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RELEASED

REPORT BY THE
Comptroller General
OF THE UNITED STATES

**Department Of Energy Can Improve
Management Of The Acquisition
Of Major Projects**

The Department of Energy (DOE) is responsible for developing and managing the acquisition of a number of major projects essential to our Nation's future energy security.

DOE has spent more than 2 years developing guidance for managing its major system acquisitions. However, GAO found that (1) DOE has yet to define overall goals and objectives, which has prevented managers from preparing a mission analysis which would establish agency priorities, (2) a lack of management commitment has limited the role of the individual project manager, and (3) DOE's review of major systems by its advisory board has been limited by a lack of pertinent documentation.

GAO makes a number of recommendations designed to help DOE identify its priorities and effectively use its resources to manage these projects.



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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-203339

The Honorable Albert Gore, Jr.
Chairman, Subcommittee on Investigations
and Oversight
Committee on Science and Technology
House of Representatives

Dear Mr. Chairman:

This report discusses the improvements needed in the Department of Energy's management of major system acquisitions. Although Energy completed its directives to guide the development and management of major systems, our review showed that much still remained to be done.

As arranged with your office, we plan no further distribution of this report until 10 days from the date of the report. At that time we will send copies to interested parties and make copies available to others upon request.

Sincerely yours,

A handwritten signature in cursive script that reads "Milton J. Aroslan".

Acting Comptroller General
of the United States

COMPTROLLER GENERAL'S REPORT
TO THE CHAIRMAN, SUBCOMMITTEE
ON INVESTIGATIONS AND OVERSIGHT
COMMITTEE ON SCIENCE
AND TECHNOLOGY
HOUSE OF REPRESENTATIVES

DEPARTMENT OF ENERGY CAN
IMPROVE MANAGEMENT OF THE
ACQUISITION OF MAJOR
PROJECTS

D I G E S T

Office of Management and Budget Circular A-109 directs Federal agencies to develop guidance to manage their major system acquisitions. The Department of Energy (DOE) has spent more than 2 years developing directives in accordance with Office of Management and Budget Circular A-109 and recently issued the final directives for its major systems. These systems--such as the strategic petroleum reserve, various demonstration plants for new energy technologies, and facilities for disposing of nuclear fuels--are very costly, complex projects.

Although GAO believes that DOE's issuance of directives is a step in the right direction, much more remains to be done to resolve fundamental management problems in the development and procurement of such projects.

GAO found that:

- DOE had not adequately identified its mission areas--its goals and objectives. Major headquarters offices did not prepare mission analyses to identify and set priorities for the agency's requirements. (See p. 3.)
- DOE management lacked total commitment to support project management, thereby limiting the role and authority of the project manager. This was evidenced by the limited number of approved project manager charters, project plans, and project management plans. Also, the project manager generally operates under two levels of authority--field operations manager and the Washington headquarters manager. (See p. 3.)
- Review and evaluation of major system acquisitions by DOE's advisory board was limited because pertinent documentation, such as independent cost estimates, approved project plans, and project management plans was missing. (See p. 6.)

In a 1979 report, ^{1/} GAO identified shortcomings in DOE's effort to implement Office of Management and Budget Circular A-109 in its day-to-day operations. DOE responded that it planned to identify its mission areas and complete a mission analysis. DOE also planned to implement a project management system, but as noted, these problems continue. (See p. 2.)

CONCLUSIONS

GAO believes the need to identify and assign DOE mission areas to the major headquarters offices is a fundamental first step in effectively managing major acquisitions. The delay in accomplishing this task, the absence of a total management commitment to support and strengthen project management, and the lack of pertinent documentation available in the decisionmaking process raise questions as to whether DOE has identified priority acquisitions and whether it was effectively using its resources in managing these acquisitions. (See p. 7.)

RECOMMENDATIONS TO THE SECRETARY OF ENERGY

The Secretary of Energy should

- identify and assign DOE's mission areas to the responsible major headquarters offices and require each to complete a mission analysis (see p. 8),
- require each of its major headquarters offices to set forth continuing plans to conduct a mission analysis to identify and establish priorities for requirements (see p. 8),
- require project managers to report directly to the responsible headquarters office to strengthen the role of the project manager and increase the level of visibility of major systems (see p. 8), and
- require that major systems reviewed and evaluated by the Energy System Acquisition Advisory Board be supported by pertinent documentation. (See p. 8.)

^{1/}PSAD-79-89, August 14, 1979.

RECOMMENDATION TO THE HOUSE
SUBCOMMITTEE ON INVESTIGATIONS
AND OVERSIGHT

In the interest of reducing unnecessary Federal spending, the subcommittee should closely monitor DOE's progress in identifying priority systems and providing adequate resources to manage its major system acquisitions. Further, to enhance its legislative oversight capability, the subcommittee may want to require DOE to institute a selected acquisition reporting system similar to that now used by the Department of Defense and the National Aeronautics and Space Administration.

AGENCY COMMENTS

DOE took exception to several areas in the report and did not agree with GAO's recommendation on the reporting level of project managers. DOE stated that the recommendation is in direct opposition to the Secretary's stated policy that headquarters' role is program policy and planning and that the field offices are responsible for program execution and project management. DOE further stated that the Secretary designated the Under Secretary as the chief operating officer of DOE and instructed DOE operations offices to report directly to the Under Secretary. According to DOE, this operating structure strengthens the project manager's role, increases the visibility of major systems, and accomplishes the stated purpose of the GAO recommendations. (See app. III.)

GAO does not view its recommendation as violating DOE's policy on placing responsibility in the field for project management. On the contrary, GAO believes it is supportive of DOE policy in that GAO's recommendation clearly identifies the project manager as the key person in the field responsible for completing the major acquisition. As the most knowledgeable source on the major acquisition, the project manager should be directly responsible to the headquarters office under which the acquisition is being completed. GAO believes, however, that the insertion of another layer of authority--the field operations manager--is unnecessary.

While DOE generally agrees with GAO's recommendations in identifying mission areas and

conducting a mission analysis, GAO is concerned that DOE actions will be delayed. Further, while DOE stated that it recognizes the advisory board's need for pertinent documentation, it noted that the board reviews and considers much information before the actual meeting. GAO's concern is whether the data provided to the advisory board is sufficient to base a decision concerning a major acquisition. GAO believes the absence of such formalized information as approved charters and plans, independent cost estimates, risk assessments, and effectiveness evaluations prevents the advisory board from effectively evaluating DOE major acquisitions.

See chapter 4 for GAO's disposition of DOE's comments.

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ABBREVIATIONS

DOE	Department of Energy
ESAAB	Energy System Acquisition Advisory Board
ESARS	Energy System Acquisition Reviews
GAO	General Accounting Office
OMB	Office of Management and Budget

CHAPTER 1

INTRODUCTION

In October 1977 the Department of Energy (DOE) was established to provide effective management of energy functions within the Federal Government to ensure a coordinated national energy policy. Inherent in its charter to carry out this role is the fact that DOE must be involved in the acquisition of very costly systems such as the Solvent Refined Coal Demonstration Plants I and II, the Strategic Petroleum Reserve, and the H-Coal Pilot Plant. In its Circular A-109, "Major System Acquisitions," dated April 5, 1976, the Office of Management and Budget (OMB) established policies to be followed by executive agencies in the acquisition of major systems. In responding to the OMB circular, DOE initiated action by issuing various management directives.

On February 6, 1978, the Secretary of Energy approved an interim management directive to guide the development and procurement of major system acquisitions. The latest version of this directive was completed on August 22, 1980, with the approval of DOE Orders 5700.1A and 5700.3.

Order 5700.1A defined DOE's requirements and objectives and assigned responsibilities and authorities necessary for the acquisition of major systems. Order 5700.3 established the procedures for implementing the policies and objectives stated in OMB Circular A-109, Order 5700.1A, and the project management system for major system acquisitions. The implementing management instructions and procedures were set forth in the project management manual promulgated by DOE Order 5700.4 of January 8, 1981.

Another primary document relating to major system acquisitions was DOE Order 5700.2 of November 16, 1978, which identified the requirements, procedures, authorities, and responsibilities for the development of independent estimates of major system acquisition costs and schedules and assessments of system/project risks.

These orders require specific management actions, some of which are addressed in chapter 2.

The process by which the major systems progress through the acquisition cycle--inception through production or commercial application--is reviewed and evaluated by DOE's Energy System Acquisition Advisory Board (ESAAB). A major system is generally defined by DOE as a system in which the Federal Government's share of the estimated total cost is over \$50 million in the advanced development phase or \$200 million over the life of the project. (See app. II.)

OUR PRIOR REPORT

We issued a report that relates closely to the subject of this report entitled "Implementation of Major System Acquisition Process--A-109--Is Inconsistent Among Civil Agencies," (PSAD-79-89, Aug. 14, 1979). It showed DOE's implementation was going slowly. The contributing factors were: (1) DOE was only established a year following the issuance of Circular A-109, (2) DOE's mission structure (mission areas) had not been established, and (3) the project management system was just being implemented.

OBJECTIVES, SCOPE, AND METHODOLOGY

On October 12, 1980, the chairman of the Subcommittee on Investigations and Oversight, House Committee on Science and Technology, requested us to review selected major system acquisitions to determine how DOE manages such systems. The review was not intended and should not be considered to be a detailed examination of DOE's major acquisitions. It was to focus on DOE's planning and acquisition processes in response to OMB Circular A-109.

Our review was conducted at DOE Headquarters located in Washington, D.C., and Germantown, Maryland, and was to (1) identify those systems DOE identified as major acquisitions and (2) evaluate DOE's management processes in acquiring major systems. To do this, we interviewed responsible DOE personnel to determine the methods used in managing major acquisitions and to evaluate the progress made in identifying mission areas and implementing a project management system. We also reviewed the adequacy and availability of data provided to DOE's ESAAB in its review and evaluation of major acquisitions.

To evaluate DOE's management systems for its major acquisitions, we reviewed DOE's progress in identifying its mission areas and in preparing a mission analysis. We also reviewed the status and availability of pertinent records, such as approved project manager charters, project plans, and project management plans. In addition, we identified the scope of authority provided the project manager to evaluate DOE's commitment to support project management.

CHAPTER 2

IMPROVEMENT NEEDED IN THE PLANNING AND ACQUISITION PROCESSES

With the completion of its major system acquisition directives, DOE completed the first step in providing guidance on effective project management. However, our review has shown that improvement is needed in the planning and acquisition processes in the areas of (1) mission area identification and analysis, (2) commitment by DOE's management to provide for stronger project management, and (3) adequacy and availability of supporting documentation to assist in the decisionmaking process.

Although some of these problems were discussed in our August 1979 report and which DOE promised to correct, the problems continue. We believe that DOE should correct these problems to successfully identify priority acquisitions and to effectively use its resources in the management of these acquisitions.

NEED TO IDENTIFY MISSION AREAS TO DETERMINE REQUIREMENTS

To adequately determine requirements, DOE must first clearly identify its mission areas (goals or objectives). Secondly, it must assign them to its major headquarters offices. Completion of these steps should enable preparation of a mission analysis to identify and establish priorities for its requirements. The continued absence of this process has prevented DOE's major headquarters offices from completing a reconciliation of resources and capabilities against its objectives in its day-to-day operations. Therefore, its requirements are not being effectively identified and put into priority order. Although DOE had planned to complete these tasks as discussed in our August 1979 report, they remain incomplete.

NEED FOR STRONGER SUPPORT OF PROJECT MANAGEMENT

Under its major system directives, a project manager was to be designated for each major system acquisition after the specific requirement was identified. Also, the project manager was to operate under the terms of a project manager charter which was to identify responsibility, authority, and accountability. Each major acquisition was to have a project plan, which is the base against which progress is measured in terms of cost, schedule, and performance. The direction and control were to be included in the project management plan, which sets forth the plans, organizations, and systems that will be used in managing the system. These documents are the baseline documents against which progress can be measured in terms of cost, schedule, and performance.

Our review showed that (1) the project manager charters were limited and inadequate, (2) appointment of project managers was not timely, (3) authority of project managers was limited, and (4) the number of approved project plans and project management plans was few. We could find no documented explanation as to the reason for the limited number of approved charters and plans. We believe the absence of such management tools substantially increases the possibility of cost overruns and schedule delays.

Limited and inadequate project manager charters

Of 32 major systems (see app I), we found that only 6 were covered by project manager charters and only 3 were signed by the project manager. Also, the charters did not include the tenure and time required of the project manager to be spent on the system, and four of six charters appeared to be outdated because of a change in personnel. Further, all six charters were vague in that the system's goals and objectives and the project manager's functions were unclear.

Need for more timely appointment of project managers

To provide onsite management control, project managers were to be appointed immediately following the identification of a mission need. We found, however, that 10 of 32 major systems had no project manager. In the case of three systems, Solvent Refined Coal Demonstration Plants I and II and the H-Coal Pilot Plant, the same person was identified as the project manager for all three systems. The estimated costs of two systems alone was \$1 billion each. Although we were told that separate project managers have recently been appointed, the demonstration plants were identified as major systems in 1979, whereas the H-Coal Pilot Plant was identified as a major system in 1978. Under the Advanced Isotope Separation acquisition, there has been no project manager appointed, although work was initiated before DOE's organization in 1977.

The absence of project managers for the 10 major systems has required the management of the systems to be maintained by DOE Headquarters, which DOE sought to avoid. Further, the delay in appointing project managers, in our view, limits DOE's control over such systems and could place too much reliance on DOE's contractors. Also, the delay in appointing project managers limits the part they play in generating innovative approaches and competition from industry. DOE officials said that project managers will be appointed on a more timely basis.

Limited authority of project manager

Major systems are to be managed by a project manager who is to be provided sufficient authority to accomplish the system's goals and objectives. Layers of authority were to be kept to a minimum between the project manager and the head of the major headquarters office. Our review showed that project managers generally operated under two levels of authority--(1) the field office manager and (2) the Washington headquarter's manager.

Under two major systems--Isabelle and Positron Electron--DOE personnel said that the project managers for these systems were actually project monitors, as the technical direction remained in DOE Headquarters. While other project managers appeared to have more than administrative responsibility, we generally found that project managers' staffs were limited to one or two professionals. According to DOE, the Solar Energy Research Institute Permanent Facility lacked an adequate number of staff for onsite management of the system.

Although DOE intended that project management of major systems be transferred to the field, the process has been slow. This was also pointed out by DOE's Director of Administration's study of October 1980 which showed, among other things, that execution of DOE's decentralization policy in project management has been inconsistent over the past 2-1/2 years. The study revealed that there has been a rapid growth of headquarters procurement operations workload during a period when emphasis was on transferring project management responsibility to the field.

DOE officials said that the project manager has easy access to top management. We believe that this access could be more direct by having the project manager report to the Assistant Secretary level through the responsible major office at DOE Headquarters under which the system is funded. This would keep the system properly focused and continually visible to top management. Since several of DOE's major systems exceed \$1 billion, we believe that sufficient funds are at stake to warrant a higher degree of visibility. Also, DOE officials believe there is a need to strengthen understaffed major system management staffs. By elevating the position of the project manager, increased recognition would be given to the management of major systems.

Limited number of project plans and project management plans

Project plans and project management plans are the basic planning documents that cover each major system acquisition from inception to completion and provide the data needed for managing, controlling, and implementing the major system. A total management commitment to develop such plans was not evident in that we found only 12 approved project plans and 7 approved project

management plans out of 32 major systems. Of these systems, 26 were identified as major system acquisitions over 2 years ago. DOE officials said that they recognized the need for the approved plans and that four additional project plans were approved as of April 1981.

The few such approved planning documents, in our opinion, indicates a serious void in the management of major system acquisitions.

LACK OF PERTINENT DOCUMENTATION
AVAILABLE IN DOE'S DECISIONMAKING PROCESS

In an attempt to provide objective management advice to the Under Secretary on each major system during the acquisition cycle--inception through production or commercial application--ESAAB was established. ESAAB was to be supported in this task by being provided such data as updated project plans, status of work completed, independent cost estimates, risk assessments, and effectiveness evaluations.

At the time of our review at DOE, ESAAB had held 15 meetings 1/ on major system acquisitions. Our review of the available documentation for each of the 15 major systems has shown that pertinent data was not available or provided to ESAAB, thereby limiting its effectiveness in reviewing and evaluating such systems. Of the 15 systems reviewed by ESAAB, 7 had no approved project plans, 12 had no approved project management plans, 11 had no independent cost estimates, and 4 had no project managers. Also, we found no evidence of risk assessments or effectiveness evaluations. We were told that the lack of adequate staff has prevented the preparation of an independent cost estimate for each system reviewed by ESAAB.

Further, there was no single cost record available which would readily identify the cost status of major system acquisitions. Therefore, DOE management, including ESAAB, lacked an effective means to assess those major systems that may have required immediate attention because of potential cost overruns. DOE officials said that sufficient data was available for them to evaluate the adequacy of the systems; however, we were unable to substantiate their assertion in view of the limited number of approved plans and formal documents discussed above.

1/Three additional meetings were held following our review.

CHAPTER 3

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

In August 1980 and in January 1981 DOE issued certain orders to guide the development and procurement of major system acquisitions as required by OMB Circular A-109. While this represents positive action, DOE has not resolved fundamental management problems, some of which were previously discussed in our August 1979 report.

DOE has continued to delay the identification and assignment of mission areas or its goals and objectives to its major headquarters offices. This has prevented DOE from completing the required mission analysis to identify and establish priorities for its requirements. Also, management has not been totally committed to implement the project management system. This was evident in the limited number of approved project manager charters, project plans, and project management plans and the slow pace in appointing project managers to major system acquisitions. The absence of such management tools as approved charters and plans, in our opinion, substantially increases the possibility of cost overruns and schedule delays. Further, the project managers generally operated under two levels of authority and had a limited number of professional staff, although some systems were estimated to cost in excess of \$1 billion.

ESAAB's effectiveness needs to be improved. Its effectiveness has been limited because in its evaluation and review of major systems, it was not always provided pertinent data such as approved project plans and project management plans, independent cost estimates, risk assessments, and effectiveness evaluations. Also, there has been an absence of a single cost record that would reveal the cost status of major systems. Thus, DOE management and ESAAB lacked a ready means to assess these systems that may have required immediate attention because of potential cost overruns.

In summary, we believe the need to identify and assign DOE mission areas--goals and objectives--to the major headquarters offices is fundamental as a first step in providing effective management of major acquisitions. The delay in accomplishing this task, the absence of a total management commitment to support and strengthen project management, and the lack of pertinent documentation available in the decisionmaking process raise questions as to DOE's successful identification of priority acquisitions and whether it was effectively using its resources in the management of these acquisitions.

RECOMMENDATIONS TO THE
SECRETARY OF ENERGY

The Secretary of Energy should

- 1001 -- identify and assign DOE's mission areas to the responsible major headquarters offices and require each to complete a mission analysis;
- 1002 -- require each major headquarters office to set forth continuing plans to conduct a mission analysis to identify and establish priorities for requirements;
- 1003 -- require project managers to report to the Assistant Secretary level through the responsible major headquarters office to strengthen the role of the project manager and increase the level of visibility of major systems; and
- 1004 -- require that major systems reviewed and evaluated by ESAAB be supported by pertinent documentation.]

RECOMMENDATION TO THE SUBCOMMITTEE

In the interest of reducing unnecessary Federal spending, the subcommittee should closely monitor DOE's progress in identifying priority systems and providing adequate resources to manage its major system acquisitions. Further, to enhance its legislative oversight capability, the subcommittee may want to require DOE to institute a selected acquisition reporting system similar to that now used by the Department of Defense and the National Aeronautics and Space Administration.

CHAPTER 4

DOE'S COMMENTS AND OUR EVALUATION

A copy of a draft of this report was provided to DOE for its review and comment. DOE's formal comments dated April 30, 1981, are included as appendix III. DOE took exception to several areas in the draft report and did not agree with our recommendation on the reporting level of the project manager. DOE's comments on these areas and our evaluation follow.

DOE stated that it has taken many positive steps to improve project management and that our draft report does not recognize many of these steps nor does it recognize the time and effort required to achieve full implementation. Further, continuing DOE management commitment to and support of the project management system has been demonstrated by such actions as:

"--The Secretary or Under Secretary has approved eight DOE policy directives which relate to project management."

While we recognize the existence of such directives, this is simply the initial step in developing a sound project management system. Further, considering the time it took DOE to approve the directives, there seems to be no sense of urgency to bring management discipline in the acquisition process. The absence of approved plans, charters, and project managers as disclosed in our review still leaves, in our view, much remaining to be done. Further, it may be too early to assess the impact these policy directives will have on major system acquisitions within DOE.

"--The Under Secretary as the Department's Acquisition Executive has designated those energy systems to be managed as Major System Acquisitions."

Again, we believe this is only the initial step in developing a sound project management system. For example, we believe the timely appointment of project managers as envisioned by DOE Orders 5700.1A and 5700.3, was a significant step that had not been taken in 10 of 32 major acquisitions as of November 1980.

"--The Under Secretary also presides over meetings of the Energy System Acquisition Advisory Board (ESAAB). The ESAAB met fourteen times during 1980 to discuss Major System Acquisitions."

While we do not question the number of meetings held by ESAAB, we found, however, that there have been no ESAAB meetings since November 1980, and more importantly, DOE officials said there is no current approved ESAAB meetings scheduled. We believe this indicates a lack of management support for this group. Our comments on the absence of pertinent data available to ESAAB are set forth later in this chapter.

"--DOE top management presides over periodic Energy System Acquisition Reviews (ESARS) of progress and problems of various DOE projects. Thirteen ESARS were conducted during 1980 for DOE Major System Acquisitions."

Again, while we do not question the number of meetings held, a DOE official said that no ESARS meetings have been conducted since October 30, 1980, and there is no indication that any are planned for the future. We believe DOE should clearly indicate whether it intends to support ESAAB and ESARS, and if not, what alternative review group is planned to assist the Under Secretary in the decisionmaking process.

"--DOE management has established a Project Management Training Program to provide basic training needed by project managers and others responsible for implementing the Project Management System. A significant number of DOE personnel have received this training. An extensive follow-on mid-level training is being developed."

While we support the training program provided and planned, a DOE official said that there is some question concerning whether the right people (project managers and their staffs) have received the training. We believe this matter should be investigated to make certain the appropriate personnel receive the training.

"--DOE management has directed establishment of Business Strategy Groups (BSGs) to ensure that a formal procedure is used in development of Project Plans and acquisition business strategies. BSGs emphasize the value of early planning to insure successful project execution."

Although this appears to be a much needed step in developing a sound project system, we are not certain as to how this group relates to the acquisition management process currently existing within DOE. Nevertheless, the effectiveness of this group to date has been limited considering the few approved project plans and project management plans in existence.

"--DOE management has also directed preparation of Advanced Acquisition or Assistance Plans (AAAPs) to identify and consider all factors affecting timely and effective contractual implementation of each project early in the project life cycle."

A DOE official said that this requirement was just recently imposed and the document identifying its use is currently in draft.

DOE agreed that while the number of approved management charters and plans is short of that desired, this does not

indicate a lack of DOE management commitment to support the acquisition process. A major reason is the difficulties associated with imposing a new system on active projects. According to DOE, it is striving to overcome these difficulties and the Under Secretary has requested cognizant Assistant Secretaries to expeditiously complete these documents for existing projects.

We still believe there is a direct correlation between the number of approved plans and management's commitment to support project management. The limited number of approved charters and plans, in our opinion, indicates that management has not placed a high enough priority on the completion of such documentation. Since these documents are the baseline documents required to support a major acquisition, we believe it is imperative that they be completed in a timely manner to avoid the acquisition moving in several uncontrolled directions. Further, DOE was unable to provide us a schedule showing when the charters and plans will be completed. We believe that specific dates should be imposed on the Assistant Secretaries to represent a more definitive commitment to complete these documents and thus improve DOE's management of its major acquisitions.

Our draft report specified that the lack of pertinent documentation, such as independent cost estimates, approved project plans, and project management plans, limits the effectiveness of the review and evaluation of major system acquisitions by ESAAB. However, DOE stated that although all of this documentation may not be presented at the ESAAB meeting, it frequently exists and is considered during the preparation process for the ESAAB meeting. Also, DOE stated that:

"--Prior to each ESAAB meeting, a pre-ESAAB meeting, attended by senior managers and representatives from all functional and program organizations, is held to identify significant issues and technical assessments which affect the decisions required. Independent cost and technical evaluations are thoroughly reviewed and considered during the pre-ESAAB meeting.

"--Dry-runs of the Project Manager's presentation are given to cognizant Assistant Secretaries and staffs to allow further discussion of the ramifications of the issues to be discussed at the ESAAB meeting.

"--Documents, such as the Mission Need Statements and Project Plans, are updated and reviewed prior to the ESAAB meeting. This documentation and the presentation to the ESAAB must be compatible; if they are not, variances must be resolved. It is not uncommon, nor improper, for such documents to be in draft form at this time. Finalization and formal approval may occur after the ESAAB meeting takes place."

DOE continued by stating that it is difficult to include evidence of all of these activities in the files and memorandums for the record of the ESAAB meetings. It should be noted that ESAAB meetings are held for a variety of purposes. All ESAABs do not require an approved project plan, project management plan, or independent cost estimate. For example, an ESAAB meeting to initiate long-lead procurement actions may not require any of the documents listed above.

In our opinion, DOE has not adequately responded to our concerns since in most instances such data as independent cost estimates, technical evaluations, mission need statements, approved project plans, or project management plans were not available to the ESAAB members. Whether or not they were in draft form may be of little consequence, in our view, if they never were finalized. The few completed cost estimates and other approved documents available would indicate, in our view, that something other than such documents, draft or otherwise, were used in the decision-making process.

Nevertheless, DOE officials stated that all ESAAB meetings do not require an approved project plan, management plan, or an independent cost estimate and used as an example an ESAAB meeting to initiate long-lead procurement actions that may not require any of the documents. In our review of data available to the ESAAB members in its evaluation of long-lead procurement activities for the Solvent Refined Coal Demonstration Plant II project, we found the absence of the following documents--an approved charter, an approved project plan, an approved project management plan, and a risk assessment. Further, the project had no full-time project manager and had an inadequate number of project office staff to review and evaluate the activities of the prime and subcontractors. While there was an independent cost estimate available, we found no evidence of a cost-benefit analysis. In our opinion, the project should never have progressed to the point of considering long-lead procurement actions before a thorough review and evaluation by DOE's decisionmaking body. Therefore, we continue to question whether sufficient data was available to ESAAB for it to make informed decisions on DOE's major acquisitions.

In response to our recommendations, DOE stated that:

"--DOE has taken steps toward formally identifying its mission areas. Upon completion of this process, these mission areas will be assigned to elements of the Department. DOE expects that this effort will be completed within six months.

"--Major Headquarters offices will be asked to provide continuing plans for conducting mission analyses once mission areas have been formally assigned. DOE believes that preliminary plans can be developed by December, 1981."

Although we were advised that similar action was to have taken place nearly 3 years ago, we are hopeful that the latest proposed action will be implemented. However, we are concerned that the corrective action may not be taken in a timely manner. Every effort should be taken to incorporate the measures we recommend to assist the various DOE elements in their budget submissions for future fiscal years.

In further commenting on our recommendations, DOE stated that:

"--DOE does not agree with the recommendation that project managers be required to report to the Assistant Secretary level through the responsible major Headquarters office. This recommendation is in direct opposition to the Secretary's stated policy that the Headquarters role is program policy and planning and that the field offices are responsible for program execution and project management. On February 12, 1981, the Secretary designated the Under Secretary as the chief operating officer of the Department and instructed DOE Operations Offices to report directly to the Under Secretary. This operating structure strengthens the project manager's role, increases the visibility of major systems, and accomplishes the stated purpose of the GAO recommendation."

We believe our recommendation is supportive of DOE policy in that it clearly identifies the project manager as the key person in the field responsible for completing the major acquisition. As the most knowledgeable source on the major acquisition, the project manager should be directly responsible to the headquarters office (the Assistant Secretary) under which the acquisition is being completed. We believe that the insertion of another layer of authority (the operations office) is unnecessary.

In concluding its comments on our recommendations, DOE stated that:

"--DOE agrees that ESAAB meetings for review and evaluation of Major System Acquisitions should be supported by pertinent documentation but suggests that recognition be given to the fact that much information is reviewed and considered prior to the actual meeting."

As previously stated, we are concerned with the lack of pertinent information being available to ESAAB. There is no question about much information being reviewed on a day-to-day basis. Our concern, however, is whether data provided to ESAAB is sufficient to base a decision concerning a major acquisition. We believe the absence of such pertinent information as approved charters and plans as well as independent cost estimates, risk assessments,

and effectiveness evaluations prevents ESAAB from effectively evaluating DOE major acquisitions.

The editorial comments mentioned in DOE's reply to our draft report have been considered and changes have been made in the report where appropriate.

MANAGEMENT STATUS OF MAJOR DOE SYSTEM ACQUISITIONSAS OF NOVEMBER 30, 1980

	<u>Approved project charter</u>	<u>Project manager</u>	<u>Approved project plan</u>	<u>Approved project management plan</u>
1. Isabelle project	X	X		X
2. Facilities for National Waste Terminal Storage				
3. Defense Waste Processing Facility				
4. Advanced Isotope Separation project				
5. Solvent Refined Coal Demonstration Plant I		X	(a)	
6. Solvent Refined Coal Demonstration Plant II			(a)	
7. Fuels and Materials Examination Facility		X	X	X
8. Magnetohydrodynamics project				
9. Positron Electron project		X		X
10. Waste Isolation Pilot Plant	X	X		
11. High BTU Synthetic Pipeline Gas Demonstration Plant A				
12. High BTU Synthetic Pipeline Gas Demonstration Plant B				
13. Low/Medium BTU Fuel Gas Demonstration Plant A		X	(a)	
14. Ebullated Bed (H-Coal) Pilot Plant			(a)	
15. Tokamak project		X		X
16. Mirror Fusion Test Facility		X		X
17. Fusion Materials Irradiation Test Facility		X	X	X
18. 10 Megawatt Solar Thermal Central Receiver Pilot Plant	X	X	X	X
19. 50 Megawatt Geothermal Demonstration Plant		X	X	
20. Flourinel project		X	X	
21. Enriched Uranium Production Facility		X	X	
22. Strategic Petroleum Reserve	X	X	X	
23. High Energy Laser Facility	X	X	X	
24. Advanced Automotive Heat Engine project		X	X	
25. OTEC-1 project		X	X	
26. Electric Vehicle Commerciali- zation project		X	X	
27. Hybrid Vehicle Commerciali- zation project		X		
28. TRU Treatment Facility		X		
29. Solar Energy Research Institute Permanent Facility		X		
30. Away From Reactor Storage project				
31. MX Defense project	X	X	X	
32. OTEC Pilot Plant	-	-	-	-
Total	<u>6</u>	<u>22</u>	<u>12</u>	<u>7</u>

a/DOE stated that project plans were approved as of April 1981.

ESTIMATED TOTAL COST OF MAJOR DOE
SYSTEM ACQUISITIONS AS OF NOVEMBER 30, 1980

	Total estimated cost (note a)
	(millions)
1. Isabelle project	\$ 276.7
2. Facilities for National Waste Terminal Storage	55.0
3. Defense Waste Processing Facility	2,583.0
4. Advanced Isotope Separation project	80.0
5. Solvent Refined Coal Demonstration Plant I	1,600.0
6. Solvent Refined Coal Demonstration Plant II	1,420.0
7. Fuels and Materials Examination Facility	170.6
8. Magnetohydrodynamics project	392.1
9. Positron Electron project	114.5
10. Waste Isolation Pilot Plant	372.0
11. High BTU Synthetic Pipeline Gas Demonstration Plant A	514.0
12. High BTU Synthetic Pipeline Gas Demonstration Plant B	647.0
13. Low/Medium BTU Fuel Gas Demonstration Plant A	620.0
14. Ebullated Bed (H-Coal) Pilot Plant	296.0
15. Tokamak project	284.0
16. Mirror Fusion Test Facility	96.2
17. Fusion Materials Irradiation Test Facility	105.0
18. 10 Megawatt Solar Thermal Central Receiver Pilot Plant	118.0
19. 50 Megawatt Geothermal Demonstration Plant	70.0
20. Flourinel project	150.0
21. Enriched Uranium Production Facility	5,400.0
22. Strategic Petroleum Reserve	2,526.7
23. High Energy Laser Facility	212.0
24. Advanced Automotive Heat Engine project	353.0
25. OTEC-1 project	39.0
26. Electric Vehicle Commercialization project	139.5
27. Hybrid Vehicle Commercialization project	115.6
28. TRU Treatment Facility	500.0
29. Solar Energy Research Institute Permanent Facility	98.5
30. Away From Reactor Storage project	(b)
31. MX Defense project	204.0
32. OTEC Pilot Plant	281.0
	\$19,833.4

a/We did not verify the source of information provided by DOE. The information was not updated because of the continuing changes in the dollar and number of projects caused by the current administration.

b/Cost not provided because the system was not completely defined and may not be funded.



Department of Energy
Washington, D.C. 20585

30 APR 1981

Mr. J. Dexter Peach
Energy and Minerals Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

The Department of Energy appreciates the opportunity to review and comment on the GAO draft report entitled "Improvements Needed in the Management of the Acquisition of Major Systems in the Department of Energy." DOE believes the present Project Management System and related policies utilize sound management principles.

In recent months, DOE has taken many positive steps to improve project management. The GAO report does not recognize many of these steps, nor does it recognize the time and effort required to achieve full implementation. Continuing DOE management commitment to and support of the Project Management System have been demonstrated by such actions as:

- The Secretary or Under Secretary has approved eight DOE policy directives which relate to project management.
- The Under Secretary, as the Department's Acquisition Executive, has designated those energy systems to be managed as Major System Acquisitions.
- The Under Secretary also presides over meetings of the Energy System Acquisition Advisory Board (ESAAB). The ESAAB met fourteen times during 1980 to discuss Major Systems Acquisitions.
- DOE top management presides over periodic Energy System Acquisition Reviews (ESARs) of progress and problems of various DOE projects. Thirteen ESARS were conducted during 1980 for DOE Major System Acquisitions.
- DOE management has established a Project Management Training Program to provide basic training needed by project managers and others responsible for implementing the Project Management System. A significant number of DOE personnel have received this training. An extensive follow-on mid-level training program is being developed.
- DOE management has directed establishment of Business Strategy Groups (BSGs) to insure that a formal procedure is used in development of Project Plans and acquisition business strategies. The BSGs emphasize the value of early planning to insure successful project execution.

--DOE management has also directed preparation of Advanced Acquisition or Assistance Plans (AAAP) to identify and consider all factors affecting timely and effective contractual implementation of each project early in the project life cycle.

DOE management is aware of the need for formal identification of mission areas in order to establish priorities for Major Systems Acquisitions. A preliminary listing of DOE missions has recently been proposed. Until this listing is finalized and approved, DOE is using the Congressionally defined mission areas set forth in Section 102 (paragraphs 2-18) of the Department of Energy Organization Act (P.L. 95-91) for planning purposes.

The draft report states that the limited number of approved Project Charters, Project Plans, and Project Management Plans shows a lack of commitment on the part of DOE management to the Project Management System. DOE agrees that the number of management charters and plans that have been approved is short of that desired. This does not, however, indicate a lack of DOE's management commitment to support the acquisition process. There are many reasons why progress has been slow in these areas. A major reason is the difficulties associated with imposing a new system on active projects. The Department is striving to overcome these difficulties and the Under Secretary has requested cognizant Assistant Secretaries to expeditiously complete these documents for existing projects. Some of these documents can be prepared readily as DOE is reevaluating program and project management priorities to conform to the FY 1982 Budget to Congress.

The draft report states that the lack of pertinent documentation, such as independent cost estimates, approved Project Plans and Project Management Plans, limits the effectiveness of the review and evaluation of Major System Acquisitions by the Energy System Acquisition Advisory Board (ESAAB). Although all of this documentation may not be presented at the ESAAB meeting, it frequently exists and is considered during the preparation process for the ESAAB meeting.

- Prior to each ESAAB meeting a pre-ESAAB meeting, attended by senior managers and representatives from all functional and program organizations, is held to identify significant issues and technical assessments which affect the decisions required. Independent cost and technical evaluations are thoroughly reviewed and considered during the pre-ESAAB meeting.
- Dry-runs of the Project Manager's presentation are given to cognizant Assistant Secretaries and staffs to allow further discussion of the ramifications of the issues to be discussed at the ESAAB meeting.
- Documents, such as the Mission Need Statements and Project Plans, are updated and reviewed prior to the ESAAB meeting. This documentation and the presentation to the ESAAB must be compatible; if they are not, variances must be resolved. It is not uncommon, nor improper, for such documents to be in draft form at this time. Finalization and formal approval may occur after the ESAAB meeting takes place.

It is difficult to include evidence of all of these activities in the files and Memoranda for the Record of the ESAAB meetings. It should also be noted that ESAAB meetings are held for a variety of purposes. All ESAABs do not require an approved Project Plan, Project Management Plan or independent cost estimate. For example, an ESAAB meeting to initiate long lead procurement actions may not require any of the documents listed above.

With respect to the specific recommendations contained in the draft report, the following comments are provided.

1. DOE has taken steps toward formally identifying its mission areas. Upon completion of this process, these mission areas will be assigned to elements of the Department. DOE expects that this effort will be completed within six months.
2. Major Headquarters offices will be asked to provide continuing plans for conducting mission analyses once mission areas have been formally assigned. DOE believes that preliminary plans can be developed by December, 1981.
3. DOE does not agree with the recommendation that project managers be required to report to the Assistant Secretary level through the responsible major Headquarters office. This recommendation is in direct opposition to the Secretary's stated policy that the Headquarters role is program policy and planning and that the field offices are responsible for program execution and project management. On February 12, 1981, the Secretary designated the Under Secretary as the chief operating officer of the Department and instructed DOE Operations Offices to report directly to the Under Secretary. This operating structure strengthens the project manager's role, increases the visibility of major systems, and accomplishes the stated purpose of the GAO recommendation.
4. DOE agrees that ESAAB meetings for review and evaluation of Major System Acquisitions should be supported by pertinent documentation but suggests that recognition be given to the fact that much information is reviewed and considered prior to the actual meeting.

Comments of an editorial nature have been provided directly to members of the GAO audit staff. DOE appreciates the opportunity to comment on this draft report and trusts that these comments will be considered in the final report.

Sincerely,


P. Marshall Ryan
Controller

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