

COPY 39 of 40

Covering 

UNCLASSIFIED



MINISTRY OF DEFENCE:
NUCLEAR RESEARCH & SUPPORT SERVICES

MEMORANDUM BY THE COMPTROLLER
AND AUDITOR GENERAL

NATIONAL AUDIT OFFICE

29 OCTOBER 1990

NAO Ref: ESU 614

NATIONAL AUDIT OFFICE
Buckingham Palace Road
Victoria

~~SECRET~~ 10/11/2008 - Declassified
London SW1W 9SP



National Audit Office

John Ainslie
Scottish Campaign for Nuclear
Disarmament
15 Barrland St
Glasgow
G41 1QH

Helping the nation spend wisely

GTN 3935

Switchboard +44 (0)20 7798 7000

Facsimile +44 (0)20 7798 7070

Direct Line +44 (0)20 7798 7830

Direct Fax +44 (0)20 7798 7070

Email julian.wood
@nao.gsi.gov.uk

Room ELIZABETH 2

Reference FOI-317

Date 11 November 2008

Dear Mr Ainslie

FREEDOM OF INFORMATION REQUEST

Thank you for your e-mail dated 15 September in which you requested a copy of the National Audit Office memorandum into the Atomic Weapons Establishment in 1990. This request has been handled under the Freedom of Information Act 2000.

A copy of the memorandum is enclosed. I am sorry for the delay in responding to your request.

Annex A to this letter sets out the steps you should take if you are not satisfied with the way in which we have handled your request for information under the Freedom of Information Act 2000.

Yours sincerely

Julian Wood
Director, Corporate Affairs



NUCLEAR RESEARCH AND SUPPORT SERVICES

CONTENTS

| | Pages |
|--|-------|
| Executive Summary of Findings and Conclusions | 1 |
| <u>Part 1 Introduction</u> | 17 |
| - Background | 17 |
| - Committee of Public Accounts and other Reports | 21 |
| - Scope of the National Audit Office Examination | 22 |
| <u>Part 2 Planning of Defence Nuclear Warhead Research</u> | 25 |
| - Determining the Nuclear Warhead Programme | 25 |
| - Defining research to be undertaken in support of the Nuclear Warhead Programme | 29 |
| - Funding the Nuclear Warhead Programme | 37 |
| <u>Part 3 Management of Nuclear Warhead Research</u> | 41 |
| - Features of Best Practice | 41 |
| - Management of Information Systems | 49 |
| - Manpower | 51 |
| - Recent Management Initiatives | 56 |
| <u>Part 4 Managing Support Services</u> | 61 |
| - Technical Services including Engineering Workshops | 63 |
| - Site Services and Maintenance | 66 |
| - Decommissioning and Waste Management | 69 |
| - Security and Safety | 75 |
| - Capital Projects | 77 |

APPENDICES

| | Pages |
|---|-------|
| 1. Organisation Chart: Nuclear Programme | 81 |
| 2. Recent AWE reviews | 82 |
| 3. Formation of the Defence Nuclear Programme | 92 |
| 4. Chart Showing the linkage between the Nuclear Procurement Assumptions and individual items of work | 95 |

MINISTRY OF DEFENCE :
NUCLEAR RESEARCH AND SUPPORT SERVICES

EXECUTIVE SUMMARY OF THE NATIONAL AUDIT OFFICE'S
FINDINGS AND CONCLUSIONS

1. The Procurement Executive of the Ministry of Defence (the Department) is responsible for nuclear weapons procurement for the United Kingdom Armed Services. The Department's Atomic Weapons Establishment (AWE) at Aldermaston, Burghfield, Cardiff and Foulness provide the national nuclear warhead capability from research through to development and production. Nuclear warhead research carried out by the AWE is of critical importance to existing and future weapons such as the £9 billion Trident programme.

2. The end-users of the AWE's nuclear warhead programme are the Armed Services. However, the role of customer is fulfilled by the Chief Scientific Adviser, the Assistant Chief of Defence Staff (Policy and Nuclear) and, in the Procurement Executive, the Chief of Strategic Systems Executive and the Director of Air Armament.

3. This Memorandum records the results of an examination by the National Audit Office of the Department's planning, management and control of

nuclear warhead research and support services carried out by the AWE at Aldermaston. The National Audit Office examined:

- (a) whether adequate systems and procedures exist for planning nuclear warhead research in order to achieve the aims and objectives of the United Kingdom nuclear defence policy (Part 2);
- (b) whether adequate systems and procedures are in operation for controlling and monitoring the progress, cost and effectiveness of nuclear warhead research (Part 3); and
- (c) whether the AWE Aldermaston support services are planned and controlled efficiently as a necessary part of nuclear warhead research, development and production (Part 4).

The National Audit Office's main findings and conclusions are summarised below.

**Findings and
Conclusions**

Systems and procedures for planning

4. Nuclear warhead research is planned as an integral part of the nuclear warhead programme and

reflects the influence and value of the 1958 Mutual Defence Agreement with the United States (paragraph 2.2).

5. There is an established system for setting the broad framework of the AWE's nuclear warhead programme, including research, whilst the Executive Responsibility Budget system provides the basis for planning and managing the detailed research tasks. However, at the time of the National Audit Office's examination, the AWE had not established measurable prioritised objectives providing a link between the broad aims and the detailed research programme. Nor had they defined a minimum capability. The Department have recognised these deficiencies and are introducing improvements through the implementation of their New Management Strategy and further development of the AWE Annual Report and Annual Review process through which the AWE programme is agreed with the customer. These improvements should provide a defined programme which will identify performance indicators, measurable objectives, priorities and the minimum capability (paragraphs 2.3 to 2.6).

6. Broad proposals for research tasks are presented to the AWE's senior management through the six-monthly Executive Responsibility Budget review process. However, the National Audit Office found

that, compared with the features of best practice of research management, the system had a number of weaknesses which reduced its effectiveness. In particular, there was no guidance or agreed framework for the evaluation of proposals; customers had little involvement; and resource estimates were not provided for items of work in the half-yearly task programme. Furthermore, the inter-relationship of individual tasks and their relevance to the overall programme were not defined. However, the Department informed the National Audit Office that the AWE's Annual Review format is developing in this direction (paragraphs 2.8 to 2.12).

7. The Department have recognised that the AWE's Annual Report has not in the past provided sufficient visibility of the programme of work to customers and that customers were insufficiently involved in determining research priorities. Accordingly, the Department have taken steps over the last four years progressively to improve the situation by involving customers in the Long-Term Costing process (which enables the Department to maintain a balance between their overall policy aims and the costed ten year programme). Further developments to tighten the customer-supplier relationship will follow on the setting of research objectives by the Nuclear Research Policy Group (paragraphs 2.14 to 2.18, 3.4).

8. In accordance with the Department's normal Estimates process the AWE were required to propose savings measures to offset enhancements to the 1988-89 research programme. Although the AWE's customers have not generally disagreed with their judgement the AWE were not able to demonstrate that savings measures identified represented the customers' lowest priority work. The improvements referred to at 7 above are designed to remedy the problem (paragraphs 2.19-2.20).

9. Manpower requirements are determined as an integral part of the Executive Responsibility Budget and Long Term Costings processes. But recruitment and retention problems have obliged the AWE to conduct several special reviews to determine achievable staff targets which would protect programme priorities. Furthermore, since the Department are required to produce forecasts which are as realistic as possible, task managers have based their manpower estimates, and hence their programmes of work, on the number and mix of staff which they expect to have available rather than those necessary to meet their objectives without recourse to overtime and other expedients. The Department do not consider zero-based budgeting to be cost effective (paragraphs 2.21 to 2.22).

Systems for controlling and monitoring progress,
cost and effectiveness

10. Although research work is subject to extensive peer review through a network of largely unminuted meetings and committees, the progress of research work is formally assessed twice a year on the basis of task reports prepared by task managers. Of the two sample occasions examined by the National Audit Office, one showed full documentation but the other was only one third complete, due to management effort having been diverted to another task. The Department informed the National Audit Office that, in view of the importance of these reports for monitoring and controlling the cost and progress of work this review documentation was normally produced in full (paragraphs 3.5 to 3.9).

11. The Executive Responsibility Budget task review reports did not enable senior management to evaluate whether expenditure to date represented value for money; nor did they provide a basis for decisions on whether to continue programmes of research. Also, there were inconsistencies in the content of task review reports, and individual tasks were reviewed in isolation with no attempt to consider the combined progress of related tasks (paragraphs 3.10 to 3.12).

12. The only tangible output from specific jobs within a task is often a technical report produced at the individual manager's discretion. Reviews had generally not been undertaken to determine technical or managerial lessons learnt from completed research work or whether value for money had been secured (paragraph 3.15).

13. Centrally provided management information was not always timely, accurate or complete. The AWE have recognised these deficiencies for several years and since 1984 have been attempting to transfer the management information system to a new computer. However, this has been delayed, initially through a lack of programming resources, and subsequently because of a lack of computer capacity. As a result, technical divisions have developed their own systems independently, and the AWE are endeavouring to make improvements to the system on the existing computer. Until a solution is provided the AWE will be unable to exploit the full potential of their Executive Responsibility Budget system as a management tool. The AWE recognise this situation and, following over three years of deliberations, propose shortly (subject to developments in introducing management contractors - paragraph 29) to let a feasibility study contract for setting the framework for the future development of information systems (paragraphs 3.16 to 3.18).

14. Staff recruitment and retention have been longstanding problems at the AWE primarily because of uncompetitive pay rates. To alleviate the situation the Department have resorted to overtime, the payment of Special Pay Additions and using contractors for support. However, overtime has been costly, poorly controlled and has become institutionalised, a situation which the AWE are in the process of addressing. The Special Pay Additions have been only partially effective and as at 1 September 1989 the manpower level at Aldermaston was almost 10 per cent below target (paragraphs 3.20 to 3.25).

15. The AWE have assessed the effects of manpower shortages only in relation to the requirement for the Trident programme which, as at 1 January 1989, accounted for most of the total vacancies (paragraph 3.26).

16. Longstanding problems in working practices, attitudes, motivation and management, leading to inefficiency, have been identified by recent reviews carried out at the AWE. Although proposals have been made to implement recommendations arising from the reviews, action has been limited and improvements in productivity arrangements are still under negotiation with union representatives

(paragraphs 3.27 to 3.33).

Planning and control of the AWE Aldermaston support services

17. The hourly cost of work undertaken by the Aldermaston main workshop was considerably higher than that charged by their commercial mechanical engineering contractors. This was mainly due to high overhead costs which the AWE attributed to the very high precision nature of the work undertaken in-house (paragraph 4.6).

18. In 1985 a Departmental review criticised the existence of a large number of small divisional workshops as not making the best use of the available resources, and recommended that they all be incorporated within the fully planned activities of a central workshop. In response, the AWE decided in 1988 to develop the existing two satellites of the central workshop leading to a 50 per cent reduction in the number of divisional workshops by October 1990 (paragraphs 4.7 and 4.8).

19. The main workshop operates a computerised planning and progress system whereas all other engineering workshops operate different and independent manual planning systems. The AWE recognise that better use of available resources

could be made by operating a fully integrated planning system (paragraphs 4.7, 4.9 and 4.11).

20. In the case of the main workshop the National Audit Office noted that: work was prioritised mainly on the basis of estimated duration time rather than urgency; budgeted time for work carried out accounted for only 52 per cent of the available workshop time; management information on costs was untimely; and only 60 per cent of the work was completed to time and cost. User divisions were also dissatisfied with the service provided by the workshop, their lack of control over this element of their budgets and the effect of late delivery on their research work. The AWE recognised the need for improvement in workshop planning and performance and were taking action at the time of audit fieldwork. The proposed action depends on the successful negotiation and implementation of a new AWE Industrial Performance Agreement (paragraphs 4.10 to 4.12).

21. Staff shortages have limited the amount of routine preventive site maintenance undertaken, and the extent of the resultant backlog of maintenance work has not been identified. The Department recognise that improvements in planning and control of site maintenance are required and that the use of overtime has provided poor value. Recommendations

to improve the situation are dependent upon the proposed AWE Industrial Performance Agreement being successfully negotiated and implemented (paragraphs 4.14 and 4.15).

22. The computerised maintenance planning and control system for mechanical and electrical inspections was judged by the AWE, in 1982, to be incapable of satisfying future requirements and by 1988 was considered to be of diminished effectiveness. A full replacement system is being developed but will cover only the new capital facilities. A scaled-down version has been proposed for existing facilities, but has yet to be defined and agreed (paragraph 4.16).

23. Decommissioning of facilities is very important in terms of maintaining and improving safety. It is a hazardous phase of a facility's life and is a relatively new field in which experience is limited. Because of the replacement of capital facilities and other developments there has been a build-up of decommissioning work at Aldermaston. The AWE have established a strategy and a programme extending to the year 2000 to deal with this work. From that date onwards the AWE envisage being able to deal with decommissioning tasks as they arise (paragraphs 4.17, 4.18 and 4.21).

24. Manpower shortages have had an adverse effect on the decommissioning programme, and this will increase significantly as the new capital facilities come on stream. As a result, the AWE have decided to extend the use of contractors on a pilot scheme basis. No cost appraisal of this initiative has yet been undertaken (paragraphs 4.22 and 4.23).

25. At present, there is no national disposal route for radioactive waste. This is a matter outside the Department's control. As a result, untreated waste is stored at Aldermaston and until a national policy is provided a new storage facility will be required every two years. The national disposal route considerations include the standards for waste packaging, and until guidance is provided nationally the AWE have decided to put in abeyance plans for new waste treatment plants (paragraphs 4.24 to 4.28).

26. The nature of Aldermaston's work requires especially high security and safety arrangements. Both condition the working of the Establishment. In 1978 an extensive enquiry into the safety of the Establishment resulted in a major programme of improvements which will continue into the 1990s. Some of this work has been delayed but the AWE have kept the safety implications under close review (paragraphs 4.29 to 4.33).

27. An extensive capital programme is in progress at Aldermaston, the major element of which is critical to safety and current production. The 31st Report from the Committee of Public Accounts, Session 1987-88 on the Control and Management of the Trident Programme identified serious delays and cost increases in the programme together with implications for the Trident warhead production. Since then measures to improve management and control of the capital programme have been introduced and costs have been contained within ministerially approved ceilings. The AWE management considered that additional manpower would be required for extending working of the old facilities and commissioning of the new and, unless this requirement could be satisfied, in their view the warhead programme could be affected. However, the department expects neither this nor technical problems with the new facilities to impact on the Trident warhead delivery programme (paragraphs 4.34 to 4.39).

General Conclusions

28. The nuclear research work undertaken by the AWE is vital to the achievement of the United Kingdom's defence policy. By its very nature, planning and controlling this work is an extremely challenging

process as it is not always possible to provide a precise definition of requirements and evaluation of achievements.

29. Since the National Audit Office completed their examination the Government has announced its intention to contractorise the activities of the AWE in two stages. By late 1990 the Government will appoint a management contractor concentrating initially on manufacturing work and site support, with full contractorisation of the Establishment planned to take place during 1992. The Department place great priority on these developments. Sound systems and procedures for planning and controlling research work and support services will be important irrespective of the nature of the management regime. Indeed, both the National Audit Office and the Department take the view that the proposed introduction of commercial management arrangements underlines the importance of strengthening existing systems and procedures, especially those intended to enable the customers of the research programme to examine work proposals and to evaluate progress and results.

30. In developing and implementing the proposal to place the AWE under commercial management, the National Audit Office recommend that the Department pay particular attention to three key areas:

(a) Research Programme Definition and Manpower Forecasting:

Until the AWE have set prioritised and measurable objectives they will be unable to demonstrate fully their resource requirements or the value for money achieved. Nor will they be able to quantify the effect of any manpower shortages or demonstrate that the available resources are being applied to the highest priority work. The strengthening of the customer-supplier relationship to be brought about by the introduction of a management contractor will also be fundamental to improving the planning and forecasting processes.

(b) Management Information Systems:

The Executive Responsibility Budget system should provide a sound basis for managing the AWE research work. However, inconsistencies in approach, an absence of guidance and a lack of documentary evidence of considerations and decisions draw into question the effectiveness of this system as currently operated.

Furthermore, this system cannot be fully exploited until the computerised system for providing central management information is improved.

- (c) Manpower supply problems and the use of existing staff:

The problem of manpower recruitment and retention at the AWE is longstanding and continues to impact on their ability to meet obligations in a timely way. Early solutions will need to be found by the new management contractor if the establishment is to meet future research, development and production requirements. However, the National Audit Office's findings show that it would be wrong to view the AWE staffing problems as a feature of manpower shortages alone. The examination identified important inefficiencies and management weaknesses, particularly in the support services area, which continue to result in poor utilisation of the available manpower resources. The achievement of efficiency improvements in those areas offers the prospect of reducing the present manpower shortfall.

PART 1 - INTRODUCTION

Background

1.1 Successive United Kingdom Governments have considered it essential to exercise firm control over all aspects of nuclear activity including nuclear warhead research, development and production. The Department consider that this control will in no way be diminished by the intended contractorisation of the activities of the Atomic Weapons Establishment which is aimed at achieving greater efficiency in operation.

1.2 Within the Ministry of Defence (the Department) responsibility for procurement of nuclear weapons delivery systems lies with two of the Systems Controllerates (Sea and Air) within the Procurement Executive. Responsibility for the management of the nuclear warhead procurement programme, including research, also rests in the Air Systems Controllerate, with the Deputy Controller (Nuclear) and thence with the Director of the Atomic Weapons Establishment (see Appendix 1). For the purpose of this Memorandum the Deputy Controller (Nuclear) and his staff are referred to as the Nuclear Controllerate.

1.3 The end-users of the defence nuclear warhead programme are the Armed Services. However, the role of customer is fulfilled by the Chief Scientific Adviser, Assistant Chief of Defence Staff (Policy and Nuclear), and, within the Procurement Executive:

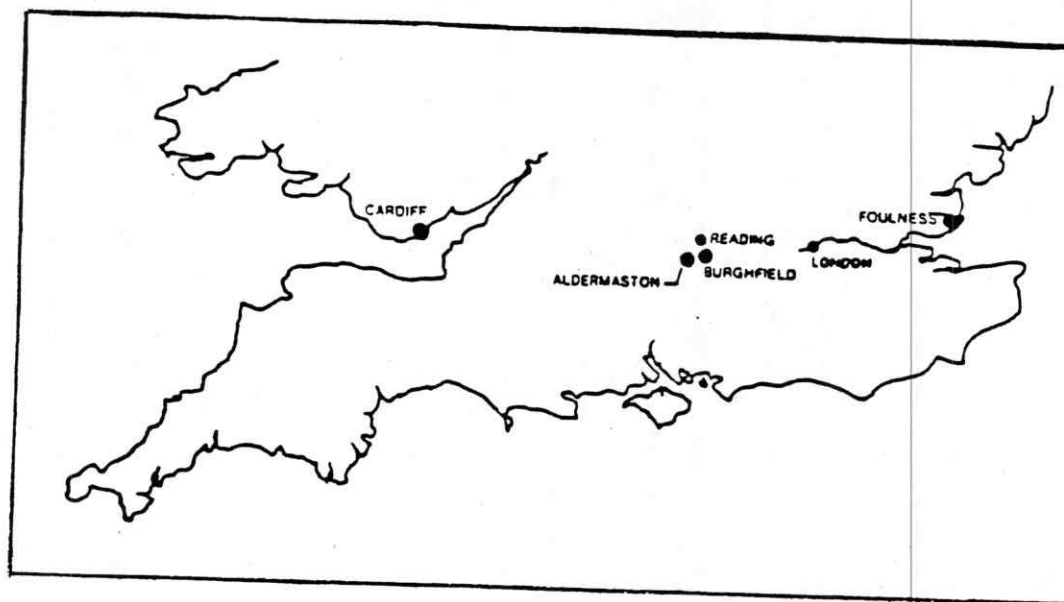
- as regards Sea Systems, the Chief of Strategic Systems Executive;
- as regards Air Systems, the Director of Air Armament.

1.4 The Atomic Weapons Establishment (AWE) provides the national nuclear warhead capability from research through development to production. It was formed in September 1987 following the amalgamation of the former Atomic Weapons Research Establishment, located at Aldermaston and Foulness, and the former Royal Ordnance Factories at Burghfield and Cardiff (see Figure 1). The AWE is organised into 15 technical divisions and 6 administrative and support divisions, with the technical divisions structured on a functional basis.

Figure 1

AWE LOCATIONS

~~CONFIDENTIAL~~ UNCLASSIFIED

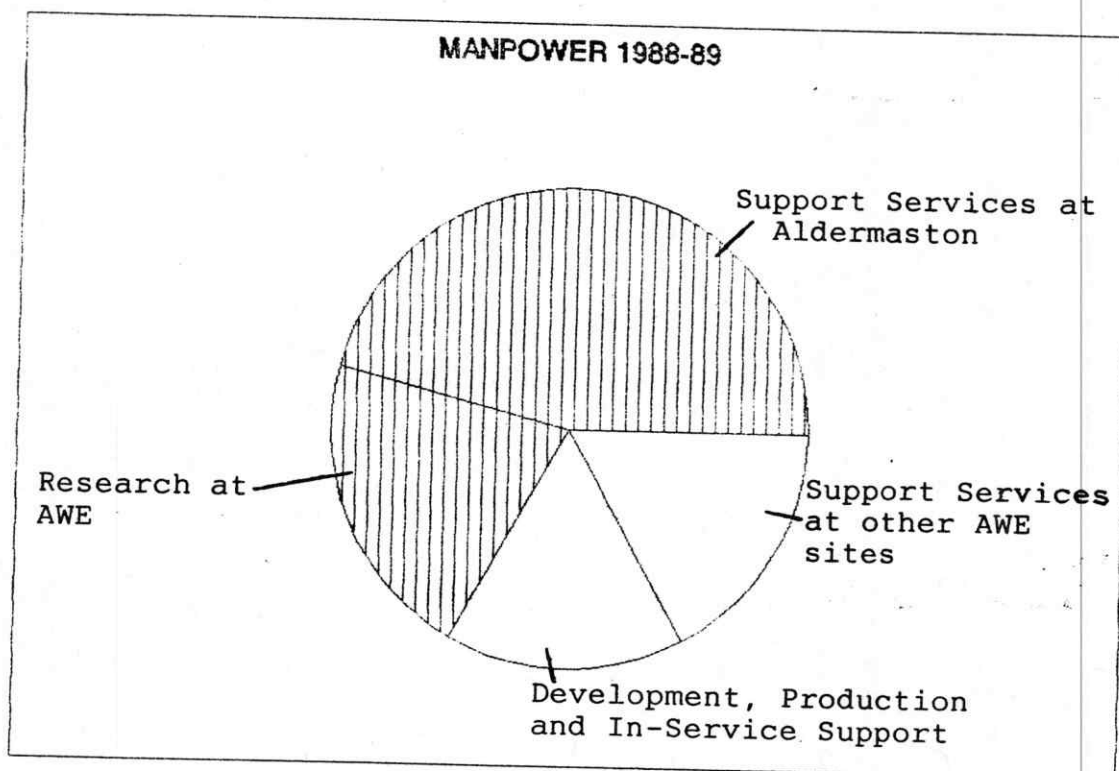
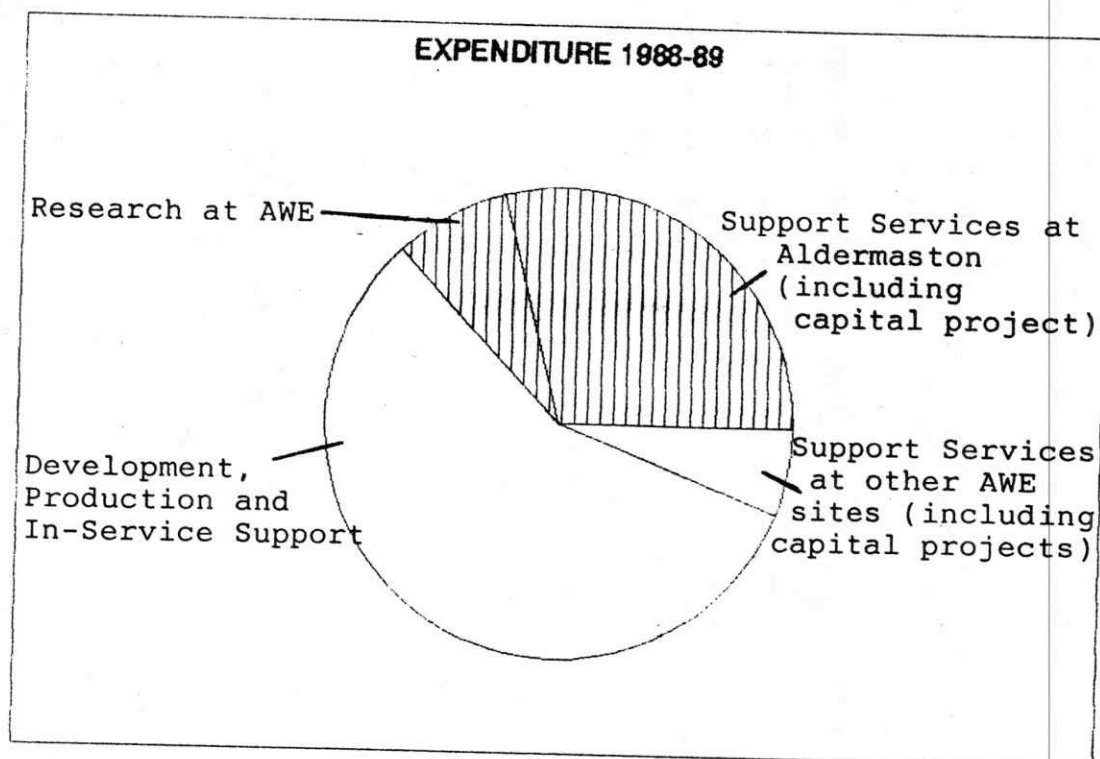


1.5 [The total expenditure on the nuclear warhead programme in 1988-89 was £607 million, of which £49 million was incurred directly on research at Aldermaston (ie excluding overheads attributed to research), and £177 million on centrally controlled support services, including capital projects, for all areas of work undertaken at Aldermaston. Approximately 6,600 staff were employed on the nuclear programme in 1988-89 of whom 1,300 were on research at the AWE and 3,000 were on centrally controlled support services at Aldermaston (see Figure 2). Over the past eight years there has been little change in the proportion of the total expenditure and manpower on the nuclear warhead programme at Aldermaston which has been devoted to research.]

~~CONFIDENTIAL~~
UNCLASSIFIED
NATIONAL ARCHIVE

~~CONFIDENTIAL~~
UNCLASSIFIED
NATIONAL ARCHIVE

FIGURE 2: NUCLEAR WARHEAD PROGRAMME EXPENDITURE AND MANPOWER FIGURES 1988-89



~~CONFIDENTIAL~~ ~~NAO~~
NATIONAL AUDIT OFFICE
UNCLASSIFIED

1.6 Nuclear warhead research is of crucial importance to maintaining the availability and effectiveness of existing weapons, to the £9 billion Trident programme and to the development of any future theatre nuclear weapon.

Committee of Public Accounts and Other Reports

1.7 This report takes account of the 48th Report from the Committee of Public Accounts, Session 1985-86 (HC 491) on the Management of Work at Non-Nuclear Defence Research Establishments. Where relevant, it considers the extent to which the Committee's recommendations have been applied to the nuclear area. This report draws upon the criteria for best management practice established in the related Report on the Management of Work at Non-Nuclear Defence Research Establishments presented by my predecessor on 16 June 1986 (HC 462). It also provides an update of the AWE capital works programme reported on by my predecessor in 1987 (the Control and Management of the Trident Programme - HC27 of Session 1987-88) and the 31st Report from the Committee of Public Accounts Session 1987-88 (HC 189), but does not cover Trident development and production specifically.

1.8 This report also takes account of initiatives arising from the Department's New Management

Strategy and three recent reviews (see Appendix 2) of the AWE's activities:

- the AWE Manpower Review completed in May 1988;
- the Industrial Society's Review of the Organisation and Management Effectiveness in the Engineering Department at Aldermaston completed in July 1988; and
- the AWE Review of Industrial Performance and Manpower Requirements completed in January 1989.

Some of the weaknesses identified and investigated by the National Audit Office were referred to in those reviews. Where those reviews have resulted in remedial measures being proposed this has been acknowledged within this report.

Scope of the National Audit Office examination

1.9 The National Audit Office examined the planning, management and control of nuclear warhead research carried out by the AWE and support services, including capital projects, in support of all work at Aldermaston. The particular issues examined were:

- (a) whether adequate systems and procedures exist for planning nuclear warhead research in order to achieve the aims and objectives of the United Kingdom's nuclear defence policy;
- (b) whether adequate systems and procedures are in operation for controlling and monitoring the progress, cost and effectiveness of nuclear warhead research; and
- (c) whether the AWE Aldermaston support services are planned and controlled efficiently as a necessary part of nuclear warhead research, development and production.

1.10 This report is based on the results of file examination and interviews at all management levels in a selection of technical, administrative and support divisions at Aldermaston completed in the spring of 1989. This was supplemented by examination at the Nuclear Controllorate.

1.11 This report does not cover nuclear warhead development and production carried out by the AWE, or activities at AWE sites elsewhere than

Aldermaston. However, where common systems of planning and control operate at Aldermaston covering research, development and production (for example, certain of the support services considered in Part 4) these were examined as a whole.

1.12 After the National Audit Office undertook their examination Ministers invited the Chairman of the Advisory Council on Science and Technology (Sir Francis Tombs), in July 1989, to offer independent advice on the AWE, with particular reference to production and engineering support matters. Against this background, and in the light of the 5th Report from the House of Commons Defence Committee, Session 1988-89 (HC 374), the Secretary of State for Defence subsequently announced, on 5 December 1989, the Government's intention to move towards full contractor operation of the AWE.

~~UNCLASSIFIED~~
~~SECRET~~

PART 2: PLANNING OF DEFENCE NUCLEAR WARHEAD
RESEARCH

2.1 This part considers whether adequate systems and procedures exist for planning nuclear warhead research in order to achieve the aims and objectives of the United Kingdom's nuclear defence policy.

Determining the Nuclear Warhead Programme

2.2 Nuclear warhead research, a component of the nuclear warhead programme, is planned as an integral part of the total defence nuclear programme (see Appendix 3). [Decisions on planning are influenced by the need to retain a capability which enables a high level of co-operation on research to develop with the United States under the terms of the 1958 Mutual Defence Agreement. In all major areas of research Joint US-UK Working Groups and other information exchange channels have developed, through which comprehensive and detailed exchanges on defence nuclear research take place as required. The scopes of these Working Groups evolve as a result of regular reviews to ensure that they remain closely relevant to the needs of the developing research programme. The Department consider that these exchanges are essential in order to implement the United Kingdom's nuclear weapons policy. The extent and value of exchanges are periodically

~~UNCLASSIFIED~~
~~SECRET~~
NATIONAL AUDIT OFFICE

25
~~UNCLASSIFIED~~
~~SECRET~~
NATIONAL AUDIT OFFICE
UNCLASSIFIED

reviewed by the Department's Chief Scientific Adviser and his counterpart in the United States, the most recent review taking place in 1989. Whilst the Department were not able to quantify totally the value of these exchanges to the United Kingdom they considered that such measures as there are indicate a very substantial benefit. They judged the exchanges to be of major political, technological and economic worth.]

2.3 The nuclear warhead programme at the AWE is:

- (a) [Determined by the Nuclear Procurement Assumptions which amplify the Nuclear Defence Policy and Weapons Plan as defined by Ministers and provide the broad framework within which tasks are undertaken.]
- (b) Built up from Executive Responsibility Budget tasks which identify the detailed activities and required resources for the programme. Once identified, they are agreed with the customer through the Annual Report and Annual Review process. (These tasks also provide the means for financial management and control, see Part 3).

- (c) Funded through the Defence Estimates, which allocate resources to the programme on a Parliamentary Vote basis, and the Long Term Costings, which enable the costed ten year programme to be maintained in balance with the Department's overall policy aims.

UNCLASSIFIED
[REDACTED] al

2.4 [The Nuclear Procurement Assumptions set out the broad policy to meet customer requirements for the procurement and upkeep of strategic and theatre nuclear warheads and of related special nuclear materials. They also provide for the programme of co-operation and information exchange with the United States government (see paragraph 2.2), and the maintenance and development of the United Kingdom's nuclear weapon research, development and production technology. The Nuclear Procurement Assumptions cover the following programme sections:

- (a) in-service and future nuclear warheads;
- (b) capability maintenance, research and support;
- (c) special nuclear materials;
- (d) intramural infrastructure; and
- (e) extramural decommissioning and waste management.]

UNCLASSIFIED



2.5 [In relation to research the Nuclear Procurement Assumptions contain 14 areas and provide a broad framework in summary form of the work to be undertaken at the AWE.] The National Audit Office observed that measurable and prioritised management objectives to provide a link between the [Nuclear Procurement Assumptions] and the detailed Executive Responsibility Budget generated research programme (see paragraphs 2.9 to 2.13 below) had not been established. Neither had the Department defined the minimum capability required to maintain a nuclear technology base.

UNCLASSIFIED



2.6 The Department recognise these important deficiencies and, as part of their New Management Strategy, work is underway to identify performance indicators and measurable objectives for each [Nuclear Procurement Assumption] area. These will be defined in terms of technical achievement, time and cost relative to the main weapons programmes and the total nuclear budget. The Department will use the indicators they are currently developing to monitor progress of technical achievement in a pilot exercise prior to full implementation of the New Management Strategy in 1991. The Department are also addressing the question of setting priorities and defining required capabilities for nuclear research as part of improvements to the Annual Report and Annual Review process (see paragraphs

UNCLASSIFIED



UNCLASSIFIED

2.14 to 2.18).



2.7 The National Audit Office found that junior managers at Aldermaston involved in the formulation of the research programme (see paragraphs 2.10 and 2.11) were generally not aware of the contents and significance of the [Nuclear Procurement Assumptions.] The Department have stated that the [Nuclear Procurement Assumptions] are not, and cannot be, designed as detailed working documents for junior managers at Aldermaston. They work to subordinate and much more detailed work sector objectives (see paragraph 2.17). The perception of junior managers is that research is given lower priority by the Department centrally than in-service or future nuclear weapons.

Defining research to be undertaken in support of the Nuclear Warhead Programme

2.8 Within the overall context of the Department's Long Term Costings, the AWE's Executive Responsibility Budget system and the Annual Report and Annual Review process are the means whereby the AWE identify and agree with customers the activities and resources required to meet the nuclear warhead research programme.

Executive Responsibility Budget System

2.9 The Executive Responsibility Budget system was introduced by the Department from 1 April 1985 in response to the Government's Financial Management Initiative. The purpose of the system is to provide an effective definition of responsibility and control over costs. This is achieved by defining a measurable programme of work and by placing responsibility and accountability with individual managers, as budget holders, for the achievement of the programme. Prior to 1985, the AWE operated a system of budgetary control at divisional level. With the introduction of the Executive Responsibility Budget system the then existing budget holders (normally Heads of Division), were designated as subordinate Executive Responsibility Budget holders. The Director of the AWE was the designated Executive Responsibility Budget holder for the AWE.

2.10 Table 1 illustrates the breakdown of the Executive Responsibility Budget for the AWE's agreed programme of work. Each task is managed wholly by one junior manager who is accountable to a subordinate budget holder who in turn is responsible to the Director of the AWE for achieving the objectives of the tasks within allocated resources (see also Appendix 4). Typically, a subordinate

budget holder within the AWE has responsibility for some 40 to 50 tasks managed by some 4 or 5 task managers.

TABLE 1: The AWE Executive Responsibility Budget

Director of the AWE -----

Budget Holder

Heads of Division -----

[22] Subordinate
Budget Holders

Junior Managers -----

[200] Task Managers
accountable for
[1000] Tasks

UNCLASSIFIED

2.11 Broad proposals for Executive Responsibility Budget tasks covering the next three years are drawn up by the task manager and reviewed by line managers every six months as part of the Executive Responsibility Budget review process (see paragraphs 3.5 to 3.10). These proposals, in the form of half-yearly programmes of work, effectively provide the sub-objectives to meet the overall task objective (see Appendix 4) which itself generally

does not change year on year.

2.12 In the context of best practice for research task proposals (see paragraph 3.3(a)), the National Audit Office found that:

- the relationship of individual task objectives to associated AWE work and their relevance to the overall programme had not been fully defined;
- there was no guidance or agreed framework within which proposals for specific research work should be evaluated;
- since Executive Responsibility Budget review meetings were seldom minuted the AWE could not demonstrate that factors such as need, costs, risk, and relationship to other work had been taken fully into account;
- partly because of the specialised knowledge required of the subject, there was little, if any, direct contact with the external customer at task manager level in drawing up research proposals; and
- although resource estimates for the first three years of Long Term Costing ten year cycle were

UNCLASSIFIED

[REDACTED] NAO
provided for tasks, they were not generally broken down for the various items of work which went to make up the half-yearly task programmes.

Taken together, these features weaken the planning process.

2.13 The AWE's Executive Responsibility Budget submissions to the Nuclear Controllerate for 1985-86 and 1986-87 neither complied with central Departmental requirements nor provided information in the form necessary to support the AWE's bid for funding. The main planning weakness was that the AWE did not present its programme by output categories [(ie Nuclear Procurement Assumptions)] and did not allocate non-programme costs (ie support services) to specific programmes. The Department set up a working group in January 1987 to investigate this problem. The group recommended in May 1987 that the AWE's Executive Responsibility Budget should be based on an expanded form of the [Nuclear Procurement Assumptions], for which customers should be identified, and that support services costs should be attributed to programmes. The AWE implemented this recommendation for subsequent Executive Responsibility Budget submissions.

UNCLASSIFIED



DECLASSIFIED



UNCLASSIFIED



Annual Report and Annual Review process

2.14 The vehicle for agreeing the AWE programme with the customer is the AWE Annual Report. This document, which flows from the AWE's internal Executive Responsibility Budget review of tasks, has been provided to the customer since 1986 at an Annual Review presentation. Within the Long Term Costing process this is the main opportunity that the customers have to comment on the programme.

2.15 In November 1987 the Nuclear Controllerate considered that there were limitations in the Annual Report. The major shortcomings in their view were that:

- it did not provide sufficient visibility to customers of the work being undertaken on their behalf, which encouraged the belief that much of the work undertaken was against internally generated requirements;
- interrelated activities within individual departments at the AWE were not amalgamated in output related packages;
- objectives or milestones were not clearly identified for the research programme; and

UNCLASSIFIED

~~CONFIDENTIAL~~ NAO
NATIONAL AUDIT OFFICE

- there was no overall report appropriate for customers' and departmental review of the programme.

The Nuclear Controllerate considered that in total these shortcomings meant that no-one outside the AWE had detailed visibility of the whole research programme, and that customers were not sufficiently involved in determining research priorities. The Department informed the National Audit Office that this coincided with conclusions reached at the same time within the AWE.

2.16 As a move towards developing the customer-supplier relationship, and reporting the outcome of the research programme on a task basis, the 1987-88 AWE Annual Report produced in May 1988 reported the programme by [Nuclear Procurement Assumptions].

This approach was considered by the customer to be a significant improvement on previous years. However, the Nuclear Controllerate recognised that the report still provided insufficient [detail of the forward research programme] and contained inconsistencies. They considered that further development of the format and content was necessary to give customers a better opportunity at the review meeting to scrutinise critically and endorse or challenge the existing and planned programmes. At the time of the National Audit Office enquiries the AWE were working

UNCLASSIFIED

~~CONFIDENTIAL~~ NAO
NATIONAL AUDIT OFFICE

UNCLASSIFIED

~~CONFIDENTIAL~~ NAO
NATIONAL AUDIT OFFICE

UNCLASSIFIED

~~CONFIDENTIAL~~ NAO
NATIONAL AUDIT OFFICE

on the introduction of further developments.

2.17 The AWE introduced improvements for the 1988-89 Annual Report produced in May 1989, and associated Annual Review presentation. Their aim was to provide much more detail on resource utilisation, progress and future milestones thereby giving customers the opportunity to become more closely involved in the formulation of the AWE's future programme. Specific measures, which have been well received by customers, included:

- [dividing the Nuclear Procurement Assumptions into a number of work sectors;]
- [providing details on activities contributing to a Nuclear Procurement Assumption by including the relevant Executive Responsibility Budget task reports (see paragraph 3.14);]
- providing information on the task objective, achievements in the current year, plans and programme milestones for the forthcoming year and resources employed; and
- prefacing groups of associated tasks by overview statements for the work sector.

[REDACTED] NAO
NATIONAL AUDIT OFFICE

The AWE have introduced further improvements in the direction of objective setting and reporting for the 1989-90 Annual Report. They also plan to address the question of setting priorities and defining the minimum capability.

2.18 In January 1988, in parallel with improvements made to the Annual Report, the Nuclear Controllerate proposed the formulation of a Research and Development Plan for each of the [high level Nuclear Procurement Assumption] based research areas at the AWE. They envisaged that this would enable the customer to see the link between the Long Term Costings and the [Nuclear Procurement Assumptions] and provide a vehicle for improved monitoring within the Nuclear Controllerate. The Department informed the National Audit Office that, by March 1990, there had been progress in developing detailed research objectives but that proposals to tighten the customer-supplier relationship still remain to be developed.

Funding the Nuclear Warhead Programme

2.19 The Supply Estimates and Long Term Costing processes are the means whereby funds are allocated on a Parliamentary Vote basis to the nuclear warhead programme. Formulation and approval of plans and budgets for the manpower and financing of the AWE

are undertaken as part of the Department's normal annual financial cycle. The AWE are required to submit an annual bid for funds based on a re-costing of the [Nuclear Procurement Assumptions] against the programme approved in the previous Long Term Costing. The AWE are also required to identify and cost new programmes and savings measures to provide the Department's senior management with the flexibility, when approving estimates, to make adjustments in the light of available resources.

2.20 In offering savings options, the AWE are constrained [by the high priority given to in-service and future weapons]. Therefore, options are focused on other alternatives. In recent years it has been possible to meet the activity and cost increases needed to sustain these priority activities within the overall Defence Budget. The National Audit Office noted that, in accordance with the Department's normal Estimates process, the AWE were required to propose savings measures to offset enhancements to the 1988-89 research programme. However, although the research programme was presented on both a Parliamentary Vote subhead basis and by [Nuclear Procurement Assumptions] the AWE did not prioritise the various elements. Therefore, the AWE were not able to demonstrate that the savings measures identified [(eg reduced frequency of underground testing, less expenditure on plasma

UNCLASSIFIED



[REDACTED] physics research)], although significant and achievable, necessarily represented the customers lowest priority work. The Department informed the National Audit Office that the AWE's customers have not generally disagreed with their judgement.

2.21 As manpower is a significant element of the AWE nuclear warhead programme, determining the manpower requirement is a key factor in financial planning. Manpower requirements are determined as an integral part of the Executive Responsibility Budget and Long Term Costing processes. However, due to adverse recruitment and retention over the years the AWE have found it necessary to carry out separate, but related, reviews to determine viable and achievable staff targets in relation to their optimum overall manpower requirements. They carried out the most recent review in May 1988 which formed the basis of the manpower target in the 1989 Long Term Costing exercise (see Appendix 2).

2.22 The National Audit Office examined the way Aldermaston manpower estimates were compiled. The in-year programme is based on a realistic assessment of the likely strength at the beginning and end of the financial year, rather than the staff required to meet the programme. However, task managers may, if they wish, bring to the attention of the subordinate budget holder the effects of having

11

insufficient staff for their programme of work. The Department recognise the incremental nature of the manpower planning process as presently operated. They informed the National Audit Office that they do not consider zero-based budgeting to be a cost-effective exercise, and that presenting costings as an aggregation of individual work programmes would require a fundamental change in the way estimates are compiled.

PART 3: MANAGEMENT OF NUCLEAR WARHEAD RESEARCH

3.1 This part considers whether adequate systems and procedures are in operation for controlling and monitoring the progress, cost and effectiveness of nuclear warhead research.

3.2 The Nuclear Controllerate's oversight of nuclear warhead research is primarily exercised through the planning and funding processes described in Part 2. Additionally, the AWE provide the Nuclear Controllerate with quarterly reports on costs, programmes and manpower which enable them to monitor progress and resource consumption generally. However, they are not involved in the day to day management of work at the AWE. This Part, therefore, concentrates on the local management activities at AWE Aldermaston. The National Audit Office carried out an extensive programme of interviews at all management levels at Aldermaston together with examination of relevant reports and files. They did not examine specific items of research work but concentrated on management practices and procedures.

Features of Best Practice

3.3 In their examination of the management arrangements at Aldermaston the National Audit

Office had regard to the features of best practice of research management identified in my predecessor's 1986 Report on the Management of Work at Non-Nuclear Defence Research Establishments (HC 462). These were as follows:

(a) Proposals for Research

- specific objectives should be set, together with an assessment of the potential risks and benefits and an estimate of likely resource costs;
- the relationship of the proposed work to other activities and alternative options should be considered;
- beneficiaries should be consulted as to the need for the work and its relative priority;

(b) In-progress Management

- targets and milestones should be set and used for reviews of progress; and

(c) Post Completion Review

- completed work should be reviewed to determine whether it has met the customer's

needs, provided technical or managerial lessons of wider application and secured value for money.

Also at all stages, management directions on individual activities should be appropriately documented. The Department have pointed out that although the features of best practice identified in the 1986 Report can be read across to the nuclear area, they are not the whole story. Nuclear warhead research has only one practitioner in the UK, the AWE. This research is aimed at only one type of product - British nuclear warheads - and is conditioned to a great extent by the requirements of the US/UK 1958 Mutual Defence Agreement (paragraph 2.2). In view of these three factors, the Department consider that the lessons of best practice in non-nuclear research are perhaps only partially applicable to the situation at the AWE.

Results of the National Audit Office Examination

(a) Proposals for Research

3.4 The process by which proposals for work are documented and considered is through the Executive Responsibility Budget system. However, this system had no agreed framework or guidance for evaluating proposals and there were acknowledged weaknesses in

[REDACTED]
UNCLASSIFIED

customer visibility (see paragraph 2.12). The only other documented examination of proposals occurred where substantial additional costs or inter-Divisional commitments were expected beyond those initially contained in programme guidelines. In these cases separate submissions were usually made to higher management or senior AWE committees for approval. Since the National Audit Office's examination the Department have established a committee known as the Nuclear Research Policy Group, with representation from all the major customers, to consider policy options and prioritisation of defence nuclear research.

(b) In-Progress Management

3.5 Although research work is subject to extensive peer review through a network of largely unminuted meetings and committees, the AWE formally assess the progress of work twice a year.

3.6 Each task manager is required to prepare an Executive Responsibility Budget task report for the subordinate budget holder to review. These reports are important working level documents which the subordinate budget holders use to monitor and control their programmes. They should state the current year budget, forecast outturn, associated [Nuclear Procurement Assumption], customer, task

UNCLASSIFIED



UNCLASSIFIED

objectives, progress and the future programme. This information enables subordinate budget holders to compare actual expenditure and progress towards achieving task objectives with budgets and target dates and milestones.

3.7 The subordinate budget holder is also required to prepare a report which: summarises the major achievements; indicates whether tasks were achieved on time and within budget; outlines the major programme objectives for the next six months; and identifies the broad direction of the longer term programme. The subordinate budget holder may also draw attention to any areas where progress has proved difficult because of inadequate resources or unforeseen technical problems, and where programme changes have been necessary because of a reallocation of priorities or a change in requirement.

3.8 In March 1987 the AWE issued guidance on the broad format and content of task managers' and subordinate budget holders' reports, which was based on the best features from Executive Responsibility Budget task reports produced across the Establishment. In September 1988 they issued further guidance requiring task reports to be standardised.

3.9 The National Audit Office found that for the May 1988 Review only 5 out of 15 AWE technical divisions produced Executive Responsibility Budget task reports. The Department informed the National Audit Office that this low figure reflected the management effort being devoted at that time to the Manpower Review completed in May 1988. For the November 1988 Executive Responsibility Budget review AWE technical divisions produced a full set of reports.

3.10 The National Audit Office examination of the November 1988 Executive Responsibility Budget review showed that there were still inconsistencies in the content of task reports. For example, they did not always include target dates, milestones and actual technical achievements compared with those planned. Furthermore, they did not generally state the continuing relevance of the tasks. The National Audit Office also found that although technical progress and achievement was documented, the reports did not specifically relate this to the resources consumed. Consequently, the reports did not enable senior management to evaluate whether expenditure to date represented value for money. Nor did they provide a basis for decisions on whether to continue particular programmes of research.

3.11 The National Audit Office also observed that

[REDACTED] UNCLASSIFIED NAO
there was only limited use of performance indicators for the Executive Responsibility Budget tasks, and that progress was monitored mainly through the use of target dates and milestones. Moreover, the target dates and milestones used were usually expressed in terms of six monthly programmes of work within the task with any measurable or demonstrable outputs. The Department informed the National Audit Office that this was because for much of the research work target dates and milestones were the only practicable yardsticks. They consider that often the only relevant output measure for much of the capability orientated research work is the ability to take on project tasks if and when they arise.

UNCLASSIFIED



3.12 Work relating to individual [Nuclear Procurement Assumptions] can involve a number of Executive Responsibility Budget tasks which may be carried out by several different divisions (see Appendix 4). The National Audit Office found that within the Executive Responsibility Budget review system each Division reviewed the tasks in isolation and made no structured attempt to review progress on related tasks together. However, arrangements existed outside the review system to monitor multi-divisional activity. Divisions prepare progress reports which are considered by AWE senior management on a regular basis at meetings which draw

UNCLASSIFIED [REDACTED] NAO
together related research from different divisions.

3.13 Task managers carried out the day-to-day management of work in an informal way such that the achievement of economy, efficiency and effectiveness through tight control of work and use of resources was not always evident. Much of this management was centred on meetings, few of which were minuted.

3.14 The AWE Annual Report provides the customer and the Nuclear Controllerate with the opportunity to review progress and achievements over the last financial year (see paragraphs 2.14 to 2.18). For the 1988-89 Annual Report the AWE updated the November 1988 task documentation for the full year and this provided an opportunity for the customer to review achievement of tasks for the whole year within the context of their associated [Nuclear Procurement Assumption]. This represented an improvement on arrangements in previous years when details of achievement were based upon the November Executive Responsibility Budget task review documentation which related to activities in the first half of the financial year only.

(c) Post Completion Review

3.15 Executive Responsibility Budget research task objectives tend to be of a continuing nature and do

not always identify an end point to the task. Specific jobs within a task may result in a piece of equipment or some new computer software. However, in many cases the only tangible output is a technical report produced at individual managers' discretion. The National Audit Office found that the AWE did not undertake reviews to determine any technical or managerial lessons learnt from completed individual research work or whether value for money had been secured. In the Department's opinion assessments of value for money to the customer can often only be long-term judgements of whether capability has been successfully maintained to take on project tasks if and when they arise.

Management Information Systems

3.16 In order to be able effectively to control the use of resources the AWE management need timely and accurate information concerning the availability, consumption and cost of resources. Divisional staff in the management grades who were interviewed by the National Audit Office considered that information provided centrally from within the AWE was untimely, (because of particular staff shortages) and was not as extensive or complete as required.

3.17 The AWE originally considered that the best option available to them was to transfer the

management accounting system onto a database machine which they had acquired in 1984. However, due in the main to a lack of programming resources, there have been substantial delays in the transfer of the management accounting programmes from the existing mainframe computer to the new database machine. In practice, the database machine has been primarily used for safety data and is now considered to have insufficient capacity to meet AWE's management accounting requirements. Meanwhile, the central AWE management information system branch is maintaining, modifying and enhancing the existing management accounting system on the existing mainframe computer so as to provide an improved service to users until an alternative solution is available. Furthermore, Divisions have taken action to develop their own systems independently and in 1989 the central AWE management information system branch provided them with a software package for use on their micro-computer systems.

3.18 Since the mid-1980's the AWE have recognised that the management information currently being produced no longer fully meets their needs. As a consequence, they have not been able to exploit the full potential of the crucially important Executive Responsibility Budget system as a management tool. Following over three years of deliberations the AWE propose shortly (subject to developments in

introducing management contractors - see paragraph 1.12) to let a feasibility study contract for setting the framework for the future development of information systems at the AWE. The target date for the introduction of the system is dependent upon the outcome of this feasibility study.

3.19 Decisions eventually to be taken by the AWE following the proposed feasibility study will need to take account of related action which is being taken centrally within the Department. Work commissioned in 1986 to define an information technology strategy for the Nuclear Controllorate led to a report being produced in March 1988. Actions arising from that report have been incorporated with those required to support the Department's New Management Strategy and development work is now proceeding.

Manpower

3.20 For a number of years the AWE have had problems recruiting and retaining staff. In February 1985 the Department found it necessary to address this problem because of the demands of the Trident programme. The Department identified the basic problem as being uncompetitive Civil Service pay rates and to overcome this they proposed special financial inducements and certain administrative

measures.

UNCLASSIFIED



3.21 The Department introduced a Special Pay Addition of £1000 to £2000 from October 1985 for the lower and middle-grade non-industrial Professional and Technical and Scientific grades. Following this action staff numbers increased during 1986 and the first half of 1987 but the trend reversed in 1988 (see Figure 3).

3.22 The Department recognised that the Special Pay Addition had been eroded gradually by pay increases nationally and by other pay increases that had affected specialist groups of staff in the Civil Service. Therefore, in May 1988 the AWE management put forward a case to introduce a new Special Pay Addition. The new additions of £1000 to £2000 a year for scientists and engineers, £1250 to £1500 for craftsmen and £750 a year for non-craft industrials were introduced in October 1988 and subsumed the 1985 Special Pay Addition. However, these latest additions have been only partially effective, and the AWE's manpower total is still falling, albeit very slowly. As at 1 September 1989 Aldermaston had a shortfall of about [500 (9.6 per cent)] against the 1 April 1989 manpower target of [5225].

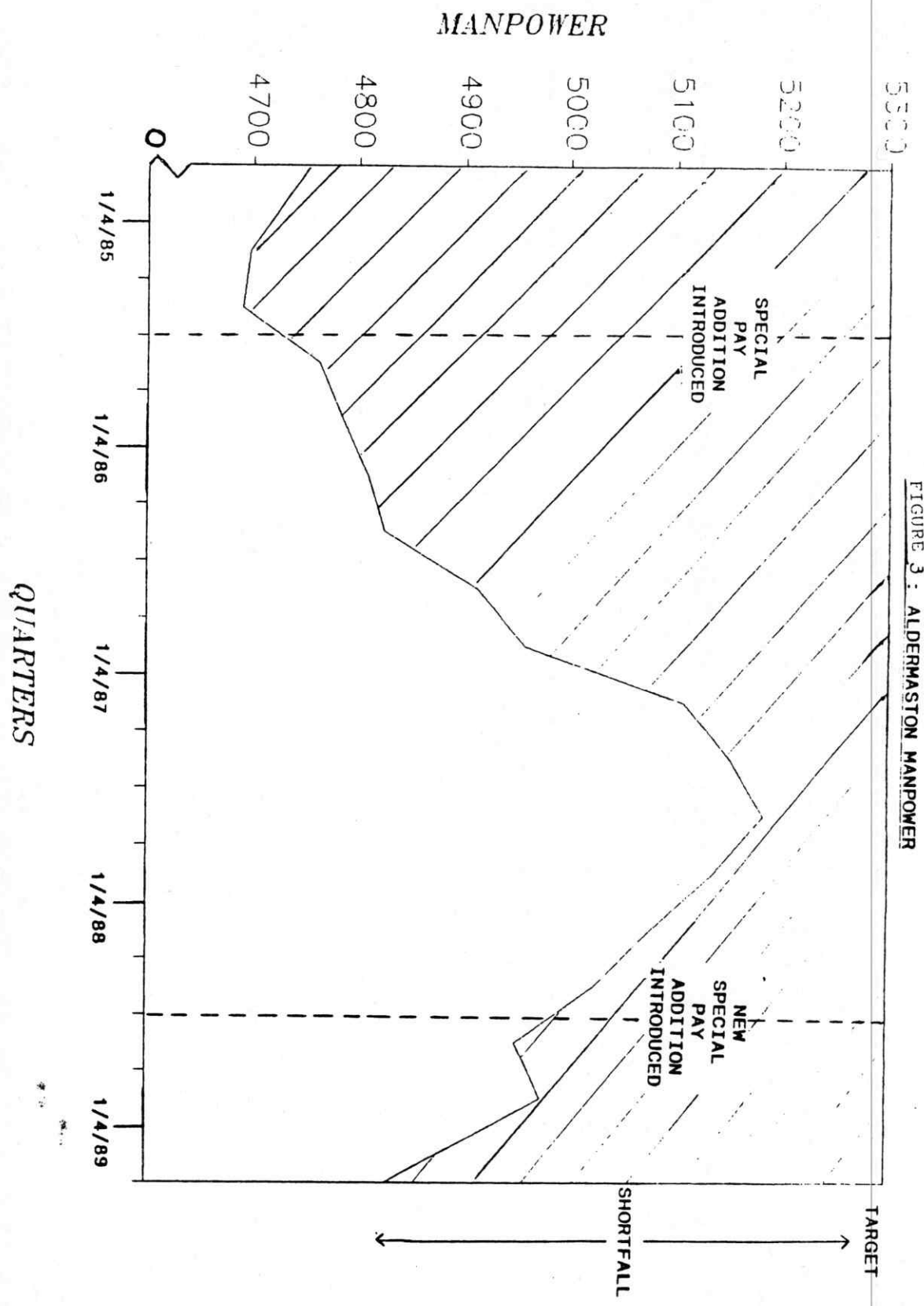
UNCLASSIFIED



UNCLASSIFIED



FIGURE 3 : ALDERMASTON MANPOWER



UNCLASSIFIED



UNCLASSIFIED



3.23 The administrative measures adopted by the Department included further re-training, internal transfers, additional advertising and [employing recruits in less sensitive areas in advance of their positive vetting clearance]. In addition, they have sought to obtain surplus Service housing and have fostered the establishment of a Building Society shared housing equity scheme for AWE employees. They have also established arrangements to make contact with suitably qualified personnel about to leave the Services and are making similar approaches to redundant personnel of the United Kingdom Atomic Energy Authority and British Aerospace (in respect of Royal Ordnance).

3.24 Overtime is another measure which the AWE have used to overcome the problems of staff shortages. Overtime at Aldermaston in 1988-89 amounted to 529 man-years at a cost of £6.6 million. Although Divisions were provided with a financial budget for overtime, available management information did not identify the reasons for overtime working. The National Audit Office recognise that some forms of overtime are unavoidable. However, they noted that recent reviews by the Department had concluded that the pattern of overtime work at the AWE suggested it has become institutionalised (see Appendix 2). Consequently, the AWE have set up a steering group tasked with achieving a better return for

54
UNCLASSIFIED



[REDACTED]
UNCLASSIFIED



expenditure on overtime through a rationalisation of times worked and better control of work.

UNCLASSIFIED



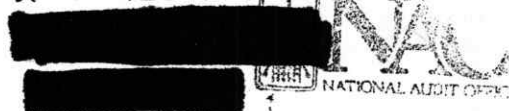
3.25 The AWE have also made use of contractor support to overcome manpower shortages. In addition to the contractor support for the capital programme (see paragraphs 4.34 to 4.40) the AWE employed [400] man-years of contractor support at a cost of [£9] million during 1988-89 of which rather less than half was necessitated by internal manpower shortages.

3.26 Manpower shortages could result in research and other programmes being delayed or cancelled. The Department have not made a comprehensive assessment of the effect of manpower shortages on the AWE work programmes except in relation to Trident. In November 1988 the AWE set up monthly Manpower Priority Review meetings and a Manpower Database. These arrangements have, so far, focused exclusively on the resource requirements for the Trident production programme identifying the critical resource requirements not being met by recruitment. In January 1989 [403] of AWE vacancies [(83 per cent)] related directly to Trident.

UNCLASSIFIED



UNCLASSIFIED



Recent Management Initiatives

3.27 The May 1988 review of manpower undertaken by the AWE (see Appendix 2) considered the relevance of present programmes and formed a judgement on the most appropriate level of manpower for the future. The review also identified longstanding problems in working practices, attitudes, motivation and management. The main weaknesses identified were:

- lack of clear delegation of authority and responsibility;
- lack of comprehensive management information systems for providing data for programme co-ordination;
- no real incentive for managers to reduce manpower;
- under-utilisation and poor management control; and
- a lack of ability to motivate and manage the industrial workforce.

3.28 The review concluded that improvements in these areas would lead to a more efficient workforce and result, in the long-term, in a reduction in



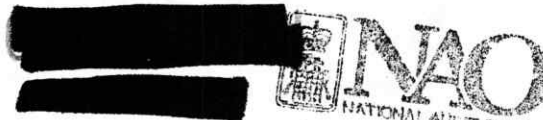
UNCLASSIFIED

manpower requirements of some [12 per cent] by April 1997. Manpower savings measures proposed for the short-term included: stopping or deferring low priority work; eliminating duplicate work and rationalisation where possible; and increasing the use of term-contractors. The long term measures proposed included improving existing programme co-ordination and making radical changes to working practices.

3.29 Subsequently, in order to obtain independent and expert advice on the implementation of the management aspects of the review of manpower, the AWE commissioned a report from the Industrial Society (see Appendix 2). Since the AWE considered that the majority of the improvements were most readily obtainable from the industrial workforce, the Society concentrated its attention on the Chief Engineer's Department at Aldermaston.

3.30 The Industrial Society submitted their report in July 1988 and the main conclusions were that:

- there were problems in the way the workforce was managed, with no clear lines of accountability and responsibility at lower management levels;
- there was little or no leadership training;



- there was disquiet amongst the staff with the general terms and conditions of employment;
- there was a lack of flexibility amongst staff because of the special allowances paid in certain areas;
- certain aspects of the recruitment and selection process fell short of what the Industrial Society considered to be good practice;
- there were deficiencies in communication which resulted in little co-ordination of work involving more than one division;
- a lack of awareness of the AWE's strategy;
- little attempt to transfer the knowledge and skills of people prior to retirement; and
- the level of allowances and pay scales led to problems with retaining staff.

The AWE's management accepted the conclusions and recommendations of the Industrial Society's Report and considered them to be applicable to the AWE as a whole.

3.31 Following the above reviews the AWE management in November 1988 made the following two proposals:

- The setting up of a Central Management Services Group to help plan and monitor the implementation of the Industrial Society's recommendations.
- A series of actions arising out of the review of manpower aimed at improving the way the AWE organises its business. These are associated with rationalisation of activities at the different sites to allow the AWE to operate in a more coherent and efficient fashion.

3.32 The National Audit Office noted that the weaknesses in management control identified by these reviews have yet to be fully overcome. The AWE were unable to appoint a Head for the Management Services Group until July 1989. The Group has now developed an action plan for the Industrial Society's findings but it was put in abeyance pending the results of the review by the Chairman of the Advisory Council on Science and Technology (Sir Francis Tombs) (paragraph 1.12). The AWE have not drawn up any other detailed action plans to address matters arising out of the review of manpower. They have

left the findings relating to individual departments to the Department Heads to implement under the oversight of the Director of the AWE.

3.33 The lack of efficiency and poor performance of the industrial workforce has also been highlighted by the AWE-led Review of Industrial Performance and Manpower Requirements, undertaken between March 1988 and January 1989 (see Appendix 2). This review followed a report in September 1987 by the Department's Directorate General of Manpower Audit which identified shortcomings in the way productivity had been measured and rewarded, and which in turn was produced in response to Treasury concern about productivity at Aldermaston. As a result of this review the AWE proposed that work measurement and performance indicators should be incorporated in a new AWE Industrial Performance Agreement. The Department informed the National Audit Office that these have yet to be introduced but negotiations with the Trades Union Side are in progress and that other aspects of the review are being pursued separately.

PART 4: MANAGING SUPPORT SERVICES

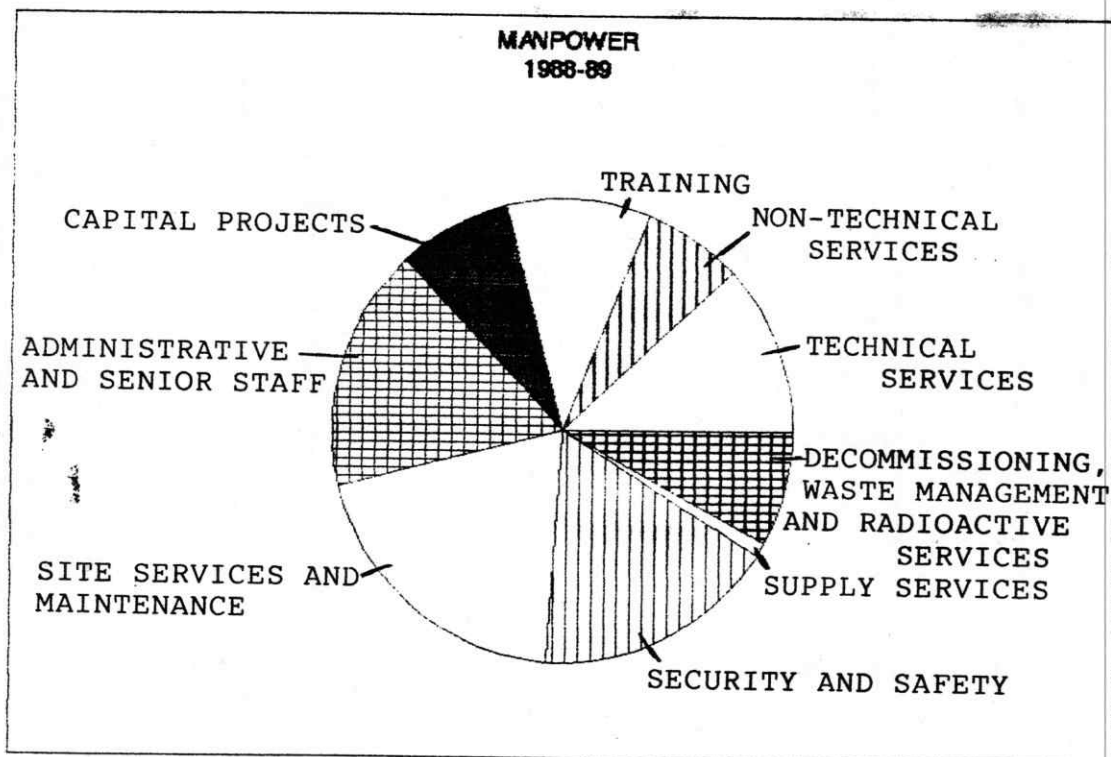
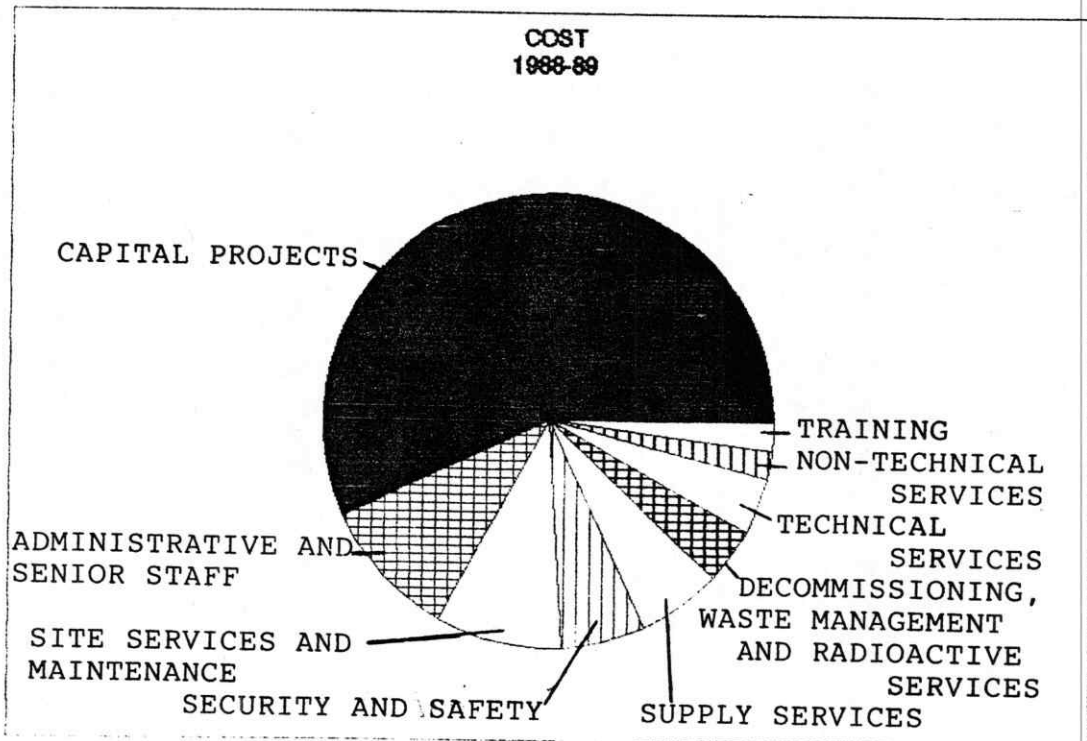
4.1 This part considers whether the AWE Aldermaston support services are planned and controlled efficiently as a necessary part of nuclear warhead research, development and production.

4.2 The work of Aldermaston depends upon a whole network of support services which need to be managed with the same care as the Establishment's main activities. Materials and equipment have to be purchased or manufactured, facilities installed and run, and laboratories and equipment maintained. In most cases it would be expensive and inefficient for scientists to do these support activities themselves.

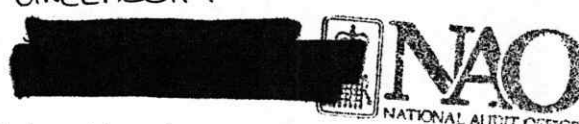
4.3 The support services, which under-pin development and production activities on site as well as research, represent a considerable proportion [(over 60 per cent)] of Aldermaston's direct costs. The cost of the centrally controlled support services for 1988-89 was [£177 million] and involved over [3,000] staff. For management accounting purposes these central costs are charged to programmes of work as overheads. The proportion of cost and manpower devoted to the various centrally provided support services is shown at Figure 4. In addition, other support activities

UNCLASSIFIED

FIGURE 4: ALDERMASTON SUPPORT SERVICES



UNCLASSIFIED



controlled by the technical divisions are charged directly to relevant tasks; they cost [£29 million] in 1988-89 and involved [650] staff.

4.4 The National Audit Office examined a selection of five important areas of the support services.

(a) Technical Services, including Engineering Workshops

4.5 During 1988-89 Aldermaston operated [one] main workshop, [2] satellite workshops and [9] specialised workshops under the control of the Chief Engineer. These workshops employed on average [278] staff, of whom [227] were industrials, at a total staff cost of [£3.5 million]. In addition, there were [9] divisional workshops under the control of technical divisions employing [27] industrial staff at a staff cost of [£0.3 million]. In 1988-89 work to the value of [£3.2] million was contracted out.

4.6 The average hourly rate charged by mechanical engineering contractors employed by the AWE was £11.72 as against the internal rate of £17.10 charged by the main workshop. The AWE attributed the difference mainly to the high overhead in their hourly rate for the equipment cost of very high precision work which contractors are unwilling to undertake in the small quantities required. In

UNCLASSIFIED



[REDACTED]
UNCLASSIFIED



addition, the use of contractors involves contract and bill paying costs.

4.7 A review of the engineering workshop facilities at Aldermaston by the Department's Directorate General of Manpower Audit in 1985 criticised the existence of a large number of small workshops. The review report recommended that all workshops should be incorporated within the fully planned activities of a central workshop under the control of the Chief Engineer, with a computerised planning system to record all tasks requiring more than half a man-day effort.

4.8 Instead, the AWE decided, in February 1988, to develop the existing two satellite workshops and reduce the [12] divisional workshops to [9]. They also proposed to establish [a third] satellite workshop by October 1990 which should enable [3] more divisional workshops to be closed.

4.9 The system of planning and control for the engineering workshop service must ensure that capacity is efficiently used and due priority is given to the most urgent jobs. The National Audit Office found, however, that all workshops planned and carried out their work independently from one another. Whereas the main engineering workshop had a computerised planning and progress system, all

UNCLASSIFIED



UNCLASSIFIED

other engineering workshops (ie both satellite and divisional workshops) operated different and independent manual planning systems.

4.10 The National Audit Office examination of the computerised planning and progress system in the main engineering workshop revealed that:

- Jobs were prioritised mainly on the basis of estimated duration time rather than urgency, with the largest jobs being undertaken first.
- The budgeted time for work carried out in the period August 1987 to September 1988 accounted for only 52 per cent of total available workshop time.
- Although management information was available to allow jobs to be progressed effectively, timely cost information was not always available.
- Only 60 per cent of the work going through the main workshop was completed within the specified time and to cost, delays often being due to material supply difficulties, changes in user requirements and a lack of machine and operator availability.

4.11 The AWE recognise that the workshop planning arrangements require improvement. Furthermore, their own reviews have shown that: operators do not work to target times; there is no real flexibility between the various trades and workshops; and operators performance is not measured. Work is underway to improve the effectiveness of the computerised planning system and in AWE's view the new Industrial Performance Agreement at present being negotiated with the Trade Unions (see paragraph 3.33) could provide a catalyst for resolving these problems.

4.12 User divisions surveyed by the National Audit Office expressed their dissatisfaction with the service provided by the main workshop and drew particular attention to the unacceptably high proportion of jobs that are delivered late. They commented upon the effect that such delays had upon their research work and that in their view they had inadequate control over this element of their budgets.

(b) Site Services and Maintenance

4.13 Site services and maintenance at Aldermaston represent a major organisational challenge. Because of the very specialised nature of the support

UNCLASSIFIED



required, it is undertaken by Aldermaston staff and contractors managed by them and not, as in other Defence establishments, by the Property Services Agency. In 1988-89 Aldermaston spent [£7 million] in-house and [£8 million] on contractors in respect of site services and maintenance. [Nearly 600] staff, [about one eighth] of Aldermaston's total manpower, are deployed on this work and this is expected to increase following completion of the new capital facilities. The high level of resources devoted to site services and maintenance is necessary because of the safety issues arising from the use of radioactive, toxic and high explosive substances at Aldermaston.

4.14 The National Audit Office found that routine preventive maintenance inspections of site buildings were not regularly undertaken at Aldermaston, due to staff shortages. Comprehensive information was consequently not available concerning the extent of the resultant backlog of maintenance work. Staff shortages in this area had also limited the AWE's ability to supervise (or undertake) the remedying of specific known but low priority faults and shortcomings.

4.15 The review of manpower undertaken by AWE management in May 1988 concluded that there was considerable room for improvement in the planning

UNCLASSIFIED



UNCLASSIFIED⁶⁷



and control of site services and maintenance work, and that poor value was obtained from the largely institutionalised overtime working in that area. The Department informed the National Audit Office that effective implementation of the review recommendations depends on a satisfactory outcome to current negotiations with Trade Unions on the AWE Industrial Performance Agreement (paragraph 3.33).

4.16 The National Audit Office also examined Aldermaston's arrangements for planning and controlling the mechanical and electrical preventive maintenance inspections, and the AWE's computerised system known as Computer Listing and Analysis of Maintenance Programmes. They found that the AWE had recognised as long ago as 1982 that the system was not capable of meeting Aldermaston's future requirements and by 1988 the system, which was still in operation at that date, was considered by AWE to be of diminished effectiveness. The main problem identified was the high degree of incompleteness and inaccuracy of the Plant Register. In November 1984 the AWE had proposed replacing this system with a new version called Asset Maintenance Planning System. This new system, which was drawn from current practice in the United Kingdom nuclear power industry, was originally intended to cover the whole of the site. However, on cost grounds, the AWE decided in 1988 to apply the full system to the [new

UNCLASSIFIED
capital facilities only], at a cost of approximately [£7.5 million] on a timescale to match completion of individual facilities. They have considered a proposal to improve and retain the Computer Listing and Analysis of Maintenance Programmes for existing facilities but discarded it in favour of a scaled-down version of the new Asset Maintenance Planning System. They have yet to define and agree the precise arrangements for implementation.

(c) Decommissioning and Waste Management

4.17 Despite being amongst the smaller services in terms of revenue resources consumed, the decommissioning and waste management programmes are very important in terms of maintaining and improving overall safety at Aldermaston. The objective of the AWE's decommissioning programme is to maintain obsolete radioactive equipment and facilities in a safe state and to provide for their decontamination and dismantling. The objective of the waste management programme is to provide a service for collection, treatment and disposal of radioactive liquid effluent and solid wastes arising from the research, development and production processes and decommissioning programme.

Decommissioning

4.18 Decommissioning is a hazardous phase of a facility's life and is a relatively new field in which experience of the required skills is developing, both within the AWE and in outside contractors. New technology is having to be developed and the work is the subject of stringent pre-planning, safety analysis and operational control.

4.19 The process of decommissioning is undertaken in three phases:

- Phase 1: preparation for care and surveillance
 - this work defines the basis on which a facility can be maintained safely until major decommissioning work can proceed. This element is staff intensive and safety and security philosophy has led to its being staffed exclusively by the AWE's personnel.
- Phase 2: care and surveillance - this phase is a fairly low key activity aimed mainly at routine inspection and safety checks and has a low AWE staff requirement.
- Phase 3: removal of contaminated plant and equipment - this is the major phase of the work

and is subject to detailed planning and safety assessment prior to removal. This activity is also staff intensive but contractor resources are used with management input from the AWE.

4.20 The AWE's policy is to put the majority of Phase 3 decommissioning work out to contract on a competitive tendering basis, retaining only a small in-house capability to deal with minor projects. However, safety and legal requirements under the Nuclear Installations and United Kingdom Atomic Energy Authority Acts, mean that the AWE cannot delegate ultimate responsibility for this work, and consequently have to maintain a significant involvement in controlling contractors work. The generation of competition in a field of limited activity, and the establishment of a suitable form of contract to be used, continues to cause difficulties.

4.21 In 1983 the AWE recognised that the replacement of capital facilities and other developments would lead to a major build-up in decommissioning work that could not all be tackled at once. They instituted a policy strategy and programme to deal with this, extending to the year 2000. From that date onwards the AWE envisage being able to deal with decommissioning tasks as they arise.

4.22 The AWE's inability to deploy sufficient manpower effort to allow work to proceed in line with programme demands has been a serious problem facing the decommissioning programme. As a result the programme has fallen behind schedule, though the recent priority given by the AWE to Phase 3 decommissioning work has improved the situation.

4.23 The AWE manpower requirement for the decommissioning programme peaks at a time when the new capital facilities will be coming on stream. As a result, the AWE developed proposals in 1987 to extend the use of contractors to Phase 1 activities. As this was a departure from the current philosophy on safety and security aspects of decommissioning, they proposed to operate a pilot scheme prior to the main Phase 1 effort which will be required on the capital facilities shortly to be replaced. They have yet to undertake an appraisal of the cost implications of this action.

Waste Management

4.24 Since 1982-83, with the abandonment of sea disposal, there has been no national repository for intermediate level radioactive waste available to any organisation generating such waste. As a result the AWE store untreated solid radioactive waste at

Aldermaston and will continue to do so until the following become available:

- an approved national disposal route;
- an agreed treatment process which meets approved packaging standards appropriate to the disposal route;
- new capital facilities for carrying out the treatment process and verifying packaging standards, which are dependent upon the criteria above being set.

4.25 The lack of a national disposal route for radioactive waste is outside the Department's control. The Department, along with all other producers of radioactive waste, await a decision by the UK Nuclear Industry Radioactive Waste Executive Limited on a future disposal site planned to be available by 2005. Among the major organisations in the nuclear industry, the AWE is one of the smallest producers of radioactive waste, but pending agreement on the means of disposal, a new storage facility for solid radioactive waste will nevertheless be required at Aldermaston every two years at an estimated cost of [£1 million each]. The National Audit Office were informed that Aldermaston has room for the construction of such

UNCLASSIFIED

[REDACTED]

[REDACTED]

stores until the end of the century, and studies into higher density drum stores are also being undertaken.

4.26 The National Audit Office noted that the UK Nuclear Industry Radioactive Waste Executive Limited have defined a standard range of packages for radioactive wastes. However, the AWE informed the National Audit Office that they still have no guidance as to the acceptability for packaging of certain materials which are within its radioactive waste and the prior treatment that might be required.

4.27 The current decommissioning programme is based on a waste decontamination and disposal facility being available by 2000 for the treatment of large radioactive items. In addition a new solid waste treatment plant is required for safety reasons and the design work for this has been completed. However, the Department consider that in the absence of a national policy on disposal sites and packaging there is considerable risk of providing facilities that would not meet the final requirements when defined. The building of these facilities at the AWE is therefore currently in abeyance.

4.28 The AWE reviewed their programme for storage of waste in 1987. Taking into account the

significant potential hazards in delaying decommissioning, and having a regard to the Nuclear Installations Inspectorate view that British Nuclear Fuels Limited should not allow waste disposal factors to affect its decommissioning programme, the AWE have concluded that the timetable of their decommissioning programme should stand. However, to minimise the level of radioactive waste that will need storage, they have taken action to reduce whenever possible the amount of waste produced.

(d) Security and Safety

4.29 Security and safety are factors which the Department consider condition the work of the Establishment. For 1988-89 the identifiable costs of security and safety were [£11 million], and [10 per cent] of Aldermaston's workforce were involved. A further [£5 million] was incurred on the Ministry of Defence Police.

4.30 The activities of the AWE have a high security classification. Special security arrangements for everyday protection of materials and information together with procedures for dealing with hostile threats are required. The AWE security staff have close liaison with the Ministry of Defence Police who, whilst being responsible for the physical security of the AWE sites, are not under the direct

control of the AWE's management.

4.31 Safety is of paramount importance as the AWE staff work with radioactive, toxic and high explosive materials. The AWE need to be prepared to deal with on-site accidents within the AWE and accidents involving the United Kingdom's nuclear weapons.

4.32 In the 1960s and 1970s good safety practices were undermined by staff shortages and financial constraints. Following an enquiry into safety, headed by Sir Edward Pochin in 1978, the AWE introduced labour intensive management of their existing facilities and commenced a programme of remedial and replacement work which will continue into the 1990s. The great majority of these improvements have either been completed or are underway. Some work has been delayed because of competing priorities but the Department have kept safety implications under close review.

4.33 Since their formation in 1987, the AWE have reviewed safety responsibilities and arrangements and have applied a common safety policy and standards across all sites.

(e) Capital Projects

NAO
UNCLASSIFIED

4.34 The AWE's capital programme for Aldermaston in 1989 consisted of: 32 projects which are critical to safety and the current production programme; [114] other major capital projects; and a bulk provision for minor capital projects.

Safety and Current Production Capital Projects

4.35 The Committee of Public Accounts reported on the Control and Management of the Trident Programme in June 1988 (HC189). Their Report highlighted the slippage and rising cost of the AWE capital programme and its implications for the Trident programme. The subsequent Treasury Minute (HC509) dated October 1988 outlined measures which the Department had introduced to ensure the timely completion of the capital works programmes within a revised cost framework.

4.36 In March 1987 the Department appointed a Project Director Facilities within the AWE with specific responsibility for the 32 Trident and safety related capital projects. At the same time they appointed a Facilities Integration Contractor to advise on establishing timescales and cost for those projects. In June 1988 they appointed a Facilities Project Management Contractor to assist

the Project Director Facilities in the management of these 32 projects. The contractor has responsibility for 26 of the projects at an estimated cost of £947 million (at September 1987 prices). 21 of these are to be completed within a cost of £836 million which includes a management fee of [£21 million] and a further [£4 million] for the achievement of [six] specified programme milestones. The other 5 projects costing £111 million are outside these incentive arrangements (see Table 2). 6 projects costing £27 million (at September 1987 prices) continue to be managed directly by the Project Director Facilities.

4.37 In June 1988, the Treasury approved the revised total estimated cost of £974 million for the 32 Trident and safety related projects. In approving the revised estimate the Treasury required target costs and completion dates for all individual projects and the establishment of adequate monitoring arrangements for early warning of any problems. As a result quarterly reports on progress are now produced for the Nuclear Controllerate by the Project Director Facilities and these are copied to Treasury.

4.38 The 1988-89 estimated outturn cost for the 32 projects is £1,016 million (at September 1988 prices). This is £16 million below the revalued

UNCLASSIFIED

Treasury approved sum of £1032m (at September 1988 prices) (see Table 2).

TABLE 2: Safety and Current Production Capital Projects

| | Total | Projects managed by the Facilities Project Management Contractor | | Projects managed by AWE's Project Director Facilities |
|-------------------------------------|-------|---|---|---|
| | | (a) Under incentive arrangements | (b) Outside incentive arrangements | |
| Projects (No) | 32 | 21 | 5 | 6 |
| Cost - £ m (at Sept. '87 prices) | 974 | 836 | 111 | 27 |
| Cost = £ m (at Sept. '88 prices) | 1032 | 886 | 118 | 28 |

4.39 The Department informed the National Audit Office that the Facilities Project Management Contractor was now in firm control of the majority of the Aldermaston capital programme. The AWE management have assessed that approximately [200 additional] staff are required for the extended working of old facilities and the accelerated commissioning of the new facilities. Meeting this requirement is proving difficult (paragraph 3.26) and unless improvements in recruitment and retention are achieved, or additional manpower effort found in some other way, the Establishment consider that the warhead delivery programme could be affected. Nevertheless, in the Department's view there is every prospect of meeting the Trident warhead delivery dates. This confirms a statement by the

[REDACTED]

Parliamentary Under Secretary of State for Defence Procurement to Parliament in February 1989 that the Trident project remained on schedule to enter service as planned in the mid-1990's.

Other Major Capital Projects at Aldermaston

4.40 With the setting up of a management contract to oversee the Trident and safety related capital projects, the AWE also set up a Capital Requirements Committee in 1988 to oversee and monitor progress on other major projects not the responsibility of the Project Director Facilities. As at January 1989, [35] of the [114] projects identified in AWE's 1989 capital programme had been approved and were subject to the control of the Capital Requirements Committee. Project Managers provide the Committee with monthly project status reports.

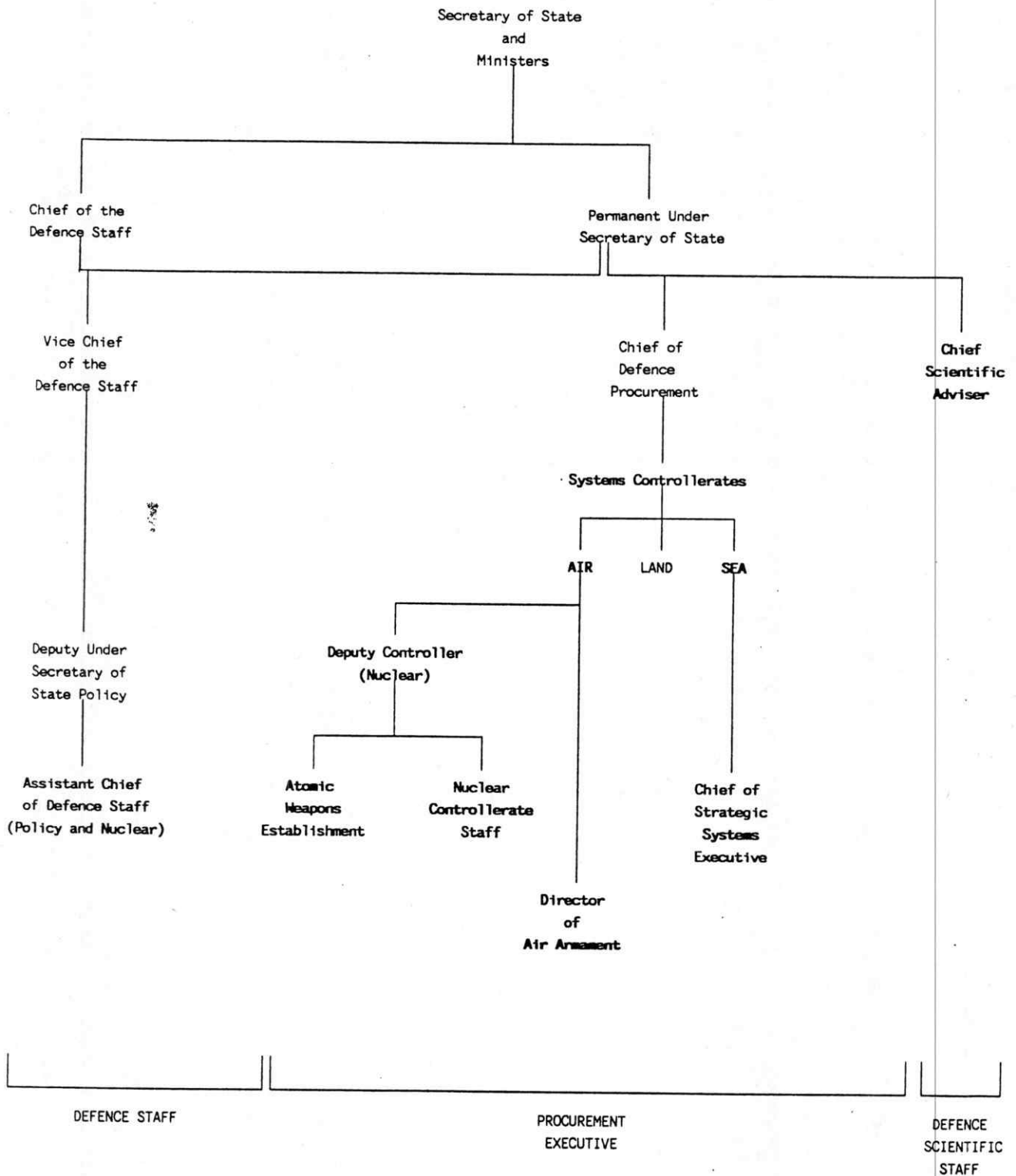
UNCLASSIFIED

[REDACTED]

[REDACTED]

Ministry of Defence

Organisation Chart : Nuclear Programme



Recent AWE Reviews

1. AWE Manpower Review

A review team comprising AWE and other Departmental staff and independent members was set up in October 1987 and reported in May 1988. The aim of the review was to consider the relevance of the AWE's programme and form a judgement on the most appropriate level of manpower, but not explicitly to review the AWE's management. Nevertheless the team did identify a number of areas of apparent weakness in the AWE management system which had implications for manpower requirements.

Manpower Requirements

The review resulted in a series of departmental short-term and long-term targets. The former reflected manpower savings to be achieved by relatively straightforward administrative action. The latter were based on the anticipated results of long-term improvements to the management system and working practices. These manpower targets were put forward to the Nuclear Controllerate to form part of the Long Term Costing exercise. However, the

Department later made a major adjustment to its estimates, mainly for recruitment realism.

Management System

The review team identified the following weaknesses in the management system, and measures which could lead to reduced manpower requirements.

Weaknesses:

- lack of clear delegation of authority/ responsibility;
- lack of comprehensive management information systems for providing data for programme co-ordination;
- no real incentive for a manager to reduce manpower;
- under-utilisation and poor management control; and
- lack of ability to motivate and manage the industrial workforce.

Manpower Saving Measures:

Short-term savings by

- stopping or deferring low priority work;
- eliminating duplication and rationalising work

- where advantageous; and
- increasing use of term contractors.

Longer term savings by

- improving existing programme co-ordination; and
- making radical changes to working practices with associated major commitment from all levels of management.

Action by AWE

The AWE management have proposed a number of actions:

- they have set up a working party to examine how they can establish a more coherent and efficient organisation for the planning and monitoring of the manufacture of component parts;
- an examination of the scope for adopting a more flexible approach to technology transfer between Aldermaston, Burghfield and Cardiff;
- an examination of the scope for rationalising administrative and technical support;
- they have set up a working party to examine whether apprentice training can be operated on an Establishment rather than site basis;
- an examination of the continued operation of the Cardiff site;

- an assessment of the scope for reducing the total effort on certain capabilities which are necessarily duplicated on different AWE sites;
- the treatment of work on underground tests as a major project;
- arrangements to improve day to day control over staff working on production and waste management programmes;
- a change in responsibility for developing management information systems, in order to achieve significant progress in this area; and
- an examination of the ability of Aldermaston to set and meet realistic targets in the workshop and engineering services areas.

The AWE consider that these actions, and those relating to the Industrial Society Review (see below) should result, through time, in the more efficient use of manpower throughout the AWE.

2. A Review of the Organisation and Management Effectiveness in the Engineering Department at AWE Aldermaston by the Industrial Society

Following the AWE Manpower Review the AWE management commissioned a report from the Industrial Society. Since the AWE management recognised that the majority of the improvements would most readily be obtained from the industrial workforce the

Industrial Society concentrated its attention on the Chief Engineer's Department at Aldermaston.

The objectives of the Industrial Society's Review were:

- to investigate the strengths and weaknesses of the current management organisation and methods and to recommend ways to improve its structure, operation, effectiveness and efficiency; and
- to assess the present state of motivation and involvement within the organisation and to identify the factors affecting them.

The Industrial Society reported in July 1988 and the main conclusions were:

Structure

- problems in the way the workforce was managed; and
- no clear lines of accountability/responsibility at lower management levels.

Leadership

- managers received little or no training on what leaders need to do to achieve commitment of the workforce.

Terms and Conditions

- disquiet amongst staff with the general terms and conditions of employment; and
- a lack of flexibility amongst staff because of the special allowances payable in certain areas.

Recruitment and Selection

- certain aspects of recruitment and selection process fell short of what the Industrial Society considered to be good practice.

Communications

- deficiencies in methods of communicating with the workforce;
- little co-ordination of work involving more than one Division;
- a lack of continuity in line management;
- a lack of awareness of the AWE's management strategy;
- little attempt made to transfer the knowledge and skills of people prior to retirement; and
- considerable problems with retaining staff (cost of living, pay scales, work too technically demanding, lack of motivation).

Job Appraisal Process

- a need to extend the job appraisal systems to industrials.

Management Development and Career Progression

- confusion in the whole area of Management Development and Career Progression.

Organisations Long Term Strategy

- a lack of awareness of the organisation's long-term strategy.

Action by AWE

The AWE Management agreed that the conclusions and recommendations were fairly generally applicable over the AWE as a whole and were keen to implement the majority of its recommendations. The AWE Management proposed in November 1988:

- the setting up of a Central Management Services cell which, inter alia, would help plan and monitor the implementation of their recommendations; and
- seeking advice on the form of a leadership orientated course(s) suitable for managers at all levels.

3. Review of Industrial Performance and Manpower Requirements at AWE Aldermaston, Burghfield and Foulness

In September 1987, following Treasury concern about the effectiveness of AWE's productivity schemes, the Department undertook a value for money review which identified shortcomings: in the way productivity had been measured and rewarded; in the use of management information systems for the control of industrial manpower levels; and in the control over overtime. As a result the AWE instituted, in March 1988, a two stage review of industrial performance and manpower requirements. The first stage examined the scope for performance indicators to measure the contribution made by the industrial workforce to overall efficiency and effectiveness. This was completed in May 1988. The second stage involved establishing the number of industrial staff required to fulfil the AWE programme. In addition the Phase Two review raised a number of broader issues. This stage was completed in January 1989.

The main findings and recommendations of the Review in relation to Aldermaston were that:

- an Industrial Manpower Baseline should be established below the then current targets;
- work recording should be implemented as a

matter of urgency;

- performance indicators should be established;
- achievable targets should be set which allow meaningful comparison with performance indicators;
- levels of 'not working' because of unofficial breaks, leaving work place early at end of day and unnecessary travelling led to low performance;
- overtime had been highly institutionalised for a considerable time and had been used to boost wage levels;
- the site was trapped in a cycle of reduced performance to underpin overtime;
- most of the aims of the organisation were remote and not readily appreciated by large parts of the workforce;
- the organisation was characterised by apathy with lack of direction and appreciation of error; and
- common services and activities could be rationalised between Aldermaston and Burghfield.

Action by AWE

The AWE have incorporated work measurement and performance indicators into a new Industrial Performance Agreement which is under negotiation

with the Trade Unions. Other aspects of the review are under consideration and are being monitored by the Management Services Group.

Formation of the Defence Nuclear Programme

1. The Defence nuclear programme, of which the nuclear warhead programme is a part, is set by a small group of Ministers, including the Prime Minister. The programme specifies the level of deterrence necessary to meet the Government's political objectives and, in general terms, the means by which it should be achieved.

2. The Department's proposals for fulfilling the Defence Nuclear Programme are provided in the following documents:

- [a. Statement of UK Nuclear Policy;
- b. UK Nuclear Weapons Plan;
- c. Long Term Costing and Nuclear Procurement Assumptions.]

[Statement of UK Nuclear Policy]

[3. This annual document is drawn up by the Assistant Chief of Defence Staff (Policy & Nuclear) and approved by the Secretary of State. It outlines the broad principles of the national nuclear weapons policy including a statement of the policy of nuclear capable forces, nuclear weapons, special

nuclear materials procurement and safety and security.]

[4. It is current policy that a national capability to design, develop and manufacture nuclear warheads should be maintained, together with an effective stockpile of in-service nuclear warheads. There is also the need to maintain effective collaboration with the US under the auspices of the 1958 US/UK Mutual Defence Agreement.]

[UK Nuclear Weapons Plan]

[5. This plan, prepared by the Chiefs of Staff Secretariat, outlines detailed intentions for the maintenance of UK strategic and theatre nuclear weapons and plans for their replacements. The plan provides a high level document defining the broad shape of the Defence Nuclear Programme and the framework to which the programmes of the AWE must conform.]

UNCLASSIFIED

NAO
NATIONAL AUDIT OFFICE

Confidential

[Long Term Costing and Nuclear Procurement
Assumptions]

6. There are 3 main levels of programme assumptions:

- The First Order Assumptions which set out the aims of the Ministry of Defence. They incorporate the main assumptions derived directly from the Government's defence policy ie, "the four pillars": maintenance of an independent nuclear deterrent for the UK; Maritime Forces; Defence of European mainland space; and Out of Area. These are issued by the Office of Management and Budget;
- Second Order Assumptions which provide detailed assumptions concerning, for example, aircraft and weapon ordering and delivery schedules, and major unit deployments; and
- [Third Order Assumptions which are detailed line item assumptions for purposes of constructing the Long Term Costings. These are referred to as the "Nuclear Procurement Assumptions".]



UNCLASSIFIED

CHART SHOWING LINKAGE BETWEEN NUCLEAR PROCUREMENT ASSUMPTIONS AND INDIVIDUAL ITEMS OF WORK

