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: 0158
CALIBRATION DATE: 06-Nov-07

SBE 45 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

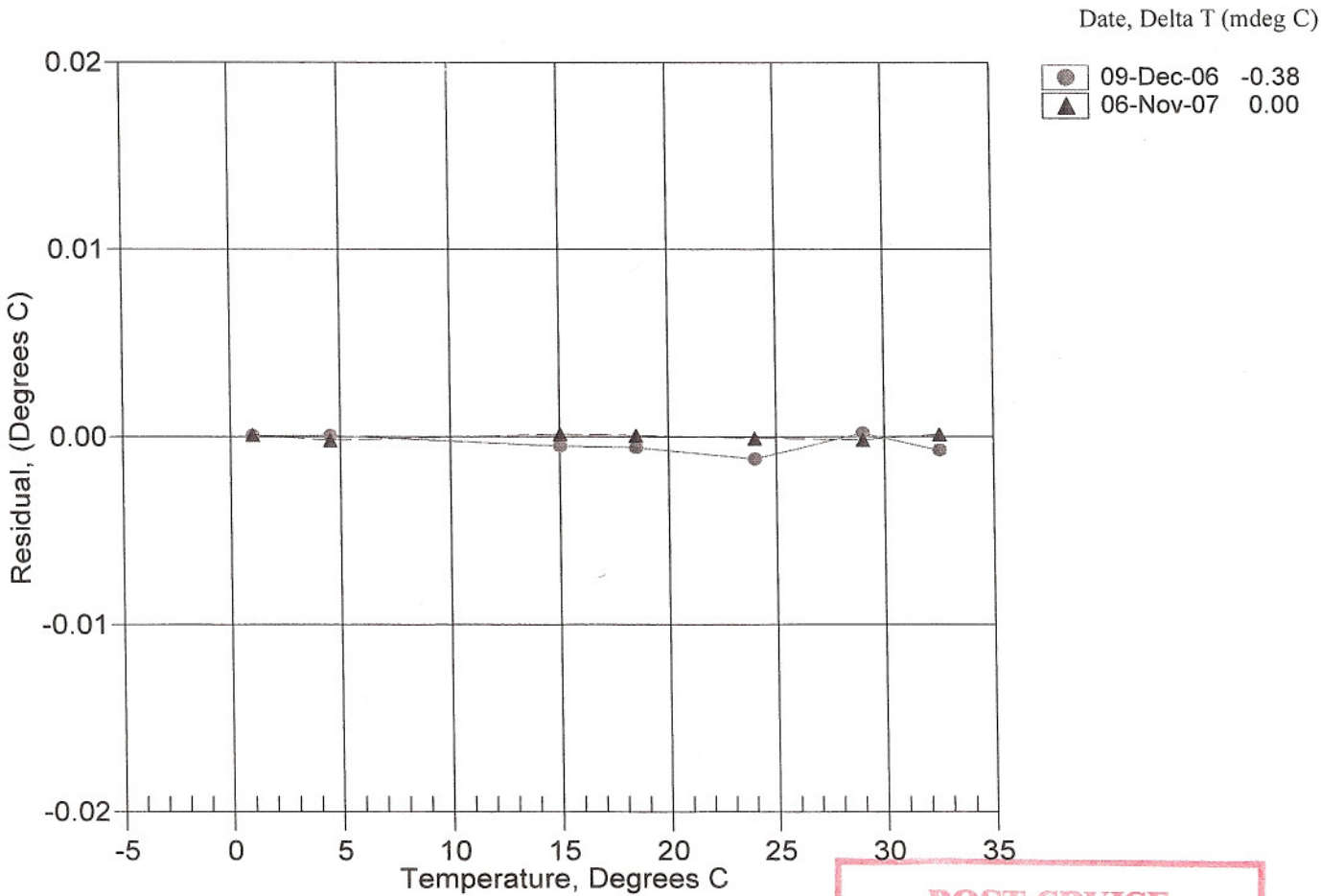
ITS-90 COEFFICIENTS

```
a0 = -4.237380e-005
a1 =  2.789440e-004
a2 = -2.615438e-006
a3 =  1.613770e-007
```

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	739025.0	1.0001	0.0001
4.5000	632722.9	4.4998	-0.0002
15.0000	404746.9	15.0001	0.0001
18.5000	350877.8	18.5001	0.0001
24.0000	281980.3	23.9999	-0.0001
29.0000	232541.0	28.9998	-0.0002
32.5000	203846.6	32.5001	0.0001

Temperature ITS-90 = $1/\{a0 + a1[ln(n)] + a2[ln^2(n)] + a3[ln^3(n)]\} - 273.15$ (°C)

Residual = instrument temperature - bath temperature



POST CRUISE CALIBRATION

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SENSOR SERIAL NUMBER: 0158
CALIBRATION DATE: 06-Nov-07

SBE 45 CONDUCTIVITY CALIBRATION DATA
PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

```
g = -1.019376e+000
h =  1.415846e-001
i = -1.103762e-004
j =  2.973139e-005
```

```
CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -9.7151e-006
```

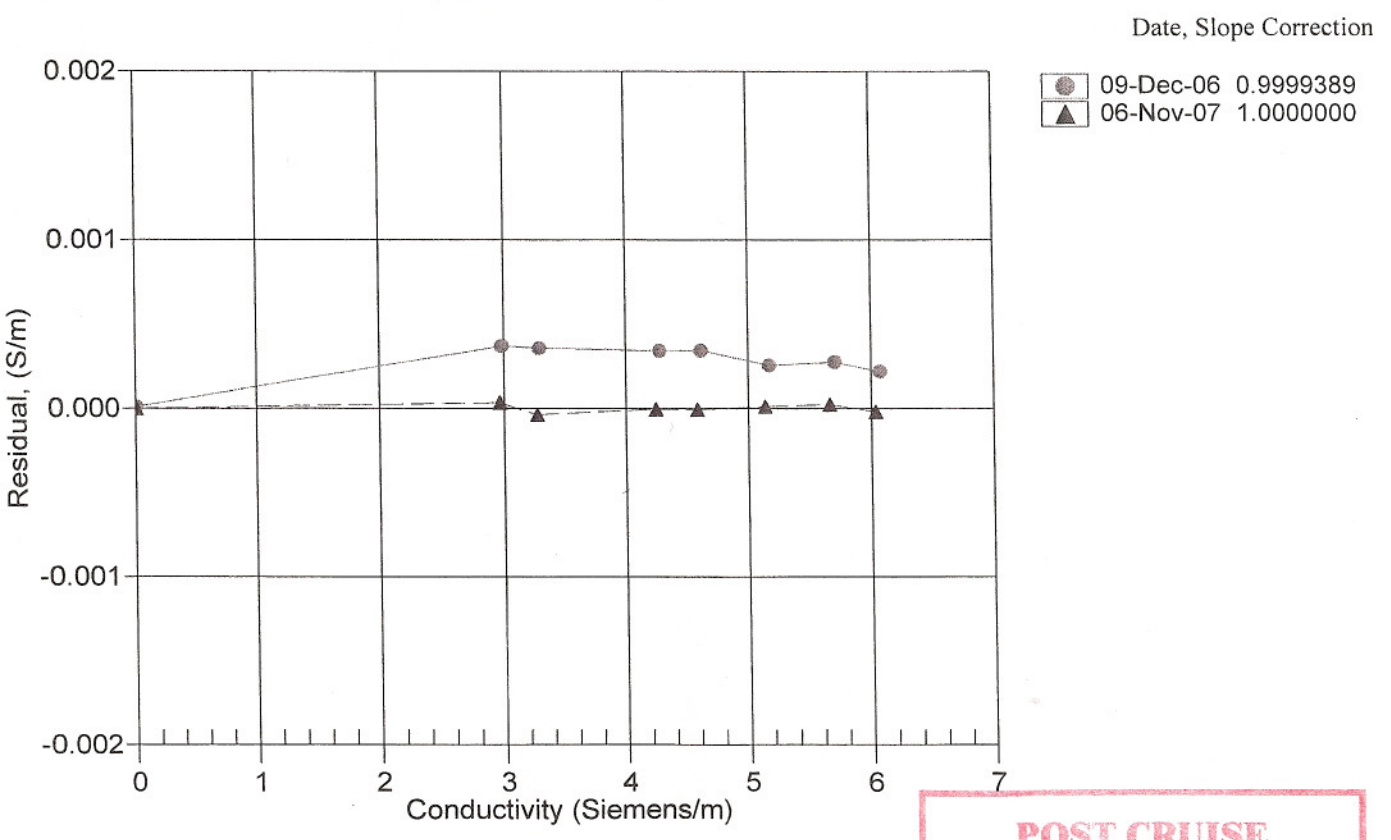
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2684.30	0.00000	0.00000
1.0000	34.6026	2.95943	5296.52	2.95947	0.00003
4.5000	34.5829	3.26487	5495.32	3.26483	-0.00004
15.0000	34.5395	4.24123	6086.84	4.24123	-0.00000
18.5000	34.5296	4.58442	6281.28	4.58441	-0.00001
24.0000	34.5154	5.13879	6582.99	5.13880	0.00001
29.0000	34.5093	5.65767	6853.06	5.65769	0.00002
32.5000	34.5056	6.02791	7039.24	6.02789	-0.00002

f = INST FREQ * sqrt(1.0 + WBOTC * t) / 1000.0

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

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

Residual = instrument conductivity - bath conductivity



POST CRUISE CALIBRATION