Mr Bate

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

1975 RESEARCH VESSEL PROGRAMME

REPORT: R V CLIONE: CRUISE 3

(Provisional: Not to be quoted without reference to the author)

STAFF:
R B Mitson
P G Griffiths
E G Shreeve
A R Pratt (Loughborough University)
N D Pearson (27 February - 7 March)
L Cox (" " " ")
M G Walker (7-10 March)
T J Storeton West (" ")

DURATION:

Left Lowestoft 1130 h 27 February
Arrived " 1900 h 10 March

LOCALITY:

Southern North Sea

AIMS:

1 To carry out a complete check on the performance of the MAFF Scanner.

2 Trials of experimental acoustic tags.

3 Seabed survey in the area of a submarine cable.

4 Tests of Loughborough University Scanner.

NARRATIVE:

After leaving Lowestoft on 27 February the ship anchored in Corton Roads for cleaning the laboratories and fixing equipment following the refit. Some electrical and acoustic measurements were possible whilst this was going on. The rubber boat was used for measurements off Southwold on 29 February after phasing and adjustments had been made with the transducer in free field conditions. At night CLIONE anchored in Corton Roads whilst further adjustments were made and interference was investigated. On 1 March some of the beam patterns were measured; later in the day some wrecks were viewed so that signal level adjustments could be checked for various modes of operation. The ship then set course for Margate Roads where she anchored at 0820 on 2 March. Weather conditions were reasonable so the rubber boat was used to continue measurements but a sudden increase in the strength of the wind caused these to be abandoned. The instrument tube on the ship was used to continue some measurements. At 2200 h the anchor was raised and CLIONE started towards Lowestoft where the ship's lifeboat collected spares on the morning of 3 March. For the rest of the day electronic circuits were checked and calibrated whilst the results of acoustic measurements were worked up. The ship anchored in sheltered water off Margate at 2200 h.

On 4 March the rubber boat was prepared for long range measurements. When these had been completed a wreck survey was carried out. Early on 5 March the ship proceeded eastwards on a seabed and wreck survey to enable the video levels and photographic system to be set up. Interference from a pirate radio station caused acoustic noise measurements to be abandoned later in

the day. Fish were being sought on 6 March and CLIONE moved down the English Channel where numerous shoals of various sizes were found. Tests were made of the Sector/Line recorder in preparation for a bottom survey on 7 March. This was carried out between 1800 h on 7 March and 0100 h 8 March around a position 52°02'20"N by 01°55'30"E.

At 0900 h 8 March Messrs Pearson and Cox left the ship and Dr M G Walker and Mr Storeton -West joined. CLIONE moved to a position south of Smiths Knoll where preparations were made to lower a caged plaice fitted with a heartbeat transmitter. The scanner azimuth steering failed but after a brief examination, during which the fault was not located, the exercise with the fish proceeded. Steering of the transducer was done by the ship. Only one set of signals were received so the cage was recovered and CLIONE set off slowly in the direction of Gt Yarmouth whilst the azimuth fault was investigated. Warnings of severe gales imminent in the area were received but fortunately they did not materialise and the repairs were effected by Mr Shreeve working under difficult conditions at 0100 h 9 March. At 0830 h preparations were made for lowering another fish but insufficient signal was obtained, so an investigation of the electrical system was made.. Eventually the level was suitable and the cage was lowered on a dahn buoy, which was tethered at 150 m from the ship. A leak in the scanner hydraulics caused the work to stop at 0045 h 10 March. Repairs could not be made so the system was run at low pressure whilst the transponder on the caged fish was interrogated. Whilst the cage was being raised to examine the fish it escaped. It was located by the scanner and tracked until 1415 h when work ceased. CLIONE proceeded to Lowestoft where she docked at 1900 h.

RESULTS:

Aim 1: Extensive measurements of the MAFF scanner acoustic system showed a good overall performance. Source level of the transmitter system is 127 dB/ /ubar/m for 11 kW input. The beam pattern showed high sidelobes and a similar efficiency to that measured on CLIONE 16/74, indicating that no further deterioration has occurred. When the transmitter is at full power a further 3 dB could be added to the source level. Measurements on the receiving array showed high sidelobes and displaced zeroes, but the main lobe sensitivity per element was 10/uv//ubar. A -26dB target was visible to 240 m range under good conditions. Long range detection was enhanced by the 200 /u s pulse facility in the new transmitter. The operator's expanded display proved useful, particularly in echo sounding mode. Displayed sector is still only 26°, so some investigation is needed here. Definition on the photo-display system looked adequate but film test strips were not entirely satiafactory, this may have been due to difficulty in adjusting the camera. The special sonar recorder is not yet properly interfaced.

Aim 2: One experimental acoustic fish tag adapted for telemetering the count of a fish heartbeat was used. In the first experiment the electrode became detached; in the second, signal potentials were too low to give an accurate count. For some hours low, but regular, counts were received but after the fish escaped from the cage very few actual counts were received, although the transponder signal was very strong. This suggests that the electrode may hav been moved during the escape.

Aim 3: A survey of the seabed near submarine cables showed no sign of dredging. closer than 1 mile to the south.

Aim 4: Tests of the Loughborough University scanner receiver were satisfactory. The modifications giving time varied gain and correction were very effective. A solid state transmitter was first used to drive a MAFF calibration projector and them, with 750 watts of power, to drive the main scanner transmit transducer. Excellent results were forthcoming in both applications.

R B Mitson
13.3.75

Seen in draft: J A F
G T R
INITIALLED: A J L

DISTRIBUTION:

Basic List

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