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MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1981 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 15b
(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF

M H Beach
C R Hood
N D Pearson

DURATION

Left Lowestoft 1050 h 14 December
Arrived Lowestoft 1330 h 16 December
All times are Greenwich Mean Time

LOCALITY

Parkeston Quay Anchorage, Harwich

AIMS

1. To check the Decca dumping ground navigation equipment.

2. To check the stability of acoustic survey towed body TM1.

3. To test various new polycarbonate transducer arrays.

NARRATIVE

CLIONE left Lowestoft at 1050 h 14 December. The Decca engineer and his dumping ground navigation equipment did not arrive due to heavy snow falls over most of the country. CLIONE sailed for Harwich with the aim of finding sheltered water for acoustic transducer tests (a NE gale force wind was forecast) and close proximity to the Roughs Tower dump site should a later rendezvous with the Decca engineer prove possible.

The stability of the acoustic towed body TM1 was tested about 5½ miles off Sizewell. This involved inserting a roll and pitch measuring unit in the towed body which was then towed for about 60 minutes at 8 knots in a square pattern. The angles of roll and pitch experienced were recorded on magnetic tape which after recovery was replayed and analysed.

CLIONE then continued to Harwich and anchored off Parkeston Quay in the River Stow estuary at 1918 h 14 December. The water depth of 6.5m rising to about 10m at high tide was considered sufficient for the proposed transducer tests.

A new 75-element polycarbonate transducer array was deployed over the ship's forward port rail for measurements but initial electrical tests indicated the presence of salt water. The transudcer was recovered and found to have leaked and was stripped down, thoroughly rinsed in freshwater and allowed to dry overnight. A new small array was made ready for deployment down the instrument tube the following morning.

On the 15 December it was learned that the check on the Decca navigation equipment was to be postponed until further notice.

The large transducer was re-assembled and deployed over the side although it was difficult to keep the transducer in a vertical plane due to the speed of the tide. However the display looked good with a marked absence of ghost images. The water depth was about 7m and the seabed visible out to about 100m. It was decided to postpone further observations until slack water at 1500h.

The small transducer was deployed down the instrument tube and scans round the seabed made using both (a) the MAFF mini-scanner system and (b) the LUT-made mini-scanner system. Photographic evidence of the transducer's performance was obtained.

RESULTS

1. The acoustic towed body with the roll and pitch sensors was towed at 8 knots for 60 minutes in a square pattern. The prevailing wind was 12 knots at bearing 270. The recorded magnetic tape was replayed and showed the maximum amplitudes of both roll and tilt to be less than 2.7° and the small displacements from the zero axes to be attributable to misalignment of the sensor package within the towed body.

2. The large 75-element polycarbonate transducer element gave a good display with the seabed being evident out to 120m in about 10m depth of water and with a complete absence of any central 'ghost' image.

   The performance of this display would of course be improved with proper phasing to the sector scanner receiver, but this was not possible since the receiver was already phased to the transducer currently being used with the stabilisation package.

3(a) The small transducer (15-element receive) with the MAFF mini-scanner system gave good results with the seabed being evident out to 200m. A marked improvement in the display and 'ghost' image was achieved by internal adjustments of the RCG (reverberation controlled gain) level and removal of multiple earths. It was considered that further improvements could be achieved by the inclusion of opto-isolation in the trigger connection.

3(b) The performance of the small transducer was similar with the LUT-made mini-scanner system, the seabed again being apparent out to about 200m. An improvement in resolution was observed with the narrow receive beam option, particularly in the prevailing condition of relatively shallow water.

M H Beach
30 December 1981

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G F Lee - Fishing Skipper

INITIALLED: HWH

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