

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-4268

Instrument Configuration.....	1
DC - Coefficient Output File.....	2
Temperature Calibration Sheet.....	3
Conductivity Calibration Sheet.....	4
Pressure Calibration Sheet.....	5

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SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-4268

Part Number: 90365.060

Description : APEX SBE 41CP Configuration

Firmware Version: 2.0

Pressure Type: Druck

Pressure Range: 2000 Dbar

Pressure Serial Number: 3469217

SBE 41CP UW V 2.0 SERIAL NO. 4268

temperature: 10-jan-12

TA0 = 7.410509e-05

TA1 = 2.653953e-04

TA2 = -1.782783e-06

TA3 = 1.331103e-07

conductivity: 10-jan-12

G = -9.873245e-01

H = 1.482937e-01

I = -4.063066e-04

J = 5.128835e-05

CPCOR = -9.570001e-08

CTCOR = 3.250000e-06

WBOTC = 1.481903e-07

pressure S/N = 3469217, range = 2900 psia: 04-jan-12

PA0 = 4.217093e-01

PA1 = 1.400942e-01

PA2 = -3.751852e-08

PTCA0 = 2.908606e+01

PTCA1 = 2.789345e-01

PTCA2 = -6.456383e-03

PTCB0 = 2.526313e+01

PTCB1 = 6.250000e-04

PTCB2 = 0.000000e+00

PTHA0 = -6.847801e+01

PTHA1 = 5.160274e-02

PTHA2 = -4.775535e-07

POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 4268
CALIBRATION DATE: 10-Jan-12

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

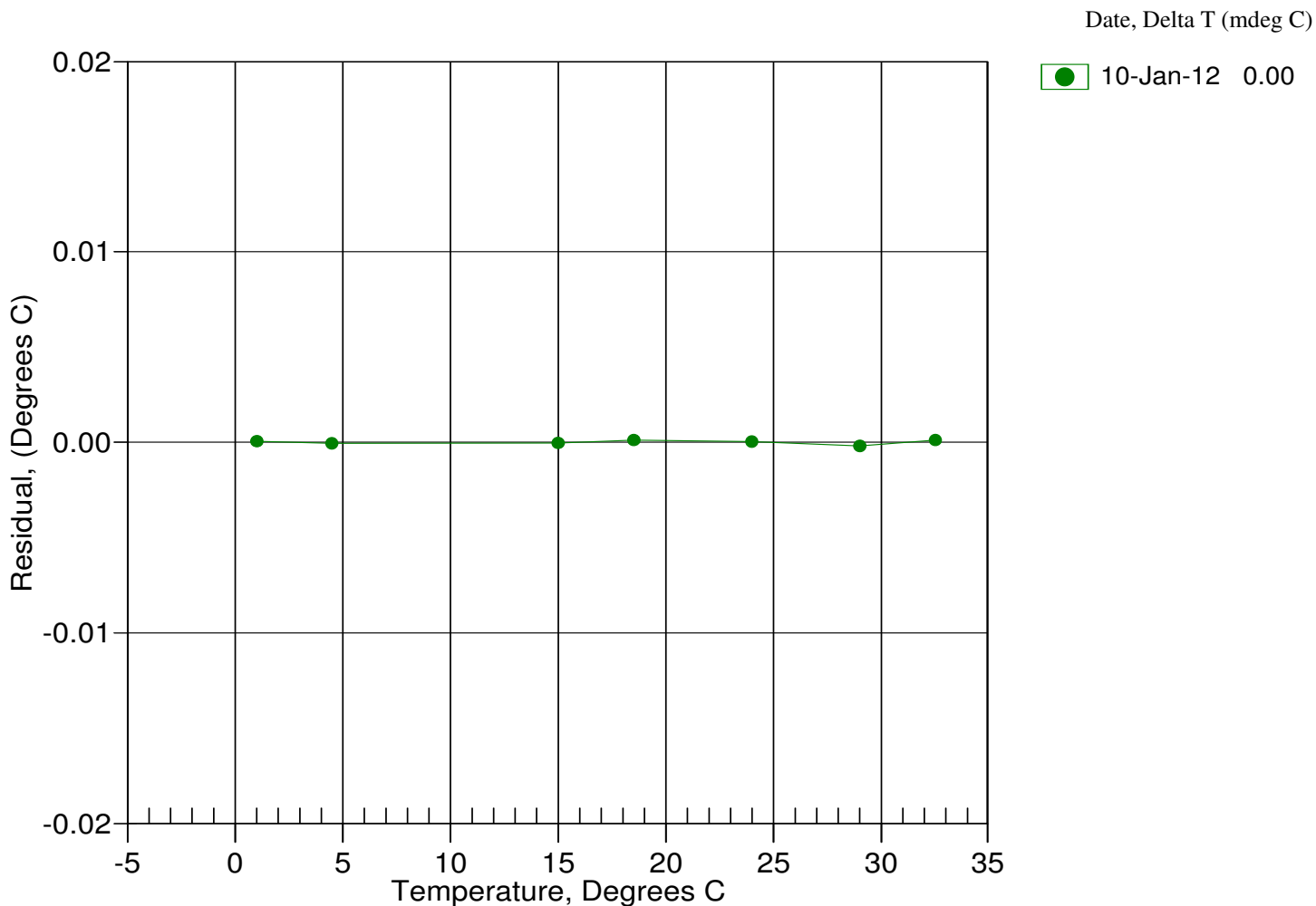
ITS-90 COEFFICIENTS

a0 = 7.410509e-005
a1 = 2.653953e-004
a2 = -1.782783e-006
a3 = 1.331103e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	700097.2	1.0000	0.0000
4.4999	597180.4	4.4998	-0.0001
15.0000	378026.6	15.0000	-0.0000
18.5000	326626.6	18.5001	0.0001
23.9940	261233.9	23.9940	0.0000
29.0000	214433.6	28.9998	-0.0002
32.5000	187410.8	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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CALIBRATION DATE: 10-Jan-12

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

COEFFICIENTS:

g = -9.873245e-001
h = 1.482937e-001
i = -4.063066e-004
j = 5.128835e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 1.4819e-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	2586.47	0.00000	0.00000
1.0000	34.8562	2.97905	5184.48	2.97906	0.00001
4.4999	34.8363	3.28642	5381.14	3.28641	-0.00000
15.0000	34.7936	4.26912	5965.83	4.26912	-0.00001
18.5000	34.7846	4.61462	6157.94	4.61462	0.00000
23.9940	34.7750	5.17254	6455.80	5.17255	0.00000
29.0000	34.7701	5.69560	6722.72	5.69561	0.00000
32.5000	34.7682	6.06855	6906.53	6.06855	-0.00001

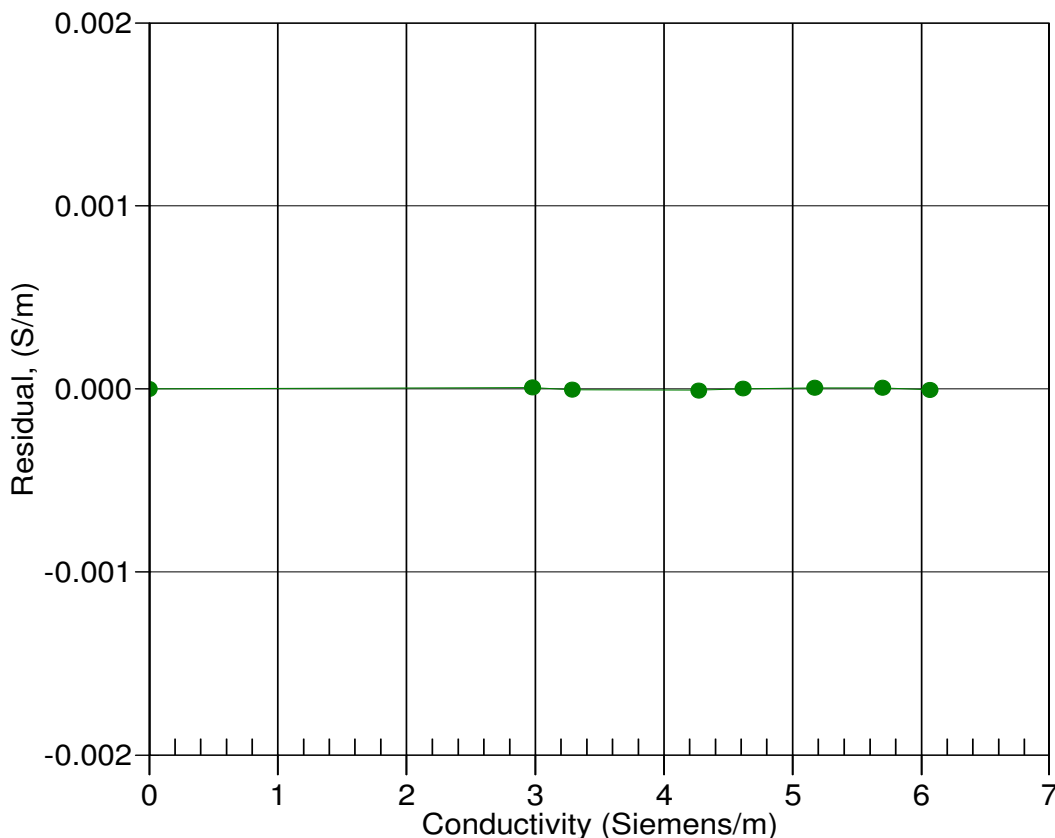
$$f = \text{INST FREQ} * \sqrt{1.0 + \text{WBOTC} * t} / 1000.0$$

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

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

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

Date, Slope Correction



10-Jan-12 1.0000000

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CALIBRATION DATE: 04-Jan-12

SBE 41cp PRESSURE CALIBRATION DATA

2900 psia S/N 3469217

COEFFICIENTS:

PA0 = 4.217093e-001

PA1 = 1.400942e-001

PA2 = -3.751852e-008

PTHA0 = -6.847801e+001

PTHA1 = 5.160274e-002

PTHA2 = -4.775535e-007

PTCA0 = 2.908606e+001

PTCA1 = 2.789345e-001

PTCA2 = -6.456383e-003

PTCB0 = 2.526313e+001

PTCB1 = 6.250000e-004

PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.67	133.5	1782.2	14.62	-0.00
591.53	4259.9	1782.4	591.72	0.01
1168.73	8395.8	1783.5	1168.87	0.00
1745.87	12540.5	1783.7	1745.96	0.00
2323.07	16694.8	1784.8	2323.09	0.00
2900.04	20857.7	1784.8	2900.12	0.00
2323.13	16694.4	1784.7	2323.03	-0.00
1745.94	12538.9	1783.8	1745.73	-0.01
1168.91	8394.9	1782.9	1168.74	-0.01
591.51	4259.0	1782.4	591.59	0.00
14.67	133.2	1782.1	14.58	-0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	1993.40	136.50
29.00	1923.80	137.22
23.99	1822.30	137.65
18.50	1712.80	137.37
15.00	1642.50	136.95
4.50	1433.70	135.53
1.00	1363.30	134.78
TEMP (ITS90)		SPAN (mV)
-5.00		25.26
35.00		25.29

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

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

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

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

Date, Avg Delta P %FS

04-Jan-12 0.00

