

DRAFT – March 8, 2006

**RADIOACTIVE MATERIAL
TRANSPORTATION PRACTICES
MANUAL**
*for use with
DOE O 460.2*



**U.S. DEPARTMENT OF ENERGY
Assistant Secretary for Environmental Management**

DISTRIBUTION:
All Departmental Elements

INITIATED BY:
Office of Environmental Management

RADIOACTIVE MATERIAL TRANSPORTATION PRACTICES MANUAL

1. **PURPOSE:** This Manual establishes a set of standard transportation practices for U.S. Department of Energy (DOE), including National Nuclear Security Administration (NNSA) organizations to use in planning and executing offsite shipments of radioactive materials including radioactive waste.

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2. **SUMMARY:** This Manual is composed of 14 transportation practices that establish a standardized process and framework for interacting with State, Tribal, and local authorities and transportation contractors and carriers regarding DOE radioactive material shipments. DOE organizations are responsible for compliance with all applicable transportation regulations and agreements with State, Tribal, or local authorities. The regulations provide a comprehensive basis for safely and securely shipping classified and unclassified radioactive materials.

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The Senior Executive Transportation Forum was established by the Secretary of Energy in January 1998 to coordinate the efforts of Departmental elements involved in the transportation of radioactive materials and waste. In response to recommendations from various DOE programs and external stakeholders, the Forum agreed to evaluate the shipping practices being used or planned for use throughout the Department, document them, and, where appropriate, standardize them. The results of that effort were reflected in the original issue of this Manual. This update reflects the ongoing and continuing collaboration of DOE organizations on the transportation of radioactive material and waste.

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3. **REFERENCE:** Department of Transportation regulations in Title 49 of the Code of Federal Regulations (CFR); Nuclear Regulatory Commission regulations in Title 10 of the CFR; DOE O 460.1B, *Packaging and Transportation Safety*; DOE O 460.2A, *Departmental Materials Transportation and Packaging Management*; and DOE O 470.4, *Safeguards and Security Program*.

4. **CONTACT:** Questions concerning this Manual should be addressed to the Office of Transportation, EM-24, 301-903-7284.



SAMUEL BODMAN
Secretary of Energy

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TRANSPORTATION PRACTICES

1. INTRODUCTION

1.1 Purpose

This Manual establishes a set of standard transportation practices for U.S. Department of Energy (DOE) organizations to use in planning and executing offsite shipments of radioactive materials including radioactive waste. The identified practices are for use by those organizations listed in ATTACHMENT 1. The practices are to be implemented by the responsible DOE office, field organization, or by contractors or carriers acting on behalf of the Department (See ATTACHMENT 2 for the Contractors Requirements Document). These practices establish a standardized process and framework for interacting with State, Tribal, and local authorities and transportation contractors and carriers regarding DOE radioactive material shipments. DOE organizations are responsible for compliance with all applicable transportation regulations and agreements with State, Tribal, or local authorities. The regulations provide a comprehensive basis for safely and securely shipping classified and unclassified radioactive materials.

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DOE shipping organizations may be subject to varying regulatory requirements due to the character of the material being shipped, statutory requirements, and the government or commercial status of the origin, the shipper, or the carrier of the material. Specific cooperative agreements with States or between DOE and regulators may also affect transportation practices.

The Senior Executive Transportation Forum was established by the Secretary of Energy in January 1998 to coordinate the efforts of Departmental elements involved in the transportation of radioactive materials and waste. In response to recommendations from various DOE programs and external stakeholders, the Forum agreed to evaluate the shipping practices being used or planned for use throughout the Department, document them, and, where appropriate, standardize them. The results of that effort were reflected in the original issue of this Manual. This update reflects the ongoing and continuing collaboration of DOE organizations on transportation of radioactive material and waste.

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1.2 Background on DOE Shipments

DOE and its predecessor agencies have maintained a record of safe transportation of radioactive materials for more than 50 years. Of the thousands of shipments, none has resulted in an identifiable injury through release of radioactive material. Approximately 3 million packages of radioactive materials are shipped each year in the United States. Historically, DOE shipments constitute only a very small fraction (typically less than 1 percent) of the total radioactive material shipments; however, they comprise a significant portion (typically around 75 percent) of the curies (amount of radioactivity) shipped annually in the United States. In fulfilling its diverse civilian and defense missions, the Department must transport various types of radioactive materials. These include isotopes for medical, industrial, and research purposes; weapons-

related materials; spent nuclear fuel (SNF) and high-level waste (HLW); low-level waste (LLW) and mixed low-level waste (MLLW); transuranic (TRU) waste; and tritium-bearing reactor components.

DOE [Headquarters organizations](#) provide policy direction and oversight for packaging and transportation activities for their respective office. The DOE [Headquarters organizations](#) responsible for shipments are the Offices of Environmental Management; Nuclear Energy, Science and Technology; Science; Civilian Radioactive Waste Management; and within NNSA, Defense Programs; Defense Nuclear Nonproliferation; and Naval Reactors. [For most radioactive shipments, DOE field organizations are responsible for detailed planning and for ensuring full regulatory compliance for the shipments. The field organizations also serve as the primary points of contact for public and stakeholder interactions.](#)

The Department uses packagings that comply with U.S. Department of Transportation (DOT) safety regulations for its non-defense transportation activities and packagings that meet DOE requirements for defense transportation activities. These packagings are designed to protect workers and limit the risk to the public during transportation. Packagings used for spent fuel and other highly radioactive material shipments are certified by the Nuclear Regulatory Commission (NRC) or by DOE using standards equivalent to NRC requirements.

Most DOE shipments are transported by commercial carriers; classified highway shipments are handled by the NNSA Office of Secure Transportation (OST). While some shipments are made by carriers under contract to DOE (or its contractors), most shipments are made by common carriers under terms of tenders that represent Departmentwide, regional, or local negotiated rates for shipping specific materials. Shipments are made by truck, rail, air, and, in limited cases, barge.

1.3 Regulations

DOT and NRC have the primary responsibility for Federal regulations governing radioactive material transportation. DOT regulations in Title 49 of the Code of Federal Regulations (CFR) set standards for packaging, transporting, and handling radioactive materials. DOT also specifies training required for personnel who handle and transport radioactive materials. NRC regulations in Title 10 of the CFR apply to the packaging and transportation by licensees of materials that have higher levels of radioactivity. DOE has modeled its standards on the NRC regulations. In some instances, DOE is subject to the NRC regulations. Transportation activities that are not regulated by DOT may be subject to the requirements of 10 CFR [830 and 835](#).

DOE O 460.1B, *Packaging and Transportation Safety*, establishes safety requirements for the proper packaging and transportation of DOE offsite shipments. DOE O 460.2A, *Departmental Materials Transportation and Packaging Management*, establishes DOE requirements and responsibilities to supplement applicable laws, rules, regulations, and other DOE Orders for materials transportation and packaging operations.

DOE O ~~470.4~~, *Safeguards and Security Program*, establishes requirements and responsibilities to ensure appropriate levels of protection in addition to appropriate facility approval registration of common carriers in the Safeguards and Security Information Management System.

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1.4 Shipments Covered by this Manual

The practices cover the majority of DOE radioactive material shipments but do not cover all materials and modes. ~~The practices apply to the DOE radioactive material/waste shipments that represent the greatest percentage of radioactivity placed in the nation's transportation system by DOE.~~ Included are highway and rail shipments of spent nuclear fuel, high-level waste, tritium-bearing reactor components, LLW and MLLW, isotopes, and classified national security shipments. National security shipments include naval spent fuel rail shipments under the cognizance of the Naval Nuclear Propulsion Program and highway shipments of classified materials made by OST. Truck shipments of TRU waste to the Waste Isolation Pilot Plant (WIPP) are also covered.

All shipments to a repository under the Nuclear Waste Policy Act (NWPA) are covered by this manual. Shipments of commercial SNF, DOE SNF, commercial HLW and defense HLW are the responsibility OCRWM. Shipments of naval spent fuel are the responsibility of the Naval Nuclear Propulsion Program (NNPP)

The practices do not apply to shipments by barge or water vessel since DOE ships only a very small number of unique items this way. ~~Other material shipments not specifically covered are those shipped infrequently or under well-established procedures and historically of little or no public interest, or shipped in accordance with strict information security protection requirements, such as (1) air shipments of medical and research isotopes which are lightweight and handled by commercial air express service to ensure quick delivery because of their short half-lives; (2) depleted uranium hexafluoride cylinders; (3) large-quantity sources; (4) classified materials moving by commercial carriers; and (5) fresh (new) nuclear fuel. All of these shipments, however, are subject to applicable Federal regulations and DOE Orders.~~ The practices do not cover DOE shipments of non-hazardous materials, non-radioactive hazardous materials, or onsite transfers of radioactive material.

Deleted: Air shipments have not been included because the vast majority of DOE radioactive air shipments are of medical and research isotopes, which are handled by commercial air express services; these isotopes are very lightweight and must be delivered quickly because of their short half-lives. TRU waste shipments between DOE sites other than the WIPP are not covered here because the practices applicable to such shipments are still under consideration. Rail shipments to WIPP are currently being considered but are not yet planned, so the practices do not address such shipments.

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1.5 Organization of this Manual

The practices described in this Manual have been divided, where appropriate, by mode (truck or rail) and by material type (classified versus non-classified, spent fuel, TRU waste, LLW, etc.). For some topics, such as emergency notification, a common approach can be applied to all modes and material types so such divisions were not necessary. In other cases, differing regulations or differing concerns based on the hazard of the material being shipped necessitated different requirements in the practices.

Practices are described for the following topics:

- Transportation Planning - the transportation planning activities that take place after the need for shipment has been identified;
- Emergency Planning - DOE emergency planning activities with State and Tribal jurisdictions; Deleted: t
- Projected Shipment Planning Information - provision of information regarding projected shipments;
- Routing - practices to identify and select transportation routes;
- Security - actions taken to ensure the security of shipments;
- Carrier/Driver Requirements - practices to ensure that shipments use high-quality carriers and drivers;
- Shipment Prenotification - near-term notification activities for pending shipments;
- Transportation Operational Contingencies - operational contingencies that may interrupt normal transport operations;
- Tracking - DOE practices for tracking the location of shipments and facilitating communication with the drivers/crew of the vehicles;
- Inspections - inspections of shipments, including both verifications of vehicle roadworthiness and radiological condition of containers loaded on the vehicles;
- Safe Parking - the criteria to be used in selecting appropriate parking locations in the event that transportation operational contingencies occur;
- Emergency Notification - the process DOE uses to notify State and Tribal officials, after DOE itself has received notification, of a transportation emergency; Deleted: trib
- Emergency Response - DOE response to a transportation emergency;
- Recovery and Cleanup - post-emergency actions taken to recover and cleanup from an accident or incident.

These topics have been arranged as one would generally address them in planning and conducting shipments. Following the 14 topics are a glossary of terms (Attachment 3) and a list of acronyms (Attachment 4).

1.6 Updates

The practices in this Manual will be updated to cover programmatic changes, additional modes and materials as needed to support shipping programs. The practices also will be updated periodically to incorporate improvements and “lessons learned” from their application.

2. TRANSPORTATION PLANNING

2.1 Introduction

This section addresses the transportation planning activities that take place after the need for shipment of radioactive material has been identified. Transportation planning activities include characterization and classification of the material to be shipped, identification of applicable regulatory and programmatic requirements, selection and procurement of appropriate packagings, evaluation and selection of modes and carriers to be used, and planning for needed public information. The objective of transportation planning is to arrange for safe, secure, timely, and cost-effective movement of the radioactive materials. Opportunities for stakeholder involvement in transportation planning activities are provided through outreach activities conducted by the DOE organizations responsible for the materials to be transported.

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DOE obtains input on transportation planning activities from a broad range of stakeholder organizations through the Transportation External Coordination Working Group (TEC/WG) and through interaction with States, Tribes, local officials, carriers, regional groups, and site advisory boards.

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2.2 Transportation Planning

2.2.1 Material Characterization and Classification

Characterization and classification of the material to be shipped are necessary to ensure that the material is shipped safely and in compliance with applicable regulations and that the material is compatible with the packaging selected for shipment. DOE is responsible for properly characterizing and classifying the material in accordance with DOT requirements and in sufficient detail to permit identification of appropriate packaging. Material characterization and classification are performed by DOE or contractor technical staff who possess detailed knowledge of the material and who have been properly trained on the DOT regulations pertaining to classification.

[Characterization and classification responsibilities for shipments to a repository under the NWPA are set forth in the Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste \(10 CFR 961\) for commercial sources of material and in MOUs between OCRWM and other DOE programs for DOE material.](#)

2.2.2 Identification of Regulatory and Programmatic Requirements

DOE identifies the need to ship, the materials to be shipped, the origin, the destination, the schedule on which shipments should be made, and other programmatic needs. In addition, for OCRWM shipments of commercial SNF/HLW, the detailed shipping arrangements will be negotiated in accordance with the requirements of disposal contracts between the Department and the utilities. In all cases, DOE is responsible for identifying applicable regulatory requirements based on characterization of the material to be shipped.

2.2.3 Packaging Selection

Packaging selection depends on the DOT material classification and the chemical and physical characteristics of the material. The shipper is responsible for identifying the proper packaging and taking steps to ensure that the packagings are available when needed for shipment. For Type B packagings, the appropriate certificate of compliance must be checked to ensure that it is current and that the proposed contents have been approved. Packaging selection is performed by the shipper's or contractor's technical staff who have been properly trained on DOT, NRC and/or international packaging regulations.

For shipments to a repository, section 180(a) of the NWPA requires that transportation casks for all shipments be certified for such use by the Nuclear Regulatory Commission.

2.2.4 Mode and Carrier Selection

Safety is the primary consideration in mode and carrier evaluation and selection. Shipments are typically planned using the mode of transportation and individual carriers within that mode that can safely provide the required service at the lowest overall cost to the Government. However, where for valid reasons a particular mode of transportation or a particular carrier within that mode must be used to meet specific program requirements and/or limitations, only that mode or carrier will be considered. Examples of valid reasons for considering only one particular mode or carrier are where only a certain mode of transportation or individual carrier is able to provide the needed service or is able to meet the required delivery date, or where the shipping or receiving facilities preclude or are not conducive to service by all modes of transportation. In such instances, consideration will be limited to modes and carriers that can meet program requirements.

Some of the factors that should be considered in determining whether a carrier or mode of transportation can meet DOE's transportation service requirements for each individual shipment are—

- availability and suitability of carrier equipment for the weight and size of the cargo;
- carrier terminal facilities at origin and destination;

- pickup and delivery service, if required;
- estimated time in transit;
- record of past performance of the carrier: and
- Security.

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a. Spent Nuclear Fuel and High-Level Waste. The DOT study “Identification of Factors for Selecting Modes and Routes for Shipping High-Level Radioactive Waste and Spent Nuclear Fuel” concluded the following:

- The transport casks used for spent fuel and high-level waste are designed to the most stringent packaging standards. The cask design reduces much of the risk associated with the transport of the material.
- Radiation exposure risks associated with incident-free shipments and with potential accident conditions are very low.
- A shipping campaign using larger-capacity rail/barge casks, where practicable, can reduce the number of trips needed and consequently may result in lower overall risk.
- Shipment duration is the most significant safety factor.
- As a general rule, highway offers the fastest movement among the three modes (highway, rail, and water), and waterway is the slowest.

DOE will consider these DOT study conclusions in its mode selection deliberations. Shippers will consult with appropriate State and Tribal officials to ensure that the ultimate choice considers their concerns.

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b. OCRWM SNF and HLW shipments to a repository. The primary shipping mode will be by rail and use of special rail service (specifically dedicated trains) is anticipated for most shipments.

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2.2.5 Transportation Plans

a. Non-Classified Spent Nuclear Fuel, High-Level Waste, Tritium-Bearing Reactor Components, and Transuranic Waste Shipments to WIPP. The cognizant DOE program office will consult with State, Tribal, and carrier representatives when developing such plans and will provide them, for comment, to those States and Tribes through whose jurisdictions the shipments are expected to be transported.

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Transportation plans describe operational strategy and delineate steps that will be taken to ensure compliance with applicable regulatory and DOE requirements. Specific contents of transportation plans are determined by the program office and/or operations office, and in general include information on¹—

- organizational roles and responsibilities,
- material to be shipped,
- projected shipping window,
- estimated number of shipments,
- mode of transport and carriers to be used,
- packages to be used,
- preferred and/or alternative routes,
- shipment pre_notifications,
- safe parking arrangements,
- tracking systems,
- emergency preparedness and response,
- recovery and cleanup,
- security arrangements, and
- public information.

b. Low-Level Waste, Mixed Low-Level Waste, and Other Radioactive Material.

Transportation plans are not routinely written for shipments of these materials. The cognizant program office will determine if the shipping activities warrant the

¹ Security needs may require that some information be subject to restricted access.

development of a written transportation plan. In consultation with State and Tribal authorities, the responsible DOE organization may determine that development of detailed fact sheets may be used to provide campaign-specific information for a wide audience: public officials, media, state and local emergency response personnel, state and regional planners, etc. This level of information can be very effective when delivered in a fact sheet when a transportation plan is not required.

2.2.6 Communications Plans

Public information officers have standardized communications practices for providing general information to the public. General information on transportation of radioactive material is identified in Attachment 5. DOE program managers are encouraged to use this material whenever possible to address public concerns/questions. For some shipments, this general information may be sufficient.

- a. Non-Classified Spent Nuclear Fuel, High-Level Waste, Transuranic Waste Shipments to WIPP, and Tritium-Bearing Reactor Components. If the cognizant DOE organizations determines that the standardized communications practices are not sufficient, they will develop a communications plan appropriate for the particular shipments in consultation with State, Tribal, and carrier representatives. It will identify roles and responsibilities for exchanging accurate information between the Department, its shipper, carriers, affected States, Tribes, and other Federal agencies, the media, and the public. The plan must identify points of contact and public spokespersons within DOE Headquarters program offices, participating DOE operations/area offices, and other participating Federal, State, and Tribal agencies.

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The designated DOE operations/area office will prepare campaign or shipment-specific public information materials, as necessary (i.e., fact sheets, briefing packages, news releases, and questions and answers) and coordinate those materials with the DOE Offices of Congressional and Intergovernmental Affairs and Public Affairs. When finalized, the materials will be shared with State and Tribal agencies for their use and distribution. As requested, DOE will assist and support State and Tribal agencies in responding to information requests from elected officials and the media.

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As indicated in OCRWM's Strategic Plan for the Safe Transportation of Spent Nuclear Fuel and High-Level Radioactive Waste to Yucca Mountain, November 18, 2003, OCRWM will implement a communications process with states, tribes, local governments, industry and other parties participating in transportation planning.

Deleted: For shipments conducted under the NWPAA, transportation contractors for the Office of Civilian Radioactive Waste Management will also prepare a communications and outreach plan describing how they will communicate and interact with State, tribal and local government officials, regional cooperative agreement groups, local civic organizations, the public, and the media. DOE will provide the proposed plan to appropriate parties along the transportation routes and seek their comments.

- b. Other Non-Classified Shipments Of Low-Level Waste, Mixed Low-Level Waste, And Other Radioactive Materials. In many instances, the general information available on programmatic web sites (see Attachment 5) may be sufficient. For some unique campaigns, more detailed communications planning may be desired. The responsible DOE organization will decide whether to develop a communications plan.

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- c. Classified National Security Shipments. All inquiries regarding classified national security shipments should be directed to OST in Albuquerque, New Mexico.
 Requests for non-classified briefings on the conduct of classified shipments, including naval spent fuel shipments, should be directed to the OST, which maintains a program to educate law enforcement and emergency response personnel about classified shipments.

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3. EMERGENCY PLANNING

3.1 Introduction

This section addresses DOE emergency planning activities with State and Tribal jurisdictions for the transportation of DOE radioactive material. It does not affect specific mutual aid agreements that DOE may have with State, Tribal, local, or county organizations.

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Emergency planning will include identification of hazards and threats, hazard mitigation, development and preparation of emergency plans and procedures, and identification of personnel, training, equipment, and other resources needed for an effective response. Planning covers activities that assist organizations to prepare for an incident/accident.

The DOE Transportation Emergency Preparedness Program (TEPP) provides “tools” to State and Tribal authorities to assist them in preparing for response to a transportation incident involving DOE shipments of radioactive material. TEPP provides technical assistance to State and Tribal Governments in obtaining a greater understanding of radiological risks, identifying planning deficiencies, updating plans, training first responders, and stimulating and testing the system for strengths and needed improvements through drills and exercises. TEPP will focus its efforts with the States and Tribes initially along identified DOE transportation corridors. The goal of TEPP is to establish consistent policies and implementing procedures, build public and institutional confidence, and demonstrate the ability to respond effectively. DOE contact will be at the State and Tribal levels; States will work with the local authorities as necessary to implement their programs.

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3.2 Emergency Planning

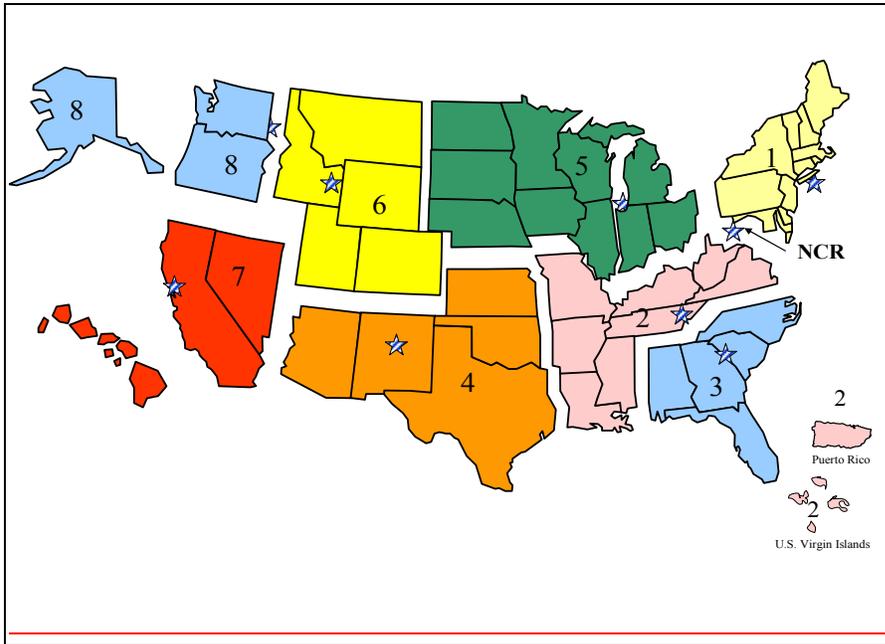
3.2.1 Federal regulations set forth requirements for Federal, State, local, and Tribal emergency planning activities. In addition, DOE Orders, guides, and manuals specify planning activities (including emergency planning) for the DOE shipper and other parties involved with shipping activities.

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DOE emergency planning will be consistent with the National Incident Management System, the National Response Plan and other current federal emergency response programs.

3.2.2 A TEPP Coordinator has been designated for each of the 8 Regional Coordinating Offices to serve as the interface with State and Tribal organizations for emergency

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planning for DOE transportation of radioactive material/wastes (see Figure 1). A current listing of TEPP coordinator names and phone numbers, along with additional information on TEPP is available at the Web site www.em.doe.gov/otem.

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The Regional TEPP Coordinator will accomplish the following:

- Discuss emergency response roles, responsibilities, capabilities, notification procedures, and information needs with State and Tribal governments along transportation corridors used for DOE radioactive material/waste shipments. DOE Regional TEPP Coordinators are available to provide planning information and assistance to State and Tribal contacts within their region. (Also see the sections on Emergency Notification and Emergency Response.)
- Provide TEPP planning tools to State and Tribal authorities to assist them in planning and preparing for response to transportation accidents/incidents involving DOE non-classified radioactive material and performing needs assessments.

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- Coordinate with site transportation programs to identify planned radioactive material shipments to assist State and Tribal organizations in planning for the various shipments. (See the sections on Transportation Planning and Projected Shipment Planning Information.)
- Coordinate information with TEPP coordinators in other regions affected by shipping routes that traverse more than one region.
- Coordinate with program offices, transportation managers, and public information officers during development of transportation plans and develop the emergency plans for shipping campaigns originating in their region. (See the section on Transportation Planning).

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3.2.3 Program-specific planning activities include the following:

- a. The OST Emergency Management Plan documents the emergency planning process for any type of operational emergency involving OST personnel and vehicles.
- b. OCRWM will require its carriers to develop an emergency response plan that addresses activities to be conducted in an accident or incident. Carriers are responsible for providing all drivers/crews and security personnel with specific written procedures that clearly define actions to be taken in the event of any emergency.

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3.3 Training

3.3.1 Transportation Emergency Preparedness Program. TEPP developed the Modular Emergency Response Radiological Transportation Training (MERRTT) to address concerns from States, Tribes, and local jurisdictions about shipments of radioactive material by the U.S. Department of Energy. MERRTT provides fundamental knowledge for responding to transportation incidents involving radioactive material and builds on training in existing hazardous materials curricula. MERRTT satisfies the training requirements outlined in the Waste Isolation Pilot Plant (WIPP) Land Withdrawal Act and is used to train responders along the WIPP corridor. Much of this training is applicable to OST and naval spent fuel shipments. MERRTT also includes a module on the Office of Secure Transportation shipments. MERRTT has a modular design, consisting of 18 concise, easy to understand modules and 4 hands-on practical exercises. This design allows a jurisdiction to integrate the modules into existing hazardous material training programs. The modular format allows instructors to tailor the training to specific emergency response audiences. MERRTT is designed to provide instructor-led or self-paced instruction. The training objectives and sequence of the modules have been structured to align the modules with the hazardous material training competencies outlined in OSHA 29 CFR 1910.120(q) and the National Fire Protection Association standards.

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3.3.2 Program-specific training activities include the following:

- a. Office of Secure Transportation. Conducts drills and exercises regularly. In-service tests are conducted annually with DOE response elements and with State law enforcement and response agencies. The OST invites States to participate in its annual In-Service Training security and emergency response joint training exercises.
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- b. WIPP. ~~Uses the TEPP/MERRTT to train responders along the WIPP corridors and conducts training exercises.~~
 - Deleted: Provides training on WIPP transportation through
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- c. Civilian Radioactive Waste Management Program. Funding and technical assistance will be provided to assist States and Tribes to obtain training necessary to prepare for NWPA shipments, ~~in accordance with Section 180(c) of the NWPA~~. This will include procedures for emergency response and safe routine transportation. ~~Funding will be provided three to five years prior to commencement of shipments~~
 - Deleted: Tribal Education Program (STEP). STEP offers training in compliance with Public Law 102-579, the WIPP Land Withdrawal Act.
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- d. The Naval Nuclear Propulsion Program. The Naval Nuclear Propulsion Program conducts periodic naval spent fuel shipment briefings and exercises. State, Tribal, and local emergency services personnel participate or observe to familiarize themselves with naval spent fuel shipments, the escorts who accompany the shipments, and the coordination required for response to an emergency.
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4. PROJECTED SHIPMENT PLANNING INFORMATION

4.1 Introduction

This section addresses the provision of information regarding projected shipments of DOE radioactive materials. The information to be provided and the timing of it will be determined by the responsible DOE organization. This will permit each Headquarters organization to determine, in concert with their stakeholders, the appropriate schedule for providing information.

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4.2 Planning Information

Planning information is the general information regarding projected shipments that is shared with State and Tribal authorities to allow them to adequately plan resources for inspections, emergency response, accident prevention, and public information/outreach activities. DOE Headquarters organization, field office, and shippers will establish an ongoing dialogue, consistent with security considerations, with State and Tribal agencies that demonstrate an ongoing interest in shipments traveling through their jurisdictions.

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4.2.1 Non-Classified Shipments

a. General information will be provided for shipment of the following materials:

- spent nuclear fuel;
- high-level waste;
- high-volume shipments of LLW and MLLW;²
- TRU waste;
- tritium-bearing reactor components.

b. General information may include the following³ (the responsible DOE organization, in consultation with State and Tribal authorities, will determine the specific information to be made available):

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- when shipments are anticipated;
- origin;
- destination;
- projected pass-through States and Tribal lands;
- expected number of shipments;
- operational specifics (e.g., whether shipments are escorted);
- description of material to be shipped;
- packaging descriptions;
- shipping modes;
- potential routes;
- DOE/contractor point of contact;
- list of applicable reference documents (e.g., environmental impact statement, environmental assessment, record of decision).

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c. Recipients of the information include the following:

- State and Tribal agency officials/points of contact (Note: States may pass on information to local governments as they deem appropriate) and

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² For the purposes of this protocol, high-volume truckload shipments are those that a shipper schedules for an average of five or more truckload shipments per week between a given origin and destination for a period of 3 or more months; high-volume rail shipments are those that a shipper schedules for an average of 60 railcars or more per month between a given origin and destination for a period of 3 or more months.

³ Security needs may require that some information be subject to restricted access.

other parties as deemed appropriate by the responsible DOE organization, in consultation with State and Tribal authorities (e.g., regional groups).

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d. Frequency of updates. In consultation with State and Tribal authorities, the responsible DOE office will determine the frequency of updates based on changes in the shipment planning parameters.

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e. Method of providing information.

(1) In consultation with State and Tribal authorities, the responsible DOE organization will determine the most appropriate method for providing and updating the information.

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(2) DOE programs may use the Prospective Shipments Module for spent fuel, highway route-controlled quantity, and other campaigns, after the NEPA process is completed.

4.2.2 Classified National Security Shipments

a. General information, as described above, on both highway shipments of classified materials made by the OST and on naval spent fuel shipments, is discussed with State and Tribal officials.

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b. DOE works with contacts, designated by States and Tribes, with needs for information about classified national security shipments.

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5. ROUTING

5.1 Introduction

This section addresses the identification and selection of highway and rail transportation routes for shipments of DOE radioactive materials, but does not change current agreements between DOE and States and Tribes regarding the routing of DOE shipments.

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5.2 Highway Routing

5.2.1 Non-Classified Shipments

a. Spent Nuclear Fuel, High-Level Waste, and Tritium-Bearing Reactor Components

(1) Highway routes are selected in accordance with 49 CFR 397.101(b) for these highway route-controlled quantity shipments.

(2) DOE/contractors analyze proposed routes using transportation models (such as TRAGIS).

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(3) States and Tribes may designate highway routes in accordance with DOT regulations (49 CFR 397.103). Additional input resulting from stakeholder review of projected shipment planning information is considered. Routes are documented in specific shipment transportation plans.

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(4) For safeguards and security purposes, the following practices apply:

(a) For spent nuclear fuel shipments involving NRC-licensed material or licensees (e.g., university and research reactor spent nuclear fuel shipments), the shipper or transportation contractor submits routes for NRC approval in accordance with 10 CFR 73.37.

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(b) The following shipments are not subject to NRC safeguards and security regulations:

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- shipments of tritium-bearing reactor components;
- high-level waste shipments;
- shipments of domestic DOE-owned spent nuclear fuel [conducted in compliance with DOE Orders, whose requirements were approved by DOT under 49 CFR 173.22(c)(2) as essentially equivalent to NRC's]

OCRWM shipments of SNF & HLW shipments made under the NWPAA. For spent fuel and high-level waste shipments by the OCRWM will retain responsibility for stakeholder interactions, final route approval and safeguards and security requirements including 49 CFR 173.22(c)(2) and other applicable requirements.

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b. Transuranic Waste Shipments

(1) Shipments to the Waste Isolation Pilot Plant. DOE negotiates routes with States and Tribes on behalf of the carrier. Specific routes to WIPP will be identified from each waste generator site. In developing these routes, DOE—

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- suggests routes to States and Tribes, based on highway route-controlled quantity routing criteria (49 CFR 397.101), which carriers would follow between given origins and destinations; Deleted: state
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- provides for State, Tribal, and local review and comment on proposed routes; Deleted: trib
- recognizes that States and Tribes may designate routes in accordance with DOT regulations (49 CFR 397.103); Deleted: state
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- uses cooperative agreement groups to help facilitate interactions with States; Deleted: state
- allows for route modifications following a defined process involving State, Tribes, and local stakeholder input; Deleted: state
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- minimizes the number of routes used for WIPP shipments;
- specifies routes to be used as an enforceable provision in contracts with carriers.

- (2) Other TRU Shipments. These shipments are done on a case-by-case basis in consultation with States and Tribes and the Carlsbad Field Office. Deleted: DOE is examining the requirements to be used for t
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c. Low-Level and Mixed Low-Level Waste. Carriers will select routes in accordance with 49 CFR 397.101(a). [The provisions of 49 CFR 397.101 state, except in circumstances when there is only one practicable highway route available, considering operating necessity and safety, the carrier must—

- (1) ensure that the motor vehicle is operated on routes that minimize radiological risk;
- (2) consider available information on accident rates, transit time, population density and activities, and the time of day and the day of week during which transportation will occur to determine the level of radiological risk; and
- (3) tell the driver which route to take and that the motor vehicle contains Class 7 (radioactive) materials.]

d. Isotopes. Carriers will comply with 49 CFR 397.101.

5.2.2 Classified National Security Shipments

The provisions of 49 CFR 173.7(b) exempt national security shipments from DOT regulations. However, DOE uses approved hazardous material cargo routes, as designated by States or Tribes, as a guide for classified national security shipments. DOE optimizes the use of four-lane highways and two-lane roads with wide shoulders for safety and security concerns.

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5.3 Rail Routing

5.3.1 Non-Classified Shipments

a. Spent Nuclear Fuel and High-Level Waste

- (1) DOE or its designated shipper specifies carriers and interchange points between carriers. DOE will coordinate routing options with rail carriers and stakeholders.

The following factors should be considered to the extent practicable:

- distance traveled;
- number of interchanges between railroads;
- use of higher-class track, for example, “key routes” as defined in Association of American Railroads Circular OT-55;
- operational input from carriers.

- (2) DOE/contractors analyze proposed routes using transportation models (such as TRAGIS).

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- (3) DOE consults with States and Tribes on the transportation plans. Additional stakeholder input resulting from stakeholder review of projected shipment planning information is considered. Routes are documented in specific shipment transportation plans.

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- (4) For safeguards and security purposes, the following practices apply:

- (a) Routes for spent nuclear fuel shipments involving NRC-licensed material or licensees (e.g., university and research reactor spent nuclear fuel shipments) are submitted by the shipper or transportation contractor for NRC review in accordance with 10 CFR 73.37.

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- (b) The following shipments are not subject to NRC safeguards and security regulation:

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- shipments of tritium-bearing reactor components;

- high-level waste shipments;
- shipments of domestic DOE-owned spent nuclear fuel [conducted in compliance with DOE Orders, whose requirements were approved by DOT under 49 CFR 173.22(c)(2) as essentially equivalent to NRC's];

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shipments of SNF & HLW made under the NWPAA. For spent fuel and high-level waste shipments made under the NWPAA, OCRWM will retain responsibility for stakeholder interactions, final route approval and safeguards and security requirements including 49 CFR 173.22(c)(2) and other applicable requirements.

b. Transuranic Waste Shipments

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- (1) Shipments to the Waste Isolation Pilot Plant. No rail shipments to WIPP are currently planned. The protocol for rail shipments to WIPP will be developed if a decision is made to utilize rail.
- (2) Other TRU Shipments. Any TRU rail shipments would be handled on a case-by-case basis in consultation with the States and Tribes and the Carlsbad Field Office.

Deleted: For spent nuclear fuel and high-level waste shipments made under the NWPAA, the responsible program will also follow the route selection requirements in the operational protocols identified in "Acquisition of Waste Acceptance and Transportation Services for the Office of Civilian Radioactive Waste Management" (Draft RFP #DE-RP01-98RW00320 or subsequent revisions), including DOE responsibility for stakeholder relations and final route approval.

- c. Low-Level and Mixed Low-Level Waste. DOE or its designated shipper specifies carriers and interchange points between carriers. Each carrier selects the specific route to be used while the shipment is in the carrier's custody and care.

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5.3.2 Classified National Security Shipments

National security rail shipments are routed as described above for spent nuclear fuel and high-level waste (Section 5.3.1.a.(1)). Routing information is made available to State and Tribal organizations for discussion as described in the Projected Shipment Planning Information section.

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6. SECURITY

This section generally addresses safeguards and security actions taken to protect DOE shipments of radioactive materials. Sensitive information regarding specific commodities or shipments is not discussed here.

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Security and safety are the key considerations in transportation of radioactive materials. For decades, NRC, DOE, and DOT regulations, and well-established industry best practices have specified detailed requirements to follow for appropriate protection and security, which generally vary depending on the type and amount of material involved.

Following the terrorist attacks of September 11, 2001, and the subsequent global war on terror, officials at every level of government have reexamined established practices related to physical protection of all hazardous materials shipments, including radioactive material. NRC, DOT, and individual DOE organizations have established enhanced security requirements for radioactive material/waste shipments. These efforts are consistent with current international initiatives and Department of Homeland Security (DHS) activities to prevent not only threats to public safety from malicious acts (such as sabotage or diversion of material), but also inadvertent loss of control of radioactive material.

Early in the shipment planning process, the responsible DOE organization will identify the Federal security regulations and requirements applicable to the shipment. State and Tribal officials can then plan accordingly in consultation with the responsible DOE organization.

Information dealing with the security of many radioactive shipments in transit can be sensitive. Depending on the type and quantity of material being shipped, this information may require protection, as Safeguards Information under NRC regulations or as Unclassified Controlled Nuclear Information (UNCI) or Official Use Only (OUO) under DOE regulations. Shipments of strategic materials (such as highly enriched uranium) are safeguards classified. Unauthorized disclosure of any of the above levels of information are violations of the Atomic Energy Act and other regulatory authorities.

Assessments of possible security threats against shipments (e.g., civil unrest directed toward a shipment, malevolent action against a shipment, activity to interfere with the progress of a shipment, etc.) are performed by DOE and evaluated on an ongoing basis in coordination with Federal, State, Tribal, and carrier law enforcement/security organizations. These threat assessments assist in determining appropriate security for shipments. In addition, based on the requirements in 49 CFR 172.800, DOT requires the development of a security plan to provide (a) sufficient background to understand the nature of the threats against hazardous materials transportation; (b) the means to identify the vulnerabilities to those threats; and (c) an approach to address the vulnerabilities. The plan must include an assessment of possible transportation security risks for shipments of hazardous material covered under this regulatory citation.

DOE organizations have developed additional guidance for shipping sites to follow for shipments in transit in the event the DHS Threat Advisory Level is elevated (e.g., when DHS elevates its threat level from Yellow to Orange).

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6.2 Security

a. Spent Nuclear Fuel and High-Level Waste

- (1) Security will be provided in compliance with NRC requirements in 10 CFR 73 for shipments subject to NRC regulation or, for those shipments not subject to NRC regulation, equivalent DOE requirements. NRC has issued compensatory measures to enhance security for irradiated reactor fuel and special nuclear material of “moderate and low significant” as described in 10 CFR 73.37 and 10 CFR 73.67. In-transit requirements include developing security plans, implementing information and physical security access controls, training, escorts, inspections, tracking, communications, and employee background checks. Specific NRC requirements are considered Safeguards Information; DOE requirements may be handled as OUO or other protected categories of information.
- (2) Liaison with Federal, State, and Tribal law enforcement/security officials will be provided by DOE.
- (3) Escorts may be provided by State, tribal, or local jurisdictions, at their discretion.
- (4) Transportation Tracking and Communications System (TRANSCOM) or an alternate tailored system will be used to track shipments, as described in the Tracking Protocol.
- (5) In addition to the above, the following practices apply to Foreign Research Reactor Fuel shipments:
 - (a) Upon arrival in coastal waters, security zones are established around the ship by the U.S. Coast Guard in accordance with a memorandum of agreement.
 - (b) Overland transport security is coordinated with State and tribal law enforcement officials and the involved railroad and motor carriers.

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Deleted: For shipments subject to NRC regulations, armed escorts are provided in heavily populated areas in accordance with 10 CFR 73.37. During transit, these shipments are under constant surveillance by the drivers or escorts. Other shipments will be escorted as needed to meet equivalent requirements.¶

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b. Low-Level Waste, Mixed Low-Level Waste, Isotopes

- (1) DOE shipping sites must develop and implement a security plan in addorance with 49 CFR 172.800. The security plan must include an assessment of possible transportation security risks and appropriate measures to address the assessed risks. Specific measures put in place by the plan may vary commensurate with the level of threat at a given time. The security plan must include, at a minimum:

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- (a) Personnel security;
- (b) Unauthorized access to the hazardous material;
- (c) En route security from origin to destination.

(2) DOE shipping sites will:

- (a) Require drivers entering the facility for loading/unloading of shipments to sign in at the security gate and be escorted to the loading/unloading location unless a security badge has been issued.
- (b) Obtain copies of documentation from the carrier that all drivers are citizens of the United States.
- (c) Verify the driver has a Commercial Driver's License with proper hazardous materials endorsement.
- (d) Document the carrier utilizes satellite tracking and/or maintains cellular telephone contact including the requirement that the driver must contact carrier dispatch at regular intervals.
- (e) Provide the drivers a briefing and a copy of written instructions regarding en route security measures to be taken.
- (f) Ensure the carrier understands their responsibility for care and custody of material in their possession.

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c. Transuranic Waste Shipments

(1) Shipments to the Waste Isolation Pilot Plant

- (a) Escorts may be provided by State, tribal, or local jurisdictions, at their discretion.
- (b) Shipments to WIPP will be tracked through TRANSCOM as described in the Tracking Protocol.
- (c) During transit, shipments are required to be under constant surveillance by the drivers.
- (d) Liaison with State and Tribal law enforcement agencies will be maintained regarding security concerns as may be identified.

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(2) Other TRU Shipments

Shipments to sites other than WIPP are handled on a case-by-case basis in consultation with the States and Tribes by the Carlsbad Field Office.

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d. Tritium-Bearing Reactor Components

- (1) Escorts may be provided by State, tribal, or local jurisdictions, at their discretion.
- (2) Shipments will be tracked by TRANSCOM as described in the Tracking Protocol.
- (3) Specific security measures will depend on the outcome of threat assessments.
- (4) The carrier is responsible for security during shipment.

6.2.2 Classified National Security Shipments

a. Office of ~~Secure~~ Transportation Shipments

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- (1) Armed Federal agents accompany each OST shipment. These agents are trained to protect and defend shipments from any attack or following any accident.
- (2) The trailers used to transport nuclear weapons are specially designed vehicles that incorporate safeguards to prevent unauthorized removal of the cargo.
- (3) The OST Transportation Emergency Communications Center (TECC) monitors, tracks, and provides communication with every convoy on the road as described under Tracking.
- (4) State law enforcement officials are briefed through the OST State Liaison Program.

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b. Naval Spent Fuel Shipments

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- (1) Shipments are escorted full-time by armed, specially trained (communications, firearms, tactics, observation, use of deadly force) active duty Navy personnel who maintain 24-hour surveillance.

- (2) Close liaison is maintained with rail carrier police departments who coordinate with State and local law enforcement officials as necessary. Rail carrier police departments are provided advance information for each shipment.
- (3) ~~OST, TECC~~ monitors, tracks, and provides communication with every shipment as described in the Tracking section.
- (4) State law enforcement officials are briefed through the ~~OST State Liaison Program~~.

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7. CARRIER/DRIVER REQUIREMENTS

7.1 Introduction

This section addresses steps taken to ensure that high-quality carriers and drivers are utilized and meet Federal safety standards for transportation of radioactive materials (e.g., vehicle maintenance, record-keeping, training, certifications, licensing, and controlled substances and alcohol testing).

7.2 Highway Carrier/Driver Requirements

7.2.1 Non-Classified Shipments

DOT provides regulatory oversight of carriers. All carriers who transport truckload quantities of radioactive material or hazardous waste, or who transport any quantity of Highway Route Controlled Quantities of radioactive materials, must be evaluated for safety, financial status, security, and compliance with applicable regulations. Only carriers with a "Satisfactory" DOT safety rating used for these shipments.

DOE must ensure that drivers hold a current commercial drivers license (CDL) with a hazardous material endorsement. They must meet applicable requirements in 49 CFR, including a DOT-managed random drug and alcohol-testing program. Additional requirements are described below by the type of radioactive material shipped.

- a. Spent Nuclear Fuel, High-Level Waste, and Tritium-Bearing Reactor Components. The provisions of 49 CFR govern carrier and driver requirements for shipments of spent nuclear fuel and high-level waste. For Highway Route Controlled Quantities of Radioactive Material, these driver training requirements are codified in 49 CFR Part 397. In addition to the CFR-required training, truck drivers are required to be knowledgeable in the Commercial Vehicle Safety Alliance Enhanced (CVSA) (Level VI) North American Standard Inspection Procedures; in particular, Part I - Driver Inspection Standards.

Spent Nuclear Fuel Shipped Under the Nuclear Waste Policy Act, as Amended (NWPA).

In addition to the minimum qualifications, driver/crew training must cover operation of the specific package tie-down systems, cask recovery procedures, use of radiation detection instruments, use of or equivalent tracking system and other communications equipment, adverse weather and safe parking procedures, public affairs awareness training; first responder awareness training (29 CFR Part 1910.120 [q]), and radiation worker “B” (or equivalent) training.

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b. Transuranic Waste Shipments

(1) Shipments to the Waste Isolation Pilot Plant

The WIPP transportation plan includes specific requirements for driver qualifications, driver performance requirements, driver training, carrier requirements, inspection requirements, and vehicle maintenance requirements.

(2) Other TRU Shipments

These shipments will be handled on a case-by-case basis in consultation with the States and Tribes and the Carlsbad Field Office.

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c. Low-Level and Mixed Low-Level Waste. LLW and MLLW shipments are made in accordance with applicable 49 CFR regulations based on the type and level of hazard associated with the material.

d. Isotopes. Isotope shipments are made in accordance with applicable regulations.

7.2.2 Classified National Security Shipments

Drivers must be at least 21 years of age and hold a current CDL with hazardous material endorsement. They must meet applicable requirements in 49 CFR and are also required to pass an annual recertification with a check ride. They receive extensive driver training (3-week tractor/trailer driving class, off-road driving course, defensive driving courses) and comply with DOT safety regulations. Drivers are covered by the Personnel Assurance Program (PAP). This program requires that training, security, and medical requirements are completed and verified annually by the PAP administrator and certified by the Manager of OST. Also, drivers must pass a comprehensive annual physical examination and are subject to random drug and alcohol testing. For classified shipments, DOE has its own fleet vehicle program. All vehicles are required to go through a complete maintenance inspection prior to departing.

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7.3 Rail Carrier Requirements

Rail carriers must comply with Federal Railroad Administration (FRA) regulations. Rail carriers are responsible for training and qualification of their crews including application of 49 CFR Part 240, Qualification and Certification of Locomotive Engineers, to operate over the district in which the train will move.

The FRA requires recurrent and function-specific training for personnel performing specific work, such as train crews, dispatchers, and signal maintainers. FRA regulations mandate recurrent training at a minimum interval of 3 years, but in cases of changed or redefined job functions or newer employees, training occurs at more frequent intervals. FRA regulations require drug and alcohol testing of engineers and crew. Regulations also require that all employees receive specific training directly tailored to job function. These regulations are meant to serve as a baseline set of requirements for the industry, and carriers often institute measures that exceed those requirements.

Regulatory compliance on the part of rail carriers in the area of rail safety (including crew training and preparedness and equipment inspection) is assured by rail industry rules, standards, and recommended practices which correspond with and in some cases enhance said regulations. Additionally, safety and performance provisions are standard features of DOE contract carrier agreements, and provide another measure of assurance that regulatory requirements are met.

For NWPA spent fuel shipments, rail carriers are also responsible for maintaining a training program addressing a list of areas, such as operation of the specific package tie-down systems, public affairs, first responder awareness training, and use of TRANSCOM or an alternate tailored system. Crews will also be trained for hazardous material handling in accordance with individual railroad operating rules and Association of American Railroad (AAR) standards.

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8. SHIPMENT PRENOTIFICATION

8.1 Introduction

This section addresses near-term notification activities for pending DOE shipments of radioactive materials.

8.2 Shipment Prenotification

Shipment prenotification informs public officials that specific near-term shipments will be transported through their jurisdictions. Such prenotifications will be done as required by regulations and agreements with Sates and Tribes.

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8.2.1 Non-Classified Shipments

- a. Spent Nuclear Fuel and High-Level Waste. DOE ~~or its contractors~~ will provide advance notification of non-classified shipments of spent fuel and high-level waste in accordance with applicable requirements as shown in Table 1. In addition to the required formal prenotification, the Department intends that verbal or written notification be provided to State and ~~Tribal~~ designated points of contact so that they are informed at least 7 working days prior to actual shipment. For OCRWM shipments, prior to dispatch of loaded casks from origin sites, the program pre-notifies affected jurisdictions of final route determinations and scheduling adjustments.
- b. Transuranic Waste Shipments to WIPP. The following notifications will be made to corridor ~~States~~ and ~~Tribes~~ affected by TRU waste shipments to WIPP:
- (1) Annual projection of shipments by January 31.
 - (2) Six-month update of the annual projection by July 31.
 - (3) A 14-day notification made prior to the first five WIPP shipments for each corridor. These will be provided to affected corridor ~~States~~ and ~~Tribes~~ by a single letter for all five shipments. The following information will be included in 14-day notifications for shipments to WIPP:
 - (a) name, address, and telephone number of the shipper, carrier, and receiver;
 - (b) point of origin of the shipment;
 - (c) description of the shipment;
 - (d) estimated date and time of departure from the point of origin.
 - (4) Eight-week rolling projections are—
 - (a) provided by TRANSCOM, or other electronic means and
 - (b) updated when schedule changes.
 - (5) 2 hours prior to entry into each ~~State~~ and ~~Tribal~~ jurisdiction, notifications are—
 - (a) provided by telephone from the WIPP Central Monitoring Room and
 - (b) to designated ~~State~~ control center.
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- c. Other DOE Shipments. No shipment-specific notifications (other than those required to comply with applicable international, Federal, State, local, and Tribal laws, rules, and regulations) will be provided for shipments of—

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- (1) LLW and MLLW,
- (2) isotopes, and
- (3) tritium-bearing reactor components.

- d. Additional Shipment Information Practices. DOE organizations may provide additional planning information and shipment prenotification to State, Tribal, and local authorities.

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Table 1. Notification Requirements for Non-Classified Spent Nuclear Fuel and High-Level Waste.

Requirements	Type of Shipment		
	Non-Classified DOE SNF and HLW not subject to NRC regulation	SNF subject to NRC regulation, in excess of 100 g net weight and over 100 rems per hour at 3 feet	SNF subject to NRC regulation, less than 100 g net weight or under 100 rems per hour at 3 feet and HLW subject to NRC regulation
Sources	DOE M 460.2-1	10 CFR 73.37	10 CFR 71.97
Who is notified	Governors or designees and designated Tribal points of contact	Governors or designees	Governors or designees
Time of notification	Postmarked at least 7 days before shipment if mailed, 4 days by messenger	Postmarked at least 7 days before shipment if mailed, 4 days by messenger	Postmarked at least 7 days prior to 7 day period when shipment departure is estimated, 4 days by messenger
Notification of schedule change	By telephone if greater than 6 hours	By telephone if greater than 6 hours	By telephone if outside of 7-day period
Information to be included in notification	<ol style="list-style-type: none"> 1. name, address, and telephone number of shipper, carrier, and receiver; 2. description of shipment 3. a list of routes to be used within the State or through Tribal jurisdictions; 4. estimated date and time of departure from point of origin; 5. estimated date and time of entry into the Governor's State or into Tribal lands; 6. estimated date and time of departure from Governor's State or Tribal jurisdiction (when the destination is not within the State) 	<ol style="list-style-type: none"> 1. name, address, and telephone number of shipper, carrier, and receiver; 2. description of shipment 3. a list of routes to be used within the State; 4. estimated date and time of departure from point of origin; 5. estimated date and time of entry into the Governor's State; 6. Statement on safeguarding schedule information 	<ol style="list-style-type: none"> 1. name, address, and telephone number of shipper, carrier, and receiver; 2. description of the shipment 3. point of origin and 7-day period when departure is estimated 4. 7-day period during which arrival at State is estimated 5. destination and 7-day period when arrival is estimated 6. point of contact
Safeguard requirements	None	Schedule information for 10 days after shipment per 10 CFR 73.21(b)(2)(ii)	None

8.2.2 Classified National Security Shipments

Classified national security shipments that meet safeguards and security requirements, including Naval spent fuel shipments, do not provide shipment prenotifications. The Atomic Energy Act of 1954 provides security requirements for the protection of information related to nuclear weapons and special nuclear materials shipments. The DOT exemption for national security shipments is stated in 49 CFR 173.7(b).

9. TRANSPORTATION OPERATIONAL CONTINGENCIES

9.1 Introduction

This section addresses operational contingencies taken in response to adverse weather, natural disasters, vehicle breakdown, travel and road/rail conditions, and unanticipated delays that could interrupt normal transportation of DOE shipments of radioactive materials. This includes determinations made prior to departure and while en route. Accidents and incidents are addressed in the Emergency Notification and Emergency Response sections.

9.2 Transportation Operational Contingencies - Highway

9.2.1 Non-Classified Shipments

- a. Spent Nuclear Fuel, High-Level Waste, Tritium-Bearing Reactor Components, and Transuranic Waste Shipments to WIPP. Before dispatch, the shipper and the carrier must agree that travel conditions are considered to be acceptable. Current weather conditions, weather forecast(s), and projected road conditions at the point of origin and along the entire route must be considered before dispatching a shipment. Information on weather and road conditions may be obtained from State information numbers and from other sources.

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Shipments should not be dispatched or travel if severe weather or bad road conditions make travel hazardous or if the forecast predicts severe weather or bad road conditions that would affect the safety of the shipment. Severe weather conditions are defined to include such National Weather Service storm warnings as the following:

- winter storm warning,
- heavy snow warning,
- blizzard warning,
- blowing and drifting snow,
- freezing rain/drizzle,

- dense fog advisory,
- tornado warning,
- severe thunderstorm warning,
- flash flood warning,
- tropical storm warning,
- high-wind warning,
- hurricane warning, and
- river flood warning.

Adverse road conditions are defined as those that prompt travel advisories suggesting that unnecessary travel be avoided (e.g., winter storm watches and snow advisories).

States and Tribes may provide input on weather and road conditions, and specific transportation plans may provide additional details on the input process. States and Tribes may monitor the status of shipments using TRANSCOM. When adverse weather and road conditions occur, States and/or Tribes may notify DOE that a shipment should use an alternate route or be diverted to a safe parking location to avoid the adverse conditions.

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In the event of a substantial unanticipated delay en route (e.g., greater than 2 hours), the affected States and Tribes will be notified of the event by TRANSCOM.

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- b. Low-Level and Mixed Low-Level Waste. Carriers are expected to exercise due caution and care in dispatching shipments. The carrier will determine the acceptability of weather and road conditions and if a shipment should be held before departure and when actions should be taken while en route. Shipments should not be dispatched or travel if severe weather or bad road conditions make travel hazardous. Current weather conditions, the weather forecast, and road conditions should be considered before dispatching a shipment. Conditions at the point of origin and along the entire route should be considered. Adverse operating conditions may be reported to the DOE shipper through various means (e.g., communications with the carrier, information issued by State, Tribal, or local authorities). Each report to the shipper is addressed in consultation with the carrier.

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- c. Isotopes. The carrier will determine the acceptability of weather and road conditions and will determine if a shipment should be held before departure and when actions should be taken while en route. The carrier will inform the shipper of any significant delays.

9.2.2 Classified National Security Shipments

Weather conditions are monitored and updated by the OTS Communications Center, TECC. No travel will occur if severe weather conditions along routes or adverse road conditions make travel hazardous. If adverse conditions are encountered en route, drivers will locate an acceptable parking area as described in the Safe Parking section of this Manual.

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9.3 Transportation Operational Contingencies - Rail

Rail carriers use train control and monitoring systems to identify the location of their trains within the rail system and to make informed decisions based on this information to avoid or minimize potential weather-related or track condition risks. Under 49 CFR 174.20, the carrier may impose local restrictions on transportation when local conditions make travel hazardous. Adverse operating conditions can be reported to the DOE shipper through several means (e.g., communications with the carrier, information provided by State, Tribal, or local authorities). Each report to the shipper is addressed in consultation with the carrier. If an accident or incident results or develops, the DOE shipper will consult with appropriate States and Tribes in accordance with the Emergency Notification and Emergency Response sections of this Manual.

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10. TRACKING

10.1 Introduction

This section addresses DOE practices for tracking the location of shipments of radioactive materials and facilitating communication with the drivers/crew of the vehicles. Tracking is the process by which the geographic location of shipments is monitored along the transportation route.

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10.2 Tracking - Highway and Rail Modes

10.2.1 Non-Classified Shipments

a. Spent Nuclear Fuel, High-Level Waste, and Tritium-Bearing Reactor Components, Transuranic Waste Shipments to WIPP. Near real-time position tracking (i.e., tracking that is updated every 3-5 minutes) and communications for all shipments will be provided by TRANSCOM or a current OCRWM shipment tracking system with comparable or enhanced capabilities. The TRANSCOM or current OCRWM shipment tracking system users' manual will discuss backup procedures to be used in the event of operational problems with the system. The shipment tracking system access is limited to users authorized by the cognizant DOE program office and in coordination with the Carlsbad Field Office or OCRWM, as applicable. Access to information on a particular shipment is controlled by the cognizant DOE organization to provide timely information to eligible corridor States and Tribes.

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For spent fuel shipments covered by the NRC, user designation and access will be consistent with NRC regulations to ensure that safeguards information, such as schedules and itineraries for specific shipments, is protected against unauthorized disclosure and is provided only to authorized individuals. In the event of an emergency, TRANSCOM ~~or the current OCRWM shipment tracking system~~ will give information on the emergency to contacts described in the Emergency Notification protocol.

- b. Other TRU Shipments. DOE is examining the requirements to be used for these shipments.
- c. Low-Level and Mixed Low-Level Waste. Not tracked by a DOE tracking system. Carriers track their shipments by various means and can provide shipment information on an as-needed basis as requested by the shipper.
- d. Isotopes. Not tracked by a DOE tracking system. Carriers track their shipments by various means and can provide shipment information on an as-needed basis as requested by the shipper.

10.2.2 Classified National Security Shipments

The OST maintains 24-hour-a-day tracking and monitoring capability through TECC. Information is available only on a classified need-to-know basis. In an emergency, information would be provided on an unclassified, need-to-know basis.

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11. INSPECTIONS

11.1 Introduction

This section addresses inspections of DOE radioactive materials shipments, including both verifications of vehicle safety and radiological safety of containers loaded on the vehicles.

11.2 Inspections - Highway

11.2.1 Non-Classified Shipments

- a. Spent Nuclear Fuel, High-Level Waste, Tritium-Bearing Reactor Components, and Transuranic Waste Shipments to WIPP. The shipper and/or carrier will perform preshipment inspections to ensure compliance with regulatory standards. Shipments will also be made available for inspection prior to departure by CVSA-certified State inspectors unless other arrangements have been made with the State. As required by NRC, DOT, inspections will be conducted in accordance with the CVSA Enhanced (Level

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VI) North American Standard Inspection Procedures.⁴ The CVSA enhanced inspection procedure imposes more stringent criteria for placing a vehicle out-of-service, includes additional inspection and out-of-service criteria items compared to the CVSA level I inspection, and adds a radiological survey. Shipments cannot proceed until any Level VI violation has been corrected consistent with Federal regulations. Shipments en route may be inspected using the Level VI inspection criteria at the discretion of the States and Tribes, or as required by State-specific regulations; however, the intent of the Level VI program is that by ensuring top-quality equipment is used, en route States will inspect Level VI shipments less frequently.

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Post-shipment inspections will be conducted by the receiver, and by states at their discretion (but not to impact unloading operations), in accordance with applicable regulations. Any post-shipment inspection that reveals a regulatory non-compliance will be handled in accordance with applicable requirements. Routinely, the package, its tie-downs, and associated transportation system hardware are visually inspected at the point of destination to ensure that no physical damage occurred during transit.

- b. Low-Level and Mixed Low-Level Waste and Isotopes. Preshipment inspections will be done by the shipper and/or carrier to ensure compliance with regulatory standards. Inspections may be done at the discretion of the States, in accordance with CVSA North American Standard Inspection (Level I) criteria, or in accordance with individual State requirements.

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11.2.2 Classified National Security Shipments

DOE's fleet of vehicles, operated by the OST, transports classified shipments. All OST vehicles are required to undergo a complete maintenance inspection prior to transporting national security shipments. The vehicle safety inspection standards used by the OST meet or exceed those contained in the CVSA Level VI inspection. The provisions of 49 CFR 173.7(b) exclude these shipments from coverage by DOT regulations 49 CFR 171 through 189. Security and technical considerations for these shipments do not permit adherence to all of the regulations. However, as a good practice, the OST voluntarily follows those regulations that are compatible with security and technical requirements.

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11.3 Inspections - Rail (Classified and Non-Classified)

⁴ CVSA is an organization that brings together Federal, State, and provincial government agencies and private industry in the United States, Canada, and Mexico, and is dedicated to improving commercial vehicle safety.

11.3.1 Spent Nuclear Fuel and High-Level Waste

Transport equipment and radiological inspections will be performed at the origin facility prior to every shipment. These inspections may be performed by Federal, State, or carrier inspectors and will be conducted to ensure compliance with applicable Federal and State regulations, Association of American Railroads rules, and industry standards. For classified shipments (e.g., naval spent fuel shipments) special arrangements with the DOE shipper will be required for a Federal or State inspection at an origin. Specifically, equipment inspectors will conduct an inspection of the cask and idler (buffer) cars and the escort vehicle (if used) at the point of origin to ensure compliance with the Safety Appliance, Power Brake, and Freight Car FRA Standards, and industry rules and recommended practices. Hazardous materials inspectors will conduct an inspection of the cask and cask car to ensure compliance with applicable Hazardous Materials Regulations concerning placarding, shipping papers, crew notification, train placement, and securement requirements. A shipment cannot proceed if it does not comply with applicable FRA requirements.

Inspections may be performed en route at suitable, scheduled stopping locations (e.g., rail yards, crew change points, refueling locations) by the FRA and State agencies through the FRA State participation program. Tribes may also participate in inspections through the State participation program, by agreement with the affected State.

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The receiver will conduct post-shipment inspections in accordance with applicable regulations. Any post-shipment inspection that reveals a regulatory non-compliance will be handled in accordance with applicable requirements. Routinely, the package, its tie-downs, and associated transportation system hardware are visually inspected at the point of destination to ensure that no physical damage occurred during transit.

11.3.2 Transuranic Waste Shipments to WIPP

No rail shipments to WIPP are currently planned. A section for rail shipments to WIPP will be developed if a decision is made to utilize rail.

11.3.3 Low-Level and Mixed Low-Level Waste

Equipment inspections may be performed by the FRA and State agencies through the FRA State participation program. Hazardous material inspections may be performed by appropriate State agencies.

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12. SAFE PARKING

12.1 Introduction

This section addresses the criteria to be used in selecting appropriate safe parking locations in the event that transportation operational contingencies occur as described in the Transportation Operational Contingencies section of this Manual. Safe parking is the process used to identify and designate parking locations and to identify criteria for selecting parking areas if a predesignated location cannot be reached.

12.2 Safe Parking - Highway

12.2.1 Non-Classified Shipments

- a. Spent Nuclear Fuel, High-Level Waste, Tritium-Bearing Reactor Components, and Transuranic Waste Shipments to WIPP. Selection of safe parking areas will be coordinated with the States and Tribes through which the shipments will pass. State, Tribal, and local law enforcement personnel have the authority to direct shipments to specific parking areas. If State or Tribal officials (normally, law enforcement personnel) determine that a route deviation rather than safe parking is necessary, they can inform the driver or carrier through direct contact or through TRANSCOM or alternate tracking system.

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The two key factors in selecting a safe parking area are desirability of a particular type of parking area and driver/crew ability to reach that parking area under different types of conditions related to the local weather, road conditions and factors causing the unanticipated delay or emergency.

To the extent practicable, safe parking areas selected should—

- provide adequate separation from other vehicles carrying hazardous materials,
- facilitate required security (e.g., lighting), and
- provide adequate driver/crew services.

Carriers should first consider parking at a DOE facility or other Federal facility, as identified in the applicable transportation plan. States and Tribes may also specify facilities to be used, such as weigh stations, State highway service facilities, and National Guard facilities.

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If none of these choices can be reached safely, the following avoidance factors should be applied in selecting a suitable safe parking location. However, it may not be possible to locate a parking site that meets all of the criteria listed. The carrier should attempt to avoid—

- highly populated areas,
- heavily industrialized areas (e.g., refineries),
- hospitals and schools,
- areas with difficult access (e.g., no room for fire equipment),
- crowded parking areas (e.g., shopping malls),
- residential areas,
- highway shoulders, and
- areas with numerous pedestrians.

The carrier must not be parked on or within 5 feet of the traveled portion of a public street or highway except for brief periods when the necessities of operation require the vehicle to be parked and make it impracticable to park the vehicle in any other place.

For shipments covered by a transportation plan, the plan would identify safe parking areas.

b. Low-Level and Mixed Low-Level Waste

Carriers are expected to exercise due caution and care in selecting parking locations, following normal operating practices and DOT regulations. [The provisions of 49 CFR 397.7(b) state that hazardous materials must not be parked on or within 5 feet of the traveled portion of a public street or highway except for brief periods when the necessities of operation require the vehicle to be parked and make it impracticable to park the vehicle in any other place.] State, Tribal, and local law enforcement personnel have the authority to direct shipments to specific parking areas.

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c. Isotopes

Safe parking locations will be determined by the carrier following normal operating practices and DOT regulations.

12.2.2 Classified National Security Shipments

The OST has in effect a safe havens agreement with the Department of Defense (DoD). The OST can also use DOE facilities for such protected parking. Also, safe parking can be arranged with the assistance of State and/or local police. The OST will notify a State for assistance in

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locating safe parking if DOE and DoD facilities are unavailable; however, the ~~OST~~ will exhaust all efforts to use DOE and DoD facilities first.

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12.3 Safe Parking - Rail

To the extent practicable, safe parking areas should be selected to provide adequate separation from other hazardous materials and to facilitate required security. In the event of adverse operating conditions, the carrier would decide where to locate the affected railcar(s). Within a DOE facility is the most desirable location, and another Federal facility is a secondary option; the third choice would be a protected “siding,” a safe, secure position along the track controlled by the railroad. Any additional security required from the State, ~~Tribal~~, or local law enforcement will be coordinated by the shipper and/or the rail carrier. Specific transportation plans may specify additional criteria.

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13. EMERGENCY NOTIFICATION

13.1 Introduction

This section of the Manual addresses the process DOE uses to notify State and ~~Tribal~~ officials of a transportation emergency involving DOE radioactive materials. It does not address the initial notifications made by the carrier or others to local emergency response organizations.

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Emergency notifications to State and ~~Tribal~~ points of contact occur after DOE, as the shipper, receives notification of an emergency. Notification to DOE may come from local responders or others (see Section 13.3). This guidance applies to all classified and non-classified DOE rail and highway shipments of radioactive material.

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13.2 Criteria for Identifying an Emergency Situation Requiring Notification

Criteria to identify a situation as an emergency include the following:

- a person is killed, or
- a person requires hospitalization due to major injuries received as a direct result of the radioactive material or an accident, or
- an evacuation of the general public, or
- one or more major transportation arteries or facilities are closed or shut down as a direct result of the radioactive material cargo, or
- fire, potential release, or suspected radioactive contamination involving a radioactive material shipment, or

- a security incident (i.e., sabotage, theft).

Additional specific criteria may be included in programmatic transportation plans.

If DOE, as the shipper, is notified of an event that does not clearly meet the reporting criteria listed above, DOE will determine whether notification to State and Tribal points of contact is appropriate. Any uncertainty as to whether a notification should or should not be made will be resolved by making the notification.

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13.3 Emergency Notification Responsibilities

13.3.1 DOE, as the shipper, will receive notification of an accident/incident from one of the following sources:

- driver, dispatcher, and/or Government escort;
- State/Tribal/local law enforcement, emergency medical, fire, and/or rescue personnel;
- satellite tracking system (e.g., TRANSCOM), when in use.

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13.3.2 When notified of an emergency situation based on the criteria identified above, the DOE shipper will conduct the following notifications in accordance with applicable DOE requirements:

- to designated State and/or Tribal 24-hour points of contact (where the event occurs);
- to the cognizant DOE Regional Coordinating Office (RCO), which may notify additional State/Tribal contacts within their respective regions (e.g., adjacent States and Tribes);
- to appropriate DOE organizations, including the DOE receiving site and the DOE Headquarters Watch Office.

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The DOE shipper will also make other applicable notifications in accordance with existing site transportation emergency plans, memorandums of agreement, or campaign-specific transportation plans. (Note: When TRANSCOM is utilized (or equivalent system), electronic notification may be provided to the corridor States by TRANSCOM in addition to telephone contacts identified above.)

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13.3.3 For WIPP shipments, in addition to the notifications identified in Section 13.3.2 above, notification will be provided to additional State and/or Tribal organizations' points of contact (where the event occurs), as specified in the WIPP Transportation Manual. In the

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event that NRC-approved packaging is damaged, the WIPP contractor will notify the NRC in accordance with 10 CFR 71.95.

13.3.4 For OCRWM shipments, the shipper will notify the NRC. These notifications will be in addition to the notifications identified in Section 13.3, above.

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13.3.5 The DOE Headquarters Watch Office will notify DOE field offices and Headquarters organizations of other appropriate Federal agencies. The DOE Headquarters Watch Office and other DOE field elements will assist, as requested, in making emergency notifications. DOE field elements may also notify appropriate regional offices of other Federal agencies.

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13.3.6 In addition to the notifications described above, DOE Headquarters and/or field elements will inform appropriate elected officials.

13.3.7 Follow-up communication is covered in the Emergency Response section.

13.4 Type of information to be provided during notification process as it becomes available

- a. identity of the caller and call-back telephone number;
- b. location, date, and time of the event;
- c. brief description of the event, including hazards of the material being shipped, injuries, environmental releases and/or personnel exposures, protective actions implemented, protective actions recommended, on-scene responders;
- d. other notifications that have been made, including media interest.

13.5 Maintenance of State/Tribal 24-hour point-of-contact list

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The DOE Headquarters National TEPP Coordinator will maintain a central database that contains the 24-hour emergency points of contact for States and Tribes DOE shippers will be able to access the list of points of contact through the Internet (www.em.doe.gov/otem/program.html). The database is reviewed twice a year and the DOE Regional TEPP Coordinators must provide interim changes throughout the year.

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For OST Classified Shipments, the OST sends out a formal request every 2 years to all State governors in the continental United States for emergency points of contact. These numbers are maintained in the OST TECC control center.

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In addition to emergency notifications discussed in this section, specific DOE organizations, in cooperation with State and Tribal organizations, may provide additional notifications in response to non-emergency events, such as vehicle breakdowns. Such notifications will be made in accordance with the Transportation Operational Contingencies section.

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14. EMERGENCY RESPONSE

14.1 Introduction

This section addresses DOE response to a transportation emergency involving DOE rail and highway shipments (classified and unclassified) of radioactive materials. It includes ongoing interactions with State, Tribal, and local officials as part of incident crisis communications. It is recognized that local government officials and agencies play a key role in transportation emergency response, likely initiating the response. Emergency response includes the actions taken by DOE in a transportation emergency as described in the Emergency Notification section.

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14.2 Emergency Response

14.2.1 DOE will provide assistance in accordance with Federal statutes and regulations to support State, Tribal, and local authorities. State, Tribal, and local governments have the primary responsibility and authority to respond to and manage emergencies within their jurisdiction. Incident command is the responsibility of State, Tribal, or local government(s). If the incident involves an OST classified shipment, the OST will establish a unified command to work closely with State/local incident command.

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[The establishment of the incident command system will be in accordance with the plan, protocols, and procedures of the State, Tribe, or local jurisdiction and in accordance with the National Incident Management System. The incident commander will be a State, Tribal or local official as described in the emergency response plan for the jurisdiction where the incident occurs.](#)

14.2.2 The cognizant DOE organization or shipper will accomplish the actions below.

a. Make emergency notifications as identified in the Emergency Notification section to designated State and Tribal points of contact.

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b. Conduct follow-up communication on DOE activities (i.e., situation updates and reports, status updates on recovery planning and termination of the event) with States and Tribes as needed for that particular incident.

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- c. Provide shipment-specific emergency information and access to DOE/contractor personnel for technical advice and detailed information as requested by on-scene response personnel.
- d. Implement transportation emergency response procedures [e.g., activating site emergency organizations or operations center(s), declaring an operational emergency, activating site-specific transportation emergency plans, escorts]. Site-specific procedures may be addressed in transportation plans or a campaign-specific plan.
- e. Assist in the coordination of DOE resources to provide additional radiological support/technical assistance if requested.
- (1) Radiological assistance will be coordinated by the cognizant RCO. The shipper may provide assistance with coordination and provision of additional radiological assessment, as needed.
 - (2) The shipper will coordinate with DOE Headquarters and the appropriate DOE RCO to identify additional DOE technical resources (programmatic, public information, emergency communication capability, and/or security personnel) to be deployed to the incident scene. These DOE representatives will provide additional technical assistance/support to the responsible on-scene authority.
 - (3) For WIPP shipments, the shipper may call upon the Incident/Accident Response Team, which will—
 - (a) provide technical expertise in determining the status of the package(s) and transporter including the tractor/trailer used in the shipment;
 - (b) assist the carrier, through the senior onsite DOE official, in the development of the incident site-specific recovery plan; and
 - (c) provide oversight of the TRU-waste carrier's cleanup operations.
- f. Coordinate with DOE Headquarters, the cognizant DOE field office, and the cognizant RCO in the affected region to designate a Federal On-scene Coordinator/Commander or Senior Energy Official, as applicable, and conduct activities if an emergency occurs that warrants a Federal response under an applicable Federal plan [e.g., the National Contingency Plan (hazardous/radioactive material response), the Nuclear/Radiological Incident Annex (radiological response), the National Response Plan].
- g. Assist in the coordination of DOE resources to provide information to the public regarding the emergency and the response.

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- h. Provide information about the shipment, general public hazard, and other information as requested by the incident commander or responder to support public information needs for non-classified shipments. It is expected that the on-scene local, State, or Tribal incident commander or responder will release appropriate public information according to established local, State, or Tribal emergency preparedness communications plans.

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- i. If a DOE public information officer is sent to the scene, the public information officer will report to the incident commander and will serve as the DOE public information liaison between the scene and appropriate DOE offices. The DOE public information officer will assist the incident commander or his/her public information officer in public information and media activities with the local, State, and Tribal authorities. If a joint information center is established by the on-scene commander, the DOE public information officer will report to the joint information center and support public information efforts. The DOE public information officer will provide copies of statements and news releases and provide updates about the incident and the response as needed to the public information points of contact.

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- j. The cognizant DOE organization, in coordination with the DOE shipper and the Office of Public Affairs, must issue statements or news releases about the incident as deemed appropriate, in a timely manner, appropriate to the severity of the event. DOE organizations should attempt to review news releases or statements that reference State, Tribal, or local actions with the appropriate authority before release. Likewise, DOE organizations should attempt to review news releases or statements from State, Tribal, or local authorities that describe the DOE shipment or DOE actions before release.

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- k. In a transportation accident or incident involving a classified national security shipment, public information will be handled by the DOE representative on-scene until a DOE public information officer arrives with the responding Radiological Assistance Program (RAP) Team. Public information will be under the control of the Senior Energy Official on-scene until relieved. All public information releases will be coordinated with NNSA Service Center and DOE Headquarters; releases regarding naval spent fuel shipments will be coordinated with the Naval Nuclear Propulsion Program. Sufficient non-classified information will be provided to explain the emergency and any protective actions required for health and safety of workers, the public, and the environment. The DOE RAP team public information officer will coordinate media activities with local, State, and Tribal public information officers and will brief any media at the incident scene about DOE activities and provide appropriate shipment information. The DOE RAP team public information officer, in conjunction with local, State, Tribal public information officers, will determine the need for activation of a joint information center. Releases will be coordinated with State, Tribal, and local authorities as described in Section 14.2.2.c.

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14.2.3 The carrier, as part of the emergency response, will—

- a. promptly notify the DOE shipper's 24-hour emergency response notification number when an emergency has occurred;
- b. forward any calls to the DOE shipper from emergency responders seeking technical advice and detailed information regarding the shipment;
- c. give notice to DOT if required by 49 CFR 171.15; and
- d. respond to the requests of State, Tribal, and local government authorities regarding recovery activities and coordinate activities with the DOE shipper.

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14.2.4 The cognizant DOE RCO will accomplish the following:

- a. Provide radiological assistance, including deployment of RAP team(s), upon request of DOE or appropriate State or Tribal authority. Support for radiological assistance will be coordinated with DOE Headquarters and the shipper. Assistance for radiological monitoring may be requested from the appropriate DOE RCO (see map attached to Emergency Planning section).
- b. Assist in the coordination of other radiological assets (e.g., Aerial Measurement System, Atmospheric Release Advisory Capability, Federal Radiological Monitoring and Assessment Center, Radiation Emergency Assistance Center/Training Site).

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14.2.5 Additional DOE response activities may be identified in DOE site transportation emergency plans, memorandums of agreement, campaign-specific transportation plans, or emergency response plans.

15. RECOVERY AND CLEANUP

15.1 Introduction

This section addresses post-emergency actions taken to recover and clean up from an accident or incident involving shipments of DOE radioactive materials. Carriers have primary responsibility for recovery and cleanup, and will coordinate with State, Tribal, and local agencies regarding these activities. DOE will coordinate with carriers, and with State, Tribal, and local authorities to ensure that cleanup is done to an acceptable level.

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15.2 Highway

All carriers of radioactive material must meet the financial requirements that are set out in 49 CFR 387.7 and in the amounts set in 387.9. In addition, coverage would be provided under provisions of the Price-Anderson Amendments Act (Public Law 100-408). Additionally, the

[Nuclear/Radiological Incident Annex describes incident management activities related to nuclear/radiological incidents.](#)

15.2.1 Non-Classified Shipments

a. Spent Nuclear Fuel, High-Level Waste, Tritium-Bearing Reactor Components, and Transuranic Waste Shipments to WIPP.

DOE will ensure that carriers have specific written procedures for providing recovery and cleanup in the event of an accident or incident, or that they have a contract with a remediation company.

For spent nuclear fuel shipments subject to the NWPAA, DOE will require the carrier of spent nuclear fuel to comply with ANSI N14.27 (“For Truckload Quantities of Radioactive Materials - Carrier and Shipper Responsibilities and Emergency Response Procedures for Highway Transportation Accidents”) regarding recovery and cleanup activities. (ANSI N14.27 requires the carrier to provide appropriate resources for dealing with the consequences of an accident, including isolating and cleaning up spills, and to maintain working contact with the responsible governmental authority until the latter has declared the incident to be satisfactorily resolved and closed.)

b. Low-Level and Mixed Low-Level Waste.

DOE will review truckload carriers’ plans for recovery and cleanup or verify that they have a contract with a remediation company.

c. Isotopes.

Carriers must comply with 49 CFR 387.7.

15.2.2 Classified National Security Shipments

The OST has contingencies in place that address recovery issues. DOE or the OST will provide the personnel and equipment needed to perform recovery and cleanup operations.

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15.3 Rail

For spent nuclear fuel, high-level waste, TRU waste to WIPP, LLW, and MLLW shipments, DOE will ensure that rail carriers have specific written procedures for providing recovery and cleanup in the event of an accident or incident. In addition, coverage would be provided under provisions of the Price-Anderson Amendment Act.

SUMMARY OF RESOURCES

The DOE, like any other shipper of radioactive material, must adhere to Federal regulations promulgated by the DOT, NRC, and the Environmental Protection Agency. In fulfilling its diverse civilian and defense missions, the DOE must transport various types of radioactive materials/wastes around the country. Types of radiological shipments include materials and isotopes for medical, industrial, and research uses; weapons and weapons-related materials; radioactive waste; plutonium residues and oxides; highly enriched uranium; spent nuclear fuel; and new (unirradiated or unused) nuclear fuel. Each DOE organization has additional information available on the internet. Key sites include:

Office of Environmental Management: In 1989, the Department of Energy created the Office of Environmental Management (EM) to mitigate the risks and hazards posed by the legacy of nuclear weapons production and research. Although the nation continues to maintain an arsenal of nuclear weapons, as well as some production capability, the United States has embarked on new missions. The most ambitious and far ranging of these missions is dealing with the environmental legacy of the Cold War. Like most industrial and manufacturing operations, the nuclear complex has generated waste, pollution, and contamination. However, many problems posed by its operations are unique. They include unprecedented amounts of contaminated waste, water, and soil, and a vast number of contaminated structures that will remain radioactive for thousands of years. <http://www.em.doe.gov/>

- Office of Transportation. <http://web.em.doe.gov/otem/>. From this site, you can follow the links to:
 - Transportation Emergency Preparedness Program. From the drop down menu, you can access the 24-hour points of contact, and other related TEPP information.
 - Fact Sheets and publications covering transportation, packaging and regulations for shipping radioactive materials/wastes.
 - Transportation Routing Analysis Geographic Information System (TRAGIS) is a routing analysis tool combining graphical interfaces with an extensive highway, rail, and waterway database. TRAGIS can be used to calculate detailed routes based on user-specified parameters, and replace the legacy HIGHWAY and INTERLINE routing models. <https://tragis.ornl.gov/tragis.htm>
 - RADTRAN is the national and international standard for transportation risk assessment for radioactive materials. RADTRAN combines user-determined demographic, routing, transportation, packaging, and materials data with meteorological data (partly user-determined) and health physics data to calculate expected radiological consequences of incident-free radioactive materials transportation and associated accident risks. <https://radtran.sandia.gov/>
- The Waste Isolation Pilot Plant, or WIPP, is the world's first underground repository licensed to safely and permanently dispose of transuranic radioactive waste left from the research and

production of nuclear weapons. After more than 20 years of scientific study, public input, and regulatory struggles, WIPP began operations on March 26, 1999.

<http://www.wipp.energy.gov/>

- **TRANSCOM2000** is the Department of Energy (DOE) Tracking and Communications System used to monitor the progress of various unclassified “high visibility” shipments, such as spent nuclear fuel, high-level and transuranic radioactive waste. With a demonstrated 99.8% reliability this nationwide 24-hour per day tracking system combines satellite and ground-based communications to monitor the progress of DOE truck, rail, barge, and ocean vessel shipments in near real time. TRANSCOM2000 has been used to monitor over 7,500 DOE high visibility shipments since its deployment in September 2001. The TRANSCOM2000 system is administered by the DOE Office of Environmental Management. The TRANSCOM2000 Communications Center is located in Carlsbad, New Mexico. For additional information contact TRANSCOM2000 Federal Program Manager at (505) 234-7372 or visit the website at: <http://tcc.transcom.energy.gov/>
- Office of Civilian Radioactive Waste Management is responsible for developing and managing a federal system for disposing of spent nuclear fuel from commercial nuclear reactors and high-level radioactive waste from national defense activities.
<http://www.ocrwm.doe.gov/wat/index.shtml> From this site, you can access information on:
 - Transportation Exhibit
 - Transportation Strategic Plan (PDF)
 - Safe Passage: An Overview of Plans for the Railroad to Yucca Mountain
 - Transportation of Spent Nuclear Fuel and High-Level Radioactive Waste to Yucca Mountain, Frequently Asked Questions - This brochure provides information about transportation of radioactive waste to the proposed repository at Yucca Mountain, for permanent disposal. Topics covered include basics on radioactive waste, transportation safety and security, the transportation system infrastructure and emergency planning and response.
 - Transportation External Coordination Working Group
<http://beta.tecworkinggroup.org/>