

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-5399

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SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-5399

Part Number: 90377.030

Description : NKE-PROVOR Configuration

Firmware Version: 2.0

Pressure Type: Kistler

Pressure Range: 2000 Dbar

Pressure Serial Number: 2142633

SBE 41 ALACE-CP-MO V 2.0 SERIAL NO. 5399
temperature: 16-aug-13
TA0 = 3.702508e-05
TA1 = 2.804077e-04
TA2 = -2.942049e-06
TA3 = 1.651230e-07
conductivity: 16-aug-13
G = -9.741448e-01
H = 1.431513e-01
I = -3.003123e-04
J = 4.208354e-05
CPCOR = -9.570001e-08
CTCOR = 3.250000e-06
WBOTC = 1.275449e-07
pressure S/N = 2142633, range = 2900 psia: 09-aug-13
PA0 = 1.725498e+00
PA1 = 1.394486e-01
PA2 = 1.560714e-08
PTCA0 = -1.271390e+02
PTCA1 = -2.089055e-02
PTCA2 = 2.442171e-02
PTCB0 = 1.036145e+02
PTCB1 = -3.625231e-03
PTCB2 = 0.000000e+00
PTHA0 = -9.878261e+01
PTHA1 = 4.161193e-02
PTHA2 = 1.058233e-06
POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 5399
CALIBRATION DATE: 16-Aug-13

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

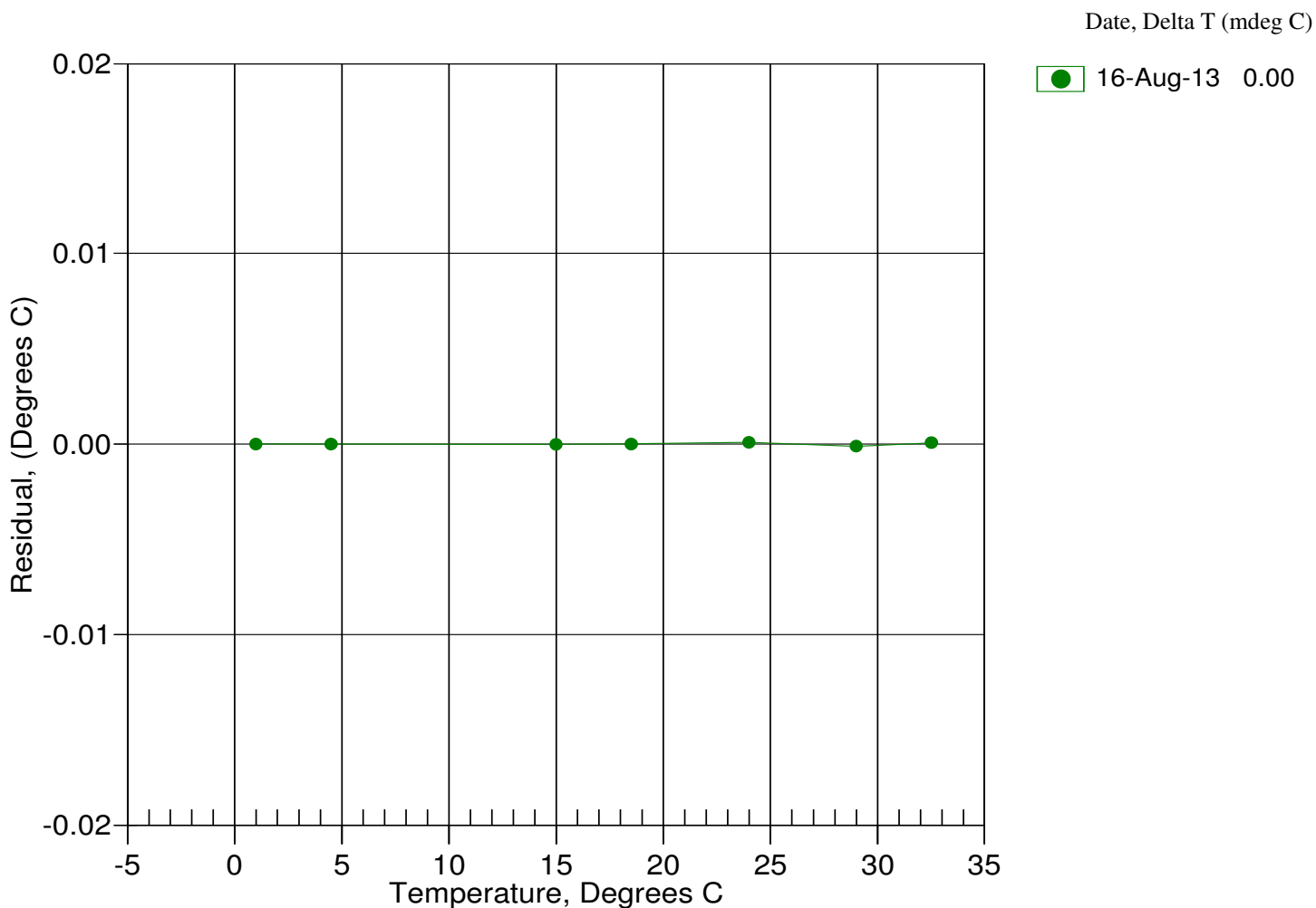
ITS-90 COEFFICIENTS

a0 = 3.702508e-005
a1 = 2.804077e-004
a2 = -2.942049e-006
a3 = 1.651230e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	624873.6	1.0000	0.0000
4.5000	533113.6	4.5000	-0.0000
15.0000	337646.8	15.0000	-0.0000
18.5000	291784.8	18.5000	0.0000
23.9940	233422.9	23.9941	0.0001
29.0000	191647.3	28.9999	-0.0001
32.5000	167523.3	32.5001	0.0001

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 = -9.741449e-001	CPcor = -9.5700e-008
h = 1.431513e-001	CTcor = 3.2500e-006
i = -3.003123e-004	WBOTC = 1.2754e-007
j = 4.208354e-005	

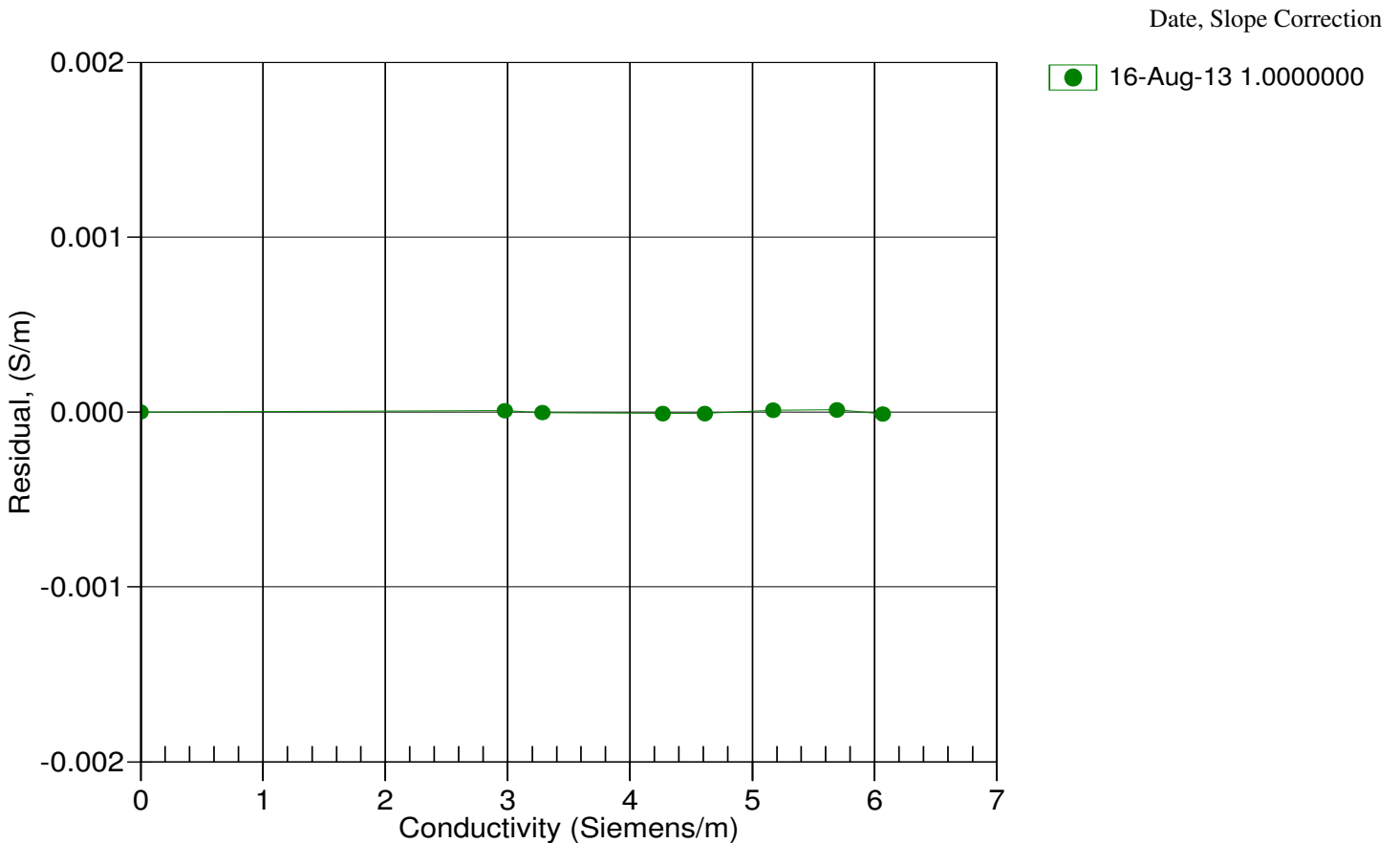
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2613.18	0.00000	0.00000
1.0000	34.8346	2.97738	5261.58	2.97739	0.00001
4.5000	34.8151	3.28462	5461.74	3.28462	-0.00000
15.0000	34.7731	4.26687	6056.70	4.26687	-0.00001
18.5000	34.7644	4.61223	6252.16	4.61222	-0.00001
23.9940	34.7549	5.16988	6555.20	5.16989	0.00001
29.0000	34.7502	5.69271	6826.76	5.69272	0.00001
32.5000	34.7485	6.06550	7013.76	6.06549	-0.00001

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

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

$$t = \text{temperature}[^{\circ}\text{C}]; p = \text{pressure}[\text{decibars}]; \delta = \text{CTcor}; \epsilon = \text{CPcor};$$

$$\text{Residual} = \text{instrument conductivity} - \text{bath conductivity}$$



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SENSOR SERIAL NUMBER: 5399
CALIBRATION DATE: 09-Aug-13

SBE 41cp PRESSURE CALIBRATION DATA
2900 psia S/N 2142633

COEFFICIENTS:

PA0 = 1.725498e+000	PTCA0 = -1.271390e+002
PA1 = 1.394486e-001	PTCA1 = -2.089055e-002
PA2 = 1.560714e-008	PTCA2 = 2.442171e-002
PTHA0 = -9.878261e+001	PTCB0 = 1.036145e+002
PTHA1 = 4.161193e-002	PTCB1 = -3.625231e-003
PTHA2 = 1.058233e-006	PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.56	-22.3	2734.8	14.63	0.00
591.16	4107.5	2736.2	591.26	0.00
1167.60	8232.8	2736.9	1167.80	0.01
1744.11	12353.7	2737.3	1744.25	0.00
2320.60	16470.7	2737.6	2320.69	0.00
2896.85	20582.0	2737.6	2896.87	0.00
2320.71	16469.7	2737.4	2320.55	-0.01
1744.35	12353.7	2736.8	1744.25	-0.00
1167.66	8230.9	2736.7	1167.53	-0.00
591.17	4105.4	2736.0	590.97	-0.01
14.56	-22.9	2738.4	14.52	-0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2935.80	-12.11
29.00	2862.40	-17.35
23.99	2757.10	-23.69
18.50	2641.20	-29.26
15.00	2566.80	-32.08
4.50	2342.50	-36.83
1.00	2267.20	-37.26

TEMP (ITS90)	SPAN (mV)
-6.49	103.64
36.80	103.48

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

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

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

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

