

MOD ENGINEERING

BY

COMMODORE R. WALMSLEY, R.N.
(*Director of Operational Requirements (Sea)*)

ABSTRACT

Senior engineer officers seem likely to be seeking a greater proportion of their appointments in the staff divisions of the Ministry of Defence. The article reviews the nature of the opportunities and the skills appropriate to the work.

Introduction

There are more or less as many engineer officers serving in the Royal Navy in 1989 as there were in 1979. With indisputably fewer ships that require Commanders (E), and a greater contribution being made by contracted and other civilian engineering staff to naval procurement and support, it seems an appropriate time to try to explain how many of our more senior naval engineers have started to earn their keep. In four words the answer is 'The Ministry of Defence' and, rather presumptuously, these few paragraphs will try to set out what is done there, who does it and how engineer officers can play a part in its doing.

Defence Interests

Unlike most other Government Departments the Ministry of Defence does almost no legislative business and has a very large executive function. When it does become involved in legislation, the need is often dictated by some change in its internal structure, such as the contractorization of the Royal Dockyards, and so in even that respect the legislative concerns are somewhat introspective. The Ministry of Defence does not, therefore, interact with the public in the same way as the Departments of Health or Transport, but its political involvement remains substantial. The primary reasons are well known: the security of the nation heads any government's list of responsibilities, and the means by which that responsibility is discharged involve debate on international relations, on moral issues and on allocation of a nation's resources. Once resources are allocated to defence, they must be efficiently managed and, within the constraints of security, those who do the managing are publicly accountable. International relations are largely a matter for the Foreign Office, and debate on moral issues is not an area on which politicians, thankfully, require much advice. That leaves the major chunk of the Ministry of Defence's business as the allocation of resources and their efficient management, for the purpose of defending the security and interests of the United Kingdom.

Personnel

Resources for defence are not much different from anything else and can be simply, but not necessarily simplistically, divided into labour and capital. Neither is much good without the other and the Ministry of Defence needs a great deal of both. Decisions on civilian manpower policy affect all uniformed activities, but are almost exclusively the preserve of civilians and therefore do not come within the ambit of this article. For the same reasons, decisions on service manpower policy are an area where the service staffs play a properly significant role. Most areas will be intuitively known to any reader of this *Journal*: recruitment, training and appointing are all executive functions which can only be properly discharged if the correct policy decisions are taken about numbers, skill levels and the need for career planning. Most of the naval work in this area is carried out within the Second Sea Lord's department and, in an engineering sense, is undertaken by engineers for engineers.

There is, however, a growing need to quantify the relationship between manpower skill levels and costs, as a result of the increasing potential for replacing men with machines. Furthermore, since the Navy is not in the happy position of being able to use wage levels to compensate for any lack of either recruitment or retention, it may become imperative to invest in increased automation if future ships are to be manned at all. Similarly there is a need to shift a greater balance of training into ships, if the overall naval manpower resource is to be deployed where it is most needed. But such training requires sophisticated equipment, and in Ministry of Defence terms that means setting a policy, for what such training is required to do, that is not technically divorced from what is practicable or affordable. The manpower scene in MOD therefore continues to offer engineer officers the substantial executive tasks of recruiting and appointing, and also in the training policy field there would seem to be a growing need for a technical appreciation of the possibilities; however, neither function is a particularly new field for engineer officers and therefore 'personnel' is not treated further here, or with the emphasis which a more balanced article would deserve.

Policy and Programmes

Defence policy does not change much, in the round, and therefore it is hardly surprising that the strategy for its implementation should be generally evolutionary. But that does not mean that it does not require to be reviewed every few years, since it fairly naturally provides the framework within which other business is conducted, and since changes may be required as a response to external events. These policy reviews will be conducted by officers from all three services, working with appropriate civil servants. Anyone seeking to contribute to a review must first have a good professional knowledge and understanding of existing policies and strategy. Staff Course training can help a lot, reading the last few years' Statements on the Defence Estimates is basic homework, but above all any service officer will need to have a wide interest in defence to underpin his own area of professional military competence. These capabilities are, of course, well within the compass of most engineer officers, and policy formulation will appeal to many with a facility for the more abstract elements of defence business. Nor does the detail of policy move slowly: reactions to arms control negotiations are just one example of the sort of subject which can require daily generation of new policy proposals.

The natural expression of defence policy is the defence programme, which maps out, over the next ten years in some detail and further in principle, the financial resources which are planned to be expended on the various

components of defence capability. Broad divisions between the three services, and central functions such as research, are each managed by appropriate staff from the specialist area working with civil servants whose responsibility lies in the area of the overall defence budget. In the naval case this amounts to some 15 officers working in the Directorate of Naval Programmes and Plans, and a number of engineer officers will be working in this very rewarding and demanding area. Their work will be geared to the annual review of budgetary allocation known as the Long Term Costings, and this process constitutes the bedrock of defence management. It is important to underline that the Long Term Costings depend on a continuity of purpose being expressed by the Defence Staff but at the same time constitute the battlefield in which naval resources are fought for and won; or otherwise.

Operations

The executive implementation of defence strategy and plans is, of course, a matter for Commanders-in-Chief. But unsurprisingly the co-ordination of government direction of Cs-in-C is a responsibility of the Ministry of Defence. Perhaps 'Rules of Engagement' exemplify the need for what may seem like back seat driving, in that they obviously require advice from Government Law Officers. Equally it is necessary to work up a series of plans against a number of reasonably foreseeable requirements; each plan must be supported by all those who are required to contribute to its implementation and there may be substantial resource implications associated with obtaining agreement to the period of notice for that implementation. At the other end of the scale, naval forces must be assigned to respond to day to day routine needs, such as those arising from environmental factors, and this task involves a detailed appreciation of the resource and opportunity cost implications of undertaking such commitments. Somewhere in the middle comes the formal assessment of the capability to fulfil today's responsibilities, and there are many who take the view that too little effort is devoted to this important if unglamorous discipline. Whether that is so or not, the evaluation of the achieved performance of any major weapon system requires a good understanding of the factors which influence performance, an analytical approach to the measurement accuracies achieved and required, and above all a detached view of the significance of the results. All these operational areas offer opportunities for the naval engineer, but perhaps none more so than the issue of performance assessment.

Intelligence

The Defence Intelligence staff is a relatively free-standing organization within the Ministry of Defence, but is one upon which all other activities depend. Obviously true in an operational sense, it is no less important when considering where to place the emphasis in long-term plans, or what performance should be specified for a new weapon system. The work is demanding intellectually and should appeal, perhaps particularly on the technical intelligence side, to anyone with a bent for detached analysis and comment, and who is content to be part of an organization which does not itself lead on the allocation or expenditure of a major proportion of the defence budget. Not that intelligence is a quiet life, since many other sectors will be demanding unobtainable threat predictions as a pre-requisite for their decisions, and it is a traditional area for the very worthwhile employment of naval engineer officers.

Operational Requirements

The defence plans and programme, taken with the threat prediction and an accurate assessment of today's systems' performance, will indicate the ideal specification, numbers and in-service date for new equipment: new ships, aircraft, submarines and command and control infrastructure, are all considered against such an operational requirement. It sounds simple enough, but it would be meaningless unless the emergent specification was related to technical practicability, and to the affordability of the most efficient procurement route. Once reconciled against these considerations of reality and agreed with all the staffs, from those responsible for scrutinizing foreign currency expenditure to those whose interests lie in the building services to house a new trainer, the operational requirement becomes a Staff Requirement(Sea)—if it is destined for naval service alone. Any need for dual service application, such as sonobuoys, or tri-service application, such as satellite communication equipments, or even international application such as the NATO Frigate, will simply add spice and challenge to the task of reconciling the irreconcilable. But it is important to emphasize that this operational requirements work is not freestanding, and within the same area of the Defence Staff it is supported by a tri-service Concepts division and specialist scientific centres. Their aims are to keep long-term equipment programmes in line with defence policy and plans, with technical developments, and to ensure that adequate attention is given to the supporting operational analysis.

Within Whitehall some 60 naval officers work within Concepts, Science(Sea) and Operational Requirements(Sea) staffs, and about a quarter of them are engineers.

Procurement and Support

The extensive procurement and support functions carried on in MOD departments at Bath, Portland and Portsmouth will be well known to most readers of this journal, and it would be inappropriate to attempt a necessarily superficial analysis. Suffice it to say that appointments in these three locations for engineer officers are often as an alternative to civilian occupancy, and that this consideration does not apply to the areas of work described in the preceding paragraphs, which in turn represents a practical appointing distinction if nothing else. Three points do, however, seem to merit special comment. First, naval aviation is an area of huge technical challenge, with a discipline and coherence from which those outside the Fleet Air arm could learn much, and whose procurement is conducted under Controller Aircraft in London, with a two-star naval Director General in charge of support who has offices in London and Yeovilton. These are, and seem likely to remain, excellent appointing opportunities for Air Engineering specialists. Second, the non-nuclear defence research establishments, soon to become the Defence Research Agency, provide the deep technical competence which underwrites all Ministry of Defence activities. Although the Admiralty Research Establishment dominates in the maritime area, there are also naval officers at Sevenoaks, Malvern, Farnborough and Porton Down, and the majority are engineers who fulfil a vital customer-oriented function in the provision of defence research and technical expertise. Finally, the increased emphasis on reliability, which has received substantial recent public comment, seems set to continue. There is little doubt that this will find expression in a better understanding of through-life costs, a more scientific basis for stores ranging and scaling, and a need for realistic specifications. All will call for engineers in Logistic Planning and Engineering Support functions.

Skills

It is a personal view that the appointment of a naval officer to the Ministry of Defence, whether from the engineering or any other specialization, should be on the basis of his military skills and experience. If he is a good administrator, so much the better and, particularly for the Procurement Executive appointments, it may be necessary to develop specialist skills to compete successfully with civilian candidates. But important to any of the appointments sketched in the preceding text will be an analytical approach, an ability to communicate well, an instinct for judging when compromise is appropriate, and a willingness to work with others. A conviction that the end is right will be a useful support to one's sense of determination, but the effective Ministry of Defence officer must often concentrate his efforts on gaining detailed approval for the means to achieve the end. Time and again, lack of attention to this aspect thwarts the implementation of worthy study recommendations. Overall, these demands do not seem very different to those required of anyone who seeks to run a ship's engineering department and, on that basis, engineering specialists should be strong candidates for Ministry of Defence appointments.

Opportunities

As the other, and important, side of the bargain, it is my view that the Ministry of Defence, mostly in Whitehall but in lesser numbers at many other locations, does offer rewarding opportunities for engineer officers. In discussing these before a potential first Ministry of Defence appointment, nobody should be discouraged by a lack of knowledge of Ministry procedures; these are analogous to ships standing orders, albeit bigger, and anyone who has mastered one can handle the other. The notoriously poor secretarial support afforded to Staff Officers, which is in any case counterbalanced by the helpfulness of those civilian staff who are available, is being increasingly mitigated by desk-top computers, printers and word processors: nearly everyone has one, and if you are the last in line, yours will be the latest model when it does arrive. On a personal basis, offices are being redecorated and refurnished, and only in the Ministry of Defence will you find a substantial number of convivial contemporaries as you get older or more senior—or both. The work offers opportunities for travel, industrial visits and tri-service liaison that most engineers will find very stimulating. If you have got this far and do not recognize my description of work in the Ministry of Defence I can only assume that you are more comfortable with an abundance of acronyms; hopefully your feelings may be closer to Queen Mary's view of life in the country after a short description of food production and a visit to a farm:

'So *that's* what hay looks like.'
