

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

1977 RESEARCH VESSEL PROGRAMME

REPORT: RV CORELLA: CRUISE 6a

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

STAFF

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DURATION

Left Lowestoft 0255 h, 27 April

Arrived Lowestoft 1632 h, 1 May

All times are Greenwich Mean Time

LOCALITY

Vicinity of Ekofisk Oil Field, North Sea

AIMS

To assist the Norwegian government in an emergency programme to assess the effects of the Ekofisk Bravo oil well-head blow out and resulting oil pollution, by collecting samples of water, sediments, fish and bottom invertebrates for hydrocarbon analysis.

NARRATIVE

CORELLA reached the vicinity of the Ekofisk oil field at 0440 h, 28 April and commenced a water sampling programme over an area of 60 x 60 n.miles (Figs 1 & 2) as part of an overall programme devised by Norwegian scientists aboard the research vessels, G O SARS and JOHAN HJORT under the direction of Dr Grim Berge. (Throughout the cruise, progress reports were exchanged between the three research vessels every 12 hours.)

Water samples for hydrocarbon analysis were taken at one and five metres below surface in specially cleansed winchester bottles from which the stoppers were removed underwater to prevent contamination from surface waters. The grid was covered so as to sample clean areas first. Sampling commenced at 0440 h, 28 April and was completed at 2228 h, 29 April.

In addition, sediment samples for hydrocarbon analysis were taken with a 1/10m² Day grab at three stations and at a further two stations off the grid nearer to the Ekofisk oilfield (Fig. 2). Three 15 minute plankton samples were taken with a one metre Hensen net with a 60 mesh/in silk in 'clean' and 'oiled' areas (Fig. 2).

Granton trawl hauls were made in a 'clean' area north of Stn 26 and in an 'oiled' area near Stn 23. At the former, the codend had to be cut away as the trawl was too heavily loaded with weed (*Flustra* sp.) to bring in-board. Nevertheless small samples of four fish species were recovered from the covers and eleven species of fish and invertebrates were taken from the second tow.

An attempt was made at several stations to take mackerel on 'feathers', but none was caught.

CORELLA left the Ekofisk area at 1030 h, 30 April and berthed at Lowestoft at 1632 h, 1 May.

RESULTS

1. Only 26 of the 35 water sampling stations on the grid could be worked due to a shortage of bottles. A total of 52 samples from 1 m and 5 m below surface were obtained for hydrocarbon analysis.

2. Three plankton samples were obtained and preserved for identification of species and inspection for presence of oil. Brief inspection on collection showed that *Rhizosolenia* (or a similar genus) was extremely abundant and tended to float in rafts at the surface of the sample, making the presence of oil difficult to assess. However, small oil droplets were seen in the sample taken at Stn 26. In all three samples the zooplankton appeared active. Some fish eggs were noted but no larvae were seen.

OBSERVATIONS OF OIL

Observed distributions of oil, as received from Norwegian authorities via G O SARS, are shown in figure 2. Throughout the cruise a close watch was made for oil on the sea.

An area of light brown globules was observed between stations 19 and 20 and duly reported.

By station 20 the sea became slightly glassy, gradually increasing until, at station 23, a very thin oil film could be detected and the oil could be smelt. Oil was most apparent near station 25 but was never more than a thin film. No discoloration of plumage could be seen in seabirds (mostly lesser black-backed gulls) alighting on the sea in this area.

No observations were made nearer than seven n.miles from Ekofisk Bravo but it is noteworthy that G O SARS, circling Bravo rig at only 1.2 n.miles distance on 29 April, reported only "very little oil visible on the surface". (In empirical terms, 20,000 tonnes of oil spread over 2000 km² represents a mean surface thickness of only 10µ.)

INFORMATION FROM RADIO REPORTS

The Norwegian research vessel G O SARS collected water samples for hydrocarbon analysis (similar to CORELLA) at 20 stations within a 30 x 30 n.miles grid, close to Ekofisk. In addition, plankton samples were taken and measurements made of chlorophyll, transparency and microbial activity (?). Some hydrographic work was also carried out with current meters.

The other Norwegian research vessel JOHAN HJORT worked the same 60 x 60 n.miles area as CORELLA, recording fish, bottom and mid-water trawling for fish and sampling for plankton, fish eggs and larvae.

Special permission to enter within 5 n.miles of the Ekofisk oilfield had to be obtained from the Norwegian authorities and as G O SARS, JOHAN HJORT and many oil technology vessels were working in this area, CORELLA did not apply to enter on the understanding that Norwegian research findings would be made available to NAFF.

G O SARS left for Norway on 30 April.

Distribution overleaf:

H S Rolfe
3 May 1977

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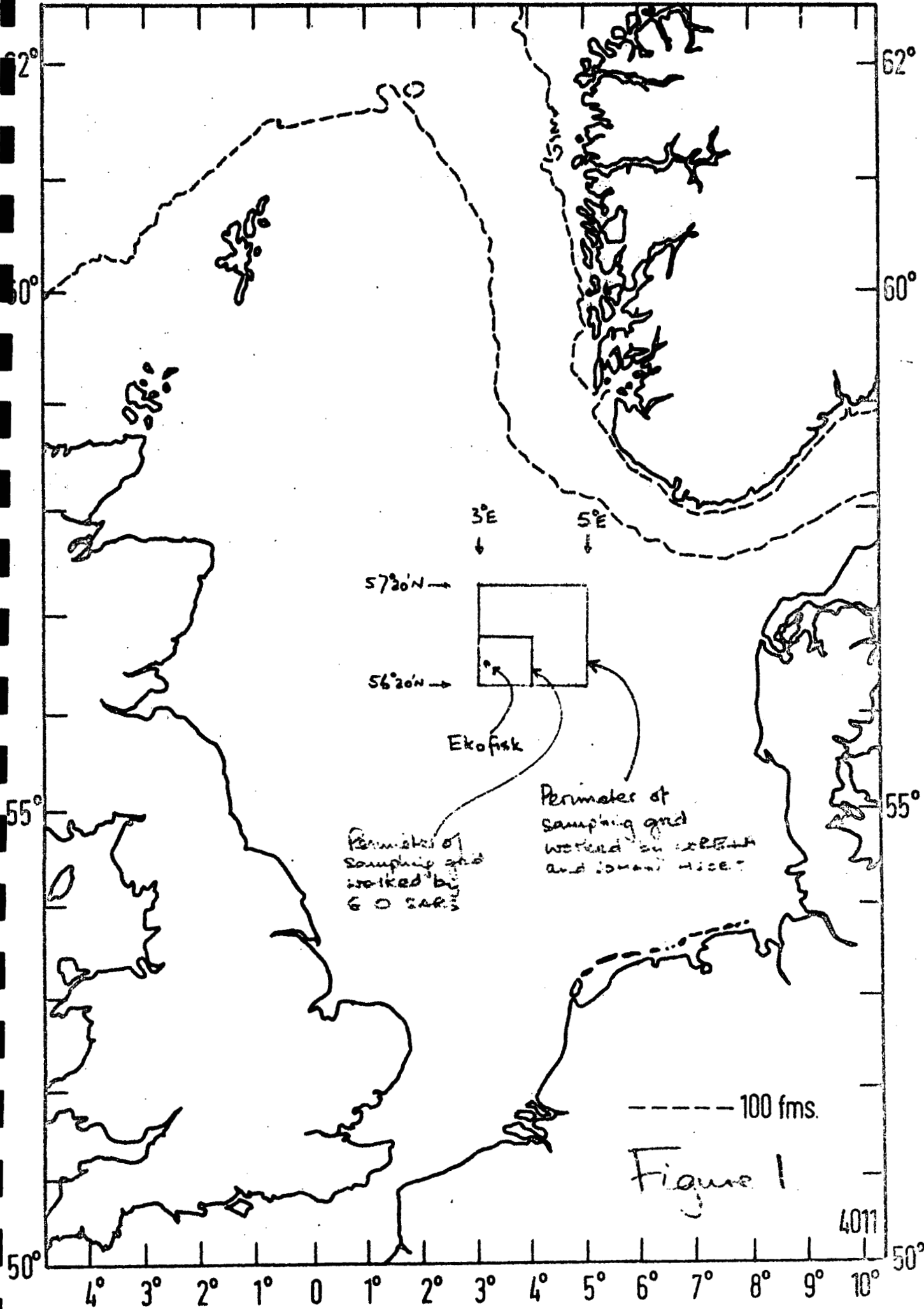
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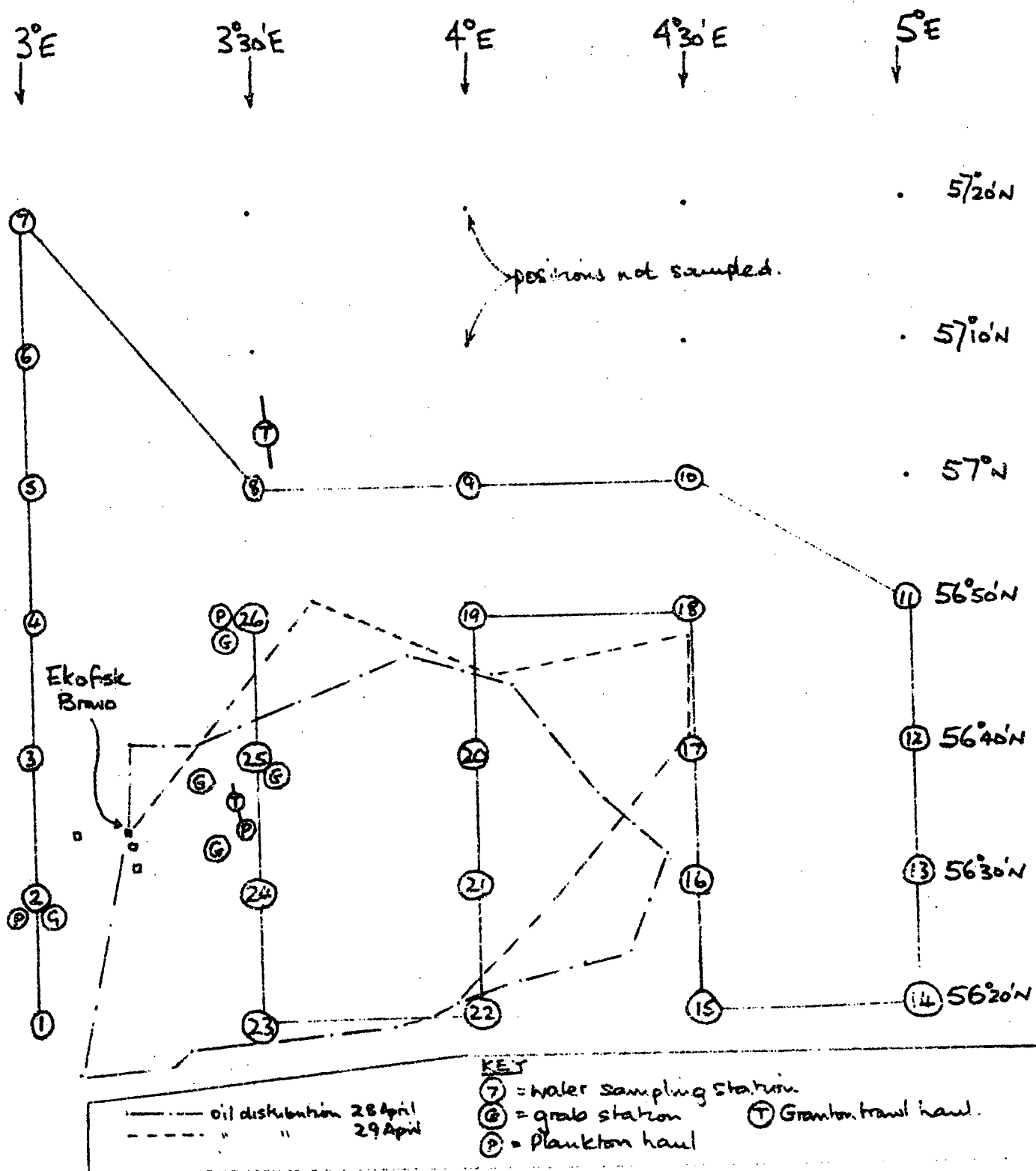


Figure 2: Position of sampling stations and reported distributions of oil.