



# SEA-BIRD ELECTRONICS, INC.

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## Temperature Calibration Report

<b>Customer:</b>	National Park Service - ALASKA		
<b>Job Number:</b>	76802	<b>Date of Report:</b>	11/6/2013
<b>Model Number:</b>	SBE 19Plus	<b>Serial Number:</b>	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:

Drift since last cal:  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: 06-Nov-13

SBE19plusV2 TEMPERATURE CALIBRATION DATA  
ITS-90 TEMPERATURE SCALE

## ITS-90 COEFFICIENTS

a0 = 1.273291e-003  
a1 = 2.620113e-004  
a2 = -4.602704e-007  
a3 = 1.561982e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT(n)	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	647463.797	1.0000	0.0000
4.5000	574642.678	4.5000	-0.0000
15.0000	393511.966	15.0000	-0.0000
18.5000	344861.695	18.5001	0.0001
24.0000	278877.220	23.9999	-0.0001
29.0000	228736.153	29.0000	0.0000
32.5000	198508.203	32.5000	-0.0000

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

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

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

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

