

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: 9088
 CALIBRATION DATE: 08-Jun-13

SLOCUM PAYLOAD CTD
 CONDUCTIVITY CALIBRATION DATA
 PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

g = -9.785832e-001
 h = 1.336776e-001
 i = -2.488969e-004
 j = 3.623097e-005

CPcor = -9.5700e-008
 CTcor = 3.2500e-006
 WBOTC = -3.6897e-007

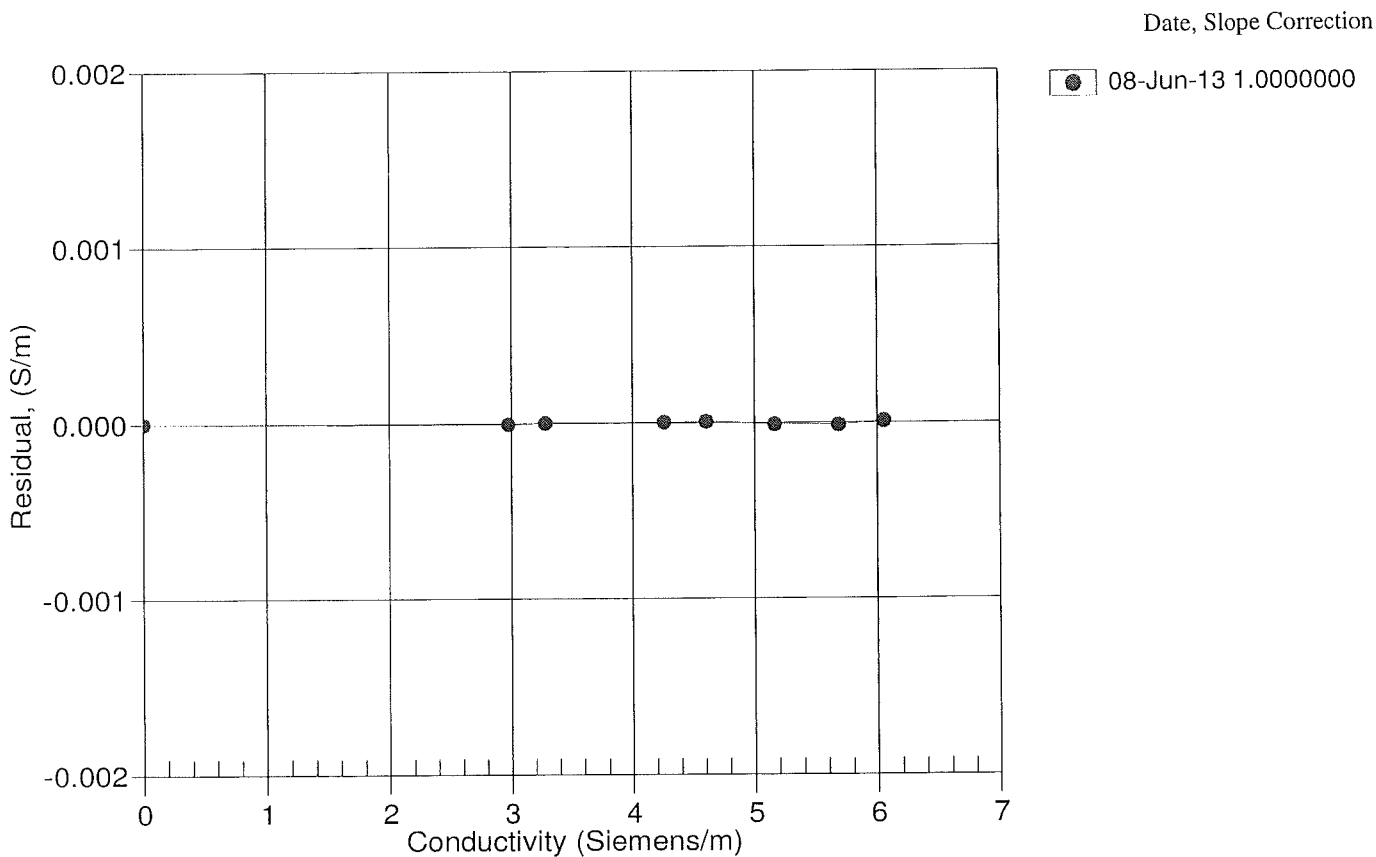
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2709.79	0.00000	0.00000
1.0000	34.7732	2.97263	5442.44	2.97263	-0.00001
4.5000	34.7536	3.27939	5649.13	3.27939	0.00000
15.0000	34.7112	4.26008	6263.46	4.26009	0.00000
18.5000	34.7022	4.60486	6465.30	4.60487	0.00001
24.0000	34.6926	5.16226	6778.55	5.16225	-0.00001
29.0000	34.6870	5.68352	7058.58	5.68351	-0.00001
32.5000	34.6845	6.05560	7251.66	6.05561	0.00001

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

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

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

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 9088
CALIBRATION DATE: 04-Jun-13

SLOCUM PAYLOAD CTD
PRESSURE CALIBRATION DATA
1450 psia S/N 3849157

COEFFICIENTS:

PA0 = -5.680030e-002
PA1 = 4.587081e-003
PA2 = -1.715854e-011
PTEMPA0 = -7.138930e+001
PTEMPA1 = 5.113191e-002
PTEMPA2 = -4.463912e-007

PTCA0 = 5.248476e+005
PTCA1 = -7.560141e-001
PTCA2 = 9.740118e-003
PTCB0 = 2.546050e+001
PTCB1 = 1.000000e-004
PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.66	528051.0	1847.0	14.69	0.00
314.98	593523.0	1852.0	314.91	-0.01
614.97	658980.0	1852.0	614.91	-0.00
914.99	724491.0	1854.0	915.02	0.00
1215.11	790004.0	1854.0	1214.98	-0.01
1465.10	844655.0	1856.0	1465.10	-0.00
1215.04	790036.0	1856.0	1215.13	0.01
914.99	724505.0	1856.0	915.08	0.01
614.99	659004.0	1856.0	615.02	0.00
315.00	593541.0	1856.0	314.99	-0.00
14.66	528049.0	1859.0	14.68	0.00

THERMAL CORRECTION

TEMP ITS90	THERMISTOR OUTPUT	INST OUTPUT
32.50	2069	528100.90
29.00	1998	528105.60
24.00	1897	528105.70
18.50	1786	528107.30
15.00	1715	528105.40
4.50	1504	528114.33
1.00	1434	528116.70

TEMP (ITS90)	SPAN (mV)
-5.00	25.46
35.00	25.46

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

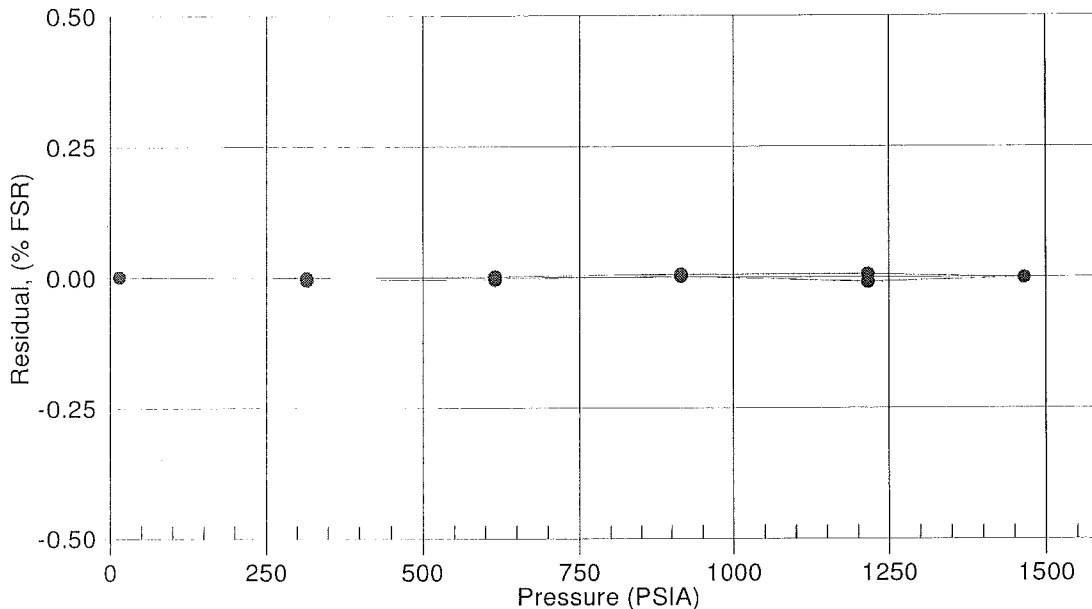
$$x = \text{pressure output} - PTCA0 - PTCA1 * t - PTCA2 * t^2$$

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

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

Date, Avg Delta P %FS

● 04-Jun-13 0.00



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SLOCUM PAYLOAD CTD
TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

a0 = -1.200493e-004
a1 = 3.114764e-004
a2 = -4.843858e-006
a3 = 2.112287e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	567421.7	1.0000	0.0000
4.5000	485220.3	4.5000	-0.0000
15.0000	309438.7	15.0000	-0.0000
18.5000	268019.7	18.5001	0.0001
24.0000	215133.0	23.9999	-0.0001
29.0000	177249.0	29.0000	-0.0000
32.5000	155292.5	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

