

SBE 41CP CERTIFICATES

CTD Serial Number 41CP-5636

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

SEA-BIRD ELECTRONICS, INC.
13431 NE 20th Street
Bellevue, Washington 98005 USA
Phone: (425) 643 9866
Fax: (425) 643 9954
Email: seabird@seabird.com

SBE 41CP Instrument Configuration

Model Number: SBE 41CP

Serial Number: 41CP-5636

Part Number: 90499.014

Description : NKE-ARVOR Configuration

Firmware Version: 2.0

Pressure Type: Kistler

Pressure Range: 2000 Dbar

Pressure Serial Number: 2147094

SBE 41 ALACE-CP-MO V 2.0 SERIAL NO. 5636
temperature: 26-dec-13
TA0 = -6.579793e-06
TA1 = 2.717765e-04
TA2 = -2.299668e-06
TA3 = 1.444993e-07
conductivity: 26-dec-13
G = -9.852093e-01
H = 1.463684e-01
I = -3.651136e-04
J = 4.994458e-05
CPCOR = -9.570001e-08
CTCOR = 3.250000e-06
WBOTC = -2.243436e-07
pressure S/N = 2147094, range = 2900 psia: 20-dec-13
PA0 = -1.325701e+00
PA1 = 1.385539e-01
PA2 = 1.969595e-08
PTCA0 = 2.659440e+01
PTCA1 = -8.718883e-01
PTCA2 = 1.988524e-02
PTCB0 = 1.049458e+02
PTCB1 = -6.002798e-03
PTCB2 = 0.000000e+00
PTHA0 = -9.565742e+01
PTHA1 = 3.928106e-02
PTHA2 = 1.377476e-06
POFFSET = 0.000000e+00

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13431 NE 20th Street, Bellevue, WA 98005-2010 USA
Phone: (+1) 425-643-9866 Fax (+1) 425-643-9954 Email: seabird@seabird.com

SENSOR SERIAL NUMBER: 5636
CALIBRATION DATE: 26-Dec-13

SBE 41cp TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

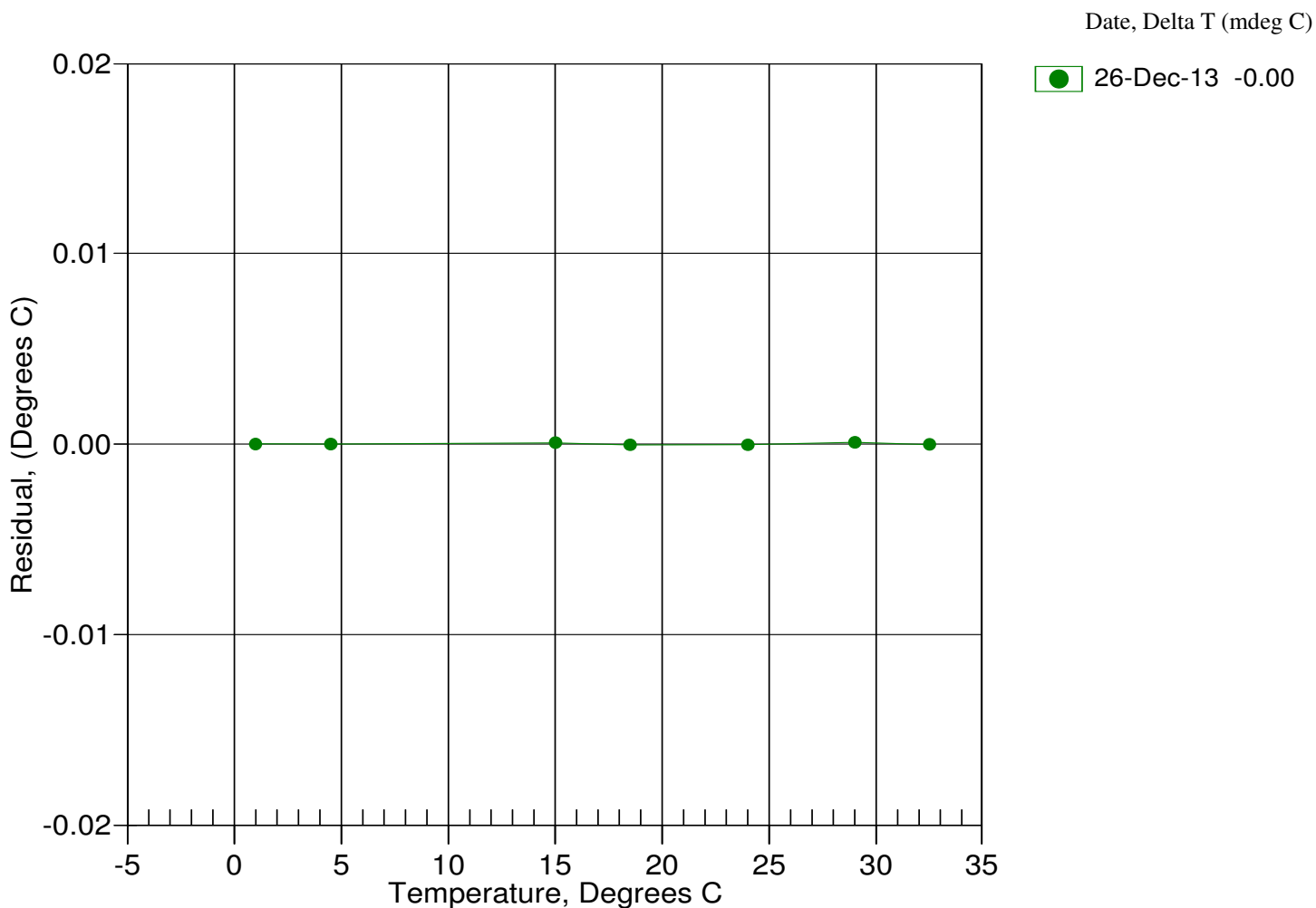
ITS-90 COEFFICIENTS

a0 = -6.579793e-006
a1 = 2.717765e-004
a2 = -2.299668e-006
a3 = 1.444993e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	863526.2	1.0000	0.0000
4.4996	736654.6	4.4996	-0.0000
15.0000	466413.2	15.0001	0.0001
18.4997	403031.6	18.4997	-0.0000
23.9940	322369.7	23.9940	-0.0000
28.9999	264638.3	29.0000	0.0001
32.5000	231306.0	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



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SENSOR SERIAL NUMBER: 5636
CALIBRATION DATE: 26-Dec-13

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

COEFFICIENTS:

g = -9.852093e-001	CPcor = -9.5700e-008
h = 1.463684e-001	CTcor = 3.2500e-006
i = -3.651136e-004	WBOTC = -2.2434e-007
j = 4.994458e-005	

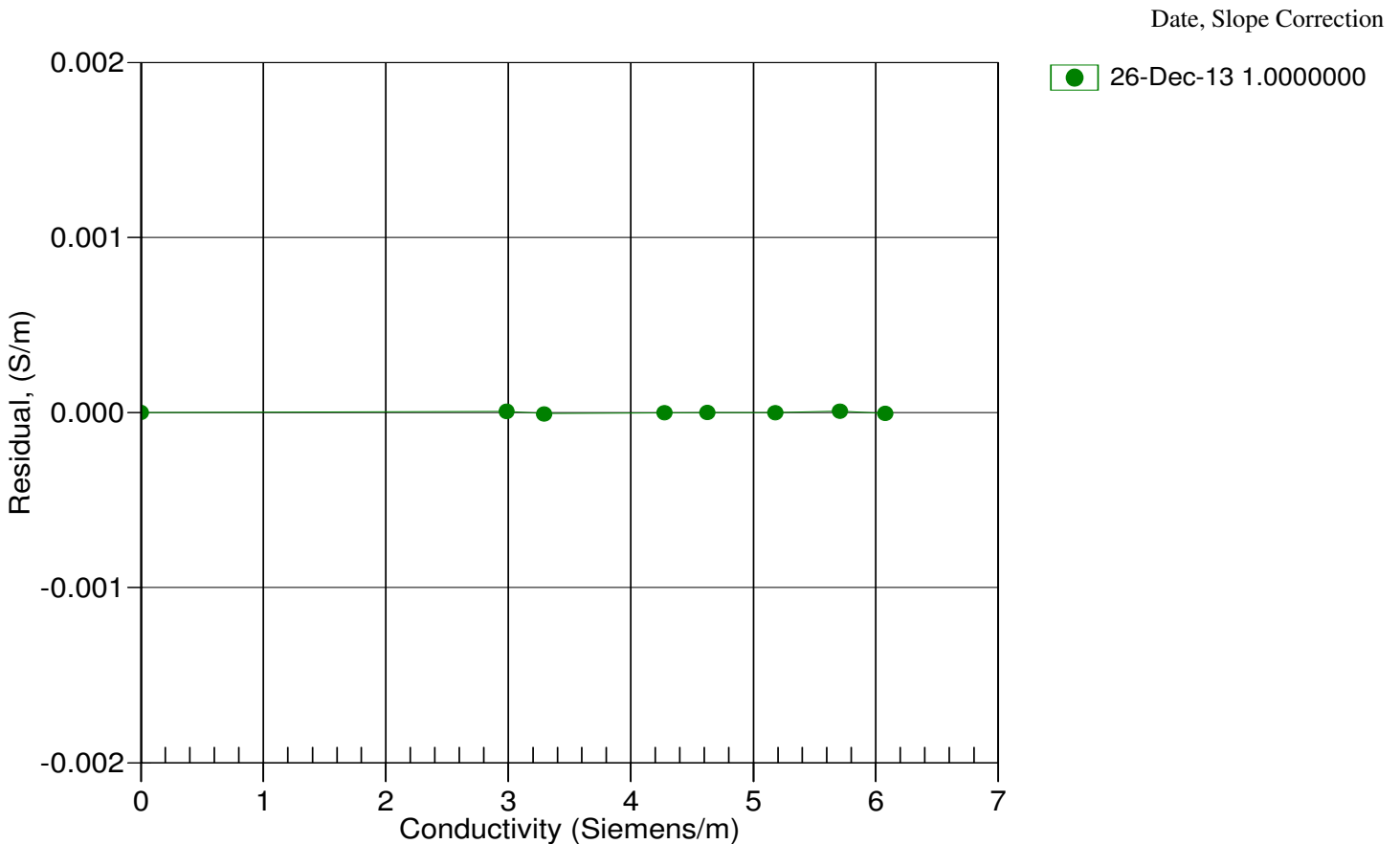
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2599.87	0.00000	0.00000
1.0000	34.9240	2.98429	5217.42	2.98430	0.00001
4.4996	34.9038	3.29213	5415.36	3.29212	-0.00001
15.0000	34.8599	4.27639	6003.81	4.27639	-0.00000
18.4997	34.8506	4.62240	6197.10	4.62240	0.00000
23.9940	34.8403	5.18118	6496.80	5.18118	-0.00000
28.9999	34.8351	5.70504	6765.35	5.70505	0.00001
32.5000	34.8334	6.07863	6950.30	6.07863	-0.00001

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

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

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

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 5636
 CALIBRATION DATE: 20-Dec-13

SBE 41cp PRESSURE CALIBRATION DATA
 2900 psia S/N 2147094

COEFFICIENTS:

PA0 = -1.325701e+000	PTCA0 = 2.659440e+001
PA1 = 1.385539e-001	PTCA1 = -8.718882e-001
PA2 = 1.969595e-008	PTCA2 = 1.988524e-002
PTHA0 = -9.565742e+001	PTCB0 = 1.049458e+002
PTHA1 = 3.928106e-002	PTCB1 = -6.002798e-003
PTHA2 = 1.377476e-006	PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.61	131.9	2728.1	14.61	0.00
591.25	4286.8	2731.8	591.37	0.00
1168.05	8436.7	2733.5	1168.12	0.00
1744.91	12582.6	2734.9	1745.00	0.00
2321.80	16723.7	2736.0	2321.89	0.00
2898.77	20859.7	2737.0	2898.75	-0.00
2321.83	16722.9	2737.2	2321.79	-0.00
1745.28	12583.6	2738.0	1745.15	-0.00
1168.05	8435.2	2738.1	1167.93	-0.00
591.26	4285.6	2738.9	591.21	-0.00
14.60	131.6	2740.7	14.57	-0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2956.10	142.58
29.00	2882.30	141.30
23.99	2775.80	140.43
18.50	2658.40	140.54
15.00	2582.70	141.33
4.50	2356.00	146.35
1.00	2278.10	149.05

TEMP (ITS90)	SPAN (mV)
-3.81	104.97
35.50	104.73

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

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

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

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

