SEA-BIRD SCIENTIFIC
Sea-Bird Scientific
13431 NE 20th Street
Bellevue, WA 98005
USA

+1 425-643-9866
seabird@seabird.com
www.seabird.com

SENSOR SERIAL NUMBER: 9431
CALIBRATION DATE: 28-Oct-17

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

COEFFICIENTS:

```
g = -1.001202e+000
h =  1.314629e-001
i = -1.015486e-004
j =  2.407372e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC =  1.5091e-007
```

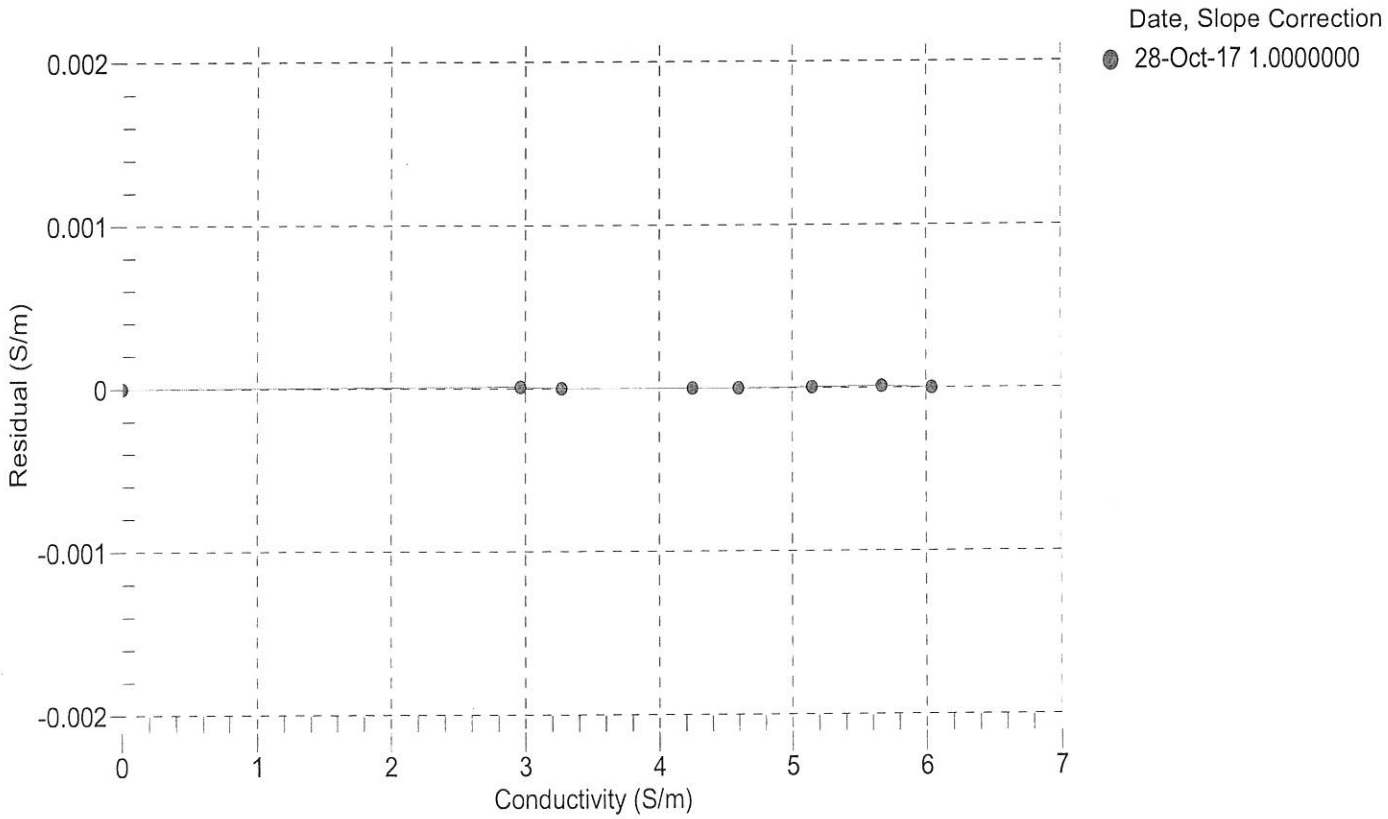
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2760.70	0.00000	0.00000
1.0000	34.6567	2.96362	5488.25	2.96362	0.00001
4.5000	34.6374	3.26950	5695.29	3.26950	-0.00000
15.0000	34.5961	4.24745	6311.11	4.24745	-0.00000
18.5000	34.5878	4.59132	6513.56	4.59131	-0.00000
23.9940	34.5786	5.14654	6827.52	5.14655	0.00000
29.0000	34.5737	5.66704	7108.94	5.66704	0.00001
32.5000	34.5705	6.03796	7302.70	6.03795	-0.00000

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



SEA-BIRD SCIENTIFIC
Sea-Bird Scientific
13431 NE 20th Street
Bellevue, WA 98005
USA

+1 425-643-9866
seabird@seabird.com
www.seabird.com

SENSOR SERIAL NUMBER: 9431
CALIBRATION DATE: 26-Oct-17

Slocum Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 10712103

COEFFICIENTS:

PA0 =	5.918117e-001	PTCA0 =	5.245631e+005
PA1 =	4.443610e-003	PTCA1 =	1.076733e+001
PA2 =	-1.064336e-011	PTCA2 =	-2.051581e-001
PTEMPA0 =	-6.738381e+001	PTCB0 =	2.528650e+001
PTEMPA1 =	5.160049e-002	PTCB1 =	1.000000e-004
PTEMPA2 =	-6.292784e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (volts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.74	527888.9	1736.3	14.77	0.00
301.70	592455.5	1739.9	301.61	-0.01
588.88	657124.6	1741.3	588.81	-0.01
876.20	721875.7	1742.0	876.29	0.01
1163.24	786517.4	1742.8	1163.19	-0.00
1450.34	851226.2	1743.7	1450.30	-0.00
1163.31	786558.4	1743.5	1163.37	0.00
876.12	721834.2	1743.5	876.10	-0.00
589.13	657219.8	1744.3	589.23	0.01
301.65	592449.4	1748.7	301.58	-0.00
14.74	527894.5	1752.7	14.79	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (volts)	INSTRUMENT OUTPUT (counts)
32.50	1984	527898.60
29.00	1913	527915.40
23.99	1811	527916.20
18.50	1699	527899.60
15.00	1629	527883.40
4.50	1418	527808.80
1.00	1347	527787.20

TEMPERATURE (°C)	SPAN
-5.00	25.29
35.00	25.29

y = thermistor output (counts)

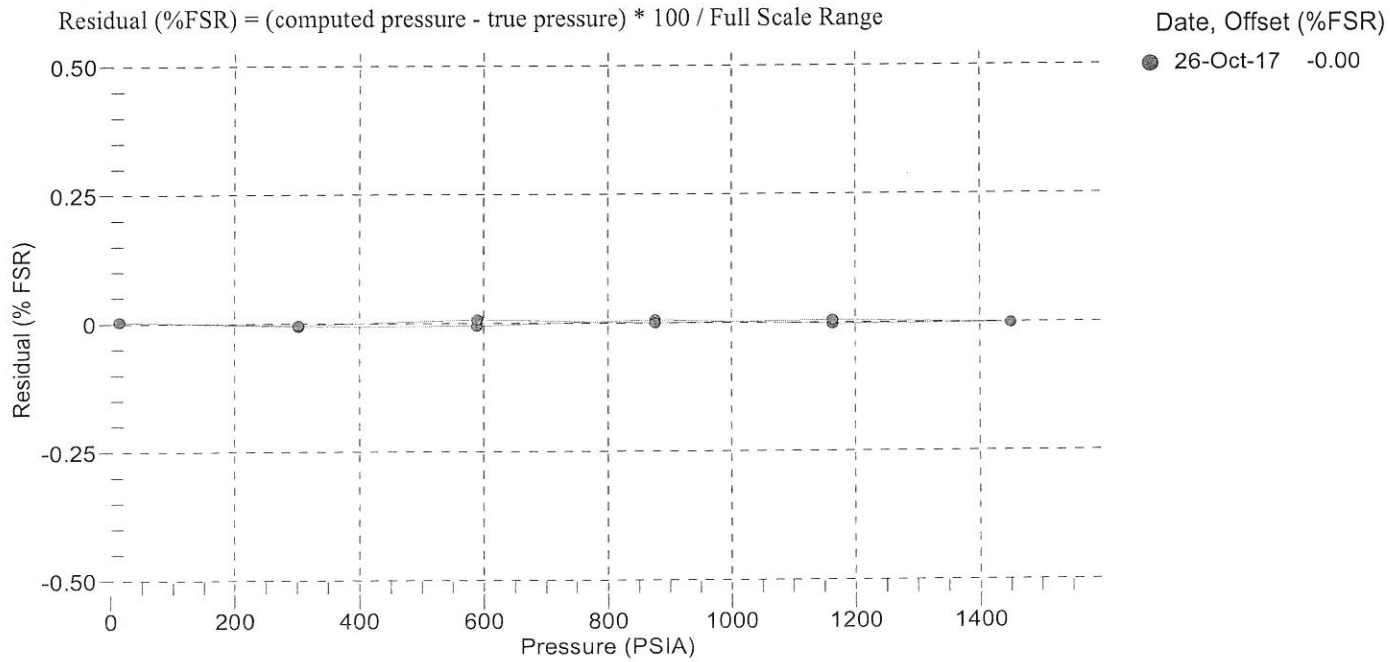
$t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$

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

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

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

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



SEA-BIRD SCIENTIFIC

Sea-Bird Scientific
13431 NE 20th Street
Bellevue, WA 98005
USA

+1 425-643-9866
seabird@seabird.com
www.seabird.com

SENSOR SERIAL NUMBER: 9431
CALIBRATION DATE: 28-Oct-17

Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

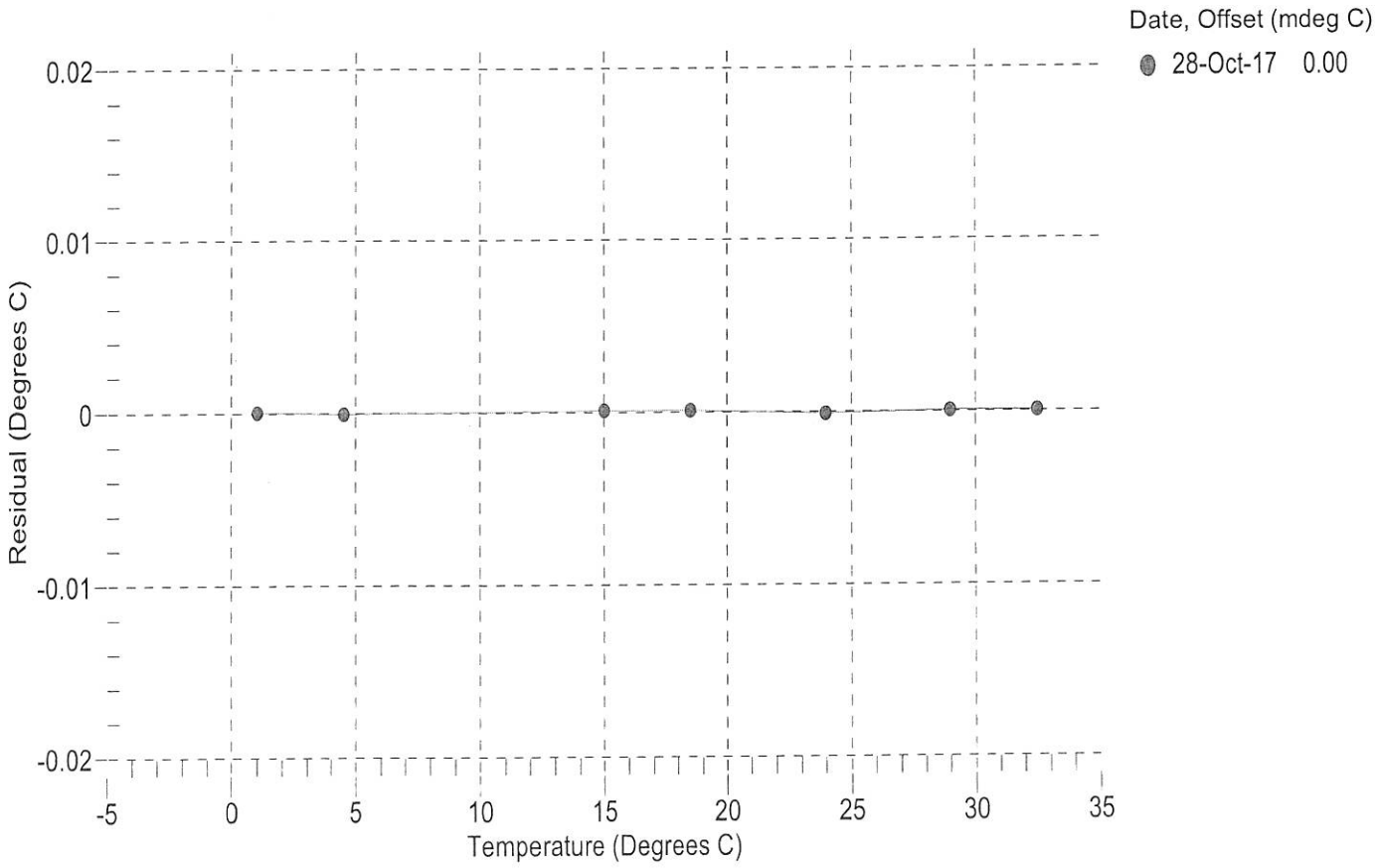
a0 = -1.839739e-004
a1 = 3.188659e-004
a2 = -5.201030e-006
a3 = 2.214812e-007

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	576786.4	1.0000	0.0000
4.5000	494124.2	4.4999	-0.0001
15.0000	316766.6	15.0001	0.0001
18.5000	274828.6	18.5001	0.0001
23.9940	221218.8	23.9939	-0.0001
29.0000	182635.0	29.0000	0.0000
32.5000	160261.4	32.5000	0.0000

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



SEA-BIRD SCIENTIFIC
Sea-Bird Scientific
13431 NE 20th Street
Bellevue, WA 98005
USA

+1 425-643-9866
seabird@seabird.com
www.seabird.com

Pressure Test Certificate

Test Date: 2017-10-26

Description: Slocum CTD

Sensor Information:

Model Number: Slocum

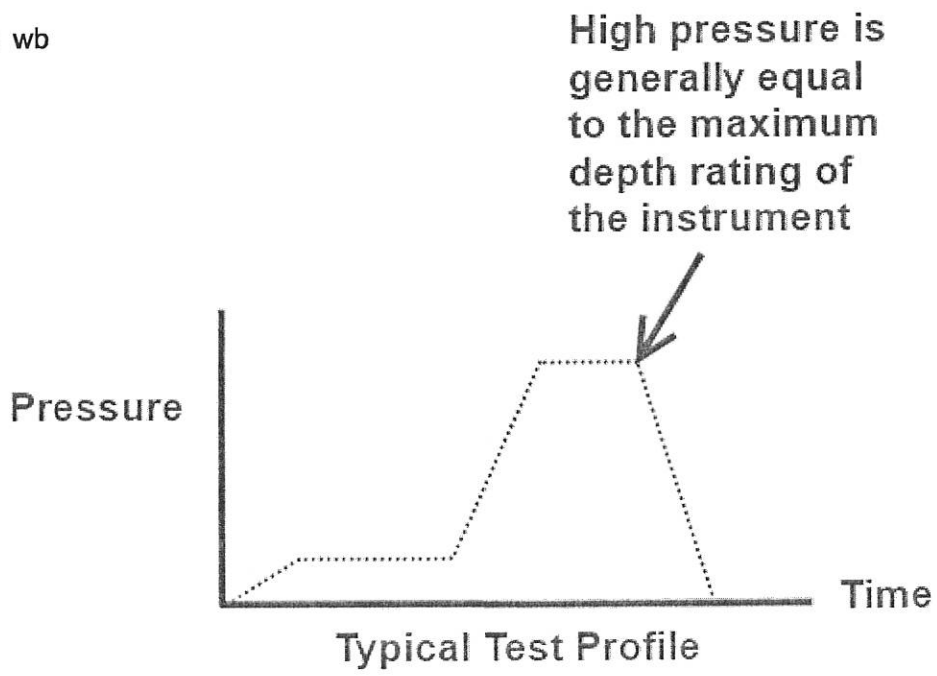
Serial Number: 9431

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: wb



Typical Test Profile