

In Confidence: Not to be quoted without reference to the Laboratory.

CRUISE REPORT

FRS "Explorer"

6-28 January 1970

Objectives

- (a) A hydrographic and bathymetric survey in the region north and north-east of Shetland.
- (b) The tracking of parachute drogues, north-east of Shetland.
- (c) Faroe-Shetland hydrographic section.

Narrative

As Mr Martin was unable to take charge of the cruise at its commencement, due to illness, Mr Burns was in charge for the first 10 days and Mr R Payne filled the vacancy.

"Explorer" left Aberdeen late on the evening of the 6 January and after ascertaining that the instrument at the Collieston current meter mooring was still functioning, made passage to Flugga, arriving the following night. Due to faulty odometers which were not immediately repairable, "Explorer" continued the passage towards Nolsø, Faroe. The next day, 8 January, with the odometers repaired, work commenced on the Nolsø-Flugga traverse at station 4 (61°42'N 4°51'W) and the section was completed in the early hours of the 11th, after having to hove-to in mid-channel for 30 hours to ride out a gale.

"Explorer" then steamed to 62°10'N 2°00'W to commence on the echo sounding and STD instrumental survey of an area, off the continental shelf, where there had been a Norwegian report of a bank of less than 300 metres depth. No bank was found and with the weather worsening a reduced bathymetric survey was carried out.

Boiler trouble compelled "Explorer" to make a slow passage to Lerwick where she docked on the 14th. Mr Payne left by air for Aberdeen but because of the continuous south easterly gales Mr Martin was prevented from joining until the 19th. In the meantime the boiler repairs had been completed. Although "Explorer" left Lerwick on the 21st the continuing gales prevented any work being done before 26 January. Then in light winds but still moderate to heavy swell, 2 parachute drogues, one at the surface and the other at 50 metres were tracked for 13 hours 10 miles east of Flugga.

"Explorer" docked in Aberdeen on the morning of 28 January.

Results

Surface temperatures across the Nolsø-Flugga traverse varied from 7.01°C over the Faroe Shelf to 8.26°C at Flugga with corresponding salinity values of 35.24‰ and 35.34‰. In mid channel, however, there occurred a "dome" of lower salinity water with surface values of 6.89°C and 35.19‰.

Nutrient values showed high winter maximum of 12.3 $\mu\text{g-at/l}$ for nitrate and 1.09 $\mu\text{g-at/l}$ for phosphate. Throughout the cruise the autoanalyser was run continuously to sample the surface layers for nitrate.

A first plot of the tracks of the two drogues showed that the net movement over 12 $\frac{1}{2}$ hours was small and to the north west. This was probably due solely to the strong swell from the south east.

R B BURNS
J H A MARTIN
17 February 1970