5 Management and financial information systems

Introduction

5.1. In this chapter we consider the role and effectiveness of the management and financial information systems in AEA. Under this heading we include the development of IT in AEA (paragraphs 5.3 to 5.8), AEA's existing management and financial information systems (paragraphs 5.9 to 5.19) and the associated computer hardware (paragraphs 5.20 to 5.26). We then consider the management of IT (paragraphs 5.27 to 5.31), management information reports (paragraphs 5.32 to 5.37) and the problems arising from the legacy of site-based systems, which are now recognised by AEA to be inappropriate to the new organisation (paragraphs 5.38 and 5.39). We then examine AEA's IT strategy (paragraphs 5.40 to 5.42) and the action that AEA is proposing to take to introduce new financial information systems and upgrade its other systems (paragraphs 5.43 to 5.54). Finally we discuss the on-line management information available within AEA (paragraphs 5.55 and 5.56). Our conclusions and recommendations are provided at paragraphs 5.57 to 5.69.

5.2. Many of AEA's commercial activities make intensive use of powerful computer systems, demanding in their use of computer hardware. This chapter is, however, only concerned with the use of computers in support of management and financial control systems.

Background

5.3. Prior to April 1990 the site-based management units enjoyed considerable autonomy in their administrative and financial structures. This led to the development of independent local financial and other computer systems. These systems were based upon locally developed charts of accounts and a miscellany of incompatible bespoke and packaged software. The consolidation of information at corporate level was carried out manually at CHQ from forms submitted by the sites.

5.4. For many years business and technical applications ran side by side on large multi-tasking mainframe computers, which differed from site to site. More recently, the use of minicomputers, personal computers (Pcs) and workstations has increased.

5.5. AEA's efficiency unit reviewed AEA computing in 1988, prior to the SIP. It recommended a new management structure for computing, separating `business' and `technical' computing, and setting up a small strategy group for business computing under a new Director of Information Technology. It also recommended the adoption of a structure of distributed computing using networked DEC VAX minicomputers. Technical computing beyond the resources of individual locations was to be based at an Authority Technical Computing Centre, located at Harwell, under the management of a separate board chaired by the Director of Culham/Harwell.

5.6. Some rationalisation of business applications was achieved in the site-based structure, for example the centralised payroll, personnel and superannuation system at Risley, which has data links to all sites.

5.7. The corporate IT directorate was only established towards the end of 1989 and there was previously no corporate IT strategy. Responsibility for defining IT requirements now rests with the Director of IT, although the majority of the systems development staff within AEA are still based in the business and site organisations (see Appendix 5.1).

5.8. The first priority following the establishment of the IT directorate was to carry out a planning study. This systematic top-down review of AEA's information system requirements resulted in the Information Strategy Plan (ISP) (see paragraph 5.40). The ISP proposed a framework of core business systems based on a common chart of accounts and a common breakdown of work. The highest priorities were given to defining the corporate information structures needed to support the following systems: project monitoring, customer reporting, invoicing, bid preparation and manpower scheduling. The major problem experienced by the new AEA organisation at this time was the failure of its existing site-based financial information systems to mesh in with the new corporate structure. The top priority in 1991 has therefore been to implement a new business-based FIS (see paragraph 5.44).

Existing management and financial information systems

5.9. The development of the existing diverse systems is described in paragraph 5.3. An overall picture of the financial systems in operation at the sites is presented in Appendix 5.2. More detailed descriptions are given below.

5.10. The systems in operation at Culham/Harwell have all been developed as bespoke systems specifically for Culham/Harwell's needs. There is a combined central general ledger and cost ledger. It is fed by systems which control the personal ledger systems, a fixed asset system, the standard AEA payroll (see paragraph 5.18), a stores system, an inter-site transactions accounting system and a time-recording system.

5.11. Harwell also operates the Harwell Commercial Data Base (HCDB) which monitors all secured external contracts and invoicing.

5.12. Dounreay, Risley and Windscale share a number of common systems. The general ledger is run on the proprietary Millennium package, supplemented by a bespoke job cost ledger. The diversity of the systems in operation is illustrated in schematic form in Appendix 5.3. Several time-recording systems are integrated into the overall set-up.

5.13. Winfrith also uses Millennium, but this was only installed in 1990 when the existing bespoke systems were found to be inadequate to supply the new businesses with the top level information required. As at the northern sites there is a multiplicity of time-recording systems.

5.14. CHQ and Corporate Treasury use the same accounting package but each has a separate chart of accounts. Extensive use is made of spreadsheets for consolidation and reporting.

5.15. Fixed assets present an extreme example of the diversity of systems in operation. Each of the three main accounting centres has separate, non-integrated fixed asset systems. That at Culham/ Harwell is bespoke; the northern sites use a bespoke system for Dounreay and a package for Risley/ Windscale; and Winfrith has developed its own spreadsheet system.

5.16. There is an elaborate system of cross-charging between businesses and sites caused mainly by the complexity and number of businesses and sites. The overall system handles 50,000 accounting transactions per working day.

BORIS

5.17. Following the SIP it became clear that the effective operation of the new businesses might be delayed by incompatibility of the financial systems. The solution proposed and implemented was to design a system, given the acronym BORIS (Business Oriented Information System), which would receive summarised accounting information from each site system for each period, and re-analyse the information into the nine businesses and seven sites that resulted from the SIP recommendations. It has always been accepted by AEA that this was a temporary solution while an assessment was made of its longer-term requirements. Appendix 5.2 shows how BORIS is placed in the overall systems structure.

AEA payroll

5.18. We were told that the complex AEA pay and conditions of service rules require experienced specialist staff for their correct application and interpretation. AEA also told us that this form of service was best provided site by site and as a consequence payroll would continue to be a site responsibility even after the 1992 reorganisation.

5.19. Pay offices operate as part of the sites structure at each of Culham/Harwell, Dounreay, Risley and Winfrith. They provide a pay service to all staff at those sites. Additionally Risley supplies a service for Windscale, and Culham/Harwell provides one for CHQ. The payroll is calculated on the ICL computer at Risley with both input and output routed through the pay offices. Superannuation and personnel records are also held on the Risley machine. The superannuation office is at Thurso, near Dounreay.

Computer hardware

5.20. At present the computing centres at Winfrith, Harwell, Risley and Dounreay all provide technical computing, data storage and data communications services (see Appendix 5.1). AEA's main computing centre at Harwell incorporates the Authority Technical Computing Centre and operates a CRAY-2 supercomputer, an IBM 3084Q, a VAX cluster, a major IBM mainframe for JET and the site data network. The main feature of future investment in computer hardware is the extension of VAX minicomputer capacity to support the implementation of FIS (see paragraph 5.44). This particularly applies to Risley where the present business systems are run on an ICL mainframe, and to Harwell where a large IBM mainframe is shared between business and technical computing.

5.21. At the end of 1991 there was still a considerable degree of overlap between technical and business computing. The wide range of types of computer equipment has also resulted in software and hardware incompatibility, communication problems and additional IT staff support costs. As FIS is implemented on VAX minicomputers these problems will be reduced. But other potentially incompatible business software systems, such as the main corporate personnel systems, will remain in use.

5.22. A consultant's report in February 1991 estimated that the two mainframe computers used predominantly for financial reporting, the ICL 3955 at Risley and the IBM 3084Q at Harwell, were peaking at 55 per cent and 70 per cent loading respectively. The transfer of financial systems on to distributed VAX minicomputers could reduce mainframe utilisation to half its present levels or even less, bringing into question the viability of the mainframe computers. The ICL machine had estimated unavoidable fixed costs of £360,000 per annum. AEA is currently estimating the cost of disposing of the surplus capacity. A review in July 1991 put the cost at £5 million. AEA told us that this cost was not solely attributable to the decision to implement the new FIS.

5.23. This overcapacity is also seen on the CRAY supercomputer for technical applications (see Chapter 11), reflecting the increasing power of the PCs and workstations installed by the businesses and the lack of external customers. The requirement for supercomputing is also under review. Although considerable rationalisation has taken place AEA acknowledged that the spare capacity needed to be exploited effectively or disposed of.

5.24. Basic technical computing other than supercomputing is normally provided by each business from its own resources. Investment in PCs, workstations and related software is also locally controlled. There are, however, some central guidelines on compatibility requirements and on value for money in purchasing.

5.25. The overall pattern of computer hardware available within AEA will ultimately be a terminal, PC or workstation on the user's desk linked to local area networks at each site. These will be connected in turn with the AEA digital network which links the sites and carries both voice and data traffic. Users will thus have access to processing power provided locally by VAX minicomputers or other file servers, and to central computing resources.

5.26. Although the AEA digital network provides a powerful system of data transmission between sites, a number of users of terminal keyboards have found that response times for non-technical data are so unsatisfactory that their use of these systems is restricted. AEA has recognised that this problem needs to be

resolved before such network traffic increases dramatically following the implementation of FIS. AEA has established that the cause is the mixing of individual keystroke traffic with large files of technical computing data transferred through the network, and believes that the problem can be eliminated by reserving separate channels for MIS traffic. The necessary work is under way.

IT management

5.27. Since late 1989 the Director of IT has been responsible for the overall development of IT; from early in 1991 he has reported to the Executive Director Finance. They have been assisted by the IT Advisory Committee which assesses the strategic IT issues arising from the information systems requirements of the businesses, sites and the corporate centre. The IT Advisory Committee is composed of nominated senior managers from all the business, sites and CHQ. It is not concerned with individual projects unless they are of special strategic value.

5.28. Notwithstanding this advisory committee and various less formal co-ordinating groups, businesses and sites have been formally free to seek to go their individual ways on IT matters, subject only to seeking the endorsement of the Director of IT for any proposed investment in excess of £60,000. At one stage the S&R business had to be discouraged from developing its own separate financial systems and encouraged to wait for FIS.

5.29. The existing IT organisation remains mainly site-based and -managed. Until FIS is fully operational in April 1992 the need to operate the existing accounting systems on a site-by-site basis restricts the rate at which the IT organisation can be brought into line with the business-based management structure.

5.30. The precise degree of centralisation versus devolution in the IT function has been a matter of internal debate. At the end of 1990 there were 16 staff in post in the central IT Directorate and the 1990/91 budget provided for operating expenditure of £1.3 million (including management of the wide area network). Site-based IT staff totalled 165 and the associated operating expenditure was judged to be in excess of £10 million. In 1990 the ISP recommended that the main site-based IT teams should be integrated into a single organisation. The distribution of the site-based staff is shown in Appendix 5.1.

5.31. Under the Review of Service Provision in July 1991 it was confirmed that the major IT activities would be brought together under a single management as a corporate service headed by a Director of Information Systems. The service will also include management of the on-site communications networks. Overall policy on IT standards and strategy will be considered by an IT Steering Group chaired at AEM level and similar in composition to the IT Advisory Committee but with more direct influence on policy. A number of important issues remain to be resolved, including the relationship with the IT activities already established in some businesses.

Management information reports

5.32. The main financial performance measures which are reported regularly to the AEM and to the Board are:

- turnover;
- operating profit;
- current cost profit;
- CCA rate of return on CCA capital employed;
- quarterly balance sheets (actuals only);
- capital expenditure;
- increase/decrease in liquidity compared with EFL; and
- restructuring provisions and expenditure.

The operating revenue and costs are normally compared with the budget. Balance sheets are not compared with budget other than at the end of the financial year.

5.33. Additional key performance indicators which are reported in diagrammatic form to the Board are:

- operating profit as percentage of external sales;
- operating profit per employee;
- external sales per employee; and
- direct costs as percentage of total sales.

5.34. Apart from these financial measures, AEA has not monitored many performance indicators at Board level. It is exploring the value of reporting additional ratios to top management to aid monitoring of business performance. In the supporting Businesses Financial Report presented to the Board some additional performance indicators are being introduced. At present these comprise:

- business margin as percentage of external sales;
- direct costs as percentage of total sales;
- overheads as percentage of total sales;
- real change in external sales over previous year;
- total sales per employee; and
- business margin per employee supporting external sales.

5.35. Individual businesses have been examining a range of additional ratios as indicators of efficiency and as an aid to identifying areas requiring action. The ratios considered include turnover per Authority grade employee, staff costs as a proportion of total direct costs and profit per employee. The unco-ordinated nature of the AEA's business software has resulted in its being excessively dependent on the manual analysis and transcription of data in preparing these management reports. Although other performance measures, such as success rates in competitive bidding, and facility utilisation factors, are also being developed, the use of non-financial performance indicators is very limited. Only isolated attempts are made to monitor product and service quality or customer satisfaction.

5.36. Because of the diversity of AEA's products and markets, no marketing indicators, such as market share and sales per employee, are monitored at corporate level. However, the Board members' bonus scheme (see Chapter 3) includes a target related to sales to customers other than DEn, BNFL and the ESI, and this parameter is therefore monitored corporately. A matrix of regular management reports, their frequency and circulation is attached at Appendix 5.4.

5.37. The format of management reports at either Board or business level following the introduction of FIS has yet to be fully defined. The new software should enable AEA to produce well presented, informative management reports without unnecessary manual effort. Implementation will, however, need to be planned in full consultation with the users of the reports.

Problems and inadequacies

5.38. Despite the BORIS overlay, the present systems cannot satisfy the requirements of AEA's current business and corporate needs. Although BORIS provides limited profit and loss reporting, the underlying financial ledgers are all site-based, and it is therefore not possible to provide businesses with balance sheets, source and application of funds statements and all the other features of a balanced set of business books. The local conventions for accounts coding, expenditure control and time recording all contribute to the problems of control experienced by business managers and accountants. The systems do not allow businesses to be properly accountable for the financial aspects of their activities-capital expenditure, current liabilities and cash as well as profit. With regard to cross-charging, the facilities established in BORIS do not provide sufficient help with the many transactions which cross site accounting systems. Due to delays in processing, transactions recorded as a sale in one business sometimes do not appear as a purchase in another business until the following month. This prevents the timely control of jobs.

5.39. The businesses are acutely aware of the inadequacy of the present systems and are seeking to improve the information available to them. When consultants reviewed the business information requirements of the S&R business at its request in August 1990 they found the existing MIS unsatisfactory in the following ways:

(a) computer reports were not formatted in a `user friendly' way and required manual interpretations and alterations before becoming readily understandable;

(b) reports were untimely and/or inaccurate;

(c) information was often given when it was not required, yet useful data were frequently either unavailable or lost amongst a mass of detail;

(d) necessary information, such as budgets, variances and forecasts for monitoring actual performance against plans, was not provided;

(e) users lacked confidence in the systems and replaced computer reports with manually-prepared reports;

(f) the three current systems were not working properly owing to technical problems and the lack of resources required to manage them;

(g) the systems were so configured that they were not easy to use; and

(h) in the recent past the management of investment in IT had not been given sufficient priority.

Many of these problems will remain until FIS is implemented in April 1992 (see paragraph 5.43).

The 1990 ISP

5.40. The top-down review of AEA's information requirements undertaken in 1990 (see paragraph 5.8) set out four main stages in developing AEA's corporate IT strategy. Work on the four stages has been carried out in parallel:

- *Stage 1*: The identification and implementation of the systems needed urgently to assist AEA to survive. Priority is being given to developing FIS and to enhancing business development information systems (BDIS).

- *Stage 2*: A review of AEA's systems and IT inheritance. This was partly covered by the 1988 Computing Review and partly by the 1990 ISP.

- *Stage 3*: An analysis of AEA's business needs in each business area, to identify the key applications needed to support them, and form the basis for future systems development.

- *Stage 4*: A review of the provision and organisation of IT services, which subsequently became integrated with the Review of Service Provision.

5.41. In implementing *Stage 3*, 11 key areas of activity, common to all businesses, were identified as the basis for business area analysis and systems planning. Priority was given to business development, project management and financial systems. The area now under analysis is personnel and manpower scheduling, but progress has had to be restricted given the concentration of resources on implementing FIS.

5.42. An internal assessment in July 1991 acknowledged that the disadvantages of the late adoption of a corporate IT strategy were fully illustrated by the difficulties that AEA was experiencing in providing the businesses with the information they required.

The new FIS

5.43. The longer-term requirements for a soundly-based FIS were recognised when the Chief Accountant at Harwell was asked by the Board in July 1990 to provide a proposal for a single corporate system. The proposal, in October 1990, at that stage called FIBS (Financial Information for Businesses and Sites) recommended, amongst other things:

(a) self-accounting for businesses and sites separately, in all key financial areas;

(b) the appointment of an accountant within each business with his own staff;

(c) a common chart of accounts;

(d) financial information to be processed by the Millennium package and used by all businesses and sites; and

(e) a two-tier costing system-a result of businesses requiring costs analysed to a level below which AEA systems were then operating-for project control purposes (this would have required some minimal extra programming).

Implementation of FIS

5.44. The FIBS proposal was put to the Audit Committee, which recommended that consultants be employed to review the proposal, devise a more comprehensive statement of requirements from prospective users and to formulate a variety of system options, both hardware and software. The consultants reported in February 1991. Three major options were evaluated and ranked. No obvious candidate emerged and the consultants recommended a tender process whereby a number of software houses were asked to bid for a specification laid down by AEA. An evaluation of the tenders led to AEA choosing the Commercial and Financial Accounting System (CFACS) operating on either distributed DEC VAX minicomputers or on DEC Ultrix processors.

5.45. CFACS is an accounting package based on the ORACLE relational database. It includes a general ledger, sales and purchase ledgers, a fixed assets recording system and a time-recording system as standard modules. An invoice-writing package is also available and is to be used extensively. AEA told us that bespoke systems for inter-business charging, sales order processing and work-in-progress calculations were to be delivered in early 1992 and that the whole system was scheduled to come into use in April 1992. Pilot schemes had been under way in two businesses as from October 1991, with three further businesses expected to start testing in January 1992. A schematic diagram of FIS as installed in each business is shown in Appendix 5.5.

5.46. The system chosen is based on hierarchical structures built on each element of the accounting code. The system is extremely powerful in its ability to aggregate data and in the choice of reports that can be produced using CFACS' reporting facility or ORACLE's high level Structured Query Language (SQL). AEA told us that the information content had been agreed by users but that reporting formats had not as yet been fully developed. Many requirements would be satisfied by on-line access. The disparate size and structure of the businesses had led to a decision not to attempt to lay down standard business reporting formats. CHQ was in the early stages of establishing the reports it would require for reporting to the AEM and to the Board.

5.47. Appendix 5.6 shows the overall FIS that will be operating from April 1992. AEA told us that there would be a marked improvement in the way in which data would be collected, processed and reported, compared with the present diverse position as shown in Appendix 5.2.

Cost of FIS

5.48. In June 1991 the budgeted cost of the total installed system, hardware and software, was put at £5.9 million plus a 15 per cent contingency of £0.9 million. Included in the £5.9 million was £2.0 million for new hardware, £0.9 million for new software and £2.7 million for the installation of the system and training of staff. AEA had originally considered that it would need a relaxation of £5.4 million in its EFL to finance the project, but said that it now planned to provide the necessary finance from within its existing EFL. A late request from the businesses to increase the possible number of concurrent users required a system upgrade which absorbed most of the contingency. AEA nevertheless expressed confidence that the project would be completed close to budget. As a result of the decision to go for a distributed DEC VAX system, spare capacity will become available on the existing IBM and ICL mainframes (see paragraph 5.22).

Other MIS

5.49. Development work on systems other than FIS and the enhanced BDIS is very restricted. The other existing systems which are not fully compatible with FIS will therefore continue for some time. These include a corporate personnel database system (PRIDE-Personnel Related Integrated Database Environment) linked to the payroll system which is run at Risley (see Chapter 7). However, AEA has recently decided that all sites should use a centrally operated Risley Stock Control System from April 1992. The implementation plan for this incorporates a single stores interface with FIS. AEA is reviewing computer systems for non-stock purchasing, and expects that the FIS Purchase Order facility will ultimately replace extant manual and computer systems. The future of the AEA pay and personnel systems will be worked out in conjunction with the future plans for the ICL mainframe computer at Risley.

5.50. The 1990 ISP identified five major information requirements which should be given priority attention to meet the needs of the businesses (see paragraph 5.8). AEA decided to concentrate initially on:

- project and cost monitoring;
- invoicing;
- marketing; and
- manpower scheduling.

The business area analysis on project and cost monitoring and the work recommended on invoicing have both now been integrated into FIS.

5.51. The marketing system is designed to support business development and the preparation of tenders. The existing BDIS is being enhanced; and as both FIS and BDIS are based on the ORACLE relational database system they will be fully compatible for data transfer. The work on manpower scheduling was given lower priority pending the outcome of a continuing study of payroll and personnel systems.

5.52. The purpose of BDIS is to provide a corporate database of contacts, customers, prospects, proposals and contracts. It tracks all marketing information from enquiries through to the signing (or loss) of a contract. The database can be accessed by authorised AEA users in order to record their own business's information or to enquire and report on any AEA data. Unfortunately some businesses are not yet willing to record their customer contacts on BDIS, in part because of response time problems (see paragraph 5.26). Proposals to remedy this situation are currently being implemented.

5.53. The choice of project management software is largely left to individual project managers. As a result some businesses are currently using different project management computer systems at each of their locations (see Chapter 12). The number of systems currently in use limits AEA's ability to transfer experienced project managers and increases the need for systems training, as well as causing data transfer problems.

5.54. The legacy of incompatible systems, which are usually not able to gain access to data created by other systems, means that, even after the implementation of FIS and the associated enhancement of BDIS, some systems will still require manual data transfer. Until all systems are fully compatible the ability of the businesses to respond to new requirements and take advantage of beneficial trends in IT will to some extent be constrained.

On-line management information

5.55. An Executive Information System (EIS) was developed in 1990 for use by the Chief Executive, Managing Directors and Executive Directors. It currently contains finance and manpower information and the `Energy Updates' extracts. Work has started on improvements to the EIS, which will eventually handle all the `top level' information, but at present priority is being given to getting FIS in place and ensuring that the EIS software will be able to retrieve the appropriate data from the FIS databases. The AEM will be consulted about their information needs, but the working assumption is that the EIS will initially model the existing printed reports.

5.56. As mentioned earlier, both FIS and BDIS are based on the ORACLE relational database system, which provides powerful on-line interrogation facilities using its SQL. As its expertise in SQL increases AEA should

benefit from the wide availability of on-line financial and customer data to managers at business level. This will ultimately enable managers to specify on-line reports which meet their individual information requirements.

Conclusions and recommendations

Information Technology strategy

5.57. Before the corporate IT Directorate was established late in 1989, AEA had no corporate IT strategy. Each site determined its own approach towards developing management information systems and selected its own computer hardware and software. We conclude that:

(a) AEA's slow adoption of a corporate IT strategy has resulted in unco-ordinated and incompatible site-based management information systems and computer hardware;

(b) the resulting incompatible systems do not provide the necessary management information to support decision-making particularly at business level;

(c) AEA is now taking appropriate steps to develop a corporate IT strategy appropriate to the new business structure. Good progress is being made on financial systems but a considerable backlog of work remains to be dealt with before this will result in MIS which fully meet the needs of AEA and its businesses; and

(d) AEA should continue to develop its IT strategy on an integrated corporate basis to ensure that all future MIS are fully relevant to the requirements of the businesses and that an appropriate level of consistency and compatibility is maintained on systems and hardware.

IT management

5.58. Despite the existence of the corporate IT Directorate, AEA's IT organisation is still mainly site-based. We conclude that:

(a) the established site-based IT organisation has contributed to the lack of co-ordination in developing a corporate approach to the development of IT, and to the lack of coherent data structures across AEA; and

(b) while some integration was achieved across site boundaries (eg in payroll, personnel and superannuation systems) the development of incompatible systems at different sites has been less cost-effective than a centrally co-ordinated approach to systems development.

5.59. We recommend that AEA should bring the locally-based IT units at all sites within the proposed corporate IT service in 1992; should ensure that the business-based IT units are functionally accountable to the corporate IT service and issued with appropriate guidelines and standards to guarantee consistency and compatibility in MIS; and should strengthen the role of the users of its management information systems at the corporate level by developing a system of user groups for each of the main management information systems to complement the overall co-ordinating role of the IT Steering Group.

Computer hardware

5.60. When the new FIS comes into use in April 1992 it will be run on locally-based minicomputers. This will release capacity on AEA's mainframe computers, which are already underutilised. We conclude that:

(a) AEA's decision to transfer its MIS progressively away from the existing incompatible mainframe computers and on to compatible locally-based minicomputers supported by a powerful digital data network appears to be reasonable;

(b) the phased transfer of systems away from the mainframe computers will leave them under-utilised; and

(c) AEA's technical CRAY-2 supercomputer is already underutilised.

5.61. We recommend that AEA should, by July 1992, review the possible methods of making more cost-effective use of its mainframe computers, including the possibility of using facilities management contracts for the under-utilised CRAY-2, IBM and ICL computers and of closing or disposing of uneconomic capacity.

Computer software and response times

5.62. The priority given to developing FIS, and to upgrading BDIS, severely restricts development work on other computer systems. Most of these are incompatible with FIS. Following the introduction of the new FIS an increased load will be placed on AEA's digital network which, for technical reasons, has offered poor response times to management information users. We conclude that:

(a) even following the implementation of FIS and the enhancement of BDIS, a number of important management information systems are likely to remain incompatible with FIS for some years at the current rate of progress; and

(b) response times for management information users on the AEA digital network can be adversely affected by the heavy demands imposed by technical computing requirements.

5.63. We recommend that AEA should:

(a) commit additional resources to updating or replacing the remaining management information systems which are incompatible with FIS, with the objective of ensuring that all of AEA's main systems are fully compatible by October 1993; and

(b) ensure that sufficient capacity on its digital network is reserved for management information users to guarantee them a rapid response when FIS comes into operation.

5.64. The legacy of independent incompatible management information systems results in a lack of common data structures. A large part of AEA's data is therefore inaccessible to systems other than that which created it. As a result AEA is heavily dependent on manual data transfer between systems. We conclude that the efficient development of management information systems in AEA is obstructed by the inability of most systems to access the data associated with other management information systems.

5.65. We recommend that, by December 1992, AEA should produce a specification for a corporate data model which will accommodate all future business systems development and ensure that all future systems have access to the same data.

Management information and financial reports

5.66. The diverse and incompatible nature of AEA's computer systems often results in the regular management reports being manually analysed and transcribed. FIS is a relational database whereby a series of hierarchies can be set up to link virtually any combination of accounts together in a reporting system.
This makes it possible to produce a wide variety of reports. AEA is confident that its requirements for management information will be met by the system. However, it told us that the financial and other reporting formats were not yet finalised despite the intense development work on FIS and its powerful capabilities. In particular the need to rectify the absence of reliable written reports for the regular monitoring of product profitability has not been addressed. We conclude that:

(a) AEA's regular management reports at both corporate and business levels are excessively dependent on the manual analysis and transcription of data for their production;

(b) insufficient attention has been given to the format of the regular written financial and management reports required to run the business following the introduction of FIS; and

(c) insufficient attention has been given to producing systematic written product profitability reports.

5.67. We recommend that:

(a) AEA should urgently prepare draft formats for the post-FIS regular written management reports for both the Board and individual businesses, incorporating data generated both by FIS and by the other existing systems which will continue; and

(b) these draft formats should be submitted to the appropriate users, including top management, for their approval by March 1992 and should:

(i) be concise and well focused on an action-orientated presentation of the key items of performance data;

(ii) be produced within a time-scale which enables corrective action to be taken effectively;

(iii) be produced without excessive use of manual analysis and transcription;

(iv) incorporate where appropriate the best practice within the existing report formats;

(v) achieve a high standard of presentation by making effective use of graphical presentation and exception reporting; and

(vi) include a mandatory range of product profitability reports, to be presented monthly to product-group management and quarterly to business Boards of Management.

Cost of FIS

5.68. The cost of hardware, software and implementation of FIS was estimated at £6.8 million, including a contingency of £0.9 million. AEA originally considered that it would need a relaxation of £5.4 million in its EFL to meet the costs of implementing FIS; in the event, however, AEA is now planning to provide the necessary finance from within its existing EFL. The original EFL had been determined on the assumption that existing hardware and relatively minor adaptations of existing software would be sufficient to support AEA's financial information needs. The decision to go for new hardware will leave surplus capacity on the large IBM and ICL mainframes currently in use. The most recent estimate of the cost of maintaining and then disposing of this surplus capacity is £5 million. We note that AEA was inaccurate in its assessment of the likely costs of FIS.

Central control of systems

5.69. The development of accounting and time recording systems in AEA has been site-based, and on occasion (see Chapter 4) this has had unfortunate results. We conclude that the separate development of systems has been an undesirable feature of AEA computing. AEA told us that when FIS became operational central control procedures would be in place to prevent the unauthorised modification by businesses and sites of agreed standard systems.