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Pressure Test Certificate

Test Date: 2019-03-27

Description: Slocum CTD

Sensor Information:
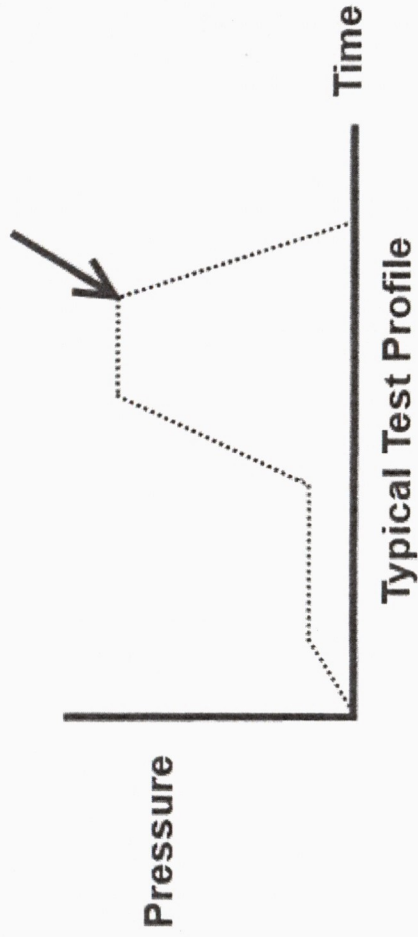
Model Number: **Slocum**

Serial Number: **9567**

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: **DC**

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

Pressure

Time

Typical Test Profile

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

SENSOR SERIAL NUMBER: 9567
CALIBRATION DATE: 07-Apr-19

COEFFICIENTS:

g = -1.017219e+000
h = 1.475863e-001
i = -2.201805e-004
j = 3.715683e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 3.1704e-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	2628.19	0.00000	0.00000
1.0000	34.8747	2.98048	5206.99	2.98048	-0.00000
4.5000	34.8542	3.28795	5402.92	3.28795	-0.00000
15.0000	34.8116	4.27110	5985.83	4.27111	0.00001
18.5000	34.8022	4.61670	6177.42	4.61670	0.00000
24.0000	34.7920	5.17541	6474.89	5.17540	-0.00001
29.0000	34.7852	5.69780	6740.86	5.69779	-0.00001
32.5000	34.7786	6.07016	6924.05	6.07017	0.00001

f = Instrument Output(Hz) * sqrt(1.0 + WBOTC * t) / 1000.0

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

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

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

Date, Slope Correction
● 07-Apr-19 1.0000000
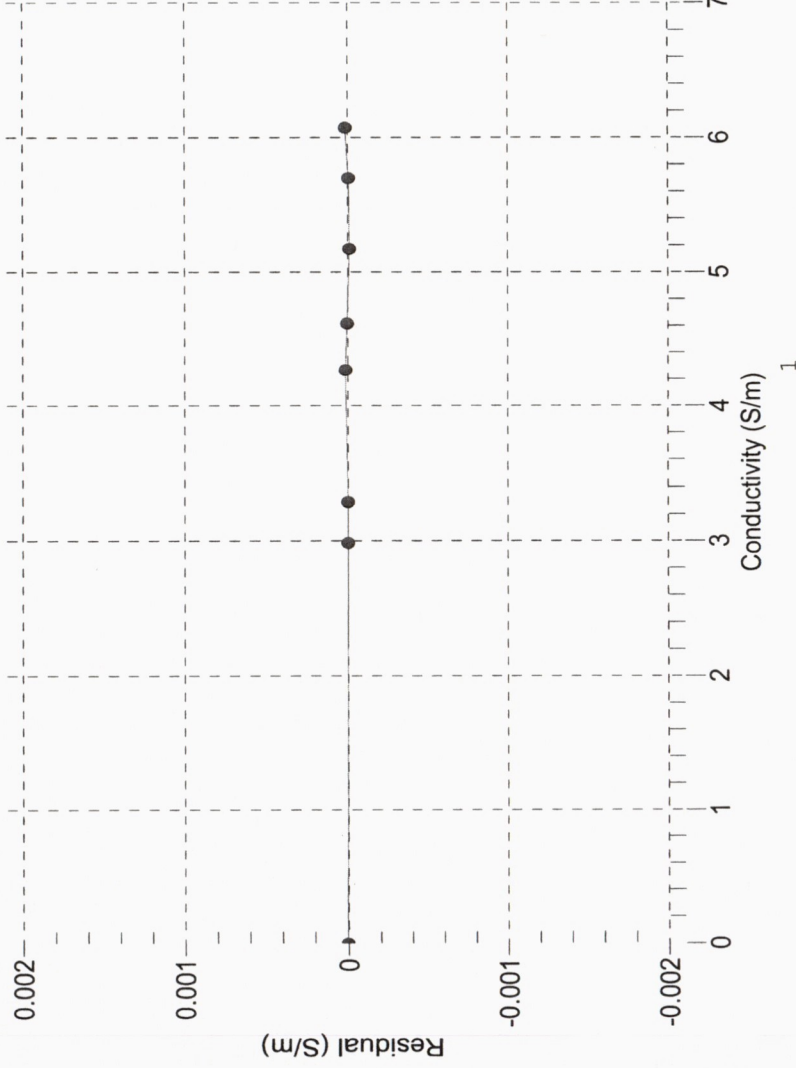
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Slocum Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 11201507

SENSOR SERIAL NUMBER: 9567
CALIBRATION DATE: 27-Mar-19

COEFFICIENTS:

PA0	=	-1.001979e-001	PTCA0	=	5.239411e+005
PA1	=	4.516382e-003	PTCA1	=	-1.754824e+000
PA2	=	-4.973919e-012	PTCA2	=	4.654546e-002
PTEMPA0	=	-6.094951e+001	PTCB0	=	2.512275e+001
PTEMPA1	=	5.295762e-002	PTCB1	=	9.500000e-004
PTEMPA2	=	-2.620816e-007	PTCB2	=	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (volts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.54	527166.0	1555.0	14.53	-0.00
300.98	590655.8	1557.9	301.02	0.00
588.29	654319.0	1558.6	588.26	-0.00
875.50	717988.8	1559.9	875.48	-0.00
1162.77	781677.5	1561.1	1162.75	-0.00
1449.71	845308.1	1561.7	1449.72	0.00
1162.75	781681.5	1562.2	1162.77	0.00
875.54	718002.7	1562.6	875.54	0.00
588.35	654337.7	1562.9	588.34	-0.00
301.13	590692.0	1565.0	301.18	0.00
14.54	527163.8	1565.9	14.52	-0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (volts)	INSTRUMENT OUTPUT (counts)
32.50	1780	527235.30
29.00	1713	527214.80
24.00	1617	527221.60
18.50	1512	527209.60
15.00	1445	527225.50
4.50	1243	527242.80
1.00	1177	527222.40

TEMPERATURE (°C)	SPAN
-5.00	25.12
35.00	25.16

y = thermistor output (counts)

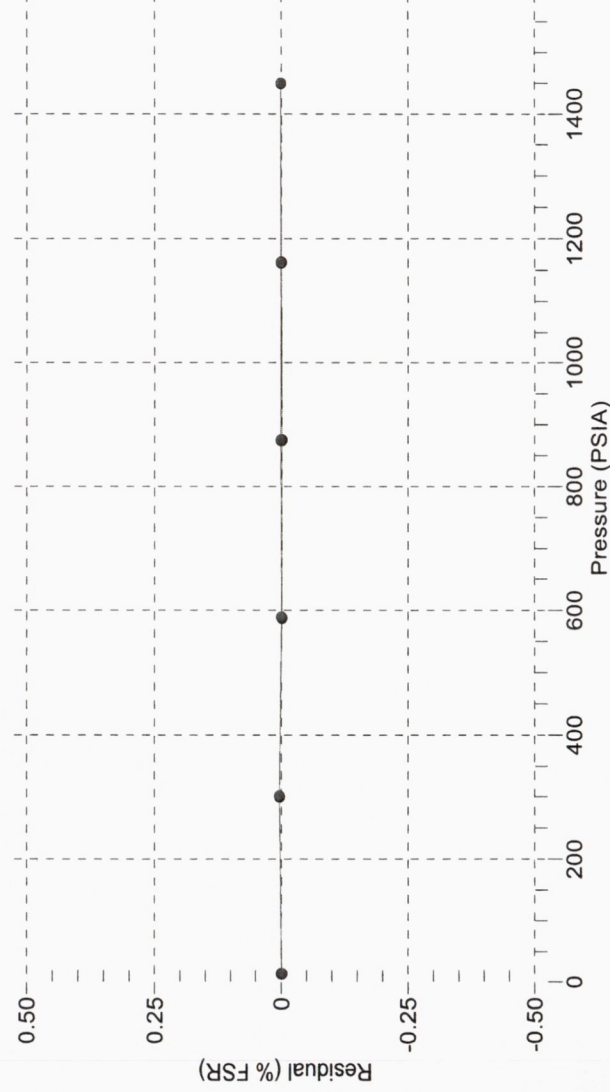$t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$

x = instrument output - PTCA0 - PTCA1 * t - PTCA2 * t^2

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

pressure (PSIA) = $PA0 + PA1 * n + PA2 * n^2$

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

Date, Offset (%FSR)
● 27-Mar-19   -0.00

Residual (% FSR) vs Pressure (PSIA)

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Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

SENSOR SERIAL NUMBER: 9567
CALIBRATION DATE: 07-Apr-19

COEFFICIENTS:

$a0 = -1.385584e-004$
$a1 = 3.167089e-004$
$a2 = -5.320675e-006$
$a3 = 2.227175e-007$

BATH TEMP (°C)	INSTRUMENT OUTPUT (counts)	INST TEMP (°C)	RESIDUAL (°C)
1.0000	579480.4	1.0000	0.0000
4.5000	495213.8	4.4999	-0.0001
15.0000	315223.0	15.0000	0.0000
18.5000	272868.5	18.5000	0.0000
24.0000	218825.0	24.0000	0.0000
29.0000	180148.4	28.9999	-0.0001
32.5000	157747.1	32.5001	0.0001

n = Instrument Output (counts)

Temperature ITS-90 (°C) = $1/\{a0 + a1[ln(n)] + a2[ln^2(n)] + a3[ln^3(n)]\} - 273.15$

Residual (°C) = instrument temperature - bath temperature

Date, Offset (mdeg C)
● 07-Apr-19   0.00

Residual (Degrees C)
Temperature (Degrees C)

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