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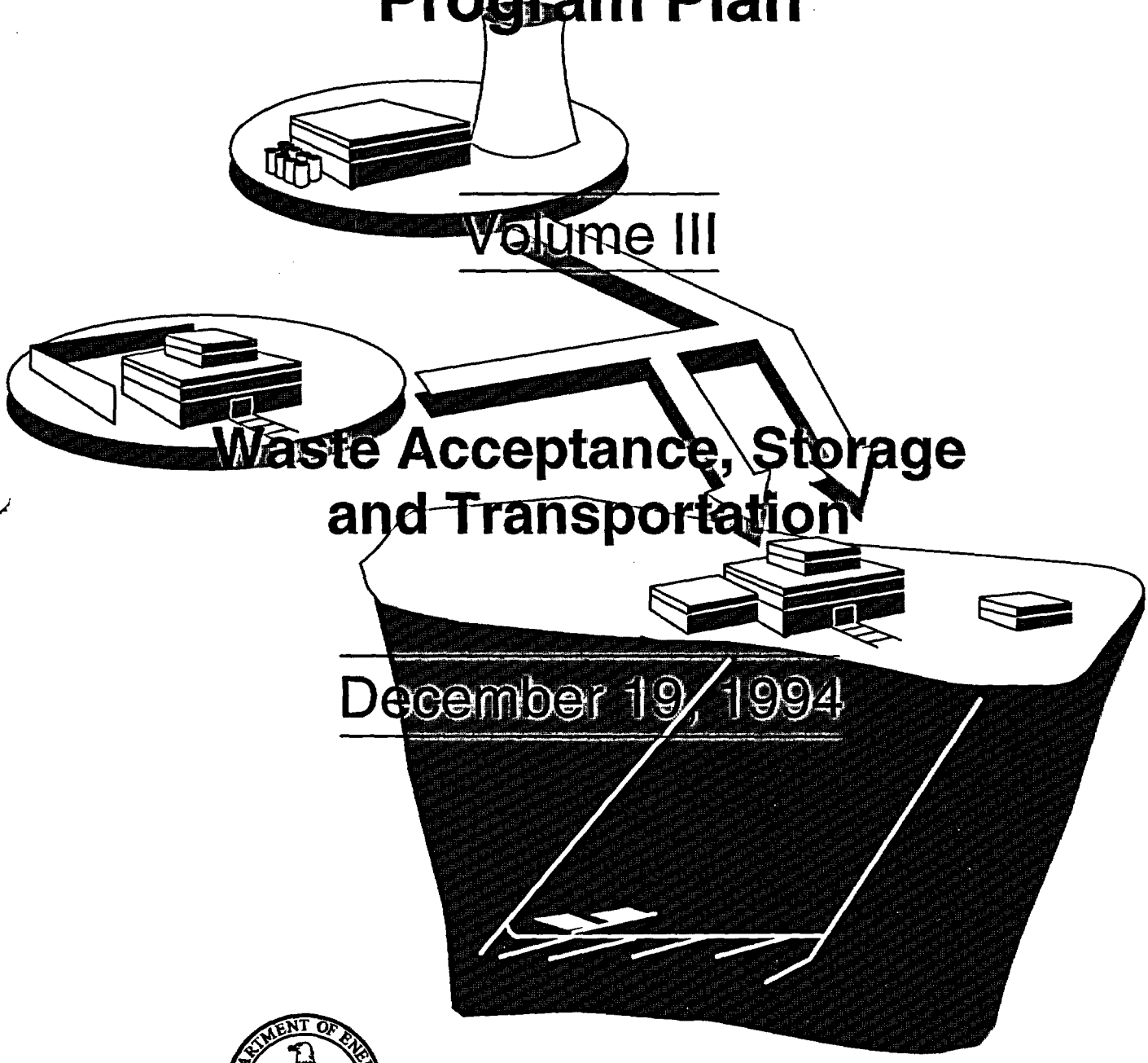
Civilian Radioactive Waste Management Program Plan



Volume III

Waste Acceptance, Storage and Transportation

December 19, 1994

U. S. Department of Energy

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Civilian Radioactive Waste Management Program Plan

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TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

LIST OF TABLES

1. EXECUTIVE SUMMARY

This volume is the plan for the Waste Acceptance, Storage, and Transportation Project in the Office of Civilian Radioactive Waste Management. The plan describes goals, issues, approaches, activities, schedule milestones, and funding requirements for the current fiscal year (1995) and for the subsequent five year planning period covering the Project for the fiscal years 1996-2000. The plan embodies the new Program Approach recently developed by the Office of Civilian Radioactive Waste Management in collaboration with stakeholders. This plan will be revised periodically to reflect progress, to respond to external advice and comments, and to convey to stakeholders, other interested parties, and program personnel the resulting changes to the program's approach, strategies, and plans.

The key characteristics of the Project's approach are to maintain flexibility to be able to respond to external developments, while demonstrating significant accomplishments independent of such external developments. The key aspects of the Department's Program implemented by this Project are to:

- **Support timely resolution of the waste acceptance and interim storage issues.** The Department will continue the formal dialogue with state officials, utilities and other interested parties initiated in May 1994 through the Notice of Inquiry, and will be prepared to participate in and provide support for any Congressional deliberations concerning resolution of these issues.

- **Ensure that multi-purpose canisters are available in 1998 for at-reactor storage,** waste acceptance, transport, and ultimately for disposal. Contingent upon the foregoing dialogue with the utilities, the results of the multi-purpose canister Environmental Impact Statement, and the decision to fabricate and deploy multi-purpose canisters, the Department's supply of multi-purpose canisters for use at reactors starting in 1998 would facilitate standardization of interim storage and integration with the rest of the waste management system, and could off-set to some extent the costs to utilities of at-reactor storage until an off site facility is available.

- **Maintain readiness to develop a Federal interim central storage facility.** The Department will develop the facility when and if a site and the necessary resources are made available. The Project has already prepared the necessary conceptual designs and implementation plans for such a facility. Until a specific site has been selected, no further development work is needed and none is included in the current plan. However, the Project will ensure that the Department can respond quickly if a decision is made to proceed with a storage facility.

- **Develop the technical and institutional capability for acceptance and transportation of spent nuclear fuel from reactors to a Federal interim central storage facility.** The Department will ensure that the capability to accept and transport spent nuclear fuel is available when needed, beginning as early as 1998. A new high-capacity truck cask and transportation casks for the multi-purpose canisters will be certified and prototypes will be constructed by the end of 1998. The necessary fleet of casks could then be purchased relatively quickly when there is a firm shipment schedule. Simultaneously, interactions

with Stakeholders will work towards gaining sufficient understanding among Stakeholders to allow the Project to move forward in a safe and timely fashion.

- **Participate actively in key deliberations that affect disposal of Department of Energy materials.** The Department will develop agreements, provide waste characterizations, and determine acceptance criteria for defense high-level waste, and for other nuclear wastes suitable for disposal in a geologic repository.

The plan divides Project activities into four product areas:

- **Waste Acceptance,** which includes implementation activities specified in the Standard Contract between the Department and the utilities for the legal and physical transfer of waste to the Federal government from the Nation's waste owners, once a Federal facility is ready to begin operation. It also includes activities for revising the Standard Contract to enable the use of multi-purpose canisters for on-site storage at reactor sites beginning in 1998, and ultimately transportation to and disposal at a Federal repository, and establishing the acceptance criteria for various defense high-level wastes.

- **Transportation,** which includes the technology development, certification, and institutional activities necessary to field a cask transportation subsystem for transport of highly radioactive wastes from the utilities and defense sites to storage and disposal facilities.

- **The Multi-Purpose Canister Subsystem,** which includes development of an Environmental Impact Statement and the design, certification, fabrication, and deployment of multi-purpose canisters for on-site storage at utilities beginning in 1998, and eventual transportation to and disposal at a Federal repository.

- **Project Management and Integration,** which includes the direction, monitoring, and control of the Project, systems engineering to ensure integration within and external to the Project, technology demonstration, and quality assurance. Project Management and Integration also includes maintenance of readiness to deploy a storage facility, technical analyses to support the development of nuclear waste policy, and the conduct and support of stakeholder interactions.

1.1 OVERVIEW

1.1.1 Historical Perspective

Highly radioactive spent nuclear fuel elements have been accumulating at 109 reactors operating at 67 sites in 32 states. The reactors facilities will have completed their 40-year initial license period by the year 2030, and by then they will have discharged about 85,000 metric tons of heavy metal contained in the spent nuclear fuel. Approximately 30,000 metric tons of heavy metal contained in the spent nuclear fuel is stored at reactor sites now.

The Nuclear Waste Policy Act of 1982 created the Office of Civilian Radioactive Waste Management to develop a system to take ownership of spent nuclear fuel and high-level waste,

to transport it off-site, and to permanently dispose of it in a geologic repository. The Office also has responsibility for disposal of high-level radioactive waste that results from the Nation's nuclear weapons program. The initial mandate was for a system that would start accepting spent nuclear fuel from civilian reactors and disposing of it in a repository beginning in 1998.

In 1987, the Department announced a five-year delay in the opening date for a repository--from 1998 to 2003. Also in 1987, Congress created the Office of the Nuclear Waste Negotiator to, among other things, find a volunteer host for a Monitored Retrievable Storage facility, an interim central storage facility for storing spent nuclear fuel until it could be transported to a repository. To counter a concern that interim central storage on the surface might become permanent, Congress linked the selection of a storage site to the recommendation of a repository site to the President by the Secretary of Energy. Under this limitation, construction of a storage site cannot begin until the Nuclear Regulatory Commission issues a license for construction of a repository. In 1989, the Department announced a delay in the recommendation of a repository site until 2001, and a delay in the expected date of repository operations until the year 2010. The Secretary also told Congress that if the linkage between the Monitored Retrievable Storage facility and the repository were modified, then waste acceptance at the facility could begin by 1998. This was based on the assumption that a site would be available by then. However, the linkage remains in place, the Nuclear Waste Negotiator has not been able to find a volunteer candidate site, and accumulated political experience suggests that a volunteer site for interim central storage is not likely. In the absence of interim central storage, waste acceptance and off-site transport could not occur until the start of repository operations in 2010.

In June, 1994, 14 utilities and 27 state agencies sued the Department because they believe that the Department has breached its agreement to begin accepting spent nuclear fuel in 1998. At the same time, utilities and reactor States proposed that Congress instruct and authorize the Department to take possession of spent nuclear fuel at the earliest possible time. It now appears possible that Congress may address the issues of waste acceptance and interim central storage in 1995. The Project will provide technical support to this process and is prepared to implement the decision that is made.

The main challenge for this Project is dealing with the current uncertainty regarding when a Federal facility will be available so that the Department can begin accepting waste. The only firm basis for current planning is the date for the start of repository operations, 2010. If a site and the resources needed to develop a Federal interim central storage facility become available in the near-term, the Project will proceed expeditiously to develop the facility. In the absence of such action, spent nuclear fuel is likely to remain at reactor sites in storage systems that meet individual utility needs. This plan provides a means to standardize and integrate additional at-reactor storage with the Federal Waste Management System.

The plan must also provide the capability to deal with new policy directions that may arise in the near term, and it must maintain the institutional waste acceptance interface with the utilities.

1.1.2 Planning Approach

The key themes of the approach for the Waste Acceptance, Storage, and Transportation Project are achievement of the milestones contained in the Program Approach and flexibility to respond quickly to external developments. The main features of the plan are:

- The Project will continue the formal dialogue with interested parties initiated in May 1994, and will be prepared to provide technical support for deliberations concerning resolution of the these issues in the Congress or the Courts.

- The Project will ensure that multi-purpose canisters are available beginning in 1998 for at-reactor storage, waste acceptance, transport, and ultimately for disposal. Use of multi-purpose canisters at reactors starting in 1998 would move toward standardization of at-reactor storage and integration with the waste management system.

- The Project will maintain readiness to develop a Federal interim central storage facility if and when a site and the necessary resources are made available. The Project has already prepared the necessary implementation plans and a range of conceptual designs for such a facility. Because more detailed work would not be useful until a specific site has been selected, no development work is included in the current plan. Scheduling and budgeting for such a facility must await future policy determinations as well as resolution of the siting issue. However, the Project will ensure that the Department can respond quickly if a decision is made to proceed with a Federal interim central storage facility.

- The Project will pursue the development of the technical and institutional capability for acceptance and transportation of spent nuclear fuel from reactors to a central facility whenever such a facility is available, beginning as early as 1998. This includes assistance to States for training for public safety officials of appropriate units of local government and Indian tribes whose jurisdictions are affected by the transportation of nuclear waste. A new high-capacity truck cask and a transportation cask for the multi-purpose canisters will be certified and prototypes will be constructed by the end of 1998, and the necessary fleet of casks or overpacks could then be procured relatively quickly when there is a firm shipment schedule. If an interim central storage facility does not become available sooner, acceptance and transportation of spent nuclear fuel will take place in 2010.

In addition to these efforts focused on civilian spent nuclear fuel, the Project will address issues concerning disposal of Department of Energy radioactive materials. The Project will participate actively in key deliberations that affect disposal of the Department's radioactive materials. The Project will work with other elements of the Department to characterize various defense high-level wastes and prepare acceptance criteria for those which are suitable for disposal in a repository, and to develop agreements concerning acceptance and disposal.

1.1.3 Product Areas

The following sections describe the activities of the Waste Acceptance, Storage and Transportation Project in the terms of its major products: waste acceptance, transportation, multi-purpose canisters, and project management and integration.

1.1.3.1 Waste Acceptance

The Department will take title to, and physical possession of, spent nuclear fuel and high-level waste through a process called waste acceptance. The first priority is to clarify the approach to waste acceptance. The Department published a Notice of Inquiry in the *Federal Register* on May 25, 1994 to elicit the views of interested parties on: 1) the Department's preliminary position that it does not have a statutory obligation to accept waste in 1998 in the absence of an operational repository or storage facility; 2) the need for an interim, away-from-reactor storage facility prior to repository operations; and 3) options for offsetting a portion of the financial burden that the utilities may incur in continuing at-reactor storage of waste after 1998. The dialogue with stakeholders will contribute to the development of the Department's position on policies to address the near-term management of spent nuclear fuel.

An option identified in the Notice of Inquiry is the deployment of multi-purpose canisters to the utilities for dry storage of spent nuclear fuel at the reactor sites. It calls for the utilities to continue ownership of the spent nuclear fuel while it remains stored at the reactor sites or other utility storage sites. The Department would take title to the spent nuclear fuel upon its removal from those sites for interim central storage or disposal. Exercising this option would require a modification of the Standard Disposal Contract, which details the roles and operational responsibilities of the Department and the owners.

New activities being planned to support possible deployment of multi-purpose canisters include:

- Developing site-specific plans for using multi-purpose canisters and identifying alternatives for sites unable to use the multi-purpose canister
- Revising the Standard Contract to incorporate the acceptability of multi-purpose canisters as a waste form; provisions for allocations, exchanges, deliveries, and loading of multi-purpose canisters; and the subsequent acceptance of loaded multi-purpose canisters immediately before off-site transport
- Allocating and scheduling the delivery of multi-purpose canisters, initially for at-reactor storage
- Developing multi-purpose canister identification methods, tamper-proof sealing methods, and spent nuclear fuel loading verification and surveillance procedures prior to sealing, consistent with national and International Atomic Energy Agency safeguards standards.

1.1.3.2 Transportation

The current transportation subsystem development schedule is paced to match repository availability in 2010 and to maintain readiness for earlier transportation should a site for Federal interim central storage become available sooner than the repository. Transportation activities include development of transportation equipment; providing procedures and training to utilities for handling, loading, and transferring multi-purpose canisters; developing operational plans and procedures for multi-purpose canister transportation casks; and transporting the multi-purpose canisters from the utility storage sites to the repository.

In addition, the Department will continue development of advanced technology, high-capacity highway transportation casks and truck transporters (GA-4/9 casks) and obtain Certificates of Compliance for these casks from the Nuclear Regulatory Commission before 1998. Defense and commercial high-level waste will be transported to the repository in specially-developed casks that would be developed in a time period beyond this five year plan.

As required by Section 180(c) of the Nuclear Waste Policy Act, the Department will develop and implement a strategy to provide technical assistance and funds to States and Indian Tribes for training public safety officials through whose jurisdiction the spent nuclear fuel and high-level waste will be transported.

Institutional activities within the transportation product area provide for stakeholder interaction and comment with respect to implementation of the multi-purpose canister, and the conduct of nuclear waste transportation. The Department also has transportation and storage cooperative agreements with 10 national and regional groups, manages a public information program, and regularly participates in regional, national, and technical meetings on transportation. This network of relationships and contacts provides the Department with a broad spectrum of viewpoints for input into policy development. The Project is working with other Department elements in developing a strategy for involving stakeholders in the drafting of route selection criteria. This will be incorporated into formal guidance to Department programs, shippers, and carriers.

1.1.3.3 Multi-Purpose Canister Subsystem

A multi-purpose canister is a metal container that can be loaded with spent nuclear fuel assemblies and then sealed. Used in conjunction with appropriate single-purpose casks or overpacks, the multi-purpose canisters can be stored, transported, and disposed of without being reopened. The multi-purpose canister subsystem also includes: (1) the on-site transfer cask, which holds the multi-purpose canister while it is being loaded in the pool and then transfers the multi-purpose canister from the pool to the on-site storage module, and (2) an uncanistered spent nuclear fuel transfer device, which loads multi-purpose canisters outside of the pool when a multi-purpose canister cask is too heavy for direct loading in a particular pool. The plan calls for the utilities to be responsible for loading and sealing the multi-purpose canisters and furnishing the dry storage module, transfer casks, and other site hardware. Multi-purpose canisters will be developed in two sizes to accommodate most reactor site capabilities.

The current thrust of this activity is to develop the multi-purpose canister subsystem to a technological level comparable with the single-purpose and dual-purpose canister subsystems already commercially available for transportation and for storage. If the decision to fabricate and deploy multi-purpose canisters is made, the Project will begin delivering multi-purpose canisters to utilities in early 1998 for at-reactor storage to accommodate 400, 600, and 900 metric tons of heavy meal contained in the spent nuclear fuel for the years 1998, 1999, and 2000 respectively.

Regulatory considerations are of paramount importance in achieving timely implementation of the multi-purpose canister subsystem. The Department will conform to the provisions of the National Environmental Policy Act and prepare a Final Environmental Impact Statement and issue a Record of Decision as components of the decision on fabrication and deployment of

multi-purpose canisters. The certification of the canisters with associated transportation casks and storage modules, and the process for determining the acceptability of repository waste packages for disposal, is a complex undertaking involving technical issues that have not been addressed previously by the Nuclear Regulatory Commission in an integrated manner.

Compliance with requirements for storage, for transportation, and for disposal demands close coordination of all design and regulatory activities. The Project will provide the system engineering needed to integrate these efforts within the Project, and with the utilities and the repository. The acquisition process will maximize participation by qualified vendors selected in full and open competition. Completion of a Final Environmental Impact Statement and its related Record of Decision, and formal approval by the Department's Energy System Acquisition Advisory Board must precede the decision to fabricate and deploy the multi-purpose canisters.

The principal actions necessary to accomplish the objectives of the multi-purpose canister product area are:

- Issue a Final Environmental Impact Statement and publish the associated Record of Decision on fabrication and deployment.
- Obtain certification from the Nuclear Regulatory Commission for the transport and storage applications.
- Receive Department approval to fabricate and deploy multi-purpose canisters.
- Provide utilities with certified designs for on-site supporting equipment.
- Provide technical support to utilities.

1.1.3.4 Project Management and Integration

The objective of Project Management is to ensure the achievement of Project goals and milestones. It includes cost, schedule, and technical direction of Waste Acceptance, Storage and Transportation Project activities. It provides managerial input to Program documents and supports the annual budgeting and planning process.

Project Management and Integration also includes system engineering, technology demonstration, and quality assurance functions. The system engineering activities ensure the sound and cost-effective application of system engineering principles to the Waste Acceptance, Storage and Transportation Project. Technology demonstration projects provide a benefit to all product areas through demonstration of relevant technologies. This includes the current planning to manage Department owned spent nuclear fuel currently stored at West Valley, New York, consistent with the Record of Decision on the Department's Programmatic Spent Nuclear Fuel Management Environmental Impact Statement. It also includes the demonstration of dry spent nuclear fuel transfer equipment. The quality assurance activities ensure that the final design, prototype fabrication, and testing are performed in accordance with appropriate quality assurance programs and procedures through surveillance and audits of vendor activities.

1.1.4 Major Milestones

The relationships among the principal Project milestones, as well as other supporting milestones, are shown in the Waste Acceptance, Storage and Transportation Schedule, Figure 1-1.

1.1.5 Funding Requirements

Table 1-1 presents the funding requirements of the four product areas. Traceability by fiscal year to previous budgetary planning estimates is provided in each of the product areas. The fiscal year 1995 funding represents the levels authorized by Congress in the fiscal year 1995 appropriation. The funding estimates for fiscal years 1996 through 2000 represent the Department's estimate, and have not been approved by the Administration or forwarded to Congress. There are a number of trends evident in each of the activity areas.

- The Waste Acceptance funding increases through 1997 in preparation for multi-purpose canister loading, and then increases further with actual and increasing loadings of the canisters beginning in 1998.

- The Transportation funding holds relatively constant through 1998 as the truck cask designs proceed through testing and certification, and thereafter decreases until actual transportation commences.

- The Multi-Purpose Canister Subsystem funding increases initially because of design, testing, and certification of the canister and support equipment, and then increases further as actual and increasing numbers of canisters are fabricated, beginning in 1997.

- The Project Management and Integration funding is essentially constant during the planning period with almost 40 percent dedicated to technology demonstration projects.

Figure 1-2 graphically displays these trends and highlights the increased activities in 1998 with the deployment and loading of multi-purpose canisters through the end of the planning period.

WAST PROJECT SUMMARY SCHEDULE THRU YEAR 2000

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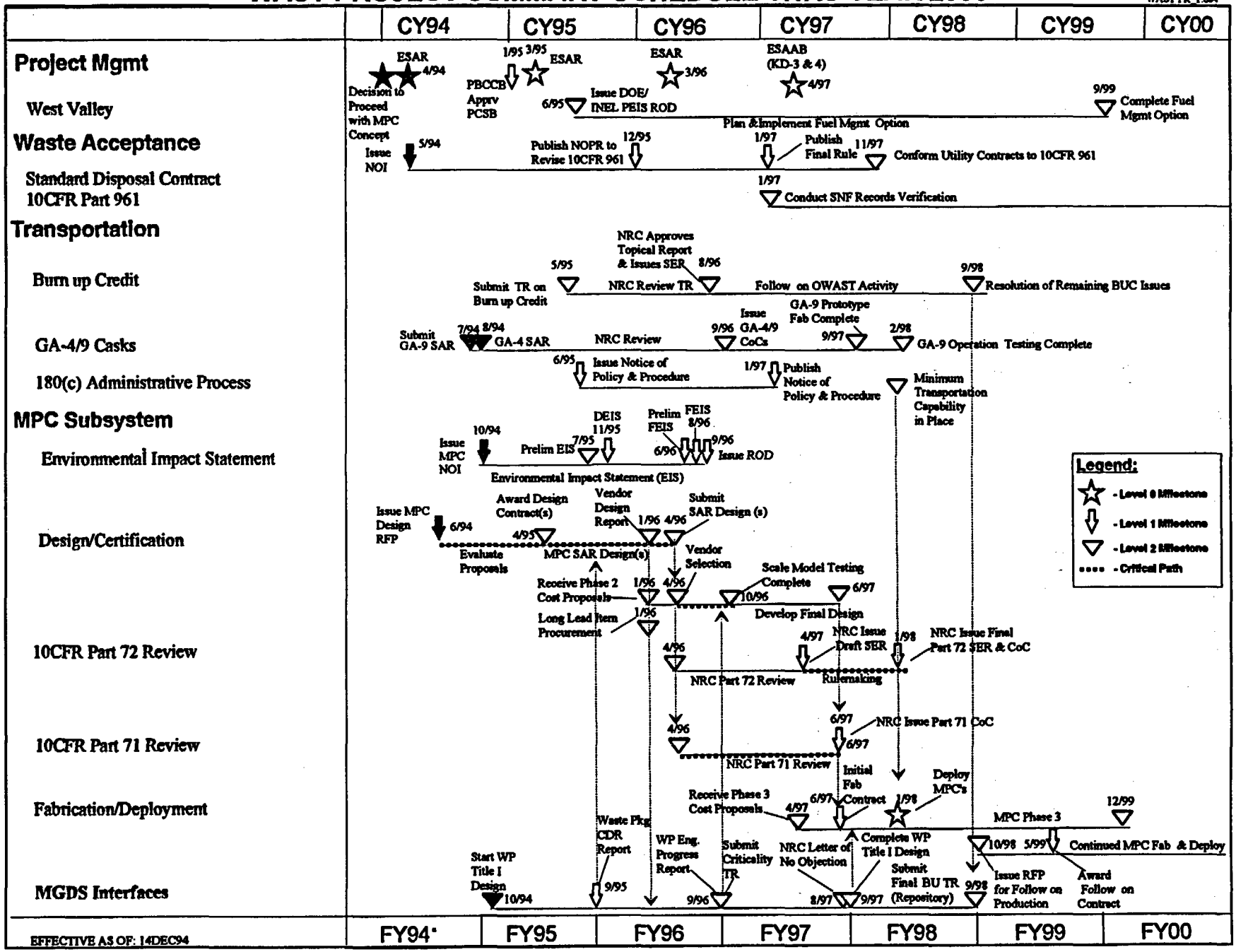

Figure 1-1. WAST Project Summary Schedule Thru Year 2000

Table 1-1. Five-Year Plan Funding Profile Total WAST Project
(Funding in $M)

Title	FY95	FY96	FY97	FY98	FY99	FY00
Waste Acceptance	6.0	7.6	10.0	14.0	16.0	18.0
Transportation	11.7	9.5	11.5	12.2	8.6	6.8
Multi-Purpose Canister	29.6	36.2	38.7	51.1	56.3	54.0
Project Management and Integration	9.7	8.4	9.2	9.1	8.5	8.2
Total	57.0	61.7	69.4	86.4	89.4	87.0

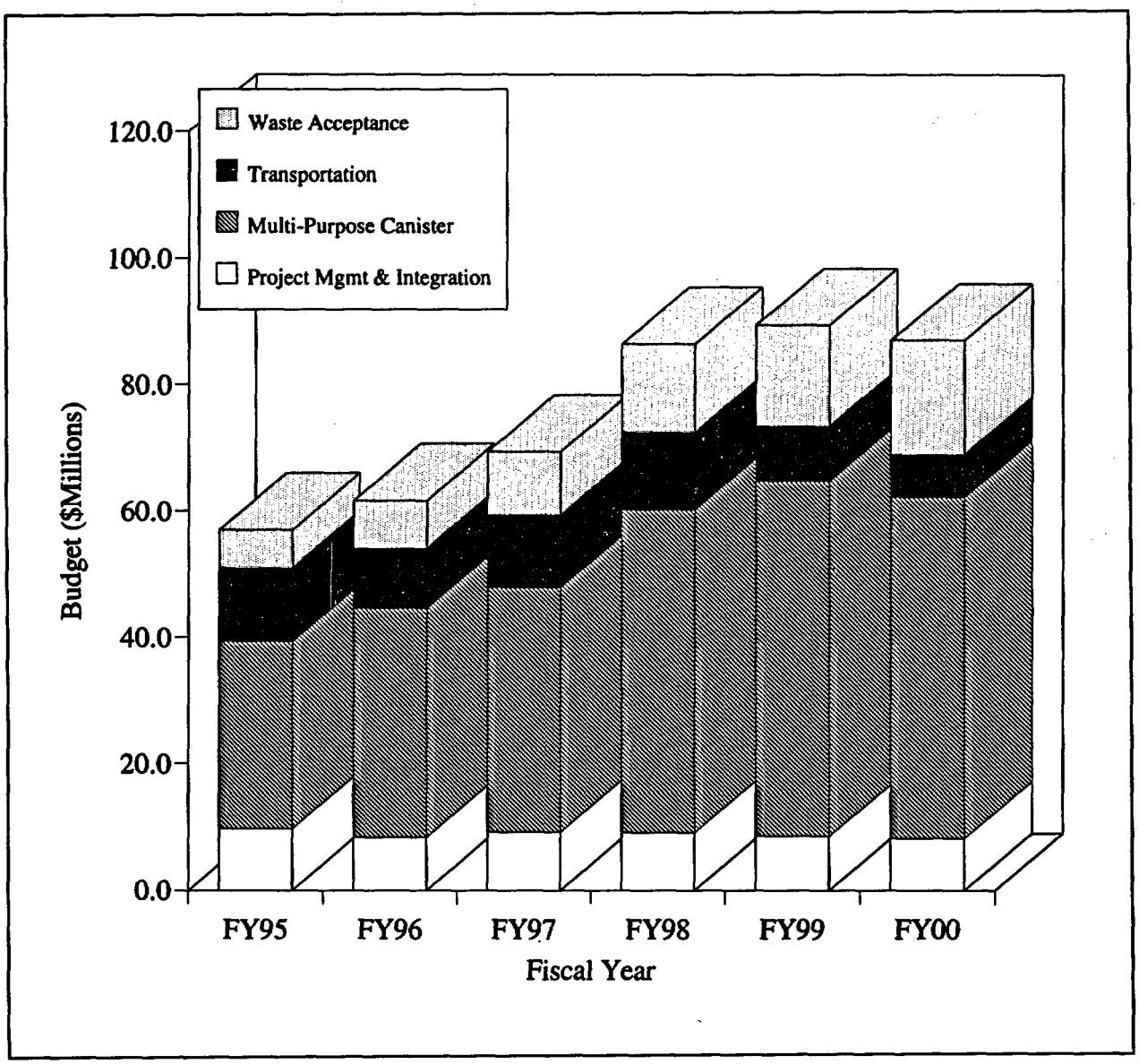

Figure 1-2. WAST Project Five-Year Plan

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2. WASTE ACCEPTANCE

2.1 INTRODUCTION

Under the Nuclear Waste Policy Act, the Department is responsible for disposing of spent nuclear fuel and high-level radioactive waste at a Federal facility. The first step in this process is Waste Acceptance, which is defined as taking title and physical possession of the waste at the owners' sites. In order to accept waste, an active interface and a contract or agreement are required between the Department and the owners of the waste. The Standard Disposal Contract, codified in Part 961 of Title 10 of the Code of Federal Regulations, defines the roles and responsibilities of the Department and owners. The Department maintains an ongoing dialogue with owners and other stakeholders to ensure that the requirements of the Standard Disposal Contract are understood by all parties and are executed successfully. This dialogue also assures that the Department has the information and data it needs to plan, design, and operate its waste management system.

In addition to disposing of spent nuclear fuel from commercial reactor sites and defense high-level waste, the Department is responsible for disposing of spent nuclear fuel and high-level radioactive waste resulting from various government initiatives and activities including commercial high-level wastes at West Valley, New York. In support of this Nation's nuclear nonproliferation policy, the Department has accepted spent nuclear fuel, of U.S. origin, from foreign research reactors, in order to assure its safe disposal. There are additional wastes that may need to be emplaced in a repository. The specific characteristics, amounts, and treatment and disposal options are not currently well defined. The Project is participating in discussions about the characteristics of these wastes and about the potential acceptance for disposal in a geologic repository.

Recognizing that there are uncertainties about when waste acceptance will begin, the Department published a Notice of Inquiry in the *Federal Register* on May 25, 1994, to elicit public comments on: 1) the Department's preliminary position that it does not have a statutory obligation to accept waste in 1998 in the absence of an operational repository or storage facility; 2) the need for an interim, away-from-reactor storage facility prior to repository operations; and 3) options for offsetting a portion of the financial burden that the utilities may incur for continued at-reactor storage of waste after 1998. Although the Department does not believe it has an obligation to begin accepting waste without an operational facility, owners have based their waste management practices on an expectation that the Department would begin accepting waste in 1998. The importance of addressing this expectation was emphasized in June 1994, when 14 utilities and 27 State agencies sued the Department because they believe that the Department has breached its agreement to begin accepting spent nuclear fuel in 1998.

An option identified in the Notice of Inquiry for offsetting a portion of the financial burden that the utilities may incur is the deployment of multi-purpose canisters for dry storage of spent nuclear fuel at reactor sites. The Department would take title to and possession of the spent nuclear fuel and the multi-purpose canister in which it is stored, during waste acceptance when the spent nuclear fuel is removed for storage or disposal at a Federal site. If the Department makes a decision to fabricate and deploy multi-purpose canisters, the Standard Disposal Contract will be modified through rulemaking.

2.2 OBJECTIVES

The Office of Civilian Radioactive Waste Management's primary objectives for waste acceptance are to:

- Develop recommendations for the Department's 1998 waste acceptance policy.
- Support the deployment of multi-purpose canisters, should a decision be made to use such canisters.
- Legally and physically transfer waste to the Federal Government from the Nation's owners and generators of spent nuclear fuel and high-level radioactive waste, once a Federal storage or disposal facility is ready to begin operations.
- Develop agreements to accept the Department's Office of Environmental Management and the State of New York's various waste forms.
- Support the transportation and disposal of waste, once accepted.
- Ensure that all program elements meet national and international requirements for the safeguarding of special nuclear materials.

To achieve these objectives, the Office of Civilian Radioactive Waste Management will:

- Continue a collaborative dialogue with the Nation's nuclear utility companies, other waste owners, and other stakeholders, and support the policy development process.
- Develop a waste acceptance process that is consistent with the needs of both the Federal Government and the Nation's owners and generators of spent nuclear fuel and high-level radioactive waste.
- Develop a plan and implement procedures to carry out the program's safeguards and security responsibilities.

The milestones for achieving these objectives are:

- Evaluate and resolve waste acceptance issues identified through the Notice of Inquiry and related activities. 1995
- Initiate the process necessary to modify the Standard Disposal Contract to accommodate a multi-purpose canister-based system. 1995
- Complete Memorandum of Agreement between the Office of Civilian Radioactive Waste Management and the Office of Environmental Management on the acceptance of the Department's waste. 1996

- Issue a final rule to modify the Standard Disposal Contract to include the use of multi-purpose canisters. 1997

- Establish protocols to load multi-purpose canisters. 1997

- Begin spent nuclear fuel verification prior to multi-purpose canister loading. 1997

2.3 STRATEGY

The major concern facing the Waste Acceptance, Storage and Transportation Project is the uncertainty regarding when a Federal facility will be available to enable the Department to begin accepting waste. Contributing to the level of uncertainty are the current litigation and the Department's Notice of Inquiry. If a site for a storage facility and the resources needed to develop one are made available, the Project must be prepared to move more quickly than required for the 2010 repository schedule. Furthermore, the longer spent nuclear fuel remains at reactor sites, the greater the potential for it to be placed into a variety of dry storage systems that may cause integration problems with the federally developed high-level waste management system. The waste acceptance process itself will be sufficiently flexible to accommodate changes in Project direction in a timely and effective manner.

Prior to the multi-purpose canister initiative, the Department planned to accept individual spent nuclear fuel assemblies loaded at the reactors into single-purpose transport casks. The casks were to be transported to the receiving facility where they would be unloaded. The individual assemblies would be checked, and any discrepancy would be identified and resolved promptly. The Standard Disposal Contract between the Department and the waste owners reflected this individual spent nuclear fuel assembly acceptance protocol. A system based on multi-purpose canisters that are loaded, sealed, and stored at reactor, and later accepted for offsite transport and disposal will require different acceptance protocols and procedures. Utilities that cannot use or choose not to use a multi-purpose canister will still deliver individual assemblies in truck transport casks to a Federal facility. Acceptance protocols and procedures must address both the individual and canistered spent nuclear fuel scenarios. To accept waste in multi-purpose canisters, single-purpose casks and dual-purpose casks, the Project must:

- Continue to perform activities required by the Standard Disposal Contract, including: acceptance priority ranking; allocation of projected acceptance capacity; Delivery Commitment Schedule and Delivery Commitment Schedule Exchange processing; Final Delivery Schedule processing; waste verification; data collection validation and dissemination; fee collection and verification; and waste and facility characterization and requirements evaluation.

- Evaluate and resolve waste acceptance issues identified through the Notice of Inquiry and related activities and interactions. In identifying and evaluating the alternatives for resolving the issue, equity implications of proposed solutions and the outcome of litigation or new legislative initiatives will be considered in reaching a final decision on the issues.

- Proceed with rulemaking to modify the Standard Disposal Contract to incorporate a multi-purpose canister-based system. Rulemaking will be conducted in coordination with the

multi-purpose canister National Environmental Policy Act efforts. The rulemaking process will address issues identified through stakeholder interactions and will include issuing a Notice of Proposed Rulemaking to announce the Department's intent to modify the Standard Disposal Contract to address multi-purpose canisters. The Notice of Proposed Rulemaking will identify options for deploying multi-purpose canisters. Based on responses to the Notice, the Department will evaluate deployment alternatives, issue a Final Rule, and implement the rule by working with the utilities to identify the number and type of canisters to be procured during the initial canister procurement.

- Accomplish waste acceptance activities in two phases. Phase I will occur prior to sealing a loaded multi-purpose canister, and Phase II will occur at the time the transport-ready canister is accepted. During Phase I, the Department will develop procedures and protocols for such activities as utility fuel data verification, canister loading verification, burnup verification, and any nondestructive assay measurements required by the Department to support subsequent safeguards activities. During Phase II, procedures and protocols will be developed for such activities as canister verification, transport readiness verification, and administrative transfer of title.

- Work with the Department's Office of Environmental Management and with the State of New York to develop the Memoranda of Agreement necessary to accept their various waste forms. The basis for acceptance will include technical waste acceptance criteria for each waste form, including radionuclide content, waste form condition, and packaging. Activities will include identifying waste forms requiring disposal, participating in working groups to address acceptance and disposal issues, negotiating agreements and revisions to those agreements, and developing criteria for each individual waste type. Wastes that may not be suitable for repository disposal will also be identified and a recommendation concerning their disposition will be developed.

2.4 WASTE ACCEPTANCE ASSUMPTIONS

The five-year plan for Waste Acceptance is based on the following assumptions:

- The decision that addresses the 1998 acceptance expectation issue will include the use of multi-purpose canisters and require modification of the Standard Disposal Contract through rulemaking.

- Consistent with the Program Approach, waste acceptance is assumed to commence in 2010. However, most waste acceptance procedures and practices must be operational prior to 1997 to support the loading of multi-purpose canisters in 1998. The remaining procedures can be put in place readily to accomplish earlier waste acceptance, should a Federal interim central storage facility be sited and become operational.

- The level of activity necessary to support waste acceptance and disposal planning for Department-owned high-level radioactive waste, spent nuclear fuel, and other reactor-irradiated nuclear materials will increase.

2.5 WASTE ACCEPTANCE FIVE-YEAR PLAN

This section summarizes the five-year plan for waste acceptance to meet the objectives discussed in Section 2.2.

2.5.1 Fiscal Year 1995

The major thrusts for fiscal year 1995 will be the initiation of the formal rulemaking process to modify the Standard Disposal Contract to incorporate the multi-purpose canister subsystem, the development of the Waste Acceptance Operations Plan, and the Verification Plan. Efforts will be initiated to ensure that spent nuclear fuel verification, and safeguards and security procedures will be in place for multi-purpose canister deployment.

2.5.1.1 Standard Disposal Contract and Other Agreements

Comments on the Notice of Inquiry will be analyzed and a summary report prepared. A Notice of Proposed Rulemaking will be prepared to address Standard Disposal Contract modifications necessary to implement a multi-purpose canister based system and to resolve previously identified waste acceptance issues. Contractually mandated activities will be completed, including the issuance of the combined Acceptance Priority Ranking Report and the Annual Capacity Report, and processing of Delivery Commitment Schedules. Delivery Commitment Schedule Exchange review criteria will be developed, as will a Delivery Commitment Schedule Information Network that will facilitate the exchange of Delivery Commitment Schedules. Reporting requirements will be satisfied. A Memorandum of Agreement will be developed, and contract negotiations will be conducted to establish the fees and terms of acceptance for Federally owned spent nuclear fuel and defense related spent nuclear fuel and high-level radioactive waste.

2.5.1.2 Systems Engineering/Waste Acceptance Criteria for Non-Utility Materials

In support of the potential deployment of multi-purpose canisters, the Waste Acceptance Operations Plan will be developed, and development of the Waste Acceptance Design Requirements Document will be initiated. System level documents impacting Waste Acceptance will be reviewed and revised as necessary. To support the integration of the Department's waste management and disposal efforts, a Waste Acceptance Criteria Management Plan will be developed to establish the process of qualifying additional high-level radioactive waste, spent nuclear fuel, and miscellaneous waste forms for acceptance by the Department. Established waste acceptance criteria will be used to evaluate alternative waste forms being considered for repository disposal, and the criteria revised or new criteria developed as necessary. Waste form documents prepared by waste producers will be reviewed for conformance with waste acceptance criteria. Support will be provided to technical working groups for waste form development, and system studies related to alternate waste forms.

2.5.1.3 Safeguards and Security

In order to support the acceptance of both individual and canistered spent nuclear fuel, a Verification Plan will be developed consistent with the requirements of the Standard Disposal Contract. Implementing procedures will be developed and an inspector training plan will be

prepared. Revisions required to the Standard Disposal Contract will be identified and implemented through rulemaking. Verification activities must be completed prior to loading multi-purpose canisters. It is, therefore, crucial that verification protocols and procedures be developed in conjunction with the development of both the Safeguards and Security Plan and Safeguards and Security Standards. The Material Control and Accountability Plan and Transportation Safeguards Plan will be revised as needed to address individual spent nuclear fuel assemblies and canistered spent nuclear fuel. Tamper-indicating devices for casks and canisters will be evaluated for use and a report will be prepared providing recommendations concerning their use. The project will interact with the Department, the International Atomic Energy Agency, the Nuclear Regulatory Commission, utilities, and others on safeguards issues.

2.5.1.4 Nuclear Waste Fund Activities

Utility payments to the Nuclear Waste Fund will be verified and projections of revenues will be prepared. The impacts on the Nuclear Waste Fund of alternative cost sharing programs, arising from the Notice of Inquiry, will be evaluated. Financial and economic analyses of the impacts of Memoranda of Agreement and contract negotiations will be conducted.

2.5.1.5 Data Collection and Dissemination

Detailed spent nuclear fuel data will be collected, validated, and disseminated to users. Projections of spent nuclear discharges will be developed and reports on the projections and spent nuclear fuel storage requirements will be written and published. Databases maintained by other Department Offices will be evaluated for Program requirements. The Unified Database System will be developed to support program planning, design, and operational requirements. Program spent nuclear fuel and reactor site data requirements will be analyzed and potential collection mechanisms will be evaluated. The Unified Database System will provide the Program with consistent reactor site and spent nuclear fuel data.

2.5.1.6 Metrics - Fiscal Year 1995

Outcomes: (1) Continuation of the stakeholder dialogue addressing previously identified contract issues, the Notice of Inquiry on Waste Acceptance Issues, and the multi-purpose canister subsystem; (2) Receipt and processing of Delivery Commitment Schedules and Exchanges; (3) Development of Delivery Commitment Schedule Exchange Review Criteria; (4) Development of the spent nuclear fuel Verification Plan; (5) Development of a Safeguards and Security Plan and Safeguards and Security Standard; (6) Development of dialogue with the International Atomic Energy Agency, Nuclear Regulatory Commission, utilities and others concerning safeguards; (7) Development of Waste Acceptance Operational Plan and Design Requirements Document; (8) Development of waste acceptance criteria for additional high-level radioactive waste, spent fuel, miscellaneous waste forms, and alternative waste forms being considered for repository disposal; (9) Collection, processing and validation of the 1994 Nuclear Fuel Data Form (RW-859); (10) Short-term electricity generation and fee projections; and (11) Development of the Unified Database System.

Outputs:

- Safeguards and Security Plan. 02/95
- Summary Report on Notice of Inquiry on Waste Acceptance Issues. 02/95
- Publish Spent Nuclear Fuel Discharges from U.S. Reactors 1993. 02/95
- Publish 1994 Acceptance Priority Ranking and Acceptance Capacity Report. 03/95
- Waste Acceptance Operations Plan. 03/95
- Delivery Commitment Schedule Information Network. 04/95
- Safeguards and Security Standard. 04/95
- Waste Acceptance Criteria Management Plan. 06/95
- Spent Nuclear Fuel Verification Plan. 07/95
- Publish Integrated Data Base for 1994. 09/95

2.5.2 Fiscal Year 1996

In addition to ongoing activities, the major thrusts for fiscal year 1996 will be the initiation of the formal rulemaking process to modify the Standard Disposal Contract to incorporate the multi-purpose canister subsystem and the acceleration of verification activities to ensure that spent nuclear fuel verification procedures will be in place prior to multi-purpose canister deployment in 1998.

2.5.2.1 Standard Disposal Contract and Other Agreements

Fiscal Year 1995 activities will continue through Fiscal Year 1996 with the addition of the following activities:

The Notice of Proposed Rulemaking will be published in the *Federal Register* to address modifications required to the Standard Disposal Contract to implement a multi-purpose canister based system. The Notice will also address previously identified waste acceptance issues. Comments on the Notice will be considered in the preparation of the Final Rule. The development of procedures for managing multi-purpose canister deployment will be initiated.

2.5.2.2 Systems Engineering/Waste Acceptance Criteria for Non-Utility Materials

Fiscal Year 1995 activities will continue through Fiscal Year 1996 with the addition of the following activities:

The development of systems engineering documentation for Waste Acceptance will include preparation of the implementing procedures defined in the Waste Acceptance Operations Plan and the preparation of the preliminary draft Design Requirements Document. Waste Acceptance Configuration Items will be identified. Alternative waste form qualification process requirements will be incorporated in the Waste Acceptance Design Requirements Document. Alternative waste forms will be evaluated for conformance with the Waste Acceptance Criteria.

2.5.2.3 Safeguards and Security

Fiscal Year 1995 activities will continue through Fiscal Year 1996 with the addition of the following activities:

Verification requirements and procedures will continue to be developed and tested, and development of a verification tracking system will be initiated. Verification inspector training will commence. Comments on verification issues addressed in the rulemaking will be evaluated and dispositioned to support the issuance of a Final Rule. Department and Nuclear Regulatory Commission interface responsibilities will be identified. Resulting Program and Project responsibilities will be defined. Program and Projects needs related to planning, equipment, training, and procedure development will be identified and measures taken to meet those needs. The Material Control and Accountability Plan will be revised to incorporate experience resulting from testing and modifying spent nuclear fuel verification procedures, including unique tracking and training aspects. The Program positions on meeting International Atomic Energy Agency standards and on containment and surveillance devices, procedures, and training will be coordinated.

2.5.2.4 Nuclear Waste Fund Activities

Fiscal Year 1995 activities will continue through Fiscal Year 1996 with the addition of the following activities:

Verification of utility payments to the Nuclear Waste Fund and projections of revenue will be continued. The evaluation of impacts on the Nuclear Waste Fund of alternative cost-sharing programs arising from the Notice of Inquiry will be completed. Financial and economic analyses of Memoranda of Agreement and contract negotiations will be completed.

2.5.2.5 Data Collection and Dissemination

Fiscal Year 1995 activities will continue through Fiscal Year 1996 with the addition of the following activities:

The Unified Database system development and testing will be completed.

2.5.2.6 Metrics - Fiscal Year 1996

Outcomes: (1) Continuation of the stakeholder dialogue addressing previously identified waste acceptance issues, the Notice of Inquiry on Waste Acceptance Issues, and the multi-purpose canister subsystem; (2) Receipt and processing of Delivery Commitment Schedules and Exchanges; (3) Development and testing of Final Delivery Schedule Processing and Approval process; (4) Development of Waste Acceptance Operations Plan implementing procedures and preliminary draft Design Requirement Document; (5) Identification of Waste Acceptance Configuration Items; (6) Complete Memorandum of Agreement between the Office of Civilian Radioactive Waste Management and the Office of Environmental Management on the acceptance of the Department's waste; (7) Development and testing of verification procedures, development of verification tracking system, commencement of verification inspector training; (8) Definition of Nuclear Regulatory Commission and Department of Energy Safeguards and Security interfaces; (9) Development of dialogue with the International Atomic Energy Agency, Nuclear Regulatory Commission, utilities and others concerning safeguards; (10) Coordination of Program position on meeting International Atomic Energy Agency containment and surveillance objectives; (11) Collection, processing and validation of the 1995 Nuclear Fuel Data Form (RW-859); (12) Short-term electricity generation and fee projections; and (14) Development and testing of the Unified Database System.

Outputs:

- Publish World Nuclear Capacity and Fuel Cycle Requirements 1995. 11/95
- Notice of Proposed Rulemaking modifying the Standard Disposal Contract to implement a multi-purpose canister based system. 12/95
- Issue Preliminary Draft Design Requirements Document. 01/96
- Publish Spent Nuclear Fuel Discharges from U.S. Reactors 1994. 02/96
- Publish 1995 Acceptance Priority Ranking and Annual Capacity Report. 03/96
- Develop and Test Unified Database System. 06/96
- Complete development of the Final Delivery Schedule Processing and Approval procedure. 07/96
- Issue plan for training of spent nuclear fuel inspectors. 07/96
- Identify Waste Acceptance Configuration Items. 07/96
- Complete development of verification requirements and procedures. 09/96
- Complete Memorandum of Agreement between the Office of Civilian Radioactive Waste Management and the Office of Environmental Restoration and Waste Management on the acceptance of the Department's waste. 09/96

- Publish Spent Fuel Storage Requirements 1995-2040. 09/96

- Publish Integrated Data Base for 1995. 09/96

2.5.3 Fiscal Year 1997

In addition to ongoing activities, the preparation and promulgation of the Final Rule to revise the Standard Disposal Contract will be completed in Fiscal Year 1997 and verification activities will commence to support loading of multi-purpose canisters in 1998.

2.5.3.1 Standard Disposal Contract and Other Agreements

Fiscal Year 1996 activities will continue through Fiscal Year 1997 with the addition of the following activities:

The Final Rule revising the Standard Disposal Contract will be published in the *Federal Register* and utility contracts will be conformed to the Rule. Procedures for managing Multi-purpose canister deployment will be implemented. Contractually mandated activities will be completed, including the issuance of the combined Acceptance Priority Ranking Report and the Annual Capacity Report and processing of Delivery Commitment Schedules, Delivery Commitment Schedule Exchanges, and Final Delivery Schedules. The Delivery Commitment Schedule Information Network will be operated and maintained as will the Final Delivery Schedule Processing and Approval procedure. Contractual reporting requirements will be satisfied.

2.5.3.2 Systems Engineering/Waste Form Criteria

Fiscal Year 1996 activities will continue through Fiscal Year 1997 with the addition of the following activities:

The preparation of operational procedures identified in Waste Acceptance Operational Plan will be completed. The Waste Acceptance Design Requirement Document will be baselined and will be used to support the detailed design of the Waste Acceptance element and preparation of the Waste Acceptance Configuration Items.

2.5.3.3 Safeguards and Security

Fiscal Year 1996 activities will continue through Fiscal Year 1997 with the addition of the following activities:

Verification will commence at selected utilities; procedures will be modified as necessary. Development and testing of a verification tracking system will be completed. Verification tracking system will be implemented and maintained. Training of spent nuclear fuel inspectors will be completed. Development of detailed Safeguards and Security plans, equipment design requirements, procedures, and training and testing plans will be overseen to assure that the compliance process is developed and implemented.

2.5.3.4 Nuclear Waste Fund Activities

Fiscal Year 1996 activities will continue through Fiscal Year 1997.

2.5.3.5 Data Collection and Dissemination

Fiscal Year 1996 activities will continue through Fiscal Year 1997 with the addition of the following activities:

The Unified Database system will be implemented, maintained and modified.

2.5.3.6 Metrics - Fiscal Year 1997

Outcomes: (1) Continuation of the stakeholder dialogue addressing issues arising from the promulgation of the Final Rule; (2) Receipt and processing of Delivery Commitment Schedules and Exchanges; (3) Receipt and Processing of Final Delivery Schedules; (4) Waste Acceptance Configuration Items identified; (5) Development of Waste Acceptance Operations Plan implementing procedures completed and Design Requirements Document baselined; (6) Completion of development and testing of verification procedures, development of verification tracking system, verification inspector training; (7) Verification begins at reactor sites; (8) Oversight of Project Safeguards and Security activities; (9) Continuation of dialogue with the International Atomic Energy Agency, Nuclear Regulatory Commission, utilities and others concerning safeguards; (10) Coordination of Program position on meeting International Atomic Energy Agency containment and surveillance objectives; (11) Collection, processing, and validation of the 1996 Nuclear Fuel Data Form (RW-859); (12) Short-term electricity generation and fee projections; and (13) Unified Database System operational.

Outputs:

- Publish World Nuclear Capacity and Fuel Cycle Requirements 1996. 11/96
- Issue Revision 0 of the Waste Acceptance Design Requirements Document. 12/96
- Publish Final Rule to modify the Standard Disposal Contract which supports multi-purpose canister implementation and addresses all remaining contract related issues. 01/97
- Verification Begins at Reactor Sites. 01/97
- Implement an operational Unified Database System. 01/97
- Publish Spent Nuclear Fuel Discharges from U.S. Reactors 1995. 02/97
- Publish 1996 Acceptance Priority Ranking and Annual Capacity Report. 03/97

- Publish Spent Fuel Storage Requirements 1996-2040. 09/97
- Publish Integrated Data Base for 1996. 09/97

2.5.4 Fiscal Year 1998

In addition to ongoing activities, verification of the identity of the spent nuclear fuel assemblies to be loaded in multi-purpose canisters will continue in Fiscal Year 1998.

2.5.4.1 Standard Disposal Contract and Other Agreements

Fiscal Year 1997 activities will continue through Fiscal Year 1998 with the addition of the following activities:

Multi-purpose canister deployment activities will be administered.

2.5.4.2 Systems Engineering/Waste Acceptance Criteria of Non-Utility Materials

Fiscal Year 1997 activities will continue through Fiscal Year 1998 with the addition of the following activities:

The Waste Acceptance Design Requirements Document will be used to support the test and integration of Waste Acceptance Configuration Items. The alternative waste form qualification process will be tested and implemented. Waste Acceptance input and review on system studies related to alternative waste forms will be provided and system study results will be incorporated into Waste Acceptance Test and Integration activities.

2.5.4.3 Safeguards and Security

Fiscal Year 1997 activities will continue through Fiscal Year 1998 with the addition of the following activities:

Inspector training will be maintained and new inspectors trained to meet requirements. Implementation of the verification tracking system will include the development and testing of routines for data acquisition, handling, control and retrieval through the Unified Database System. An International Atomic Energy Agency required Design Information Questionnaire and Facility Attachment will be developed.

2.5.4.4 Nuclear Waste Fund Activities

Fiscal Year 1997 activities will continue through Fiscal Year 1998.

2.5.4.5 Data Collection and Dissemination

Fiscal year 1997 activities will continue through Fiscal Year 1998.

2.5.4.6 Metrics - Fiscal Year 1998

Fiscal year 1997 activities will continue through Fiscal Year 1998 with the addition of the following activities:

Outcomes: (1) Continuation of the stakeholder dialogue addressing issues arising from the promulgation of the Final Rule; (2) Receipt and processing of Delivery Commitment Schedules and Exchanges; (3) Receipt and Processing of Final Delivery Schedules; (4) Testing and integration of Waste Acceptance Configuration Items identified; (5) Testing and implementation of alternative waste form qualification process; (6) Verification continues at reactor sites; (7) Oversight of project Safeguards and Security activities; (8) International Atomic Energy Agency required Design Information Questionnaire and Facility Attachment will be developed; (9) Continuation of dialogue with the International Atomic Energy Agency, Nuclear Regulatory Commission, utilities and others concerning safeguards; (10) Coordinate Program position on meeting International Atomic Energy Agency containment and surveillance objectives; (11) Collection, processing and validation of the 1997 Nuclear Fuel Data Form (RW-859); (12) Short-term electricity generation and fee projections; and (13) Unified Database System operational.

Outputs:

- Publish World Nuclear Capacity and Fuel Cycle Requirements 1997. 11/97
- Verification of spent nuclear fuel loaded in additional multi-purpose canisters. All Year
- Publish Spent Nuclear Fuel Discharges from U.S. Reactors 1996. 02/98
- Publish 1997 Acceptance Priority Ranking and Annual Capacity Report. 03/98
- Complete development of the International Atomic Energy Agency required Design Information Questionnaire and Facility Attachment. 09/98
- Publish Spent Fuel Storage Requirements 1997-2040. 09/98
- Publish Integrated Data Base for 1997. 09/98

2.5.5 Fiscal Year 1999

In addition to ongoing activities verification of the identity of spent nuclear fuel assemblies to be loaded into multi-purpose canisters will continue in Fiscal Year 1999.

2.5.5.1 Standard Disposal Contract

Fiscal Year 1998 activities will continue through Fiscal Year 1999 with the addition of the following activities:

Conformance of the utility contracts to the revised Final Rule will be completed.

2.5.5.2 Systems Engineering/Waste Acceptance Criteria for Non-Utility Materials

Fiscal Year 1998 activities will continue through Fiscal Year 1999.

2.5.5.3 Safeguards and Security

Fiscal Year 1998 activities will continue through Fiscal Year 1999 with the addition of the following activities:

Inspector training will be maintained and new inspectors trained to meet requirements. Project development of detailed Safeguards and Security plans, equipment design requirements and specifications, procedures, and training and testing plans will continue to be overseen to assure that the compliance process is developed and implemented. Coordination and interactions with the International Atomic Energy Agency, Nuclear Regulatory Commission, utilities and others concerning safeguards will be continued. The Program positions on meeting International Atomic Energy Agency standards and on containment and surveillance devices, procedures, and training will be coordinated. An International Atomic Energy Agency required Design Information Questionnaire and Facility Attachment will be revised.

2.5.5.4 Nuclear Waste Fund Activities

Fiscal Year 1998 activities will continue through Fiscal Year 1999.

2.5.5.5 Data Collection and Dissemination

Fiscal Year 1998 activities will continue through Fiscal Year 1999.

2.5.5.6 Metrics - Fiscal Year 1999

Outcomes: (1) Continuation of the stakeholder dialogue addressing issues arising from the promulgation of the Final Rule; (2) Receipt and processing of Delivery Commitment Schedules and Exchanges; (3) Receipt and Processing of Final Delivery Schedules; (4) Testing and integration of Waste Acceptance Configuration Items; (5) Testing and implementation of alternative waste form qualification process; (6) Verification continues at reactor sites; (7) Oversight of project Safeguards and Security activities; (8) International Atomic Energy Agency required Design Information Questionnaire and Facility Attachment will be revised; (9) Continuation of dialogue with the International Atomic Energy Agency, Nuclear Regulatory Commission, utilities and others concerning safeguards; (10) Coordination of Program position on meeting International Atomic Energy Agency containment and surveillance objectives; (11) Collection, processing and validation of the 1998 Nuclear Fuel Data Form (RW-859); (12) Short-term electricity generation and fee projections; and (13) Unified Database System operational.

Outputs:

- Publish World Nuclear Capacity and Fuel Cycle Requirements 1998. 11/98
- Verification of spent nuclear fuel loaded in additional multi-purpose canisters. All year
- Publish Spent Nuclear Fuel Discharges from U.S. Reactors 1997. 02/99
- Publish 1998 Acceptance Priority Ranking and Annual Capacity Report. 03/99
- Complete revision of the International Atomic Energy Agency required Design Information Questionnaire and Facility Attachment. 9/99
- Publish Spent Fuel Storage Requirements 1998-2040. 09/99
- Publish Integrated Data Base for 1998. 09/99

2.5.6 Fiscal Year 2000

In addition to ongoing activities, verification of the identity of spent nuclear fuel assemblies to be loaded into multi-purpose canisters will continue in Fiscal Year 2000.

2.5.6.1 Standard Disposal Contract

Fiscal Year 1999 activities will continue through Fiscal Year 2000.

2.5.6.2 Systems Engineering/Waste Acceptance Criteria for Non-Utility Materials

Fiscal Year 1999 activities will continue through Fiscal Year 2000.

2.5.6.3 Safeguards and Security

Fiscal Year 1999 activities will continue through Fiscal Year 2000.

2.5.6.4 Nuclear Waste Fund Activities

Fiscal Year 1999 activities will continue through Fiscal Year 2000.

2.5.6.5 Data Collection and Dissemination

Fiscal Year 1999 activities will continue through Fiscal Year 2000.

2.5.6.6 Metrics - Fiscal Year 2000

Outcomes: (1) Continuation of the stakeholder dialogue addressing issues arising from the promulgation of the Final Rule; (2) Receipt and processing of Delivery Commitment Schedules

and Exchanges; (3) Receipt and Processing of Final Delivery Schedules; (4) Testing and integration of Waste Acceptance Configuration Items; (5) Testing and implementation of alternative waste form qualification process; (6) Verification continues at reactor sites; (7) Oversight of project Safeguards and Security activities; (8) International Atomic Energy Agency required Design Information Questionnaire and Facility Attachment will be revised; (9) Continuation of dialogue with the International Atomic Energy Agency, Nuclear Regulatory Commission, utilities and others concerning safeguards; (10) Coordinate Program position on meeting International Atomic Energy Agency containment and surveillance objectives; (11) Collection, processing and validation of the 1999 Nuclear Fuel Data Form (RW-859); (12) Short-term electricity generation and fee projections; and (13) Unified Database System operational.

Outputs:

- Publish World Nuclear Capacity and Fuel Cycle Requirements 1999. 11/99
- Verification of spent nuclear fuel loaded in additional multi-purpose canisters. All year
- Publish Spent Nuclear Fuel Discharges from U.S. Reactors 1998. 02/00
- Publish 1999 Acceptance Priority Ranking and Annual Capacity Report. 03/00
- Update the International Atomic Energy Agency required Design Information Questionnaire and Facility Attachment. 09/00
- Publish Spent Fuel Storage Requirements 1999-2040. 09/00
- Publish Integrated Data Base for 1999. 09/00

2.6 WASTE ACCEPTANCE COST ESTIMATE

Table 2-1 presents the funding requirements for the fiscal years 1995-2000 for the waste acceptance product area.

The upward trend in waste acceptance funding requirements through 1997 is for the development of protocols and procedures that must be completed and in place prior to 1998, and which must be operational prior to the initial loading and sealing of multi-purpose canisters. Funding requirements again rise in 1998 and trend upward because of the initial and increasing number of multi-purpose canister loadings that must be supported, beginning in 1998, and the related operational costs of that support.

Table 2-1. Five-Year Plan Funding Profile
Waste Acceptance (Funding in $M)

WBS	Title	FY95	FY96	FY97	FY98	FY99	FY00
3.3.1/ 3.3.2/ 3.3.3	Waste Acceptance	6.0	7.6	10.0	14.0	16.0	18.0

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3. TRANSPORTATION

3.1 INTRODUCTION

Transportation and Waste Acceptance are integrally connected activities. The current vision is to transport spent nuclear fuel to a federal facility immediately following waste acceptance. Many of the uncertainties that confront waste acceptance (see Chapter 2) also confront the planning for transportation.

Transportation activities include developing generic procedures for, and training commercial utilities in, the handling, loading, and transfer of multi-purpose canisters and transport casks; providing transportation casks; transporting the spent nuclear fuel from the utility storage sites to the repository; and working with stakeholders to identify and resolve policy and operational issues of mutual concern. At present, there is uncertainty about the degree utilities will use the multi-purpose canister. Some reactors may be unable to use the multi-purpose canister because of plant or transportation capability limitations, and some utilities may elect not to use the multi-purpose canister. The Department is developing a dry transfer capability to transfer spent nuclear fuel from various casks to a multi-purpose canister. The current plan calls for shipping the majority of the spent nuclear fuel in multi-purpose canisters in transportation casks on rail and barge. When rail or barge facilities are not available at the reactor site, heavy-over-the-road-haul trucks will transport the cask from the reactor to a rail or barge facility. Spent nuclear fuel that cannot be transported by rail or barge would be transported by legal-weight truck. Shipping spent nuclear fuel in transportation casks from reactor sites to the repository will begin in 2010, when the repository is scheduled to begin operations. Chapter 4 addresses multi-purpose canisters in more detail.

In addition to transportation casks for multi-purpose canisters, advanced-technology, high-capacity casks for highway transportation will be developed and certified. The GA-4 and GA-9 advanced-technology casks designed by General Atomics are currently in development. All transportation casks require certification by the Nuclear Regulatory Commission under Part 71 of Title 10 of the Code of Federal Regulations.

The current transportation subsystem development schedule is paced to match repository availability. Should a Federal site for spent nuclear fuel storage become available sooner than the repository, the Department will maintain readiness so that a transportation capability could be available when the facility is completed.

The Department will also continue work with stakeholders to identify and resolve operational and policy issues of mutual concern to spent nuclear fuel and high-level waste. Stakeholders involved in the process include other Federal agencies; State, Tribal, and local governments; the electric utilities, transportation, and nuclear supplier industries; trade and professional associations; environmental and other special-interest groups; academic transportation study centers; and the general public. Issues, in addition to Section 180(c), include transportation modes and routes, infrastructure improvements, cask designs and testing requirements, Tribal prenotification of shipments, liability, emergency preparedness, security, and State, Tribal, and local authority to regulate and inspect shipments.

The Department is committed to managing a program that is open to pubic involvement, provides avenues for stakeholder involvement, and provides information and educational materials to interested parties. The involvement and educational activities that the transportation subelement will continue to support include:

- Operating a public information program. This program features fact sheets, films, videotapes, and visual aids; guided tours of nuclear facilities; and speakers on a wide range of topics.

- Operating an educational assistance program. This program includes curriculum guides for science teachers, instructional materials, training programs for students and teachers, and technical and financial aid for educational institutions.

- Sponsoring cooperative agreement groups. The Department currently funds ten national and regional groups which provide information and advice on transportation issues.

- Sponsoring conferences and meetings. The Department sponsors the Transportation Coordination Group meetings and the Transportation External Coordination Working Group meetings. The Project representatives also attend meetings of various stakeholder groups to report on the Project. These forums provide the Department the opportunity to report on the Department's plans and activities and to gather feedback on them from stakeholders.

3.2 OBJECTIVES

For transportation, the primary objective is to develop the technical and institutional capability to transport spent nuclear fuel from reactors to a repository beginning in 2010, or whenever a Federal interim central storage facility is available, potentially as early as 1998. The major milestones for achieving this objective are:

- Receive certificates of compliance for General Atomics' GA-4 and GA-9 advanced-technology highway casks from the Nuclear Regulatory Commission. 1996

- Resolve remaining burn-up credit issues and its impact on criticality control for storage and transportation. 1997

- Provide transportation input to the repository Environmental Impact Statement. 1997

- Issue notice of proposed policy and procedures for implementing section 180(c). 1997

- Complete first GA-4/9 cask prototype. 1997

- Begin distributing multi-purpose canisters to utilities. 1998

- Achieve the basic capability to transport commercial spent nuclear fuel. 1998

- Provide operational multi-purpose canister distribution/technical assistance team. 1998

- Attain a fully operational transportation capability. 2010

3.3 STRATEGY

To meet this objective, the Department's strategy divides the transportation activities into three phases. The near-term or Planning Phase covers the period between 1995 and 2000. Its focus will be deploying the multi-purpose canister subsystem and development of a minimal transportation capability in support of a possible Federal interim central storage facility. The mid-term or Plan Sustainment Phase extends from 2001 to 2005 and focuses on continued support of multi-purpose canister distribution and maintenance of a transportation capability. The long-term or Operational Preparation Phase covers the period 2006 through 2010 and focuses on deployment of a fully operational transportation capability to support the start of repository operation in 2010.

3.3.1 Planning Phase (Present-2000)

During the Planning Phase, the Department will complete specific tasks to support the development of the multi-purpose canister and a transportation capability. This transportation capability will also support operations to a possible Federal interim central storage facility. The tasks are:

- Provide technical support for the design, development, and deployment of multi-purpose canisters and transportation casks as necessary. When the multi-purpose canister subsystem is fully implemented, these transportation casks will be the principal means for transporting spent nuclear fuel from utility sites to an interim central storage site or repository. They must be fully integrated into the transportation subsystem.

- Support National Environmental Policy Act activities for the multi-purpose canister subsystem and the repository Environmental Impact Statement. These activities include the development and maintenance of data bases on handling and using multi-purpose canisters and transportation casks.

- Submit a Topical Report on burnup credit and its impact on criticality control in 1995. Resolve any comments and prepare, if necessary, a revised topical report on the use of burnup credit and its impact on the criticality control methods for submittal to the Nuclear Regulatory Commission by 1997. Burnup credit will allow the Department to use the full capacity of the large multi-purpose canisters. These activities are coordinated with the repository's long term criticality control activities.

- Develop and implement, as appropriate, a plan for training and providing technical support required by the potential deployment of the multi-purpose canisters.

- Develop and certify an advanced high capacity legal-weight truck transport capability by 1998. Subtasks include applying for Nuclear Regulatory Commission certification of the

casks and testing the tractor-trailer designed to transport the casks. The safety analysis reports for the GA-9 and GA-4 casks were submitted to the Nuclear Regulatory Commission in July and August 1994, respectively, and certification is expected in two years. The certification process will include testing a half-scale cask model. Concurrent with cask certification, the tractor and trailer designed to transport the cask will undergo operational and durability testing. After the cask design is certified, a prototype cask will be fabricated.

To meet the schedule for this task, the Department must meet frequently with the Nuclear Regulatory Commission and cask design contractor to resolve regulatory issues. If transportation occurs earlier than 2010, the Department will adjust this schedule to achieve the requisite transportation capability. Incorporated in this plan is the effective use of existing-technology casks to meet transport requirements.

- Fund and maintain cooperative agreements with national and regional groups to address institutional and technical issues. Subtasks include:

  - Develop policy options for the transportation subsystem.

  - Seek to resolve institutional issues with State, Tribal, and transportation industry representatives.

  - Develop guidelines for selecting routes.

  - Address the issue of full-scale cask testing, which is not a regulatory requirement.

  - Work with stakeholders and use an administrative procedure process to develop procedures for implementing Section 180(c) of the Nuclear Waste Policy Act.

- Develop a transportation concept of operations. The development of the concept of operations will identify critical issues that must be resolved. The Project will work closely with other offices within the Department, other Federal agencies (such as the Department of Transportation), and industry groups (such as the Association of American Railroads) to resolve issues on routing, rail car design, use of dedicated trains, escort requirements, risk assessment, emergency response, tracking systems, recovery operations, and in-transit physical security. The goal is to complete these key activities that, if not done, could preclude early waste acceptance and transport to a Federal interim central storage facility.

3.3.2 Plan Sustainment Phase (2001-2005)

During this phase, the Project will continue to support the deployment of the multi-purpose canister subsystem and continue to refine plans for a fully operational transportation subsystem. The Department will complete the following tasks:

- Maintain current certificates of compliance for the GA-4 and GA-9 legal-weight truck casks and the multi-purpose canister transportation cask.

- Continue to support interactions with stakeholders to identify and resolve policy and operational issues.

- Ensure close coordination with the utilities on the receipt, use, and maintenance of multi-purpose canisters.

- Ensure close coordination between the transportation and repository elements during the planning and construction (if any) of rail spurs needed to transport spent nuclear fuel from the utility sites to a repository.

- Continue to refine and update the transportation concept of operations.

3.3.3 Operational Preparation Phase (2006-2010)

During this phase, the Department will initiate activities to develop a fully operational transportation subsystem by 2010. Should a Federal interim central storage facility be available prior to 2010, the schedule for these activities would be correspondingly advanced. The following tasks must be completed during this phase:

- Issue requests for proposals for cask fleet fabrication to procure sufficient multi-purpose and legal-weight-truck casks to meet shipping schedules to the repository.

- Complete and implement the concept of operations and establish an organization for executing the transportation plan. This task includes preparing and implementing detailed procedures for each aspect of transportation operations – planning, tracking and control, traffic management, field operations, and service and maintenance.

- Prepare statements of work and requests for proposals and award contracts for highway, rail, barge (if required), heavy-haul, heavy-lift, and any other services required to support transportation operations.

- Operationally test the transportation subsystem in sufficient time to ensure an operational capability in 2010.

- Prepare detailed shipping plans including shipping schedules, technical training, and selection of shipping routes.

- Continue stakeholder interactions to help identify and resolve policy and operational issues in preparation for the shipments.

- Implement Section 180(c) of the Nuclear Waste Policy Act three to five years before the first shipment.

- Continue to work closely with the utilities on the acceptance, use, and maintenance of shipping casks, and provide technical assistance for the transport operations planned for each utility site.

3.4 ASSUMPTIONS FOR TRANSPORTATION

The five-year plan for the Transportation element is based on the following assumptions:

- Other than existing truck casks, there will be a limited high capacity truck shipment capability in 1998 consisting of one GA-9 legal-weight truck cask with an interchangeable basket. Thus, the majority of commercial spent nuclear fuel can be transported by this cask.

- Transportation of spent nuclear fuel will begin upon commencement of repository operations in 2010, but possibly to a Federal interim central storage facility as early as 1998.

- Direct financial assistance under Section 180(c) will not begin during this five-year planning horizon unless a Federal waste management facility is identified. Implementation of Section 180(c) will begin three to five years prior to shipment to the repository or a Federal interim central storage facility.

- The decision will be made to fabricate and deploy multi-purpose canisters, having considered potential environmental impacts.

3.5 TRANSPORTATION FIVE-YEAR PLAN

This section summarizes the five-year plan for transportation to meet the objectives discussed in Section 3.2.

3.5.1 Fiscal Year 1995

The major focus for fiscal year 1995 will be to complete the fabrication of the half-scale model of the GA-4 transportation cask and to begin regulatory testing. Because the GA-4 and GA-9 casks are similar, it is normally sufficient to build models and prototypes, and do testing on only one of the two types, typically the more limiting. Durability and operability testing of the GA-9 legal-weight trailer and the tractor will be completed and a test report prepared. The Topical Report for Criticality Control will be completed and submitted to the Nuclear Regulatory Commission for review. Support will be continued for the multi-purpose canister and multi-purpose canister transportation cask development and National Environmental Policy Act activities. Interactions with the stakeholders will continue, with particular emphasis on developing a process for resolving the full-scale cask testing issue, developing a route selection guidance document, developing Section 180(c) policy and implementation recommendations, and providing a route selection guidance document.

3.5.1.1 Transportation Equipment

The fabrication of the half-scale model of the GA-4 legal-weight truck cask will be completed. This cask model will then undergo a series of tests prescribed in Nuclear Regulatory Commission spent nuclear fuel transportation cask licensing regulations.

The certification process for the GA-4/9 legal-weight truck casks will continue with the Nuclear Regulatory Commission. Technical issues to support cask certification will be addressed as questions and comments are received from the Nuclear Regulatory Commission.

The durability and operability testing of the GA-9 legal-weight trailer and tractor combination will be completed and the final test report will be prepared.

Burnup credit for storage and transportation of spent nuclear fuel is expected to be implemented in two phases. For the first phase, a Topical Report on the use of burnup credit and its impact on criticality control will be completed and submitted to the Nuclear Regulatory Commission for review. For the second phase, in fiscal year 1997, additional technical factors will be included. Specific studies, analysis, and verification experiments will be planned and managed to support certification of multi-purpose canister transportation and storage designs credit for spent nuclear fuel burnup. Because current burnup credit activities for storage and transportation are closely related to the overall issue of criticality control for disposal, close coordination will be maintained with the design of the repository waste package.

3.5.1.2 Institutional

Interactions will be continued with State, Tribal, and local governments; other Federal agencies; and the transportation industry to promote understanding and build public confidence. All National Environmental Policy Act interactions related to the transportation element of the multi-purpose canister subsystem will be supported. Transportation input will be provided to scoping activities related to the repository and to any additional actions on the part of the Department that may be subject to the National Environmental Policy Act.

Cooperative agreements with national and regional groups will be maintained and funded to address institutional and technical transportation operations issues. Policy options on key transportation institutional issues will be developed, working toward resolution of institutional issues with State, Tribal, and transportation industry representatives. Transportation External Coordination Working Group and Transportation Coordinating Group meetings, technical workshops, and public information activities will be continued. Departmental route selection guidance will be developed. A process to resolve the full-scale cask testing issue will be developed. The Department will work with stakeholders to resolve the issue of how to implement Section 180(c) of the Nuclear Waste Policy Act, using an administrative procedure process.

3.5.1.3 Operations

The Reference Transportation Data and Assumptions Report, the standard source for transportation planning data, will be revised and updated to include multi-purpose canister subsystem design and operational parameters. The transportation data baseline will be maintained and risk-based data will be added for all modes of transportation considered. The Transportation Geographic Information System will be enhanced with new data to support Environmental Impact Statement preparation. Analytical and trade-off studies related to transportation subsystem design and operations will be performed.

The Transportation Operations Plan will be completed and baselined. Development and updating of transportation information will be continued in support of multi-purpose canister and legal-weight truck cask development. Assessments of the overall multi-purpose canister and multi-purpose canister transportation cask fleet composition and operational requirements will continue, integrating the unique needs of individual reactor sites. Detailed input on transportation subsystem operational requirements will continue to be developed for legal-weight truck cask, multi-purpose canister, and multi-purpose canister transportation cask design and development activities. Rail service, intermodal transfer, and heavy haul will be evaluated and plans will be developed to support transportation activities at utility sites, the repository, and potential storage sites, as required. Interfaces will be maintained with other system elements to integrate transportation planning and operational concepts.

The detailed plan for the conduct of transportation operations prior to 2010 will be developed. The necessary models, codes, and data for transportation impact analysis for environmental documents will be acquired.

3.5.1.4 Metrics - Fiscal Year 1995

Outcomes: (1) Continue interaction with the Nuclear Regulatory Commission on the pending Certificates of Compliance for GA-9 and GA-4 casks; (2) Continue to develop and refine transportation databases; (3) Adopt a methodology and supporting analytical models to perform risk analyses; (4) Continue interactions with stakeholders to identify and address policy and operational issues of mutual concern; (5) Develop a process for resolving full-scale cask testing issue; and (6) Support National Environmental Policy Act activities related to the Environmental Impact Statements for the multi-purpose canister and the repository.

Outputs:

- Complete the Transportation System Operations Plan. 11/94
- Prepare a contingency plan for early transportation operations. 01/95
- Issue a Notice of Intent to prepare proposed policy and procedure on Section 180(c). 01/95
- Complete the Topical Report on the use of burnup credit and its impact on storage and transportation criticality control and submit it to the Nuclear Regulatory Commission. 05/95
- Complete draft Route Selection Guidance Document. 06/95
- Complete fabrication of the GA-4 transportation cask half-scale model. 07/95
- Complete final test report for the GA-9 legal-weight trailer and tractor testing. 09/95

3.5.2 Fiscal Year 1996

The major focus for fiscal year 1996 will be on the data and analysis that will support the Nuclear Regulatory Commission on the pending Certificates of Compliance for the GA-4 and GA-9 legal-weight truck casks. It is anticipated that the Nuclear Regulatory Commission will issue the Certificates of Compliance for the GA-4 and GA-9 legal-weight truck casks by the end of the fiscal year, and fabrication of the GA-9 cask prototype can begin. Support will be continued for the multi-purpose canister and multi-purpose canister transportation cask development and National Environmental Policy Act activities. The anticipated receipt from the Nuclear Regulatory Commission of a Safety Evaluation Report on the use of burnup credit and its impact on criticality control will be an important factor towards obtaining certificates of Compliance in 1997. Interactions will continue with stakeholders to resolve institutional issues, in particular Section 180(c) requirements. Cooperative agreements with national and regional groups will be maintained and funded, and a vigorous institutional program will continue.

3.5.2.1 Transportation Equipment

The ongoing Nuclear Regulatory Commission process of certifying the GA-4/9 legal-weight truck casks will be supported by addressing technical issues related to cask design that arise during certification activities. Fabrication of the prototype legal-weight truck cask will begin. The Nuclear Regulatory Commission is expected to issue the Certificates of Compliance for the GA-4 and GA-9 legal-weight truck casks during the year.

Nuclear Regulatory Commission comments and questions on the burnup credit and its impact on criticality control will be addressed and a revision to the Topical Report will be submitted. Specific studies, analytical capabilities, and verification experiments will be documented in support of the certification of multi-purpose canisters, transportation and storage casks, and for obtaining criticality control credit for spent nuclear fuel burnup. A Safety Evaluation Report for the use of burnup credit and its impact on criticality control will be received from the Nuclear Regulatory Commission.

3.5.2.2 Institutional

Ongoing activities from Fiscal Year 1995 will be continued, with the following tasks also being accomplished.

Policy options on key transportation institutional issues will be developed, working toward resolution of institutional issues with State, Tribal, and transportation industry representatives. Departmental route selection guidance will be developed and a route selection guidance document issued. The requirement for full-scale cask testing will be determined, and, if so, the types of tests that will be performed will be defined. The Department will continue to work with stakeholders to resolve the issue of how to implement Section 180(c) of the Nuclear Waste Policy Act, using an administrative procedure process.

3.5.2.3 Operations

Ongoing activities from Fiscal Year 1995 will be continued, with the following tasks also being accomplished.

Development and updating of transportation information will be continued in support of multi-purpose canisters development. Assessments of the over all multi-purpose canister and multi-purpose canister transportation cask fleet composition and operational requirements will continue, integrating the unique needs of individual reactor sites. A draft plan for the delivery and utilization of the multi-purpose canisters will be prepared.

The detailed plan for the conduct of transportation operations prior to 2010 will be revised and updated. The necessary models, codes, and data for transportation impact analysis for environmental documents will be acquired.

3.5.2.4 Metrics - Fiscal Year 1996

Outcomes: (1) Continue interaction with the Nuclear Regulatory Commission on the pending Certificates of Compliance for GA-9 and GA-4 casks; (2) Continue to develop and refine transportation databases; (3) Implement a methodology and supporting analytical models to perform risk analyses; (4) Continue interactions with stakeholders to resolve institutional issues, in particular Section 180(c); and (5) Support National Environmental Policy Act activities related to the Environmental Impact Statements for the multi-purpose canister and the repository.

Outputs:

- Complete the final test report for the GA-4 transportation cask half-scale model regulatory testing. 11/95
- Select policy option for resolving full-scale cask testing issue. 11/95
- Complete the incorporation of the half-scale model test results into the GA-4/9 Safety Analysis Report. 12/95
- Provide revised contingency plan for early transportation operations. 12/95
- Based on Nuclear Regulatory Commission comments, submit revised Topical Report on the use of burnup credit and its impact on criticality control for storage and transportation. 04/96
- Prepare draft plan for deployment of the multi-purpose canisters. 06/96
- Issue Route Selection Guidance Document. 6/96

- Receive Safety Evaluation Report on the use of burnup credit for criticality control from the Nuclear Regulatory Commission. 08/96

- Nuclear Regulatory Commission issues Certificates of Compliance for the GA-4 and GA-9 legal-weight truck casks. 09/96

3.5.3 Fiscal Year 1997

The major focus for fiscal year 1997 will be the completion of the prototype fabrication for the GA-9 cask; development of a Topical Report on the extended use of burnup credit and its impact on criticality control; and continued support of multi-purpose canister development activities. In addition, a final Notice of Proposed Policy and Procedures detailing the policy for implementing Section 180(c) will be issued.

3.5.3.1 Transportation Equipment

The procurement and fabrication of the GA-9 legal-weight truck cask prototype will be completed. Technical issues to support cask design and certification activities will continue to be addressed and resolved.

A Topical Report addressing additional technical factors in the use of burnup credit and its impact on criticality control for storage and transportation will be completed and submitted to the Nuclear Regulatory Commission for review.

3.5.3.2 Institutional

Ongoing activities from Fiscal Year 1996 will be continued, with the following tasks also being accomplished.

A transportation assessment to support development of the draft repository Environmental Impact Statement will be prepared.

A policy for implementing Section 180(c) of the Nuclear Waste Policy Act will be issued.

3.5.3.3 Operations

Ongoing activities from Fiscal Year 1996 will be continued, with the following tasks also being accomplished.

Planned analytical and trade-off studies related to transportation subsystem design and operations addressing the deployment and use of multi-purpose canisters and multi-purpose canister transportation casks will be completed to support the repository Environmental Impact Statement.

Information to support the acceptance and utilization of multi-purpose canisters will be updated. The plan for multi-purpose canister delivery will be completed. Plans to support transportation

activities at utility sites, the repository, and potential storage sites, as required, will be developed. Interfaces will be maintained with other system elements to integrate transportation planning and operational concepts.

Specialized hardware and software to measure gross gamma and neutron output of spent nuclear fuel will be developed. This will be used to verify burnup credit parameters for loading GA-4 casks and multi-purpose canisters that use burnup credit.

3.5.3.4 Metrics - Fiscal Year 1997

Outcomes: (1) Continue to support National Environmental Policy Act activities related to the Environmental Impact Statement on the repository; and (2) Continue interactions with stakeholders to identify and address policy and operational issues of mutual concern.

Outputs:

- Submit Topical Report addressing additional technical factors in the use of burnup credit and its impact on criticality control for storage and transportation to the Nuclear Regulatory Commission. 05/97
- Issue Notice of Proposed Policy and Procedures detailing the implementation of Section 180(c). 06/97
- Complete fabrication and acceptance of the GA-9 prototype cask. 09/97
- Complete plan for multi-purpose canister deliveries. 09/97

3.5.4 Fiscal Year 1998

The major focus for fiscal year 1998 will be supporting the distribution of the multi-purpose canisters, if implemented. A strong institutional program will be maintained to continue interactions with stakeholders to resolve issues. The receipt of the Safety Evaluation Report on the Topical Report on the use of additional technical factors in burnup credit and its impact on criticality control for storage and transportation is anticipated from the Nuclear Regulatory Commission.

3.5.4.1 Transportation Equipment

Technical issues to support cask fabrication will continue to be addressed and resolved. Technical management and integration of cask fabrication activities will be continued. The operations and maintenance manuals for the GA-4/9 transportation casks will be provided.

Nuclear Regulatory Commission questions on the Topical Report on the use of additional technical factors in burnup credit and its impact on criticality control will be addressed and the report will be revised. A Safety Evaluation Report is expected from the Nuclear Regulatory Commission.

3.5.4.2 Institutional

Ongoing activities from Fiscal Year 1997 will continue, with the following specific tasks also being accomplished.

Preparation for implementation of the Section 180(c) provisions if a Federal interim central storage facility becomes available will begin.

3.5.4.3 Operations

Ongoing activities from Fiscal Year 1997 will continue, with the following specific tasks also being accomplished.

A system safety and human factors evaluation on the GA-4/9 cask design and operational procedures will be completed.

Transportation requirements for the repository will be coordinated with facility designers. An operational assessment of the repository conceptual design will be prepared.

3.5.4.4 Metrics - Fiscal Year 1998

Outcomes: (1) Support environmental studies and evaluation activities for the repository; and (2) Continue interactions with stakeholders to resolve issues.

Outputs:

- Receive Safety Evaluation Report on the Topical Report on the use of additional technical factors in burnup credit and its impact on criticality control of storage and transportation. 01/98
- Begin managing multi-purpose canister distribution to the utilities. 01/98
- Complete Operational Testing of GA-9 cask prototype. 02/98

3.5.5 Fiscal Year 1999

The major focus for fiscal year 1999 is to continue to support distribution of the multi-purpose canisters. Funding and support will continue for cooperative agreements with national and regional groups, and a vigorous institutional program will continue.

3.5.5.1 Transportation Equipment

Ongoing activities from Fiscal Year 1998 will continue.

3.5.5.2 Institutional

Ongoing activities from Fiscal Year 1998 will continue.

3.5.5.3 Operations

Ongoing activities from Fiscal Year 1998 will continue, with the following specific tasks also being accomplished.

Support will be provided for the distribution of the multi-purpose canisters to the utility sites.

The final assessment of the overall multi-purpose canister and multi-purpose canister transportation cask fleet composition and operational requirements will be completed, integrating the unique needs of individual reactor sites.

The final system safety and human factors evaluation on the multi-purpose canister design(s) and operating procedures will be completed.

3.5.5.4 Metrics - Fiscal Year 1999

Outcomes: (1) Support environmental studies and evaluation activities for the repository; and (2) Continue interactions with stakeholders to resolve issues.

Outputs:

- Manage distribution of the multi-purpose canister to the utilities.

3.5.6 Fiscal Year 2000

The major focus of for fiscal year 2000 will be to provide continued support for the distribution of the multi-purpose canisters and a strong, vigorous institutional program.

3.5.6.1 Transportation Equipment

Ongoing activities from Fiscal Year 1999 will be continued.

3.5.6.2 Institutional

Ongoing activities from Fiscal Year 1999 will be continued.

3.5.6.3 Operations

Ongoing activities from Fiscal Year 1999 will be accomplished.

3.5.6.4 Metrics - Fiscal Year 2000

Outcomes: (1) Support environmental studies and evaluation activities for the repository; and (2) Continue interactions with stakeholders to resolve issues.

Outputs:

- Manage multi-purpose canister distribution to the utilities.

3.6 TRANSPORTATION COST ESTIMATE

Table 3-1 presents the funding requirements for the fiscal years 1995-2000 for the Transportation product area.

The transportation funding requirements are relatively constant during the 1995-1998 period and then decrease. The principle reason for this is that the conduct of truck cask certification continues during this period and is substantially completed in 1998. Thereafter the funding requirements decrease and remain at lower levels until Section 180(c) activities in preparation for actual transportation are started. This start is assumed to be beyond the year 2000.

Table 3-1. Five-Year Plan Funding Profile Transportation
(Funding in $M)

WBS	Title	FY95	FY96	FY97	FY98	FY99	FY00
3.1.5/3.2.5	Regulatory	0.6	0.3	0.3	0.3	0.3	0.2
3.1.14/3.2.14	Institutional	2.9	2.7	2.9	2.9	2.9	2.9
3.2.2	Casks	5.1	5.1	5.1	5.1	1.6	0.7
3.2.4	Support Systems	1.9	0.9	2.0	2.5	2.4	2.4
3.2.13	E, S & H	1.2	0.5	1.2	1.4	1.4	0.6
	Total	**11.7**	**9.5**	**11.5**	**12.2**	**8.6**	**6.8**

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4. MULTI-PURPOSE CANISTER SUBSYSTEM

4.1 INTRODUCTION

A multi-purpose canister is a metal container that is loaded with spent nuclear fuel assemblies and then sealed. Using appropriate single-purpose overpacks for storage, transport, and disposal, the loaded multi-purpose canisters will be stored, transported, and disposed of without ever being reopened. The benefits of using multi-purpose canisters include standardization, system compatibility, integration, and simplification of both Department and utility systems, and could result in significantly reducing the number of times individual spent nuclear fuel assemblies are handled. Upon completion of the multi-purpose canister Environmental Impact Statement and announcement of the Record of Decision, and the Nuclear Regulatory Commission's certification for storage and transportation, the Department will decide whether it will fabricate and deploy the canisters.

The multi-purpose canister subsystem, which includes the special-purpose overpacks and other equipment, is shown conceptually in Figure 4-1. It consists of the multi-purpose canister itself, the multi-purpose canister transportation cask, the storage module, the disposal container, and related equipment for sealing and handling. The multi-purpose canister's disposal container would be developed later as part of the waste package and repository designs. The at-reactor element of the multi-purpose canister subsystem also includes: (1) the on-site transfer cask, which holds the multi-purpose canister while it is being loaded in the pool and then transfers the multi-purpose canister from the pool to the storage module, and (2) an uncanistered spent nuclear fuel transfer device, which loads multi-purpose canisters outside of the pool when a multi-purpose canister transfer or transport cask is too heavy for direct loading in a particular pool. The size and capabilities of the multi-purpose canisters are influenced by regulations, the design of the repository and the disposal waste package, as well as the nature of both the spent nuclear fuel and the utilities' storage facilities capabilities.

The multi-purpose canister must be certified by the Nuclear Regulatory Commission together with the storage module and transfer cask for storage, and the transport cask for transportation. The multi-purpose canister and the appropriate overpacks will be designed and certified initially for storage and transport. The multi-purpose canister and conceptual disposal overpack will be evaluated to ensure compatibility with the disposal waste package. The multi-purpose canister will be approved for disposal when the waste package and repository are licensed. In order to minimize the uncertainties of future disposal certification, it is planned that a report on multi-purpose canister disposal be submitted to the Nuclear Regulatory Commission, with the request that the Commission issue a statement of no objection to the planned disposal design of the canister.

The multi-purpose canister must accommodate pressurized-water reactor (PWR) and boiling-water reactor (BWR) spent nuclear fuels and should be sized to allow maximum utility usage. Following a review of utility data on reactor pool crane capability, two multi-purpose canister system sizes were chosen: nominally 75-ton (small) and 125-ton (large). The tonnage (75 ton/125 ton) refers to the minimum handling capability required to accommodate a loaded multi-purpose canister and transportation cask within the on-site transfer segment. Depending on final

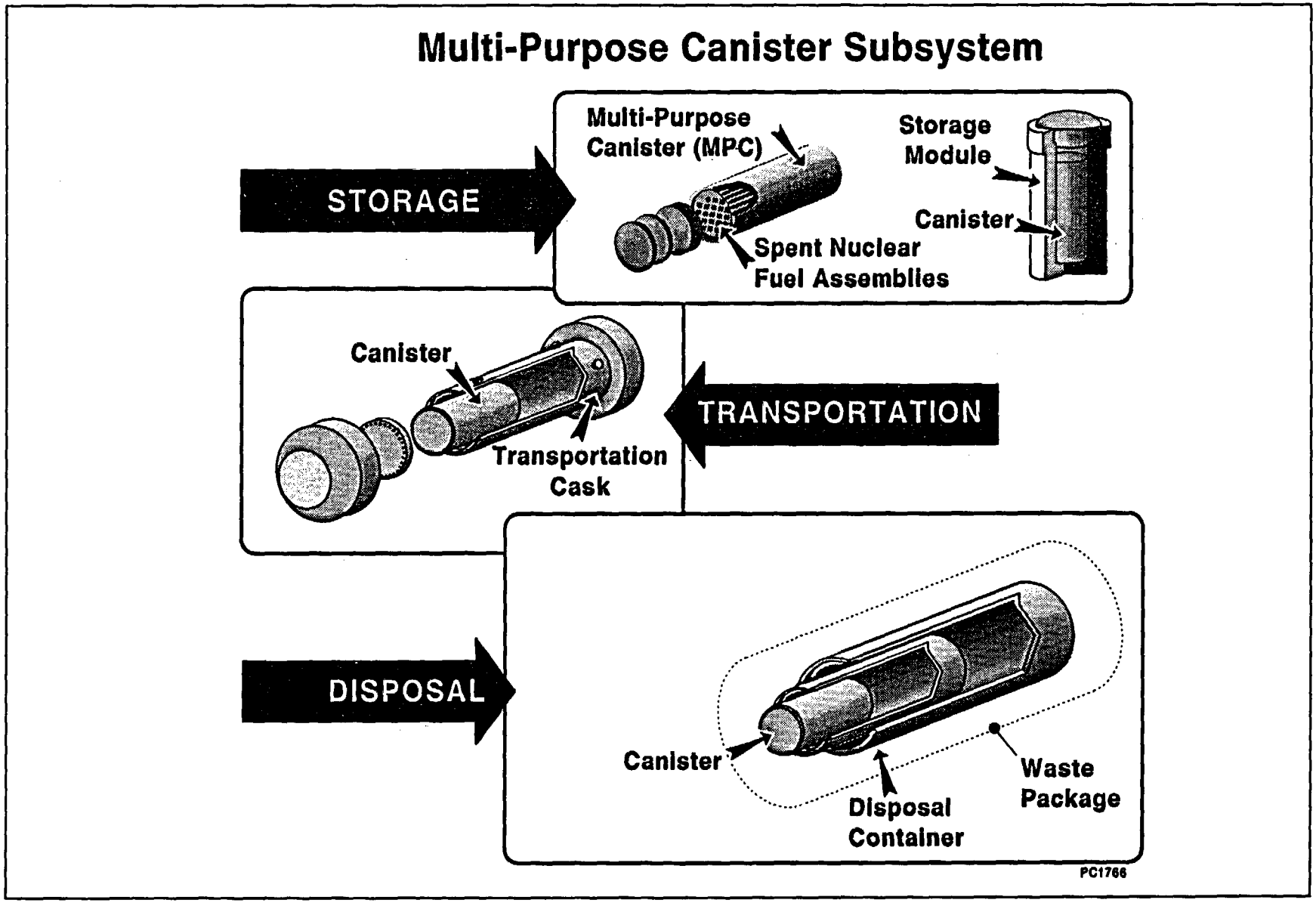

Figure 4-1. Conceptual Multi-Purpose Canister Subsystem

design, there also may be some multi-purpose canister length variations reflecting the spent nuclear fuel sizes. In summary, the minimum number of designs for multi-purpose canister subsystem components without considering variations in canister length are:

- Multi-purpose canister — 4 designs (75/125 ton and PWR/BWR)
- Storage module — 2 designs (75/125 ton)
- Transfer cask — 2 designs (75/125 ton)
- Transport cask — 2 designs (75/125 ton)
- Uncanistered spent nuclear fuel transfer cask — 1 design

4.2 OBJECTIVES

The objective is to develop, by 1998, a multi-purpose canister subsystem that is compatible with the functions of transportation, storage, and disposal, with the intention of not reopening it once spent nuclear fuel has been loaded.

Upon completion of the Environmental Impact Statement for the multi-purpose canisters and announcement of the Record of Decision and the Nuclear Regulatory Commission's certification for storage and transportation, the Department will decide whether it will fabricate and deploy the canisters. The goal is to deliver multi-purpose canisters to utilities in early 1998 for at-reactor storage. The utilities would continue ownership of the spent nuclear fuel until the Department accepts the loaded multi-purpose canisters for transportation off-site.

The principal activities that must be accomplished during the next five years to meet the multi-purpose canister subsystem objective are as follows:

- Issue a Record of Decision based on the Environmental Impact Statement which evaluates the potential environmental impacts of fabricating and deploying the multi-purpose canister subsystem and of reasonable alternative storage and transport systems.
- Integrate waste package design requirements, such as materials selection, criticality control, and thermal limits, from the waste package design into the multi-purpose canister design.
- File applications and obtain Nuclear Regulatory Commission certifications for the multi-purpose canister subsystem under 10 CFR Parts 71 and 72 for the components of the multi-purpose canister subsystem concerning transport and storage, respectively.

- Make the decision on whether to fabricate and deploy the multi-purpose canister subsystem as an integral part of the overall system, giving proper consideration to environmental, technical, and economic factors.

- If the decision is made to fabricate and deploy, award a contract for fabrication of multi-purpose canisters.

4.3 STRATEGY

The Department has embarked on an aggressive schedule to meet its objective of being able to deploy the multi-purpose canister subsystem by early 1998. Careful planning, frequent communication with the Nuclear Regulatory Commission, and thoughtful contingency planning will minimize schedule risks.

The regulatory process is the major uncertainty in maintaining the multi-purpose canister subsystem development and deployment schedule. The certification of the multi-purpose canister subsystem is a complex task involving technical issues that span three regulations (10 CFR Parts 71, 72 and 60, concerning transport, storage, and disposal respectively) that have not been addressed previously by the Nuclear Regulatory Commission in an integrated manner.

A requirement of multi-purpose canister design and development is to comply with requirements in 10 CFR Part 71 and 10 CFR Part 72 and be compatible with 10 CFR Part 60. This will be accomplished by developing a flexible, robust design for the repository, waste package, and multi-purpose canister. This design will be developed to support the 1998 repository technical site suitability evaluation, the 2001 initial license application, and the 2008 license application update. There is an economic risk in fabricating, deploying, and loading the multi-purpose canisters prior to the licensing of the repository. To minimize the economic risk of loading unusable multi-purpose canisters, there is a management strategy discussed in more detail in Volume 1 which is supported by integrated storage, transportation, and disposal design specifications, and a series of coordinated design reviews of the repository and waste packages beginning in Fiscal Year 1995.

A number of interfaces have been identified between the multi-purpose canister subsystem and the geologic repository. During disposal operations, the multi-purpose canister is placed inside the disposal overpack and the two components together form the waste package. The major interfaces are related to repository waste handling operations, the waste package design, and the repository subsurface design with respect to thermal loading. The multi-purpose canister subsystem interface with waste package design is related primarily to materials compatibility, long-term criticality control, and thermal design.

The materials compatibility, long-term criticality control, and thermal design of the multi-purpose canister design precedes the waste package design by several years. These issues have been considered in the conceptual design and specification for the multi-purpose canister subsystem, and the waste package and repository advanced conceptual design. This coordination of the multi-purpose canister design with the repository and waste package designs minimizes the potential economic risk of a non-disposable multi-purpose canister.

The Department is proposing to utilize multi-purpose canisters for storage, transportation, and disposal of spent nuclear fuel. The Notice of Intent to prepare an Environmental Impact Statement for the Fabrication and Deployment of a Multi-Purpose Canister based system for management of civilian spent nuclear fuel was published in the *Federal Register* on October 24, 1994.

The Multi-Purpose Canister Environmental Impact Statement will address in general terms potential impacts related to the deployment of the multi-purpose canister based system and its alternatives at all steps leading to the ultimate disposal of spent nuclear fuel at a repository. This environmental impact statement will include an assessment of the surface related impacts of using multi-purpose canisters and alternatives for waste disposal. This assessment will be based on available data on the surface facilities at the repository. A detailed assessment on the use of multi-purpose canisters as part of the waste package will be included in the repository Environmental Impact Statement and the waste package and repository designs. Scoping hearings were held in Las Vegas, NV, Chicago, IL, and Washington, D.C. in late 1994. The Program Strategy for National Environmental Policy Act compliance is outlined in Volume 1, Section 2.1.2. The Multi-Purpose Canister Final Environmental Impact Statement and related Record of Decision are planned for the Fall of 1996.

The Project has conducted and will continue interactions with stakeholders regarding the multi-purpose canister based system. In 1993, the Project convened two stakeholder workshops to obtain input on the proposed multi-purpose canister subsystem technology development. On a monthly basis, the Office of Civilian Radioactive Waste Management distributes a calendar enabling stakeholders to determine their own level of involvement. These meetings, in conjunction with the ongoing National Environmental Policy Act process for the fabrication and deployment of the multi-purpose canister, permit stakeholders continual and timely access and involvement.

4.4 ASSUMPTIONS

The five-year plan for the multi-purpose canister subsystem is based on the following assumptions:

- The Department will decide to fabricate and deploy multi-purpose canisters after appropriate National Environmental Policy Act documentation is complete.
- The repository waste package design will continue to be compatible with the use of the multi-purpose canister concept.
- Utilities needing dry storage and capable of handling multi-purpose canisters will use multi-purpose canisters and related components for at-reactor dry storage.
- The decision to proceed with Nuclear Regulatory Commission certification will be made in Fiscal Year 1996.

WAST PROJECT SUMMARY SCHEDULE THRU YEAR 2000

TESS 12/14/94
WASTYR 1.dc4

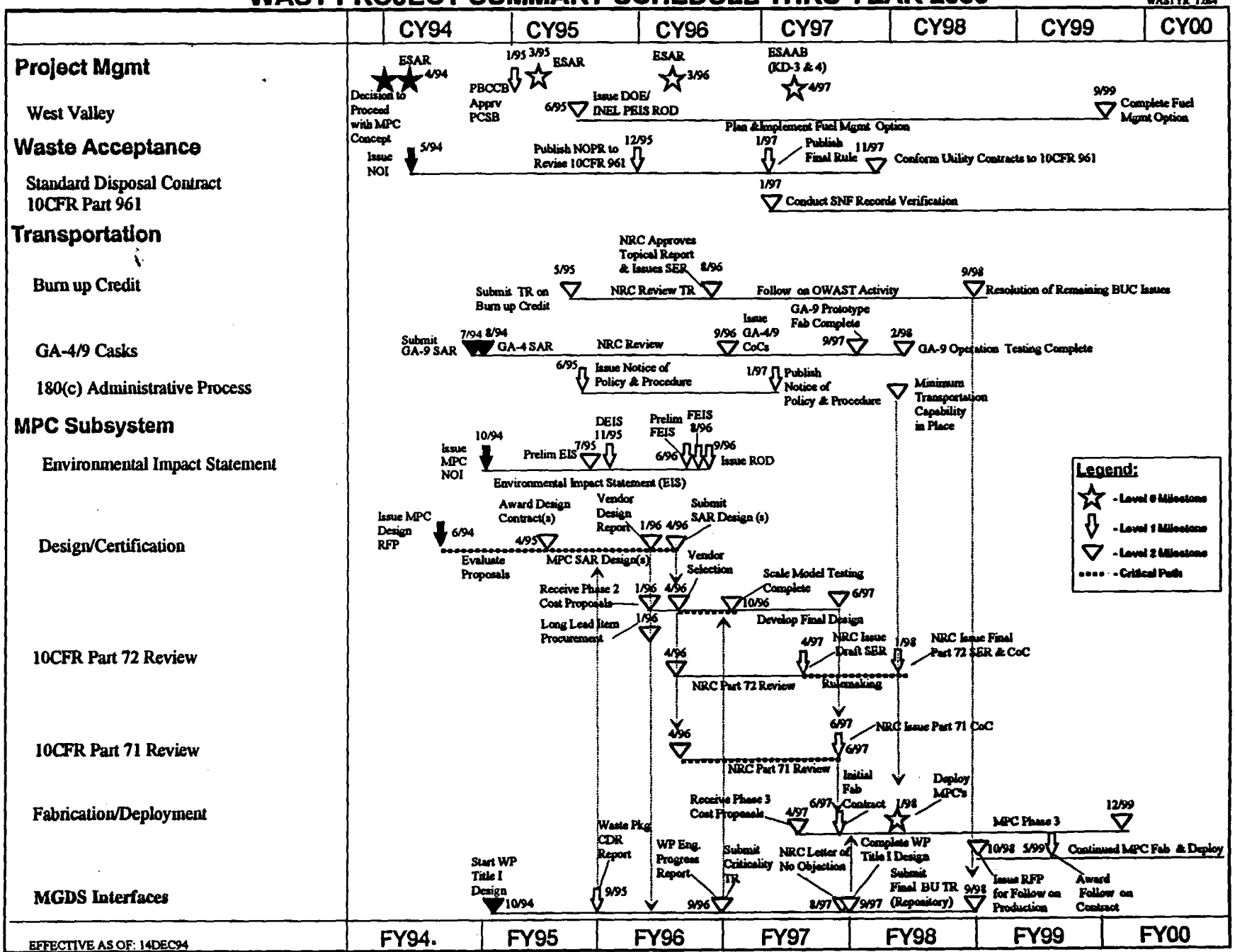

Figure 4-2. WAST Project Summary Schedule Thru Year 2000

- Fabrication of multi-purpose canisters will be consistent with the published waste acceptance rates of 400, 600, and 900 metric tons of heavy metal contained in spent nuclear fuel for Fiscal years 1998, 1999, and 2000, respectively.

- Other than the two multi-purpose canister transportation cask prototypes (75 ton/125 ton), the requirements and funding for the fabrication of additional transportation casks is beyond this five year planning horizon.

4.5 FIVE-YEAR PLAN

The design, certification, and potential fabrication of multi-purpose canisters and related components is being accomplished through a competitive procurement as a major system acquisition in accordance with Department procurement procedures and regulations. This procurement strategy will permit private industry to develop the most effective multi-purpose canister subsystem for the Department. The procurement will consist of:

- Phase 1: Multi-purpose canister subsystems design packages and Safety Analysis Reports for submittal to the Nuclear Regulatory Commission

- Phase 2: (Optional): Nuclear Regulatory Commission Certificates of Compliance including, if needed, model fabrication and testing; full-scale prototype fabrication; and multi-purpose canister welding demonstrations

- Phase 3: (Optional): Fabrication of multi-purpose canisters for 1998 and 1999 projected requirements, including necessary welding equipment and spare parts.

Follow-on procurement of additional multi-purpose canisters for 2000 and beyond would be initiated in Fiscal Year 1999. Follow-on procurement specifications will be modified as necessary to match the repository needs and to accommodate additional spent nuclear fuel assemblies.

Although the uncanistered spent nuclear fuel transfer device may be a component of the multi-purpose canister subsystem, it is not a part of the foregoing multi-purpose canister procurement. A separate acquisition strategy will be developed during Fiscal Year 1995. This would use the results of ongoing uncanistered spent nuclear fuel transfer design work sponsored by the Electric Power Research Institute and the Department and reflect the interest of nuclear utilities in potential utilization.

A five year Project schedule emphasizing details on the multi-purpose canister subsystem is shown in Figure 4-2.

4.5.1 Fiscal Year 1995

The major activities for fiscal year 1995 are: 1) To execute contracts with selected commercial firms for the design of the multi-purpose canister subsystem; 2) Formalize the dialogue with the Nuclear Regulatory Commission on the use of burnup credit and its impact on criticality

control; and 3) Develop a Draft Environmental Impact Statement on the potential fabrication and deployment of multi-purpose canisters.

4.5.1.1 Multi-Purpose Canister Development

The proposals received from commercial firms for the design and certification by the Nuclear Regulatory Commission of the multi-purpose canister subsystem storage module and transportation cask will be evaluated and one or more contracts will be awarded for the design and preparation of Safety Analysis Reports (Phase 1). Six design packages will be completed. These are a large (125 ton) multi-purpose canister transportation cask, the small (75 ton) multi-purpose canister transportation cask, the large on-site transfer/on-site storage segment, the small on-site transfer/on-site storage segment, the large multi-purpose canister assembly, and the small multi-purpose canister assembly. The design process will be monitored to assure compliance with the requirements of the request for proposal. The information on the commercial design of the multi-purpose canisters will be integrated with the preliminary design of the repository's waste package.

During fiscal year 1995, this task area will support the development and submittal of a Topical Report to the Nuclear Regulatory Commission demonstrating the adequacy of burnup credit and its impact on criticality control. The Topical Report will focus on: 1) achieving sufficient burnup credit to be useful for the initial years of deployment of multi-purpose canisters and 2) identifying the information and procedure concerning the spent nuclear fuel such that once loaded, the multi-purpose canisters can be eventually disposed of at the repository without reopening.

Public scoping meetings will be completed to finalize the issues to be addressed in the Environmental Impact Statement on the potential fabrication and deployment of multi-purpose canisters.

A Draft Environmental Impact Statement will be developed during fiscal year 1995 for publication in early fiscal 1996.

4.5.1.2 Metrics - Fiscal Year 1995

Outcomes: (1) Initiate interaction with the Nuclear Regulatory Commission on the schedule for submittal of applications, in fiscal year 1996, from the multi-purpose canisters subsystem design vendors; (2) Integrate the design information from the multi-purpose canister subsystem designers and the repository's waste package designers; (3) Continue to participate in a dialogue with the Nuclear Regulatory Commission concerning the use of burnup credit; (4) Develop a

Preliminary Draft Environmental Impact Statement incorporating the results of scoping meetings with the public.

Outputs:

- Issue the Environmental Impact Statement Notice of Intent for the multi-purpose canister subsystem. 10/94
- Complete public scoping meetings on the Environmental Impact Statement. 12/94
- Award one or more contracts for the design and certification of the multi-purpose canister subsystem. 04/95
- Begin Safety Analysis Report Designs for the multi-purpose canister subsystem. 04/95

4.5.2 Fiscal Year 1996

The major focus for fiscal year 1996 will be to submit multi-purpose canister Safety Analysis Report(s) to the Nuclear Regulatory Commission for review. Additionally, the Department will issue a Draft Multi-Purpose Canister Subsystem Environmental Impact Statement for public review, comment and consideration of the potential effect of the fabrication and deployment of the multi-purpose canister subsystem. The Department will also issue a final Environmental Impact Statement and Record of Decision.

4.5.2.1 Multi-Purpose Canister Development

The multi-purpose canister subsystem vendors' design activities will be reviewed. The vendors' products will be evaluated to ensure the design conforms to the requirements. The vendors' test planning, fabrication, test readiness reviews, and verification plans will be reviewed, monitored, and supported as required. Multi-purpose canister cask subsystem designs will be completed.

A cask model will be fabricated and testing initiated in support of certification of the multi-purpose canister and its transportation cask under 10 CFR 71. Prototype fabrication of the multi-purpose canister transportation casks will begin, and Safety Analysis Report(s) for multi-purpose canister transportation casks will be submitted to the Nuclear Regulatory Commission.

The Safety Analysis Report(s) for the multi-purpose canister and its storage module will be submitted to the Nuclear Regulatory Commission for review.

Nuclear Regulatory Commission certification progress will be monitored, and multi-purpose canister generic issue resolution activities will be conducted.

A Draft Environmental Impact Statement will be issued, hearings will be held to receive public comments, and responses to public comments will be incorporated. The final Environmental Impact Statement and accompanying Record of Decision will also be issued.

Relevant information from the Waste Package Conceptual Design Report on materials selection, long-term criticality control, and permissible fuel cladding temperature limits will be incorporated into the multi-purpose canister cask system designs.

Health and safety studies, including a human factor engineering study of the multi-purpose canister designs, will be conducted.

4.5.2.2 Metrics - Fiscal Year 1996

Outcomes: (1) Continue interaction with the Nuclear Regulatory Commission on the implementation of the multi-purpose canister subsystem; (2) Integrate the design information from the multi-purpose canister subsystem designers and the repository's waste package designers; (3) Support responses to questions from the Nuclear Regulatory Commission on the use of burnup credit; (4) Develop a report which would support a finding of the Nuclear Regulatory Commission of no objection to the disposal of the multi-purpose canister in the repository; and (5) Complete the Environmental Impact Statement process.

Outputs:

- Issue the Draft Environmental Impact Statement for the multi-purpose canister subsystem for public review. 11/95
- Submit the multi-purpose canister subsystem storage module Safety Analysis Report(s) to the Nuclear Regulatory Commission for review and acceptance. 04/96
- Submit the multi-purpose canister subsystem transportation Safety Analysis Report(s) to the Nuclear Regulatory Commission for review and acceptance. 04/96
- Issue the Final Environmental Impact Statement for the multi-purpose canister subsystem. 08/96
- Issue a Record of Decision for the multi-purpose canister subsystem. 09/96

4.5.3 Fiscal Year 1997

During Fiscal Year 1997, the major focus will be on activities leading to the certification of the designs submitted in Fiscal Year 1996. If a decision is made to fabricate and deploy the multi-purpose canister subsystem, the Department will award a fabrication contract.

4.5.3.1 Multi-Purpose Canister Development

The certification activities of the multi-purpose canister subsystem vendors will be monitored. The vendors' test planning, fabrication, test readiness reviews, and verification plans will be reviewed and monitored as required.

Scale model testing in support of certification of the multi-purpose canister and its transportation cask under 10 CFR 71 will be completed and the results submitted to the Nuclear Regulatory Commission. Prototype fabrication and operational testing of the multi-purpose canister transportation casks will be completed.

Following a receipt of a Certificate of Compliance under 10 CFR Part 71 (transport) and a Draft Certificate of Compliance under 10 CFR Part 72 (storage) from the Nuclear Regulatory Commission, the Project will prepare for the Energy System Advisory Board Key Decision #3 and #4 requesting approval for fabrication and deployment of the multi-purpose canisters. A fabrication contract to support deployment of multi-purpose canisters in 1998 and 1999 will be awarded if this decision is favorable.

4.5.3.2 Metrics - Fiscal Year 1997

Outcomes: (1) Continue interaction with the Nuclear Regulatory Commission on the applications from the multi-purpose canister subsystem vendors for storage and transport certificates; (2) Integrate the design information from the multi-purpose canister subsystem designers with the design information from the repository's waste package Title I design; (3) Coordinate with the Waste Acceptance Final Rule on the potential use of the multi-purpose canisters for at-reactor storage during 1998 and 1999; and (4) Support the Nuclear Regulatory Commission deliberations to authorize general certificates (Final 10 CFR Part 72 Certificates of Compliance) for the use of the multi-purpose canister subsystem.

Outputs:

- Submittal of a report to the Nuclear Regulatory Commission seeking a determination of no objection to the use of multi-purpose canisters as part of the waste package. 12/96
- Issuance of the Draft Certificate of Compliance for Part 72 (storage) by the Nuclear Regulatory Commission. 04/97
- Approval by DOE's Energy System Acquisition Advisory Board to fabricate and deploy multi-purpose canisters. 04/97
- Issuance of Part 71 (transport) Certificate of Compliance by the Nuclear Regulatory Commission. 06/97
- Award a fabrication contract for up to two years of multi-purpose canister requirements. 06/97

4.5.4 Fiscal Year 1998

During fiscal year 1998, final preparations will be made for the initial system-wide implementation of the multi-purpose canister subsystem. This will include coordination with the Nuclear Regulatory Commission, the potential utility users, and the repository's waste package designers.

4.5.4.1 Multi-Purpose Canister Development

The multi-purpose canister subsystem vendor designs and supporting documents will be evaluated to ensure conformance to the contract and the Design Requirements Document.

Multi-purpose canister issue resolution activities with the Nuclear Regulatory commission will continue. Topical Reports and proposed rule makings will be developed, and regulatory documents will be reviewed. The final Certificate of Compliance under Part 72 (storage) will be obtained from the Nuclear Regulatory Commission.

Receipt of multi-purpose canisters to support deployment for on-site storage will commence.

The Waste Package Title I design will be reviewed to determine the need to update the specifications for follow-on production of multi-purpose canisters.

4.5.4.2 Metrics - Fiscal Year 1998

Outcomes: (1) Integration and coordination of the designs of the multi-purpose canister subsystem and the repository waste package; (2) Approval by the Nuclear Regulatory Commission of the general use of multi-purpose canister subsystems for storage at reactor sites; and (3) Agreement with the Nuclear Regulatory Commission on the loading procedures necessary to allow the multi-purpose canisters to remain unopened from storage through disposal.

Outputs:

- Issuance of the Final Part 72 Certificate of Compliance by the Nuclear Regulatory Commission. 01/98
- Clear the deployment hold point for compliance of the multi-purpose canister with the Waste Package Title I design. 10/97
- Provide multi-purpose canisters for deployment. 01/98
- Complete the initial year's multi-purpose canister fabrication. 06/98

4.5.5 Fiscal Year 1999

During fiscal year 1999, the focus will be on continuing to fabricate multi-purpose canisters, and to provide support to the loading operations at the storage sites. Additionally, a contract for follow-on fabrication will be awarded.

4.5.5.1 Multi-Purpose Canister Development

The follow-on request for proposal for the fabrication of multi-purpose canisters will be developed and issued. These proposals will be evaluated and a contract for fabrication will be awarded. The vendor's activities and products will be evaluated to ensure conformance to requirements.

4.5.5.2 Metrics - Fiscal Year 1999

Outcomes: (1) Fabrication of multi-purpose canisters for spent nuclear fuel storage at-reactor sites; (2) Identification of the types and quantities of multi-purpose canisters needed for years beyond calendar 1999; and (3) Modification, if necessary, to the Certificates of Compliance to accommodate design changes arising from the finalization of the Waste Package Title II design.

Outputs:

- Issue Request for Proposal for follow-on production. 10/98
- Award the follow-on multi-purpose canister fabrication contract. 05/99

4.5.6 Fiscal Year 2000

During fiscal year 2000, the follow-on fabrication of the multi-purpose canisters will continue.

4.5.6.1 Multi-Purpose Canister Development

Nuclear Regulatory Commission interaction will continue to support future recertifications of the multi-purpose canister subsystem.

The fabrication of multi-purpose canisters will continue. The repository and waste package designs will continue to be evaluated for compatibility with the multi-purpose canister subsystem.

4.5.6.2 Metrics - Fiscal Year 2000

Outcomes: (1) Continue fabrication of multi-purpose canisters for spent nuclear fuel storage at reactor sites; (2) Confirm the types and quantities of multi-purpose canisters needed for years 2000 and 2001; and (3) Monitor vendor activities.

Output:

- Additional multi-purpose canisters are fabricated as needed to support deployment requirements.
- Complete the initial fabrication contract. 12/99

4.6 COST ESTIMATE

Table 4-1 presents the funding requirements for the fiscal years 1995 to 2000 for the multi-purpose canister subsystem product area.

The funding for the multi-purpose canister subsystem increases initially because of the design and testing of the canister, its transportation cask, storage module, and related components. This work begins to decrease in 1997 and is substantially complete by 1998. However, this decrease

is more than offset by the increasing costs of fabrication of an increasing number of canisters for delivery to the utilities after 1998. Additional fabrication of multi-purpose canister transportation casks is currently projected beyond the timeframe of this plan. Funding in the Environment, Safety and Health area reflects the development and completion of the Environmental Impact Statement in Fiscal years 1995 through 1997, and then drops to a supporting role for the repository Environmental Impact Statement.

Table 4-1. Five-Year Plan Funding Profile
Multi-Purpose Canister (Funding $M)

WBS	Title	FY95	FY96	FY97	FY98	FY99	FY00
3.1.5	Regulatory	1.5	0.8	1.3	1.2	0.9	0.9
3.1.7/ 3.1.12/ 3.1.15	Engineering Development	13.0	17.4	32.2	46.2	55.3	53.0
3.1.113	E, S & H	3.7	2.6	1.6	0.1	0.1	0.1
3.2.2	Casks	11.4	15.4	3.6	3.6	0.0	0.0
	Total	**29.6**	**36.2**	**38.7**	**51.1**	**56.3**	**54.0**

5. PROJECT MANAGEMENT AND INTEGRATION

5.1 INTRODUCTION

The Project Management and Integration activity provides the direction, coordination, and support necessary to produce high-quality products on time and within budget. It consists of five subelements: Project Management; Environmental, Safety and Health; Systems Engineering; Technology Demonstration; and Quality Assurance. These activities further ensure that the Project is integrated within itself and the Program. Project management activities include those related to managing cost and schedule baselines and developing annual budgets and plans which cut across all waste acceptance, transportation, and multi-purpose canister subsystem activities. Systems Engineering includes those activities necessary to ensure that project plans are integrated and are consistent with Program objectives. Environmental, Safety and Health, and Quality Assurance activities are accomplished within this function. Technology Demonstration activities that could benefit one or more subsystems are also contained within this element.

5.2 OBJECTIVES

The primary objective of this task area is to provide the leadership, planning, performance measurement, and direction needed to improve and sustain the project's financial, technical, and schedule performance. These metrics are assessed regularly at Project reviews. The key activities needed to accomplish this objective are:

- "Assist in" or "arrange for" complete functional and physical configuration audits that document the multi-purpose canister subsystem's compliance with Program requirements and interface specification. 02/97
- Provide the Energy System Acquisition Advisory Board the basis for the authorization to fabricate and deploy multi-purpose canisters. 04/97
- Develop and maintain timely budget documentation that supports the Program's goals and mission. Annually
- Update the Project technical and programmatic requirements documents. Ongoing
- Status regularly the Project cost, schedule, and technical performance. Ongoing

5.3 STRATEGY

The strategy for achieving the project management objective is: to establish technical, cost, and schedule baselines; to put technical and Project plans in place; and to use the plans and baselines for Project performance measurement to increase staff accountability. To facilitate this, Project work has been divided into products, assigned to a specific manager, and the schedules and costs associated with each product through fiscal year 2000 have been baselined. The Project baseline documentation used for this includes the Project Five-Year Plan, Project Annual Plan, Project Plan, Project Management Plan, Project Work Breakdown Structure, Project Cost and Schedule

Baseline, Project Systems Engineering Management Plan, and Project Configuration Management Plan. Each activity is identified within the baseline, and earned value accounting is applied to track performance and focus on deviations to the plan. Regular Project reviews assess the deviations, and appropriate corrective measures are accomplished.

The strategy for achieving systems engineering objectives is to use integrated teams of Project and Program systems engineers, designers, and other specialists to:

- Define what the Project must accomplish and allocate these requirements to the Project product areas.
- Develop and document the Project's decision and studies management approach.
- Develop and maintain through appropriate configuration management the Project's technical baseline that documents the requirements that the Project elements must meet.
- Ensure that Project subelements, called configuration items, meet their requirements through appropriate tests and evaluations.

The Environmental, Safety and Health strategy is focused on ensuring that Project activities comply with applicable Federal, Department, and State regulations, and developing a safety first culture.

The Quality Assurance strategy is based on the effective implementation of the Nuclear Regulatory Commission requirements and other programmatic requirements of the Department via the Program's Quality Assurance Requirements and Description Document.

5.4 ASSUMPTIONS

The Five Year Plan for Project Management and Integration is based on the following:

- No further monitored retrievable storage facility work will be planned until a site is identified. If a monitored retrievable storage or Federal interim central storage site is identified, the plan will be modified, and additional resources will be provided to execute the new direction.
- The multi-purpose canister will be certified for transportation and storage, and eventually licensed for disposal.
- The results of the current litigation will not significantly modify the Project plan.
- Technology demonstrations will be conducted to support Project objectives.

5.5 FIVE-YEAR PLAN

The Project Management and Integration task area ensures the successful attainment of Project goals and milestones. It includes cost, schedule, and technical direction of Waste Acceptance,

Storage and Transportation activities; development and maintenance of Project technical and programmatic documents and procedures; input to Civilian Radioactive Waste Management System program documents; and supporting the Departments' annual budgeting and planning process. The major sub-elements within Project Management and Integration are: project management and integration, environment safety and health, systems engineering, technology demonstration projects, and quality assurance.

The project management element includes establishment of the technical, cost, and schedule baselines, baseline change control, project control, and project integration. Project management consists of project direction, organization, prioritization and the allocation of resources for the Project. Project control consists of cost and schedule baseline maintenance, project tracking and reporting, and current year project performance measurement. Project integration activities include strategic and operational planning, multi-year planning, budgeting and scheduling, and the baseline change control process.

Environment, Safety and Health provides the unified program for the administration of plans and activities related to the safety and protection of the environment. An Environmental, Safety and Health Management Plan will be updated. It will include an analysis of all existing applicable regulations related to the Project, and the development of strategies for complying with them. It will also recognize and consider environmental justice in carrying out the Waste Acceptance, Storage and Transportation project.

Systems engineering provides the structure and analytical processes and procedures to ensure compliance with relevant Department requirements for systems engineering in major system acquisitions. This includes providing Project technical integration and management, Project system evaluation, design control, verification and acceptance, and configuration management. Project technical integration and management includes: coordinating project systems engineering activities with the Program; supporting Project management and Program systems engineering; defining and maintaining the Project document hierarchy; developing and maintaining systems engineering-related documents within that hierarchy; and providing decision and risk management support, coordinating Project study, modeling, database, life cycle cost, and specialty engineering activities. System engineering includes:

- Development, evaluation, and support of system requirements, design, life cycle cost, specialty engineering, and other studies.

- Design control which supports the development and maintenance of the Project's technical baseline documents and related traceability, and leading Project interface control activities.

- Verification and acceptance, including the development and maintenance of the Project Test and Evaluation Plan, and planning and leading Project verification and acceptance audits and reviews.

- Project configuration management including: development and maintenance of the Project Configuration Management Plan; development and maintenance of the Project Configuration Item Architecture, Specification Tree, and Quality Affecting item list; and performing configuration management activities.

Technology demonstration projects benefit the entire Project organization and support the timely waste acceptance, interim storage, and transportation of waste to a repository. These activities presently include evaluations on the behavior of spent nuclear fuel in long term storage and disposal of non-fuel-bearing components and the demonstration of transportable storage cask technology. Near term management of the foregoing spent nuclear fuel will be determined by the Record of Decision of the Department of Energy programmatic spent fuel management and Idaho National Engineering Laboratory Environmental Management Programs Environmental Impact Statement. A demonstration of uncanistered spent nuclear fuel transfer technology will also be conducted during the planning period.

The quality assurance activities support implementation of a Project compliant with the DOE/RW-0333P, Quality Assurance Requirements and Description Document for all quality affecting work. Quality Assurance Program Implementing Procedures are used to identify and track such work, ensuring that the products designed, developed, fabricated, and tested are accomplished in a consistent and approved way by qualified people, and are in strict compliance with quality assurance requirements and procedures. Quality assurance audits, surveillance, and self assessment surveys are also conducted to verify the attainment of quality assurance objectives.

5.5.1 Fiscal Year 1995

The major focus for fiscal year 1995 will be to complete the baselining of Project technical and programmatic documentation which implements the Program Approach, the presentation of a successful Energy System Acquisition Review #2, and the completion of the Waste Acceptance, Storage and Transportation Fiscal Year 1996 Annual Plan. The Department will also begin implementation of an appropriate West Valley spent nuclear fuel management option.

5.5.1.1 Project Management and Integration

Provide accurate and timely reporting and analysis of Project cost, schedule, and technical data.

Develop Project-level cost and schedule baseline documentation, networks and logic diagrams to support baseline management control and assist in the analysis of proposed management baseline changes. The Project Energy System Acquisition Advisory Board Cost and Schedule Baseline will be submitted to the Program Board for review and approval

Convene the Energy System Acquisition Advisory Board to present the results of the proposal evaluation process.

Develop and validate the Department's Internal Review Budget to support the Fiscal Year 1996 Annual Plan (which serves as the workscope contract to all participants), the Fiscal Year 1997-1999 Internal Review Budget submission, and the Fiscal Year 1997-2001 Office of Management

and Budget submission. In support of this, a Product-oriented Work Breakdown Structure defining the Project's products will be developed and baselined with the Program.

5.5.1.2 Environmental, Safety and Health

Provide over-sight of environmental, safety and health activities associated with Waste Acceptance, Storage and Transportation Project major systems acquisition in order to maintain the public safety and protect the environment.

Update the Environmental, Safety and Health Five-Year Plan and the Multi-Purpose Canister Regulatory Compliance Plan as required.

5.5.1.3 Systems Engineering

Maintain the current Project Management baseline through scheduled revisions to Project plans. The Project System Engineering Management Plan and related appendices and reports will be updated to be consistent with the Program Systems Engineering Management Plan, which is currently undergoing revision to reflect the design control improvement process. The Configuration Management Plan will be updated. Development and maintenance of the Program's management baseline will be supported.

Perform Project configuration management activities and coordinate these with the Program-level and multi-purpose canister vendor's configuration management activities. Develop the Project Quality Affecting item list.

Update Project technical baseline and related traceability documentation to reflect the developing design. The Program's technical baseline development, revision, and traceability activities will be supported, including development of Interface Control Documents and the application of the Automated Requirements Management System to establish and maintain traceability of requirements for the Project. Begin verification and acceptance planning for multi-purpose canister and GA4/9 cask subsystems.

Complete Project inputs to the Program Total System Life Cycle Cost study.

Project-level system integration activities, such as the integration of the multi-purpose canisters with waste acceptance, will be provided throughout the year as required, and support to Program-level activities will be provided.

5.5.1.4 Technology Demonstration

The behavior of spent nuclear fuel in long term storage will be monitored. Gas samples will be taken and analyzed quarterly from two dry storage casks at the Department's Idaho National Engineering Laboratory.

Planning will begin for conducting a demonstration of uncanistered spent nuclear fuel transfer technology.

The Dry Rod Consolidation Technology Disposition activity will be completed and closed out.

Safe pool storage of Department owned spent nuclear fuel will continue at West Valley until the Department begins implementation of an appropriate spent nuclear fuel management option. This option will be consistent with the Record of Decision issued for the Department of Energy Programmatic Spent Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement. Penalty payments to New York State may be incurred for West Valley pool storage.

5.5.1.5 Quality Assurance

All design, development and fabrication activities will be performed in accordance with the Office of Civilian Radioactive Waste Management Quality Assurance program. Vendors' quality assurance plans will be reviewed for compliance with the Quality Assurance Requirements and Description Document, and audits and surveillances will be conducted.

Oversight will be provided for the development and maintenance of implementing procedures and verification of the achievement of quality goals. Quality audits, surveillance, and self assessment surveys will be provided to ensure compliance.

5.5.1.6 Fiscal Year 1995 Metrics

Outcomes: (1) Waste Acceptance, Storage and Transportation Project activities are funded and scheduled in a manner that meets Program goals; (2) Planned work is accomplished within the Project's cost and schedule baseline; (3) Compliance with all applicable statutes, regulations, and Department Orders is maintained; (4) Department owned spent nuclear fuel stored at West Valley New York continues to be stored in a safe manner.

Outputs:

- Project input to the Program Cost and Schedule Baseline is approved. 01/95
- Successfully hold the Waste Acceptance, Storage and Transportation Project Energy System Acquisition Review #2. 03/95
- Complete the Waste Acceptance, Storage and Transportation Fiscal Year 1996 Annual Plan on schedule. 09/95
- Issue a final report and close out the Dry Rod Consolidation Technology Disposition Project. 09/95

5.5.2 Fiscal Year 1996

The major focus for fiscal year 1996 will be to successfully hold the Waste Acceptance, Storage and Transportation Project Energy System Acquisition Review #3 and complete the Waste Acceptance, Storage and Transportation Fiscal Year 1997 Annual Plan. Additionally, the

Department will continue work leading to a physical demonstration of an uncanistered spent nuclear fuel transfer device.

5.5.2.1 Project Management and Integration

Develop and validate the Department's Internal Review Budget to support the Fiscal Year 1997 Annual Plan (which serves as the workscope contract to all participants), the Fiscal Year 1998-2000 Internal Review Budget submission, and the Fiscal Year 1998-2002 Office of Management and Budget submission.

Provide accurate and timely reporting and analysis of Project cost, schedule, and technical data.

Develop Project-level cost and schedule baseline documentation, networks and logic diagrams to support baseline management control and assist in the analysis of proposed management baseline changes.

Convene and support the Energy System Acquisition Review #3.

5.5.2.2 Environmental, Safety and Health

Provide Oversight of environmental, safety and health activities associated with Waste Acceptance, Storage and Transportation Project major systems acquisition in order to maintain the public safety and protect the environment.

Update the Environmental, Safety and Health Five-Year Plan and the multi-purpose canister Regulatory Compliance Plan as required.

5.5.2.3 Systems Engineering

Maintain the current Project management baseline through scheduled revisions to Project plans. Update the Project System Engineering Management Plan and related appendices and reports, the Project Test and Evaluation Plan, and the Project Configuration Management Plan and its appendices as required. Develop and maintain the Program's management baseline.

Perform Project configuration management activities and coordinate these with the Program-level and multi-purpose canister vendor's configuration management activities. The Quality Affecting item list will be maintained.

Update Project technical baseline and related traceability documentation to reflect the developing design. The Program's technical baseline development, revision, and traceability activities will be supported, including development of Interface Control Documents and the application of Automated Requirements Management System to establish and maintain traceability.

Perform Project-related studies and analyses, and support Program studies, such as the Total System Life Cycle Cost study.

Provide Project-level system integration activities, and support to Program-level activities throughout the year as required.

5.5.2.4 Technology Demonstration

Planning and an implementation of an appropriate West Valley interim spent nuclear fuel management option consistent with the Record of Decision for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement will continue. Penalty payments to New York State may continue to be incurred for West Valley pool storage.

5.5.2.5 Quality Assurance

All design, development and fabrication activities will be performed in accordance with the Office of Civilian Radioactive Waste Management Quality Assurance program. Vendors' quality assurance plans will be reviewed for compliance with the Quality Assurance Requirements and Description Document, and audits and surveillances will be conducted.

Provide Oversight for the development and maintenance of implementing procedures and verification of the achievement of quality goals. Quality audits, surveillance, and self assessment surveys will be provided to ensure compliance.

5.5.2.6 Fiscal Year 1996 Metrics

Outcomes: (1) Waste Acceptance, Storage and Transportation Project activities are funded and scheduled in a manner that meets Program goals; (2) Planned work is accomplished within the Project's cost and schedule baseline; (3) Compliance with all applicable statutes, regulations, and Department Orders is maintained; (4) Department owned spent nuclear fuel stored at West Valley New York continues to be stored in a safe manner.

Outputs:

- Begin planning for the demonstration of the uncanistered spent nuclear fuel transfer device. 01/96
- Successfully hold the Waste Acceptance, Storage and Transportation Project Energy System Acquisition Review #3. 03/96
- Complete the Waste Acceptance, Storage and Transportation Fiscal Year 1997 Annual Plan on schedule. 09/96

5.5.3 Fiscal Year 1997

The major focus for fiscal year 1997 will be to present the Waste Acceptance, Storage and Transportation Project to the Energy System Acquisition Advisory Board to receive authorization to fabricate and deploy multi-purpose canisters; and complete the Waste Acceptance, Storage and Transportation Fiscal Year 1998 Annual Plan. Other actions will be to complete Functional

Configuration Audits and Physical Configuration Audits that document the multi-purpose canister subsystem conformance with established requirements; and begin the implementation of an interim management option for West Valley spent nuclear fuel.

5.5.3.1 Project Management and Integration

Fiscal Year 1996 activities will continue through 1997 with the addition of the following activities:

Support will be provided to the Energy System Acquisition Advisory Board in their decision to authorize the fabrication and deployment of multi-purpose canisters.

The Fiscal Year 1998 Annual Plan will be issued, and a Fiscal Year 1999-2001 Internal Review Budget and a Fiscal Year 1999-2003 Office of Management and Budget will be submitted.

5.5.3.2 Environmental, Safety and Health

Fiscal year 1996 activities will continue through 1997.

5.5.3.3 Systems Engineering

Functional Configuration Audits and Formal Qualification Review will be planned, conducted, and the results documented to support acceptance of prototype multi-purpose canisters. Physical Configuration Audits for the multi-purpose canisters will be planned.

Multi-purpose canister Final Design Reports and Design Packages will be baselined, and the subcontractor's Quality Affecting item list will be incorporated into the Project's Quality Affecting item list.

Multi-purpose canister-related Interface Control Documents will be updated to reflect the final design.

5.5.3.4 Technology Demonstration

Penalty payments to New York State may continue to be incurred for waste stored in West Valley pool storage. Planning for demonstration of the uncanistered spent nuclear fuel transfer device will be completed and preparations for the demonstration will begin.

Continue planning and begin implementation of the appropriate West Valley spent nuclear fuel management option.

5.5.3.5 Quality Assurance

Fiscal Year 1996 activities will continue through 1997.

5.5.3.6 Fiscal Year 1997 Metrics

Outcomes: (1) Waste Acceptance, Storage and Transportation Project activities are funded and scheduled in a manner that meets Program goals; (2) Planned work is accomplished within the Project's cost and schedule baseline; (3) Compliance with all applicable statutes, regulations, and Department Orders is maintained; (4) Department owned spent nuclear fuel stored at West Valley New York will continues to be stored in a safe manner.

Outputs:

- Hold a Waste Acceptance, Storage and Transportation Project Energy System Acquisition Advisory Board (Key Decision Milestone 3 and #4) to obtain authorization to fabricate and deploy multi-purpose canisters. 04/97

- Complete Waste Acceptance, Storage and Transportation Fiscal Year 1998 Annual Plan schedule. 09/97

- Complete Functional Configuration Audits and Physical Configuration Audits that document the multi-purpose canister subsystem conformance with established requirements. 09/97

5.5.4 Fiscal Year 1998

The Major focus for fiscal year 1998 will be to complete the Waste Acceptance, Storage and Transportation Fiscal Year 1999 Annual Plan, the Physical Configuration Audit Report that documents the conformance of the multi-purpose canister subsystem with the acceptance criteria, and continue implementation of an appropriate West Valley spent nuclear fuel management option.

5.5.4.1 Project Management and Integration

Fiscal Year 1997 activities will continue through 1998 with the addition of the following activities:

The Fiscal Year 1999 Annual Plan will be issued, and a Fiscal Year 2000-2002 Internal Review Budget and a Fiscal Year 2000-2004 Office of Management and Budget will be submitted.

5.5.4.2 Environmental, Safety and Health

Fiscal Year 1997 activities will continue through 1998.

5.5.4.3 Systems Engineering

Fiscal Year 1997 activities will continue through 1998 with the addition of the following activities:

Multi-purpose canister Physical Configuration Audits will be performed and the results documented to support acceptance of the first production unit multi-purpose canister.

Project-level technical reviews will be conducted.

The Project technical baseline will be updated to include the multi-purpose canister as-built documentation. Support program and project design control, technical baseline development/revision, and traceability activities.

Project specialty engineering activities will be conducted, and Program specialty engineering activities will be supported.

5.5.4.4 Technology Demonstration

Continue the implementation of the appropriate option for West Valley spent nuclear fuel management. Conduct demonstration tests on the uncanistered spent nuclear fuel transfer device.

Develop demonstration plans as new technologies, processes, and procedures are identified.

5.5.4.5 Quality Assurance

Fiscal Year 1997 activities will continue through 1998.

5.5.4.6 Fiscal Year 1998 Metrics

Outcomes: (1) Waste Acceptance, Storage and Transportation project activities are funded and scheduled in a manner that meets Program goals; (2) Planned work is accomplished within the Project's cost and schedule baseline; (3) Compliance with all applicable statutes, regulations, and Department Orders is maintained; (4) Department owned spent nuclear fuel stored at West Valley New York will continue to be stored in a safe manner.

Outputs:

- Complete the Waste Acceptance, Storage and Transportation Fiscal Year 1999 Annual Plan on schedule. 9/98

- Complete the Physical Control Audit Report that documents the conformance of the multi-purpose canister subsystem with the acceptance criteria. 9/98

- Complete the final report on the uncanistered spent nuclear fuel transfer device demonstration. 9/98

5.5.5 Fiscal Year 1999

The Major focus for fiscal year 1999 will be to complete the Waste Acceptance, Storage and Transportation Fiscal Year 2000 Annual Plan and to maintain the Project's management and technical baselines.

5.5.5.1 Project Management and Integration

Fiscal Year 1998 activities will continue through 1999 with the addition of the following activities:

The Fiscal Year 2000 Annual Plan will be issued, and a Fiscal Year 2001-2003 Internal Review Budget and a Fiscal Year 2002-2006 Office of Management and Budget will be submitted.

5.5.5.2 Environmental, Safety and Health

Fiscal Year 1998 activities will continue through 1999.

5.5.5.3 Systems Engineering

Fiscal Year 1998 activities will continue through 1999.

5.5.5.4 Technology Demonstration

Complete implementation of the appropriate option for West Valley spent nuclear fuel management. Continue developing demonstration plans as new technologies, processes, and procedures are identified.

5.5.5.5 Quality Assurance

Fiscal Year 1998 activities will continue through 1999.

5.5.5.6 Fiscal Year 1999 Metrics

Outcomes: (1) Waste Acceptance, Storage and Transportation Project activities are funded and scheduled in a manner that meets Program goals; (2) Planned work is accomplished within the Project's cost and schedule baseline; (3) Compliance with all applicable statutes, regulations and department Orders is maintained.

Outputs:

- Waste Acceptance, Storage and Transportation Fiscal Year 2000 Annual Plan completed on schedule. 9/99

- Complete the appropriate option for West Valley spent nuclear fuel management. 9/99

5.5.6 Fiscal Year 2000

The Major focus for fiscal year 2000 will be to complete the Waste Acceptance, Storage and Transportation Fiscal Year 2001 Annual Plan and to maintain the Project's management and technical baselines.

5.5.6.1 Project Management and Integration

Fiscal Year 1999 activities will continue through 2000 with the addition of the following activities:

The Fiscal Year 2001 Annual Plan will be issued, and a Fiscal Year 2002-2004 Internal Review Budget, and a Fiscal Year 2002-2006 Office of Management and Budget will be submitted.

5.5.6.2 Environmental, Safety and Health

Fiscal Year 1999 activities will continue through 2000.

5.5.6.3 Systems Engineering

Fiscal Year 1999 activities will continue through 2000.

5.5.6.4 Technology Demonstration

Fiscal Year 1999 activities will continue through 2000.

5.5.6.5 Quality Assurance

Fiscal Year 1999 activities will continue through 2000.

5.5.6.6 Fiscal Year 2000 Metrics

Outcomes: (1) Waste Acceptance, Storage and Transportation project activities are funded and scheduled in a manner that meets Program goals; (2) Planned work is accomplished within the Project's cost and schedule baseline; (3) Compliance with all applicable statutes, regulations and department Orders is maintained.

Outputs:

- Waste Acceptance, Storage and Transportation Fiscal Year 2001 Annual Plan completed on schedule. 9/00

5.6 COST ESTIMATE

Table 5-1 presents the funding requirements for the fiscal years 1995 - 2000 for the Project Management and Integration product area. Total funds are reduced in 1999 and 2000 reflecting the decline of Systems Engineering activity with the completion of the multi-purpose canister

design and certification. Funds for Project Management and Integration are reduced in proportion to the total Project funding, decreasing to about 8 percent at the end of the planning period.

Table 5-1. Five-Year Plan Funding Profile
Project Management and Integration
(Funding in $M)

WBS	Title	FY95	FY96	FY97	FY98	FY99	FY00
3.1.1/3.2.1	System Engineering	1.5	1.1	1.6	1.6	0.7	0.6
3.1.3	Site Investigations	0.2	0.0	0.0	0.0	0.0	0.0
3.1.7	Engineering Development	3.1	3.1	3.1	3.1	3.1	3.1
3.1.9/3.2.9	Project Management	3.9	3.4	3.5	3.6	3.6	3.4
3.1.11/ 3.2.11	Quality Assurance	0.6	0.4	0.6	0.4	0.7	0.7
3.1.13/ 3.2.13	E, S & H	0.4	0.4	0.4	0.4	0.4	0.4
	Total	**9.7**	**8.4**	**9.2**	**9.1**	**8.5**	**8.2**