

R1/12

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FRV *Scotia*

Cruise 0703S

REPORT

15 April – 5 May 2002

Loading: Aberdeen
Unloading: Aberdeen
Half Landing: Stornoway (24 April)

Personnel

W R Turrell	
G Slesser	
S Hughes	Part 2 only
J Beaton	
D Lichtman	
M Burns	
M Rose	
A Watson	
M Robjant	FRS PhD Student
R Swift	Aberdeen University
S Mendes	Aberdeen University
Toby Sherwin	Visitor (SAMS) - Part 2 only

Out-turn days per project: 10 days AE11r, 2 days AE11q, 9 days AE1190

Gear

CTD + lowered S4 package, ADCP Moorings, Pop Up Acoustic Moorings, Towed hydrophone, thermosalinograph.

Objectives

1. To perform hydrographic surveys along the JONSIS standard section in the northern North Sea.
2. To perform hydrographic surveys along the standard Rockall section.
3. To perform a survey of the Wyville-Thomson Ridge.
4. To perform hydrographic surveys along the standard Faroe Shetland Channel sections.
5. To service two ADCP moorings.
6. To attempt to recover two pop-up moorings.
7. To perform eddy surveys in the Faroe Shetland Channel
8. To perform ad-hoc towed array acoustic recordings for cetaceans.

10. To provide film opportunity to BBC Horizon.

Narrative

On sailing from Aberdeen at 1000 GMT on Tuesday 15 April, tests were performed using the CTD in Aberdeen Bay. This provided an opportunity for filming by the BBC Horizon Programme. BBC staff were then landed by small boat, and filming continued from a helicopter until CTD tests were completed at 1630 GMT.

Scotia then proceeded to the start of the JONSIS standard section, and this line was surveyed using the CTD/rosette package. After completing the JONSIS line at 1500 GMT on Wednesday 16 April, *Scotia* proceeded to Fair Isle, where two staff were landed by small boat into the north haven of the island. The staff met Dave Wheeler, demonstrated sampling methods and installed a Minilog temperature recorder on the harbour pier. This established a Long Term Monitoring Site on the island. *Scotia* left the area at 1900 GMT and proceeded to the start of the Rockall Standard Section.

Scotia arrived at the start of the Rockall section (Survey Area 3 – see map) at 2000 hours Thursday 17 April, which was surveyed until 0900 hours on Saturday 19 April. An initial survey of the Wyville-Thomson Ridge (WTR) as then be performed (Survey Area 2), commencing at 0400 hours on Sunday 20 April and finishing at 1730 hours on Wednesday 23 April. On completion *Scotia* made passage to Stornoway, which she entered at 0800 hours on Thursday 24 April. Dr T Sherwin (SAMS), Ms S Hughes joined the vessel at 0900 hours with equipment. (We very much wish to thank the Fishery Officers at Stornoway for all their help transferring Dr Sherwin and Ms Hughes from the ferry to the vessel). During the half landing, data from the initial WTR survey was analysed.

After the half landing, *Scotia* sailed at 0800 hours Friday 25 April and returned to the WTR, where a small-scale overflow investigation, using the CTD, vessel mounted ADCP and lowered S4 package, suspended below the CTD, commenced at 1930 hours on 25 April and was completed by 2330 hours on Monday 28 April. *Scotia* then proceeded to the location of the ADCP mooring D at 60°27.01'N 4°22.30'W. On arrival at 1200 hours on Tuesday 29 April weather had deteriorated. Work was delayed until 0800 hours the following morning, when both ADCP moorings were successfully recovered. Survey work along the Fair Isle Munken line then commenced at 0100 hours on Wednesday 30 April. This line was followed by the Nolso Flugga line, which was successfully completed by 2100 hours on Friday 2 May.

Scotia then proceeded into the lee of Shetland in order to transfer buoys forward ready for deployment. Some time was taken setting up the ADCPs by computer, and there were subsequently sealed and *Scotia* sailed at 0100 hours Saturday 3 May. By 1200 hours that day both ADCP moorings had been relayed, and *Scotia* proceeded to the location of two lost acoustic moorings. These were successfully located and recovered by 1700 hours. *Scotia* then commenced a short survey to locate surface mesoscale features. This concluded on the morning of Sunday 4 May, when *Scotia* sailed to Aberdeen, via two predetermined points to collect live plankton samples. *Scotia* entered Aberdeen at 0600 hours on Monday 5 May.

Results

The cruise was characterised by good weather throughout. 193 CTD stations were completed, two ADCP moorings recovered and re-laid and two lost acoustic moorings retrieved. In addition, continuous acoustic recordings for cetaceans were obtained throughout the trip. All samples, nutrients and salinities, were analysed at sea. The CTD calibration was completed at sea. Tests were performed on the vessel mounted ADCP, and weather logging system. It should also be noted that a significant amount of training took place during this cruise, and new members of staff are now competent to take away CTDs and operate them on their own. In addition, a member of staff (John Beaton) ran the mooring retrieval / deployment for the first time, and so is now also competent to perform this task on future surveys on his own.

1. JONSIS Standard Section: Completed. Results are being processed.
2. To perform hydrographic surveys along the standard Rockall section: Completed.
3. To perform a survey of the Wyville-Thomson Ridge: This survey was perhaps one of the most intensive and detailed available to date. Extensive analysis of the data was performed at sea, and a paper prepared for submission to ICES. A new water mass has been defined; Wyville-Thomson Overflow Water (WTOW), and the route this water takes from the point where it cascades over the Wyville-Thomson Ridge to where it enters the northern Rockall Trough traced. This work contributes to ROAME AE1190, investigating the flow of Atlantic water around Scotland.
4. To perform hydrographic surveys along the standard Faroe Shetland Channel sections: Completed.
5. To service two ADCP moorings: Completed. Moorings were relayed at.
6. To attempt to recover two pop-up moorings: Both moorings were found and retrieved. This will allow the recovery of important data from a deployment of an array of 4 moorings, 2 of which had been recovered on a previous cruise.
7. To perform eddy surveys in the Faroe Shetland Channel: Partially completed. Time only allowed a very short survey. However, continuous surface readings were recorded throughout the trip, and the results particularly from the WTR survey will be useful. It was noted that very interesting cloud-free satellite images were available during that survey.
8. To perform ad-hoc towed array acoustic recordings for cetaceans: In total 240 minutes were spent monitoring for cetacean vocalizations corresponding to 1642.2 miles of track surveyed. Surveys were conducted using a towed hydrophone array between standard hydrographic stations along Fair Isle Munken and Nolso Flugga lines as well as Rockall and Wyville-Thompson ridge lines, where travel times exceeded one hour, and between transect lines. Towed array surveys were also carried out during transits between mooring deployment and recovery sites. Sperm whales and dolphin species were acoustically detected during these surveys (Fig. 1). Two sightings, one of two individuals of an un-identified baleen whales species and one other of a group of Atlantic white-sided dolphins were made. 45 sonobuoys were deployed in standard hydrographic stations along Fair Isle Munken and Nolso Flugga lines and also Rockall and Wyville-Thompson ridge stations when the station duration exceeded one hour.
9. To liaise with data collectors on Fair Isle and establish an LTM site: This was completed, and the Long Term Monitoring site was successfully established on Fair Isle, in co-operation with David Wheeler.
10. To provide film opportunity to BBC Horizon: This objective was successfully completed.

Additional Task: Live plankton samples were returned to Aberdeen for S Hay.

W R Turrell
9 May 2003

Seen in draft: P Ramsay, OIC *Scotia*

Fair Isle - Munken (Amended for presence of Foinaven oil platform)

	Name	Latitude	Longitude	Depth	Spacing
01	FIM-01	60° 10.00' N	03° 44.00' W	150 m	
02	SEFOS	60° 13.00' N	03° 51.50' W	170 m	8.9 km
03	FIM-02	60° 16.00' N	03° 59.00' W	200 m	8.9 km
04	SEFOS	60° 18.00' N	04° 04.50' W	330 m	6.3 km
05	FIM-03	60° 20.25' N	04° 09.00' W	390 m	6.3 km
06	FIM-04	60° 25.00' N	04° 19.00' W	655 m	12.4 km
07	FIM-05	60° 29.00' N	04° 26.00' W	995 m	9.8 km
08	FIM-06	60° 35.00' N	04° 45.00' W	1090 m	20.6 km
09	FIM-6a	60° 38.00' N	04° 54.00' W	1030 m	9.9 km
10	FIM-07	60° 43.00' N	05° 06.00' W	915 m	14.3 km
11	FIM-08	60° 47.00' N	05° 16.00' W	830 m	11.7 km
12	FIM-09	60° 51.00' N	05° 29.00' W	600 m	13.9 km
13	FIM-10	61° 02.00' N	05° 57.00' W	280 m	32.4 km
14	FIM-11	61° 12.00' N	06° 22.00' W	240 m	
Totals				7,585.00	155.40

Nolso-Flugga

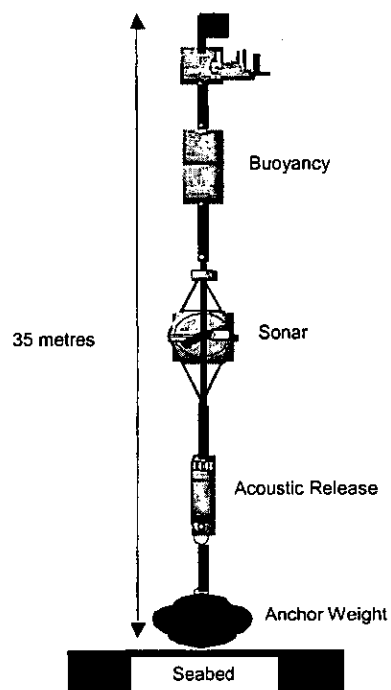
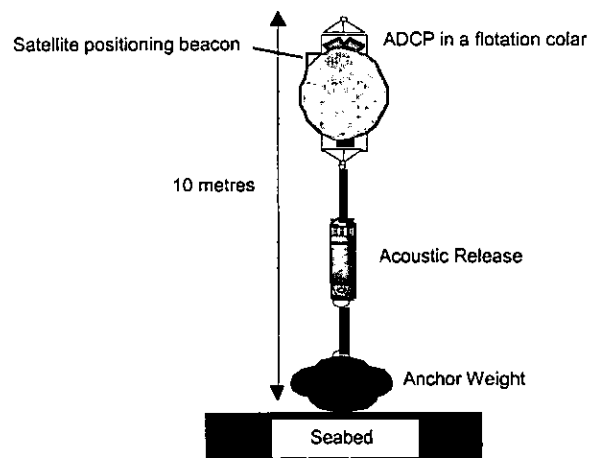
	Name	Latitude	Longitude	Depth	Spacing
01	NOL-01	60° 56.00' N	01° 00.00' W	110 m	
02	SEFOS	60° 58.70' N	01° 17.70' W	125 m	16.7 km
03	SEFOS	61° 01.40' N	01° 35.40' W	155 m	16.7 km
04	NOL-02	61° 04.00' N	01° 53.00' W	270 m	16.7 km
05	SEFOS	61° 06.00' N	02° 01.50' W	440 m	8.5 km
06	NOL-03	61° 08.00' N	02° 10.00' W	550 m	8.5 km
07	SEFOS	61° 09.30' N	02° 17.50' W	630 m	7.1 km
08	NOL-3a	61° 11.00' N	02° 25.00' W	730 m	7.4 km
09	NOL-04	61° 14.00' N	02° 40.00' W	1080 m	14.5 km
10	NOL-05	61° 21.00' N	03° 10.00' W	1370 m	29.6 km
11	NOL-06	61° 28.00' N	03° 42.00' W	1235 m	31.2 km
12	NOL-07	61° 35.00' N	04° 15.00' W	990 m	31.9 km
13	NOL-08	61° 42.00' N	04° 51.00' W	235 m	34.2 km
14	NOL-09	61° 49.00' N	05° 21.00' W	180 m	29.3 km
15	NOL-10	61° 54.00' N	05° 45.00' W	290 m	22.9 km
16	NOL-11	62° 00.00' N	06° 12.00' W	125 m	26.0 km
Totals				8250 m	301.20 km

JONSIS Line

	Name	Latitude	Longitude	Depth	Spacing
01	JO 1	59° 17.00' N	02° 14.00' W	75 m	
02	JO 1A	59° 17.00' N	02° 5.00' W	90 m	8.5 km
03	JO 2	59° 17.00' N	01° 56.00' W	100 m	8.5 km
04	JO 3	59° 17.00' N	01° 48.00' W	80 m	7.6 km
05	JO 4	59° 17.00' N	01° 40.00' W	90 m	7.6 km
06	JO 5	59° 17.00' N	01° 30.00' W	95 m	9.5 km
07	JO 6	59° 17.00' N	01° 20.00' W	110 m	9.5 km
08	JO 6A	59° 17.00' N	01° 10.00' W	120 m	9.5 km
09	JO 7	59° 17.00' N	01° 0.00' W	125 m	9.5 km
10	JO 8	59° 17.00' N	00° 40.00' W	120 m	18.9 km
11	JO 9	59° 17.00' N	00° 20.00' W	140 m	18.9 km
12	JO10	59° 17.00' N	00° 0.00' W	135 m	18.9 km
Totals				1180 m	126.9 km

1	A	57 35.0 N	13 38.0 W		130 m
2	B	57 34.0 N	13 20.0 W		210 m
3	C	57 33.0 N	13 00.0 W		330 m
4	D	57 32.5 N	12 52.0 W		1000 m
5	E	57 32.0 N	12 38.0 W		1658 m
6	F	57 30.5 N	12 15.0 W		1817 m
7	G	57 29.5 N	11 51.0 W		1812 m
8	H	57 29.0 N	11 32.0 W		2020 m
9	I	57 28.0 N	11 19.0 W		750 m
10	J	57 27.0 N	11 05.0 W		550 m
11	K	57 24.0 N	10 52.0 W		850 m
12	L	57 22.0 N	10 40.0 W		2076 m
13	M	57 18.0 N	10 23.0 W		2340 m
14	N	57 14.0 N	10 03.0 W		2100 m
15	O	57 09.0 N	09 42.0 W		1900 m
16	P	57 06.0 N	09 25.0 W		1050 m
17	Q	57 03.0 N	09 13.0 W		350 m
18	R	57 00.0 N	09 00.0 W		135 m
19	S	56 57.0 N	08 47.0 W		125 m
20	15G	56 53.0 N	08 30.0 W		125 m
21		56 50.2 N	08 20.0 W		120 m
22		56 48.5 N	08 10.0 W		0 m
23		56 47.0 N	08 00.0 W		110 m
24		56 45.5 N	07 50.0 W		0 m
25		56 44.0 N	07 40.0 W		55 m
26		56 44.0 N	07 30.0 W		220 m
27		56 44.0 N	07 20.0 W		160 m
28		56 44.0 N	07 10.0 W		0 m
29		56 44.0 N	07 00.0 W		145 m
30		56 44.0 N	06 45.0 W		35 m

31		56 44.0 N	06 36.0 W		0 m
32		56 44.0 N	06 27.0 W		115 m
33		56 42.5 N	06 22.0 W		0 m
34		56 41.0 N	06 17.0 W		40 m
35		56 40.0 N	06 08.0 W		190 m



NOT TO
SCALE

