VESSEL R.R.S. JOHN MURRAY

CRUISE PERIOD 2-13 April, 1976

PERSONNEL IMER, Edinburgh
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ITINERARY

2 April 13.00 hrs. departed Aberdeen.
Proceeded towards the SW corner of the FLEX square along IN-OUT leg ILSW.
Launched CPR and UOR.

3 April 02.00 CPR and UOR recovered inboard.
Began work on Station 1.
04.30 Proceeded towards Station 2 towing UOR and CPR.
10.16 CPR and UOR inboard. Began work on Station 2.
11.30 Proceeded towards Station 3 towing UOR and CPR.
12.00 CPR and UOR recovered inboard due to loss of speed through main engine trouble.
12.22 Launched CPR and UOR.
15.07 CPR and UOR recovered inboard.
Weather too heavy to continue towing.
19.30 Bad weather stopped work.

4 April 11.45 Weather improved; increased speed to 4 knots, headed for Station 3.
13.50 Launched UOR and CPR.
16.45 UOR and CPR recovered inboard. Headed for JONSDAP mooring 72 at SW corner of FLEX square.
18.30 Deployed sediment traps.
Proceeded towards Station 3. Launched UOR.
21.00 Recovered UOR.
21.20 Began work on Station 3.
21.50 Proceeded towards Station 4. Launched UOR and CPR.

5 April 04.30 Recovered UOR and CPR inboard.
04.45 Began Station 4.
05.34 Launched UOR and CPR.
06.10 Weather deteriorating. Recovered UOR and CPR. Work abandoned, ship hove to.
23.00 Weather Force 8-9; headed for shelter of Norwegian coast.

6 April Severe gales, force 9-10.

7 April 06.30 Docked Kristiansand.

8 April 13.00 Sailed Kristiansand.
16.30 Launched UOR.
18.20 Recovered UOR.
19.00 Launched UOR.
20.46 Recovered UOR.
20.56 /

20.56 Launched UOR.

9 April 02.10 UOR lost overboard during hauling (see Appendix for report of loss and recovery of UOR)
03.20 Launched Dhan buoy at position of loss.
06.55 Reported loss of UOR to IMER, Edinburgh.
11.10 Start search to locate pinger within UOR with Helle hydrophone.
12.02 Located pinger.
12.22 Dhan buoy launched to mark position. Maintain position by Dhan to await arrival of M.V. BORGHOLM.

10 April 16.30 M.V. BORGHOLM alongside; picked up weak signal from UOR pinger.
23.18 UOR recovered; Dhan buoy recovered. Proceeded toward FLEX square.

11 April 18.50 Began Station 7.
20.30 Proceeded towards central Station 9; hauled and launched HSLE net at approximately ½ hr. intervals.

12 April 03.00 Began Station 9.
04.06 Proceeded towards JONSDAP mooring 91.
07.00 Laid mooring for sediment traps.
09.00 Hove to on station - bad weather.
10.43 Started deployment of quanta meter; started ^{14}C incubation experiment on deck at 6 light levels.
11.50 Proceeded to rendezvous point with METEOR for nutrient intercalibration experiment.
13.24 On station with METEOR, MECHELEN and ANTON DOHRN.
13.53 Began Station work.
14.40 Change over of samples effected. Proceeded towards JONSDAP mooring 72.
19.00 Recovered and re-layed sediment traps. Water bottle station.
20.00 Proceeded toward Aberdeen.

13 April 10.00 Docked Aberdeen.

OBJECTIVES

See Cruise Programme IMER/FLEX/2/76.

PROCEDURES and METHODS

As outlined in Cruise Programme.

EQUIPMENT AND OTHER FAILURES

1. Weather conditions over the cruise period caused serious curtailment of the sampling programme. All work ceased on 5 April when severe weather forced the ship to seek the shelter of the Norwegian coast. R.R.S. JOHN MURRAY was unable to return to the FLEX square to continue the programme until 11 April.

2. The UOR was lost at 50°13.5'N, 05°8.2'E on 9 April; it was recovered on 10 April by M.V. BORGHOLM and submersibles (Pisces).

3. The coring winch, from which the UOR was deployed, proved unsatisfactory.

4. The mooring gear which was provided by RVB (see Cruise Programme) was inadequate.

5. The failure of the PAXMAN (Diesel Auxiliary) caused loss of power to the hydrographic winch and was responsible/

responsible for a 2 hr. delay at Station 1.

6. Main engine trouble on one occasion when towing the UOR caused an abrupt loss of speed with the result that the instrument dived to a depth in excess of 100m(sea bed at this position was approximately 120m).

7. The main deep freezer ceased to function within a few hours of leaving port; there would have been insufficient storage space for nutrient samples if the programme had not been curtailed by bad weather.

RESULTS

6 Standard Stations were completed (representing 2/3 of 1 grid of the FLEX square). All planned samples for temperature, salinity, chlorophyll a, phytoplankton cell counts and four inorganic nutrients were taken at these stations. A further hydrographic station was worked at JONSDAP mooring 72.

The temperature remained isothermal at 6.3/4^{o}C at all stations. Higher values of chlorophyll a were obtained nearer the surface. The highest value in the FLEX square was 0.9µgChla/1 (approximate winter base line level for chlorophyll a is 0.2-0.3µgChla/L).

Sediment trap moorings were deployed near Station 1 at JONSDAP mooring 72 and near Station 9 at JONSDAP mooring 91. The sediment traps at mooring 72 were lifted and re-layed on 12 April for collection by the next cruise 4B/76 of the JOHN MURRAY.

The horizontal profiling equipment for salinity, temperature, chlorophyll and nitrate at 3m worked continuously for approximately 4/5 of the cruise track. The equipment was only switched off when the ship was hove to due to bad weather.

One, on deck, ^{14}C incubation experiment was carried out, at six light levels, at central Station 9. The depths of the 'recommended' light levels for incubation were determined by lowering a quanta meter.

A very limited deployment of the HSLE net was carried out from Station 7 to Station 9. Zooplankton was scarce; the most abundant species being Thysanoessa raschi, Pseudocalanus elongatus and Calanus finmarchicus.

Two LHPR hauls were taken, one at Station 7 and the other at Station 9, yielding 31 individual zooplankton samples for which data on volume of water filtered, depth and temperature ranges were recorded in situ.

Ten tows were taken with the UOR for a total of 320 miles; six tows were taken with a modified (box-tail) CPR containing a MATR system for recording temperature and depth.

Date: 19 May 1976

Prepared by: R. Williams

Approved by: R.S. Glover

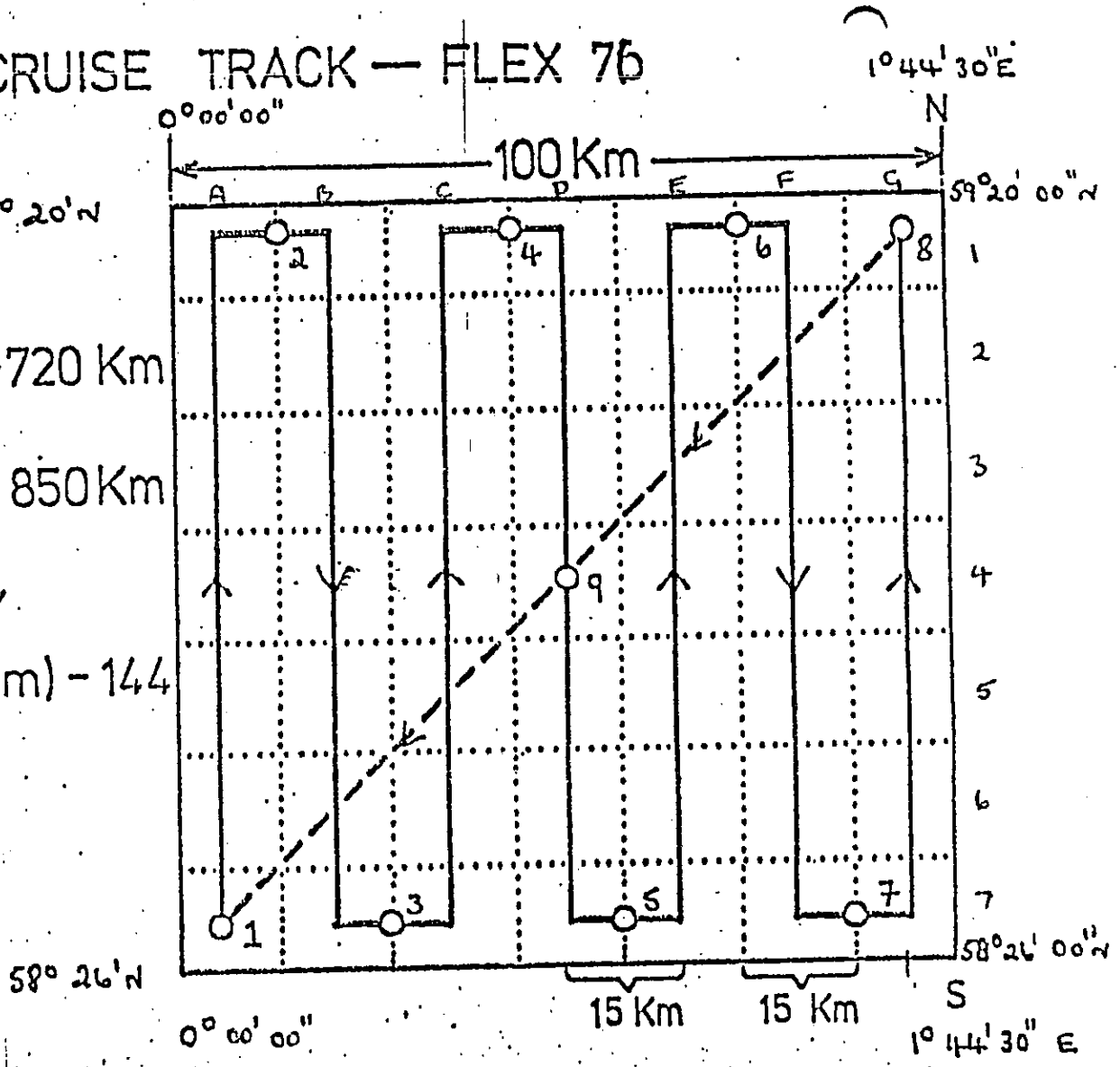
PROPOSED CRUISE TRACK — FLEX 76

Cruise track – 720 Km

CT + Diagonal – 850 Km

No of samples/
/CT (1sample/5Km) – 144

O – Stations 1–9



REGULAR CIRCULATION – CRUISES

Internal

Glover
Longhurst
Robinson

Heath
Plymouth File (2)

External

NERC

Foxton

IOS

Charnock
Edwards (BODS)

RVB

Stobie

DOE

Garnett, London
Wise, London

IOS (Taunton)

Tucker

IGS

Moore

IOS (Bidston)

Cartwright

MBA

Denton

SMBA

Currie

MAFF

Lee, Lowestoft
Cushing, Lowestoft
Wood, Burnham-on-Crouch

DAFS

Parrish, Aberdeen
Holden, Pitlochry

ADDITIONAL CIRCULATION FOR FLEX CRUISES

Met. Office

White

NMFS

Marak

DAFS

Steele
Adams
Baird
Henderson
Payne
Conway

IMER

Williams
Bruce
Aiken
John
Hollis
Lonie

FLEX Leader (Hamburg)

Duchrow