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: 5166
CALIBRATION DATE: 21-Apr-07

SBE16plus TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

a0 = 1.286185e-003
a1 = 2.601005e-004
a2 = 8.796172e-008
a3 = 1.413433e-007

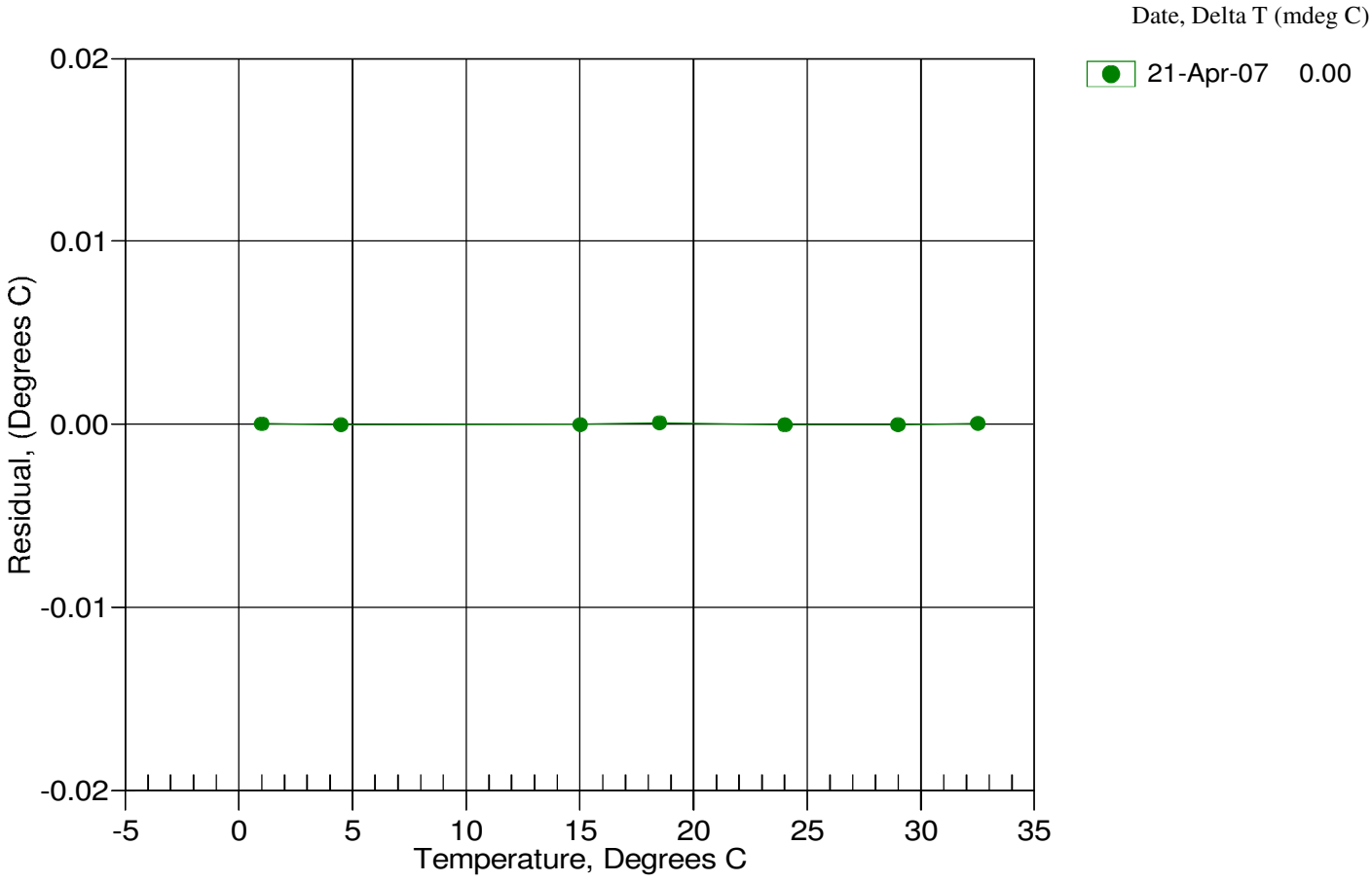
BATH TEMP (ITS-90)	INSTRUMENT OUTPUT(n)	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	602640.600	1.0000	0.0000
4.4999	533582.900	4.4999	-0.0000
15.0000	363280.400	15.0000	-0.0000
18.5000	317851.800	18.5001	0.0001
23.9998	256413.900	23.9998	-0.0000
29.0000	209838.300	29.0000	-0.0000
32.5000	181796.400	32.5001	0.0000

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

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

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

Residual = instrument temperature - bath temperature



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SENSOR SERIAL NUMBER: 5166
CALIBRATION DATE: 21-Apr-07

SBE16plus CONDUCTIVITY CALIBRATION DATA
PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

```
g = -1.018693e+000
h =  1.593015e-001
i = -5.731472e-004
j =  6.936952e-005

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

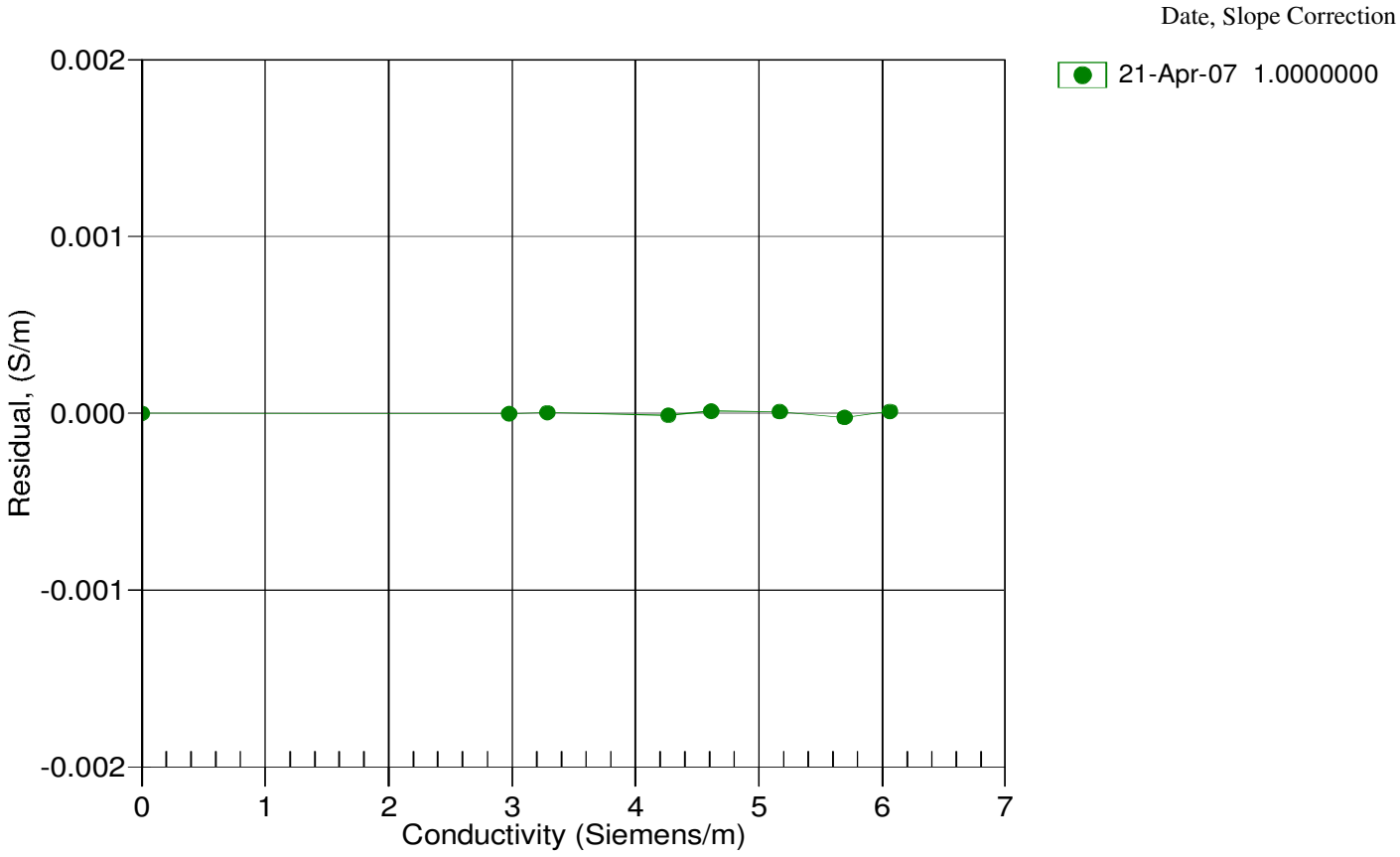
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2536.82	0.0000	0.00000
1.0000	34.8329	2.97724	5026.24	2.9772	-0.00000
4.4999	34.8124	3.28438	5215.43	3.2844	0.00000
15.0000	34.7688	4.26640	5778.11	4.2664	-0.00001
18.5000	34.7592	4.61161	5963.04	4.6116	0.00001
23.9998	34.7485	5.16963	6250.05	5.1696	0.00001
29.0000	34.7423	5.69156	6506.67	5.6915	-0.00002
32.5000	34.7371	6.06374	6683.46	6.0638	0.00001

f = INST FREQ / 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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CALIBRATION COEFFICIENTS

SERIAL NO : **104227**

PRESSURE TRANSDUCER

DATE : 08-31-2006

MODEL :	PRESSURE RANGE :	TEMP. RANGE :	PORT :
46K-134	0 to 6000 psia	0 to 125 deg C	oil filled

PRESSURE COEFFICIENTS

U = temperature (deg C)

$C = C_1 + C_2U + C_3U^2$

$D = D_1 + D_2U$

$T_0 = T_1 + T_2U + T_3U^2 + T_4U^3 + T_5U^4$

T = pressure period (μsec)

Pressure : (psia)

$$P = C\left(1 - \frac{T_0^2}{T^2}\right)\left(1 - D\left(1 - \frac{T_0^2}{T^2}\right)\right)$$

C_1	-29493.83	psia
C_2	-4.76506E-01	psia/deg C
C_3	8.19742E-03	psia/deg C^2

D_1	0.032968
D_2	0

T_1	30.00898	μsec
T_2	-5.05845E-04	μsec/deg C
T_3	3.86287E-06	μsec/deg C^2
T_4	1.94603E-09	μsec/deg C^3
T_5	0	

(08-31-2006)

PAROSCIENTIFIC, INC.
4500 148th AVENUE N.E.
REDMOND, WA. 98052

CUSTOMER : SEABIRD ELECTRONICS, INC.

PARO TEST 12

SALES ORDER : 23379 PREPARED BY : T.C.

CALIBRATION COEFFICIENTS

SERIAL NO : **104227**

PRESSURE TRANSDUCER

DATE : 08-31-2006

MODEL :	PRESSURE RANGE :	TEMP. RANGE :	PORT :
46K-134	0 to 6000 psia	0 to 125 deg C	oil filled

PRESSURE COEFFICIENTS AT FIXED TEMPERATURE

(only valid at specified temperature)

T = pressure period (μsec)

Pressure equation : (psia)

$$P = C\left(1 - \frac{T_0^2}{T^2}\right)\left(1 - D\left(1 - \frac{T_0^2}{T^2}\right)\right)$$

Temperature: 21.0 C

C (psia)	-29500.22				
D	0.032968				
T_0 (μsec)	30.00008				

(08-31-2006)

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