

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

1986 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE ; CRUISE 13

STAFF:

Part a. R J Law (SIC)
T W Fileman
P M Hudson
S J W Padley
Carole Wallis

Part b. M J Waldock (SIC)
D J Harper
A Franklin
M Kirby
Catherine Fileman
Carole Wallis

DURATION:

Part a. Left Lowestoft 1130 h 7 November 1986
Docked Sunderland 1030 h 11 November 1986

Part b. Left Sunderland 1050 h 12 November 1986
Docked Lowestoft 1030 h 21 November 1986

LOCATION:

Central and Southern North Sea.

AIMS:

- Part a. 1. To carry out studies of the dispersion of oily water discharges at the Auk and Argyll oil fields, using a towed fluorimeter. This continues studies begun during CLIONE 14/85.
2. To collect samples of water from within the oily water discharge plumes for onshore analysis by GC MS.
- Part b. 1. To collect samples of seawater for trace metal analysis from the Central and Southern North Sea, and from the estuaries of the major east coast rivers. Analysis of copper, cadmium, mercury and lead will be carried out on board ship; further analyses will be carried out at Burnham.
2. To collect samples of commercial fish species from the vicinity of Tees Bay. (Cod, whiting, plaice, dab, sole, flounder; 25 specimens of commercial size for each species). They will be analysed for metals and pesticides as part of the routine fish and shellfish quality monitoring programme.

NARRATIVE:

Part a. CLIONE left Lowestoft at 1130 h on 7 November and proceeded directly to the Auk oil field, arriving in the vicinity at 1100 h on 8 November. As oil production had not resumed at Auk after a routine shutdown CLIONE continued to the Argyll field. The direction of the tide required towing of the instrument package across a heavy swell and excessive rolling during towing, and so no work could be

carried out on the 8 November. By the morning of 9 November the weather was worsening and the swell rising higher, and all prospect of work around the oil fields had to be abandoned. CLIONE then proceeded south west to the coast, directly into the weather, and finally anchored at Skinningrove Wick, north of Whitby, at 0930 h on 10 November. A number of replicate water samples were collected here (10) from 1 m depth and the extracts stored for subsequent analysis at Burnham, and 6 further Winchesters of clean seawater were collected for use in laboratory calibration of the Aquatracka towed fluorimeter. CLIONE raised anchor at 1445 h and then carried out two Aquatracka tows, across Tees Bay from 1529 h to 1708 h, and between Seaham and Sunderland from 1756 h to 1858 h. CLIONE then proceeded to anchor near Whitley Bay. On the morning of 11 November a further Aquatracka tow was made between Whitley Bay and Sunderland from 0830 h to 1000 h, and CLIONE then proceeded to dock in Sunderland at 1030 h to exchange scientists.

Part b. CLIONE left Sunderland at 1050 h on 12 November, steamed to the mouth of the Tyne and anchored. Water sampling started at 1215 h and samples were taken at hourly intervals during a tidal cycle, finishing at 0135 h on 13 November. The sampling programme was rescheduled to avoid poor weather conditions offshore and CLIONE steamed directly to Tees Bay to trawl for commercially important fish species. Trawling was completed by 1430 h. CLIONE then anchored in Tees Bay overnight and hourly water sampling for tidal cycle work recommenced at 0600 h on 14 November. By 15 November the weather had moderated and the scheduled course was resumed, taking surface water samples at 20 nm intervals from Newcastle to the Dogger Bank. CLIONE dodged overnight off the Dogger Bank and sampling continued on 16 November despite worsening weather conditions. By 1530 h it was considered to be too hazardous to continue, and sampling was abandoned. The weather moderated overnight and on 17 November surface water sampling on the Dogger Bank was completed. Further water samples were taken at 20 nm intervals on a course towards Flamborough Head, and water samples for depth profiling were taken at one station. CLIONE steamed to the Humber overnight and anchored. Surface water samples were taken during a tidal cycle in the Humber on 18 November. On 19 and 20 November water samples were taken S and E of the Humber to examine the influence of heavy metals discharged from the estuary on concentrations in offshore waters. The grid was completed by 1200 h on 20 November and water samples were then taken at 20 nm intervals along the median line until 1845 h. CLIONE then returned to Lowestoft, docking at 1030 h on 21 November 1986.

RESULTS:

Part a. No work was possible on either of the two aims because of the bad weather prevailing around the Auk and Argyll oil fields. Some measurement of coastal hydrocarbon concentrations was carried out using the Aquatracka and some reproducibility testing of the routine fluorescence method for seawater analysis was also conducted.

Part b. Most of the planned regime of water sampling was successfully completed. 80 samples were taken for metals analysis. Dissolved, reactive and total mercury concentrations were determined in 80% of samples whilst on board, by cold vapour spectrophotometric techniques. Dissolved and total lead and cadmium concentrations were determined in 100% of samples by anodic stripping voltammetry. Copper concentrations were successfully determined in only 10% of samples on board, due to problems with contamination of purging gas supplies. The remainder of samples were stored for analysis at Burnham. Samples of water were filtered and stored for analysis of nutrients and salinity at Lowestoft. Well defined trends in concentrations of metals in seawater were evident with regard to salinity and spatial distribution of samples.

(2) Trawls from the Tees Bay provided adequate catches of commercially important fish and shellfish. Samples each of 25 cod, whiting, haddock, plaice, lemon sole, Cancer and Nephrops, and at least 10 sole, dab, and megrim, were preserved by freezing for analysis of metals and pesticide residues at Burnham.

R J Law

M J Waldock

26 November 1986

SEEN IN DRAFT:

G S

R C N

INITIALLED:

H W H

DISTRIBUTION:

Basic List +

R J Law

T W Fileman

P M Hudson

S J W Padley

Carole Wallis

M J Waldock

D J Harper

A Franklin

M Kirby

Catherine Fileman

56°2' 1° 0° 1° 2°

CRIONE 13(b) 86

TRACK CHART

55°

ANCHOR

ANCHOR
& TRAWL

54°

53°

ANCHOR

9.1.2

— SAMPLING
- - - STEAMING



