U.S. Department of Energy
Office of Inspector General
Office of Audits and Inspections

Audit Report

Department of Energy's Management of Surplus Nuclear Materials

OAS-L-13-04

January 2013

Department of Energy
Washington, DC 20585

January 11, 2013

MEMORANDUM FOR THE DIRECTOR, OFFICE OF NUCLEAR MATERIAL INTEGRATION, NATIONAL NUCLEAR SECURITY ADMINISTRATION

FROM: Daniel M. Weeber
Assistant Inspector General for
Audits and Administration
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "The Department of Energy's Management of Surplus Nuclear Materials"

BACKGROUND

A primary mission of the Department of Energy and its predecessor organizations has been to design, build and test the Nation's nuclear weapons. To accomplish this mission, much of the Department's complex was devoted to the production and fabrication of nuclear weapons components. With the end of the Cold War in the early 1990s, many such operations were suspended or shutdown. Because these shutdowns were initially considered temporary, the Department did not make long term plans for storage or permanent disposition of the nuclear material, including material that became surplus to the Department's mission needs.

In 2005, the Department chartered the Nuclear Materials Disposition and Consolidation Coordination Committee (Committee) to facilitate integration of individual program efforts to disposition nuclear materials. The Committee was tasked with identifying opportunities for resource sharing and reducing the duplication of effort at multiple sites in areas such as the storage and surveillance of nuclear materials. Prior to that time, nuclear material disposition projects at various sites across the complex were independently managed by program offices. The Committee recommended that an office be established within the Department's National Nuclear Security Administration (NNSA) to guide and oversee the integration of the various programs' nuclear material management activities. Accordingly, NNSA established the Office of Nuclear Materials Integration (ONMI) to formalize and combine functions previously served by temporary entities such as the Committee that preceded it. Specifically, ONMI develops strategic plans and policies related to the life-cycle management of nuclear materials and coordinates activities among various program offices.

Due to the importance of nuclear material management integration and increased efforts to consolidate and dispose of surplus materials, we initiated this audit to determine whether the Department had effectively managed the disposition of surplus nuclear materials.

CONCLUSIONS AND OBSERVATIONS

We determined that the Department made significant progress toward the disposition of surplus nuclear materials. Specifically, the Department:

- Developed a life-cycle nuclear materials management policy, implemented strategic plans for consolidation and disposition of nuclear materials, and refined its nuclear materials management organization; and,

- Consolidated highly enriched uranium and plutonium materials.

The Department made significant progress; yet, despite the specific requirement to do so, we noted that ONMI had formally proposed and gained program and field element approval of only one Lead Materials Management Organization (LMMO) to integrate and coordinate the management of specific nuclear materials. In fact, some nuclear materials were being managed by de facto or provisional LMMOs. Additionally, the Department had not designated certain nuclear materials as National Assets to enable retention and continued availability. National Assets are nuclear materials that have no current programmatic use but have been judged as unique or difficult to reproduce. As such, those materials would be set aside because of a significant possibility that the materials will be required for future programmatic use. Unless these materials are treated as National Assets, the materials are at risk of being processed as waste for permanent disposal.

Surplus Nuclear Materials Management

To strengthen nuclear materials management, in August 2009, the Department revised Department Order 410.2, *Management of Nuclear Materials*, to promote life-cycle management over nuclear materials and integrate program office activities. The revisions formalized requirements for five categories of management activities and assigned Headquarters program and field element responsibilities for implementing them. These categories consisted of (1) material forecast and allotment reporting; (2) nuclear materials management plans; (3) nuclear material inventory assessments; (4) inventory management; and, (5) a national strategic plan for management of the Department's nuclear materials. Further, in early 2012, the Department issued guidance documents for both the *Nuclear Material Allotment Forecast* and *Nuclear Material Management Plan.* Also, as of October 1, 2012, ONMI was updating the draft *National Strategic Plan for Nuclear Materials: A New Era* (Strategic Plan) to reflect comments from the Office of Management and Budget.

The Department also revised the Nuclear Materials Inventory Assessment process to, among other things, implement life-cycle management of nuclear materials across the complex. ONMI annually issues detailed guidance requiring Department field elements to submit data categorizing all nuclear materials as having a "defined use" or "no defined use" based on programmatic requirements and direction from Department Headquarters organizations. ONMI annually updates the data during the inventory assessment process and makes it available to all program office nuclear material managers for planning and evaluation. In addition, according to officials, in 2011, the Department transferred responsibility for managing and operating the

Nuclear Materials Management and Safeguards System, which contains the overall nuclear materials inventory database, from the Office of Health, Safety and Security to ONMI to enhance communication and integration.

Finally, the Department implemented plans for consolidating or disposing of surplus nuclear materials. Under these plans, the Department made substantial progress with the consolidation and disposition of significant amounts of Category I and II quantities of highly enriched uranium and weapons-usable plutonium. For example, the Department consolidated the highly enriched uranium inventory at the Y-12 National Security Complex and the Savannah River Site (Savannah River). Further, most surplus non-pit weapons-usable plutonium at the Hanford Site was relocated to Savannah River. Also, inventories of special nuclear materials requiring the highest level of security have been removed from Sandia National Laboratories and Lawrence Livermore National Laboratory.

Lead Materials Management Organizations

Despite improvements to the surplus nuclear materials management process, the Department had only designated one LMMO to integrate and coordinate the management of nuclear materials. Departmental Order 410.2 requires ONMI to propose a Department Headquarters organization or field element as LMMO, subject to the organization or field element's approval, for specific nuclear materials, as warranted. Based on discussions with ONMI officials and our review of Department documents, LMMOs were planned to function as technical points of contact complex-wide for material specific issues and were intended to minimize the impediments associated with integrating program office operations. Although ONMI officials planned to propose LMMOs for all accountable nuclear materials and were in discussions with the program offices to assign LMMOs, none had been formally designated prior to July 2012, nearly 3 years after revising Department Order 410.2. ONMI and program officials stated this was due in part to concerns expressed by program offices regarding LMMO responsibilities. According to ONMI, program offices believed that establishment of LMMOs may obscure responsibilities for disposition of materials and potentially interfere with management's authority to administer these programs.

We noted, however, that organizations have performed as de facto LMMOs for some nuclear materials. For example, the Department's Y-12 facility has performed this function for enriched uranium materials and Savannah River and Los Alamos National Laboratory have cooperated as provisional LMMOs for surplus plutonium and defense programmatic plutonium materials, respectively. According to officials, formal designation of LMMOs will enhance ONMI's ability to facilitate effective integration and efficient coordination of nuclear materials disposition. On July 20, 2012, the Director of ONMI issued the charter establishing Oak Ridge National Laboratory as LMMO for heavy isotope materials. Prior to this date, however, neither de facto nor official LMMOs had been assigned for certain surplus nuclear reactor components that contain heavy isotope materials identified by the Department to have value for future programmatic use. For example, the existing inventory of plutonium-242/244, americium-243 and curium-244/246/248 are valuable as feedstock for producing new isotopes. The Department's strategic plan, dated April 2011, identified these materials as rare and economically

irreplaceable. The strategic plan also acknowledged the need for Department decisions regarding the preservation of these materials before the opportunity is lost, as the supply of these unique materials is dwindling with decay.

National Asset Materials

We also noted the Department had not designated and did not manage any nuclear materials as National Assets. The Department's Strategic Plan concluded that specified surplus nuclear reactor components contain rare isotopes that are, for all practical purposes, irreplaceable and vulnerable to be processed as waste for permanent disposal. Department Order 410.2 requires ONMI to identify and recommend designation of National Asset materials to enable retention and continued availability of items that have no immediate programmatic use and no Department owner, but may have future use for research, commercial applications, environmental safeguards or nuclear forensics and are unique or costly to replace. We found that ONMI is in the process of identifying materials for National Asset designation; however, the Department had not designated any nuclear materials as National Assets or provided the funding necessary to recover these valuable isotopes.

We recognize that there are continuing issues related to programmatic authority and funding restrictions that prohibit program offices from taking possession and recovering these types of nuclear materials. For example, as we noted in our report on *Meeting Medical and Research Needs for Isotopes Derived from Uranium-233* (DOE/IG-0795, May 2008), surplus inventories of uranium-233 are controlled and managed by the Office of Environmental Management (EM), whose mission is to dispose of unwanted materials. No programs stepped forward to take control of the materials because EM required the adopting program to assume responsibility for managing the materials and paying for the disposition costs. To retain these materials, programs must have current projects with current funding sources – a circumstance that does not currently exist. At the time of our review, the Department had not sought a Congressionally-approved programmatic mission and appropriated funds to preserve and retain materials for future Department or national use. Per ONMI's Director, the Department is in the process of determining which materials and what amounts to consider for National Asset designation. Decisions regarding future life-cycle plans for these materials are crucial to efficiently and effectively manage these national resources.

Path Forward

The Department has made significant progress in managing the disposition of surplus nuclear materials. To advance these efforts, we suggest the Department:

- Finalize its efforts to formally designate the LMMOs to facilitate the integration and coordination of nuclear materials disposition; and,

- Complete its determination of the types and quantity of surplus nuclear materials containing valuable isotopes that need to be preserved for programmatic and national needs before the opportunity is lost.

We coordinated the results of our review with management officials. Because formal recommendations are not being made, a formal response is not required. We appreciate the cooperation of your staff and the various field elements that provided information or assistance during the audit.

Attachment

cc: Deputy Secretary
Associate Deputy Secretary
Under Secretary for Nuclear Security
Associate Administrator for Defense Nuclear Security, NA-70
Director, Office of Business Operations, NA-MB-20

OBJECTIVE, SCOPE AND METHODOLOGY

OBJECTIVE

The objective of the audit was to determine whether the Department of Energy (Department) had effectively managed the disposition of surplus nuclear materials.

SCOPE

This audit was performed from May 26, 2011, to October 1, 2012, at Department Headquarters in Germantown, Maryland and the Savannah River Site (Savannah River) in Aiken, South Carolina. The scope of the audit primarily covered the National Nuclear Security Administration's (NNSA) management and planning of the disposition of surplus nuclear materials.

METHODOLOGY

To accomplish the objective of this audit, we:

- Reviewed applicable laws, regulations and guidance;
- Reviewed prior audits and assessments;
- Assessed the Department's organizational structure and strategic plan for managing surplus nuclear materials;
- Interviewed key personnel at NNSA's Office of Nuclear Materials Integration and Savannah River; and
- Reviewed the 2010 summary of the Nuclear Materials Inventory Assessment report.

We conducted this performance audit in accordance with generally accepted government audit standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, the audit included tests of controls and compliance with laws and regulations to the extent necessary to satisfy the objective. In particular, we assessed the Department's implementation of the *Government Performance and Results Act Modernization Act of 2010* and concluded that the Department had established performance measures for managing the disposition of surplus nuclear materials. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We did not rely on computer-processed data to achieve the objective of our audit.

Management waived an exit conference.

IG Report No. OAS-L-13-04

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