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FRV *Clupea*

Cruise 0493C

REPORT

8-12 March 1993

Personnel

P Balls	PSO
R Payne	HSO
R Adams	SO
M Lyons	PhD student

Objectives

1. To service instrumentation on three moorings.
2. To undertake a hydrochemical survey along the east coast of Scotland, Moray Firth to the Firth of Forth.

Narrative

After loading at Aberdeen on the 8th *Clupea* sailed at approximately 1230. Following the completion of compass calibration and the disembarkation of the technician *Clupea* proceeded south for the Tay area at 1400. *Clupea* anchored in St Andrews Bay at 2100 for the final preparation of instrumentation to be deployed during the following day. *Clupea* left its anchorage at 0600 on the 9th and made passage to the mooring off Arbroath, servicing was completed by 0930. Two further moorings were serviced during the 9th, the inner mooring in St Andrews Bay by 1145 and that off Fife Ness by 1600. Following completion of the third mooring *Clupea* returned to its anchorage in St Andrews Bay.

A continuous hydrochemical survey was commenced at 0300 on the 10th, four lines were completed during the course of the day, K by 0830, M by 1300, J by 1800 and I by 2200. *Clupea* then proceeded north and completed three further lines during the 11th, S by 0230, F by 0600 and R by 0930, *Clupea* docked in Fraserburgh at 1400. Equipment was offloaded on the morning of the 12th, scientific staff left at 1015.

Results

Five current meters and a water level recorder were serviced during the cruise, all were found to be undamaged and a data recovery of 100% was obtained. Time series of the residual currents revealed a strong and highly stable bottom return flow (up to 15 cm/s) within St Andrews Bay directed towards the mouth of the river beneath the Tay plume. At the mooring positions to both the north (Arbroath) and south (Fife Ness) of the Tay,

near bed currents were observed to be directed onshore while those at eight metres were found to be typically directed alongshore and southward. On several occasions reduced salinity water was observed at the upper current meters, this is probably associated with the Tay plume. The current meter at nine meters depth in St Andrews Bay appears to be below the Tay plume, plans are in hand to install an instrument nearer the surface.

The two nutrient analysers recovered during this cruise had both shut down early into their deployment. The two hourly sampling interval used in the current study is longer than that used during the Loch Linnhe work, this has exposed a flaw in the software controlling the instruments. The problem has been identified and will be corrected before the next deployments. The discrete nutrient samples collected during the cruise await analysis in the Laboratory.

The temperature and salinity data gathered during the cruise indicates that freshwater inputs were low at the time of the survey. Consequently there was little evidence of stratification other than very close inshore. Further offshore the water column was vertically well mixed, indicative of winter conditions.

P Balls

7 April 1992

Seen in draft: S Clark

SCOTTISH NORTH SEA COASTAL ZONE PROJECT 1993

