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: 0256
CALIBRATION DATE: 21-Sep-21

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

COEFFICIENTS:

```
g = -9.922437e-001
h =  1.254969e-001
i = -1.346138e-004
j =  2.585577e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -1.4808e-007
```

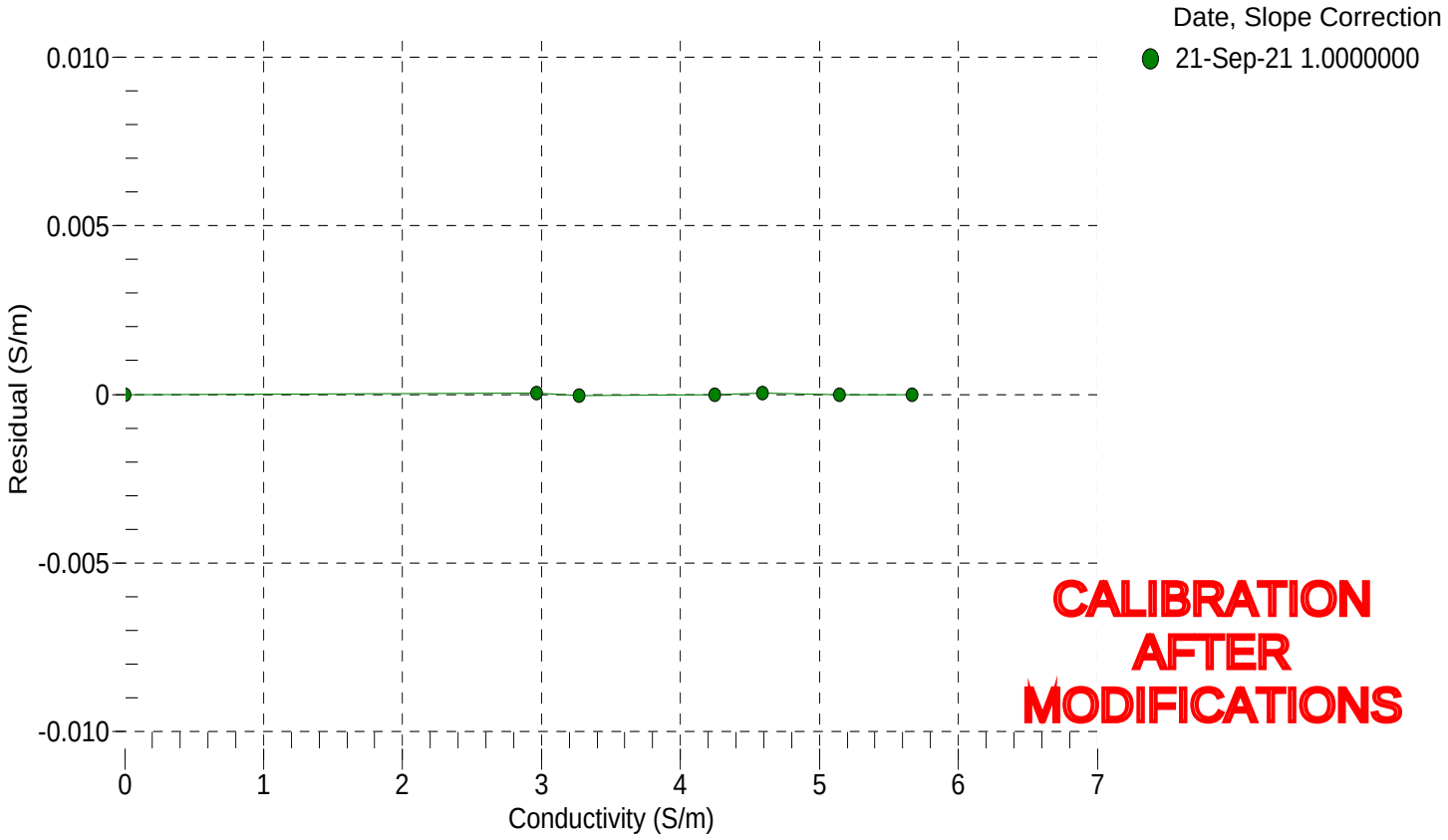
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2813.81	0.00000	0.00000
1.0000	34.6422	2.96250	5612.33	2.96253	0.00003
4.5000	34.6232	3.26830	5824.45	3.26825	-0.00004
15.0000	34.5815	4.24585	6455.32	4.24582	-0.00002
18.5000	34.5727	4.58953	6662.68	4.58957	0.00005
24.0000	34.5644	5.14528	6984.57	5.14527	-0.00001
29.0000	34.5595	5.66497	7272.39	5.66497	-0.00000
32.5000	34.5553	6.03560	7470.79	6.03583	0.00022

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: 0256
CALIBRATION DATE: 14-Sep-21

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

COEFFICIENTS:

```
g = -9.920914e-001
h =  1.254960e-001
i = -1.367531e-004
j =  2.598962e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -1.4808e-007
```

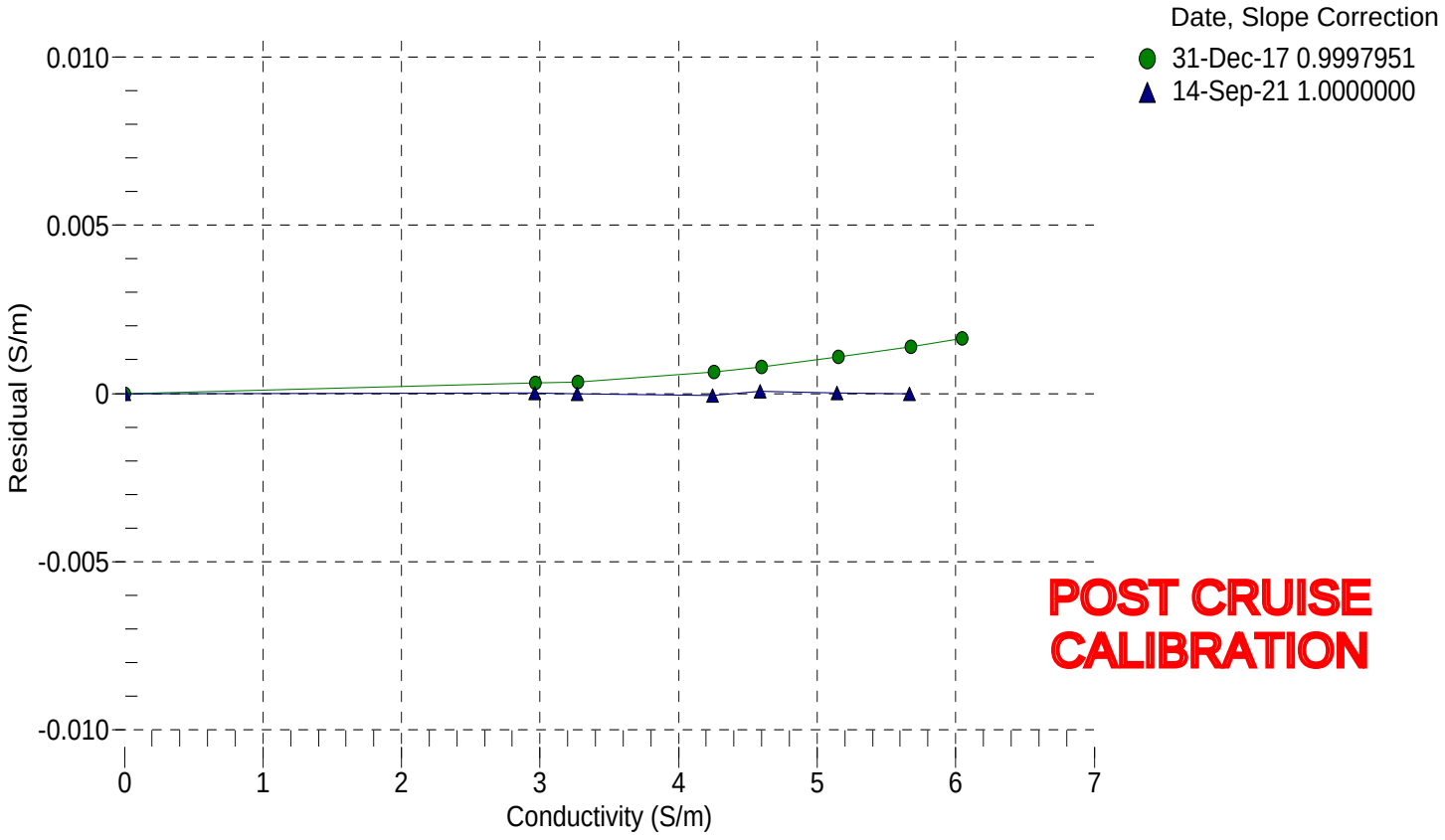
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2813.66	0.00000	0.00000
1.0000	34.6431	2.96257	5612.45	2.96258	0.00002
4.5000	34.6237	3.26834	5824.60	3.26833	-0.00001
15.0000	34.5830	4.24601	6455.53	4.24595	-0.00006
18.4999	34.5746	4.58974	6662.97	4.58980	0.00006
24.0000	34.5656	5.14544	6984.84	5.14545	0.00001
29.0000	34.5606	5.66513	7272.65	5.66512	-0.00001
32.5000	34.5569	6.03585	7471.01	6.03587	0.00002

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: 0256
CALIBRATION DATE: 10-Sep-21

Glider Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 10719843

COEFFICIENTS:

PA0 =	2.828849e-001	PTCA0 =	5.245004e+005
PA1 =	4.510012e-003	PTCA1 =	4.357900e+000
PA2 =	-1.917590e-011	PTCA2 =	-8.430304e-002
PTEMPA0 =	-6.123978e+001	PTCB0 =	2.515668e+001
PTEMPA1 =	5.350856e-002	PTCB1 =	-8.478803e-004
PTEMPA2 =	-6.653089e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (volts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.49	527711.2	1616.0	14.52	0.00
301.49	591291.0	1619.5	301.41	-0.01
588.65	654983.7	1621.1	588.66	0.00
875.85	718702.1	1623.1	875.86	0.00
1162.99	782432.1	1624.7	1162.97	-0.00
1450.10	846195.3	1625.8	1450.07	-0.00
1163.04	782456.1	1626.4	1163.08	0.00
875.88	718711.9	1627.0	875.91	0.00
588.74	655006.1	1627.3	588.76	0.00
301.62	591323.2	1630.0	301.56	-0.00
14.49	527710.5	1630.6	14.52	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (volts)	INSTRUMENT OUTPUT (counts)
32.50	1792	527920.00
29.00	1724	527922.50
24.00	1626	527925.60
18.50	1519	527919.70
15.00	1451	527911.40
4.50	1248	527887.90
1.00	1180	527870.60

TEMPERATURE (°C)	SPAN
-5.10	25.16
35.00	25.13

y = thermistor output (counts)

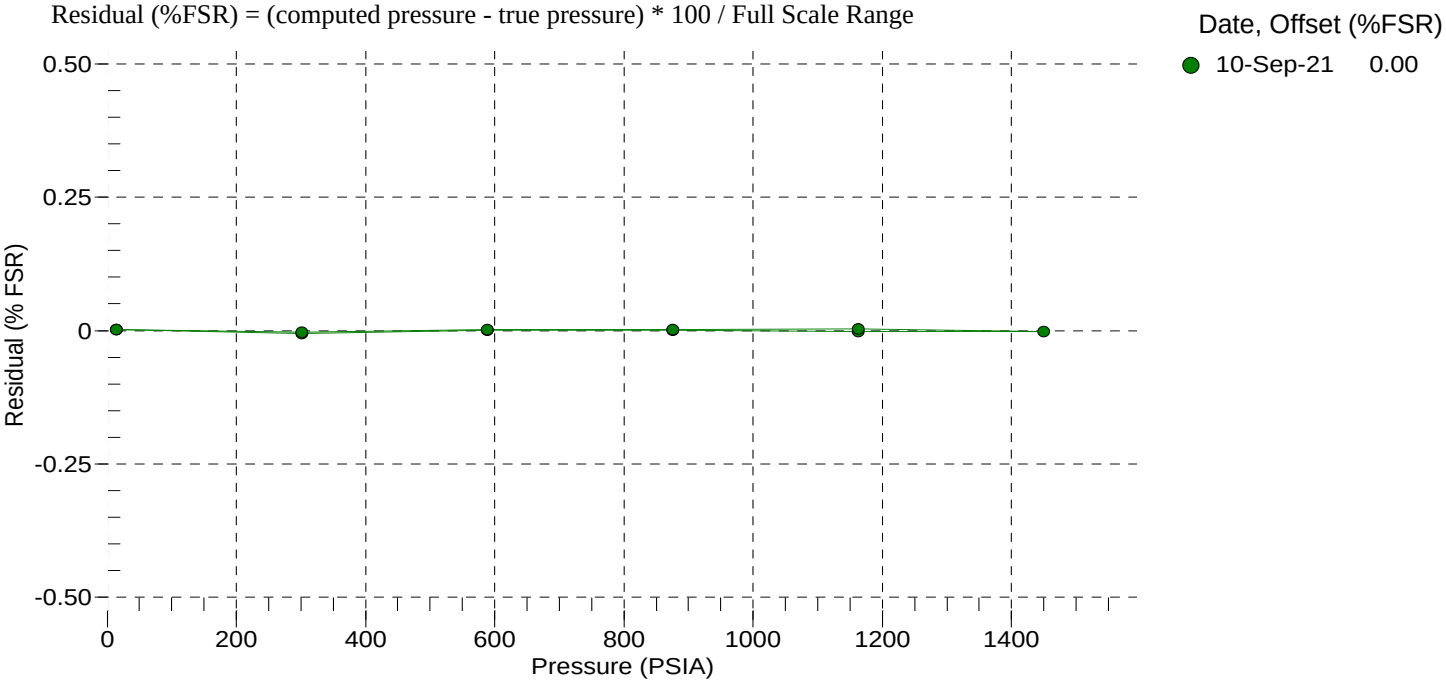
$t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$

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

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

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

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



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SENSOR SERIAL NUMBER: 0256
CALIBRATION DATE: 21-Sep-21

Glider Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

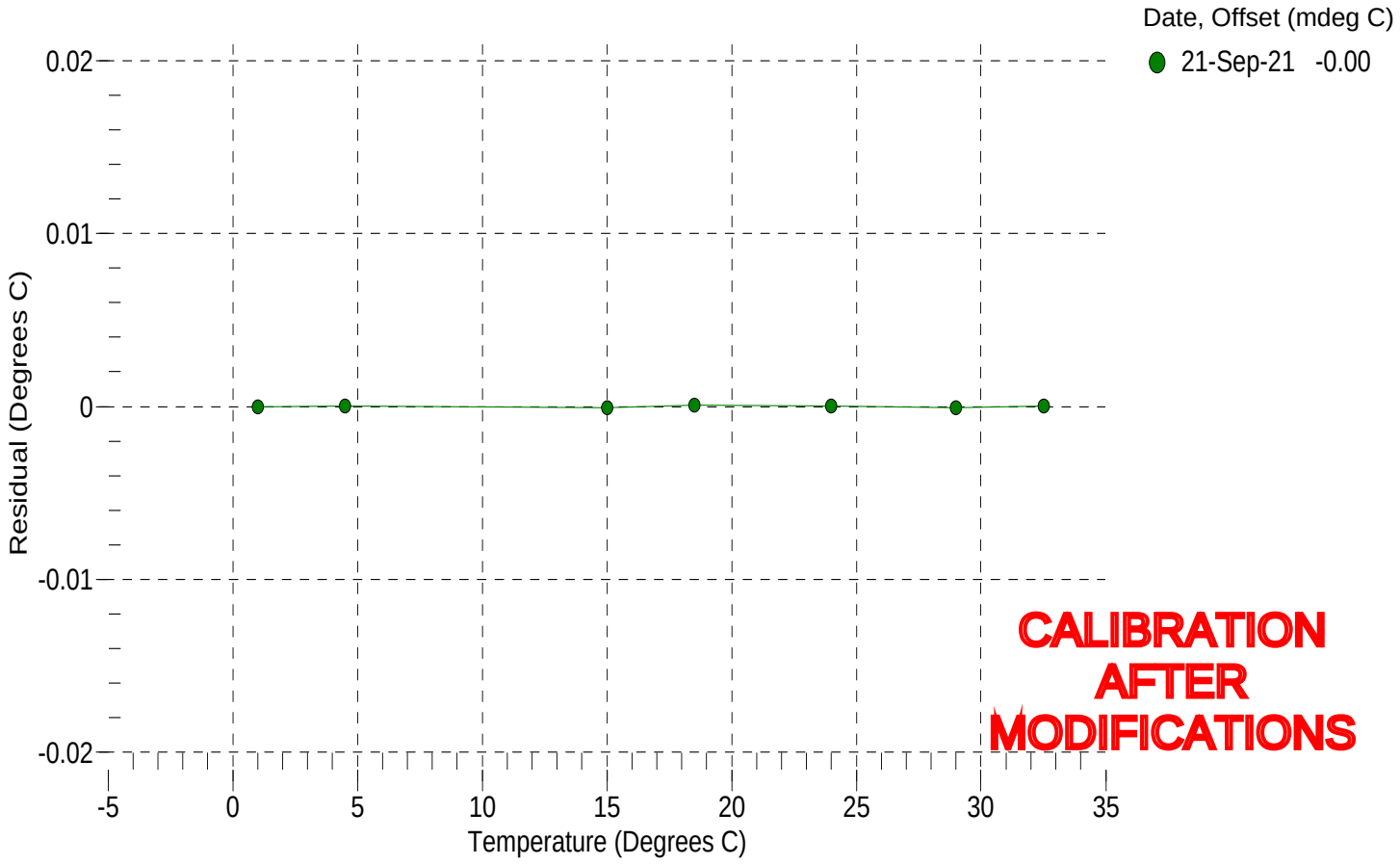
```
a0 = -1.827970e-004
a1 =  3.218334e-004
a2 = -5.497910e-006
a3 =  2.290690e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	565222.3	1.0000	-0.0000
4.5000	483947.9	4.5000	0.0000
15.0000	309755.2	14.9999	-0.0001
18.5000	268608.0	18.5001	0.0001
24.0000	215992.5	24.0000	0.0000
29.0000	178242.8	28.9999	-0.0001
32.5000	156334.6	32.5000	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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Glider Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

```
a0 = -1.864013e-004
a1 =  3.223627e-004
a2 = -5.513669e-006
a3 =  2.287861e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	565250.0	1.0000	0.0000
4.5000	483965.2	4.5000	-0.0000
15.0000	309761.2	14.9997	-0.0003
18.4999	268606.4	18.5004	0.0005
24.0000	215996.2	24.0000	-0.0000
29.0000	178249.6	28.9996	-0.0004
32.5000	156339.8	32.5002	0.0002

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