



Sea-Bird Electronics, Inc.

13431 NE 20th St. Bellevue, Washington 98005 USA

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## SBE Pressure Test Certificate

Test Date: 9/10/2012 Description SBE-39 Temperature/Pressure Sensor

Job Number:

Customer Name

### SBE Sensor Information:

Model Number: 39

Serial Number: 6303

### Pressure Sensor Information:

Sensor Type: Druck

Sensor Serial Number: 3699236

Sensor Rating: 870

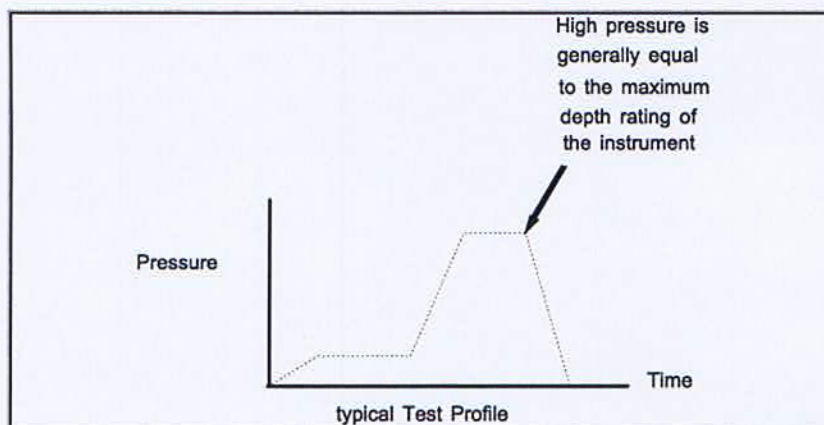
### Pressure Test Protocol:

Low Pressure Test: 44 PSI Held For 15 Minutes

High Pressure Test: 870 PSI Held For 15 Minutes

Passed Test:

Tested By: VG



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SENSOR SERIAL NUMBER: 6303  
CALIBRATION DATE: 14-Sep-12

SBE 39 TEMPERATURE CALIBRATION DATA  
ITS-90 TEMPERATURE SCALE

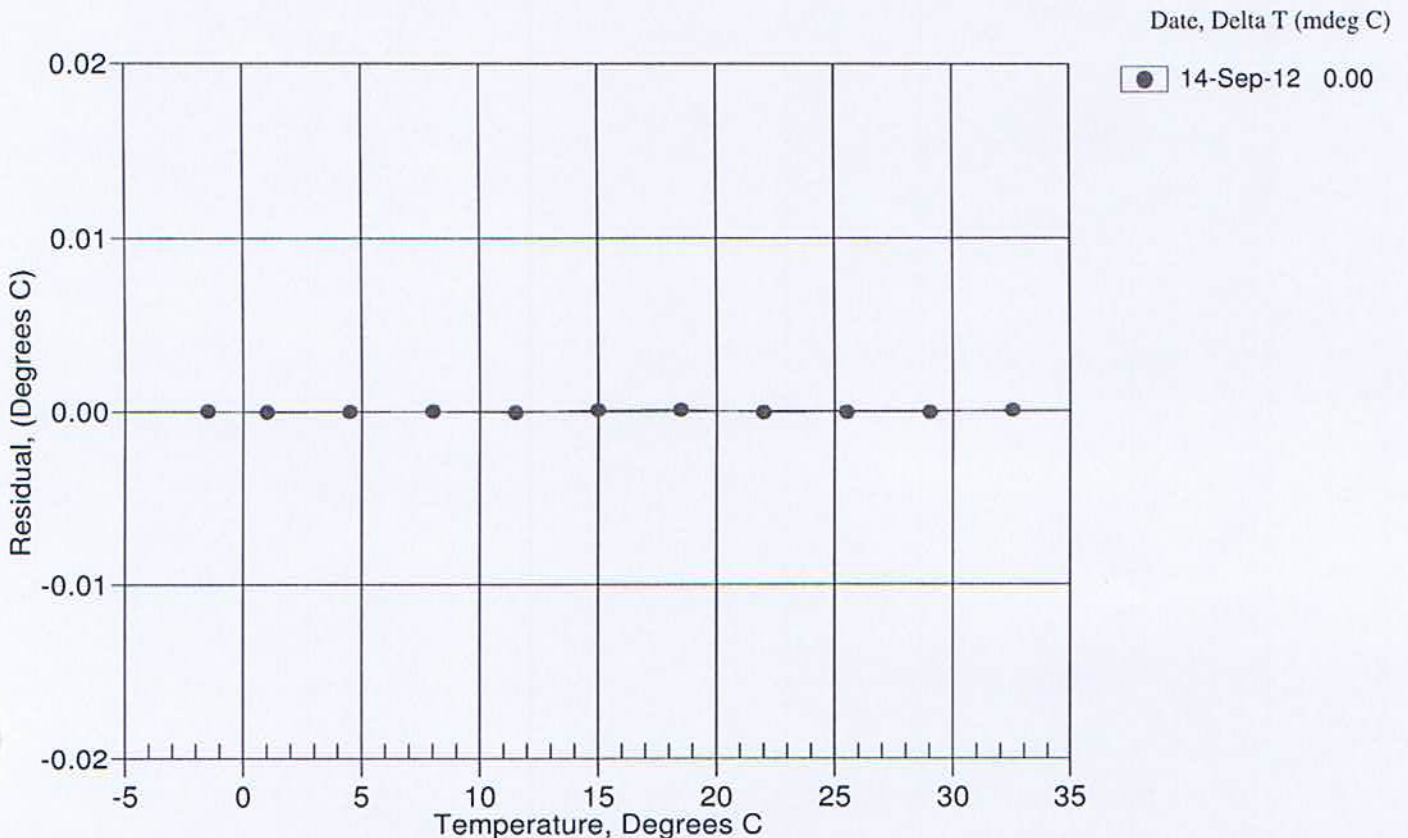
## ITS-90 COEFFICIENTS

a0 = -1.140843e-004  
a1 = 3.099487e-004  
a2 = -4.733583e-006  
a3 = 2.069606e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
-1.5000	646631.3	-1.5000	0.0000
1.0000	576864.0	1.0000	-0.0000
4.5000	493100.5	4.5000	-0.0000
8.0000	422915.3	8.0000	0.0000
11.5002	363901.5	11.5002	-0.0000
14.9998	314121.6	14.9999	0.0001
18.4999	271983.0	18.5000	0.0001
21.9999	236205.5	21.9999	-0.0000
25.4999	205731.3	25.4999	-0.0000
29.0000	179696.2	29.0000	-0.0000
32.5000	157388.9	32.5000	0.0000

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

Residual = instrument temperature - bath temperature



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SENSOR SERIAL NUMBER: 6303  
CALIBRATION DATE: 11-Sep-12

SBE 39 PRESSURE CALIBRATION DATA  
870 psia S/N 3699236

**COEFFICIENTS:**

PA0 = -1.389125e-001	PTCA0 = 1.841164e+001
PA1 = 4.076954e-002	PTCA1 = -7.772063e-002
PA2 = 4.408203e-009	PTCA2 = -3.048791e-003
PTHA0 = -7.627382e+001	PTCB0 = 2.523913e+001
PTHA1 = 5.056381e-002	PTCB1 = 2.250000e-004
PTHA2 = -4.547959e-007	PTCB2 = 0.000000e+000

**PRESSURE SPAN CALIBRATION**

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.76	380.7	2000.0	14.77	0.00
180.02	4432.2	2005.0	180.00	-0.00
360.01	8842.1	2006.0	360.01	0.00
540.01	13247.7	2006.0	540.01	0.00
719.99	17648.6	2006.0	720.00	0.00
874.97	21434.2	2005.0	874.95	-0.00
720.02	17649.3	2005.0	720.03	0.00
540.04	13248.6	2004.0	540.05	0.00
360.05	8843.1	2003.0	360.05	-0.00
180.06	4433.2	2004.0	180.04	-0.00
14.75	380.6	2007.0	14.77	0.00

**THERMAL CORRECTION**

TEMP ITS90	PRESS TEMP	INST OUTPUT
-1.50	1499.10	391.50
4.50	1621.10	390.95
11.50	1763.90	390.08
18.50	1907.10	388.91
25.50	2050.70	387.49
32.50	2194.50	385.62

TEMP (ITS90)	SPAN (mV)
-5.00	25.24
35.00	25.25

$$y = \text{thermistor output}; t = P\text{TEMPA}0 + P\text{TEMPA}1 * y + P\text{TEMPA}2 * y^2$$

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

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

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

Date, Avg Delta P %FS

● 11-Sep-12 0.00

