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: 0143
CALIBRATION DATE: 15-Nov-09

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

GHIJ COEFFICIENTS

g = -1.04115415e+001
h = 1.17920509e+000
i = -1.91620937e-003
j = 2.39851733e-004
CPcor = -9.5700e-008 (nominal)
CTcor = 3.2500e-006 (nominal)

ABCDM COEFFICIENTS

a = -6.60572262e-034
b = 1.17901506e+000
c = -1.05187578e+001
d = 1.95207936e-003
m = 23.6
CPcor = -9.5700e-008 (nominal)

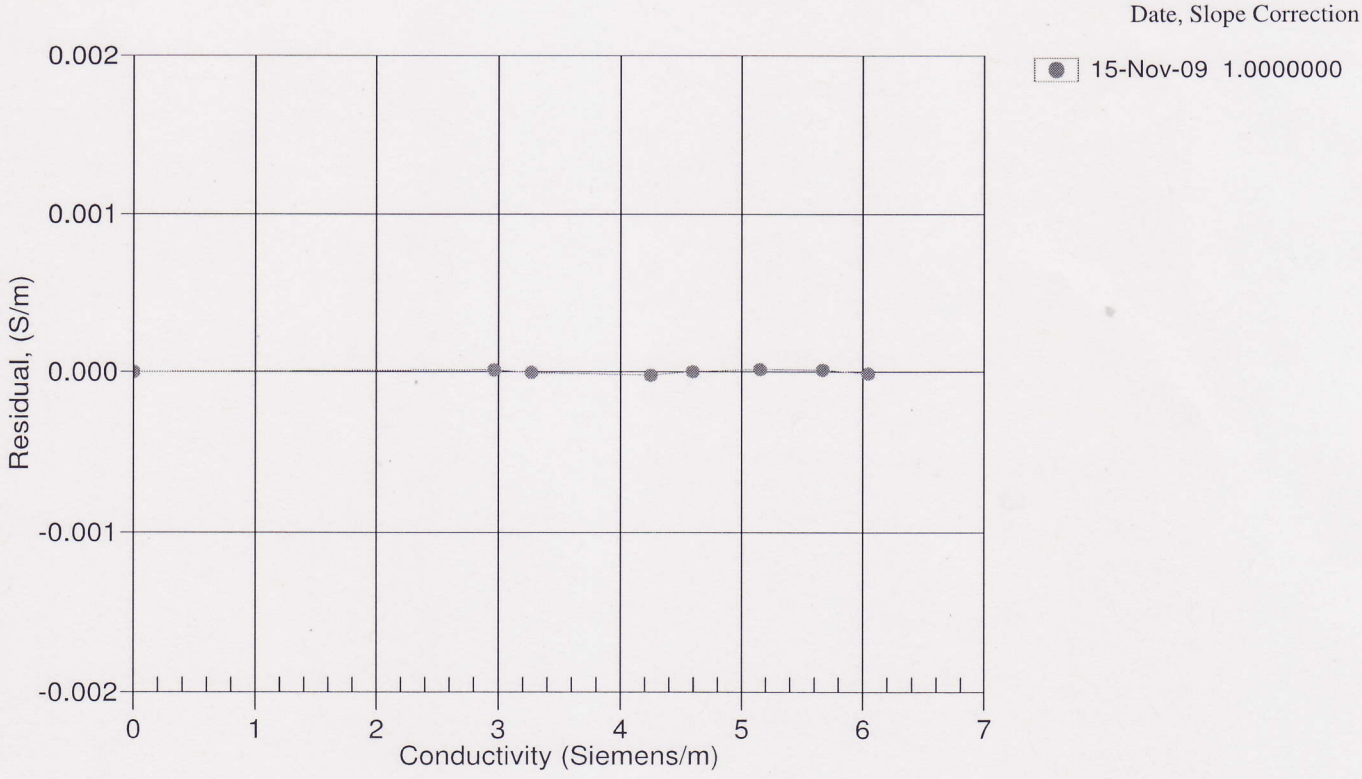
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (kHz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2.97593	0.00000	0.00000
1.0000	34.6798	2.96541	5.83644	2.96542	0.00001
4.5000	34.6599	3.27142	6.05471	3.27141	-0.00001
15.0000	34.6170	4.24974	6.70438	4.24972	-0.00002
18.5000	34.6080	4.59371	6.91807	4.59371	0.00000
24.0000	34.5982	5.14976	7.24993	5.14977	0.00001
29.0000	34.5931	5.66986	7.54683	5.66987	0.00001
32.5000	34.5901	6.04099	7.75155	6.04098	-0.00001

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

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

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

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



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GliderAPL TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

g = 4.30166611e-003
h = 6.21826982e-004
i = 2.24851247e-005
j = 2.31915739e-006
f0 = 1000.0

IPTS-68 COEFFICIENTS

a = 3.64763625e-003
b = 5.81216755e-004
c = 1.49277037e-005
d = 2.32059229e-006
f0 = 2974.000

BATH TEMP (ITS-90)	INSTRUMENT FREQ (Hz)	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	2974.000	0.9999	-0.00010
4.5000	3219.430	4.5002	0.00017
15.0000	4043.878	14.9999	-0.00012
18.5000	4349.497	18.5000	0.00000
24.0000	4862.302	23.9999	-0.00010
29.0000	5364.147	29.0003	0.00033
32.5000	5736.102	32.4998	-0.00019

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 IPTS-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