

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: 9270
CALIBRATION DATE: 17-Jan-15

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

COEFFICIENTS:

g = -9.913061e-001
h = 1.527281e-001
i = -9.059550e-005
j = 3.011435e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 9.8108e-008

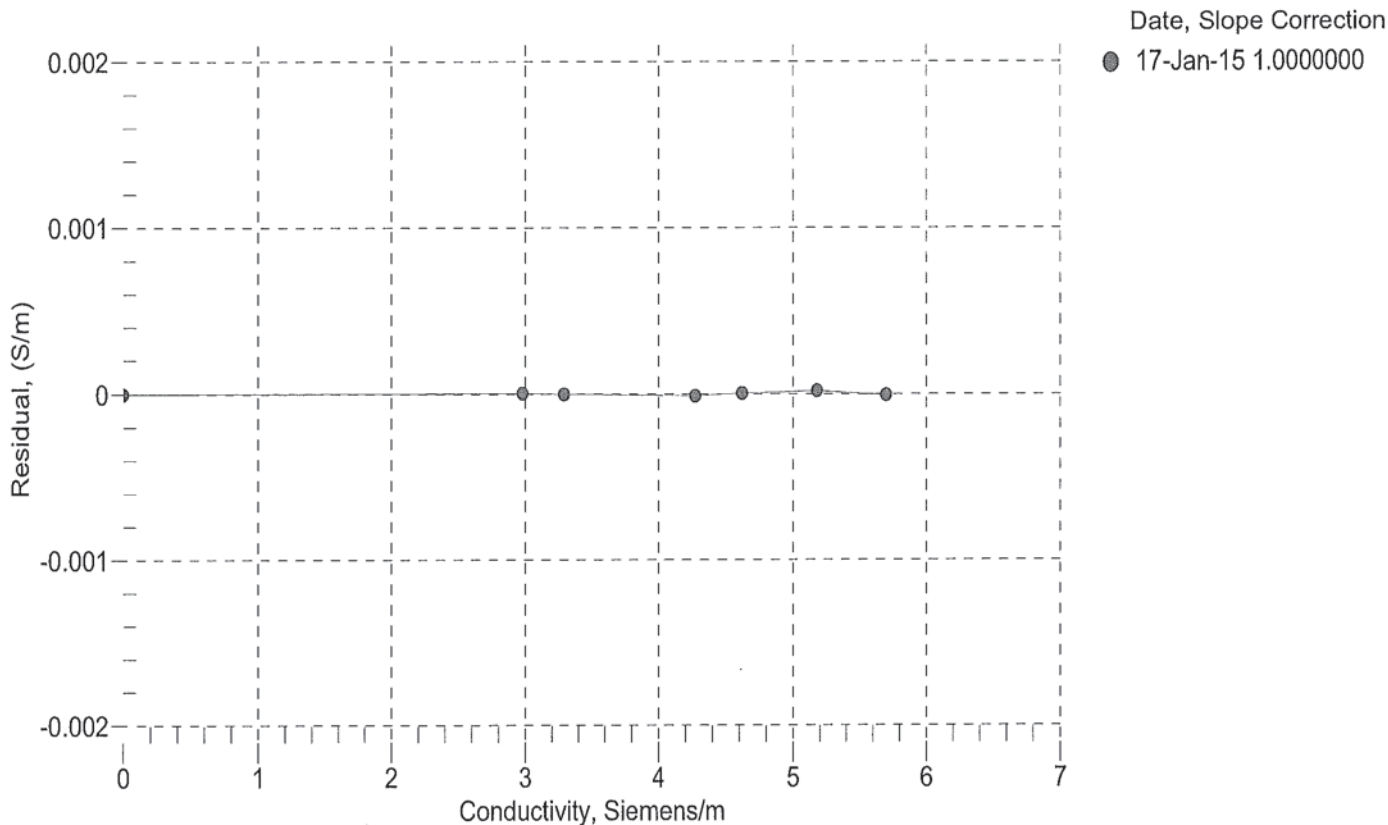
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2547.97	0.00000	0.00000
1.0000	34.8900	2.98166	5095.00	2.98167	0.00000
4.5000	34.8701	3.28930	5287.86	3.28930	-0.00000
15.0000	34.8272	4.27281	5861.33	4.27280	-0.00001
18.5000	34.8181	4.61858	6049.81	4.61858	0.00000
23.9940	34.8080	5.17691	6342.07	5.17693	0.00002
29.0000	34.8020	5.70024	6603.98	5.70023	-0.00001
32.5000	34.7978	6.07313	6784.09	6.07272	-0.00040

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

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

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

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 9270
CALIBRATION DATE: 12-Jan-15

Slocum Payload CTD PRESSURE CALIBRATION DATA
FSR: 1450 psia S/N 4314736

COEFFICIENTS:

PA0 = 3.528866e-001	PTCA0 = 5.239648e+005
PA1 = 4.616189e-003	PTCA1 = 5.638453e+000
PA2 = -2.656934e-011	PTCA2 = -1.024408e-001
PTEMPA0 = 1.617433e+002	PTCB0 = 2.529525e+001
PTEMPA1 = -6.626416e-002	PTCB1 = -3.500000e-004
PTEMPA2 = 5.157362e-008	PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

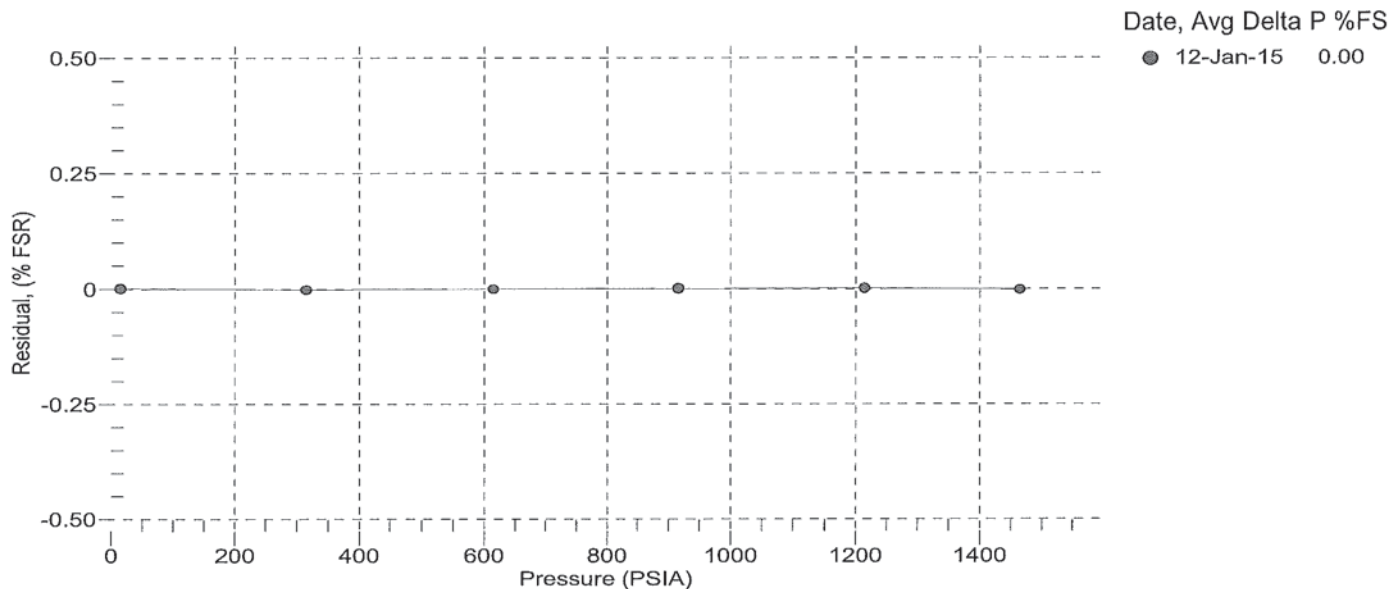
PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FS
14.78	527171.0	2104.0	14.81	0.00
315.11	592226.0	2100.0	315.09	-0.00
615.07	657264.0	2098.0	615.06	-0.00
915.04	722350.0	2098.0	915.03	-0.00
1215.01	787488.0	2096.0	1215.02	0.00
1464.99	841794.0	2094.0	1464.95	-0.00
1215.01	787493.0	2097.0	1215.04	0.00
915.06	722361.0	2097.0	915.08	0.00
615.10	657270.0	2097.0	615.09	-0.00
315.13	592227.0	2098.0	315.09	-0.00
14.78	527165.0	2099.0	14.78	0.00

THERMAL CORRECTION

TEMP ITS90	THERMISTOR OUTPUT	INST OUTPUT
32.50	1954	527226.60
29.00	2006	527214.00
23.99	2081	527216.40
18.50	2167	527205.00
15.00	2218	527220.40
4.50	2378	527166.00
1.00	2430	527148.00

TEMP (ITS90)	SPAN (mV)
-5.00	25.30
35.00	25.28

$y = \text{thermistor output}; t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$
 $x = \text{pressure output} - PTCA0 - PTCA1 * t - PTCA2 * t^2$
 $n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$
 $\text{pressure (psia)} = PA0 + PA1 * n + PA2 * n^2$



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 CALIBRATION DATE: 17-Jan-15

Slocum Payload CTD TEMPERATURE CALIBRATION DATA
 ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

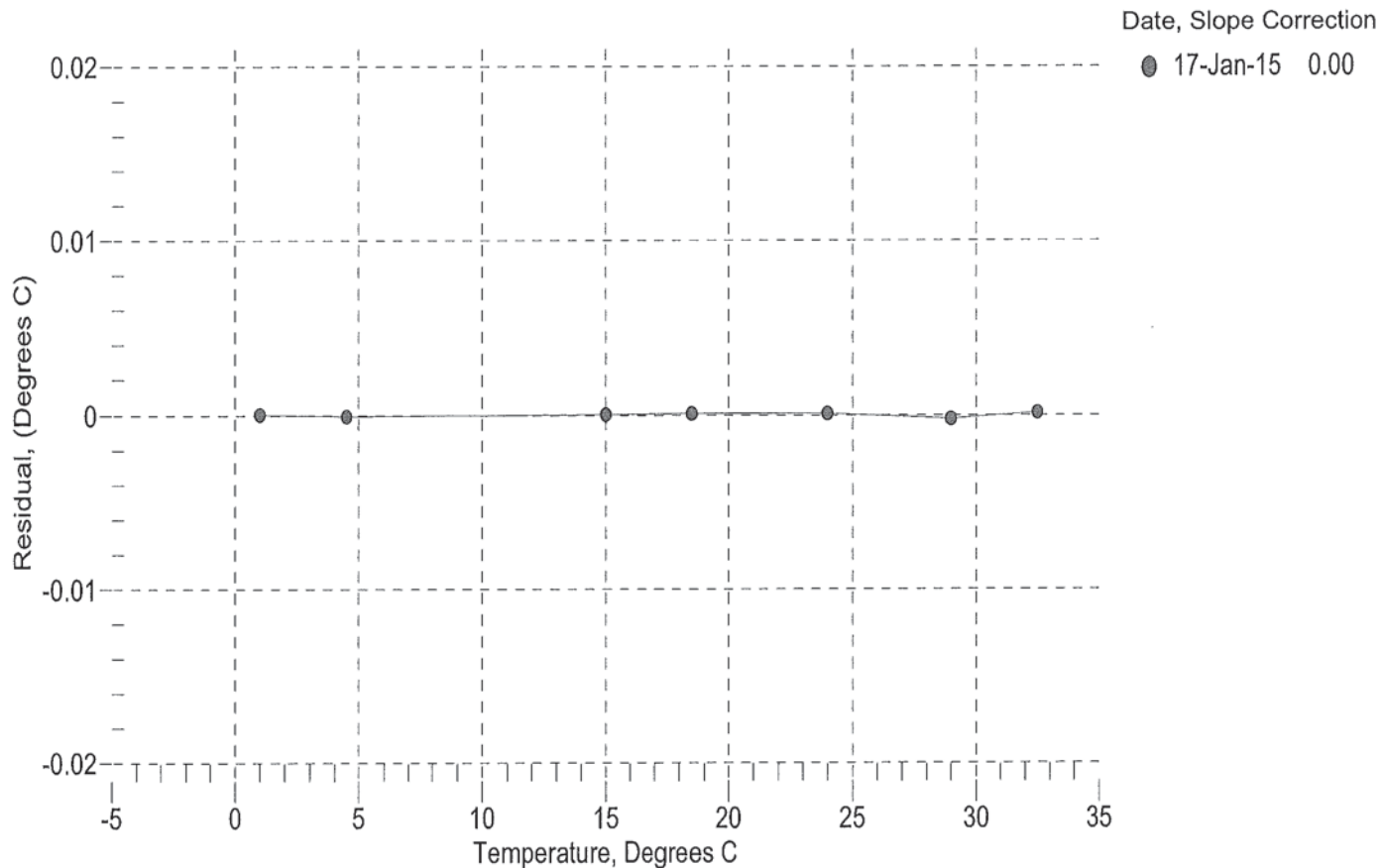
a0 = -6.516595e-005
 a1 = 2.952793e-004
 a2 = -3.457127e-006
 a3 = 1.759450e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	564268.6	1.0000	0.0000
4.5000	483019.6	4.4999	-0.0001
15.0000	308951.8	15.0000	0.0000
18.5000	267853.8	18.5001	0.0001
23.9940	215360.8	23.9941	0.0001
29.0000	177621.6	28.9998	-0.0002
32.5000	155750.2	32.5001	0.0001

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





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Pressure Test Certificate

Test Date: 01/06/15

Description: Slocum CTD

Sensor Information:

Model Number: Slocum

Serial Number: 9270

Pressure Test Protocol:

Low Pressure Test: 40	PSI	Held For: 15	Minutes
High Pressure Test: 40	PSI	Held For: 15	Minutes

Passed Test: Yes

Tested By: ap

High pressure is generally equal to the maximum depth rating of the instrument

