Ministry of Defence: Operation of the Royal Dockyards under Commercial Management
This report has been prepared under Section 5 of the National Audit Act, 1983 for presentation to the House of Commons in accordance with Section 9 of the Act.

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Summary and conclusions

1 Commercial managers have run the two Royal Dockyards since 6 April 1987 under the Dockyard Services Act 1986. The Department’s objectives in introducing commercial management were to achieve greater efficiency, maximum competition and better overall value for money.

2 The seven year term contracts, with Devonport Management Limited at Devonport and Babcock Thorn Limited at Rosyth, provide for the Government owned Dockyard assets to be licensed to the commercial managers. The latter are responsible for carrying out ship refitting work awarded to them by the Department, to an acceptable standard of quality, in accordance with contract terms and conditions for price and delivery.

3 Responsibility for managing the ship refitting programme and the Department’s assets in the Dockyards, and for placing ship refit contracts, rests with the Directorate General of Ship Refitting (DGSR). Most refit work (63 per cent in 1990–91) is allocated to the Dockyards as their core programme. Such an arrangement was required to make the term contracts commercially acceptable. Twenty-three per cent of Naval work (mainly Royal Fleet Auxiliaries and small vessels) was put to competition in 1990–91, while 14 per cent was allocated to the Department’s Fleet Maintenance and Repair Organisation at Portsmouth.

4 In their 2nd Report of Session 1988–89 (HC 55), the Committee of Public Accounts noted a number of problems in the Royal Dockyards, both before and after their transfer to commercial management. They also noted that the Department expected efficiency savings from commercial management; emphasised the importance of balancing Dockyard capacity and workload; supported the Department’s commitment to encourage more commercial work there; stressed the importance of the Department’s commitment to increase competition for warship refits and noted that greater competition for procurement of materials would load to better value for money; and recommended that the Department should move to full risk pricing on all contracts by the end of the second year of commercial management. They expected the Department to limit the size of the new DGSR organisation and to keep the location of its staff under review.

5 The National Audit Office study examined the results of the first four years of commercial management and considered the extent to which the expected benefits had been achieved. The main aspects examined and the National Audit Office’s main findings and conclusions are set out below.

Findings and conclusions

6 Prior to the letting of the term contracts, the Department announced reductions in the Navy’s refitting programme. Further significant reductions have occurred since Vesting Day. These reductions underlie many of the problems that have been experienced (Report Part 2). A major difficulty in managing individual refit projects is control of “growth work”. This work, which is additional to that in the refit specification, arises because the condition of a vessel can only be properly assessed once the refit has commenced, or from the late introduction of new equipment or from additional minor work (paragraph 3.9).
Further improvements are required in writing refit specifications; this should help manage growth work and minimise its volume.

7 In the early days of commercial management the Department’s refit specifications were inadequate. This, coupled with a general lack of experience on both sides in pricing specifications, contributed to difficult contract negotiations, excessive growth work and delays and cost increases. The Department have attempted to improve specifications and are now considering a revised approach, including involving the commercial managers earlier in specification development. Improvements are also required in specifications for refits put out to competition. Better specifications should reduce the volume of growth work. The level of this work has frequently exceeded the provisions made for it by the Department (paragraphs 3.5–3.7, 3.9–3.14).

The Department have met their targets for introducing risk pricing for labour but not for materials.

8 Risk pricing involves the contractor in quoting a firm or fixed price, or in accepting an element of risk in return for incentives to increase profit by reducing costs. For the labour element of contracts, the Department have achieved their target of pricing 90 per cent by value on a risk basis. Achievement of the target for materials is dependent on improvements in estimating materials consumption (paragraphs 3.17–3.20).

There is room for improvement in materials supply and a need to consider how more competition might be achieved for procuring materials.

9 Many of the pre-Vesting Day material supply problems remain, with shortages accounting for some refit delays. Greater co-ordination is required between the organisations responsible for Ministry Supplied Materials. Although the commercial managers are formally responsible for Contractor Supplied Materials, in practice they have little scope in most cases to buy these from sources other than the Department (paragraphs 3.21–3.26).

10 There are constraints on the commercial managers’ ability to order materials well in advance and on the Navy supplies organisation’s ability to reserve all items without definite orders. There is a need on both sides for improvements in material planning systems and for joint action to resolve problems of identifying and funding future requirements, particularly for major items with long lead times (paragraphs 3.27–3.31).

The National Audit Office support the Department’s plans for further reductions in staff numbers and to keep under review the balance between costs and benefits of detailed control procedures.

11 DGSR’s total staff numbers increased up to 1991 to cope with extra responsibilities, but some cuts have now been made and more are planned. The transfer of staff from DGSR’s Bath Headquarters to the Dockyards has been slower than expected. The Department are considering the case for moving contracts staff to the waterfront as part of integrated specialist support cells for project contract managers (paragraphs 3.2–3.4, 3.8).
Despite changes introduced to improve control, the procedures for approving growth work are detailed and time consuming and reduce the time available to the Department's project staff to oversee refit work. The commercial managers and private companies felt that procedures for pricing growth work did not differentiate sufficiently between major and minor variations. The Department claim savings from their checks on growth work, but there is a need to control the effort required in approving relatively minor growth work. The commercial managers also stated that the Department's procedures for approving capital expenditure were too cumbersome and prolonged. Some streamlining of procedures in these and other areas may be possible, and might lead to efficiency improvements in DGSR. The Department are keeping the balance between costs and benefits of checking under review (paragraphs 3.8-3.14, 4.12).

While control procedures are necessary for public accountability, it is right that the Department should have regard to the costs and benefits of specific procedures and the need to obtain best overall value for money. The National Audit Office took note of the views of the commercial managers and private ship repairers that the Department should consider whether project contract managers have sufficient delegated authority and responsibility, particularly for approving growth work, and that they should examine ways of reducing the time required to approve the procurement and disposal of assets. In carrying out these reviews, they should have regard to practice in the private sector.

The Department's aims in charging a licence fee are: to ensure cost-effectiveness for the Department; to ensure that the commercial managers are not subsidised, but to allow them to compete on fair terms with private ship repair companies.

The licence fee is included as an overhead in the Dockyards' hourly rates. As most of the Dockyards' work has been for the Department, most of the licence fee, plus an element for profit, has been re-charged to the Department. The profit element has been some £1.5 to 2 million a year. In some cases the basis of assessment has contributed to a high fee compared with the annual costs of owning similar assets in competitors' yards. This has affected the commercial managers' prospects of obtaining competitive work, thereby relieving Naval work of some of the Dockyard overhead costs. In 1991–92 the Department introduced revised arrangements which have resulted in lower licence fees (paragraphs 4.3–4.8).

The commercial managers have achieved cost savings but there is a need to develop ways of measuring efficiency improvements, as provided for in the term contracts, and their overall performance.

The Department consider that changes since Vesting Day have rendered meaningless any attempt to assess the level of overall savings from commercial management. While it is not possible to assess what would have happened without commercial management, both commercial managers have introduced measures to improve efficiency and have made identifiable cost savings; the Department have incurred additional expenditure on items such as management of the refit programme and redundancies. The Department take account of the efficiency improvements specified in the term contracts in negotiating individual
refit contracts, but no satisfactory method of measuring the improvements achieved has been developed. Performance indicators to assess the overall performance of the commercial managers were introduced in 1990, three years after the introduction of commercial management. The Royal Navy were generally pleased with the quality of vessels returned from the Dockyards (paragraphs 5.1-5.6, 5.18, 5.34-5.35).

The commercial managers need more stability in the Naval programme if they are to achieve the expected benefits from improved efficiency and greater competition.

16 Reductions in the total Naval workload, often at short notice, have made forward planning difficult for the commercial managers. Redundancies, paid for by the Department, have been significantly more than the Department expected. Dockyard overhead costs have had to be spread across a lower volume of work and smaller labour force, resulting in uncompetitive charging rates. Under-utilised staff and facilities in 1990-91 are estimated to have cost £53 million. Some were retained to meet a corresponding increase in workload expected in later years but similar forecast increases have often not materialised in the past. The Department should develop further with the commercial managers the Department's proposals to retain a lower level of staff and supplement them with temporary labour or sub-contractors as necessary. The problems resulting from workload reductions would have arisen under any system of Dockyards management (paragraphs 2.2-2.4, 2.10-2.14, 5.29, 5.33, 6.16).

The National Audit Office support the Department's continuing efforts to improve refit performance on time and cost.

17 Delays and increases in costs over the Department's estimates based on initial contracts for refits have continued to occur since the introduction of commercial management. In particular, performance was worse on projects completed in 1989-90 and 1990-91 than in the first year of commercial management. Although there was some progress in 1990-91, there is still considerable scope for further improvements. The main cause of such delays and cost increases has been growth work, covered by contract amendments approved by the Department. The latter should ensure that realistic time and cost contingencies are allowed for such work. Delays have also occurred in refits in the private yards (paragraphs 5.7-5.15, 5.23).

The system of recovering Dockyard costs should encourage the commercial managers to be efficient without subsidies, whilst allowing them reasonable opportunities to obtain competitive work which contributes to meeting overhead costs.

18 Because of instability in the Navy's refitting programme, the system of recovering Dockyard labour and overhead costs through hourly rates, based on an agreed level of work, has not been effective. The Department, but not the commercial managers, believe the system has encouraged over-capacity and provided little incentive for the Dockyards to become more efficient.

19 Delays in finalising rates have diminished the risk for the commercial managers on Naval work, while the level of uncertainty, associated with in-year increases in rates resulting from workload reductions, has in some cases made it more difficult for the commercial managers to quote for competitive work. This and
other factors led to a situation where, until recently, the two commercial managers had not tendered for much of the Naval work open to competition. By contrast, in total they have won as much commercial work as they originally predicted, though most of this has not been ship refitting. The Department have proposed changes to the system of calculating hourly rates that would facilitate advance agreement and eliminate in-year changes (paragraphs 5.19–5.33).

The Department’s review of future arrangements for Naval refitting work will consider the balance between the benefits of competition, the effects on total refit costs, and future needs for Dockyard capacity.

20 The net result of the existing charging system, coupled with the fact that the commercial managers have not secured substantial competitive work, is that the Department meet most of the Dockyards’ costs, including under-utilised labour retained to meet future requirements, plus the cost of competitive Naval refit work placed elsewhere. Some recent contracts have been allocated to the commercial managers on a marginal cost basis instead of being put to competition. There is a question whether, in these circumstances, competition alone gives best value for money (paragraphs 2.5–2.9, 2.12–2.14).

21 The Department are considering the arrangements for management of the Dockyards after the end of the first term contracts. They are also reviewing the requirement for Naval support facilities in association with the Options for Change review. These reviews need to identify the level of long term capacity required in the Dockyards and consider how best to obtain value for money through making use of that capacity, while maximising incentives to efficiency through competition for a proportion of Naval work. The Department intend to take account of experience to date of commercial management and Naval work done by private ship repairers (paragraphs 6.8–6.14).

General conclusions 22 Progress on the Department’s objectives in introducing commercial management has been mixed. The commercial managers have improved efficiency and cut costs, although the Department are unable to assess the net savings actually achieved. Reductions in the Navy’s refitting programme have prevented a greater proportion of the Naval workload being put out to competition. They have also contributed to the commercial managers’ difficulties in bidding for and winning work from other sources but their targets for such work have, in total, been achieved. Refits carried out in the Dockyards are still being completed late and over Departmental budgets, based on initial contracts, but this is largely due to growth work approved by the Department. The commercial managers have substantially met their final contract commitments.

23 The Department are taking account of experience since 1987 in considering the arrangements for the future management of the Dockyards. However, the need to await the outcome of the Options for Change and associated reviews has affected progress in deciding on the preferred option. The National Audit Office support the Department’s intention, if they decide to continue with commercial management, to seek as far as possible to incorporate the improvements they have identified as being necessary to the existing arrangements, including seeking to encourage greater private investment in the Dockyard assets. There is
also a need for a regular dialogue with the commercial managers and private ship repair companies on ways of obtaining better value for money in Naval ship repair and refitting.

24 The Department have considered in the past, without reaching firm conclusions, the level of capacity which needs to be maintained in the Dockyards and the extent to which that should be utilised in peacetime. Resolution of this issue, and the question of the extent of future competition in Naval ship refitting, are vital to the achievement of value for money from the Dockyards in the future. In considering future arrangements, the Department may find it helpful to take account of the experience of overseas Navies in ship repair and refitting.
Part 1: Introduction and background

Background

1.1 Commercial managers, Devonport Management Limited at Devonport and Babcock Thorn Limited at Rosyth, have run the two Royal Dockyards since 6 April 1987 under the Dockyard Services Act 1986. The Department's objectives in introducing commercial management into the Dockyards were to achieve greater efficiency, maximum competition and better overall value for money.

1.2 The seven year term contracts provide for the Government owned Dockyard assets to be licensed to the commercial managers. The latter are responsible for carrying out ship refitting work awarded to them by the Department, to an acceptable standard of quality, in accordance with contract terms and conditions for price and delivery.

1.3 With the introduction of commercial management, the Department established a new customer organisation under the Director General Ship Refitting (DGSR), who reports to the Chief of Fleet Support. DGSR's prime responsibilities are to plan the Royal Navy's ship repair/refitting programme, place and manage contracts with the Dockyards and other ship repairers, and manage the Department's assets in the Dockyards.

1.4 The refitting programme comprises three elements:
   - the "core" programme allocated to the Dockyards [63 per cent in manweek terms in 1990–91];
   - the "unallocated" programme which is open to competition between the Dockyards and private yards [23 per cent]; and
   - work allocated to the Department's Fleet Maintenance and Repair Organisation at Portsmouth [14 per cent].

DGSR manage the first two; Commander-in-Chief Naval Home Command manages the third. In 1990–91 the total cost of work in the core and unallocated programmes was £554 million (Appendix 1).

1.5 The Department are studying options for the management of the Dockyards after the first term contracts expire in April 1994. Their decision will have regard to the future size of the Fleet and a Departmental review of industry-wide capacity for shipbuilding and ship repair.

1.6 In their 2nd Report 1988–89 on the Transfer of the Royal Dockyards to Commercial Management (HC 551, the Committee of Public Accounts noted the unsatisfactory situation in the Dockyards, both before and after Vesting Day, with regard to: verification of work outstanding, quality control, the standard of refit work, the introduction of risk pricing, the availability of new systems, and accounting for materials and assets.

1.7 The Committee:
   - noted that the Department expected efficiency savings from commercial management;
   - emphasised the importance, in seeking value for money, of balancing Dockyard capacity and workload and supported the Department's commitment to encourage more commercial work in the Dockyards;
   - stressed the importance of the Department's commitment to increase competition for warship refits and noted that greater competition for the procurement of materials would lead to better value for money;
   - recommended a move to full risk pricing on all contracts by the end of the second year of commercial management; and
   - expected the Department to limit the size of the DGSR organisation and to keep the location of its staff under review.
Scope of the National Audit Office examination

1.8 Against this background the National Audit Office examined:

- the impact of reductions in the Navy's ship refitting programme (Part 2);
- the Department's management of the refitting programme (Part 3);
- the arrangements for the commercial managers' use of the Dockyard assets (Part 4);
- the performance of the Dockyards under commercial management (Part 5); and
- the Department's planning for the future management of the Dockyards (Part 6).

1.9 The National Audit Office examined the Department's records, including 12 refit projects ranging from a routine overhaul of a surface ship to a major refit of a nuclear submarine (Appendix 2). They visited both commercial managers, who co-operated fully in providing information on aspects of importance to the study. The National Audit Office also commissioned consultants Ewbank Preece to advise on the approaches to ship refitting adopted by certain overseas Navies (Appendix 3) and to obtain information from three private ship repair companies which had undertaken Naval work. The National Audit Office also visited one of these, Swan Hunter Shipbuilders on Tyneside. A joint National Audit Office and DGSR team visited the United States Navy to gain first hand experience of their initiatives to improve the performance and efficiency of their shipyards (Appendix 4).
Part 2: Reductions in the Navy's refitting programme

2.1 This Part considers the impact of reductions in the Naval workload on the Dockyards.

Workload changes since Vesting Day

2.2 The Department announced major reductions in the Navy's refitting programme before the first term contracts were let. The latest frigates required less maintenance, while the frequency and work content of other refits was reduced. The reduced programme formed the basis for the term contracts. Further significant reductions have occurred since Vesting Day.

2.3 Figures 1 and 2 show that, over the four years to March 1991, the actual volume of core work fell by 45 per cent at Devonport and 34 per cent at Rosyth from the workloads expected when the term contracts were negotiated. The greatest reductions occurred in 1990-91: 44 per cent at Devonport and 30 per cent at Rosyth. Reasons included: a decision to pay off some vessels early; delay of refits due to budgetary pressures; technical problems on the nuclear submarine refit programme; and service of vessels in the Gulf. The total Naval refit load planned for later years has also reduced. The commercial managers calculated that in 1990-91 the Navy's core workload took up less than half of the maximum Dockyard capacity at Devonport and Rosyth. Reasons included: a decision to pay off some vessels early; delay of refits due to budgetary pressures; technical problems on the nuclear submarine refit programme; and service of vessels in the Gulf. The total Naval refit load planned for later years has also reduced. The commercial managers calculated that in 1990-91 the Navy's core workload took up less than half of the maximum Dockyard capacity at Devonport and Rosyth. The Department have written off £137 million in respect of the work, including overheads, prior to termination.

Size of the unallocated programme

2.5 The Department originally intended that the two Dockyards would initially have a core programme comprising some 70 per cent of the total Naval workload. Ten per cent would remain with the Fleet Maintenance and Repair Organisation, Portsmouth. The other 20 per cent open to competition between the Dockyards and private sector yards was expected to rise to about 30 per cent by 1993-94.

2.6 Table 1 shows that to date the level of competition peaked in 1989-90 at 24.5 per cent of the total Naval workload. The Department's latest plans predict an increase to 29 per cent in 1992-93 and to higher levels in later years.

Table 1: Size of the Naval unallocated programme

<table>
<thead>
<tr>
<th>Manweeks</th>
<th>Proportion of Naval load (%)</th>
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<tbody>
<tr>
<td>1967-68</td>
<td>93,411</td>
</tr>
<tr>
<td>1968-89</td>
<td>93,266</td>
</tr>
<tr>
<td>1989-90</td>
<td>101,788</td>
</tr>
<tr>
<td>1990-91</td>
<td>68,843</td>
</tr>
</tbody>
</table>

Source: Director General of Ship Refitting

The level of competition for ship refitting work fell significantly in 1990-91 in volume terms, but remained relatively constant in percentage terms.

2.7 The Department have attempted to secure value for money in difficult circumstances by striking a balance between providing a balanced workload and encouraging maximum competition. Table 2 shows that a number of refits have been transferred from the unallocated to the core programme and vice versa. The Department stated that their aim in switching work to the core was to maximise value for money, by keeping the Dockyards fully employed, rather than to achieve the 30 per cent target for competition.
Figures 1 and 2 show that the volume of core work has fallen consistently since Vesting Day and has always been below the level planned.
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2.8 Table 2: Net transfers of work between the core and unallocated programmes

<table>
<thead>
<tr>
<th>Year</th>
<th>To Core (manweeks)</th>
<th>To Unallocated (manweeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967-68</td>
<td>12,500</td>
<td></td>
</tr>
<tr>
<td>1968-69</td>
<td>3,000</td>
<td>6,200</td>
</tr>
<tr>
<td>1969-70</td>
<td>11,000</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23,600</td>
<td>9,200</td>
</tr>
</tbody>
</table>

Source: Director General of Ship Repairing

The main movement has been from the unallocated programme to the core. In addition, some 16,000 man weeks were transferred from the Fleet Maintenance and Repair Organisation, Portsmouth to the unallocated programme, including 17,500 man weeks for the refit of HMS Southampton, brought forward following damage to the ship during operations.

2.9 In 1990-91 the Department proposed to transfer four Royal Fleet Auxiliary refits from the unallocated programme to the core at Devonport. By using Devonport's surplus labour, which the Department would have to fund if the company could not recover it in any other way, they expected to save £10 million compared with the expected cost of competitive contracts. However, taking into account the need to retain competition in the longer term, the Secretary of State for Defence ruled that one vessel should be competed. In the event, three vessels were not refitted because of the Gulf Crisis, leaving one to be refitted at Devonport. Further contracts were awarded, following competition, to Rosyth in 1991 on a value for money basis utilising Departmentally-funded non-productive labour (paragraph 5.22).

2.10 The reductions in workload have led to redundancies since Vesting Day (Table 3).

2.8 Table 3: Staffing levels and redundancies

<table>
<thead>
<tr>
<th>Devonport</th>
<th>Rosyth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff in post at Vesting Day</td>
<td>11,460</td>
</tr>
<tr>
<td>In post at 31.3.91</td>
<td>5,611</td>
</tr>
<tr>
<td>Reduction in strength</td>
<td>5,849</td>
</tr>
<tr>
<td>Redundancies</td>
<td>5,298</td>
</tr>
<tr>
<td>Redundancies to 31.3.91 as percentage of original workforce</td>
<td>47%</td>
</tr>
<tr>
<td>Anticipated workforce at 31.3.92</td>
<td>5,200</td>
</tr>
</tbody>
</table>

Source: Commercial managers

Liability for redundancies rests with the Department, except where they result from a failure to win agreed levels of commercial work (paragraph 5.25) and in the case of one commercial manager, failure to win an agreed percentage of unallocated work offered. To date all redundancies have been attributed to workload reductions, but in respect of the unallocated work level, the possibility of a claim against the commercial manager, for recovery of part of past payment made, is being considered. The cost to the Department to 31 March 1991 was £130 million (Devonport £110 million; Rosyth £20 million); the Department's pre-Vesting Day estimate was £60 million.

2.11 The National Audit Office noted that, allowing for natural wastage of 1,515 staff at Devonport and 360 at Rosyth, redundancies exceeded the reductions in the workforce. This was due to the companies' need to adapt to a commercial environment and recruit employees with the skills, knowledge and experience needed for the companies to survive in the commercial market, and has not reduced the Department's redundancy costs.
Under-utilisation of labour

2.12 The commercial managers aim to keep their full-time workforces at the minimum level to meet planned workloads (particularly, for example, to retain skills in areas of advanced technology) and to use casual labour and subcontractors to the maximum extent practicable. However, uncertainties in the programme and in the future availability of specific skills on a casual or sub-contract basis make it difficult to assess the right level. Variations in the annual programme at times result in surplus labour. The commercial managers have utilised such spare labour on work transferred from the unallocated programme and on asset maintenance, but in 1989–90 and 1990–91 they were unable to absorb all surplus labour in this way. The National Audit Office noted that while workloads were expected to increase to employ the labour retained for the future, similar forecast increases had often not materialised in the past. The Department may pay the commercial managers to retain staff expected to be required to meet the future refit programme, and for the surplus labour while agreed redundancies take place.

2.13 In 1989–90 under-utilised labour at Rosyth, valued at £4.1 million, was included as an overhead in calculating local hourly rates. The cost was thus spread across all work in the Dockyard and earned the commercial manager a profit of about £250,000. For 1990–91 the Department separately paid the commercial managers £25 million at Devonport and £18 million at Rosyth, plus a three per cent disruption fee, in respect of all costs attributable to under-utilisation. Devonport Management Limited explained that the payment to them arose as a result of the immediate impact of programme changes, with one project being already overdue to start refit when it was announced that the vessel was to be decommissioned.

Overheads

2.14 Workload reductions have also resulted in fixed and variable overheads being spread across a reduced base, resulting in increases in hourly rates and the cost of work carried out. In 1990–91 the potential effect on hourly rates at Rosyth from the delayed start of a major refit was such that the Department decided to account separately for the overheads attributable to the project and paid Babcock Thorn Limited £9.5 million, including profit, as a separate sum. The Department pointed out that this sum, having been eliminated from the rates, was excluded from project contract prices. The impact of increases in hourly rates is considered further in Part 5.
Part 3: The Department’s management of the refitting programme

3.1 This Part covers DGSR’s organisation and the Department’s management of the refitting programme.

Size and location of DGSR

3.2 The Committee of Public Accounts (HC 55 paragraph 20) acknowledged the need for a customer organisation, but felt that the reduction in the Naval refitting programme should create room for staff reductions. They expected the Department to take steps to limit DGSR’s size. They also stressed the need, recognised by the Department, to match the commercial managers’ speed of decision-making, and therefore expected the Department to keep the location of DGSR’s staff under review.

3.3 DGSR’s organisation and responsibilities are shown at Appendix 5. The complement moved from 621 at Vesting Day to 701 by April 1991, reduced to 666 at June 1991 and is planned to fall to 641 at April 1992. The Department stated that the increase was due to DGSR’s taking on additional responsibilities, for example, from the local Naval Bases; and the fall to workload reductions and internal re-organisations. The effect of further cuts is being considered in the Options for Change exercise.

3.4 Since Vesting Day DGSR have transferred some 20 posts from their Bath Headquarters to the waterfront. The 50:50 split between the two envisaged in 1985 was achieved in 1991, partly due to transfers of tasks and staff from the Naval Bases to DGSR.

Refit specifications

3.5 Since Vesting Day an important Departmental task has been to produce a work specification as a basis for the refit contract. Before Vesting Day specifications were required only for competitive refits, normally Royal Fleet Auxiliaries and minor vessels. DGSR put much effort into determining the format and content of specifications, but recognised that early specifications were inadequate. They and the commercial managers lacked experience of pricing complex warship refit specifications. Poor specifications contributed to difficult contract negotiations, excessive growth work, delays and cost increases. The National Audit Office noted specifications problems on seven of the 12 projects examined. Some were vague and incomplete, others did not fully reflect experience gained from earlier refits of similar vessels.

3.6 DGSR have made several attempts to improve the standard of specifications. They concluded in 1990 that the existing practice, based on the premise of competition, was not appropriate for core programme work; and the commercial managers should be more closely involved, and at an earlier stage. Under a revised system being trialled on two projects, the commercial manager produces a work package to meet DGSR’s statement of requirements. This is costed and evaluated by each party. DGSR hope this approach will shorten contract negotiations and, in time, reduce the volume of growth work (paragraph 3.10). The final trial results will be available in late 1992.

3.7 The private ship repair yards consulted by the National Audit Office considered the standard of specifications to be inadequate for competitive tendering on a firm price basis. They thought DGSR should be more precise in specifying the nature of the work required and could usefully involve specification writers in the later stages of a refit. They also felt there was scope to improve the bid evaluation process if DGSR could issue tender documents earlier and improve the range and quality of information provided. The Department stated that their policy was to set out what work was required and not how it was to be undertaken, and to apply lessons learned from completed refits to new refits. They also had to strike a balance between the timing of the issue of tender documents and the level of detail included.
Project oversight

3.8 The commercial managers and private ship repairers commented that DGSR’s project contract managers did not have sufficient authority in contract matters, and that decision-making was too slow. The Department did not agree, they pointed out that the comments were not made by disinterested parties. In 1990 a working group concluded that the project contract managers, who are now responsible for both the planning and execution of a refit project, needed support from integrated teams of specialists in contracts, estimating, finance, materials and quality assurance, ideally from support cells at each Dockyard. The Department are studying the case for moving contracts staff to the waterfront; the other specialists are already there. The contracts staff would continue to be under DGSR’s line management but, under the Department’s normal arrangements, have a separate chain of command for their professional responsibilities.

Control of growth work

3.9 A major difficulty in managing a refit project is controlling “growth work”, i.e. work not explicitly covered by the specification. The nature of ship refitting means that such work is unavoidable as the vessel’s condition can only be properly assessed once the refit has commenced. A contingency is included in all project cost estimates for growth work, and refit contracts specify the hourly rates to be applied. Growth work comprises:

- Emergent work arising from the tasks included in a specification (64 per cent in the projects examined by the National Audit Office);

- Extra work required by the Department, such as the late introduction of new equipment (24 per cent); and

- Additional minor work, generally requested by ships’ staff, not defined in the specification (12 per cent).

3.10 The National Audit Office found that the volume of growth work frequently exceeded the Department’s expectations and was a factor in cost and/or time overruns for five of the nine completed projects examined. In 1990–91 the Department attributed over 50 per cent of all refit delays and cost overruns to growth work. However, their analysis of growth work on one project (HMS Sovereign in 1989–90) revealed that only 18 per cent, by value, was unforeseeable. On recent projects (eg HMS Beaver), the Department have made allowance within the specification for unpredictable work arising during refits. The commercial managers pointed out that this did not result in any reduction in the time required to obtain approval for such work.

3.11 Variation orders for growth work are approved by DGSR, priced, and covered by a contract amendment. The process is time consuming because of the volume of such work and the procedures involved, and affects the time DGSR’s project staff can devote to overseeing refits.

3.12 Babcock Thorn Limited told the National Audit Office that the arrangements were expensive and adversely affected their management of refits. They had calculated that about 80 per cent of variation orders represented only 20 per cent of the value. They, and the private ship repairers, argued that the arrangements for agreeing prices were unwieldy and bureaucratic and did not differentiate between major and minor variations. The Department stated that they had received no complaints from the private ship repairers regarding the agreement of prices for growth work.

3.13 The Department concluded in 1988 that the procedures for approving variation orders were unsatisfactory and have trialled a new system on two refits. Benefits are expected from improved financial control and a reduced average processing time. However, the new system increases the workload for project staff and lengthens the processing time for variation orders below £3,000. The system is now under review. An accelerated procedure for variation orders under £1,000 was also trialled but the Department considered there was some risk to financial control.

3.14 The Department have had some success in restricting growth work. They employed consultants to validate variation orders raised by the commercial manager on two projects. This had resulted in a net saving of £450,000; on another refit, the Department’s technical estimating officers examined variation order pricing and made an estimated saving of £1.4 million on a total of £6.4 million. The Department intend to keep under review the balance between the costs and benefits of checking variation orders.
Contract negotiations

3.15 Contract negotiations take place on the commercial manager's bid and an estimate prepared by the Department's technical estimating staff. The main problem has been agreeing the man-hours needed for the work, as a basis for any "fixed price" for the labour element of the contract. The Department begin work on specifications up to 21 months before the planned start of refits, with the aim of placing refit contracts one month before the planned start. However, planning delays and protracted contract negotiations have put pressure on planned dates. The Department did not achieve their target on any of the 12 projects examined.

3.16 The Department's policy is to agree taut prices before placing a contract; if necessary, this will take priority over the planned start date. There have been difficult negotiations at both Dockyards, with some tender bids being well above the Department's estimates, and the latter have accepted delays in order to obtain acceptable terms.

Risk pricing and incentive contracts

3.17 The Committee of Public Accounts recommended that the Department move to full risk pricing on all contracts by April 1989 (HC 55 paragraph 36). The Department felt that a target of 60 per cent by April 1990 was more realistic. The Department consider risk pricing to mean:
- a firm/fixed price; or
- a target cost and target profit, with predetermined arrangements for sharing cost under and overruns within an overall maximum price.

Table 4: Levels of risk and incentive prices agreed

<table>
<thead>
<tr>
<th>Department's targets by value</th>
<th>Labour (%)</th>
<th>Materials (%)</th>
<th>Services and sub-contracts (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>risk pricing</td>
<td>90</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>risk or incentive pricing</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

Levels achieved

<table>
<thead>
<tr>
<th></th>
<th>Labour (%)</th>
<th>Materials (%)</th>
<th>Services and sub-contracts (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devonport Management Ltd</td>
<td>93</td>
<td>88</td>
<td>61</td>
</tr>
<tr>
<td>Babcock Thorn Ltd</td>
<td>89</td>
<td>76</td>
<td>73</td>
</tr>
</tbody>
</table>

Source: Director General of Ship Refitting

They have a separate classification for what they regard as incentive arrangements namely:
- actual costs plus fixed sum for profit;
- actual costs plus percentage profit, within an overall maximum price.

The National Audit Office noted that these arrangements offer only limited incentives.

3.18 Table 4 shows the Department's achievement against their targets for pricing labour, materials, and services and sub-contracts.

3.19 On the Department's classification, 11 of the 12 projects examined by the National Audit Office had labour priced on a risk basis. However, the materials content was at risk in only three cases, the remaining nine being on a cost plus basis.

3.20 The Department told the National Audit Office that although their objective was to agree risk prices for materials, estimating the level of materials likely to be required was often not possible within usual risk limits because of the type of work involved. The National Audit Office's project examination demonstrated the difficulties. The latest forecast of materials expenditure on HMS Churchill, prior to the refit's cancellation, was £5 million below the target price of £18 million. Under the contract, the Department would have received the benefit of most of this underspend.
Material supply

3.21 There are two types of materials and equipments for refits. Ministry Supplied Materials are items of importance to the Department, who supply them on a free issue basis. All other materials, known as Contractor Supplied Materials, are the responsibility of the commercial managers.

Ministry Supplied Materials

3.22 The Navy supplies organisation and the Procurement Executive each supplied about half of the commercial managers' requirements for Ministry Supplied Materials in 1990-91, in total £53 million. In January 1990 the Department acknowledged that over 15 per cent of Ministry Supplied Materials were supplied late, causing nine per cent of refit delays. In respect of Procurement Executive Supplied Materials, the Department stated that the main factors that gave rise to materials management problems were: the Procurement Executive's inability to guarantee delivery dates from the equipment manufacturers; poor documentation from suppliers; and, as a consequence, poor storage, monitoring and accounting by the commercial managers. The Department had introduced tighter procedures to improve the position.

The National Audit Office found that there was insufficient liaison between the different organisations involved. However, the Department have made improvements. Responsibilities for monitoring and hastening the supply of material have been brought together at the Dockyards and a direct link established with the Procurement Executive.

Contractor Supplied Materials

3.24 The Navy supplies organisation provide most Contractor Supplied Materials. Prior to Vesting Day, both commercial managers agreed to purchase certain ranges of materials from the Department for the duration of the term contracts. Under this agreement they can use an alternative source of supply if they can secure terms which the Navy supplies organisation cannot match, in which case satisfactory arrangements must be agreed for running down Navy stocks. Alternatively they can terminate the agreement at 12 or 24 months notice depending on the items involved. The Committee of Public Accounts recognised that such arrangements were necessary for an initial period, but endorsed the Department's view that competition was desirable to secure good value for money. They considered that the Department should make arrangements that enabled the commercial managers to test the market at the earliest opportunity (HC 55 paragraphs 16 and 21).

3.25 The Department consider that the withdrawal clauses have provided the commercial managers with adequate opportunity for alternative sourcing. However, in practice, there is little scope for the commercial managers to establish alternative sources of supply. Most equipments are unique to Naval vessels and full procurement specifications are seldom released by the original manufacturers. The Navy supplies organisation are effectively the sole stockholder for many items, while for others the lead-times involved are too long. Private ship repairers also told the National Audit Office that the limited time between award of the contract and the refit start left them little choice but to order most of their materials through the Department.

3.26 The private ship repairers complained that the Navy supplies organisation were unable to quote a firm price for materials beyond the current financial year, whereas the ship repairers were required to bid on the basis of firm prices. The Department stated that the current arrangements, based on an annual firm price catalogue, had been developed in conjunction with the commercial managers to meet their requirements. Given resource constraints, the Department did not consider it practicable to operate a separate pricing system for the private sector, which accounts for only two per cent of the Navy supplies organisation's business.

Advanced material planning

3.27 In January 1980 the Department accepted that many of the pre-Vesting Day material supply problems remained, and that shortages and late deliveries of both Ministry and Contractor Supplied Materials accounted for some shortages. Eight of the 12 projects examined by the National Audit Office suffered material supply problems, although none of the final overruns reported was directly attributable to materials problems. The Procurement Executive supplied sonar equipment for the update package on HMS Splendid nearly two years after the original delivery forecast; and there were 1,000 cases where late delivery of materials threatened delay before deferment of
the refit of HMS Renown. The Department pointed out that the 1,000 cases represented less than 2.5 per cent of total material ordered for the refit and stressed the need to view problems in the context of the overall scale of the supply business.

3.28 The Department have blamed many of the problems on poor material planning and little advance ordering of material by the commercial managers. They stated that where planning did occur, it tended to be unstructured and of questionable value. The National Audit Office noted that the commercial managers ordered a significant amount of materials at short notice: almost 90 per cent of the orders placed at Devonport in 1990 were for supply within nine working days. The Navy supplies organisation are funded, on average, to achieve about 85 per cent stock availability.

3.29 The commercial managers pointed out that the nature of the business meant that exact requirements could not be specified in advance, for example, because of the frequent need to strip and survey equipment before knowing what material is required. They stated that the inability of the Navy supplies organisation to reserve stocks of spare parts without definite orders, their own lack of visibility of stockholdings and procurement activity, and their contractual agreements with the Department, were all constraints on achieving delivery targets.

3.30 The Department have developed an Advanced Material Planning System to encourage the commercial managers to plan and order materials in advance. The system is being trialled on a number of projects, but progress to date has been disappointing. The supplies organisation have developed improved information technology systems to deal more effectively with forward requirements. DGSR have also taken steps to improve the availability of information from the Navy supplies organisation and the Procurement Executive, and the level of feedback on material deficiencies.

3.31 However, it seems likely that material shortages will be a problem for some time to come. There is a need for a material planning system, with associated stockholding policies, which takes account of total Naval requirements, past and current usage and contracts already placed, and identifies refit requirements in sufficient time to avoid shortages. The Department have plans for such a system. The question of funding such requirements will also need to be addressed.

Management information and performance assessment

3.32 DGSR produce quarterly reports for the Chief of Fleet Support, recording progress against their main objectives for ship refitting (Appendix 5). They have made good progress in developing management information systems and have introduced a range of performance measures and indicators. However, they have found performance assessment difficult. In February 1991 they concluded that the major programme reductions and continuing uncertainties had rendered targets for the year largely meaningless. As a result, they were unable to relate achieved performance to targets.

United States Navy experience

3.33 The Department’s problems with ship refitting are not unique; similar problems have been experienced by the United States Navy. The General Accounting Office reported in July 1990 that cost increases and time overruns had occurred at both public and private shipyards. They identified similar causes: poor specifications and work packages, significant amounts of growth work, and material supply problems.

3.34 In their discussions with the United States Navy, the National Audit Office found that the latter were also trying to improve efficiency and cut costs in their public shipyards under their Naval Industrial Improvement Program (Appendix 4). Several of their initiatives are directly relevant to the situation in the United Kingdom:

- Work definition: review of work packages by a specialist team to identify unnecessary work or duplication has reduced estimated costs by between 12 and 30 per cent.
- Material management: contingencies are being reduced and risk analysis carried out on the timing of orders.
- Cost and time control: systems are being introduced to provide early warning of variances.

3.35 The National Audit Office also noted common problems in the United States Navy’s dealings with private shipyards; for example, in producing concise but sufficiently detailed specifications and in controlling the volume of growth work.
Part 4: Dockyard fixed assets

4.1 This Part examines the arrangements for the commercial managers' use of Government-owned fixed assets.

4.2 The net current value of fixed assets at 31 March 1991 was £2.34 million (Devonport £1.74 million, Rosyth £0.60 million). The Department retain ownership of land, buildings, and plant and machinery over £3,000 in value. The commercial managers pay annual licence fees for using these assets and are responsible for maintenance.

Licence fee arrangements 1987–1991

4.3 The Department charge a licence fee to:
- ensure that the commercial managers' commercial work is not subsidised;
- provide a return to the Department for the use of their assets on non-core work; and
- provide the commercial managers with an incentive to use the assets efficiently.

4.4 The commercial managers have consistently argued that the licence fees are too high, and that this adversely affects their ability to win commercial work (paragraph 5.25). The assets were initially valued on the assumption that neither commercial manager would need to seek much commercial work, since the Navy's refitting programme would provide an adequate and continuous workload. The market rental values were increased to take account of the guaranteed nature of this work. Since 1987 certain assets have been revalued, primarily to reflect the reduction in workload. However, the consequential reductions in licence fees have been more than offset by the effect of revaluing assets for inflation and accounting for new assets.

4.5 The commercial managers put several points to the National Audit Office.

Market conditions

They stated that asset values were not related to market conditions and exceeded values placed on similar assets by competitors, resulting in higher charges and adverse effects on bids for non-core work. Devonport Management Limited claimed that their docking charges were up to ten times those of their competitors.

Earning capacity

The value of business assets derives from the volume of work they support. Figures 3 and 4 show the relative levels of assets values, licence fees and total workload at each Dockyard from Vesting Day to 1990–91. The commercial managers argued that the licence fees should be reduced in line with reductions in their workload and should take account of the under-utilisation of some assets.

Effect of revaluation and inflation

In calculating the annual licence fee, assets are revalued to take account of changes in the asset base and inflation. Both commercial managers have argued that none of their competitors is faced with an annual revaluation for inflation. Also, from 1989–90 to 1991–92 the interest rate, linked to United Kingdom base rates, which is used to calculate the annual fee, has risen. Babcock Thorn Limited have consistently argued that a lower rate should be applied. The National Audit Office found that in one year, 1989–90, the licence fee increased by 22 per cent at Devonport and 19 per cent at Rosyth.

The Department pointed out that over the period 1987–88 to 1989–90 the licence fees were only 6 per cent of turnover and had averaged only 9 per cent of the value of assets.

4.6 The licence fee is included as an overhead in hourly rates and therefore charged against refit work. The charging mechanism provides for the commercial managers to pick up the cost of assets used on commercial work. As most of their work is for the Department, the bulk of the fee, plus an element for profit, is re-charged to the Department. Since Vesting Day, this profit element has been in the range £1.5 to 2 million a year.
The licence fees and asset values are based on a revaluation in June 1990. They, therefore, do not represent the licence fees actually paid or the asset values shown in the annual DGSR Operating Statements.

Figures 3 and 4 show that asset values and the level of the licence fee have increased since Vesting Day, while workload has reduced.
4.7 In November 1990 the Department accepted that the existing licence fees had affected the achievement of value for money and the commercial managers' ability to compete for non-core work. This had affected two of the Department's aims in charging a licence fee (paragraph 4.3); the Department obtained little return from spreading the Dockyards' overheads, while the high proportion of non-competitive Naval work provided little incentive for the commercial managers to use assets efficiently.

Revised licence fee arrangements

4.8 The following revised arrangements were introduced in 1991–92:

- the Department do not charge a fee for assets, primarily nuclear, used exclusively for core programme work;
- the licence fees for docks are charged only when a dock is occupied;
- assets values and licence fees are adjusted to reflect changes in workload.

The Department consider these new arrangements should assist the commercial managers in their bid to win more commercial work. They have resulted in significant reductions in the licence fee for 1991–92 compared with 1990–91; Devonport Management Limited's fee fell by 51 per cent to £12 million and Babcock Thorn Limited's by 34 per cent to £6 million.

Maintenance of assets

4.9 The commercial managers are responsible for maintaining assets; costs are recovered through hourly rates. The Department have invested considerable effort to ensure that maintenance work is to an acceptable standard. For example many assets taken over by Devonport Management Limited were found to be in an unacceptable condition. The resulting "Get Well" programme is expected to cost £35 million (£18 million incurred to 31 March 1991).

Rationalisation of assets

4.10 The Department told the Committee of Public Accounts in 1988 that commercial management had brought with it more rigorous discipline in asset use, and the Department would be much more critical in determining which assets they no longer required (HC 55 paragraph 12). Both commercial managers have put forward rationalisation plans to improve efficiency and reduce facilities to a level needed to support the Dockyards' current role. Both schemes comprise spend to save measures; at approval in 1990 the schemes were forecast to cost £27 million and produce a net benefit, over a 10 year period, of £17 million (figures discounted to 1989–90 levels). The schemes will result in substantial surplus land and buildings becoming available for alternative use or disposal.

4.11 In seeking the Department's approval for the measures, DGSR gave assurances that the commercial managers would be contractually bound to reflect the savings in lower refit costs. In practice, this has not proved possible, partly due to the difficulty in quantifying such savings. Nevertheless, the Department told the National Audit Office that the expected savings would be taken into account when negotiating future hourly rates.

4.12 Both commercial managers informed the National Audit Office that the Department's procedures for approving capital expenditure were too cumbersome and prolonged. For example, it took the Department two years to approve the rationalisation proposals.

Capital investment

4.13 Although the Department are responsible for capital investment, other than in information technology, they had expected the commercial managers to finance some new asset purchases; for example, where these would improve their chances of winning commercial work. The commercial managers have argued that there is no incentive for them to invest in assets for the core programme; that it is the Department's contractual responsibility to underwrite Dockyard modernisation; and that the duration of the term contracts would not allow sufficient payback on any major investment. To date both commercial managers have invested in improvements in information technology. Devonport Management Limited have invested more than £1 million in other assets, some required urgently for core programme work, while Babcock Thorn Limited incurred expenditure in excess of £1 million in 1991–92 in developing the Rail business interests at Rosyth (paragraph 5.25).
Part 5: Performance of the Royal Dockyards under commercial management

5.1 The Department told the Committee of Public Accounts in 1988 that it would be almost impossible to compare the performance of the Dockyards under commercial management with their performance prior to Vesting Day (HC 55 paragraph 37). They have since attempted to compare performance in a number of ways, but have failed due to changes in the Dockyards and reductions in the Navy’s refitting programme. They concluded that events had rendered such a comparison meaningless. This Part examines the commercial managers’ efforts to improve efficiency and obtain commercial work; and performance on individual refits, which reflects on both the commercial managers and DGSR.

Improving efficiency

5.2 One of the Government’s objectives in introducing commercial management was to improve efficiency. The Department negotiated targets with each commercial manager, and these are laid down in the term contracts. Devonport Management Limited undertook to improve production rates by 30 per cent over the period of the term contract; Babcock Thorn Limited undertook to reduce overheads by 13 per cent over the first three years and increase productivity by 31 per cent over the full term contract.

5.3 Both companies have undertaken specific cost reduction exercises and have introduced efficiency measures. These include improved planning, new and more flexible working practices, better training and management development, and improved production and quality control. Devonport Management Limited pointed out that their costs were affected by the Naval Base being on the same site and by the fact that they undertook certain functions which at Rosyth were carried out by the Department.

5.4 The commercial managers informed the National Audit Office of their estimated savings. Devonport Management Limited claimed, and the Department using the same assumptions of inflation endorsed, total estimated savings up to 31 March 1991 of about £50 million (fixed overheads £35 million; overheads on commercial work £15 million). They also stated that they were committed to further savings of over £60 million in 1991–92. Those savings reflect the difference between costs actually incurred and an estimate of those that would have been incurred, based on 1987–88 costs, without the various improvement measures. Of the total savings to 31 March 1992, £7 million derives from assumed productivity improvements of eight per cent a year. Babcock Thorn Limited claimed a reduction in the unit cost of refitting of 20 per cent, through a combination of greater efficiency and lower overheads, with total annual costs reducing by £13 million at 1987–88 constant price levels between 1987–88 and 1990–91. In calculating the unit cost reduction, the company assumed a productivity improvement of five per cent a year.

5.5 Although the companies were not contractually committed to achieve the forecast efficiency improvements, the Department intended to take them into account in agreeing the manhour content of project contracts. In effect, new targets would be set for project performance each year, with two-thirds of the negotiated improvements accruing to the Department. The Department try to ensure that lower operating costs and improvements in the proportion of direct hours worked are fully reflected in hourly rates; and that planned improvements in productivity are matched by a reduction in the labour content of individual refit contracts. In the absence of any directly comparable measure of output, the Department stated that they were not in a position to validate achievement of assumed annual productivity improvements nor therefore to endorse the total savings claimed by the commercial managers. However, they have assumed annual improvements in line with the figures set out in the term contracts.

5.6 The National Audit Office were unable to quantify the extent to which contract prices have reflected improvements. They noted that although there was evidence of improvements in
the numbers of direct hours worked by individual employees (Table 5), the actual cost per employee in the Dockyards had increased since Vesting Day because the number of employees had fallen at a faster pace than the Dockyard overheads.

Table 5: Direct hours per industrial employee

<table>
<thead>
<tr>
<th>Year</th>
<th>Devonport</th>
<th>Devonport</th>
<th>Devonport</th>
<th>Devonport</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967-68</td>
<td>1,036</td>
<td>1,050</td>
<td>1,250</td>
<td>1,050</td>
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<tr>
<td>1986-89</td>
<td></td>
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<tr>
<td>1989-90</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1990-91</td>
<td></td>
<td></td>
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</tbody>
</table>

Source: Annual hourly rate agreements.

Labour utilisation improved by 20 per cent at Rosyth up to 1989-90. At Devonport a similar trend was reversed in 1990-91 because redundancies could not be made at the same rate at which the workload fell; a constraint there is the number of staff employed to support the Naval Base.

Performance: target completion dates

5.7 Refit overruns delay the return of ships to the Fleet, which can affect training and operational effectiveness. Table 6 shows the average delay, in percentage terms, for projects costing more than £0.5 million, excluding those in progress at Vesting Day. The Table distinguishes delays beyond the initial contract delivery date and those beyond the contractual delivery date after negotiation of variation orders to cover growth work.

Table 6: Average percentage time overruns

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</thead>
<tbody>
<tr>
<td>(a) Beyond initial contract date</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Devonport</td>
<td>16</td>
<td>9</td>
<td>42</td>
<td>23</td>
</tr>
<tr>
<td>Rosyth</td>
<td>15</td>
<td>22</td>
<td>33</td>
<td>21</td>
</tr>
<tr>
<td>(b) Beyond final contract date</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Devonport</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Rosyth</td>
<td>2</td>
<td>7</td>
<td>12</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Director General of Ship Refitting

(a) Average delays were greater in 1990–91 than in the first two years of commercial management.

(b) Final contract dates were substantially achieved.

5.8 The Department categorise delays beyond initial contract dates as follows:

- Customer delays - such as a change in Fleet requirements or additional work from ships’ staff;
- Customer Agents delays - such as growth work approved by DGSR or late delivery of Ministry Supplied Materials;
- Contractor delays - due to the commercial managers or their sub-contractors.

5.9 In 1990–91, 15 out of 17 projects completed at Devonport, and nine of 11 at Rosyth, overran their original targets. Figure 5 shows DGSR’s determination of liability for these overruns. The

Figure 5: Liability for time overruns in 1990–91

Source: DGSR Master Ship Completion List

Figure 5 shows the largest single cause of time overruns has been growth work (emergent and extra).
proportion of delays attributed to the commercial managers was 28 per cent at Devonport and 19 per cent at Rosyth. Devonport Management Limited pointed out that managing the redundancy programme at the same time as delivering ships affected performance. They accepted that their record in 1990-91 was "not good", but stated that the figures were heavily influenced by problems, some outside their control, on three vessels in the early part of the year. They had taken steps to rectify the situation. They also emphasised the need for planning time for major changes (paragraph 2.13) if adverse impacts on value for money and delivery performance were to be avoided.

5.10 All nine completed projects in the National Audit Office sample overran their original targets, by 13 per cent on average, mostly due to growth work approved by the Department. Individual overruns ranged from five to 48 per cent, the latter being largely due to a late change to the ship's equipment update package by the Fleet.

5.11 In April 1990 the Department accepted the need for a marked improvement in completing projects on time. Their target was to reduce overruns by 10 per cent by April 1991 and 30 per cent by April 1992. This latter target was achieved in 1990-91 (Table 6). They have also improved the information on overruns to identify more clearly the problems and corrective action needed.

Performance: Cost

5.12 The introduction of arms-length contracts and risk pricing has minimised the extent to which the Department suffer cost increases on the work provided for in original contracts. However, growth work is covered by amendments to contracts resulting in extra costs. Table 7 compares the total cost incurred by the Department with their budget based on the original contract, including an allowance for growth work, and shows the average cost overrun in percentage terms for projects costing more than £0.5 million, excluding those in progress at Vesting Day.

<table>
<thead>
<tr>
<th>Table 7: Average percentage cost overruns on original contract budgets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of completion</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>1987-88</td>
</tr>
<tr>
<td>1988-89</td>
</tr>
<tr>
<td>1989-90</td>
</tr>
<tr>
<td>1990-91</td>
</tr>
</tbody>
</table>

Source: Director General of Ship Refitting.

Cost overruns were worse in 1987-88 than in 1987-88.

5.13 In 1990-91, 12 out of 17 projects completed at Devonport, and 10 out of 11 at Rosyth, overran their original budgets. Figure 6 shows that the main reason for cost overruns, categorised in the same way as for time overruns (paragraph 5.8), was growth work approved by the Department.

5.14 All nine completed refit projects in the National Audit Office sample had exceeded their original budgets, by 18 per cent on average. Individual overruns of one to 60 per cent were mainly due to growth work, though on four projects cost increases also occurred due to increases in Dockyard hourly rates following Naval workforce reductions (paragraph 5.29 and Appendix 2).

5.15 To improve cost control, DSGR have identified the need for greater realism in budgets to reflect ship condition and lessons learnt, and for stricter budgetary controls. DSGR's target for 1990-91 was to contain the full cost of each refit to within 10 per cent of the budget. Thirteen of 28 projects completed in 1990-91 met this target.

Performance: Quality

5.16 Both commercial managers have attained accreditation for their quality control systems. The Department's Quality Assurance Directorate staff, in liaison with DSGR staff, ensure that the appropriate contract quality assurance conditions are specified and achieved. The Department have recognised that it is more difficult to obtain an objective measure of quality. New performance indicators record the number of deficiencies found during certain specified post-refit trials and the number of non-conformance reports raised by the Quality Assurance Directorate staff. Further quality performance indicators are under discussion.
5.17 One difficulty in assessing the standard of the Dockyards' work has been the absence of any feedback, except for major problems, from a vessel once it has left the Dockyard. Some defects have to be dealt with by ships' staff at sea. The Department should ensure that all defects are fed back to the commercial managers through DGSR, in order that both the Department and the commercial managers can improve the quality of refit work.

Customer views on Dockyard performance

5.18 The Navy were generally pleased with the quality of vessels returned from the Dockyards. However, they were concerned about late completions of refits, which had affected operational plans. The National Audit Office noted that most delays were attributable to the Department (Figure 5).

Competition and diversification

5.19 An objective of introducing commercial management was to maximise competition. The commercial managers were expected to compete for an increasing proportion of the unallocated Naval work and to absorb a greater proportion of the Dockyard overheads by winning commercial work. The Department try to ensure that competition between the commercial managers and private ship repair companies is on a fair basis, and that the commercial managers are not subsidised from public funds.

The unallocated programme

5.20 Table 8 shows that the amounts of work won by each Dockyard from the unallocated programme have been substantially less than the commercial managers' original estimates. The National Audit Office found that there were two main factors: the failure to increase the
Table 8: Unallocated Naval work won (manweeks)

<table>
<thead>
<tr>
<th></th>
<th>1987-88</th>
<th>1988-89</th>
<th>1989-90</th>
<th>1990-91</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devonport</td>
<td>6,000</td>
<td>14,000</td>
<td>22,000</td>
<td>23,000</td>
<td>65,000</td>
</tr>
<tr>
<td>Estimate</td>
<td>nil</td>
<td>nil</td>
<td>1,377</td>
<td>1,629</td>
<td>3,006</td>
</tr>
<tr>
<td>Actual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosyth</td>
<td>6,000</td>
<td>15,000</td>
<td>22,000</td>
<td>29,000</td>
<td>72,000</td>
</tr>
<tr>
<td>Estimate</td>
<td>1,215</td>
<td>8,402</td>
<td>4,730</td>
<td>3,427</td>
<td>17,774</td>
</tr>
<tr>
<td>Actual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Commercial managers

The amounts won have been substantially less than the original estimates which were based on expectations of a much larger programme.

The National Audit Office noted that Babcock Thorn Limited had declined to bid in 19 consecutive Royal Fleet Auxiliary competitions. Both commercial managers stated that they had to give priority to the core programme and therefore could not always guarantee the availability of dry docks. However, the position changed in 1991-92 for Royal Fleet Auxiliary refits. Devonport Management Limited responded to 12 of 13 invitations to tender and won four contracts. Babcock Thorn Limited won a further four contracts but in their case these were awarded on the basis of utilising Departmentally-funded labour. They told the National Audit Office that they were not competitive for Royal Fleet Auxiliary refits because they had the costs associated with a yard built to deal with more complex ships.

The unallocated programme has largely consisted of Royal Fleet Auxiliary and small vessels, plus some minor contracts. Table 9 shows the commercial managers response and success rates on this work.

The National Audit Office found that from 1987-88 to 1989-90, the private ship repair yards had a better record than the commercial managers on completing refits to time. However, in 1990-91 this position was reversed, with refits completed in private yards incurring an average overrun of 53 per cent. As with the Dockyards, the private yards' figures were significantly affected by difficulties with particular refits.

To date, only one major warship project, the refit and repair of HMS Southampton, has been put out to competition. Both commercial managers submitted bids, but the contract was won by Swan Hunter Shiplbuilders Limited. DGSR consider that the competition resulted in good value for money and an hourly rate for growth work significantly below that of the lower Dockyard bidder. One reason for this was Swan Hunter’s more extensive use of competitive sub-contracting than is usual in the Dockyards. The contract was completed in May 1991.

Commercial work

Targets for commercial work were laid down in side letters to the term contracts and were based on the companies’ own predictions. In total, these targets were achieved up to 31 March 1991 (Table 10). To win these levels of

Table 9: Analysis of unallocated Naval work offered to and won by the commercial managers 1987-1991

<table>
<thead>
<tr>
<th></th>
<th>Tenders invited</th>
<th>Response rate</th>
<th>Contracts awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devonport</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royal Fleet Auxiliaries</td>
<td>42(a)</td>
<td>19 (45%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Small ships</td>
<td>168</td>
<td>79 (42%)</td>
<td>13 (7%)</td>
</tr>
<tr>
<td>Minor contracts</td>
<td>39</td>
<td>29 (74%)</td>
<td>7 (18%)</td>
</tr>
<tr>
<td>Rosyth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royal Fleet Auxiliaries</td>
<td>42</td>
<td>7 (17%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Small ships</td>
<td>105</td>
<td>38 (36%)</td>
<td>7 (7%)</td>
</tr>
<tr>
<td>Minor contracts</td>
<td>50</td>
<td>45 (90%)</td>
<td>19 (38%)</td>
</tr>
</tbody>
</table>

Source: Director General of Ship Refitting

(a) In 12 cases a dock was not available.

The commercial managers have won very few of the larger jobs.
commercial work, both commercial managers have diversified, as envisaged in pre-Vesting Day negotiations, into other markets, including railway rolling stock and diesel engine refurbishment, joinery products and services, weapons refurbishment and small boatbuilding.

5.26 Competitively won work continues to increase. In agreeing the costing rates with the Department for 1991–92, Babcock Thorn Limited included an estimate of 16,650 manweeks of competitive work (being the sum of unallocated Naval and commercial work). The comparable figure for Devonport Management Limited was 18,966 manweeks.

Constraints on ability to compete

5.27 A major reason for the Dockyards' inability to win more competitive work is the scale of Dockyard overheads, together with the arrangements for recovering them. Other factors have been the impact of the licence fee (paragraph 4.5) and the fact that the commercial managers started from a zero base. The Department consider that further productivity improvements are also needed.

5.28 The commercial managers recover the Dockyards running costs through a system of hourly rates and tariffs. Hourly rates are calculated annually by allocating costs (ie direct and indirect labour and variable and fixed overheads) to cost centres and then across the estimated total workload (manweeks), including non-core work, for each centre. The rates agreed are used to cost the labour content of core programme contracts. Tariffs are levied for the use of facilities (eg berths and dry docks) and for the provision of utilities (eg electricity).

5.29 In quoting for non-core work, the commercial managers have to take account of the hourly rates agreed (or likely to be agreed) with the Department. Reductions in the Naval workload have resulted in increases in the hourly rates, leaving the commercial managers in an increasingly uncompetitive position. For example, the four Royal Fleet Auxiliary refits that were competed in 1990–91 were all won by private yards, and the commercial managers' hourly rates for growth work were between 11 and 28 per cent higher than those of the successful bidders.

5.30 The term contracts envisaged that the hourly rates and tariffs would be agreed in advance for each year, thus providing a degree of risk for both parties. For example, any under-estimate of costs or over-estimate of workload might result in a loss to the commercial manager. In practice, until 1990–91, rates were not agreed until late in the financial year to which they related, mainly due to uncertainty as to the likely workload. In 1991–92, rates for Devonport Management Limited and Babcock Thorn Limited were agreed in July and November 1991 respectively.

5.31 For contract pricing purposes, provisional rates and tariffs are used. Subsequent increases as a result of in-year workload reductions can have a serious impact on both the commercial managers and the Department. For the former, late increases can make commercial work unprofitable. For example, Devonport Management Limited stated that the removal of a Naval vessel from the programme resulted in a major commercial project having to absorb a greater proportion of the annual dock charge and a loss on the project. The Department's budgeting process is adversely affected by increases in the cost of individual projects.

5.32 This uncertainty can inhibit the commercial managers' incentive to compete. In 1990 Devonport Management Limited wished to quote for the refit of a ship owned by the Natural Environment Research Council. The company believed that they could compete on
the basis of the 1990–91 provisional hourly rates, but not on the likely revised rates. They asked the Department to protect them from any increases in rates included in their bid; in effect, proposing a differential rate for commercial work. Devonport Management Limited estimated that had they been successful, this approach would have saved the Department £6 million in underutilised labour costs. The Department did not respond within the timescale open to the company, the latter did not submit a bid and the contract went abroad. The term contracts provide for the use of differential rates where different types of work are done within the same cost centre. However, the Department regard warship and commercial vessel work as being of the same type and believe that different overhead rates might lead to accusations of subsidy. The National Audit Office noted that in terms of achieving value for money for the taxpayer, there would be no difference between undertaking work at marginal cost to the Department (paragraph 2.8) or for another body funded by the Exchequer such as the Natural Environment Research Council.

5.33 DGSR concluded in February 1991 that the present system of fixing hourly rates was unsatisfactory. They felt it encouraged over-capacity, which the Department had to fund, made in-year cash management by DGSR very difficult, and provided little incentive for the Dockyards to become more efficient. DGSR have put proposals to the commercial managers to fix hourly rates in advance based on agreed levels of manpower, fixed well below estimated peak loading levels to encourage efficiency and a greater use of sub-contractors and casual labour. Any costs associated with surplus labour as a result of subsequent changes in workload would be separately identified. The commercial managers stated that they had set workforce levels below those required to meet workload peaks.

Overall performance assessment

5.34 The Committee of Public Accounts recommended that the Department should vigorously pursue the development of performance indicators and publish them with DGSR's annual Operating Statement (HC 55 paragraph 37). Performance indicators have been developed to cover the performance of DGSR; for example, comparison of refit projects' outturn expenditure with the estimate, assessment of progress in introducing risk pricing, and reports on DGSR's running costs. Measures of the commercial managers' performance on time, cost and quality have yet to be incorporated.

5.35 The term contracts required the commercial managers to devise systems to measure performance to quantify efficiency savings actually achieved. Such systems have not been developed, although there are global measures of savings (paragraph 5.4). In January 1990 the Department engaged consultants Coopers and Lybrand Deloitte to propose performance measures covering a wide range of activities, though concentrating on the value for money being achieved. The measures proposed are the basis for quarterly performance assessments by the commercial managers. These are discussed at the six-monthly meetings between DGSR and commercial managers at Board level. The Department accept that they give no indication whether predicted savings have been achieved, but consider them a useful guide in measuring improvements in the commercial managers' performance.

5.36 The commercial managers' published Accounts showed that between 1987–88 and 1990–91, Devonport Management Limited's operating profit was about 4 to 5 per cent and Babcock Thorn Limited's about 5 to 6 per cent of turnover. However, the level of capital invested by the companies has been relatively low (paragraph 4.13); in 1990–91 the ratio of profit to capital employed by the companies, ie excluding the value of Government-owned assets, was 36 per cent at Devonport Management Limited and 94 per cent at Babcock Thorn Limited, compared with the 21 per cent target rate on capital for risk contracts allowed for in the Profit Formula for Government contracts. The Department have sought to reflect this by negotiating profit rates below those set by the Profit Formula Sixth Review Board in July 1990.
Part 6: Future Dockyard management

6.1 This Part examines the Department's progress in considering arrangements for the management of the Dockyards after the expiry of the existing term contracts in 1994.

Planning for future Dockyard management

6.2 Under the term contracts, the Department must inform the commercial managers by 5 October 1992 whether they propose to renew their contracts. In practice, the Department need to make decisions significantly earlier.

6.3 A Departmental Steering Group identified the main options for future management as privatisation or modified "Government Owned Contractor Operated" arrangements. As a fallback, should commercial options fail, they identified the option of a Government management arrangement (a Government owned plc or Agency).

6.4 The Department's consultants, Samuel Montagu, had earlier advised that some form of modified version of the current arrangements would be the best option in the medium term. However, the Department are still considering some form of privatisation.

6.5 Having studied the planning timescales for each main option, the Department concluded in July 1990 that a Ministerial decision was needed by January 1991 on the option to be pursued. However, the Department's Options for Change studies (paragraph 6.9) could have a significant impact upon the size of the Navy's refitting programme, the location of the work, and how it is carried out. The Department concluded that a particular course of action should not be recommended until the outcome of these studies was known. It is now unlikely that a decision on the future management of the Dockyards will be made until later in 1992.

Lessons learnt from commercial management

6.6 The Department have identified 14 key areas where they wish to improve the existing arrangements if commercial management were to continue (Appendix 6). These include refit contract terms, redundancy liabilities, the licence fee and investment in new assets. The more important areas were also identified by the National Audit Office as those where improvements were needed.

6.7 The commercial managers informed the National Audit Office that they would also be seeking improvements in any new term contracts. They would wish to see a stabilised programme of work, better arrangements for the procurement of new assets, a lower licence fee, and greater commitment from the Department through longer term contracts.

Other Departmental reviews

6.8 In July 1990 the Department announced significant reductions in the size of the Royal Navy. The destroyer/frigate force was to be "around 40" instead of "about 50"; the submarine force, in addition to Trident, was to be about 16 compared with the current 27. Most of the reductions will be achieved by paying off older vessels, and have had an immediate impact on the Dockyards. The Department have since confirmed that whilst it was likely that the Royal Fleet Auxiliary force would be reduced, final decisions had yet to be taken.

6.9 Further studies are reviewing the level of support required for a smaller Navy and how this might best be provided. The two studies that most affect the Dockyards are those on Future Shipbuilding and Ship Repair and Refit Requirements; and the future of the Fleet Maintenance and Repair Organisation, Portsmouth.

6.10 Currently there is excess ship repair and refit capacity in the United Kingdom, both within the Department's establishments and in the private
yields. It is therefore essential that the Department determine the level of long-term refitting capacity required. The National Audit Office found that they have considered this on a number of occasions, but have failed to arrive at any firm conclusions. As a result there is no definition of how much capacity should be guaranteed within the Dockyards nor of the degree to which that capacity should be utilised.

Factors to be taken into account

6.11 The National Audit Office's examination highlighted the following factors which should be taken into account by the Department in their decisions on the way forward.

Dockyards overheads and workload

6.12 The Dockyards, with their high overheads, currently find it difficult to compete with the private ship repair yards for repair work. Achievement of the objective of improving value for money by bringing more work into the Dockyards will therefore be difficult, but would be assisted by a combination of the following:

- further development of new markets by the commercial managers;
- further rationalisation of Dockyard assets and reductions in overheads, based on a stable forward Naval programme which represents a viable workload;
- further improvements in efficiency.

6.13 The commercial managers would also be assisted by overhead recovery arrangements which give them sufficient flexibility to compete in commercial markets. This is difficult for the Department to achieve because of the potential conflict between their two objectives of ensuring that the commercial managers compete on fair terms with the private yards, and maximising the contribution which commercial work makes to meeting the Dockyards' overheads. As a possible solution Devonport Management Limited have offered to negotiate in advance the total annual contribution to overheads from commercial work. This would give the Department an agreed contribution, while giving the commercial managers greater flexibility and maximising their incentive to obtain commercial work. The Department believe such an arrangement to be a subsidy, and is unnecessary if rates are agreed by commencement of the financial year of application.

Use of commercial ship repair yards

6.14 Excess capacity in the private ship repair yards currently enables the Department to obtain competitive prices for unallocated work. This raises the question whether better value for money could be obtained by opening up a greater proportion of the Naval workload to competition. Some private yards have the advantage of possessing the database and skills used to build the Navy's ships. However, competition would not necessarily give better value for money in the short term when the Department still has to pay the commercial managers to retain the required capacity.

Payment for under-utilised Dockyard facilities

6.15 The commercial managers have also pointed to the need to maintain competence on sophisticated systems through nominated subcontractors even where competition was applied. A similar arrangement operates in some other countries (paragraph 6.18).

Overseas experience

6.17 The National Audit Office obtained information on the experience of overseas Navies: Australia, Canada, The Netherlands, Germany and the United States (Appendix 3).

6.18 None of these countries has chosen to follow the United Kingdom's "Government Owned Contractor Operated" approach. However, each country has a different mix of public and private ship repair facilities and a different policy for determining the level of competition within their refitting programmes. The National Audit Office's analysis highlighted a number of factors that the Department might usefully take into account:
in the United States private shipyards have won most of the competitions for surface ships, and public shipyards most of the competitions for submarines, rendering effective competition between public and private yards very difficult;

- the benefits to be obtained from allocating the refits of certain vessels to the shipyards that originally built them; and

- the advantages of putting the less complex aspects of a refit out of competition, while awarding the more technical elements to one of the Dockyards or to a specialist equipment contractor.

This latter approach has been tried successfully in Germany and was a feature of the refit of HMS Southampton at Swan Hunter.
Appendix 1
Extracts from 1990–91 DGSR Operating Statement

<table>
<thead>
<tr>
<th>Total costs by programme (£'000)</th>
<th>Core</th>
<th>Unallocated</th>
<th>Unprogrammed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refit contracts</td>
<td>384,794</td>
<td>54,729</td>
<td>27,566</td>
<td>467,099</td>
</tr>
<tr>
<td>Ministry Supplied Materials</td>
<td>48,437</td>
<td>4,364</td>
<td>153</td>
<td>52,954</td>
</tr>
<tr>
<td>Cost of owning Dockyard assets(1)</td>
<td>(13,649)</td>
<td>(468)</td>
<td>(501)</td>
<td>(14,638)</td>
</tr>
<tr>
<td>Administration and other costs(2)</td>
<td>64,063</td>
<td>11,809</td>
<td>3,591</td>
<td>79,463</td>
</tr>
<tr>
<td>Total</td>
<td>468,040</td>
<td>70,440</td>
<td>30,000</td>
<td>564,470</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total costs by location (£'000)</th>
<th>Devonport</th>
<th>Rosyth</th>
<th>Private Yards</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refit contracts</td>
<td>240,623</td>
<td>168,807</td>
<td>75,689</td>
<td>467,099</td>
</tr>
<tr>
<td>Ministry Supplied Materials</td>
<td>28,464</td>
<td>21,520</td>
<td>4,970</td>
<td>52,954</td>
</tr>
<tr>
<td>Cost of owning Dockyard assets(1)</td>
<td>(11,802)</td>
<td>(2,834)</td>
<td></td>
<td>(14,638)</td>
</tr>
<tr>
<td>Administration and other costs(2)</td>
<td></td>
<td></td>
<td></td>
<td>79,463</td>
</tr>
<tr>
<td>Total</td>
<td>290,157</td>
<td>191,161</td>
<td>115,109</td>
<td>584,670</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Government owned fixed assets by location: Net current value at 31 March 1991 (£'000)</th>
<th>Devonport</th>
<th>Rosyth</th>
<th>Private Yards</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>6,204</td>
<td>1,283</td>
<td></td>
<td>7,486</td>
</tr>
<tr>
<td>Buildings</td>
<td>123,040</td>
<td>36,895</td>
<td></td>
<td>159,935</td>
</tr>
<tr>
<td>Plant and machinery</td>
<td>44,573</td>
<td>22,003</td>
<td></td>
<td>66,581</td>
</tr>
<tr>
<td>Total</td>
<td>173,617</td>
<td>60,165</td>
<td></td>
<td>233,782</td>
</tr>
</tbody>
</table>

Notes:
1. This figure represents the difference between the annual cost of fixed assets as represented by depreciation and interest on fixed capital (£19,144,000) and the corresponding commercial value as represented by the licence fees received (£33,790,000).
2. This heading includes Dockyard redundancy costs of £51 million.
## Appendix 2
### Results of the National Audit Office project examination

### Devonport

<table>
<thead>
<tr>
<th>Vessel and type of work</th>
<th>Date of refit completion</th>
<th>Actual time taken (days)</th>
<th>Time overruns (%)</th>
<th>Main reason</th>
<th>Actual cost ((\text{£m}))</th>
<th>Cost overruns (%)</th>
<th>Main reason</th>
<th>Growth work as % of total refit cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballister T22 Frigate Refit</td>
<td>1 Nov 1989</td>
<td>409</td>
<td>7</td>
<td>Commercial manager responsibility</td>
<td>13.5</td>
<td>40</td>
<td>Hourly rate changes</td>
<td>15</td>
</tr>
<tr>
<td>Brazen T22 Frigate Refit</td>
<td>25 April 1990</td>
<td>386</td>
<td>5</td>
<td>Commercial manager responsibility</td>
<td>14.2</td>
<td>21</td>
<td>Hourly rate changes</td>
<td>23</td>
</tr>
<tr>
<td>Oppurette Diesel Submarine Refit</td>
<td>14 Aug 1990</td>
<td>737</td>
<td>9</td>
<td>Extension of sea trials and subsequent discovery of a defect</td>
<td>28.1</td>
<td>1</td>
<td>Material rate changes</td>
<td>9</td>
</tr>
<tr>
<td>Boxer T22 Frigate Refit</td>
<td>7 Nov 1990</td>
<td>428</td>
<td>6</td>
<td>Commercial manager responsibility</td>
<td>15.2</td>
<td>3</td>
<td>Hourly rate changes</td>
<td>24</td>
</tr>
<tr>
<td>Telladar Nuclear Submarine Routine overhaul</td>
<td>6 March 1991</td>
<td>157</td>
<td>20</td>
<td>Emergent work</td>
<td>10.5</td>
<td>4</td>
<td>Emergent work</td>
<td>18</td>
</tr>
<tr>
<td>Solutead Nuclear Submarine Refit</td>
<td></td>
<td></td>
<td></td>
<td>Refit still in progress.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Rosyth

<table>
<thead>
<tr>
<th>Vessel and type of work</th>
<th>Date of refit completion</th>
<th>Actual time taken (days)</th>
<th>Time overruns (%)</th>
<th>Main reason</th>
<th>Actual cost ((\text{£m}))</th>
<th>Cost overruns (%)</th>
<th>Main reason</th>
<th>Growth work as % of total refit cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ariadne Leander Frigate Refit</td>
<td>13 April 1989</td>
<td>357</td>
<td>19</td>
<td>Emergent work</td>
<td>7.1</td>
<td>29</td>
<td>Emergent work</td>
<td>36</td>
</tr>
<tr>
<td>Juno Leander Frigate Refit</td>
<td>17 Nov 1989</td>
<td>299</td>
<td>16</td>
<td>Commercial manager responsibility</td>
<td>7.4</td>
<td>26</td>
<td>Emergent work</td>
<td>36</td>
</tr>
<tr>
<td>Edinburgh T42 Destroyer house overhauls</td>
<td>12 Sept 1990</td>
<td>253</td>
<td>48</td>
<td>Late addition to work package and poor weather</td>
<td>7.1</td>
<td>60</td>
<td>Late addition to work package</td>
<td>22</td>
</tr>
<tr>
<td>Scylla Leander Frigate Refit</td>
<td>17 Sept 1990</td>
<td>344</td>
<td>12</td>
<td>Extra work (some defective not incorporated into work package); sea trials delayed due to operational reasons; discovery of defects during sea trials</td>
<td>13.3</td>
<td>46</td>
<td>Emergent work</td>
<td>32</td>
</tr>
<tr>
<td>Churchill Nuclear Submarine Refit</td>
<td></td>
<td></td>
<td></td>
<td>Refit terminated before completion</td>
<td></td>
<td></td>
<td></td>
<td>Refit still in progress.</td>
</tr>
<tr>
<td>Renown Refit Nuclear Submarine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. This figure excludes the cost of Ministry Supplied Materials and certain DGSN administrative costs.
2. Time overruns represent the difference between the expected length of the refit when the contract started and actual time taken to complete, including agreed contract extensions.
3. Cost variances represent the difference between the Department's estimate at contract start date and actual expenditure.
4. On cancellation, the pricing of the refit of CHURCHILL was amended to cost plus.
5. The refit of RENOWN began under cost plus arrangements, a risk contract was agreed 13 months after the start of the refit.

*Source: National Audit Office project analysis and DGSN Master Ship Completion List.*
Appendix 3
The approaches to ship refitting adopted by certain overseas Navies

None of the Navies consulted have appointed commercial managers to run their publicly-owned dockyards exactly like the United Kingdom's "Government Owned Contractor Operated" Dockyards. The approach adopted by each Navy is set out below.

**Australia**

Two public dockyards have carried out ship repair and refitting work. One of these now operates as a division of Australian Defence Industries Limited (a wholly Government owned company) and has an exclusive five year contract (expiring in 1993) with the Government. The other dockyard has been leased to private contractors.

The National Audit Office did not obtain any details of how vessels are awarded to these yards, nor of the extent of competition that exists.

**Canada**

Frigate and destroyer refits are normally carried out by private dockyards, though weapons systems work is done in a public yard. Submarines, small ships and auxiliary vessels are refitted in one of two public yards.

**Germany**

Frigates, destroyers and small ships are refitted under the supervision of the Government "Arsenal" in private shipyards, which compete for the contract. Weapons systems work is undertaken by the "Arsenal" or, in some cases, is contracted out by the "Arsenal". A similar approach was adopted for submarines, except that they were awarded to the yard that originally built them. However, for reasons of economy, competition is now extended to other shipyards which have sufficient experience in handling non-magnetic steel.

Note: the information obtained relates only to that part of Germany that has been a member of NATO.

**The Netherlands**

Frigates, destroyers, small ships and some auxiliary vessels are refitted in one public Naval dockyard. Some ships are refitted in commercial yards. Some commercially run dockyards are limited companies owned wholly or partly by the Government. Most submarines are built and refitted in one private yard, although older vessels may be refitted in the Naval dockyard.

**United States**

Refitting work of all types of vessel is carried out by a mix of eight public yards and numerous private yards. Approximately 70 per cent of work is allocated to the public yards; the rest is competed in the private sector. There is a limited programme of competition between the public and private yards.

**Common Features**

All the Navies consulted award some refitting work to private dockyards.

Canada, the Netherlands and Germany ensure that where a refit is carried out in a private yard, the weapons systems work is done within the public sector.
Appendix 4
United States Navy initiatives in ship refitting

1 About 70 per cent of refitting work is carried out in publicly owned and run shipyards, with the remaining 30 per cent being placed in private yards following competition. The Department of Defense's Naval Sea Systems Command is responsible for the refit and repair of Navy ships. It has management control of the eight public shipyards and the 15 Supervisors of Ships who oversee the work carried out in the private shipyards. Annual expenditure exceeds $4 billion.

2 In 1990 the United States General Accounting Office published two reports on ship repair:

*Cost Growth and Schedule Overrun Problems Continue at the Shipyards* (July 1990)

The report identified cost increases and schedule (time) overruns at both public and private yards. The reasons for the problems bore a marked similarity to United Kingdom experience; for example, poorly defined work packages, material supply problems, and additional unplanned work. In response to the report, the Department of Defense drew attention to initiatives that were on-going as part of the Naval Industrial Improvement Program for public shipyards, and referred to various actions being pursued with the private shipyards.

*Status of the Public and Private Shipyard Competition Program* (September 1990)

Although the level of competition between public and private ship repair yards had risen to over 13 per cent in budgetary terms, there was little effective competition in practice: public yards generally won submarine orders, there being no private yard bids, and private yards won those for surface ships. Nevertheless, the United States Navy believed that the programme had led to public yards developing a more business-like approach.

3 To learn more about these initiatives, the National Audit Office and a DGSR representative visited the United States Navy.

4 The Naval Industrial Improvement Program was established in 1984 with the overall objectives of reducing the cost of ship repair and overhaul while maintaining quality and timeliness. The programme focussed on identifying and changing procedures and working practices that impeded efficiency and operational control. The initiatives, which are still on-going, have produced significant savings and improvements in financial management and business planning.

5 In May 1990 the Naval Sea Systems Command produced a Corporate Operations Strategy and Plan for 1990 to 1994, which drew on the Naval Industrial Improvement Program and the results of the Ship Depot Maintenance study completed in January 1989. The plan identifies the changes required in nine key areas:

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<th>Cost and schedule performance</th>
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<td>Schedule performance</td>
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<tr>
<td>Greater integration of activities, including matching of work with available skills, better control of new work, and the introduction of accountability.</td>
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Direct labour cost performance
Better manpower planning, including use of surplus labour, and increased use of project management.

Overhead cost performance
Review of all overheads, a reduction in the layers of supervision, and retirement of unused capacity.

Material cost performance
Reduce the direct and indirect cost of materials, improve material planning and management of surplus material, and obtain greater efficiency in the use of materials.

Improved capital plant management
Implement a Capital Asset Management Plan aimed at modernising practices and procedures.

Technical Excellence and Human Resource Strategy

Technical excellence
Establish uniform integrated technical working procedures and set up centres of excellence.

Safety enhancement
Develop a health and safety improvement programme.

Human Resource Strategy
Establish a manpower planning system, introduce organisational changes, and improve management development and training.

Environmental compliance
Increase environmental awareness at all levels and adopt a strong commitment to comply with requirements. Quantified targets have been set for each area, with an indication of the detailed actions to be taken and how performance will be measured.

6 The plan incorporates improvements identified in an Advanced Industrial Management Program, which draws on a strong commitment to "Total Quality Management". A lower-level Strategic Operations Plan has been developed by each of the public shipyards. In addition, "Proof of Concept" exercises are carried out, whereby all untested initiatives are proven on a limited number of projects before being applied throughout the shipyards.

7 With regard to private shipyards the Naval Sea Systems Command are working to reduce cost increases and time overruns in the following ways:

- applying the lessons learned from previous refits; in particular, by including growth work in the specified work packages for future refits;
- deferring non-essential growth work to the next refit period;
- incorporating liquidated damages clauses in contracts as an incentive to complete on time;
- taking a contractor's previous performance into account more when evaluating contract bids;
- retaining the right to bring in a third party to carry out growth work when a price cannot be agreed with a contractor;
- placing planning staff in the contractor's yard to provide technical support and guidance, with the aim of reducing problems arising from the late supply of materials and information.
Appendix 5
DGSR structure and complement at 7 June 1991

DGSR's Primary Objectives
To provide specialist advice, policy and guidance in ship refitting matters and to inform the planning and resource allocation process.
To establish and oversee the ship refitting and asset programme to agreed time and cost whilst meeting specified standards.
To manage allocated resources efficiently and effectively and in compliance with Departmental standards.
To develop, introduce and maintain appropriate organisation, management and communication structures, procedures and systems.

Note: Constituent figures only add up to 682 - DGSR and his personal staff are additional.
Appendix 6

Improvements to be sought in future term contracts

As part of their planning for the future management of the Dockyards, the Department have identified 14 key areas where they would wish to improve the existing arrangements if commercial management continues (Report, paragraph 6.6). These are listed below:

1. Increase the commercial managers’ liability for redundancies.
2. Sever the Department’s links on all personnel related matters, for example canteens and welfare.
3. Encourage investment/purchase of assets by the commercial managers.
4. Improve the licence fee structure.
5. Introduce improved procedures within DCSR for managing refit projects.
6. Establish performance targets and related incentives; and a formal evaluation process in respect of time, cost, quality and efficiency.
7. Improve stage payment arrangements.
8. Introduce Liquidated Damages for refit project contracts.
9. Achieve an increase in the commercial managers’ commitment to meeting pre-refit dates, and improve the Department’s ability to impose sanctions.
10. Achieve increased responsibility/accountability by the commercial managers for materials.
11. Obtain better definition for accountability of assets/services within the Naval Bases.
12. Establish the right in the term contracts to implement, without delay, the necessary amendments to reflect changes in Government procurement policy.
13. Encourage the commercial managers to declare surplus/under-utilised assets.
14. Encourage greater commercial manager investment in “Through Life” support.