

U. S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL

AUDIT OF CONSTRUCTION OF AN
ENVIRONMENTAL, SAFETY, AND HEALTH ANALYTICAL LABORATORY
AT THE PANTEX PLANT

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U. S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
 OFFICE OF AUDIT SERVICES

AUDIT OF CONSTRUCTION OF AN
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AT THE PANTEX PLANT

Audit Report Number: WR-B-96-02

October 6, 1995

SUMMARY

The Secretary of Energy envisions the Department operating more cost effectively, while maintaining its level of service to the American public. It is, therefore, imperative that Managers pursue only those construction projects that are vital to the Department of Energy (Department) mission requirements and that projects are accomplished in the most economical and efficient manner possible. The objective of this audit was to determine whether the construction of an Environmental, Safety, and Health Analytical Laboratory (ES&H Laboratory) at the Pantex Plant near Amarillo, Texas is needed and whether construction is the most cost effective alternative for meeting mission needs.

The Department planned to construct a new ES&H Laboratory at Pantex even though its mission requirements were already being satisfied either at onsite laboratories or commercial laboratories. Construction of the laboratory had been approved because the Department relied on justifications that were not updated and were, therefore, inadequate. Furthermore, required evaluations of alternatives were either not performed or not documented. As a result, the Department planned to spend an additional \$8.4 million on a laboratory that was not adequately justified as necessary, that may compete with private sector laboratories, and that may not provide a sufficient appearance of independence.

We recommended that the Manager, Albuquerque Operations Office, suspend additional funding for the project until the need is clearly established and cost/benefit analyses are performed. We also recommended that the Manager cancel the construction project if the ES&H Laboratory cannot be justified. Albuquerque management concurred with the recommendations.

PART I

APPROACH AND OVERVIEW

INTRODUCTION

The Secretary of Energy envisions the Department operating more cost effectively, while maintaining its level of service to the American public. It is, therefore, imperative that Managers pursue only those construction projects that are vital to the Department of Energy (Department) and that projects are accomplished in the most economical and efficient manner possible. The objective of this audit was to determine whether the construction of an Environmental, Safety, and Health Analytical Laboratory (ES&H Laboratory) at the Pantex Plant near Amarillo, Texas is needed and whether construction is the most cost effective alternative for meeting mission needs.

SCOPE AND METHODOLOGY

The audit was conducted at the Albuquerque Operations Office (Albuquerque); Amarillo Area Office; Pantex contractors Mason & Hanger - Silas Mason Co., Inc. (Mason & Hanger) and Battelle Memorial Institute (Battelle), Amarillo, Texas; and at the Office of Defense Programs, Germantown, Maryland.

To accomplish the audit objective, we:

- o reviewed Federal law, Department and Albuquerque Orders, and an Office of Management and Budget Circular to identify requirements;
- o obtained and evaluated the Conceptual Design Report and construction project data sheets to identify alternatives and the justification for need;
- o interviewed key Department and contractor officials;
- o toured existing laboratory facilities; and,
- o reviewed project files, contracts, prior audits, and other relevant documents.

We performed the audit according to generally accepted Government Auditing Standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. We limited the internal control review to the planning and management of line item projects and did not rely on any computer-generated data to develop this report. Since the review was limited, it would not necessarily disclose all internal control deficiencies that may have existed at the time of our audit.

We performed the audit during the period from January to August 1995. We discussed audit findings with the Director, Project & Facilities Management Division on August 18, 1995.

BACKGROUND

In the 1980s, the mission of the Pantex complex was to produce high explosive components for nuclear weapons, assemble nuclear weapons, modify and maintain the nuclear weapon stockpile, perform quality evaluations of nuclear weapons, and dispose of obsolete weapons in the stockpile. As production requirements declined in the 1990s, the Pantex mission expanded to include weapons disassembly, research and development of alternative uses for plutonium, technology transfer, and environmental restoration.

In support of its mission, Pantex performed or contracted for various analyses of chemical, explosive, and environmental samples. At the time of our review, most of the chemical and explosive testing was carried out at various laboratories onsite, including a chemistry/explosives laboratory built in 1969. Most of the environmental samples were sent offsite to commercial laboratories for analysis.

The 1988 Pantex Site Development Plan first proposed the construction of a laboratory to consolidate existing analytical and sampling operations. The

1991 Site Development Plan described the proposed laboratory as an onsite, 16,000 square foot, ES&H Analytical Laboratory to be used for both environmental and explosive sample testing. The plan estimated that the ES&H Laboratory could be built at a cost of \$8.8 million with construction to begin in 1994. The laboratory's primary functions would be to provide onsite capability and capacity to test environmental samples and waste, to characterize waste streams, and to support weapon activities. Construction of the new ES&H Laboratory would allow the Department to conduct the bulk of its testing onsite rather than going offsite to laboratories run by commercial vendors or educational institutions.

OBSERVATIONS AND CONCLUSIONS

The Department did not document that construction of the proposed ES&H Laboratory was needed to meet the Pantex Plant's mission requirements. Based on the lack of supporting documentation and other information discussed in Part II of this report, we concluded that the Department spent about \$400,000 and plans to spend an additional \$8.4 million for a new ES&H Laboratory that may not be justified.

The 1988 justification stated that a laboratory was needed to provide onsite capacity and capability to test environmental samples and waste, to characterize waste streams, and to support weapons activities. However, environmental sample analysis is currently being done offsite with no major problems. Additionally, the Department anticipates significant reductions in nuclear weapons activities. This reduction will, in turn, affect the number of samples to be analyzed at the proposed laboratory. Despite the satisfactory performance of the offsite laboratories and an anticipated reduction in nuclear activities, the justification for the ES&H Laboratory has not been reevaluated.

The Department also did not have documentation to support that constructing a new facility was more cost effective than continuing the status quo or pursuing other alternatives. The 1991 Conceptual Design Report, for example, showed five alternatives for the proposed ES&H Laboratory but did not adequately support Mason & Hangar's conclusion that constructing a new facility was more cost effective. In addition, there was no documentation showing that either the Department or Mason & Hanger studied the five alternatives to determine if they represented viable options for meeting Pantex' mission requirements.

If the Department constructs a laboratory that is not needed, it will spend an additional \$8.4 million unnecessarily, may inappropriately compete with private sector laboratories, and may harm, rather than help, public perceptions of the Department's credibility. We recommended, therefore, that the Manager, Albuquerque Operations Office, suspend additional funding for the project until the need is clearly established and cost/benefit analyses are performed.

Albuquerque reported a management control weakness in its Fiscal Year 1994 annual assurance memorandum concerning, in part, whether roles and responsibilities for project management at all levels were clearly defined. At the time of our review, Albuquerque had not implemented corrective action to solve this weakness.

FINDING AND RECOMMENDATIONS

Need for Construction of an ES&H Laboratory

FINDING

Established policy required the Department to ensure that proposed construction projects are needed to meet mission requirements. The Department planned, however, to construct a new ES&H Laboratory at Pantex even though its mission requirements were already being satisfied either at onsite laboratories or commercial laboratories. Construction of the laboratory had been approved because the Department relied on justifications that were not updated and were, therefore, inadequate. Furthermore, required evaluations of alternatives were either not performed or not documented. As a result, the Department planned to spend an additional \$8.4 million on a laboratory that was not adequately justified as necessary, that may compete with private sector laboratories, and that may not provide a sufficient appearance of independence.

RECOMMENDATIONS

We recommend the Manager, Albuquerque Operations Office:

-- Suspend additional funding for the ES&H Laboratory construction project until the need for the laboratory is clearly established and documented in writing. The document should include a complete analysis of need based on projected future requirements and analysis of costs and benefits of all alternatives that could satisfy the requirements for laboratory services.

-- Cancel the construction project if the ES&H Laboratory cannot be justified.

MANAGEMENT REACTION

Management agreed with the audit recommendations. Part III of this report addresses management and auditor comments.

DETAILS OF FINDING

A specific objective of the Department's project management system, established in Department Order 4700.1, is to ensure that construction projects are needed to support the mission of the organization and are cost effective. Once the need is established, the Order requires the Department's field elements to identify and evaluate all competing project alternatives to satisfy that need. Albuquerque Order 4700.1 requires that management and operating contractors evaluate and rank all alternatives considered in the Conceptual Design Report and documentation regarding the rationale for rejecting each alternative.

In addition, DOE Order 5100.3 requires an annual rejustification and validation of a proposed project. Typically, construction data sheets, submitted during the budget process, are used to explain and justify proposed or ongoing construction projects. These sheets must be accurate and up-to-date because they are used during Department, Office of Management and

Budget, and Congressional budget reviews. Without accurate data concerning ongoing need, however, informed decisions cannot be made.

NEED FOR THE NEW ES&H LABORATORY

Mason & Hanger planned to construct a new ES&H Laboratory and the Department approved this construction, but at the time of our review, neither Mason & Hanger nor Department officials could demonstrate convincingly that a new onsite ES&H Laboratory was needed. Justification for construction--as included in the Department's Fiscal Year 1996 budget request and other documents--was based on the assertions that the existing chemistry laboratory was outdated and ill-equipped, that offsite laboratories could neither respond quickly enough to Pantex' needs nor analyze explosives, and that offsite laboratories were not subjected to stringent Department quality control criteria. The audit disclosed problems with each of these arguments.

Information provided to us and our own observations showed that while the present onsite laboratory was aging and becoming increasingly crowded, it functioned satisfactorily. Site development plans through Fiscal Year 1992, in fact, explicitly stated that Pantex was 100 percent mission capable with the capital assets in place. Later site development plans were silent on this issue, but made no reference to unmet mission requirements. Furthermore, the audit disclosed that the primary reason for crowding in the existing laboratory was an increasing environmental workload, not increased explosives testing. Environmental testing can, as discussed below, be performed offsite with satisfactory results.

Neither Department nor Mason & Hanger project officials could document that difficulties with analysis or turnaround times existed, either in November 1992, when the Fiscal Year 1994 project data sheet was developed, or in 1995, when the budget for the construction of the proposed laboratory was submitted. To the contrary, Department and contractor officials responsible for environmental programs informed us that offsite laboratories could provide quick turnarounds for samples. If problems with turnaround times did exist, these problems were not documented.

Interestingly, we found that Mason & Hanger did not require quick turnaround on most environmental samples. Between September 30, 1993, and March 17, 1994, for instance, Mason & Hanger awarded subcontracts totaling more than \$1.1 million annually for non-radiological environmental analyses. Of this amount, however, only \$33,000 was awarded for performing analyses with a turnaround time of 24 hours.

The justification also stated that offsite laboratories could not analyze water or soil for the most common explosives used at Pantex. However, a May 1993 Mason & Hanger audit of an offsite laboratory noted that this laboratory had the capabilities to perform explosives analyses, if required.

Finally, the justification stated that offsite laboratories were not subject to stringent Department quality control criteria that were in place onsite. However, we found that offsite laboratories had the same requirements as onsite laboratories. Therefore, they were subject to the same types of reviews, inspections, tests, checks, surveillances, and audits as onsite facilities. In addition, the Department's quality assurance program requirements, detailed in DOE Order 5700.6C, established the necessity of adhering to stringent quality controls. This Order applies to

all management and operating contractors whether the services are performed onsite or procured from offsite sources. Offsite laboratories, therefore, are held to the same stringent Department criteria as onsite laboratories; the only difference is that Mason & Hangar ensures compliance rather than the Department.

REQUIRED REVIEWS AND ANALYSES

The Department was poised to construct a laboratory that did not appear necessary to meet mission requirements because it did not follow established project management procedures. Justifications were not updated and analyses of alternatives were either not performed or not adequately documented.

Reevaluation of Need

The audit showed that Mason & Hangar did not reevaluate its need for an ES&H Laboratory after the Department began to downsize the weapons complex. When Mason & Hangar first proposed constructing a new ES&H Laboratory, the stockpile consisted of more than 20,000 weapons made up of 25 different types. With changes in national security needs, however, the Department's Office of Defense Programs projected a steady decline in both the size and diversity of the nuclear stockpile. This projection indicated that by the year 2003, the stockpile will be reduced to less than 3,500 weapons of 7 types. As these reductions became apparent, the Department did not ensure that Mason & Hanger reevaluated its need for the proposed ES&H Laboratory.

Analysis of Alternatives

The audit also showed that even if a mission need did exist, the Department cannot be certain that constructing a new facility is the most cost effective alternative. According to the Conceptual Design Report for the proposed ES&H Laboratory, Mason & Hanger studied and rejected five alternatives before concluding that constructing a new facility was the only option available. These five alternatives were to: (1) continue using the existing facility after remodeling and adding to it; (2) move the operations to another facility onsite; (3) move to a temporary facility; (4) send samples to outside contractors for analysis; or (5) take no action.

We found, however, that Mason & Hanger officials did not perform studies of the five alternatives as required by Albuquerque Order 4700.1. Thus, Mason & Hanger did not determine if any of the alternatives were more cost effective than constructing a new facility. When one Albuquerque official requested Mason & Hanger to indicate if it was cost effective to build the facility as opposed to continuing the analysis work offsite, Mason & Hanger replied that it was impossible to make a meaningful direct cost comparison because offsite laboratories pose unacceptable risks to the Department. Mason & Hangar, however, did not document any analysis of alternatives. Instead, an official told us that building the new laboratory was the "common sense" solution.

If it is determined that there is no need for independent analysis of environmental samples, we believe that Mason & Hanger should have considered the alternative of sending samples to another Department facility. For example, Sandia National Laboratories have environmental sampling capability.

To its credit, Albuquerque recognized that lack of clearly defined roles and responsibilities was a weakness in its project management system. In its Fiscal Year 1994 assurance memorandum on internal controls, Albuquerque attributed the weakness to evolving and increasing project management requirements, limited or decreasing resources, and organizational changes. In this regard, the Albuquerque Project and Facilities Management Division officials said that they could not identify an Albuquerque program sponsor or customer supporting construction of the ES&H Laboratory.

AVAILABLE BENEFITS

The absence of a need determination based on future requirements, the inaccuracies in the stated availability and suitability of services of offsite commercial laboratories, and the apparent omission of studies of alternatives led us to conclude that the Department had not fully justified the proposed ES&H Laboratory. In fact, if more of the ES&H testing is done by outside laboratories, the proposed ES&H laboratory may not be needed. Therefore, Albuquerque should suspend construction of the ES&H Laboratory until the need is properly justified and the project proven to be cost effective, or, if not cost effective, cancelled.

At least three different types of benefits are available to the Department if construction is halted. First, the Department could save about \$8.4 million. This figure represents the difference between the \$8.8 million appropriated by Congress and the \$400,000 the Department has incurred in costs and commitments as of the end of April 1995. Second, the Department would no longer risk directly competing with private sector laboratories capable of performing the same analyses. Finally, testing environmental samples at offsite laboratories provides the credibility of independent analyses. According to a Department official, having independent analyses is a significant factor in the public's perception of Departmental credibility. This official also pointed out that if an onsite laboratory is constructed, the Department would still incur offsite analysis costs to validate the results.

PART III

MANAGEMENT AND AUDITOR COMMENTS

The Director, Project & Facilities Management Division agreed with the recommendations. A summary of management and auditor comments follows.

Finding. Need for Construction of an ES&H Laboratory

Recommendation No.1: We recommend the Manager, Albuquerque Operations Office, suspend additional funding for the ES&H Laboratory construction project until the need for the laboratory is clearly established and documented in writing. The document should include a complete analysis of need based on projected future requirements and analysis of costs and benefits of all alternatives that could satisfy the requirements for laboratory services.

Management Comments: Concur. Albuquerque said that all work and funding for the project has been suspended until the project has been rejustified (need for the laboratory is clearly established and documented in writing). A final position is anticipated by December 15, 1995.

Auditor Comments: We believe Management's comments are responsive to our recommendation.

Recommendation No.2: We recommend that if the ES&H Laboratory cannot be justified, cancel the construction project.

Management Comments: Concur.

Auditor Comments: We believe Management's comments are responsive to our recommendation.

In addition to commenting on our recommendations, Albuquerque also provided other comments which we addressed to the extent possible in the body of the report.

Report No. WR-B-96-02

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