



Sea-Bird Scientific
13431 NE 20th Street
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USA

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www.seabird.com

Pressure Test Certificate

Test Date: 2021-01-28

Description: Slocum CTD

Sensor Information:

Model Number: Slocum

Serial Number: 9690

Pressure Test Protocol:

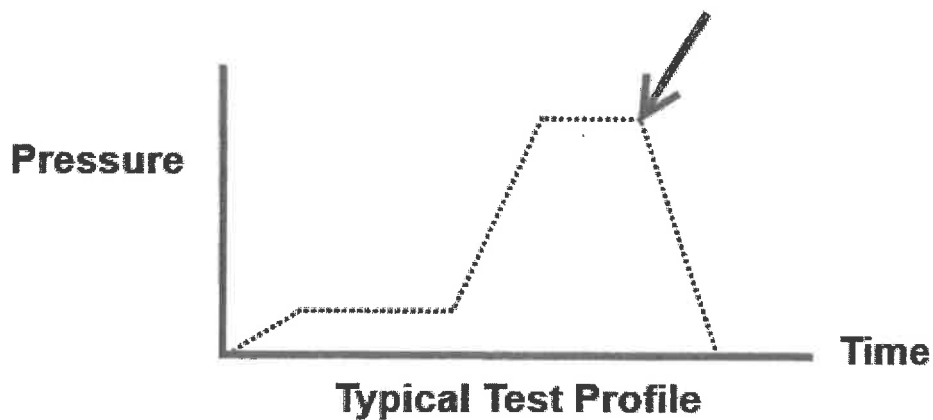
Low Pressure Test: 40 PSI Held For: 15 Minutes

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: 9690
CALIBRATION DATE: 31-Jan-21

Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

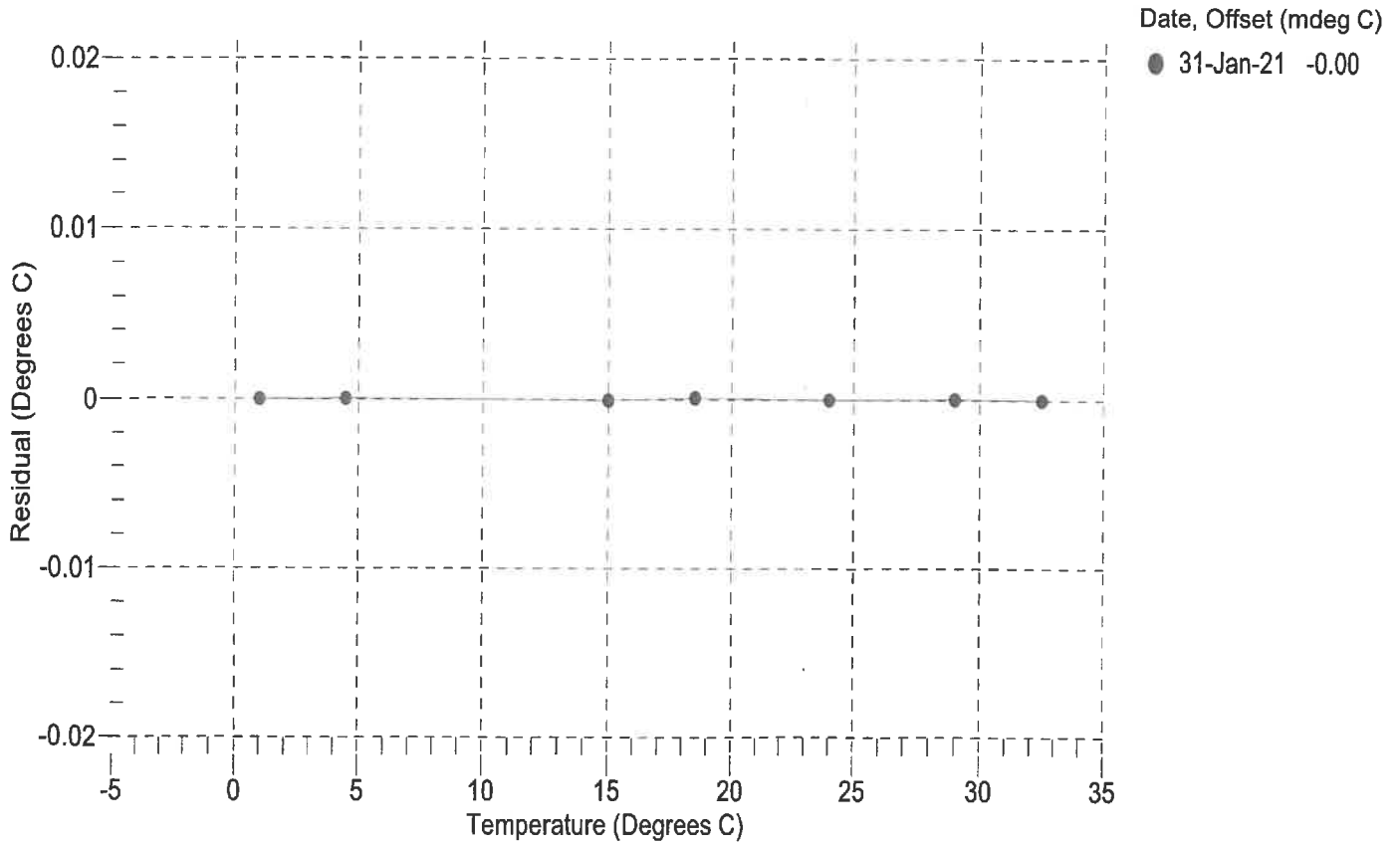
a0 = -1.380602e-004
a1 = 3.102941e-004
a2 = -4.561781e-006
a3 = 2.035466e-007

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	571313.8	1.0000	-0.0000
4.5000	489141.4	4.5000	0.0000
15.0000	313052.0	14.9999	-0.0001
18.5000	271462.2	18.5001	0.0001
24.0000	218282.8	24.0000	-0.0000
29.0000	180127.8	29.0000	0.0000
32.5000	157985.8	32.5000	-0.0000

n = Instrument Output (counts)

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

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





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

COEFFICIENTS:

g = -1.026919e+000 CPcor = -9.5700e-008
 h = 1.581039e-001 CTcor = 3.2500e-006
 i = -4.156937e-004 WBOTC = 5.2197e-007
 j = 5.626979e-005

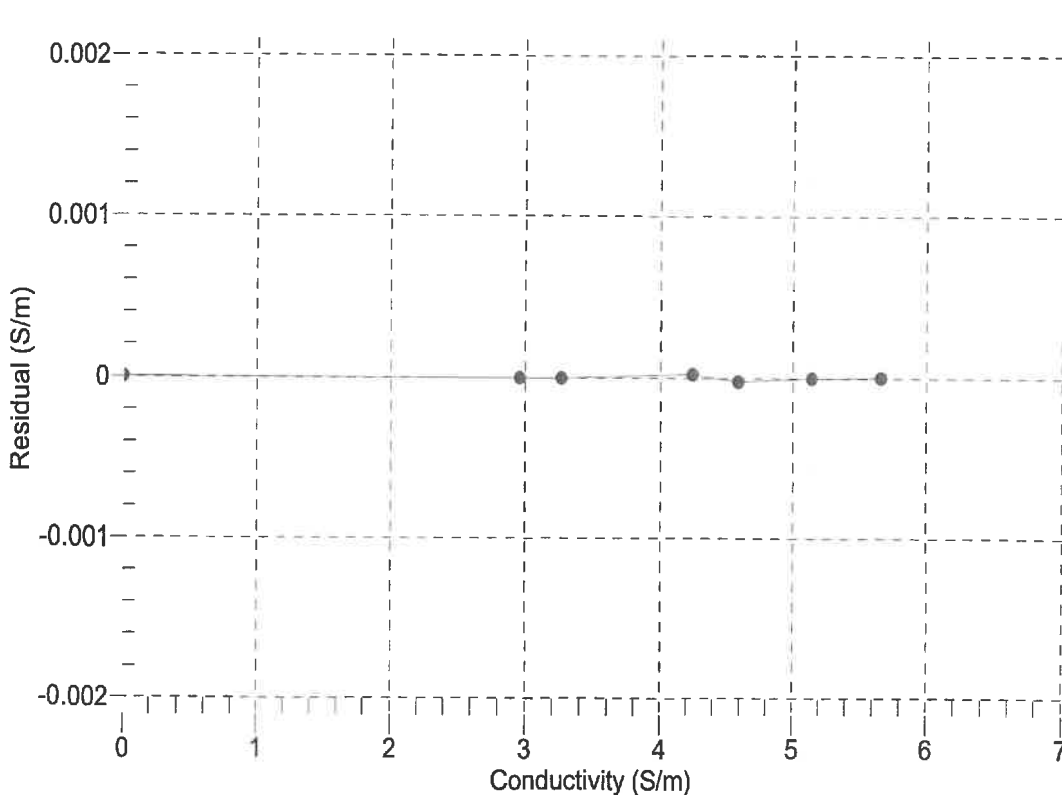
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2554.17	0.00000	0.00000
1.0000	34.6111	2.96009	5032.35	2.96009	-0.00000
4.5000	34.5918	3.26562	5221.12	3.26562	-0.00000
15.0000	34.5501	4.24240	5782.72	4.24242	0.00002
18.5000	34.5412	4.58580	5967.31	4.58577	-0.00002
24.0000	34.5313	5.14090	6253.95	5.14090	-0.00000
29.0000	34.5259	5.66008	6510.29	5.66009	0.00000
32.5000	34.5239	6.03074	6687.03	6.03061	-0.00013

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

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



Date, Slope Correction
 ● 31-Jan-21 1.0000000



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SENSOR SERIAL NUMBER: 9690
CALIBRATION DATE: 29-Jan-21

Slocum Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 11705796

COEFFICIENTS:

PA0 =	1.049180e-001	PTCA0 =	5.239114e+005
PA1 =	4.478599e-003	PTCA1 =	1.081495e+000
PA2 =	-1.645493e-011	PTCA2 =	-4.000319e-003
PTEMPA0 =	-6.078142e+001	PTCB0 =	2.518335e+001
PTEMPA1 =	5.450182e-002	PTCB1 =	6.015038e-004
PTEMPA2 =	-5.960552e-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)
14.40	527138.8	1559.9	14.45	0.00	32.50	1745	527200.40
301.45	591241.8	1560.1	301.31	-0.01	29.00	1678	527199.40
588.57	655455.6	1560.3	588.53	-0.00	24.00	1583	527198.80
875.69	719686.6	1560.5	875.69	0.00	18.50	1479	527187.00
1162.91	783961.5	1560.3	1162.92	0.00	15.00	1412	527184.40
1450.11	848244.6	1560.5	1450.04	-0.00	4.50	1214	527178.00
1162.99	783982.1	1559.7	1163.01	0.00	1.00	1148	527171.00
875.65	719718.5	1558.9	875.84	0.01			
588.59	655464.0	1558.4	588.57	-0.00			
301.49	591258.5	1557.7	301.39	-0.01			
14.40	527146.3	1557.3	14.48	0.01			

	TEMPERATURE (°C)	SPAN
	-3.90	25.18
	36.00	25.20

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-Jan-21 -0.00

