



SEA-BIRD
SCIENTIFIC

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Pressure Test Certificate

Test Date: **2022-04-28**

Description: **Slocum CTD**

Sensor Information:

Model Number: **Slocum**

Serial Number: **9807**

Pressure Test Protocol:

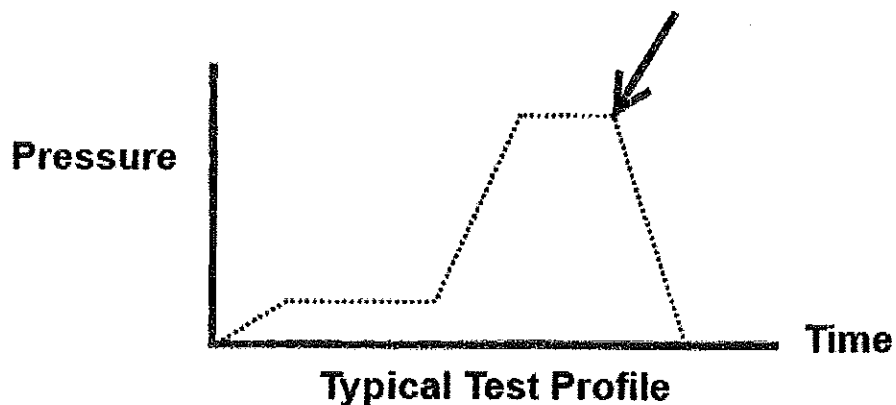
Low Pressure Test: **40** PSI Held For: **15** Minutes

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

Passed Test: **True**

Tested By: **db**

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





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SENSOR SERIAL NUMBER: 9807
CALIBRATION DATE: 29-Apr-22

Slocum Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 11998509

COEFFICIENTS:

PA0 = 1.179963e-001
PA1 = 4.459436e-003
PA2 = -1.602817e-011
PTEMPA0 = -6.145788e+001
PTEMPA1 = 5.449367e-002
PTEMPA2 = -6.554641e-007

PTCA0 = 5.240035e+005
PTCA1 = 1.754637e+000
PTCA2 = -2.773918e-002
PTCB0 = 2.511929e+001
PTCB1 = -1.741294e-004
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)
14.59	527282.6	1579.6	14.63	0.00	32.50	1762	527278.00
301.87	591670.1	1582.6	301.73	-0.01	29.00	1694	527277.20
589.00	656123.6	1583.5	589.00	-0.00	24.00	1599	527275.40
876.13	720571.2	1584.2	876.11	-0.00	18.50	1494	527269.60
1163.29	785060.2	1585.0	1163.26	-0.00	14.99	1428	527270.20
1450.45	849572.0	1586.4	1450.39	-0.00	4.49	1228	527263.00
1163.29	785094.9	1586.1	1163.42	0.01	1.00	1162	527246.80
876.07	720564.9	1586.2	876.08	0.00			
588.94	656125.1	1586.2	589.01	0.00			
301.78	591671.5	1586.6	301.74	-0.00			
14.57	527279.6	1587.5	14.61	0.00			
					TEMPERATURE (°C)		SPAN
					-4.10		25.12
					36.10		25.11

y = thermistor output (counts)

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

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

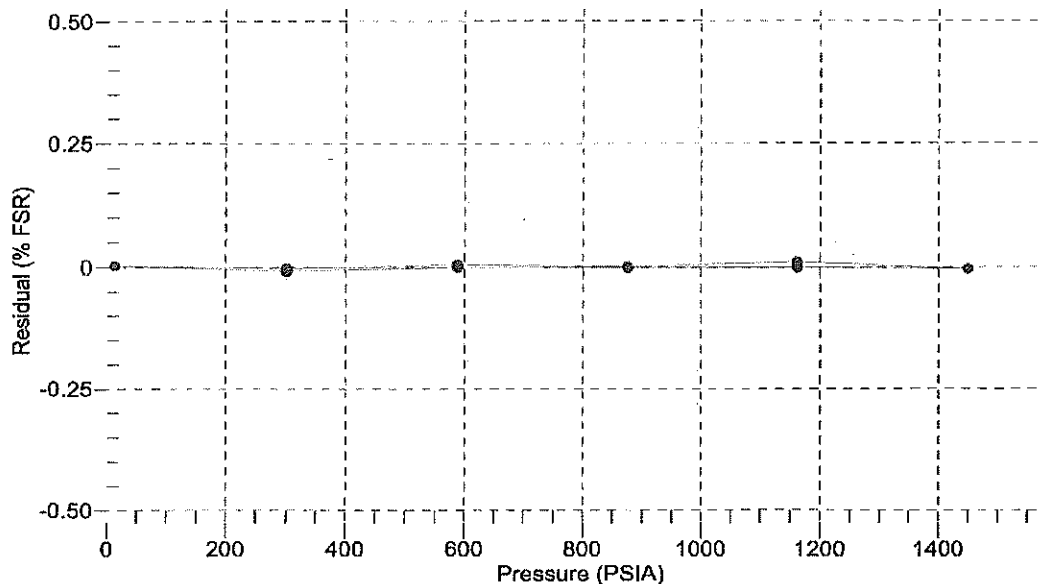
$$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$$

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

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

Date, Offset (%FSR)

● 29-Apr-22 -0.00





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SENSOR SERIAL NUMBER: 9807
CALIBRATION DATE: 06-May-22

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

COEFFICIENTS:

g = -1.004803e+000
h = 1.518585e-001
i = -5.415939e-004
j = 6.396567e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 4.5207e-007

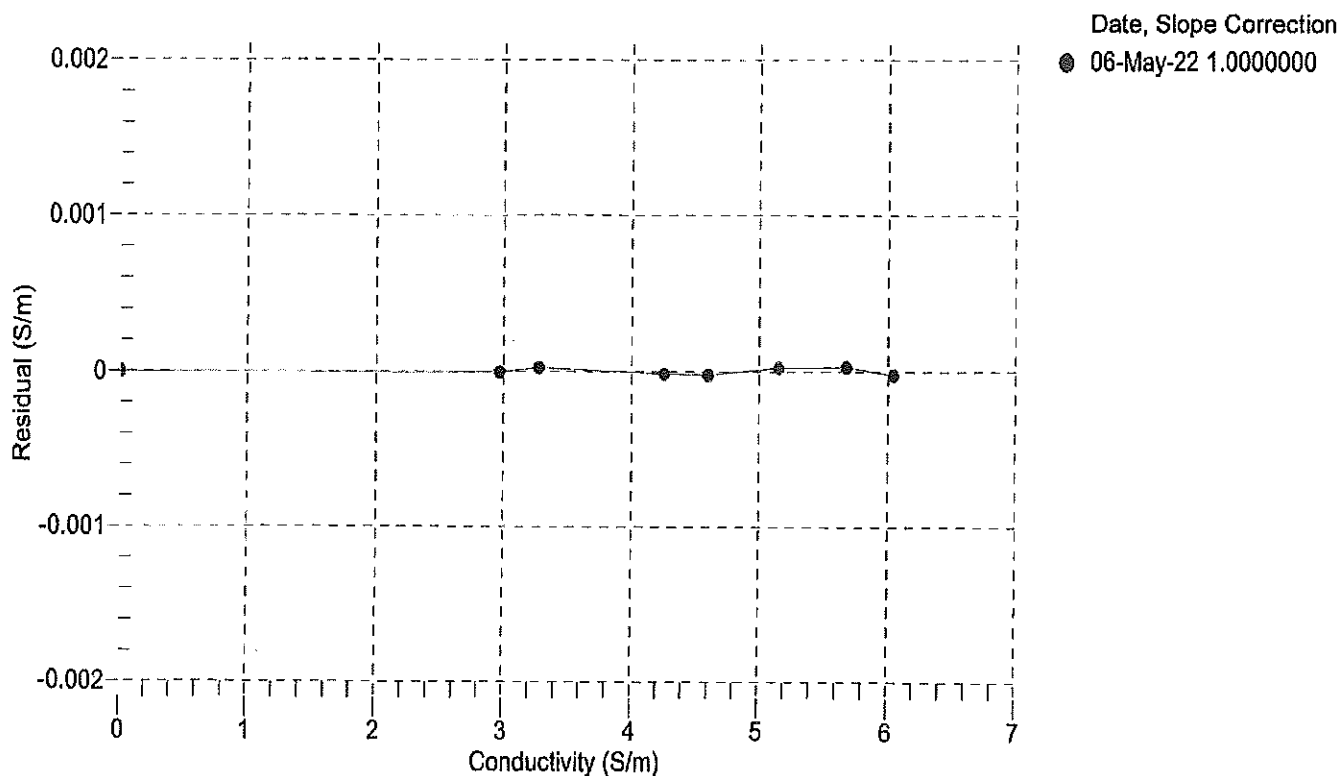
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2580.55	0.00000	0.00000
1.0000	34.7243	2.96885	5133.89	2.96884	-0.00001
4.4947	34.7039	3.27469	5327.39	3.27471	0.00002
14.9924	34.6602	4.25374	5903.48	4.25373	-0.00002
18.5000	34.6497	4.59865	6093.17	4.59863	-0.00002
24.0000	34.6380	5.15503	6386.98	5.15505	0.00002
29.0000	34.6286	5.67503	6649.47	5.67505	0.00003
32.5000	34.6158	6.04497	6829.81	6.04495	-0.00002

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

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





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CALIBRATION DATE: 06-May-22

Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

a0 = -6.099263e-005
a1 = 2.998808e-004
a2 = -4.012071e-006
a3 = 1.887700e-007

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	568966.0	1.0000	-0.0000
4.4947	486300.6	4.4947	0.0000
14.9924	309510.8	14.9923	-0.0001
18.5000	267819.8	18.5000	0.0000
24.0000	214751.6	24.0001	0.0001
29.0000	176775.4	28.9999	-0.0001
32.5000	154780.2	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)

● 06-May-22 0.00

