Department of Energy
National Nuclear Security Administration
Washington, DC 20585

September 24, 2002

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW
Washington, DC 20004

Dear Mr. Chairman:

The National Nuclear Security Administration (NNSA) report addressing storage and disposition of inactive actinide nuclear materials is provided in response to your May 20, 2002, letter.

The long-term holding of unneeded actinide material, even in small quantities stored in appropriate containers and vaults, is an undesirable condition. Storage space for this material is limited and costly to construct and maintain. Retaining inactive material with no defined programmatic use adversely impacts operations and mission accomplishment. We agree with the Board that additional emphasis needs to be applied to planning and implementing disposition pathways for as much of the inactive inventory as possible. Since, in most cases, this material does not create a significant incremental risk to workers or the public, we propose to address the overall disposal issue in a well-planned and properly funded manner. Since this work will compete for the same facilities and personnel as other high-priority safety and programmatic work, it must be integrated with that work. In some cases, additional near-term actions may be required to insure some of those items are stabilized and packaged for interim storage. It is my expectation that we should begin to see inactive actinide footprint reduction in Fiscal Year 2004, depending largely on the availability of disposition paths.

The enclosed report responds to the six Defense Nuclear Facilities Safety Board issues and discusses NNSA site status. We will complete three additional documents relating to disposition planning, evaluation of materials continuing need, and sealed-source disposition. These documents will be provided to you by January 31, 2003, as described in the report. At the same time, we will identify our strategy for additional activities to improve storage and disposition of inactive actinide materials. We are committed to addressing important issues using a risk-based prioritization approach, leading to resource-loaded disposition plans.

Planning and implementation of future activities will be supported and facilitated by the Inactive Actinides Working Group (IAWG) whose members individually will represent their sites' interests and collectively will assist NNSA in addressing improved

management of inactive actinide materials complex wide. I have appointed a senior Defense Programs Manager, Max Clausen, Acting Director of the Office of Strategic Materials and Transportation, to be responsible for ensuring accomplishment of required actions to address inactive actinide materials management issues and needs.

The resolution of these issues will require a combination of institutional change, shifts in programmatic priorities and resources, and increased management attention at both NNSA Headquarters and sites. Our program offices, in coordination with the IAWG, continue to support sites activities in resolving the identified issues.

If you have any questions, please contact me at (202) 586-2179 or have your staff contact Ms. Diane Larsen at (301) 903-7316.

Sincerely,

Everet H. Beckner
Deputy Administrator
for Defense Programs

Enclosure

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02-2059

National Nuclear Security Administration

Response to Defense Nuclear Facilities Safety Board May 20, 2002, Letter on Inactive Actinide Materials

September 17, 2002

Acronyms

ALO	Albuquerque Operations Office
CMR	Chemistry and Metallurgy Research
CSMO	Central Scrap Management Office
DNFSB	Defense Nuclear Facilities Safety Board
DOD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
DP	Defense Programs
DU	Depleted Uranium
EIS	Environmental Impact Statement
EM	Environmental Management
FY	Fiscal Year
HEU	Highly Enriched Uranium
HEUMF	Highly Enriched Uranium Materials Facility
IAWG	Inactive Actinides Working Group
IGSV	In Ground Storage Vault
INEEL	Idaho National Engineering and Environmental Laboratory
KAMS	K-Area Materials Storage Facility
LANL	Los Alamos National Laboratory
LEU	Low Enriched Uranium
LLNL	Lawrence Livermore National Laboratory
LLW	Low Level Waste
LMI	Legacy Materials Initiative
MAA	Material Access Area
MOX	Mixed Oxide
NEPA	National Environmental Policy Act
NISSMG	Nonactinide Isotope and Sealed Sources Management Group
NMIA	Nuclear Material Inventory Assessment
NNSA	National Nuclear Security Administration
NRC	Nuclear Regulatory Commission
NTS	Nevada Test Site
NU	Natural Uranium
ORNL	Oak Ridge National Laboratory
OSRP	Offsite Source Recovery Program
PIO	Program Integration Office
PPU	Planned Programmatic Use
RTG	Radioisotope Thermoelectric Generator
SNL	Sandia National Laboratories
SRO	Savannah River Operations Office
SRS	Savannah River Site
TA	Technical Area
TRU	Transuranic Waste
TVA	Tennessee Valley Authority
USAF	United States Air Force
WIPP	Waste Isolation Pilot Plant
Y-12	Y-12 National Security Complex

EXECUTIVE SUMMARY

Introduction

A May 20, 2002, letter from the Defense Nuclear Facilities Safety Board (DNFSB) to the Deputy Administrator for Defense Programs (NA-10) identified six issues (See Table ES-1) for the National Nuclear Security Administration (NNSA) to address associated with the safe management and disposition of inactive actinide nuclear materials. The issues are based on the results of a multi-site review by the Board staff on the management of inactive nuclear materials at Defense Programs sites. The overall objective of the review was to assess NNSA's management of nuclear materials that are not needed by current programmatic missions and are not part of an ongoing DNFSB recommendation. The DNFSB examined the inventory and plans for use of inactive nuclear materials, continued storage or disposition, configuration and packaging protocols, and conditions that could potentially lead to unnecessary radiological safety or environmental risk.

Table ES-1. DNFSB Issues

1	Evaluation of the adequacy of existing characterization information to support storage and disposition decisions.
2	A process to ensure that practicable disposition paths are identified for all existing inactive materials, as well as new materials generated or brought on site.
3	Evaluation of the appropriateness of storage systems presently used for inactive materials.
4	Identification of sites/facilities for long-term storage of inactive materials awaiting permanent disposition and plans to ensure that certification and availability of all required shipping containers are being pursued aggressively and integrated across secretarial offices.
5	A protocol to ensure that inactive materials being held for potential future use are periodically evaluated for continuing need and that the bases are documented.
6	Development of a long-term strategy for disposition of surplus sealed actinide sources.

Purpose

This report responds to the six DNFSB issues and identifies the strategy by which NNSA will further address these issues. It outlines the preliminary status of inactive materials within the NNSA complex relative to the infrastructure, processes, and programs in place to support resolution of the Board issues.

Path Forward

Effective life cycle management of inactive materials will achieve much of what the Board's letter intended. This can be accomplished through an integrated NNSA materials management approach. In response to the special attention being placed on the inactive actinide materials at NNSA sites, NA-10 established the Inactive Actinides Working Group (IAWG) to develop strategies, processes, and plans and coordinate implementation of activities to address inactive actinide issues and needs. This group includes NNSA site

nuclear material managers, NNSA Headquarters Program Office personnel, select subject matter and technical experts tasked to advise DP program offices and NA-10 on steps needed to complete timely corrective actions related to inactive actinide materials. Efforts will be coordinated with appropriate points of contact in other Program Offices.

The following actions constitute the beginning strategies toward remediation of the issues.

By January 31, 2003, IAWG will submit to NA-10 for approval and issuance to NNSA sites and for transmittal to the DNFSB:

- A process for developing practical materials disposition paths, including alternatives.
- A protocol, including criteria and definitions, for periodic evaluation of inactive materials to determine continuing need for future use plus recommended changes to the Nuclear Material Inventory Assessment (NMIA) process to improve data utility, maintenance, and reporting.
- A documented strategy for disposition of surplus sealed actinide sources.

The process, protocol and strategy identified above will constitute the basis for proceeding with identification, planning and implementation of site-specific activities to improve management and disposition of inactive actinide materials. When we submit these documents to the DNFSB, we also will identify the next steps to be taken. These steps will include:

- Completing site-specific baseline material disposition plans for all NNSA sites including identification of uncertainties and gaps in the plans.
- Identifying characterization requirements for storage, disposition, transportation, and receiver site acceptance, evaluating site capabilities and identifying gaps, developing and recommending a plan to resolve identified gaps.
- Identifying actions needed to address the uncertainties and gaps in the site-specific baseline plans.
- Preparation of NNSA integrated, resource loaded disposition plans based on site-specific material disposition plans; defining priorities leading to recommendations for disposition/characterization projects.
- Incorporation of packaging needs or gaps from the disposition plans for inclusion in the packaging program plan, coordinated with other DOE Headquarters program offices. This packaging program plan identifies needed shipping containers, actions required to develop and certify those containers, and actions required to maintain and optimize utilization of those containers across the NNSA and DOE complex.

The resolution of the inactive actinides issues identified herein will require a combination of institutional changes, shifts in programmatic priorities and resources, and increased management attention at both the sites and headquarters. The IAWG will provide a structure for addressing implementation issues and responding to the dynamics of the nuclear material management in the DOE.

1.0 Introduction

On May 20, 2002, the Defense Nuclear Facilities Safety Board (DNFSB, the 'Board') issued a letter to the Deputy Administrator for Defense Programs (NA-10) identifying six primary issues for the Department of Energy (DOE) to address associated with the proper management and disposition of Defense Programs inactive actinide materials. The issues are based on the results of a multi-site review by the staff of the Board on the management of inactive nuclear materials at National Nuclear Security Administration (NNSA) sites, focusing on Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL). The overall objective of the Board review was to assess NNSA's management of inactive nuclear materials, including those that no longer have a programmatic mission and are not part of an ongoing stabilization program. The Board examined the inventory of nuclear materials and the plans for their use, continued storage, or disposition. The Board also evaluated configuration and packaging protocols and assessed conditions or weaknesses that could lead to unnecessary or increased radiation exposure to workers and the public, as well as higher potential for the release of radioactive materials to the environment.

The Deputy Administrator for Defense Programs agrees that the Board identified issues need to be addressed and will identify the planning and implementation of NNSA specific activities needed to ensure better nuclear materials management processes are developed for NNSA sites and actions taken for existing inactive materials. The DNFSB reviewed the 1999 Nuclear Material Inventory Assessment (NMIA) at LANL and LLNL. This inventory was dated and had been revised in the 2000 and 2001 NMIA submittals. Review by the Board of the current data may have resulted in different observations. However, NA-10 agrees that many of the NNSA storage facilities are at or near their capacity. The accumulation of inactive inventories leading to reduced availability of storage space results from a combination of factors. These have historically included insufficient advocacy for inactive materials disposition and limited coordination of departmental efforts and capabilities related to life cycle management of these materials. This response reflects a desire to improve lifecycle management of inactive nuclear materials. Sites must have clear guidance on determining which materials are inactive, have clear definitions of both interim and long-term storage adequacy, and NNSA must proactively deal with the issue of practical disposition options, at appropriate locations, for its sites where inactive materials are creating issues.

2.0 Purpose

The purpose of this report is to provide the Board a response to the six issues identified in the May 20, 2002, letter (the 'Board letter') and to establish the approach for NNSA to identify the NNSA complex wide status and develop the path forward to resolve these issues. This report provides a summary status of inactive materials within the NNSA complex and information on the infrastructure, processes, and programs in place to support resolution of the Board issues. Furthermore, the report identifies a path forward for development of needed processes and strategies, disposition planning and gap analysis, materials characterization, and packaging needs identification.

3.0 Background

DOE Order 5660.1B, "Management of Nuclear Materials," addresses DOE and NNSA requirements for the management of inactive nuclear materials. These include characterizing the materials for safe storage, processing the materials for long-term safe storage, and providing safe and compliant long-term storage. The Order was first issued in November 1988, superseding ERDAM 7451, "Management of Nuclear Material," and later revised in July 1992 and again in May 1994 as DOE Order 5660.1A and 5660.1B. Other than changing the organizational title, the Order has not changed significantly since its initial issuance. The programmatic focus in implementation of the Order's requirements has been on data collection to conserve the valuable resources of nuclear materials by optimizing their use and efficient distribution and to provide broad guidance on how to manage materials that are no longer required. This Order was not originally intended to emphasize the management of inactive nuclear material having no reuse potential or value. The intent was to ensure that usable nuclear materials were optimally applied to meet ongoing nuclear material program requirements. Other organizational instructions and guidelines were available for the management of scrap nuclear materials, including the Central Scrap Management Office (CSMO) handbooks on disposition of unirradiated scrap nuclear materials.

However, as written, the Order does identify the requirements for management of inactive materials without regard to value. In years past, the CSMOs were established and utilized by Defense Programs as tools for promoting integration among sites to consolidate inactive materials at dedicated storage locations. The transfer of former DP sites to the Office of Environmental Management (EM) has resulted in elimination of all but the uranium CSMO, which presently is minimally supported. Evaluation of revitalizing such services for complex-wide integration and effective management could be considered as one of the solutions to improving safe and efficient centralized storage and disposition. The DOE has recognized that DOE Order 5660.1B requires substantial updating and is in the process of its revision as DOE Order 410.X, which will address effective life cycle management planning for the Department's nuclear materials.

4.0 DNFSB Summary

The Board review identified that NNSA sites store significant amounts of inactive nuclear materials that are not part of a formalized safe storage or disposition program. The Board observed that numerous materials may require stabilization and repackaging for safe interim and long-term storage, and many require decisions be made regarding paths forward for interim consolidation and/or ultimate disposition. The Board has identified the following specific issues to be addressed in this report:

1	**Evaluation of the adequacy of existing characterization information to support storage and disposition decisions.**
2	**A process to ensure that practicable disposition paths are identified for all existing inactive materials, as well as new materials generated or brought on site.**
3	**Evaluation of the appropriateness of storage systems presently used for inactive materials.**
4	**Identification of sites/facilities for long-term storage of inactive materials awaiting permanent disposition and plans to ensure that certification and availability of all required shipping containers are being pursued aggressively and integrated across secretarial offices.**
5	**A protocol to ensure that inactive materials being held for potential future use are periodically evaluated for continuing need and that the bases are documented.**
6	**Development of a long-term strategy for disposition of surplus sealed actinide sources.**

5.0 Scope

The scope of this response includes compiling the characterization, packaging, infrastructure, and process information for the following NNSA sites and materials to support a comprehensive response to the issues identified.

Sites and Facilities

The following NNSA sites presently contain or have the potential to receive materials within the scope of this response:

- Los Alamos National Laboratory (LANL)
- Lawrence Livermore National Laboratory (LLNL)
- Sandia National Laboratories (SNL) - New Mexico
- Savannah River Site (SRS)
- Pantex
- Y-12 National Security Complex
- Nevada Test Site (NTS)

SRS and NTS had no materials in scope and are not included in most of the discussion below.

Materials

The report scope consists of the following non-waste actinide materials, including pieces and parts made of these materials, from Table I-1 of DOE Manual 474.1A that are categorized as "Other" materials in the USE field of the Nuclear Materials Inventory Assessment (NMIA), or that are categorized as "Active" or "Potential Programmatic Use" materials in the USE field and have no potential future use:

- Uranium (depleted [DU], natural [NU], low enriched [LEU], highly enriched [HEU], ^{233}U)

- Plutonium - ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{241}Pu (including Radioisotope Thermoelectric Generators {RTGs})
- Americium - ^{241}Am, ^{243}Am
- Californium - ^{252}Cf
- Curium - Cm
- Neptunium - ^{237}Np
- Thorium - Th
- Surplus sealed actinide sources

Out-of-Scope Items

Materials, pieces, parts and components that are subject to implementation plans for DNFSB recommendations 94-1/00-1, 97-1, and 99-1 are outside the scope of this report with respect to stabilization and disposition since such actions are already addressed in the pertinent DNFSB implementation plans. Materials in weapons or sealed weapons components are out of scope with the exception of RTGs. Nuclear materials that have been declared waste are out of scope.

6.0 Strategic Approach

In order to respond to the issues identified by the Board and provide a comprehensive, integrated response addressing each specific issue, NA-10 established the Inactive Actinides Working Group (IAWG). To facilitate response preparation and support identification of material disposition improvements, the Office of Strategic Materials and Transportation (NA-125) is leveraging the expertise of the NNSA sites nuclear materials managers along with the Albuquerque Operations Office (ALO) and Savannah River Operations Office (SRO). The approach to this 120-day response includes utilizing systems engineering concepts to define the requirements, analyze the issues, gather site specific information, analyze the information sufficiently to provide a complex wide status, identify additional nuclear material management needs and recommendations, and validate the proposed recommendations. To inform this process, DP developed an Information Request to obtain sufficient site-specific information to address the Board issues NNSA complex-wide and support the development of improvements needed to resolve these issues.

The issues contained in the Board letter clearly identify the need for integrated and formalized processes for disposition of inactive actinide and other excess nuclear materials and the need to improve integration among sites to consolidate. Consideration of revitalizing centralized storage locations as previously done through the Department's CSMOs will be done within the process of revising DOE Order 5660.1B. The DOE has recognized that DOE Order 5660.1B requires substantial updating, and in FY2000 initiated preparation of DOE Order 410.X to replace 5660.1B.

Existing Programmatic Efforts to Improve Safe Management of Inactive Materials

To support safe life cycle management of materials, DP recognizes the needs to disposition excess nuclear materials and to plan the ultimate disposition of new materials

as they are generated or brought onto a site. NNSA will develop processes for disposition planning for issuance to the sites. In parallel, DOE, through DP, is drafting the new Order and Manual for application to all DOE programs and sites. Due to the different audiences and pre-decisional nature of these efforts, the degree of overlap and convergence is yet to be defined. In FY02, NA-125 developed the Legacy Materials Initiative (LMI) to support NNSA sites in the effective management and disposition of legacy nuclear materials. This initiative is structured to identify and evaluate current and future legacy materials issues, develop alternative solutions with an emphasis on disposition, propose paths forward for each issue, and implement approved projects. These actions will ensure that NNSA complex-wide disposition activities are integrated and optimized, site specific disposition plans are developed and funded for legacy nuclear materials, end states negotiated and validated, and direct site assistance in the execution of plans to resolve issues resulting from changing capabilities of the nuclear materials complex.

The LMI will adapt existing expertise and lessons learned from other DOE programs, including the EM Nuclear Materials Stewardship Program and the Central Scrap Management Office for Uranium. The success of NNSA surplus nuclear materials disposition programs are currently somewhat dependent on end states controlled by non-Defense Programs (DP) offices such as EM. However, it is also clear that if NNSA sites are to remain capable of carrying out future defense program missions, NNSA must develop internal NNSA disposition alternatives, making disposition of inactive materials at those sites less dependent on other DOE program directions and institutional constraints.

7.0 Issues Assessment and Recommendations

7.1 Issue 1 Evaluation of the adequacy of existing characterization information to support storage and disposition decisions.

Current Status

Existing characterization information for the inactive actinide materials at many NNSA sites is generally adequate. However, some sites still need to improve their characterization information to support disposition activities. This varies depending upon the materials under consideration as well as the purpose for the characterization. For example, at the Pantex Plant, the inactive actinides are comprised of retired RTGs from weapon systems, while other sites, especially the national laboratories and the Y-12 National Security Complex, have a broad array of inactive actinide materials, and not all samples of materials have been thoroughly characterized. Additionally, the sites recognize that while some materials have been sufficiently characterized for interim storage, additional characterization information will be required for shipping and disposition to assure compliance with waste management site or other receiving site acceptance criteria. For example, LANL has less than 500 items that are characterized only for isotope and form, the minimum information needed for safe, secure storage. These items would require further characterization for shipping and disposition.

The situation at LLNL is similar to that at LANL. In general, the characterization of inactive materials for on-site storage at all sites is adequate, ranging from a high confidence in materials such as Pu and U, to a lower confidence in the characterization of materials such as depleted uranium and sealed actinide sources that present a lower safety risk. However, LLNL underscores the fact, as have others, that additional characterization is needed to address the different requirements for shipping and disposition. LLNL has programs underway to characterize specific materials for continued storage or disposition. However, LLNL makes the point that characterizing materials for disposition should be performed when the disposition pathway and the characterization requirements are defined, since receiver sites and disposition programs dictate the requirements.

Sandia National Laboratories (SNL) reports similar circumstances wherein their inventory, principally enriched uranium, has medium to high adequacy of characterization for on-site storage, but additional characterization would be needed for disposition. At the Pantex Plant, the inactive actinides are comprised of retired RTGs from weapon systems, and these have specific definitions for their composition leading to a high level of confidence in the characterization. Y-12 reports that the adequacy of the characterization of their inactive actinide materials for storage and projected disposition is medium.

Table 7.1. Adequacy of Characterization Information for Storage and Disposition

Site	Storage	Shipping	Disposition	Comments
LANL	**High**	**Medium**	**Low**	Characterization for Disposition is Low because disposition programs require additional information to meet specific acceptance criteria.
LLNL	**High**	**Medium**	**Low**	Characterization for Disposition is Low because disposition programs require additional information to meet specific acceptance criteria.
SNL	**High**	**Medium**	**Low**	Characterization for Disposition is Low because disposition programs require additional information to meet specific acceptance criteria.
Y-12	**Medium**		**Medium**	Characterization for both Storage and Disposition is rated as Medium
Pantex	**High**		**High**	Characterization for Storage is High and characterization for Disposition is high

High – Characterization is generally sufficient to demonstrate compliance with the activity requirements;
Medium – Characterization generally meets the minimum requirements for the activity but specific details may not be readily available without additional calculation, review, or analysis;
Low – Characterization information is less than necessary for the required activity.

All NNSA sites currently report that their characterization of on-site inactive actinides is in the medium to high range for their immediate needs. However, all sites believe that disposition efforts would require additional characterization. All NNSA sites currently have sufficient capability and resources to perform characterization for storage, although increased requirements on characterization for disposition would have to be accompanied by program direction and increased or reprioritized resources.

7.2 Issue 2 A process to ensure that practicable disposition paths are identified for all existing inactive materials, as well as new materials generated or brought on site.

Current Status

NNSA sites have individual processes or criteria for ensuring that practicable disposition paths are identified for existing inactive materials as well as for new materials generated or brought onsite. However, because complex-wide processes don't exist, each site has been proactive in dispositioning inactive actinides materials as feasible, and working to define viable disposition paths for problematic materials. The processes to develop disposition paths are formalized at some sites and are addressed informally at other sites. For incoming materials, most sites have internal corporate process requirements for life cycle planning of nuclear materials. The issuance of NNSA processes will provide a common direction to all NNSA sites.

Table 7.2. Processes in place to ensure disposition paths are identified for inactive and new materials

Site	Comments
LANL	As part of LANL's Nuclear Materials Handbook, there is a procedure for authorizing incoming nuclear materials that includes definition of disposition path. For existing inactive material, the NMIA process and assignment of "ownership" defines disposition responsibility.
LLNL	LLNL is proactive in independently seeking practical disposition pathways for many of its legacy inactive materials. LLNL utilizes site documentation that requires program proponents of incoming material to propose a potential pathway out of the site upon program completion. However, in most cases the material remains on site and is planned for disposition by the nuclear materials management group. Increased attention is given to certain material types in a graded fashion relative to the safety and security vulnerabilities the material may present. Decisions regarding material disposition at LLNL are currently made based on potential receiver sites and disposition certainty.
SNL	Sandia has actively assessed nuclear material inventory since 1993 and completed the first comprehensive material disposition plan in 1995. In FY02 Sandia completed another comprehensive material disposition plan using the Non-actinide Isotope and Sealed Source Management Group (NISSMG). Sandia has established a formal Corporate Process Requirement (CPR) for life cycle planning of new material brought onsite.
Y-12	Practicable disposition paths have been identified for the inactive materials. Process knowledge and the LEU/NU/DU Trade Study Retain/Discard Criteria were considered in making disposition decisions.
Pantex	Procedures are developed at Pantex to incorporate packaging and disposition requirements of the drawings and specifications provided by the design agency

Needs

Defining end states does not necessarily result in defining practicable disposition paths, and therefore does not reduce or eliminate adverse impacts to ongoing NNSA programs. In general, the sites are able to identify end states for some material. There are a few material streams, however, for which there are currently no defined end states or require additional effort to develop practicable disposition paths. For these materials, the focus is currently on ensuring safe storage until a disposition path is defined. Disposition paths have been defined for some materials. Because these disposition paths won't be available

for more than 3-5 years, the continued presence of these materials will introduce near-term programmatic impacts and cause unnecessary risk to workers at these sites.

The development of a process that will result in disposition options for NNSA must be accomplished through an integrated planning effort.

Path Forward

The IAWG will strongly support NNSA disposition planning to address Board concerns and site issues. Disposition elements of lifecycle stewardship to be addressed by NNSA include:

- Establish a disposition planning process through the IAWG that will include the following steps:
    - Determine if the material can be declared waste
    - Develop site-specific, but integrated disposition plans, including
        - Review existing data
        - Identify materials
        - Identify material characteristics
        - Consider reuse
        - Develop discard alternatives
        - Recommend preferred alternative to site
        - Validate recommended alternative with site
    - Obtain approval to execute integrated disposition plans
    - Maintain and execute integrated disposition plans
        - Disposition material

7.3 Issue 3 Evaluation of the appropriateness of storage systems presently used for inactive materials.

Current Status

Storage issues at NNSA sites require quick resolution to avoid adverse impacts to ongoing missions. Some secure Category I locations, such as vaults, are either full or nearly full. In other cases, sites are using deteriorated facilities to store less hazardous, inactive actinide materials, because better storage facilities and practical disposition paths are not available.

- At LANL, there are two major storage sites. The site at Technical Area 55 (TA-55) is full, although it is being modified to allow more storage space. The second site at TA-18 has been required to de-inventory part of its material, and studies are continuing to plan for the further de-inventorying of that location. There are other, numerous Category III and IV Material Balance Areas, but they account for small amounts of material.
- LLNL characterizes the appropriateness of their storage systems as low to high, although a storage limit issue is developing for Building 332, the plutonium facility. Otherwise, materials are stored in facilities that have adequate space.

LLNL is currently re-configuring its Building 332 vaults to address space and worker dose issues.

- SNL makes use of vacant U.S. Air Force (USAF) storage chambers in the Manzano Storage Complex. While SNL has access to other SNL-controlled storage, they rely heavily on the Air Force and will continue to do so in the future. This could be a vulnerability for the SNL storage program.
- Y-12 continues to compete for storage space with conflicting missions of infrastructure reduction and modernization of equipment and facilities. The bridging from current status to the modernized position is the challenge. As a result, Y-12 has considerable amounts of material stored in facilities that are described as deteriorated. They state that the materials are currently stored under conditions that are evaluated as having intermediate-low appropriateness, and Y-12 is trying to address the need for consolidated non-Material Access Area (MAA) storage and disposition of inactive materials, but doing so within reduced budgets for these activities.
- Pantex's concerns involve RTGs that are kept in a vault. Although the vault is full, they are working on reconfiguring the packaging to allow for improved use of storage space.

Although most of the sites are managing storage appropriately given current constraints, some are in a tenuous position near-term relative to adverse programmatic impacts.

Table 7.3. Evaluation of the appropriateness of storage systems presently used for inactive materials.

Site	High	Medium	Low	Comments
LANL	√			Appropriateness of current LANL storage systems is High, but the storage facilities are full and the TA-18 facility is being de-inventoried. Future storage depends on either continued disposition or new storage capability.
LLNL	√	√	√	Appropriateness of current LLNL storage systems is High, but Building 332 is approaching storage limits. Otherwise, storage space is adequate for current known needs.
SNL	√			Appropriateness of Sandia storage systems is Intermediate High to High. Based on floor space, facilities are 50-60% full. Based on hazard category III limits, facilities are approximately 95% full.
Y-12	√		√	Inactive materials (with the exception of ^{233}U and ^{237}Np) are stored in deteriorating facilities. Improvement in the storage situation is important and near-term actions are under development by NNSA.
Pantex	√			Current storage is full, but there is an on-going effort to improve the storage configuration for RTGs.

7.4 Issue 4 — Identification of sites/facilities for long-term storage of inactive materials awaiting permanent disposition and plans to ensure that certification and availability of all required shipping containers are being pursued aggressively and

integrated across secretarial offices.

7.4a. Identify sites/facilities for long-term storage of inactive materials awaiting permanent disposition.

Current Status

All DP sites are responsible for storage of inactive actinide materials awaiting permanent disposition. (See Table 7.4a below.) All NNSA sites other than Y-12 (which has a uranium long term storage mission) store inactive actinide materials pending disposition absent a long-term storage mission.

Table 7.4a. Identification of Storage Facilities Pending Disposition

Site	Comments
LANL	Cat I storage areas at TA-55 and TA-18 used for current (and future) inactive and active material storage are virtually full. TA-18 continues to de-inventory HEU to Y-12. In order to continue to help meet programmatic requirements through FY11, the PF-4 vault at TA-55 is being modified to accommodate additional 3013 containers. An additional on-site alternative for storage pending disposition is the CMR (Chemistry and Metallurgy Research) replacement facility expected to be available in ~FY11/12. Some LANL material, ~100 3013 containers, is included in the SRS baseline plutonium storage strategy for shipment in FY04. However, additional NNSA materials estimated to be on the order of hundreds of containers are not included. Other DOE sites, such as Hanford, Y-12, INEEL, and NTS should also be considered for possible long-term storage.
LLNL	LLNL neither currently has nor anticipates a defined and funded mission to store legacy or other inactive materials for the long term (10-year period). If current inactive material inventories remain at LLNL, a storage limit issue within Building 332 is anticipated as soon as FY03. Some LLNL material, ~100 3013 containers of EM material, is included in the SRS baseline plutonium storage strategy for shipment in FY04. However, additional NNSA materials estimated to be on the order of hundreds of containers are not included. Other sites should be considered for long-term storage of NNSA legacy materials prior to shipment to the ultimate disposition site such as NTS, Y-12, Idaho National Engineering and Environmental Laboratory (INEEL), or Hanford.
SNL	Sandia's inactive materials are stored in Department of Defense U.S. Air Force (DOD/USAF) facilities such as the Manzano Storage Complex. Since the USAF may request that Sandia vacate their sensitive storage area upon 180 days notice, Sandia periodically updates a storage contingency plan for materials stored in these facilities. The In Ground Storage Vault (IGSV) at Technical Area V is a resource in this regard. This facility will provide secure storage for high attractiveness level materials, which will reduce but not eliminate Sandia's dependence on USAF facilities. Like LLNL and LANL, Sandia supports shipment of the inactive material to its future disposition processing site.
Y-12	Y-12 has had a long-standing mission to the DOE/NNSA Complex as a supply and storage site for uranium materials; therefore, storage of some inactive material is expected until final disposition is accomplished. DU, NU, and LEU materials will remain in their current storage locations pending disposal at NTS, or shipment for storage pending reuse to Portsmouth on a funds-available basis. Thorium is being moved from sea-land containers into Building 9204-4 pending identification of a disposition location. U-235 materials mixed or contaminated with Pu, Np, or U-233 also will be stored in their current location pending shipment to SRS prior to ~FY09.
Pantex	Design of a rack-type system to be installed in the current vault-type facility utilized for RTG's is planned to increase interim staging capability pending FY03 funding.

While the NNSA agrees that inactive materials should be dispositioned safely and promptly, it is necessary to implement interim storage prior to final disposition. Generally, this storage is accomplished at NNSA sites collocated in the same storage facilities as active materials. NNSA is working toward a desired end state in which inactive materials are consolidated in dedicated facilities at their final disposition facility.

To fully address storage of inactive materials awaiting disposition, the topics of storage pending disposition are discussed on a material-type basis due to differing facility requirements and disposition paths.

Plutonium – ^{239}Pu

LANL and LLNL currently hold significant quantities of inactive ^{239}Pu materials. SNL has a very small amount of fuel grade ^{239}Pu. These sites have identified the Savannah River Site as the disposition site. This approach is consistent with DOE disposition strategy for surplus weapons-grade ^{239}Pu, which relies on the new Mixed Oxide (MOX) Fuel Fabrication Facility to be built at SRS. The path forward for non-MOX-able ^{239}Pu is currently being examined through a proposed National Environmental Policy Act (NEPA) action by the Office of Environmental Management (EM). The scope of this Environmental Impact Statement (EIS) will include both fuel grade and "non-MOXable" weapons grade material. Current aqueous dissolution capabilities at the SRS H-canyon and HB-line and storage at the K-Area Materials Storage Facility (KAMS) will be integrated into disposition strategies.

First priority for ^{239}Pu storage in KAMS is given to the EM closure projects. Some LLNL and LANL material, ~200 3013 containers, is included in the SRS baseline plutonium storage strategy for shipment in FY04. However, additional NNSA materials estimated to be on the order of hundreds of containers are not included. The KAMS facility is projected to reach capacity with shipments of the Hanford material. Therefore, additional NNSA materials cannot be shipped to KAMS for storage pending operation of the MOX facility. While feasible, this disposition strategy may adversely impact Laboratory programs due to limited ^{239}Pu storage space. Therefore, interim or alternative measures may be required at these sites to provide storage of inactive material pending MOX disposition.

At LANL, major Category I storage areas are virtually full. The remaining Category III and IV material balance areas do not constitute a significant storage resource. To meet near term needs, the PF-4 vault at TA-55 is being modified to accommodate additional 3013 containers. Should the baseline SRS shipment be further delayed, an additional on-site storage alternative is the CMR (Chemistry and Metallurgy Research) replacement facility (startup in FY11/12). LLNL has similar concerns as LANL and expects a Building 332 storage issue for Pu and U. These issues may affect NNSA program missions as early as FY03. However, based upon the disposition baseline, current inventories need to be stored until 2010.

Off-site storage alternatives include the Nevada Test Site (NTS) or Hanford facilities as coordinated with the larger Hanford material disposition to SRS. INEEL facilities may also present storage opportunities pending future nuclear energy missions.

Highly Enriched Uranium

LANL, LLNL, and SNL each have significant quantities of inactive HEU materials in storage. The Y-12 National Security Complex classifies their non-National Security HEU as Potential Program Use material due to its pending transfer to the Fissile Materials Disposition (MD) Program. Y-12 also manages HEU associated with ^{233}U and ^{237}Np.

A recent joint NNSA/EM Trade study, "Unallocated Off-Specification HEU: Recommendations for Disposition," NNSA/NN-0014, analyzed disposition options for much of the NNSA inactive HEU material. NNSA supports consolidation of inactive materials at their disposition processing location/site. The recommended disposition end state for the majority of these materials is blend-down of the HEU for reuse as Tennessee Valley Authority (TVA) reactor fuel. The Trade Study recommended that disposition processing of Pu-contaminated HEU materials be performed at the SRS H-Canyon while the non-Pu-contaminated material should be processed at commercial facilities (with the exception of the ^{233}U and ^{237}Np associated material). Ideally, inactive HEU material would be consolidated at SRS, Y-12, or commercial facilities for storage pending processing. Other options for Pu-contaminated HEU include oxidation at LANL or carbon dioxide cleaning at LLNL for portions of the Laboratory parts inventory.

Much of the commercially suitable material is already stored at Y-12 awaiting transfer to the TVA fuel vendor in the near term. The Pu-contaminated HEU exists as components located at NNSA facilities pending recommended disposition processing at SRS. Additional HEU exists at SNL in a variety of forms. These materials, which currently fall outside of the KAMS storage baseline, are recommended to be shipped just-in-time to SRS. While the exact processing timeframe for these NNSA HEU materials in the SRS H-Canyon has not been established, it is anticipated to occur within the current TVA blenddown project timeframe, i.e., prior to the end of FY09. Therefore, storage pending transfer to SRS will continue to be required in current storage locations.

Additional storage systems options are being considered to provide secure storage for HEU materials. These options will reduce but not eliminate Sandia's dependence on USAF storage facilities. SNL supports shipment of the inactive material to its future disposition processing site.

The Y-12 National Security Complex serves as the central repository for HEU and is the supplier for authorized domestic and foreign users. Y-12 provides critical storage capability supporting DP stockpile stewardship mission and other programmatic missions. Future materials storage to support these active missions will be provided in the Highly Enriched Uranium Materials Facility (HEUMF) that is being designed.

In order to ensure that the Y-12 processing capability is not compromised, the Y-12 acceptance criteria have been designed to limit certain contaminants (e.g., transuranics, fission products, and certain isotopes) in the HEU received at Y-12. HEU materials for which Y-12 does not have a processing capability or may contaminate the HEU supply are not suitable for storage or processing at Y-12. Some contaminated HEU currently stored at Y-12 should be shipped to SRS, as recommended by the Unallocated Off-Spec HEU study.

Depleted, Natural, and Low-Enriched Uranium and Thorium

Most NNSA sites have various quantities of inactive depleted, natural, and low-enriched uranium (LEU). Y-12 has a long-term storage mission for uranium and thorium materials. This response will therefore focus on Y-12 plans for disposition and associated storage pending disposition as a potential model for other NNSA sites. At Y-12, a new initiative is currently being developed to disposition large inventories of DU, NU, LEU, and other excess non-MAA materials as discussed below.

Most of the current inventory of DU at the Y-12 Complex contains large quantities of material that may not be useful for production requirements. It is estimated that approximately 75% of the DU inventory at the Y-12 Complex could be considered inactive. DU is currently stored in Buildings 9204-4, 9720-18, 9720-38, 9201-5, 9720-33, and sea-land containers. The Y-12 Ten-Year Non-MAA Storage Management Plan is being revised specifically to address the need for consolidated non-MAA storage and disposition of inactive materials. Continued storage in these facilities is needed prior to disposal as low-level waste (LLW) at NTS. Implementation of disposal will be commensurate with funding. Other NNSA sites are encouraged to dispose of their inactive DU as LLW.

The total inventory of thorium at the Y-12 Complex is in a variety of forms including metal, oxide, and forms commingled with HEU. Thorium is currently stored in Building 9204-4 and in sea-land containers. However, the thorium stored in sea-land containers is being relocated to Building 9204-4. Specific disposition plans have not been developed for thorium. Thorium is expected to remain in its current storage pending identification of disposition path. Some of the thorium material can be shipped to NTS, however, the HEU fuel material mixed with thorium cannot.

The total inventory of NU at the Y-12 Complex is approximately 122.6 metric tons in a variety of forms, primarily metal. The vast majority is surplus and therefore suitable for sale or disposal. NU is currently stored in Buildings 9204-4, 9720-18, and 9720-38 and is anticipated to remain pending disposition and resources. That portion of the surplus NU judged to be suitable for potential future use may be transferred to the management of the Uranium Management Group (UMG) and shipped to their storage facility at Portsmouth if these facility operations are approved in the pending decision of the Programmatic Environmental Assessment. The remainder is expected to be packaged and shipped to the NTS for disposal.

The situation is much the same for LEU where most of the inventory is inactive material. LEU is currently stored in Building 9204-4, 9720-18, and 9720-38 and is anticipated to remain in storage at these facilities. The vast majority of this material (i.e., metal, oxide, and compounds) is believed to be potentially suitable for future use and may be transferred to the UMG storage facility at Portsmouth if these facility operations are approved in the pending decision of the Programmatic Environmental Assessment. A substantial part of the remainder (i.e., combustibles, organics, residues, miscellaneous solids, and solutions) is expected to be processed, packaged, and shipped to NTS for disposal. Disposition is dependent on resource availability or when Portsmouth is authorized to receive additional materials.

Other Isotopes

Most NNSA sites contain unique actinide isotope materials requiring disposition. Due to their unique characteristics, a full suite of disposition paths has not been identified for every isotope. Also, in some cases, continued storage in their present locations can become costly due to special storage requirements. Examples of these materials, HEU associated with ^{233}U and ^{237}Np in Building 9720-5 at the Y-12 complex, were analyzed in the Unallocated Off-Spec HEU Study. In both cases, the material will be stored in its current location prior to packaging at Oak Ridge National Laboratory (ORNL) and shipment to SRS for canyon processing. With DOE's remaining unique processing capabilities being programmed to capacity to fulfill EM mission requirements, it is important for NNSA to identify unique inactive materials, provide resources and place them in the processing queue.

RTG's and Sealed Actinide Sources

The inactive actinide materials at Pantex consist of a relatively small number of RTGs that are considered "excess". The facility in which these items are staged is a vault, which may be modified for a proposed rack-type storage system. Materials will remain at Pantex pending identification of a site for disposition of RTGs.

At most NNSA sites, accountable actinide sources are stored in the same manner as other accountable nuclear materials. These materials comprise a wide variety of nuclides. The most common are actinide ^{239}Pu and ^{241}Am sources; actinide (alpha, n) ^{238}Pu, ^{239}Pu, and ^{241}Am neutron sources; and the spontaneous fission source ^{252}Cf. Most inactive materials remain in storage facilities pending identification of viable disposition paths. Some sites have taken innovative approaches to moving problem sources to waste storage facilities. Due to the designation as non-defense TRU waste origin, these sources cannot be disposed in WIPP. At LANL, DOE has agreed to the termination of safeguards requirements for these ^{238}Pu and ^{241}Am sources. This decision allows these items to be declared waste and stored in TA-54 waste facilities.

In general, non-defense actinide sources have no defined disposition path and are anticipated to remain in current storage locations. An example is storage of commercial ^{239}Pu sources at LANL. Historically, LANL has received sources for storage pending disposition processing. With the cessation of processing, these materials now consume significant storage space and resources.

Y-12, Pantex, and SRS (NNSA) report no inactive sealed sources.

7.4b. Describe the plans to ensure that certification and availability of all required shipping containers are being pursued aggressively and integrated across secretarial offices.

Current Status

NA-125 has created a program structure for packaging to identify shipping container needs, to identify budget requirements, to establish projects for developing, certifying, and procuring new packagings, and to maintain the existing inventories of packagings for transportation of nuclear materials. A detailed Defense Programs Packaging Report is being developed to evaluate materials that need to be shipped, identify available

containers and their limitations, conduct a gap analysis of available containers versus materials to be shipped, evaluate proposed new containers, and determine the effects of proposed Nuclear Regulatory Commission (NRC) and Department of Transportation (DOT) rule changes. While it is recognized that some necessary information for this analysis is not currently available, the intent is to conduct detailed data collection from the sites to support the development of the report and determine the gaps in packaging capabilities. This report will be updated annually to provide the basis for Defense Program's packaging budget requests.

Defense Programs currently is developing and certifying several new containers. SAFKEG container certification is expected by November 2002. The SAFKEG will be a general-purpose container for plutonium, uranium, and other actinides in solid or powder form and will be approved to transport RTGs. The DPP-2 container is expected to be certified early in calendar year 2004 and will be able to transport plutonium and plutonium bearing contents for which the DT-22 was not originally envisioned. NA-125 is currently submitting budget requests for the development of several other new containers over the next five years. These containers include a 6M Replacement container, which will take advantage of the proposed rule changes from the NRC and DOT to be a general purpose fissile material packaging.

Table 7.4b. Adequacy of plans to ensure availability of required shipping containers are being pursued aggressively and integrated across secretarial offices.

Site	Comments
LANL	Concerns over availability of 9975, SAFKEG and 6M or 6M replacement containers as well as secure transport availability. Willing to provide the number of items, the associated SNM, and other pertinent information to help determine the number of shipping containers needed.
LLNL	Issues like material characterization, shipping container planning, and interim storage system adequacy decisions all rely on reliable disposition options. Will need more detailed disposition locations and corresponding acceptance criteria to be able to identify needs.
SNL	Sandia is unable to accurately predict which shipping containers will be required. Additional characterization information is required before container requirements can be determined with any degree of accuracy. Sandia has a unique inventory composed of small lots of irregularly shaped items, many irradiated, which will require uncommon packaging solutions. Sandia packaging specialists participate in DOE packaging needs studies, committees, and working groups.
Y-12	Suitable packagings for most materials are currently available; however, shipping will be impacted if a 6M replacement container is not ready in the near future. Special handling and repackaging of ^{233}U and ^{237}Np will be required prior to shipment.
Pantex	No additional needs for RTG shipments pending SAFKEG certification and availability.

7.5 Issue 5 — A protocol to ensure that inactive materials being held for potential future use are periodically evaluated for continuing need and that the bases are documented.

Current Status

There is a well-defined infrastructure established within DOE to identify and document the periodic evaluation of material held for potential future use. However, there is no

consistent approach or criteria for determining the need for continued storage of these inactive materials. A primary mechanism for the review of materials is the NMIA process, which requires sites to perform an annual update of inventory data. Site input to the NMIA is generally through a site-specific material management process that feeds the NMIA data fields.

The process for determining potential programmatic use requires interaction between the nuclear material managers and the program or operations personnel. The extent of this interaction and depth of justification required to maintain material varies across programs and sites. In some instances, such as Pantex, DP may require material be held for future use in a directed programmatic hold mode.

Table 7.5. Sites using established protocol to ensure inactive materials held for potential future use are periodically evaluated for continuing need.

Site	Comments
LANL	This mechanism already exists in the site execution of the NMIA process. LANL specifically outlines this process through the use of project codes in the Nuclear Materials Handbook, which includes descriptions of the activities associated with specific project codes and how this information is maintained and updated. Los Alamos annually performs an assessment of its holdings and has a high level of confidence that the active defined use categories of inventories at Los Alamos are justified and documented. The nuclear material inventory at Los Alamos National Laboratory is categorized and segregated by the assignment of project codes to each item. Each project code at Los Alamos is identified as either National Security required or excess to National Security.
LLNL	LLNL determines material use categories annually in the NMIA process. Methodologies for the completion of the NMIA report are documented in the Associate Nuclear Materials Manager's Handbook. The annual NMIA report is a formalized reporting method to transmit information on LLNL inventories to the DOE Oakland Operations Office. It reports the assessment of all materials under LLNL jurisdiction including inactive materials and is in turn forwarded on the NNSA/HQ, NA-125.2.
SNL	Complete field assessment in FY99. Process being implemented is not formalized but includes requiring project representatives to provide justification for retaining materials in their projects.
Y-12	Y-12 has had a long-standing mission for the DOE Complex as a storage and supply facility for uranium. As a result, storing inactive uranium materials for future potential programmatic use (PPU) is an expected state for materials until final disposition. Review of the continuing need for inactive uranium materials has been periodically performed, and special emphasis is currently being given to the evaluation of materials in storage, and identification and execution of disposition for inactive materials determined as no longer required for Defense Programs or other DOE users.
Pantex	N/A - Periodic evaluations for continuing need are not currently conducted at Pantex. Inactive RTGs are being held for potential future use through a DOE/AL directed programmatic hold. RTGs are inventoried annually for accountability.

Needs

A standard approach with criteria is needed to provide the NNSA sites a basis for periodically evaluating materials for future needs. A common element of the periodic evaluation is the need for consistency in the definitions, acquisition, roll up, and synthesis of site data into the DOE NMIA system. Clarifying the criteria from which material owners can base their justifications for potential reuse would reduce the inconsistencies and uncertainties in the need for maintaining material. Future improvements for the NMIA in this regard should include refinement of "code" definitions to assure their clear understanding and consistent application and other changes to improve reports on inactive materials.

Path Forward

Processes proposed by the IAWG and a new NMIA structure will assist sites to develop practical disposition plans for inactive actinide material, to require periodic updates of the inventory, and to identify more comprehensive criteria for the need to retain materials. NNSA will provide the oversight and assurance that the sites are meeting the

requirements of the processes. In addition to these programmatic efforts, actions will be taken to identify and implement data evaluation and reporting in the NMIA process.

7.6 Issue 6 Development of a long-term strategy for disposition of surplus sealed actinide sources.

Current Status

Disposition of surplus sealed actinide sources is an area where the DOE Off-site Source Recovery Program (OSRP) has been proactive. NNSA needs to develop a long-term disposition strategy for its surplus sealed actinide sources.

Table 7.6. Development of long-term strategy for disposition of surplus sealed actinide sources

Site	Comments
LANL	There is currently no disposition path for any non-defense actinide sources. A safeguards constraint, coupled with the inability to disposition these items, has resulted in the cessation of the collection and shipment of ^{239}Pu neutron sources to LANL under the auspices of the EM-sponsored OSRP. However, a joint DOE/NRC initiative, supported by Congress, may propose collection of several hundred additional ^{239}Pu sources at LANL.
LLNL	LLNL employs disposition options as they emerge such as the Nevada Test site, encapsulation for the OSRP program at LANL and searching for beneficial use at other sites. Several sources are to be shipped to ORNL for potential beneficial use. LLNL has engaged the services of the NISSMG group for the purpose of assisting with disposition planning for some sealed sources. Disposition options are explored and implemented as needed.
SNL	FY02 Material Disposition Plan developed by NISSMG identified disposition path for all surplus actinide sources.
Y-12	Not applicable.
Pantex	Not applicable.

The need for a long-term strategy in the disposition of DOE neutron sources resulted in the issuance by the NISSMG of the DOE Neutron Source Trade Study in March 2002 as "Methodology for Disposition of DOE Neutron Sources." This study provides an overall strategy and a tool for use in the disposition of NNSA neutron sources. Elements of the strategy include:

- Explore reuse opportunities
- Dispose of low activity actinide sources as LLW.
- For sources exceeding LLW waste acceptance criteria that have a defense origin, will be disposed of directly at WIPP.
- For sources exceeding LLW waste acceptance criteria that do not have a defense origin, the Off-Site Source Recovery Project (OSRP) has been established to provide interim management.

The OSRP is an existing DOE program, sponsored by EM, established to recover and manage unwanted commercial, radioactive sealed sources and other radioactive materials that:

- Present a risk to public health and safety,

- Present a potential loss of control by a Nuclear Regulatory Commission (NRC) or agreement state licensee, or
- Are excess and unwanted and are a U.S. Department of Energy (DOE) responsibility under Public Law 99-240, or are DOE-owned.

Currently, it is limited in the types of sources it can accept and lacks the capacity to accept ^{239}Pu/Be sources. Commercial sources accepted by OSRP, having a non-defense origin, currently have no disposition path pending DOE's development of a Greater Than Class C disposal facility.

Needs

The current approach however is *ad hoc* and is not fully integrated within NNSA. Tools are available to support planning and collection for the vast majority of surplus actinide sealed sources. There is a need for more flexibility in the disposition of this material and a clear need for a disposition path for non-defense actinide sources.

Path Forward

- The path forward will include development of a long-term strategy for disposition of surplus sealed actinide sources.

8.0 Overall Path Forward

Effective life cycle management of inactive materials will be accomplished through an integrated NNSA materials management approach. In response to the special attention being placed on the inactive actinide materials at NNSA sites, NA-10 established the IAWG to develop a focused project plan and strategies and coordinate implementation of activities described in this report. This group includes NNSA site nuclear material managers, NNSA Headquarters Program Office personnel, select subject matter and technical experts tasked to advise NA-10 and DP program offices on steps needed to complete timely corrective actions related to this response. Efforts will be coordinated with appropriate points of contact in other Program Offices. The IAWG will provide additional information and recommendations to NA-10 as summarized below.

The following actions constitute the beginning strategies toward remediation of the issues. By January 31, 2003, the IAWG will submit to NA-10 for approval and issuance to NNSA sites and transmittal to the DNFSB:

- A process for developing practical material disposition paths, including alternatives;
- A protocol, including criteria, for periodic evaluation of inactive materials to determine continuing need for future use plus recommended changes to the NMIA process to improve data utility, maintenance, and reporting;
- A documented strategy for disposition of surplus sealed actinide sources.

The process, protocol and strategy identified above will constitute the basis for proceeding with identification, planning and implementation of site-specific activities to improve management and disposition of inactive actinide materials. When we submit

these documents to the DNFSB, we also will identify the next steps to be taken. These steps will:

- Completing site-specific baseline material disposition plans for all NNSA sites including identification of uncertainties and gaps in the plans.
- Identifying characterization requirements for storage, disposition, transportation, and receiver site acceptance, evaluating site capabilities and identifying gaps, developing and recommending a plan to resolve identified gaps.
- Identifying actions needed to address the uncertainties and gaps in the site-specific baseline plans.
- Preparation of NNSA integrated, resource loaded disposition plans based on site-specific material disposition plans; defining priorities leading to recommendations for disposition/characterization projects.
- Incorporation of packaging needs or gaps from the disposition plans for inclusion in the packaging program plan, coordinated with other DOE Headquarters program offices. This packaging program plan identifies needed shipping containers, actions required to develop and certify those containers, and actions required to maintain and optimize utilization of those containers across the NNSA and DOE complex.

The resolution of the inactive actinides issues identified herein will require a combination of institutional changes, shifts in programmatic priorities and resources, and increased management attention at both the sites and headquarters. The IAWG will provide a structure for addressing implementation issues and responding to the dynamics of the nuclear material management in the DOE.