R1/12

Not to be cited without prior reference to Marine Scotland, Marine Laboratory, Aberdeen

FRV *Scotia*

Cruise 1309S

REPORT

1-19 October 2009

Loading: Aberdeen, 28 September 2009
Unloading: Aberdeen, 19 October 2009

Personnel

G Slesser	(in charge)
B Berx	
M Geldart	
N Collie	
M Rose	
D Watson	
J Dunn	1-9 October
J Beaton	10-19 October
B Wouters	KNMI

Gear

SeaBird CTDs, ADCPs, Current Meters, Acoustic Releases, Recovery Trawl

Objectives

1. Perform hydrographic surveys along the JONSIS standard section in the northern North Sea.

2. Perform biological sampling along the JONSIS standard section using the Ocean Sampler with additional positions to be sampled in the immediate area.

3. Recover and redeploy two current meter moorings East of Shetland.

4. Perform a CTD survey East of Shetland.

5. Perform hydrographic surveys along the standard Faroe - Shetland Channel sections.

6. Take samples for long term storage at Fair Isle – Munken stations FIM-01 and FIM-06.

7. Service two ADCP moorings in the Faroe Shetland Channel.

8. Recover an ADCP mooring on the Wyville-Thomson Ridge for redeployment for the THOR project (see objective 9).

9. Deploy two additional ADCP moorings for the THOR project in the Faroe Shetland Channel.

10. Perform CTD surveys along the Shelf Edge / Fair Isle Channel as time allows.

Out-Turn Days per Project: 19 days: Ae11r0

Narrative

Scotia sailed from Aberdeen at 0900 (all times are GMT) on Thursday 1 October for crew familiarisation of the CTD crane operation prior to making passage to the start of the JONSIS standard section. The opportunity was also taken at the familiarisation position to test the SBE19 (6029) CTD which had been giving problems on an earlier cruise. Deployment tests showed that this CTD was operating as it should.

Scotia arrived at the start of the JONSIS section at 0343 on Friday 2 October and sampling by CTD/carousel sampler and Ocean Sampler was completed at 1905 on the same day (Stns. 476-487). Passage was made to east of Shetland to commence sampling the three East Shetland CTD sections (Stns 488-519). This work commenced at 0125 on Saturday 3 October and was completed at 2347 on Sunday 4 October with a break during this survey work of seven hours due to gale force conditions.

Following this, passage was made to the first of the two East of Shetland moorings. Moorings East Shetland 1 and 2 were recovered and redeployed successfully. East Shetland two mooring (60°09.99'N 000° 10.00'W) was recovered at 0733, East Shetland one mooring (60° 18.67'N 000° 41.79'W) was recovered at 1310, East Shetland one and two moorings were redeployed at 1555 and 1947 respectively on Monday 5 October. Three CTD stations were worked by these mooring positions (Stns 520-522).

Passage was then made to the start of a series of stations across the Fair Isle Channel. One station (Stn. 523) on this section was completed at 0038 on Tuesday 6 October before gale force weather conditions forced this survey to be abandoned and shelter was made south of Bressay.

Weather conditions finally abated sufficiently to allow *Scotia* to make passage for the shelf edge at 0530 on Wednesday 7 October. On arrival at the shelf edge (60° 07.00'N 004° 33.00'W) a thirteen hour survey was conducted to monitor shelf edge currents over a tidal cycle, this work commenced at 1730 and finished at 0631 on Thursday 8 October (Stns. 524-547). *Scotia* then made for the NORDIC WOCE NWSD mooring position (60° 26.93'N 004° 22.24'W) and this mooring was deployed at 1135. Following this, passage was made to the NORDIC WOCE NWSE mooring position (60° 16.49'N 004° 19.97'W) and this was recovered at 1345. This mooring was redeployed (60° 16.50'N 004° 20.00'W) at 1620 on Thursday 7 October. Passage was then made for Ullapool where *Scotia* docked at 0830 on Friday 9 October for the mid cruise break. On berthing a check of the calibration of the ADCP to be deployed in the trawl proof housing was carried out. One Marine Laboratory staff member departed during this mid cruise break and a SAMS member of staff joined the ship for the second part of the cruise.

A spare part for the trawl proof mooring housing failed to be delivered to the *Scotia* at Ullapool and subsequently this additional ADCP mooring deployment was cancelled. The *Scotia* departed from Ullapool at 1100 on Saturday 10 October for the remaining additional ADCP mooring deployment site.

At 0832 on Sunday 11 October mooring NWSD* was deployed (60° 30.48'N 004° 34.03'W). *Scotia* then made passage for the start of CTD and water sampling across the Faroe-Shetland Channel. Three sections, Fair Isle – Munken, Nolso – Flugga and Faroe – Cape Wrath were sampled. The work commenced at the eastern end of the Fair Isle – Munken section at 1224 on Sunday 11 October and was completed at 1032 on Thursday 15 October (Stns. 548-590). This was followed by three CTD sections (Stns. 591-605) across the shelf edge. This work commenced at 1346 on Thursday 15 October and was completed at 1417 on Friday 16 October. Finally, before returning to Aberdeen CTD sampling (Stns. 606-637) was carried out in the Fair Isle Channel and East Shetland commencing at 2340 on Friday 16 October. This work was completed at 0701 on Sunday 18 October. The *Scotia* berthed at 0600 on Monday 19 October.

Results

The weather conditions throughout the cruise were mixed from good to gale force conditions. There were two breaks in the work program due to weather conditions during the first half of the cruise but much quieter weather during the second half of the cruise allowed the majority of the objectives to be completed.

1. The JONSIS standard section in the northern North Sea was surveyed.

2. Biological sampling was conducted along the JONSIS standard section using the Ocean Sampler.

3. The two current meter moorings E of Shetland were successfully recovered, the data downloaded, serviced and redeployed.

4. The three CTD sections east of Shetland were sampled, the southernmost section repeated towards the end of the cruise.

5. The two standard Faroe Shetland Channel sections were surveyed plus a section of 13 stations running south of the Faroe Islands towards Cape Wrath.

6. Samples were taken for long term storage at Fair Isle – Munken stations FIM-01 and FIM-06.

7. The Nordic WOCE ADCP mooring NWSE was recovered successfully, the data downloaded and redeployed. The Nordic ADCP mooring NWSD which broke adrift in May of this year and recovered NE of the Shetland Islands was redeployed on position. The recovered data from the NWSE mooring will be processed in the laboratory by in-house software.

8. This objective was cancelled as an alternative ADCP was supplied by SAMS for objective 9.

9. The ADCP supplied by SAMS was deployed on position for the THOR Project. Due to a delay by the suppliers of a modification part for the housing of the second ADCP mooring for the THOR Project the mooring was not deployed and will now be deployed in the spring of 2010.

10. Several sections were sampled along the Shelf Edge.

Throughout the cruise, sea surface temperature, salinity and fluorescence recordings were made using a Sea-Bird SBE21 Thermosalinograph and Wet Labs Fluorometer. Surface samples were taken throughout the cruise to calibrate these data. The thermosalinograph frequently failed to transmit data to the ships IT system and had to be restarted almost daily. The cause of this is being investigated. Detailed results of the data collected during the cruise will be made available as these data are worked up and interpreted in the laboratory. Calibrations were carried out on *Scotia* for both the thermosalinograph and CTD instrumentation. All hydrographic data are delivered to the ICES and BODC data centre in due course over the following year.

G Slesser
9 November 2009.