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9-METRE SURVEY MOTOR BOATS OF THE HYDROGRAPHIC SERVICE OF THE ROYAL NAVY

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INTRODUCTION

The six 35-feet Survey Motor Boats originally fitted to the three Ocean Survey Ships of the Royal Navy in 1965 had given good service but were in need of replacement in 1979/80. When considering their replacements, the opportunity was taken to repeat the class of 9-metre boats carried in the newer Ocean Survey Ship, HMS *Herald*, and now fitted as replacements in the four Coastal Survey Vessels. At the same time, six additional 9-metre boats were ordered to replace the boats used at the Hydrographic School, Plymouth, and the boats attached to the Inshore Survey Vessels based at Plymouth, Chatham and Portsmouth. Including 3 spares, there are, therefore, now 22 Survey Motor Boats, all of the same type, in use in the RN Hydrographic Service as well as a number of smaller boats.

Design parameters

When first designed in 1971, the boat was required to be used for both visual and electronic fixing, to have a maximum speed of 8 knots, and to be suitable for hoisting in the gravity davits of the *Bulldog* class of Coastal Survey Vessel. It was to be constructed of glass-reinforced plastic and to be single-engined with a Kitchen Gear rudder.

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Details of boat

Length	9.4 metres
Beam	2.9 metres
Draught	1.1 metres
Weight	5.65 tonnes
Engine	Perkins 4.236 Lowline Diesel (1979 boats)
Propulsion	Single shaft with reversible gearbox. Kitchen rudder controls
Speed	8.2 knots
Hull	GRP with wooden rubbing strakes and allround rubber fender
Power supplies	24V DC 112 Amp (1979 boats; earlier boats are being brought up to this standard)
Endurance	380 miles at 8 knots

The original prototype boat in 1971 was built by Watercraft Ltd., Shoreham, Sussex. The mould for the hull then became Ministry of Defence property and has been used for subsequent production from Watercraft and other builders – notably Fairey Marine Ltd. of Hamble, Hampshire.

Equipment fit

Echo sounder	Kelvin Hughes Type MS 48 (RN Type 780) fitted to 1979 boats and being fitted to earlier boats to replace RN Type 772
Position Fixing (Electronic)	Choice of Decca Hi-Fix Decca Trisponder Decca Navigator Receiver Type 80309 A
Sonar	Offshore Acoustics Ltd Dual Channel Sidescan Sonar (RN Type 2034) or EG & G Mark 1B Dual Channel Sidescan Sonar
Radio	HF SSB (Voice) and/or VHF (IMM)
Other Equipment	Wire sweeping gear Plotting table Stowage for beacon poles, etc.

Crew

For surveying purposes, a crew of 5 is normally carried. For non-surveying tasks, a crew of 2 is sufficient, when 28 passengers can be carried in fair weather.

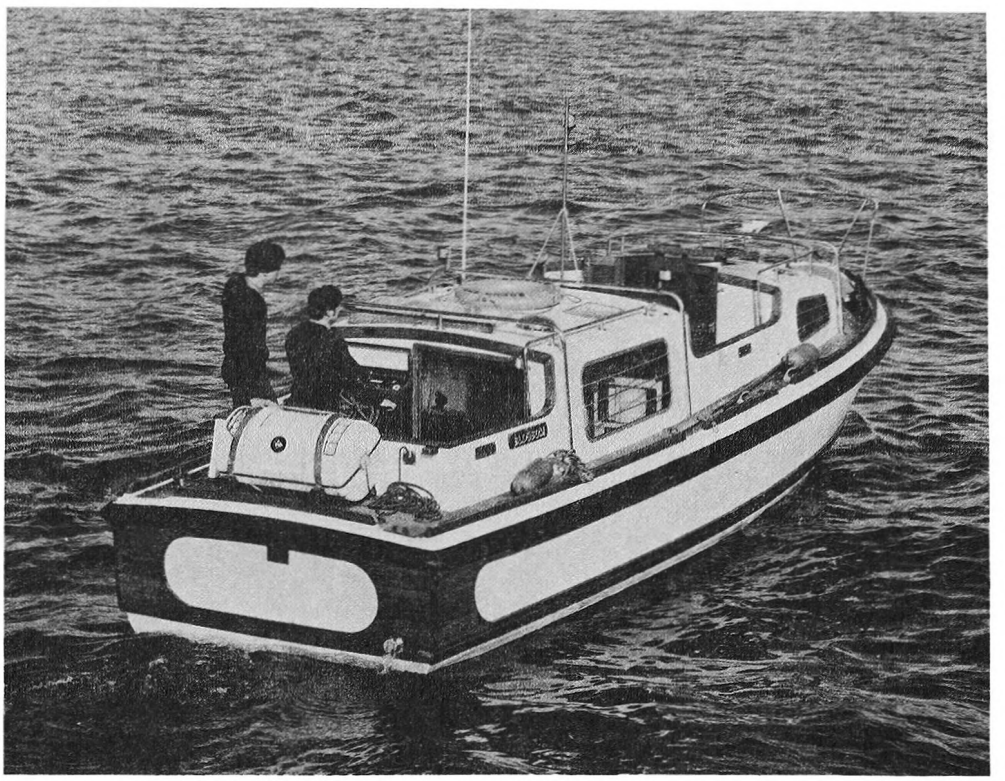

FIG. 1. – 9-metre survey motor boat showing position of echo sounder in after cabin.

FIG. 2. – 9-metre survey motor boat with Training Class from Royal Navy Hydrographic School at Plymouth (The international composition of such a class is clearly shown).

Layout

The boat is divided into 3 sections :

Forward Section : Domestic facilities and enclosed stowages for normal boat stores

Centre Section : Engine and gearbox, batteries and engineering spares (including oil) under deck plates. Open stowage area and/or secondary position for observation of horizontal sextant angles

After Section : Survey plotting and equipment space. Primary sextant angling position and Coxswain's position

Additional spaces fore and aft of these sections house anchor cable (forward) and steering gear and fuel tanks (two × 35 gallons) (aft).

Habitability

It was not intended that the boat be used for overnight accommodation and so it contains only sufficient facilities for a survey crew's daily needs. A small cooking stove and sink with a 25-gallon fresh water tank are fitted in the forward cabin together with storage for a small amount of food. No toilet facilities are fitted.

In common with many GRP boats, high temperatures inside cabins are experienced in tropical conditions and cooling fans are fitted where necessary. Overheating of electronic equipment has caused problems and, again, the use of fans is indicated. In cold conditions, a small heater is available in the after cabin but is seldom used; adequate dress is more effective.

From their first introduction, the boats have seen service in such varied conditions as those experienced in the winter in the Shetland Islands or tropical conditions throughout the year.

Operation from parent ship

In both the Ocean Survey Vessels and the Coastal Survey Vessels, the boat is carried in overhead gravity davits, with the exception of HMS *Herald* where luffing davits are used and the boat is stowed in crutches. The boats can be hoisted or lowered in up to Force 5 with relative ease, and in rougher conditions by hoisting with foul-weather gear. In these marginal conditions, some protection of crew members is advisable from the heavy units of the falls although a fully trained crew will be able to hook on without undue risk.

Developments

Since the first prototype was evaluated in 1971/72, improvements have continued to 1979; the most important of these has been the increase in electrical power generated as the needs of more and more electronic equipment became apparent. The 1979 boat has a large alternator, which is now being fitted to the earlier boats, and which has a capacity well in excess of present requirements.

It has, however, proved impossible to allocate permanent space in the after section for every piece of electronic equipment which may be carried. Since it is not usual to employ all available systems simultaneously, the provision of adequate power supplies and bench areas allows the parent ship to fit the equipment required for the particular survey.

The RN Hydrographic Service does not, at present, use data loggers or processors in Survey Motor Boats, nor are there plans to do so.

CONCLUSION

Experience has confirmed that the compromises needed to allow for the use of either visually or electronically controlled position fixing present some problems with the use of either method but the accepted layout seems to present the best such compromise. The class of boat has already given good service and now has the advantage of standardisation throughout the RN Surveying Flotilla.

With the increasing amount and rate of change in development of electronic equipment now available, it is necessary to have the ability and capability to interchange equipment easily.

The introduction of data loggers and processors may well preclude the use of the same hull for all types of surveys without major re-design.

It is considered important to the all-round development of all surveying officers and ratings that they should have very adequate practical experience in survey motor boats in order to complete their all-round seamanship and professional skills whilst obtaining the inshore data required by Hydrographic Offices and inshore mariners. This design of boat provides a very convenient platform for these purposes.