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Report by the Comptroller and Auditor General

Ministry of Defence: Dockyard Efficiency

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Ministry of Defence
Control of Dockyard Operations and Manpower

Summary and conclusions

1. As a result of decisions taken during the 1981 Defence Review, only the Devonport and Rosyth Dockyards will remain open at the end of 1984. Most Dockyard work is now concerned with the refit, repair and alteration of warships and their equipment, plus some work on other MOD ships and for other defence establishments.

2. Even on this reduced scale of operations, the Dockyards consume significant human and material resources; estimated production costs in 1983–84 amount to nearly £500 million. Efficient Dockyard management and use of resources are therefore important objectives. But these have to be balanced against the need to meet the Navy's operational requirements; and in practice this poses major problems, given special factors inherent in the nature of warship refit and repair and difficulties in assessing productivity and performance. Important questions also arise on clarifying responsibilities and accountability and deciding on the most appropriate organisational and financial framework for Dockyard operations.

3. These problems are not new, nor are they considered for the first time in this report. Since 1971 a number of Ministry of Defence and independent reports have highlighted many of the major issues and difficulties involved. But these have produced conflicting recommendations, and progress on resolving the basic questions has been limited.

4. This raises the question of whether more urgent and decisive action is needed. If so, it could be at two levels; first in terms of tackling conclusively the operational, management and financial relationships which are fundamental to the environment in which Dockyard work is carried out; second in implementing effectively at Dockyard level the necessary incentives to efficiency and the improved planning, control and management information systems already identified.

5. This report accordingly reviews the wider issues involved and deals with the results of a more detailed study by my officers of procedures at Devonport and Rosyth for planning and controlling refit work and the use of Dockyard labour. Both aspects are considered in more detail in Part 1 and Part 2 attached; and the main findings and conclusions are summarised below. The study did not address certain other aspects of overall Dockyard operations such as controls over materials and overheads and the impact of Fleet maintenance policy.
Responsibilities and accountability

6. The Dockyards exist for the maintenance of the Fleet and are part of the Navy Department under the control of the Admiralty Board. Within the Navy Department it is the responsibility of the Naval Staff to determine operational requirements; the extent, timing and priority of programmed refit and repair work; and the urgency of any unscheduled, short term tasks. The Dockyards for their part are responsible for carrying out Naval Staff requirements; for the economical and efficient management of the ship refit and support programme; and for the cost-effective use of their manpower, capital facilities and other material resources. In practice, Dockyard operations have to seek an appropriate balance between meeting Naval Staff requirements and efficiently discharging their own financial responsibilities.

7. Though their decisions on operational requirements and priorities are critical factors in the efficient planning and execution of Dockyard work, the Naval Staff are not accountable for Dockyard costs and performance. Overall budget limitations represent a broad constraint on expenditure; and MOD's view is that in practice financial control also results from scrutiny of the cost-effectiveness of individual refits before commencement of work and from the need to maximise use of ships by reducing the time spent in Dockyards. However those specifying requirements do not have the direct financial incentive of paying for the work these demand from the Dockyards. There appears to be inadequate consideration of the impact of urgent requests for unscheduled work on the economic use of Dockyard facilities and labour, and the attendant disruption and damaging effects on the costs of programmed work. Planning procedures provide for consultation between the Naval Staff and the Dockyards on the refit programme and on any changes; but these do not always appear to provide sufficient information for considered and informed decisions on the costs and cost-effectiveness of individual tasks taken before work is approved (paragraphs 1.8, 1.22 and 2.7 (i)-(iii) attached).

8. Some unprogrammed work is inevitable and often arises at short notice. However, it represents as much as 10 per cent of the Dockyard workload and in aggregate has a major disruptive effect on the timing and costs of the agreed work programme. The full costs and penalties of unprogrammed work are not calculated either on individual jobs or on the programme as a whole, before work is carried out or subsequently. On a broad assessment in 1978 the real costs of such disruption in a particular case were stated to be as high as 2½ times the cost charged to the unprogrammed job (paragraph 1.23 attached). But such costs will vary significantly; and MOD have pointed to the difficulties in calculating them and in turn assessing the cost penalties involved in having ships idle.

Nature of Dockyard work

9. The specialised nature of warship refit and repairs is a complicating factor in securing efficient Dockyard operation and close control of costs. In many cases — particularly in major refits — the full extent of the work involved cannot be determined until after work has started. The consequent difficulties in planning work and allocating manpower and other resources are further complicated by the volume and mix of work. At one time a Dockyard may have 30 ships undertaking programmed refit and repair and another 10 ships seeking unprogrammed support of different kinds. Some 40 trades and skills may be involved, posing major problems of scheduling, communication and control.

10. Resolving such difficulties is the responsibility of Dockyard Managing Directors. But manpower limits, imbalance between trades, low natural wastage, and the lack of flexibility in pay rates are major inhibiting factors to which solutions are still awaited (paragraph 1.18 attached). Overtime is one — potentially
expensive — measure adopted. This arises in all ship repair industries, but there is a lack of a consistent policy on overtime working as between the different Dockyards and some evidence that it is seen as an established part of Dockyard operations and not as a measure to be adopted only where strictly necessary and under close control (paragraphs 24 below and 2.17 to 2.21 attached).

Assessment of performance

11. There are significant difficulties in establishing an appropriate basis for assessing output and performance for Dockyard refit work. Currently there is a dearth of relevant and reliable performance measures and indicators. On the basis of the broad yardsticks previously used of percentage overruns on refit times and costs, there are signs that overall performance has improved since it was last reviewed by the Public Accounts Committee in Session 1977–78; nevertheless it appears to be accepted that more needs to be done to develop suitable analyses of efficiency and productivity. There are signs that more of the sort of information needed for such developments may become progressively available from other improvements in Dockyard control systems (paragraphs 1.25 and 1.26 attached).

12. The lack of outside competition for warship refits is a further difficulty in assessing Dockyard performance. But the absence of any direct comparison and stimulus to efficiency as between the Dockyards and commercial ship repairers may be remedied as a result of current discussions with British Shipbuilders and other Defence contractors about placing selected warship refits with commercial yards. There may also be lessons to be learned by comparing Dockyard planning and control procedures with practices and techniques in the private sector (paragraphs 1.27 to 1.28 attached).

Trading Fund and other options

13. There were five major reports on the organisation and operation of the Dockyards between 1971 and 1982. Despite these successive reports and their various recommendations, there appears to have been little real progress on ways of resolving the fundamental questions referred to in previous paragraphs. As one of the recent reports commented:

“No-one who has waded in sequence through the various reports on Dockyard organisation produced [since 1971] can fail to be struck by the disparity between effort applied and results achieved.”

14. A recurring issue has been whether the introduction of a Dockyard Trading Fund, or some similar arrangement, would bring commercial disciplines; make the full cost of resources a significant factor in decision-making; improve control and accountability; introduce greater cost consciousness on the part of both the Naval Staff as customer and the Dockyard as supplier; encourage better management; and provide incentives and stimulus to improved, cost-effective performance. MOD have consistently questioned the weight of these arguments in the particular circumstances and pressures of Dockyard operations, and have claimed that a Trading Fund would require increased administrative costs which would not be offset by increased efficiency (paragraphs 1.31 to 1.33 attached).

15. Further MOD examinations in 1982 have proposed a number of ways of enhancing Naval Staff and Dockyard cooperation and balancing operational requirements against their financial consequences; improving financial control and accountability; reorganising responsibilities for Dockyard management and improving management systems and efficiency; and introducing outside competition. These recommendations and related matters are under current consideration and for the most part no timescale for agreeing and implementing any changes has yet been decided upon (paragraph 1.35 attached). Negotiations may take some time to complete.
**Programme and project management**

16. Dockyard procedures for planning and control of projects and use of labour were critically reviewed by the Public Accounts Committee in Session 1977–78. Some important improvements have since been made; but a number of other measures introduced have not achieved their objectives and have been wholly or largely discontinued.

17. There are extensive programme and project management procedures at both Devonport and Rosyth; and the organisation, lines of responsibility and control systems appear in principle adequate to secure effective control on a day to day basis. In practice, however, examination revealed a number of weaknesses at both yards. Existing computer systems could not cope quickly enough with programme changes; information systems were inadequate; there were difficulties and delay in producing work schedules and in providing sufficient information and instructions on forward workload and priorities; there were weaknesses in estimating and monitoring progress on jobs and in controlling contingencies (paragraphs 2.7–2.8 attached).

18. Whilst it was difficult to quantify the direct effect of such problems, the general position appeared to be that project management were concentrating more on physical progress and the essential task of achieving target dates than on the cost of jobs; and that line management faced difficulties in planning and controlling the efficient use of the labour resources at their disposal.

**Productivity schemes**

19. A succession of Dockyard productivity and incentive schemes since 1970—71 have not proved satisfactory in securing the savings and improved performance intended. A new Dockyard Wages Scheme introduced at Chatham on a trial basis in 1975 was expected to be extended subsequently to all yards; but because this too failed to achieve the planned levels of performance over a trial period of several years, it was not extended and was itself replaced in 1981 by the current Dockyard Efficiency Scheme. The objectives are once again to produce more effective use of labour and a greater commitment from the workforce (paragraphs 2.9–2.12 attached).

20. Stage 1 of the latest scheme has also encountered difficulties and delay, stemming partly from the 1981 Defence Review and the Falklands conflict. The planned six month start-up period for introducing full work measurement and achieving a 10 per cent increase in performance ran on for nearly 2½ years before the higher, self-financing Stage 2 targets were introduced in Devonport in August 1983 and in Rosyth in December 1983 (paragraphs 2.13–2.14 attached).

21. As a result of these delays, there is as yet no clear evidence as to the cost-effectiveness of the new Dockyard Efficiency Scheme. But MOD consider the experience to date as encouraging. Further developments in Dockyard performance indicators, assisted by improved budgetary control systems and computerised management accounting and information systems are under consideration.

**Waiting time and overtime**

22. In general terms, the levels of both waiting time and overtime reflected the difficulties caused by unprogrammed work and short term changes, and the problems and constraints in the efficient use of Dockyard labour. Across the programme as a whole recorded waiting time was less than 10 per cent of the total hours available; but in some production areas it could reach a weekly level of 40 per cent and in others it exceeded 20 per cent for the whole of 1982–83. In some weeks some work centres recorded levels of 20 per cent for both waiting time and overtime (paragraphs 2.15–2.16 attached).
23. Planning is based on the assumption that there will be a regular level of overtime in many areas. MOD informed me that a significant level of regular overtime is necessary and is normal in the ship repair industry. Overtime provides some operational benefits to management and encourages more use of capital facilities; but it also has disadvantages, including the heavy additional direct costs involved and falling productivity. Arriving at the right level of overtime working thus requires careful judgement and close monitoring.

24. My staff's examination indicated that a major determining factor in authorising overtime work appeared to be the availability of funds in the Dockyard budget. There was scope for improvement in the procedures for controlling the extent and costs of overtime; for bringing the financial consequences of weekend overtime work sufficiently to notice; and for achieving consistency in overtime policy and the right balance between manpower and overtime levels (paragraphs 2.17 to 2.21 attached).
Ministry of Defence: Control of Dockyard Operations and Manpower

Report

Part 1: Factors Affecting Economy, Efficiency and Effectiveness of Dockyard Operations

Responsibilities and Accountability

1.1 The primary function of the Royal Dockyards is to support the Fleet by carrying out refit, repair and alteration of warships and equipment. In general they undertake those tasks which are beyond the resources of ships' crews and the Navy's own fleet maintenance groups.

1.2 Within the collective responsibility of the Admiralty Board for establishing Navy requirements and providing the means to meet them, the Dockyards are separately accountable for their work. They are required to meet Fleet Operational Requirements with regard to quality standards and refit dates; to make the most cost effective use of their manpower and material resources; and to ensure the efficient management of the overall ship refit and repair programme. In practice, Dockyard operations have to seek an appropriate balance between meeting Naval Staff requirements and efficiently discharging their own financial responsibilities.

The Navy customer

1.3 Demands on the Dockyards are initiated by various parts of MOD and by the Commander-in-Chief Fleet. Planning procedures involve Naval Staff and Dockyard management, together with the procurement and stores organisations, in determining the overall ship refit and repair programme and in scheduling and negotiating man-week budgets for individual jobs. These arrangements are a critical factor in the efficient execution of Dockyard work, and are intended to secure the minimum change and disruption in the agreed programme. But urgent and unscheduled work may arise which the Dockyard has to undertake, often without adequate information to assess the disruption and additional costs incurred on programmed work.

The Dockyard supplier

1.4 The Chief of Fleet Support is the Admiralty Board member with responsibility for work undertaken in the Royal Dockyards. He is accountable for the efficiency with which Dockyard programmes are executed and is the Accounting Officer for the Dockyard Services Vote and the Dockyard Operating Accounts.

1.5 The Chief Executive Dockyards (CED) is accountable to the Chief of Fleet Support for control of the Dockyard Vote; and for the progress and execution of all work within the financial, manpower, cost and time limits approved by the Admiralty Board. The authority and powers of CED headquarters are not fully or formally identified. It has, in the past, exercised central control of many aspects of Dockyard operations; and, broadly speaking, it is currently responsible for policy, planning and resource matters. Its role and size in the smaller Dockyards organisation of the future have recently been reviewed.

1.6 The trend in recent years has been to move away from central control and to increase the delegated authority of the individual Dockyard Managing Directors. MDs are responsible for monitoring and controlling their own work programme and expenditure within their allocated budgets; for agreeing amendments within the constraints of the overall approved programme of work for the current year; and for taking financial and administrative decisions at Dockyard level. In some key areas such as the level of overtime working and development of ADP systems, where there appeared at the time of the review to be no clear CED headquarters policies, MDs have hitherto been left to develop and implement their own policies. This can give rise to differences between one Dockyard and another; for example the policy on overtime at Rosyth is to restrict it to 5 per cent of normal hours, but Devonport are prepared to allow overtime of up to 15 per cent of normal hours (see also paragraph 2.21). The Ministry have since informed me that an ADP policy is now being developed at headquarters.

Customer/supplier relationship

1.7 Though there is a customer and supplier relationship between the Naval Staff and the Dockyards, this is of a special kind. First, the need fully to utilise the capacity of the Dockyards and the absence of commercial yards with experience in warship refit and repair means that the Naval Staff has effectively only one supplier and the Dockyard one customer for such work. Second, the Naval Staff as customer does not pay the Dockyard for the services it receives. The normal restraints and safeguards of a customer/supplier relationship do not therefore apply.

1.8 MOD informed me that the main refitting and repair programme is subject to a number of controls; the overall limitations of the Naval Budget represent a broad constraint on expenditure; the content and cost of individual refits are scrutinised in detail in advance to ensure their cost-effectiveness; and there is the incentive for the Naval Staff to limit the turn-round time to maximise the usage and operational availability of warships. However, because the Naval Staff is not charged for Dockyard work, those who specify the
requirements do not have a direct financial incentive to mini-
mimise the costs of meeting them. Nor does the present
system bring home sharply to the Naval Staff the effects of
unscheduled work on the cost of programmed work and on
the overall use of Dockyard resources. MOD informed me
that much of this unprogrammed work is of urgent operati-
onal importance; but there appears to be no clear identifi-
cation of the factors involved in deciding between meeting
operational requirements and the effects on costs and the
efficient use of Dockyard resources. Priority is normally
given to meeting specified operational requirements, tim-
ings and priorities, even though this may lead to uneconomic
use of Dockyard resources. The power of final decision rests
effectively with the Naval Staff, with major decisions being
taken by the Admiralty Board. The fact that the Naval Staff
are supplied with statements of the assessed cost of particu-
lar jobs in progress does not appear to be a sufficient incenti-
tive to economy; nor is it a substitute for considered and
informed decisions on the cost-effectiveness of individual
tasks taken before work is approved.

Nature of Dockyard work

1.9 The programming difficulties referred to above are
complicated by problems which are inherent in the nature of
Dockyard work. Modern warships and submarines incorpo-
rate the latest technology and complex weapon systems.
Special skills, expertise and facilities are required for their
refit and repair. Such work comprises more than 80 per cent
of the Dockyard workload. The programmed work current-
ly undertaken includes major refits of surface ships involv-
ing extensive modernisation (now being phased out and re-
placed by restorative refits as a result of the 1981 Defence
Review); major refits of nuclear submarines; normal refits
undertaken at specified intervals during a ship's life; routine
dockings; rectification of defects; and other improvements
by alterations and additions.

1.10 In many cases the full extent of work involved —
particularly in major refits — cannot be determined until
work has started. There are standard budgets for refits for
different classes of ship and areas of work, but in practice
estimates of the work involved have to be progressively
adjusted to take account of general and more detailed
surveys of a ship's condition as it is opened up, and of defect
lists submitted by the ship's staff. Such uncertainty poses
significant difficulties in planning work, allocating man-
power and other resources and controlling costs.

1.11 The volume and mix of work are further complicating
factors. At any one time a Dockyard may have 30 ships
undertaking programmed work and another 10 seeking
unprogrammed support. Some 40 trades and supporting
teams may be involved. Hundreds of communication chan-
nels are created to control many projects of different sizes
with various labour levels and trade mixes.

1.12 Management of the Dockyard programme in recent
years has also had to take account of changes resulting from
Defence Reviews, in particular the 1981 Review which an-
nounced changes in Navy policy and consequent reduction
in the size of the Dockyard organisation. Emergency work
during and after the Falklands crisis, and industrial and
non-industrial pay disputes, have also caused difficulties and
disruption.

1.13 No warship refits are currently undertaken outside
the Royal Dockyards, and there are no direct analogues with
commercial ship repair work. Comparisons of performance
are therefore not straightforward, nor are practices and con-
trull techniques in commercial yards necessarily relevant to
Dockyard operations. This is not to say, however, that there
are no lessons to be learned by comparing Dockyard plann-
ing and control procedures with project control and man-
agement techniques in other jobbing environments in the
private sector. Further MOD study appears desirable in this
area (see also paragraphs 1.27 to 1.28 below).

Planning

1.14 The aim of MOD's long term planning is to provide
the Dockyards with a balanced programme of work which
will utilise their capacity fully for ten years ahead. The
approved long term plans are translated into five year costing
programmes which may be subject to further adjustment to
reflect the imposition of annual financial and manpower
limits.

1.15 The refit programme is largely dictated by the origin-
al new construction programme, together with decisions on
updating, the introduction of new weapons, refit inter-
vals, etc. Labour estimates and timescale for each refit are
converted into blocks of work for inclusion in the pro-
gramme. Work is allocated to individual Yards, taking
account of their specialised facilities and the Navy's re-
quirement for repair support to be carried out as far as pos-
sible at a vessel's base port.

Workload and capacity

1.16 Decisions in the 1981 Defence Review materially
affected long term planning by taking ships out of service
earlier, putting an end to major destroyer and frigate moder-
nisation and changing the upkeep cycles. The closure of the
Dockyards at Chatham (31.3.84) and Gibraltar (31.12.84),
and the change in the role of the Portsmouth Dockyard from
30.9.84, is expected to reduce current manpower of some
27,000 staff to about 25,700 by end 1983–84. Further man-
power reductions are possible. Annual production costs of
some £600 million in 1982–83 will fall to approximately £500
million over this same period.

1.17 Current Dockyard programmes still contain some
major refits which were in hand or planned before the 1981
Review and therefore include a continuing high level of
modernisation work. Alterations and additions accounted
for some 30 per cent on average of work on refits completed
in 1982–83. The advent of more advanced warship designs,
less frequent repair, maintenance and update and continu-
ing financial constraints will make it essential to achieve the
right balance of requirements and resources in the future.

Manpower allocation

1.18 Annual manpower limits for each Yard are less than
the resources needed to meet the accepted workload. Within
those limits, Managing Directors are nevertheless expected
to employ the appropriate numbers of different trades
needed to meet the approved programme. The balance of
trades required varies greatly depending upon the types of
ships, but the imposition of manpower limits together with
low natural wastage limits the scope for ready adjustment of
labour resources. There are local shortages in some trades
but the Civil Service system of fixed pay rates in all industrial establishments does not allow for local variations to overcome such difficulties. There are also constraints on movement of workers between trades or production centres.

1.19 Such constraints on numbers and on achieving the right balance of skills mean that the Managing Director has to rely on meeting demands by regular overtime working, time and cost, and productive efficiency have not yet been satisfactorily analysed and resolved.

**Unprogrammed work**

1.20 Dockyard Resource Allocation Control (DRAC) procedures were developed to bring the Navy into the planning of Dockyard work and involve them in agreeing the overall programme and labour budgets for each ship refit with CED headquarters and Dockyard management. Subsequently, however, the programme may be significantly altered at short notice during the year to accommodate unscheduled operational demands. A proportion of Dockyard capacity is earmarked for unprogrammed work but it is, by its nature, unpredictable as to its timing, extent and impact on other work.

1.21 The DRAC procedures provide for the acceptance of some unprogrammed defect work by arrangement between local Naval staff and Dockyard management. However, if such work is considered likely to delay another project in the programme by more than two weeks, or to increase the labour budget by more than 10 per cent, approval is sought from Naval headquarters staff, via CED.

1.22 Penalties involved in undertaking unscheduled jobs at short notice are normally expressed solely in terms of delays in completion of other work. They are not usually costed nor are the full financial implications considered and agreed before the work is approved and started. In practice delays are normally borne on major projects with a long timescale, where their impact — though no less real — may be a less immediate source of concern than on shorter term work; the implications are therefore not fully brought out.

1.23 Unprogrammed work represents as much as 10 per cent of the Dockyard workload and in aggregate has a considerable disruptive effect on the agreed programme. The study was told that no assessment could be made of the full extra costs arising from additional overtime or the “knock-on” effect of the disruption of work schedules caused by taking labour from programmed jobs. This can result in increased waiting time for other trades on a number of projects. The Naval Staff are not accountable for nor made fully aware of the consequential real costs of overtime or waiting time, the widespread repercussions on other jobs, and the effects on efficient overall use of labour. These real costs of disruption are difficult to assess and will tend to vary significantly according to the nature of the urgent repair and its effect on the programme in hand; but the Public Accounts Committee were told in 1978, in relation to a particular example, that the distorting factor of urgent unprogrammed work could be as high as 2½; in other words the real cost was 2½ times the cost charged to the unprogrammed job.

**Assessment of performance**

1.24 The scale and complexity of Dockyard work, and the operational considerations involved, mean that there are major difficulties in establishing relevant and reliable measures of Dockyard performance. Despite repeated MOD consideration, there has been only very limited progress in identifying and introducing appropriate output and performance measures. The necessary relationships between quality of output, estimates and outturn in terms of time and cost, and productive efficiency have not yet been satisfactorily analysed and resolved.

1.25 One yardstick previously used in assessing overall performance was the proportion of refits completed on time and within estimated costs. On this basis, performance has in fact improved since the position was last reviewed in 1976. Statistics for refits completed during 1982 show that times taken exceeded the project estimates by an average of 14 per cent for normal refits and 15 per cent for major refits, compared with 56 per cent and 28 per cent respectively in 1976. Similarly the 1982 cost overruns, after allowing for inflation, also showed an improvement. After taking into account the contingency allowance introduced into Dockyard estimates since 1978 to cater for disruption, the overruns in 1982 for normal refits were 3 per cent on time and costs and for major refits were 6 per cent on time and 8 per cent on costs.

1.26 Such figures are only broad indicators because they do not reflect changes in refit work packages. The position remains that there is no single measure of Dockyard performance, and it would be unwise to draw firm conclusion from such figures as are available on individual aspects of their operations. However, the introduction of procedures for a new efficiency scheme (paragraph 2.12), enabling productive output to be measured in standard hours, may now provide the means to develop suitable performance indicators. A budgetary control system being developed will help by relating work output to budget costs. There will also need to be changes in Dockyard management accounting systems and development of ADP systems.

1.27 A different kind of difficulty in assessing Dockyard performance arises from the absence of competition and comparison with other suppliers. No warship refits are currently undertaken outside the Dockyards and there are no direct comparisons with commercial ship repair work. However, discussions are proceeding with British Shipbuilders and other Defence contractors with the aim of placing some warship refitting work to contract so as to introduce the stimulus of competition whilst recognising inherent difficulties in estimating and comparing costs. A decision on this is expected shortly.

1.28 The nature of warship refit work also means that comparisons of Dockyard performance with results elsewhere are not straightforward, nor are practices and control techniques in commercial yards necessarily relevant to Dockyard operations and circumstances. Some outside practices are procedures may not provide a desirable example to follow. But the development referred to in paragraph 1.27 above may be a first step in enabling lessons to be learned by comparing Dockyards planning and control procedures with those used in other relevant environments in the private sector.
previous reports

1.29 There were five major reports on the organisation and operation of the Dockyards between 1971 and 1982. These reports considered, and suggested a variety of solutions to, the basic problems of striking an appropriate balance between Naval Staff operational requirements and Dockyard efficiency and cost-effectiveness; providing incentives to efficiency in the single customer/single supplier relationship between the Naval Staff and the Dockyards; encouraging outside comparisons; and measuring output and productivity in relation to cost.

1.30 Despite these successive reports and recommendations, there has so far been little real progress towards resolving the fundamental Dockyard questions. As one of the recent reports commented:

"No-one who has waded in sequence through the various reports on Dockyard organisation produced [since 1971] can fail to be stuck by the disparity between effort applied and results achieved."

Trading Fund and other options

1.31 A recurring focus of attention throughout the reports has been the possible introduction of a Dockyard Trading Fund. The basic arguments for a Trading Fund are that it would bring commercial disciplines; help to clarify responsibilities; identify the full costs of resources used; introduce greater cost consciousness on the part of both the Naval Staff customer and the Dockyard supplier; improve control and accountability; encourage better management; and provide greater incentives and stimulus for improvement.

1.32 A further consideration in the successful introduction of a Trading Fund might be the extent to which Dockyard operations and efficiency might benefit from a more arms-length relationship with MOD, perhaps similar to that which has operated hitherto for the Royal Ordnance Factories. There are parallels also in the operations of other public sector Trading Funds, where greater separation of customer/supplier functions has been successfully accomplished.

1.33 MOD have, however, consistently questioned the effectiveness of a Trading Fund in the particular circumstances and pressures of Dockyard operations and have claimed that it would require increased administrative costs which would not be offset by increased efficiency. Discussions in this area are continuing between MOD and the Treasury.

1.34 The introduction of a full-blooded Dockyard Trading Fund might not be the only way to make a significant impact on the problems which have been a consistent feature of Dockyard organisation and operation for many years. Nevertheless it is clear from MOD's own recent reports and follow-up studies that those basic difficulties remain to be resolved. MOD studies in 1982–83 have proposed, inter alia:

(i) the establishment of a "Navy Customer Agency" to enhance cooperation between the Naval Staff and the Dockyards and provide the framework for balancing requirements against the resources required to meet them and the financial and programme consequences.

(ii) Improved financial control and greater accountability as between the Dockyard and the Naval Staff for the costs of individual projects.

(iii) Organisational changes to produce a streamlined headquarters organisation of less than half its present size, with greater definition of responsibilities and the delegation of more powers to Dockyard Managing Directors. Enhanced responsibilities for planning and project managers within the Yards would be combined with improved management systems and a general drive to increase efficiency.

An earlier study had proposed the introduction of greater competition from commercial yards.

1.35 MOD have informed me that progress on these and related matters is at various stages. The form of the improved financial planning and control arrangements will be dependent upon the outcome of discussions with Treasury. It is not possible, therefore, to set any firm timescale for introducing changes to the existing system, nor to make firm decisions about the size, shape and precise role of the Customer Agency, since these will be dictated to a large extent by the outcome of the financial deliberations. The streamlining of the headquarters organisation and the greater delegation of powers to Dockyard Managing Directors are well in hand and are planned to be substantially complete by October 1984. As stated at paragraph 1.27, the report on the scope for increasing competition by placing some warship refitting work to contract is under consideration.
Part 2: Planning, Control and Monitoring of Dockyard Programme and Projects

2.1 Dockyard procedures for planning and control of projects and use of labour were last considered by the Public Accounts Committee in Session 1977–78. The Committee noted continued cost and time overruns on ship refits and recommended that MOD should energetically pursue further improvements in their estimating, planning and control procedures. Some improvements such as the Dockyard Resource Allocation Control (URAC) procedures (paragraph 1.20 above), and better project estimating arrangements, have since been sustained; others, however, such as job order costing, local Dockyard operating accounts and the Dockyard Wages Scheme (paragraphs 2.10–2.12 below) have been wholly or partly discontinued. The results of my staff's latest examination of Dockyard procedures at Devonport and Rosyth in these and related areas are dealt with further below.

Financial control

2.2 Annual Estimates provision for the Dockyard Vote has regard to general financial and manpower limits as well as to the requirements of the Dockyards' five year costed programme. For 1982–83 the initial bid for wages provision of £150 million was eventually reduced to £138 million. At the time there was much uncertainty as to the effect of the 1981 Defence Review on the Dockyard workload and some adjustments were subsequently made to the programme.

2.3 After the Estimate is approved, the programme is reviewed and the financial provision allocated between Yards. Within the approved Estimate, Dockyard management set limits for basic pay, overtime, shift working and allowance payments for each section of the Yard. Monitoring of expenditure is undertaken by both the Dockyards and CED headquarters. Under current proposals for introduction of a new budgetary control system, individual managers will also be responsible for monitoring their own expenditure against a financial budget related to planned output.

Programme and project management

2.4 Individual labour budgets for refit or repair projects are based on standards for different classes of ship and areas of work, adjusted to reflect the detailed survey of the vessel, ship's staff defect lists, and approved alterations and additions. The initial budget is normally not finalised until the start date for normal refits and later for other work; subsequently the forecast of outturn is progressively adjusted as the extent of the necessary work is revealed and approved.

2.5 Project staff produce work schedules for completion of the refit, including timetables and target dates for completion of work by different trades. These in turn provide the basis for the project manager's monitoring of progress and the targets used by line management in production areas in planning the flow of work. Project managers decide what needs to be done and when. Line managers, who control workers in particular crafts or trades working on various projects, decide who should do the work and how it should be done. At Rosyth project and line management have recently been combined. CED headquarters also monitor progress of refits on the basis of information provided by the Yards.

2.6 Additional control is provided by weekly labour allocation charts showing for each production area the estimated time to be spent on each project totalled to provide an assessment of the expected workload for comparison with the labour force available. This information together with data from the project groups is used to assist production planners to balance workload and labour resources or enable line management to take appropriate action to correct imbalances.

Weaknesses in control

2.7 My staff's examination revealed a number of weaknesses in the operation of these procedures at both Rosyth and Devonport:

(i) The existing computer systems could not cope quickly enough with the many changes to the approved programme. Information systems generally were inadequate for management purposes. A review of projects in hand at both Yards indicated difficulties in producing and updating work schedules; and in the majority of cases examined, the schedules had been produced too late to be used effectively. A number of computer systems under development are aimed at remedying these defects.

(ii) Because of the late receipt and inadequacy of information relating to defects and alterations and additions, project staff were often unable to produce properly defined work instructions for line management on time. Procedures provide for production centres to have forward workload instructions 3 weeks in advance. In practice they generally do not have such information at the time decisions have to be taken on immediate priorities at working level.

(iii) Project staff often gave inadequate estimates for jobs to line management. The latter should report back to project managers when the outturn on jobs is likely to vary significantly from estimates and obtain approval for allocation of additional resources; but these procedures were often not followed. As a result project managers did not have adequate information for monitoring progress and for future estimating.

(iv) The contingency element for unforeseen work included in project estimates was originally intended to be controlled centrally for each project. Procedures in the Yards now appeared to be moving instead towards allocation of the contingency along with the initial work estimates to provide line management with a fixed budget to cover both known and unforeseen work. Whilst this change may reduce management monitoring effort, it means that the contingency is committed at an early stage; it reduces the value of the estimates for known work and weakens the control exercised by the project managers.
2.8 These deficiencies, together with the disruption caused by unprogrammed work previously referred to, resulted in project management concentrating more on monitoring physical progress and the achievement of target dates than on the cost of the jobs, while line management faced difficulties in planning the efficient use of the labour resources at their disposal. It was not possible directly to quantify the effect of these problems and there were differing views among Dockyard managers as to their significance.

Productivity schemes

2.9 Dockyard workers have participated in a variety of types of productivity schemes over many years. Such schemes are expected to be self financing, either from savings or from increased productivity; but in practice there have been various difficulties in operating them successfully to achieve these aims.

2.10 In 1975 a new Dockyard Wages Scheme was introduced at Chatham on a trial basis. This was expected to replace all existing schemes and involved payment of a 20 per cent supplement on basic pay to all industrial employees, and the introduction of work measurement and key performance indicators. If successful, the new scheme was to be extended to the other home Dockyards.

2.11 Reviewing progress in 1978, the Public Accounts Committee were concerned that, some 24 years after the scheme’s inception, the level of performance at Chatham remained lower than expected and indeed showed signs of deterioration. The Committee recommended that MOD should seek to identify the causes and potential remedies before extending the system to other Yards, even though these were still operating what were recognised to be unsuitable incentive schemes.

2.12 Subsequent failure of Dockyard Wages Scheme performance indicators to reach sufficiently high levels led to its replacement by the Dockyard Efficiency Scheme (DES) approved in April 1980. As with previous schemes, the DES is intended to produce more effective use of labour and a greater commitment from the workforce.

2.13 With trade union agreement, Stage 1 of the scheme was introduced in April 1981. Existing productivity bonuses were frozen and an interim cash bonus paid. In Stage 1 full work measurement was to be introduced and 10 per cent higher performance levels achieved within 6 months. Stage 2 was then to be implemented, replacing existing incentive payments with an efficiency bonus of 20 per cent of basic pay to all eligible employees, plus a bonus to production workers of up to 15 per cent for a corresponding increase in output.

2.14 The non-industrial dispute of 1981, the 1981 Defence Review and the Falklands crisis in practice delayed for nearly two years the achievement of the specified Stage 1 performance levels. The full scheme was eventually introduced at Devonport in August 1983 and Rosyth in December 1983. As a result of these delays there is no clear evidence yet as to the cost effectiveness of the DES, although MOD consider that their experience to date is encouraging.

Waiting time

2.15 To ensure efficient use of Dockyard labour it is necessary to identify the extent of waiting time — is all time when men are available but not working. Some waiting time is unavoidable on some jobs because of the circumstances in which the work has to be carried out; and periods of less than 1 hour per job per day are charged direct to the job and not recorded as waiting time. My staff noted that though recorded waiting time over the programme as a whole was less than 10 per cent, levels in some production areas in some weeks exceeded 40 per cent of the total hours available. Some areas were averaging recorded waiting time in excess of 20 per cent for the whole of 1982–83. In some weeks some work centres recorded levels of 20 per cent for both waiting time and overtime.

2.16 Dockyard management felt that the above figures reflected the difficult nature of refit work and that control of waiting time was improving because of the impact of the Dockyard Efficiency Scheme. Difficulties in staff allocation and in moving workers quickly between different areas of work were put forward as further constraints on effective labour utilisation.

Over time

2.17 Financial provision for a planned level of overtime in the approved annual budget is allocated to the line managers who control labour resources in the production centres. MOD informed me that it is allocated mainly on the basis of the programme as modified in the light of experience rather than a detailed assessment of the foreseen overtime need for the year ahead. The study found that past usage was a significant factor in allocations to production centres. Planning is based on the assumption that there will be a regular level of overtime in many areas; and a major determining factor in authorisation appears to be the availability of money in the budget.

2.18 MOD informed me that in their view a significant amount of regular overtime is necessary in a jobbing and repair industry and is the practice in commercial ship repair. They consider that overtime can provide increased productive capacity, subject to the constraint of availability of funds; reduce unit costs by optimising output and increasing the utilisation of capital assets; allow flexibility to management in the deployment and supervision of the multi-trade workforce; and provide extra trained resources at short notice.

2.19 Examination showed that the level of overtime increased near project milestones, which is to be expected as a means of meeting target dates. But in some cases it also increased at the end of the financial year, for no clear operational reason. My staff were assured by management that overtime was only authorised in case of need but their general conclusion was that there was scope for improvement in the procedures for controlling overtime and using it only where strictly necessary, having regard to the additional direct costs involved. Rosyth management have already taken some action along these lines. A factor here is that the Dockyard accounting systems allocate costs on the basis of hours worked and do not differentiate between normal hours, shiftwork and overtime. On Sundays overtime is paid at double the normal rate. Much emergency work is done at
weekends and there is a need for the true cost of such requirements to be identified and taken fully into account in deciding on priorities.

2.20 Whilst a reasonable level of properly controlled overtime can have the benefits described at paragraph 2.18, I also observe that the average overtime hour costs a third more in wages than normal time. Other disadvantages include the problems of proper supervision of labour, of deteriorating performance as staff work long hours and of maintaining a high level of effort during normal hours. In the Dockyards this latter point could lead to the new group incentive schemes not achieving their full potential.

2.21 As noted in paragraph 1.6, there are different policies on overtime at different Dockyards. Rosyth management, convinced that overtime is poor value for money and leads to low productivity, have reduced the amount worked to 5 per cent of normal time. Devonport management, with greater work overload problem, have a much higher level of overtime at 15 per cent. CED is currently considering the need for a clear overtime policy for the Dockyards, but the absence of any means of measuring output has made it difficult to assess the effectiveness of overtime working and thus properly inform the decisions to be made on the optimum levels of manpower and overtime for efficient Dockyard operation and labour utilisation.

Internal Audit review

2.22 In 1982 Internal Audit, following an examination of the long term planning, estimating and controlling of expenditure for ship refits, made a large number of detailed recommendations for improvements in procedures. These are under further review within MOD in conjunction with consideration of the reports referred to in paragraph 1.34 above. Additionally, following an Internal Audit examination of overtime throughout the Navy Department, a number of recommendations relating to the more effective control of overtime are currently under consideration.