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R.V. ERNEST HOLT

Cruise Report for Cruise 5/1969

Staff:

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Duration:

18 April - 15 May 1969

Aims

1. To work a number of hydrographic sections across Rockall Bank and Rockall Channel.

2. To moor recording current meters in the region of the cascading water to the west of Rockall and at two positions south of Rockall.

3. To collect water samples from the southern end of Rockall Channel for the Radiobiology Section.

4. To release surface and sea-bed drifters along two lines of stations in the English Channel.

Narrative

R. V. ERNEST HOLT sailed from Grimsby at 1900 hours, 18 April in a stiff northerly breeze and set course for Stornaway. During the morning of 20 April while off Cape Wrath, in the more sheltered waters of the Minch, it was decided to practice the launching and recovering of a current meter rig to give the ship's officers and crew some experience of the technique and to discover what modifications might be necessary to carry out the operation efficiently on this vessel. The first rig was launched at 1015 hours and recovered at 1430 hours, at slack water, three attempts being made to manoeuvre the ship alongside to grapnel successfully. A second launch and recovery was made more expertly during the afternoon and evening, although it was clear that several minor modifications would be needed to facilitate launching. The ship left the practice area at 2030 hours, arriving at Stornaway at 0140 hours, 21 April.

The ship sailed again from Stornaway, water and fuel tanks topped up, at 1900 hours, 21 April, after having an extra steam pipe shield and deck plate fitted, and a further deck stanchion removed. Course was then set for the first station on the Butt of Lewis - George Bligh Bank Section which was reached at 0520 hours, 22 April. Work began in marginal conditions with a 35 knot easterly wind, and only two stations were completed before it became necessary to dodge for 11 hours. Work began again at 2130 hours, the Butt of Lewis to George Bligh Bank and George Bligh Bank to Rockall Sections being completed by mid afternoon on 24 April when preparations were made to launch the first current meter rig (CM1) at 57°35'N, 14°19'W. This was successfully laid at 2015 hours in 116 fathoms, the deepest station as yet attempted,

using 2 Aberdeen sub-surface floats plus 150 lb weight to reduce buoyancy. Since the performance of LORAN A and poor signals from LORAN C during the hours of darkness make position fixing unreliable, the second current meter station (CM2) at 57°42'N, 14°40'W, was laid the following morning in 218 fathoms, using the double NIO aluminium cylinder subsurface floats, before returning to the vicinity of CM1 to anchor with the "Snowanchor" and carry out a DRCM station. The anchor was weighed at 0300 hours, 26 April and course set for the third current meter station (CM3), 56°48'N, 14°44'W, but by the time of arrival at the required position the wind had freshened to 30 knots causing a heavy swell. The attempt was therefore postponed, and the ship continued working a hydrographic Section from Rockall in a south westerly direction along the bank to a position 54°56'N, 17°00'W.

Meanwhile H.M.S. HECLA had been contacted by radio and it was arranged that she should check and report on the buoys as convenient while working in the area. Subsequently, a daily exchange of working position and information was made.

By 0330 hours, 28 April the wind and sea had moderated sufficiently to permit the laying of a third rig at CM3 in a 20 knot wind at 0956 hours, and a fourth rig at CM4 (56°05'N, 15°36'W) at 1555 hours, using a single NIO cylinder and the new Cosalt prototype subsurface floats respectively. The three buoys previously laid were checked during the following day to confirm navigational accuracy by LORAN A, two of the surface tonoids being replaced. At 2300 hours on 24 April the Rockall-Malin Head Section was begun, the weather showing considerable improvement. On the deeper stations of this section (2500 m+) the hydrowire wore through the guiding-on sheave, and it was necessary to repair the sheave in Londonderry, which was reached at 2230 hours, 1 May, after completing the hydrographic section.

During the stay in Londonderry several of the scientists and ship's officers visited H.M.S. HECLA which was also in the river.

After refuelling, ERNEST HOLT sailed from Londonderry at 1050 hours, 3 May and worked the Donegal-Rockall Bank sections in fine weather, checking CM3 at the western end of the section at 1200 hours, 5 May. During this run water samples were taken for the Radiobiology Section at each alternate station. Two short hydrographic sections in a north westerly direction from CM3 and CM1 as far as 17°00'W were then completed before it was decided to lift the current meter rigs in a freshening wind on 6-7 May.

During the next three days a hydrographic section was completed along longtitude 17°00'W from 58°23'N to 54°56'N, and another from the latter position extending across Porcupine Bank to 51°42'N, 12°21'W. At 0705 hours, 10 May course was set for the drifter release grid in the western English Channel, the first station being reached at 1945 hours, 11 May. During this steam, the current meter wires were removed from the starboard winch drum and replaced by the trawl warp, the trawl being shot over deep water to wind the warp back onto the winch drum under tension, thus making the trawl ready for the next cruise.

The drifter release grid was completed in the Channel by 0710 hours, 13 May, together with a number of releases in Poole Bay and in the vicinity of Dolphin Bank, of sea bed drifters supplied by the Borough Engineer, Bournemouth Town Council, in order to assist in a sedimentation study being undertaken by the Council. The ship then steamed to Great Yarmouth, berthing at 1040 hours,

14 May where the scientific equipment was unloaded and the scientific staff disembarked. The ship sailed for Grimsby on the next tide at 1930 hours reaching Grimsby during the morning of 15 May.

Results

1. Nine hydrographic sections were completed across Rockall Bank and Rockall channel comprising 66 series stations, of which 19 extended below 1000 m and 14 below 2000 m. It seemed possible from the temperature sections that cascading was taking place at a number of localities on the edge of Rockall Bank including those where CM1 and CM2 were moored. The expected cold plug of winter water (below 9°C) was evident on the bank, but in the deeper water east and west of Rockall considerable mixing was taking place to a depth of several hundred meters, the surface temperature being up to 1.4°C higher than over the bank. At depths greater than 2,500 m in the Rockall Channel temperatures below 3.5°C were recorded, whereas the lowest temperature on the bottom on the Butt of Lewis - George Bligh Bank Section was 3.83°C. The maximum wire depth which could be used safely was 2588 m. At this stage the drum could be seen through the remaining coils on the hydrographic winch (perhaps 100 m remained on the drum).

2. Two Plessey meter rigs CM1 and CM2 were moored west of Rockall in the region of cascading water, and two, CM3 and CM4, were moored south of Rockall. Three meters were used on each rig in the surface, middle and bottom layers respectively. There was no evidence of buoys overturning, and the lights appeared in all cases to work satisfactorily, as did the new prototype Cosalt subsurface buoy. The ship's crew were able quickly to achieve an efficient technique for laying and recovering the buoys from ERNEST HOLT, little difficulty being experienced in manoeuvring the ship alongside the buoy for recovery, in the tidal and weather conditions prevailing. In each case a flag attached to the light bracket of the buoy assisted in visual spotting.

In calm conditions the maximum pick up range both visually and by radar was $2\frac{1}{2}$ miles. In heavy swell the range of first sighting was considerably reduced. In fact H.M.S. HECLA was unable to spot the buoys on several occasions when working within one mile of the LORAN position as supplied by ERNEST HOLT, probably due to the heavy swell obtaining at that time. The Marconi LORAN worked well for LORAN A reception during daylight hours but lost these signals during the hours of darkness. LORAN C reception was poor and intermittent, signals usually being received reliably only during the early hours of the morning, although HECLA reported good reception of LORAN C throughout on DECCA equipment. The Navigator will submit a full report separately.

Eight of the twelve meters used appeared to have worked satisfactorily. One had a tangled tape on recovery, two showed evidence of considerable seepage and shorting, and one had a battery pack failure.

3. Ten water samples were collected for the Radiobiology Section on the Donegal - Rockall Bank Section.

4. 25 surface and 25 sea-bed drifters were released at each of 16 stations on 3 lines in the western English Channel. Ten sea-bed drifters were also released at each of twelve stations in Poole Bay and around Dolphin Bank for the Bournemouth Town Council.

5. XBT's were fired on the deeper sections between those stations more than 25 miles apart. The recorder and probes worked satisfactorily, but on one occasion the XBT wire tangled around the GEK cable. The results were radioed daily to the laboratory for onward transmission to the U.S. Fleet Weather central, Rota, Spain.

6. GEK were towed across all the hydrographic sections and along the drifter release grid in the English Channel.

7. A DRCM station was worked alongside CM1. A rather weak and variable current was found never exceeding 20 cm/sec.

8. Wave records were taken four times daily, generally at the synoptic hours while weather observations were being made.

Acknowledgement

We are pleased to record our grateful appreciation of the loan of subsurface floats from the National Institute of Oceanography and the Marine Laboratory, Aberdeen.

H. W. Hill
15.5.69

Seen in draft: E. A. Binnington, Captain
G. W. Argumont, Fishing Skipper.

Initialled: AJL

Distribution:
Basic list, plus the following:-
Scientific staff on cruise
Director, National Institute of Oceanography
Director, D.A.F.S., Marine Laboratory, Aberdeen
Captain Haslam, H.M.S. HECLA, B.F.P.O., Plymouth
Deputy Borough Engineer, Town Hall, Bournemouth