

TOWED ECHOSOUNDERS FOR PARALLEL SOUNDING

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The steadily growing demand for very close hydrographic surveys has made it necessary to increase the number of echosounder-bearing vessels considerably, in order to enable the hydrographic services to conduct the required surveys within a reasonable period of time.

To keep expenses at the lowest possible level the system of parallel sounding has been introduced, in which one larger survey vessel, acting as leader, is supplemented by an number of small fast launches running sounding lines on parallel courses at predetermined distances. This system, however, requires a crew of one or two men per sideboat.

At the meeting of the Northern Hydrographic Group in Helsinki in 1964 the idea was put forward that a considerable saving in manpower might be effected if it were possible to build echosounder transducers into floats that could be towed by smaller craft carrying extra receivers (echo-graphs).

This idea was taken up by the Royal Danish Hydrographic Office, and after a long series of experiments a set of gear, which works satisfactorily, has been developed.

This echosounding gear has been constructed for use with the Danish type of survey launches, as described in the *International Hydrographic Review*, July 1960, page 25, and can be towed by one launch.

The gear consists of two lengths of combined conductor- and towing-cable, 13.5 mm in diameter, each connected to an Atlas Monograph 30 kHz receiver installed in the launch, the other end of each of the cables being made fast to an "otter" from which it is connected to a 30 kHz transducer built into a float (figure 1).

The "otters" (figure 4) that have been specially constructed for this gear (since no existing type could be used) pull the cables out and somewhat downwards, thus forming a Y (figure 2).

The transducers are built into a groove in the bottom of the float (figure 3). By means of this gear three sounding lines can be made by one survey launch with a normal crew, instead of only one line.

The "otters" can pull the floats so far out that at a speed of 6 knots the angle between them is approximately 82°. By adjusting speed and the length of cable the floats can be made to run parallel to the course of

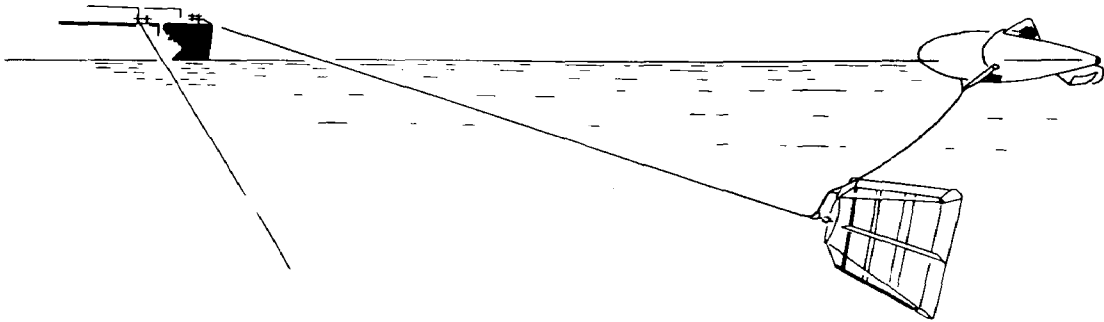


FIGURE 1

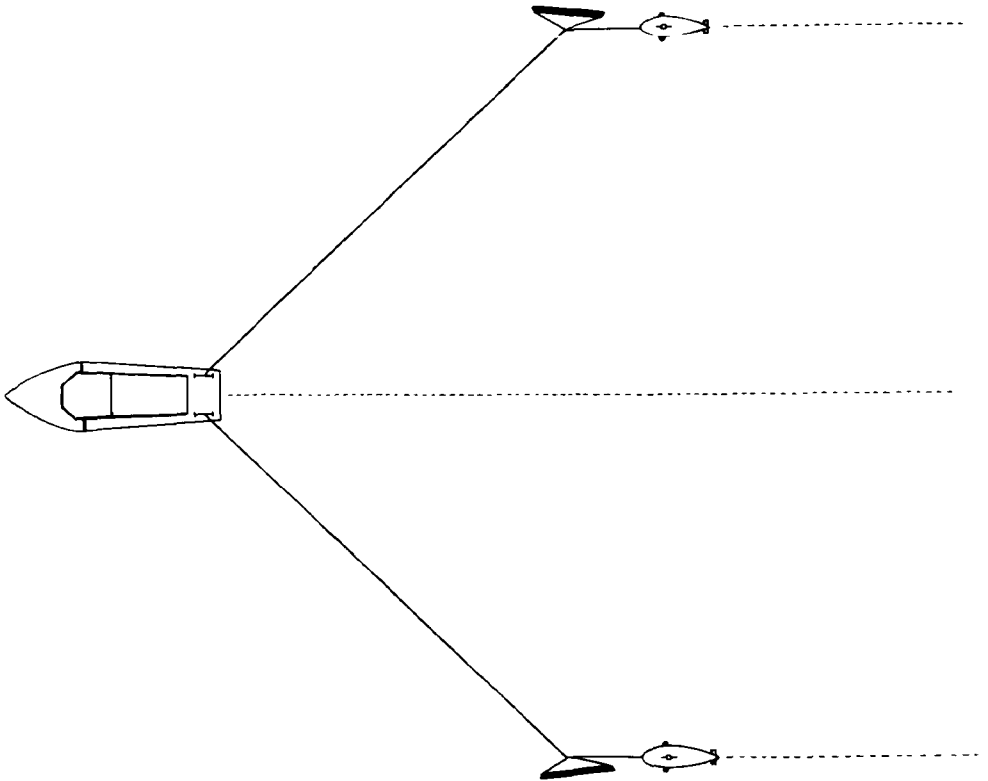


FIGURE 2

the launch at a predetermined distance, which for the Danish surveys has been fixed at 50 m.

Trials have shown that the floats run on very stable courses, the horizontal variation not exceeding 1 m. Maximum variation in measured depth is 0.1 m.

The gear is best suited for surveys where long straight courses can be run. It cannot be used for depths less than 4 m as the "otters" travel 2.5 - 3 m below the surface. The gear is constructed for a speed of 8 -

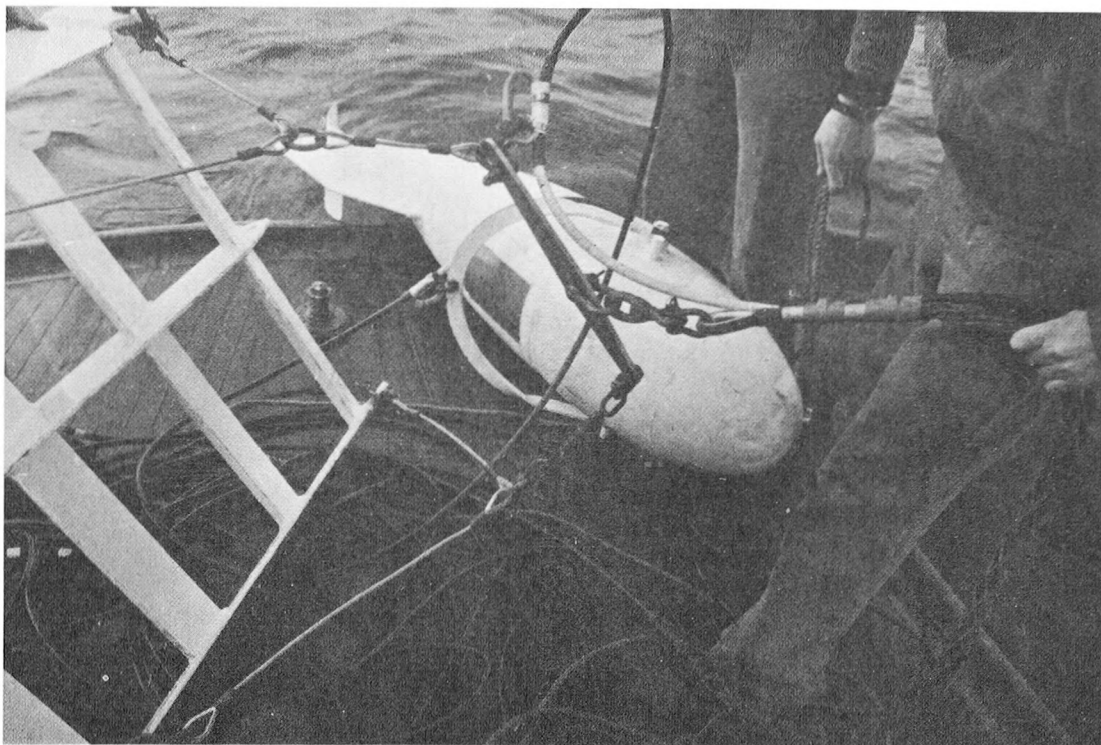


FIGURE 3

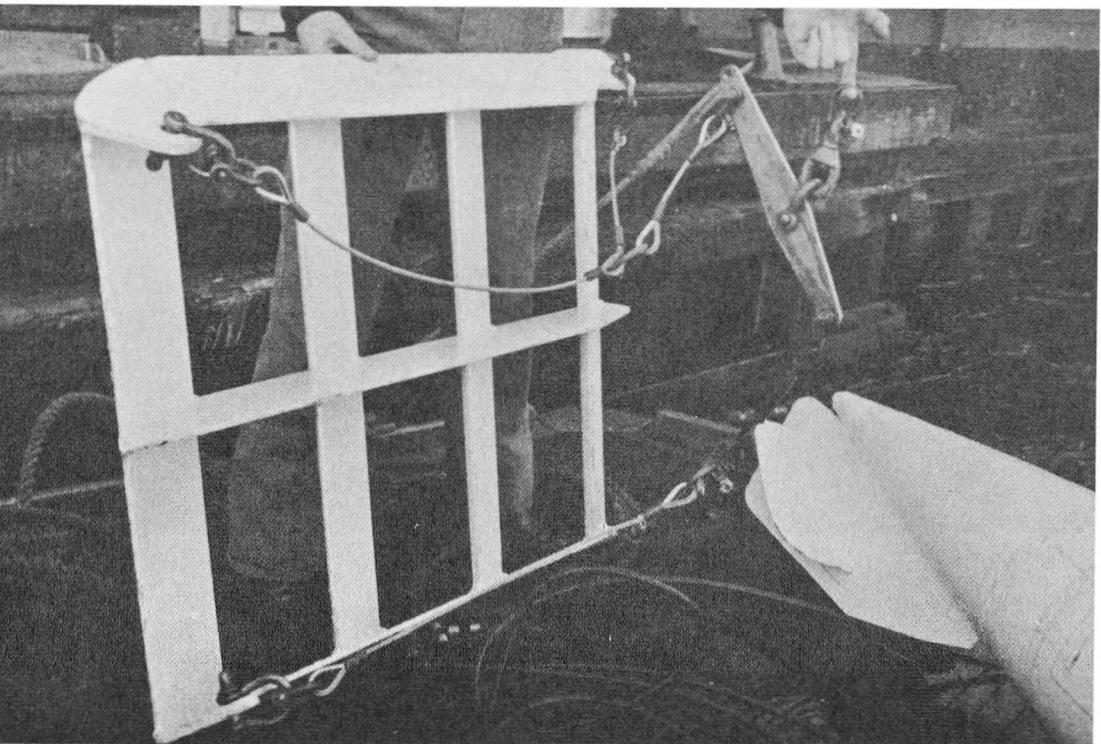


FIGURE 4

9 knots. Loss of speed for the survey launch is 1 - 3 knots when towing the complete gear.

Apart from installing two extra receivers (echographs) and two cable drums, no other extra installations in the launch are required. "Otters" and floats are so light that they can be handled by hand without need for davits.

Details of the gear are the following :

- 2 Atlas Monograph echosounders 30 kHz;
- 2 lengths of combined conductor- and towing-cables of 100 m each;
- 2 " Otters ", 90×96 cm, with bridles; weight 28 kilos (figure 4);
- 2 Floats with built-in transducers, 51×180 cm; weight about 50 kilos (figure 5).

On a future occasion it is intended to try to mount two floats on each cable in such a way that No. 2 float will run half-way between the launch and No. 1 float.

Should this be successful (and this office firmly believes that it will be) five sounding lines could be run simultaneously with only one launch, thus making a further saving in personnel and time.

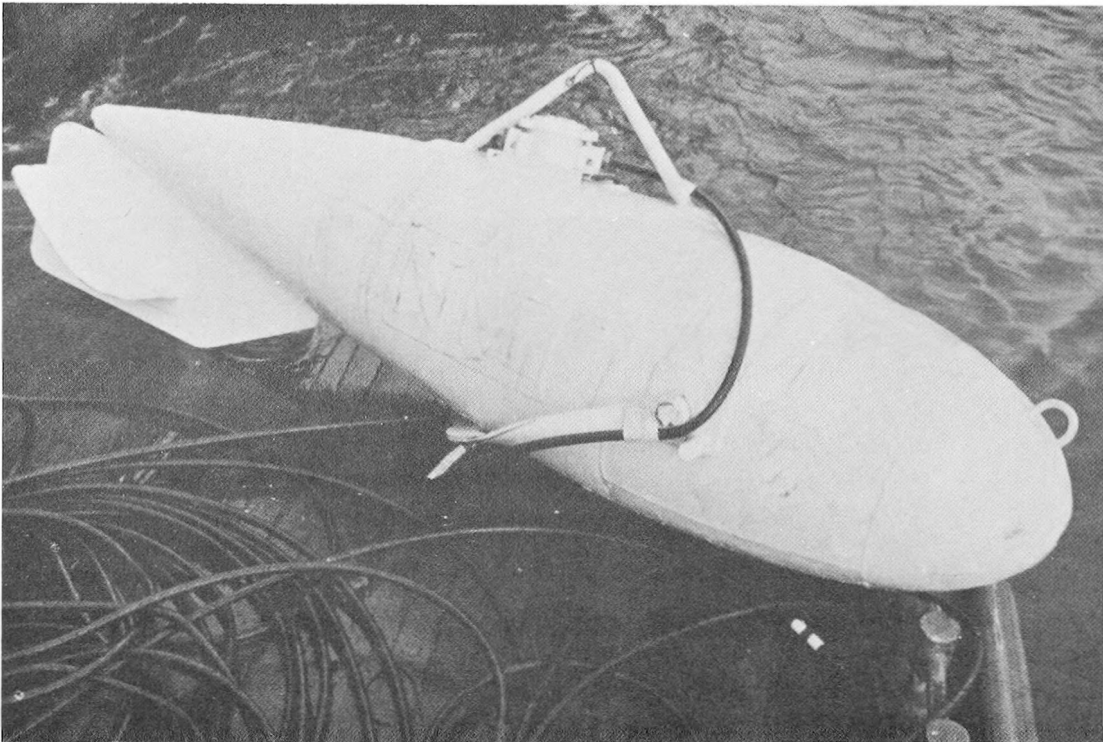


FIGURE 5