



Sea-Bird Scientific
 13431 NE 20th Street
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 USA

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 www.seabird.com

SENSOR SERIAL NUMBER: 9059
 CALIBRATION DATE: 08-Jan-18

Slocum Payload CTD PRESSURE CALIBRATION DATA
 1450 psia S/N 3806522

COEFFICIENTS:

PA0 =	3.051861e-001	PTCA0 =	5.251641e+005
PA1 =	4.592624e-003	PTCA1 =	1.934199e+000
PA2 =	-2.083998e-011	PTCA2 =	4.866322e-002
PTEMPA0 =	-7.009247e+001	PTCB0 =	2.535088e+001
PTEMPA1 =	5.175779e-002	PTCB1 =	-4.250000e-004
PTEMPA2 =	-4.296846e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (volts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)	TEMP (°C)	THERMISTOR OUTPUT (volts)	INSTRUMENT OUTPUT (counts)
14.53	528327.1	1804.0	14.54	0.00	32.50	2016	528404.80
301.44	590784.4	1805.2	301.39	-0.00	29.00	1946	528391.40
588.66	653360.7	1805.7	588.64	-0.00	24.00	1846	528368.80
875.88	715969.3	1806.6	875.86	-0.00	18.50	1737	528345.00
1163.12	778618.1	1806.7	1163.11	-0.00	15.00	1667	528330.40
1450.28	841280.9	1807.2	1450.26	-0.00	4.50	1459	528302.00
1163.19	778646.7	1806.8	1163.24	0.00	1.00	1390	528295.20
875.96	715993.5	1806.7	875.97	0.00			
588.68	653374.6	1806.4	588.70	0.00			
301.33	590773.7	1807.1	301.34	0.00			
14.52	528327.8	1807.6	14.54	0.00			

THERMAL CORRECTION

TEMPERATURE (°C)	SPAN
-5.00	25.35
35.00	25.34

y = thermistor output (counts)

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

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

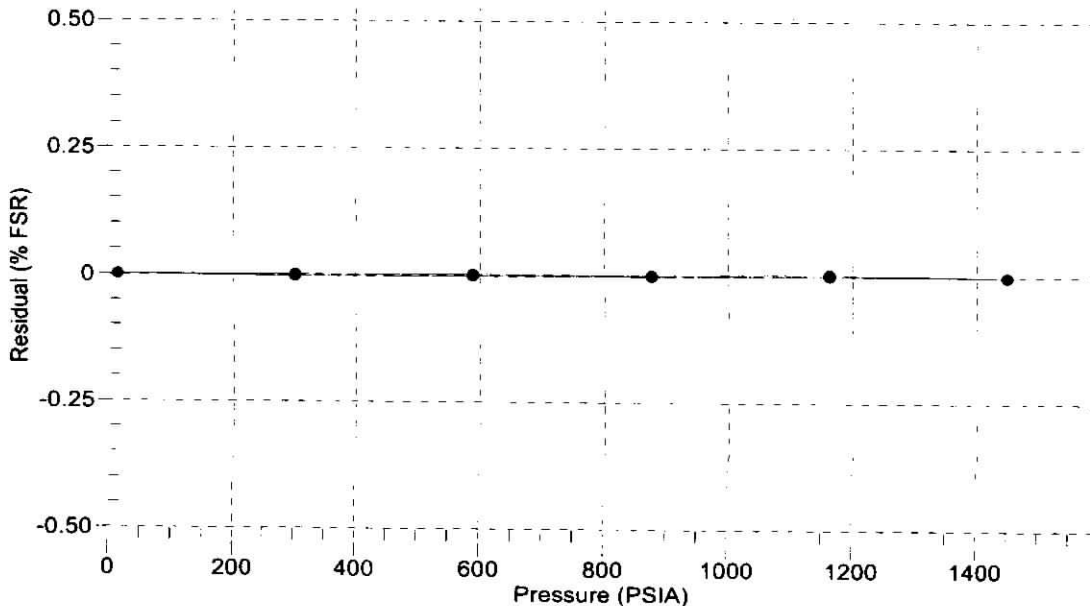
$$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$$

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

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

Date, Offset (%FSR)

● 08-Jan-18 0.00





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 CALIBRATION DATE: 09-Jan-18

Slocum Payload CTD TEMPERATURE CALIBRATION DATA
 ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

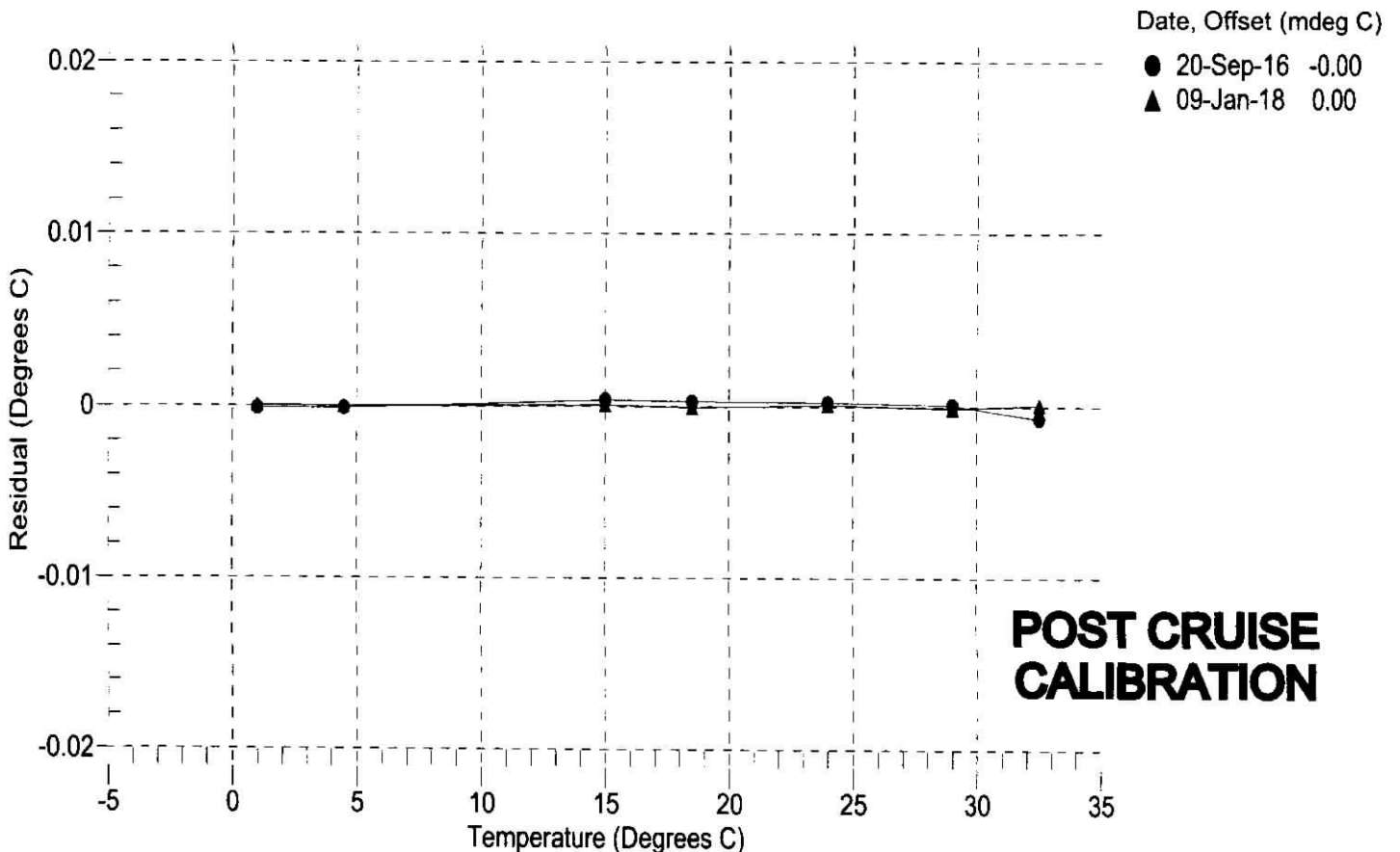
a0 = -7.847918e-005
 a1 = 2.988585e-004
 a2 = -3.825737e-006
 a3 = 1.856999e-007

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	579575.5	1.0000	0.0000
4.5000	495894.5	4.5000	-0.0000
15.0000	316756.5	15.0001	0.0001
18.5000	274499.8	18.4999	-0.0001
24.0000	220499.7	24.0001	0.0001
29.0000	181790.7	28.9999	-0.0001
32.5000	159339.6	32.5001	0.0001

n = Instrument Output (counts)

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

$$\text{Residual (°C)} = \text{instrument temperature} - \text{bath temperature}$$





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

COEFFICIENTS:

g = -9.712333e-001
 h = 1.350194e-001
 i = -4.101756e-004
 j = 4.898164e-005

CPcor = -9.5700e-008
 CTcor = 3.2500e-006
 WBOTC = 1.9210e-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	2689.44	0.00000	0.00000
1.0000	34.7662	2.97209	5419.99	2.97210	0.00001
4.5000	34.7468	3.27881	5626.27	3.27881	-0.00000
15.0000	34.7055	4.25946	6239.29	4.25945	-0.00001
18.5000	34.6971	4.60426	6440.65	4.60425	-0.00001
24.0000	34.6882	5.16167	6753.12	5.16170	0.00003
29.0000	34.6846	5.68317	7032.44	5.68316	-0.00001
32.5000	34.6824	6.05528	7223.61	6.05272	-0.00255

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

t = temperature (°C); p = pressure (decibars); δ = CTcor; ϵ = CPcor;

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

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

