

U.S. Department of Energy
Washington, D.C.

ORDER

DOE O 461.1D

Approved: 08-05-2026

**SUBJECT: PACKAGING AND TRANSPORTATION FOR OFFSITE SHIPMENT OF
MATERIALS OF NATIONAL SECURITY INTEREST**

1. PURPOSE. To establish requirements and responsibilities for packaging and transportation of offsite shipments of materials of national security interest (MNSIs) to ensure safe, secure, and efficient transportation of these materials.
2. CANCELLATIONS. This Order cancels Department of Energy (DOE) Order (O) 461.1C, *Packaging and Transportation for Offsite Shipment of MNSI*. Cancellation of a directive does not, by itself, modify or otherwise affect any contractual or regulatory obligation to comply with the directive.
3. APPLICABILITY.
 - a. Departmental Applicability. Except for the equivalencies and exemptions in paragraph 3.c., this Order applies to any Departmental elements with responsibility for activities associated with offsite shipments of MNSI. The National Nuclear Security Administration (NNSA) is responsible for managing and overseeing offsite shipments of MNSI, including operations of the Office of Secure Transportation (OST) Transportation Safeguards System (TSS). The NNSA Administrator must ensure that NNSA employees comply with their responsibilities under this Order. Nothing in this Order may be construed to interfere with the NNSA Administrator's authority under Section 3212(d) of Public Law 106-65, National Defense Authorization Act for Fiscal Year 2000, to establish Administration-specific policies, unless disapproved by the Secretary.
 - b. DOE Contractors. The requirements of this Order shall be incorporated into applicable contracts, including Management and Operating contracts. The contractor is responsible for flowing down the requirements of this Contractor Requirements Document (CRD), if applicable. Contractors shall comply with the requirements of applicable federal, state, and local laws and regulations in carrying out the requirements of this Order unless relief has been granted in writing. Omission of any applicable law or regulation from the Order does not affect the obligation of the contractor to comply with such law or regulation. Contractors must comply with the requirements of this Order, except to the extent modified by the equivalencies or exemptions identified herein or issued to the contractor in writing by DOE utilizing the process outlined in DOE O 251.1E, *Departmental Directives Program*, including as amended or updated.

- c. Equivalencies and Exemptions. Requests for equivalencies and exemptions to the requirements of this Order are processed in accordance with DOE Order 251.1, current version. The Cognizant Secretarial Officer (CSO) must approve exemptions and equivalencies. Central Technical Authority (CTA) concurrence is required for both. Exemptions may be granted provided they are not prohibited by law and do not present undue risk to security, public health and safety, workers, or the environment.
- (1) Equivalency. In accordance with the responsibilities and authorities assigned by Executive Order 12344, Naval Nuclear Propulsion Program, codified at 50 U.S.C. §§ 2406, *Deputy Administrator for Naval Reactors*, and 2511, the Deputy Administrator for Naval Reactors (Director) must implement and oversee requirements and practices pertaining to this Order for activities under the Director's cognizance, as deemed appropriate.
 - (2) Exemption. Consistent with Secretarial Delegation Order 00-033.00B, this Order does not apply to Bonneville Power Administration.
 - (3) Exemption. Operations conducted under DOE Order (O) 460.1, *Hazardous Materials Packaging and Transportation Safety*, current version.
 - (4) Exemption. Operations conducted under DOE O 461.2, *Onsite Packaging and Transfer of Materials of National Security Interest*, current version.
 - (5) Exemption. Operations conducted under DOE-STD-1212, *Explosives Safety Manual*, current version.

4. REQUIREMENTS.

a. General Requirements for Shipments.

- (1) Packaging and transportation of offsite shipments of MNSI must be conducted in accordance with Department of Transportation (DOT) Hazardous Materials Regulations (HMRs), 49 CFR §§ 171–180, and Nuclear Regulatory Commission (NRC) regulations in 10 CFR § 71, Packaging and Transportation of Radioactive Material, or by an NNSA-approved alternative method specified in this Order.
- (2) Shipments that comply with DOT HMRs should be transported via an approved commercial carrier unless security requires use of the TSS.
- (3) Shipments that do not comply with DOT HMR must be transported via the TSS.

- b. Alternative Requirements for Shipments. NNSA-issued authorizations apply when standard DOT/NRC compliance is not achievable or applicable. NNSA authorizations are offsite transportation certificate (OTC), offsite transportation authorization (OTA), offsite transportation direction (OTD), and national security exemption (NSE). All authorization types may be renewed following the applicable process described below.
- (1) Offsite Transportation Certificate. An OTC is required for shipments of fissile or Type B quantities of MNSI where the package meets 10 CFR § 71 requirements. An OTC application must include a Safety Analysis Report for Packaging (SARP) and an OST-approved tie-down procedure, submitted to the NNSA Certifying Official (NNSA CO). The NNSA CO must review the application and document findings in a safety evaluation report (SER). An OTC may be issued for a period of up to 5 years. Prior to first use, a written request to become an Authorized User must be submitted to the NNSA CO, supported by site-specific operating procedures and a site-specific quality assurance (QA) program that meets 10 CFR § 71, Subpart H, Quality Assurance. Authorized Users must maintain and use current copies of the SARP and OTC.
 - (2) Offsite Transportation Authorization. An OTA is required for shipments of non-fissile, less than Type B quantities of MNSI where packages will not meet DOT HMR requirements. An OTA application must include a Hazard Analysis Report (HAR) documenting the risk to workers, public, and environmental health and safety, and OST-approved tie-down procedures, submitted to the NNSA CO. The NNSA CO must review the application and document findings in an SER. An OTA may be issued for a period of up to 5 years.
 - (3) Offsite Transportation Direction. An OTD is required for fissile or Type B quantities of MNSI where the package will not meet 10 CFR § 71 requirements. Prior to application, a request to proceed must be submitted through the program office to the respective Deputy Administrator, demonstrating the shipment is for national security purposes and explaining why the package cannot meet 10 CFR § 71. Upon Deputy Administrator approval, an OTD application must be submitted to the NNSA CO, supported by the Deputy Administrator-approved request to proceed, a transportation system risk assessment (TSRA) documenting risk to worker, public, and environmental health and safety, and OST-approved tie-down procedures. The NNSA CO must review the application, document findings in an SER, and notify the CSO of OTD approvals. An OTD may be issued for a period of up to 5 years. Prior to first use, a written request to become an Authorized User must be submitted to the NNSA CO, supported by site-specific operating procedures. Authorized Users must maintain and use current copies of the TSRA and OTD.

- (4) National Security Exemption. An NSE is required for air transportation of plutonium in a package that does not meet 10 CFR 71.74, Accident conditions for air transport of plutonium. Each NSE request must be submitted as specified in 10 CFR 871.1, National security exemption, supported by a TSRA that assesses risk to worker, public, and environmental health and safety, submitted to the NNSA CO at least nine months prior to the shipment date. The NNSA CO must document concurrence or non-concurrence in an SER and forward to CTA. CTA must review and concur or not concur prior to review by the Deputy Administrator for Defense Programs for approval or disapproval. An NSE without concurrence from both CTA and the NNSA CO requires the NNSA Administrator's approval.

c. Quality Assurance.

- (1) Design, testing, fabrication, procurement, inspection, operations, or maintenance for certified Type B and fissile materials packaging activities must be performed under a QA program that meets 10 CFR § 71, Subpart H.
- (2) All other radioactive and hazardous materials packaging activities must be performed under a QA program that meets DOE O 414.1, *Quality Assurance*, current version.

d. Transportation Safeguards System.

- (1) A documented safety analysis (DSA) must be prepared that addresses all operations which do not meet DOT or NRC regulatory requirements, in accordance with the methodology in Appendix A, which specifies the approach that complies with 10 CFR § 830.
- (2) All vehicles used to transport MNSI offsite must be operated in accordance with the Federal Motor Carrier Safety Regulations, 49 CFR §§ 350–399, or as approved by the Responsible Official for secure transportation.

e. Scheduling Transportation Safeguards System Shipments.

- (1) Shipping forecasts must be developed by each Program Secretarial Officer and submitted to the Responsible Official for secure transportation.
- (2) Scheduling conflicts must be resolved by the Secure Transportation and Packaging Steering Committee (STPSC). Unresolved conflicts must be elevated to the Secure Transportation Asset Advisory Board (STAAB).
- (3) Each site must confirm shipment needs via a transportation shipping request (TSR) no less than 60 days prior to material availability date, with updates at 30 days and 7 days prior to shipment.

- (4) Prior to TSS shipment, sites must ensure that shipping authorizations are available, the receipt site is authorized to take custody, and the TSR is final.
 - (5) Requests for significant variances to the TSS schedule must be submitted per the shipping forecast request procedure.
- f. Training. All personnel who support or perform packaging and transportation operations must be appropriately trained and qualified and must maintain auditable training records in accordance with approved NNSA or site-specific records schedules.

5. RESPONSIBILITIES.

- a. Administrator, NNSA.
 - (1) Ensure implementation and execution of requirements and responsibilities in accordance with this Order.
 - (2) Approve or disapprove NSEs that have not been concurred by the CTA and the NNSA CO.
- b. Cognizant Secretarial Officer. Approve or disapprove exemptions and equivalencies to this Order.
- c. Central Technical Authority (CTA).
 - (1) Concur or does not concur with the request for exemptions or equivalencies from the requirements of this Order.
 - (2) Review and concur or does not concur on requests for NSEs in accordance with 10 CFR 871.1 for air transportation of plutonium.
- d. Program Secretarial Officers.
 - (1) Provide information to the Assistant Deputy Administrator for Secure Transportation and STPSC concerning new shipping campaigns as early as possible.
 - (2) Provide shipment forecasts and updates for use of the TSS.
 - (3) Assign representatives to the STPSC and the STAAB.
- e. NNSA Deputy Administrators.
 - (1) Provide information concerning new shipping campaigns to the Responsible Official for secure transportation and the STPSC as early as possible.

- (2) Provide shipment forecasts and updates for the use of the TSS.
 - (3) Assign a representative to the STPSC and the STAAB.
- f. Deputy Administrator for Defense Programs.
 - (1) Designate specific materials or items not defined in this Order as MNSI.
 - (2) Approve or disapprove requests for NSEs in accordance with 10 CFR 871.1 and Section 4.b.(4) of this Order for air transportation of plutonium.
- g. Principal Assistant Deputy Administrator for Military Application. Serve as the chairperson of the STAAB.
- h. Field Organization Managers.
 - (1) Ensure applicable requirements of this Order are incorporated in all contracts involving activities associated with offsite shipments of MNSI.
 - (2) Provide periodic support to external organizations conducting oversight at field organizations and contractor sites/facilities.
 - (3) Conduct oversight of packaging and transportation safety programs under their cognizance in accordance with DOE O 226.1, *Implementation of Department of Energy Oversight Policy*, current version.
 - (4) Review QA programs related to packages of fissile and Type B quantities of MNSI for conformance with 10 CFR § 71, Subpart H.
 - (5) Ensure that DOE personnel are assigned and trained to oversee compliance with the requirements of this Order, and that oversight is performed and documented.
 - (6) Assign a representative to serve on the STPSC.
- i. Responsible Official for Secure Transportation.
 - (1) Ensure that OST prepares DSAs in accordance with Appendix A of this Order.
 - (2) Ensure that OST analyzes tie-down instructions for cargo configurations transported within the TSS.
 - (3) Manage and operate the TSS.
 - (4) Authorize alternatives from the Federal Motor Carrier Safety Regulations, 49 CFR §§ 350–399.

- (5) Define the frequency, content, and format of shipping requirement forecasts and TSR requirements.
- (6) Approve requests for variances to TSS scheduling requirements.
- (7) Assign a representative to serve on the STPSC and the STAAB.

j. NNSA Certifying Official (NNSA CO).

- (1) Approve or revoke OTAs, OTCs, and OTDs.
- (2) Review QA programs for certified packages of fissile and Type B quantities of MNSI meeting 10 CFR § 71, Subpart H.
- (3) Conduct periodic oversight of DOE contractor packaging and transportation activities per DOE O 226.1, current version.
- (4) Provide guidance to field organizations and contractors that prepare MNSI safety-basis documents (e.g., SARPs, TSRAs, and HARs).
- (5) Review and approve operating procedures related to packaging MNSI.
- (6) Appoint the federal chairperson and members of Transportation Safety Review Panels (TSRPs) and convene TSRPs.
- (7) Document results of package reviews in a SER.
- (8) Establish requirements and schedules for the approval process for OTCs, OTAs, OTDs, and NSEs and provide guidance to field organizations and contractors.
- (9) Maintain copies of all currently approved safety-basis documents and ensure OST-approved tie-down procedures are in place, including SERs, OTAs, OTCs, and OTDs.
- (10) Provide support to DOE organizations conducting oversight of packaging operations under this Order per DOE O 226.1, current version.

k. Deputy Administrator for Naval Reactors.

- (1) Implement and oversee all policies and practices pertaining to this Order for activities under the cognizance of the Naval Reactors Program.
- (2) Assign a representative to serve on the STPSC and the STAAB.

l. Contractors. Contractors with responsibility for packaging and transportation activities must:

- (1) Perform packaging and transportation of offsite shipments of MNSI in accordance with the requirements of this Order.

- (2) Perform periodic self-assessments of activities covered by this Order.
 - (3) Ensure that packages within the TSS without OST-approved tie-down procedures have tie-down procedures and associated analyses submitted to OST for approval before shipment.
 - m. Contracting Officer. For all applicable contracts and upon notification that a site/facility management contract is affected by this Order, the contracting officer(s) shall incorporate the requirements into the affected contract(s) via the “Laws, Regulations, and DOE Directives” clause of the contract, or through negotiation and modification, as appropriate.
6. INVOKED TECHNICAL STANDARDS. The following DOE technical standard is 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. DOE Standard (STD)-3009-2014, Preparation of Nonreactor Nuclear Facility Documented Safety Analysis. This DOE technical standard is required to be used for developing DSAs, except for deviations specifically identified in the Appendix to this Order.
 - b. DOE-NA-STD-3016-2023, *Hazard Analysis Reports for Nuclear Explosive Operations*. This DOE technical standard is required to be used for weapons response information.
7. DEFINITIONS.
- a. Authorized User. An organization authorized by the NNSA CO to use a fissile or Type B radioactive material package.
 - b. Documented Safety Analysis. The safety-basis document developed to achieve compliance with the safety-basis requirements of 10 CFR § 830.
 - c. Hazards Analysis Report. The safety-basis document supporting approval of an OTA. The HAR identifies the type and quantity of hazardous material, packaging, mode of transportation, tie-down procedures, and the risk the shipment poses to the health and safety of the public, workers, or the environment. The NNSA CO establishes the content and format of a HAR.

- d. Materials of National Security Interest. Strategic materials (hazardous materials used in the development, testing, production, and maintenance of nuclear weapons and other materials that have been designated as critical to the national security of the United States [U.S.]). The Deputy Administrator for Defense Programs may designate other strategic items as MNSI as necessary for the national security of the United States used in the development, testing, production, and maintenance of nuclear weapons and other materials that have been designated as critical to the national security of the United States. The Deputy Administrator for Defense Programs may designate other specific items as MNSI as necessary for the national security of the United States.
- e. National Security Exemption. An authorization governed by 10 CFR 871.1 and this Order, for air transportation of plutonium in a package that does not comply with 10 CFR 71.74. NNSA Defense Programs defines the content and format of an NSE.
- f. Nuclear Explosive. An assembly containing fissile and/or nuclear fusion materials and main charge high-explosive parts or propellants (i.e., a nuclear warhead or nuclear explosive test device) capable of producing a nuclear yield.
- g. Offsite. Any area within or outside the boundaries of a DOE site or facility to which the general public has free and uncontrolled access.
- h. Offsite Transportation Authorization. An NNSA authorization for approving the offsite shipment of packages that do not comply with the DOT HMR. OTAs are for packages containing non-fissile, less than Type B quantities of radioactive and other hazardous material that are MNSI. The OTA defines the authorized package and specifies handling and transportation requirements.
- i. Offsite Transportation Certificate. An NNSA certificate for approving offsite shipments of MNSI in fissile or Type B packages that meet 10 CFR § 71. The OTC defines the authorized package and specifies handling and transportation requirements.
- j. Offsite Transportation Direction. An NNSA authorization to approve the offsite shipment of MNSI in fissile or Type B packages that do not meet 10 CFR § 71. The OTD defines the authorized package and specifies handling and transportation requirements.
- k. Package. Packaging plus its hazardous material contents as presented for transport.
- l. Packaging. A receptacle and any other components that are important to the safe performance of the package. Packaging may consist of one or more receptacles, absorbent materials, spacing structures, thermal insulation, radiation shielding, service equipment for filling, emptying, venting and pressure relief, and devices for cooling or absorbing mechanical shocks. The conveyance, tie-down system, and auxiliary equipment may sometimes be designated as part of the packaging.

- m. Operating Procedures. Written procedures that implement the package operation requirements from Chapter 7 of the SARP or TSRA.
- n. Safety Analysis Report for Packaging. A document that follows NRC Regulatory Guide 7.9, as amended by NNSA CO guidance, that demonstrates the package complies with 10 CFR § 71.
- o. Safety Basis. This Order refers to several different types of documents generically as safety-basis documents (e.g., SARPs, TSRAs, and HARs), many of which need to be developed to obtain authorization of shipments of nuclear materials based on requirements established by the DOT, the NRC, and the DOE. Independent of these other safety-basis documents, the OST DSA is intended to be developed to achieve compliance with the safety-basis requirements of 10 CFR § 830.
- p. Safety Evaluation Report. The report prepared by DOE to document the sufficiency of the analysis in the safety-basis documents (i.e., SARP, TSRA, and HAR).
- q. Secure Transportation Asset Advisory Board. A senior management group chaired by the Principal Assistant Deputy Administrator for Military Applications, with membership from each participating Program Secretarial Officer and NNSA Deputy Administrator, which provides a forum to integrate the transportation organizational needs of all participants.
- r. Secure Transportation and Packaging Steering Committee. A group chaired by the NNSA Packaging Program Manager, with membership from all sites and program offices that participate in transportation of MNSI. The STPSC provides a forum to integrate the needs of all participants and elevate any needs that cannot be met to the STAAB for resolution.
- s. Transportation Safeguards System (TSS). A DOE system (equipment, personnel, procedures, etc.), federally managed and operated by the OST. It is used for the safe and secure movement of cargo requiring safeguards.
- t. Transportation Safety Review Panel (TSRP). A panel chaired by a federal employee and composed of subject matter experts who perform independent technical reviews of the safety-basis documents for fissile or Type B radioactive material packages.
- u. Transportation Shipping Request. A shipping request, provided by the shipper to the OST. The OST establishes the content and format of a TSR.
- v. Transportation System Risk Assessment. The safety-basis document that supports an OTD and NSE. The TSRA identifies why a compliant shipment cannot be made, the content, packaging, mode of transportation, tie-down procedures, and the risk the shipment poses to the health and safety of the worker, public, or environment. The NNSA CO establishes the content and format of a TSRA.

8. REFERENCES.

- a. Title XXXII of P.L. 106-65, “National Nuclear Security Administration Act,” as amended, established a separately organized agency within the Department of Energy.
- b. DOE Order 226.1, *Implementation of Department of Energy Oversight Policy*, current version.
- c. DOE Order 251.1, *Departmental Directives Program*, current version.
- d. DOE Order 414.1, *Quality Assurance*, current version.
- e. DOE Order 460.1, *Hazardous Materials Packaging and Transportation Safety*, current version.
- f. DOE Order 461.2, *Onsite Packaging and Transfer of Materials of National Security Interest*, current version.
- g. DOE Order 452.2, *Nuclear Explosive Safety*, current version.
- h. NRC Regulatory Guide 7.9, Standard Format and Content of Part 71 *Applications for Approval of Packages for Radioactive Material*.
- i. Title 10 CFR § 71, *Packaging and Transportation of Radioactive Material*.
- j. Title 10 CFR § 830, *Nuclear Safety Management*.
- k. Title 10 CFR § 871.1, “Air transportation of plutonium.”
- l. Title 49 CFR §§ 100–185, Pipeline and Hazardous Materials Safety Administration, Department of Transportation.
- m. Title 49 CFR §§ 350–399, Federal Motor Carrier Safety Regulations.
- n. DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23*, Nuclear Safety Analysis Reports.
- o. DOE-STD-1186-2004, *Specific Administrative Controls*.
- p. DOE-STD-3009-2014, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, Change Notice No. 3.
- q. DOE NA Standard 3016-2023, *Hazard Analysis Reports for Nuclear Explosive Operations*.

9. CONTACT. Questions concerning this Order should be addressed to the NNSA Office of Packaging and Transportation (505) 845-5360.

BY ORDER OF THE SECRETARY OF ENERGY:



JAMES P. DANLY
Deputy Secretary

APPENDIX A
PREPARATION METHODOLOGY FOR DOE/NNSA OFFICE OF SECURE
TRANSPORTATION'S DOCUMENTED SAFETY ANALYSIS

1. PURPOSE. Appendix A of Title 10 Code of Federal Regulations § 830 (10 CFR § 830), *Nuclear Safety Management*, identifies DOE Order 461.1, *Packaging and Transportation for Offsite Shipment of Materials of National Security Interest*, current version, or successor documents, as an approved methodology for developing a documented safety analysis (DSA) for the offsite transportation "...of nuclear explosives, nuclear components, Naval nuclear fuel elements, Category I and Category II special nuclear materials, special assemblies, and other materials of national security." This appendix describes an acceptable methodology for the Department of Energy (DOE)/National Nuclear Security Administration (NNSA) Office of Secure Transportation (OST) to use to develop and maintain a DSA that complies with the safety-basis requirements of 10 CFR § 830.
2. OBJECTIVE. This methodology was developed with consideration of both DOE nuclear facility safety requirements and DOT hazardous material transportation requirements. DOE/NNSA must not use limited nuclear safety resources to analyze operations that comply with applicable national consensus codes and U.S. regulations. The OST DSA must identify operations that are not compliant with DOT requirements and ensure those operations have been adequately analyzed and necessary hazard controls identified, commensurate with the level of hazards associated with OST offsite transportation operations.
3. SAFETY ANALYSIS METHODOLOGY. The methodology below describes how OST must comply with the safety-basis requirements of Subpart B of 10 CFR Part 830. The methodology encompasses: describing all offsite transportation operations; identifying DOT-required controls for hazardous material shipments; identifying specific operations that cannot comply with DOT requirements; analyzing those non-compliant operations; and identifying hazard controls necessary for safe operations beyond those required by DOT.
 - a. Performing Hazard Categorization. DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*, defines a methodology for hazard categorization and provides guidance on using a graded approach for development of safety analysis documents. OST should apply this standard where appropriate to determine the appropriate hazard category for its operations. A pre-determined category designation is not required; hazard categorization must reflect the actual risk profile of the operations as analyzed in the DSA.
 - b. Documented Safety Analysis. DOE-STD-3009-2014, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, Change Notice No. 3, is an approved methodology for demonstrating compliance with 10 CFR Part 830. DSAs developed by OST should leverage the requirements of DOE-STD-3009-2014 where appropriate with specific deviations identified in this Appendix.

- c. Defining the Scope of Work. The DSA must define the scope of the OST mission as it relates to the offsite transportation of nuclear explosives, nuclear components, Naval nuclear fuel elements, Category I and Category II special nuclear materials, special assemblies, and other MNSI. All OST offsite transportation operations fall into one of three categories: nuclear explosives shipments, risk-based non-DOT-compliant shipments, or DOT-compliant shipments. The DSA must identify the subset of operations that cannot comply with DOT requirements and describe those operations in detail.
- d. Identifying and Analyzing Hazards. Shipping organizations are responsible for identifying and analyzing hazards associated with shipments that comply with DOT requirements, as described in Section 4 of this Order. Because compliance with DOT requirements provides adequate protection of workers and the public from hazards associated with transportation of hazardous materials, analysis of those operations does not need to be included in a DSA. The identification and analysis of hazards associated with shipments that do not comply with DOT requirements, including nuclear explosives shipments and other risk-based non-DOT-compliant shipments, must be included in the DSA. All non-DOT-required structures, systems, and components (SSCs) identified in the hazard analysis that are necessary for adequate protection of workers must be categorized as “safety SSCs.”
- e. Weapon Response Information. Given the unique hazards associated with operations involving nuclear explosives, weapons response information is used to demonstrate that identified hazard controls are sufficient to ensure adequate protection of workers and the public for hazard scenarios in which the hazard cannot be eliminated or adequately mitigated. Weapon response information includes the probability of hazardous material dispersal, aerosolized dispersal (AD), inadvertent nuclear detonation (IND), or worker safety consequence given a specific hazard environment. As needed, OST must follow the processes defined in DOE-NA-STD-3016-2018, Hazard Analysis Reports for Nuclear Explosive Operations, for requesting and using weapons response information.
- f. Accident Analysis. For transportation activities that do not comply with DOT requirements, the DSA must include analysis of the bounding accidents (design-basis accidents [DBAs]). The DSA need not include analysis of consequences for DBAs involving AD or IND of nuclear explosives; rather, the DSA must assume that these accidents will challenge the Evaluation Guideline (EG) of 25 rem as established in DOE-STD-3009-2014. Because many AD and IND scenarios cannot be eliminated or their consequences adequately mitigated, prevention is typically relied upon rather than mitigation, and analysis of mitigated consequences for these scenarios is unnecessary. Accident analysis must identify the complete set of controls and recommend any new controls necessary to lower accident likelihood.

- g. Hazard Controls and Safety Management Programs. Per DOE-STD-3009-2014, the DSA must identify hazard controls necessary to ensure adequate protection of workers and the public, demonstrate the adequacy of these controls, and define the process for maintaining them. Given the proximity of OST offsite transportation operations to the public, distinctions between controls that protect workers versus the public are unnecessary. The DSA must distinguish between DOT-required hazardous material SSCs and NNSA-regulated safety SSCs. Non-DOT-required SSCs, the failure of which could result in consequences exceeding EGs, or the preventive or mitigating function of which is a major contributor to defense in depth or worker safety, must be designated as “safety SSCs.” Administrative controls with safety importance equivalent to engineered controls must be identified and developed as specific administrative controls per DOE-STD-1186-2004, *Specific Administrative Controls*. The DSA must include technical safety requirements necessary to ensure safety SSCs are available to fulfill their credited safety functions and must define the safety management programs necessary for safe operations, including quality assurance, procedures, maintenance, personnel training, conduct of operations, emergency preparedness, fire protection, radiation protection, and criticality safety.
- h. Approval and Updates. OST must submit the DSA to the Safety Basis Approval Authority, which will formally document approval in a safety evaluation report and may require additional operational controls or constraints to be included in the safety basis. The DSA must be kept current to reflect changes in work or hazards.
- i. Transportation Authorizations and the Unreviewed Safety Question Process. 10 CFR 830.203 requires OST to establish, implement, and take actions consistent with an unreviewed safety question (USQ) process. OST must submit its USQ procedure to the Safety Basis Approval Authority for approval. The USQ process must be used to evaluate (a) any new shipments that do not comply with DOT requirements and were not previously evaluated in the OST DSA; and (b) proposed changes to equipment or procedures associated with shipments previously evaluated in the OST DSA.

ATTACHMENT 1
CONTRACTOR REQUIREMENTS DOCUMENT
DOE ORDER 461.1C, *PACKAGING AND OFFSITE TRANSPORTATION OF*
MATERIALS OF NATIONAL SECURITY INTEREST

This Contractor Requirements Document (CRD) establishes requirements for those contractors whose contracts implicitly or explicitly involve packaging or transportation of offsite shipments of materials of national security interest (MNSI).

To the extent a contractor is regulated by the Nuclear Regulatory Commission (NRC), a state under an agreement with the NRC (Agreement State), or the Department of Transportation (DOT), nothing in this CRD relieves the contractor of having to comply with any applicable regulatory requirements.

Regardless of the performer of the work, contractors are responsible for compliance with the requirements of this CRD. Contractors are responsible for flowing down the requirements of this CRD to subcontracts at any tier to the extent necessary to ensure the contractor's compliance with the requirements. In doing so, the contractor must not unnecessarily or imprudently flow down requirements to subcontracts. That is, the contractor must: (1) ensure that it and its subcontractors comply with the requirements of this CRD, and (2) incur only costs that would be incurred by a prudent person in the conduct of a competitive business.

All contractors with this CRD incorporated in their contracts must comply with the following requirements to support offsite shipment of MNSI:

1. General Requirements for Shipments.

- a. Contractors must perform packaging and transportation of offsite shipments of MNSI in accordance with DOT Hazardous Materials Regulations (HMRs), 49 CFR Parts 171–180, and with NRC regulations in 10 CFR Part 71, except where an alternative is specified in this CRD.
- b. Shipments prepared and performed according to the DOT HMR should be evaluated for shipment via an approved commercial carrier unless security requirements dictate use of the Transportation Safeguards System (TSS).
- c. Shipments which cannot be prepared according to the DOT HMR must be transported via the TSS.
- d. Handling and transportation of nuclear explosives is conducted under DOE O 452.2, *Nuclear Explosive Safety*, current version.

2. Alternative Requirements for Shipments.

- a. An OTC is required for shipments of fissile or Type B quantities of radioactive material where packages meet 10 CFR Part 71 requirements.

- b. Contractors requesting an OTC must submit an application to the NNSA Certifying Official (NNSA CO), at least 9 months prior to the need date. The application must include a SARP and an OST-approved tie-down procedure.
- c. OTCs may be renewed following the process described in this section.
- d. Prior to first use, contractors must submit a written request, through the Field Organization Manager, to the NNSA CO, requesting to become an Authorized User. The request must be supported by:
 - (1) Site-specific operating procedures.
 - (2) Site-specific QA program that meets 10 CFR Part 71, Subpart H.
- e. Authorized Users must maintain and use current copies of the SARP and OTC.
- f. An OTA is required for shipments of non-fissile, less than Type B quantities of MNSI, where the packages will not meet the requirements of the DOT HMR.
- g. Contractors requesting an OTA must submit an application to the NNSA CO. The application must be submitted at least 2 months prior to the OTA need date, and must be supported by:
 - (1) An HAR documenting the risk the shipment poses to the health and safety of the worker, public, or environment, and
 - (2) OST-approved tie-down procedures for the package.
- h. An OTD is required for fissile or Type B quantities of MNSI where the package will not meet the requirements of 10 CFR § 71. Prior to developing the transportation system risk assessment (TSRA), contractors must submit a request for approval to proceed to their respective NNSA program office.
- i. Contractors must submit their OTD application through their respective NNSA program office. The application must be submitted to the NNSA CO at least 9 months prior to the shipping need date. The OTD application must be supported by:
 - (1) Deputy Administrator-approved request to proceed with the OTD application.
 - (2) TSRA that documents the risk the shipment poses to the health and safety of the worker, public, or environment.
 - (3) OST-approved tie-down procedures for package.

- j. Prior to first use, contractors must become an Authorized User. Contractors must submit a written request to the NNSA CO through the Field Organization Manager for review and approval. The request must be supported by site-specific operating procedures.
 - k. Authorized Users must maintain and use current copies of the TSRA and OTD.
3. Quality Assurance.
- a. Contractors performing design, testing, fabrication, procurement, inspection, operations, or maintenance for certified Type B and fissile materials packaging must perform those activities under a quality assurance program that meets 10 CFR Part 71, Subpart H. Contractors must submit their quality assurance program, through the Field Organization Manager, to the NNSA CO for approval.
 - b. Contractors that perform functions for all other radioactive and hazardous materials packaging must perform those operations under a QA program that meets DOE O 414.1, *Quality Assurance*, current version, approved by the responsible Field Organization Manager.
4. Transportation Safeguards System Shipment.
- a. Contractors must submit their shipment needs in a transportation shipping request (TSR) no less than 60 days prior to material availability date, with additional updates submitted 30 days and 7 days prior to shipment.
 - b. Prior to TSS shipment, contractors must ensure current shipping authorizations (OTA, offsite transportation certificate, OTD, or shipping papers) are available, the receipt site is authorized to take custody, and the TSR is final.
 - c. Requests for significant variances to the TSS schedule (TSR requirements) must be submitted per the shipping forecast request procedure.
 - d. Unless specifically directed by DOE, contractors preparing shipments of MNSI for the TSS need not follow the placarding requirements of 49 CFR Part 172 Subpart F.
 - e. Contractors who request shipment of packages within the TSS that do not have OST-approved tie-down procedures must submit the tie-down procedures and any associated analysis to ensure cargo compatibility with the TSS secure transporter, to OST for approval.
 - f. Contractors must ensure that their organizations perform periodic self-assessments of activities covered by this CRD.
5. Training. All personnel who support or perform packaging and transportation operations must be appropriately trained and qualified and must maintain auditable training records in accordance with approved NNSA or site-specific records schedule.