

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-4559

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SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-4559

Part Number: 90499.012

Description : NKE-ARVOR Configuration

Firmware Version: 2.0

Pressure Type: Kistler

Pressure Range: 2000 Dbar

Pressure Serial Number: 2103253

SBE 41 ALACE-CP-MO V 2.0 SERIAL NO. 4559
temperature: 27-apr-12
TA0 = -7.495841e-06
TA1 = 2.848578e-04
TA2 = -3.284252e-06
TA3 = 1.719982e-07
conductivity: 27-apr-12
G = -9.751385e-01
H = 1.485923e-01
I = -4.002799e-04
J = 5.231179e-05
CPCOR = -9.570001e-08
CTCOR = 3.250000e-06
WBOTC = -1.947077e-07
pressure S/N = 2103253, range = 2900 psia: 24-apr-12
PA0 = -1.607421e+00
PA1 = 1.398364e-01
PA2 = 1.583818e-08
PTCA0 = -1.392533e+02
PTCA1 = -1.038548e+00
PTCA2 = 2.347566e-02
PTCB0 = 1.031631e+02
PTCB1 = -3.946750e-03
PTCB2 = 0.000000e+00
PTHA0 = -9.766900e+01
PTHA1 = 4.093194e-02
PTHA2 = 9.855219e-07
POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 4559
CALIBRATION DATE: 27-Apr-12

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

a0 = -7.495841e-006

a1 = 2.848578e-004

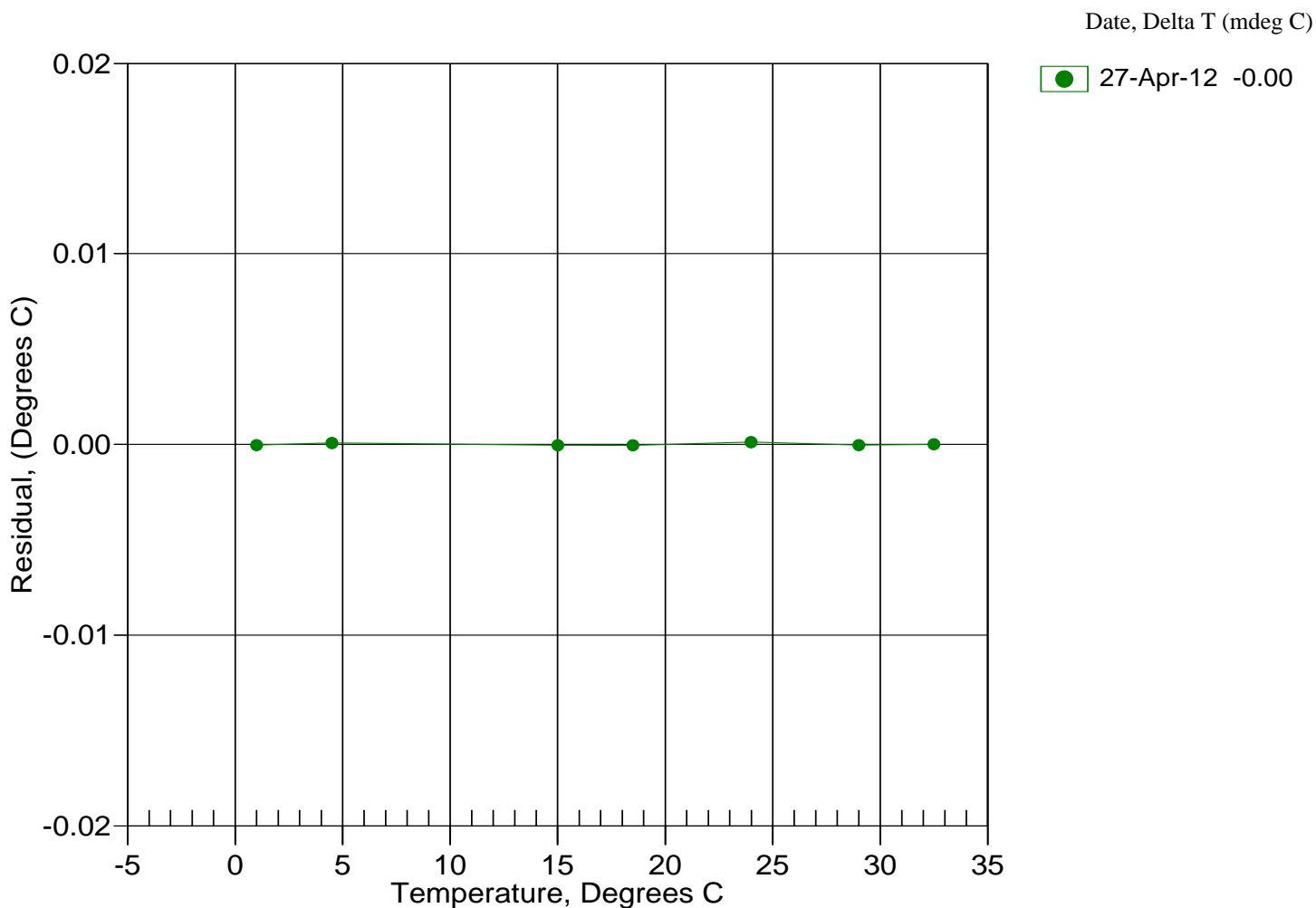
a2 = -3.284252e-006

a3 = 1.719982e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	692481.5	1.0000	-0.0000
4.5000	590705.4	4.5001	0.0001
15.0000	373973.6	15.0000	-0.0000
18.5000	323138.2	18.4999	-0.0001
23.9940	258457.5	23.9941	0.0001
29.0000	212169.2	29.0000	-0.0000
32.5000	185444.8	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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CALIBRATION DATE: 27-Apr-12

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

COEFFICIENTS:

g = -9.751385e-001	CPcor = -9.5700e-008
h = 1.485923e-001	CTcor = 3.2500e-006
i = -4.002799e-004	WBOTC = -1.9471e-007
j = 5.231179e-005	

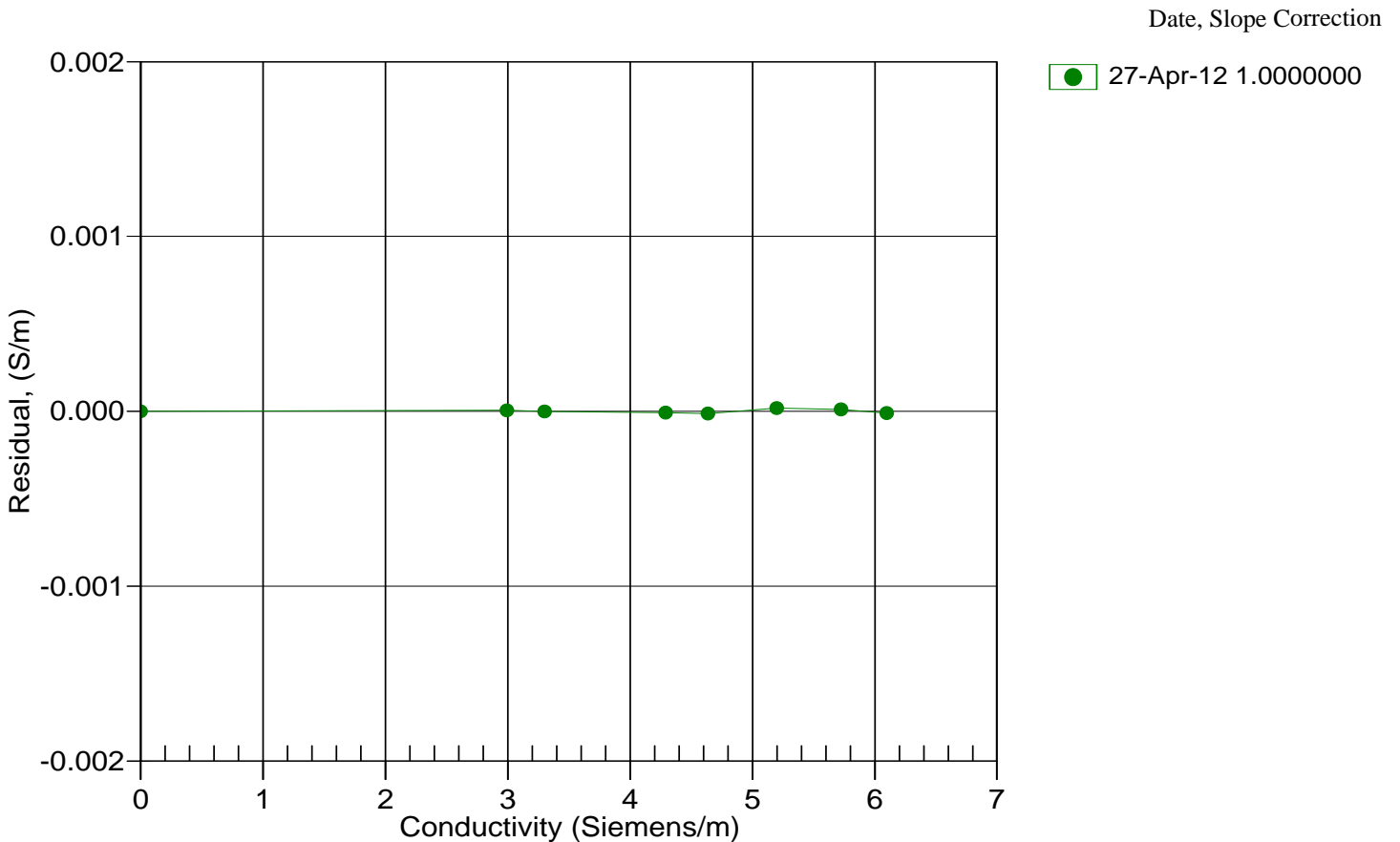
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2567.65	0.00000	0.00000
1.0000	35.0508	2.99409	5180.08	2.99410	0.00001
4.5000	35.0307	3.30295	5377.33	3.30295	-0.00000
15.0000	34.9881	4.29045	5963.56	4.29044	-0.00001
18.5000	34.9792	4.63764	6156.12	4.63762	-0.00001
23.9940	34.9694	5.19825	6454.63	5.19827	0.00002
29.0000	34.9643	5.72382	6722.07	5.72383	0.00001
32.5000	34.9619	6.09850	6906.18	6.09849	-0.00001

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

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

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

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 4559
CALIBRATION DATE: 24-Apr-12

SBE 41cp PRESSURE CALIBRATION DATA
2900 psia S/N 2103253

COEFFICIENTS:

PA0 = -1.607421e+000	PTCA0 = -1.392533e+002
PA1 = 1.398364e-001	PTCA1 = -1.038548e+000
PA2 = 1.583818e-008	PTCA2 = 2.347566e-002
PTHA0 = -9.766900e+001	PTCB0 = 1.031631e+002
PTHA1 = 4.093194e-002	PTCB1 = -3.946750e-003
PTHA2 = 9.855219e-007	PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.57	-34.6	2750.5	14.65	0.00
591.63	4086.6	2752.3	591.72	0.00
1168.71	8204.7	2753.5	1168.90	0.01
1745.73	12317.7	2754.3	1745.91	0.01
2322.78	16426.5	2755.3	2322.86	0.00
2899.63	20530.0	2756.0	2899.60	-0.00
2322.86	16425.9	2755.5	2322.78	-0.00
1746.01	12317.7	2755.0	1745.91	-0.00
1168.69	8202.0	2754.9	1168.53	-0.01
591.52	4083.5	2754.7	591.29	-0.01
14.57	-35.2	2754.0	14.56	-0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2967.80	-29.77
29.00	2893.30	-31.37
23.99	2785.80	-32.38
18.50	2666.70	-32.07
15.00	2590.80	-31.14
4.50	2361.80	-25.06
1.00	2284.90	-21.97

TEMP (ITS90)	SPAN (mV)
-4.34	103.18
36.07	103.02

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

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

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

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

