

**Overview of the Office of Civilian Radioactive Waste Management's
National Transportation Plan - 9338**

G. Lanthrum, F. Moussa
U.S. Department of Energy, Office of Civilian Radioactive Waste Management
1000 Independence Ave., SW, RW-10
Washington, DC 20585

J. Patric, P. Bolton
Booz Allen Hamilton
955 L'Enfant Plaza North, SW, Suite 5300
Washington, DC 20024

ABSTRACT

One of the objectives of the Department of Energy's (DOE) Office of Civilian Radioactive Waste Management (OCRWM) Program is to develop and begin implementation of a comprehensive national transportation plan that accommodates state, local, and tribal concerns and input to the greatest extent practicable. Development of the *National Transportation Plan* (NTP or Plan) is a step towards achieving that objective.

This NTP outlines the Department of Energy's (DOE) current strategy and planning for developing and implementing the transportation system required to transport spent nuclear fuel (SNF) and high-level radioactive waste (HLW) from where the material is generated or stored to the proposed repository at Yucca Mountain, Nevada. The Plan describes how DOE's Office of Civilian Radioactive Waste Management (OCRWM) intends to develop and implement a safe, secure and efficient transportation system and how stakeholder collaboration will contribute to the development of that transportation system. This paper provides an overview of the NTP.

INTRODUCTION

One of the objectives of the Department of Energy's (DOE) Office of Civilian Radioactive Waste Management (OCRWM) Program is to develop and begin implementation of a comprehensive national transportation plan that accommodates state, local, and tribal concerns and input to the greatest extent practicable. Development of the *National Transportation Plan* (NTP or Plan) is a step towards achieving that objective.

The NTP outlines the Department of Energy's (DOE) current strategy and planning for developing and implementing the transportation system required to transport spent nuclear fuel (SNF) and high-level radioactive waste (HLW) from where the material is generated or stored to the proposed repository at Yucca Mountain, Nevada. The Plan provides information about how DOE's Office of Civilian Radioactive Waste Management (OCRWM) intends to develop and implement a safe, secure and efficient transportation system and how stakeholder collaboration will contribute to the development of that transportation system.

STRUCTURE OF THE PLAN

The Plan brings together OCRWM's approach for acquiring capital assets (casks, rail cars, and a rail line in Nevada), its operational planning efforts, and its institutional program in a single document. Specifically, the Plan describes the elements of the national transportation system that OCRWM is developing, the phases of that development effort and how OCRWM will collaborate with stakeholders in the development and implementation of that system. This Plan describes the transportation system that will be needed when the repository is operating at full capacity.

The Plan is divided into two sections:

- Introduction
- Development of the Transportation System

INTRODUCTION SECTION

The Introduction Section provides background information as well as an overview of the approach to developing the transportation system including the two capital asset acquisition projects, i.e., the National Transportation Project and the Nevada Rail Infrastructure Project, along with the parallel institutional and operational planning efforts. The section provides background information about the proposed transportation system including the following:

The types and amount of materials planned to be transported to the repository

- Commercial SNF – 63,000 Metric Tons of Heavy Metal (MTHM).
- DOE SNF and Naval Nuclear Propulsion Program (NNPP) SNF – 2,333 MTHM
- DOE HLW – 4,667 MTHM

Transport modes - Rail shipments will be the mode of choice for sites with rail access. For sites without rail access, other options for transport could include:

- Overweight/Legal weight truck – For commercial SNF sites that do not have the capability to handle rail casks, DOE could transport SNF by overweight or legal weight trucks.
- Intermodal with Heavy-haul truck – For the 22 commercial SNF sites that currently have the capability to handle and load rail casks, but do not have direct railroad service, DOE could transport SNF casks to nearby railheads by heavy-haul truck. The viability of this approach is illustrated by the approximately 200 heavy-haul shipments of SNF that are conducted in France each year.
- Intermodal with Barge - Barge shipments of rail casks containing SNF could also be considered from 16 (a subset of the 22 commercial sites without direct rail access) commercial sites that are on or near navigable waterways. Barge transport would be done to another facility with rail access.

The potential use of these modes of transport will be site specific and will be considered on a case by case basis as appropriate. Under an agreement with OCRWM, the NNPP is responsible for managing transportation for delivery of NNPP SNF shipments to the repository.

The Introduction Section also provides an overview of the following documents related to transportation requirements that are key to development and implementation of the transportation system:

The *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program, Fiscal Year 2007*, DOE/RW-0591, July 2008, (TSLCC) presents the costs to complete development and implementation of the integrated transportation system. The TSLCC presents OCRWM's May 2007 total system cost estimate for the disposal of the nation's SNF and HLW, including detailed estimated costs associated with both the National Transportation Project and the Nevada Rail Infrastructure Project. OCRWM has established preliminary schedules for both projects. Both the cost and the schedule for both projects and for the development of the transportation system will be dependent upon the availability of funding and necessary appropriations.

The *Transportation System Requirements Document*, DOE/RW-0425, Rev5 addresses system requirements. A Transportation System Operations Plan will be developed and will identify operational requirements based on a functional analysis of the transportation system and identification of regulatory requirements that must be adhered to in operating the transportation system. A Transportation Program Management Plan will also be developed and will identify transportation programmatic requirements and will define how they will be implemented. Once developed, the operational and programmatic requirements will be added to the requirements management system. OCRWM anticipates that technical, regulatory, programmatic, and operational requirements will be reflected in a matrix that maps requirements to steps in the processes involved in shipping SNF and HLW to the repository at Yucca Mountain.

Safety and security requirements and standards for the development, design and operation of the OCRWM transportation system are detailed in DOE M 460.2-1A, *U. S. Department of Energy Radioactive Material Transportation Practices Manual* and the final *Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (Repository SEIS), Appendix H. These documents reflect DOE's longstanding commitment to meet or exceed the DOT and NRC safety and security requirements and standards that apply to comparable commercial shipments. The NWPA explicitly requires DOE to ship SNF and HLW to a repository in transportation casks certified by NRC (NWPA § 180(a)); to comply with NRC notification requirements prior to conducting such shipments (NWPA § 180(b)); and to provide States and Tribes technical assistance and funds for training for public safety officials on procedures for safe routine transportation and for dealing with emergency response situations (NWPA§180(c)).

SYSTEM DEVELOPMENT SECTION

The transportation system will be comprised of capital assets, the capabilities and personnel to operate the system, and an institutional program which engages stakeholders in a collaborative planning process. OCRWM plans to develop the transportation system incrementally. This section describes current planning for the:

- Acquisition of capital assets
- Operations development, and
- The institutional program.

Acquisition of capital assets

The section on the acquisition of capital assets discusses how the hardware, facilities, and other physical assets needed by the transportation system are being acquired by the Nevada Rail Infrastructure Project and the National Transportation Project.

The Nevada Rail Infrastructure Project is responsible for the development of a railroad to provide access between the repository at Yucca Mountain and an existing main rail line within Nevada. DOE has decided to construct and operate a railroad along a rail alignment within the Caliente corridor. DOE also has decided to allow shipments of general freight on the rail line, subject to obtaining a certificate of public convenience and necessity from the Surface Transportation Board and other necessary regulatory approvals. Next steps will include obtaining the certificates and all other necessary permits and authorizations, acquisition of private land, detailed characterization of the alignment, development of a preliminary design, development of the final design, construction, development of a railroad operating plan, and commissioning activities to transition to operations.

The National Transportation Project includes the acquisition of transportation casks and ancillary equipment for truck and rail shipments, specialty rail cars, any maintenance facilities necessary to maintain the casks, intermodal transfer equipment, monitoring and maintenance equipment, and an operations center. OCRWM currently anticipates that it would procure services for barge, legal and overweight truck and heavy-haul truck shipments.

Operations development

A major activity in the development of the OCRWM transportation system will be the development of the capability to operate the system. This capability includes shipment planning, coordination with stakeholders, dispatch of unloaded casks and associated equipment to an origin site, transport of loaded casks to the repository, secure communications, shipment tracking, and maintenance of casks and ancillary equipment. The *DOE Radioactive Material Transportation Practices Manual*, DOE M 460.2-1A, supplementing DOE Order 460.2-1, provides guidance for the procedures to be used for transportation operations.

Due to the early stage of system development, operational planning has been limited. A preliminary operational construct is described in the *Transportation System Concept of Operations (CONOPS)*, April 2006. The *CONOPS* is a high-level description of transportation system design, and it defines the fundamental operational elements of the transportation system.

OCRWM is currently developing a generic transportation operations plan that will be used as a basis for hardware development and operational training, resource deployment, preparatory activities, and full

scale operations. Transportation planning activities include developing generic descriptions of each step of the transportation process, associated regulatory and operational requirements, creation of shipment preparation check lists, selection of modes and suites of routes to be used, selection of communications and tracking systems and planning for public communications. States, Tribes, carriers, and utilities will be involved in development of this generic operations plan. This plan will support future development of detailed campaign plans that address site specific transportation issues.

Institutional program

OCRWM is working collaboratively with interested stakeholders on the development and implementation of the transportation system. OCRWM's approach to stakeholder interactions is addressed in the *Strategic Plan for the Safe Transportation of Spent Nuclear Fuel and High-Level Radioactive Waste to Yucca Mountain: A Guide to Stakeholder Interactions*, November 2003. The Institutional Program section of the NTP discusses how OCRWM is implementing the Strategic Plan by working with a wide range of stakeholders including national organizations and groups, industry associations, States, Tribes, and local governments, State and local first responders, and utilities. The Plan specifically addresses two key areas for which OCRWM is currently seeking stakeholder input, emergency preparedness and route selection.

DOE has worked and will continue to work with State, Tribal and local response and law enforcement authorities to plan for response to accidents, security incidents or other events that might occur. If requested, DOE would also provide technical advice and assistance including access to teams of experts in radiological monitoring and related technical issues.

Additionally, DOE is required by Section 180(c) of the NWPA to provide technical assistance and funds to States and Tribes through whose jurisdictions DOE plans to transport SNF and HLW to the proposed repository for training of local public safety officials. The training is to cover procedures for safe routine transportation of these materials, as well as procedures for addressing emergency response situations. DOE issued for public comment a revised proposed policy for implementing Section 180(c) on October 31, 2008 (73 FR 64933). OCRWM intends to conduct a pilot program involving a limited number of States and Tribes to test the implementation of the Section 180(c) grant procedures after evaluating public comments received on the revised proposed policy. DOE then plans to issue a new revised proposed policy for public comment and then to issue the final Section 180(c) policy prior to awarding the first 180(c) grants. The first grants are planned to be issued approximately four years prior to the commencement of shipments through a State or Tribe's jurisdiction. Subject to available appropriations, it is intended that funding assistance would last until shipments to the repository are completed.

In advance of shipments, OCRWM plans to identify a preliminary suite of national routes that reflects consideration of the interests of a broad cross-section of stakeholders. Identification of the preliminary suite of routes would facilitate transportation planning activities and support a pilot program for providing Section 180(c) grants. The representative rail and truck routes analyzed in the Final Repository SEIS will be considered when identifying a preliminary suite of national routes.

OCRWM will work with carriers, States, Tribes, local officials, and other key stakeholders to identify routing criteria and to ensure the criteria are consistent with best practices and regulations. Broader public input will also be sought on routing. Additionally, industry standard practices, legislative and regulatory requirements will be considered as OCRWM identifies a preliminary suite of national routes.

PLAN UPDATES

The Plan will be updated, as appropriate, to reflect progress in the development and implementation of the transportation system, accommodate changes to the waste management system, and incorporate

stakeholder and public comments. OCRWM also anticipates that detailed implementation plans will be developed in the future in collaboration with the stakeholder community. The NTP provides the framework for that future detailed planning. OCRWM anticipates that the more detailed planning documents for the national transportation system will include, but not be limited to, a national operations plan, campaign plans, an implementation plan for the NWPA Section 180(c) policy, fleet maintenance and inventory management plans, security plans, and emergency response plans.

CONCLUSION

The Plan was issued for public comment on January 16, 2009. It is available on the OCRWM website at www.ocrwm.doe.gov. Comments are being sought by electronic posting on the website, or via regular mail to Mr. Frank Moussa, U.S. Department of Energy, OCRWM Office of Logistics Management, 1000 Independence Avenue, SW, Washington, DC 20585-0001. Comments should be submitted no later than April 30, 2009. After completion of the comment period, OCRWM intends to prepare a comment-response document which will accompany the next revision of the plan. Public input to the Plan will assist OCRWM with developing a safe, secure, efficient system for transporting SNF and HLW to Yucca Mountain.