



Department of Energy
National Nuclear Security Administration
Washington, DC 20585
August 28, 2001

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW.
Suite 700
Washington, D.C. 20004-2901

Dear Mr. Chairman:

A Defense Nuclear Facilities Safety Board (Board) letter of May 29, 2001, noted continuing concerns related to hazardous material storage at the Y-12 National Security Complex (Y-12). An interim response dated July 26, 2001, delivered a project plan aimed at resolution of concerns related to Building 81-22. Y-12 continues to report good progress in de-inventory of Building 81-22. Additionally, the July 26, 2001, letter advised that 1) the Non-Material Access Area (MAA) Storage Assessment Team was to focus on producing a Comprehensive 10-Year Storage Plan (10-Year Storage Plan) that would be integrated into the overall infrastructure modernization plan for Y-12, and 2) the project plan for developing the 10-Year Storage Plan would be forwarded to the Board by August 31, 2001. BWXT Y-12 has developed a project plan (enclosed) that will be used to develop a 10-Year Non-MAA Storage Management Program. The 10-Year Non-MAA Storage Management Program will take into account national security material requirements and hazard evaluation and risk reduction for non-MAA materials. The program will be integrated with the Y-12 Strategic Plan, the 10-Year Comprehensive Site Plan, the 10CFR830 Plan, and other long-range planning documents. National Nuclear Security Administration field and Headquarters staff have reviewed and concur with this project plan. This program will ensure that materials needed to support national security are stored in a manner that will not pose undue risk to the public, workers, or the environment.

If you have any questions concerning our approach for improving the storage of hazardous materials at Y-12, please contact me or have your staff contact Mr. David Beck at 202-586-4879.

Sincerely,

A handwritten signature in black ink that reads "K. A. Carlson for".

Kathleen A. Carlson
Acting Deputy Administrator
for Defense Programs

Enclosure

cc w/enclosure:
M. Whitaker, S-3.1



PROJECT PLAN

FOR

TEN-YEAR NON-MAA STORAGE MANAGEMENT PROGRAM

Planning Team

Darrel P. Kohlhorst, Co-Lead

Shirley O. Cox, Co-Lead

Lisa B. Shope, Co-Lead

Kathy M. Bracic

Jennings E. Cline

Joe P. Crociata

Joel Garber

Patricia W. Hart

John E. Jones Jr.

Melvin R. Lundberg

Terry R. Miller

Ron F. Milligan

Neal R. Mowery

C. E. (Ed) Tilley, Jr.

Ralph E. Watts

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PROJECT PLAN FOR TEN-YEAR NON-MAA STORAGE MANAGEMENT PROGRAM

1.0 INTRODUCTION

The Oak Ridge Y-12 National Security Complex is responsible for the manufacture and assessment of nuclear weapons and other weapons components, safeguarding special nuclear materials, and the prevention of the proliferation of weapons of mass destruction. An integral part of this unique mission is the storage of strategic nuclear materials, including both Material Access Area (MAA) storage for Highly Enriched Uranium (HEU) or other fissile material and Non-MAA storage for weapons related materials not required to be placed under MAA storage.

This Project Plan is intended to outline the scope and approach for development of a ten-year Non-MAA Storage Management Program. However, high priority activities to improve Non-MAA storage are already underway and will continue throughout the period while the longer-term program is being developed.

2.0 PURPOSE AND SCOPE OF THE PLAN

The purpose of this Plan is to establish a consistent set of goals and requirements for Non-MAA storage to guide the development of a Ten-Year Non-MAA Storage Management Program. The Plan is intended to respond to concerns expressed by National Nuclear Security Agency (NNSA), Department of Energy (DOE), (HEU Vulnerability Assessment and other reviews), the Defense Nuclear Facility Safety Board (DNFSB), (in letters and staff reports), and the BWXT Y-12 management team regarding the facilities and conditions of Non-MAA storage. The priority for addressing these concerns will be driven by the assessment of risks associated with the current status of Non-MAA storage and the potential benefits to be derived from specific corrective actions.

The scope of the Plan addresses Non-MAA materials and facilities in a comprehensive program aimed at the systematic identification of essential Non-MAA materials, the disposition of non-essential materials, where possible, and the progressive upgrade of storage facilities and conditions.

3.0 DEFINITION OF NON-MAA STORAGE

Material Access Area (MAA) requirements are defined in DOE Orders (Safeguards and Security/Nuclear Materials Control and Accountability) and applies to any highly enriched uranium or other fissile material determined to be greater than a specific quantity and attractiveness level. As it relates to the Y-12 Complex, this includes Categories I and II quantities of HEU material and any Category III quantity of HEU material that may qualify for higher security conditions under certain roll-up criteria.

By definition, Non-MAA storage is for weapons-related materials not required to be placed under MAA storage. Non-MAA storage includes Categories III and IV HEU and other nuclear and non-nuclear strategic materials that are a part of or associated with a nuclear

weapon or weapon component production. Higher security conditions are a frequent storage requirement due to the classified nature of the material or the classified shape of the material or weapon component. Examples of Non-MAA storage includes the following material types and forms:

- Depleted uranium (DU)
- Low enriched uranium (LEU)
- Lithium and lithium compounds
- Deuterium Oxide (Heavy Water)
- Non-Special Nuclear Material (SNM) weapons components and assemblies
- Weapon component shipping and storage containers
- Natural or normal uranium (NU)
- Categories III and IV HEU including combustibles, residues and other low assay HEU materials
- Thorium
- Beryllium
- Mercury
- Miscellaneous weapons dismantlement materials
- Classified tooling and fixtures

4.0 SITUATION ASSESSMENT

Storage and processing of Non-MAA materials is, and will continue to be, an important part of the Y-12 Complex Mission. Non-MAA storage facilities have deteriorated due to age and lack of resources to maintain the facilities.

A number of recent assessments have called attention to this circumstance and recommended improvements, including:

- *Program Management Plan for Near and Long-Term Storage of Non-MAA Materials at the Y-12 Plant*, Y/LB-15,951, October 1997
- *Assessment of Space for Storing Lithium and Depleted Uranium at the Y-12 Plant*, Y/LB-15,937, September 1997
- *Feasibility Study for a Consolidated Non-MAA Storage Facility at the Y-12 Plant (Draft)*, November 1997
- *Non-MAA Storage Optimization Program*, presentation by Gloria Mencer, NMSS.
- *FY 2001 Strategic Plan for the Y-12 Complex Nuclear Materials Storage (U)*, Y/LB16,042, April 2001

Each of these efforts resulted in recommended actions for improvement in Non-MAA storage. For example, the Program Management Plan (October 1997) resulted in a detailed Schedule, Work Breakdown Structure (WBS), and Ten Year Budget Plan for the recommended upgrade of Non-MAA storage. However, in each case, the recommended actions for improvement in Non-MAA storage have not been adequately funded or implemented due to higher budget priorities at the Y-12 Complex.

On October 6, 1999, August 18, 2000, and, most recently, May 29, 2001, DNFSB transmitted letters to DOE regarding the "less-than-satisfactory identification and analysis of hazards and associated controls and the physical condition of some defense nuclear facilities at the Y-12 Complex."

Specifically, in the DNFSB Staff Report, *Material Storage Facilities, Oak Ridge, Y-12 National Security Complex*, May 3, 2001 letter, it was stated that the DNFSB staff

"observed inadequate characterization of material hazards, poor development and implementation of controls for the Non-MAA storage facilities, and a general lack of maintenance of these facilities. In particular, the staff is concerned that the Non-MAA materials, which are needed to meet the requirements of the enduring nuclear weapons stockpile, are not characterized, stored, and protected in an appropriate manner. The facilities that store these materials must protect workers, the public, and the environment from the potential radiological and toxicological hazards posed by the materials. The staff also observed a significant amount of excess material that needs to be prepared for disposition in a timely manner..."

These are similar to concerns raised during the DOE HEU Vulnerability Assessment regarding in-process and scrap (i.e., combustibles, residues) HEU materials, some of which are in Non-MAA storage, and concerns stated by the Y-12 Materials Stewardship Program Office in its annual revisions to the strategic plan for nuclear materials storage.

Issues regarding Non-MAA storage that have been identified in previous studies and in DNFSB correspondence are summarized in sections 4.1 through 4.6.

4.1 Non-MAA Storage Space is Essentially Fully Occupied

A program does not exist to evaluate materials in storage and dispose of them when no longer needed. As a result, materials placed in Non-MAA storage tend to remain in storage indefinitely. Materials generated as the result of ongoing activities or receipts are added to existing Non-MAA storage resulting in the available space being filled to or near capacity.

4.2 Non-MAA Storage Is A Low Priority

Over the years Non-MAA storage has warranted a low priority when compared to production, MAA storage, and other Complex requirements. Because of this low priority, Non-MAA storage has generally gravitated to the poorer buildings on the Y-12 site. Many of these buildings are of wood frame construction and/or are over forty years old (see Appendix B, Table 1). Over the years, maintenance of these buildings has been inadequate, and in some cases, the buildings no longer provide a suitable environment for storage of strategic materials such as uranium, lithium, mercury, or beryllium.

4.3 Materials Stored For Many Years Now Lack Traceability

Many of the materials now in storage were placed there decades ago, and the organization that did so may no longer exist at the Y-12 Complex. Many of the materials stored in support of specific weapons programs may no longer be required. Classified tooling has been kept to conform to DOE guidance that certain components warranted redundant tooling in the event of breakage at a critical juncture. Directives were provided from Albuquerque Operations Office that prohibited disposal of any weapon components for programs in the enduring stockpile. These requirements may, in some cases, no longer be valid or a greater quantity than required may have been retained. Finally, other materials exist in Non-MAA storage that have no apparent logical justification, at this time, to be in storage. Evaluating why certain materials were placed in storage and whether they should continue to be retained in storage will be challenging because of the lack of traceability.

4.4 A Critical Assessment of Non-MAA Storage is Needed

Existing Non-MAA storage has not been critically evaluated in relation to current mission needs to determine which Non-MAA materials are essential and which are non-essential.

4.5 There Are Limited Resources To Disposition Non-MAA Materials That Are No Longer Needed

There are no designated resources set aside to disposition Non-MAA materials that are no longer needed. In order to disposition these materials to a waste disposal site or for reuse, disposition paths must be fully planned, executed, and appropriate documentation generated. As a result of the lack of resources, materials tend to remain in storage indefinitely.

4.6 Additional Non-MAA Storage Space Must Be Provided For Future Y-12 Complex Requirements

Additional storage space will be necessary for future Non-MAA materials requirements. Potential sources of additional Non-MAA storage include:

- Dismantlement program components
- Lithium compounds and half heavy water from dismantlement programs
- Classified components and tooling from current programs
- Materials returned to the Central Scrap Management Office (CSMO) at Y-12
- Lithium materials returning from ETTP
- Y-12 Complex modernization activities (consolidation of materials from decommissioning facilities)
- Materials consolidation from Nuclear Materials Stewardship Program initiatives

5.0 MATERIALS

In order to develop a Program Plan that will provide an effective tool to assist in the managing of materials in Non-MAA storage, a materials team will be established that will:

- Define and populate a Materials database for materials in storage
- Develop a materials retention and ownership process
- Define the process for declaring materials excess

The team will define the categories of materials that will be included in the Program Plan. After the materials are identified, the team will develop a database that will be used to collect information on an item level that will include material lot identification numbers, material form, quantities, packaging, contamination, ownership, facility/location and other fields that will be pertinent to material retention and disposition. Population of the database will be based on the Ten-Year Site Plan using risk assessment, materials hazard, and building deactivation schedule as a means of assigning priorities (see Tables 1 through 3). An integral part of the database development will be establishing a means of ensuring the information is dynamic and maintained.

In addition to the Materials database, a method will be established to define retention guidelines and programmatic material ownership. Included in this element will be identification of the owner, disposition status, and retention period. Identifying material ownership will present a challenge due to the period of time that some of the material has been in storage. Many of the organizations or programs associated with the materials are no longer in existence. The deliverable for this element will be a means of identifying the programmatic material owner and retention guidelines.

Another area to be addressed will be establishing the process necessary to identify material as surplus and available for disposition. Since Y-12 serves as steward for DOE owned materials, processes for removing the materials from the Y-12 Complex need to be defined. This process will address only the steps required to "flag" the materials as available for disposition and will not address the actual disposition process. The deliverable for this element will be a process map.

6.0 MATERIAL DISPOSITION AND DISPOSAL PROCESSES

Stockpile reduction and curtailment of new weapons production have created significant inventories of materials such as depleted uranium, lithium compounds, tooling, various metals, and other non-nuclear materials that do not require MAA storage. Because of health and safety issues and existing storage facilities that are 30 to 50 years old, disposition of excess, Non-MAA materials have become very important at the Y-12 Complex.

As the materials information is gathered and the database is developed, information will be included to support disposition decisions. This information will be integrated into a disposition matrix to support the material disposition evaluation process and disposition paths.

The disposition team will evaluate and revise the 1993 study on disposal technologies. Additionally, for the type of materials, the team will determine disposition paths.

A Process Flow Chart illustrating these paths will be developed for each major type of Non-MAA material (i.e., DU, lithium, classified tooling and fixtures, etc.). Disposition paths may include:

- Retain in present form and storage facility for future use
- Consolidate storage and retain for future use
- Repackage or process for volume reduction and retain for future use
- Sanitize and/or demilitarize and retain for future use
- Sanitize and/or demilitarize for sale or disposal
- Sale of non-essential material
- Disposal of non-essential material through
 - Classified disposal on site
 - Unclassified disposal on site
 - Low level waste disposal through BJC
 - RCRA waste disposal

Information would then be developed to estimate the unit cost for each major step along the disposition path so reasonable budget estimates may be developed to accompany disposition recommendations.

The material disposition process may focus preferentially on specific materials and/or facilities in order to respond to identified risks or meet specific programmatic or facility closure goals, but the overall plan is to address all Non-MAA materials and facilities within the ten-year horizon.

7.0 FACILITIES

This section describes the major activities for developing a program for the Non-MAA storage facilities required at Y-12 for the next ten years. This program will be based on the planned dispositioning of Non-MAA materials. In addition, the program will be integrated with the Y-12 Strategic Plan, the Ten Year Comprehensive Site Plan, the 10CFR830 Plan, and other long range planning documents.

The Facilities section of the ten-year program will include an updated assessment of the current facilities, including their storage capacity, condition, risk, and ability to comply with Non-MAA storage requirements. The section will also include an updated projection of storage requirements to include the capacity needed and the capability of the storage facilities regarding environmental conditions and security requirements. The assessment will include factors such as:

- Building condition and expected life
- Maintenance and expected operating costs
- Approved inventory per authorization basis
- Risk assessment
- Compliance with anticipated changes in security requirements
- Opportunities for improvements in storage configuration

Based on the assessment of existing facilities and the projection of long-term storage needs, decisions regarding building renovation, building demolition, conversion of existing buildings, and/or new building construction will be made. Specific actions along with the budget requirements will be developed and included in the ten-year program. Included in the program will be a schedule for providing detailed plans for vacating specific storage buildings slated for infrastructure reduction.

Integrated with the Ten-Year Comprehensive Site Plan (provided in draft to NNSA on July 31, 2001), and the Infrastructure Reduction Initiative, the current projection for vacating Non-MAA storage facilities and consolidating Non-MAA storage (primarily in Building 9204-4) is shown in Tables 1 through 3. These projections will be reviewed and revised as appropriate during the planning period in response to the assessment of risk to workers, the public and the environment.

Portions of Building 9204-4 are currently being utilized for Non-MAA storage. The program will address the process by which this facility will be evaluated to determine its long-term use as a Non-MAA storage facility and a facility for processing Non-MAA materials prior to disposition. A comprehensive assessment will be needed to determine if this facility is suitable for use as a major storage facility beyond five years. In addition, current actions to vacate Building 81-22 and possibly other high priority storage facilities will continue during the planning process in FY02.

Table 1. Facility Projection for Non-MAA Storage Consolidation (2002-2004)

<i>Building</i>	<i>Total Sq Ft</i>	<i>Non-MAA Storage Sq Ft</i>	<i>Building Construction</i>	<i>Building Age</i>	<i>Projected Priority for Turnover to IR</i>	<i>Projected Date for Turnover to IR</i>
81-22	14,578	14,578	Wood Frame	44+	Committed	2002
9201-5	530,500	5,000	Concrete, StStl, Masonry Walls	56		
9204-4	273,830	10,000	Concrete, StStl, Masonry Walls	52		
9720-1	43,000	14,300	Wood Frame	57	4	2004
9720-14	2,400	2,400	Prefab Metal	46	1	2002
9720-18	6,050	6,050	Prefab Metal	43	2	2003
9720-26	13,600	13,600	Masonry Walls			
9720-33	39,903	15,680	Masonry Walls, StStl Roof	31		
9720-38	7,700	7,700	Prefab Metal	19		
9720-46	3,605	3,605	Prefab Metal	14		
9831	16,900	15,000	Prefab Metal			2002
Sea-Land Containers	6,080	6,080	N/A	N/A	3	2002, 2003, 2004 To Be Determined

Table 2. Facility Projection for Non-MAA Storage Consolidation (2005-2008)

<i>Building</i>	<i>Total Sq Ft</i>	<i>Non-MAA Storage Sq Ft</i>	<i>Building Construction</i>	<i>Building Age</i>	<i>Projected Priority for Turnover to IR</i>	<i>Projected Date for Turnover to IR</i>
81-22	14,578	14,578	Wood Frame	44+		
9201-5	530,500	5,000	Concrete, StStl, Masonry Walls	56	5	2005
9204-4	273,830	To Be Determined	Concrete, StStl, Masonry Walls	52		
9720-1	43,000	14,300	Wood Frame	57		
9720-14	2,400	2,400	Prefab Metal	46		
9720-18	6,050	6,050	Prefab Metal	43		
9720-26	13,600	13,600	Masonry Walls		9	2008
9720-33	39,903	15,680	Masonry Walls, StStl Roof	31		
9720-38	7,700	7,700	Prefab Metal	19	6	2006
9720-46	3,605	3,605	Prefab Metal	14	7	2006
9831	16,900	16,900	Prefab Metal		8	2007
Sea-Land Containers	6,080	6,080	N/A	N/A		

Table 3. Facility Projection for Non-MAA Storage Consolidation (2009-2011)

<i>Building</i>	<i>Total Sq Ft</i>	<i>Non-MAA Storage Sq Ft</i>	<i>Building Construction</i>	<i>Building Age</i>	<i>Projected Priority for Turnover to IR</i>	<i>Projected Date for Turnover to IR</i>
81-22	14,578	14,578	Wood Frame	44+		
9201-5	530,500	5,000	Concrete, StStl, Masonry Walls	56		
9204-4	273,830	To Be Determined	Concrete, StStl, Masonry Walls	52	11	
9720-1	43,000	14,300	Wood Frame	57		
9720-14	2,400	2,400	Prefab Metal	46		
9720-18	6,050	6,050	Prefab Metal	43		
9720-26	13,600	13,600	Masonry Walls			
9720-33	39,903	15,680	Masonry Walls, StStl Roof	31	10	
9720-38	7,700	7,700	Prefab Metal	19		
9720-46	3,605	3,605	Prefab Metal	14		
9831	16,900	16,900	Prefab Metal			
Sea-Land Containers	6,080	6,080	N/A	N/A		

Shaded facilities are projected to be turned over to Infrastructure Reduction and are therefore no longer available for Non-MAA storage (during these timeframes).

8.0 ROLES AND RESPONSIBILITIES

NNSA through the Y-12 Area Office provides overall guidance to the Y-12 Complex regarding mission requirements related to Non-MAA storage and the funding necessary to carry out those missions. This guidance is transmitted through the senior management of BWXT Y-12, who oversee all activities in Y-12, to specific programmatic and manufacturing organizations responsible for the management and conduct of Non-MAA storage activities. Current roles and responsibilities are summarized below. These roles and responsibilities will be reviewed during development of the Program Plan and revised if appropriate.

8.1 Programs

RTBF Materials Stewardship Program will provide programmatic guidance and direction for materials to be stored, the funding to enable safe, secure management and storage operation for nuclear and non-nuclear weapons materials and components.

DSW Dismantlement Program will provide programmatic guidance and direction for the dismantlement of canned subassemblies, demilitarization and sanitization of weapons components, and disposition planning for these materials.

Containers Management will provide containers and packaging assistance.

Campaigns Material Readiness, ADAPT, SRC and Materials Dynamics Campaigns will provide enhanced technologies, methods and systems for effective inventory management systems and optimum storage space utilization.

8.2 Manufacturing

Material Control Organization (MCO), Enriched Uranium Operations (EUO), and Materials and Mechanical Operations (M&MO) will provide trained and certified personnel as required to perform safe, secure, effective management and storage of materials placed in Non-MAA storage facilities. (Unless transferred to MCO, EUO will continue to operate and manage 9720-12.) If resources are provided, M&MO will consolidate DU to reduce footprint of stored DU and prepare DU for disposal (demilitarization/declassification). Technology Development will provide technical expertise as needed in disposition planning and execution.

8.3 Overhead

Y-12 Complex overhead will provide budget for routine maintenance and utilities for the facilities not included in RTBF Operations of Facilities Program.

9.0 RESOURCE REQUIREMENTS

The resources necessary to carry out this planning effort will include dedicated and matrixed personnel working across many functional areas. The Material Stewardship Program will be responsible for overall management of the program and will take the lead in coordination with other organizations to secure the resources required to follow through on the plan.

Most of the funding and resources required will come from those functions involved with storage, dismantlement, material control, etc., as part of their normal responsibilities. However, dedicated individuals will be needed to both drive and participate in organizing the tasks, developing the projects, gathering the information, etc. for this plan to be a success. A Project Manager and team members will be assigned to function as the core team with the main responsibility for executing the Materials Characterization and Inventory Management System planning, the Materials Disposition (including Disposal) planning, and the Facilities planning. Other tasks, as developed, will be funded through the appropriate internal control point and validated/prioritized by the standard budget process.

The staffing requirement to establish this program in FY2002 is projected in the table below.

Project Manager
Materials Team Lead
Data Management & Development
Database Implementation
Disposition Team Lead
Process Flow Chart Development and Economic Analysis
Facilities Team Lead
Facility Closure Planning
Facility Consolidation Planning (primarily Building 9204-4)

10.0 REGULATORY/ADMINISTRATIVE REQUIREMENTS

Storage and disposition of Non-MAA material is controlled by regulatory and administrative requirements at many levels, including federal (EPA, NRC, DOT), state (Tennessee Department of Environment and Conservation (TDEC)), Local (Oak Ridge Reservation Local Oversight Committee and Oak Ridge Environmental Quality Advisory Board), DOE (orders and regulations), and Y-12 (policies, procedures and requirements).

Understanding these requirements and their interactions is essential to maintain a compliant storage function and properly manage and disposition Non-MAA materials (including disposal of unneeded materials). The Ten-Year Non-MAA Storage Program will define these requirements and verify their inclusion in internal Y-12 processes and procedures for use in the management, storage, and disposition of Non-MAA materials.

11.0 SCHEDULE AND DELIVERABLES

Figure 1 presents the preliminary schedule for developing the Non-MAA storage management program. This initial planning effort will extend for approximately one year and encompass development of the materials assessment, data requirements, database implementation, material disposition paths and flow charts, facility risk assessments, regulatory and administration requirements, etc., along with the schedule and deliverables for the ten-year program. Annually this plan will be updated and continue to provide guidance and actions for the Non-MAA storage at Y-12.

12.0 REFERENCES

Ten-Year Comprehensive Site Plan, Draft dated 7/30/01

Defense Nuclear Facilities Safety Board letter to DOE Entitled "Material Storage Facilities, Oak Ridge Y-12 National Security Complex," dated May 29, 2001.

Defense Nuclear Facilities Safety Board letter to DOE Entitled "Review of Fire Protection Program, Y-12 Plant," dated August 18, 2000.

Defense Nuclear Facilities Safety Board letter to DOE Entitled "Safety Basis for Defense Nuclear Facilities at Y-12 Plant," dated October 6, 1999.

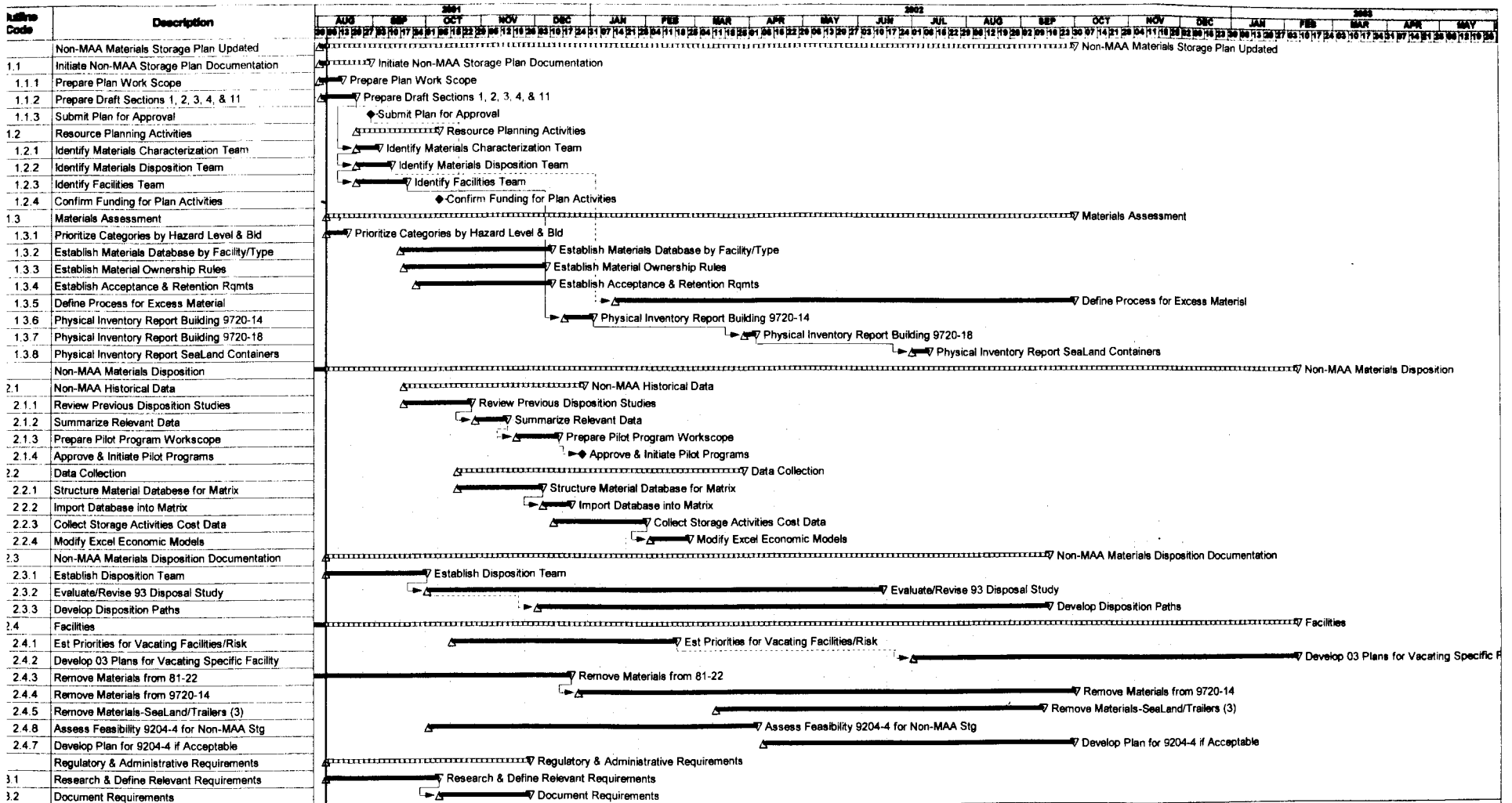
Oak Ridge Y-12 Plant Working Group and Site Assessment Team Reports on Environmental, Safety and Health Vulnerabilities Associated with the Department's Storage of Highly Enriched Uranium, DOE/EH-0525, December 1996.

Program Management Plan for Near and Long-Term Storage of Non-MAA Materials at the Y-12 Plant, Y/LB-15,951, October 1997.

Assessment of Space for Storing Lithium and Depleted Uranium at the Y-12 Plant, Y/LB-15,937, September 1997.

Feasibility Study for a Consolidated Non-MAA Storage Facility at the Y-12 Plant (Draft), November 1997.

FY 2001 Strategic Plan for the Y-12 Complex Nuclear Materials Storage (U), Y/LB16,042, April 2001.



t date 01AUG01
sh date 07FEB03
i date 06AUG01
date 09AUG01
s number 1A
Primavera Systems, Inc.

BWXT Y-12, L.L.C.

Figure 1. Non-MAA Storage Project Plan

█ Early bar
▲ Early start point
▼ Early finish point
█ Progress bar

▤ Summary bar
◆ Start milestone point
◆ Finish milestone point