

U.S. DEPARTMENT OF ENERGY  
OFFICE OF INSPECTOR GENERAL

AUDIT OF THE MANAGEMENT OF THE COOPERATIVE  
AGREEMENT WITH TEXAS TO FUND THE AMARILLO  
NATIONAL RESOURCE CENTER FOR PLUTONIUM

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OFFICE OF INSPECTOR GENERAL  
OFFICE OF AUDIT SERVICES  
WESTERN REGIONAL AUDIT OFFICE

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Audit Report Number: WR-B-96-08 August 23, 1996

SUMMARY

As the Nation dismantles its nuclear weapons, it must confront the issue of how to dispose of the special nuclear material taken from these weapons. To address the disposition issue, the Department of Energy, in November 1994 entered into a five year \$51.45 million non-competitive cooperative agreement with the State of Texas. Through this agreement, the Department provided financial assistance to the State of Texas to establish the Amarillo National Resource Center for Plutonium. The Center sponsored research on issues relating to the storage, disposition, potential utilization, and transportation of plutonium, high explosives, and other materials generated from nuclear weapons disassembly. The Department determined that the financial assistance would be administered through a cooperative agreement because the Department would have substantial involvement during the agreement period. The audit objective was to determine if the Department provided adequate management, direction, and control to ensure that the Center's activities are beneficial to the Department and do not duplicate the work at the Department's national laboratories.

The Department has had limited involvement in the Center's research projects and has not provided adequate management, direction, and control to ensure that the Center's activities are beneficial and not duplicative. In addition, the Center's projects identified by the Office of Fissile Materials Disposition as supporting Defense Programs activities have not been reviewed. Our review, as well as a subsequent review performed by the Department's Office of Fissile Materials Disposition, revealed that the Department funded about \$1.8 million during the first two years of Center's operation for research which duplicated research conducted by the Department's national laboratories. The duplication occurred because responsibility for technical review was assigned at a level without authority to fully coordinate review of the Center's research projects with the Department's national laboratories.

We recommended the Manager, Albuquerque Operations Office ensure adequate Department involvement and adequate delineation of roles and responsibilities for managing, directing, and controlling the Center's research. We also

recommended that the Manager, Albuquerque Operations Office establish a procedure with Headquarters Program Officers to ensure that research proposed by the Center does not duplicate other research initiated by the national laboratories.

Management agreed with the audit recommendations.

\_\_\_\_\_(Signed)\_\_\_\_\_  
Office of Inspector General

## PART I

### APPROACH AND OVERVIEW

#### INTRODUCTION

The Department funded a cooperative agreement with the State of Texas to establish the Amarillo National Resource Center for Plutonium. The Center sponsored research on issues relating to the storage, disposition, potential utilization, and transportation of plutonium, high explosives, and other materials generated from nuclear weapons disassembly. The audit objective was to determine if the Department had provided adequate management, direction, and control to ensure that the Center's activities are beneficial to the Department and do not duplicate the work at the Department's national laboratories.

#### SCOPE AND METHODOLOGY

The audit was conducted from August 1995 to June 1996 at the Albuquerque Operations Office (Albuquerque); Amarillo Area Office; Amarillo National Resource Center for Plutonium; State of Texas, Office of the Governor; University of Texas at Austin; Texas A&M University; and the Department's Offices of Fissile Materials Disposition and Defense Programs.

To accomplish the audit objective, we:

- o reviewed federal regulations, Department Orders, Office of Management and Budget Circulars, and Cooperative Agreement No. DE-FC04-95AL85832 with the State of Texas to identify requirements;
- o interviewed key officials of the Department, State of Texas, Center, University of Texas, Texas A&M University, and Sandia, Los Alamos, and Lawrence Livermore National Laboratories;
- o reviewed Center task plans, project proposals, and project files as well as other relevant documents;

- o requested Sandia, Los Alamos, and Lawrence Livermore National Laboratories to review Center projects for duplication; and,
- o obtained and analyzed State of Texas public vouchers submitted to the Department for reimbursement.

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 Department's management of Center projects and the disbursement of funds. Computer generated data was not an integral part of the audit objective; therefore, we did not rely on computer generated data to develop this report. Since the review was limited, it would not necessarily disclose all internal control weaknesses that may have existed at the time of our audit. Albuquerque officials waived an exit conference.

#### BACKGROUND

As the Nation dismantles its nuclear weapons, it must confront the issue of how to dispose of the special nuclear materials taken from these weapons. Options include long and short term storage, disposition, or utilization of the material, such as a fuel in nuclear reactors. The materials disposition issue is important to the Department's Pantex Plant located near Amarillo, Texas because a significant portion of nuclear materials inventory is currently stored at Pantex.

To address the disposition issue, the Department, in November 1994 entered into a five year \$51.45 million non-competitive cooperative agreement with the State of Texas. Through this agreement, the Department provided financial assistance to the State of Texas to develop the Amarillo National Resource Center for Plutonium. The agreement formalized the Secretary of Energy's commitments to Texas for Pantex continued storage of nuclear materials resulting from weapons dismantlement activities as well as the commitment to satisfy environmental, health, and safety concerns. The Department's share of the agreement was \$49 million and Texas's share was \$2.45 million. The Department determined that the financial assistance would be administered through a cooperative agreement because the Department would have substantial involvement during the five year agreement period.

The cooperative agreement envisioned the Center as a scientific and technical information resource on issues relating to the storage, disposition, potential utilization, and transportation of plutonium and other materials generated from nuclear weapons dismantlement activities. The results of this research would also be used to advise

the Governor and citizens of Texas on matters relating to future activities at the Department's Pantex Plant. The Center proposed research projects that included aquifer testing, bioremediation, chromium remediation, the use of fissile materials as fuel in nuclear reactors, joint studies relating to the disposition of weapons-grade plutonium with Russian institutions of higher education, long-term immobilization studies, an electronic resource library, and long-term storage facilities. The Center's proposed research projects support various Departmental elements, primarily the Offices of Fissile Materials Disposition and Defense Programs. The Office of Materials Disposition provided programmatic direction and funding for fiscal years 1995 and 1996. Defense Programs will provide programmatic direction and funding beginning in fiscal year 1997. Albuquerque had responsibility for management and oversight of the cooperative agreement.

The cooperative agreement's five primary objectives were to:

- o establish a comprehensive, electronic archive of information about nuclear materials and evaluate and disseminate this information;
- o advance technical knowledge of weapons materials and the environmental impact, and health and safety issues related to the handling, recycling and disposition of these materials;
- o conduct site-specific environmental, geological, hydrological, health, safety, and monitoring studies;
- o establish an education and outreach program that includes a visitor/science center; and,
- o provide training at DOE sites on current approaches to the storage and packaging of nuclear materials.

To accomplish the objectives, the State of Texas contracted with the University of Texas at Austin to manage the Center for the Texas Higher Education Consortium composed of the University of Texas, Texas A&M University, and Texas Tech University. The Center sponsored research and education projects based on recommendations from university professors, the Department, the Governor's Office, and the Consortium. The Center's Governing Board approved the projects and allocated the funds.

#### OBSERVATIONS AND CONCLUSIONS

The audit determined that the Department has not provided adequate management, direction, and control over the Center's research projects. Early in our review, we identified potential duplicative Center research with that performed by the Department's national laboratories. Subsequently, the Department's Office of Fissile Materials

Disposition (Materials Disposition), reviewed the Center's fiscal year 1996 research projects and found that many of them duplicated work performed at the national laboratories and, therefore, would not benefit the Department. As a result of its review, Materials Disposition recommended that several projects be redirected or rescope. Materials Disposition also advised the Amarillo Area Office that many of the Center's research tasks should be either coordinated with the national laboratories or reviewed by the Department's Office of Defense Programs to prevent duplication of effort. As a result, the Center agreed to redirect and rescope specific projects and to coordinate with the national laboratories as recommended. Although we were pleased with both the review and the Center's corrective actions, we determined that more coordination and review of the Center's projects was necessary.

During our audit, the Department implemented two actions affecting its involvement in Center activities. First, the Department's Office of Defense Programs agreed to share in the Center's funding for fiscal year 1997 and provide full funding in fiscal year 1998. On November 15, 1995, the Principal Deputy Assistant Secretary for Defense Programs assigned a project manager to begin reviewing the Center's proposed fiscal year 1997 research projects when available. Second, in May 1996, the Albuquerque Operations Office assigned a technical point-of-contact to assist the Contracting Officer's Technical Representative in coordinating the Center's research with the national laboratories. These two actions are significant because they represent positive steps toward substantial involvement in the cooperative agreement with the State of Texas.

In our opinion, the finding in this report disclosed material internal control weaknesses that management should consider when preparing its yearend assurance memorandum on internal controls.

## PART II

### FINDING AND RECOMMENDATIONS

#### Involvement in the Center's Sponsored Research

#### FINDING

The Code of Federal Regulations requires substantial involvement between the Department and cooperative agreement participant to share in the management, control, or direction of project activities. In addition, Article IV of the cooperative agreement with Texas established that the Department had the right to review performance, provide recommendations and guidance, and approve succeeding phases of projects. The Department, however, has had limited involvement in the Center's research projects. Our review,

as well as a subsequent review performed by the Office of Fissile Materials Disposition, revealed that at least \$1.8 million of the Center's research duplicated, to some extent, research conducted by the Department's national laboratories. In addition, Materials Disposition identified Center projects which support Defense Programs activities, but had not requested Defense Programs to review them. The duplication occurred because responsibility for technical review was assigned at a level without authority to fully coordinate review of the Center's research projects with the Department's national laboratories. As a result, the Department cannot be certain that all the Center's research is beneficial to the Department and does not duplicate research performed by the Department's national laboratories.

#### RECOMMENDATIONS

We recommend the Manager, Albuquerque Operations Office:

1. Ensure adequate Department involvement and adequate delineation of roles and responsibilities for managing, directing, and controlling the Center's research.
2. Establish a procedure with Headquarters Program Officials to ensure that research proposed by the Center does not duplicate other research initiated by the Department's national laboratories.

#### MANAGEMENT REACTION

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

#### DETAILS OF FINDING

As established in Title 10 of the Code of Federal Regulations (CFR) Part 600.302 (b) and (c), substantial involvement between the Department and the participant is the only criterion which distinguishes a grant from a cooperative agreement. The CFR states that substantial involvement exists when:

- o responsibility for the management, control, or direction is shared by the Department and the participant;
- o responsibility for the performance of the project is shared by the Department and the recipient;
- o the Department has the right to intervene in the conduct or performance of project activities for programmatic reasons.



The Department incorporated the CFR requirements in Article IV, "Substantial Involvement Between DOE and the Recipient" of the cooperative agreement with Texas. This agreement established the Department's right to:

- o receive performance reviews and to provide recommendations and/or program guidance; and,
- o provide prior approval and authorization to start work on the next phase if a project consists of more than one phase.

The cooperative agreement also stated that the Department may utilize technical monitors to provide assistance and recommendations to the Department relating to the work performed under the agreement. The use of such technical monitors would ensure that research conducted at the Center would benefit the Department.

#### DUPLICATED RESEARCH

Our audit revealed that some of the Center's research duplicated research conducted by the national laboratories and thus, did not benefit the Department. To make this determination, we requested technical personnel from Sandia, Los Alamos, and Lawrence Livermore National laboratories to conduct a limited review of 12 Center research projects. Their review identified projects that duplicate research conducted at the national laboratories. In one example, a Los Alamos scientist commented on Center project, "Disposition of Excess Weapons-grade Plutonium in Deep Boreholes," funded for \$50,000 in fiscal year 1995, stating that the Center was addressing issues and proposing tasks upon which Los Alamos had already addressed and published its results. In another example, a Sandia scientist commented on Center project, "Non-Destructive Assay of Plutonium," funded for \$78,000 in fiscal year 1995 that non-destructive measurements of special nuclear material is a major effort at Los Alamos. Both Sandia and Los Alamos scientists questioned how meaningful work can be accomplished without the Center's access to specialized and classified information.

Our review was followed by a limited review conducted by Materials Disposition which was also assisted by technical personnel from the national laboratories. This review focused on 18 of 33 tasks related to Materials Disposition activities from the Center's fiscal year 1996 Task Plans. However, according to Headquarters, Defense Programs officials, Materials Disposition did not request that they review the Center's fiscal year 1996 Task Plans.

The Materials Disposition limited review revealed that six of the Center's research projects duplicated work at the national laboratories and, therefore, were not beneficial to the Department. The extent of duplication varied from

extensive duplication where many of the tasks were considered duplicative and unnecessary to moderate duplication where some of the tasks were considered duplicative. The following are examples where there was significant duplication:

- o The Center's research on the "Consolidated Storage Facility Robotics and Monitoring," funded for about \$802,000 in fiscal year 1996 will study the same areas where extensive R&D had been performed by the national laboratories. Consequently, Materials Disposition recommended that the work should be coordinated with the laboratories to prevent duplication.
- o The review also found that the Center's research on "Water Reactor Options," funded for \$550,000 in fiscal year 1996, appeared to be redundant. The review pointed out that the proposed tasks are completed or are ongoing at other Departmental sites, and specifically cited the creation of a Mixed Oxide Fuel data repository at the Oak Ridge National Laboratory.
- o In a third example, the review commented that the proposed research on the "Transportation of Mixed Oxide Fuel," funded for \$300,000 in fiscal year 1996, may not be needed because the fuel will be transported from the fabricator to the reactor in the Safe Secure Transport System. Thus, additional transportation studies appear to be redundant. In addition, the review noted that the modeling for plutonium dispersal from transportation incidents has been done by the laboratories and is routinely used in the Department's transportation of special nuclear materials as well as weapons.

Because the review found apparent redundancy, Materials Disposition recommended that the Center either redirect the research or coordinate with the national laboratories to prevent duplication.

In response to Materials Disposition's review, the Center agreed to redirect several research projects and to coordinate its research activities with the national laboratories. In its response to the comments relating to the study on "Consolidated Storage Facility Robotics and Monitoring," for example, the Center stated it was coordinating with Sandia and had scheduled meetings with Los Alamos to better understand other ways in which the technology could fit into the plans for long term storage. The Center further stated that it was conducting research in order that the results could be incorporated at the design specification stage. The Center also indicated it would reorganize its project on the "Transportation of Mixed Oxide Fuel" and will meet with Sandia personnel to clarify needs.

Currently, Materials Disposition is reviewing the Center's corrective actions to determine if they are acceptable. Defense Programs does not plan to review Fiscal

Year 1996 projects.

#### ROLES AND RESPONSIBILITIES

The duplication of research occurred because Albuquerque had not clearly defined and assigned roles and responsibilities. The cooperative agreement was funded through the Department's Office of Fissile Materials Disposition and contracting authority was delegated to the Albuquerque Operations Office. After the agreement was awarded, Albuquerque transferred full responsibility for contract administration and technical review to the Amarillo Area Office. Amarillo personnel involved in this effort found that they had responsibility but felt they lacked the authority to coordinate the Center's research efforts with work at the Department's national laboratories. Thus, during the first year of operation, there was little coordination of the Center's research efforts with the Department's laboratories.

During the course of this audit, Amarillo asked Albuquerque to reassume the responsibility for contracting and coordinating the Center's research with the Department's national laboratories. Albuquerque reassigned contracting responsibility for a period of time but has since determined that responsibility for contracting and contract administration remain in Amarillo. In May 1996, Albuquerque assigned a technical point-of-contact to assist the Contracting Officer's Technical Representative in coordinating the Center's research activities with the Department's national laboratories.

Since the award of the cooperative agreement in November 1994, Albuquerque prepared several draft versions of a protocol document which defines the roles and responsibilities among various organizations within the Department regarding the management and administration of the cooperative agreement. However, the Departmental organizations did not reach agreement on their respective roles and responsibilities and, consequently the drafts were neither finalized nor approved. Albuquerque is hopeful that the protocol document will be finalized and will alleviate the programmatic and administrative issues in managing, directing, and controlling the cooperative agreement with the State of Texas.

#### EFFECT

The full effect of the duplication of research with the Department's laboratories is unknown. We did not attempt to project the dollar effect because of multi-year funding. The extent of duplication varied from project to project and the fact that all projects were not reviewed. Projects identified as having some duplication had two year funding of about \$1.8 million. In this era of limited budgets, the Department must try to get maximum benefit from its research

dollars and must, therefore, ensure that its research dollars are not used to fund duplicative projects.

### PART III

#### MANAGEMENT AND AUDITOR COMMENTS

In responding to our initial draft report, the Deputy Assistant Secretary for Program Support, Defense Programs and the Albuquerque Director, Contracts and Procurement Division concurred with our recommendations. A summary of management's comments and our replies follows.

Recommendation No. 1: Ensure adequate Department involvement and adequate delineation of roles and responsibilities for managing, directing, and controlling the Center's research.

Management Comments: Defense Programs and Albuquerque concurred with the recommendations. Albuquerque, however, used the term "partially concur" in their response. The protocol is being finalized by the Albuquerque technical point-of-contact who will coordinate the Center's research activities with the Department's program offices and national laboratories as appropriate. He will ensure the Center's research activities are beneficial to the Department and are not duplicating research performed by the Department's national laboratories. Defense Programs expects the protocol document to be finalized by September 30, 1996.

Auditor Comments: Revision 10 of the draft protocol document dated July 26, 1996, provides for the Albuquerque Weapons Quality Division to ensure that the Center's task proposals are unique and not duplicative of ongoing programs at Department laboratories. If the Weapons Quality Division technical point-of-contact can ensure non-duplication for all the Center's activities, this protocol should be satisfactory. Management's comments are responsive to the recommendation.

Recommendation No. 2: Establish a procedure with Headquarters Program Officials to ensure that research proposed by the Center does not duplicate other research initiated by the Department's national laboratories.

Management Comments: Defense Programs and Albuquerque concurred with the recommendation. Albuquerque stated that the protocol document discussed under Recommendation No. 1 incorporates the responsibility for the Albuquerque technical point-of-contact to coordinate with the national laboratories to ensure the Center's research activities benefit the Department and do not duplicate research being or already performed by the national laboratories.

Auditor Comments: As discussed above, if the Weapons Quality Division technical point-of-contact can ensure non-

duplication for all the Center's activities, this protocol should be satisfactory. Management's comments are responsive to the recommendation.

Management Comments on Part IV, Other Matters:  
Management also provided comments on two concerns we raised related to areas of financial administration of the Cooperative Agreement. These comments are incorporated into Part IV.

## PART IV

### OTHER MATTERS

During the audit, we had concerns about two items relating to the financial administration of the cooperative agreement with the State of Texas. First, the Department provided obligations far in excess of cash needs. Second, the State has not provided the Department an accounting of the State's matching share. We are not making recommendations on these matters, but we believe that management should address these concerns.

#### EXCESS OBLIGATIONS

To fund the cooperative agreement, the Department obligated a total of \$9 million in fiscal year 1995 to support the Center's first year funding. During the first year, Texas demonstrated an actual cash need of about \$2 million resulting in a carryover of \$7 million to fiscal year 1996. On January 31, 1996, the Department obligated an additional \$7.5 million bringing the total obligated but uncosted balance to about \$14.5 million. The State has not provided the Department with projected cash needs. We believe that the Department should only obligate funds based on projected cash needs.

In response to our initial draft report, Management stated that the Department's obligation of funds have been consistent with approved budgets and task plans proposed by the Center. The uncosted balance of \$14.5 million identified in the audit is a result of procedures utilized by the State to award research contracts approved by the Center's Governing Board and invoicing of costs associated with work performed under the research contracts. Because of the layers of administration from award of a research contract to preparation, submission, review, and approval of invoices, the collection of costs has been slow. Thus, obligations by the Department show up as large uncosted balances. To alleviate this problem, Texas will begin reporting costs monthly to the Department of Health and Human Services, the agency responsible for payments to Texas under the agreement. Health and Human Services will report costs to the Department electronically for posting to the Financial Information System each month.

## ACCOUNTABILITY FOR THE STATE'S MATCHING SHARE

According to the cooperative agreement, the Department's funding share was \$49 million and Texas' share was \$2.45 million (5 percent) to include cash or allowable in-kind contributions of services, materials, and/or property. To date, Texas has not provided the Department with financial reports stating the extent and application of its purported cost share. For example, SF-269 "Financial Status Report," which Texas is required to submit as part of its reporting requirement, requests information on both the federal and the recipients share of net outlays. The Financial Status Report submitted on February 15, 1996, which covers the period November 1, 1995 to January 31, 1996, states that the total federal outlay was \$673,663 and the recipient's net outlay was left blank. This omission led us to question whether Texas has contributed its share of resources to support the Center as required by the agreement. We believe that the Department should obtain a full accounting from Texas for the matching share of costs.

Management stated that through April 1996, Texas reported its cost share of 5 percent of the Department's funded amount. Management added that there is no requirement for cost share reporting during each reporting period.

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