

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-5567

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SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-5567

Part Number: 90499.014

Description : NKE-ARVOR Configuration

Firmware Version: 2.0

Pressure Type: Kistler

Pressure Range: 2000 Dbar

Pressure Serial Number: 2142662

SBE 41 ALACE-CP-MO V 2.0 SERIAL NO. 5567
temperature: 25-sep-13
TA0 = 7.072152e-05
TA1 = 2.698615e-04
TA2 = -2.142921e-06
TA3 = 1.427552e-07
conductivity: 25-sep-13
G = -9.753424e-01
H = 1.418024e-01
I = -3.607480e-04
J = 4.718220e-05
CPCOR = -9.570001e-08
CTCOR = 3.250000e-06
WBOTC = 2.536112e-07
pressure S/N = 2142662, range = 2900 psia: 17-sep-13
PA0 = 1.078350e-01
PA1 = 1.385010e-01
PA2 = 1.548409e-08
PTCA0 = -1.652826e+02
PTCA1 = -6.454234e-01
PTCA2 = 2.968491e-02
PTCB0 = 1.040830e+02
PTCB1 = -3.606066e-03
PTCB2 = 0.000000e+00
PTHA0 = -9.944633e+01
PTHA1 = 4.159907e-02
PTHA2 = 1.092126e-06
POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 5567
CALIBRATION DATE: 25-Sep-13

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

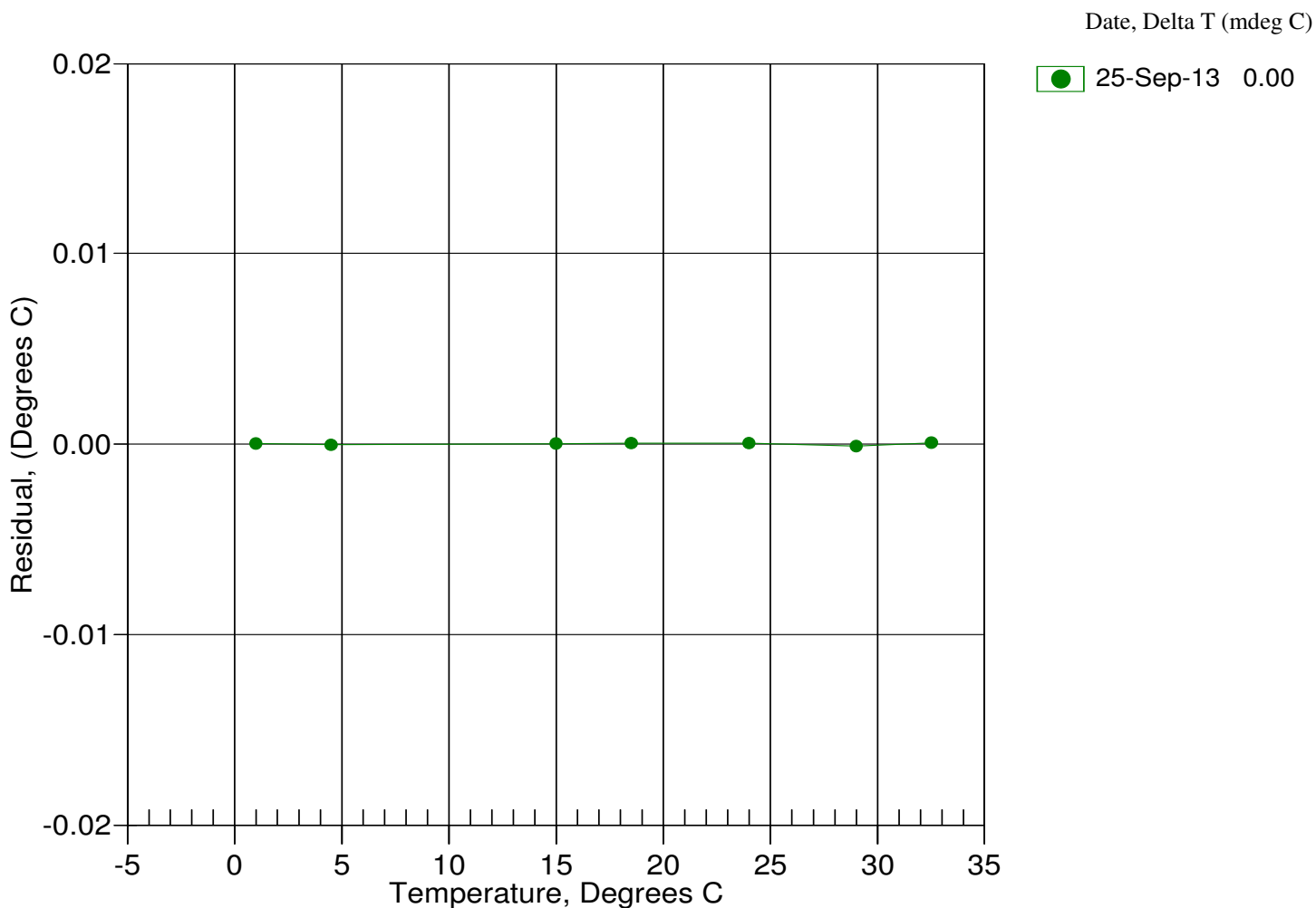
ITS-90 COEFFICIENTS

a0 = 7.072151e-005
a1 = 2.698615e-004
a2 = -2.142921e-006
a3 = 1.427552e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	664744.8	1.0000	0.0000
4.5000	566908.6	4.5000	-0.0000
15.0000	358656.4	15.0000	0.0000
18.5000	309834.2	18.5000	0.0000
23.9940	247732.6	23.9940	0.0000
29.0000	203300.6	28.9999	-0.0001
32.5000	177652.4	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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SENSOR SERIAL NUMBER: 5567
CALIBRATION DATE: 25-Sep-13

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

COEFFICIENTS:

g = -9.753424e-001	CPcor = -9.5700e-008
h = 1.418024e-001	CTcor = 3.2500e-006
i = -3.607480e-004	WBOTC = 2.5361e-007
j = 4.718220e-005	

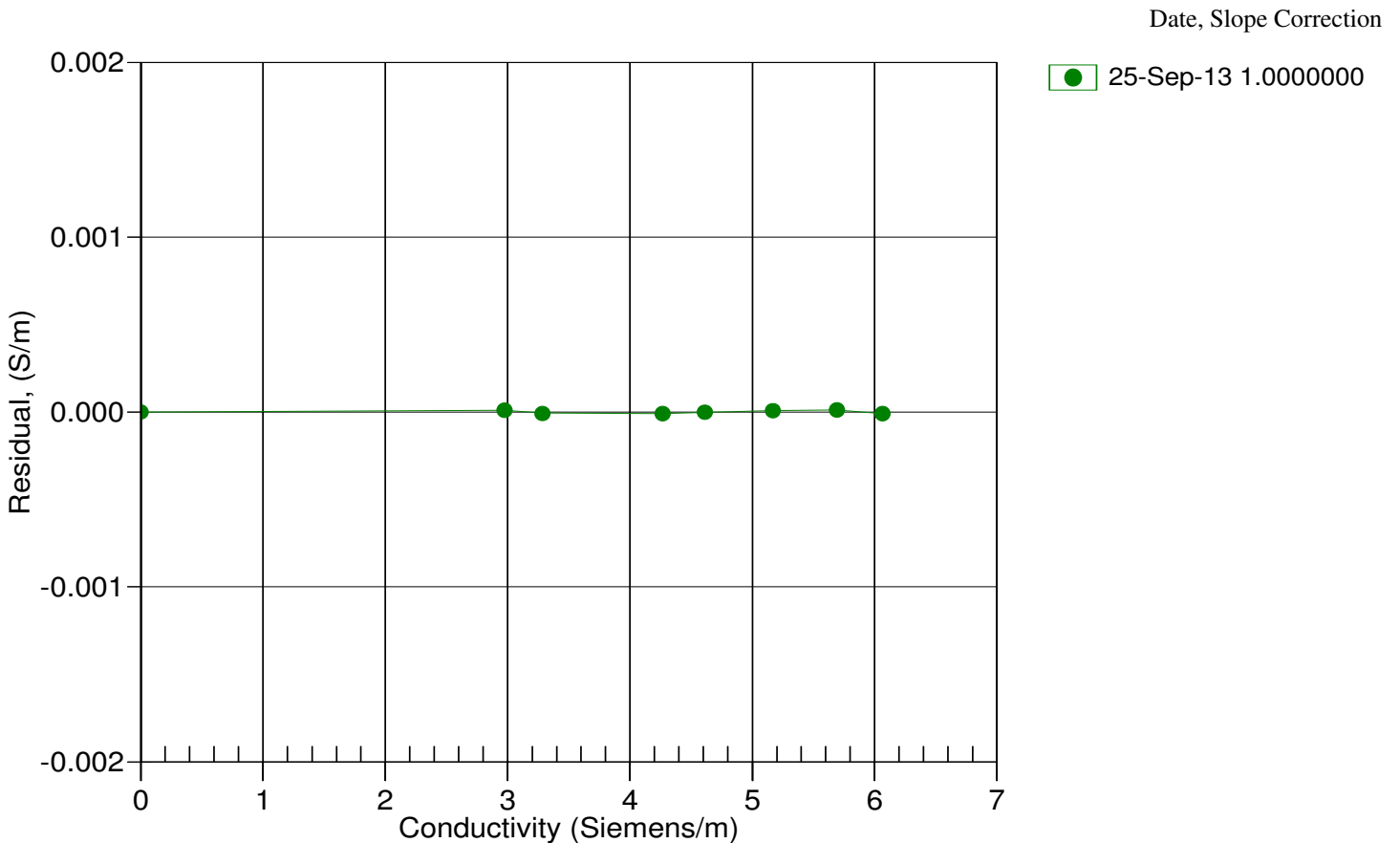
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2628.39	0.00000	0.00000
1.0000	34.8266	2.97676	5290.24	2.97677	0.00001
4.5000	34.8066	3.28390	5491.40	3.28389	-0.00001
15.0000	34.7637	4.26584	6089.28	4.26583	-0.00001
18.5000	34.7541	4.61101	6285.66	4.61101	-0.00000
23.9940	34.7436	5.16839	6590.08	5.16839	0.00001
29.0000	34.7375	5.69086	6862.82	5.69087	0.00001
32.5000	34.7344	6.06332	7050.57	6.06331	-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: 5567
 CALIBRATION DATE: 17-Sep-13

SBE 41cp PRESSURE CALIBRATION DATA
 2900 psia S/N 2142662

COEFFICIENTS:

PA0 = 1.078350e-001	PTCA0 = -1.652826e+002
PA1 = 1.385010e-001	PTCA1 = -6.454234e-001
PA2 = 1.548409e-008	PTCA2 = 2.968491e-002
PTHA0 = -9.944633e+001	PTCB0 = 1.040830e+002
PTHA1 = 4.159907e-002	PTCB1 = -3.606066e-003
PTHA2 = 1.092126e-006	PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.55	-60.1	2743.2	14.58	0.00
591.41	4099.9	2742.9	591.48	0.00
1168.10	8255.0	2742.9	1168.24	0.01
1744.94	12406.6	2743.2	1745.05	0.00
2321.72	16553.6	2742.9	2321.75	0.00
2898.27	20695.5	2742.9	2898.28	0.00
2321.82	16553.4	2741.9	2321.73	-0.00
1745.53	12409.5	2741.3	1745.46	-0.00
1168.36	8255.3	2740.5	1168.29	-0.00
591.45	4098.1	2739.5	591.25	-0.01
14.55	-60.4	2738.7	14.56	0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2944.20	-45.81
29.00	2871.30	-49.99
23.99	2766.50	-54.62
18.50	2651.10	-57.95
15.00	2576.60	-59.21
4.50	2353.20	-58.55
1.00	2278.50	-56.80

TEMP (ITS90)	SPAN (mV)
-5.72	104.10
36.34	103.95

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

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

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

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

