

# SEA-BIRD ELECTRONICS, INC.

1808 136th Place N.E., Bellevue, Washington, 98005 USA  
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SENSOR SERIAL NUMBER: 0066  
 CALIBRATION DATE: 24-Jun-07

GliderAPL TEMPERATURE CALIBRATION DATA  
 ITS-90 TEMPERATURE SCALE

**ITS-90 COEFFICIENTS**

g = 4.34124325e-003  
 h = 6.32630289e-004  
 i = 2.55185502e-005  
 j = 2.86510039e-006  
 f0 = 1000.0

**ITS-68 COEFFICIENTS**

a = 3.64763479e-003  
 b = 5.85686795e-004  
 c = 1.57265421e-005  
 d = 2.86668368e-006  
 f0 = 3133.856

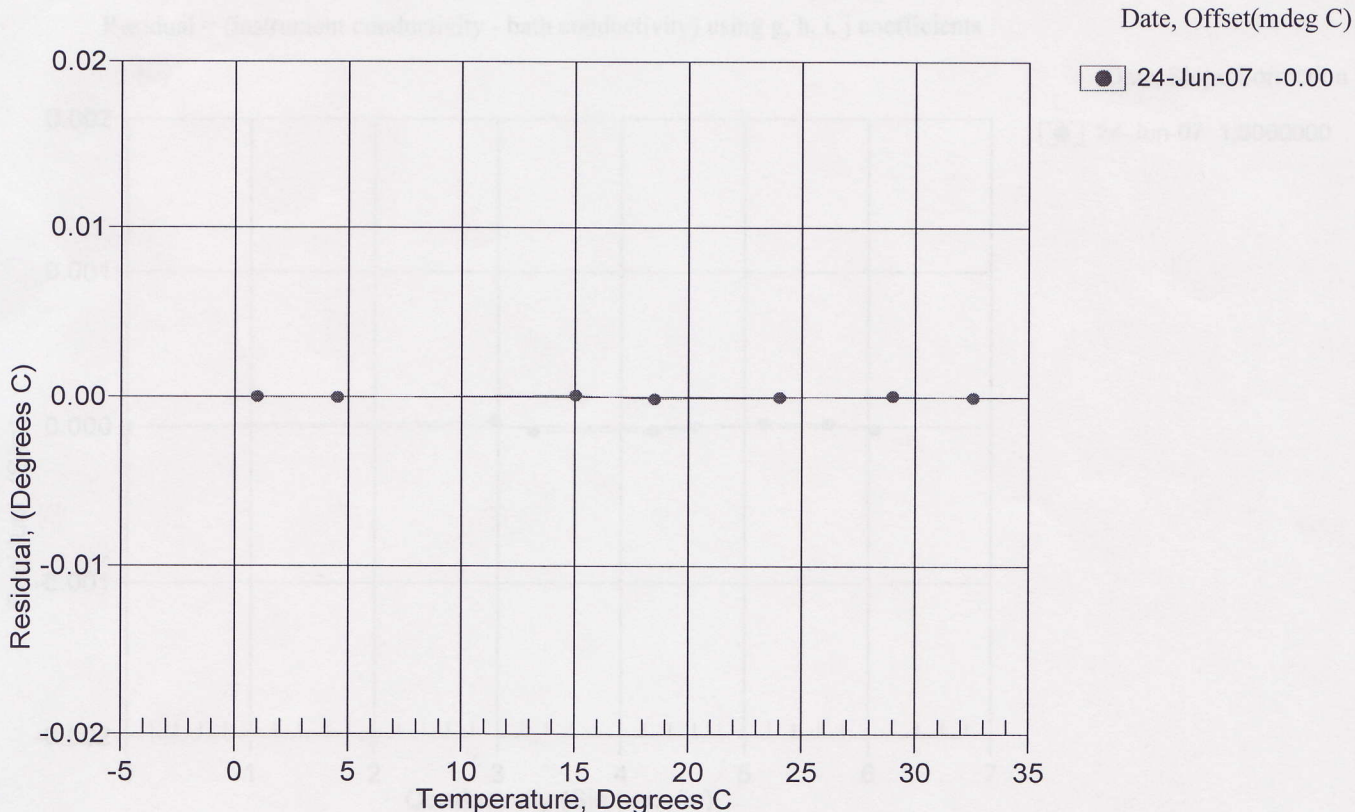
BATH TEMP (ITS-90)	INSTRUMENT FREQ (Hz)	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	3133.856	1.0000	0.00001
4.5000	3390.421	4.5000	-0.00003
15.0000	4251.554	15.0001	0.00010
18.5000	4570.421	18.4999	-0.00010
24.0000	5105.161	24.0000	-0.00001
29.0000	5627.992	29.0001	0.00006
32.5000	6015.312	32.5000	-0.00003

Temperature ITS-90 =  $1/\{g + h[\ln(f_0/f)] + i[\ln^2(f_0/f)] + j[\ln^3(f_0/f)]\} - 273.15$  (°C)

Temperature ITS-68 =  $1/\{a + b[\ln(f_0/f)] + c[\ln^2(f_0/f)] + d[\ln^3(f_0/f)]\} - 273.15$  (°C)

Following the recommendation of JPOTS:  $T_{68}$  is assumed to be  $1.00024 * T_{90}$  (-2 to 35 °C)

Residual = instrument temperature - bath temperature



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

### GHIJ COEFFICIENTS

g = -9.82994435e+000  
 h = 1.09371696e+000  
 i = -1.34708907e-003  
 j = 1.84599255e-004  
 CPcor = -9.5700e-008 (nominal)  
 CTcor = 3.2500e-006 (nominal)

### ABCDM COEFFICIENTS

a = 1.37457784e-005  
 b = 1.08986394e+000  
 c = -9.81757221e+000  
 d = -8.40180950e-005  
 m = 4.8  
 CPcor = -9.5700e-008 (nominal)

BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (kHz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	3.00121	0.00000	0.00000
1.0000	34.7554	2.97126	6.01679	2.97129	0.00004
4.5000	34.7368	3.27796	6.24515	3.27793	-0.00003
15.0000	34.6959	4.25840	6.92426	4.25838	-0.00003
18.5000	34.6874	4.60311	7.14747	4.60311	0.00000
24.0000	34.6784	5.16038	7.49397	5.16040	0.00003
29.0000	34.6738	5.68160	7.80383	5.68162	0.00002
32.5000	34.6716	6.05361	8.01745	6.05358	-0.00002

$$\text{Conductivity} = (g + hf^2 + if^3 + jf^4) / 10(1 + \delta t + \epsilon p) \text{ Siemens/meter}$$

$$\text{Conductivity} = (af^m + bf^2 + c + dt) / [10 (1 + \epsilon p)] \text{ Siemens/meter}$$

t = temperature[°C]; p = pressure[decibars];  $\delta$  = CTcor;  $\epsilon$  = CPcor;

Residual = (instrument conductivity - bath conductivity) using g, h, i, j coefficients

Date, Slope Correction

24-Jun-07 1.0000000

