

R1/12

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FRV *Scotia*

Cruise 1800S Part II

## REPORT

30 November - 4 December

### Personnel

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### Objectives

1. To assess the performance of the newly designed small mesh cod-end cover with respect to its effect on the geometry and water flow in the cod-end of the trawl.
2. To mount and operate the Seabat sonar on the remote controlled television vehicle (RCTV) to obtain information of fish populations in the mouth and ahead of the trawl and to obtain simultaneous video footage using the SIT camera where possible to give information on species identification.
3. To assess the performance of the ROS s0/s0 Navigator camera on the RCTV and obtain quantitative footage of fish numbers passing into the cod-end by positioning the RTV up against the extension of the net.
4. To mount a camera (either ROS 20/20 or standard mini TV) on the trawl extension in order to make quantitative counts of fish passing into the cod-end.
5. To undertake further sea trials using modified Bran+Luebbe AA3 nutrient analyser.

**Out-turn days per project:** MF0662 - 4days

### Narrative

Staff travelled to Scrabster to join *Scotia* on 30 November. The vessel sailed at 1400 hours. Suitable fishing grounds west of Dounreay were located in 60 m of water on the advice of local fishermen. A preliminary tow was made to calibrate the depth/speed characteristics of the remote controlled underwater television vehicle (RCTV). The vehicle floatation was adjusted and a full calibration completed that evening.

Trials continued on the same grounds for the following two days. After increasing damage was sustained on successive hauls, the net was changed on 2 December and the vessel sailed for grounds near the Beatrice Field in the Moray Firth in time to continue trials the following day. Further hauls were completed without further damage and on the evening of 3 December the vessel made for Aberdeen, docking at 0700 hours on 4 December.

## Results

1. The drag of the net and the flow inside and outside the cod-end were measured to assess the effect of fitting a small mesh (10 mm) cover over the cod-end to trap escaping fish. The small mesh cover was then deployed with flexible kites and chain to maintain separation between it and the cod-end itself. It took up good geometry on shooting but subsequently suffered major damage and incomplete data were obtained.
2. Through-water visibility was good on both fishing grounds with maximum ranges at 50 m depth of up to 15 m. The standard low-light TV camera and Seabat sonar system were deployed on the RCTV during six hauls to assess their potential for determining the populations of fish passing into and escaping from different areas of the standard GOV sampling trawl. The Seabat system was used at three different orientations to allow vertical, oblique and horizontal views of the fishing gear. It was possible to discriminate small fish within, and escaping from, the net at different positions. Detailed vertical and horizontal profiles of the net geometry were obtained from the doors to the cod-end. The RCTV system worked well with several hours of video being collected. Recordings from both Seabat and SIT camera will be analysed in the Laboratory. Important information was gained about the limits of performance of the RCTV. Horizontal views of the gear forward of the net mouth were not possible, being limited by RCTV downforce. However, it was possible to position the vehicle over either otterboard when a warp length of 180 m was used.
- 3 and 4. The Navigator CCD camera was mounted on both the RCTV and on a frame attached at the cod-end mouth. Suitable launch and recovery methods for the frame were developed with the help of the crew. High quality film was obtained when the camera was used in 50 m depth during daylight. Detailed comparisons with the low light SIT camera film will be made in the Laboratory.
5. Reasonably successful trials using the Bran+Luebbe AA3 nutrient analyser were undertaken throughout the trip. The trials identified further problems with the operation of this equipment aboard *Scotia* that has stimulated discussions between the laboratory and instrument manufacturers.

R S T Ferro  
13 December 2000

Seen in draft: R Walton