

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: 9307
CALIBRATION DATE: 11-Oct-15

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

COEFFICIENTS:

g = -9.737373e-001
h = 1.449905e-001
i = -1.653534e-004
j = 3.382679e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 1.9279e-007

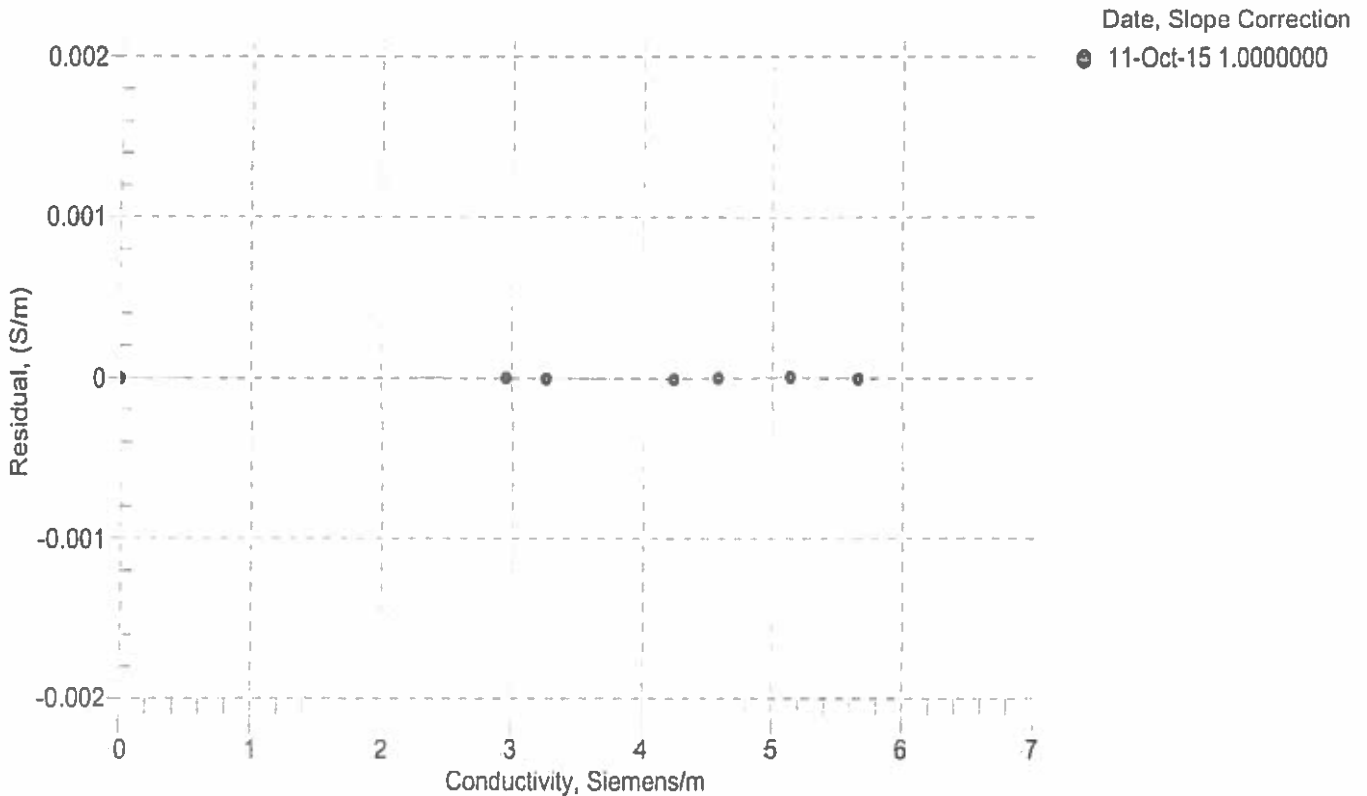
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2593.30	0.00000	0.00000
0.9999	34.6063	2.95971	5207.55	2.95971	0.00000
4.4999	34.5868	3.26519	5405.29	3.26519	-0.00000
15.0000	34.5447	4.24181	5993.11	4.24180	-0.00001
18.5000	34.5359	4.58517	6186.27	4.58517	0.00000
24.0000	34.5265	5.14026	6486.08	5.14027	0.00001
29.0001	34.5217	5.65948	6754.15	5.65948	-0.00000
32.5001	34.5197	6.03010	6938.95	6.02999	-0.00011

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

$$\text{Conductivity} = (g + h * f^2 + i * f^3 + j * f^4) / (1 + \delta * t + \epsilon * p) \text{ Siemens / meter}$$

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

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 9307
CALIBRATION DATE: 30-Apr-15

Slocum Payload CTD PRESSURE CALIBRATION DATA
FSR: 1450 psia S/N 4386335

COEFFICIENTS:

PA0 =	-5.534108e-002	PTCA0 =	5.252475e+005
PA1 =	4.583147e-003	PTCA1 =	-4.239935e+000
PA2 =	-2.407314e-011	PTCA2 =	1.609031e-001
PTEMPA0 =	1.582502e+002	PTCB0 =	2.510163e+001
PTEMPA1 =	-6.522976e-002	PTCB1 =	-7.481297e-005
PTEMPA2 =	-1.091660e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FS
14.76	528481.0	2066.0	14.82	0.00
315.08	593996.0	2064.0	314.99	-0.01
614.99	659514.0	2063.0	614.97	-0.00
915.00	725088.0	2061.0	915.00	0.00
1214.91	790690.0	2059.0	1214.95	0.00
1464.80	845350.0	2057.0	1464.71	-0.01
1214.91	790702.0	2060.0	1215.00	0.01
914.99	725095.0	2061.0	915.03	0.00
614.99	659519.0	2061.0	614.99	-0.00
315.06	594003.0	2062.0	315.02	-0.00
14.76	528473.0	2061.0	14.78	0.00

THERMAL CORRECTION

TEMP ITS90	THERMISTOR OUTPUT	INST OUTPUT
32.50	1922	528573.50
29.00	1975	528554.90
24.00	2051	528520.50
18.50	2135	528519.10
15.00	2188	528518.80
4.50	2348	528519.90
1.00	2401	528537.40

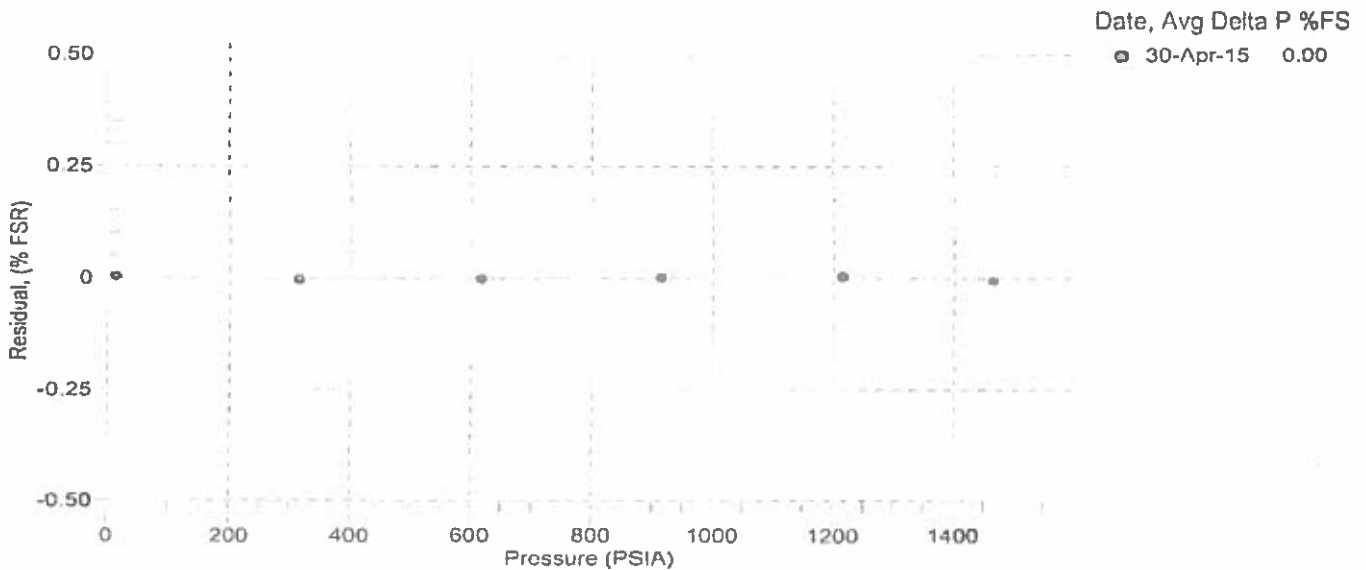
TEMP (ITS90)	SPAN (mV)
-5.00	25.10
35.10	25.10

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

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

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

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



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Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

a0 = -1.200713e-004
a1 = 3.088530e-004
a2 = -4.550478e-006
a3 = 2.037097e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
0.9999	568899.0	0.9999	0.0000
4.4999	486795.6	4.4999	-0.0000
15.0000	311022.6	15.0001	0.0001
18.5000	269557.5	18.4999	-0.0001
24.0000	216565.4	24.0000	0.0000
29.0001	178574.3	29.0001	0.0000
32.5001	156541.7	32.5001	-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

n = instrument output

