



SEA-BIRD ELECTRONICS, INC TELEPHONE 206 643-9866 FAX 206 643-9954  
 1808-136th Place Northeast, Bellevue, Washington 98005 USA Telex 292915 SBEI UR

### Temperature Calibration Report

Customer: EMS

SBE Job Number: 20006R Date of report: 06 January 1999

SBE Model Number: 3 Serial Number: 031359

Unless instructed otherwise and if received intact (not broken) and functional, temperature sensors are calibrated 'as received', i.e. without repairs or adjustments that would prevent determination of the sensor's drift history. If calibration uncovers problems with the sensor, a second calibration will be required after the necessary work is finished.

An 'as received' calibration certificate listing the coefficients used to convert sensor frequency to temperature 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 should only be used with data collected subsequent to the calibration.

'AS RECEIVED CALIBRATION' (x) Performed ( ) Not Performed

Date: 06 Jan 99 Drift since last cal: .00499 °Celsius/year

Comments:

'POST REPAIR CALIBRATION' ( ) Performed (x) Not Performed

Date: \_\_\_\_\_ Drift since last cal: \_\_\_\_\_ °Celsius/year

Comments:

# SEA-BIRD ELECTRONICS, INC.

1808 136th Place N.E., Bellevue, Washington 98005 USA  
 Phone: (425) 643 - 9866 Fax: (425) 643 - 9954 Internet: seabird@seabird.com

SENSOR SERIAL NUMBER = 1359  
 CALIBRATION DATE: 06-Jan-99s

TEMPERATURE CALIBRATION DATA  
 ITS-90 TEMPERATURE SCALE

### ITS-90 COEFFICIENTS

g = 4.37605866e-03  
 h = 6.40936153e-04  
 i = 2.27833417e-05  
 j = 2.14789713e-06  
 $f_0 = 1000.000$

### IPTS-68 COEFFICIENTS

a = 3.68151350e-03  
 b = 5.98011756e-04  
 c = 1.55691159e-05  
 d = 2.14938567e-06  
 $f_0 = 3076.478$

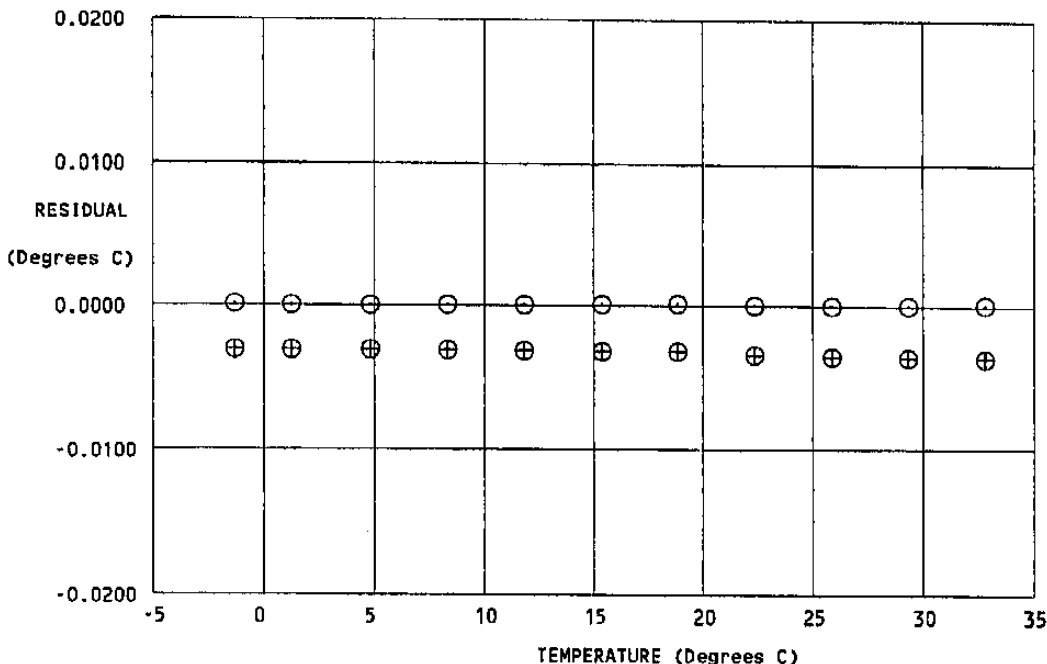
BATH TEMP (ITS-90 °C)	INSTRUMENT FREQ (Hz)	INST TEMP (ITS-90 °C)	RESIDUAL (ITS-90 °C)
-1.5223	3076.478	-1.5222	0.00003
1.0395	3258.939	1.0395	-0.00004
4.6131	3526.386	4.6130	-0.00001
8.1198	3803.841	8.1198	-0.00001
11.6236	4096.317	11.6236	-0.00001
15.1840	4409.538	15.1840	0.00003
18.6475	4730.107	18.6475	0.00007
22.1490	5070.458	22.1489	-0.00003
25.6768	5430.285	25.6767	-0.00006
29.1481	5801.256	29.1481	-0.00002
32.6228	6189.691	32.6228	0.00004

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



calibration date	delta T (mdeg C)
⊕ 07-May-98s	-3.33
⊙ 06-Jan-99s	0.00

POST CRUISE  
 CALIBRATION