

Approved: 6-10-2022

SUBJECT: DEPARTMENTAL MATERIALS TRANSPORTATION MANAGEMENT

1. **PURPOSE.** To establish requirements and responsibilities for management of Department of Energy (DOE), including National Nuclear Security Administration (NNSA), materials transportation and to ensure the safe, secure, and efficient transportation of materials, both hazardous and nonhazardous, for offsite shipments.
2. **CANCELS/SUPERSEDES.** DOE Order (O) 460.2A, *Departmental Materials Transportation and Packaging Management*, dated 12-22-04; and DOE M 460.2-1A, *Radioactive Material Transportation Practices Manual for Use with DOE O 460.2A*, dated 06-04-08.

Cancellation of a directive does not, by itself, modify or otherwise affect any contractual or regulatory obligation to comply with the directive. Contractor Requirements Documents (CRDs) that have been incorporated into a contract remain in effect throughout the term of the contract unless and until the contract or regulatory commitment is modified to either eliminate requirements that are no longer applicable or substitute a new set of requirements.

3. **APPLICABILITY.**
 - a. **Departmental Applicability.** Except for the equivalencies/exemptions in paragraph 3.c., this Order, including the provisions that impose requirements set forth in 49 CFR, applies to all Departmental elements which are involved in activities associated with the transportation of offsite shipments of materials. The applicability of this Order to government employees is not affected by 49 CFR 171.1(d)(5) and 49 CFR 390.3(f)(2). The Administrator of the National Nuclear Security Administration (NNSA) must assure that NNSA employees comply with their responsibilities under this directive. Nothing in this directive will be construed to interfere with the NNSA Administrator's authority under section 3212(d) of Public Law (P.L.) 106-65 to establish Administration-specific policies, unless disapproved by the Secretary.
 - b. **DOE Contractors.** Except for the equivalencies/exemptions in paragraph 3.c., the Contractor Requirements Document (CRD), Attachment 1, sets forth requirements of this Order that will apply to contracts that include the CRD. The CRD must be included in all contracts that involve activities associated with the transportation of offsite shipments of materials.

c. Exemptions/Equivalencies for DOE O 460.2B.

- (1) Exemptions/Equivalencies. Except as provided in paragraphs 3.c.(2) through 3.c.(6) below, exemptions/equivalencies to this Order must be requested and processed in accordance with Appendix E of DOE O 251.1, *Departmental Directives Program*.¹
- (2) Exemptions. For any requirements imposed by this Order which also are imposed by DOE O 460.1, *Hazardous Materials Packaging and Transportation Safety*, the Departmental element responsible for the shipment must follow the equivalency/exemption process defined in DOE O 460.1.
 - (a) DOE elements must submit their exemption applications through the Head of the responsible Operations Office or Field Office/Site Office Manager to the DOE Certifying Official (DOE CO) for final approval or disapproval.
 - (b) NNSA elements must submit their exemption applications through the Head of the responsible Operations Office or Field Office/Site Office Manager to the NNSA Certifying Official (NNSA CO) for final approval or disapproval.
- (3) Exemption. This Order does not apply to operations conducted under DOE O 461.1, *Packaging and Transportation for Offsite Shipment of Materials of National Security Interest*.
- (4) Exemption. This Order does not apply to the Bonneville Power Administration.
- (5) Exemption. This Order does not apply to transport by NNSA's Office of Secure Transportation (OST) Federal Agents of Class 1 Protective Force munitions in government aircraft or vehicles for a non-commercial government purpose (e.g., operations or training), when such transport is conducted pursuant to DOE O 473.2, *Protective Force Operations*, and the procedures of an approved safety and security plan.
- (6) Equivalency. In accordance with the responsibilities and authorities assigned by Executive Order 12344, codified at 50 USC sections 2406 and 2511 and to ensure consistency through the joint Navy/DOE Naval Nuclear Propulsion Program, the Deputy Administrator for Naval Reactors (Director) will implement and oversee requirements and

¹ Any reference to a DOE directive that does not include an alpha character indicating version is understood to refer to the most current version of that directive.

practices pertaining to this Directive for activities under the Director's cognizance, as deemed appropriate.

4. REQUIREMENTS.

a. General.

- (1) Except as otherwise provided in this Order, and except to the extent that a requirement would infringe on the protection of classified information, each Departmental element must manage transportation activities for any offsite shipment of materials to which this Order is applicable in accordance with U.S. Department of Transportation (DOT) regulations in 49 CFR Part 40 and 49 CFR Parts 171-180 for transportation of hazardous materials; 49 CFR Parts 350-399 for transportation by motor vehicle; 49 CFR Parts 190-193, 195 and 199 for transportation by pipeline; and 49 CFR Parts 200-268 for transportation by rail.
- (2) DOE has reached agreement with the States and Tribes from which or through which it ships transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP) and other destinations. These requirements for TRU waste shipments are implemented through the TRU Waste Transportation Plan (or successor document). Each Departmental element must ensure that any TRU waste shipments for which it is responsible are conducted in accordance with the standards and protocols delineated in the TRU Waste Transportation Plan, not including TRU waste shipments that are within the same DOE site or other TRU waste shipments as agreed to between DOE and affected States or Tribes.
- (3) Except for shipments within the same DOE site, if shipments of TRU waste are contemplated using protocols other than those described in the TRU Waste Transportation Plan, discussions will be held with affected States or Tribes. Any TRU waste shipment not executed in accordance with the TRU Waste Transportation Plan is subject to the requirements of this Order, including requirements specified for spent nuclear fuel (SNF), high level waste (HLW), and tritium-bearing reactor components.

b. Programmatic.

- (1) Automated shipment processing.
 - (a) To the maximum extent practicable, an automated system for performing transportation management functions, including electronic data interchange (EDI) transactions, pre- and post-payment audits, and generation of shipping documents must be used. DOE's Automated Transportation Logistics and Analysis System (ATLAS) is the preferred application.

- (b) If ATLAS or an interfacing system is not used, contractor-managed systems may be used provided that quarterly shipping reports are submitted electronically to the Office of Environmental Management (EM), Office of Packaging and Transportation, using an approved template for the information, which can be found on the Packaging and Transportation Wiki at <http://em-opt.wikidot.com> or designated successor website.
- (2) Insurance. Consistent with the Government's self-insurance policy, no Departmental element may expend Government funds to insure its property against loss, damage, or destruction while in transit, unless the shipment qualifies as a special circumstance and is approved by the Contracting Officer (see 48 CFR 47.102, *Transportation Insurance*, and 41 CFR Part 102-117, *Transportation Management*). Declared value for express shipments is not considered insurance, and the costs will be allowable if the costs comply with the requirements of Federal Acquisition Regulation (FAR) 48 CFR 31.201-2, the terms of the contract, and the limitations set forth in FAR 48 CFR Subpart 31.2.
- (3) Payment audits. Each Departmental element that processes and pays carrier bills for transporting property for the U.S. Government using commercial or government bills of lading must follow 41 CFR Subpart 109-40.50, *Bills of Lading*; 41 CFR Part 102-117, *Transportation Management*; 41 CFR Part 102-118, *Transportation Payment and Audit*; and the provisions of the Federal transportation procurement statutes (49 USC 10721 and 49 USC 13712).
 - (a) Each Field Office/Site Office must coordinate activities that are subject to General Services Administration (GSA) audit (41 CFR Part 102-118) with the Director of the Office of Packaging and Transportation (EM).
 - (b) Each Field Office/Site Office that processes commercial bills of lading (CBL) exceeding \$10,000 will annotate the CBL with the following statement: "Equal Employment Opportunity: All provisions of Executive Order 11246, as amended by Executive Order 11375 and Executive Order 13672, and of the rules, regulations, and relevant orders of the Secretary of Labor are incorporated herein."
- (4) Compliance evaluations.
 - (a) Each Departmental element must evaluate the full scope of packaging and transportation operations at each site/facility for which it is responsible at least once every three years.

- (b) Each Departmental element must conduct evaluations using existing site/facility processes (e.g., facility representatives program reviews, operational readiness reviews, contractor self-assessments, and other safety reviews) or an established transportation and compliance review program. To meet the requirements of DOE O 226.1, Implementation of Department of Energy Oversight Policy, the preferred method is the Transportation Safety and Operations Compliance Assurance Program (TCAP) assessment process.
 - (c) Each Departmental element must provide copies of the evaluation reports to the EM or NNSA Office of Packaging and Transportation (as appropriate) within 45 days of the evaluation.
- c. Shipment Planning for Certain Hazardous Materials.
- (1) Transportation plans.
 - (a) The Departmental element must develop a transportation plan for unclassified shipments of SNF, HLW, tritium-bearing reactor components, and Category 1 radioactive sources.
 - (b) When planning shipments of radioactive materials other than specified above in 4.c.(1), (e.g., high-visibility or high-volume shipments), the Departmental element will determine whether a transportation plan is warranted.
 - (c) Transportation plans must describe operational strategy and delineate steps that will be taken in accordance with applicable requirements. Specific contents of transportation plans, which are determined by the Departmental element, in general include information on:
 - 1 Organizational roles and responsibilities;
 - 2 Materials to be shipped;
 - 3 Projected shipping window (as appropriate, Departmental elements must consider input from States and Tribes on holidays or special events that may impact shipping schedules or where emergency response assets may be otherwise engaged);
 - 4 Estimated number of shipments;
 - 5 Modes of transportation and, if applicable, carriers to be used;

- 6 Packages to be used;
 - 7 Primary and alternate routes. For SNF, a detailed map must be included as well as contact information for local law enforcement agencies (LLEAs) along the route.
 - 8 Shipment advance notifications to be provided (see Attachment 3, Advance Shipment Notifications to States and Tribes);
 - 9 Safe parking arrangements;
 - 10 Tracking systems;
 - 11 Emergency preparedness and response;
 - 12 Recovery and cleanup;
 - 13 Security plans; and
 - 14 Public information.
- (d) When developing transportation plans, the Departmental element must consult and provide plans for comment to representatives of the States and Tribes through whose jurisdictions the shipments are expected to be transported.
- (e) The Departmental element must assess the extent to which any of the information in a transportation plan must be subject to restricted access in the interest of security.
- (2) Route identification.
- (a) For unclassified shipments of SNF, HLW, tritium-bearing reactor components, Category 1 radioactive sources, as well as high-volume or high-visibility shipments of low-level radioactive waste (LLW) or mixed low-level radioactive waste (MLLW), the Departmental element must seek and consider input from States and Tribes resulting from their reviews of DOE shipment planning data.
 - (b) For unclassified shipments of SNF, HLW, and tritium-bearing reactor components, the Departmental element must:
 - 1 Specify routes to be used as a provision in contracts with, or instructions to, carriers as appropriate.

- 2 Ensure routes comply with any applicable agreements between DOE and States or Tribes.
 - 3 Ensure that proposed routes are analyzed using a transportation tool such as the Transportation Routing Analysis Geographic Information System (TRAGIS), the Stakeholder Tool for Assessing Radioactive Transportation (START), or another tool with equivalent capability. The route analysis tool must be capable of assessing and planning routes in accordance with relevant routing criteria of DOT regulations and any additional routing factors determined appropriate by DOE.
- (c) For unclassified shipments of applicable hazardous materials by rail, the Departmental element must ensure carrier route analysis and selection in accordance with 49 CFR 172.820, which includes a requirement to seek relevant information from State, Tribal, and local officials, as appropriate, regarding security risks to high-consequence targets along or in proximity to the route used.
- (3) Safe parking for highway shipments covered by a transportation plan.
- (a) The Departmental element must select safe parking in accordance with the provisions of 49 CFR 397.7 and, to the extent practicable, with the following factors:
- 1 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;
 - 2 Adequate separation from other vehicles or fixed locations identified as containing hazardous materials;
 - 3 Required security (e.g., lighting); and
 - 4 Adequate driver/crew services.
- (b) The Departmental element must ensure that the following avoidance factors are considered and applied to the extent practicable 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 below. The selection of a safe parking area must attempt to avoid:
- 1 Heavily populated areas;
 - 2 Heavily industrialized areas (e.g., refineries);

- 3 Hospitals and schools;
 - 4 Areas with difficult access (e.g., no room for fire equipment);
 - 5 Crowded parking areas (e.g., shopping malls);
 - 6 Residential areas;
 - 7 Highway shoulders; and
 - 8 Areas with numerous pedestrians.
- (4) Security and physical protection.
- (a) Departmental elements must ensure the development and implementation of a security plan for shipments of hazardous materials in accordance with 49 CFR Part 172, Subpart I and applicable DOE safeguards and security requirements.
 - (b) Departmental elements must ensure that shipments of SNF, HLW, and tritium-bearing reactor components, as well as Category 1 and 2 radioactive sources, are conducted in accordance with Attachment 2, *Physical Protection of Specified Shipments*.
 - (c) Special nuclear material (SNM) and other accountable material as identified in DOE O 474.2, *Nuclear Material Control and Accountability*, must be protected in accordance with applicable DOE safeguards and security requirements.
 - (d) Additional requirements for import and export of Category 1 and 2 radioactive sources are found in DOE O 462.1, *Import and Export of Category 1 and 2 Radioactive Sources and Aggregated Quantities*.
- (5) Communications plans and public information. For unclassified shipments of SNF, HLW, tritium-bearing reactor components, and high-volume shipments or high-visibility shipments of LLW or MLLW, the Departmental element must manage external communications regarding such shipments as follows:
- (a) The Departmental element must provide biannual shipment planning data to the DOE EM Office of Packaging and Transportation for distribution to State and Tribal governments as appropriate.
 - (b) The Departmental element must coordinate with the appropriate public affairs or communications personnel regarding any existing

standardized communications practices to apply when considering the public release of information regarding shipments.

- (c) If the Departmental element determines that the standardized communications practices are not sufficient, it must determine whether a communications plan is warranted for the particular shipment(s).
 - 1 In developing a communications plan, the Departmental element must consult with the relevant State and/or Tribal governments and carrier representatives as appropriate.
 - 2 The communications plan must identify roles and responsibilities for exchanging information between the Department and, as appropriate, the shipper, carriers, States and Tribes through whose jurisdictions the shipments are expected to be transported, other Federal agencies, the media, and the public.
 - 3 The communications plan must identify points of contact and public spokespersons within DOE Headquarters program offices, participating DOE operations/site/field offices, and other relevant Federal, State, or Tribal government agencies.
- (d) The Departmental element must determine whether campaign or shipment-specific public information materials are warranted (e.g., fact sheets, briefing packages, news releases, or questions and answers).
 - 1 In developing any such materials, the Departmental element must coordinate with the DOE Offices of Congressional and Intergovernmental Affairs and Public Affairs.
 - 2 To the extent practical, the Departmental element must also coordinate the draft public information materials with the appropriate agencies of States and Tribes and, when finalized, share the materials with the appropriate State and Tribal agencies for their use and distribution.
- (6) Consignee notifications and related shipment investigations.
 - (a) Consignee notifications. For each shipment of fissile material or Type B quantity of radioactive material, the responsible Departmental element must:

- 3 Availability and suitability of carrier equipment for the weight and size of the cargo;
- 4 Carrier terminal facilities at origin and destination;
- 5 Pickup and delivery service, if required;
- 6 Estimated time in transit; and
- 7 Due diligence review of the carrier's profile, including Motor Carrier Evaluation Program (MCEP) reports when applicable.

(2) Transportation services and rates.

(a) Highway transport.

- 1 The Departmental element must ensure that a motor carrier that transports the following commodities offsite has been evaluated in accordance with DOE's MCEP plan and program procedures:
 - a Materials requiring issuance of a Federal Motor Carrier Safety Administration, Hazardous Materials Safety Permit (49 CFR Part 385, Subpart E);
 - b Materials that require a Hazardous Materials Security Plan (49 CFR Part 172, Subpart I);
 - c Type A or Type B radioactive materials not requiring a Hazardous Materials Safety Permit or a Security Plan;
 - d Truckload (TL) quantities of low-level or mixed waste shipped as low-specific-activity (LSA) or surface-contaminated object (SCO); or
 - e Hazardous materials not included in the previous categories and which require an Environmental Protection Agency (EPA) Uniform Hazardous Waste Manifest.
- 2 The Departmental element must provide a copy of the MCEP evaluation document to the EM Office of Packaging and Transportation within 45 days of completion of the carrier evaluation.

- 3 For shipments by motor carriers on behalf of the Department, the Departmental element may use only carrier rates on file with Departmental elements and/or Departmental contractors, other Federal agencies, or a State commission.
- a Use of DOE-negotiated national tenders is preferred.
 - b For local rates, Departmental elements may negotiate with motor carriers or authorize cost type contractors to negotiate with carriers concerning rates, classification ratings, services, and related transportation matters when only their own organizations will be affected. Departmental elements negotiating local rates must maintain documentation of actions taken that demonstrates comparison of best value. Tenders must follow the latest version of DOE 190, *Motor Freight Rates and Rules Schedule*.
 - c For any tender rate used, other than a DOE national tender, a copy of the approved tender must be provided to the EM Office of Packaging and Transportation for filing with the GSA.
 - d When other than a low-cost carrier or mode of transportation is used for any shipment other than overnight express, each Departmental element must ensure that a written justification (e.g. three or more spot quotes) or management approval statement is retained with the bill of lading indicating why the carrier or mode selected was necessary to meet the requirements of the shipment and to obtain safe, expeditious, and economical delivery.

(b) Rail transport.

- 1 Each Departmental element may only use rates which have been negotiated and accepted from railroads that demonstrate compliance with applicable Federal Railroad Administration requirements, DOT Hazardous Materials Regulations, and Association of American Railroads interchange standards.

2 Each Departmental element may only use special train services which have been approved by the appropriate Field Office/Site Office or program manager.

e. Inspections.

(1) General requirements. Upon receipt of a materials shipment, the Departmental element must:

- (a) Visually inspect the shipment and examine the relevant shipping papers to ensure consistency and that the appropriate materials have been received.
- (b) Visually inspect any DOE-owned or DOE contractor-owned transport equipment for damage and report for damage remediation and the filing of any loss or damage claims, as appropriate. Any such claims must be filed in accordance with the provisions of 41 CFR 102-117.190 and within the time limitations of 41 CFR 102-118.460.

(2) Outbound radioactive material shipments. Prior to loading, each Departmental element must:

- (a) Visually inspect the empty conveyance to ensure the conveyance is acceptable for the intended use.
- (b) For empty conveyances intended for radioactive material which will be transported as exclusive use in accordance with 49 CFR 173.427(b)(4), 173.427(c), or 173.443(b), survey the empty conveyance according to American National Standards Institute (ANSI) N 14.36, *Measurement of Radiation Level and Surface Contamination for Packages and Conveyances*, as a minimum, to ensure the presence of radioactive substances on a surface does not exceed 0.4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters and 0.04 Bq/cm² for all other alpha emitters.
- (c) For empty conveyances received for transporting radioactive material as an exclusive use shipment under the provisions of 49 CFR 173.443(c) which are intended for loads in accordance with 49 CFR 173.427(b)(4), 173.427(c) or 173.443(b):

1 Contamination values on the conveyance must not exceed the specified contamination control limits in 49 CFR 173.443(a). These shipments must remain under exclusive use per 49 CFR 173.443(c).

- 2 A conveyance used for non-exclusive use shipments is not required to be surveyed unless there is a reason to suspect that it may exhibit contamination.
- (3) For incoming radioactive material shipments, each Departmental element must:
- (a) Ensure that all incoming shipments are inspected upon receipt for damage or loss and evidence of leakage. Radioactive material packages must be monitored as required by 10 CFR 835.405. The contamination control limits of 49 CFR 173.443 must be applied until the shipment is unloaded from the conveyance.
- (b) Ensure that any incoming shipment of radioactive material subject to any DOT exclusive use provisions must be kept under the control of the receiving site's radiation protection program for all subsequent on-site transfers to the on-site unloading destination. Prior to unloading, radioactive material shipments in exclusive use must meet the following requirements:
- 1 Visual inspection of the package and/or conveyance for external damage or leakage and survey according to ANSI N 14.36, as a minimum, to ensure the survey results comply with the radiation level limitations requirements of 49 CFR 173.441 and contamination control requirements of 49 CFR 173.443.
- 2 If a package or conveyance is found to be contaminated at levels above these limits, detain the vehicle and/or immediately notify the carrier and the shipping site so other potentially contaminated vehicles can be surveyed. Specific response activities will follow site/facility procedures.
- (c) Ensure that when a conveyance is used for the transport of radioactive material in accordance with the exclusive use provisions of 49 CFR 173.427(b)(4), 173.427(c) or 173.443(b), it is surveyed after unloading:
- 1 If the conveyance will be reused for radioactive materials transportation under the exclusive use provisions of 49 CFR 173.427(b)(4), 173.427(c), or 173.443(b), the empty conveyance must be surveyed according to ANSI N 14.36 to ensure survey results comply with the requirements of 49 CFR 173.443(c). All subsequent exclusive use conditions for this conveyance must have exclusive use and survey instructions provided to the carrier prior to shipment.

- 2 If the conveyance will be removed from exclusive use and returned to general use (free release/unrestricted use), the empty conveyance must be surveyed to ensure it is below the definition of contamination in 49 CFR 173.403 as well as in compliance with applicable DOE, Agreement State, or NRC survey limits. The Departmental element must determine whether clearance from DOE radiological controls is required under DOE O 458.1, *Radiation Protection of the Public and the Environment*, and/or 10 CFR Part 835, *Occupational Radiation Protection*, as applicable.
- (d) Commercial carrier equipment should not be introduced into radiological areas which require surveys upon exit (Contamination Area, High Contamination Area, or Airborne Radioactivity Area) subject to 10 CFR Part 835.
- (4) Inspections of SNF, HLW, and tritium-bearing reactor component shipments.
 - (a) Highway shipments. The Departmental element must ensure that shipment inspections are performed in accordance with the following:
 - 1 Prior to departure, shipments must be made available for inspection by Commercial Vehicle Safety Alliance (CVSA)-certified State and/or Tribal inspectors unless other arrangements have been made.
 - 2 En route inspections may be performed at the discretion of the States and Tribes in accordance with State or Tribal laws and regulations unless other arrangements have been made, such as an inspection reciprocity agreement.
 - 3 Post-shipment inspections must be conducted by the receiver and may be conducted by States and Tribes at their discretion in accordance with State or Tribal laws and regulations unless other arrangements have been made.
 - (b) Rail shipments.
 - 1 The Departmental element must ensure that locomotive and railcar safety inspections are performed at the origin facility by the originating rail carrier prior to each shipment. The carrier inspection may be reviewed by either a qualified Federal Railroad Administration (FRA) inspector or an FRA-certified State Motive Power & Equipment (MP&E) inspector, at FRA's discretion, to ensure conformity with

applicable regulations and standards. Tribes may attend rail inspections in coordination with a qualified inspector(s) by prior agreement with the inspector(s) and the rail property owner for each time an inspection is performed.

2 The Departmental element must ensure that the conveyance and package(s) of radioactive materials shipments are made available for radiological surveys/inspections by State or Tribal inspectors, as appropriate under applicable law, at points of origin and en route. En route inspections may take place only at times and locations deemed safe by the rail carrier.

3 The Departmental element must ensure that the train is made available as appropriate for en route safety inspections, unless other arrangements have been made such as inspection reciprocity agreements. Inspections may take place only at safe, scheduled stopping locations (e.g., where adjacent track(s) are clear of movement, crew change points, refueling locations). Inspections will be conducted by the rail carrier for the appropriate long-haul inspection and/or by a qualified FRA inspector or an FRA-certified State MP&E inspector, at FRA's discretion, to ensure conformity with applicable regulations and standards. Tribes may attend rail inspections in coordination with a qualified inspector(s) by prior agreement with the inspector(s) and the rail property owner for each time an inspection is performed.

f. Operational contingencies and emergency response.

(1) Emergency planning.

- (a) The Departmental element must maintain and regularly update emergency plans for the transportation of radioactive materials.
- (b) Emergency plans must 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.
- (c) Emergency planning must be consistent with the National Incident Management System, the National Response Framework and other current federal emergency response programs.
- (d) The Departmental element must coordinate with DOE's Transportation Emergency Preparedness Program (TEPP) as

needed to determine emergency response planning and training needs of State, Tribal, and local first responders. TEPP information is available at <http://teppinfo.com/>.

(2) Weather and travel considerations for SNF, HLW, and tritium-bearing reactor components.

- (a) Shipments must not be dispatched or travel if severe weather or adverse road conditions make travel hazardous or if the forecast predicts severe weather or adverse road conditions that would affect the safety of the shipment. Roads within the first 200 miles should be substantially clear of snow and ice. The predicted weather for the first 200 miles of the route should not be expected to deteriorate significantly for at least the next four to five hours. Predicted weather along the remainder of the route should be expected to be acceptable for the time period when the shipment is anticipated to be transiting that area.
- (b) If adverse road conditions are encountered en route, drivers must locate safe parking.
- (c) The Departmental element must consider information provided by States or Tribes regarding weather and road conditions and convey, as appropriate, to the contractor.

(3) Emergency notifications.

- (a) In the event of an emergency incident involving hazardous materials shipments, notifications and reporting will be conducted in accordance with DOE O 151.1, *Comprehensive Emergency Management System*, and DOE O 232.2, *Occurrence Reporting and Processing of Operations Information*, which requires reporting pursuant to 49 CFR 171.15.
- (b) In addition to notifications required by DOE O 151.1 and DOE O 232.2, the following notifications are required:
 - 1 The DOE shipper must immediately notify the responsible Departmental element that an emergency incident involving a hazardous materials shipment has occurred.
 - 2 As soon as practical, but no later than 12 hours after receiving notification of an incident, the Departmental element must notify:
 - a State and/or Tribal representatives and/or their designated 24-hour points of contact for the location where the emergency incident occurs;

- b The cognizant DOE Radiological Assistance Program Regional Program Manager (RPM), as required;
 - c The DOE Headquarters Emergency Operations Center (EOC);
 - d The National Response Center at 800-424-8802 (toll free) or 202-267-2675 (toll call) or online at <http://nrc.uscg.mil> in accordance with 49 CFR 171.15;
 - e The receiving site;
 - f Other notifications specified in memoranda of agreement and/or campaign-specific transportation plans, as applicable; and
 - g Other appropriate DOE organizations.
- (c) If categorized as an Operational Emergency under DOE O 151.1, the Departmental Element must comply with applicable timeline and notification requirements of DOE O 151.1.
- (4) Emergency Response. When an emergency occurs, the Departmental element must ensure that the following occur:
 - (a) Conduct follow-up communication on DOE activities (e.g., situation updates and reports, status updates on recovery planning and termination of the event) with States and Tribes as needed for that particular incident.
 - (b) Provide shipment-specific emergency information and access to DOE/contractor personnel for technical advice and detailed information as requested by on-scene response personnel.
 - (c) Implement emergency response procedures (e.g., activating site emergency organizations or operations centers, declaring an operational emergency, activating site-specific transportation emergency plans, providing escorts). Site-specific procedures may be addressed in transportation plans or a campaign-specific plan.
 - (d) Assist in the coordination of DOE resources to provide additional radiological support/technical assistance if requested.
 - (e) Assist in the coordination of radiological assistance by the RPM. The shipper may provide assistance with coordination and provision of additional radiological assessment, as needed.

(f) Coordinate with DOE Headquarters, the responsible DOE Field Office/Site Office, and the responsible RPM in the affected region to determine if an emergency occurs that warrants a Federal response under an applicable Federal plan, e.g., the National Contingency Plan and/or the National Response Framework.

(5) Recovery and cleanup for unclassified radioactive materials shipments. The Departmental element must 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 recovery and remediation company.

5. RESPONSIBILITIES.

a. Assistant Secretary for Environmental Management.

- (1) Administers Departmental transportation and packaging responsibilities.
- (2) Develops Departmental policies and guidance for Departmental materials transportation management and assists DOE organizations and contractors on related matters.
- (3) Represents the Department in matters dealing with transportation operations with other Federal entities.
- (4) Coordinates Departmental review of, participation in, and comments on international, Federal, State, Tribal, and local transportation laws and regulations.
- (5) Develops and submits petitions for rulemaking concerning the Department's transportation related matters.
- (6) Establishes and maintains a transportation management program that includes:
 - (a) MCEP to evaluate commercial motor carriers' capability to safely conduct DOE shipments of radioactive and hazardous materials.
 - (b) Negotiation of national freight rate tenders and maintenance of the DOE 190, *Motor Freight Rates and Rules Schedule*.
 - (c) Automated transportation logistics system for performing transportation management functions, including electronic data interchange (EDI) transactions, pre- and post-payment audits.
 - (d) TEPP for training and coordination with local first responders.

- (7) Develops, integrates, implements, and maintains computerized systems and tools to support transportation management and administers requests for use of or access to the systems and tools.
- (8) Reviews occurrence reports and information pertaining to transportation incidents to analyze safety and security concerns, trends, and potential impact on packaging and transportation operations and to develop lessons learned.
- (9) Collects transportation data from sites in order to perform analysis on trends, equipment usage, safety performance benchmarking, and for response to stakeholder concerns and questions from Congress.

b. Associate Administrator for Safety, Infrastructure and Operations, National Nuclear Security Administration.

In coordination with the Office of Environmental Management:

- (1) Develops NNSA supplemental policies and guidance for the transportation and packaging management responsibilities for offsite materials shipments.
- (2) Represents NNSA in matters related to transportation and packaging operations with other Federal entities.
- (3) Coordinates NNSA elements' review of, participation in, and comments on international, Federal, State, Tribal, and local transportation laws and regulations.
- (4) Reviews NNSA elements' occurrence reports and information pertaining to transportation incidents to analyze safety concerns, trends, and potential impact on transportation operations and to develop lessons learned.

c. DOE Secretarial Officers, Program Secretarial Officers, Lead Program Secretarial Officers, and NNSA Deputy Administrators.

- (1) Ensure that Departmental elements and contractors under their purview fully implement and comply with the requirements of this Order.
- (2) Coordinate program-related transportation plans; proposed transportation computerized systems; transportation systems studies; packaging development activities; and training requirements, reports, and analyses with the Office of Environmental Management to ensure consistency of policy and avoid duplication of effort.
- (3) Designate individuals cognizant of program plans and requirements to serve as the points of contact for transportation and packaging interfaces

and integration of transportation and packaging activities into program planning.

- (4) Ensure that the Field Offices/Site Offices conduct compliance assessments of transportation and packaging operations at each facility at least every three years.
- (5) Ensure incidents, events, emergencies, emergency notifications and reports are reported to the Headquarters EOC.

d. Head of Operations Offices or Field Office/Site Office Managers.

- (1) Ensure that Field Offices/Site Offices and contractors/subcontractors under their purview involved in performing or managing transportation and packaging fully implement and comply with the requirements of this Order.
- (2) Advise other field organizations; DOE EM and NNSA Offices of Packaging and Transportation; cognizant Program Secretarial Officers, Secretarial Officers and Lead Program Secretarial Officers; and the NNSA Deputy Administrators of new or changing State, Tribal, or local laws, rules, or regulations.
- (3) Issue bills of lading when required and authorize contractor employees to issue bills of lading within prescribed limitations.
- (4) Ensure contractor/subcontractor transportation and packaging operations are evaluated for compliance with requirements of this Order at least once every three years. Assistance with reviews may be requested from the respective Office of Packaging and Transportation (EM or NNSA).
- (5) Request a contracting officer to incorporate the requirements of the CRD (Attachment 1 to this Order) into new or existing contracts and delete the requirements of the canceled Order in existing contracts.
- (6) Ensure, to the maximum extent practicable, use of an automated system for performing specific traffic/logistics functions.
- (7) Ensure that all for-hire motor carriers who transport the commodities described in section 4.d.(2)(a)1 are evaluated in accordance with the Motor Carrier Evaluation Program plan and program procedures.
- (8) Coordinate with the Director of the Office of Packaging and Transportation (EM) regarding activities that are related to a GSA Audit (41 CFR Part 102-118).

- (9) For transportation activities requiring either an Interim Hazard Classification or Final Hazard Classification, review and forward the request to the NNSA Office of Packaging and Transportation for approval.
 - e. NNSA Office of Packaging and Transportation.
 - (1) Serves as the DOE Primary Hazard Classifier for Department of Transportation Permanent Hazard Classifications and the approval of Interim Hazard Classification for the shipment of explosive substances and articles.
 - (2) Reviews and approves requests for classification of new explosives.
 - (3) Reviews and approves test plans prepared in accordance with TB 700-2 to determine proper classification of new explosives.
 - (4) Makes preliminary classification determinations of requests for tentative classification of new explosives.
 - (5) Transmits classification approval documents and supporting data for registration with the Department of Transportation.
 - f. Contracting Officers. Upon notification that a site/facility management contract is affected by this Order, the contracting officer(s) will incorporate the CRD into the affected contract(s) in accordance with DOE O 251.1, Departmental Directives Program.
6. INVOKED STANDARDS. The following industry standards are invoked as required methods in this Order in accordance with the applicability and conditions described within this Order. Any technical standard or industry standard that is mentioned in or referenced by this Order, but is not included in the list below, is not invoked by this Order. Note: DOE O 251.1D, Appendix J provides a definition for “invoked technical standard.”
- a. ANSI N 14.36, *Measurement of Radiation Level and Surface Contamination for Packages and Conveyances*. This industry standard is required to be used for the survey of conveyances used for the transport of radioactive materials. Specific requirements are found in Section 4.e. and Attachment 1, Section 5.c.
 - b. DoD TB 700-2, *Department of Defense Ammunition and Explosives Hazard Classification Procedures*. This industry standard is required to be used for the hazard classification and testing of explosives. Specific requirements are found in Section 4.c. and Attachment 1, Section 3.g.
7. REFERENCES.
- a. Public Law. Section 3212(d) of Public Law (P.L.) 106-65, *National Defense Authorization Act for Fiscal Year 2000*

b. United States Code (USC).

- (1) 49 USC 10721, *Government Traffic*
- (2) 49 USC 13712, *Government Traffic*
- (3) 50 USC 2406, *Deputy Administrator for Naval Reactors*
- (4) 50 USC 2511, *Naval Nuclear Propulsion Program*

c. Code of Federal Regulations (CFR).

- (1) 10 CFR Part 37, *Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material, Subpart D, Physical Protection in Transit, and Appendix A, Category 1 and Category 2 Radioactive Materials*
- (2) 10 CFR Part 73, *Physical Protection of Plants and Materials*
- (3) 10 CFR Part 835, *Occupational Radiation Protection Program*
- (4) 40 CFR Part 300, *National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan)*
- (5) 41 CFR Part 102-117, *Transportation Management*
- (6) 41 CFR Part 102-118, *Transportation Payment and Audit*
- (7) 41 CFR Subpart 109-40.50, *Bills of Lading*
- (8) 48 CFR Subpart 31.2, *Contracts with Commercial Organizations*
- (9) 48 CFR 47.102, *Transportation Insurance*
- (10) 49 CFR 107.105, *Application for special permit*
- (11) 49 CFR Parts 171-180, *Hazardous Materials Regulations*
- (12) 49 CFR Parts 190-193, 195, 199, *Pipeline and Hazardous Materials Safety Administration*
- (13) 49 CFR Parts 200-268, *Federal Railroad Administration*
- (14) 49 CFR Parts 350-399, *Federal Motor Carrier Safety Regulations*

d. Executive Orders (EO).

- (1) EO 11246, *Equal Employment Opportunity*

(2) EO 11375, *Amending Executive Order No. 11246, Relating to Equal Employment Opportunity*

(3) EO 12344, *Naval Nuclear Propulsion Program*

e. National and International Standards.

(1) ANSI N 14.36, *Measurement of Radiation Level and Surface Contamination for Packages and Conveyances*

(2) International Atomic Energy Agency (IAEA) TECDOC 1344, *Categorization of Radioactive Sources*

(3) Association of American Railroad (AAR) OT-55, *Recommended Railroad Operating Practices for Transportation of Hazardous Materials*

(4) AAR S-2043, *Performance Specification for Trains Used to Carry High-Level Radioactive Material*

f. Other Government References.

(1) DoD 4500.9-R, *Defense Transportation Regulation*

(2) DoD TB 700-2, *Department of Defense Ammunition and Explosives Hazard Classification Procedures*

(3) Federal Railroad Administration Safety Compliance Oversight Plan for Rail Transportation of High-Level Radioactive Waste and Spent Nuclear Fuel

(4) Federal Emergency Management Agency, National Response Plan

g. DOE.

(1) DOE O 144.1, *Department of Energy American Indian Tribal Government Interactions and Policy*

(2) DOE O 151.1, *Comprehensive Emergency Management System*

(3) DOE O 153.1, *Departmental Radiological Emergency Response Assets*

(4) DOE O 226.1, *Implementation of Department of Energy Oversight Policy*

(5) DOE O 231.1, *Environment, Safety, and Health Reporting*

(6) DOE O 232.2, *Occurrence Reporting and Processing of Operations Information*

(7) DOE O 251.1, *Departmental Directives Program*

- (8) DOE Order 410.2, *Management of Nuclear Materials*
- (9) DOE Order 458.1, *Radiation Protection of the Public and the Environment*
- (10) DOE O 460.1, *Hazardous Materials Packaging and Transportation Safety*
- (11) DOE O 461.1, *Packaging and Transportation for Offsite Shipment of Materials of National Security Interest*
- (12) DOE O 462.1, *Import and Export of Category 1 and 2 Radioactive Sources and Aggregated Quantities*
- (13) DOE O 470.3, *Design Basis Threat*
- (14) DOE O 470.4, *Safeguards and Security Program*
- (15) DOE O 473.1, *Physical Protection Program*
- (16) DOE O 473.2, *Protective Force Operations*
- (17) DOE O 474.2, *Nuclear Material Control and Accountability*
- (18) DOE 190, Motor Freight Rates and Rules Schedule
- (19) DOE-STD-1192, *Security Risk Management*
- (20) TRU Waste Transportation Plan (DOE/CBFO 98-3103)

8. DEFINITIONS.

- a. Carrier. A person or entity engaged in the transportation of passengers or property in commerce by rail car, aircraft, motor vehicle, or vessel.
- b. Category. A designation (Category 1, 2 or 3) of radioactive sources based on quantity, type and health effects as defined in IAEA TECDOC 1344, Categorization of Radioactive Sources.
- c. Consignee. The person, entity, or place shown on a shipping document, package marking, or other media as the location to which a carrier is directed to transport a shipment (i.e., the recipient).
- d. Departmental element(s). Programs, operations offices, field/site offices, and other organizational units of the Department of Energy, including those of the National Nuclear Security Administration.
- e. Exclusive use. The sole use of a conveyance by a single consignor; further defined in 49 CFR 173.403.

- f. High-visibility shipments. Those shipments determined by the Departmental Element, in coordination with the Field Office/Site Office Manager and affected State or Tribal government stakeholders, to warrant special arrangements during transit and/or shipments expected to generate an unusually high degree of concern or interest on the part of State or Tribal governments, other stakeholders, the media, or the public. Such shipments may merit additional outreach and communications activities.
- g. High-volume shipments. Shipping campaigns by truck averaging five or more truckload shipments per week between a given origin and destination for a period of three or more months, or shipping campaigns by rail averaging 60 railcars or more per month between a given origin and destination for a period of three or more months.
- h. Highway Route Controlled Quantity (HRCQ). A quantity of radioactive material as specified in 49 CFR 173.403.
- i. Offsite. Any area within or outside the boundaries of a DOE site or facility to which the general public has free and uncontrolled access.
- j. Onsite. Any area within the contiguous (i.e., touching, unbroken, continuous) boundaries of a DOE site or facility to which public access is controlled or restricted. Where a public road or railroad track traverses a contiguous DOE site or facility, the area may be temporarily considered and treated as onsite for the purposes of transportation only during such time that public access to the area is effectively restricted by signals, lights, gates, guards, or similar controls.
- k. Safe parking. For truck shipments, a readily recognizable and accessible site to be used in the event of a transportation operational contingency, and at which security is present or from which the transport crew can notify and wait for the local law enforcement authorities. Criteria for safe parking are described in section 5.c.(3) of this Order. Safe parking areas are desirable parking locations that the driver/crew can reach under different types of conditions related to local weather, road conditions, or factors causing an unanticipated delay or emergency.
- l. Shipper. The person or entity who tenders or makes the material available for transportation.
- m. Special train service. A train that includes operating or handling requirements specified by the shipper and/or required by the rail carrier which are not typical of regular freight train service.
- n. Spent nuclear fuel (SNF). Fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. The term "spent nuclear fuel" is considered to be synonymous with the terms "irradiated reactor fuel" and "used nuclear fuel" which are sometimes used in other regulatory or technical documents.

- (1) SNF greater than 100 grams. A quantity of SNF in a single shipment weighing in excess of 100 grams (0.22 lbs) in net weight of SNF, exclusive of cladding or other structural or packaging material, which has a total external radiation dose rate in excess of 1 Gray (100 rad) per hour at a distance of 1 meter (3.3 feet) from any accessible surface without intervening shielding.
 - (2) SNF 100 grams or less. A quantity of SNF in a single shipment weighing 100 grams (0.22 pounds) or less in net weight of SNF, exclusive of cladding or other structural or packaging material, which has a total external radiation dose rate in excess of 1 Gray (100 rad) per hour at a distance of 1 meter (3.3 feet) from any accessible surface without intervening shielding.
- o. TRANSCOM. DOE's satellite tracking and communications system used to monitor radioactive material shipments, such as special nuclear material, transuranic waste, spent nuclear fuel, foreign research reactor fuel, and other shipments as authorized.
 - p. Transportation Emergency Preparedness Program (TEPP). A national DOE program managed at the headquarters level that interfaces with and provides tools and training to State and Tribal authorities to assist in preparing for response to a potential transportation incident involving DOE shipments of radioactive material.
 - q. Tribe. An American Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that appears on the list of federally recognized Tribes published annually by the Bureau of Indian Affairs, Department of the Interior, pursuant to the Federally Recognized Indian Tribe List Act of 1994. "Tribal" means of or pertaining to such Tribe(s).
 - r. Tritium-bearing reactor components. Absorber rods that replace the normally used burnable absorber rods (nuclear reactor rods used to capture or absorb neutrons) for the purpose of producing tritium. Tritium-producing burnable absorbable rods, or TPBARs, are an example.
9. CONTACT. Questions concerning this Order should be directed to the EM Office of Packaging and Transportation, askpat@hq.doe.gov.

BY ORDER OF THE SECRETARY OF ENERGY:



DAVID M. TURK
Deputy Secretary

ATTACHMENT 1
CONTRACTOR REQUIREMENTS DOCUMENT
DOE O 460.2B, DEPARTMENTAL MATERIALS TRANSPORTATION MANAGEMENT

Regardless of the performer of the work, the contractor is responsible for compliance with the requirements of this Contractor Requirements Document (CRD). The contractor is responsible for flowing down the requirements of this CRD to subcontractors at any tier to the extent necessary to ensure the contractor's compliance with the requirements. This CRD establishes requirements for Department of Energy (DOE), including National Nuclear Security Administration (NNSA), contractors whose contracts involve activities associated with transportation of materials, both hazardous and nonhazardous, for offsite shipments. To the extent the contractor is regulated by the U.S. Nuclear Regulatory Commission (NRC), a State under an agreement with the NRC (Agreement State), or the U.S. Department of Transportation (DOT), nothing in this CRD relieves the contractor of having to comply with any applicable regulatory requirements.

In addition to the requirements of this CRD, contractors must comply with Attachments 2 and 3 to DOE Order (O) 460.2B, referenced in and made a part of this CRD, which provide program requirements and information applicable to contractors.

1. GENERAL REQUIREMENTS.

- a. Except as otherwise provided in this Order or to the extent that a requirement would infringe upon protection of classified information, the contractor must manage offsite shipment of materials in accordance with U.S. Department of Transportation (DOT) regulations in 49 CFR Part 40 and 49 CFR Parts 171-180 for transportation of hazardous materials; 49 CFR Parts 350-399 for transportation by motor vehicle; 49 CFR Parts 190-193, 195 and 199 for transportation by pipeline; and 49 CFR Parts 200-268 for transportation by rail.
- b. DOE has reached agreement with the States and Tribes from which or through which it ships transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP) and other destinations. These requirements for TRU waste shipments are implemented through the TRU Waste Transportation Plan (or successor document). Contractors must coordinate with the Departmental element to ensure that TRU waste shipments are conducted in accordance with the standards and protocols delineated in the TRU Waste Transportation Plan, not including TRU waste shipments that are within the same DOE site or other TRU waste shipments as agreed to between DOE and affected States or Tribes.

2. PROGRAMMATIC REQUIREMENTS.

- a. Automated shipment processing.
 - (1) To the maximum extent practicable, an automated system for performing transportation management functions, including electronic data interchange (EDI) transactions, pre and post-payment audits, and generation of shipping documents must be used. DOE's Automated

Transportation Logistics and Analysis System (ATLAS) is the preferred application.

- (2) If ATLAS or an interfacing system is not used, contractor-managed systems may be used provided that quarterly shipping reports are submitted electronically to the Office of Environmental Management (EM) Office of Packaging and Transportation using an approved template for the information, which can be found on the Packaging and Transportation Wiki at <http://em-opt.wikidot.com> or designated successor website.
- b. Insurance. Consistent with the Government's self-insurance policy, no contractor may expend Government funds to insure its property against loss, damage, or destruction while in transit, unless the shipment qualifies as a special circumstance and is approved by the Contracting Officer (see 48 CFR Part 47.102, *Transportation Insurance*, and 41 CFR Part 102-117.100, *Transportation Management*). Declared value for express shipments are not considered insurance and the costs will be allowable if the costs comply with the requirements of Federal Acquisition Regulation (FAR) 48 CFR Part 31.201-2, the terms of the contract, and the limitations set forth in FAR 48 CFR Subpart 31.2.
- c. Payment Audits. Each contractor that processes and pays carrier bills for transporting property for the U.S. Government using commercial or government bills of lading must follow 41 CFR Part 109-40.50, *Bills of Lading*; 41 CFR Part 102-117, *Transportation Management*; 41 CFR Part 102-118, *Transportation Payment and Audit*; and the provisions of the Federal transportation procurement statutes (49 USC 10721 and 49 USC 13712).
- (1) Each contractor must coordinate activities that are subject to General Services Administration (GSA) audit (41 CFR Part 102-118) with the appropriate Field/Site Office.
 - (2) Each contractor that processes commercial bills of lading (CBL) exceeding \$10,000 will annotate the CBL with the following statement: "Equal Employment Opportunity: All provisions of Executive Order 11246, as amended by Executive Order 11375, and of the rules, regulations, and relevant orders of the Secretary of Labor are incorporated herein."

Unless otherwise provided in a particular contract between DOE and one of its contractors, contractors must ensure that commercial bills of lading and other commercial documents covering shipments made by or to Departmental contractors on behalf of the Department consign shipments as described below (abbreviations are acceptable to the extent they reasonably identify the entities involved in the shipments):

TO: U.S. Department of Energy in care of [name of contractor]

OR

TO: U.S. National Nuclear Security Administration in care of
[name of contractor]

AND

FROM: [name of contractor] for the U.S. Department of Energy

OR

FROM: [name of contractor] for the U.S. National Nuclear Security
Administration

d. Compliance evaluations.

- (1) The contractor must evaluate the full scope of packaging and transportation operations at each site/facility at least once every three years.
- (2) The contractor must conduct evaluations using existing site/facility processes (e.g., facility representatives program reviews, operational readiness reviews, contractor self-assessments, and other safety reviews) or an established transportation and compliance review program. To meet the requirements of DOE O 226.1, *Implementation of Department of Energy Oversight Policy*, the preferred method is the Transportation Safety and Operations Compliance Assurance Program (TCAP) assessment process.
- (3) The contractor must provide copies of the evaluation reports to the respective DOE Field Office/Site Office.

3. SHIPMENT PLANNING FOR CERTAIN HAZARDOUS MATERIALS.

a. Transportation plans.

- (1) A transportation plan must be developed for unclassified shipments of spent nuclear fuel (SNF), high-level radioactive waste (HLW), tritium-bearing reactor component, and Category 1 radioactive sources.
- (2) When planning shipments of radioactive materials other than specified above in 3.a.(1), (e.g., high-visibility or high-volume shipments) the contractor must develop a transportation plan when deemed necessary by the Departmental element.

- (3) Transportation plans must describe operational strategy and delineate steps that will be taken in accordance with applicable requirements. Specific contents of transportation plans, which are determined by the contractor, in general include information on:
 - (a) Organizational roles and responsibilities;
 - (b) Materials to be shipped;
 - (c) Projected shipping window (as appropriate, DOE organizations must consider input from States and Tribes on holidays or special events that may impact shipping schedules or where emergency response assets may be otherwise engaged);
 - (d) Estimated number of shipments;
 - (e) Modes of transportation and, if applicable, carriers to be used;
 - (f) Packages to be used;
 - (g) Primary and any alternate routes. For SNF, a detailed map must be included as well as contact information for local law enforcement agencies (LLEAs) along the route;
 - (h) Shipment advance notifications to be provided. See Attachment 3, *Advance Shipment Notifications to States and Tribes*;
 - (i) Safe parking arrangements;
 - (j) Tracking systems;
 - (k) Emergency preparedness and response;
 - (l) Recovery and cleanup;
 - (m) Security plans; and
 - (n) Public information.
- (4) When developing transportation plans, the contractor must support the appropriate Field Office/Site Office or program manager in engaging in consultation with representatives of the States and Tribes through whose jurisdictions the shipments are expected to be transported.
- (5) The contractor must assess the extent to which any of the information in a transportation plan must be subject to restricted access in the interest of security.

b. Route identification.

- (1) For unclassified shipments of SNF, HLW, and tritium-bearing reactor components, the contractor must:
 - (a) Specify routes to be used as a provision in contracts with, or instructions to, carriers as appropriate.
 - (b) Ensure that routes comply with any applicable agreements between DOE and States or Tribes.
 - (c) Ensure that proposed routes are analyzed using a transportation tool such as the Transportation Routing Analysis Geographic Information System (TRAGIS), the Stakeholder Tool for Assessing Radioactive Transportation (START), or another tool with equivalent capability. The route analysis tool must be capable of assessing and planning routes in accordance with relevant routing criteria of DOT regulations and additional routing factors determined appropriate by DOE.
- (2) For unclassified shipments of applicable hazardous materials by rail, the contractor must ensure carrier route analysis and selection accordance with 49 CFR 172.820, which includes a requirement to seek relevant information from State, local, and Tribal officials, as appropriate, regarding security risks to high-consequence targets along or in proximity to the route used.

c. Safe parking for highway shipments covered by a transportation plan.

- (1) The contractor must select safe parking in accordance with the provisions of 49 CFR 397.7 and, to the extent practicable, with the following factors:
 - (a) 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;
 - (b) Adequate separation from other vehicles or fixed locations identified as containing hazardous materials;
 - (c) Required security (e.g., lighting); and
 - (d) Adequate driver/crew services.
- (2) The contractor must ensure that the following avoidance factors are considered and applied to the extent practical 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 below. The selection of a safe parking area must attempt to avoid:

- (a) Heavily populated areas;
 - (b) Heavily industrialized areas (e.g., refineries);
 - (c) Hospitals and schools;
 - (d) Areas with difficult access (e.g., no room for fire equipment);
 - (e) Crowded parking areas (e.g., shopping malls);
 - (f) Residential areas;
 - (g) Highway shoulders; and
 - (h) Areas with numerous pedestrians.
- d. Security and physical protection.
- (1) The contractor must ensure the development and implementation of a security plan for shipments of hazardous materials in accordance with 49 CFR Part 172, Subpart I, and applicable DOE safeguards and security requirements.
 - (2) The contractor must ensure that shipments of SNF, HLW, and tritium-bearing reactor components, as well as Category 1 and 2 radioactive sources, are conducted in accordance with Attachment 2, *Physical Protection of Specified Shipments*.
 - (3) Special nuclear material (SNM) and other accountable material as identified in DOE O 474.2, *Nuclear Material Control and Accountability*, must be protected in accordance with applicable DOE safeguards and security requirements.
 - (4) Additional requirements for import and export of Category 1 and 2 radioactive sources are found in DOE O 462.1, *Import and Export of Category 1 and 2 Radioactive Sources and Aggregated Quantities*.
- e. Communications plans and public information. For unclassified shipments of SNF, HLW, tritium-bearing reactor components, and high-volume shipments or high-visibility shipments of low LLW or MLLW, the contractor must assist the Departmental element with communication plans, fact sheets, briefing packages, news releases, public information materials, and questions and answers as required.
- f. Consignee notifications and related shipment investigations.
- (1) Consignee notifications. For each shipment of fissile material or Type B quantity of radioactive material, the contractor must:

- (a) Pre-shipment: Notify the consignee of the date of the shipment, the expected date and time of arrival, and any special loading or unloading instructions, and request confirmation upon receipt of the shipment.
 - (b) Post-shipment: Confirm receipt of the shipment via tracking system, if applicable, or by contacting the consignee as of the expected arrival date and time, if the consignee has not already provided receipt confirmation to the shipper.
 - (2) Shipment investigations. For each shipment of fissile material or Type B quantity of radioactive material, the contractor must immediately conduct an investigation, in coordination with the consignee, of any shipment that is lost or unaccounted for.
 - (3) Additional requirements for SNF, HLW, tritium-bearing reactor components, and Category 1 and 2 radioactive sources are provided in Attachment 2, *Physical Protection of Specified Shipments*.
- g. Explosives.
 - (1) Hazard classification and testing of explosives must be performed in accordance with 49 CFR 173.56 and Department of Defense (DoD) Technical Bulletin (TB) 700-2, *Department of Defense Ammunition and Explosives Hazard Classification Procedures*, including interim hazard classification for developmental explosive substances and articles to allow shipment pending final testing for permanent classification.
 - (2) Before transporting new explosive substances and articles made by the Department or under the direction or supervision of the Department, the contractor must comply with the following:
 - (a) Requests for Interim Hazard Classification must meet the explosive substances and articles requirements in the current version of TB 700-2 and must be submitted for approval to the NNSA Office of Packaging and Transportation at least 30 days before the required shipping date.
 - (b) A Final Hazard Classification Test Plan must be approved by the NNSA Office of Packaging and Transportation prior to laboratory testing of explosive substances and articles by a DOT-approved facility.
 - (c) Requests for Final Hazard Classification that do not require testing must meet the explosives substances and articles requirements in TB 700-2, and the methodology for analysis (e.g., analogy) must be approved by NNSA Office of Packaging and Transportation.

- (d) Provide the request for approval and supporting documentation to NNSA Office of Packaging and Transportation for registration with DOT for Final Hazard Classification.
 - (3) Requests for approval and registration of foreign manufactured explosive substances and articles must be submitted to DOT through the DOE designated agent for review and approval in accordance with 49 CFR Part 173.56, 49 CFR Part 107.705(a)(5), and/or 49 CFR Part 107.105, as appropriate.
 - h. Military Air Transportation. Each contractor that requires military air transportation must send requests to the Air Force (as per Department of Defense 4500.9-R, *Defense Transportation Regulation*) and provide copies of the requests through the Field/Site Office to the appropriate Program Secretarial Office. Requests will include the Departmental element's certification that military air transport is in the national interest and that commercial air transportation is not readily obtainable or capable of meeting program requirements.
4. CARRIER AND RATE SELECTION.
- a. Carrier selection.
 - (1) Safety and security are the primary considerations 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 and securely provide the required service at the lowest overall cost to the Government. The contractor must also select the mode and carrier in accordance with any specific program needs or constraints which may render only a particular mode of transportation or a particular carrier within that mode to be suitable.
 - (2) In determining whether a carrier or mode of transportation can meet DOE's transportation service requirements for each individual shipment, the contractor must consider the following:
 - (a) Record of past performance of the carrier.
 - (b) Relevant qualifications as needed, e.g. safety permit.
 - (c) Availability and suitability of carrier equipment for the weight and size of the cargo.
 - (d) Carrier terminal facilities at origin and destination.
 - (e) Pickup and delivery service, if required.
 - (f) Estimated time in transit.

- (g) Due diligence review of the carrier’s profile, including Motor Carrier Evaluation (MCEP) reports when applicable.

b. Transportation services and rates.

(1) Highway transport.

- (a) The contractor must ensure that a motor carrier that transports the following commodities offsite has been evaluated in accordance with DOE’s MCEP plan and program procedures:

- 1 Materials requiring issuance of a Federal Motor Carrier Safety Administration, Hazardous Materials Safety Permit (49 CFR Part 385, Subpart E), or
- 2 Materials that require a Hazardous Materials Security Plan (49 CFR Part 172, Subpart I), or
- 3 Type A or Type B radioactive materials not requiring a Hazardous Materials Safety Permit or a Security Plan, or
- 4 Truckload (TL) quantities of low-level or mixed waste shipped as low-specific-activity (LSA) or surface-contaminated object (SCO); or
- 5 Hazardous materials not included in the previous categories and which require an Environmental Protection Agency (EPA) Uniform Hazardous Waste Manifest.

- (b) The contractor must provide a copy of the MCEP evaluation document through the appropriate Field/Site Office to the EM Office of Packaging and Transportation within 45 days of completion of the carrier evaluation.

- (c) For shipments by motor carriers on behalf of the Department, the contractor may use only carrier rates on file with Departmental organizations and/or contractors, other Federal agencies, or a State commission.

- 1 Use of DOE-negotiated national tenders is preferred.
- 2 For local rates, contractors may negotiate with motor carriers or authorize cost type contractors to negotiate with carriers concerning rates, classification ratings, services, and related transportation matters when only their own field organizations will be affected. Contractors negotiating local rates must maintain documentation of actions taken that demonstrates comparison of best value. Tenders must

follow the latest version of DOE 190, *Motor Freight Rates and Rules Schedule*.

- 3 For any tender rate used, other than a DOE national tender, a copy of the approved tender must be provided to the EM Office of Packaging and Transportation for filing with the GSA.
- 4 When other than a low-cost carrier or mode of transportation is used for any shipment other than overnight express, each contractor must ensure that a written justification (e.g. three or more spot quotes) or management approval statement is retained with the bill of lading indicating why the carrier or mode selected was necessary to meet the requirements of the shipment and to obtain safe, expeditious, and economical delivery.

(2) Rail transport.

- (a) Each contractor may only use rates which have been negotiated and accepted from railroads that demonstrate compliance with applicable Federal Railroad Administration requirements, DOT Hazardous Materials Regulations, and Association of American Railroads interchange standards.
- (b) Each contractor may only use special train services which have been approved by the appropriate Field/Site Office or program manager.

5. INSPECTIONS.

- a. General. Upon receipt of a materials shipment, the contractor must:
 - (1) Visually inspect the shipment and examine the relevant shipping papers to ensure consistency and that the appropriate materials have been received.
 - (2) Visually inspect any DOE-owned or DOE contractor-owned transport equipment for damage and report for damage remediation and the filing of any loss or damage claims, as appropriate. Any such claims must be filed in accordance with the provisions of 41 CFR Part 102-117.190 and within the time limitations of 41 CFR Part 102-118.460.
- b. Outbound radioactive material shipments. Prior to loading, each contractor must:
 - (1) Visually inspect the empty conveyance to ensure the conveyance is acceptable for the intended use.

- (2) For empty conveyances intended for radioactive material which will be transported as exclusive use in accordance with 49 CFR Part 173.427(b)(4), 173.427(c), or 173.443(b), survey the empty conveyance according to American National Standards Institute (ANSI) N 14.36, *Measurement of Radiation Level and Surface Contamination for Packages and Conveyances*, as a minimum, to ensure the presence of radioactive substances on a surface does not exceed 0.4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters and 0.04 Bq/cm² for all other alpha emitters.
- (3) For empty conveyances received for transporting radioactive material as an exclusive use shipment under the provisions of 49 CFR Part 173.443(c) which are intended for loads in accordance with 49 CFR Part 173.427(b)(4), 173.427(c) or 173.443(b):
 - (a) Contamination values on the conveyance must not exceed the specified contamination control limits in 49 CFR Part 173.443(a). These shipments must remain under exclusive use per 49 CFR Part 173.443(c).
 - (b) A conveyance used for non-exclusive use shipments is not required to be surveyed unless there is a reason to suspect that it may exhibit contamination.

c. Incoming radioactive material shipments.

- (1) Each contractor must ensure that all incoming shipments are inspected upon receipt for damage or loss and evidence of leakage. Radioactive material packages must be monitored as required by 10 CFR Part 835.405. The contamination control limits of 49 CFR Part 173.443 must be applied until the shipment is unloaded from the conveyance.
- (2) Each contractor must ensure that any incoming shipment of radioactive material subject to any DOT exclusive use provisions must be kept under the control of the receiving site's radiation protection program for all subsequent on-site transfers to the on-site unloading destination. Prior to unloading, radioactive material shipments in exclusive use must meet the following requirements:
 - (a) Each contractor must visually inspect the package and/or conveyance for external damage or leakage and survey according to ANSI N 14.36, as a minimum, to ensure the survey results comply with the radiation level limitations requirements of 49 CFR Part 173.441 and contamination control requirements of 49 CFR Part 173.443.
 - (b) If a package or conveyance is found to be contaminated at levels above these limits, each contractor must detain the vehicle and/or

immediately notify the carrier and the shipping site so other potentially contaminated vehicles can be surveyed. Specific response activities will follow site/facility procedures.

- (3) When a conveyance is used for the transport of radioactive material in accordance with the exclusive use provisions of 49 CFR Part 173.427(b)(4), 173.427(c) or 173.443(b), it must be surveyed after unloading as follows:
 - (a) If the conveyance will be reused for radioactive materials transportation under the exclusive use provisions of 49 CFR Part 173.427(b)(4), 173.427(c) or 173.443(b), each contractor must survey the empty conveyance according to ANSI N 14.36 to ensure survey results comply with the requirements of 49 CFR Part 173.443(c). All subsequent exclusive use conditions for this conveyance must have exclusive use and survey instructions provided to the carrier prior to shipment.
 - (b) If conveyance will be removed from exclusive use and returned to general use (free release/unrestricted use), the empty conveyance must be surveyed to ensure it is below the definition of contamination in 49 CFR 173.403 as well as in compliance with applicable DOE, Agreement State, or NRC survey limits. The contractor must determine whether clearance from DOE radiological controls is required under DOE O 458.1, *Radiation Protection of the Public and the Environment*, and/or 10 CFR Part 835, *Occupational Radiation Protection*, as applicable.
 - (4) Commercial carrier equipment should not be introduced into radiological areas which require surveys upon exit (Contamination Area, High Contamination Area, or Airborne Radioactivity Area) subject to 10 CFR Part 835.
- d. Inspections of SNF, HLW, and tritium-bearing reactor component shipments.
- (1) Highway shipments. The contractor must ensure that shipment inspections are performed in accordance with the following:
 - (a) Prior to departure, shipments must be made available for inspection by Commercial Vehicle Safety Alliance (CVSA)-certified State and/or Tribal inspectors unless other arrangements have been made.
 - (b) En route inspections may be performed at the discretion of the States and Tribes in accordance with State or Tribal laws and regulations unless other arrangements have been made, such as an inspection reciprocity agreement.

- (c) Post-shipment inspections must be conducted by the receiver, and may be conducted by States and Tribes at their discretion in accordance by State or Tribal laws and regulations unless other arrangements have been made.

(2) Rail shipments.

- (a) The contractor must ensure that locomotive and railcar safety inspections are performed at the origin facility by the originating rail carrier prior to each shipment. The carrier inspection may be reviewed by either a qualified Federal Railroad Administration (FRA) inspector or an FRA-certified State Motive Power & Equipment (MP&E) Inspector, at FRA's discretion, to ensure conformity with applicable regulations and standards. Tribes may attend rail inspections in coordination with a qualified inspector(s) by prior agreement with the inspector(s) and the rail property owner for each time an inspection is performed.
- (b) The contractor must ensure that the conveyance and package(s) are made available for radiological surveys/inspections by State or Tribal inspectors, as appropriate under applicable law, at points of origin and en route. En route inspections may take place only at times and locations deemed safe by the rail carrier.
- (c) The contractor must ensure that the train is made available as appropriate for en route inspections, unless other arrangements have been made such as inspection reciprocity agreements. Inspections may take place only at safe, scheduled stopping locations (e.g., where adjacent track(s) are clear of movement, crew change points, refueling locations). Inspections will be conducted by the rail carrier for the appropriate long-haul inspection and/or by a qualified FRA or an FRA-certified State MP&E inspector, at FRA's discretion, to ensure conformity with applicable regulations and standards. Tribes may attend rail inspections in coordination with a qualified inspector(s) by prior agreement with the inspector(s) and the rail property owner for each time an inspection is performed.

6. OPERATIONAL CONTINGENCIES AND EMERGENCY RESPONSE.

a. Emergency planning.

- (1) The contractor must maintain and regularly update emergency plans for the transportation of radioactive materials.
- (2) Emergency plans must 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.

- (3) Emergency planning must be consistent with the National Incident Management System, the National Response Framework and other current federal emergency response programs.
- (4) The contractor must coordinate with the Departmental element and the Transportation Emergency Preparedness Program (TEPP) as needed to determine emergency response planning and training needs of State, Tribal, and local first responders. TEPP information is available at <http://teppinfo.com/>.

b. Weather and travel considerations for SNF, HLW, and tritium-bearing reactor components.

- (1) Shipments must not be dispatched or travel if severe weather or adverse road conditions make travel hazardous or if the forecast predicts severe weather or adverse road conditions that would affect the safety of the shipment. Roads within the first 200 miles should be substantially clear of snow and ice. The predicted weather for the first 200 miles of the route should not be expected to deteriorate significantly for at least the next four to five hours. Predicted weather along the remainder of the route should be expected to be acceptable for the time period when the shipment is anticipated to be transiting that area.
- (2) If adverse conditions are encountered en route, drivers must locate safe parking.

c. Emergency notifications.

- (1) In the event of an emergency incident involving hazardous materials shipments, the contractor will conduct notifications and reporting in accordance with DOE O 151.1, *Comprehensive Emergency Management System*; DOE O 232.2A, *Occurrence Reporting and Processing of Operations Information*; and DOE O 470.4, *Safeguards and Security Program*, for security incidents.
- (2) The contractor will make other applicable notifications in accordance with site transportation emergency plans, memorandums of agreement, or campaign-specific transportation plans.

d. Emergency response. When an emergency occurs, the contractor must ensure that the following occur:

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

- (2) Provide shipment-specific emergency information and access to DOE/contractor personnel for technical advice and detailed information as requested by on-scene response personnel.
 - (3) Implement transportation emergency response procedures (e.g., activating site emergency organizations or operations centers, 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.
 - (4) Assist in the coordination of DOE resources to provide additional radiological support/technical assistance if requested.
 - (5) Radiological assistance will be coordinated by the cognizant DOE Radiological Assistance Program Regional Program Manager (RPM). The shipper may provide assistance with coordination and provision of additional radiological assessment, as needed.
 - (6) Coordinate with DOE Headquarters, the responsible DOE field office, and the responsible RPM in the affected region to determine if an emergency occurs that warrants a Federal response under an applicable Federal plan, e.g., the National Contingency Plan and/or the National Response Framework.
- e. Recovery and cleanup for unclassified radioactive materials shipments. The contractor must 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 recovery and remediation company.

ATTACHMENT 2 PHYSICAL PROTECTION OF SPECIFIED SHIPMENTS

This Attachment provides information and/or requirements applicable to contracts in which the CRD (Attachment 1 to DOE O 460.2B) is inserted.

Unclassified shipments of spent nuclear fuel (SNF), high-level radioactive waste (HLW), tritium-bearing reactor components, and Category 1 and 2 radioactive sources must be conducted in accordance with applicable DOE safeguards and security requirements, and must meet the following physical protection requirements during transport:

1. SNF greater than 100 grams,¹ HLW, and tritium-bearing reactor components.
 - a. General requirements. A physical protection system must be established and maintained to meet the following requirements:
 - (1) Shipment departure and arrival times must be pre-planned and coordinated with the receiving entity/consignee.
 - (2) Advance shipment notifications must be made to State governors or their designees and Tribal officials or their designees in accordance with Attachment 3 of this Order.
 - (3) Near real-time position tracking and communications must be provided.
 - (a) Truck shipments must use TRANSCOM. TRANSCOM shipments must be continuously and actively monitored by the responsible Departmental element or contractor until safe delivery of the shipment at the final destination. In the event the responsible Departmental element or contractor does not have a 24/7 operations center with this capability, the responsible party must coordinate continuous monitoring with the DOE HQ Watch Office, within the DOE/NNSA Consolidated Emergency Operations Center, at 202-586-8100.
 - (b) Rail and water shipments must use TRANSCOM if possible. If not, the Departmental element or contractor must ensure a similar capability is provided by the carrier. The Departmental element or contractor must have direct access to the carrier's tracking system if possible, and will ensure the carrier maintains a 24/7 operations center to communicate with DOE at regular intervals

¹ SNF greater than 100 grams: A quantity of SNF in a single shipment weighing in excess of 100 grams (0.22 lbs) in net weight of SNF, exclusive of cladding or other structural or packaging material, which has a total external radiation dose rate in excess of 1 Gray (100 rad) per hour at a distance of 1 meter (3.3 feet) from any accessible surface without intervening shielding.

- (4) Route selection and transportation plans must be performed in accordance with the body of this Order and CRD, as applicable for the mode(s) of transport.
- (5) Written transportation physical protection procedures must be developed, maintained, and implemented which address the following:
 - (a) Access controls to ensure no unauthorized persons have access to sensitive shipment information.
 - (b) Roles and responsibilities of the responsible Departmental element or contractor operations center personnel, drivers, escorts, and other individuals relative to the security of the shipment.
 - (c) Reporting of transportation emergencies in accordance with the body of this Order and CRD.
 - (d) Communications/security protocols that include the management of refueling or other stops, detours, and the loss of communications, temporarily or otherwise.
 - (e) Normal conditions operating procedures.
 - (f) Contingency and response procedures.
- (6) Transportation physical protection procedures must be retained in a retrievable format for three years after the shipment or shipping campaign concludes.
- (7) Shipment drivers and/or escorts must communicate with the responsible Departmental element or contractor operations center at random intervals, not to exceed two hours, to advise of shipment status for road and rail shipments, and for water shipments while vessels are docked at U.S. ports. The physical protection procedures described above in 1.a.(5) must include procedures in the event no communication is received within a two-hour window.
- (8) In addition to the operational contingency requirements in the body of this Order and CRD, the following contingency and response procedures must be followed:
 - (a) Establish, maintain, and follow written contingency and response procedures to address threats, thefts, and radiological sabotage related to spent nuclear fuel in transit.
 - (b) Ensure personnel associated with the shipment are appropriately trained regarding contingency and response procedures.

- (c) Retain contingency and response procedures in a retrievable format for three years after the shipment or shipping campaign concludes.
- b. Shipments by road. In addition to the general requirements identified above, the physical protection system for any portion of a SNF shipment by road shall provide that:
- (1) Transport of the shipment will be nonstop from origin to destination except for food, fuel, driver/escort relief, unscheduled maintenance/repair, or emergency.
 - (2) The transport vehicle is:
 - (a) Occupied by at least two individuals. For shipments with driving time greater than the maximum number of allowable hours of service in a 24-hour duty day as established by the Department of Transportation Federal Motor Carrier Safety Administration, both individuals must be drivers.
 - (b) Escorted by an armed member of a local law enforcement agency (LLEA) in a mobile unit of such agency. In the event LLEA is unable or unwilling to escort shipments, the Departmental element must contact the respective Office of Packaging and Transportation (EM or NNSA) at the earliest possible point to make other arrangements for physical protection of the shipment.
 - (c) Under constant control and surveillance at all times. During such stops as described in 1.b.(1), an escort or driver must remain with the transport vehicle at all times to ensure safety and security of the shipment.
 - (d) The transport and escort vehicles are equipped with at least two different forms of communication capabilities not subject to the same failure mode.
 - (e) The transport vehicle must be equipped with:
 - 1 TRANSCOM communication equipment
 - 2 Features for immobilization of the tractor or cargo-carrying portion of the transport vehicle for at least 30 minutes, or a method to enhance the ability of the responsible operations center to locate the transport vehicle's position if an incident occurs (e.g., panic button linked to TRANSCOM).
- c. Shipments by rail. In addition to the general requirements identified above, the physical protection system for any portion of a SNF shipment by rail shall provide that:

- (1) A shipment car is accompanied by two armed escorts, at least one of whom is stationed at a location on the train that will permit observation of the shipment car while in motion. Multiple shipment cars that are part of a train do not require separate escorts for each car.
 - (2) LLEA may perform escort duties to the extent feasible and practical. Otherwise, the Departmental element must contact the respective Office of Packaging and Transportation (EM or NNSA) at the earliest point in the planning process to make other arrangements for physical protection of the shipment.
 - (3) The train operator and escorts are equipped with at least two different forms of communication capabilities not subject to the same failure mode.
- d. Shipments by U.S. waters. Departmental elements planning to ship by U.S. waters must contact the respective Office of Packaging and Transportation (EM or NNSA) at the earliest possible point in the planning process to coordinate physical protection requirements for the shipment.
2. SNF 100 grams or less,² and Category 1 radioactive sources.
- a. General Requirements. The physical protection of such shipments must meet the following requirements:
 - (1) Shipment departure and arrival times must be pre-planned and coordinated with the receiving entity/consignee.
 - (2) Advance notification of shipments shall be made to State governors or their designees and Tribal officials or their designees in accordance with Attachment 3 of this Order.
 - (3) Near real-time position tracking and communications must be provided.
 - (a) Truck shipments must use TRANSCOM. TRANSCOM shipments must be continuously and actively monitored by the responsible Departmental element or contractor until safe delivery of the shipment at the final destination. In the event the responsible Departmental element or contractor does not have a 24/7 operations center with this capability, the responsible party must coordinate continuous monitoring with the DOE HQ Watch Office at 202-586-8100.

² SNF 100 grams or less: A quantity of SNF in a single shipment weighing 100 grams (0.22 pounds) or less in net weight of SNF, exclusive of cladding or other structural or packaging material, which has a total external radiation dose rate in excess of 1 Gray (100 rad) per hour at a distance of 1 meter (3.3 feet) from any accessible surface without intervening shielding.

- (b) Rail and water shipments must use TRANSCOM if possible. If not, the Departmental element or contractor must ensure a similar capability is provided by the carrier. The Departmental element or contractor must have direct access to the carrier's tracking system if possible and will ensure the carrier maintains a 24/7 operations center to communicate with DOE at regular intervals.

- b. Shipments by road. In addition to the general requirements identified above, for any portion of such shipment traveling by road, the following requirements apply:
 - (1) Transport of the shipment will be nonstop from origin to destination except for food, fuel, driver relief, unscheduled maintenance/repair, or emergency.
 - (2) In order to meet the requirement of 2.b.(1) above, an additional driver must accompany the driver for those highway shipments with driving time greater than the maximum number of allowable hours of service in a 24-hour duty day as established by the Department of Transportation Federal Motor Carrier Safety Administration.
 - (3) The transport vehicle must be:
 - (a) Under constant control and surveillance. During such stops as described in 2.b.(1) above, a driver must remain with the transport vehicle at all times to ensure safety and security of the shipment.
 - (b) Equipped with at least two different forms of communication capabilities not subject to the same failure mode.
 - (c) Equipped with TRANSCOM communication equipment.
 - (4) Written normal and contingency procedures must be developed to address:
 - (a) Notifications to the responsible Departmental element or contractor operations center and LLEA, including identification of and contact information for the appropriate LLEA(s) along the route;
 - (b) Communication/security protocols that include provisions for refueling or other stops, detours, and locations where communication is expected to be temporarily lost;
 - (c) Identification of safe parking along the route;
 - (d) Loss of communications; and
 - (e) Responses to an actual or attempted theft or diversion of a shipment.

- (5) Drivers, accompanying personnel, and operations center personnel must be provided access to the normal and contingency procedures.
 - c. Shipments by rail. In addition to the general requirements identified above, for any portion of such shipment traveling by rail, periodic reporting must be made to the appropriate operations center in accordance with preset intervals.
3. Category 2 radioactive sources.
 - a. Shipment arrival times must be coordinated with the receiving entity/consignee prior to shipment.
 - b. Ensure constant control and/or surveillance during transit and have the capability for immediate communication to summon appropriate response or assistance.
 - c. Use carriers that have established package tracking systems that are documented, proven, and routinely used to transport objects of value. In order for a package tracking system to maintain constant control and/or surveillance, the system must allow the responsible Departmental element or contractor to identify the most recent location of the package and when it should arrive at the next point of control. Note that TRANSCOM may be used to satisfy the tracking requirement.
 - d. Use carriers that have established tracking systems that require an authorized signature prior to releasing the package for delivery or return.
4. Shipment Investigations. For each shipment covered under this Attachment, the responsible Departmental element or contractor must immediately conduct an investigation, in coordination with the consignee, of any shipment that is lost or unaccounted for.

ATTACHMENT 3
ADVANCE SHIPMENT NOTIFICATIONS TO STATES AND TRIBES

This Attachment provides information and/or requirements applicable to contracts in which the CRD (Attachment 1 to DOE O 460.2B) is inserted.

For unclassified shipments of spent nuclear fuel (SNF), high-level waste (HLW), tritium-bearing reactor components, and Category 1 radioactive sources, the following notifications are required, except as otherwise provided by law.

1. As further specified in this Attachment, each responsible Departmental element must provide, or ensure that their contractors provide, advance notification to the governor of a State (or the governor's designee) of the shipment before transport of the material within or across the boundary of the State.
2. As further specified in this Attachment, each Departmental element must provide, or ensure that their contractors provide, advance notification to the Tribal official (or the Tribal official's designee) of the shipment before transport of the material within or across the boundary of the reservation of a federally recognized Tribe.
3. Memorandums of Agreement (MOA) with the Department regarding advance notifications of shipments. Any such MOA in effect at the time of issuance of this Order will remain in effect until such time that the MOA expires, is rescinded by either party, or is revised. Copies of MOAs for advance shipment notifications must be provided to the DOE EM Office of Packaging & Transportation at askpat@hq.doe.gov and distributed to Departmental elements and contractors as appropriate.
4. In order to receive shipment notifications described in paragraph 5 of this Attachment, designated State and Tribal representatives must:
 - a. Be identified in writing to the DOE EM Office of Packaging & Transportation at askpat@hq.doe.gov for addition to the DOE Notifications Master Contact List.
 - b. Possess an email address, telephone number, and TRANSCOM account. Instructions for obtaining a TRANSCOM account are available at: tcc.transcom.energy.gov/.
 - c. If unable to obtain/maintain an email address and/or TRANSCOM account, State and Tribal representatives must provide a written request for paper mail notifications to the DOE EM Office of Packaging & Transportation.
5. Preliminary Communication. To the extent possible, prior to a shipment or the first of a series of shipments, preliminary communication must be conducted with designated representatives of affected States and Tribes to convey general shipment information at least two weeks in advance of the upcoming shipment(s).
6. Advance Shipment Notifications. Unless otherwise agreed to in an applicable MOA, and except as otherwise provided in section 6.c. below, notifications to States and Tribes will

be provided at least seven days before shipment departure from origin. The responsible Departmental element will select the method of notification, taking into account State and Tribal preferences specified during the identification of designees as described in paragraph 4 above.

- a. The preferred method of notification is via email with TRANSCOM shipment ID. Designated representatives of States and Tribes through whose jurisdiction(s) a shipment is expected to be transported will have access to shipment details and schedule upon logging into TRANSCOM.
- b. Email notifications containing shipment details will be used for shipments not available via TRANSCOM. Such email notifications must be password-protected.
- c. Paper mail notifications are the least preferred method. If mailed, notifications must be postmarked at least ten days before shipment departure from origin.
- d. Paper mail notifications and email notifications not containing a TRANSCOM shipment ID will include the following information:
 - (1) Name, address, and telephone number of the shipper, carrier, and receiver of the shipment.
 - (2) Description of materials in the shipment as specified in 49 CFR 172.202 and 172.203(d).
 - (3) Listing of routes to be used within the State or Tribal reservation.
 - (4) Projected shipping schedule, to be placed in a separate enclosure for paper mail notifications, including:
 - (a) Estimated date and time of departure from origin;
 - (b) Estimated date and time of entry into the State or Tribal reservation;
 - (c) Estimated date and time of arrival at destination.
 - (d) Statement describing any requirements to protect shipment information against unauthorized disclosure in accordance with applicable information protection requirements.
- e. Revision. In the event of a shipment schedule change that differs by more than six hours from the originally provided schedule, the responsible Departmental element must provide notification by telephone or email to designated State and Tribal representatives.

- f. Cancellation. In the event of cancellation of a shipment for which advance notification has been sent, the Departmental element must provide a cancellation notice to designated State or Tribal representatives. Email is the preferred method.
7. Maintenance of the DOE Notifications Master Contact List. The EM Office of Packaging & Transportation will maintain a list of designated State and Tribal contacts for shipment notifications and coordinate annual updates. The list will be available to Departmental users, including contractors, upon request through askpat@hq.doe.gov.