

Sea-Bird Electronics, Inc.

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: 9027

CALIBRATION DATE: 26-Aug-12

SLOCUM PAYLOAD CTD

TEMPERATURE CALIBRATION DATA

ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

a0 = -7.362357e-005

a1 = 3.024051e-004

a2 = -4.207861e-006

a3 = 1.950006e-007

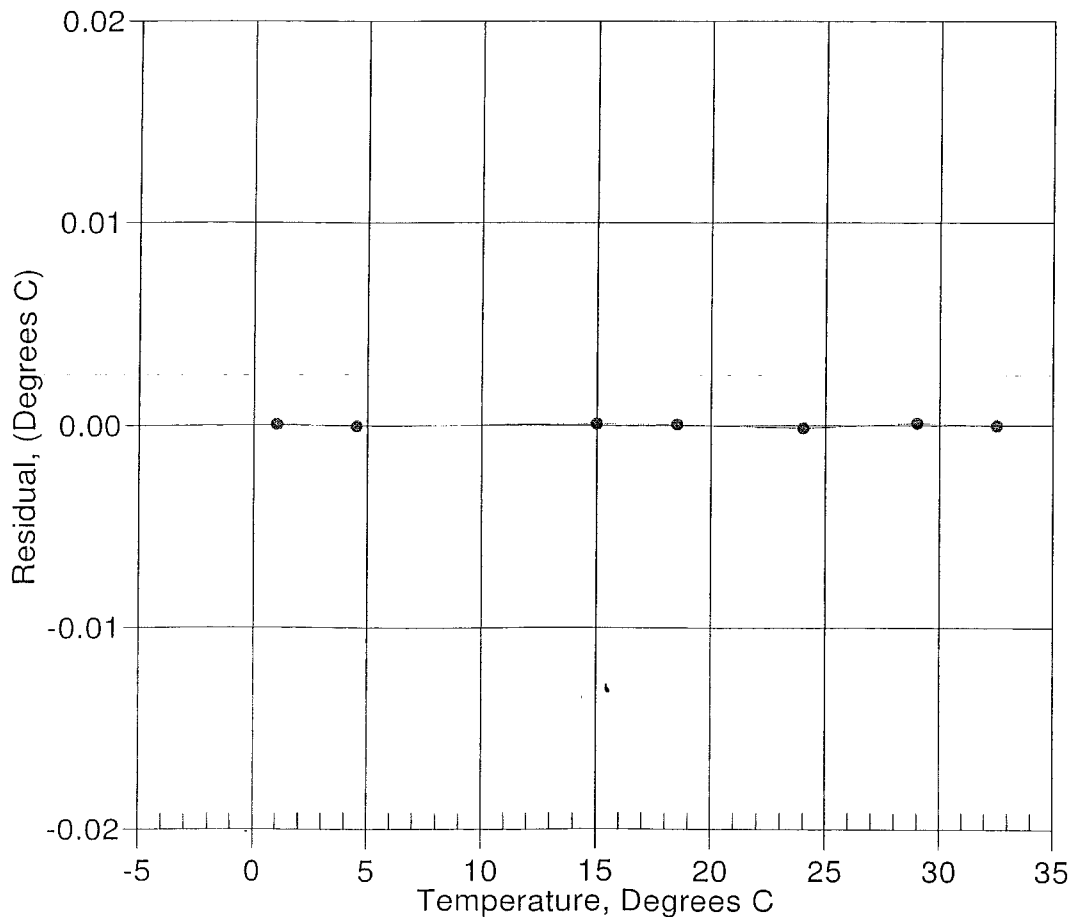
BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	567152.0	1.0000	0.0000
4.5000	484791.6	4.4999	-0.0001
15.0000	308793.4	15.0001	0.0001
18.5000	267357.6	18.5000	0.0000
24.0000	214470.3	23.9999	-0.0001
29.0000	176603.6	29.0001	0.0001
32.5000	154668.2	32.5000	-0.0000

$$\text{Temperature ITS-90} = 1 / \{a_0 + a_1[\ln(n)] + a_2[\ln^2(n)] + a_3[\ln^3(n)]\} - 273.15 \text{ (}^\circ\text{C)}$$

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

Date, Delta T (mdeg C)

26-Aug-12 0.00



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CONDUCTIVITY CALIBRATION DATA

PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

g = -9.648778e-001

CPcor = -9.5700e-008

h = 1.324014e-001

CTcor = 3.2500e-006

i = -1.470101e-004

WBOTC = -5.8604e-007

j = 2.831645e-005

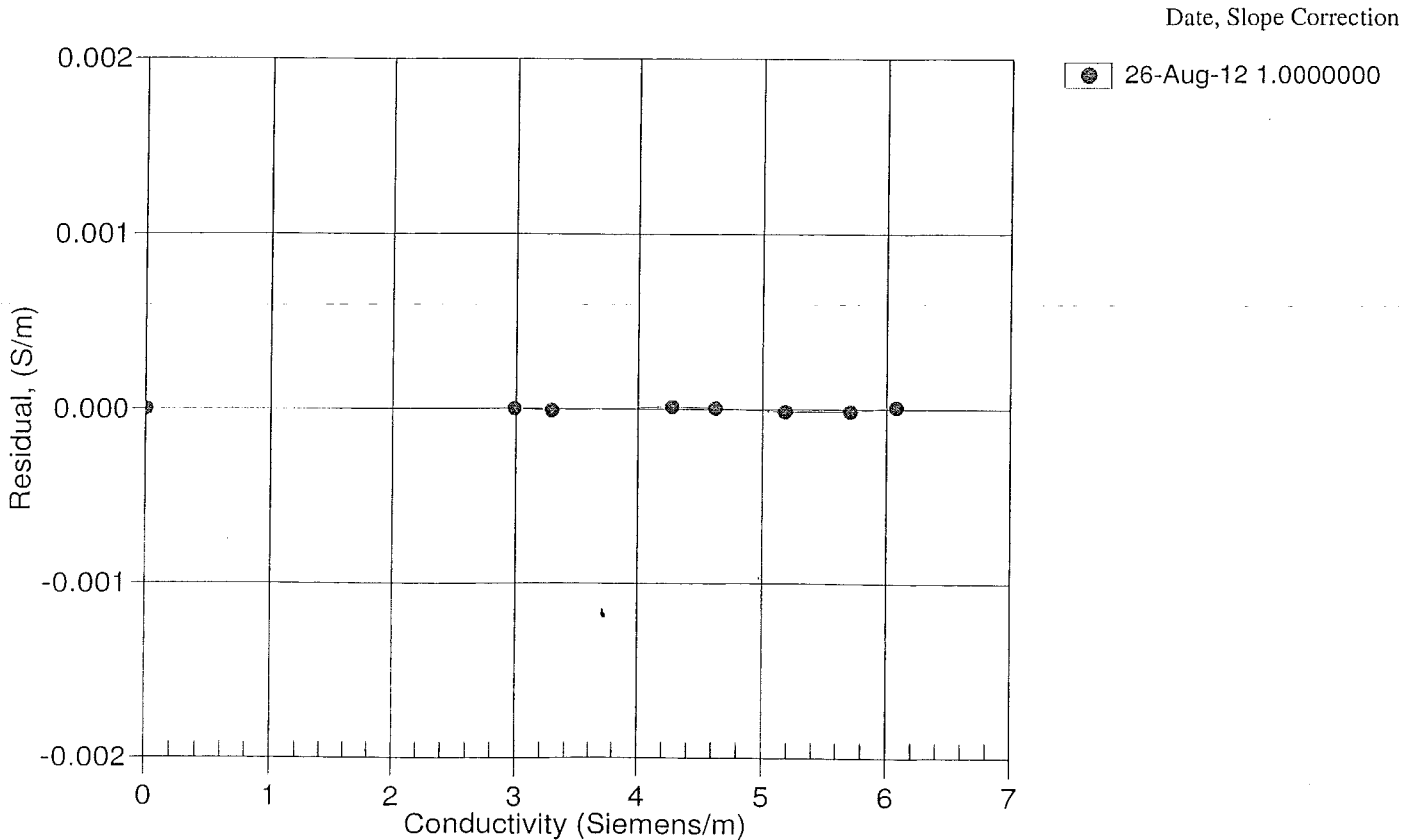
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2701.50	0.00000	0.00000
1.0000	34.9189	2.98390	5460.31	2.98390	0.00000
4.5000	34.8996	3.29181	5668.48	3.29180	-0.00001
15.0000	34.8574	4.27612	6287.13	4.27614	0.00002
18.5000	34.8482	4.62214	6490.32	4.62215	0.00001
24.0000	34.8375	5.18143	6805.63	5.18142	-0.00001
29.0000	34.8294	5.70422	7087.37	5.70421	-0.00001
32.5000	34.8207	6.07667	7281.26	6.07668	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: 9027
 CALIBRATION DATE: 23-Aug-12

SLOCUM PAYLOAD CTD
 PRESSURE CALIBRATION DATA
 1450 psia S/N 3648532

COEFFICIENTS:

PA0 = 8.150484e-002
 PA1 = 4.614183e-003
 PA2 = -2.528865e-011
 PTEMPA0 = -6.717872e+001
 PTEMPA1 = 5.210486e-002
 PTEMPA2 = -4.857422e-007

PTCA0 = 5.239698e+005
 PTCA1 = 3.121849e-001
 PTCA2 = 3.485335e-002
 PTCB0 = 2.524513e+001
 PTCB1 = 1.225000e-003
 PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.65	527160.0	1721.0	14.68	0.00
315.11	592342.0	1723.0	315.02	-0.01
615.07	657498.0	1725.0	615.02	-0.00
915.00	722703.0	1726.0	915.03	0.00
1214.95	787935.0	1727.0	1214.94	-0.00
1464.94	842332.0	1727.0	1464.88	-0.00
1214.91	787940.0	1727.0	1214.96	0.00
914.97	722706.0	1728.0	915.03	0.00
615.03	657503.0	1728.0	615.03	0.00
315.04	592343.0	1728.0	315.02	-0.00
14.65	527160.0	1728.0	14.68	0.00

THERMAL CORRECTION

TEMP ITS90	THERMISTOR OUTPUT	INST OUTPUT
32.50	1948	527199.90
29.00	1879	527194.40
24.00	1780	527184.50
18.50	1670	527172.90
15.00	1601	527164.20
4.50	1394	527157.50
1.00	1325	527155.20
TEMP (ITS90)		SPAN (mV)
-5.00		25.24
35.00		25.29

$$y = \text{thermistor output}; t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$$

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

$$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$$

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

Date, Avg Delta P %FS

23-Aug-12 0.00

