SBE41-CP ALACE

Instrument Configuration

Instrument Serial Number:	41-11670
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2623.34
Communications Format:	RS232
Communications Settings:	9600 baud, 8 Data Bits, No Parity

Installed Devices/Sensors

Data Format	*Measurement*	*Sensor Type*	*Serial Number*	*Rating*
Count	Temperature	Internal	N/A	N/A
Frequency	Conductivity	Internal	N/A	N/A
Count	Pressure	Druck	11056690	2000m(2000 dBar)

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13431 NE 20th Street
Bellevue, WA 98005
USA

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SENSOR SERIAL NUMBER: 11670
CALIBRATION DATE: 29-Mar-19

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

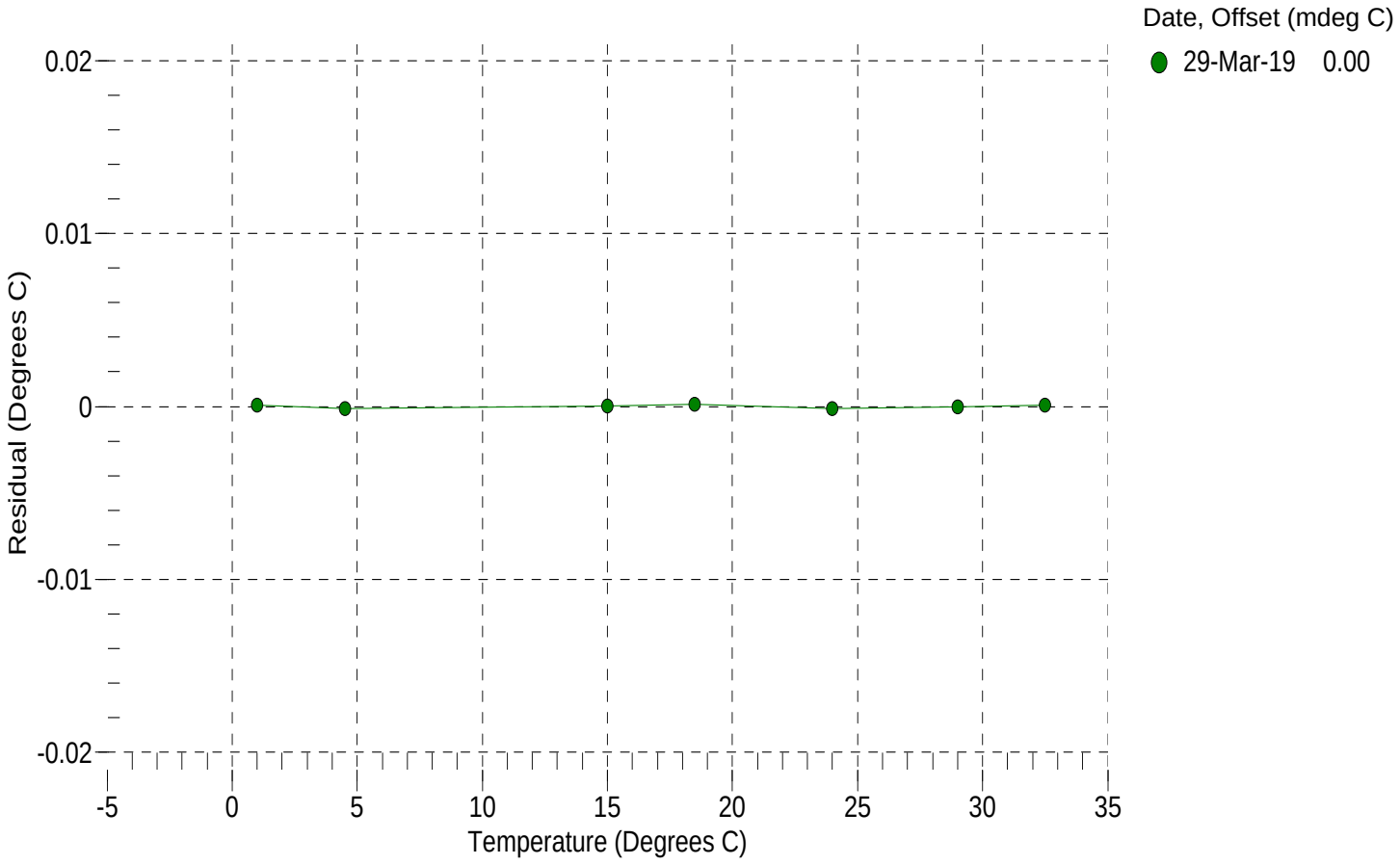
```
a0 = -8.383896e-004
a1 =  2.842516e-004
a2 = -3.157884e-006
a3 =  1.385337e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0005	16409839.7	1.0006	0.0001
4.5000	14030303.5	4.4999	-0.0001
15.0000	8940381.2	15.0000	0.0000
18.5000	7741017.0	18.5001	0.0001
23.9940	6211082.2	23.9939	-0.0001
29.0000	5112636.0	29.0000	-0.0000
32.5000	4476919.0	32.5001	0.0001

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: 11670
CALIBRATION DATE: 29-Mar-19

SBE 41 CONDUCTIVITY CALIBRATION DATA
PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

```
g = -1.007591e+000
h =  1.470324e-001
i = -3.659655e-004
j =  4.924688e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -6.3525e-008
```

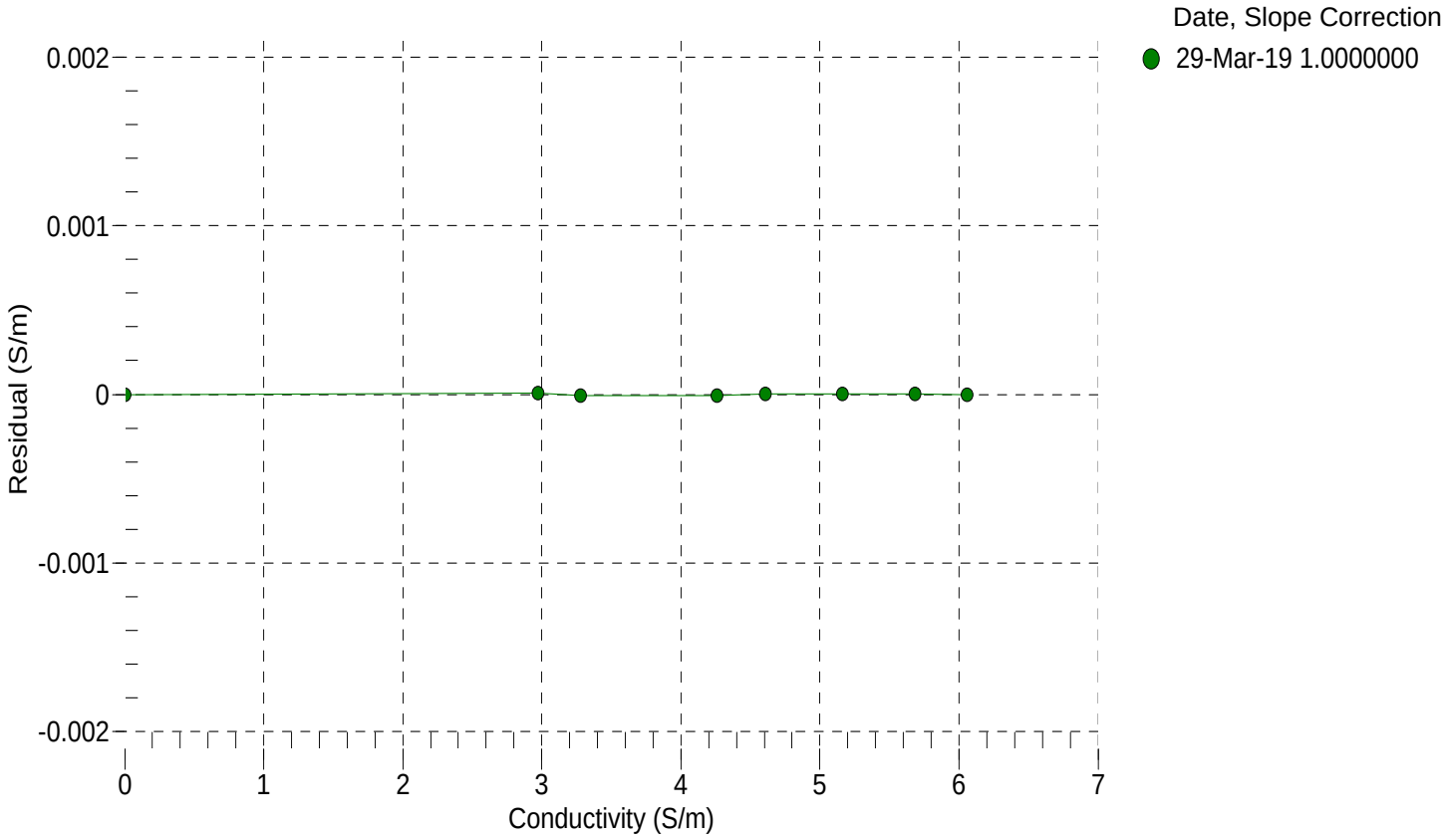
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2623.34	0.00000	0.00000
1.0005	34.7798	2.97319	5213.40	2.97319	0.00001
4.5000	34.7602	3.27995	5409.99	3.27995	-0.00001
15.0000	34.7179	4.26082	5994.72	4.26081	-0.00001
18.5000	34.7089	4.60566	6186.89	4.60566	0.00000
23.9940	34.6988	5.16246	6484.84	5.16246	0.00000
29.0000	34.6933	5.68444	6751.87	5.68444	0.00000
32.5000	34.6898	6.05642	6935.68	6.05642	-0.00000

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: 11670
CALIBRATION DATE: 25-Mar-19

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 11056690

COEFFICIENTS:

PA0 =	2.221455e-001	PTCA0 =	-1.521512e+003
PA1 =	3.921222e-004	PTCA1 =	1.472054e+001
PA2 =	-2.661082e-013	PTCA2 =	4.452202e-001
PTHA0 =	2.965677e+002	PTCB0 =	3.122787e+005
PTHA1 =	-6.188356e-005	PTCB1 =	2.612645e+001
PTHA2 =	-9.247535e-013	PTCB2 =	-4.429927e-001

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.55	35704.1	4164677.6	14.58	0.00
591.28	1509775.5	4163851.2	591.31	0.00
1167.89	2986595.7	4163156.4	1167.96	0.00
1744.58	4466472.3	4162578.8	1744.65	0.00
2321.24	5949391.9	4162041.2	2321.35	0.00
2897.88	7434720.8	4161416.6	2897.81	-0.00
2321.33	5949373.0	4161819.4	2321.34	0.00
1744.68	4466375.2	4162182.2	1744.61	-0.00
1168.28	2987168.8	4162488.4	1168.19	-0.00
591.47	1509856.5	4162839.0	591.34	-0.00
14.56	35723.3	4163008.0	14.59	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	4025081.20	37904.20
29.00	4075479.80	37798.41
23.99	4147568.80	37639.21
18.50	4226487.80	37414.34
15.00	4276693.00	37254.92
4.50	4426648.80	37059.92
1.00	4476798.20	37007.87

TEMPERATURE (°C)	SPAN
1.04	312305.37
20.55	312628.48
33.31	312657.42

y = thermistor output (counts)

$t = PTHA0 + PTHA1 * y + PTHA2 * y^2$

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

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

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

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