

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-4263

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SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-4263

Part Number: 90365.060

Description : APEX SBE 41CP Configuration

Firmware Version: 2.0

Pressure Type: Druck

Pressure Range: 2000 Dbar

Pressure Serial Number: 3469177

SBE 41CP UW V 2.0 SERIAL NO. 4263

temperature: 10-jan-12

TA0 = 4.438133e-05

TA1 = 2.767957e-04

TA2 = -2.713842e-06

TA3 = 1.580282e-07

conductivity: 10-jan-12

G = -9.740411e-01

H = 1.460383e-01

I = -1.920894e-04

J = 3.804807e-05

CPCOR = -9.570001e-08

CTCOR = 3.250000e-06

WBOTC = -2.578971e-08

pressure S/N = 3469177, range = 2900 psia: 04-jan-12

PA0 = 3.815212e-01

PA1 = 1.399357e-01

PA2 = -3.901253e-08

PTCA0 = 4.309951e+01

PTCA1 = 2.055383e-01

PTCA2 = -3.652180e-03

PTCB0 = 2.531513e+01

PTCB1 = -9.750000e-04

PTCB2 = 0.000000e+00

PTHA0 = -7.070914e+01

PTHA1 = 5.159355e-02

PTHA2 = -6.675291e-07

POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 4263
CALIBRATION DATE: 10-Jan-12

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

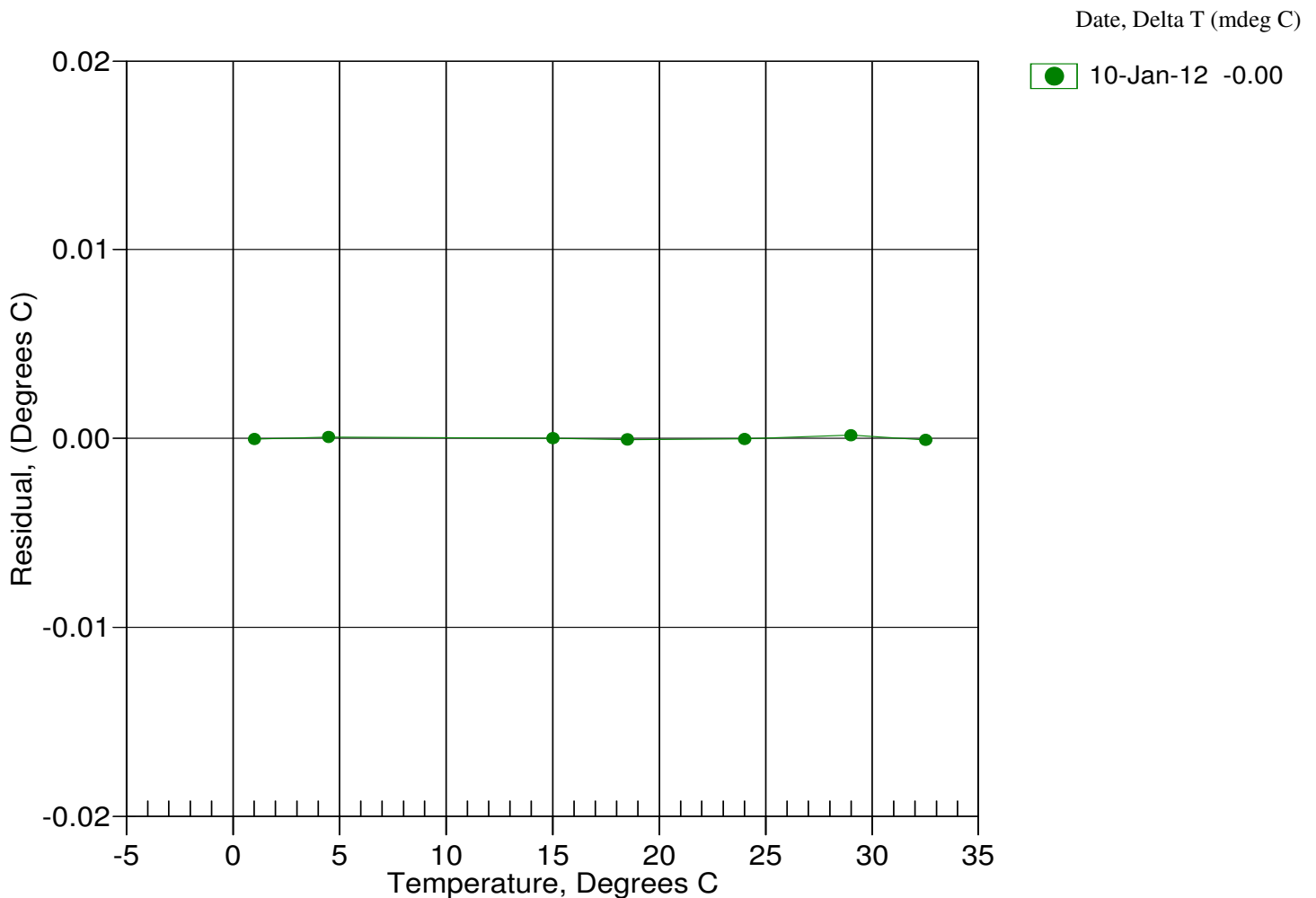
ITS-90 COEFFICIENTS

a0 = 4.438133e-005
a1 = 2.767957e-004
a2 = -2.713842e-006
a3 = 1.580282e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	662885.4	1.0000	-0.0000
4.5000	565266.7	4.5001	0.0001
15.0000	357513.4	15.0000	0.0000
18.5000	308816.4	18.4999	-0.0001
23.9940	246879.3	23.9940	-0.0000
29.0000	202569.2	29.0002	0.0002
32.5000	176999.4	32.4999	-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: 10-Jan-12

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

COEFFICIENTS:

g = -9.740411e-001
h = 1.460383e-001
i = -1.920894e-004
j = 3.804807e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = -2.5790e-008

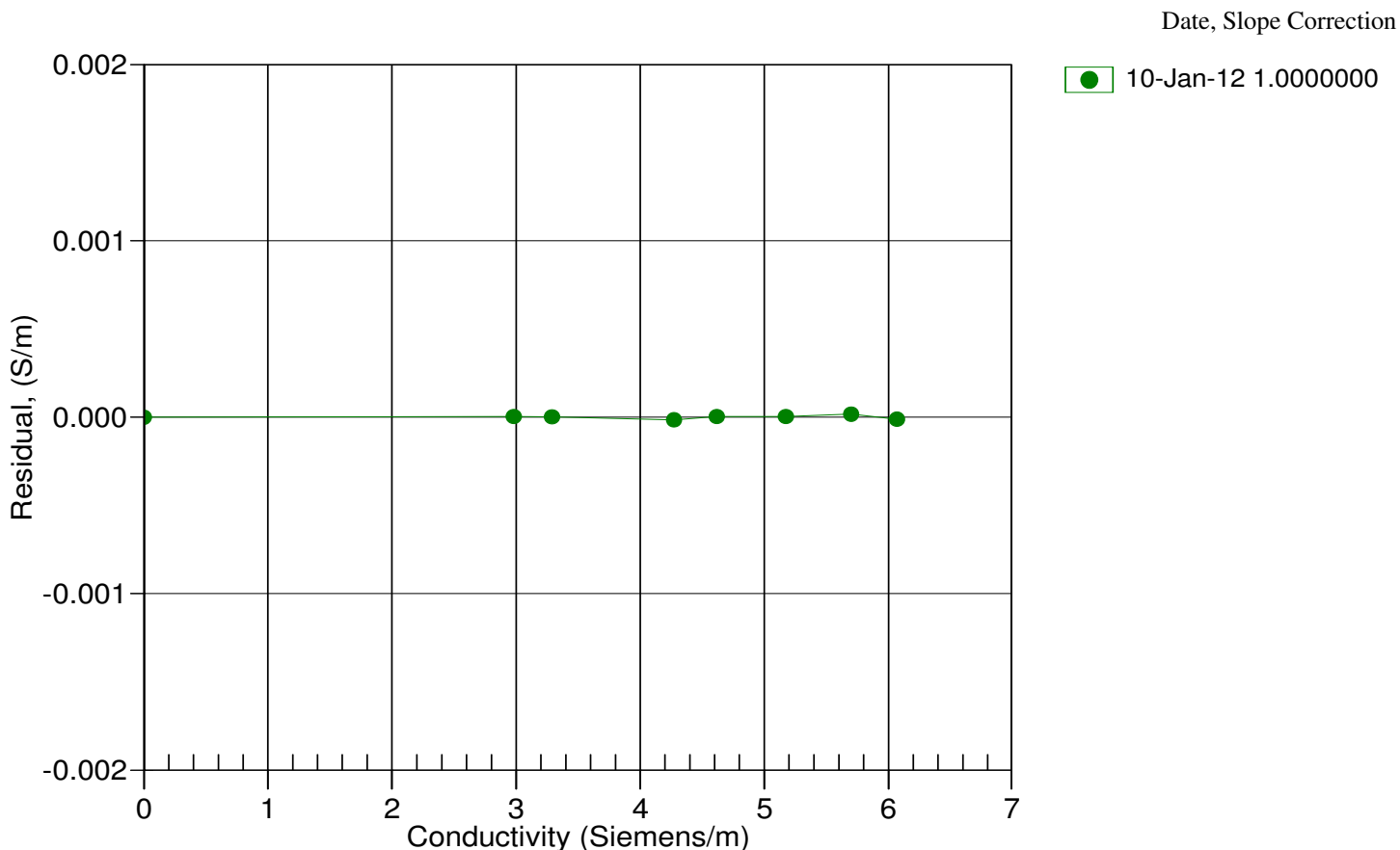
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2584.73	0.00000	0.00000
1.0000	34.8793	2.98084	5203.41	2.98084	0.00000
4.5000	34.8590	3.28836	5401.18	3.28836	0.00000
15.0000	34.8157	4.27155	5988.99	4.27153	-0.00002
18.5000	34.8061	4.61716	6182.07	4.61717	0.00000
23.9940	34.7956	5.17527	6481.41	5.17527	0.00000
29.0000	34.7883	5.69825	6749.53	5.69827	0.00002
32.5000	34.7818	6.07065	6933.92	6.07064	-0.00001

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

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

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

Residual = instrument conductivity - bath conductivity



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CALIBRATION DATE: 04-Jan-12

SBE 41cp PRESSURE CALIBRATION DATA

2900 psia S/N 3469177

COEFFICIENTS:

PA0 = 3.815212e-001

PA1 = 1.399357e-001

PA2 = -3.901253e-008

PTHA0 = -7.070914e+001

PTHA1 = 5.159355e-002

PTHA2 = -6.675290e-007

PTCA0 = 4.309951e+001

PTCA1 = 2.055383e-001

PTCA2 = -3.652180e-003

PTCB0 = 2.531513e+001

PTCB1 = -9.750000e-004

PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.65	147.6	1827.8	14.63	-0.00
591.61	4274.3	1829.0	591.89	0.01
1169.16	8412.3	1829.7	1169.38	0.01
1746.69	12559.2	1830.2	1746.78	0.00
2324.16	16715.7	1830.8	2324.17	0.00
2901.47	20881.9	1831.6	2901.55	0.00
2324.28	16715.6	1830.6	2324.15	-0.00
1746.96	12559.7	1830.1	1746.85	-0.00
1169.42	8411.0	1829.3	1169.20	-0.01
591.95	4273.8	1828.6	591.82	-0.00
14.66	147.3	1827.5	14.59	-0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2055.10	151.68
29.00	1983.50	151.96
23.99	1881.20	152.01
18.50	1769.90	151.60
15.00	1698.30	151.02
4.50	1486.50	149.83
1.00	1415.70	149.25

TEMP (ITS90)	SPAN (mV)
-5.00	25.32
35.00	25.28

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

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

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

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

Date, Avg Delta P %FS

04-Jan-12 0.00

