

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-5394

Instrument Configuration.....	1
DC - Coefficient Output File.....	2
Temperature Calibration Sheet.....	3
Conductivity Calibration Sheet.....	4
Pressure Calibration Sheet.....	5

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SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-5394

Part Number: 90377.030

Description : NKE-PROVOR Configuration

Firmware Version: 2.0

Pressure Type: Kistler

Pressure Range: 2000 Dbar

Pressure Serial Number: 2139243

SBE 41 ALACE-CP-MO V 2.0 SERIAL NO. 5394
temperature: 16-aug-13
TA0 = -5.407648e-07
TA1 = 2.743899e-04
TA2 = -2.482631e-06
TA3 = 1.494099e-07
conductivity: 16-aug-13
G = -9.828341e-01
H = 1.402815e-01
I = -3.031163e-04
J = 4.186388e-05
CPCOR = -9.570001e-08
CTCOR = 3.250000e-06
WBOTC = -3.142231e-07
pressure S/N = 2139243, range = 2900 psia: 08-aug-13
PA0 = -1.182383e+00
PA1 = 4.743293e-01
PA2 = 4.006719e-07
PTCA0 = -8.424737e+01
PTCA1 = -4.903276e-01
PTCA2 = 1.607242e-02
PTCB0 = 1.016743e+02
PTCB1 = -7.989494e-03
PTCB2 = 0.000000e+00
PTHA0 = -9.831664e+01
PTHA1 = 4.122433e-02
PTHA2 = 1.078201e-06
POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 5394
CALIBRATION DATE: 16-Aug-13

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

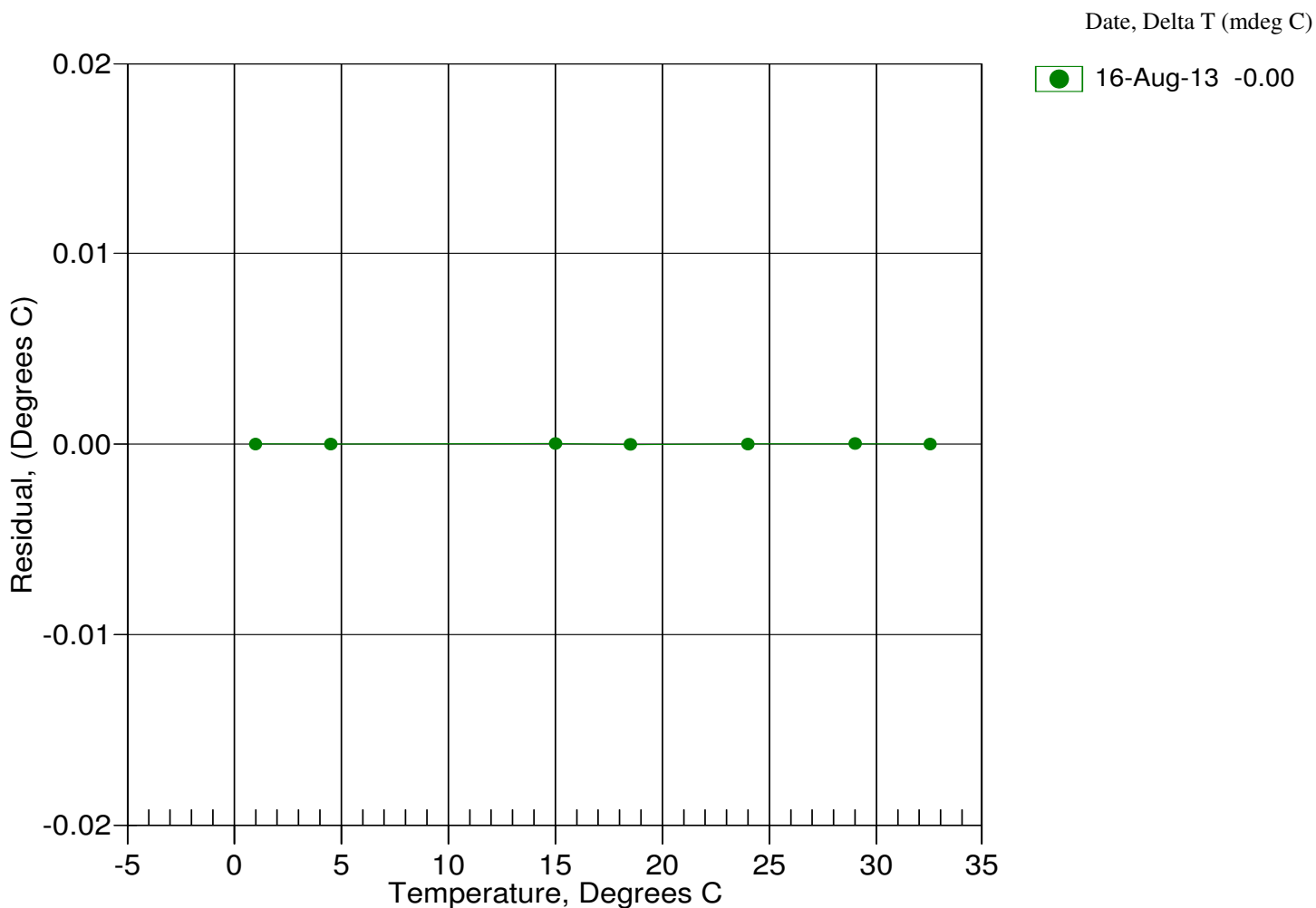
ITS-90 COEFFICIENTS

a0 = -5.407648e-007
a1 = 2.743899e-004
a2 = -2.482631e-006
a3 = 1.494099e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	805656.7	1.0000	0.0000
4.5000	687222.6	4.5000	-0.0000
15.0000	435035.0	15.0000	0.0000
18.5000	375889.6	18.5000	-0.0000
23.9940	300637.5	23.9940	0.0000
28.9995	246786.2	28.9995	0.0000
32.5000	215689.3	32.5000	-0.0000

Temperature ITS-90 = $1 / \{ a_0 + a_1[\ln(n)] + a_2[\ln^2(n)] + a_3[\ln^3(n)] \} - 273.15$ (°C)

Residual = instrument temperature - bath temperature



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CALIBRATION DATE: 16-Aug-13

SBE 41cp CONDUCTIVITY CALIBRATION DATA
PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

g = -9.828341e-001	CPcor = -9.5700e-008
h = 1.402815e-001	CTcor = 3.2500e-006
i = -3.031163e-004	WBOTC = -3.1422e-007
j = 4.186388e-005	

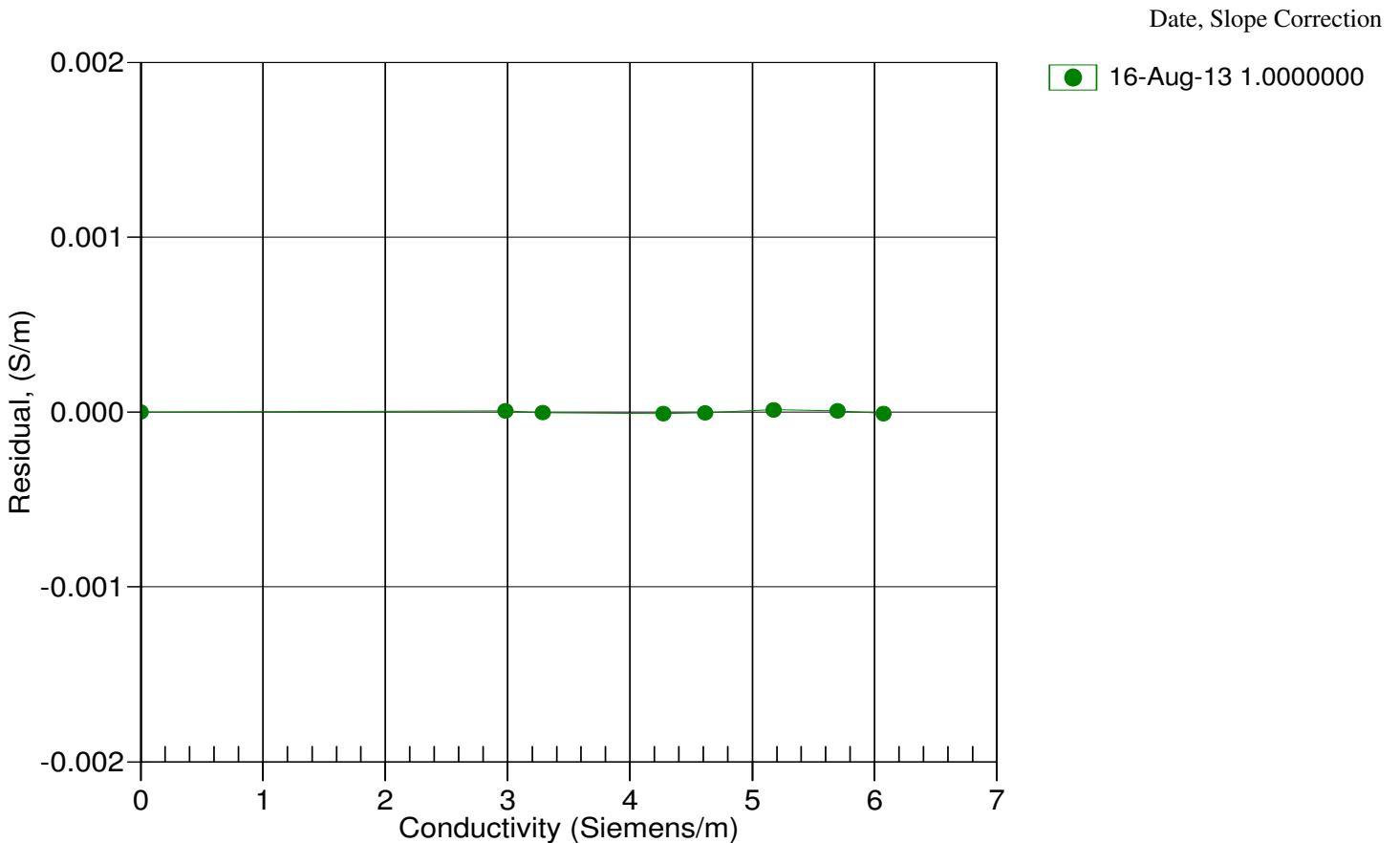
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2651.74	0.00000	0.00000
1.0000	34.8728	2.98033	5323.34	2.98034	0.00001
4.5000	34.8535	3.28789	5525.45	3.28788	-0.00000
15.0000	34.8115	4.27109	6126.23	4.27108	-0.00001
18.5000	34.8024	4.61672	6323.60	4.61672	-0.00000
23.9940	34.7923	5.17483	6629.59	5.17484	0.00001
28.9995	34.7866	5.69795	6903.73	5.69795	0.00001
32.5000	34.7831	6.07086	7092.47	6.07085	-0.00001

$$f = \text{INST FREQ} * \text{sqrt}(1.0 + \text{WBOTC} * t) / 1000.0$$

$$\text{Conductivity} = (g + hf^2 + if^3 + jf^4) / (1 + \delta t + \epsilon p) \text{ Siemens/meter}$$

t = temperature[°C]; p = pressure[decibars]; δ = CTcor; ϵ = CPcor;

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 5394
CALIBRATION DATE: 08-Aug-13

SBE 41cp PRESSURE CALIBRATION DATA
2900 psia S/N 2139243

COEFFICIENTS:

PA0 = -1.182383e+000	PTCA0 = -8.424737e+001
PA1 = 4.743293e-001	PTCA1 = -4.903276e-001
PA2 = 4.006719e-007	PTCA2 = 1.607242e-002
PTHA0 = -9.831664e+001	PTCB0 = 1.016743e+002
PTHA1 = 4.122433e-002	PTCB1 = -7.989494e-003
PTHA2 = 1.078201e-006	PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.61	-53.8	2768.5	14.47	-0.00
591.09	1158.1	2768.8	591.02	-0.00
1167.46	2367.2	2769.3	1167.42	-0.00
1743.97	3574.1	2769.1	1743.94	-0.00
2320.42	4778.2	2769.3	2320.29	-0.00
2896.67	5980.1	2769.4	2896.76	0.00
2320.47	4778.5	2768.3	2320.44	-0.00
1744.24	3574.8	2767.8	1744.28	0.00
1167.58	2367.7	2767.3	1167.66	0.00
590.75	1157.8	2766.6	590.89	0.00
14.60	-53.4	2765.8	14.68	0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2945.90	-48.04
29.00	2873.20	-49.54
23.99	2766.60	-51.43
18.50	2649.70	-52.63
15.00	2575.40	-52.70
4.50	2349.90	-50.90
1.00	2273.80	-49.40

TEMP (ITS90)	SPAN (mV)
-5.70	101.72
36.18	101.39

$$y = \text{thermistor output}; t = \text{PTHA0} + \text{PTHA1} * y + \text{PTHA2} * y^2$$

$$x = \text{pressure output} - \text{PTCA0} - \text{PTCA1} * t - \text{PTCA2} * t^2$$

$$n = x * \text{PTCB0} / (\text{PTCB0} + \text{PTCB1} * t + \text{PTCB2} * t^2)$$

$$\text{pressure (psia)} = \text{PA0} + \text{PA1} * n + \text{PA2} * n^2$$

Date, Avg Delta P %FS

08-Aug-13 -0.00

