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: 0039
CALIBRATION DATE: 13-Sep-04

90340 CONDUCTIVITY CALIBRATION DATA
PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

g = -1.043420e+000
h = 1.512335e-001
i = -5.723597e-005
j = 3.120519e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = -7.2641e-006

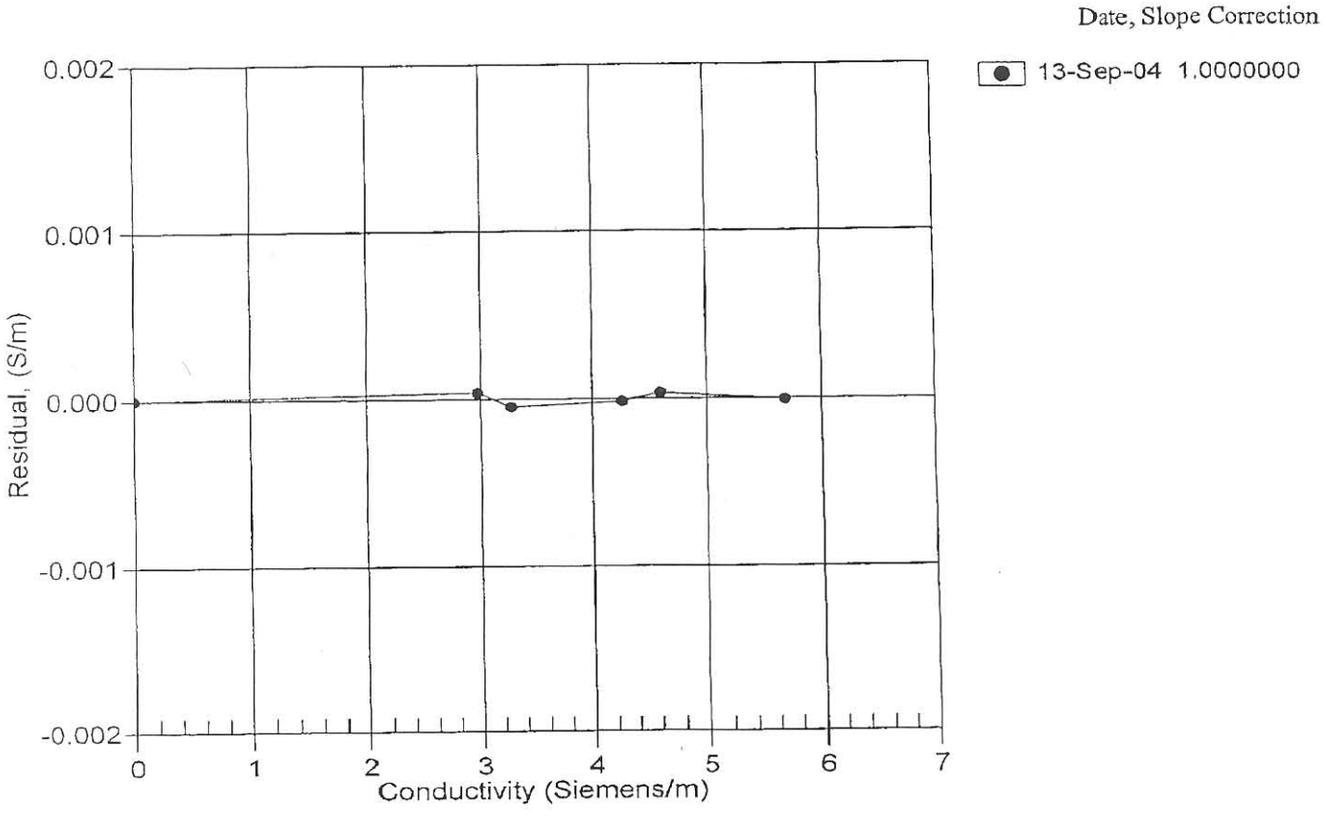
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2626.32	0.00000	0.00000
1.0000	34.7465	2.97057	5142.89	2.97061	0.00004
4.5000	34.7266	3.27709	5334.77	3.27705	-0.00005
15.0000	34.6837	4.25706	5905.96	4.25705	-0.00002
18.5000	34.6747	4.60161	6093.83	4.60164	0.00003
29.0000	34.6603	5.67964	6646.52	5.67963	-0.00001

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



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SENSOR SERIAL NUMBER: 0039
CALIBRATION DATE: 19-Aug-04

90340 PRESSURE CALIBRATION DATA
508 psia S/N 5631

COEFFICIENTS:

PA0 =	9.461948e-002	PTCA0 =	5.669728e+001
PA1 =	2.401722e-002	PTCA1 =	3.118938e-001
PA2 =	8.449160e-010	PTCA2 =	-6.122581e-003
PTHA0 =	-7.526565e+001	PTCB0 =	2.511137e+001
PTHA1 =	3.891068e-002	PTCB1 =	-9.250000e-004
PTHA2 =	1.580425e-006	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.62	669.6	2310.0	14.73	0.02
99.73	4203.1	2309.0	99.68	-0.01
199.73	8363.2	2310.0	199.73	-0.00
299.72	12520.5	2310.0	299.73	0.00
404.71	16883.4	2309.0	404.71	0.00
504.70	21036.3	2313.0	504.67	-0.01
404.72	16884.6	2310.0	404.74	0.00
299.73	12521.4	2310.0	299.75	0.01
199.74	8363.7	2311.0	199.74	0.00
99.74	4203.5	2312.0	99.69	-0.01
14.62	662.4	2310.0	14.56	-0.01

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2512.80	677.91
29.00	2438.00	677.00
24.00	2331.40	676.48
18.50	2211.70	677.28
15.00	2133.40	677.66
4.50	1903.30	675.07
1.00	1824.70	673.46

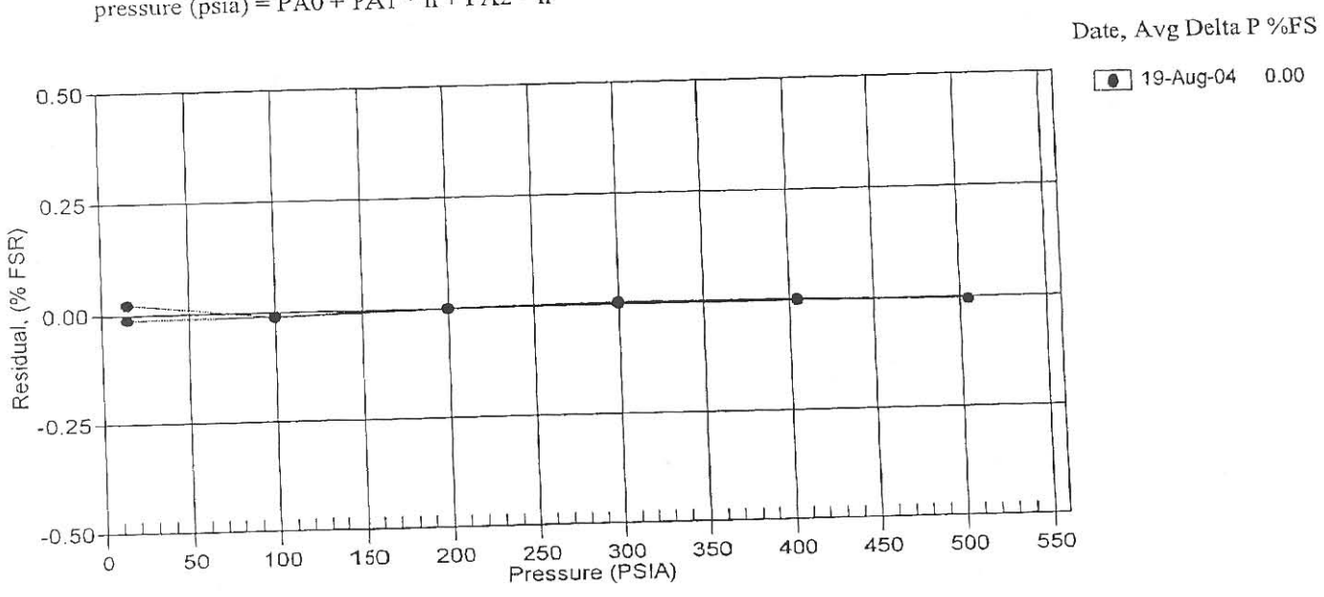
TEMP (ITS90)	SPAN (mV)
-5.00	25.12
35.00	25.08

y = thermistor output; $t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$

x = pressure output - $PTCA0 - PTCA1 * t - PTCA2 * t^2$

$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$

pressure (psia) = $PA0 + PA1 * n + PA2 * n^2$



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SENSOR SERIAL NUMBER: 0039
CALIBRATION DATE: 13-Sep-04

90340 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

a0 = -1.798912e-005
a1 = 2.767243e-004
a2 = -2.408307e-006
a3 = 1.597400e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	672520.8	1.0001	0.0001
4.5000	576296.9	4.4998	-0.0002
15.0000	369579.1	15.0002	0.0002
18.5000	320644.1	18.5000	0.0000
24.0000	257989.4	23.9999	-0.0001
29.0000	212974.3	29.0000	-0.0000
32.5000	186825.2	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