

Scottish Marine Biological Association
Dunstaffnage Marine Research Laboratory

Cruise Report
RRS CHALLENGER

Cruise 15/1982
16-30 October 1982

RRS CHALLENGER, CRUISE 15/1982

Duration: 1404 h 16 October - 1050 h 30 October 1982

All times GMT.

Locality: Scottish continental slope and shelf, Rockall Channel, 56°-59°N.

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Aims:

- 1) To service SMBA and Bidston moorings on the continental shelf on lines A to D.
- 2) To service SMBA moorings F & M in the Rockall Channel and to transfer mooring P to position A4.
- 3) To withdraw moorings R and Z on the outer shelf and service mooring Y in the Tiree passage, and to refurbish the SMBA fouling studies buoy off S. Uist if time and weather permit.
- 4) To lay moorings M2 and HS1 for the Marine Sciences Lab., Menai Bridge.
- 5) To make CTD observations across the slope at the mooring transects and across the Anton Dohrn Seamount section.

6) To sample chlorophyll across the shelf and slope west of the Outer Hebrides for the Marine Biology Station, Portaferry.

7) To collect 30-litre samples for radiocaesium determination at ten standard positions between the Sound of Mull and the shelf-edge, and to obtain CTD profiles at each.

Narrative: CHALLENGER sailed from Invergordon at 1404 h 16 October and proceeded to the Pentland Firth in south-easterly winds which reached force 8 in the evening. The firth was passed and with the prospect of continuing gales the ship anchored off Scrabster at 0308 h, 17 October. Some of the freshwater had become contaminated with salt water because of a faulty vent pipe and it was decided to empty and refill this tank at Scrabster whilst awaiting an improvement on the weather. Accordingly CHALLENGER went alongside at 1215 h 18 October and sailed again at 0815 h 19 October. The winds, though still of forces 6-8, had turned south-westerly and passage was made along the north coast to the Minch, where a heavy swell was encountered. The ship anchored in Broad Bay at 0310 h 20 October until 1013 h, when course was set for Stornoway to allow the 4th Engineer to be examined by a doctor after a fall in heavy weather. The ship was in port from 1317 h until 1100 h 21 October, when a westerly veering of the wind allowed passage down the Little Minch to the site of mooring HS1. After a search for suitable depth, the mooring was laid between 1835 and 1922 h. A CTD lowering was made nearby and at 2007 h course was set for Barra Head.

With west-south-west winds of force 6, CHALLENGER steamed to the position of mooring R, but despite good visibility between rain squalls nothing was sighted during a search from 0930 to 1100 22 October. The position of mooring P, in 1000 m on the continental slope, was reached, and at 1236 h the release was contacted and switched on. Recovery

occupied from 1250 to 1342 h and the ship steamed to the location of the one-year Bidston pressure gauge deployment. This was contacted and the position verified between 1650 and 1821 h, but as darkness had fallen it was agreed to proceed to mooring F overnight, testing acoustic releases en route at 1941-2057 h. Mooring F was located at 0734 h 23 October and recovery occupied from 0734 to 0849 h. Used wires were dumped and relaying took place between 1242 and 1400 h. A CTD lowering was made at 1425-1518 h and the ship returned to the mooring to obtain a new satellite position fix at 1535 h. After the release had timed out, course was set for station G of the Anton Dohrn Seamount CTD section, which was completed between 1813 and 1922 h, but by this time the southerly wind had strengthened to forces 8-9 and further CTD lowerings were abandoned. Course was set for the position of mooring M, but with the prospect of continuing gales it was decided to head for St. Kilda at 0120 h 24 October. CHALLENGER anchored in Village Bay at 1309 h and weighed anchor at 0800 h 25 October when winds had become variable, forces 4-5. A U-shaped mooring carrying a combined current meter and pressure gauge was laid in soundings of 145 m at position B1 at 1111-1140 h, and a conventional U-shaped mooring with two current meters at B1 was recovered and re-laid between 1319 and 1617 h. Mooring B2, superceded by the current meter/pressure gauge rig at B1, was located at dusk and recovered in strengthening winds between 1834 and 1902 h. The acoustic beacons on two sub-surface moorings at B2 were located and the ship returned to the lee of St. Kilda overnight.

The southerly winds from an intense depression on 26 October exceeded 70 kts in squalls and were generally of forces 9-10 during the morning. A slight amelioration in the afternoon allowed the ship to run northward at 1320 h, reaching the Butt of Lewis at 2200 h. Force 8-9 south to south-westerlies persisted during 27 October, and CHALLENGER anchored in Broad Bay at 1000 h. Although winds were 40-50 kts during the morning of 28 October, they dropped to force 7 in the afternoon. With better weather forecast, anchor was weighed at

1425 h and the ship proceeded southwards through the Little Minch. However, the wind became south by east and strengthened once more to force 9 on 29 October, and progress was slow. The position of mooring Y, in the Tiree Passage, was passed at 1220 h, but the spar buoy was not seen, possibly due to the poor visibility. At 1700 h a dramatic improvement occurred with the passage of a cold front, with the wind veering to west and falling to force 6 and less. Good speed was subsequently made, CHALLENGER berthing at Ardrossan at 1050 h, 30 October.

Sailing on the following day for the second leg of the cruise was prevented by industrial action, and after a number of days of negotiations the cruise was abandoned. Scientific staff, including Miss Lennon and Mr. Johnston of Portaferry who had joined at Ardrossan, left the ship on the afternoon of 3 November.

Results: Aim 1) Of the Shelf Experiment moorings, only Bidston positions B1 and B2 were serviced (see Tables 1 and 2). At B1 a new combined pressure gauge and current meter tripod was laid (B1B), and the existing mooring carrying two current meters (B1A) was serviced. At B2 a combined pressure gauge/current meter mooring (B2A) was raised and not replaced as it had been superseded by mooring B1B.

Aim 2) SMBA mooring F was serviced on 23 October. The four current meters ^{were} deployed on 8 May, 168 days previously, but the tapes were fully used by the time of recovery. All meters appeared to have functioned correctly.

Mooring P was retrieved on 22 October. This had been laid on 27 April, 178 days previously, and again the tapes of the four current meters had expired, but should contain good data.

Aim 3) The position of mooring R was visited on 22 October without the spar buoy being sighted. The ship steamed a box around the position, but the need to make the most of daylight and fair weather precluded a full search or dragging. It was not possible to visit mooring Z and the fouling studies buoy during the cruise, and although the position of Y was passed on 29 October, it was not sighted. Heavy weather

and poor visibility prevented a search at this time.

(Aim 4) Mooring HS1 was laid in a depth of 153 m on 21 October. The U-shaped mooring carried three current meters and a temperature and salinity recorder and was marked with both a toroid and a spar buoy. There was no opportunity to lay mooring M2 off the Firth of Lorne.

Aim 5) A CTD lowering was made at mooring F on 23 October and it was planned to make further lowerings overnight en route to mooring M. Unfortunately, the weather deteriorated at the second station (G) making it difficult to hold the ship to the wire, and the section was abandoned. No other opportunities for CTD work presented themselves.

Aim 6) Chlorophyll observations had been planned for the second leg of the cruise, which did not take place.

Aim 7) No radiocaesium samples were collected as there was no opportunity for the ship to steam over the section from the shelf-edge to the Sound of Mull.

D.J. Ellett

15 November 1982.

Table 1. Moorings raised during Cruise 15/1982

Date Recovered	Date Deployed	Station	Position				Sounding m.	Instruments	Institution
			Lat. N.	Long. W.					
22 Oct. '82	27 Apr. '82	P	57	07.3	09	23.4	1025	4 current meters (c/m)	SMBA
23 Oct. '82	8 May '82	F	57	28.4	12	15.5	1804	4 c/m	SMBA
25 Oct. '82	28 Aug. '82	B1A	57	56.4	08	50.4	161	2 c/m	Bidston
25 Oct. '82	28 Aug. '82	B2A	58	00.5	09	08.6	206	1 c/m, pressure gauge	Bidston

Table 2. Moorings laid during Cruise 15/1982

Date	Station	Position				Sounding m	Instruments	Institution
		Lat. N.	Long. W.					
23 Oct. '82	F	57	29.1	12	15.5	1818	4 current meters	SMBA
25 Oct. '82	B1A	57	55.9	08	50.6	160	2 c/m	Bidston
25 Oct. '82	B1B	57	54.4	08	48.5	145	1 c/m, pressure gauge	Bidston
21 Oct. '82	HS1	57	24.8	06	58.9	153	4 c/m, t&s recorder	UCNW

