

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: 0111
CALIBRATION DATE: 30-Mar-09

GliderAPL TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

g = 4.28349571e-003
h = 6.20325124e-004
i = 2.24696033e-005
j = 2.32676008e-006
f0 = 1000.0

IPTS-68 COEFFICIENTS

a = 3.64763285e-003
b = 5.80629855e-004
c = 1.50865801e-005
d = 2.32821262e-006
f0 = 2890.305

BATH TEMP (ITS-90)	INSTRUMENT FREQ (Hz)	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0001	2890.305	1.0002	0.00006
4.5001	3129.054	4.5000	-0.00011
15.0001	3931.418	15.0002	0.00010
18.5001	4228.902	18.5002	0.00005
24.0002	4728.165	24.0000	-0.00018
29.0002	5216.841	29.0003	0.00008
32.5002	5579.152	32.5002	-0.00000

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

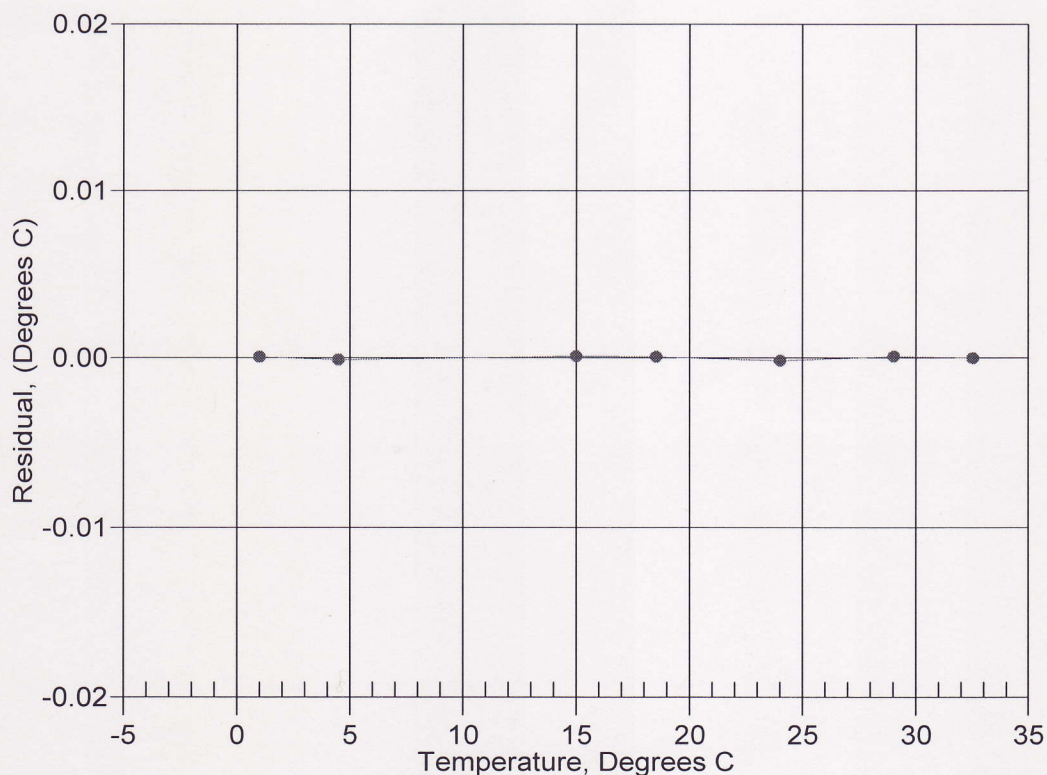
$$\text{Temperature IPTS-68} = 1 / \{a + b[\ln(f_0/f)] + c[\ln^2(f_0/f)] + d[\ln^3(f_0/f)]\} - 273.15 \text{ (}^\circ\text{C)}$$

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

Residual = instrument temperature - bath temperature

Date, Offset(mdeg C)

● 30-Mar-09 0.00



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

GHIJ COEFFICIENTS

g = -9.86865871e+000
h = 1.11693154e+000
i = 2.35907928e-004
j = 7.80389549e-005
CPcor = -9.5700e-008 (nominal)
CTcor = 3.2500e-006 (nominal)

ABCDM COEFFICIENTS

a = 2.58165138e-004
b = 1.11647292e+000
c = -9.86358636e+000
d = -7.88927801e-005
m = 3.6
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	2.97061	0.00000	0.00000
1.0001	34.7390	2.97000	5.94100	2.97006	0.00006
4.5001	34.7193	3.27648	6.16601	3.27643	-0.00005
15.0001	34.6765	4.25628	6.83549	4.25625	-0.00004
18.5001	34.6675	4.60076	7.05561	4.60075	-0.00002
24.0002	34.6576	5.15764	7.39741	5.15769	0.00004
29.0002	34.6524	5.67851	7.70315	5.67857	0.00006
32.5002	34.6499	6.05027	7.91395	6.05021	-0.00005

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

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

t = temperature[°C]; p = pressure[decibars]; δ = CTcor; ϵ = CPcor;

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

Date, Slope Correction

30-Mar-09 1.0000000

