

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-5395

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SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-5395

Part Number: 90377.030

Description : NKE-PROVOR Configuration

Firmware Version: 2.0

Pressure Type: Kistler

Pressure Range: 2000 Dbar

Pressure Serial Number: 2139244

SBE 41 ALACE-CP-MO V 2.0 SERIAL NO. 5395
temperature: 15-aug-13
TA0 = 5.621679e-05
TA1 = 2.741451e-04
TA2 = -2.453272e-06
TA3 = 1.513769e-07
conductivity: 15-aug-13
G = -9.851994e-01
H = 1.423650e-01
I = -2.896359e-04
J = 4.109401e-05
CPCOR = -9.570001e-08
CTCOR = 3.250000e-06
WBOTC = -7.588981e-07
pressure S/N = 2139244, range = 2900 psia: 08-aug-13
PA0 = -5.856135e-02
PA1 = 4.761976e-01
PA2 = 3.222960e-07
PTCA0 = 4.498686e+01
PTCA1 = -3.973923e-01
PTCA2 = 1.626585e-02
PTCB0 = 1.021627e+02
PTCB1 = -8.082617e-03
PTCB2 = 0.000000e+00
PTHA0 = -9.736026e+01
PTHA1 = 4.037309e-02
PTHA2 = 1.309846e-06
POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 5395
CALIBRATION DATE: 15-Aug-13

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

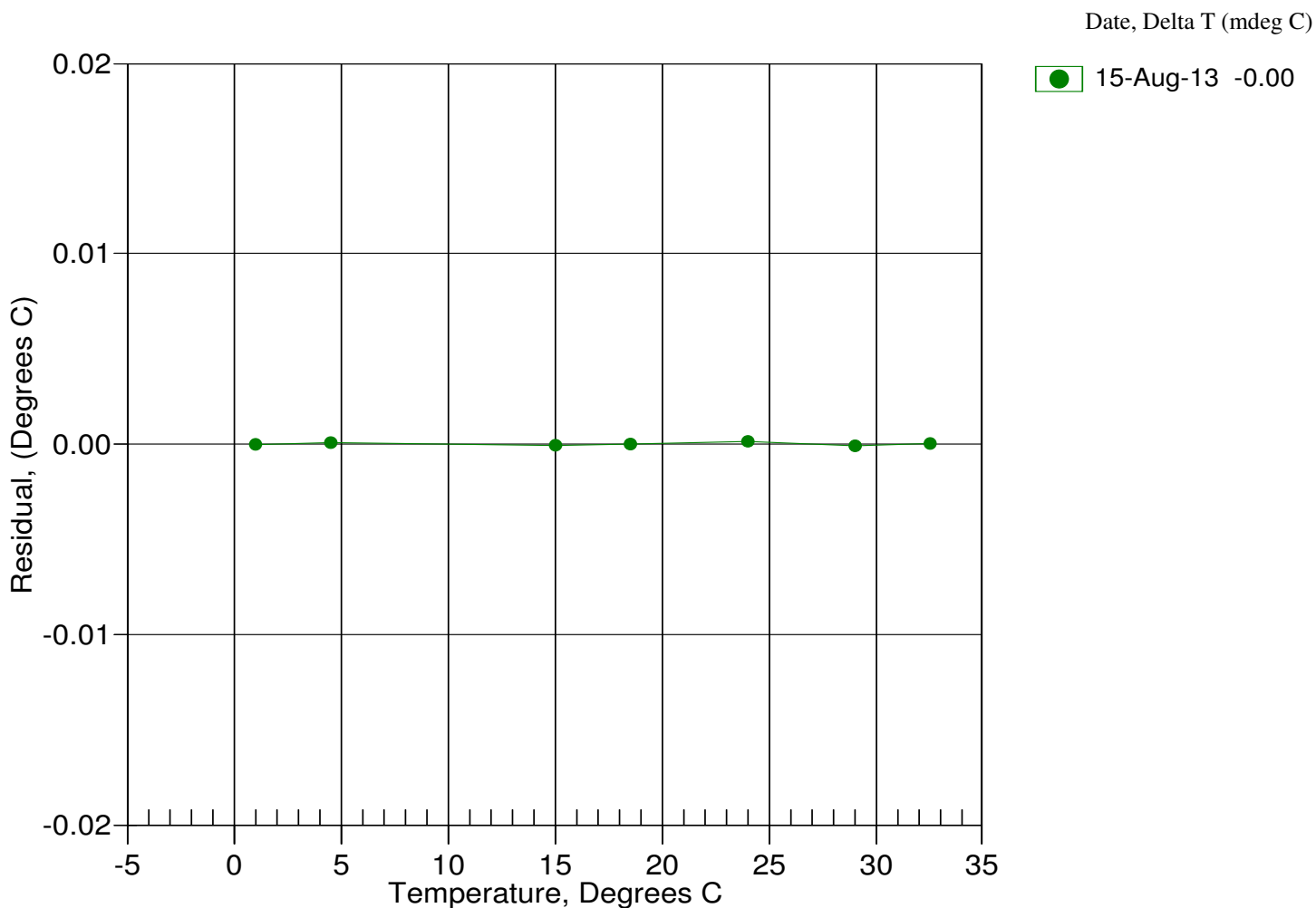
ITS-90 COEFFICIENTS

a0 = 5.621679e-005
a1 = 2.741451e-004
a2 = -2.453272e-006
a3 = 1.513769e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	646835.6	1.0000	-0.0000
4.5000	551755.5	4.5001	0.0001
15.0000	349296.7	14.9999	-0.0001
18.5000	301809.8	18.5000	-0.0000
23.9940	241391.0	23.9941	0.0001
29.0000	198152.6	28.9999	-0.0001
32.5000	173187.8	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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SENSOR SERIAL NUMBER: 5395
CALIBRATION DATE: 15-Aug-13

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

COEFFICIENTS:

g = -9.851994e-001	CPcor = -9.5700e-008
h = 1.423650e-001	CTcor = 3.2500e-006
i = -2.896359e-004	WBOTC = -7.5890e-007
j = 4.109401e-005	

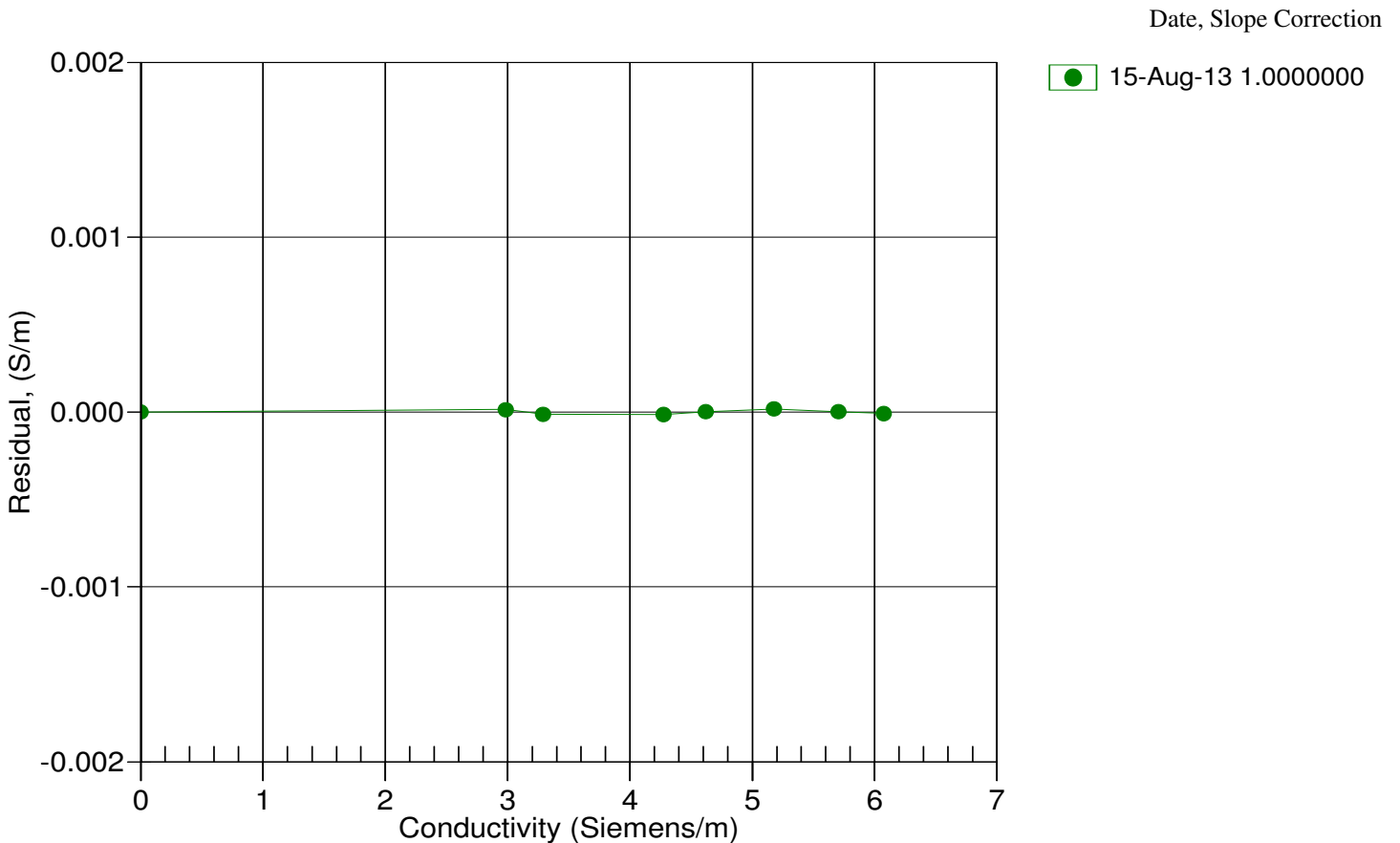
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2635.08	0.00000	0.00000
1.0000	34.9018	2.98258	5286.38	2.98259	0.00002
4.5000	34.8825	3.29035	5487.00	3.29034	-0.00001
15.0000	34.8402	4.27423	6083.40	4.27422	-0.00002
18.5000	34.8310	4.62011	6279.35	4.62011	0.00000
23.9940	34.8209	5.17861	6583.15	5.17863	0.00002
29.0000	34.8152	5.70216	6855.37	5.70216	0.00000
32.5000	34.8109	6.07515	7042.70	6.07515	-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: 5395
 CALIBRATION DATE: 08-Aug-13

SBE 41cp PRESSURE CALIBRATION DATA
 2900 psia S/N 2139244

COEFFICIENTS:

PA0 = -5.856135e-002	PTCA0 = 4.498686e+001
PA1 = 4.761976e-001	PTCA1 = -3.973923e-001
PA2 = 3.222960e-007	PTCA2 = 1.626585e-002
PTHA0 = -9.736026e+001	PTCB0 = 1.021627e+002
PTHA1 = 4.037309e-002	PTCB1 = -8.082617e-003
PTHA2 = 1.309846e-006	PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.61	75.4	2761.5	14.51	-0.00
591.09	1282.4	2761.5	590.88	-0.01
1167.46	2487.7	2761.8	1167.37	-0.00
1743.97	3691.2	2761.8	1743.94	-0.00
2320.42	4892.4	2762.0	2320.34	-0.00
2896.67	6091.5	2762.0	2896.67	-0.00
2320.47	4892.7	2761.2	2320.49	0.00
1744.24	3692.1	2760.4	1744.37	0.00
1167.58	2488.4	2759.8	1167.71	0.00
590.75	1282.2	2759.4	590.79	0.00
14.60	75.9	2759.0	14.77	0.01

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2936.80	80.54
29.00	2863.70	78.46
23.99	2758.70	76.12
18.50	2643.10	74.50
15.00	2569.10	74.01
4.50	2344.60	74.77
1.00	2269.20	75.95

TEMP (ITS90)	SPAN (mV)
-5.70	102.21
36.18	101.87

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

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

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

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

