

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: 1417
CALIBRATION DATE: 22-Nov-03

SBE 37 RTC CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

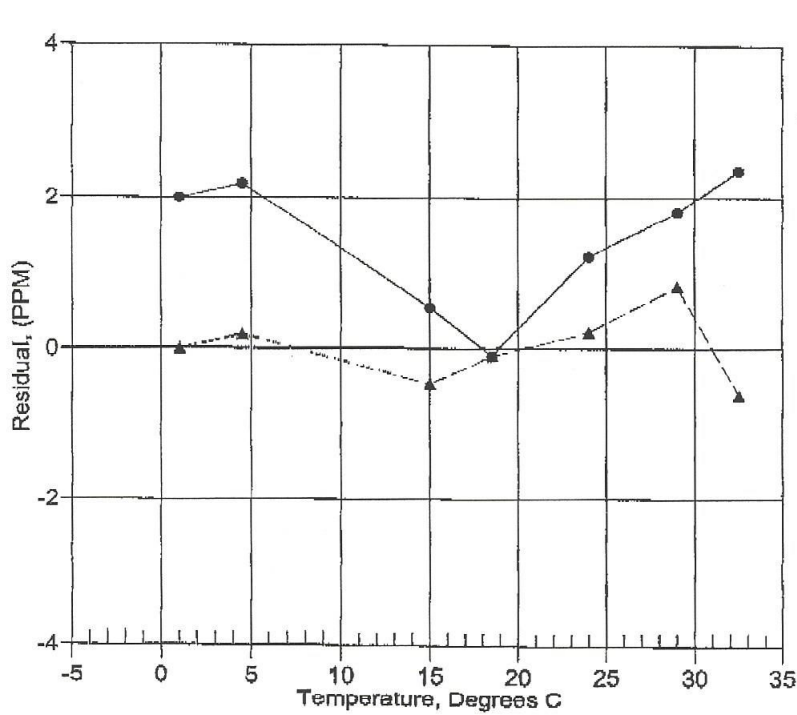
COEFFICIENTS:

rtca0 = 9.999894e-001
rtca1 = 1.640506e-006
rtca2 = -2.871530e-008

BATH TEMP (ITS-90)	RTC FREQ (Hz)	COMPUTED FREQ (Hz)	RESIDUAL (PPM)
1.0001	0.9999910	0.9999910	-0.0
4.4999	0.9999960	0.9999962	0.2
15.0000	1.0000080	1.0000075	-0.5
18.4999	1.0000100	1.0000099	-0.1
24.0001	1.0000120	1.0000122	0.2
29.0000	1.0000120	1.0000128	0.8
32.5000	1.0000130	1.0000124	-0.6

$$\text{RTC frequency} = \text{rtca0} + \text{rtca1} * t + \text{rtca2} * t^2$$

$$\text{Residual} = (\text{Computed RTC frequency} - \text{Measured RTC frequency}) * 1e6$$



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SBE 37 TEMPERATURE CALIBRATION DATA
 ITS-90 TEMPERATURE SCALE

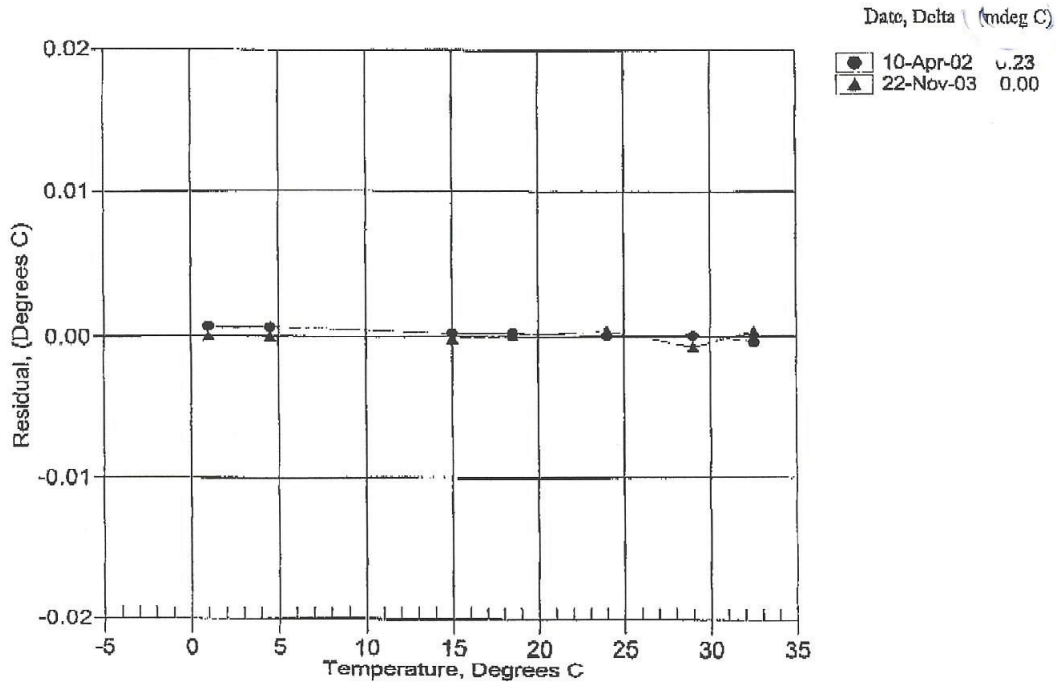
ITS-90 COEFFICIENTS

a0 = -2.054350e-005
 a1 = 2.751427e-004
 a2 = -2.195463e-006
 a3 = 1.542085e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0001	669869.0	1.0001	0.0000
4.4999	574355.0	4.4999	-0.0000
15.0000	368962.2	14.9998	-0.0002
18.4999	320280.4	18.5000	0.0001
24.0001	257909.0	24.0005	0.0004
29.0000	213078.7	28.9993	-0.0007
32.5000	187007.2	32.5003	0.0003

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

Residual = instrument temperature - bath temperature



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SBE 37 CONDUCTIVITY CALIBRATION DATA
 PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

g = -1.053908e+000
 h = 1.783546e-001
 i = -2.255548e-004
 j = 5.124285e+005

CPcor = -9.5700e-008
 CTcor = 3.2500e-006
 WBOTC = 8.5316e-006

BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
24.0000	0.0000	0.00000	2432.28	-0.00000	-0.00000
1.0001	34.8263	2.97675	4752.70	2.97675	0.00001
4.4999	34.8053	3.28378	4929.68	3.28378	-0.00000
15.0000	34.7601	4.26545	5456.43	4.26543	-0.00002
18.4999	34.7499	4.61050	5629.64	4.61050	-0.00000
24.0001	34.7381	5.16829	5898.61	5.16830	0.00002
29.0000	34.7304	5.68983	6139.14	5.68984	0.00001
32.5000	34.7251	6.06188	6304.93	6.06187	-0.00001

$f = \text{INST FREQ} * \text{sqrt}(1.0 + \text{WBOTC} * t) / 1000.0$

$\text{Conductivity} = (g + hf^3 + if^5 + jf^7) / (1 + \delta t + \epsilon p)$ Siemens/meter

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

Residual = instrument conductivity - bath conductivity

Date, Slope Correction

