

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: 9037
CALIBRATION DATE: 11-Sep-12

Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

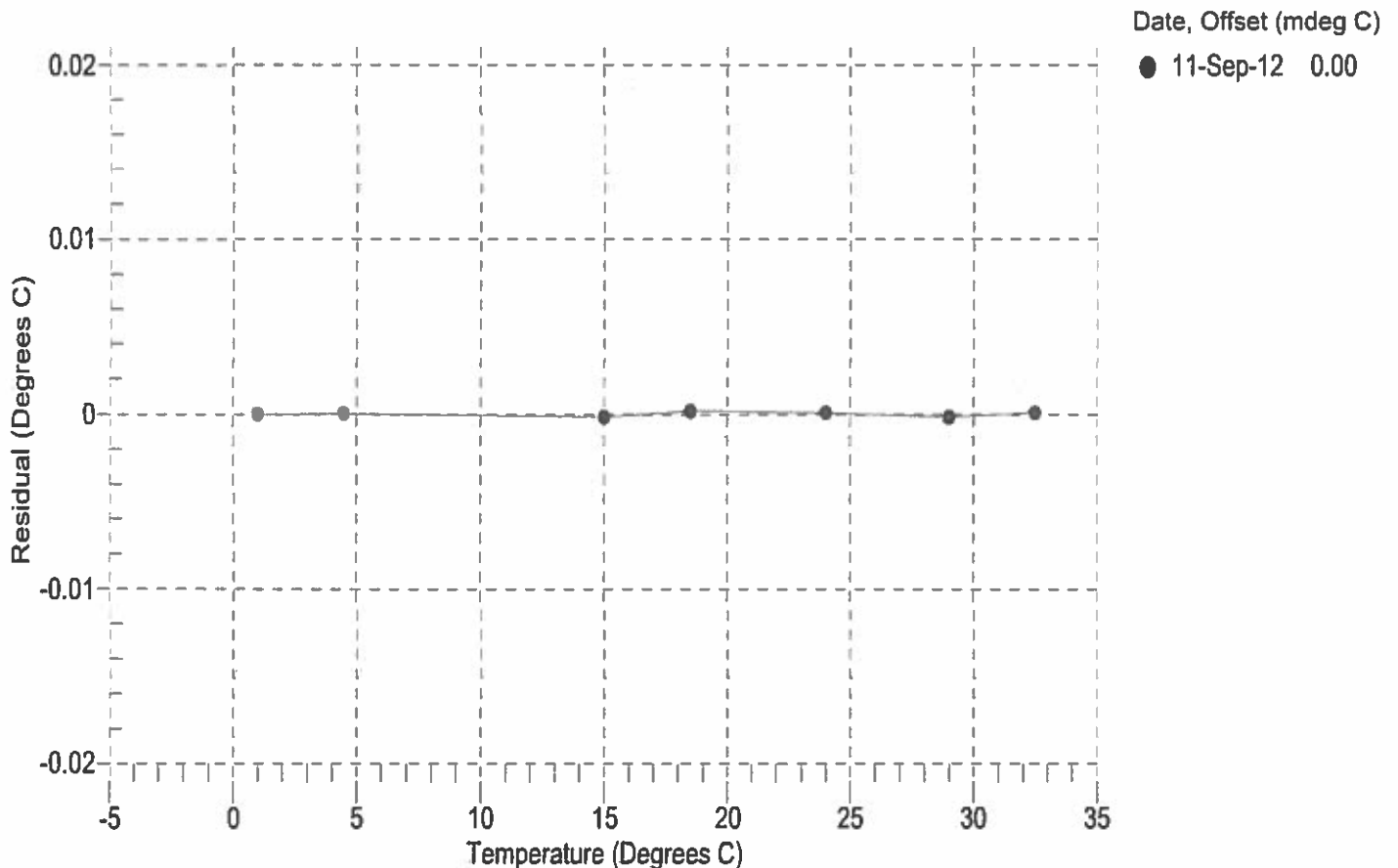
a0 = -1.668603e-004
a1 = 3.172360e-004
a2 = -5.101892e-006
a3 = 2.177311e-007

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	568712.2	1.0000	-0.0000
4.5000	486930.0	4.5000	0.0000
15.0000	311666.4	14.9998	-0.0002
18.5000	270266.0	18.5002	0.0002
23.9940	217382.6	23.9941	0.0001
29.0000	179353.2	28.9998	-0.0002
32.5000	157310.8	32.5001	0.0001

n = Instrument Output (counts)

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

Residual (°C) = instrument temperature - bath temperature



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CALIBRATION DATE: 05-Sep-12

Slocum Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 3648535

COEFFICIENTS:

PA0 =	3.136369e-002	PTCA0 =	5.241456e+005
PA1 =	4.989681e-003	PTCA1 =	7.919956e-001
PA2 =	-3.141503e-011	PTCA2 =	4.450824e-005
PTEMPA0 =	-6.840815e+001	PTCB0 =	2.515263e+001
PTEMPA1 =	5.281678e-002	PTCB1 =	1.925000e-003
PTEMPA2 =	-7.145819e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

THERMAL CORRECTION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (volts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)	TEMP (°C)	THERMISTOR OUTPUT (volts)	INSTRUMENT OUTPUT (counts)	
14.61	527097.0	1737.0	14.65	0.00	32.50	1962	527166.40	
315.00	587404.0	1740.0	314.95	-0.00	29.00	1893	527164.20	
615.00	647703.0	1740.0	614.98	-0.00	23.99	1793	527162.80	
914.98	708048.0	1741.0	915.00	0.00	18.50	1684	527155.80	
1214.96	768429.0	1742.0	1214.98	0.00	15.00	1614	527151.40	
1464.98	818775.0	1744.0	1464.92	-0.00	4.50	1407	527145.40	
1214.96	768436.0	1744.0	1215.00	0.00	1.00	1338	527142.20	
914.98	708055.0	1744.0	915.03	0.00				
615.02	647714.0	1744.0	615.02	-0.00	TEMPERATURE (°C)		SPAN (mV)	
315.03	587410.0	1745.0	314.97	-0.00	-5.00	25.14		
14.61	527094.0	1747.0	14.63	0.00	35.00	25.22		

y = thermistor output (counts)

$$t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$$

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

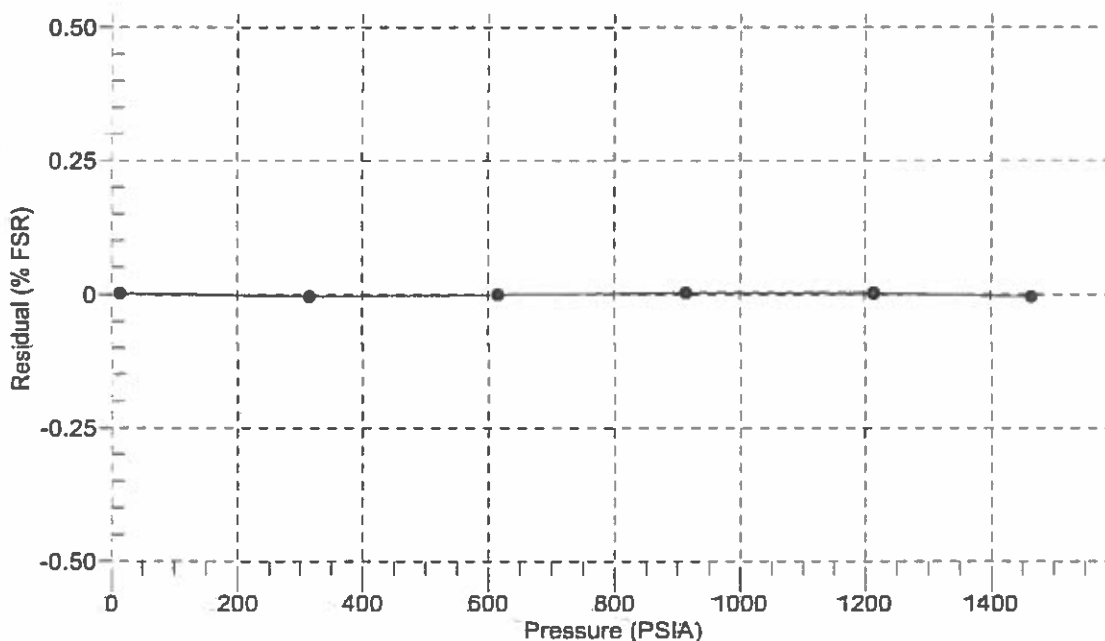
$$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$$

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

$$\text{Residual (\%FSR)} = (\text{computed pressure} - \text{true pressure}) * 100 / \text{Full Scale Range}$$

Date, Offset (%FSR)

● 05-Sep-12 -0.00



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

COEFFICIENTS:

g = -9.752903e-001	CPcor = -9.5700e-008
h = 1.333835e-001	CTcor = 3.2500e-006
i = -1.902639e-004	WBOTC = 3.3860e-007
j = 3.085686e-005	

BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2706.98	0.00000	0.00000
1.0000	34.9818	2.98876	5453.99	2.98876	0.00000
4.5000	34.9619	3.29710	5661.48	3.29710	0.00000
15.0000	34.9189	4.28286	6278.23	4.28285	-0.00001
18.5000	34.9096	4.62941	6480.85	4.62941	-0.00000
23.9940	34.8991	5.18896	6794.97	5.18898	0.00003
29.0000	34.8925	5.71339	7076.37	5.71338	-0.00002
32.5000	34.8883	6.08712	7270.10	6.08712	0.00000

f = Instrument Output(Hz) * sqrt(1.0 + WBOTC * t) / 1000.0
 t = temperature (°C); p = pressure (decibars); δ = CTcor; ε = CPcor;
 Conductivity (S/m) = (g + h * f² + i * f³ + j * f⁴) / 10 (1 + δ * t + ε * p)
 Residual (Siemens/meter) = instrument conductivity - bath conductivity

