R1/6 13CR83

In Confidence: Not to be quoted without reference to laboratory

FRV 'Clupea'
Cruise 13/83

REPORT
24 November - 9 December 1983

Objectives

1. To obtain a systematic set of measurements of netting panel angles, mesh angles and cross-sectional shape of a trawl (PT163) using the remote controlled television vehicle (RCTV) and an echo-sounder mounted on it.

2. To obtain simultaneously, measurements of the overall loading and geometry of the net using conventional instrumentation.

Narrative

After the instrumentation and fishing gear had been loaded and the RCTV cable wound onto its winch Clupea sailed from Greenock at 2300 hrs on 24 November. Additional equipment was loaded at Kyle of Lochalsh before trials commenced on Saturday 26 November in the Sound of Raasay. The half landing was taken in Kyle on 2 December by which time approximately one working day had been lost due to failure of the rotor controllers.

After commissioning an alternative RCTV controller system a further series of hauls was made until the evening of Tuesday 6 December. One day was lost due to bad weather and to avoid further gales the ship sailed to the Moray Firth where the trials were continued on Wednesday morning. When work was completed on Thursday 8 December Clupea sailed for Aberdeen arriving at 2030 hrs.

Results

Techniques were developed for measuring mesh angles and distances between opposite panels of the net (PT163) at each joining round along the top panel and also the port side panel. True views of the meshes were obtained using the RCTV with an anglemeter on the camera. Distances between panels were obtained from an echo-sounder mounted parallel to the camera axis. From these readings the angles of the netting panels to the net centre-line can be determined. It was not possible to measure these panel angles directly because of poor visibility and particularly because the RCTV was found to tow at significant angles of heel, pitch and, at times, yaw.

Two warp lengths (100 and 150m) and a range of speeds between three and four knots were used during 13 hauls of four hours average duration.

Measurements of wing-end tension, door and headline depth, door and wing-end spread, headline height and net speed through the water were obtained

consistently during the trials. Additional distance measurements were made at the net mouth occasionally. These data will allow calculation of net drag and of sweep and net mouth geometry (including the angles of the sweep wires at the wing ends). The net will be measured carefully to provide precise details of its construction, particularly mesh and twine size.

A comprehensive set of data will then be available for correlation with data on a model of the net in the SFIA flume tank at Hull and with computer models of the net which are being developed.

R S T Ferro
12 December 1983

Seen in draft: A Mair