

IN CONFIDENCE: Not to be quoted without reference to the laboratory

FRV 'Clupea'  
Cruise 1/83

### Cruise report

4 - 11 February 1983

### Objectives

1. To collect samples of water, sediment and biota from the vicinity of the Guillam Bank Dumping site for cyanide and heavy metal analysis.
2. To undertake an underwater closed circuit television survey of the Guillam Bank Dump site.
3. To monitor the dumping of anode and cathode waste from the dumping vessel "Kindeace", and to determine resultant free cyanide levels in the water column and sediment following dumping.
4. To collect a water sample for radio-caesium monitoring at a position 57°49'N 2°58'W (off Buckie).

### Narrative

'Clupea' left Aberdeen during the afternoon of 4 February and headed for the Moray Firth. The weather was worsening, and upon reaching the Moray Firth 'Clupea' anchored in shelter off Lossiemouth for the night. On the morning of 5 February 'Clupea' sailed for the survey area of Guillam Bank. Weather conditions has not improved, and it was not possible to undertake scientific sampling. 'Clupea' therefore headed for the Cromarty Firth and tied up at Invergordon to allow scientific staff to set up scientific equipment at the Invergordon smelter. Mr McKie had travelled from Buckie in an official vehicle, and he rejoined the ship at Invergordon. Scientific staff worked at the smelter during the afternoon of 5 February. On 6 and 7 February weather conditions had not improved, and the weather forecast indicated that it was unlikely that conditions at the dump site would be suitable for scientific sampling. However conditions in the Cromarty Firth were fairly reasonable and, after consultation with Mr Geddes, it was decided that we should proceed to the dump site to ascertain whether any sampling could be undertaken. On both days sampling was not possible, and 'Clupea' returned to Invergordon to allow scientific staff to return to the smelter to prepare for subsequent sample treatment.

Following an improvement in the weather, sampling commenced on 8 February. An Agassiz trawl survey was undertaken on the morning of 8 February. The proposed survey was reduced to four transects, two on the dump site and two off the dump site. In the afternoon the grab sampling was commenced. 'Clupea' returned to Invergordon for the night of 8 September to allow scientific staff to prepare samples for analysis. On 9 February the weather had again improved, and the TV sledge was launched. Three transects were covered during the morning of 9 February. Picture quality was extremely poor because of high levels of suspended solids in the water column. It was therefore decided that the TV survey should be postponed. During the remainder of 9 February a series of water samples were collected from the dump site area, and the grab sampling survey was completed. 'Clupea' returned to Invergordon for the night of 9 February and water samples were processed at the smelter. On 10 February weather conditions had deteriorated slightly. 'Clupea' sailed to the dump site to assess whether it would be possible to recommence the TV survey, and to await the arrival of the

dumping vessel 'Kindeace'. Conditions were unsuitable for the underwater TV survey, and were sufficiently adverse to prevent the 'Kindeace' from leaving port. 'Clupea' therefore returned to the Cromarty Firth, and the transmissometer was tested in the Firth off the BACO jetty. 'Clupea' then tied up at the BACO jetty alongside 'Kindeace' and samples of material scheduled for dumping were taken from stockpiles on the jetty, and from the holds of the dumping vessel. 'Clupea' then returned to Invergordon. Samples were taken to the smelter for processing.

At 0500 hrs on 11 February Mr McKie left 'Clupea' to collect processed samples from the smelter. 'Clupea' then sailed for Buckie. En route to Buckie water samples were collected for radio-caesium analysis. Mr McKie travelled from Invergordon to Buckie by official vehicle and rejoined 'Clupea' when the vessel docked at Buckie. Upon arrival at Buckie we were informed that adverse weather conditions had prevented the laboratory lorry from travelling to Buckie. It was therefore not possible to unload the 'Clupea'. Ships crew and scientific staff left the vessel at Buckie on 11 February.

### Results

1. Cruise objective 1 was achieved. Water samples were collected at nine sampling stations for cyanide analysis. Samples were collected from sea surface to seabed at 5 metre depth intervals. A total of 60 water samples were collected, and processed at the Invergordon smelter prior to analysis in the Aberdeen Marine Laboratory. Grab samples were collected from 57 of the 65 sample stations. The remaining eight stations were on 'hard ground'. Samples were deep frozen for subsequent analysis in Aberdeen. Four Agassiz trawls were completed, and fauna collected was separated into individual species. After suitable preparation, faunal samples were deep frozen for subsequent analysis in Aberdeen. Bad weather prevented further Agassiz sampling.
2. Cruise objective 2 was abandoned because of adverse weather conditions, and extremely poor underwater visibility. Only three transects were completed, and picture quality was unacceptable. The survey was therefore postponed, and subsequently abandoned.
3. Cruise objective 3 was abandoned. Adverse weather conditions prevented the 'Kindeace' from leaving port.
4. Cruise objective 4 was achieved. Radio caesium samples were collected off Buckie at position 57° 49' N, 02° 58' W.

Derek Seward  
15 November 1983