/Issue 1/Rev.C/01/02/2007



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CERTIFICATE OF CALIBRATION

Certificate No.:

11CA0711 01-05

Page:

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2

Item tested

Description:

Acoustical Calibrator (Class 1)

Manufacturer:

Rion Co., Ltd.

Type/Model No.:

NC-73

Serial/Equipment No.:

10307223 / N.004.08

Adaptors used:

_

Item submitted by

Curstomer:

AECOM ASIA CO. LTD.

Address of Customer:

_

Request No.: Date of receipt:

11-Jul-2011

Date of test:

13-Jul-2011

Reference equipment used in the calibration

| Description: | Model: | Serial No. | Expiry Date: | Traceable to: |
|-------------------------|----------|------------|--------------|---------------|
| Lab standard microphone | B&K 4180 | 2412857 | 18-May-2012 | SCL |
| Preamplifier | B&K 2673 | 2239857 | 14-Dec-2011 | CEPREI |
| Measuring amplifier | B&K 2610 | 2346941 | 15-Dec-2011 | CEPREI |
| Signal generator | DS 360 | 61227 | 30-May-2012 | CEPREI |
| Digital multi-meter | 34401A | US36087050 | 09-Dec-2011 | CEPREI |
| Audio analyzer | 8903B | GB41300350 | 27-May-2012 | CEPREI |
| Universal counter | 53132A | MY40003662 | 30-May-2012 | CEPREI |

Ambient conditions

Temperature:

22 ± 1 °C

Relative humidity: Air pressure:

55 ± 5 % 990 ± 5 hPa

Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- 3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Huang-Jian

ena Jun Qi

Approved Signatory:

Date:

42 1 4 264

Campan, Cha

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibratory no implication regarding the long-term stability of the instrument.

Soils & Materials Engineering Co., Ltd.

Form No.CARP156-1/Issue 1/Rev.D/01/03/2007



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Tel : (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

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Certificate No.:

11CA0711 01-05

Page:

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Measured Sound Pressure Level 1,

> The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

| | | | (Output level in dB re 20 μPa) |
|-----------|-----------------------|----------------------|--------------------------------|
| Frequency | Output Sound Pressure | Measured Output | Estimated |
| Shown | Level Setting | Sound Pressure Level | Uncertainty |
| Hz | dB | ₫B | dB |
| 1000 | 94.00 | 93.70 | 0.10 |

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz

STF = 0.002 dB

Estimated uncertainty

0:005 dB

Actual Output Frequency 3,

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz

Actual Frequency = 989.2 Hz

Estimated uncertainty

0.2 Hz

Coverage factor k = 2.2

Total Noise and Distortion 4,

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz

TND = 0.7%

Estimated uncertainty

0.7%

The uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95 %. A coverage factor of 2 is assumed unless explicitly stated.

End

Date:

ung Chi Yip

Checked by:

Chan Chun Larr 13-Jul-2011

13-Jul-2011

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

Soils & Materials Engineering Co., Ltd.

Form No.CARP156-2/Issue 1/Rev.C/01/05/2005



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:

MR MIKE SHEK

CLIENT:

AECOM ASIA COMPANY LIMITED

ADDRESS:

11/F, TOWER 2, GRAND CENTRAL PLAZA,

138 SHATIN RURAL COMMITTEE ROAD,

SHATIN, N.T., HONG KONG.

PROJECT:

WORK ORDER:

HK1204978

LABORATORY:

HONG KONG

DATE RECEIVED:

21/02/2012

DATE OF ISSUE:

23/02/2012

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test:

Conductivity, Dissolved Oxygen, pH, Salinity, Temperature and Turbidity

Description:

YSI Sonde

Brand Name:

YSI

Model No.: Serial No.:

YSI 6820 V2 12A010544

Equipment No.:

W.026.34

Date of Calibration: 21 February, 2012

NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

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Kwai Chung HONG KONG Phone:

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hongkong@alsglobal.com

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

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Page 1 of 3

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order:

HK1204978

Date of Issue:

23/02/2012

Client:

AECOM ASIA COMPANY LIMITED



Description:

YSI Sonde

Brand Name:

YSI

Model No.: Serial No.:

YSI 6820 V2

Equipment No.:

12A010544 W.026.34

Date of Calibration:

21 February, 2012

Date of next Calibration:

21 May, 2012

Parameters:

Conductivity

Method Ref: APHA (21st edition), 2510B

| Expected Reading (uS/cm) | Displayed Reading (uS/cm) | Tolerance (%) |
|--------------------------|----------------------------|----------------|
| 146.9 | 146 | -0.6 |
| 6667 | 6514 | -2.3 |
| 12890 | 12890 | 0.0 |
| 58670 | 57840 | -1.4 |
| | Tolerance Limit (%) | 10.0 |

Dissolved Oxygen

Method Ref: APHA (21st edition), 45000: G

| Expected Reading (mg/L) | Displayed Reading (mg/L) | Tolerance (mg/L) |
|-------------------------|--------------------------|------------------|
| | | |
| 6.32 | 6.44 | 0.12 |
| 7.16 | 7.12 | -0.04 |
| 8.13 | 8.12 | -0.01 |
| | | |
| | Tolerance Limit (±mg/L) | 0.20 |

pH Value

Method Ref: APHA 21st Ed. 4500H:B

| Method Rei. Al TIA 213t Ed. 43 | OOTTID | |
|--------------------------------|-----------------------------|---------------------|
| Expected Reading (pH Unit) | Displayed Reading (pH Unit) | Tolerance (pH unit) |
| 4.0 | 4.02 | 0.02 |
| 7.0 | 6.99 | -0.01 |
| 10.0 | 9.93 | -0.07 |
| | Tolerance Limit (±unit) | 0.2 |

Salinity

Method Ref: APHA (21st edition), 2520B

| Method Rel. Al TIA (213 | Cuition), 2320b | |
|-------------------------|------------------------|---------------------|
| Expected Reading (N | NTU) Displayed Reading | (NTU) Tolerance (%) |
| | | |
| 0 | 0.08 | |
| 10 | 10.32 | 3.2 |
| 20 | 20.44 | 2.2 |
| 30 | 30.93 | 3.1 |
| | 20 90 10 5 | 1 |
| | Tolerance Limit (| ±%) 10.0 |

Mr Chan Kwok Pai, Godfrey Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order:

HK1204978

Date of Issue:

23/02/2012

Client:

AECOM ASIA COMPANY LIMITED



Description:

YSI Sonde

Brand Name:

YSI

Model No.:

YSI 6820 V2

Serial No.:

12A010544

Equipment No.:

W.026.34

Date of Calibration:

21 February, 2012

Date of next Calibration:

21 May, 2012

Parameters:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

| Expected Reading (°C) | Displayed Reading (°C) | Tolerance (°C) |
|------------------------|------------------------|-----------------|
| 14.6 | 14.33 | -0.3 |
| 26.5 | 26.44 | -0.1 |
| 32.0 | 31.46 | -0.5 |
| 9 | Tolerance Limit (°C) | 2.0 |

Turbidity

Method Ref: APHA (21st edition), 2130B

| Expected Reading (NTU) | Displayed Reading (NTU) | Tolerance (%) |
|------------------------|-------------------------|---------------|
| | | |
| 0 | -0.2 | |
| 4 | 3.8 | -5.0 |
| 10 | 9.6 | -4.0 |
| 20 | 19.9 | -0.5 |
| 50 | 54.8 | 9.6 |
| 100 | 109.2 | 9.2 |
| | Tolerance Limit (+%) | 10.0 |

Mr Chan Kwok Fai, Godfrey

ALS Technichem (HK) Pty Ltd **ALS Environmental**



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:

MR MIKE SHEK

CLIENT:

AECOM ASIA COMPANY LIMITED

ADDRESS:

11/F, TOWER 2, GRAND CENTRAL PLAZA, 138 SHATIN RURAL COMMITTEE ROAD,

SHATIN, N.T.,

HONG KONG.

PROJECT:

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test:

Conductivity, Dissolved Oxygen, pH, Salinity, Temperature and Turbidity

Description: Brand Name: **YSI Sonde** YSI

Model No.:

YSI 6820 V2

Serial No.:

12A010545

Equipment No.:

Date of Calibration: 21 February, 2012

NOTES

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

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Mr Chan Kwok) Fai, Godfrey Laboratory - Hong Kong

WORK ORDER:

LABORATORY:

DATE RECEIVED:

DATE OF ISSUE:

HK1204979

HONG KONG

21/02/2012

22/02/2012

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order:

HK1204979

Date of Issue:

22/02/2012

Client:

AECOM ASIA COMPANY LIMITED



Description: Brand Name: YSI Sonde

YSI

Model No.:

YSI 6820 V2

Serial No.:

12A010545

Equipment No.:

Date of Calibration:

21 February, 2012

Date of next Calibration:

21 May, 2012

Parameters:

Conductivity

Method Ref: APHA (21st edition), 2510B

| Expected Reading (uS/cm) | Displayed Reading (uS/cm) | Tolerance (%) |
|--------------------------|----------------------------|----------------|
| 146.9 | 153 | 4.2 |
| 6667 | 6308 | -5.4 |
| 12890 | 12570 | -2.5 |
| 58670 | 56410 | -3.9 |
| | Tolerance Limit (%) | 10.0 |

Dissolved Oxygen

Method Ref: APHA (21st edition), 45000: G

| Expected Reading (mg/L) | Displayed Reading (mg/L) | Tolerance (mg/L) |
|-------------------------|--------------------------|------------------|
| 6.32 | 6.47 | 0.15 |
| 7.16 | 7.06 | -0.10 |
| 8.13 | 8.13 | 0.00 |
| | T-1 | 0.20 |
| | Tolerance Limit (±mg/L) | 0.20 |

pH Value

Method Ref: APHA 21st Ed. 4500H:B

| Expected Reading (pH Unit) | Displayed Reading (pH Unit) | Tolerance (pH unit) |
|----------------------------|-----------------------------|---------------------|
| 4.0 | 3.98 | -0.02 |
| 7.0 | 6.97 | -0.03 |
| 10.0 | 9.92 | -0.08 |
| | Tolerance Limit (±unit) | 0.2 |

Salinity

| Expected Reading (NTU) | Displayed Reading (NTU) | Tolerance (%) |
|------------------------|-------------------------|---------------|
| 0 | 0.08 | |
| 10 | 10.08 | 0.8 |
| 20 | 20.13 | 0.6 |
| 30 | 30.52 | 1.7 |
| | Tolerance Limit (±%) | 10.0 |

Mrchan Kwok Fai, Godfrey aboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd ALS Environmental

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YSI Sonde

Brand Name:

YSI

Model No.:

YSI 6820 V2

Serial No.:

12A010545

Equipment No.:

Date of Calibration:

21 February, 2012

Date of next Calibration:

21 May, 2012

Parameters:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

| Expected Reading (°C) | Displayed Reading (°C) | Tolerance (°C) |
|------------------------|-------------------------|-----------------|
| 14.6 | 15.01 | 0.4 |
| 26.2 | 26.28 | 0.1 |
| 31.0 | 30.52 | -0.5 |
| | Tolerance Limit (°C) | 2.0 |

Turbidity

Method Ref: APHA (21st edition), 2130B

| Expected Reading (NTU) | Displayed Reading (NTU) | Tolerance (%) |
|------------------------|-------------------------|---------------|
| 0 | 0.3 | |
| 0 | 0.2 | 10.0 |
| 4 | 3.6 | -10.0 |
| 10 | 9.6 | -4.0 |
| 20 | 18.7 | -6.5 |
| 50 | 50.1 | 0.2 |
| 100 | 96.9 | -3.1 |
| 6 | Tolerance Limit (±%) | 10.0 |

ALS Technichem (HK) Pty Ltd **ALS Environmental** Mr Chan Kwok Fail Godfrey Laboratory Manager - Hong Kong

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