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FRV *Clupea*

Cruise 1091C Part 1

REPORT

3-8 July 1991

Personnel

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Objectives

1. Water sampling for trace organic contaminants at Garroch Head sewage sludge dump site.

2. Transmissometer survey of the sludge plume, with monitoring of additional physical and chemical parameters.

3. Sampling of pelagic fish in the Firth of Clyde for JMG.

Narrative

The scientific staff joined *Clupea* at Buckie on 3 July. The vessel then proceeded via Pentland Firth to the Clyde, arriving during the early morning of 5 July. On route water samples were taken for humic materials and analysed on board by fluorescence. *Clupea* rendezvoused with the dumping vessel MV *Garroch Head* at 1130 on 5 July. Immediately following a spot dump of the sludge, two drifting buoys were launched and water sampling for organics commenced in the centre of the plume. Simultaneously, vertical profiles of optical transmittance, salinity and temperature were taken. Water samples for determination of dissolved ammonia, suspended particulate loading, dissolved organic carbon and humic materials were also taken. On completion of static sampling a towed transmissometer and pump were deployed and transects across the plume were completed. The vessel then returned to the centre of the plume to recommence static sampling. This cycle was repeated until 2000. The vessel then proceeded to Ardrossan to berth. Trawling for herring occupied 6 July. Three pelagic trawls were completed in the northern area of the Firth of Clyde. *Clupea* rendezvoused with MV *Dalmarnock* on 7 July and water sampling and transmissometry surveys were completed in a similar sequence to that of 5 July. On completion of sampling the vessel berthed at Ardrossan at 2100. A further survey of the sludge plume was completed on

8 July after rendezvous with MV *Garroch Head*. On completion of sampling the vessel berthed at Ardrossan at 2100. The scientific crew left the vessel on the morning of 9 July after unloading of equipment and frozen samples.

Results

A full set of water samples was obtained from the expanding sludge plume which will allow the physicochemical process governing the behaviour of organic contaminants in the water column to be investigated. Transmissometer profiles will allow the size and rate of expansion of the surface plume to be calculated. Budgets of the amount of organic contaminants persisting in the water column as a result of the sludge dumping may be calculable from the data.

A G Kelly

7 October 1991