



SEA-BIRD ELECTRONICS, INC TELEPHONE 206 643-9866 FAX 206 643-9954  
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### Conductivity Calibration Report

Customer: EMS  
 SBE Job Number: 20006R Date of report: 08 January 1999  
 SBE Model Number: 4 Serial Number: 041202

Unless instructed otherwise and if received intact (not broken) and functional, conductivity sensors are calibrated 'as received', i.e, without cleaning or other processing that would prevent determination of the sensor's drift history. If calibration uncovers problems with the sensor or demonstrates the need to clean the conductivity cell and replatinize the cell electrodes, a second calibration will be performed after the necessary work is finished.

An 'as received' calibration certificate listing the coefficients used to convert sensor frequency to conductivity will be provided. Users may judge whether the 'as received' or previously determined coefficients are more likely to represent the condition of the sensor at the time of deployment (those using SEASOFT should enter the chosen coefficients using SEACON). Calibration coefficients obtained after a repair or after cleaning and replatinizing the cell should only be used with data collected subsequent to the calibration.

'AS RECEIVED CALIBRATION'----- (x) Performed ( ) Not Performed  
 Date: 07 Jan 99 Drift since last cal: .00080 [PSU]/month<sup>1</sup>  
Comments:

'POST CLEANING/REPLATINIZING CALIBRATION'----- ( ) Performed (x) Not Performed  
 Date: \_\_\_\_\_ Drift since initial cal:<sup>2</sup> \_\_\_\_\_ [PSU]/month<sup>2</sup>  
Comments:

<sup>1</sup>Measured at 3.0 S/m

<sup>2</sup>Cleaning and replatinizing tend to 'reset' the conductivity sensor to its original condition. Therefore, lack of drift in post cleaning/replatinizing calibration is an indicator of geometric stability of the cell and the electrical stability of the sensor interface circuits. 'Drift since initial cal' is the total drift from date of the sensor's initial calibration (at time of manufacture) except where the cell has been replaced in which case the drift is referenced to the 1st calibration using the replacement cell.

# SEA-BIRD ELECTRONICS, INC.

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SENSOR SERIAL NUMBER = 1202  
 CALIBRATION DATE: 07-Jan-99s

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

### GHIJ COEFFICIENTS

g = -4.13530259e+00  
 h = 4.60614027e-01  
 i = 4.07376939e-05  
 j = 2.07779743e-05  
 CPcor = -9.57e-08 (nominal)  
 CTcor = 3.25e-06 (nominal)

### ABCDM COEFFICIENTS

a = 2.96824328e-05  
 b = 4.60738834e-01  
 c = -4.13591150e+00  
 d = -8.73162399e-05  
 m = 3.9  
 CPcor = -9.57e-08 (nominal)

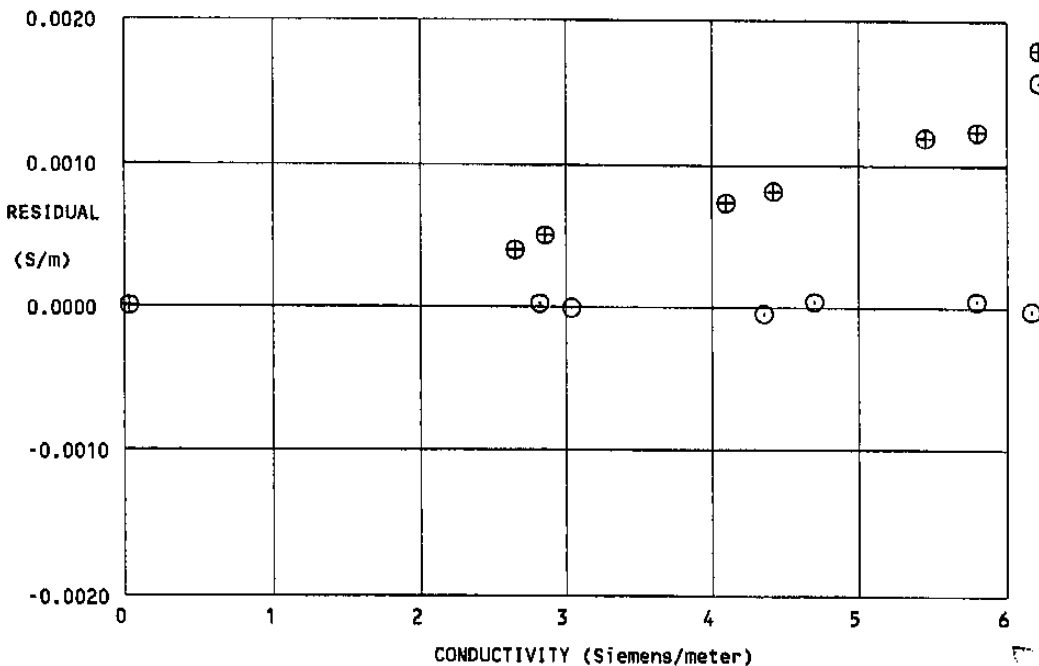
BATH TEMP (IPTS-68 °C)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (kHz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
0.0000	0.0000	0.00000	2.99529	-0.00000	-0.00000
-1.4070	35.0939	2.79022	8.32385	2.79024	0.00002
1.1332	35.0955	3.00914	8.60252	3.00913	-0.00001
15.2512	35.0947	4.32656	10.11669	4.32651	-0.00005
18.6887	35.0915	4.66952	10.47454	4.66956	0.00004
29.2324	35.0892	5.76601	11.54273	5.76605	0.00004
32.6717	35.0846	6.13521	11.88027	6.13518	-0.00003

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

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

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

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



calibration date	slope correction
⊕ 12-May-98s	0.999802
⊙ 07-Jan-99s	1.000000

POST CRUISE  
 CALIBRATION