

**REVIEW OF DEPARTMENT OVERSIGHT
FOR TRANSPORTATION
OF NUCLEAR WASTE**

Office of the Secretary

**Report Number CR-2002-073
Date Issued: January 10, 2002**



U.S. Department of
Transportation
Office of the Secretary
of Transportation
Office of Inspector General

Memorandum

Subject: ACTION: Report on Review of Departmental
Oversight for Transportation of Nuclear Waste
Report No. CR-2002-073

Date: January 10, 2002

From: Alexis M. Stefani 
Assistant Inspector General for Auditing

Reply to JA-50:x69970
Attn of:

To: The Secretary
The Deputy Secretary
Chief of Staff

This memorandum presents the results of our review of the Department's oversight for transportation of nuclear waste. Our scope and methodology are in the Exhibit.

DOT needs to take steps to be fully prepared as the Department of Energy (DOE) ramps up its program for transferring nuclear waste from temporary storage to permanent storage.¹ According to DOE forecasts, shipments of transuranic waste will increase greatly in the next few years, from about 100 in 2000 to 330 in 2001, to 695 in 2002, and more than 1,300 in 2005. Likewise, DOE forecasts a sharp increase in shipments of high-level radioactive waste beginning in 2010, assuming DOE opens its candidate permanent repository for such waste as scheduled. To address this growth in shipments, we are recommending that DOT: (1) designate a focal point to timely and effectively address budget, resource, regulatory, coordination, infrastructure, routing, environmental, and safety issues that may arise with increased shipments of nuclear waste and (2) establish and maintain senior-level coordination with DOE regarding transportation of nuclear waste. DOT agreed with both recommendations and anticipates completing them by April 2002.

¹ DOE stores and transports waste created by nuclear research, nuclear power generation, and other uses of radioactive materials. Currently, most high-level waste and transuranic waste are stored at sites where they were produced, including 132 temporary sites for high-level radioactive waste, 23 temporary sites, and a permanent repository for transuranic waste.

BACKGROUND

DOT enforces Federal regulations and controls for the safe transportation of hazardous materials by truck, rail, and waterborne vessel, as follows:

- The Federal Motor Carrier Safety Administration coordinates with the state agencies responsible for making point-of-origin and roadside inspections of trucks carrying nuclear waste, and provides regulatory guidelines for selecting highway transportation routes.
- The Federal Railroad Administration uses an existing policy to conduct inspections on all known rail shipments of high-level nuclear waste to ensure compliance with all aspects of applicable existing rail safety and hazardous materials regulations. This is done through the implementation of its Safety Compliance Oversight Plan for High-Level Nuclear Waste and Spent Nuclear fuel. These inspections include staff from each of the Federal Railroad Administration's disciplines, that is, operating practices, hazardous materials, signal and train control, motive power and equipment, and track.
- The United States Coast Guard inspects and provides security for all waterborne vessels transporting nuclear waste.
- The Research and Special Programs Administration administers a program intended to comprehensively protect persons, property and the environment during the transport of all hazardous materials, including radioactive material. The program encompasses regulations addressing such issues as packaging nuclear wastes for transport, hazard communication, radiation and contamination control, criticality safety, specific modal requirements, and training. RSPA coordinates these efforts with the U.S. Nuclear Regulatory Commission.

We limited our review to DOE shipments of high-level radioactive waste and transuranic waste – the two types of waste that pose the greatest risk to persons, property, and the environment. DOE is responsible for safeguarding its nuclear waste before, during, and after transportation. Also, DOE establishes equipment inspection requirements, determines transportation routes, and enters into contracts for shipping nuclear waste to and between storage facilities. Further, DOE trains Federal, state, and local agencies in handling hazardous materials, inspection requirements, and

High-level radioactive waste includes material that results from the reprocessing of spent nuclear fuel that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation. **Transuranic waste**, most of which was created in the nuclear weapons production process, also requires permanent isolation. This waste includes items such as radioactively contaminated clothing, tools, glassware, equipment, debris, and residues.

emergency preparedness along transportation routes. We did not consider waste transported by the Department of Defense (DOD), such as spent fuel from nuclear powered submarines.

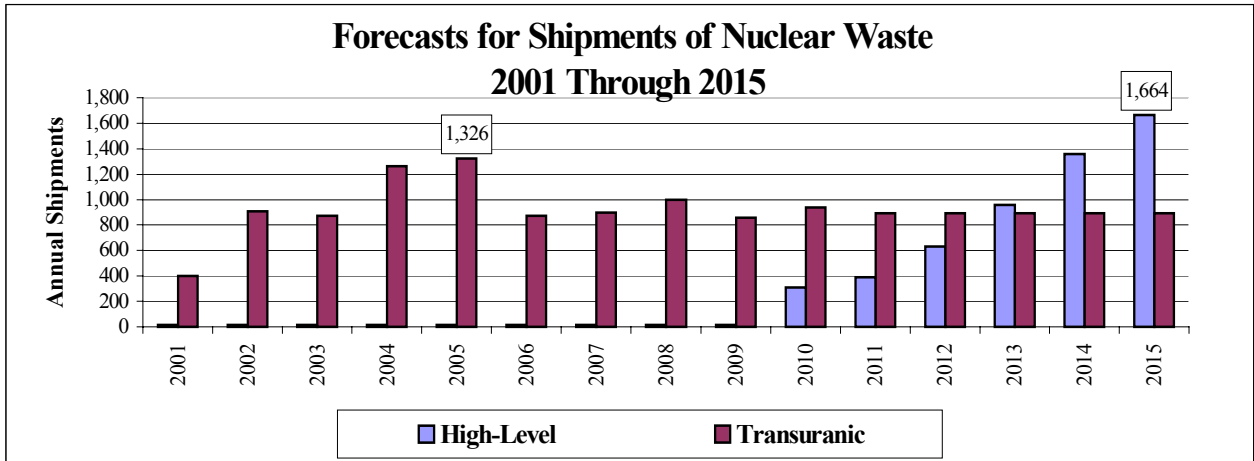
RESULTS OF REVIEW

DOT needs to take steps to be fully prepared for future shipments of transuranic waste and high-level waste. Within the next 5 years, DOE expects a rapid and large increase in shipments of transuranic waste as it implements a program to transfer this waste from temporary storage to permanent storage. Beginning in 2010, DOE expects a similar increase in shipments of high-level radioactive waste, assuming DOE's candidate permanent repository for this waste is approved as scheduled.

Shipments of transuranic waste are increasing significantly as DOE transfers this waste from temporary storage to permanent storage. DOE began shipping transuranic waste to a permanent repository near Carlsbad, New Mexico, in April 1999. Beginning with 112 truck shipments in 2000 and 330 transported in 2001, DOE forecasts more than 1,300 truck shipments by 2005. These forecasts include only those sites with defined shipping schedules, which account for about 20,000 of the 37,000 shipments expected before DOE completes its transfer of all transuranic waste to the permanent repository in 2034. DOE will update forecasts as it defines shipping schedules for the remaining sites.

In comparison to transuranic waste, DOE estimates that it will transport only 12 to 14 shipments of high-level radioactive waste each year through 2009. This estimate includes four to six shipments under the Atoms for Peace Program and eight shipments of spent nuclear fuel from university research reactors. Based on DOE forecasts, shipments of high-level radioactive waste will increase greatly in 2010 if DOE opens its candidate permanent repository for such waste as scheduled. According to DOE forecasts, about 300 shipments will be transported to the final repository in 2010, increasing to nearly 1,700 shipments in 2015. DOE expects to complete its transfer of all high-level radioactive waste from temporary storage to the permanent repository by 2035, using a combination of truck and rail shipments.

Under a mostly truck scenario, DOE forecasts 49,800 shipments (49,500 truck and 300 rail) of waste to the permanent repository. Comparatively, DOE estimates 13,400 shipments (10,800 rail and 2,600 truck) under a mostly rail scenario. The following figure shows DOE forecasts for shipments of nuclear waste between 2001 and 2015.



Source: Department of Energy

At this time, DOT is not fully prepared for the forecasted increase in shipments. DOT Operating Administrations, such as the Federal Railroad Administration, the Federal Motor Carrier Safety Administration, and representatives of DOE’s Senior Executive Transportation Forum, are concerned that there is no focal point within DOT with sufficient authority to deal timely and effectively with budget, resource, regulatory, coordination, infrastructure, routing, environmental, and safety issues that may arise with increased shipments of nuclear waste. Because of these conditions, the Operating Administrations, DOE, and state inspection agencies are unsure whether the current levels of planning, inspection, training, and oversight activity will be sufficient for forecasted levels of nuclear waste shipments.

To strengthen assurances that forecasted increases in DOE shipments of nuclear waste will be transported safely, DOT needs a mechanism for additional senior-level coordination within the Department, with DOE, and with others involved in shipping nuclear waste. One possibility is DOT’s Office of Intermodalism, the focal point for inter-modal and cross-modal hazardous materials issues within DOT. Another possibility is the newly created Transportation Security Administration. In either case, increased DOT senior-level involvement in issues involving the transportation of nuclear waste, including involvement in the Senior Executive Transportation Forum that DOE established in 1998 to facilitate decisions regarding transportation of radioactive materials and waste, is needed. While DOT staff have attended some of the Forum’s meetings, DOT has not filled the “Ex-Officio” position established for DOT representation on the Forum. Participation in this forum could assist DOT in developing plans and strategies to resolve issues that may arise with increased DOE shipments of nuclear waste.

RECOMMENDATIONS

We recommend that DOT:

1. Designate a focal point to timely and effectively address budget, resource, regulatory, coordination, infrastructure, routing, environmental, and safety issues that may arise with increased shipments of nuclear waste.
2. Establish and maintain senior-level coordination with DOE regarding transportation of nuclear waste.

MANAGEMENT COMMENTS

We provided a draft copy of this report to the Associate Deputy Secretary and Director, Office of Intermodalism as well as staff in the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, the United States Coast Guard, and the Research and Special Programs Administration. The group indicated general agreement with our findings and recommendations. Where appropriate, we incorporated the comments into this final report. The complete text of management comments is in the Appendix.

The Department agreed to evaluate alternatives for creating a focal point and plans to make a determination by April 2002. This focal point may also serve as the senior level contact with DOE.

OFFICE OF INSPECTOR GENERAL COMMENTS

Actions taken and planned by the Department are reasonable, subject to the follow-up requirements in DOT Order 8000.1C.

We appreciate the courtesies and assistance extended to our staff during this review. If you have any questions, please call me at (202) 366-1992 or Mark R. Dayton, Deputy Assistant Inspector General for Competition, Economic, Rail, and Special Programs, at (202) 366-9970.

#

EXHIBIT. SCOPE AND METHODOLOGY

We conducted our review from July 2000 through April 2001. We focused our review on actions taken by Department of Transportation (DOT) Operating Administrations during the 3 years ended December 31, 2000 to ensure the Department of Energy (DOE) and its contractors followed Federal hazardous materials regulations and controls for transporting nuclear waste.

We discussed safeguarding responsibilities with staff from the Nuclear Regulatory Commission and DOE. The Commission and DOE review, approve, and coordinate transportation -- including security safeguards -- of hazardous materials under their control. We familiarized ourselves with regulations, policies, procedures, and controls for transportation of nuclear waste. We identified storage facilities and past and forecasted shipments for nuclear waste. We also reviewed inspection records and discussed storage, coordination, transportation, and inspection issues with staff from:

- DOT Headquarters and field offices for the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, the United States Coast Guard, and the Research and Special Programs Administration.
- DOE temporary storage sites for nuclear waste near Aiken, South Carolina; Idaho Falls, Idaho; and Richland, Washington.
- DOE permanent repository for transuranic waste near Carlsbad, New Mexico and DOE's candidate permanent repository for high-level radioactive waste near Yucca Mountain, Nevada.
- DOE National Transportation Program Office and the Office of Civilian Radioactive Waste Management.
- Nuclear Regulatory Commission's Nuclear Materials Safety and Safeguards Office and the Package Performance Study Focus Group.
- Commercial Vehicle Safety Alliance, which developed the DOE inspection standards for motor vehicles carrying nuclear waste.
- CSX Transport, a rail carrier involved with transport of nuclear waste.

We observed four shipments of nuclear waste. In addition, we surveyed staff in inspection agencies for 15 different states and attended a class sponsored by the Commercial Vehicle Safety Alliance to learn about state regulations, inspection processes, and concerns for transporting nuclear waste. Further, we attended two focus group meetings sponsored by the Nuclear Regulatory Commission, oversight hearings held by DOE's Nuclear Waste Technical Review Board, and a meeting of the DOE Transportation External Coordinating Working Group to further assess issues and concerns over transportation of nuclear waste.

We met with staff from DOE's Office of Inspector General (OIG) to determine whether they previously audited DOE's handling of radioactive waste. According to DOE staff, DOE OIG has not conducted any DOE-wide reviews of program operations in this area, but has audited specific contractor performance related to ongoing operations and cleanup of radioactive waste at DOE facilities. These audits focused on contractor compliance with contract requirements.




Memorandum

**U.S. Department of
Transportation**
Office of the Secretary
of Transportation

Subject: Action: Response to Draft Report on Review of
Departmental Oversight for Transportation of
Nuclear Waste

Date:

From: 
Melissa J. Allen
Assistant Secretary for Administration

Reply to

Attn. of:

To: Alexis M. Stefani
Assistant Inspector General for Auditing

OVERVIEW

We agree that the Department needs to be prepared for the time when nuclear waste shipments ramp up significantly. There are numerous factors within the Federal government and private industry that will affect the timing of increased shipments and consequently the timing of our resource needs associated with fulfilling the Department's responsibilities relating to the transport of nuclear waste. For example, while the Department of Energy (DOE) is committed to a relatively aggressive schedule for opening a permanent storage facility for high-level nuclear waste by 2010, numerous hurdles remain that could cause that date to slip. On the other hand, a number of electric power utilities, faced with increasingly limited storage capacity for spent nuclear fuel, are planning a Private Fuel Storage Initiative (PFS) that will involve shipping spent fuel to a temporary storage facility in Utah. The PSF is reportedly on-track to begin shipping fuel to this facility via rail in early 2004. If these plans continue on track, additional resources to help ensure the safe transport of these materials may be needed sooner than previously anticipated

In order to make most effective use of the taxpayers money, the Department is faced with the difficult situation of ensuring that sufficient resources are available when needed, to effectively fulfill our responsibilities. At the same time, it would not be useful to bring too many resources online before there is a clear indication of firmly established schedules for nuclear waste transport. We agree with the OIG recommendations for close coordination within and outside the Department to help us ensure that appropriate resources are available when needed. Critical to this effort is ensuring that we get accurate and up-to-date information from DOE and industry sources as it becomes available. Equally important is to have a conduit to facilitate the flow of this information throughout the Department.

RECOMMENDATIONS AND RESPONSE

The OIG report recommends that DOT:

Recommendation 1: Designate a focal point to timely and effectively address budget, resource, regulatory, coordination, infrastructure, routing, environmental and safety issues that may arise with increased shipments of nuclear waste.

Response: Concur. The Department will evaluate alternatives for placing a focal point, mindful of the ongoing organizational changes underway in the Department. We anticipate determining a location for this function by April 2002.

Recommendation 2: Establish and maintain senior-level coordination with DOE regarding nuclear waste transportation.

Response: Concur. The focal point described in recommendation 1 could also serve as a senior level contact with DOE, for the purpose of anticipating trends in nuclear waste shipments. We will determine by April 2002 how to best carry out this function.

Thank you for the opportunity to comment on the draft report. Please contact Martin Gertel on 366-5145 with any questions.

cc: Mr. McGuire, DHM-1
Ms. Goff, S-3
Mr. Gavalla, RRS-1