

G/32/69  
Dr. Swallow

"JOHN MURRAY" CRUISE October 1969 Part 3 22nd - 27th October

Bath University N.E. Atlantic

AIMS:

To recover the tide gauge laid during part 1 on La Chapelle Bank.

Towing trials of the Bath University side ways looking asdic fish and faired cable.

Acoustic trial of the "Hook" fish and new N.I.O. 10K c/s pinger transducer.

SCIENTIFIC PARTICIPANTS:

D.I. Gaunt	N.I.O. (in charge)
J. Hopkins	Bath Univ.
J. Joseph	" "
D. Philips	" "
R. Spenser	" "

NARRATIVE:

"John Murray" sailed at 2030/22nd Oct. from Barry for La Chapelle Bank in moderate weather. To save time and in case of bad weather, the hull echo sounding transducer was wired into the NIO PDR mufax. Four elements of the transducer were wired into the P.U.B. transmitter through a switching system. It was hoped to maintain a speed of 8 KTS. but a heavy beam swell kept the speed down to  $6\frac{1}{2}$ -7 knots. Running the "Paxman" would not have increased speed and ship conditions would have been more uncomfortable.

Approach towards the tide gauge position was made on a course of  $186^{\circ}$ , acoustic signals were transmitted to turn on the command pinger, and at 1400 hrs - 24th with Decca coordinates of Red F22.06, Green D 47.30 faint pinger signals could be seen on the mufax. Several runs were made to find the best approach course, to enable stronger signals to be received, so that on release the exact position of the tide gauge would be known. The pinger could not be resolved from the hull transducer, and the towed hydrophone and the tadpole were streamed at 1635 hrs.

Fortunately the towed hydrophones worked well both forward and aft gave good pinger signals. Several crosses were made and the tide recorder was still on the bottom, although half an hour was lost when an oil drum was sighted. Whilst steaming across the tide gauge position release signals were transmitted, it required two passes before release occurred at 1850 hrs.

By this time it was dark and before release was made the command pinger was checked to ensure that the flashing light would be working.

Separation from the sea bed was clearly seen on the mufax record and at 1853 hrs. the sphere pressure operated pinger was seen. No visual sighting was made, and a course was set towards the tide gauge using the towed hydrophones. At 1905 hrs. the flashing light was seen from the bridge, and recovery took place at 1915 hrs. without any damage to the tide gauge.

Due to the loss of time steaming from Barry to La Chapelle Bank, the Bath University asdic trial, had to be carried out in the vicinity of the tide gauge position. Although Decca was not essential for the trial run, Bath University decided not to work during the night. A course was set towards the position of

the lost N.I.O. mooring O40 and on arrival the ship hove to until the morning of the 25th.

At 0850 hrs. on the 25th the towed asdic was lowered to the 200' and then hauled to 150', to enable the capstan drums to be slewed to the correct angle. An 800' of wire out Bath University decided not to carry on as the fairing clips were being crippled, as they passed over the "A" frame sheave (PDR). The fish was towed at 6 knots and the pressure sensor (Ether Bourdon tube) indicated depth of fish as 322'. The large storage drum brake failed due to poor design, and there was no adequate safety system that could be used. With three turns of the faired cable on the drum, and no braking system the towing trial was carried out with the hydraulic power on. As the winch neutral position is dependant on load this operation was highly dangerous to the two connecting cables running from the storage drum to the laboratory.

Mr. Joseph who operated the winch maintained a steady zero control position under very trying circumstances. Towing was carried out from 1020 hrs. to 1032 hrs. Hauling was finished by 1050 hrs. During lowering and recovery the nose of the fish hit the stern and was damaged. Bath University decided not to carry out any further trials.

A course was set to put the ship in a position for the trial of the "Hook Fish" approx. one mile from the O40 lay. The 8mm wire was attached to the towing strop of the fish with a 400 lb length of chain attached by a 6mm strop to the aft end. Whilst steaming at 1 knot the "Hook Fish" was lowered to 1000 metres. Good pinger signals were obtained and pay out contained to 1600 metres, the bottom echo was clearly seen. At 1303 hrs. the pinger trace indicated that the fish was horizontal and at 1330 hrs. the ship stopped. Engine revs. were increased and the dynamometer indicated a load of  $2\frac{1}{2}$  tons (these are still not calibrated). After passing through the O40 position hauling started at 1406 hrs. The fish was all inboard by 1429, and jammed in the jaws was a 2' 6" length of wire. Particles of the inner hemp strand were found. It is unlikely that the wire was from O40. The ends indicated a large breaking load as the majority of the wires had been strained and decreased in diameter. The ends showed a typical break under tension going beyond the elastic limit. Very little sign of corrosion could be seen, but further inspection would show more clearly the wire condition. Several rock samples were found, and these provided Philips with some interest as he is basically a geologist. During the drag the pinger indicated a jumping motion of the fish, and a further drag was made using a 200 lb chain between the fish and the 8mm wire.

At 1454 hrs. the wire was payed out to 1600 metres and a further 400 metres of main trawl warp was put out. At 2000 metres pinger signals were still clearly seen, and the fish dragged horizontally until hauling at 1712 hrs. Apart from mud and more rocks there was nothing to indicate the fish had made contact with any wire. From the marks on the fish it would appear that one lead blade was vertical with the two side blades gliding on the mud. At 1620 hrs. Decca had started to become erratic and no further attempts to drag were made.

At 1712 hrs. course was set for Barry arriving at 0800 hrs. 27th.

The weather throughout the cruise was good although there was a continual large swell causing the ship to roll badly.

#### CONCLUSIONS:

The tide gauge was recovered without mishaps due fortunately to the towed hydrophones working, and the efficient way the Master and crew handled the ship. It would appear that the tide gauge has worked satisfactorily, no leakage of the F.M. head occurred and the tape had made the correct number of scans.

The new N.I.O. pinger transducer worked well and for the first time it was possible to see the performance of a bottom drag using different systems of rigging.

The Bath University trial showed that further work is required on the winch handling system before any serious asdic runs can be made.

ACKNOWLEDGMENTS:-

It is again a pleasure to acknowledge the helpful participation of Captain Ferry and the ships company of "John Murray" with special thanks to the Bosun, who made such an excellent job of recovering the tide gauge during the dark.

D.I. Gaunt  
27th Oct. 1969