# Calibrating a Slocum pumped/unpumped and SeaGlider CTD

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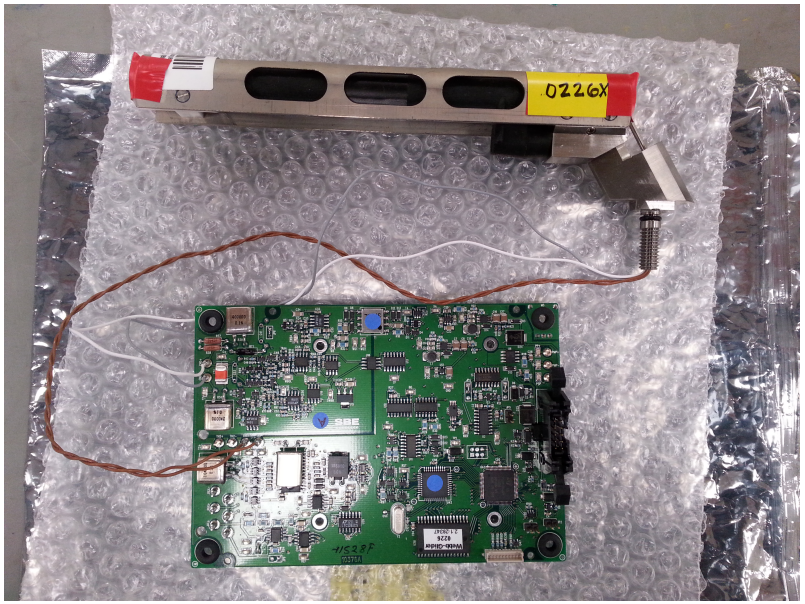
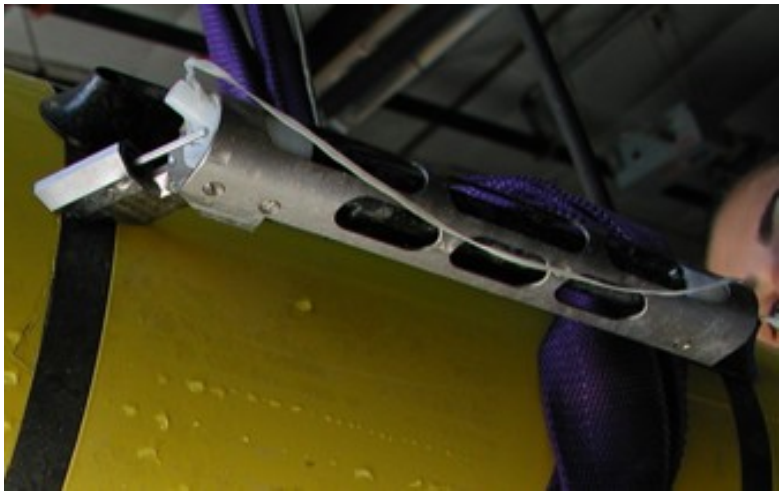
# Maritime Autonomous Robotic Systems

# Slocum

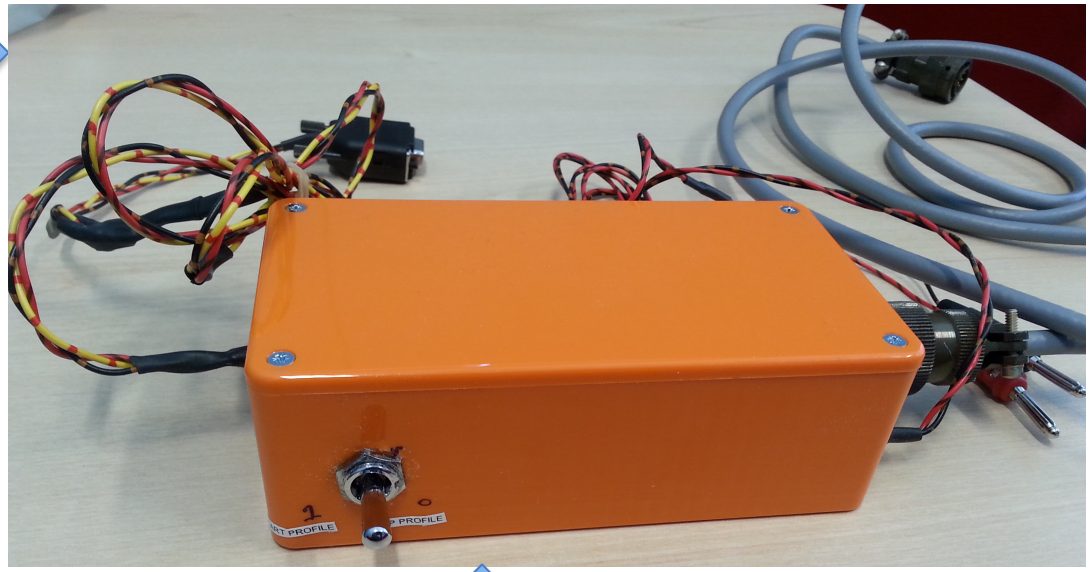
Slocum Glider pumped CTD

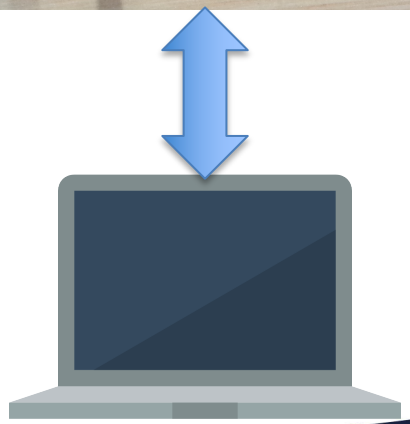


Slocum glider unpumped CTD

# Slocum

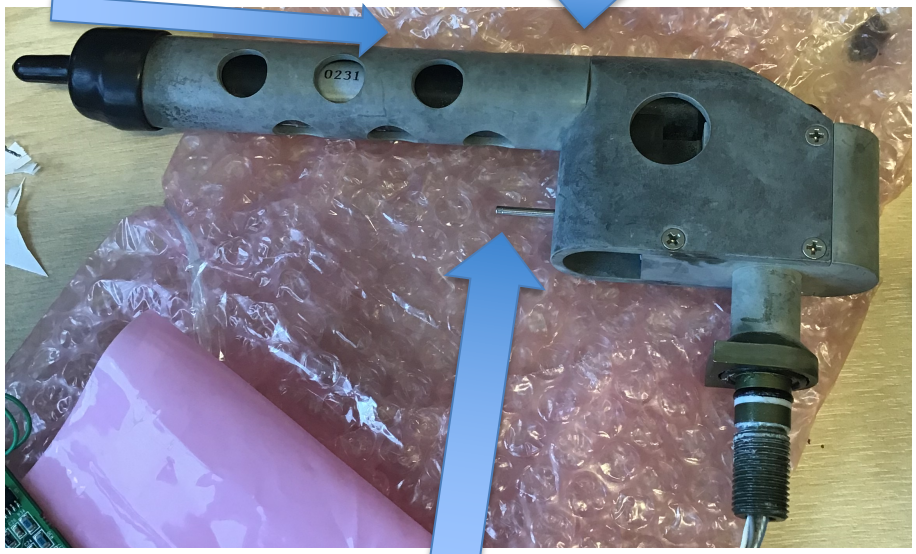




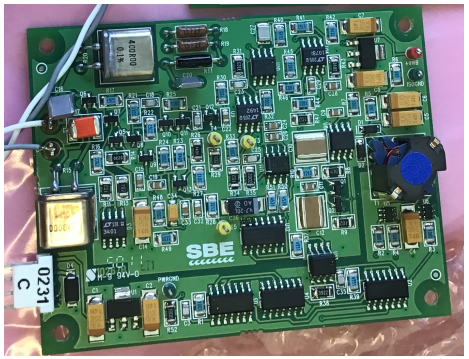
# Seaglider

Conductivity Sensor

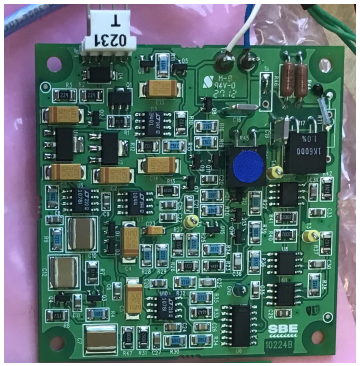
Entrance to sensor




Temperature Sensor




Conductivity Board

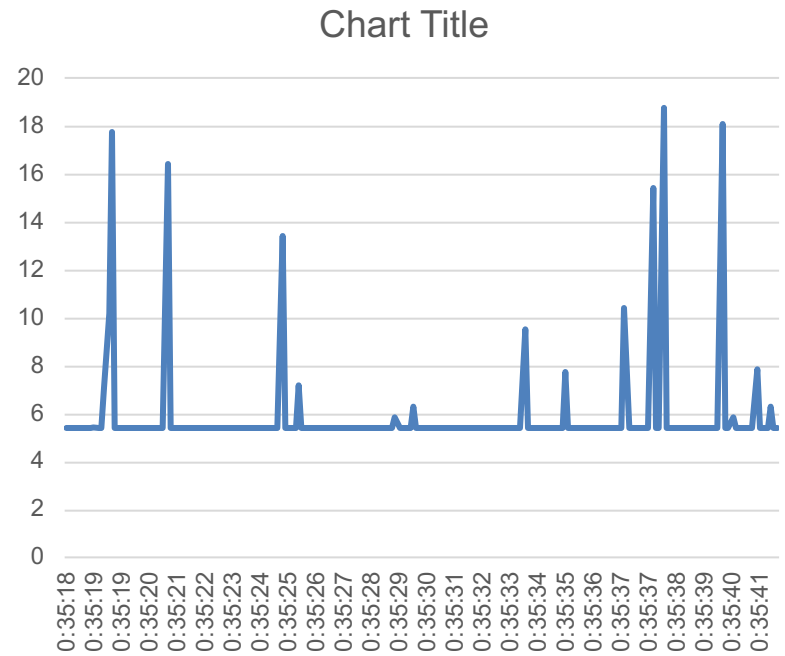



Temperature board

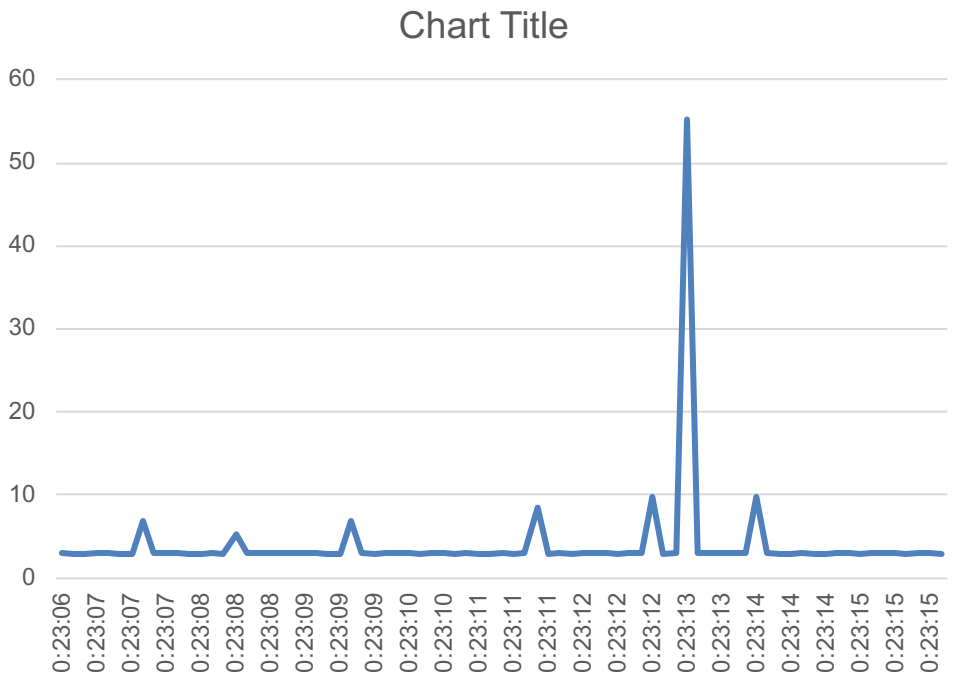
# Seaglider

- Frequency output from both boards
- Runs on about ~10v from (Measured from glider)


# Progress – Initial attempt




From the temperature sensor




From the conductivity sensor

# Progress

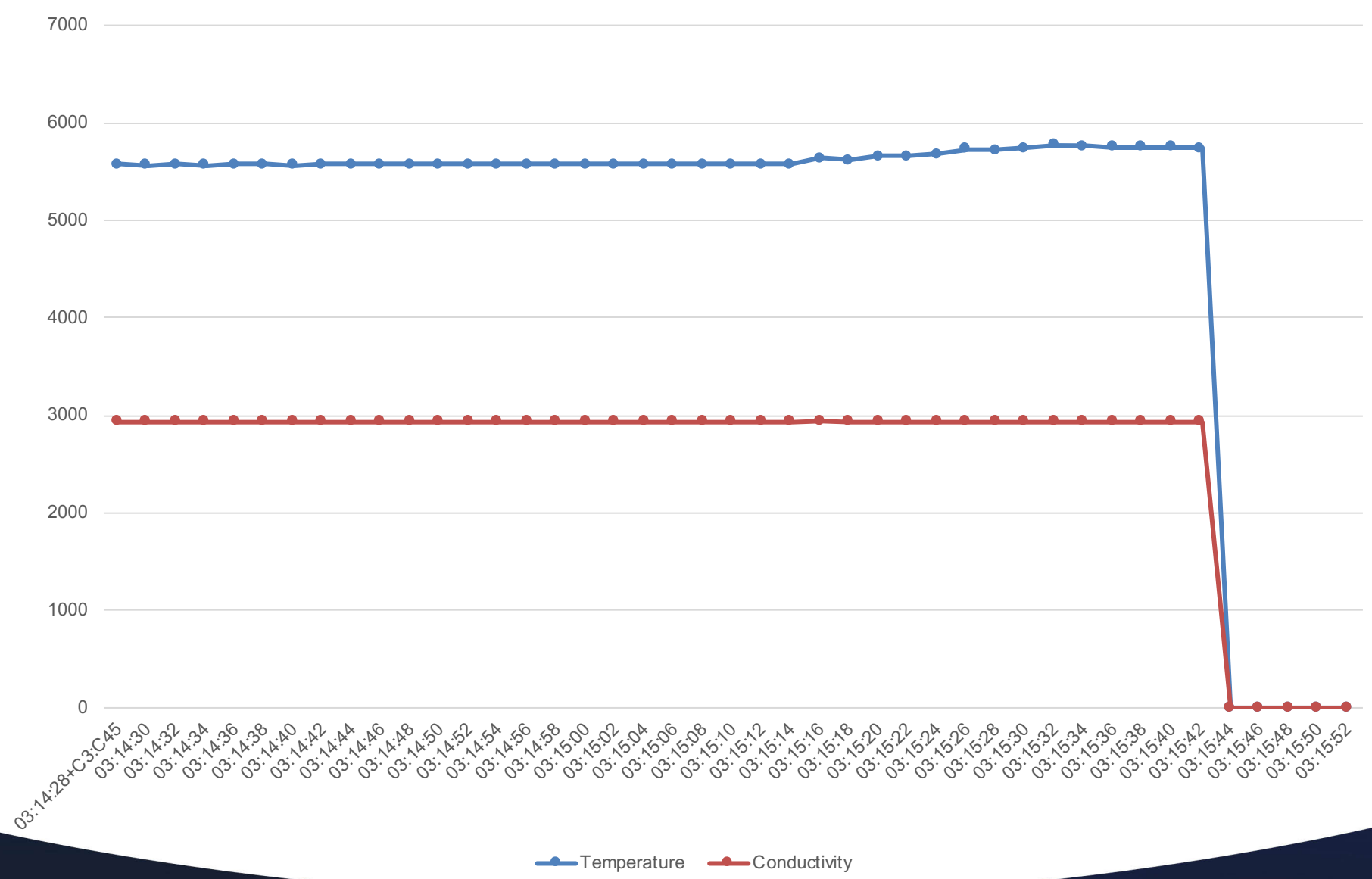


Chart Title
7000
6000
5000
4000
3000
2000
1000
0
03:14:28+C3:C45
03:14:30
03:14:32
03:14:34
03:14:36
03:14:38
03:14:40
03:14:42
03:14:44
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03:14:56
03:14:58
03:15:00
03:15:02
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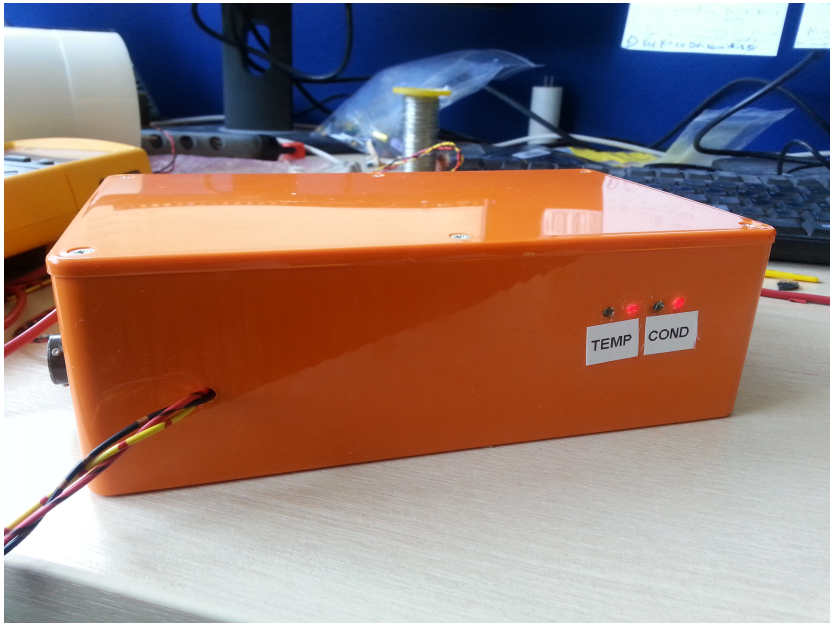
03:15:40
03:15:42
03:15:44
03:15:46
03:15:48
03:15:50
03:15:52
Temperature
Conductivity

# Fault detection

I added 4 Leds to show the state of the sensors. 2 for the Conductivity and 2 for the Temperature


Green – The Sensor electronics are working




Red – There's a fault somewhere

# Fault detection

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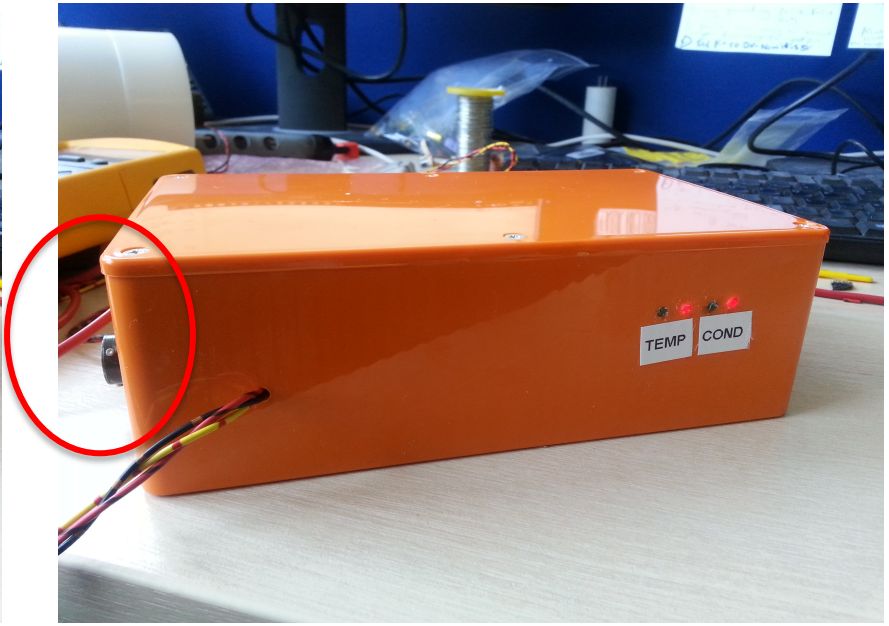


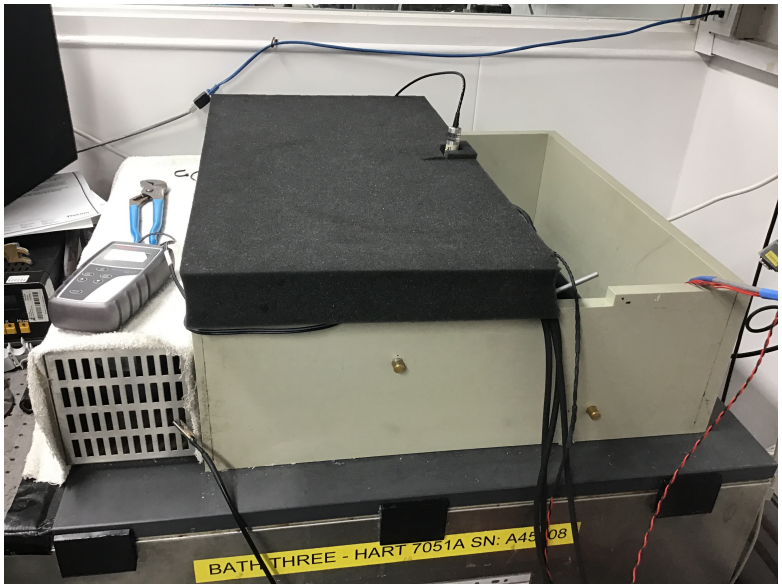

Red – There's a fault somewhere

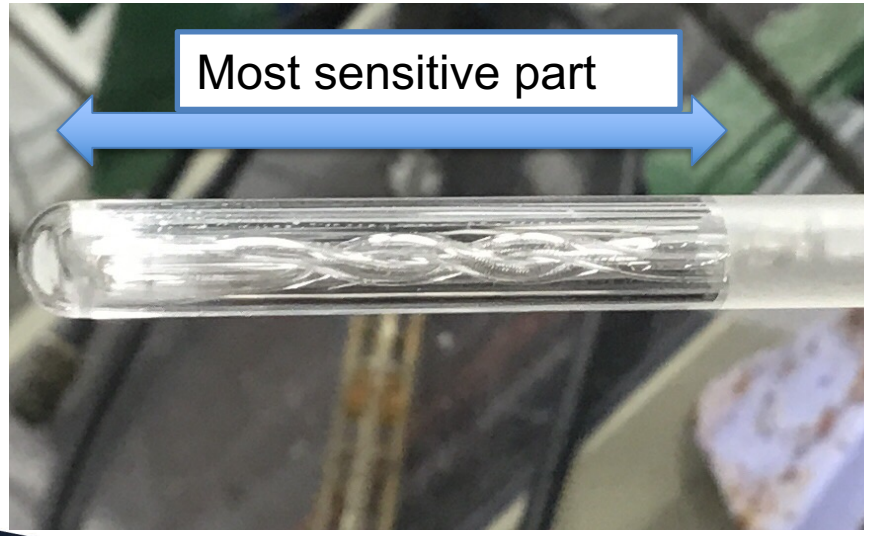
# The Calibration Laboratory

- Seabird, RBR, Aanderaa and AML instruments can be calibrated as well as a range of other oceanographic instruments.
- Calibration parameters include Temperature, Pressure, Conductivity and Salinity samples.
- Guildline Salinometers can be serviced, aligned and repaired.
- All measurements are traceable to National Standards and the laboratory is currently in the process of achieving ISO 9001.
- The laboratory has over 20 years of calibration experience (the last 10 specifically with oceanographic instrumentation).
- Calibration Checks are also available if full calibrations are not required.

# How we calibrate the Temperature probe

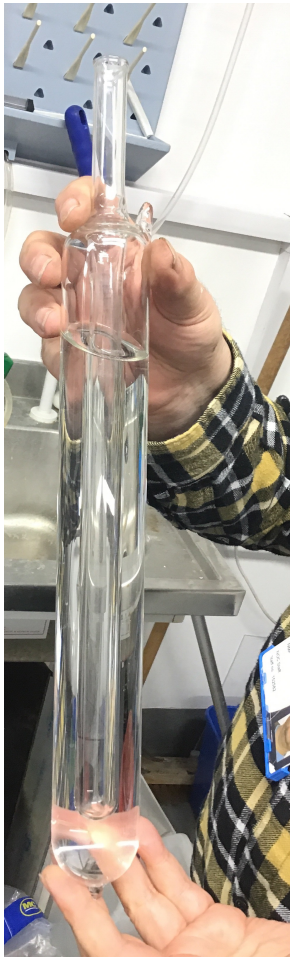
- Temperature controlled bath
- HART 7051
- Standard Platinum Resistance Thermometer
- Calibrated at the National Physical Laboratory (NPL) in London
- The bath is profiled to find the best spot (Hot and cold). Immersion depth 200mm (Below the surface of the water)
- Allow 30Mins to 1hr for everything to settle before taking any readings



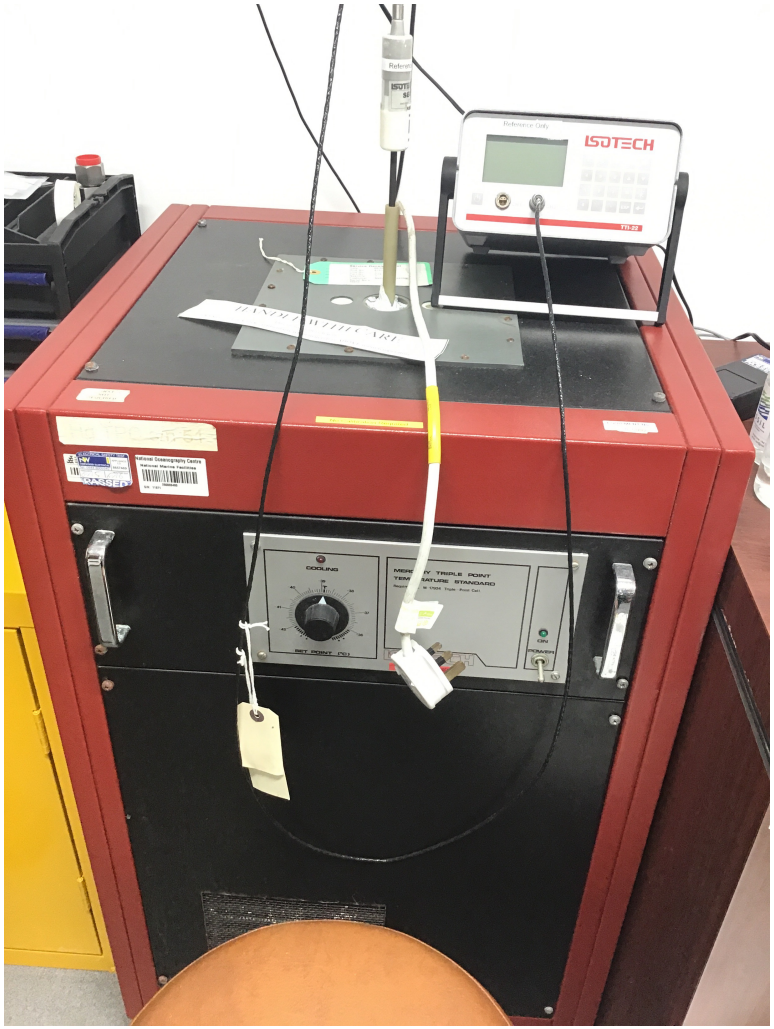




# How we calibrate the Temperature probe

- Triple point cell
- Water



- Mercury

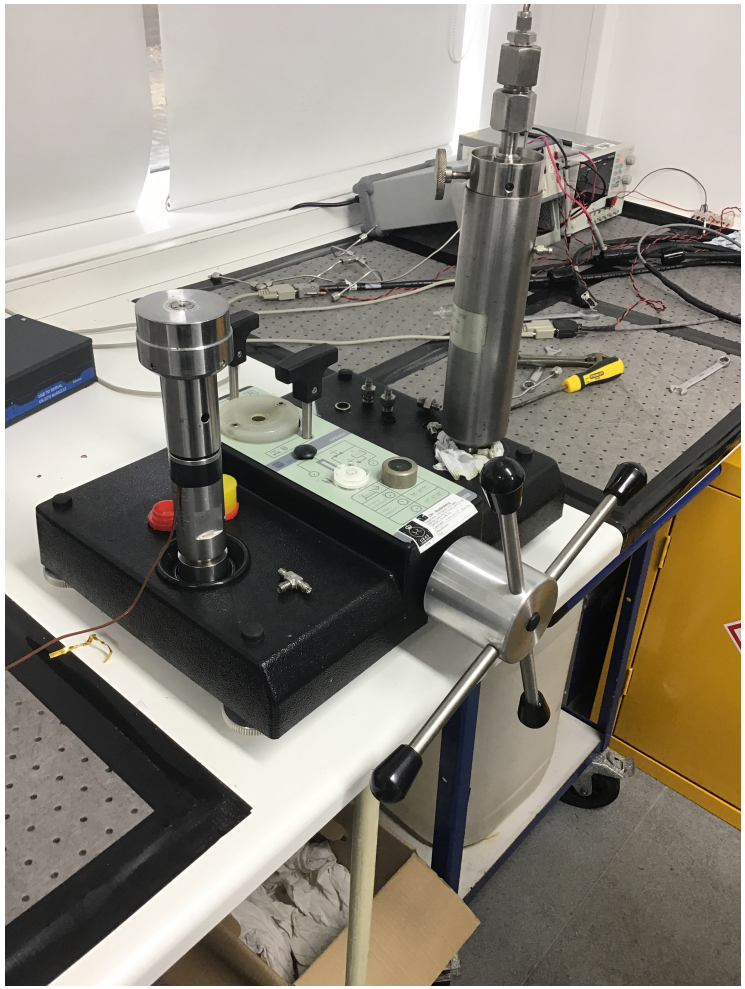


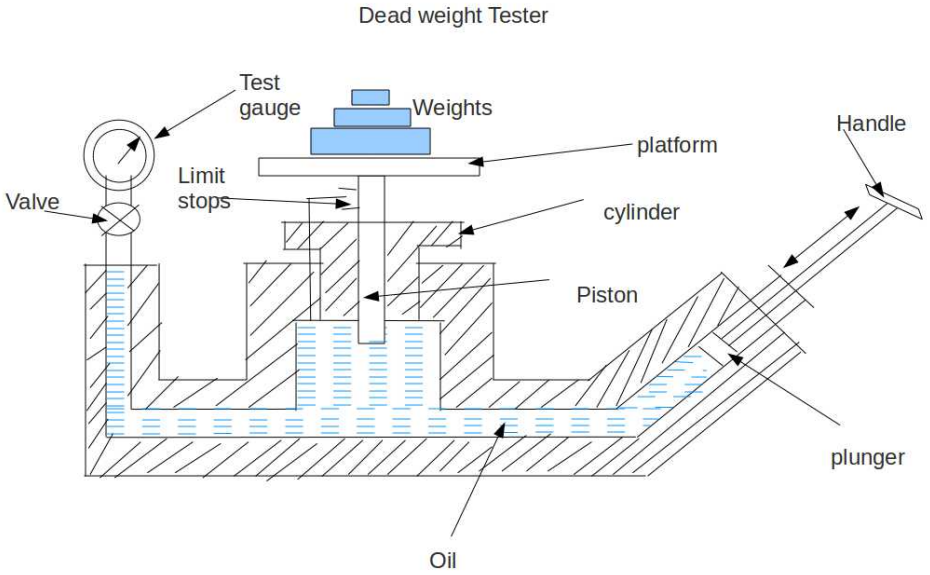
# How we calibrate the Conductivity Sensor

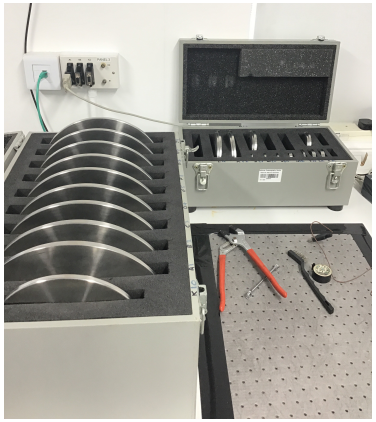

Salinometer - a device designed to measure the salinity, or dissolved salt content of a solution.

# How we calibrate the Pressure/depth Sensor

## Dead weight tester





# Advantages

- Rapid testing. You do not have to connect the CT to the glider before you can test it.
- Fault detection for the seaglider CT
- Faster calibration to industrial standard
- Calibration laboratory that other glider groups can use

# THANK YOU