



SEA-BIRD
SCIENTIFIC

Sea-Bird Scientific
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Pressure Test Certificate

Test Date: 2019-03-01

Description: Slocum CTD

Sensor Information:

Model Number: Slocum

Serial Number: 9551

Pressure Test Protocol:

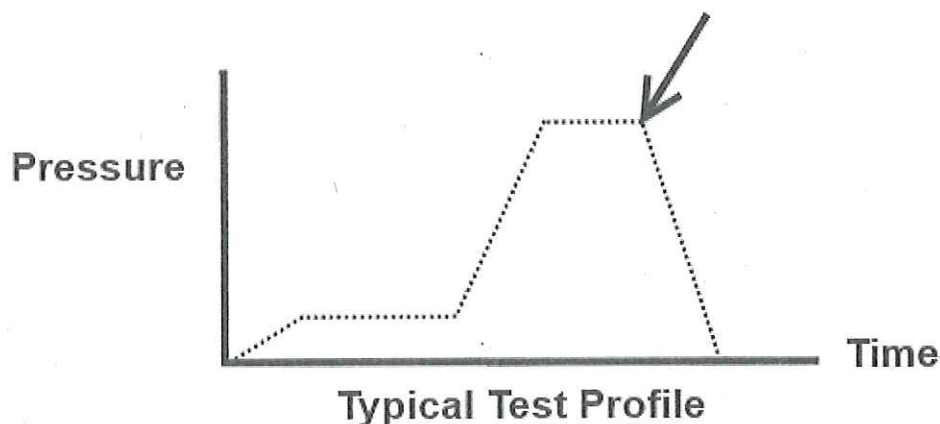
Low Pressure Test: 40 PSI Held For: 15 Minutes

High Pressure Test: 1450 PSI Held For: 15 Minutes

Passed Test: True

Tested By: TH

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





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SENSOR SERIAL NUMBER: 9551
CALIBRATION DATE: 22-Feb-19

Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

a0 = -1.176372e-004
a1 = 3.041950e-004
a2 = -3.971637e-006
a3 = 1.871741e-007

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	561534.4	1.0000	-0.0000
4.5000	480971.2	4.5000	0.0000
15.0000	308220.8	14.9998	-0.0002
18.5000	267383.0	18.5003	0.0003
24.0000	215150.2	23.9998	-0.0002
28.9999	177648.2	29.0000	0.0001
32.5000	155875.6	32.5000	-0.0000

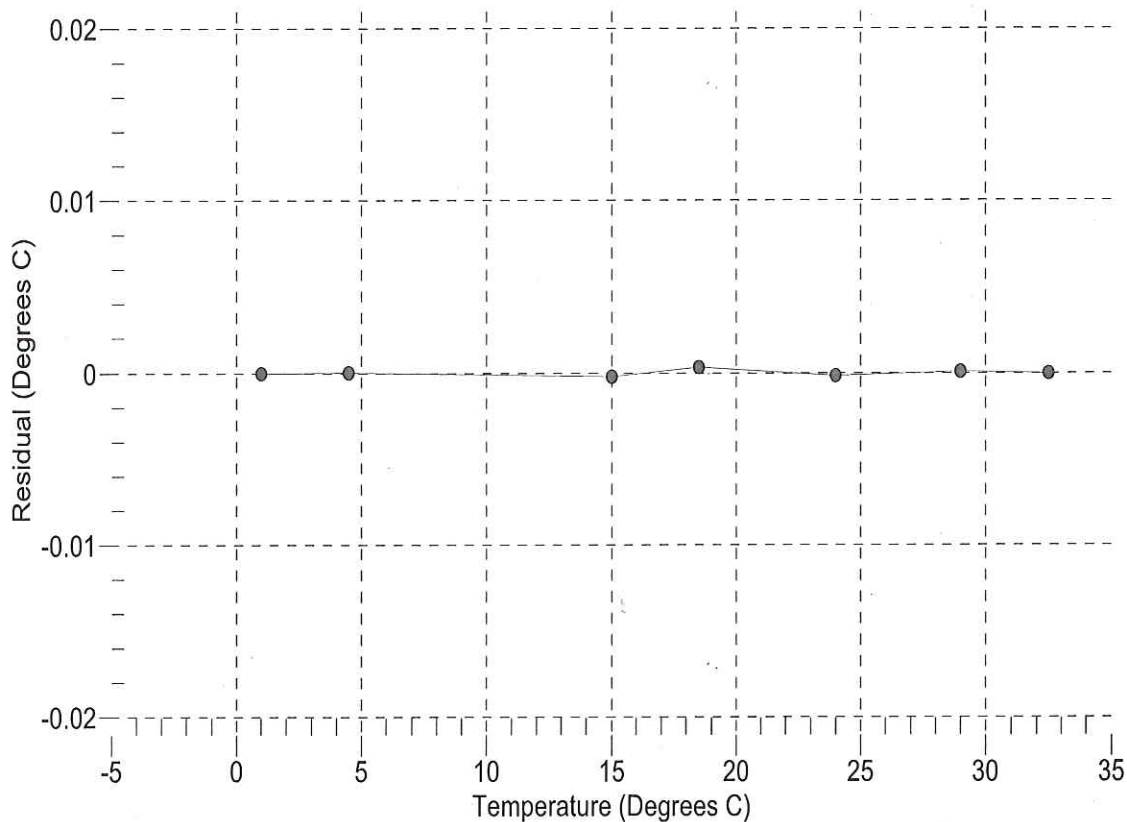
n = Instrument Output (counts)

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

Date, Offset (mdeg C)

● 22-Feb-19 -0.00





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SENSOR SERIAL NUMBER: 9551
CALIBRATION DATE: 18-Feb-19

Slocum Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 11201505

COEFFICIENTS:

PA0 = 1.303949e-001
PA1 = 4.496554e-003
PA2 = -1.076939e-011
PTEMPA0 = -5.905836e+001
PTEMPA1 = 5.407122e-002
PTEMPA2 = -5.792297e-007

PTCA0 = 5.240996e+005
PTCA1 = 9.412815e-001
PTCA2 = 5.006244e-002
PTCB0 = 2.506488e+001
PTCB1 = 3.750000e-004
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)
14.80	527395.8	1459.9	14.79	-0.00	32.50	1725	527443.80
301.06	591094.0	1472.2	301.07	0.00	29.00	1658	527428.20
588.08	654965.9	1474.3	588.06	-0.00	24.00	1562	527420.60
875.46	718957.1	1476.2	875.49	0.00	18.50	1457	527382.80
1162.77	782937.3	1477.6	1162.78	0.00	15.00	1391	527391.20
1449.89	846903.5	1479.1	1449.92	0.00	4.50	1191	527368.80
1162.88	782950.9	1479.8	1162.83	-0.00	1.00	1124	527359.60
875.45	718942.0	1480.7	875.41	-0.00			
588.29	655021.4	1482.0	588.30	0.00	TEMPERATURE (°C)		SPAN
300.98	591089.2	1484.3	301.04	0.00	-5.00		25.06
14.80	527396.5	1487.6	14.77	-0.00	35.00		25.08

y = thermistor output (counts)

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

x = instrument output - PTCA0 - PTCA1 * t - PTCA2 * t²

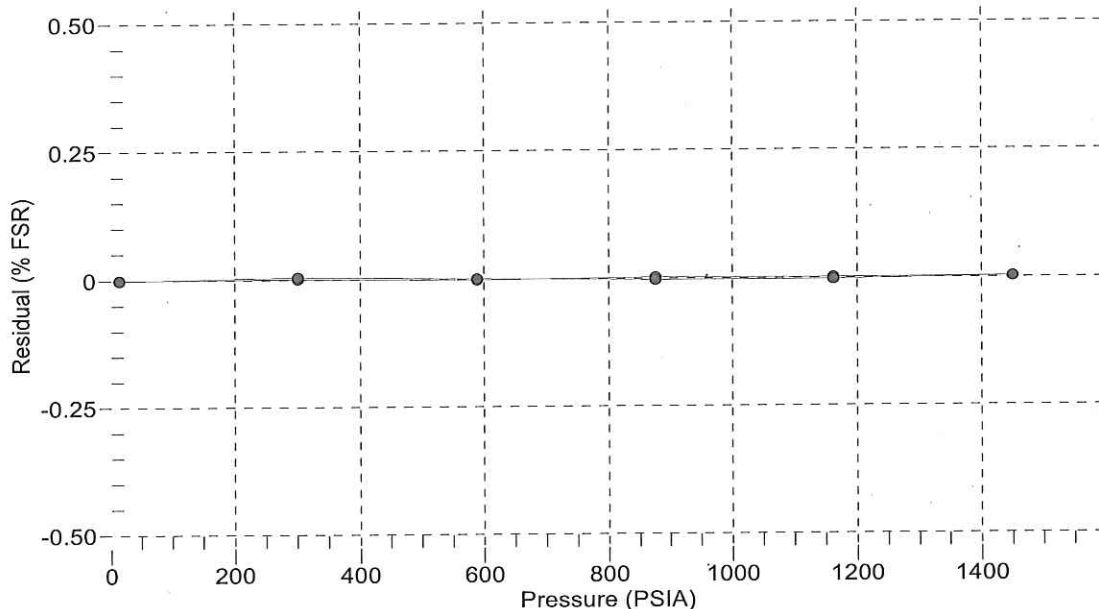
$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$

pressure (PSIA) = PA0 + PA1 * n + PA2 * n²

Residual (%FSR) = (computed pressure - true pressure) * 100 / Full Scale Range

Date, Offset (%FSR)

● 18-Feb-19 -0.00





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CALIBRATION DATE: 22-Feb-19

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

COEFFICIENTS:

g = -1.007926e+000
h = 1.370379e-001
i = -1.945126e-004
j = 3.210553e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 3.0692e-008

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	2714.92	0.00000	0.00000
1.0000	34.8407	2.97785	5395.33	2.97784	-0.00001
4.5000	34.8216	3.28517	5598.86	3.28519	0.00001
15.0000	34.7799	4.26762	6204.06	4.26762	0.00000
18.5000	34.7710	4.61301	6402.98	4.61301	-0.00000
24.0000	34.7599	5.17116	6711.70	5.17115	-0.00001
28.9999	34.7534	5.69316	6987.79	5.69317	0.00001
32.5000	34.7484	6.06549	7178.03	6.06549	-0.00000

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

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

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

Date, Slope Correction

● 22-Feb-19 1.0000000

