

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-3819

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-3819

Part Number: 90365.051

Description : APEX SBE 41CP Configuration

Firmware Version: 2.0

Pressure Type: Druck

Pressure Range: 2000 Dbar

Pressure Serial Number: 3215818

SBE 41CP UW V 2.0 SERIAL NO. 3819

temperature: 20-may-11

TA0 = 6.552264e-05

TA1 = 2.703045e-04

TA2 = -2.127294e-06

TA3 = 1.423983e-07

conductivity: 20-may-11

G = -9.961637e-01

H = 1.407262e-01

I = -3.637476e-04

J = 4.478797e-05

CPCOR = -9.570001e-08

CTCOR = 3.250000e-06

WBOTC = -1.749684e-07

pressure S/N = 3215818, range = 2900 psia: 12-may-11

PA0 = 1.380828e+00

PA1 = 1.395167e-01

PA2 = -3.956920e-08

PTCA0 = 8.284641e+01

PTCA1 = 6.488910e-01

PTCA2 = -8.775090e-03

PTCB0 = 2.544250e+01

PTCB1 = -1.100000e-03

PTCB2 = 0.000000e+00

PTHA0 = -7.460592e+01

PTHA1 = 4.957492e-02

PTHA2 = -3.877856e-07

POFFSET = 0.000000e+00

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SENSOR SERIAL NUMBER: 3819
CALIBRATION DATE: 20-May-11

SBE 41_{CP} TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

a0 = 6.552264e-005

a1 = 2.703045e-004

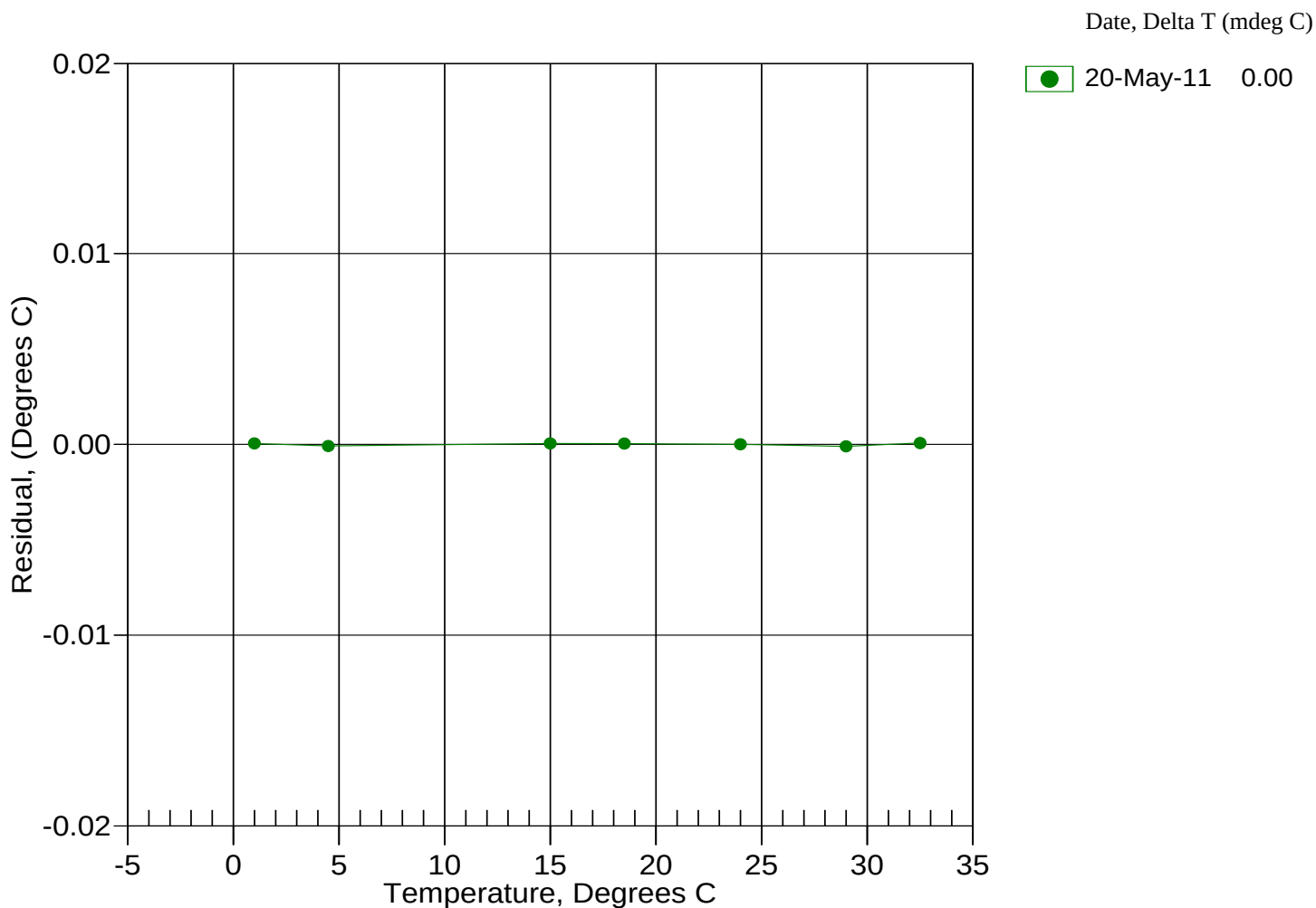
a2 = -2.127294e-006

a3 = 1.423983e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	658607.4	1.0000	0.0000
4.5000	561862.7	4.4999	-0.0001
15.0000	355808.9	15.0000	0.0000
18.5000	307471.8	18.5000	0.0000
23.9940	245964.0	23.9940	-0.0000
29.0000	201936.7	28.9999	-0.0001
32.5000	176513.3	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: 3819
CALIBRATION DATE: 20-May-11

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

COEFFICIENTS:

g = -9.961637e-001

CPcor = -9.5700e-008

h = 1.407262e-001

CTcor = 3.2500e-006

i = -3.637476e-004

WBOTC = -1.7497e-007

j = 4.478797e-005

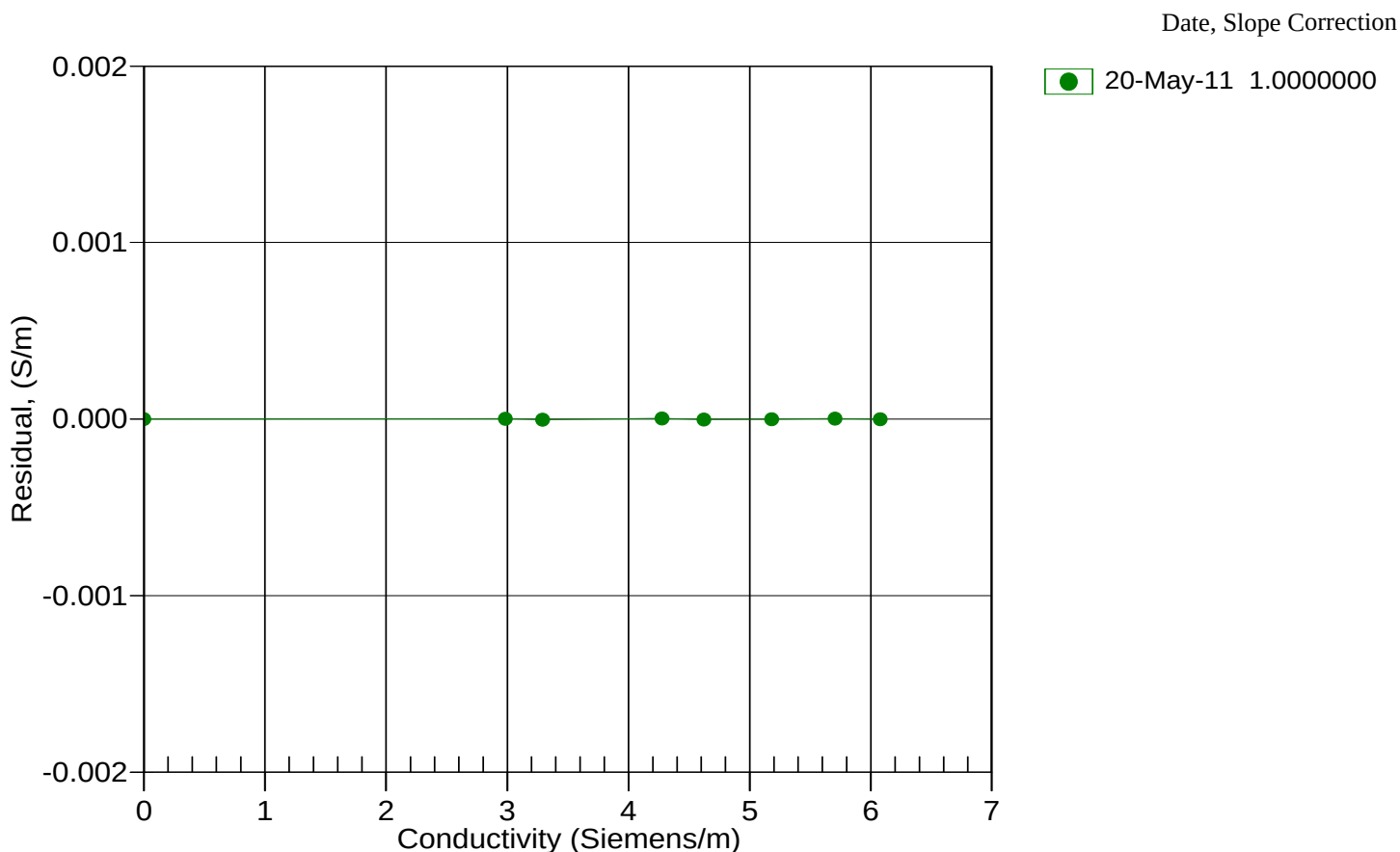
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2666.78	0.00000	0.00000
1.0000	34.9242	2.98431	5331.03	2.98431	0.00000
4.5000	34.9043	3.29221	5532.90	3.29220	-0.00000
15.0000	34.8616	4.27658	6133.17	4.27658	0.00000
18.5000	34.8523	4.62263	6330.39	4.62263	-0.00000
23.9940	34.8420	5.18140	6636.19	5.18140	-0.00000
29.0000	34.8357	5.70514	6910.19	5.70514	0.00000
32.5000	34.8315	6.07834	7098.78	6.07834	-0.00000

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

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

t = temperature[°C]; p = pressure[decibars]; δ = CTcor; ϵ = CPcor;

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 3819

CALIBRATION DATE: 12-May-11

SBE 41cp PRESSURE CALIBRATION DATA

2900 psia S/N 3215818

COEFFICIENTS:

PA0 = 1.380828e+000

PA1 = 1.395167e-001

PA2 = -3.956920e-008

PTHA0 = -7.460592e+001

PTHA1 = 4.957492e-002

PTHA2 = -3.877856e-007

PTCA0 = 8.284641e+001

PTCA1 = 6.488910e-001

PTCA2 = -8.775090e-003

PTCB0 = 2.544250e+001

PTCB1 = -1.100000e-003

PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.72	188.5	1968.3	14.75	0.00
591.80	4325.5	1971.4	591.76	-0.00
1168.63	8472.8	1973.2	1168.85	0.01
1745.53	12628.0	1974.6	1745.67	0.00
2322.39	16792.5	1975.6	2322.41	0.00
2898.97	20965.8	1976.7	2898.99	0.00
2322.43	16791.9	1977.0	2322.33	-0.00
1745.84	12628.5	1976.8	1745.74	-0.00
1168.69	8471.3	1976.3	1168.64	-0.00
591.84	4324.8	1976.0	591.66	-0.01
14.71	188.7	1984.6	14.75	0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2198.30	195.48
29.00	2125.20	195.65
23.99	2020.80	194.81
18.50	1906.60	192.95
15.00	1833.80	191.40
4.50	1616.00	186.64
1.00	1543.80	184.73

TEMP(ITS90)	SPAN(mV)
-5.00	25.45
35.00	25.40

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

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

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

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

Date, Avg Delta P %FS

12-May-11 -0.00

