



# SEA-BIRD ELECTRONICS, INC.

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## Temperature Calibration Report

Customer:	National Park Service - ALASKA		
Job Number:	71943	Date of Report:	12/12/2012
Model Number:	SBE 19Plus	Serial Number:	19P55083-6353

Temperature sensors are normally calibrated 'as received', without adjustments, allowing a determination sensor drift. If the calibration identifies a problem, 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 coefficients to convert sensor frequency to temperature. 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. The coefficient 'offset' allows a small correction for drift between calibrations (consult the SEASOFT manual). Calibration coefficients obtained after a repair apply only to subsequent data.

### 'AS RECEIVED CALIBRATION'

Performed  Not Performed

Date: 12/12/2012

Drift since last cal: -0.00007 Degrees Celsius/year

Comments:

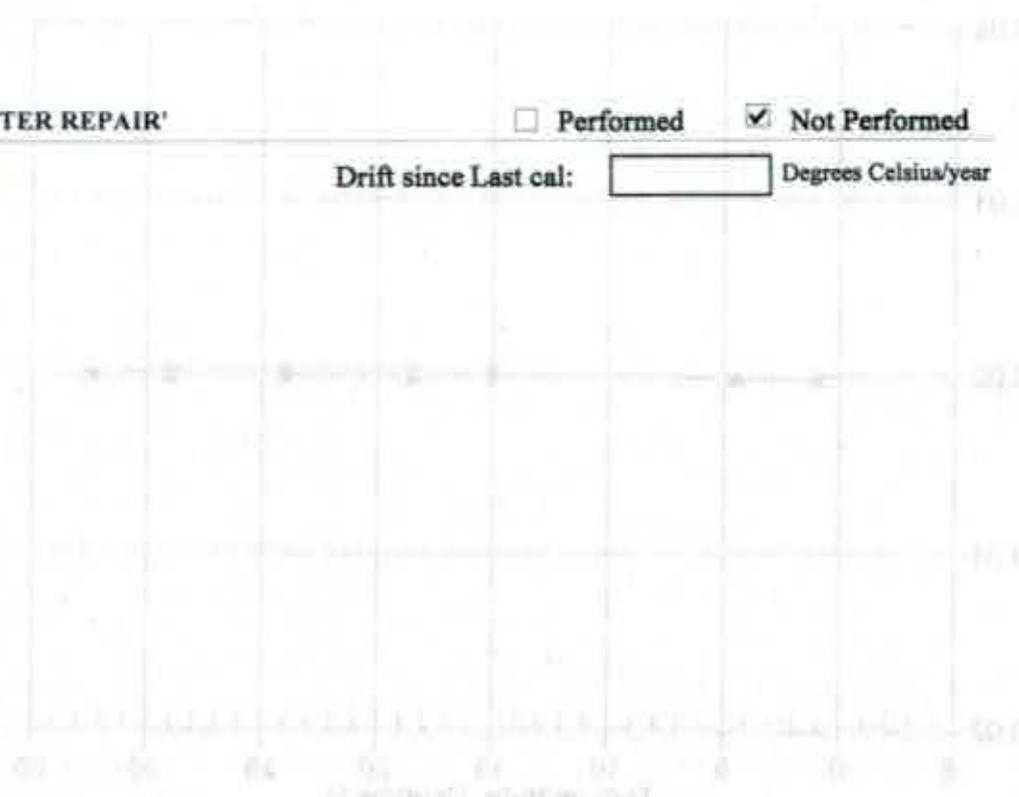
### 'CALIBRATION AFTER REPAIR'

Performed  Not Performed

Date:

Drift since Last cal:  Degrees Celsius/year

Comments:



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SENSOR SERIAL NUMBER: 6353  
 CALIBRATION DATE: 12-Dec-12

SBE19plusV2 TEMPERATURE CALIBRATION DATA  
 ITS-90 TEMPERATURE SCALE

### ITS-90 COEFFICIENTS

a0 = 1.288592e-003  
 a1 = -2.565356e-004  
 a2 = 1.903471e-007  
 a3 = 1.305268e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT(n)	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	647455.689	1.0000	0.0000
4.5000	574640.049	4.4999	-0.0001
15.0000	393518.667	15.0001	0.0001
18.5000	344872.083	18.5000	-0.0000
23.9999	278885.450	23.9999	-0.0000
29.0000	228739.783	29.0000	-0.0000
32.5000	198506.533	32.5000	0.0000

$$MV = (n - 524288) / 1.6e+007$$

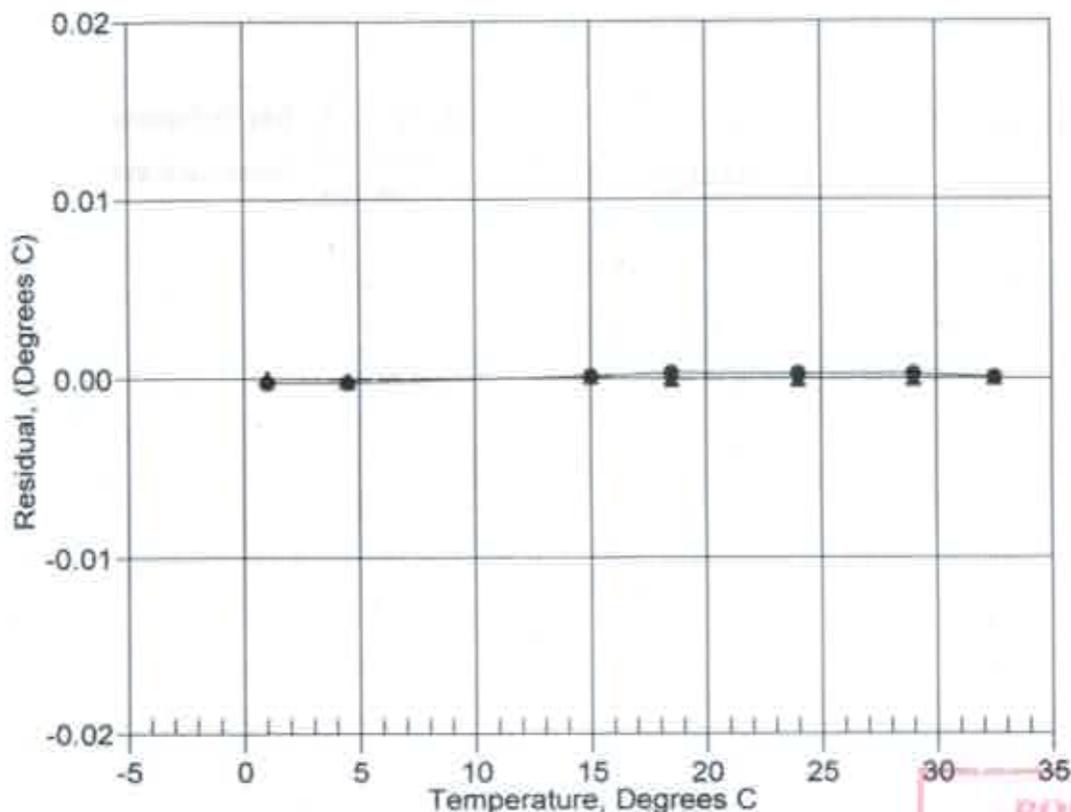
$$R = (MV * 2.900e+009 + 1.024e+008) / (2.048e+004 - MV * 2.0e+005)$$

$$\text{Temperature ITS-90} = 1 / \{a_0 + a_1[\ln(R)] + a_2[\ln^2(R)] + a_3[\ln^3(R)]\} - 273.15 \text{ (}^\circ\text{C)}$$

$$\text{Residual} = \text{instrument temperature} - \text{bath temperature}$$

Date, Delta T (mdeg C)

● 07-Dec-11 0.07  
 ▲ 12-Dec-12 0.00



**POST CRUISE  
 CALIBRATION**