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RH Waste Disposal Operations Contractor Operational Readiness Review Plan of Action

Revision 0

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U.S. Department of Energy
Carlsbad Field Office

RH Waste Disposal Operations
Contractor Operational Readiness Review
Plan of Action

U.S. Department of Energy
Carlsbad Field Office
Approval

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RH Waste Disposal Operations
Contractor Operational Readiness Review
Plan of Action

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ACRONYMS AND ABBREVIATIONS

CBFO	Carlsbad Field Office
CCTV	closed circuit television
CFR	*Code of Federal Regulations*
CH	contact-handled
CNS	Chem-Nuclear Services
CTS	Commitment Tracking System
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
EM	DOE Office of Environmental Management
FY	fiscal year
HEPA	high efficiency particulate air (filter)
HWFP	Hazardous Waste Facility Permit
ISMS	Integrated Safety Management System
LMA	Line Management Assessment
NMED	New Mexico Environment Department
NRC	U.S. Nuclear Regulatory Commission
ORR	Operational Readiness Review
POA	Plan of Action
RH	remote-handled
SAR	Safety Analysis Report
S/RID	Standard/Requirements Identification Document
SDD	System Design Description
SSCs	Structures, Systems, and Components
TIM	Training Implementation Matrix
TRU	transuranic
TSR	Technical Safety Requirement
USQ	Unreviewed Safety Question
VPP	Voluntary Protection Program

WIPP	Waste Isolation Pilot Plant
WTS	Washington TRU Solutions LLC
WWIS	WIPP Waste Information System

GLOSSARY

Administrative Controls - Provisions relating to organization and management, procedures, record keeping, assessment, and reporting necessary to ensure the safe operation of the facility. These can be programmatic or specific as defined in DOE-STD-1186.

Chem-Nuclear Services CNS10-160B Cask (CNS10-160B) - A U.S. Nuclear Regulatory Commission (NRC) certified type B shipping container consisting of two carbon steel shells and a lead shield welded to a carbon steel bottom plate. The CNS10-160B is designed to carry up to 10 drums of remote-handled (RH) waste to the Waste Isolation Pilot Plant (WIPP).

Contact-Handled (CH) Waste - Transuranic (TRU) waste that has a measured radiation dose rate at the container surface of 200 millirem (mrem) per hour or less and can be handled safely without special equipment when placed in containers.

Core Requirement - A fundamental area or topic of review evaluated during an Operational Readiness Review (ORR) to assess whether a facility can be operated safely. Core requirements are provided in U.S. Department of Energy (DOE) Order 425.1C, *Startup and Restart of Nuclear Facilities*.

Documented Safety Analysis (DSA) - A documented analysis of the extent to which a nuclear facility can be operated safely with respect to workers, the public, and the environment, including a description of the conditions, safe boundaries, and hazard controls that provide the basis for ensuring safety (formerly called a safety analysis report [SAR]).

Emplacement - The placing of radioactive wastes in the WIPP repository.

Essential Equipment - Systems, structures, and components (SSC) that must be operable to meet waste handling or waste storage/disposal mode requirements or be operable to support mode operations (System Design Description [SDD]).

Evolution - Sequence of events involved in the development of a process.

Graded Approach - The process used to determine the level of analysis, documentation, and actions necessary to comply with a requirement commensurate with (1) the relative importance to safety, safeguards, and security; (2) the magnitude of any hazard involved; (3) the life-cycle stage of a facility; (4) the programmatic mission of a facility; (5) the particular characteristics of a facility; (6) the complexity of the weapons-related or research activity; and (7) any other relevant factor (DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Reviews [ORR]*).

Hazard Category - A classification based on the consequences of an unmitigated release of radioactive and/or hazardous material as defined in Title 10 *Code of Federal*

Regulations (CFR) Part 830, Subpart B, "Safety Basis Requirements." WIPP is classified as a Hazard Category 2.

Line Management Assessment (LMA) - An internal Washington TRU Solutions LLC (WTS) activity for evaluation/achievement of facility readiness prior to initiating the WTS ORR.

Mode - A process area/system configuration established to provide a safe, structured approach to facility operations. Modes reflect the relative hazards associated with different facility or process configurations and are used to determine the applicability of LCOs in the RH Technical Safety Requirements (TSRs). Three modes are defined in the RH TSRs: RH Waste Handling, RH Waste Storage, and Standby. The modes are defined such that the Waste Handling Building and the Underground may be in different modes. Prior to receiving waste, the facility is required to be in one of the modes of operation. Mode designations and changes are an administrative declaration made by the WIPP Facility Shift Manager or designee.

ORR Breadth - The set of core requirements evaluated by the WTS ORR team during conduct of the ORR.

ORR Depth - The level of analysis, documentation, or actions to which a particular review objective is assessed. Necessary evaluation rigor will be determined by a graded approach.

ORR Implementation Plan - The plan developed by the WTS ORR team describing the specifics of the approach, methodology, and reporting requirements of the WTS ORR.

ORR Plan of Action (POA) - The document that describes the breadth and prerequisites of the ORR and what will be evaluated by the ORR. WTS and the DOE Carlsbad Field Office (CBFO) will each prepare a POA.

ORR Prerequisite - Action(s) which must be completed prior to the start of the ORR.

ORR Scope - The overall magnitude of the ORR as defined by the breadth of the core requirements selected and depth of evaluation of these requirements during the conduct of the ORR.

Panel - A group of several underground rooms in which TRU waste is disposed. At WIPP, a panel consists of seven rooms connected by drifts at each end.

Post-Start Finding - A condition that can be resolved in parallel with program work. Resolution of post-start findings is addressed by a corrective action plan that may include credit for compensatory actions already taken.

Pre-Start Finding - A condition that must be corrected before RH waste disposal operations can be started. Resolution of pre-start findings is addressed by a corrective action plan.

Pre-Start and Post-Start Finding Criteria - Criteria for assessing pre-start findings will be used by the ORR Team to determine if a finding must be corrected prior to start-up of the RH disposal process. Findings that do not meet the criteria may be completed after the start-up of the RH disposal process.

A pre-start finding demonstrates at least one of the following:

- The inability of essential equipment to perform as specified in design documentation or to operate within specified limitations.
- Conditions, functions, or equipment contrary to those described in the WIPP RH Waste DSA or TSRs.
- Potential environmental impact exceeding regulatory or site-specific release limits, conditions, or requirements.
- Impact to worker safety and/or health exceeding regulatory or site-specific limits, conditions, or requirements.
- Programmatic noncompliance (e.g., repeated violations of technical procedures associated with waste disposal or supporting process technical procedures or failure to implement authorization basis requirements in technical procedures).
- A lack of technical procedures for a waste disposal or supporting process.
- A lack of specific operator training which affects waste disposal or supporting process performance.

Radiological Survey - An evaluation of the radiological conditions and potential hazards incidental to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation.

Remote-Handled Waste - TRU wastes that have a measured radiation dose rate at the container surface of between 200 mrem per hour and 1,000 rem (Roentgen equivalent man) per hour and, therefore, must be shielded for safe handling.

Repository - The WIPP underground, including access drifts and waste panels, but excluding shafts.

Resource Conservation and Recovery Act-Related Equipment - Equipment listed in the WIPP Hazardous Waste Facility Permit (HWFP), Attachment D, Inspection Schedule,

Process and Forms, Table D-1, Inspection Schedule/Procedures; and Attachment F, RCRA Contingency Plan, Table F-6, Emergency Equipment Maintained at the Waste Isolation Pilot Plant.

RH-72B Road Cask - An NRC-certified type B shipping container consisting of a cylindrical stainless steel and lead cask body, a separate inner stainless steel vessel, and foam-filled impact limiters at each end of the cask body. The RH-72B is designed to safely transport a single canister of RH waste which can contain three 55-gallon drums or be direct loaded.

RH Mode Compliance Equipment - Safety Class and Safety Significant SSCs credited in the RH DSA and required to be operable for a particular mode. The credited SSCs are described in Chapter 4 of the RH DSA.

Room - An excavated cavity within a panel in the WIPP underground. A room is nominally 33 feet (ft) (10 meters [m]) wide, 13 ft (4 m) high, and 300 ft (91 m) long.

Safety Class Systems, Structures, and Components (SSCs) - Functional classification designation assigned to Systems, Structures or Components that protect the public from the consequences of accidents that are defined and analyzed in the DSA.

Safety Limits - Limits on process variables associated with those physical barriers, generally passive, which are necessary for the intended facility functions and which are found to be required to guard against the uncontrolled release of radioactivity and other hazardous materials (this includes releases into the complex and/or the community).

Safety-Significant SSCs - Functional classification designation assigned to SSCs that provide defense-in-depth for Safety Class SSCs or protect site and facility workers from the consequences of accidents that are defined and analyzed in the DSA.

Shipping Container - A package designed to transport TRU waste and TRU-mixed waste to the WIPP site. For RH TRU waste, these packages are the RH-72B cask and the CNS10-160B.

Transuranic (TRU) Waste - Waste containing more than 100 nanocuries of alpha-emitting TRU isotopes per gram of waste, with atomic numbers greater than 92 and half-lives greater than 20 years, except for (1) high-level radioactive waste; (2) waste that the Secretary has determined, with the concurrence of the Administrator, does not need the degree of isolation required by the disposal regulations; or (3) waste that the NRC approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste."

1.0 INTRODUCTION

This POA documents the breadth, the prerequisites, and the facility for the Contractor ORR of the RH TRU waste disposal operations at WIPP, which will be conducted by WTS in fiscal year (FY) 2006. The Contractor ORR team will consist of independent WTS and subcontractor personnel, as defined in DOE Order 425.1C. The RH waste disposal operations ORR will be conducted to the requirements of DOE Order 425.1C.

This POA complies with the requirements of DOE O 425.1C and considers the guidance of DOE-STD-3006-2000. Included in this POA are (1) a facility description, (2) a definition of the ORR scope and breadth, (3) prerequisite conditions, (4) projected schedule, (5) identification of the WTS ORR team leader, and (6) DOE ORR approval authority. Following approval of the POA, WTS will develop an implementation plan to describe the process and the rationale for the conduct of the Contractor ORR team review.

1.1 WIPP Overview

The WIPP mission is the deep geologic disposal of CH and RH TRU waste and TRU mixed waste. WIPP is located in Eddy County in southeastern New Mexico, 26 miles southeast of Carlsbad, as shown in Figure 1. The facility is built on a 10,240-acre parcel of land set aside by Public Law 102-579. The sparsely populated area surrounding WIPP is used primarily for livestock and the development of potash, oil, and natural gas resources.

2.0 NAME OF THE FACILITY/ACTIVITY BEING STARTED

This POA addresses the start-up of RH TRU waste disposal operations at WIPP.

3.0 DESCRIPTION OF THE FACILITY/ACTIVITY

3.1 RH Facility

WIPP is statutorily limited to receive and emplace for disposal a total TRU waste volume of 6.2 million cubic feet.

The WIPP facility has sufficient capacity to handle 250,000 ft^3 (7,080 m^3) of RH TRU waste, the limit established in the 1981 Consultation and Coordination with the state of New Mexico and included in the 1981 DOE Record of Decision. In addition, the WIPP Land Withdrawal Act of 1992 (Public Law 102-579) limits the total RH TRU waste activity to 5.1×10^6 curies.

RH waste will be packaged in steel containers placed inside shielded road casks for transportation to the WIPP facility. RH TRU wastes will be disposed in the 100-acre disposal area on a horizon located 2,150 ft beneath the surface in a deep, bedded salt

formation. Waste is transferred by hoist from the surface to the disposal horizon via a waste shaft.

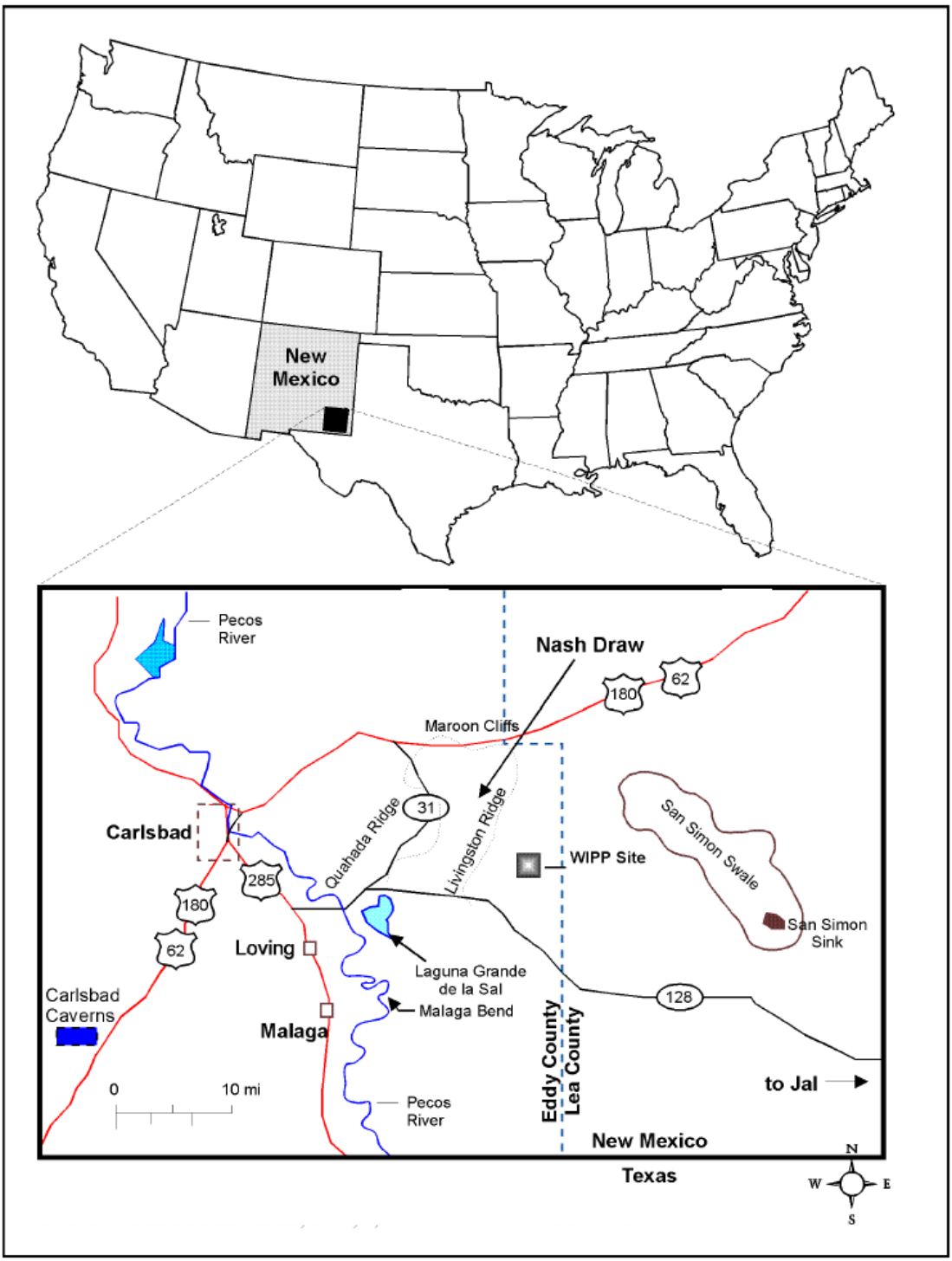


Figure 1. Location of the WIPP Facility

3.2 RH-72B Road Cask Waste Disposal Process

This section describes the process and systems for handling RH TRU waste at WIPP using the RH-72B road cask (see Figure 2). The RH waste disposal process begins with the acceptance of a waste shipment in the WIPP Waste Information System (WWIS). The RH TRU surface facilities are shown in Figure 3. Figure 4 gives an overview of the RH-72B TRU waste disposal process.

RH-72 B TRU Waste Receiving

RH TRU waste shipments arrive at WIPP by truck. Upon arrival at the WIPP security gate, each incoming road cask shipment is inspected. These inspections include verification of shipment documentation, a security check, and an initial exterior radiological survey of the shipment.

After turning over the shipping documentation to the transportation engineer, the driver transports and parks the trailer in the parking area south of the RH Bay or takes the trailer into the RH Bay and disconnects the transporter as directed by the waste handling engineer or the facility shift manager. The driver is subsequently released. If the trailer was parked south of the RH Bay, the disconnected loaded trailer is attached to a trailer jockey and brought into the RH Bay by WIPP WTS operations personnel.

RH-72B Road Cask Preparation

After the trailer is parked in the RH Bay, the two impact limiters are removed from the road cask while still on the trailer. The 140/25-ton overhead crane is used to lift the impact limiters and place them on separate support stands. The cask-lifting yoke is then connected to the 140/25-ton overhead bridge crane. The lifting yoke engages the handling trunnions of the road cask. The road cask is lifted and rotated to the vertical position, and is placed on the road cask transfer car. The A-frame of the road cask transfer car supports the road cask at the transport trunnions. The road cask is then moved to the cask preparation station (an elevated work platform) in the RH Bay. The work platform allows personnel to access the entire head area of the road cask for conducting lid preparation, radiological surveys, physical inspections, and/or minor maintenance.

After the RH-72B road cask is placed in the cask preparation work station, the outer lid lift fixture is attached to the work platform 2.5-ton jib crane. After radiological surveys for surface contamination and radiation levels are performed, the space between the inner and outer lid is vented through a high efficiency particulate air (HEPA) filter via the outer lid vent port. The operators then remove the outer containment lid bolts using the outer containment lid bolts de-tensioning device. The outer lid lift fixture is attached to the outer containment lid. The outer containment lid is lifted by the jib crane from the road cask and placed on its storage stand. The inner lid is vented through a HEPA filter to equalize the pressure between the road cask cavity and atmosphere, then the inner lid lift fixture is attached to the inner lid.

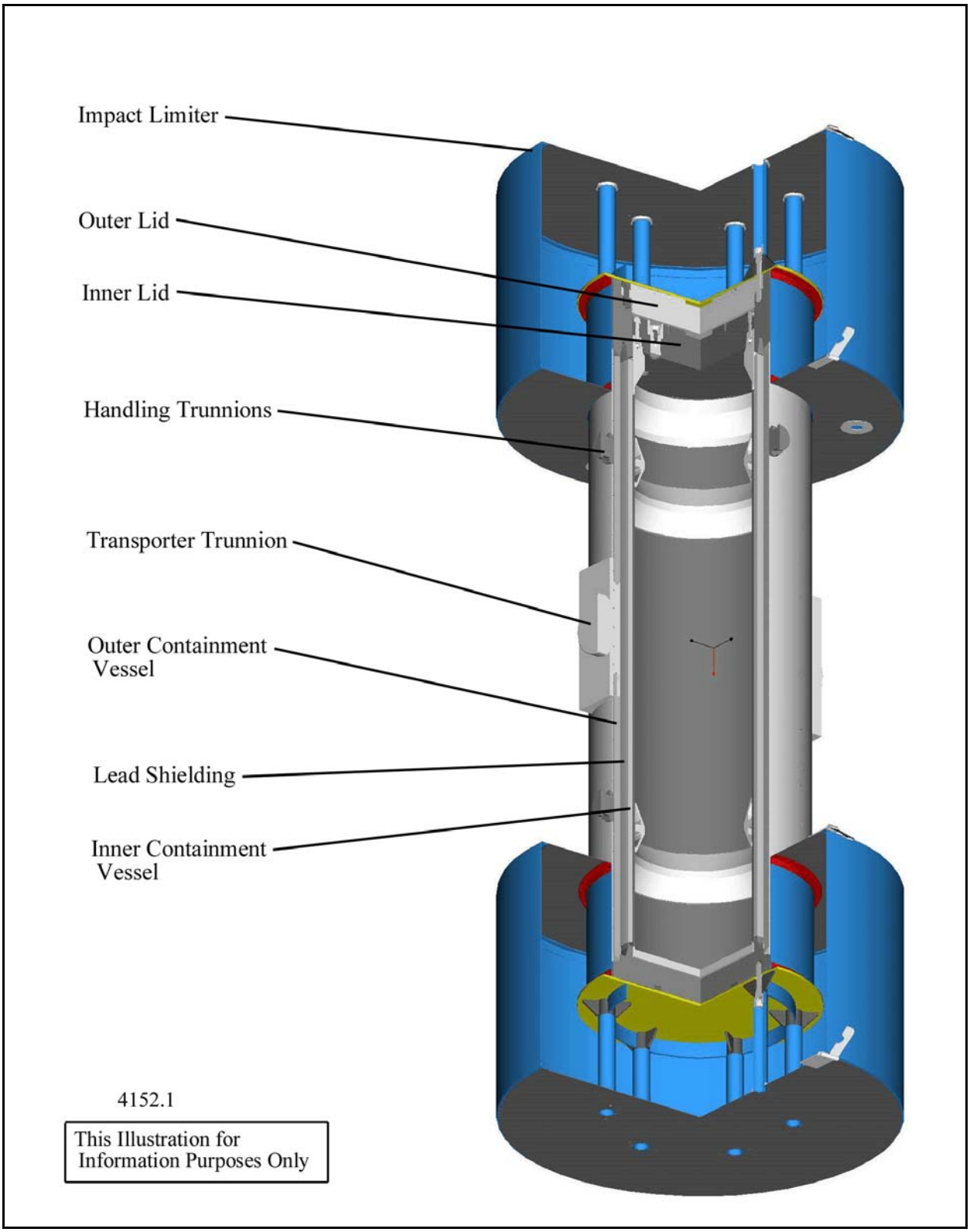


Figure 2. RH-72B Road Cask

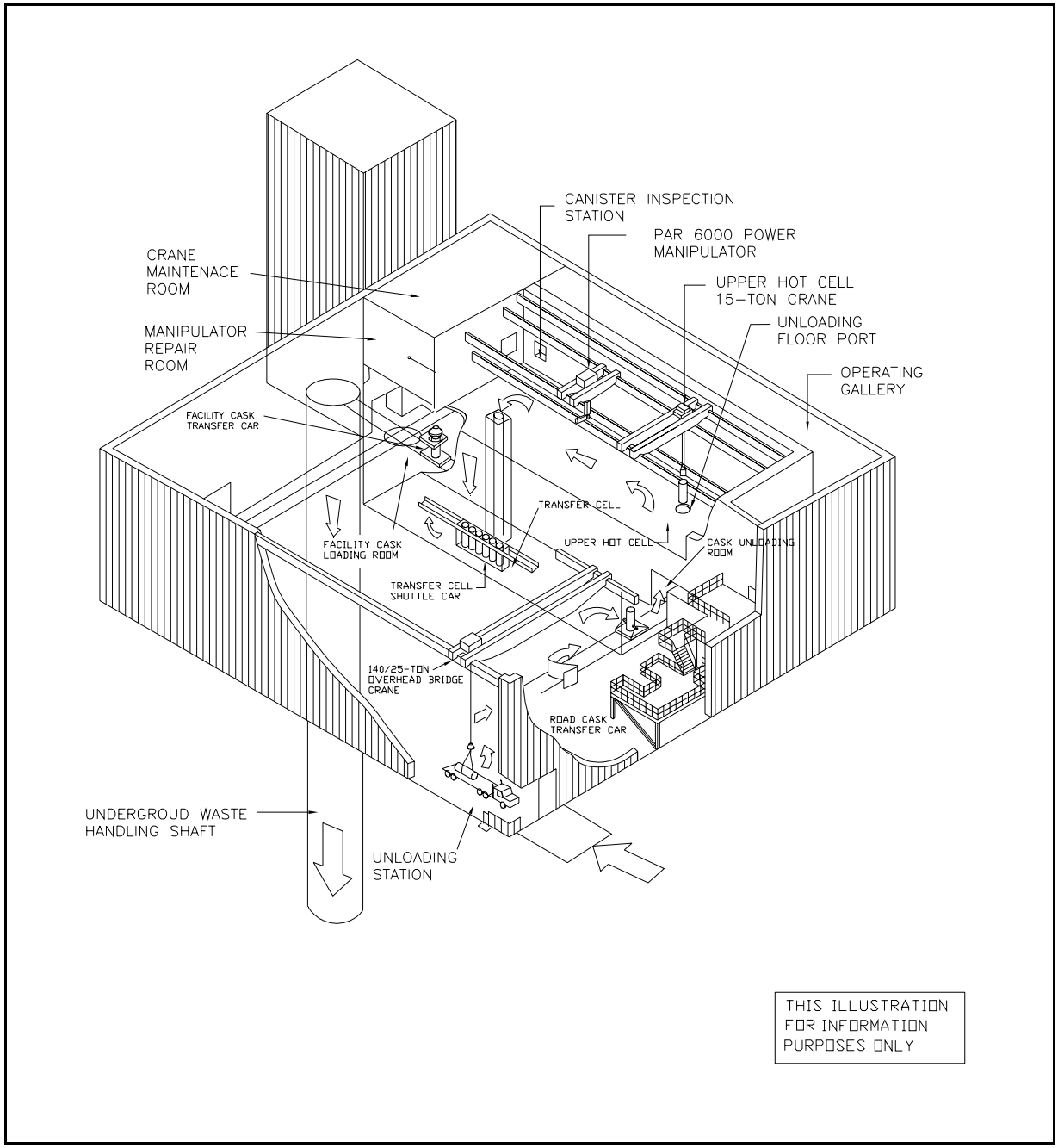


Figure 3. Pictorial View of RH TRU Surface Facilities

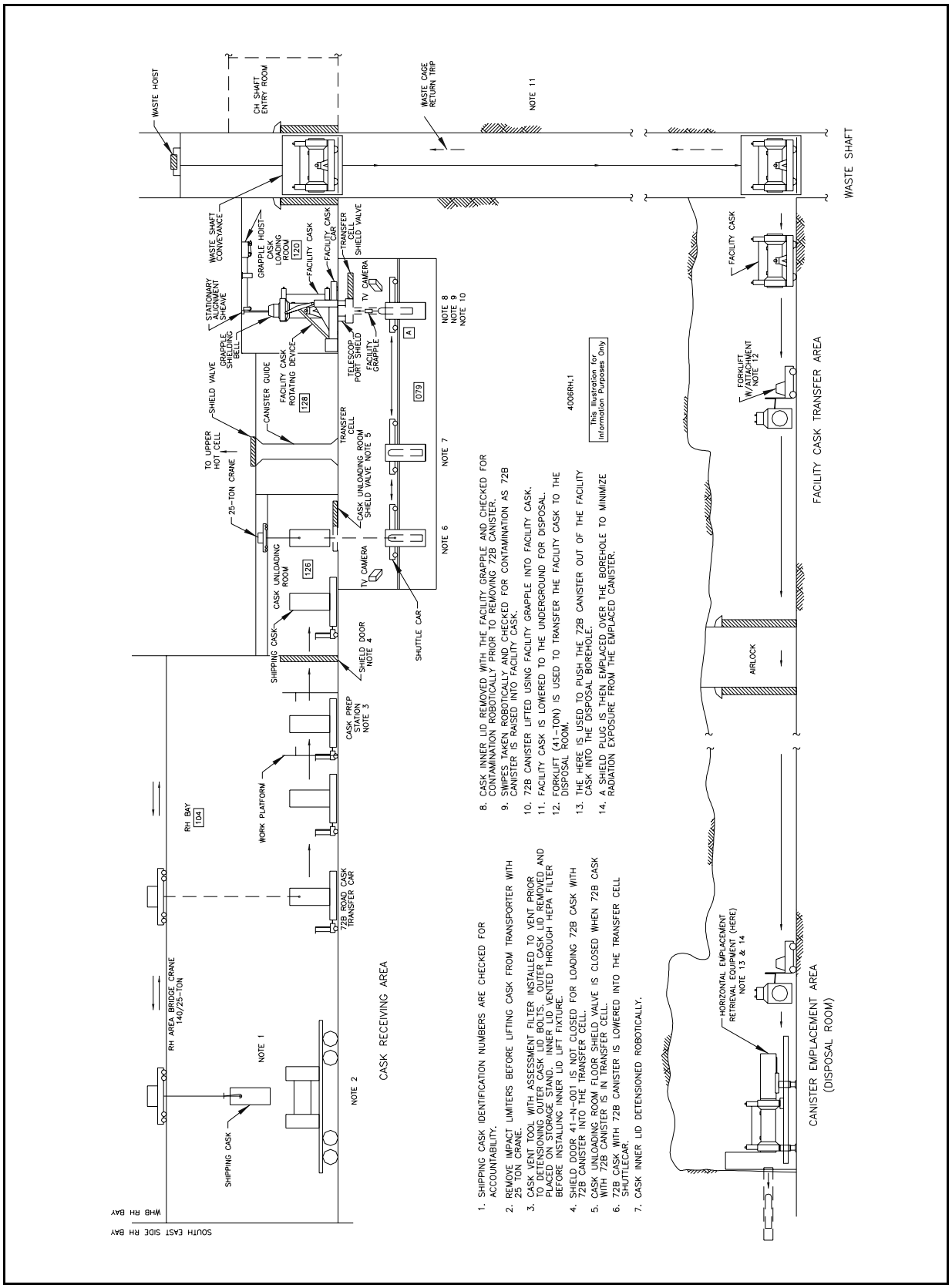


Figure 4. RH-72B TRU Process Overview

Road Cask Unloading

The road cask is moved from the cask preparation station into the Cask Unloading Room. A 25-ton crane with a road cask lift fixture is located in the Cask Unloading Room. After the Cask Unloading Room lift fixture has engaged two opposing lifting trunnions of the road cask, the crane lifts the road cask and positions the cask over the Cask Unloading Room floor shield valve. The following interlocks are required prior to opening the floor shield valve:

1. The 25-ton crane is positioned over the Cask Unloading Room floor valve.

2. The shuttle car cask receiver, in the Transfer Cell, is positioned under the Cask Unloading Room floor valve.

3. The Transfer Cell ceiling shield valve is closed.

4. The Hot Cell floor shield valve is closed.

When all interlocks are satisfied, the Cask Unloading Room floor shield valve is opened.

Transfer Cell

The road cask is lowered through the open Cask Unloading Room floor shield valve into the Transfer Cell and onto the shuttle car road cask receiver. The height of the cask receiver and the size of the shuttle car prevent any road cask movement once it is inside the receiver. The road cask lift fixture is disengaged from the lifting trunnions. Closed-circuit television (CCTV) cameras and load cells on the lift fixture are used to verify that the lift fixture is disengaged. The 25-ton crane lift fixture is raised back inside the Cask Unloading Room and the floor shield valve is closed.

The Transfer Cell shuttle car is designed to transfer one road cask at a time from below the Cask Unloading Room floor shield valve to the various robotic workstations in the Transfer Cell. Remote-controlled CCTV cameras are used to monitor waste handling operations in the Transfer Cell.

The shuttle car positions the road cask under the robotic inner lid de-tensioning device. The de-tensioning device loosens the lid retaining bolts, which are spring-loaded so that they remain in the inner lid. The de-tensioning device is retracted, and the shuttle car then positions the road cask directly below the Transfer Cell ceiling shield valve.

Facility Cask Loading Room

In the Facility Cask Loading Room, the facility cask, on the facility cask transfer car, is positioned so that when it is rotated to the vertical position by the facility cask rotating device, it is aligned with the opening of the Transfer Cell ceiling shield valve and the telescoping port shield. The Facility Cask Loading Room shield door is closed.

When the facility cask has been rotated to the vertical position, the telescoping port shield, mounted in the floor of the Facility Cask Loading Room, is raised to mate with the facility cask bottom shield valve body. The Facility Cask Loading Room 6.25-ton grapple hoist is lowered so that the shield bell is in contact with the facility cask top shield valve body. With the shield bell and the telescoping port shield in contact with the facility cask, the RH TRU waste container is totally shielded and can be safely transferred from the road cask into the facility cask.

The top and bottom facility cask shield valves are opened. Then the Transfer Cell ceiling shield valve is opened. The facility grapple, attached to the 6.25-ton grapple hoist, is lowered through the facility cask into the Transfer Cell. The facility grapple engages the inner lid lift fixture and lifts the inner lid clear of the road cask. When the lid is clear of the cask, radiological contamination swipes are taken robotically and transferred from the Transfer Cell to the Service Room for analysis. The shuttle car is then repositioned so that the inner lid storage platform is aligned under the Transfer Cell ceiling shield valve. The grapple hoist positions the inner lid on its storage platform and releases the lift fixture. The facility grapple is lifted so that it clears the road cask and the shuttle car then positions the road cask to align with the Transfer Cell ceiling shield valve. The facility grapple is lowered until it engages the waste canister pintle.

As the waste canister is lifted from the road cask and before it passes through the Transfer Cell ceiling shield valve, radiological contamination swipes are taken robotically and transferred from the Transfer Cell to the Service Room for analysis. Also, the waste canister identification is visually verified and compared against the identity listed in the WWIS to verify that the canister is suitable for emplacement. During the lift, the CCTV cameras provide a visual inspection to verify the mechanical integrity of the waste canister.

When the waste canister has cleared the Transfer Cell ceiling shield valve, the shield valve is closed and the waste canister is held in position until the results of the contamination surveys, waste canister identification number verification, and canister integrity are reviewed. If results are satisfactory, operations may continue. If results are not satisfactory, operations are suspended and a recovery plan is initiated.

The waste canister is now fully lifted inside the facility cask. The bottom shield valve of the facility cask is closed, and the facility grapple hoist lowers the waste canister so that it rests on the gate of the bottom shield valve. The facility grapple is disengaged from the waste canister pintle and lifted into the shield bell. The facility cask top shield valve is closed. The shield bell is then lifted away from the facility cask and the telescoping port shield is lowered. The facility cask is rotated to the horizontal position. The Facility Cask Loading Room shield door is opened.

Waste Shaft Entry Room

In the waste shaft entry room, the waste hoist conveyance is positioned, the shaft gates are opened, the pivot rails are lowered, and the facility cask transfer car transports the facility cask onto the waste hoist conveyance, which lowers it to the WIPP underground.

Transfer Area

When the waste hoist conveyance reaches the disposal horizon in the WIPP underground, the chairing device is activated, the shaft gates are opened, the pivot rails are lowered, and the facility cask transfer car moves from the conveyance into the transfer area (E-140 drift) under its own electrical power. The 41-ton forklift lifts the facility cask from the facility cask transfer car and into the RH waste disposal location.

RH TRU Waste Disposal

At the RH waste disposal location, the 41-ton forklift places the facility cask on the waste transfer machine, which has been previously aligned with a horizontal borehole (see Figure 5). The facility cask is moved forward to mate with the shield collar and the transfer carriage is advanced to mate with the rear facility cask shield valve. Both facility cask shield valves are opened and the transfer mechanism extends to push the canister into the borehole. After the transfer mechanism is retracted into the facility cask, the forward shield valve is closed, and the transfer mechanism is further retracted into its housing. A forklift, using the strong back, positions a shield plug on the shield plug carriage. The transfer carriage is moved to the rear about 6.5 ft (2 m) and a 6-ton forklift places the shield plug carriage on the staging platform. The transfer carriage pushes the shield plug into the facility cask. The front shield valve is opened and the shield plug is pushed into the borehole.

The transfer mechanism is retracted, and the facility cask shield valves are closed. The transfer carriage is retracted, the shield plug carriage is removed, and the facility cask is removed from the waste transfer machine. The waste transfer machine is now available for movement to another location. The disposal process ends with the administrative closeout of procedural paperwork and entry of waste emplacement data into the WWIS.

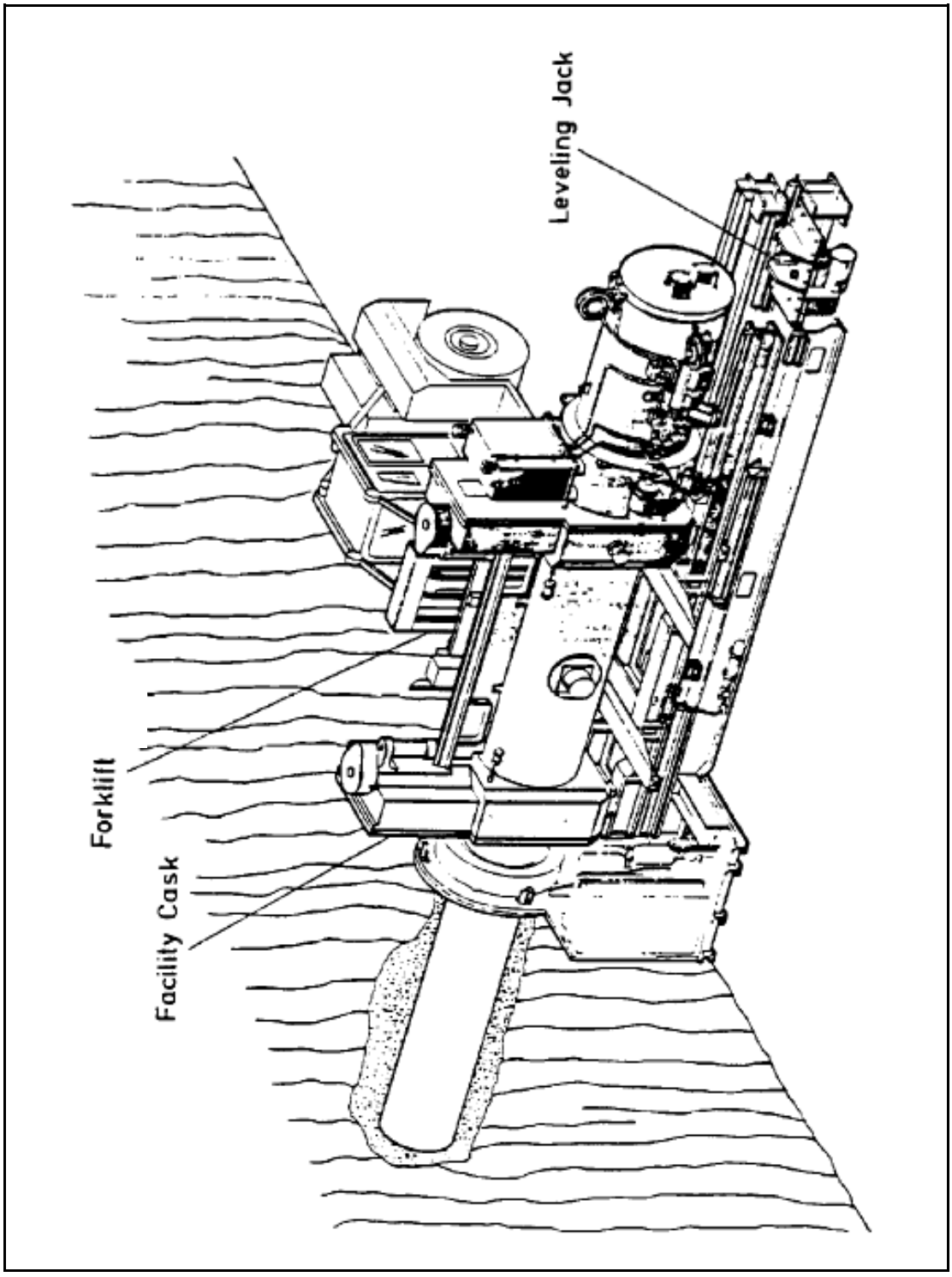


Figure 5. Facility Cask Installed on the Waste Transfer Machine Assembly

3.3 CNS10-160B Unloading Operation Description

This section describes the process and systems for handling RH TRU waste at WIPP using the CNS10-160B road cask (see Figure 6). The RH waste disposal process begins with the acceptance of a waste shipment in the WWIS. Figure 7 gives an overview of the CNS10-160B TRU waste disposal process.

CNS10-160B RH TRU Waste Receiving

RH TRU waste shipments arrive at WIPP by truck. Upon arrival at the WIPP security gate, each incoming road cask shipment is inspected, including shipment documentation verification, a security check, and an initial exterior radiological survey of the shipment.

After turning over the shipping documentation to the transportation engineer, the driver transports and parks the trailer in the parking area south of the RH Bay, or takes the trailer into the RH Bay and disconnects the transporter as directed by the waste handling engineer or the facility shift manager. The driver is subsequently released. If the trailer was parked south of the RH Bay, a driver and a transporter will be required to move the trailer into the RH Bay.

CNS10-160B Preparation

After the trailer is parked in the RH Bay, the small ratchet binders are disconnected from the top impact limiter and the top impact limiter is removed from the cask while still on the trailer. The 25-ton overhead crane is used to lift the impact limiter and place it aside in the RH Bay. Surfaces exposed by the removal of the top impact limiter are surveyed for radiological contamination. The four large ratchet binders are removed from the cask, the three small ratchet binders are removed from the lower impact limiter, and the ratchet binders are set aside. The lift lugs are attached to the cask. The lift lugs are then rigged to the 140-ton crane and the cask is lifted clear of the bottom impact limiter. The CNS10-160B is then placed on the transfer car and moved into the preparation station.

CNS10-160B Primary Lid Removal

The cask cavity is vented through a HEPA filter via the vent port to equalize pressure between the road cask cavity and the atmosphere. The 24 hexagonal bolts on the cask's primary lid are loosened and removed. Lid lift fixtures are then attached to the three lift points on the cask lid. The road cask transfer car is then moved into the Cask Unloading Room and the cask is centered beneath the Hot Cell shield port plug. The Cask Unloading Room shield door is then closed and the Hot Cell crane is used to remove the Hot Cell shield port plug and set it aside in the Hot Cell. The Hot Cell crane is then connected to the cask lid lift fixture and the cask lid is removed, lifted through the opening in the Hot Cell floor, and set aside.

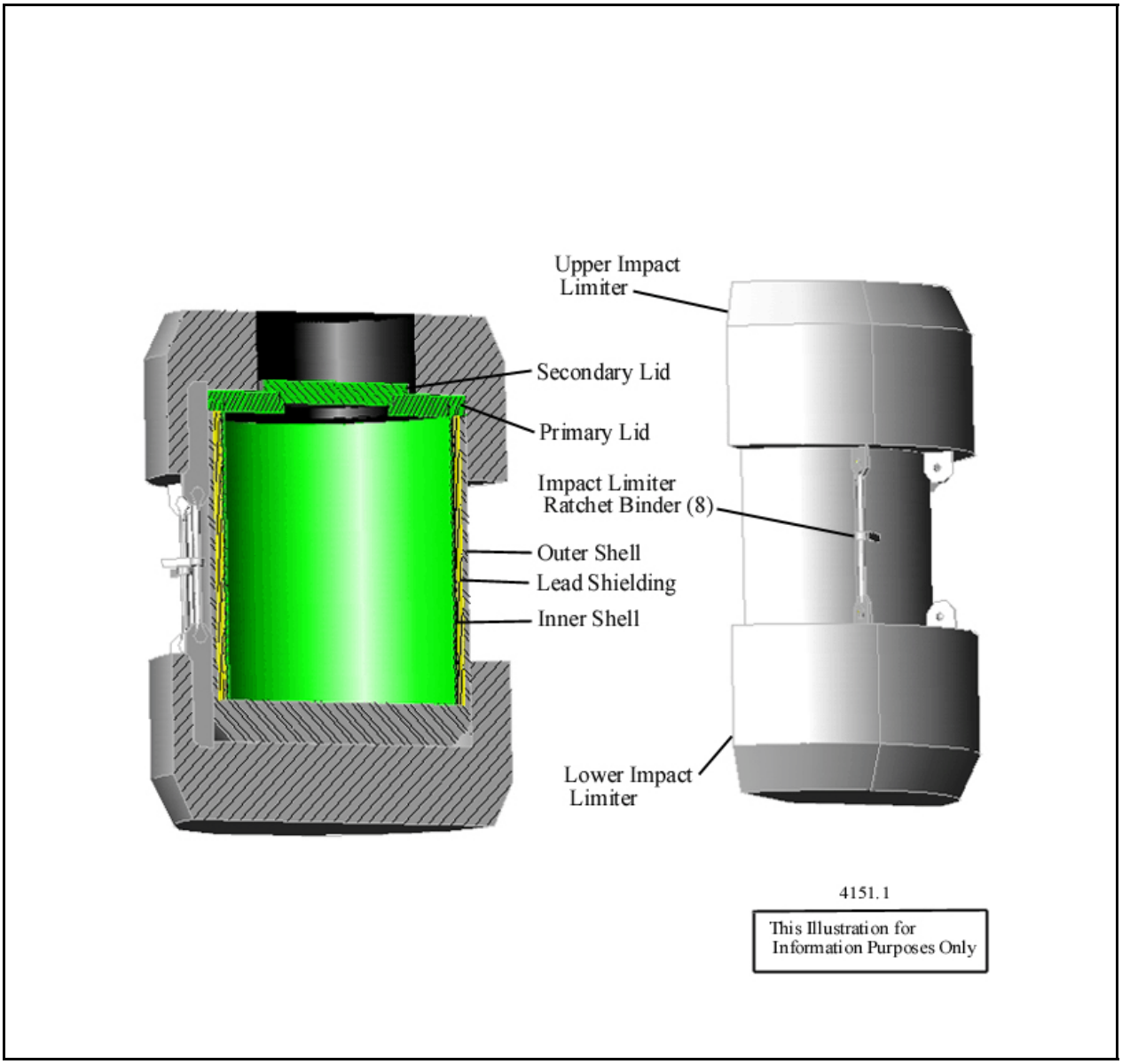
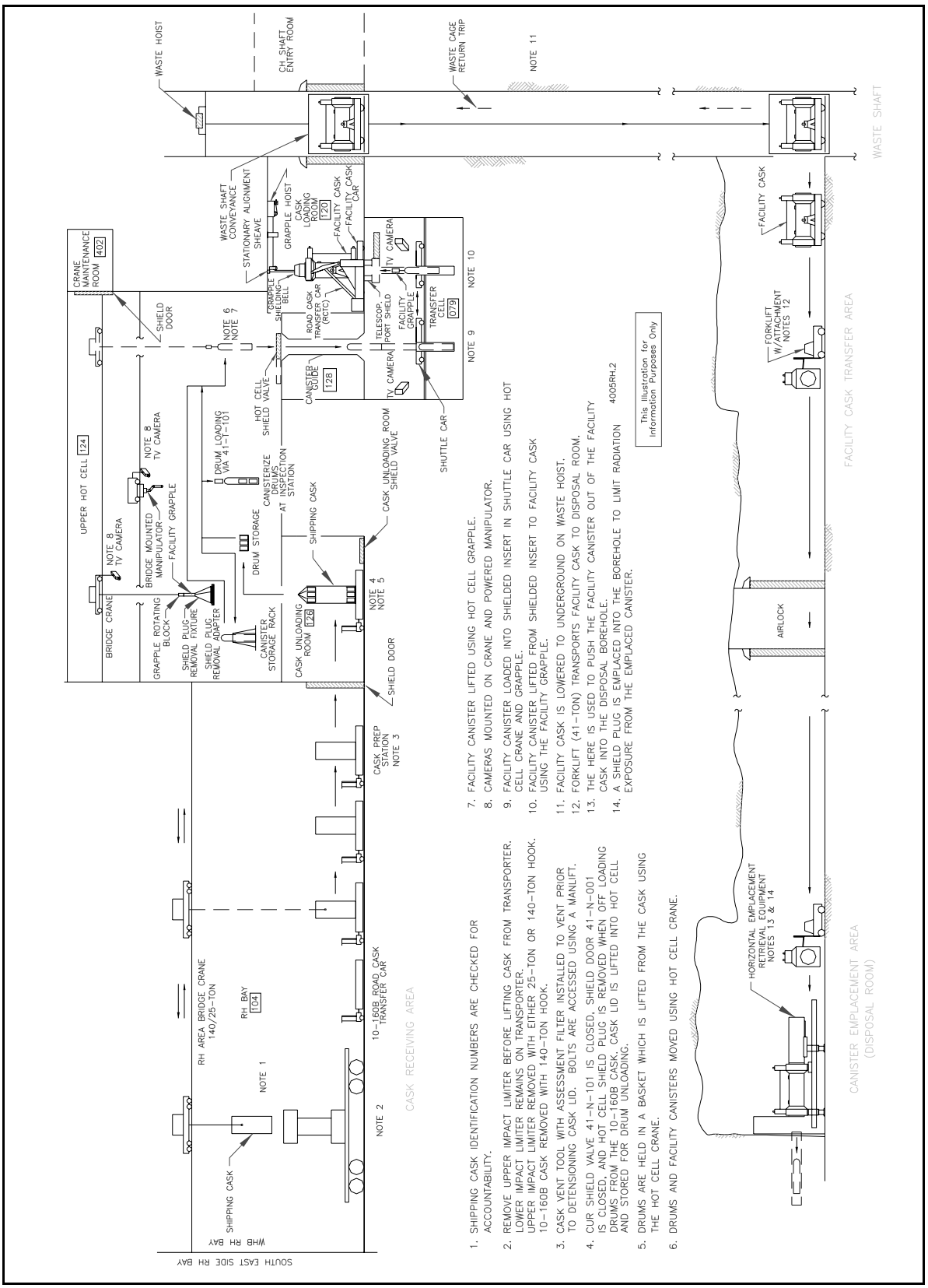


Figure 6. CNS10-160B Road Cask



1. SHIPPING CASK IDENTIFICATION NUMBERS ARE CHECKED FOR ACCOUNTABILITY.
2. REMOVE UPPER IMPACT LIMITER BEFORE LIFTING CASK FROM TRANSPORTER. LOWER IMPACT LIMITER REMAINS ON TRANSPORTER. UPPER IMPACT LIMITER REMOVED WITH EITHER 25-TON OR 140-TON HOOK. 10-160B CASK REMOVED WITH 140-TON HOOK.
3. CASK VENT TOOL WITH ASSESSMENT FILTER INSTALLED TO VENT PRIOR TO DETENSIONING CASK LID. BOLTS ARE ACCESSED USING A MANLIFT.
4. CUR SHIELD VALVE 41-N-101 IS CLOSED, SHIELD DOOR 41-N-001 IS CLOSED, AND HOT CELL SHIELD PLUG IS REMOVED WHEN OFF LOADING DRUMS FROM THE 10-160B CASK. CASK LID IS LIFTED INTO HOT CELL AND STORED FOR DRUM UNLOADING.
5. DRUMS ARE HELD IN A BASKET WHICH IS LIFTED FROM THE CASK USING THE HOT CELL CRANE.
6. DRUMS AND FACILITY CANISTERS MOVED USING HOT CELL CRANE.
7. FACILITY CANISTER LIFTED USING HOT CELL GRAPPLE.
8. CAMERAS MOUNTED ON CRANE AND POWERED MANIPULATOR.
9. FACILITY CANISTER LOADED INTO SHIELDED INSERT IN SHUTTLE CAR USING HOT CELL CRANE AND GRAPPLE.
10. FACILITY CANISTER LIFTED FROM SHIELDED INSERT TO FACILITY CASK USING THE FACILITY GRAPPLE.
11. FACILITY CASK IS LOWERED TO UNDERGROUND ON WASTE HOIST.
12. FORKLIFT (41-TON) TRANSPORTS FACILITY CASK TO DISPOSAL ROOM.
13. THE HERE IS USED TO PUSH THE FACILITY CANISTER OUT OF THE FACILITY CASK INTO THE DISPOSAL BOREHOLE.
14. A SHIELD PLUG IS EMPLACED INTO THE BOREHOLE TO LIMIT RADIATION EXPOSURE FROM THE EMPLACED CANISTER.

Figure 7. CNS10-160B RH TRU Process Overview

CNS10-160B Unloading

After the cask lid has been set aside, the Hot Cell crane is attached to the drum carriage lift fixture. The drum carriage lift fixture is lowered through the Hot Cell floor opening and connected to the upper drum carriage assembly inside the cask. The upper drum carriage assembly is lifted into the Hot Cell and swiped for contamination, the bar code identification numbers from the drums are verified against the WWIS, and the carriage is set on the Hot Cell floor as close as possible to the inspection station. The drum carriage lift fixture is disconnected from the upper drum carriage. This process is repeated for the lower drum carriage. Once the lower drum carriage has been set on the Hot Cell floor, empty drum carriages may be reloaded into the empty CNS10-160B cask. The Hot Cell crane is then disconnected from the drum carriage lift fixture.

CNS10-160B Primary Lid Installation

The cask lid is lifted using the previously attached lid lift fixture and lowered through the Hot Cell floor opening. The lid is lowered onto the cask and disconnected from the Hot Cell crane. The Hot Cell crane is then used to replace the Hot Cell shield port plug. After the Hot Cell shield port plug is in place, the Cask Unloading Room shield door is opened and the road cask transfer car is moved to an area accessible to the 140/25-ton crane. The 25-ton crane is connected to the cask lid lift fixture and the cask lid is removed and set aside. The internals of the cask and, if present in the cask, the empty drum carriage units are surveyed for radiological contamination. The lid O-rings are inspected for cleanliness and damage. The O-ring seal-seating surfaces are cleaned and inspected to prevent O-ring damage. The lid is lifted and placed on the cask. The lid lift fixture is disconnected from the cask lid. The 24 hexagonal bolts are installed, hand tightened, and properly torqued.

CNS10-160B Trailer Loading

The CNS10-160B is lifted off the road cask transfer car using the 140-ton crane. The cask is moved over the trailer, centered to align with the lower impact limiter, and lowered into the lower impact limiter. The cask lift lugs are removed and the small and large ratchet binders are installed. The upper impact limiter is lifted using the 25-ton crane, aligned, and lowered onto the cask. The small ratchet binders are then attached to the top impact limiter. The cask is prepared for off-site transport. All rigging is removed.

Drum Canisterization and Canister Transfer

The Hot Cell crane is used to move an empty WIPP facility canister to the inspection station. The shoulder hook on the Hot Cell bridge-mounted, powered manipulator is then used to engage the sling from one of the drums in a carriage unit and the drum is lifted free of the carriage unit. The identification number of the drum is recorded and radiological contamination surveys are performed on the drum using the master-slave manipulators. The swipes from the contamination survey are transferred to the Hot Cell

Operating Gallery via the transfer drawer for counting. Once the swipes have been counted, the drum is lowered into the WIPP facility canister. This process is repeated until three drums are loaded in the canister.

Once the canister is loaded, the canister lid is connected to the Hot Cell crane and placed onto the WIPP facility canister. The canister lid is rotated to lock it in place using the Hot Cell bridge-mounted, powered manipulator and/or the Hot Cell crane and master-slave manipulator. The canister number is recorded and correlated with the bar code numbers from the drums loaded into it. The canister is then lifted from the inspection station moved to an empty receiver station in the east side of the Hot Cell until it can be transferred to the shuttle car for disposal. Partially loaded canisters remain at the Hot Cell inspection station until they are fully loaded.

Disposal of the facility canisters from the CNS10-160B unloading operation process is done using the existing RH-72B cask transfer system for RH disposal. The shuttle car is loaded with a shielded insert and positioned beneath the Hot Cell port. A loaded canister is lifted from the receiving station and positioned over the Hot Cell port with the Hot Cell shield valve closed. The Hot Cell shield valve is opened and the canister is lowered into the shielded insert located on the shuttle car. The Hot Cell crane is disconnected from the canister, the crane hook is raised until it clears the Hot Cell shield valve, and the shield valve is closed. The canister is then processed for disposal as mentioned in the previous process. These activities are repeated until all loaded canisters are removed from the Hot Cell.

4.0 RESPONSIBLE CONTRACTOR

WTS is the WIPP management and operating contractor responsible for RH waste disposal operations.

5.0 DESIGNATION OF ACTION AS A NEW START

The ORR for RH waste disposal operations is designated as a "New Start" ORR. WIPP has been classified as a segmented Hazard Category 2 facility as documented in the RH TRU Documented Safety Analysis (DSA). This classification was based on the deterministic analysis of an unmitigated release of the material at risk from the facility to the environment.

The acquisition cost for the WIPP facility was $558 million through FY 2000. This included $431.1 million in capital construction, $81.5 million in capital equipment, and $31.4 million in general plant projects. Construction of RH waste handling facilities was included in this acquisition. RH start-up costs were $2.8 million in FY 2005, and are projected to be $7.2 million in FY 2006, including required facility and equipment modifications, capital equipment acquisition, engineering support, and readiness certification.

6.0 PROPOSED BREADTH OF THE ORR

This section defines the breadth of the Contractor ORR with respect to each of the core requirements (CRs) from DOE O 425.1C. The CRs below are organized under the Integrated Safety Management System (ISMS) Guiding Principle they are associated with in DOE O 425.1C, and are numbered to match the numbers in DOE O 425.1C. The italicized quotations are taken from DOE O 425.1C and DOE-STD-3006-2000. Core requirements 16, 17, and 18 are applicable to the DOE ORR only and will not be addressed in this POA.

6.1 Responsibility for the Protection of Employees, the Public, and the Environment

Guiding Principle #1 - Line Management is responsible for the protection of employees, the public, and the environment. Line Management includes those contractor and subcontractor employees managing or supervising employees performing work.

CR 1 Line Management has established programs to ensure safe accomplishment of work (the authorization authority should identify in the POA those specific infrastructure programs of interest for the start-up or restart). Personnel exhibit an awareness of public and worker safety, health, and environmental protection requirements and, through their actions, demonstrate a high-priority commitment to comply with these requirements.

WIPP Safety Management Programs were thoroughly evaluated and found to be robust during the ORR for CH waste disposal operations completed in 1998. In addition, WIPP was recertified as a Voluntary Protection Program (VPP) Star site in September 2005. WIPP was the first DOE site to achieve DOE program Star status in 1994.

WTS annually prepares a comprehensive ISMS report for WTS management review. The report determines the effectiveness of the ISMS and includes self-assessments and other evaluations performed by WTS. Areas for improvement are identified, reported and tracked to closure via the WTS Commitment Tracking System. This mechanism helps the team review not only the effectiveness of individual components but also the effectiveness and integration of the entire ISMS.

The annual WTS review of the ISMS is followed by a CBFO review. In its most recent review, the CBFO reported, "WTS has integrated safety into all facets of its operations and has an effective feedback and improvement system in place."

The WTS ORR team will evaluate WIPP Safety Management Programs to the extent necessary to ascertain their readiness to support the safe and compliant accomplishment of RH waste disposal operations. To accomplish this, the team will observe simulated RH waste disposal operations, off-normal RH waste disposal

operations, and simulated emergency operations as necessary. All aspects of RH-72B and CNS10-160B cask preparation, handling, and disposal operations will be included in these observations. In addition, the team will conduct document reviews and personnel interviews to verify that WIPP Safety Management Programs have been modified where required and required training has been completed.

Specific safety management programs of interest for the start-up of RH waste disposal operations include Radiological Safety and Emergency Management, Industrial Safety and Hygiene, Environmental Protection, Nuclear Safety, Maintenance, Engineering Configuration Control, Fire Protection, Criticality Safety, Training, and Quality Assurance.

The WTS ORR team will evaluate RH waste disposal operations and support personnel during interviews, drills, and performance demonstrations to ensure that they are aware of public and worker safety, health, and environmental protection requirements and demonstrate a high-priority commitment to comply with these requirements.

6.2 Lines of Authority and Responsibility

Guiding Principle #2 - Clear and unambiguous lines of authority and responsibility for ensuring ES&H are established and maintained at all organizational levels.

CR 2 Functions, assignments, responsibilities and reporting relationships (including those between the line operating organization and ES&H support organizations) are clearly defined, understood, and effectively implemented with line management responsibility for control of safety.

RH waste handling operations, an element of WTS Integrated Waste Operations, is shown on the WTS organization chart dated October 1, 2005. The WTS ORR team will verify that RH waste handling operations have implemented a management system that assigns safety as priority one and details organizational responsibilities. The WTS ORR team will verify that functions, assignments, responsibilities, and reporting relationships are defined and understood. The WTS ORR team will observe the effectiveness of RH program interfaces and responsibilities demonstrated during interviews, drills, and demonstrations to verify line management control of safety.

6.3 Personnel Experience, Knowledge, Skills, and Abilities

Guiding Principle #3 - Personnel shall possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.

CR 3 The selection, training, and qualification programs for operations and operations support personnel have been established,

documented, and implemented. The selection process and applicable position-specific training for managers assures competence commensurate with responsibilities. (The training and qualification program encompasses the range of duties and activities required to be performed.)

Training and qualification program requirements for RH operations and RH operations support personnel have been documented in the Training Implementation Matrix (TIM). The WTS ORR team will verify adequate training for these personnel as documented in the CBFO-approved TIM. The WTS ORR team will verify the adequacy of the qualifications of WTS RH technical support personnel and management staff responsible for RH waste disposal operations with respect to their position descriptions, the HWFP training matrix, and the TIM, as appropriate. RH-related position descriptions will be evaluated for the incorporation of TIM and HWFP requirements. Recent hiring activities for RH-related positions will be reviewed to verify compliance with requirements.

CR 4 Level of knowledge of managers, operations, and operations support personnel is adequate based on reviews of examinations and examination results and selected interviews of managers, operating, and operations support personnel.

The WTS ORR team will verify the adequacy of RH waste operation process knowledge and material handling safety by observing both RH-72B and CNS10-160B waste unloading and handling activities performed by the operations staff and applicable support personnel. Interviews of applicable managers, operators, and operations support personnel, as well as reviews of examinations and examination results, will be used to determine effectiveness of the RH training programs in establishing an adequate level of knowledge.

CR 5 Modifications to the facility have been reviewed for potential impacts on training and qualification. Training has been performed to incorporate all aspects of these changes.

The WTS ORR team will review WTS Engineering Configuration Control documentation and records to verify that changes to training qualification programs are tracked to completion for facility modifications associated with RH waste operations. Adequacy of incorporating modification impacts into operator training and qualification will be verified by observation of RH waste operations, interviews, and review of RH training programs and qualification cards.

6.4 Effective Allocation of Resources

Guiding Principle #4 - Resources are effectively allocated to address ES&H, programmatic, and operational considerations. Protecting employees, the public, and the environment is a priority whenever activities are planned and performed.

CR 6 Sufficient numbers of qualified personnel are available to conduct and support operations. Adequate facilities and equipment are available to ensure operational support services are adequate for operations. (Such support services include operations, training, maintenance, waste management, environmental protection, industrial safety and hygiene, radiological protection and health physics, emergency preparedness, fire protection, quality assurance, criticality safety, and engineering.)

The WTS ORR team will observe normal and emergency RH waste disposal operations using both the RH-72B and the CNS10-160B to verify that sufficient qualified personnel are available to meet the defined WIPP RH DSA facility mode-specific staffing requirements. The ORR team will also verify that adequate facilities, equipment, and support personnel are available and qualified to conduct safe RH operations. For the purpose of this ORR, these requirements will be based upon the projected waste operation throughput.

6.5 Hazard Identification, Evaluation, and Mitigation

Guiding Principle #5 - Before work is performed, the associated hazards are evaluated and an agreed upon set of standards and requirements are established which, if properly implemented, provide adequate assurance that employees, the public, and the environment are protected from adverse consequences.

CR 7 Facility safety documentation is in place and has been implemented that describes the "safety envelope" of the facility. The safety documentation should characterize the hazards/risks associated with the facility and should identify preventive and mitigating measures (systems, procedures, administrative controls, etc.) that protect workers and the public from those hazards/risks. Safety structures, systems, and components (SSCs) are defined and a system to maintain control over their design is established.

The WTS ORR team will verify that an appropriately approved DSA is available that addresses all aspects of RH waste disposal operations. Interviews, observation of operations, and documentation reviews will be performed to ensure that conditions as stated in the RH DSA, RH TSRs, and Specific Administrative Controls, are implemented

to provide adequate protection for workers, the public, and the environment. The WTS ORR team will verify that RH Mode Compliance Equipment associated with RH waste disposal operations has been defined and that a system to maintain control of the design of RH Mode Compliance Equipment is defined and implemented.

CR 8 A program is in place to confirm and periodically reconfirm the condition and operability of safety SSCs. This includes examination of records of tests and calibrations of these systems. The material condition of all safety, process, and utility systems will support the safe conduct of work.

The WTS ORR team will review approved surveillance procedures, schedules, and results of completed surveillances to ensure that the requirements of the RH DSA have been implemented satisfactorily. The team will observe performance of selected surveillance procedures to evaluate the ability of RH operations and support personnel to complete the surveillances satisfactorily. The WTS ORR team will observe operations and conduct walk-downs of RH waste disposal equipment and systems identified as RH Mode Compliance Equipment in the RH DSA to verify adequacy of operational condition. The WTS ORR team will review maintenance records, including the appropriate instrument calibrations, to ensure that designated RH Mode Compliance Equipment will support the safe conduct of work.

CR 9 The facility systems and procedures, as affected by facility modifications, are consistent with the description of the facility, procedures, and accident analysis included in the safety basis.

The WTS ORR team will assess the processes that ensure system descriptions, operating procedures, and maintenance procedures are maintained current and consistent for designated RH Mode Compliance Equipment affected by facility modifications. The ORR will verify that a process is in place and implemented to review design changes for their impact to the WIPP RH DSA and its supporting analyses.

6.6 Adequate Administrative and Engineering Controls

Guiding Principle #6 - Administrative and Engineering Controls to prevent and mitigate hazards are tailored to the work being performed and associated hazards. Emphasis should be on designing the work and/or controls to reduce or eliminate the hazards and to prevent accidents and unplanned releases and exposures.

CR 10 Adequate and correct procedures and safety limits are in place for operating the process systems and utility systems that include revisions for modifications that have been made to the facility.

The WIPP RH DSA does not contain safety limits for the waste disposal process and supporting utility systems. The WTS ORR team will evaluate RH waste handling

operations and applicable utility system procedures to verify that they have been properly validated and determine their adequacy. The WTS ORR team will observe the use of these procedures during routine and simulated emergency operations and verify the ability of the WTS staff to operate and maintain the process equipment and utility systems as described in the WIPP RH DSA.

CR 11 A routine drill program and emergency operations drill program, including program records, have been established and implemented.

The WTS ORR team will observe the performance of off-normal and simulated emergency RH operations drills to evaluate the effectiveness of the ongoing emergency preparedness program. The WTS ORR team will review drill program records to ensure that drills are conducted on a routine basis.

CR 12 An adequate start-up or restart program has been developed that includes plans for graded operations and testing after start-up or resumption to simultaneously confirm operability of equipment, viability of procedures, and the performance and knowledge of the operators. The plans should indicate validation processes for equipment, procedures, and operators after start-up or resumption of operations including any required restrictions and additional oversight.

The WTS ORR team will review and assess the WIPP RH Waste Disposal Operations Start-Up Plan to assure it contains adequate validation processes for equipment, procedures and operators, including any necessary restrictions and provisions for additional oversight after start-up.

CR 13 The formality and discipline of operations is adequate to conduct work safely and programs are in place to maintain this formality and discipline.

The WTS ORR team will observe the implementation of the applicable elements of DOE Order 5480.19, Change 2, *Conduct of Operations Requirements for DOE Facilities*, in RH waste disposal operations and support activities, through interviews, document reviews, drills, and demonstrations.

6.7 Authorization Agreement

Guiding Principle #7 - The conditions and requirements to be satisfied for operations to be initiated and conducted are established and agreed upon by DOE and the contractor. These agreed-upon conditions and requirements are requirements of the contract and binding on the contractor. The extent of documentation and level of authority for

agreement shall be tailored to the complexity and hazards associated with the work and shall be established in a Safety Management System.

CR 14 Formal agreements between the operating contractor and the DOE have been established via the contract or other enforceable mechanism to govern the safe operations of the facility. A systematic review of the facility's conformance to these requirements has been performed. These requirements have been implemented in the facility, or compensatory measures are in place, and formally agreed to during the period of implementation. The compensatory measures and the implementation period are approved by the DOE.

The WTS ORR team will verify that a formal agreement (Authorization Agreement) is in place between the WTS and the DOE to contractually establish requirements for safe RH operation of WIPP. The WTS ORR team will verify that Standards/Requirements Identification Documents (S/RIDs) have been approved and implemented. The WTS ORR team will verify, if appropriate, that compensatory measures have been implemented and schedules to gain full compliance with applicable DOE Orders and directives have been formally approved by WTS and the DOE.

The WTS ORR team will evaluate compliance with the WIPP Hazardous Waste Facility Permit (HWFP) to ensure that the RH hazardous waste permit conditions (or the draft RH hazardous waste permit conditions) have been properly implemented. On November 23, 2005, the New Mexico Environment Department (NMED) issued a draft HWFP that includes the RH TRU Waste Permit modification. Final approval of the RH TRU waste HWFP may not occur before the start of the contractor ORR. Therefore, if the final permit has not been approved, the WTS ORR team will evaluate implementation of the draft permit and the formal change control process that will identify and implement any changes from the draft permit to the final permit. CBFO will review and provide oversight for the process to be used. Approval of the process is a contractor ORR prerequisite. When the final permit is issued, the approved change control process will be applied to assure implementation of all new or revised permit requirements with CBFO oversight. Implementation of the final permit will be managed as a pre-start item to be included in the Readiness to Proceed Memorandum.

CR 15 A feedback and improvement process has been established to identify, evaluate, and resolve deficiencies and recommendations made by independent review groups, official review teams, audit organizations, and the operating contractor (e.g., DOE P 450.5, Line Environmental, Safety and Health Oversight).

The WTS ORR team will verify that processes exist and are implemented to identify, evaluate and respond to issues, deficiencies, or improvement suggestions communicated by internal or external auditors/reviewers. Where issues or deficiencies

exist, the WTS ORR team will evaluate these issues for potential impact on the ability to safely start-up RH waste disposal operations.

7.0 BOUNDARIES OF THE ORR

For the two RH waste handling processes, the WTS ORR performance demonstration boundaries will begin with the respective trailer carrying its designated cask, positioned in the RH Bay for unloading with the tractor removed and the RH Bay doors closed. The WTS ORR boundaries conclude for each process as stated below.

RH-72B

Concluding Boundaries - The waste canister is emplaced in the borehole and the borehole shield plug is emplaced. The RH-72B waste disposal process demonstration will be limited to:

- Positioning of the trailer for road cask unloading
- Preparation for the cask-to-cask transfer
- Transfer of the waste canister from the road cask to the facility cask
- Transport of the facility cask to the disposal location
- Emplacement of the canister in the designated borehole
- Borehole shield plug emplacement
- Updating of the WWIS
- Empty shipment preparation for the RH-72B

The following additional activities are also in scope for RH-72B operations:

- Off-normal and emergency response operations
- Safety program implementation within RH disposal activities
- Preoperational equipment checks
- Pre-shift briefings

CNS10-160B

Concluding Boundaries - The CNS10-160B-payload transferred into WIPP facility canisters, with the loaded canister placed in the transfer shuttle car (engaged in the cask-to-cask disposal process). The CNS10-160B waste process demonstration will be limited to:

- Positioning of the trailer for road cask unloading
- Preparation for cask unloading
- Road cask primary lid removal preparation
- Removal of the drum carriages from the cask
- Loading of drums into the WIPP facility canister
- Loading and transfer of the WIPP facility canister into the cask-to-cask process

- Updating of the WWIS
- Empty shipment preparation for the CNS10-160B

The following additional activities are in scope for CNS10-160B operations.

- Hot Cell operations
- Off-normal and emergency response operations
- Safety program implementation within RH disposal activities
- Preoperational equipment checks
- Pre-shift briefings

7.1 Interfaces

The following activities interface with and support safe RH waste disposal operations. Therefore, these activities are considered within the boundaries defined in Sections 6.0 and 7.0 and will be evaluated during the WTS ORR.

- Implementation of the radiation safety program within the RH waste disposal process (e.g., Operational Health Physics and Radiological Engineering)

- Operation of surface and underground Mode Compliance Equipment supporting RH waste operations, including performance of the associated surveillances

- Training of operators and technical support personnel as defined in the WIPP TIM for RH waste disposal processes

- Implementation of quality assurance requirements within the processes identified in the WTS RH ORR boundaries

- Issues Management "WIPP Form" process

- RH process Records management

- Implementation of the WIPP HWFP conditions and requirements, including conditions and requirements from the draft RH hazardous waste permit conditions if the final permit has not been approved and other permits applicable to RH disposal process activities identified within the WTS ORR boundaries

- Maintenance of RH Mode Compliance Equipment

- TSR Implementation, including the Unreviewed Safety Question (USQ) process for RH waste disposal operations and supporting processes

- Implementation of controls and Safety Management Programs from the RH DSA

- RH waste disposal operations and supporting process procedures

- Design and configuration control of RH Mode Compliance Equipment

- Emergency Response capabilities in support of RH process activities

7.2 Baseline Documents

The following requirements documents directly support the waste disposal process and will be used as baseline documents for the ORR. The S/RID process describes the contractual directives essential to the safe and efficient handling of RH waste. The remaining documents capture other programmatic and process expectations within the scope of the WTS ORR.

- WTS S/RID

- WIPP HWFP and applicable draft hazardous waste permit conditions for the RH waste disposal process if the final permit has not been approved

7.3 Exclusions

The boundaries of the RH ORR exclude those activities that do not directly support RH waste operations and are currently authorized by the DOE in support of CH waste handling operations. The following activities are excluded from the scope of the ORR:

- CH waste disposal operations and supporting activities will be excluded from this ORR. Activities that support both CH and RH waste disposal will only be assessed to ensure that the RH interface is adequate to support RH disposal operations (e.g., Waste Hoist operations). Receipt inspections performed at the main entrance to the facility are excluded from this ORR as the type of waste received does not change these processes.

- The WWIS, with the exception of RH data entry and RH data field content, is excluded from this ORR. The WWIS was reviewed thoroughly during the CH start-up activities. The operation of the WWIS is the same whether for CH or RH waste. In addition, the WWIS receives annual inspections from the U.S. Environmental Protection Agency.

- Mine Safety and Operations activities are excluded. Quarterly independent inspections are performed by the Mine Safety and Health Administration. In addition, the New Mexico State Mine Inspector performs annual inspections of mine safety.

- RH-72B/CNS10-160B cask design and maintenance are excluded. RH-72B/CNS10-160B cask design and the Safety Analysis Report for Packaging are approved by the NRC. The RH-72B/CNS10-160B casks will be in use with an NRC-approved maintenance program and will be audited by the NRC.

- The WIPP Dosimetry Program is excluded. The program is currently accredited and audited by the DOE Laboratory Accreditation Program.

- The waste package transportation system is excluded. The transportation system was reviewed thoroughly during the CH start-up activities. The fundamental transportation system is unchanged between the CH and RH process. The Colorado State Patrol Hazardous Material Division, representing the Western Governors' Association, currently performs annual audits of the transportation process. The U.S. Department of Transportation also conducts initial and follow-up audits for WIPP waste carriers.

- Site utilities not directly interfacing with RH waste handling (e.g., lighting, potable water, sewage, etc.) will be excluded from this RH ORR. These fundamental site utilities were evaluated during the CH ORR.

- Support organizations not directly involved with RH waste handling (e.g., Security, Accounting, Legal) are excluded from this RH ORR. Support organizations were reviewed thoroughly during the CH start-up activities.

- The design of equipment that does not directly support RH waste disposal will be excluded from this ORR. Fundamental design principles and configuration control were extensively reviewed during the CH ORR.

8.0 ORR PREREQUISITES

This section addresses conditions that must be met prior to starting the Contractor ORR. The specific prerequisites found in section 8.2 will be measured for adequacy during the WTS Line Management Assessment. Pre-start findings from the WTS Line Management Assessment associated with these prerequisites must be closed prior to the start of the Contractor ORR. Completion of the prerequisite conditions will be addressed in the WTS General Manager's Readiness to Proceed with the Contractor ORR Memorandum.

8.1 General Prerequisites

The following documents must be approved/issued and available prior to the start of the Contractor ORR:

- DOE-approved Contractor ORR POA

- WTS-approved Line Management Assessment Plan

- DOE-approved RH DSA

- WTS Line Management Assessment documentation based on minimum Core Requirements of DOE O 425.1C completed with all pre-start findings closed (with

the exception of a manageable list of open pre-start items that have a well-defined plan and schedule for closure to include implementation of the final RH HWFP if not approved and implemented before the start of the ORR) and post-start corrective actions identified and entered in the Commitment Tracking System (CTS)

- Memorandum of readiness to proceed with the Contractor ORR issued by the WTS General Manager

- Team leader-approved Contractor ORR Implementation Plan

8.2 Specific Prerequisites

The following specific prerequisites have been identified for the commencement of the Contractor ORR. The prerequisites are designated by numbers to match the Core Requirements in Section 6.0, Proposed Breadth of the ORR, and associated subsections. Evidence files will be established based on the requirements of the POA, and objective evidence will be available prior to the start of the ORR to demonstrate that each of the following prerequisites is met.

CR 1

1. The WTS LMA is complete. Documentation exists to show that the LMA demonstrated RH Waste Handling Program compliance, as well as employee commitment to public and worker safety and health and environmental compliance. Pre-start findings have been closed with the exception of a manageable list of open pre-start items that have a well-defined plan and schedule for closure. Any post-start findings have been identified and entered into the CTS.

2. Documentation exists to show that WIPP Safety Management Programs have been modified or updated as required to support RH waste disposal operations and required training is complete.

CR 2

1. A current WTS organization chart is available that includes RH waste disposal management, operations, and support personnel.

2. A WTS Integrated Safety Management System description has been approved that describes the functions, assignments, and organizational responsibilities for RH waste disposal operations consistent with the requirements of the approved RH DSA.

3. RH waste disposal management, operations and support personnel have been trained and understand the functions, assignments, responsibilities and reporting relationships for RH waste disposal operations as demonstrated during interviews and performance demonstrations.

CR 3

1. Documentation exists to show that WTS RH waste disposal management, operations, and support personnel have been selected, trained, and qualified in accordance with the CBFO-approved TIM. RH waste disposal management, operations and support personnel position descriptions are available from the WTS Human Resources Department.

2. Documentation exists to show that all RH personnel have met the prescribed entry-level requirements prior to being assigned to positions related to RH waste disposal operations.

3. RH training and qualification requirements cover the range of duties and activities required to be performed as evidenced during performance demonstrations.

4. Documentation exists to show that the RH training and qualification program meets the requirements of DOE O 5480.20A, Change 1, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*. Training records for RH management, operations, and support personnel are accurate and current.

5. Documentation exists to show that a continuing training program for RH operations and support personnel has been established consistent with the requirements of DOE O 5480.20A.

6. Documentation exists to show that RH training and qualification requirements reflect the latest changes to procedures and RH-related facility modifications.

CR 4

1. The level of knowledge of RH managers, RH operations, and RH operations support personnel is adequate to support the safe and compliant performance of RH waste disposal operations as evidenced during performance demonstrations, selected interviews, and review of examinations and examination results.

CR 5

1. Documentation exists to show that RH waste disposal facility modifications were reviewed for potential impacts on training and qualification, and that training and qualifications were modified appropriately to incorporate all aspects of these changes.

2. Documentation exists to show that RH waste disposal operations and operations support personnel have been trained and qualified to the most recent revisions to the training and qualification requirements.

3. The as-built configuration of the RH TRU waste handling facility and equipment is consistent with the design as evidenced during facility walk-downs, performance demonstrations, and documentation reviews.

CR 6

1. An approved RH waste disposal staffing plan is available for review. The minimum staffing requirements for RH waste handling operations are defined, and training and qualification records document equal or greater numbers of qualified personnel available in these positions. A list of applicable personnel has been placed in the evidence files.

2. Documentation exists to show that the approved RH waste disposal staffing plan supports the minimum qualified staff as defined in the WIPP RH TSR document and is adequate to support the projected waste operation throughput.

3. The defined minimum RH waste handling staff is adequate to support safe and compliant RH waste handling operations as evidenced during performance demonstrations.

4. Adequate facilities and equipment are available to ensure operational support services are available to support planned operations as evidenced during performance demonstrations, selected interviews, and document reviews.

CR 7

1. The WIPP DSA and TSRs for RH waste handling operations have been approved by the DOE.

2. Documentation exists to show that the approved RH DSA and TSR requirements are fully implemented, including required training. The implementation of the RH DSA and TSR requirements is adequate as evidenced during performance demonstrations and selected interviews.

3. Documentation exists to show that the WIPP Waste Acceptance Criteria are consistent with the applicable boundary conditions and facility process limits specified in the RH DSA.

4. Documentation exists to show that the Pre-Fire Plan has been revised to be current with RH waste handling operations and that emergency response personnel have been trained on this revision.

5. Documentation exists to show that the facility Fire Hazard Analysis (FHA) is approved and current with RH waste handling operations. RH-applicable requirements have been fully implemented as evidenced during facility walk-downs, record reviews, and performance demonstrations.

6. Documentation exists to show that the Criticality Safety Evaluations required to support RH waste handling operations have been completed, approved, and implemented. Applicable controls have been implemented in RH waste handling procedures.

CR 8

1. Documentation exists to show that WIPP RH Mode Compliance Equipment has been designated and is operational. RH Mode Compliance Equipment has been incorporated into the maintenance program.

2. Documentation exists to show that surveillance procedures required by the RH DSA to confirm and periodically reconfirm the condition and operability of RH Mode Compliance Equipment have been developed, approved, scheduled and performed in compliance with the DSA.

3. RH Mode Compliance Equipment is in a condition to support the safe performance of RH waste disposal operations as evidenced by equipment walk-downs and reviews of maintenance and surveillance records.

4. Documentation exists to show that required RH equipment calibrations and tests are complete, current, and scheduled in a recall program.

5. Tools and equipment for maintenance of RH Mode Compliance Equipment have been identified, calibrated, and tested as required, and are available to support maintenance

as evidenced by field walk-downs and review of applicable documentation.

6. Approved RH waste handling equipment maintenance procedures are available for review.

7. Documentation exists to establish the basis for RH system set points, loop accuracies, and acceptable tolerances.

8. Documentation exists to show that a review of incomplete maintenance actions has been conducted and none of the outstanding actions impact the ability to perform RH waste disposal operations safely in accordance with the requirements of the RH DSA.

CR 9

1. Documentation exists to show that RH facility systems and procedures, as affected by facility modifications, were subjected to the USQ determination process to ensure that changes were consistent with the description of the facility, procedures, and accident analysis included in the RH DSA.

CR 10

1. Documentation exists to show that RH operation and maintenance procedures have been approved and issued as controlled documents. The configuration management and design change control procedures have been approved and are available for use.

2. RH waste handling operations and applicable utility system procedures have been properly validated and are adequate to support safe performance of RH waste disposal operations as evidenced during performance demonstrations.

3. Documentation exists to show that RH waste handling procedures adequately implement appropriate administrative controls as described in the RH DSA.

CR 11

1. Documentation exists to show that the routine operations drill program and emergency drill program have been updated to include RH waste-related events.

2. Documentation exists to show that deficiencies identified during RH waste-related operations and emergency drills have been corrected and lessons learned have been fed back into training and qualification programs as appropriate.

	3.	RH waste disposal operations management, operators, and operations support personnel are adequately trained to handle RH waste-related operational emergencies and off-normal events as evidenced by performance demonstrations that included at least one operational emergency drill.
CR 12	1.	An approved start-up plan for RH waste disposal operations is available for review.
CR 13	1.	Documentary evidence exists to show that the current WTS Conduct of Operations Implementation Matrix includes RH waste disposal operations and has been approved by the CBFO.
	2.	Conduct of operations is adequate to support safe RH waste disposal operations as evidenced during performance demonstrations, interviews, and facility walk-downs.
CR 14	1.	A current contract, governing RH waste handling operations, exists between the WTS and the DOE. The WTS S/RID has been updated to reflect RH waste disposal requirements and approved by the CBFO.
	2.	Documentation exists to show that a review of S/RID requirements has been completed. Requirements identified as not fully implemented have been evaluated for impact on RH waste handling operations, and compensatory measures have been implemented where required.
	3.	Documentation exists to show that either the final RH HWFP modification has been implemented or the draft RH HWFP modification issued on November 23, 2005, has been implemented and a formal change control process to be used for implementation of the final permit has been approved.
	4.	Documentation exists to show that open programmatic noncompliances have been reviewed for applicability to RH waste handling operations, and those applicable to RH waste handling operations have been satisfactorily dispositioned.
CR 15	1.	The Issues Management "WIPP Form" process is approved and implemented to identify, evaluate, and respond to internal and external audit deficiencies, issues, and

suggestions. The WTS CTS process has been implemented, and documentation exists to show that an assessment of open items has been completed to determine their impact on the ability to safely conduct RH waste disposal operations. Open deficiencies have been categorized as pre-start or post-start, and all pre-start issues have been closed with the exception of a manageable list of open pre-start items that have a well-defined plan and schedule for closure.

9.0 ESTIMATED ORR START DATE AND DURATION

The RH Contractor ORR is estimated to start in June 2006. The Contractor RH ORR will require about two weeks to complete including field reviews and initial development of the ORR report. One additional week will be required to complete the final report. Follow-on activities, such as corrective action implementation and closure validation, will continue beyond the RH ORR readiness verification process. It is estimated that the DOE ORR will start in August 2006. Details of the ORR schedule are shown in Appendix A.

10.0 PROPOSED ORR TEAM LEADER

The proposed WTS RH ORR Team Leader is John G. McKibbin of Washington Group International. Mr. McKibbin has the necessary qualifications for managing and conducting the ORR, including (1) technical familiarity with the activities and functional areas being reviewed; (2) previous performance-based review experience or training; (3) demonstrated leadership and managerial skills; and (4) ORR experience, or formal training. Mr. McKibbin's resume of qualifications is shown in Appendix B.

11.0 OFFICIAL TO APPROVE START OF THE ORR

The official to approve the start of the RH waste disposal operations Contractor ORR will be the WTS General Manager. The WTS Manager for Operations is responsible for the activities required to achieve overall RH waste disposal operation readiness.

12.0 OFFICIAL TO APPROVE START-UP OF THE FACILITY

DOE O 425.1C provides the following designation of approval authority:

- For initial start-ups of new hazard category 1 and 2 nuclear facilities, the Secretary of Energy (or designee) shall approve the start-up.

- The Secretary of Energy delegated the start-up approval authority for WIPP to Mr. Dae Y. Chung, Acting Deputy Assistant Secretary for Integrated Safety Management and Operations Oversight, EM-3.2 (DOE Office of Environmental

Management). Delegation was conferred by DOE-EM Memorandum 0400861, dated February 18, 2004.

13.0 REFERENCES

Public Law 102-579, Waste Isolation Pilot Plant Land Withdrawal Act of 1992

Public Law 104-201, Amendment to Public Law 102-579, 1996

10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste"

10 CFR Part 830 Subpart B, "Safety Basis Requirements"

DOE O 425.1C, *Startup and Restart of Nuclear Facilities*

DOE O 5480.19, Change 2, *Conduct of Operations Requirements for DOE Facilities*

DOE O 5480.20A, Change 1, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*

DOE P 450.5, *Line Environmental, Safety and Health Oversight*

DOE-STD-3006-2000, *Planning and Conduct of Operational Readiness Reviews (ORR)*

DOE/WTS 01-3181, Revision 2, *Authorization Agreement for the Waste Isolation Pilot Plant*

WIPP Hazardous Waste Permit No. NM4890139088-TSDF, issued by the New Mexico Environment Department (as amended)

WTS Conduct of Operations Implementation Matrix

WIPP Training Implementation Matrix

WIPP Standards/Requirements Identification Documents

Appendix A - WIPP RH ORR Schedule

Activity	Forecast Completion Date
Start M&O Contractor ORR	09-Jun-06
Complete M&O Contractor ORR	23-Jun-06
Complete M&O Contractor ORR Final Report	30-Jun-06
Complete M&O Contractor ORR Pre-Start Corrective Actions	13-Jul-06
Complete M&O Contractor Validation of Pre-Start Corrective Actions	14-Jul-06
WTS General Manager Forward Readiness to Proceed Memo to the CBFO	14-Jul-06
CBFO Endorse Readiness to Proceed Memo and Forward to DOE HQ	19-Jul-06
DOE HQ Complete Review of Readiness to Proceed Memo and M&O Contractor ORR Report	01-Aug-06
DOE HQ Authorize Start of DOE ORR	02-Aug-06
Start DOE ORR	04-Aug-06
Complete DOE ORR	17-Aug-06
Complete DOE ORR Final Report	24-Aug-06
M&O Contractor Complete DOE ORR Pre-Start Corrective Actions	29-Aug-06
Complete DOE Validation of DOE ORR Pre-Start Corrective Actions	31-Aug-06
CBFO and DOE ORR Team Forward Final Report and Recommendation to DOE HQ	01-Sep-06
DOE HQ Complete Review of DOE ORR Results	14-Sep-06
DOE HQ Authorize Start-Up of RH TRU Waste Operations	14-Sep-06

Appendix B - WTS ORR Team Leader Resume

JOHN G. MCKIBBIN

Professional Summary:

Mr. McKibbin has over twenty-six years experience in Plutonium and other Special Nuclear Materials (SNM) Operations and Technical Management. He has provided technical support to the Babcox and Wilcox Hanford Company (BWHC) Plutonium Finishing Plant (PFP), including support for the 94-1 decision process. He was the Executive Vice-President/Deputy to President at Safe Sites of Colorado (SSOC) where he assisted in ten critical start-ups during 1978. At the Savannah River Site (SRS), Mr. McKibbin successfully applied a graded approach to meet Defense Nuclear Facility Safety Board (DNFSB) safety documentation requirements, risk assessments, training, and U.S. Department of Energy (DOE) Order compliance requirements for production line start-up and ongoing operations.

Education:

BS, Chemical Engineering, University of Illinois, 1973

Clearance:

Active DOE Q

Professional Experience:

PDCF Project Manager **Current**
Mr. McKibbin is currently serving as Project Manager for the Pit Disassembly and Conversion Facility being designed by Denver Operations Office for NNSA. The facility is to be built at SRS to provide feed for MOX. Title II design is expected to be completed this calendar year.

RHWF ORR, West Valley **2004**
Mr. McKibbin served as the lead evaluator for the Process criteria during the ORR for start-up of the Remote Handled TRU Waste Handling Facility at West Valley. The site asked Mr. McKibbin to confirm readiness after completing corrective actions and prior to initiation of the DOE ORR.

Los Alamos National Lab **2003 - 2004**
Mr. McKibbin served as Senior Technical LANL Advisor to the Operations AD and overall lead for the 12 advisors assigned to support the laboratory. Asked to participate on the committee assigned to develop and implement the new site Work Control Procedures, focused on Pu facility capabilities and Weapons Program management at LANL.

River Corridor Proposal **2003 - 2004**
Mr. McKibbin was proposed as the 300 Area Field Project Manager on the successful Washington Closure Company bid to perform site clean-up and closure at Hanford. The award was protested and eventually withdrawn, but key personnel had to remain available for almost nine months until that decision was made by the DOE. He performed several special assignments during this time including serving as LANL lead advisor described above.

THOR Treatment Technologies, LLC **2002 - 2003**
Mr. McKibbin served as company president, responsible for development of steam reforming system design to treat liquid waste and TRU and LLM waste drums. THOR is a joint venture between WGES and Studsvik.

TRU Operations, Aiken, SC **2001 - 2002**
Mr. McKibbin was responsible for design and development of TRU waste treatment and characterization. He supported TRU shipping acceleration activities at SRS. Provided support for WIPP and National TRU Program activities.

Washington Safety Management Solutions, LLC **1999 - 2001**
Mr. McKibbin provided full-time technical consulting support for BWHC at PFP. He provided technical support for the 94-1 decision processes for the development of the manpower loaded baseline schedule (IPMP). He provided the technical information required for permit decision changes on how solutions and materials would be handled. He provided design input on the Mg(OH)2 design. Mr. McKibbin identified areas with potential cost savings and ways to accelerate the start-up of cementation process. Mr. McKibbin provided support for DOE-RL. His responsibilities included support for development of PFP PBIs for FY 2000, review of performance indicators for PFP, and review of the proposed start-up review procedures, and support for the team looking into streamlining the Authorization Basis (AB) process for PFP. Mr. McKibbin supported Rocky Mountain Remediation. Services AB compliance review and Building 776/777 readiness to proceed with the Implementation Verification Review of their Basis for Interim Operation implementation.

Safe Sites of Colorado **1994 - 1999**
Senior Management
Mr. McKibbin directed and provided executive management for nuclear facility operation and deactivation, management of former plutonium areas, and laboratories at DOE Rocky Flats Environmental Technology Site. Mr. McKibbin led the SSOC team that won the bid to provide plutonium cleanup capability to the Kaiser-Hill Team at Rocky Flats. SSOC managed and processed all plutonium buildings at Rocky Flats. He successfully resumed operations in all facilities. He completed construction of the Caustic Waste Treatment System. He obtained DOE and DNFSB agreement for a residual characterization program and initiated sampling. He directed the safety and conduct of operations in plutonium facilities with a strong focus on procedural compliance with criticality and other procedures to maintain the safety envelope. Mr. McKibbin assured cost, schedule, and technical quality of overall SNM management and operations. He

planned baseline and monitoring progress to assure accomplishment of milestones. Mr. McKibbin managed up to a $140M budget at SSOC and up to 1,400 employees.

Mr. McKibbin oversaw the management and execution of over ten start-ups scheduled for FY 1998. All of these processes successfully operated after completion of the start-up reviews. In late 1996, and early 1997, he completed the Caustic Waste Treatment System Operational Readiness Review and start-up and the High Concentration Plutonium tank draining.

Westinghouse Savannah River Company **1989 - 1994**
Project Management
Area Manager, H-Area Separations
Mr. McKibbin directed SNM operations and maintenance activities in a chemical separations facility processing highly enriched Uranium-235 and a glove-box facility, which handled plutonium-238 and other actinides. He successfully applied a graded approach to meet DNFSB safety documentation requirements, risk assessments, training, and DOE Order compliance requirements for production line start-up and ongoing operations. He led this facility, which initially had been shut down for not meeting DNFSB requirements, into start-up in only nine months. Mr. McKibbin successfully and efficiently managed the facility start-up and operations with cost savings of $5M. He implemented Total Quality Management initiatives to reduce costs site-wide, achieving more than $8M in savings and directed 600 employees and a budget of $170M. Mr. McKibbin operated facilities at a cost savings of $30-$40M per year by directing operations on important requirements only. He was a key participant on the Waste Certification Task Team for H-Area with responsibilities for oversight of $7M in subcontracts for construction.

Manager, Separations Operations
Mr. McKibbin directed SNM operations in two chemical separations facilities, which processed highly enriched uranium-235 and plutonium-239, a glovebox facility, which handled plutonium-238 and other actinides, and a spent fuel storage basin. He led and implemented a change to standards-based Conduct of Operations culture using the Hanford Fast Flux Test Facility model. He oversaw Decontamination and Decommissioning of contaminated glovebox space and directed a staff of 500 and an annual budget of $100M.

E. I. DuPont de Nemours, Savannah River Management **1983 - 1989**

Manager, FB-Line Team
Mr. McKibbin managed production, maintenance, and technical activities in support of plutonium-239 processing and production. He implemented an SNM waste minimization program that reduced waste generation by 50 percent in the first year and 10 to 15 percent each year thereafter. He met all production commitments for Rocky Flats on schedule and managed a staff of 250 and a budget of $50M.

Quality Assurance Superintendent, H-Area Separations
Mr. McKibbin developed and implemented the site Quality Assurance plan.

Temporary Assignment, Savannah River Laboratory
Mr. McKibbin was assigned to assist DOE Albuquerque Operations Office in developing plutonium and tritium schedules and long-range plans.

Chief Supervisor, H-Area Separations
Mr. McKibbin supervised the H-Area Separations and reconfigured the production process. He increased production by 11 percent. He oversaw consolidation of plutonium-238 scrap materials into production quality material and processed the available uranium/plutonium sent from Rocky Flats.

Professional Societies or Organizations:
First Chairman of Facility Managers Council
Blue Ribbon Task Team on Waste Certification at SRS
Certificate of Appreciation from DOE Albuquerque