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# SEA-BIRD ELECTRONICS, INC.

1808 136th Place N.E., Bellevue, Washington, 98005 USA

Phone: (425) 643 - 9866 Fax (425) 643 - 9954 Email: seabird@seabird.com

SENSOR SERIAL NUMBER: 0136  
CALIBRATION DATE: 26-Oct-09

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

### GHIJ COEFFICIENTS

g = -9.79905968e+000  
h = 1.08534677e+000  
i = -2.02917148e-003  
j = 2.31018635e-004  
CPcor = -9.5700e-008 (nominal)  
CTcor = 3.2500e-006 (nominal)

### ABCDM COEFFICIENTS

a = 5.53600148e-006  
b = 1.07924974e+000  
c = -9.77978813e+000  
d = -8.74970427e-005  
m = 5.2  
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	3.01032	0.00000	0.00000
1.0000	34.6979	2.96681	6.04090	2.96682	0.00001
4.5000	34.6778	3.27294	6.27028	3.27293	-0.00001
15.0000	34.6344	4.25165	6.95231	4.25165	-0.00001
18.5000	34.6252	4.59575	7.17643	4.59575	0.00001
23.9999	34.6153	5.15201	7.52431	5.15201	0.00000
29.0000	34.6101	5.67233	7.83540	5.67234	0.00000
32.5000	34.6078	6.04373	8.04988	6.04373	-0.00000

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

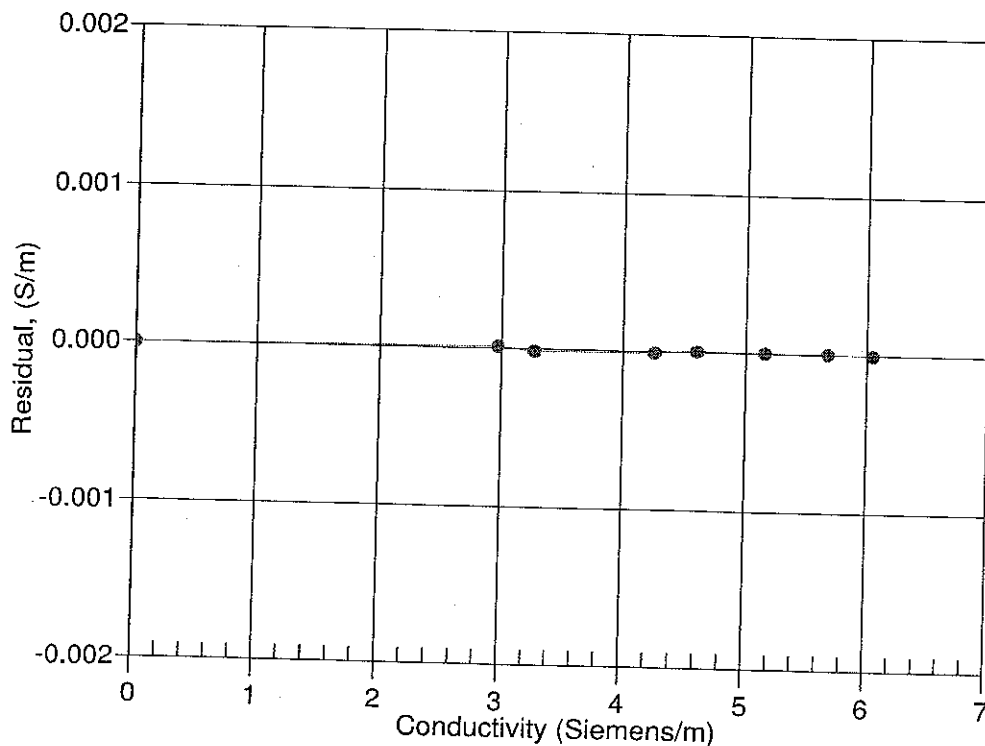
$$\text{Conductivity} = (af^m + bf^2 + c + dt) / [10(1 + \epsilon p)] \text{ Siemens/meter}$$

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

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

Date, Slope Correction

● 26-Oct-09 1.0000000



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CALIBRATION DATE: 26-Oct-09

GliderAPL TEMPERATURE CALIBRATION DATA  
ITS-90 TEMPERATURE SCALE

### ITS-90 COEFFICIENTS

g = 4.32682378e-003  
h = 6.21762506e-004  
i = 2.28951473e-005  
j = 2.41352683e-006  
f0 = 1000.0

### IPTS-68 COEFFICIENTS

a = 3.64763502e-003  
b = 5.79283852e-004  
c = 1.47093435e-005  
d = 2.41495813e-006  
f0 = 3108.222

BATH TEMP (ITS-90)	INSTRUMENT FREQ (Hz)	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	3108.222	1.0000	-0.00000
4.5000	3365.594	4.5000	-0.00000
15.0000	4230.623	15.0001	0.00011
18.5000	4551.354	18.4999	-0.00013
23.9999	5089.686	23.9999	-0.00005
29.0000	5616.597	29.0002	0.00016
32.5000	6007.224	32.4999	-0.00008

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

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

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

Residual = instrument temperature - bath temperature

