

IN CONFIDENCE: NOT TO BE QUOTED WITHOUT REFERENCE TO THE LABORATORY

CRUISE REPORT

FRV "MARA"

2 July - 27 July 1973

OBJECTIVES:

1. To develop techniques for the direct observation of trawl gears by the diving team and to co-ordinate these with results obtained by instrumentation.
2. An instrumented assesment of "All metal" cambered boards, polyvalent boards, V-boards and flat boards on two types of ground.
3. Observation of board action (stability in operation and flexibility to ground conditions), turbulence behind the boards and the track and volume of the mud cloud created by different board forms.
4. Observation by divers of the effect of the rig variations on a trawl net pin-pointing the areas of stress.
5. Observation of fish behaviour in the area of the sweeps and spreading wires.

NARRATIVE:

Mara operated from Buckie for the duration of the cruise, fishing an area between Lossiemouth and Spey Bay. The ground conditions in the area worked were varied, ranging from fine sand to large boulders standing 1 metre off bottom.

During the first two weeks of the cruise the weather was good with underwater visibility extending on occasions to 50 feet. With the advent of northerly gales, the underwater conditions deteriorated, and all but precluded the use of photography. Only one day was worked in the final week due in part to winch trouble and the continuing disturbed weather. This loss of sea time necessitated a curtailment of the original programme.

RESULTS:

It was found that the diving team could stay with the gear and make observations and measurements at speeds up to 2.5 knots. At speed in excess of this it was only possible to check on one or two specific items and/or make a general observation as to the net passed. The experience gained indicates that modifications to the diving equipment may, in the future, make it possible to stay with the gear at higher speeds.

Early in the cruise it was noted that the Mark IA spreadmeter and the headline manometer were causing distortion to the net shape. They were discarded and these measurements made directly by the divers.

A scaled down White Sea Trawl was used throughout the trials and with this net headline heights of 15' and wing-end spreads of up to 35' were recorded. Total tension at the ship and distortion in the square would suggest that this particular net was rather large for a 200 HP vessel and consequently it may have been under-spread.

By towing the net through vertical dye columns it was observed that the main pressure area inside the trawl occurred at the mouth of the cod-end. The other net sections appeared to pass through the dye column with minimal disturbance to it.

The mud clouds stirred up by differing trawl board forms and their track relative to the sweep angle and the wing-end of the trawl were examined. Standard flat V-form, cambered and Polyvalent boards were used for comparison. There were considerable differences in the volume and spread of the mud clouds, with the less sophisticated board forms creating the greater disturbance.

During the cruise some 1500 feet of 16mm film and 600 still photographs were shot underwater. These and the instrument readings are currently being analysed.

A Corrigan

16/11/73