

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: 9057
 CALIBRATION DATE: 30-Sep-16

Slocum Payload CTD TEMPERATURE CALIBRATION DATA
 ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

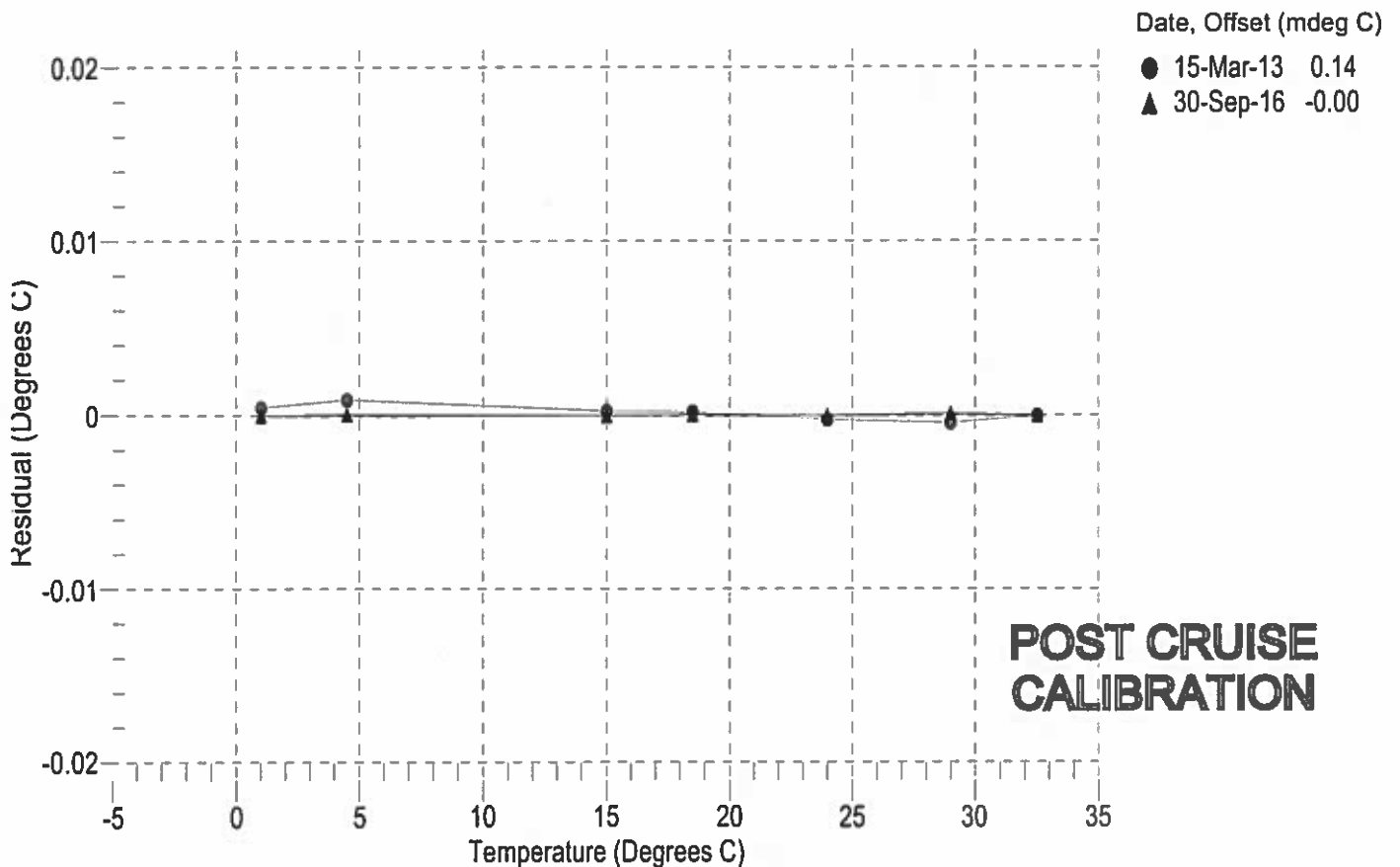
a0 = -1.129043e-004
 a1 = 3.101905e-004
 a2 = -4.800148e-006
 a3 = 2.077539e-007

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	587758.4	1.0000	-0.0000
4.5000	502149.6	4.5000	0.0000
15.0000	319405.7	15.0000	-0.0000
18.5000	276427.0	18.5000	0.0000
24.0000	221604.2	24.0000	-0.0000
29.0000	182381.9	29.0001	0.0001
32.5000	159672.7	32.5000	-0.0000

n = Instrument Output (counts)

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

Residual (°C) = instrument temperature - bath temperature



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

COEFFICIENTS:

g = -9.837084e-001
 h = 1.329141e-001
 i = -3.513669e-004
 j = 4.228103e-005

CPcor = -9.5700e-008
 CTcor = 3.2500e-006
 WBOTC = 1.4056e-006

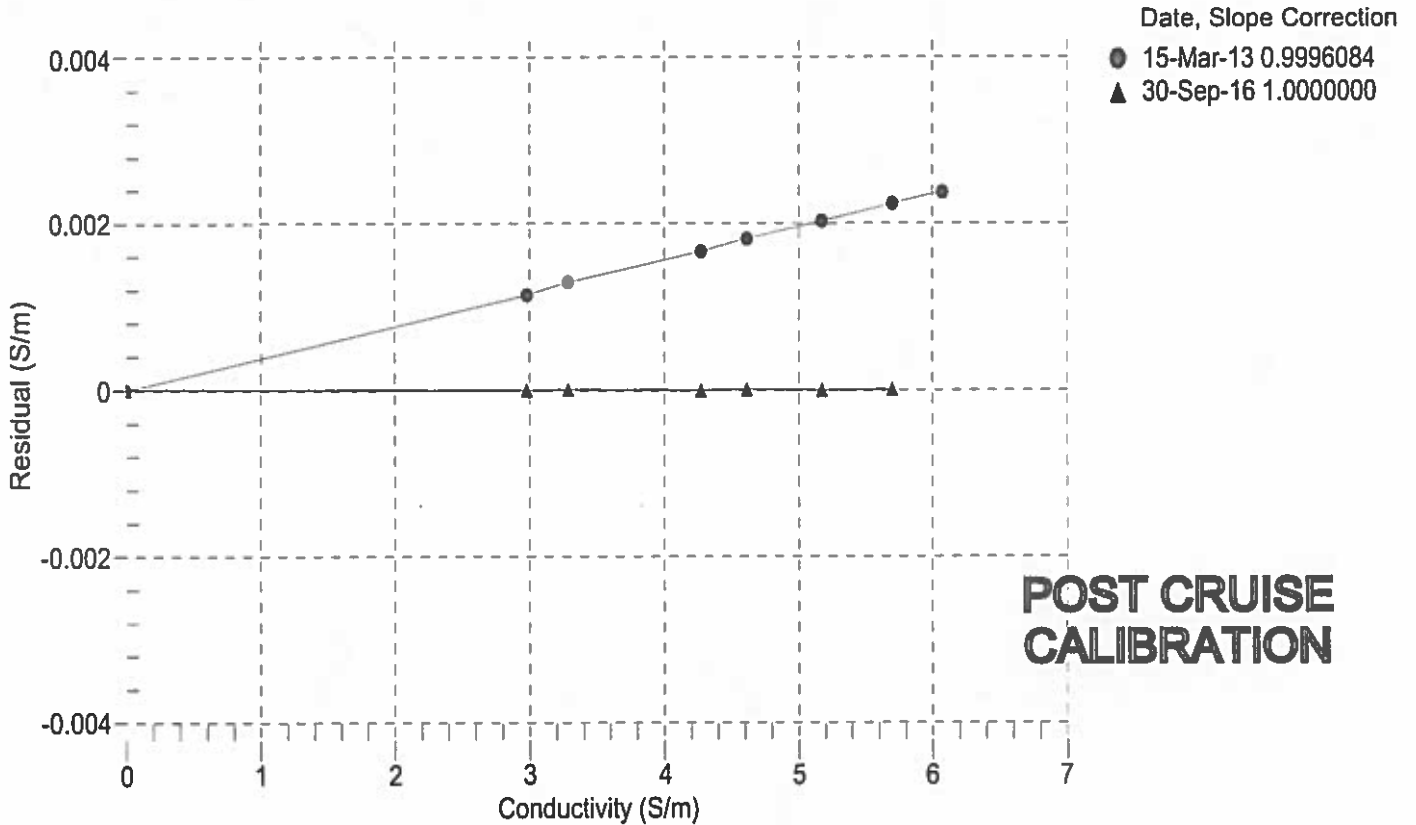
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2727.06	0.00000	0.00000
1.0000	34.8769	2.98065	5474.90	2.98064	-0.00001
4.5000	34.8565	3.28814	5682.74	3.28815	0.00001
15.0000	34.8141	4.27137	6300.64	4.27136	-0.00001
18.5000	34.8053	4.61707	6503.65	4.61708	0.00001
24.0000	34.7959	5.17593	6818.71	5.17592	-0.00001
29.0000	34.7913	5.69868	7100.41	5.69869	0.00000
32.5000	34.7892	6.07180	7294.55	6.07172	-0.00008

$f = \text{Instrument Output(Hz)} * \text{sqrt}(1.0 + \text{WBOTC} * t) / 1000.0$

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

$\text{Conductivity (S/m)} = (g + h * f^2 + i * f^3 + j * f^4) / 10 (1 + \delta * t + \epsilon * p)$

Residual (Siemens/meter) = instrument conductivity - bath conductivity



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CALIBRATION DATE: 28-Sep-16

Slocum Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 3791765

COEFFICIENTS:

PA0 =	2.408279e-001	PTCA0 =	5.250244e+005
PA1 =	4.560499e-003	PTCA1 =	1.934965e+000
PA2 =	-1.136445e-011	PTCA2 =	1.601245e-002
PTEMPA0 =	-6.920017e+001	PTCB0 =	2.533450e+001
PTEMPA1 =	5.242340e-002	PTCB1 =	-1.000000e-004
PTEMPA2 =	-5.841509e-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)
14.66	528236.0	1791.0	14.65	-0.00	32.50	1984	528309.70
314.94	594111.0	1794.0	315.04	0.01	29.00	1914	528302.00
614.95	659878.0	1795.0	614.85	-0.01	24.00	1815	528289.30
914.95	725719.0	1796.0	914.89	-0.00	18.50	1705	528272.80
1214.95	791580.0	1796.0	1214.93	-0.00	15.00	1636	528261.40
1464.94	846473.0	1797.0	1464.92	-0.00	4.50	1429	528241.30
1214.90	791589.0	1797.0	1214.97	0.00	1.00	1360	528233.30
914.93	725738.0	1796.0	914.98	0.00			
614.92	659895.0	1796.0	614.93	0.00			
314.94	594090.0	1796.0	314.95	0.00			
14.65	528231.0	1797.0	14.62	-0.00			

TEMPERATURE (°C)	SPAN (mV)
-5.00	25.34
35.00	25.33

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)

● 28-Sep-16 0.00

