

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-4168

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SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-4168

Part Number: 90365.060

Description : APEX SBE 41CP Configuration

Firmware Version: 2.0

Pressure Type: Druck

Pressure Range: 2000 Dbar

Pressure Serial Number: 3459004

SBE 41CP UW V 2.0 SERIAL NO. 4168

temperature: 17-nov-11

TA0 = 7.359234e-05

TA1 = 2.662710e-04

TA2 = -1.871988e-06

TA3 = 1.354091e-07

conductivity: 17-nov-11

G = -9.972080e-01

H = 1.442053e-01

I = -3.692459e-04

J = 4.682586e-05

CPCOR = -9.570001e-08

CTCOR = 3.250000e-06

WBOTC = -2.592410e-07

pressure S/N = 3459004, range = 2900 psia: 10-nov-11

PA0 = 7.422265e-01

PA1 = 1.405001e-01

PA2 = -3.983233e-08

PTCA0 = 2.204428e+01

PTCA1 = 2.781759e-01

PTCA2 = -1.457645e-03

PTCB0 = 2.516537e+01

PTCB1 = -5.250000e-04

PTCB2 = 0.000000e+00

PTHA0 = -6.849388e+01

PTHA1 = 5.205554e-02

PTHA2 = -7.097177e-07

POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 4168
CALIBRATION DATE: 17-Nov-11

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

a0 = 7.359234e-005
a1 = 2.662710e-004
a2 = -1.871988e-006
a3 = 1.354091e-007

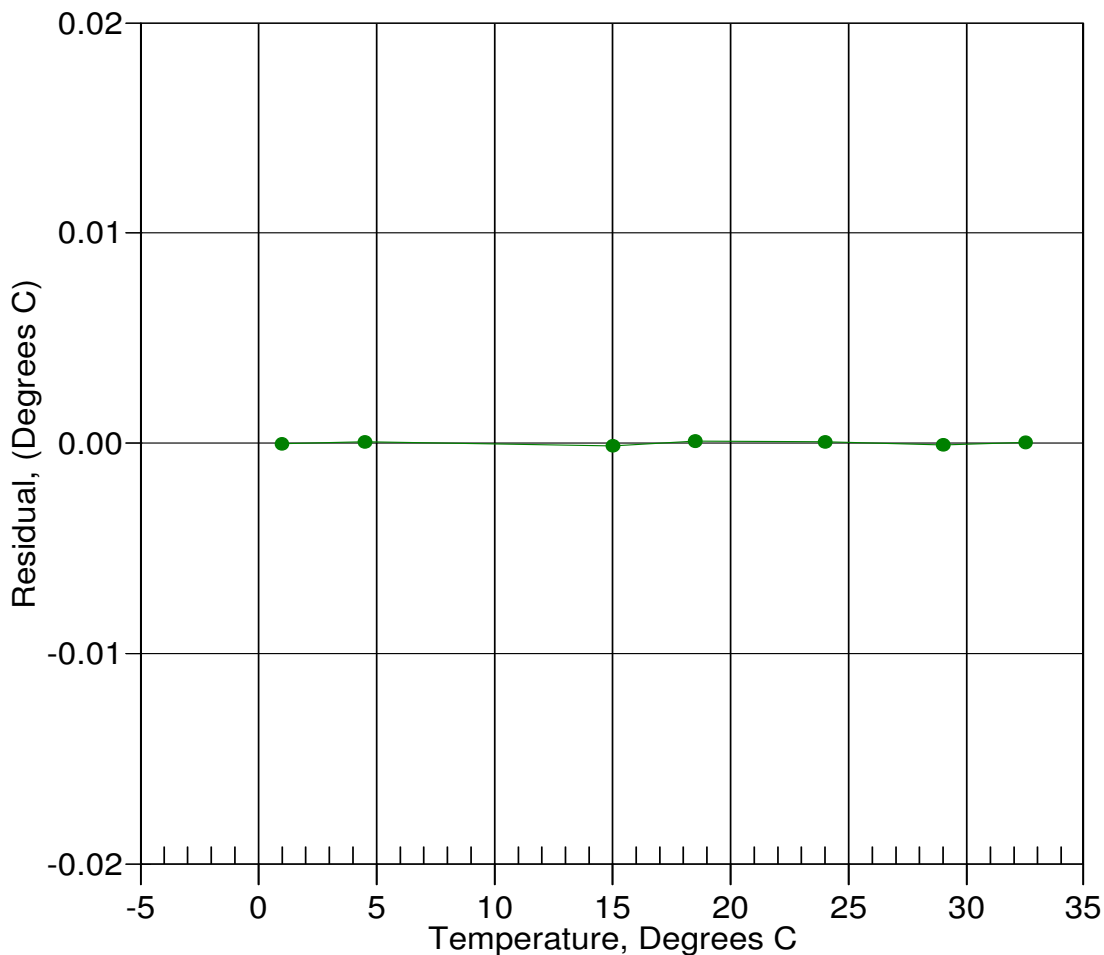
BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	698363.5	1.0000	-0.0000
4.5000	595597.0	4.5001	0.0001
15.0000	376850.5	14.9999	-0.0001
18.5000	325559.5	18.5001	0.0001
23.9940	260318.5	23.9941	0.0001
29.0000	213636.9	28.9999	-0.0001
32.5000	186689.2	32.5000	0.0000

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

Date, Delta T (mdeg C)

17-Nov-11 -0.00



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CALIBRATION DATE: 17-Nov-11

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

COEFFICIENTS:

g = -9.972080e-001
h = 1.442053e-001
i = -3.692459e-004
j = 4.682586e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = -2.5924e-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	2635.61	0.00000	0.00000
1.0000	35.0262	2.99219	5271.54	2.99219	0.00001
4.5000	35.0059	3.30084	5471.18	3.30084	-0.00000
15.0000	34.9622	4.28761	6064.76	4.28760	-0.00001
18.5000	34.9529	4.63453	6259.81	4.63452	-0.00001
23.9940	34.9426	5.19471	6562.23	5.19472	0.00002
29.0000	34.9373	5.71990	6833.25	5.71991	0.00001
32.5000	34.9348	6.09431	7019.87	6.09430	-0.00001

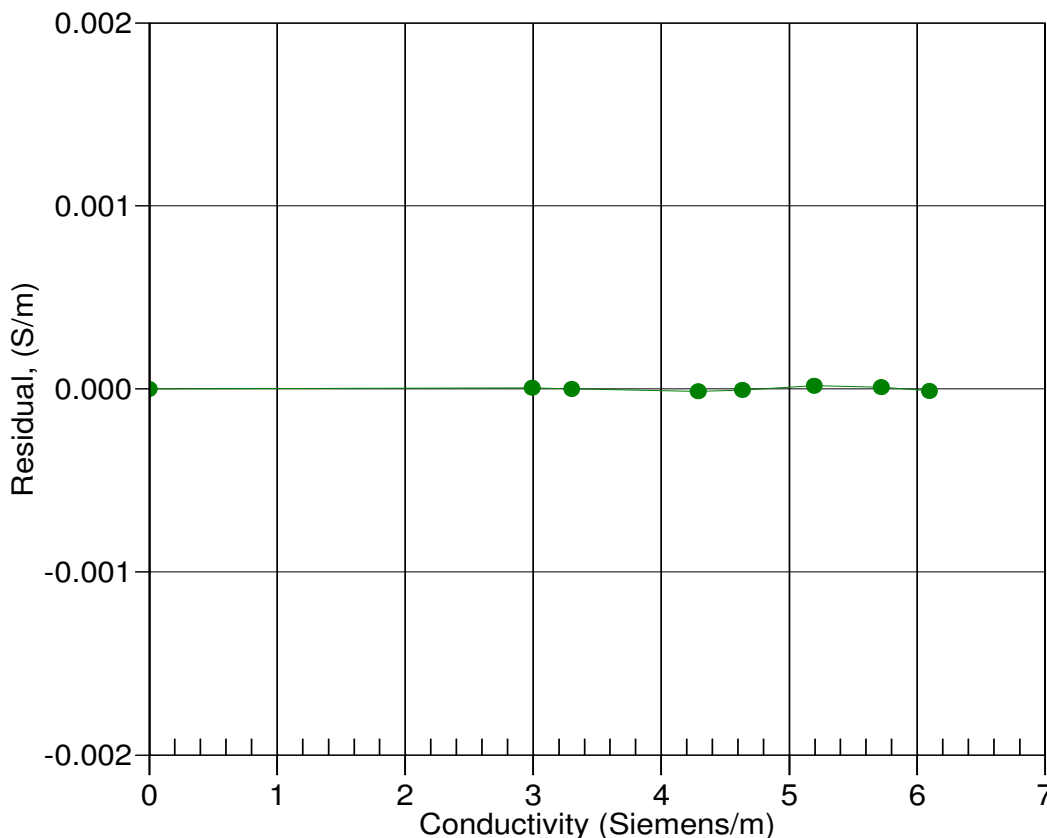
$$f = \text{INST FREQ} * \sqrt{1.0 + \text{WBOTC} * t} / 1000.0$$

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

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

$$\text{Residual} = \text{instrument conductivity} - \text{bath conductivity}$$

Date, Slope Correction



17-Nov-11 1.0000000

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SENSOR SERIAL NUMBER: 4168

CALIBRATION DATE: 10-Nov-11

SBE 41cp PRESSURE CALIBRATION DATA

2900 psia S/N 3459004

COEFFICIENTS:

PA0 = 7.422265e-001

PA1 = 1.405001e-001

PA2 = -3.983233e-008

PTHA0 = -6.849388e+001

PTHA1 = 5.205554e-002

PTHA2 = -7.097177e-007

PTCA0 = 2.204428e+001

PTCA1 = 2.781759e-001

PTCA2 = -1.457645e-003

PTCB0 = 2.516537e+001

PTCB1 = -5.250000e-004

PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.66	125.8	1769.1	14.58	-0.00
591.52	4237.5	1770.1	591.83	0.01
1168.85	8358.8	1771.2	1169.07	0.01
1746.24	12490.2	1771.8	1746.37	0.00
2323.57	16630.9	1772.7	2323.60	0.00
2900.63	20780.8	1773.5	2900.74	0.00
2323.58	16630.1	1772.5	2323.49	-0.00
1746.93	12491.1	1771.8	1746.49	-0.02
1168.93	8357.4	1771.7	1168.87	-0.00
591.58	4235.5	1771.0	591.55	-0.00
14.62	125.3	1775.5	14.50	-0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	1994.50	130.09
29.00	1923.20	129.72
23.99	1821.80	128.66
18.50	1711.20	127.28
15.00	1640.60	126.51
4.50	1430.40	123.97
1.00	1360.00	123.01

TEMP (ITS90)	SPAN (mV)
-5.00	25.17
35.00	25.15

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

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

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

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

Date, Avg Delta P %FS

10-Nov-11 -0.00

