

BRIAN GRIFFITHS

HULL FORMS FOR WARSHIPS : LORD HILL-NORTON'S REPORT

For the past year, an unofficial committee under Lord Hill-Norton, a former Chief of the Defence Staff, has been investigating the scientific arguments behind the Navy's rejection of the Thornycroft Giles "short/fat" hull design for warships, which was condemned as unsuitable for the Navy by the Hull Committee of the Defence Scientific Advisory Council (DSAC) in 1983.

Lord Hill-Norton has now submitted his report to the Prime Minister, with a covering letter which says that he hopes to make the report public on or about May 15, subject to her views.

The report is a substantial document produced by a strong committee whose two technical members were well qualified to assess the scientific arguments on both sides of the case. Professor RV Jones is Emeritus Professor of Natural Philosophy at Aberdeen University and was Churchill's adviser on radar during the War. Dr. Richard Garwin is the IBM Research Fellow at the Thomas Watson Research Center in New York and an adjunct Professor of Physics at Columbia University, and has advised the U.S. Government on a wide range of defence matters.

Lord Strathcona, a former junior Minister at Defence, was the fourth member of the committee.

Page 5 of the report gives a good summary. The committee's chief conclusion, bluntly stated by Lord Hill-Norton in his letter to the Prime Minister, confirms our own:

"We have no doubt that the rejection of the merits of the short fat ship by the DSAC, and hence their conclusion, was unsound. Indeed, we found the relevant document which formed the basis for their consideration of the matter to be seriously flawed."

Lord Hill-Norton recommends, therefore, that the question of the suitability of the short/fat frigate design should be reopened and that an independent but official committee of inquiry should be appointed to examine his own committee's findings.

The MoD, who mounted their own internal investigation as a result of our original report on this matter, have also concluded that there is room for independent re-examination of the grounds on which the design was rejected, but they say it will be hard to find a suitably-qualified chairman who is not himself parti-pris.

It is true that it might be hard, in the small world of British naval construction, to find a qualified naval architect who has not already become embroiled in this dispute. We do not, on the other hand, think that Lord Hill-Norton's suggestion of a judge or QC as chairman of the inquiry is the best solution. A qualified senior scientist - preferably a professor of engineering with a background in fluid mechanics - should be in charge.

The question of the short/fat ship is important to defence policy because the design of the Type 23 Frigate, originally intended to be cheaper than its predecessor, the Type 22, is several years late and ^{would} cost almost £200m today. And its maximum speed of only 29 knots could be too slow for its primary role of catching Soviet submarines, the newest of which, according to the generally authoritative "Jane's", can reach well over 42 knots submerged.

According to the Hill-Norton report, the short/fat hull form is inherently cheaper and quicker to build, more stable, more spacious, better as a weapons platform and, above all, faster than conventional hulls.

For a surprisingly low cost penalty in powering and hence fuel consumption, the new design could, in the light of recent tests at the BHC tank, reach speeds of 50-60 knots. And the overall, through-life cost would be less than that of a conventional frigate. If Lord Hill-Norton is right, the design certainly deserves fairer consideration from the Royal Navy than it has so far received.

The court case against British Shipbuilders

Lord Hill-Norton has, for obvious reasons, remained silent about the court case which Osprey Ltd. have started against British Shipbuilders, alleging breach of their copyright and incorporation of their designs in the Hong Kong Patrol Craft with the knowledge of MoD.

Although the internal MoD inquiry found no evidence of Naval involvement in the unlawful testing, a senior former member of the MoD's Sea Systems Controllerate at Bath has now been named in the pleadings as having received data from the unlawful tests, and the plaintiffs are accordingly applying for exemplary damages. The case comes to trial in the High Court next January.

Counsel for the Plaintiffs thinks that, on hearing the case, the judge may refer the papers to the DPP because there are prima facie grounds for a criminal charge of conspiracy.

Recommendations

The Prime Minister may like to invite George Younger to set up the independent inquiry suggested by Lord Hill-Norton under the chairmanship of an eminent Professor of Engineering with a background in fluid mechanics. The inquiry might be given terms of reference similar to those set out at annex A, and should report within six months.

The Prime Minister may also like to write thanking Lord Hill-Norton for the work which his committee has done, agreeing to his proposed publication date and inviting him in to discuss his report. His committee has worked hard and the secretary has spent many thousands of pounds of his own money on preparing and publishing the report.

Lord Hill-Norton's findings raise doubts both about the competence of the Navy's warship design establishment and about effective control of the system of defence procurement as a whole.

When he comes in, the Prime Minister may care to ask him what he thinks should be the future of the Sea Systems Controllerate at Bath, and what can be done in future to prevent the cycle of delay, mounting cost and failure to give fair appraisal to new ideas of which this is but one example.



CHRISTOPHER MONCKTON

7 May, 1986.

ANNEX A

TERMS OF REFERENCE FOR THE INQUIRY INTO WARSHIP HULL DESIGN

1. To inquire into and report on the suitability of the Type 23 Frigate for its primary role of anti-submarine warfare and other roles, with reference to the following considerations

a) the appropriateness, in the light of the high speeds of which Soviet submarines are now known to be capable, of revising upward the maximum speed of 29 knots for the Type 23 Frigate given in the current Naval Staff Requirement;

b) the reasons for the rise in the cost of the project, with an estimate of the total unit production cost of each Type 23 Frigate, fully fitted out and ready for sea, at current prices, with due apportionment of development and other overhead costs;

c) the length of the development period and the impact of the delay on Naval capability and on defence contractors;

2. To inquire into and report on the detailed operational, financial, technical and other arguments for and against the Sirius S90 hull-form as compared with conventional designs, taking into account the report of the DSAC Hull Committee and Lord Hill-Norton's report and with reference to the following considerations:

a) the maximum speed desirable to enable a frigate to carry out its primary task of detecting and destroying hostile submarines, and the capacity of the S90 and conventional designs to achieve that speed without unreasonable increases in powering and hence in fuel consumption;

b) the resistance and hence powering requirements of the S90 and conventional hulls at speeds throughout the operational range, evaluating the significance of hydrodynamic lift under the S90 hull in reducing its resistance;

c) the seakeeping and ability to survive damage of of each design, especially in roll, pitch, yaw, whole and damaged stability, and ability to survive weather or enemy action;

d) the costs of constructing, outfitting and maintaining ships of each design, and the implications of these costs for the number of frigates which the Royal Navy will be able to deploy in future years;

e) the through-life running costs of each design, particularly fuel costs based on the estimated hours which a frigate might spend each year at different speeds throughout the operational range up to the desirable maximum speed, and on the resistance characteristics and powering requirements of the S90 and conventional hull-forms;

f) the suitability of each design as a platform for weapons, radars, electronic counter-measures, etc.;

g) the habitability of each design as an effective working and living environment for the crew;

h) the export potential of each design, bearing in mind performance set against initial and through-life costs.

3. To inquire into and report on the desirability, feasibility and estimated cost of building a full-scale prototype Sirius hull of the same displacement as the Type 23, to allow evaluation of the design as a possible warship.

4. To inquire into and report on the procurement process for warships in general, with reference to the desirability of making the process subject to greater Ministerial scrutiny and control and subject to more frequent professional advice from outside the existing design system.

5. To make recommendations, and to report within six months.