

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-3548

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SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-3548

Part Number: 90365.051

Description : APEX SBE 41CP Configuration

Firmware Version: 2.0

Pressure Type: Druck

Pressure Range: 2000 dBar

Pressure Serial Number: 3060892

SBE 41CP UW V 2.0 SERIAL NO. 3548

temperature: 08-oct-10

TA0 = 4.486621e-05

TA1 = 2.687433e-04

TA2 = -2.007847e-06

TA3 = 1.389915e-07

conductivity: 08-oct-10

G = -1.039083e+00

H = 1.537008e-01

I = -3.766561e-04

J = 4.964006e-05

CPCOR = -9.570001e-08

CTCOR = 3.250000e-06

WBOTC = 3.389757e-07

pressure S/N = 3060892, range = 2900 psia: 04-oct-10

PA0 = 6.206313e-01

PA1 = 1.402064e-01

PA2 = -4.300211e-08

PTCA0 = 2.144768e+01

PTCA1 = 2.629053e-01

PTCA2 = -2.777707e-03

PTCB0 = 2.523250e+01

PTCB1 = -7.000000e-04

PTCB2 = 0.000000e+00

PTHA0 = -6.835930e+01

PTHA1 = 5.049806e-02

PTHA2 = -3.489921e-07

POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 3548
CALIBRATION DATE: 08-Oct-10

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

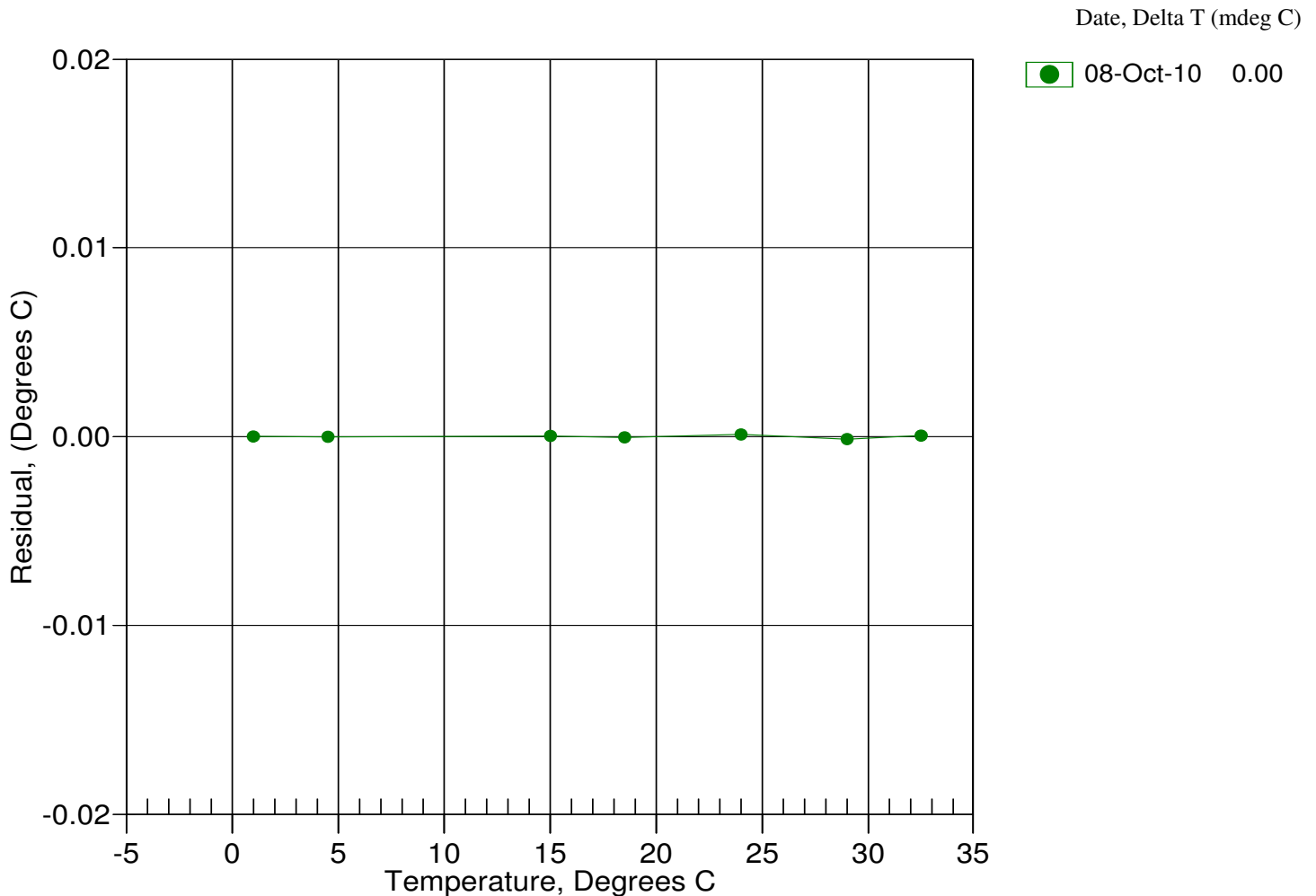
ITS-90 COEFFICIENTS

a0 = 4.486621e-005
a1 = 2.687433e-004
a2 = -2.007847e-006
a3 = 1.389915e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	726148.9	1.0000	0.0000
4.5000	619651.6	4.5000	-0.0000
15.0000	392713.0	15.0000	0.0000
18.5000	339446.4	18.4999	-0.0001
23.9940	271639.9	23.9941	0.0001
29.0000	223089.0	28.9999	-0.0001
32.5000	195043.9	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: 3548
CALIBRATION DATE: 08-Oct-10

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

COEFFICIENTS:

g = -1.039083e+000
h = 1.537008e-001
i = -3.766561e-004
j = 4.964006e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 3.3898e-007

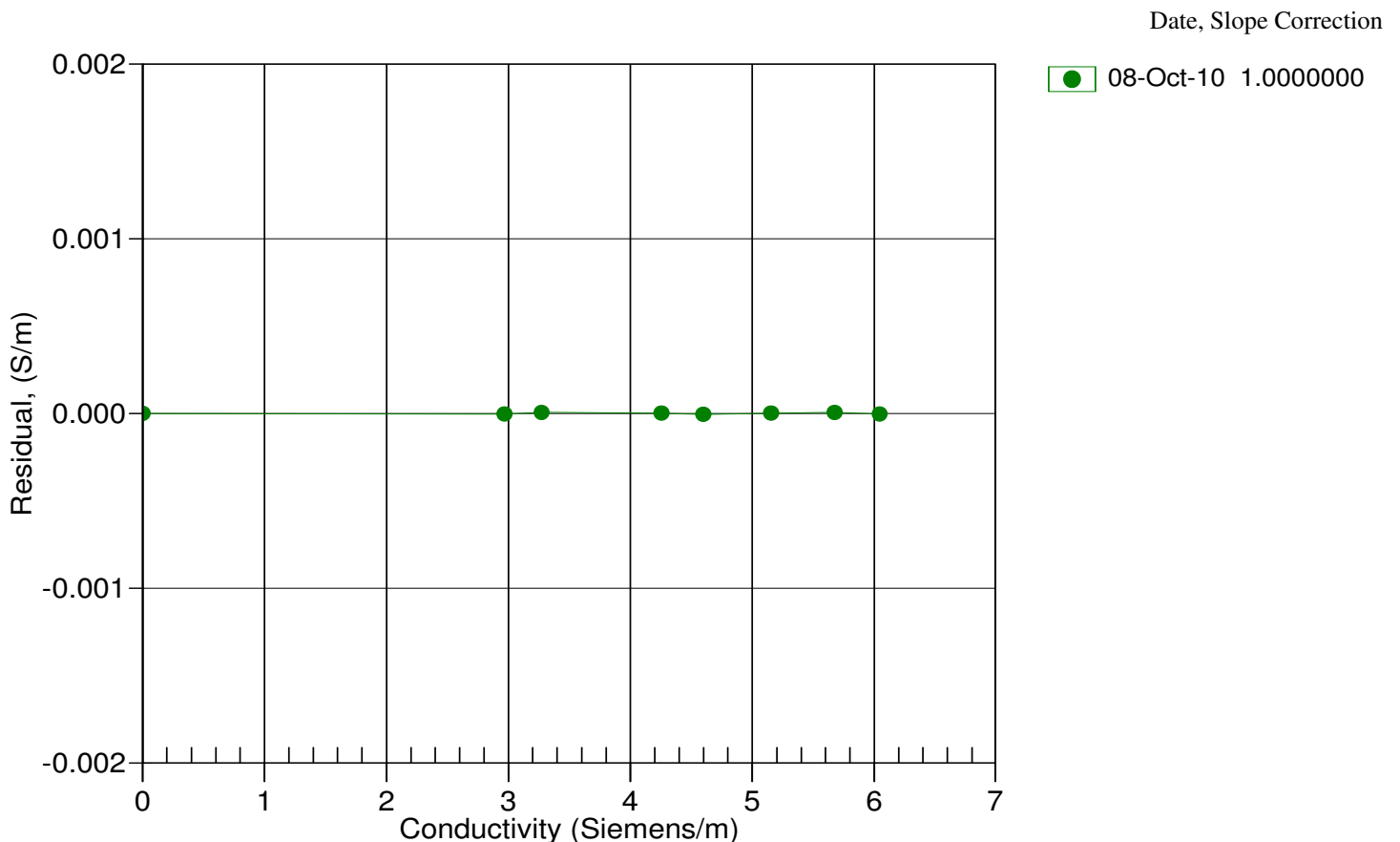
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2605.54	0.00000	0.00000
1.0000	34.7076	2.96756	5116.12	2.96755	-0.00000
4.5000	34.6878	3.27379	5307.60	3.27380	0.00001
15.0000	34.6453	4.25285	5877.37	4.25285	0.00000
18.5000	34.6360	4.59702	6064.70	4.59702	-0.00001
23.9940	34.6258	5.15279	6355.29	5.15280	0.00000
29.0000	34.6200	5.67377	6615.80	5.67378	0.00001
32.5000	34.6169	6.04514	6795.21	6.04514	-0.00000

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

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

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

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 3548

CALIBRATION DATE: 04-Oct-10

SBE 41cp PRESSURE CALIBRATION DATA

2900 psia S/N 3060892

COEFFICIENTS:

PA0 = 6.206313e-001

PA1 = 1.402064e-001

PA2 = -4.300211e-008

PTHA0 = -6.835930e+001

PTHA1 = 5.049806e-002

PTHA2 = -3.489921e-007

PTCA0 = 2.144768e+001

PTCA1 = 2.629053e-001

PTCA2 = -2.777707e-003

PTCB0 = 2.523250e+001

PTCB1 = -7.000000e-004

PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.65	126.1	1809.8	14.68	0.00
592.20	4248.6	1811.3	592.27	0.00
1169.38	8379.9	1811.9	1169.62	0.01
1746.74	12521.5	1812.6	1746.93	0.01
2324.05	16672.6	1813.1	2324.09	0.00
2901.03	20833.1	1813.8	2901.07	0.00
2324.11	16671.7	1812.9	2323.97	-0.00
1747.08	12521.2	1812.2	1746.89	-0.01
1169.51	8378.5	1811.5	1169.42	-0.00
592.24	4247.0	1810.5	592.04	-0.01
14.65	125.9	1810.1	14.65	0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2025.50	131.39
29.00	1954.60	131.30
23.99	1852.60	130.84
18.50	1740.80	129.80
15.00	1670.10	129.05
4.50	1457.50	127.08
1.00	1386.80	126.20

TEMP (ITS90)	SPAN (mV)
-5.00	25.24
35.00	25.21

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

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

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

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

Date, Avg Delta P %FS

04-Oct-10 0.00

