



Southern Ohio Cleanup Company LLC

**TRANSPORTATION SAFETY DOCUMENT
FOR THE ON-SITE TRANSPORT OF HAZARDOUS MATERIAL
AT THE PORTSMOUTH GASEOUS DIFFUSION PLANT**

**U. S. Department of Energy
Portsmouth/Paducah Project Office
and
Southern Ohio Cleanup Company LLC**

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Southern Ohio Cleanup Company LLC
Managing
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Portsmouth Gaseous Diffusion Plant
Piketon, Ohio

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APPROVALS**Southern Ohio Cleanup Company LLC****Transportation Safety Document for the On-Site Transport of Hazardous Material
at the Portsmouth Gaseous Diffusion Plant**

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ACRONYMS/DEFINITIONS

Always Safe Mass	Uranium-235 (²³⁵ U) mass that is ≤ 45% of the minimum critical mass.
ANSI	American National Standards Institute
BIO	Basis for Interim Operations
CAAS	Criticality Accident Alarm System
CFR	Code of Federal Regulations
Commercial Driver's License (CDL)	<p>A license issued by a State or other jurisdiction in accordance with the standards contained in 49 CFR Part 383, <i>Commercial Driver's License Standards; Requirements and Penalties</i>, to an individual which authorizes the individual to operate a class of a commercial motor vehicle (CMV). Drivers are required to obtain and hold a CDL if they operate in commerce and if they drive a vehicle that meets any of the classifications of a CMV described below:</p> <ul style="list-style-type: none"> • Class A – Any combination of vehicles with a gross vehicle weight rating (GVWR) of 26,001 or more pounds (lbs.), provided the GVWR of the vehicle(s) being towed is in excess of 10,000 lbs. • Class B – Any single vehicle with a GVWR of 26,001 or more pounds, or any such vehicle towing a vehicle not in excess of 10,000 lbs. GVWR. • Class C – for the purposes of this document, a vehicle not meeting the Class A or B requirements, but which carries hazardous materials in an amount requiring placarding in accordance with United States (U.S.) Department of Transportation (DOT) requirements. Also transports at least 16 passengers (including driver). <p>The following endorsements and restrictions apply to CDLs:</p> <ul style="list-style-type: none"> • H (Hazardous Materials) Endorsement – Authorizes the driver to drive a vehicle transporting hazardous materials in an amount requiring placarding in accordance with DOT requirements (but not tank vehicles). • X (Tanker <u>and</u> Hazardous Materials) Endorsement – Authorizes the driver to drive tank vehicles transporting hazardous materials in a quantity requiring placarding in accordance with DOT requirements. <p>For the purposes of this document, a CDL is required for operation of a CMV carrying hazardous material on-site and CMV drivers who carry hazardous materials are required to have the “H” or “X” endorsement as applicable.</p>
Commercial Motor Vehicle (CMV)	A motor vehicle or combination of motor vehicles used in commerce to transport passengers or property if the motor vehicle (a) has a gross combination weight rating of 11,794 kg (kilograms) or more (26,001 lbs. or more) inclusive of a towed unit(s) with a GVWR of more than 4,536 kg (10,000 lbs.); (b) has a GVWR of 11,794 kg or more (26,001 lbs. or more); (c) is designed to transport 16 or more passengers, including the driver; or (d) is of any size and is used in the transportation of hazardous materials as defined in this section (and in accordance with 49 CFR § 171.8, <i>Definitions and abbreviations</i>).
Control Measures	For on-site transfers or movements, are used to ensure packages are not exposed to transport conditions more severe than those experienced in off-site transportation.

CRD	Contractor Requirements Document
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DOT-Compliant Packaging	Packaging that meets the regulations of DOT for off-site shipment.
DOT Equivalent Packaging	Packaging that can be shown conclusively to provide performance equivalent to packaging meeting the requirements of DOT for off-site shipment. Packaging falling into this category will generally be a slight modification of a DOT-compliant packaging or a Defense Programs packaging. An example may be a package approved by the DOE Office of Licensing or the National Nuclear Security Administration Service Center's Packaging Certification Division.
DOT Terms and Definitions	Specific definitions can be located in 49 CFR Chapter I (Parts 105–199), <i>Pipeline and Hazardous Materials Safety Administration, Department of Transportation</i> .
Driver	For the purposes of this document, a driver is the person who operates a vehicle that carries hazardous material.
DSA	Documented Safety Analysis
DUF₆ Conversion Facility	Depleted Uranium Hexafluoride Conversion Facility
ELS	Equivalent Level of Safety
EMS	Emergency Management System
EPA	U.S. Environmental Protection Agency
ERG	Emergency Response Guide
Excepted	Packaging which meets the requirements of 49 CFR § 173.24, <i>General requirements for packagings and packages</i> ; § 173.24a, <i>Additional general requirements for non-bulk packagings and packages</i> ; § 173.410, <i>General design requirements</i> ; or § 174.453, <i>Fissile materials – exceptions</i> (for fissile material).
Facility	A structure or location that is uniquely identified by description or number at the PORTS site. A facility will have a designated facility manager and a defined boundary.
FMCSR	Federal Motor Carrier Safety Regulations
FMCSR Terms and Definitions	Specific definitions can be located in 49 CFR Chapter III (Parts 300–399), <i>Federal Motor Carrier Safety Administration, Department of Transportation</i> .
G	Guide
gal.	Gallon
GVWR	Gross Vehicle Weight Rating

Hazardous Material	As referenced throughout this document, includes all hazardous materials as defined by DOT in 49 CFR § 171.8. This includes hazardous substances; marine pollutants; materials designated as hazardous in the Hazardous Materials Table of 49 CFR § 172.101, <i>Purpose and use of the hazardous materials table</i> ; and materials that meet the defining criteria for hazard classes and divisions in 49 CFR Part 173, <i>Shipper – General Requirements for Shipments and Packagings</i> .
Hazardous Waste	Any material that is subject to the hazardous waste manifest requirements of the Environmental Protection Agency (EPA) specified in 40 CFR Part 262, <i>Standards Applicable to Generators of Hazardous Waste</i> .
HAZCOM	Hazard Communications
HAZWOPER	Hazardous Waste Operations and Emergency Response
HMR	Hazardous Material Regulations
IC	Incident Commander
Industrial Equipment (Powered Industrial Trucks)	Any mobile power-propelled truck used to carry, push, pull, lift, stack, or tier materials. Examples include fork-lifts, pallet jacks, low lift jacks, cylinder haulers, stackers, etc. Earth moving and road hauling trucks, golf carts, bucket trucks, and licensed automobiles are not included in the definition.
Industrial Package (IP-1 or IP-2)	Packaging that, together with its low specific activity (LSA) material or surface contaminated object (SCO) contents, meets the requirements of 49 CFR § 173.410 and § 173.411, <i>Industrial packages</i> .
ISMS	Integrated Safety Management System
kg	Kilograms
LA	Limited Area
lbs.	Pounds
LSA	Low Specific Gravity
Marking	A descriptive name, identification, weight, specification, or United Nations (UN) marks, or combination thereof, required by 49 CFR Subchapter C, <i>Hazardous Materials Regulations</i> , on the outer packagings of hazardous material.
Material of Trade (MOT)	A hazardous material, other than a hazardous waste, that is carried on a motor vehicle (1) for the purpose of protecting the health and safety of the motor vehicle operator or passengers, (2) for the purpose of supporting the operation or maintenance of a motor vehicle (including its auxiliary equipment), or (3) by a private motor carrier (including vehicles operated by a rail carrier) in direct support of a principal business that is other than transportation by motor vehicle.
Movement	Refers to changes in location of hazardous material that are between noncontiguous facility boundaries (i.e., building to building, facility to facility) and within the contiguous boundary defined by the scope of one or more Safety Basis (SB) documents.
NCS	Nuclear Criticality Safety
NCSA	Nuclear Criticality Safety Approval
NCSE	Nuclear Criticality Safety Evaluation

Non-Routine Transfers	Any transfer of hazardous material that does not have an established, evaluated, documented, and approved method to perform the transfer.
NQA	National Quality Assurance
NRC	U.S. Nuclear Regulatory Commission
NS	Norfolk Southern Railway
O	Order
Off-Site	Any area within or outside a DOE site to which the public has free and unlimited access.
On-Site	Any area within boundaries of a DOE site or facility that is fenced or otherwise access-controlled.
OSHA	Occupational Safety and Health Administration
OSWDF	On-Site Waste Disposal Facility
P	Policy
Packaging	A receptacle and any other components or materials necessary for the receptacle to perform its containment function in conformance with the minimum packing requirements of 49 CFR § 171.8 for radioactive material packaging and 49 CFR § 173.403, <i>Definitions</i> .
Pu	Plutonium
PHA	Process Hazard Analysis
PORTS	Portsmouth Gaseous Diffusion Plant
PPA	Property Protection Area
Procedure	A document written and vetted through document control.
PSM	Process Safety Management
PSS	Plant Shift Superintendent
QA	Quality Assurance
Radioactive Material	Any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in the table in 49 CFR § 173.436, <i>Exempt material activity concentrations and exempt consignment activity limits for radionuclides</i> , or values derived according to instructions in 49 CFR § 173.433, <i>Requirements for determining basic radionuclide values, and for the listing of radionuclides on shipping papers and labels</i> .
Radioactive Mixed Waste	A waste material that is radioactive as well as containing other hazard constituents.
RCRA	Resource Conservation and Recovery Act
RMDC	Records Management Document Control
Routine Transfers	Any transfer of hazardous material that (a) has an established method to perform the transfer and (b) the method has been evaluated, documented, and approved.
SB	Safety Basis

SCO	Surface Contaminated Object
SDS	Safety Data Sheet (formerly Material Safety Data Sheet [MSDS])
SNM	Special Nuclear Material (i.e., Plutonium [Pu]-239, Pu-241, U-233, U-235)
SODI	Southern Ohio Diversification Initiative
STD	Standard
TPD	Training Position Description
Transfer	In this document, refers to all changes in location of hazardous material between noncontiguous facility boundaries (i.e., building to building, facility to facility) when the material is on any type of transport vehicle that is listed in Section 2.2, <i>Vehicles</i> , of this Transportation Safety Document (TSD).
TRM	Training Requirements Matrix
TSCA	Toxic Substances Control Act
TSD	Transportation Safety Document
TSR	Technical Safety Requirement
U	Uranium
UF₆	Uranium Hexafluoride
U.S.	United States
USQD	Unreviewed Safety Question Determination
Work Package	In this document, includes any document or set of documents used in the performance of work in the field.
X-780 HA	DND-HA-780-00001, <i>Hazard Analysis for the Operations of the Portsmouth Gaseous Diffusion Plant On-Site Waste Disposal Facility</i>

BACKGROUND

This document identifies the manner in which Portsmouth Decontamination & Decommissioning (D&D) Project meets the on-site requirements of U.S. Department of Energy (DOE) Order (O) 460.1D, *Hazardous Materials Packaging and Transportation Safety*. The D&D Project conducts on-site transfer and movement operations of hazardous material at the Portsmouth Gaseous Diffusion Plant (PORTS). On-site transfers and movements are not considered to be in commerce if they occur within an area the public does not have access to; therefore, they are not regulated by the U.S. Department of Transportation (DOT) Hazardous Materials Regulations (HMR) or the Federal Motor Carrier Safety Regulations (FMCSR) within the limited area (LA) or restricted boundaries of PORTS and/or on property owned and maintained by DOE where the public has been denied access. Transportation of hazardous material introduced into commerce on public access roadways is performed in compliance with DOT regulations.

D&D Project Contractor is the DOE contractor responsible for managing the D&D activities at PORTS. D&D Project personnel or subcontractors perform these activities. Transfer or movement of hazardous materials on-site is executed on a daily basis. On-site transfer or movement activities are not subject to the regulations of 49 Code of Federal Regulations (CFR), *Transportation*; however, these activities are subject to DOE Orders; company policies, plans, and procedures; and other applicable state and federal regulations.

D&D Project Contractor operations under 10 CFR Part 830, *Nuclear Safety Management*, Subpart B, *Safety Basis Requirements*, are performed in accordance with:

- POEF-DND-001, *Basis for Interim Operation (BIO) of the Former Uranium Enrichment Facilities (FUEF) at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (also referred to as the BIO)
- POEF-DND-002, *Technical Safety Requirements for Former Uranium Enrichment Facilities (FUEF) at the Portsmouth Gaseous Diffusion Plant Piketon, Ohio* (also referred to as the TSR)
- DND/PORTS-444, *Documented Safety Analysis for the X-345 and X-744G Facilities at the Portsmouth Gaseous Diffusion Plant Piketon, Ohio* (also referred to as the DSA)
- DND/PORTS-446, *Technical Safety Requirements for X-345 and X-744G Facilities at the Portsmouth Gaseous Diffusion Plant Piketon, Ohio* (also referred to as the TSR)
- POEF-DND-020, *Safety Management Program Description for Southern Ohio Cleanup Company LLC Decontamination & Decommissioning Project*
- POEF-DND-024, *Documented Safety Analysis for Decontamination and Decommissioning for the X-330 and X-333 Process Buildings, Portsmouth Gaseous Diffusion Plant, Piketon, Ohio* (also referred to as the DSA)
- POEF-DND-025, *Technical Safety Requirements for Decontamination and Decommissioning of the X-330 and X-333 Process Buildings Portsmouth Gaseous Diffusion Plant Piketon, Ohio* (also referred to as the TSR)
- EVAL-NS-2024-0065, *Evaluation of the Safety of the Situation (ESS) and Justification for Continued Operations (JCO) for Parcel 1 and Parcel 2 Land Transfers*

D&D Project Contractor also performs transportation activities at the On-Site Waste Disposal Facility (OSWDF). These transportation activities at the OSWDF and the associated haul road are analyzed in DND-HA-780-00001, *Hazard Analysis for the Operations of the Portsmouth Gaseous Diffusion Plant On-Site Waste Disposal Facility* (also referred to as X-780 HA).

1. PURPOSE, SCOPE, AND APPLICABILITY

1.1 Purpose

The purpose of this Transportation Safety Document (TSD) is to describe the methodology involved in the safe packaging, transfer, and/or movement of hazardous material on-site at the PORTS. This TSD identifies the approach by which the D&D Project meets on-site requirements in accordance with DOE O 460.1D.

The contractor must perform hazardous materials transfers in accordance with 49 CFR Parts 171–180 and the relevant federal regulations governing each mode of transportation, or the site- or facility-specific operations or field office-/site office-approved TSD that describes the methodology and compliance process to meet equivalent safety for any deviation from the requirements of 49 CFR Parts 171–180 and 49 CFR Parts 350–399. For on-site transfers involving nuclear facility Hazard Category 2 or 3 quantities, the TSD must comply with the safety basis (SB) requirements of 10 CFR Part 830, Subpart B.

As an alternative to the requirements of this TSD, these packaging, transfers, and/or movement operations may be made in full compliance (i.e., shipping papers, labels, placards, emergency response guide [ERG] for the material, and the driver has their hazardous material endorsement) with DOE regulations or under properly authorized DOT special permits or exceptions, as applicable. Implementation of this TSD also will provide protection for the environment, property, and personnel, as required by the Integrated Safety Management System (ISMS).

1.2 Scope

The contents of this TSD are intended to apply to the movement or transfer of hazardous material, not only within the LA and property protection area (PPA), but also on other areas of the PORTS site. All on-site transfers of hazardous material will be between PORTS facilities and use roadways that are within the outer security boundary. Access to areas on the PORTS site typically available to the public may be temporarily modified by use of barriers and/or protective force personnel to restrict public access during movements of hazardous material. By restricting public access, such movements of hazardous material are not subject to the DOT HMR or FMCSR and so the requirements of this TSD will apply. Otherwise, areas where the public has unrestricted access are considered in commerce and full compliance (i.e., shipping papers, marking, labels, placards, ERG for the material, and the driver has their hazardous material endorsement) is required.

1.3 Applicability

This TSD applies to all activities involving the on-site transfers or movements of hazardous material between, to, or from the D&D Project controlled facilities at PORTS that are not in full compliance with DOT requirements by D&D Project personnel or subcontractors. All hazardous material movements are performed utilizing DND-WM-PRO-00272, *On-Site Transportation of Hazardous Materials*. This includes activities performed by subcontractors and other site organizations performing activities in areas controlled by D&D Project. These activities include hazardous materials movements on site roads and the site rail system, except as noted below.

This TSD does not apply to hazardous material transported in full compliance with DOT requirements or transport of non-hazardous materials. However, all transport activities shall meet applicable SB requirements.

On-site transfers of uranium will meet the requirements of this TSD which specifies compliance to approved Nuclear Criticality Safety Approvals (NCSAs) or Nuclear Criticality Safety Evaluations (NCSEs) for the material being transferred.

On-site rail operations that are the responsibility of the Depleted Uranium Hexafluoride (DUF₆) Conversion Facility contractor are beyond the scope of this TSD.

1.4 General Transportation System Description

The transportation system consists of a containment device (i.e., package), as applicable; securement; and a transport vehicle. The containment system can support handling operations, protect an article from physical damage, and/or prevent the release of hazardous material as well as provide radiological controls and/or shielding. The securement will provide protection by maintaining the containment system or item on the transport vehicle.

The load and securement strategy for hazardous material transported on-site on commercial motor vehicles (CMVs) may be documented within the appropriate work package(s), procedures, or provided to project personnel by a transportation specialist as necessary. Drivers have the responsibility to ensure that each load is properly secured in accordance with the FMCSR. However, if deemed necessary, a transportation specialist shall provide guidance and final approval authority. A transportation specialist shall be contacted for guidance if needed, especially for non-routine movements.

Hazardous material transported on industrial equipment (forklifts, carts, cylinder haulers, etc.) will be done per approved procedures and/or work package instructions. The operator is responsible to ensure each load is properly secured.

In all cases, transport vehicles (conveyances) will be maintained to provide a safe, operable means of transport. Only properly trained and qualified personnel may operate transport vehicles.

1.5 Responsibilities for Transportation Safety Document (TSD)

The D&D Project is responsible for the technical content, preparation, and maintenance of this TSD. The Transportation Program Manager is responsible for the preparation and maintenance of the TSD. The TSD implementing the D&D Project performance documents are prepared using the D&D Project performance document process and controlled using the D&D Project Records Management Document Control (RMDC) procedure(s).

2. SITE DESCRIPTION

PORTS is presently a site with a number of operating entities under contract to DOE. The D&D Project Contractor is responsible for the demolition and disposal of the gaseous diffusion process facilities, equipment, related process buildings, and associated ancillary facilities. In addition to D&D Project operations and activities, other activities and contractors on the PORTS site include: the DUF₆ Conversion Facility and associated cylinder storage yards; Site Infrastructure Management contractor; and Centrus Energy and associated the Lead Cascade and American Centrifuge Plant facilities.

DOE has also transferred land parcels which are considered public land to Southern Ohio Diversification Initiative (SODI) for development and are not part of the DOE site. See Figure 2, *SODI Public Land Parcels – Current and Proposed*, for transferred parcels and parcels proposed for transfer.

2.1 Portsmouth Gaseous Diffusion Plant (PORTS) Location, Access, and Boundaries

PORTS is located in rural Pike County, a sparsely populated area in south central Ohio. The facility is about 70 miles south of Columbus, Ohio and 75 miles east of Cincinnati, Ohio, the two closest metropolitan areas. The cities of Portsmouth and Chillicothe, Ohio, are located approximately 25 miles from the facility (south and north, respectively).

The Scioto River Valley is 1 mile west of the facility. The Scioto River is a tributary of the Ohio River and their confluence is approximately 20 miles south of PORTS. With the exception of the Scioto River floodplain, which is farmed extensively, the area around PORTS consists of marginal farmland and forested hills.

The specific location of PORTS (i.e., a central point of the facility near the PORTS former uranium enrichment facility [FUEF]) is latitude 39°0'30" N and longitude 83°0'00" W. In Universal Transverse Mercator coordinates, this location is N 4,319,410 m and E 326,829 m (Zone 17).

The PORTS facilities are located within the former PORTS site. The DOE reservation is shown in Figure 1, *DOE Reservation and PORTS Site Boundary*. Figure 1 also provides a colored outline view and location of the major facilities at the PORTS site in addition to other PORTS site entities.

Figure 1. DOE Reservation Boundary and PORTS Site

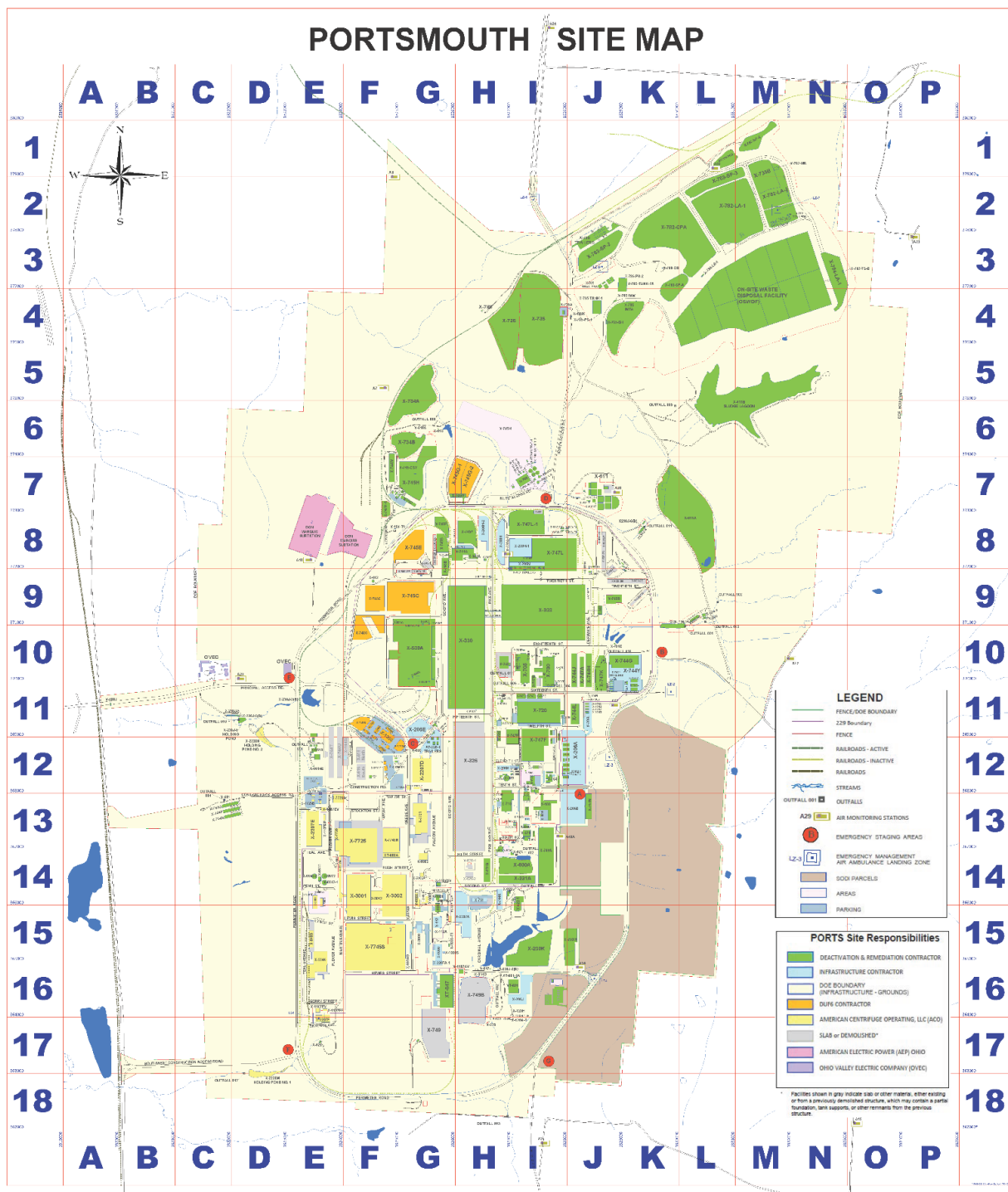
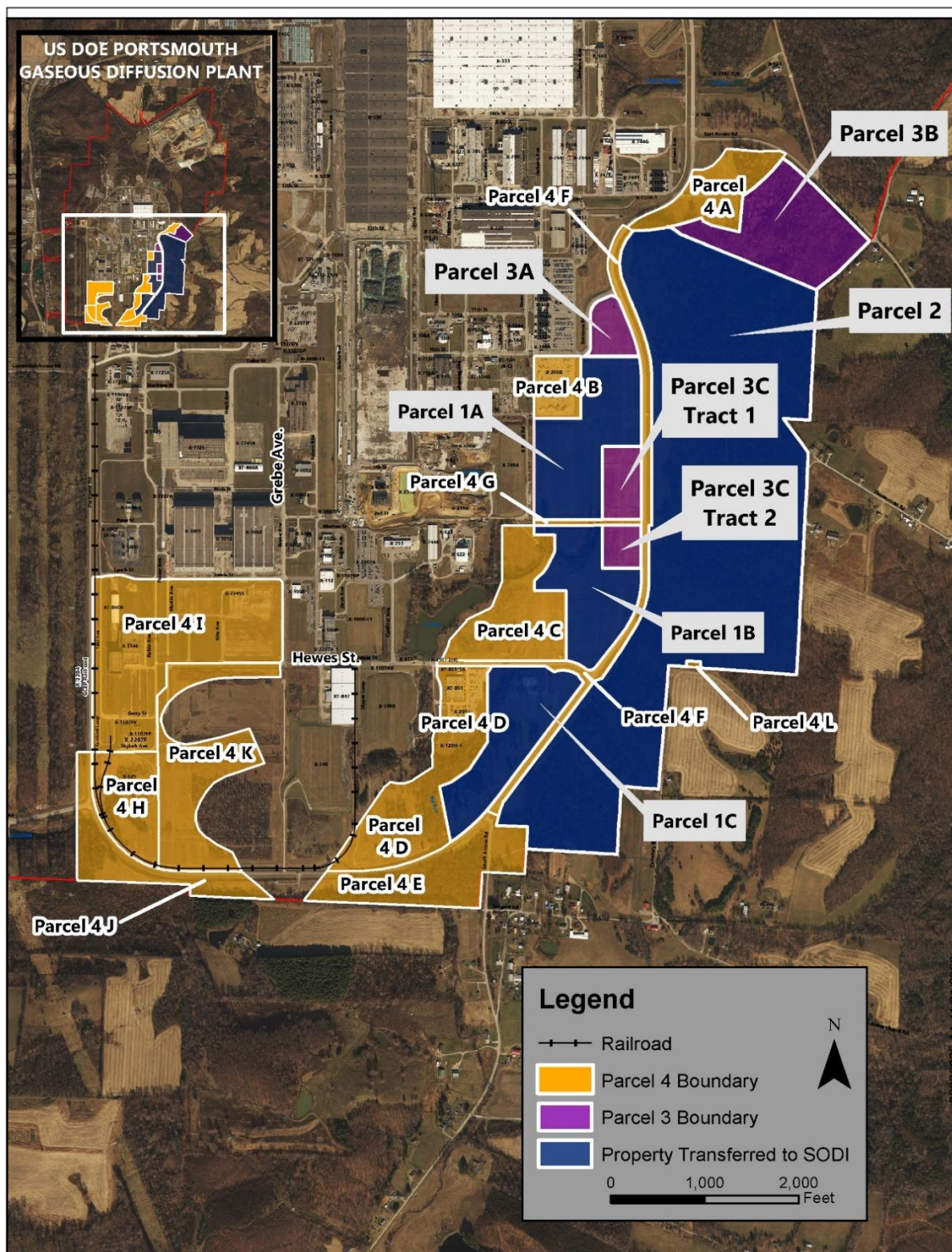


Figure 2. SODI Public Land Parcels – Current and Proposed



The site consists of facilities and areas that are 1) leased/subleased to Centrus and regulated by the U.S. Nuclear Regulatory Commission (NRC) in accordance with a license issued in accordance with 10 CFR Part 70, *Domestic Licensing of Special Nuclear Material*; or 2) retained by DOE (i.e., non-leased) and operated by DOE contractors in accordance with DOE regulations, orders, and standards.

2.1.1 On-Site Transportation and Transmission Systems

No U.S. or state highways enter the PORTS reservation. Vehicular traffic can enter the reservation through several access roads that intersect the plant's perimeter road; these roads are shown in Figure 1. Off-site transportation in the immediate vicinity of PORTS includes U.S. Highway 23, State Highways 124 and 32, and State Road 335.

Norfolk Southern Railway (NS) provides rail access to the PORTS site from the northwest.

On-site utility transmission systems include those for communications, water, electricity, natural gas, and wastewater. Discharge of wastewater is made to the Scioto River and its tributaries, Little Beaver Creek and Big Run Creek.

2.1.2 Site Boundary

The entire DOE reservation on which PORTS is located is marked and bounded by signs and fences, either chain link or barbed wire (in the wooded areas). Where roads cross the boundary, gates are in place to serve as barriers if needed. DOE controls activities in and regulates access to this reservation area. The DOE reservation and its boundaries are identified in Figure 1.

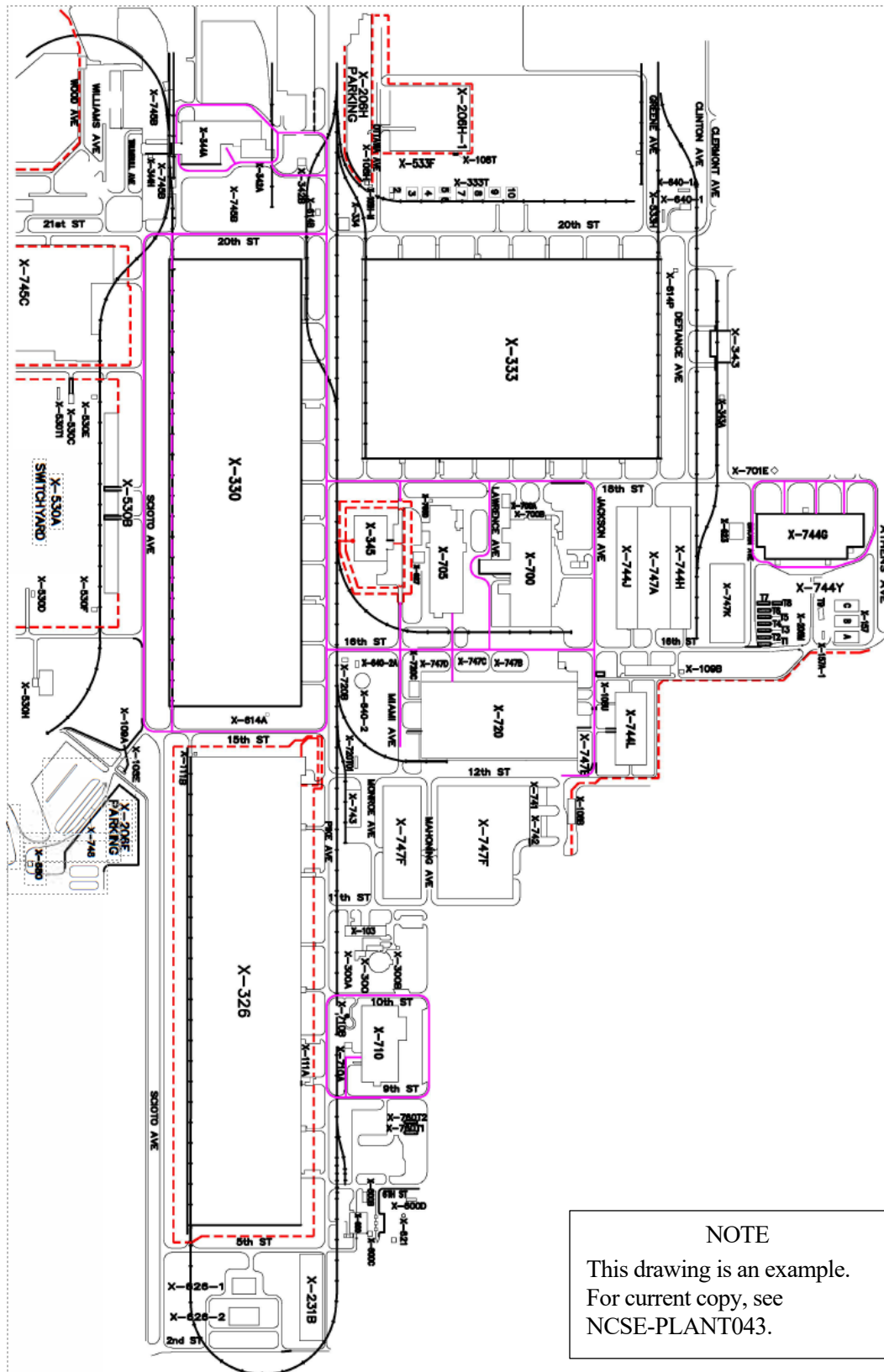
The D&D Project Contractor facilities are located within the next level of control – an LA and/or a PPA surrounded by a security fence. Access to buildings within this area is gained only with an appropriate badge. Activities in this area are limited to plant operation, maintenance, management, deactivation, decontamination, decommissioning, environmental restoration, and associated construction activities. The majority of on-site transfers of hazardous material are conducted inside of the LA or PPA. The PORTS Hazard Category 2 facilities are located within the LA or PPA.

The controlled area is as defined in 10 CFR Part 835, *Occupational Radiation Protection*, and is the area outside the restricted area but inside the site (reservation) boundary, access to which can be limited by the D&D Project for the purposes of plant protection, security, emergency preparedness, radiation protection, and transportation. This boundary is identified in Figure 1 (Perimeter Road).

On-site. 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 on-site 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. Additionally, road closures will be discussed with and coordinated with the public entity to minimize any issues for the proposed moves. (DOE O 460.1D)

Hazardous material covered by this TSD may be transferred using any plant roadway within the controlled secure area, except for greater than safe mass transfers of ^{235}U . Hazardous material transfers involving greater than an “always safe mass” ^{235}U are required to use plant roadways having criticality accident alarm system (CAAS) coverage, if not in full DOT compliance with respect to quantity limits and packaging, if possible, or separate analysis must be made. Figure 3, *CAAS Covered Roadways at PORTS*, shows a typical layout of the areas where CAAS coverage is provided on plant-site roadways. For the current approved map of CAAS coverage for plant-site roadways, see the latest revision of NCSE-PLANT043, *Nuclear Criticality Safety Evaluation for Fissile Material Transport*. Reference NCSE-PLANT028, *Nuclear Criticality Safety Evaluation for Removal and Handling of Planned Expeditious Handling Equipment*.

Figure 3. CAAS Covered Roadways at PORTS



2.2 Vehicles

Material covered by this TSD may be transferred using any plant roadway within the controlled secure area. Transport vehicles shall be maintained and operated in compliance with the FMCSR or Occupational Safety and Health Administration (OSHA), as indicated. The FMCSR provides for safe means of transportation in commerce (off-site). Compliance with these regulatory requirements on-site will ensure safe transfer or movement conditions. Unless the material is being used under the material of trade (MOT) exception, hazardous material shall not be transported in personal vehicles or in the passenger compartment of government-owned or commercial vehicles. Types of transport vehicles used on-site include, but are not limited to, the following:

- FMCSR Vehicles
 - Tanker truck > 10,000 lbs.
 - Semi-tractor > 10,000 lbs.
 - Tractor-trailer (semi) > 10,000 lbs.
 - Truck with trailer (non-semi) > 10,000 lbs.
 - Box truck/van truck > 10,000 lbs.
 - Chassis vehicle > 10,000 lbs.
 - Dump truck > 10,000 lbs.
 - Flatbed vehicle > 10,000 lbs.
 - Semitrailer > 10,000 lbs.
- OSHA Vehicles
 - Fork-truck/forklift
 - Industrial equipment (cylinder haulers, stackers, etc.)
 - Heavy duty equipment (articulated dump trucks, etc.)
- Company Vehicle Maintenance Program
 - Automobiles
 - Vans
 - Pickup trucks
 - Trucks < 10,000 lbs.

On-site transfer or movement conditions, historically, are less hazardous than those encountered in commerce. As a result, the transportation system can deviate from the FMCSR. This deviation can be accomplished through an equivalent means of safety. When operations deviate from the FMCSR, the equivalent safety requirements shall be addressed via work packages, procedures, other forms of peer reviewed written instructions, or within this document. Any deviations from the FMCSR shall be documented and approved by the Transportation Manager, unless contained in a flow down procedure implementing this TSD or SB documents.

There are specific deviations from the FMCSR that may be employed for the movements of hazardous materials on-site if the vehicle and driver do not fully comply with the FMCSR outlined below:

- Marked “Limited Use Vehicle, On-Site Only” in plain sight of the operator (i.e., on dashboard);
- Does not need to be registered with DOT or marked per 49 CFR § 390.21, *Marking of self-propelled CMVs and intermodal equipment*;
- Does not need a DOT annual inspection;

- Needs to be in an appropriate, documented preventative maintenance program;
- Needs to be inspected prior to each use and inspection documented;
- Needs to be inspected after each use and the inspection documented; and
- Needs to be driven by a qualified equipment operator, if industrial equipment, or otherwise driven by a person holding a commercial driver's license (CDL) Class A or B with either an H or X endorsement.

3. **ORGANIZATIONAL RESPONSIBILITIES**

This section identifies positions responsible for the planning, analysis, implementation, and approval process for the activities of this TSD.

3.1 **Hazardous Material Transfer Responsibilities**

- **D&D Project Workers** – Responsible for on-site hazardous material transfers and are trained to the applicable procedures and HMR as required.
- **Director Waste Management** – Has overall responsibility for the waste management program for the D&D Project, including transportation and packaging.
- **Facility Manager** – Approves transfers into or out of his/her assigned facilities and ensures inventory control is maintained within the SB for his/her facility.
- **Nuclear Safety Manager** – Responsible for maintaining the SB documents and evaluating changes to on-site hazardous material transfer and movement evolutions. The manager is responsible for assuring such changes are evaluated and approved, as required, in accordance with the unreviewed safety question determination (USQD) process.
- **Transportation Manager** – Responsible for maintaining, reviewing, concurring, and approving this TSD. When needed, or desired, the manager may perform the functions of the transportation specialist. The manager is responsible for approving equivalent and nonequivalent packaging configuration and FMCSR safety equivalencies. Additionally, the manager is also responsible for approving non-routine transfers or movements, prior to the transfer or movement commencing, and informing DOE.
- **Transportation Specialist** – Performs the duties as the shipper on behalf of DOE. These duties include providing shipping documents, marking/labeling/placarding, performing peer reviews, etc., as needed per site procedures. In addition, the transportation specialist is responsible for performing transportation oversight of D&D Project subcontractors and providing technical and transportation safety-related assistance to project personnel.

3.2 Independent Oversight

Assessment oversight is addressed by the D&D Project Assessment Program, a function within the Environmental, Safety, Health, & Quality (ESH&Q) directorate, which is independent from the organization responsible for hazardous material transfers. The assessment program is described in the Quality Assurance Program Description (QAPD) and provides for the planning, conducting, and coordination of assessments by program owners as well as independent parties. Hazardous material transfers related operational readiness reviews and readiness assessments, when needed, are driven through the Operations Programs section of the Nuclear Safety and Engineering directorate. These processes are conducted in accordance with ISMS descriptions, environmental management system descriptions, and the following regulations:

10 CFR Part 830, Subpart A, *Quality Assurance Requirements*; DOE O 414.1E, *Quality Assurance*; DOE Policy (P) 450.4A Chg 1 (MinChg), *Integrated Safety Management Policy*.

4. EXTERNAL REGULATIONS

4.1 Code of Federal Regulations (CFR)

Regulations issued by the various bureaus and agencies of the federal government are generally found in the CFR. The following documents relating to packaging and transportation are used as a basis for this on-site, graded approach to identification; packaging; hazard communications (HAZCOM); transportation; transfer or movement of hazardous material; and ISMS for the protection of the worker, public, and environment.

- 10 CFR Part 20, *Standards for Protection Against Radiation*
- 10 CFR Part 71, *Packaging and Transportation of Radioactive Material*
- 10 CFR Part 830, *Nuclear Safety Management*
- 10 CFR Part 835, *Occupational Radiation Protection*
- 10 CFR Part 851, *Worker Safety and Health Program*
- 29 CFR Part 1910, *Occupational Safety and Health Standards*, Subpart H, *Hazardous Materials*
- 29 CFR Part 1910, Subpart N, *Materials Handling and Storage*
- 29 CFR Part 1910, Subpart Z, *Toxic and Hazardous Substances*
- 29 CFR Part 1926, *Occupational Safety and Health Regulations for Construction*
- 40 CFR Part 61, *National Emission Standards for Hazardous Air Pollutants*
- 40 CFR Parts 260–265, *Environmental Protection Agency, Resource Conservation Recovery Act*
- 40 CFR Parts 700–789, *Environmental Protection Agency, Toxic Substance Control Act*
- 49 CFR Parts 40, 325, 350, and 355–399, *Federal Motor Carrier Safety Regulations*
- 49 CFR Parts 105–199, *Pipeline and Hazardous Materials Safety Administration*
- 49 CFR Parts 200–299, *Federal Railroad Administration*

4.2 Department of Energy Orders and Standards (DOE Os and DOE STDs)

Directives required by the DOE to be implemented for packaging and transportation are contained in DOE orders. Orders that are applicable to D&D Project personnel and subcontractors are as follows:

- DOE O 420.1C, Chg. 3 (LtdChg), *Facility Safety*
- DOE O 426.2A, Chg. 1 (AdminChg), Contractor Requirements Document (CRD), *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*
- DOE O 231.1B, Admin. Chg. 1, CRD, *Environment, Safety and Health Reporting*
- DOE O 435.1, Chg. 2 (AdminChg), CRD, *Radioactive Waste Management*
- DOE O 458.1, Chg. 4 (LtdChg), *Radiation Protection of the Public and the Environment*
- DOE O 460.1D, Chg. 1 (LtdChg), CRD, *Hazardous Materials Packaging and Transportation Safety*
- DOE O 460.2B, CRD, *Departmental Materials Transportation Management*
- DOE O 470.4C, CRD, *Safeguards and Security Planning*
- DOE O 471.1B, CRD, *Identification and Protection of Unclassified Controlled Nuclear Information*
- DOE O 472.2A, Chg. 1 (LtdChg), *Personnel Security*
- DOE O 473.1A, CRD, *Physical Protection Program*
- DOE O 474.2A, Chg. 1 (AdminChg), CRD, *Nuclear Material Control and Accountability*

4.3 Benchmark Standards and Equivalent Compliance

The DOT hazardous material packaging and transportation regulations in 49 CFR and the associated standards and guidance, although not directly governing of D&D Project on-site transfers, are considered “safe harbor” (is a provision granting protection from penalty or oversight if certain conditions are met) and appropriate benchmarks for demonstrating compliance with Federal regulations and DOE orders. For packaging and associated transfer evolutions either not covered by or not compliant with the requirements specified in the DOT regulations, demonstration of substantial equivalence (adequate safety) shall be considered sufficient to establish compliance with DOE requirements for the safe management of hazardous material transfers at PORTS. The methodology specified in this TSD for safety assessment and performance of on-site transfers of hazardous material at PORTS, supported by the analysis presented and referenced, provide a substantially equivalent safety envelope, and thus constitute compliance with the DOE requirements.

4.4 State and Local Regulations

There are no special requirements imposed by the State of Ohio or local regulations for on-site transfers.

5. SITE SPECIFIC STANDARDS, PROCEDURES, AND INSTRUCTIONS

The requirements for preparing, reviewing, approving, issuing, revising, and maintaining the D&D Project performance documents for all activities at PORTS are specified in the D&D Project procedures. These procedures provide the performance document processes to satisfy requirements for the following:

- 10 CFR § 830.122, *Quality assurance criteria.*, Criterion (d)(1), Criterion (d)(2), Criterion (e)(1)
- DOE Guide (G) 414.1-2B, Chg. 2 (AdminChg), *Quality Assurance Management Program Guide*
- DOE O 414.1E, *Quality Assurance*, Criterion 4(a) and Criterion 5(a)
- DOE-STD-1073-2016, *Configuration Management*

5.1 Packaging Standards

The codes and standards that support packaging standards; performance criteria; and design, fabrication, and quality elements identified in this chapter are the following:

- 10 CFR Part 71, *Packaging and Transportation of Radioactive Material* (standards for the NRC Type AF, Type B, and general license packagings)
- 49 CFR Part 173, *Shipper – General Requirements for Shipments and Packagings* (standards and requirements for the DOT packaging and exceptions)
- 49 CFR § 178.350, *Specification 7A; general packaging, Type A* (standards for the DOT 7A Type A package)
- American National Standards Institute (ANSI) Standard N14.5, *Radioactive Materials – Leakage Test on Packages for Shipment* (procedures for leak-testing of packages)
- USEC-651, latest revision, *Uranium Hexafluoride: A Manual of Good Handling Practices*, which includes the following basic Quality Assurance (QA) requirements:
 - ANSI N14.1, *Nuclear Materials – Uranium Hexafluoride – Packagings for Transport*
 - DOT 49 CFR § 173.474, *Quality control for construction of packaging*, and § 173.475, *Quality control requirements prior to each shipment of Class 7 (radioactive) materials*
 - National Quality Assurance (NQA)-1-2022, *Quality Assurance Requirements for Nuclear Facility Applications*
 - NRC 10 CFR Part 71, *Packaging and Transportation of Radioactive Material*, Subpart H, *Quality Assurance*, and 10 CFR Part 76, *Certification of Gaseous Diffusion Plants*
- DOE/RL--96-57, Rev. 0, Volume 1, *Test and evaluation document for DOT Specification 7A Type A packaging* (reference only)

5.2 Procedures

5.2.1 Site Procedures

The site-specific standards, procedures, and instructions applicable to PORTS on-site packaging and transfer activities are in place covering the topics listed below:

- Receipt, transport, and movement of radioactive materials
- Packaging hazardous materials for transport or transfer
- Guidelines for motor carriers
- Motor carrier safety compliance
- Implementation of the PORTS TSD for the on-site transfer of hazardous material
- Method of documenting exceptions/equivalencies to DOT compliance for packaging used on-site
- Preparing containers for off-site shipment
- Transfer of fissile materials using small diameter containers with use of multi-position transfer vehicles, carts, or dollies
- Transfer of fissile materials using limited safe volume and/or geometry containers
- Use of small diameter containers for storage of uranium material
- Radiologically contaminated materials and equipment
- Fissile material transport
- Transfer of containers of Nuclear Criticality Safety (NCS)-exempt material
- Material handling

These procedures are listed in DND-WM-PRO-00272.

5.2.2 Special Procedures

New procedures for individual hazardous material transport activities are developed, as needed, for non-routine transfers in compliance with D&D Project performance document development requirements. This would be for waste/material that is not DOT compliant, is not part of an SB, and is not a current pre-approved activity. A separate safety analysis of the proposed transfer will be performed. These special procedures shall be prepared and reviewed for compliance with DOE SB requirements and approved by the Nuclear Safety Manager before being applied to transfers at PORTS.

New work packages are developed for proposed transfers as needed. These work packages will be prepared and approved in compliance with work package development procedures and will be subject to the USQD process. Upon approval, the new work package will result in the new transfer to be considered routine; thus, additional like transfers utilizing the work package will be authorized.

5.3 Transfer Controls

The D&D Project procedures include those applicable to PORTS on-site transfer activities and related to activities such as securing of loads and tie-down, load compatibility, segregation of material, contamination and radiation exposure control, and criticality control.

The D&D Project procedures and/or work packages provide requirements for securing of loads based on the type of load, transfer vehicle, and transfer conditions.

The D&D Project procedures and/or work packages provide requirements for fissile material transfers implementing the NCS requirements.

Load compatibility is addressed during load makeup. The general compatibility of material inside each package is addressed during the packaging phase. During the load makeup phase, the compatibility and required segregation of the various packages is addressed by following DOT requirements (e.g., 49 CFR § 177.848, *Segregation of hazardous materials*) for all NCS-exempt hazardous materials (i.e., not classed as fissile). Any specific requirements for fissile materials will be identified in the NCSA or NCSE for the material.

The D&D Project procedures and/or work packages include requirements related to contamination and radiation exposure control as specified by the radiation protection program. These include requirements for radiation surveys; exposure controls, including as low as reasonably achievable (ALARA); contamination control; and control of radioactive materials. The radiation protection program documents are listed in DND-RP-PL-00002, *Radiation Protection Program*.

The D&D Project NCS programs and implementing procedures are utilized to assure that operations involving fissile materials are appropriately evaluated, the required controls are flowed down into procedures and/or work packages, and the requirements for CAAS coverage is provided as needed.

5.4 Safety Programs

In addition to the safety management programs discussed above, the D&D Project site policy and safety management programs relevant to safe on-site transfers of hazardous materials also include the following:

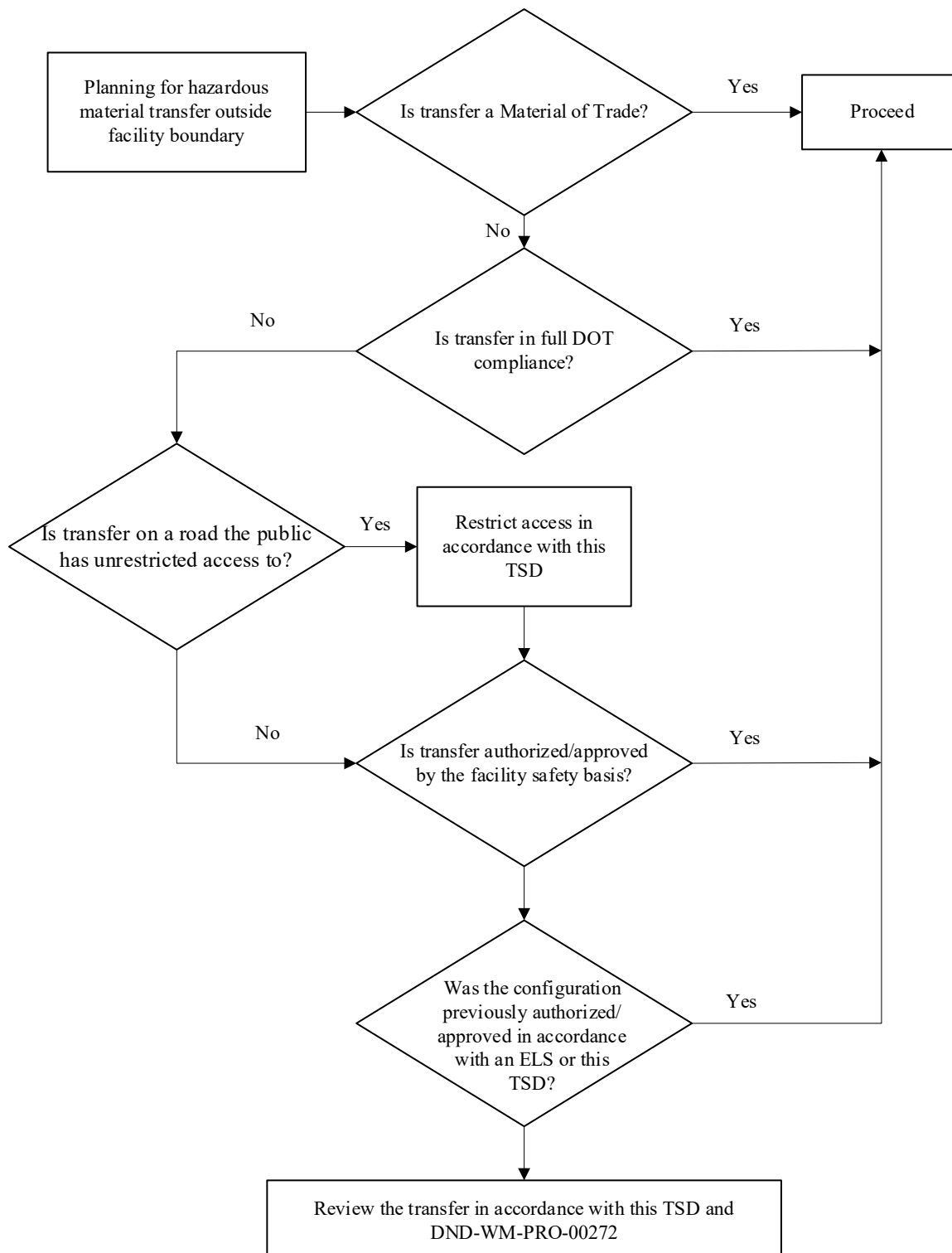
- ISMS Program
- Emergency Management System (EMS) Program
- Nuclear Safety Program
- Worker Safety and Health Program
- Environmental Compliance Program
- QA Program
- Nuclear Material Control and Accountability Program

These programs are implemented in procedures and work packages associated with the on-site transfers of hazardous materials.

5.5 Instructions

Refer to Figure 4, *Decision Tree for Use of TSD*, for applicability.

Figure 4. Decision Tree for Use of TSD



5.5.1 Forms of Waste/Hazardous Materials

Non-Waste Hazardous Material

Non-waste hazardous material will be identified in accordance with the on-site HAZCOM program. Examples of these would be chemicals used during a process. Some of these materials meet the definition of the DOT MOT exceptions, as described in 49 CFR § 173.6, *Materials of trade exceptions*. Materials within the HAZCOM program shall be handled according to the HAZCOM procedures and excluded from all DOT on-site shipping requirements.

Hazardous Waste

Per 49 CFR § 171.8, hazardous waste is any material that is subject to the hazardous waste manifest requirements of the U.S. EPA specified in 40 CFR Part 262, *Standards Applicable to Generators of Hazardous Waste*, Subpart B, *Manifest Requirements Applicable to Small and Large Quantity Generators*.

Waste can be identified as, but is not limited to, legacy waste, contaminated debris/equipment, or newly generated waste eventually bound for disposition. Sometimes there are treatment and/or recycling options for a waste in lieu of or in conjunction with disposition. Materials may need to be moved in order to be sampled, weighed, repackaged, stored, etc. Limited knowledge of some materials may inhibit the preparation of a DOT shipping paper. Containers are stored by their characteristics and category (i.e., flammables are stored together; corrosives are segregated from other substances and stored together).

Detailed data may not be available until analytical results are obtained to know the exact constituents, flashpoints, pH, etc. In these cases, process knowledge, data from previous sampling events, safety data sheets (SDSs), etc., will be used to identify the potential hazards and determine the need for segregation of incompatible materials.

Waste identification and characterization processes at the PORTS are established through waste management policies, plans, and/or procedures that are established, implemented, and maintained to address the following:

- Waste stream identification/profiling
- Waste information reporting
- Waste acceptance criteria
- Waste characterization, segregation, and recycling
- Packaging and transfer or movement
- On-site and off-site treatment, storage, and disposal

Radiologically Contaminated Materials

Radiologically contaminated materials shall be identified and controlled per the Radiation Protection Program. Radiologically contaminated materials can fall under more than one program, as the material also could be a Resource Conservation and Recovery Act (RCRA) hazardous waste (e.g., mixed waste).

In the case of uranium-bearing equipment (e.g., enrichment process equipment removed for disposition), the transfer is accomplished per procedures or work instructions containing the controls established by NCS analyses. These requirements are developed specific to the equipment being moved and the transfer vehicle and securement identified. For containers of uranium materials, the materials are transferred utilizing procedures or work instructions that contain the NCS and radiation protection controls required to ensure safety and are specific to the containers, transfer vehicles, and securement method utilized.

5.5.2 General Transfer Requirements

Identification and documentation for the on-site transfer or movement of hazardous material shall be accomplished in accordance with DOT requirements, SB documents, or through an approved equivalent means (e.g., HAZCOM program, NCS program, Waste Management Program, Radiation Protection Program, etc.). A transportation specialist can provide input in identifying hazardous material by reviewing characterization documentation and other available information, such as drum labels, and may require appropriate testing where available information is insufficient prior to on-site transfer or movement. The transportation specialist shall document the approval of all equivalencies for those that are not currently authorized through procedures flowing down the requirements of the SB documents.

The planning process, as documented in an approved work package, for on-site movement of large pieces of equipment or materials should include the development of transportation plans, where appropriate, to ensure that transportation hazards (i.e., possible overhead obstructions, etc.) associated with the task have been evaluated and controls implemented to provide for the safety of personnel and equipment during the movement operation. Use of forklifts for on-site transportation of equipment and materials should be limited, when practical, in order to minimize forklift operation for long distances on plant roadways. If a forklift must be used, spotters and escorts shall be assigned to support any movement operation where the size of the load has the potential to reduce the visibility of the forklift operator. Pallets should be used in lieu of drum grabbers when transporting drums across the plant site to minimize the potential for loss-of-load incidents and drum damage.

5.5.3 Packaging

Packaging is basically a containment system for hazardous material. Containment systems are important for a number of reasons. Chemical, radiological, and physical hazards, as well as the transport conditions, should be identified before selecting the containment system. A well-designed package can lessen the probability and consequences of a hazardous material release. The primary emphasis for safe transfer or movement on-site is the containment of hazardous material. The performance of the packaging will assist in the safety analysis for on-site transfer or movements. Options are listed below for selecting packages for on-site transfer or movement of hazardous material.

Department of Transportation Packaging — DOT performance-based packaging is packaging that meets the DOT regulations for off-site shipments of hazardous material. For on-site transfers or movements, an evaluation of DOT packaging is not needed, only documentation of the approved packaging and appropriate inspections and record keeping. Minimum packaging requirements are found in 49 CFR § 173.24; 49 CFR § 173.24a; 49 CFR § 173.24b, *Additional general requirements for bulk packagings*; 49 CFR § 173.410; 49 CFR § 173.411; and 49 CFR § 173.412, *Additional design requirement for Type A packages*, for radioactive material and includes excepted packaging, industrial packaging (IP)-1, IP-2, DOT 7A Type A, Type AF, Type B, or other specification packaging. Minimum packaging requirements are found in 49 CFR Part 178, *Specifications for Packagings*, for non-radioactive material.

Department of Transportation Equivalent Packaging — DOT equivalent packaging is packaging that is comparable to the performance criteria of DOT packaging for off-site shipments. DOT equivalent packaging is evaluated by subject matter experts (SMEs) and/or the transportation specialist and is documented as acceptable prior to use. Examples of equivalent packaging may include excepted packaging or DOT specification containers that have been stored inside, inspected periodically, and/or have maintained their integrity.

Department of Transportation Nonequivalent Packaging. — DOT nonequivalent packaging is all other packaging that cannot show equivalency (e.g., non-DOT performance-based packaging and unpackaged items or articles). DOT nonequivalent packaging is evaluated and documented as acceptable prior to use. This evaluation will include the appropriate packaging SME and/or transportation specialist, signed off as authorized by Engineering, unless already incorporated in a flow down procedure from requirements contained in SB documents. Additional requirements for the use of nonequivalent packages can be found in SB documents.

Independent of the packaging choice, packages shall be:

- Compatible with the packaging contents,
- In good condition, and
- Inspected prior to use per applicable procedures.

For movements of uncontained hazardous material, not already provided for in SB documents, a transportation specialist will participate in the work planning process. The DOT HMR allows material meeting either LSA-I and/or surface contaminated objects (SCO)-I to be transported unpackaged in accordance with 49 CFR § 173.427, *Transport requirements for low specific activity (LSA) Class 7 (radioactive) materials and surface contaminated objects (SCO)*, (c). Unpackaged LSA and SCO materials shall be transported in such a manner that, under normal conditions of transport, there will be no escape of radioactive contents from the conveyance and NCS controls are implemented.

The use of DOT specification packaging is always acceptable; however, there are times when items, articles, or other non-DOT packaging need to be transferred or moved for repackaging, weighing, sorting, etc. General types of containers that typically are used on-site include the following:

- Metal boxes (B-12, B-25, ST-90, etc.)
- Cargo tanks (bulk liquids or gases)
- Cylinders (pressure vessel designed for compressed gas or liquids)
- Metal drums (30-gallon [gal.], 55-gal., 110-gal., etc.)
- Poly drums (55-gal., 114-gal., etc.)
- Poly tanks (greater than 110 gal.)
- Freight containers (Sealand, intermodal, etc.)
- Fuel tanks (petroleum products)
- Garbage trucks
- Portable tanks (tanks designed to be lifted when full)
- Roll-off bins on truck chassis
- Sift-proof packaging (dump-beds, open top trailers, etc.)
- Poly bags
- Super sacks
- Gas/diesel fuel cans
- Other containment, such as wrapping (i.e., for contamination control)

Multiple packaging layers exist for some packaged material and most waste. The primary packaging layer provides the primary containment function and consists of the container in which the material or waste is placed. An inner layer is also present for most waste. The inner layer may consist of plastic bags in which the waste is collected prior to being placed in (for example, a 55-gallon drum and/or a drum liner or similar item). An outer layer is also present for a limited number of material containers. The outer layer typically consists of plastic bags in which a surface contaminated container is placed. More robust outer layers consist of overpacks. The primary container and each additional packaging layer provide a barrier to the release of the package contents. Except for overpacks, no credit is taken for such layers in the safety assessments; however, the layers are expected to provide some additional benefit to controlling hazardous material release and are considered a defense in-depth feature.

5.5.4 Communication

Communication of the hazards of the material being transferred or moved on-site use the HAZCOM and the work planning processes and generally do not rely on full compliance with DOT shipping papers, marking, labeling, or placarding. The hazards of on-site transfers and movements are lower than those encountered in commerce due to speed restrictions, transit time, lower vehicular congestion, timely emergency response, and the overall awareness and training of on-site personnel, which affords an equivalent degree of safety compared to full DOT compliance in off-site shipments.

The following are minimum standards for on-site transfer or movement of hazardous material, excluding requirements as stated in flow down procedures implementing the requirements of SB documents.

Marking and labeling — On-site transfers of hazardous materials do not require marking and labeling as required by DOT. These requirements in commerce are principally to identify materials in storage incident to transportation to ensure packages are not mixed, particularly when storage areas or conveyances have materials from various shippers going to various destinations. These requirements are frequently allowed exceptions if the material is transferred in as exclusive use with no interim storage and no mixing of packages being shipped to multiple destinations. Conditions on site generally are equivalent to exclusive use rules in addition to the reduced hazards, and so an equivalent degree of safety is provided. However, labeling and marking is required to identify the contents sufficiently for HAZCOM as follows:

- **Non-waste materials** — Containers shall be labeled in accordance with the HAZCOM program.
- **Radiologically contaminated materials** — Containers shall be labeled in accordance with radiation protection procedures, as applicable.
- **Fissile materials** — Containers shall be labeled in accordance with NCS procedures.

- **Shipping Papers** — On-site transfers of hazardous materials do not require shipping papers as defined by DOT or EPA requirements. Shipping papers are used in commerce to ensure packages and shipments are identified uniquely and to communicate the hazards of the shipment to the transporter and receiver. The equivalent information is transferred on-site through the work control process, material transfer processes (e.g., nuclear material and accountability controls and waste location change requirements), the use of trained personnel to transport materials, and inventory controls (e.g., material limits in storage areas). However, documentation identifying the material shall travel with the hazardous material during on-site transfer or movement. Examples of acceptable documentation include the following:
 - Request for Disposal and/or Waste Container Tracking Form,
 - Product specification information or SDS for non-waste materials,
 - Equivalent Level of Safety (ELS) for on-site transportation of hazardous materials, or
 - Documentation as provided for in flow down procedures implementing requirements from SB documents.

Placards — Vehicles performing movements and transfers on-site are not required to be placarded as required by 49 CFR § 172.504, *General placarding requirements*, (c). The use of placards in commerce, primarily, is to aid emergency responders in assessing potential hazards to themselves and the public in the event of an accident with potentially unknown materials. However, on-site transfers are conducted in a controlled environment with hazards of the transfers provided to the shipper and receiver through the work control process.

5.5.5 Securement

Securement of an item, article, or containment system shall be performed to provide adequate safety. The FMCSR provides the standards for safe securement in commerce and will serve as the on-site standard for securement of hazardous material on vehicles defined as CMVs unless another equivalent means of securement is evaluated and approved by the D&D Project transportation specialist or in flow-down procedures and/or work packages implementing requirements from SB documents.

A DOT equivalency may be used for on-site transfer or movement of hazardous material items, depending on the transport conditions and the method evaluated. If an equivalent methodology is utilized, then it shall be evaluated, documented, and approved by the D&D Project Transportation Manager, unless part of a procedure and/or work package implementing SB documents requirements, before the transfer or movement operation is conducted. Input from Engineering personnel may be required if deemed necessary by the Transportation Manager.

Hazardous material must be secured to the transport conveyance: a truck, trailer, truck trailer combination, or piece of industrial equipment, such as a forklift. Securement methods for transfer of hazardous material by industrial equipment must be described in and performed to existing procedures and/or work packages. Drivers/operators have the final responsibility for securement of cargo on vehicles under their control. However, if deemed necessary, a transportation specialist shall provide guidance and final approval authority. Additional guidance from the D&D Project transportation specialist may be provided in the form of a written load plan.

5.5.6 Transport

The objective of the D&D Project Transportation Safety Program is to ensure that on-site transfer or movement of hazardous material is conducted in a manner that provides a safety equivalent to that afforded by DOT regulations.

All CMV vehicles that traverse the DOE reservation and onto publicly accessible roads is subject to the HMR and FMCSR and no exceptions are afforded by this document.

Properly trained and qualified personnel must operate all vehicles on-site. Industrial equipment shall be driven by a qualified equipment operator as defined in OSHA requirements. CMVs carrying hazardous materials shall be driven by person holding a CDL Class A or B with an H endorsement. If the movement involved the use of a tanker with a sufficient quantity of material that would require placards under DOT requirements, the driver shall have a CDL with an X endorsement.

Access to on-site roadways typically available to the public may be temporarily modified by use of barriers or protective force personnel to restrict public access during movements of hazardous material. By restricting public access, such movements of hazardous material are not subject to the DOT HMR or FMCSR; otherwise, full compliance is required.

5.6 Control Measures

Control measures for on-site transfer or movement of DOT packaging and DOT equivalent packaging shall be used to ensure packages are not exposed to transport conditions more severe than those experienced in off-site transportation.

Control measures selected for DOT nonequivalent packaging or deviations from the FMCSR shall be used to compensate the transport system by providing additional protection and adequate safety for the on-site transfer or movement of hazardous material.

Control measures being utilized shall be documented as acceptable and approved by D&D Project Transportation Manager or as stated in approved procedures. The types of additional control measures that typically are used include route restrictions; speed limitations; and weather, time, and traffic restrictions. Other restrictions might include a secondary containment system on a conveyance and/or additional training for the operators.

Route Restriction — A designated route can be utilized to transfer or move the material on-site. This route control will limit the transport system within the transportation environment where the transportation conditions have been determined and analyzed.

Speed Limit — The maximum speed for the transport device can be limited. This control, typically, is used to maintain the transport system in a low-impact scenario.

Weather Restrictions — Operations may be stopped when severe weather is predicted (e.g., high winds, heavy precipitation, or lightning). Severe weather can impede the operator's vision and/or make the transport conditions treacherous.

Time Restrictions — The time when a loaded transport device may operate along an on-site route may be restricted to avoid periods of heavy vehicle or pedestrian traffic.

Traffic Restrictions — The traffic on the route can be controlled to restrict certain vehicles within the route (or temporarily restrict public access) or to impede the possibility of an impact with another vehicle.

Combustible Loading Controls — To minimize the potential for a fire in the transport vehicle, combustibles are maintained as low as reasonably possible. Combustibles are limited to those associated with the vehicle itself (such as fuel) and those associated with the transported items (packaging materials, tie downs, tarps, etc.).

5.7 Additional Control Measures and for Rail Movements

On-site transfer or movement of hazardous material occurring by rail shall be in accordance with site procedures as defined in the site rail program. These are listed in DND-WM-PRO-00272.

The rail system is used to transport railcars with cargo containers, flatcars, and gondolas onto and off the site using equipment designed for rail car movement (e.g., a railcar mover [Trackmobile] or locomotive).

The NS railway is accessed by rail from the northeast and NS equipment does not pass south of the X-752 facility per the existing side track agreement.

The following additional control measures are implemented to ensure on-site movement by rail is accomplished safely. These controls are implemented in the rail program procedures:

- Track conditions on-site are maintained as Class 1 track when used for the transfer of hazardous material. Overhead line clearances are maintained in accordance with the National Electric Code. Deviations and approvals for use of site rail are made by a designated track inspector.
- Access to unused or abandoned parts of the site rail system shall be restricted by barriers or signals.
- Blue signal protection shall be used outside the plant boundary when workers are on, under, or between rail equipment. Blue signal protection is also used to denote areas beyond which rail operations are not allowed where other barriers are not used.

- Appropriate chocks, in concert with the railcar handbrakes, will be used to secure the railcars in place while the project personnel are working on or around the cars. Chocks will be removed and handbrakes released only when work is completed and spotters are present and are in communication with the rail mover operator prior to movement.
- Railcars will not be moved across site roads (including construction roads) unless the crossing is equipped with a flashing signal with a crossing gate or spotters are used to stop traffic.
- Containers will be loaded and secured on railcars, taking in account the center of gravity, in accordance with Association of American Railroads Standards.
- Loaded railcars that have been staged outside the LA shall be controlled by locking the rail spur, as required by PORTS security plans.

6. **SAFETY ASSESSMENT METHODOLOGY**

The methodology for the on-site transfer or movement of hazardous material is presented in this section. Transfers or movements of hazardous material on-site are either controlled by the SB documents and associated procedures, or are hazardous waste operations and emergency response (HAZWOPER) activities and are subject to HAZWOPER requirements. Because on-site transfers of hazardous materials and wastes at PORTS have been exempted from the requirements of DOT HMR (49 CFR) as discussed previously, the on-site transfer or movement of hazardous material has been evaluated by waste management for hazards and controls. Because of the highly controlled and regulated work environment of PORTS, the hazards of transportation are more easily controlled and mitigated. This is due, primarily, to the following on-site controls, such as:

- Speed restrictions
- Transit time
- Lower vehicular congestion
- Timely emergency response
- Overall awareness and/or training of on-site personnel

Proposed changes to the types of hazardous material transferred on-site or methods of transfer are evaluated in accordance with the USQD process and are reviewed by transportation, safety, and environmental SMEs.

Routine transfers or movements of hazardous material that are packaged in DOT packages or DOT equivalent packages and follow the requirements in Section 5, *Site Specific Standards, Procedures, and Instructions*, of this TSD, as applicable, will not require any further safety analysis. Such transfers include the following general categories:

- On-site transfer of uranium materials and other nuclear materials in DOT-approved packages
- On-site transfer of hazardous material in DOT-approved packages
- On-site transfer of hazardous and radioactive waste in DOT-approved packages
- Transfer or movement of hazardous material in non-DOT-approved packaging or process equipment

6.1 Hazard and Accident Analysis

For the D&D Project, the SB document the hazard and accident analyses that were performed for the facilities containing fissile (i.e., special nuclear material [SNM]), radioactive, and hazardous materials. These analyses consider the “bounding accidents” for the facilities, including the use of bounding inventories, initiating events, and conservative bounding consequence analyses. As such, the SB provides analyses that bound potential accidents involving transfers of hazardous material on-site.

The X-780 HA for the OSWDF analyzes release events involving waste conveyances (i.e., 30 cubic yard dump trucks) in which there is a release of material from dumping or a fire. The accidents are postulated for material/soil release or for fires involving dump trucks. OSWDF-5 is a medium fire involving the contents of 12 dump trucks. In both cases, the potential consequences to the collocated worker were at least an order of magnitude less than the 10-roentgen equivalent man (rem) dose at 30 meters; this is significantly less than what would qualify the events for Hazard Category 3 designation. Off-site consequences were negligible. These events are considered bounding to any transportation of building debris/contaminated soil to the OSWDF.

7. ROUTINE TRANSFERS

A routine transfer is any transfer of hazardous material that (a) has an established method to perform the transfer and (b) the method has been evaluated, documented, and approved by an approved ELS or the decision tree in Figure 4. All routine transfers at PORTS have been evaluated following the methodology in Section 6, *Safety Assessment Methodology*, and appropriate and necessary controls developed. The evaluation results are documented and imposed controls are summarized in the appropriate D&D Project procedures listed in Section 5 and relevant work packages.

7.1 Material Types

Material types include hazardous, radioactive, and mixed materials and waste. These materials are subdivided in material types and waste types.

Specific material types include the following:

- Uranium hexafluoride (UF₆)
- Enriched uranium in oxide and other forms, both highly enriched uranium and low enriched uranium
- Enriched uranium in metal form as billets, ingots, and pieces
- Depleted uranium
- As purchased hazardous chemicals and materials
- Debris from the process buildings to the OSWDF
- Contaminated soil from various burial ground excavations to the OSWDF

Specific waste types include:

- Uranium-bearing bulk solid material, generally designated on-site as dry active waste

- Uranium contaminated equipment or components
- Low-level radioactive waste
- Hazardous waste
- Mixed waste
- RCRA wastes
- Toxic Substances Control Act (TSCA) wastes
- TSCA/RCRA mixed wastes
- Contaminated groundwater associated with the groundwater cleanup operation

The primary radioactive constituent of concern is uranium in various forms and enrichment levels. PORTS does not possess nuclear components or special assemblies nor plutonium or other transuranic material (except as incidental processing byproducts held up in some uranium process equipment). Small amounts of fission products, such as Technetium-99 (⁹⁹Tc), are known to be in some of the uranium process equipment and radioactive waste.

7.2 DOT Exceptions and Special Permits

Routine transfers or movements may also include any DOT exceptions that are identified in 49 CFR. The typical exceptions to DOT packaging authorized in the HMR are 49 CFR § 173.4, *Small quantity for highway and rail*; 49 CFR § 173.6; and 49 CFR § 173.8, *Exceptions for non-specification packagings used in intrastate transportation*. Any exceptions that are listed in 49 CFR will be considered routine transfers or movements, which require no additional analysis; however, the full DOT requirement for the exception must be implemented.

Routine transfers or movements may also consist of using DOT special permits. A DOT special permit can be utilized when transferring or moving hazardous material on-site. No additional analysis is required when using a fully implemented DOT special permit.

7.3 Route Restrictions

Transfers may be performed using any plant roadway within the outer security fence (defined as the boundary between on-site non-public and public roads). Transfer of uranium-bearing equipment containing more than an always safe mass ²³⁵U per shipment between facilities is limited to on-site roadways having CAAS coverage, unless such a move is analyzed and approved through the USQD process.

7.4 Radiation Protection During Transfers

The requirements for radiation protection applied to on-site transfers are derived from DND-RP-PL-00002.

7.5 Transfers of Uranium-Bearing Materials and Wastes

This section provides a summary description of the operations involved in the routine transfer of uranium-bearing and contaminated equipment, uranium materials, and uranium-bearing or contaminated wastes between facilities or locations on-site (on-site means within the DOE reservation boundaries where roadways and access points are controlled by DOE and D&D Project Contractor). As described in the SB, “transfer” refers to movement of the above materials between facilities or locations on-site.

7.5.1 Contaminated Equipment, Uranium Materials, and Wastes

The transfer movement of UF₆ cylinders is described in the SB documents. The transfer of uranium-bearing and contaminated equipment, and uranium materials and wastes, is described in the SB documents. The transfer of hazardous materials is described in the SB documents. The overall description of on-site transfer operations, including the programmatic requirements to support safe operations, is summarized in this TSD. The activities described in this section do not include movement of uranium-bearing and contaminated equipment, uranium materials, or waste entirely within a single building and adjacent operating area; these are covered as part of the analyzed building evolutions. This section also does not discuss the requirements for off-site transportation of such materials; all such off-site transfers must meet DOT requirements. As noted above, on-site transfer movement of the materials being discussed may be accomplished with DOT-approved packaging, which inherently meets the on-site transfer movement safety requirements.

7.5.2 Contaminated Uranium Processing Equipment

Equipment is removed from the enrichment cascade and other uranium processing facilities for repair, characterization for support of the D&D Project, and packaging for eventual disposal. Such cascade and other uranium process maintenance operations are subject to specific NCS requirements, including for the preparation of systems; removal evolutions; control of the equipment after removal; the non-destructive assay (NDA) measurements; and subsequent packaging, storage/staging, and transfer of equipment.

The transfer evolutions are performed with specially-designed transport systems (e.g., converter and compressor wagons or carts) for the large, specialized equipment and with normal transport vehicles for smaller items (e.g., forklifts). The vehicles and restraint systems are evaluated to provide stability for the loads during the transport, including anticipated abnormalities (e.g., sudden stops, minor collisions). The rigging and transport preparation is performed in accordance with approved procedures by qualified personnel with oversight by the qualified supervisor.

7.5.3 Fissile Material

Normal plant operations routinely require the on-site transfer of fissile material outside buildings by a number of conveyances. Many different types of vehicles are used for fissile material transport, including pickup trucks, flatbed trucks, step vans, bicycles, automobiles, rail cars, forklifts, mobile cranes, straddle carriers, barrel lifts, and barrel dollies. The types of containers used include sample containers, UF₆ cylinders, small diameter containers (polybottles, F-cans, etc.), drums or barrels, limited safe volume containers, and B-25 and “6 × 6 × 8” boxes. Specific vehicle storage arrays, restraint system, and container specifications are contained in NCSA or NCSE document requirements, design documents, and procedures. A typical transfer activity encompasses the loading of the vehicle, movement between buildings, and unloading of the vehicle. On-site transfer of fissile materials containing more than an always safe mass ²³⁵U per shipment between facilities is limited to on-site roadways having CAAS coverage. See NCSE-PLANT043.

NCS analyses of such evolutions are performed in accordance with the requirements in the SB documents. The NCS of fissile material transfer is based primarily on administrative and physical controls that limit the mass, geometry, and interaction between containers of uranium-bearing materials. For example, any vehicle used for transfer of small diameter containers is required to have securely anchored storage rack holders which maintain a minimum spacing between containers. Where multiple items are transferred that require spacing, each item is secured in place such that the required spacing will be maintained during normal transfer movements and during small transfer abnormalities (e.g., sudden stops, minor collisions, etc.). Numerous requirements, specific to the type of container being used, are imposed for the proper handling of containers when loading, unloading, or transferring fissile material. These include requirements such as only moving one container at a time within the cargo area and not performing transfers with any other type of container. These are contained in specific NCSAs and NCSEs.

Single cylinder dollies (used to transfer small UF₆ cylinders) are constructed such that the required minimum spacing between cylinders is maintained when multiple dollies are parked next to one another. The walls of UF₆ cylinders are credited as a passive physical barrier preventing the release of UF₆ from the cylinder as well as the entry of moderator into the cylinder.

7.6 Transfers of Waste Containers

Low-level radioactive waste, hazardous waste, and mixed waste handling and storage operations are located throughout plant-site. RCRA 90-day storage areas and satellite accumulation areas are located near the origin of the waste. Many different types of containers are used for the wastes; these range from small diameter containers to large waste boxes. Some waste is transferred to other facilities to be temporarily stored until it is either shipped off-site for treatment and/or disposal or staged prior to treatment and/or storage in on-site facilities.

The Packaging and Transportation Program establishes and enforces processes used to identify, classify, package, mark, label, placard, load, unload, secure, transport, and control waste with radiological, chemical, and physical hazards. Packaging and transportation policies, plans, and/or procedures are developed, controlled, and implemented to address (1) hazardous material identification; (2) classification; (3) containerization; (4) hazard communication; (5) personnel training; and (6) oversight of subcontractors engaged in packaging and transportation activities.

Radioactive and hazardous waste management includes changing the location of waste and materials for the purposes of storage, consolidation, relocation, receipt of newly generated waste, and transfer for treatment and/or disposal. "Movements" constitute a change in location that is within the contiguous boundary defined by the scope of the SB and associated documents. Movements may be between buildings, pads, or other structures that are within the SB-defined contiguous boundaries. "Transfers" constitute a change in location within on-site boundaries that exclude access by the general public. "Transportation" is any change in location conducted on a vehicle designed for over the road transport, outside of a structure.

Based on the origin, route, and destination, a change in location (on-site transfer) may fall under the scope of another DOE SB or an NRC license. Transportation off-site would fall under the regulation of the DOT. The SB documents provide a list of requirements for changing locations of wastes; the DSAs provide descriptions of the integration of transportation requirements with the waste disposition process.

For those movement activities that are covered in the SB documents, hazard and accident analysis for movement-related events are analyzed as described in the facility-specific SB document. The analysis addresses movements of hazardous material that fall within the facility boundaries defined in the facility description. Hazards that exceed standard industrial hazards routinely encountered by the general public or in general industry and construction are evaluated. The purpose of the evaluation is to ensure a comprehensive assessment of hazards and focus attention on those events that pose the greatest risk to the public and to workers. The hazard evaluation provides event categorization, identification of event cause(s), assignment of initiating event frequency and unmitigated consequence level, and identification of preventive and mitigative features required to maintain acceptable risk. Preventive features are expected to reduce frequency of the event; mitigative features are expected to reduce the consequences.

For containers that are not geometrically favorable, the ^{235}U mass in a container or groups of containers in these areas is administratively controlled to a safe limit. When it is required, spacing and stacking limits are imposed as additional NCS controls. Transfer of wastes containing more than an always safe mass ^{235}U (enriched to $\geq 1\%$) per shipment between facilities is limited to on-site roadways having CAAS coverage without special analysis.

Depending on the event and consequences, the set of controls for transfer of waste may include portions of those shown in BIO, which is reproduced in Table 1, *Typical Preventive and Mitigative Controls*, or procedures and/or work packages as described in the SB documents.

Table 1. Typical Preventive and Mitigative Controls

Control Set	Preventive	Mitigative
Packaging	Limitation on the number of packages in movement	Package design features Limitation on the contents Inspection of package integrity
Controls	Restriction of other vehicles in vicinity Routing to avoid external hazards Operating restrictions due to weather Assignment of Spotters	Reduced speed limit Engineered tie downs/constraints Routing to avoid receptors Evacuate/limit other personnel in vicinity
Communications	Posting of route	Appropriate marking and labeling Hazards awareness brief for workers/drivers Emergency response personnel brief Continuous contact with Plant Shift Superintendent (PSS)

Specific packaging, controls, and communications will be identified to prevent or mitigate identified hazards within the scope of the facility-specific SB or NCS documents (such as NCSAs or NCSEs). Any potentially unanalyzed packaging presented for movement of hazardous material within the contiguous boundaries of a facility will be evaluated through the USQD process.

Transportation of hazardous materials is made in accordance with Transportation Plans and work management documents (work instructions, work management packages, procedures, etc.) that direct implementation of packaging, controls, and communications set forth in this TSD, DOE Orders, or regulations, as applicable. Oversight of subcontractor-performed transportation activities is conducted in accordance with contractor procedures.

7.7 Transfer of Hazardous Materials

The transfer of hazardous materials between facilities on-site is accomplished utilizing the DOT-approved containers that the material is contained in when delivered to the site. In some cases, individual containers are taken from the boxes in which they are delivered (e.g., cleaning supplies, pesticide containers, bottles of acids and bases for laboratory operations). DOT-approved cylinders containing hazardous or flammable materials are transferred with standard industrial equipment (e.g., forklifts or trucks) with engineered holders or vehicle restraint systems in accordance with approved procedures. Personnel performing the transfers are trained in the hazards of the materials (in accordance with the requirements of the SB documents) and are trained in emergency response notifications and actions in accordance with the requirements of the SB documents and the emergency plan. Potential releases during transfer operations have been evaluated either as part of the process hazard analyses (PHAs) for OSHA Process Safety Management (PSM)-regulated chemicals and/or during the hazard evaluation phase of the SB preparation. For highly hazardous chemicals exceeding the applicability thresholds, the OSHA PSM PHAs identify any controls required during transfer operations to control hazards and potential accident consequences to the public or worker. No controls were required in the SB to control hazards to the public or workers beyond those that are described in the SB documents.

NCS controls for transferring radioactive materials are identified by the applicable NCSA or NCSE for the material. This division is used because (a) the NCSA or NCSE under which the material is stored provides a simple, but unique, material type identification and (b) a basic NCSA or NCSE imposed control is that containers covered by different NCSAs and/or NCSEs shall not be mixed on a load.

8. NON-ROUTINE TRANSFERS

Non-routine transfers or movements are those activities involving the use of a nonequivalent DOT packaging and/or unpackaged items/articles not provided for in flow down procedures implementing this TSD and, where applicable, requirements from the SB documents. If a transfer or movement has already been proceduralized or otherwise evaluated and approved, then the transfer or movement is considered a routine transfer. However, a transfer or movement that has not been proceduralized or has not been evaluated and approved is considered a non-routine transfer and, as such, must follow the process detailed in this TSD. Such transfers will require evaluation by the USQD process and a review by NCS. Once this new transfer has been reviewed and approved, then it will become a routine transfer and follow the routine transfers requirements set forth in Section 7, *Routine Transfers*, of this TSD.

Non-routine transfers or movements involving the use of nonequivalent DOT packaging or unpackaged items/articles will require an approved work package or procedure, which will include a load and securement strategy that is in accordance with applicable FMCSR or OSHA standards, prior to the operation. The work package or procedure shall detail the process, actions, and methods that will be used to ensure equivalence with DOT requirements. At a minimum, the work package or procedure shall include, but is not limited to, identification of hazardous material, containerization, marking and labeling, loading and securement strategy, and emergency response. If work package instructions are used, the D&D Project Transportation Manager must approve the transportation aspects. If site procedures are used in providing details for non-routine transfers or movements, then they shall have the D&D Project Transportation Manager approval/concurrence. D&D Project Transportation Manager shall ensure a DOE representative is notified before commencement of any non-routine transfers or movements or series of transfers or movements.

9. **PERSONNEL QUALIFICATION AND TRAINING**

Personnel who are defined as hazardous material employees will be trained per 49 CFR Part 172, *Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans*, Subpart H, *Training*. The training requirement for D&D Project personnel and subcontractor personnel is dependent upon each job function. Management determines whether the employee performs functions that require additional hazardous material training. An equivalency can be utilized if documented and approved by the D&D Project Transportation Manager and the Training Manager in accordance with D&D Project training procedures.

Personnel who will be transporting hazardous material on-site utilizing a CMV with a gross combination weight rating of 26,001 lbs. or more, inclusive of a towed unit(s) with a gross vehicle weight rating (GVWR) of more than 10,000 lbs. or a vehicle with a GVWR of 26,001 lbs. or more will have an active CDL and the appropriate hazardous materials endorsement. Even though the FMCSR includes any size vehicle used in the transportation of placarded hazardous material in its definition of a CMV, placarding is included in the deviations outlined in Subsection 5.5.4, *Communication*. Placarding will only be required for on-site movements as deemed necessary by the Transportation Group as further discussed in Subsection 5.5.4. Training requirements are outlined for both CDL and non-CDL personnel, including hazardous material employee requirements, in accordance with 49 CFR Part 172, Subpart H, in applicable D&D Project training procedures and/or training requirements matrices (TRMs).

NOTE

For non-placarded amounts of hazardous materials (such as small vials of acids; environmental samples; 49 CFR § 172.514, *Bulk packagings*, Table 2; materials up to 1,000 lbs.) carried by drivers without a CDL, care should be taken to ensure that the exceptions in 49 CFR (such as the small quantity exceptions in 49 CFR § 173.4 and in 49 CFR § 173.421, *Excepted packages for limited quantities of Class 7 [radioactive] materials*, or placarding exceptions in 49 CFR § 172.504) are met.

The training position descriptions (TPDs) are documented for the worker categories involved in on-site transfers. Key positions in directing and assuring the safety of transportation activities are:

- Line Supervisors must evaluate personnel assigned to transport hazardous materials on-site to determine that they can successfully operate the assigned vehicle, including emergency equipment. The required courses, course content, testing, and qualification requirements for all packaging and transportation personnel are specified in the TRMs.
- Radiation Control Technicians also support hazardous material transfer operations. The core training requirements for these personnel are listed in their TPD. They may also receive additional training specifically associated with the facility and its material or waste classifications where the operations are performed.

- Transportation Manager – This person is responsible for maintaining, reviewing, and concurring with this TSD and is responsible for approving equivalent and nonequivalent packaging configurations and FMCSR safety equivalencies. Additionally, the manager is also responsible for approving non-routine transfers or movements, prior to the transfer or movement commencing, and informing DOE.
- Transportation Specialist – These personnel perform the duties as the shipper, on behalf of DOE, including providing shipping documents, marking/labeling/placarding, performing peer reviews, etc. as needed, per site procedures. In addition, the transportation specialist is responsible for performing transportation oversight of the D&D Project subcontractors and providing technical and transportation safety-related assistance to project personnel.

The requirements for documenting training are specified in training procedures. Required training is documented and tracked in the D&D Project training database. Deficiencies are issued for delinquent training and, until training requirements are satisfied, the employee duties are appropriately restricted or supervised by a fully trained person in the area of deficiency.

10. **DOCUMENTATION AND RECORD KEEPING**

Records generated or received as a result of on-site transfers must be submitted to the RMDC group for record retention and disposition in accordance with the records management procedures.

Records that must be maintained include, but are not limited to, the following:

- SB documents, including BIOS, DSAs, TSDs, Safety Analysis Reports for Packaging (SARPs), etc.
- Test reports
- Any other packaging evaluations
- Personnel training and qualification records
- Vehicle maintenance and inspection records
- All documentation associated with both routine and non-routine transfers, such as:
 - Request for Disposal and/or Waste Container Tracking Form
 - Product specification information or SDS for non-waste materials
 - Equivalent on-site transfer shipping document
 - Documentation as provided for in flow down procedures implementing requirements from SB documents
 - Work package

If the transfers involve accountable nuclear material, compliance with DND-MC-PL-00013, *Nuclear Materials Control and Accountability (MC&A) Plan for Facilities at the Portsmouth Ohio Site*, is also required.

The RMDC is a service group that is responsible for maintaining the records. The records are to be stored in a secure manner using a convenient method (e.g., electronic databases and paper files). The records are to be retained for an indefinite period and will be reviewed periodically for identification of appropriate schedule for destruction. Records retention determinations shall be based upon a National Archives and Records Administration (NARA)-approved records disposition schedule.

11. **INCIDENT REPORTING AND EMERGENCY RESPONSE**

Emergency response information for routine and non-routine transfers or movements must be available to emergency response personnel in the event of an incident. The information must be available within the transport vehicle or with the technical contacts and be available to the emergency response personnel or representative. The document should contain the appropriate information for emergency responders to mitigate the hazards associated with the material. 49 CFR Part 172, Subpart G, *Emergency Response Information*, may be used in part as guidance to assemble the required information. Examples of acceptable emergency response guidance include the following:

- ERG
- SDS
- National Institute for Occupational Safety and Health (NIOSH) Guide

Where specific program procedures and work practices require the use of additional emergency response information, assembling the additional information is required.

On-site incidents and/or accidents will be handled through the established site procedures and processes. These procedures and processes typically spell out precise measures to take for certain classes and amounts of hazardous material released and/or spilled, personal protective equipment (PPE), and other precautions to take. In the event of an accident or spill, the Incident Command System will be initiated per site procedures, as applicable.

The incident reporting and emergency response plans for PORTS are specified in the site and D&D Project Supplemental Emergency Plans. The immediate response actions for individuals and/or organizations are summarized below.

- Worker notifies:
 - 1) The PSS (dial 911 on the plant phone system, pull any fire alarm box, use plant radio) if the event involves actual or potential injury, a potential NCS violation, radionuclide or chemical exposure, or loss of radiological control; and
 - 2) His/her supervisor.
- The PSS notifies:
 - 1) PORTS Fire Services and/or Emergency Medical personnel, as appropriate; and
 - 2) Personnel on the notification list.

The worker's supervisor will report the incident to the appropriate Project Manager.

The PSS categorizes the event for occurrence reporting purposes in accordance with occurrence reporting procedures. Contractor Assurance maintains a procedure for performing investigations. Investigations are performed by trained and qualified personnel.

The D&D Project uses an Incident Command System to ensure that emergency groups function as a team during emergencies. The Incident Commander (IC) is normally the PSS on duty. The IC relies heavily on the local emergency directors and plant emergency personnel during emergencies. The emergency plans are included in DND-EM-EPHA-00007, *Southern Ohio Cleanup Company LLC Emergency Planning Hazards Assessment for the Decontamination & Decommissioning, Infrastructure Support Services, and Piketon DUF₆ Conversion Facilities at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio.*

12. TRANSPORT VEHICLE OPERATIONS

12.1 Vehicle Inspection and Maintenance

The maintenance and inspection requirements for on-site vehicles are specified in procedures that address the following general requirements (additional specific requirements are pertinent to the type of vehicles being covered by the procedure):

- **Material handling equipment** procedures require a once per shift, pre-use inspection of material lifting, handling, and transfer equipment . The procedures contain inspection checklist forms for forklifts, material transfer vehicle, and hoisting and rigging, as applicable.
- **Motor carrier safety compliance** procedures require compliance with DOT regulations governing CMVs (49 CFR Parts 325-399), including their inspection, repair, and maintenance.

12.2 Vehicle Operators

PORTS workers who operate vehicles other than commercial vehicles (such as stake bed truck, step van, or pickup truck) are required to have a valid driver's license. The vehicle operator must meet the training requirements in Section 9, *Personnel Qualification and Training*, for a PORTS project worker.

PORTS workers who operate a CMV (such as flat-bed semi-tractor truck) or transfer quantities of hazardous materials that would require a placard in accordance with DOT requirements are required to meet appropriate DOT training regulations. The vehicle operator must meet the training requirements in Section 9.

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SOURCE REFERENCES AND REGULATORY REQUIREMENTS

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1. 10 CFR Part 20, *Standards for Protection Against Radiation*
2. 10 CFR Part 70, *Domestic Licensing of Special Nuclear Material*
3. 10 CFR Part 71, *Packaging and Transportation of Radioactive Material*
4. 10 CFR Part 76, *Certification of Gaseous Diffusion Plants*
5. 10 CFR Part 830, *Nuclear Safety Management*
6. 10 CFR Part 835, *Occupational Radiation Protection*
7. 10 CFR Part 851, *Worker Safety and Health Program*
8. 29 CFR Part 1910, *Occupational Safety and Health Standards*
9. 29 CFR Part 1926, *Occupational Safety and Health Regulations for Construction*
10. 40 CFR Part 61, *National Emission Standards for Hazardous Air Pollutants*
11. 40 CFR Parts 260–265, *Environmental Protection Agency, Resource Conservation Recovery Act*
12. 40 CFR Parts 700–789, *Environmental Protection Agency, Toxic Substance Control Act*
13. 49 CFR, *Transportation*
14. ANSI N14.1, *Nuclear Materials – Uranium Hexafluoride – Packaging for Transport*
15. ANSI N14.5, *Radioactive Materials – Leakage Test on Packages for Transfer*
16. DND-EM-EPHA-00007, *Southern Ohio Cleanup Company LLC Emergency Planning Hazards Assessment for the Decontamination & Decommissioning, Infrastructure Support Services, and Piketon DUF₆ Conversion Facilities at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*
17. DND-HA-780-00001, *Hazard Analysis for the Operations of the Portsmouth Gaseous Diffusion Plant On-Site Waste Disposal Facility*
18. DND-MC-PL-00013, *Nuclear Materials Control and Accountability (MC&A) Plan for Facilities at the Portsmouth Ohio Site*
19. DND/PORTS-444, *Documented Safety Analysis for the X-345 and X-744G Facilities at the Portsmouth Gaseous Diffusion Plant Piketon, Ohio*
20. DND/PORTS-446, *Technical Safety Requirements for the X-345 and X-744G Facilities at the Portsmouth Gaseous Diffusion Plant Piketon, Ohio*
21. DND-RP-PL-00002, *Radiation Protection Program*
22. DND-WM-PRO-00272, *On-Site Transportation of Hazardous Materials*
23. DOE G 414.1-2B, Chg. 2 (AdminChg), *Quality Assurance Program Guide*
24. DOE O 414.1E, *Quality Assurance*
25. DOE O 420.1C, Chg 3 (LtdChg), *Facility Safety*
26. DOE O 426.2A, Chg. 1 (AdminChg), *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*

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27. DOE O 231.1B, Admin. Chg. 1, *Environment, Safety and Health Reporting*
28. DOE O 435.1, Chg. 2 (AdminChg), *Radioactive Waste Management*
29. DOE O 458.1, Chg. 4 (LtdChg), *Radiation Protection of the Public and the Environment*
30. DOE O 460.1D, *Hazardous Materials Packaging and Transportation Safety*
31. DOE O 460.2B, *Departmental Materials Transportation Management*
32. DOE O 470.4C, *Safeguards and Security Planning*
33. DOE O 471.1B, *Identification and Protection of Unclassified Controlled Nuclear Information*
34. DOE O 472.2A, Chg. 1 (LtdChg), *Personnel Security*
35. DOE O 473.1A, *Physical Protection Program*
36. DOE O 474.2A, Chg. 1 (AdminChg), *Nuclear Material Control and Accountability*
37. DOE P 450.4A Chg 1 (MinChg), *Integrated Safety Management Policy*
38. DOE/RL--96-57, Rev. 0, Volume 1, *Test and evaluation document for DOT Specification 7A Type A packaging* (reference only)
39. DOE-STD-1073-2016, *Configuration Management*
40. EVAL-NS-2024-0065, *Evaluation of the Safety of the Situation (ESS) and Justification for continued Operations (JCO) for Parcel 1 and Parcel 2 Land Transfers*
41. NCSE-PLANT028, *Nuclear Criticality Safety Evaluation for Removal and Handling of Planned Expeditious Handling Equipment*
42. NCSE-PLANT043, *Nuclear Criticality Safety Evaluation for Fissile Material Transport*
43. NQA-1-2022, *Quality Assurance Requirements for Nuclear Facility Applications*
44. POEF-DND-001, *Basis for Interim Operation (BIO) of the Former Uranium Enrichment Facilities (FUEF) at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*
45. POEF-DND-002, *Technical Safety Requirements for the Former Uranium Enrichment Facilities (FUEF) at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*
46. POEF-DND-020, *Safety Management Program Descriptions for Southern Ohio Cleanup Company LLC (SOCCo) Decontamination & Decommissioning Project*
47. POEF-DND-024, *Documented Safety Analysis for Decontamination and Decommissioning of the X-330 and X-333 Process Buildings, Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*
48. POEF-DND-025, *Technical Safety Requirements for Decontamination and Decommissioning of the X-330 and X-333 Process Buildings Portsmouth Gaseous Diffusion Plant Piketon, Ohio*
49. USEC-651, *Uranium Hexafluoride: A Manual of Good Handling Practices*