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R Lavasy

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1978 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 10

(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF:

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DURATION:

Left Grimsby 1254 h, 9 November

Arrived Falmouth 1300 h, 28 November

(All times are Greenwich Mean Time)

LOCALITY:

North East coast of England and the Wyville-Thomson Ridge

AIMS:

1. To track acoustic floats at 300-400 m depth in the vicinity of the Wyville-Thomson Ridge in order to approximate a feature of the migration of the blue whiting.

2. To make a short-term comparison of near-bed velocities as measured by Aanderaa and Plessey current meters in 2000 metres of water.

3. To test the MAFF Salinity Temperature Depth (STD) profiler.

4. To service the JONSIS stations, and recover the current meter network put out in the Tyne-Tees area during CLIONE 13/78.

5. To release a drifting Satellite Buoy with a drogue at 350 metres to the south of the Wyville-Thomson Ridge and thus get an estimate of the long-term drift at that depth.

6. To collect sea-water samples for the Radiobiological Laboratory (AEP 1) between the Irish Sea and the Faeroes.

NARRATIVE

The ship sailed on the mid-day tide of 9 November and in the next two days serviced the JONSIS stations and recovered the six moored current meter stations put out in the Tyne-Tees area during a recent CLIONE cruise. After lying for an hour or so in order to clear the decks course was set for the Wyville-Thomson

Ridge and the vessel made excellent progress in a following Force 9 wind.

The Fair Isle region was reached at 1600 h, 12 November and by this time the wind had backed to the west; consequently the ship dodged until 0715 h, 14 November. Persistent Force 9 and 10 winds blew throughout this period and on receipt of yet another Storm warning the ship steamed for the Faroe Islands in order not only to get a lee but also to collect en route water samples for AEP 1. The ship lay in Thorshavn harbour for 24 hours from 1100 h, 15 November and was visited by two Faroese fisheries' scientists for a short while.

Once the ship had cleared the approaches to Thorshavn harbour on 16 November a lee was sought under Sandoy Island whilst the acoustic "Fish" was streamed. Course was then set for the deep water of the Faroe-Shetland channel via an AEP 1 sampling station and, after an uncomfortable passage, the ship reached the proposed working area at 2330 h, 16 November (see Fig. 1a).

The following morning the wind had decreased to 30 knots and a deep current meter station was deployed in 1152 metres of water by 1054 h. Expendable Bathythermograph (XBT) probes were then used to identify the water-mass structure between the 1000 metre depth and the water covering the shelf to the north-west. Arctic Intermediate (AI) water (2.8°C, 34.88°/oo salinity) was found to lie in the 750 metre-470 metre zone and an IOS float nominally set to drift at 400 metres depth was deployed in this zone at 1916 hours, 17 November.

This float (Float 1) was tracked from 0001 hours 18 November and a good estimate of its depth obtained at 1409 hours. The tracking showed that (i) the sensitivity level used in previous cruises was too high for conditions in this region - the float being triggered randomly very frequently and (ii) tho float lay at only 200 metres depth. Consequently it was retrieved for adjustments to be made.

Bearing in mind the results of the first deployment another float (Float 2) was launched in Force 9 winds at 1850 hours, tracked overnight and fixed initially at 0917 h, 19 November. It was found to be lying at about 680 metres depth and so a third float (Float 3) was released at 1128 h aimed specifically again at the AI water. Whilst the float was falling through the water column a water bottle station was completed and the MAFF STD tested.

Float 3 was fixed during the early evening of 19 November and the ship then steamed across the deep channel to the northern flank of the Wyville-Thomson Ridge in order to deploy two more floats in this key area and test the range of the tracking system. Float 4 was successfully launched but then came a series of failures during wire-tests followed by the sudden onset of a Force 10-11 gale. Consequently no more floats were launched; the ship dodging from 1230 h, 20 November until 2200 h, 21 November when the swell had gone down and the ship was able to steam for the deep moored current meter station.

During that same evening the Watch reported that the "Fish" had disappeared from its towing point on the starboard baggage davit. A new transducer was made up from materials to hand and bolted to the carriage used for lowering the shallow water acoustic release down the ship's tube.

At first light on 22 November the ship lay at the deep current meter station and in rapidly worsening conditions the rig was located acoustically, brought to the surface and retrieved: the wind increased from 35 knots to 50 knots during the operation. The ship was forced to dodge until 1615 hours when it moved to the area where the second and third floats had been released 3 days before. Great difficulty was experienced initially in getting the new transducer down the tube and then, after an adjustment had been made so that it went down easily, the package on which it was mounted became jammed in the bottom of the tube. Consequently the box search of the float area that began at 2030 h, 22 November,

had to be undertaken at 5 knots. (On some legs this was all that could be achieved against the wind and sea in any case.)

The search for the floats (see Fig. 1b) took in both the regions around the launch positions and the extrapolated track of float 2 but no trace of them was found although there were one or two possible echoes to follow up. A second test of the STD system was made during one of these false alarms. At 0600 h, 25 November the search was called off and the ship moved to 59°30', 7°20'W, where a Satellite Buoy with a drogue at 400 metres was launched between 0830 and 1000 h, before steaming to Falmouth for dry-docking. During the run home further sea-water samples were collected for AEP 1 and a third test of the STD was made in the Irish Sea. The ship docked in Falmouth at 1300 h on 28 November.

RESULTS:

1. The persistent Gale- and Storm-Force winds experienced made it impossible to tackle properly the main aim of the cruise viz float-tracking in the vicinity of the Wyville-Thomson Ridge. The few hours of tracking that were possible showed the potential of the IOS floats in relation to aspects of fish migration studies such as movement at a specific depth or through a particular region. However, as far as relatively shallow water deployments are concerned (< 500 metres) the ballasting of the floats is still at the experimental stage.

(Separate reports have been drawn up in relation to the losses of the towed Fish and 3 floats.)

2. A 5-day comparison of near-bed velocities in 1152 metres of water as recorded by Aanderaa and Plessey 1021 current metres was made. The tapes were worked-up at sea. "True" slack waters were recorded by the Savonius rotor of the Aanderaa meter. There are various features of the records that need closer examination.

3. The STD system worked well on each of the 3 test lowerings: in particular the source of the erratic readings in the 0-1000 metre layer found on other cruises has been found and eliminated.

4. The JONSIS stations were serviced and the Tyne-Tees networks recoverrd: station E had been interfered with and the top meter torn off the rig.

5. A Satellite Buoy with a drogue at 400 metres was released at 59°30', 7°20'W on 25 November.

6. Water samples were collected at the JONSIS stations and on a line of stations running from the Faroes to the Irish Sea for AEP 1.

J W Ramster
5 December 1978

SEEN IN DRAFT: RAT
EWP

INITIALLED: AJL

DISTRIBUTION: Basic List
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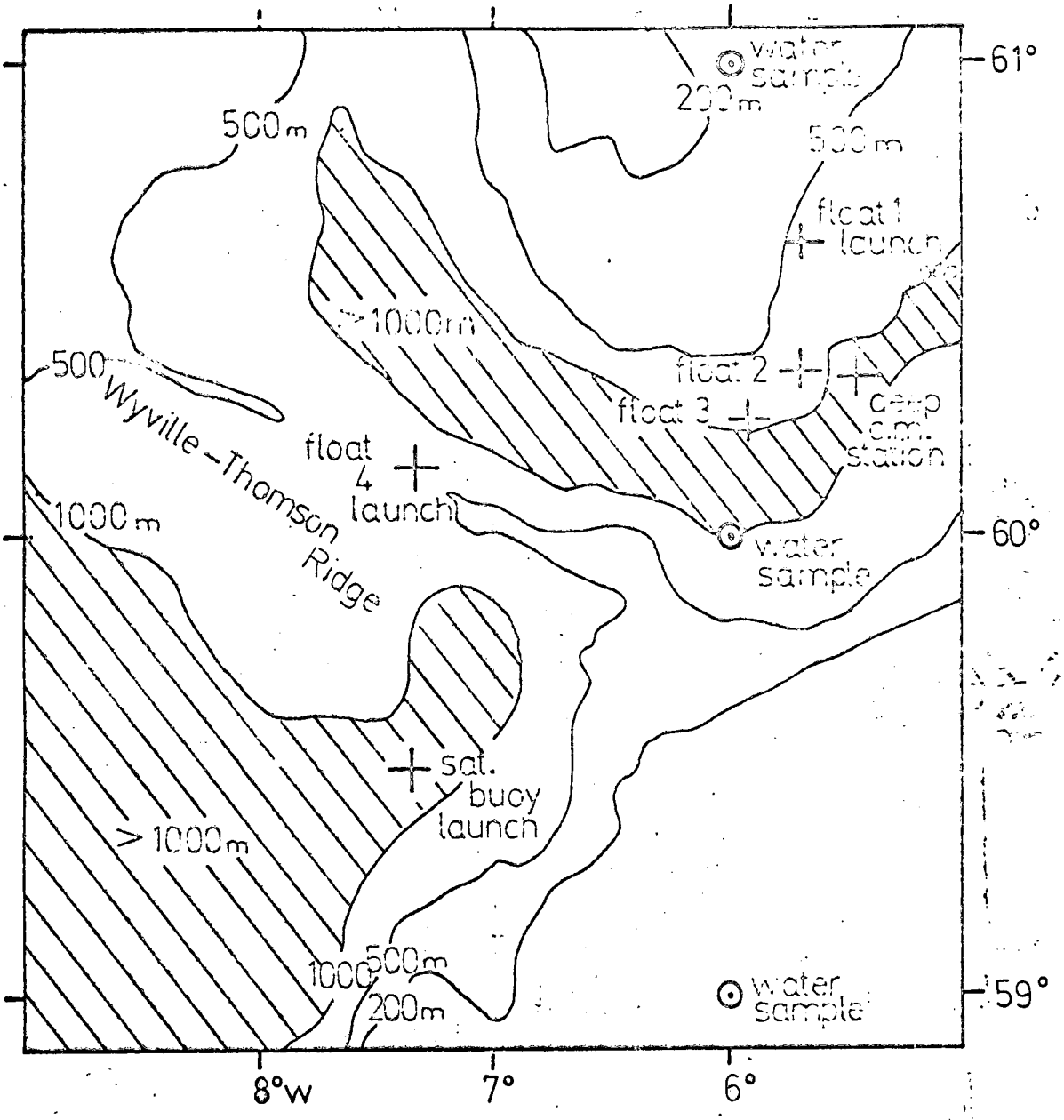
Fig 1(a) Main working area.



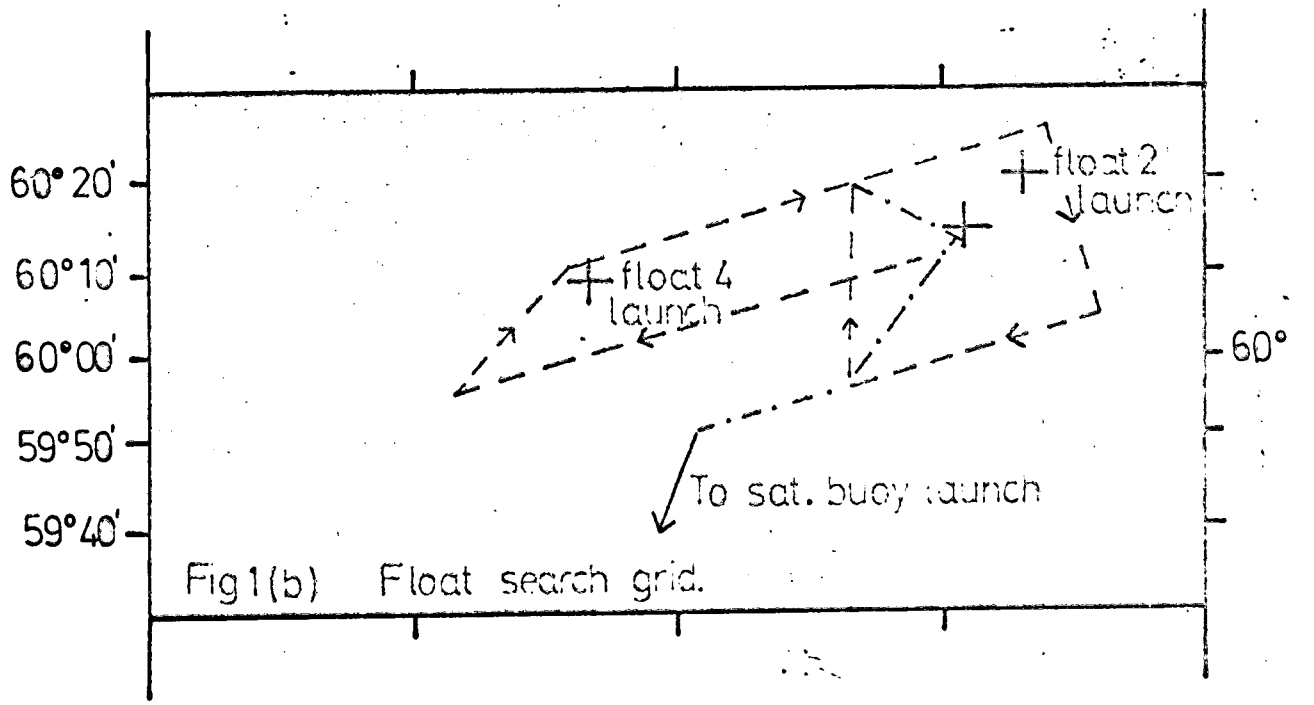


Fig 1(b) Float search grid.