

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: 0436
CALIBRATION DATE: 03-Mar-09

SBE19 CONDUCTIVITY CALIBRATION DATA
PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

GHIJ COEFFICIENTS

g = -3.79939402e+000
h = 4.53334325e-001
i = 1.15901101e-003
j = -3.71250090e-005
CPcor = -9.5700e-008 (nominal)
CTcor = 3.2500e-006 (nominal)

ABCDM COEFFICIENTS

a = 3.41672081e-002
b = 4.18124729e-001
c = -3.79624896e+000
d = -1.44062125e-004
m = 2.1
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	2.88535	0.00000	0.00000
1.0000	34.8735	2.98039	8.54210	2.98039	0.00000
4.5000	34.8542	3.28795	8.92262	3.28795	0.00000
14.9999	34.8120	4.27113	10.04215	4.27111	-0.00002
18.4999	34.8030	4.61678	10.40705	4.61679	0.00000
24.0000	34.7931	5.17556	10.97120	5.17558	0.00003
29.0000	34.7870	5.69806	11.47355	5.69805	-0.00001

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

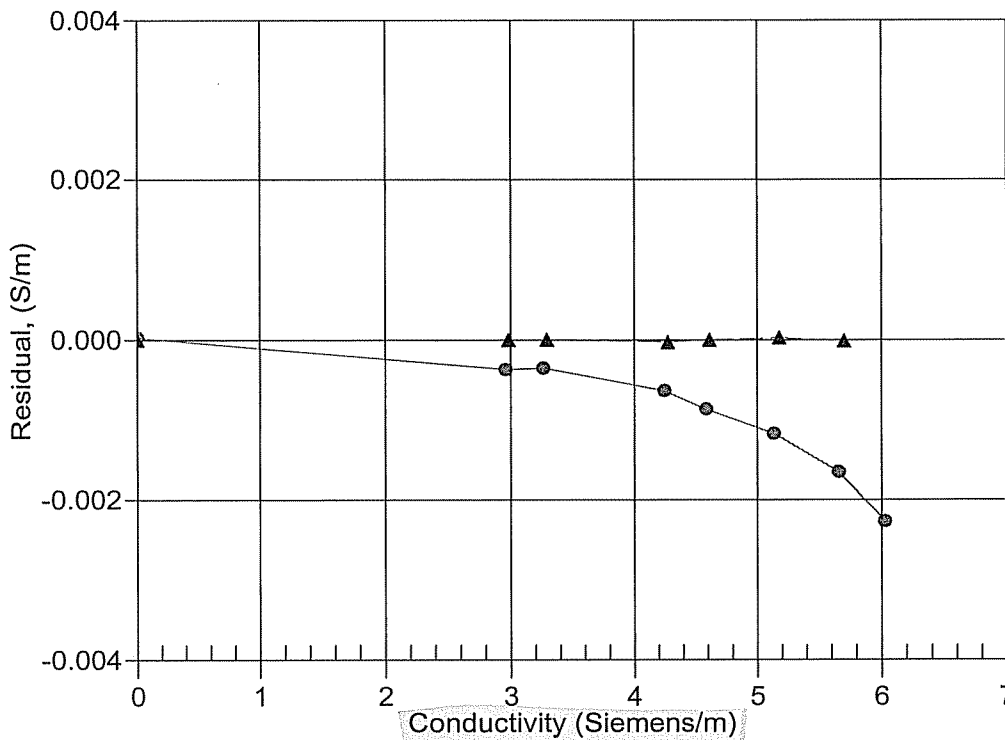
Conductivity = $(af^m + bf^2 + c + dt) / [10(1 + \epsilon p)]$ Siemens/meter

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

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

Date, Slope Correction

● 06-Nov-07 1.0002477
▲ 03-Mar-09 1.0000000



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SENSOR SERIAL NUMBER: 0436
CALIBRATION DATE: 18-Feb-09

SBE19 CONDUCTIVITY CALIBRATION DATA
PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

GHIJ COEFFICIENTS

g = -3.80000770e+000
h = 4.53430281e-001
i = 1.13305864e-003
j = -3.52686236e-005
CPcor = -9.5700e-008 (nominal)
CTcor = 3.2500e-006 (nominal)

ABCDM COEFFICIENTS

a = 3.45525486e-002
b = 4.17665364e-001
c = -3.79641445e+000
d = -1.65501486e-004
m = 2.1
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	2.88547	0.00000	0.00000
1.0000	34.7920	2.97409	8.53411	2.97408	-0.00000
4.5000	34.7727	3.28102	8.91419	3.28103	0.00001
15.0000	34.7297	4.26211	10.03225	4.26207	-0.00004
18.5000	34.7201	4.60698	10.39665	4.60699	0.00000
24.0000	34.7093	5.16447	10.95997	5.16452	0.00005
29.0000	34.7011	5.68557	11.46131	5.68553	-0.00004
32.5000	34.6950	6.05723	11.80596	6.05723	0.00001

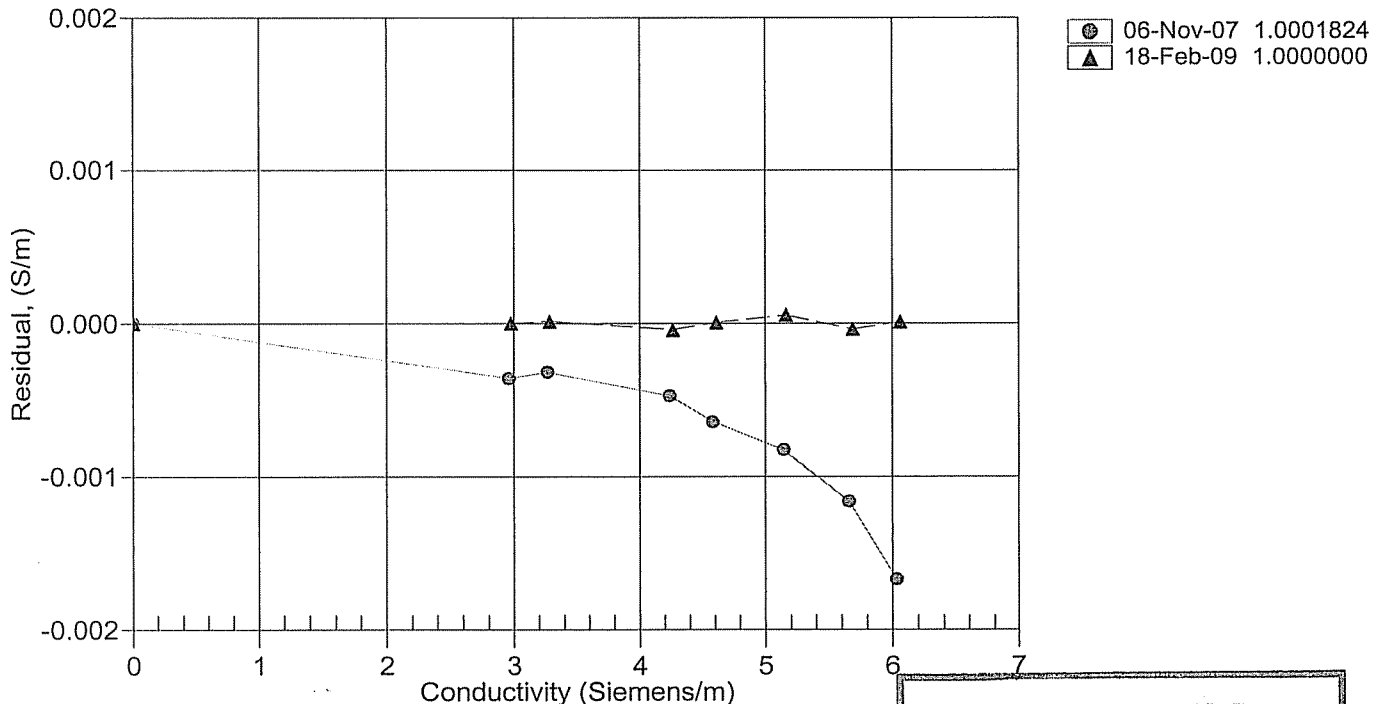
Conductivity = $(g + hf^2 + if^3 + jf^4) / 10(1 + \delta t + \epsilon p)$ Siemens/meter

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



**POST CRUISE
CALIBRATION**



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

Conductivity Calibration Report

Customer:	USGS/Glacier Bay National Park		
Job Number:	53627	Date of Report:	3/3/2009
Model Number	SBE 19-03	Serial Number:	193353-0436

Conductivity sensors are normally calibrated 'as received', without cleaning or adjustments, allowing a determination of sensor drift. If the calibration identifies a problem or indicates cell cleaning is necessary, then a second calibration is performed after work is completed. The 'as received' calibration is not performed if the sensor is damaged or non-functional, or by customer request.

An 'as received' calibration certificate is provided, listing the coefficients used to convert sensor frequency to conductivity. Users must choose whether the 'as received' calibration or the previous calibration better represents the sensor condition during deployment. In SEASOFT enter the chosen coefficients using the program SEACON. The coefficient 'slope' allows small corrections for drift between calibrations (consult the SEASOFT manual). Calibration coefficients obtained after a repair or cleaning apply only to subsequent data.

'AS RECEIVED CALIBRATION'

Performed Not Performed

Date: 2/18/2009

Drift since last cal: +0.00040 PSU/month*

Comments:

'FINAL CALIBRATION'

Performed Not Performed

Date: 3/3/2009

Drift since Last cal: +0.00050 PSU/month*

Comments:

**Measured at 3.0 S/m*

Cell cleaning and electrode replatinizing tend to 'reset' the conductivity sensor to its original condition. Lack of drift in post-cleaning-calibration indicates geometric stability of the cell and electrical stability of the sensor circuit.