This document includes:
Physical/Temperature/Temperature of the water column
Physical/Water properties/Salinity of the water column
Physical/Radiation/Visible waveband radiance and irradiance measurements in the water column

at both L4 and E1.

On the "optics" rig we have the following instrumentation

- SeaBird SBE 19+ CTD (Temperature and salinity measurements)
- Satlantic OCR and OCI sensors (visible radiance and irradiance measurements)
- Wetlabs ac9+ (attenuation and absorption at 9 visible wavelengths)
- Weblabs ECO VSF (volume scattering function at a single (or three) visible wavelengths)
- Hobilabs bb6 (backscattering at 6 visible wavelengths)
- Fluorometer
- Chelsea Inst. Fast Repetition Rate Fluorometer and PAR sensor

Sample collection

- Before leaving the Sound place the FRRF into the rig and secure
- Remove blank plugs and spray connectors with silicon release spray and connect to the PAR sensor, depth sensor and battery pack. Make sure the FRRF doesn't turn on automatically when power is connected. If this happens swipe the magnet down the front of the instrument to turn it off.
- Once on station and ready to deploy the optics rig then connect the optics rig to the deployment cable with an appropriate shackle securing the shackle with a small cable tie to prevent unscrewing.
- Remove all the caps off the optical sensors and the tubing from the CTD.
- Turn on the FRRF by swiping the magnet slowly down the front of the sensor, wait for blue LED's to start flashing, if they don't start after 10 seconds then try swiping the magnet again.
- Turn on the AC9+ by moving the white magnet from the OFF hole and placing it into the ON hole.
- Turn on the CTD by simply sliding the switch to the on position.
- Deploy the rig into the water and lower to approximately 5m and leave it there for 5 minutes to allow the instruments to stabilise.
- Bring the rig to just below the surface and the deploy down to 50m as slowly as possible (maximum speed 5m in 1 minute) then return to the surface at the same rate.
- Bring the rig back onboard and turn off the instruments.

- Replace the caps and tubes.
- Once back into safe water remove the FRRF from the rig and spray connectors with silicon release spray and then replace the blank plugs. Finally place the instrument back into its box.

Calculations and analysis

CTD – the raw data are processed using the SeaBird software and temperature, salinity, density and fluorometry binned to 0.5 m depth bins.
Ac9+ - data processed using Wetlabs software with temperature and salinity corrections. Data binned to 1 m depth bins.
VSF – data processed using in-house developed software and backscatter calculated from the VSF. Data binned to 1 m depth bins.
Bb6 – data processed using Hobilabs software. Data binned to 1 m depth bins.
FRRF – data processed using the Matlab code developed by Sam Laney at OSU USA. The various parameters (Fv/Fm) then binned to 0.5 m depth bins.
Radiometry – data processed to extract water leaving radiances and diffuse attenuation coefficients using in-house developed software.

Data stored

In WCO database – new data delivered every three months.