Sea-Bird Scientific
13431 NE 20th Street
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USA

+1 425-643-9866
seabird@seabird.com
www.seabird.com

SENSOR SERIAL NUMBER: 0329
CALIBRATION DATE: 14-Apr-21

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

COEFFICIENTS:

```
g = -1.018363e+000
h =  1.384140e-001
i = -2.039370e-004
j =  3.367508e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC =  1.2275e-007
```

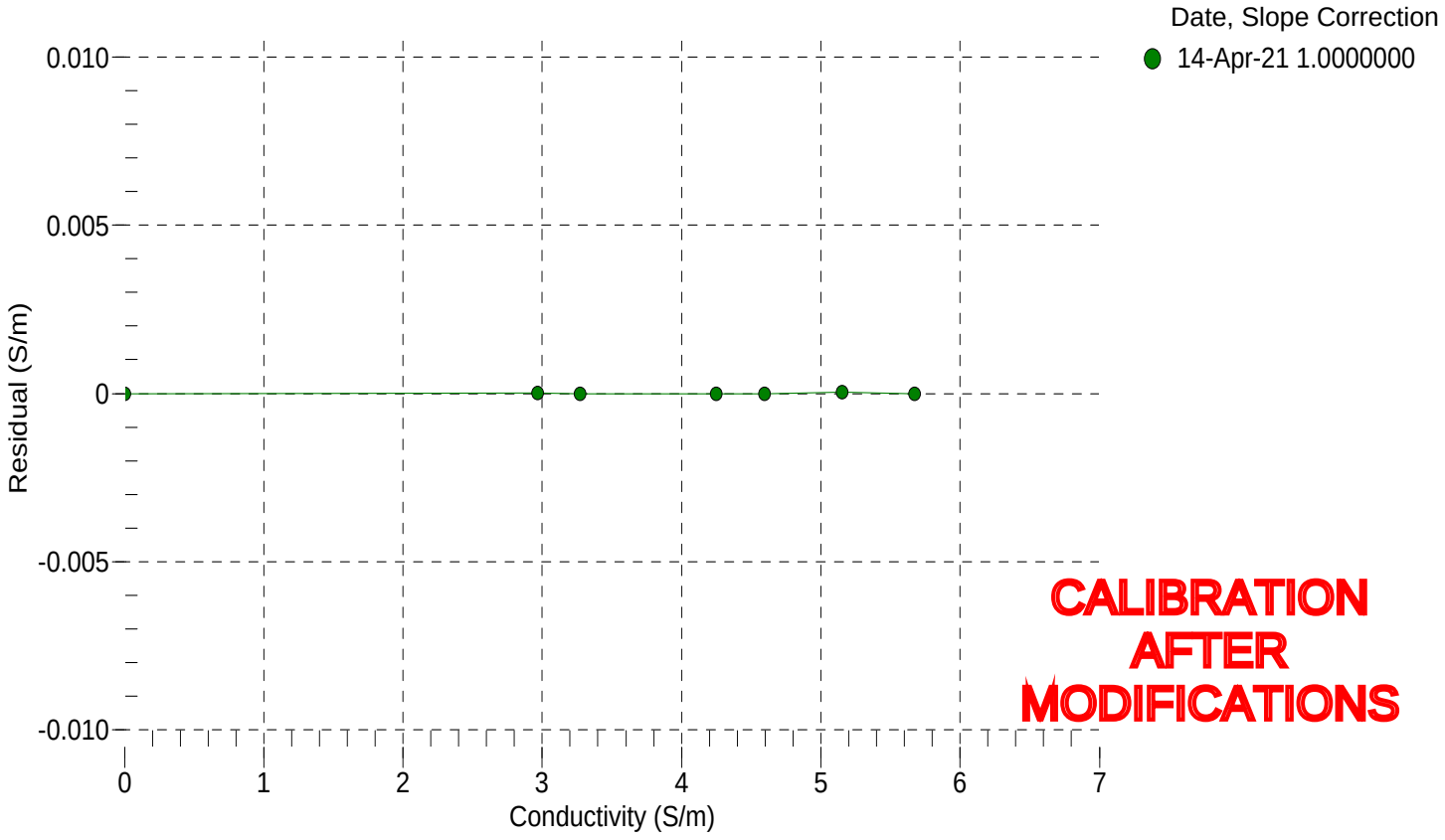
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2715.44	0.00000	0.00000
1.0000	34.6916	2.96632	5367.88	2.96633	0.00001
4.5000	34.6719	3.27244	5569.61	3.27244	-0.00000
15.0000	34.6296	4.25113	6169.72	4.25112	-0.00001
18.5000	34.6204	4.59518	6366.98	4.59517	-0.00001
24.0000	34.6095	5.15125	6673.23	5.15128	0.00003
29.0000	34.5999	5.67085	6946.84	5.67084	-0.00001
32.5001	34.5887	6.04078	7134.95	6.04053	-0.00025

f = Instrument Output(Hz) * sqrt(1.0 + WBOTC * t) / 1000.0

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

Conductivity (S/m) = $(g + h * f^2 + i * f^3 + j * f^4) / (1 + \delta * t + \varepsilon * p)$

Residual (Siemens/meter) = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 0329
CALIBRATION DATE: 14-Mar-21

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

COEFFICIENTS:

```
g = -9.990253e-001
h =  1.357150e-001
i = -1.682747e-004
j =  3.079113e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC =  1.2275e-007
```

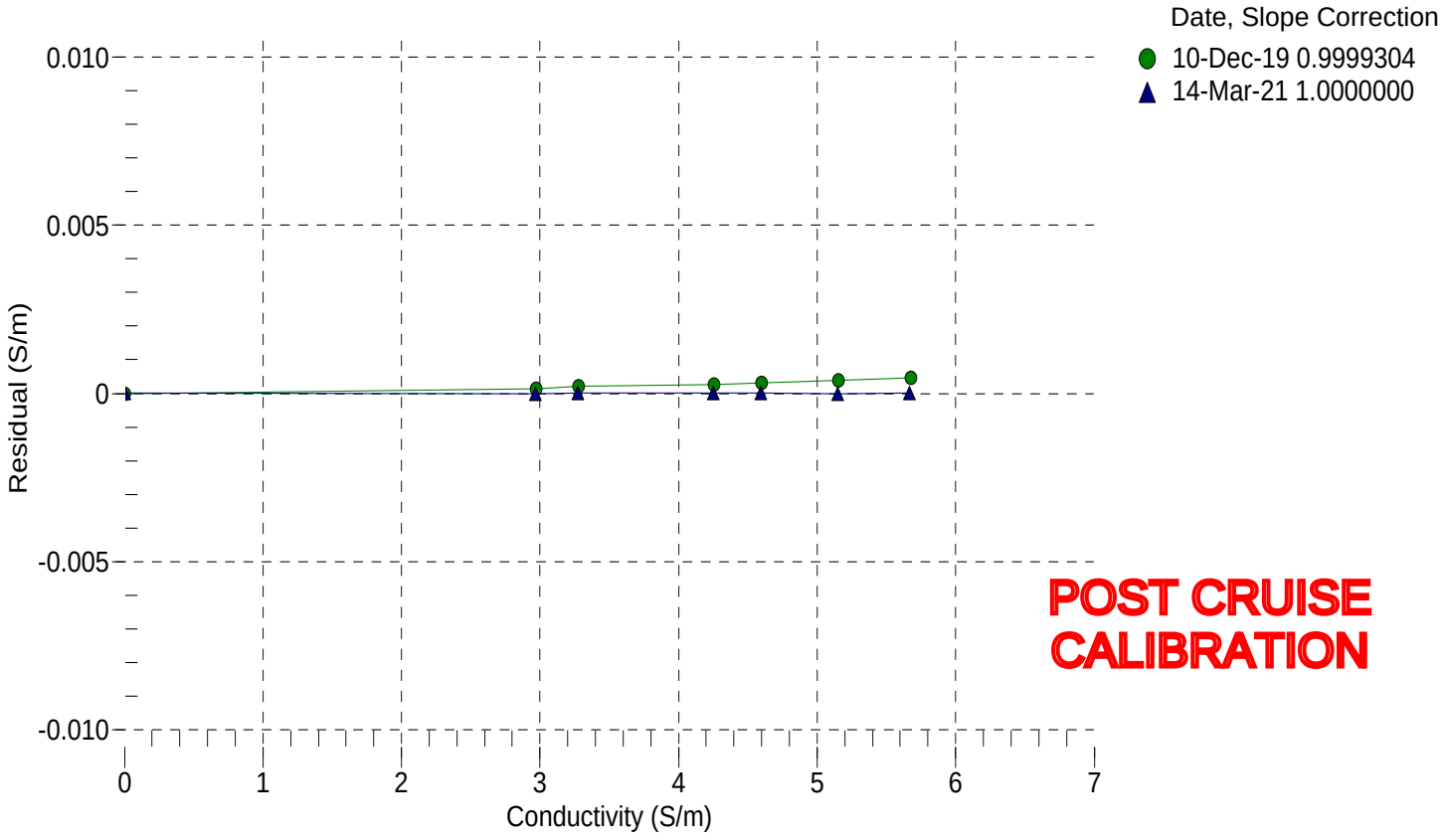
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2715.45	0.00000	0.00000
1.0000	34.6661	2.96435	5404.23	2.96433	-0.00002
4.5000	34.6466	3.27029	5608.27	3.27031	0.00002
15.0000	34.6055	4.24848	6215.00	4.24849	0.00000
18.5000	34.5969	4.59239	6414.42	4.59240	0.00000
24.0000	34.5877	5.14837	6724.00	5.14835	-0.00002
29.0000	34.5762	5.66740	7000.37	5.66741	0.00001
32.5000	34.5398	6.03320	7191.81	6.03961	0.00640

f = Instrument Output(Hz) * sqrt(1.0 + WBOTC * t) / 1000.0

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

Conductivity (S/m) = $(g + h * f^2 + i * f^3 + j * f^4) / (1 + \delta * t + \varepsilon * p)$

Residual (Siemens/meter) = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 0329
CALIBRATION DATE: 10-Mar-21

Glider Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 11405334

COEFFICIENTS:

PA0 =	4.030258e-002	PTCA0 =	5.242803e+005
PA1 =	4.413349e-003	PTCA1 =	6.135278e-001
PA2 =	-1.597858e-011	PTCA2 =	-1.428776e-002
PTEMPA0 =	-6.043787e+001	PTCB0 =	2.510673e+001
PTEMPA1 =	5.448126e-002	PTCB1 =	-3.258145e-004
PTEMPA2 =	-8.608353e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (volts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.48	527530.3	1568.1	14.36	-0.01
301.08	592609.1	1572.0	301.59	0.03
588.38	657582.0	1573.0	588.21	-0.01
875.65	722751.6	1574.5	875.57	-0.01
1163.01	787969.9	1576.2	1163.01	-0.00
1450.36	853212.1	1577.5	1450.41	0.00
1163.03	787986.6	1580.7	1163.08	0.00
875.65	722753.1	1581.4	875.58	-0.00
588.36	657571.6	1581.6	588.17	-0.01
301.37	592609.1	1582.6	301.59	0.02
14.49	527517.7	1582.5	14.30	-0.01

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (volts)	INSTRUMENT OUTPUT (counts)
32.50	1755	527714.50
29.00	1687	527719.60
24.00	1590	527722.50
18.50	1484	527718.40
15.00	1416	527714.40
4.50	1215	527715.40
1.00	1149	527713.10

TEMPERATURE (°C)	SPAN
-3.90	25.11
36.00	25.09

y = thermistor output (counts)

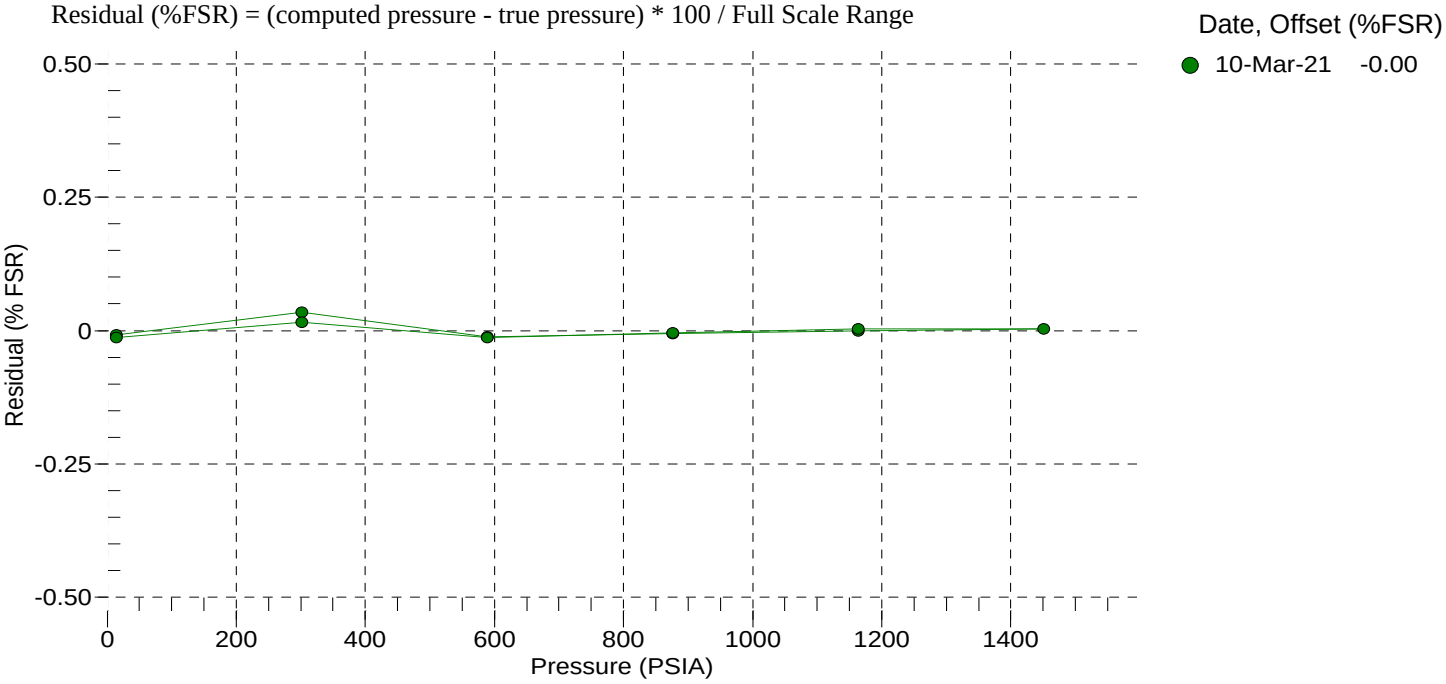
$t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$

$x = \text{instrument output} - PTCA0 - PTCA1 * t - PTCA2 * t^2$

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

$\text{pressure (PSIA)} = PA0 + PA1 * n + PA2 * n^2$

Residual (%FSR) = (computed pressure - true pressure) * 100 / Full Scale Range



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SENSOR SERIAL NUMBER: 0329
CALIBRATION DATE: 14-Apr-21

Glider Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

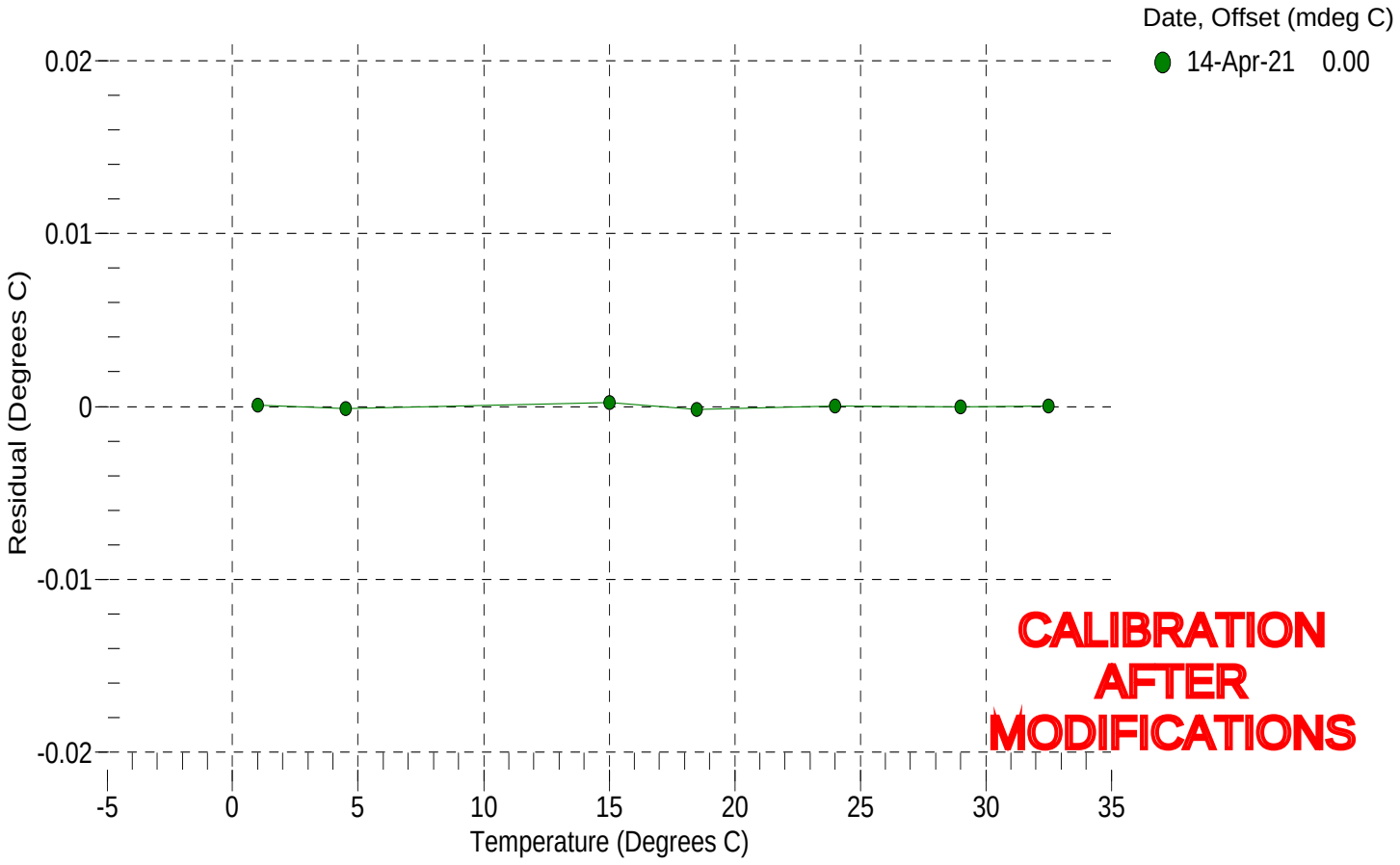
```
a0 = -5.369454e-005
a1 =  2.985786e-004
a2 = -3.983881e-006
a3 =  1.882325e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	581281.3	1.0001	0.0001
4.5000	496529.2	4.4999	-0.0001
15.0000	315640.2	15.0002	0.0002
18.5000	273116.2	18.4998	-0.0002
24.0000	218873.3	24.0000	0.0000
29.0000	180075.7	29.0000	-0.0000
32.5001	157614.2	32.5001	0.0000

n = Instrument Output (counts)

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

Residual (°C) = instrument temperature - bath temperature



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SENSOR SERIAL NUMBER: 0329
CALIBRATION DATE: 14-Mar-21

Glider Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

```
a0 = -1.632239e+000
a1 = -1.185207e-001
a2 =  3.955582e-002
a3 = -1.627639e-003
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	1911735.5	1.0002	0.0002
4.5000	1892381.0	4.5277	0.0277
15.0000	1848916.5	14.9166	-0.0834
18.5000	1837110.0	18.4174	-0.0826
24.0000	1819872.9	24.1332	0.1332
29.0000	1806092.6	29.2722	0.2722
32.5000	1798762.0	32.2318	-0.2682

n = Instrument Output (counts)

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

Residual (°C) = instrument temperature - bath temperature