WASTE ISOLATION PILOT PLANT REMOTE HANDLED (RH) TECHNICAL SAFETY REQUIREMENTS

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TECHNICAL SAFETY REQUIREMENTS
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ABBREVIATIONS AND ACRONYMS

AC	ADMINISTRATIVE CONTROL
ALARA	As Low as Reasonably Achievable
CFR	Code of Federal Regulations
CH	Contact handled
CMR	Central Monitoring Room
CUR	CASK UNLOADING ROOM
DBE	Design basis earthquake
DBT	Design basis tornado
DF	DESIGN FEATURE
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DSA	Documented safety analysis
FCLR	FACILITY CASK LOADING ROOM
FCRD	Facility cask rotating device
FCTC	Facility cask transfer car
FGE	Fissile gram equivalent
HERE	Horizontal Emplacement Retrieval Equipment
ITV	Inspector's test valve
LCO	LIMITING CONDITIONS OF OPERATION
LCS	Limiting Control Setting
NFPA	National Fire Protection Association
PAC	PROGRAMMATIC ADMINISTRATIVE CONTROLS
PE-Ci	Pu-239 Equivalent Curie
PIV	Post Indicator Valve
PPA	Property protection area
psi	Pounds per square inch
psig	Pounds per square inch gauge
RH	Remote handled
SAC	SPECIFIC ADMINISTRATIVE CONTROLS
SL	Safety Limits
SMP	Safety management program
SR	Surveillance Requirement
SSCs	Structures, systems, and components
SWB	Standard waste box
TDOP	Ten drum overpack
TRU	Transuranic
TSR	TECHNICAL SAFETY REQUIREMENT
USQ	Unreviewed safety question
WHB	Waste Handling Building
WIPP	Waste Isolation Pilot Plant

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Section 1

Use and Application

TECHNICAL SAFETY REQUIREMENTS

1.0 USE AND APPLICATION

1.1 Introduction and Scope

1.1.1 TECHNICAL SAFETY REQUIREMENT Applicability

This document contains the Waste Isolation Pilot Plant (WIPP) Remote-Handled (RH) Transuranic (TRU) Waste TECHNICAL SAFETY REQUIREMENTS (TSRs) that define the performance requirements of structures, systems, and components (SSCs), ADMINISTRATIVE CONTROLS, and DESIGN FEATURES to ensure safe operation of WIPP. Activities performed at the WIPP associated with receiving and disposing of RH WASTE are governed by the *WIPP RH Waste Documented Safety Analysis* (RH DSA).[1]

1.1.2 Methodology

This TSR document is prepared in accordance with guidance contained in Title 10 *Code of Federal Regulations* (CFR), Part 830, Subpart B, "Safety Basis Requirements."[2] The derivation of RH TSRs and operational controls are contained in Chapter 5 of the RH DSA.[1]

1.2 Definitions

----------**NOTE**----------

The definitions provided in this section are specifically applicable to the TSR, and they are displayed in uppercase letters throughout this TSR document.

TERM	DEFINITION
ACTIONS	The steps listed in each requirement that are required to be performed when the specified LIMITING CONDITION FOR OPERATION (LCO) is not met.
ACTIVE RH DISPOSAL ROOM	The disposal room in the UNDERGROUND in which RH WASTE is actively being emplaced.
ADMINISTRATIVE CONTROL	Provisions relating to safety management programs (SMPs) necessary to ensure safe operations. ADMINISTRATIVE CONTROLs (ACs) may be Programmatic or Specific.
AFFECTED AREA	The area where the required fire suppression system coverage is not provided. The AFFECTED AREA is situationally determined.
CH BAY	PROCESS AREA of the WIPP waste handling building (WHB) for processing CH WASTE as described in DOE/WIPP 95-2125, *WIPP Contact Handled (CH) Technical Safety Requirements.*[3]

TERM	DEFINITION
CH WASTE	Contact handled transuranic waste contained in drums, standard waste boxes (SWBs), ten drum overpacks (TDOPs), or pipe overpacks. Drums may be in drum assemblies as seven packs of 55-gallon drums, four packs of 85-gallon drums, or three packs of 100-gallon drums. The containers are further described in DOE/WIPP 95-2065, *WIPP Contact Handled (CH) Documented Safety Analysis*.[5]
CLOSED RH SHIPPING CASK	Refers to a 72-B shipping cask in which the inner containment vessel lid and associated bolts are installed or a 10-160B shipping cask with the lid and lid bolts installed.
DESIGN FEATURE	Normally passive characteristics (e.g., shielding, structural walls, SSC locations) of the facility not subject to change by operations personnel. DESIGN FEATUREs are controlled through configuration management to protect safety functions.
DIRECT LOADED	DIRECT LOADED RH WASTE is untreated RH WASTE loaded directly into a 72-B RH WASTE canister.
DISPOSAL PATH	The route the RH WASTE travels from the waste shaft to the ACTIVE RH DISPOSAL ROOM.
FIRE WATCH	Continuous inspection of an area for the purpose of looking for fire initiators or evidence of a fire in progress. Persons performing a FIRE WATCH look for and report fire or conditions that could cause a fire. In addition this person must be qualified to recognize and extinguish an incipient fire or alert the appropriate personnel of the condition. During a FIRE WATCH the area is constantly monitored and will not be left unattended. However, a FIRE WATCH is only applicable for RH WASTE HANDLING vehicles, when the vehicle is in use for RH WASTE HANDLING.
FREQUENCY	How often a specific surveillance must be performed.
IMMEDIATELY	As a completion time, to be initiated directly and completed as soon as possible, with the minimal amount of time required to safely complete the activity.
INOPERABLE/ INOPERABILITY	Not OPERABLE
LIMITING CONDITIONS FOR OPERATION (LCOs)	The lowest functional capability or performance level of equipment, restrictive parameters, or states required for safe operation.
MODE	Any one inclusive combination of applicable PROCESS AREA conditions used for assigning applicability of safety equipment and limits as specified in Table 1.3-1 with respect to the relative hazards present.

TERM	DEFINITION
OPERABLE/ OPERABILITY	A system, subsystem, component, or device shall be OPERABLE when it is capable of performing its specified function(s); and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication, or other auxiliary equipment that are required for the system, subsystem, component, or device to perform its specified function(s) are also capable of performing their related support function(s). Successful completion of SURVEILLANCE REQUIREMENTS within the specified FREQUENCY is required to declare a system, subsystem, component, or device as being OPERABLE.
PROCESS AREA	A defined area in the facility that may consist of a room, several rooms, or an entire area. A PROCESS AREA may be a portion of a facility or an entire facility area covered by a particular operation or procedure. (See Table 1.2-1 for RH PROCESS AREA description.)
PROGRAMMATIC ADMINISTRATIVE CONTROL	PROGRAMMATIC ADMINISTRATIVE CONTROLs (PACs) are designed to provide broad programmatic support for SMPs supporting defense-in-depth, or worker safety. PACs are not used to provide specific preventive or mitigative functions for accident scenarios identified in DSAs.
RH WASTE	RH WASTE contained in 30- or 55-gallon drums shipped in a 10-160B shipping cask, 72-B canisters either direct loaded or loaded with three 30- or 55-gallon drums, or facility canisters loaded with three 30- or 55-gallon drums. The drums shipped in a 10-160B shipping cask will be drum carriages of five drums per carriage.
RH WASTE HANDLING OPERATIONS	Operations involving RH WASTE being unloaded, transported, and/or emplaced.
SPECIFIC ADMINISTRATIVE CONTROL	An AC that provides a specific preventive or mitigative function for accident scenarios identified in the DSA where safety function has importance similar to, or the same as, the safety function of a safety SSC (e.g., discrete operator actions, combustible loading program limits, hazardous material limits protecting hazard analyses or facility categorization). A Violation of SPECIFIC ADMINISTRATIVE CONTROLs[5] (SACs) is an immediate TSR Violation.
SURVEILLANCE REQUIREMENTS	Requirements relating to testing, calibration, or inspection to ensure that the necessary OPERABILITY of SSCs is maintained or that operations are within the specified LCOs.
TECHNICAL SAFETY REQUIREMENT	The limits, controls, and related actions that establish the specific parameters and requisite actions for the safe operation of a nuclear facility and include, as appropriate for the work and the hazards identified in the DSA for the facility: safety limits, operating limits, SURVEILLANCE REQUIREMENTS, administrative and management controls, use and application provisions, and DESIGN FEATUREs (DFs), as well as a bases appendix.

TERM	DEFINITION
VENTILATION CONFIGURATION	The alignment of dampers, bulkheads, and ventilation fan combinations and speeds for the UNDERGROUND ventilation system.
VERIFY	VERIFY is to confirm and substantiate that an activity or condition has been implemented in conformance with requirements. Manipulation of equipment or instrumentation to conform with the specified requirement is not permitted. Methods other than direct observation may be used.
UNDERGROUND RH WASTE HANDLING EQUIPMENT	The RH 41-ton forklift, the 20-ton forklift, 6-ton forklift, and the horizontal emplacement retrieval equipment (HERE). The 41-ton forklift is used to move the facility cask from the waste shaft station to the ACTIVE RH DISPOSAL ROOM and to return the facility cask to the facility cask transfer car (FCTC). It is also used to move the waste transfer machine portion of the HERE. The 20-ton forklift is used to move the shield collar and alignment fixture of the HERE from one disposal borehole to the next disposal borehole. The 6-ton forklift is used to position the shield plug and shield plug carriage on a borehole. The HERE is used with the facility cask to transfer the RH WASTE canister from the facility cask into the disposal borehole.
WASTE FACE	The exposed area of the emplaced CH WASTE disposal array where the CH WASTE is susceptible to damage from collisions, fires, explosions, and other events that could lead to a release of radiological material.

Table 1.2-1 PROCESS AREA Description

PROCESS AREA Name	PROCESS AREA Description
RH BAY	The large bay area of the WHB used for RH WASTE storage and RH WASTE HANDLING OPERATIONS and includes the 140/25-ton crane and the cask preparation station, and the shaft entry room (only when RH WASTE is present).
CASK UNLOADING ROOM (CUR)	A room in the WHB used for RH WASTE storage and RH WASTE HANDLING OPERATIONS. RH WASTE HANDLING OPERATIONS includes lowering a 72-B shipping cask containing RH WASTE into the TRANSFER CELL using the CUR crane or raising the 10-160B lid and drum carriages with RH WASTE into the UPPER HOT CELL using the UPPER HOT CELL crane. For processing a 72-B shipping cask or placing it in STORAGE in the CUR, the UPPER HOT CELL shield plugs are installed and the CUR shield door is opened. The CUR floor shield valve is closed during STORAGE in the CUR and opened only for transfer of the 72-B shipping cask into the TRANSFER CELL shuttle car. During RH WASTE handling involving a 10-160B shipping cask the CUR shield door is closed and the UPPER HOT CELL shield plugs are removed for transfer of the shipping cask lid, drum carriages, or facility canisters. For STORAGE of a 10-160B shipping cask in the CUR, the UPPER HOT CELL shield plugs are installed and the CUR shield door is closed. During 10-160B RH WASTE HANDLING OPERATIONS or STORAGE the CUR floor shield valve is closed.
UPPER HOT CELL	A room in the WHB used to canisterize 30- or 55-gallon drums containing RH WASTE from a 10-160B shipping cask. During transfer of RH WASTE drums to the UPPER HOT CELL, the UPPER HOT CELL shield plugs are removed and the UPPER HOT CELL floor shield valve is closed. During placement of the 30- or 55-gallon drums containing RH WASTE into a facility canister, the UPPER HOT CELL shield plugs are installed and the UPPER HOT CELL floor shield valve is closed. During transfer of a facility canister loaded with RH WASTE to the TRANSFER CELL, the UPPER HOT CELL shield plugs are installed and the UPPER HOT CELL floor shield valve is open. During STORAGE in the UPPER HOT CELL the UPPER HOT CELL floor shield valve is closed and the UPPER HOT CELL shield plugs are installed.

TRANSFER CELL	A room in the WHB used to process a 72-B RH WASTE canister from a 72-B shipping cask or to process a facility canister into and from a shielded insert. Only one RH WASTE canister is processed in the TRANSFER CELL at a time. In the TRANSFER CELL, the shuttle car is positioned in four different locations for specific functions: 1) under the CUR to receive a 72-B shipping cask or a shielded insert; 2) at the detension station where the 72-B inner lid is detensioned with the detension robot or where a facility canister containing RH WASTE is lowered to the TRANSFER CELL from the UPPER HOT CELL; 3) under the FCLR where a RH WASTE canister is raised into the facility cask in the FCLR. Prior to transfer of a 72-B canister, this location is also used to remove the inner lid of 72-B shipping cask and take radiological swipes when the inner lid is removed and during transfer of the 72-B canister into the facility cask; 4) a location to position the shuttle car for storage of the 72-B shipping cask inner lid prior to moving the shuttle car back to 3) for transfer of the 72-B canister to the facility cask. During RH WASTE HANDLING OPERATIONS in the TRANSFER CELL, the CUR shield valve is closed except during transfer of the 72-B shipping cask into the TRANSFER CELL, the UPPER HOT CELL shield valve is closed except during transfer of a facility canister to the shuttle car in the TRANSFER CELL, and the TRANSFER CELL ceiling shield valve is closed except during transfer of a RH WASTE canister to the facility cask or for transfer of the 72-B shipping cask inner lid to a storage location on the shuttle car. During STORAGE of RH WASTE in the TRANSFER CELL, all three shield valves are closed.
FACILITY CASK LOADING ROOM (FCLR)	A room in the WHB used for transferring an RH WASTE canister to the facility cask. During operations that involve the lid of the 72-B shipping cask or transfer of a canister containing RH WASTE, the TRANSFER CELL ceiling shield valve is opened and the facility cask is rotated vertically over the port to the TRANSFER CELL. During STORAGE of RH WASTE in the facility cask, the TRANSFER CELL ceiling shield valve is closed and the facility cask is rotated horizontally.
SURFACE	The above-ground areas within the Property Protection Area (PPA) where RH WASTE is in a CLOSED 72-B or 10-160B shipping cask. The RH BAY is considered part of the SURFACE only when a CLOSED RH SHIPPING CASK is still secured to the transportation trailer with the impact limiters in place.
UNDERGROUND	All below-ground areas associated with RH WASTE disposal, including the waste shaft, DISPOSAL PATH, and ACTIVE RH DISPOSAL ROOM.

1.3 Operational MODES

To aid in compliance with the WIPP LCOs, operational MODES are established to provide a safe, structured approach to facility operation. MODES reflect the relative hazards associated with different facility or process configurations; categorize the requirements placed on the facility as a convenience for operator control; and aid the operations staff in determining when the LCO is applicable. Also, MODES provide a convenient way to ensure availability of all pertinent safety functions during the current PROCESS AREA/system configuration because not all safety functions are required in each MODE. If equipment performs a safety function, but the safety function is not required in certain MODES, it would be inefficient to require the equipment to be OPERABLE when it is not needed.

The MODES defined in Table 1.3-1 for the WIPP facility are RH WASTE HANDLING, RH WASTE STORAGE, and RH STANDBY. The hierarchy of MODES from the highest to the lowest in relation to hazards is RH WASTE HANDLING, RH WASTE STORAGE, and RH STANDBY. MODE designations and changes are an administrative declaration made by the WIPP Facility Shift Manager or designee. There are certain requirements and characteristics that will be present during each MODE. The MODE definition addresses the actual performance or the capability of the WIPP facility to conduct its intended function(s).

Table 1.3-1 - MODE Descriptions

MODE	MODE Description
RH WASTE HANDLING	A MODE that is used for the RH BAY, CUR, UPPER HOT CELL, TRANSFER CELL, FCLR, and UNDERGROUND when RH WASTE containers or shipping casks loaded with RH WASTE are being moved. While in this MODE, all LCOs for operation(s) have been met and the facility is performing or is capable of performing its intended function(s). Other actives that are allowed in this MODE are maintenance, repair, and inspections as long as these activities are not in conflict with the requirements set forth in this document.
RH WASTE STORAGE	A MODE that is used for the RH BAY, CUR, TRANSFER CELL, UPPER HOT CELL and FCLR. While in this MODE, RH WASTE can not be physically handled, but will be temporarily stored. While in this MODE all LCOs for storage have been met and the facility is performing or is capable of performing its intended function(s). Other actives that are allowed in this MODE are maintenance, repair, and inspections as long as these activities are not in conflict with the requirements set forth in this document.
RH STANDBY	A MODE that is used for the CUR, UPPER HOT CELL, TRANSFER CELL, and FCLR when no RH WASTE is present and SURFACE when RH WASTE is in a CLOSED RH SHIPPING CASK.

1.4 Logical Connectors

Purpose — This section explains the meaning of logical connectors. Logical connectors are used to discriminate between (and yet connect) discrete conditions, ACTIONS, completion times, surveillances, and FREQUENCY(s). The only logical connectors that appear in this document are "AND" and "OR." The physical arrangement of these connectors constitutes logical conventions.

Background

Several levels of logic may be used to state ACTIONS. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each ACTION.

The first level of logic is identified by the first digit of the number assigned to an ACTION and the placement of the logical connector in the first level of nesting (e.g., left-justified with the number of the ACTION). The successive levels of logic are identified by additional digits of the ACTION number and by successive indention (within a number group) of the logical connectors.

When logical connectors are used to state a condition, usually only the first level of logic is used, and the logical connector is left-justified with the condition statement. In few cases successive levels of logic are used. This is identified solely by indenting the logical connector because subparts of a condition statement are not numbered separately.

AND connects two or more sets of criteria that must both (all) be satisfied for a given logical decision.

OR denotes alternative combinations or conditions, meaning either one or the other.

When logical connectors are used to state a completion time, surveillance, or FREQUENCY, usually only two levels of logic are used, and the logical connector is justified consistent with the logic level for statement of the completion time, surveillance, or FREQUENCY.

1.5 Completion Times

Purpose

This section establishes the completion time convention and provides guidance for its use.

Background

LCOs specify minimum requirements for ensuring safe operation of the WIPP facility. The ACTIONS associated with an LCO state the conditions required to meet the LCO. Specified with each stated condition are required ACTION(s) and completion time(s).

Completion Time

The completion time is the amount of time allowed to complete an ACTION. It is referenced to the time a situation (e.g., INOPERABLE equipment or variable not within limits) is discovered that requires entering an ACTION's condition, provided the PROCESS AREA is in a MODE or specified condition stated in the applicability portion of the LCO. ACTIONS shall be completed before the specified completion times expire. An ACTION's condition remains in effect until the condition no longer exists or the PROCESS AREA is not within the LCO applicability.

If situations are discovered that require entry into more than one condition within a single LCO (multiple conditions), the ACTIONS for each condition shall be performed within the associated completion times. When in multiple conditions, separate completion times are tracked for each condition starting from the time of discovery of the situation that required entry into the condition.

Once a condition has been entered, subsequent trains, subsystems, components, or variables expressed in the condition discovered to be INOPERABLE or not within limits shall not result in separate entry into the condition. The ACTIONS of the condition continue to apply to each additional failure, with completion times based on initial entry into the condition.

1.6 FREQUENCY Notation

Purpose

This section defines the proper use and application of FREQUENCY requirements. Each SURVEILLANCE REQUIREMENT (SR) has a specified FREQUENCY within which the surveillance shall be performed to meet the associated LCO. An understanding of the correct application of the specified FREQUENCY is necessary for compliance with the SR.

FREQUENCY Notation

The FREQUENCY notations, as used in the SRs, and elsewhere, are defined in Table 1.6-1.

Table 1.6-1 SURVEILLANCE REQUIREMENT FREQUENCY

Notation	FREQUENCY	FREQUENCY +25% (see Note 1)
EACH SHIFT	12 hours	15 hours
DAILY (Note 2)	24 hours	30 hours
WEEKLY	7 days	8 days
MONTHLY	31 days	38 days
QUARTERLY	92 days	115 days
SEMI-ANNUALLY	184 days	229 days
ANNUALLY	365 days	456 days

Note 1: It is expected that all SRs will be performed within their FREQUENCY(s). This column represents the 25% extension allowed by SR 4.0.2.

Note 2: DAILY means that the surveillance is performed each day that the equipment/system is to be used and prior to use. If a specific piece of equipment is not used each day, the surveillance is not performed on inactive equipment until prior to use and prior to use each following day that the equipment is in service.

Section 2

Safety Limits

2.0 SAFETY LIMITS

Safety Limits (SLs) are limits on process variables associated with those safety class physical barriers, generally passive, that are necessary for the intended facility function and that are required to guard against the uncontrolled release of radioactive materials.

Application of the TSR selection criteria and methodology, which are based on 10 CFR Part 830, Subpart B,[2] has resulted in the identification of no process variables that require SLs.

Section 3/4

Operational Limits
and
SURVEILLANCE REQUIREMENTs

3/4 LCSs, LCOs, AND SURVEILLANCE REQUIREMENTS

3.0 Limiting Control Settings and LIMITING CONDITIONS FOR OPERATION

As defined in 10 CFR Part 830,[2] Limiting Control Settings (LCSs) are settings on safety systems that control process variables to preclude the exceeding of a SL. Since no SLs have been identified for inclusion in the WIPP RH TSR; no LCSs are required.

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the applicability, except as provided in LCO 3.0.2.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. If the LCO is restored before the specified completion time(s) expires, completion of the ACTIONS is not required, unless otherwise stated.

Conditions in the ACTIONS for an LCO may be concurrently applicable.

A system or component can intentionally be made INOPERABLE and the associated condition entered. The completion times for ACTIONS are applicable when a system or component is intentionally made INOPERABLE. Acceptable reasons for intentionally entering an LCO condition include, but are not limited to, performance of SRs, preventive maintenance, corrective maintenance, or investigation of operational problems.

LCO 3.0.3 When an LCO statement is not met and the associated ACTIONS are not met, or when an associated action is not provided, the applicable PROCESS AREA shall be placed in a MODE or other specified condition in which the LCO is not applicable. If the LCO is applicable in all MODES, activities shall be initiated IMMEDIATELY to place the applicable PROCESS AREA in a safe condition. The applicable PROCESS AREA shall be in a safe condition within 6 hours. With the facility in a safe condition, a Response Plan shall be developed by the contractor and approved by the U.S. Department of Energy (DOE).

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the ACTIONS required by LCO 3.0.3 are not required.

LCO 3.0.3 is applicable in all MODES. Exceptions to LCO 3.0.3 may be stated in the individual LCOs.

LCO 3.0.4 When a LCO is not met, a MODE or other specified condition in the applicability shall not be entered, except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the applicability for an unlimited period of time. LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the applicability that are required to comply with ACTIONS.

Exceptions to LCO 3.0.4 are stated in the individual LCOs. When an individual LCO states that LCO 3.0.4 does not apply, it allows entry into MODES or other specified conditions in the applicability when the associated ACTIONS to be entered permit operation in the MODE or other specified condition for only a limited time.

LCO 3.0.5

Equipment removed from service or declared INOPERABLE to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

LCO 3.0.6

When a support system is declared INOPERABLE, the supported systems are also required to be declared INOPERABLE. However, only the support system's ACTIONS are required to be entered, provided they reflect the supported system's degraded safety condition. This is a clarification of the definition of OPERABILITY.

When a support system is INOPERABLE and no LCO for that support system is specified in the TSR, the impact of the INOPERABILITY or degradation of the support system's function on the OPERABILITY of the supported system shall be evaluated. Upon determination that the supported system is INOPERABLE, the ACTIONS associated with the supported system shall apply.

4.0 SURVEILLANCE REQUIREMENTS

SR 4.0.1 SRs shall be met during the MODES or other specified conditions in the applicability for individual LCOs unless otherwise stated in the SR. Failure to meet a surveillance (whether such failure is experienced during the performance of the surveillance or between performances of the surveillance) shall constitute failure to meet the LCO. Failure to perform a surveillance within the specified FREQUENCY shall constitute failure to meet the LCO, except as provided in SR 4.0.3. Surveillances do not have to be performed on INOPERABLE equipment or variables outside specified limits.

SR 4.0.2 The specified FREQUENCY for each SR is met if the surveillance is performed within 1.25 times the interval specified in the FREQUENCY, as measured from the previous performance or as measured from the time a specified condition of the FREQUENCY is met. The 25% extension allowed is not applicable to nonperiodic SRs.

If a completion time requires periodic performance of "every...," the above FREQUENCY extension applies to each performance after the initial performance.

Exceptions to SR 4.0.2 are stated in the individual SRs.

SR 4.0.3 If it is discovered that a surveillance was not performed within its specified FREQUENCY, compliance with the requirement to declare the LCO not met may be delayed from the time of discovery up to 24 hours or up to the limit of the specified FREQUENCY, whichever is less. This delay period is permitted to allow performance of the surveillance.

If the surveillance is not performed within the delay period, the LCO shall IMMEDIATELY be declared not met, and the applicable ACTIONS shall be entered. The completion times of the ACTIONS begin IMMEDIATELY on expiration of the delay period. When the surveillance is performed within the delay period and the surveillance is not met, the LCO shall IMMEDIATELY be declared not met, and the applicable ACTIONS shall be entered. The completion times of the ACTIONS begin IMMEDIATELY on failure to meet the surveillance.

SR 4.0.4 Entry into a MODE or other specified condition in the applicability of a LCO shall not be made unless the LCO's surveillances have been met within their specified FREQUENCY. This provision shall not prevent passage through or to MODES or other specified conditions in compliance with ACTIONS.

3/4.1 FIRE PROTECTION SYSTEM

LCO 3.1.1 Fire Suppression System for the Waste Handling Building

LCO: The fire suppression system for the WHB shall be OPERABLE. An OPERABLE fire suppression system consists of the following elements:

- The static pressure at each riser identified in Table 3.1.1-1 shall be greater than or equal to 125 psig (pounds per square inch gauge).
- The primary or alternate ~~main~~ isolation valves ~~for each riser~~ identified in Table 3.1.1-1 shall be locked in the open position.
- All other system isolation valves identified in Table 3.1.1-2 shall be locked in the open position.
- ~~The post indicator valve(s) (PIV) identified in Table 3.1.1-1 shall be locked in the open position.~~ DELETED
- Water flow indication when the inspector's test valve(s) (ITV) identified in Table 3.1.1-1 is opened.
- Main drain test results are less than or equal to 20% pressure change.

MODE Applicability: RH WASTE HANDLING and RH WASTE STORAGE

PROCESS AREA Applicability: RH BAY(RH WASTE HANDLING only), UPPER HOT CELL, FCLR, UNDERGROUND (when transporting RH WASTE on the waste shaft conveyance)

3/4.1 FIRE PROTECTION SYSTEM

LCO 3.1.1 Fire Suppression System for the Waste Handling Building (continued)

Table 3.1.1-1 Fire Suppression Component ~~Riser and PIV~~ Identification

Riser Location	Gauge Number	Primary Isolation Valve(s) ~~and PIV~~ Numbers	Alternate Isolation Valve(s) Numbers	ITV Number
CH BAY	411-PI-003-001	FW-Y-PIV-1 FW-Y-PIV-20 FW-Y-PIV-38 FW-Y-PIV-19 FW-411-V-001 FW-412-V-006	FW-Y-PIV-1 FW-Y-PIV-2 FW-Y-PIV-4 FW-Y-PIV-11 FW-Y-PIV-8 FW-411-V-079 FW-411-V-078 FW-411-V-001 FW-412-V-006	FW-411-V-023 FW-412-V-002
OP&RR	411-PI-003-003	FW-Y-PIV-1 FW-Y-PIV-2 FW-Y-PIV-4 FW-Y-PIV-11 FW-Y-PIV-8 FW-411-V-010	FW-Y-PIV-1 FW-Y-PIV-20 FW-Y-PIV-38 FW-Y-PIV-19 FW-411-V-078 FW-411-V-079 FW-411-V-010	FW-411-V-062
RH BAY	411-PI-003-005	FW-Y-PIV-1 FW-Y-PIV-20 FW-Y-PIV-38 FW-Y-PIV-18 FW-Y-PIV-17 FW-411-V-052	FW-Y-PIV-1 FW-Y-PIV-2 FW-Y-PIV-4 FW-Y-PIV-11 FW-Y-PIV-7 FW-Y-PIV-14 FW-Y-PIV-16 FW-Y-PIV-17 FW-411-V-052	FW-411-V-042 FW-411-V-044

Table 3.1.1-2 Isolation Valve Number and Location

Valve Number	Location Description
FW-411-V-072	Isolates the sprinkler piping in modular office 41-Z-052, located on WHB mezzanine.
FW-411-V-073	Isolates the sprinkler piping in the sound enclosure, located in the waste hoist control room.

3/4.1 FIRE PROTECTION SYSTEM

LCO 3.1.1 Fire Suppression System for the Waste Handling Building (continued)

----------**NOTE**----------
Separate entry is allowed for each INOPERABLE portion of the fire suppression system
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ACTIONS

Condition	Required ACTION		Completion Time
A. The fire suppression system is determined to be INOPERABLE for the WHB	A.1	Remove any diesel powered equipment from the RH BAY.	IMMEDIATELY
	AND		
	A.2	Post a FIRE WATCH in the AFFECTED AREA(s)	IMMEDIATELY
	AND		
	A.3	Stop all RH WASTE HANDLING OPERATIONS in the RH BAY, the UPPER HOT CELL, the FCLR or the UNDERGROUND that involves use of the waste hoist.	48 hours
	~~**AND**~~		
	~~A.4~~	~~Restore OPERABILITY of the affected fire suppression system~~	~~2 weeks~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE REQUIREMENT		FREQUENCY
4.1.1.1	VERIFY the water supply static pressure as measured at each riser to the WHB identified in Table 3.1.1-1 is greater than or equal to 125 psig.	MONTHLY
4.1.1.2	VERIFY the primary or alternate ~~main~~ isolation valves ~~for each riser~~ identified in Table 3.1.1-1 are ~~is~~ locked open.	MONTHLY
4.1.1.3	VERIFY that other isolation valves identified in Table 3.1.1-2 are locked open.	MONTHLY
4.1.1.4	~~VERIFY that the PIV(s) associated with each riser as identified in Table 3.1.1-1 is locked open~~. DELETED	~~MONTHLY~~
4.1.1.5	Open the ITV associated with each riser as identified in Table 3.1.1-1 and VERIFY water-flow through the associated system.	QUARTERLY
4.1.1.6	Perform a main drain test to VERIFY that the water supply pressure reduction is less than or equal to 20%.	ANNUALLY

LCO 3.1.2 Fire Water Supply System

LCO: The fire water supply system shall be OPERABLE. An OPERABLE fire water supply system consists of the following elements:

- The system shall maintain a water capacity of ≥ 135,000 gallons.
- The system shall have two OPERABLE fire pumps.
- The following isolation valves shall be opened: FW-456-V-001, FW-456-V-019, FW-456-V-020, and FW-456-V-003.

MODE Applicability: RH WASTE HANDLING and RH WASTE STORAGE

PROCESS AREA Applicability: RH BAY(RH WASTE HANDLING only), UPPER HOT CELL, UNDERGROUND (when transporting RH WASTE on the waste shaft conveyance)

ACTIONS

Condition	Required ACTION		Completion Time
A. Fire Water capacity is < 135,000 gallons	A.1	Remove any diesel powered equipment from the RH BAY.	IMMEDIATELY
	AND		
	A.2	Initiate actions to restore water volume to the required level.	IMMEDIATELY
	AND		
	A.3.1	Restore the water volume to the required level.	8 hours
		OR	
	A.3.2	Stop all RH WASTE HANDLING OPERATIONS in the WHB.	8 hours

3/4.1 FIRE PROTECTION SYSTEM

LCO 3.1.2 Fire Water Supply System (continued)

ACTIONS (continued)

Condition		Required ACTION		Completion Time
B.	One Fire Pump is INOPERABLE	B.1.1	Stop all RH WASTE HANDLING OPERATIONS in the WHB.	1 week
			OR	
		B.1.2	Restore OPERABILITY of the affected Fire Pump	1 week
C.	Both Fire Pumps are INOPERABLE	C.1	Remove any diesel powered equipment from the RH BAY.	IMMEDIATELY
		AND		
		C.2.1	Restore OPERABILITY of at least one Fire Pump	8 hours
		OR		
		C.2.2	Stop all RH WASTE HANDLING OPERATIONS in the RH BAY	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE REQUIREMENT		FREQUENCY
4.1.2.1	VERIFY that there is > 135,000 gallons of water available to fight a fire within the Water Distribution System.	EACH SHIFT
4.1.2.2	VERIFY that ~~the~~ isolation valves FW-456-V-001, FW-456-V-019, FW-456-V-020, and FW-456-V-003 are ~~is~~ open.	EACH SHIFT
4.1.2.3	VERIFY that there is > 125 gallons of diesel fuel maintained in the diesel Fire Pump fuel tank.	Each shift
4.1.2.4	Perform an Automatic Start test on the Fire Pumps to assure each pump can automatically start at the proper pressure parameter.	WEEKLY
4.1.2.5	VERIFY that each Fire Pump is capable of pumping output of ≥1500 gpm at ≥105 psi (pounds per square inch) net discharge.	ANNUALLY

3/4.1 FIRE PROTECTION SYSTEM

LCO 3.1.3 UNDERGROUND RH WASTE HANDLING EQUIPMENT Automatic/Manual Fire Suppression System

LCO: The automatic/manual fire suppression system on UNDERGROUND RH WASTE HANDLING EQUIPMENT, shall be OPERABLE. An OPERABLE automatic fire suppression system consists of the following elements:

- System status lights are functioning properly and no trouble lights are illuminated on the automatic fire suppression system control module.
- A charged fire suppressant system on the UNDERGROUND RH WASTE HANDLING EQUIPMENT selected for use.

An OPERABLE manual fire suppression system consists of the following element:

- A charged fire suppressant system on the UNDERGROUND RH WASTE HANDLING EQUIPMENT selected for use.

MODE Applicability: RH WASTE HANDLING

PROCESS AREA Applicability: UNDERGROUND

ACTIONS

Condition	Required ACTION	Completion Time
A. Automatic Fire Suppression System INOPERABLE but the manual fire suppression capability is OPERABLE for the UNDERGROUND RH WASTE HANDLING EQUIPMENT	A.1 Post a FIRE WATCH. **AND**	IMMEDIATELY
	A.2.1 Restore OPERABILITY of the automatic fire suppression system to continue RH WASTE HANDLING OPERATIONS **OR**	48 hours
	A.2.2 Stop RH WASTE HANDLING OPERATIONS in the UNDERGROUND using the UNDERGROUND RH WASTE HANDLING EQUIPMENT with INOPERABLE automatic fire suppression system.	48 hours

3/4.1 FIRE PROTECTION SYSTEM

LCO 3.1.3 UNDERGROUND RH WASTE HANDLING EQUIPMENT Automatic/Manual Fire Suppression System

ACTIONS (continued)

B.	Both manual and automatic capability of the Automatic/Manual Fire Suppression System INOPERABLE for the UNDERGROUND RH WASTE HANDLING EQUIPMENT	B.1	Post a FIRE WATCH.	IMMEDIATELY
		AND		
		B.2	Stop RH WASTE HANDLING OPERATIONS with the affected piece of equipment.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE REQUIREMENT		FREQUENCY
4.1.3.1	VERIFY, for the UNDERGROUND RH WASTE HANDLING EQUIPMENT, that the automatic fire suppression system control module system status lights are functioning properly and that no trouble lights are illuminated on the equipment.	48 hours *
4.1.3.2	Visually VERIFY that the automatic/manual fire suppression system has not discharged.	Each shift prior to initial use*
4.1.3.3	VERIFY that the automatic/manual fire suppression system is charged.	Semi-annually
4.1.3.4	Perform a test of the automatic fire suppression system controls.	Semi-annually

* FREQUENCY of surveillance applies only to equipment in use. The 25% allowance of SR 4.0.2 does not apply to these FREQUENCIES.

3/4.2 UNDERGROUND VENTILATION SYSTEM

LCO 3.2.1 Underground Ventilation System

LCO: The underground ventilation system shall be OPERABLE for RH WASTE HANDLING OPERATIONS in the UNDERGROUND. An OPERABLE underground ventilation system consists of the following elements:

- A minimum of 42,000 actual cubic feet per minute in the ACTIVE RH DISPOSAL ROOM.
- A minimum of 20,000 actual cubic feet per minute in the waste shaft station ventilation circuit as measured on the waste shaft side of regulator 74-B-308.

MODE Applicability: RH WASTE HANDLING

PROCESS AREA Applicability: UNDERGROUND

ACTIONS

Condition	Required ACTION	Completion Time
A. VENTILATION CONFIGURATION changes or UNDERGROUND ventilation is INOPERABLE.	A.1 Place RH WASTE in a safe condition and stop RH WASTE HANDLING OPERATIONS **AND** A.2 Restore UNDERGROUND ventilation system OPERABILITY or VERIFY the ACTIVE RH DISPOSAL ROOM and waste shaft ventilation circuit have the required flow.	IMMEDIATELY Prior to resuming RH WASTE HANDLING OPERATIONS in the UNDERGROUND

SURVEILLANCE REQUIREMENTS

SURVEILLANCE REQUIREMENT		FREQUENCY
4.2.1.1	VERIFY a minimum of 42,000 actual cubic feet per minute in the ACTIVE RH DISPOSAL ROOM.	Daily and after VENTILATION CONFIGURATION changes
4.2.1.2	VERIFY a minimum of 20,000 actual cubic feet per minute in the waste shaft ventilation circuit as measured on the waste shaft side of regulator 74-B-308.	Daily and after VENTILATION CONFIGURATION changes

3/4.3 INTERLOCKS

LCO 3.3.1 WHB Shielding Interlocks - CUR Shield Door, UPPER HOT CELL Shield Plugs and UPPER HOT CELL Crane

LCO: The UPPER HOT CELL shield plugs and CUR shield door interlocks shall be OPERABLE when transferring RH WASTE out of a 10-160B cask or when RH WASTE is present in the UPPER HOT CELL. OPERABLE interlocks consists of the following:

- The CUR shield door must be closed before the UPPER HOT CELL crane grapple can be raised when positioned over the UPPER HOT CELL floor shield plugs.
- When the UPPER HOT CELL shield plugs are removed and the CUR shield door is closed, the CUR shield door cannot be opened.

MODE Applicability: RH WASTE HANDLING, RH WASTE STORAGE

PROCESS AREA Applicability: UPPER HOT CELL, CUR

ACTIONS

Condition	Required ACTION		Completion Time
A. Interlocks for shielding are INOPERABLE.	A.1	Do not remove the UPPER HOT CELL shield plugs.	IMMEDIATELY
	AND		
	A.2	Place RH WASTE in a safe condition and stop RH WASTE HANDLING in the UPPER HOT CELL.	2 weeks
	AND		
	A.3	Restore interlocks to OPERABLE condition.	Prior to resuming RH WASTE HANDLING in the UPPER HOT CELL and RH WASTE HANDLING or STORAGE involving a 10-160B shipping cask in the CUR.

3/4.3 INTERLOCKS

LCO 3.3.1 WHB Shielding Interlocks - CUR Shield Door, UPPER HOT CELL Shield Plugs and UPPER HOT CELL Crane (continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE REQUIREMENT		FREQUENCY
4.3.1.1	VERIFY the CUR shield door cannot be opened with the UPPER HOT CELL shield plugs removed.	QUARTERLY and after maintenance on the CUR shield door controls, or the UPPER HOT CELL crane.
4.3.1.2	VERIFY the UPPER HOT CELL crane grapple cannot be raised when centered over the UPPER HOT CELL floor shield plugs unless the CUR shield door is closed.	QUARTERLY and after maintenance on the CUR shield door controls, or the UPPER HOT CELL crane.

3/4.3 INTERLOCKS

LCO 3.3.2 WHB Interlocks - UPPER HOT CELL Crane and FCLR Grapple Pintle Contact Interlock with Pivot Dogs

LCO: The grapple pintle contact interlock with the pivot dogs shall be OPERABLE for the UPPER HOT CELL crane grapple and the FCLR grapple. OPERABLE interlocks consists of the following:

- The UPPER HOT CELL crane grapple shall be operable when operating the UPPER HOT CELL crane. OPERABLE is defined as the UPPER HOT CELL grapple pivot dogs cannot be rotated open unless the grapple is in contact with a pintle as indicated by the pintle contact indicating light on the hot cell crane control panel.

- The FCLR grapple shall be OPERABLE when operating the FCLR grapple hoist. OPERABLE is defined as the FCLR grapple pivot dogs cannot be rotated open unless the grapple is in contact with a pintle as indicated by the pintle contact indicating light on Panel 411-CP-264-04.

Note: The two cranes are independent pieces of equipment and the LCO actions can be introduced when either or both are inoperable.

MODE Applicability: RH WASTE HANDLING

PROCESS AREA Applicability: UPPER HOT CELL, CUR, TRANSFER CELL (when RH WASTE HANDLING OPERATIONS that involve lifting a canister, canister lid, or lift fixture with the UPPER HOT CELL crane is being conducted in the PROCESS AREA); FCLR, TRANSFER CELL (when RH WASTE HANDLING OPERATIONS that involve lifting a canister are being conducted in the PROCESS AREA)

ACTIONS

Condition	Required ACTION	Completion Time
A. UPPER HOT CELL grapple pintle contact interlock INOPERABLE.	A.1 Place RH WASTE in a safe condition and stop RH WASTE HANDLING. **AND** A.2 Restore interlocks to OPERABLE condition.	2 weeks Prior to resuming RH WASTE HANDLING OPERATIONS in the UPPER HOT CELL.
B. FCLR grapple pintle contact interlock INOPERABLE	B.1 Place RH WASTE in a safe condition and stop RH WASTE HANDLING. **AND** B.2 Restore interlocks to OPERABLE condition.	IMMEDIATELY Prior to resuming RH WASTE HANDLING OPERATIONS in the FCLR.

3/4.3 INTERLOCKS

LCO 3.3.2 WHB Interlocks - UPPER HOT CELL Crane and FCLR Grapple Pintle Contact Interlock with Pivot Dogs (continued)

SURVEILLANCE REQUIREMENT

SURVEILLANCE REQUIREMENT		**FREQUENCY**
4.3.2.1	Using a suspended test fixture, VERIFY that the UPPER HOT CELL crane grapple pivot dogs cannot be rotated open unless the grapple is in contact with a pintle as indicated by the pintle contact indicating light on the hot cell crane control panel.	QUARTERLY and after maintenance on the UPPER HOT CELL hoist or grapple or the associated controls.
4.3.2.2	Using a suspended test fixture, VERIFY that the FCLR grapple pivot dogs cannot be rotated open unless the grapple is in contact with a pintle as indicated by the pintle contact indicating light on Panel 411-CP-264-04.	QUARTERLY and after maintenance on the FCLR grapple hoist or grapple or the associated controls.

3/4.3 INTERLOCKS

LCO 3.3.3 WHB Interlocks- FCLR grapple hoist and shield bell, telescoping port shield, facility cask and shield valves, and TRANSFER CELL ceiling shield valve

LCO: The interlocks between the FCLR grapple hoist, shield bell, facility cask, telescoping port shield, and TRANSFER CELL ceiling shield valve shall be OPERABLE when the inner lid is being removed from a 72B shipping cask of RH WASTE, during transfer of a 72B or 10-160B canister of RH WASTE from the TRANSFER CELL to the facility cask or when a 72B shipping cask of RH WASTE with its inner lid removed is in the TRANSFER CELL. OPERABLE interlocks consist of the following:

- The facility cask top shield valve cannot be opened unless the grapple is at position B as indicated by the position B light on control panel 411-CP-264-04. The facility cask top shield valve cannot be closed unless the grapple is at position B as indicated by the associated position lights on control panel 411-CP-264-04 and the grapple is open.
- The TRANSFER CELL ceiling shield valve cannot be opened unless the telescoping port shield is in contact with the facility cask lower shield valve. If the facility cask is not present, the TRANSFER CELL ceiling shield valve cannot be opened unless the FCLR grapple hoist shield bell is in contact with the telescoping port shield at position E as indicated by the position E indicating light on control panel 411-CP-264-04. The TRANSFER CELL ceiling shield valve cannot be closed when lifting a RH WASTE canister unless the grapple hoist is at position B, C, or D as indicated by the associated position lights on control panel 411-CP-264-04.
- The facility cask lower shield valve cannot be opened unless the TRANSFER CELL ceiling shield valve is open and the grapple hoist is at position D as indicated by the position D light on control panel 411-CP-264-04. The facility cask lower shield valve cannot be closed unless the grapple hoist is at position B or C as indicated by the associated position lights on control panel 411-CP-264-04.

MODE Applicability: RH WASTE HANDLING, RH WASTE STORAGE

PROCESS AREA Applicability: TRANSFER CELL(during RH WASTE HANDLING and RH WASTE STORAGE);
FCLR (during RH WASTE HANDLING)

ACTIONS

Condition	Required ACTION	Completion Time
A. Interlocks for shielding are INOPERABLE.	A.1 Place RH WASTE in a safe condition and stop RH WASTE HANDLING. **AND** A.2 Restore interlocks to OPERABLE condition.	IMMEDIATELY Prior to resuming RH WASTE HANDLING OPERATIONS in the TRANSFER CELL or FCLR.

3/4.3 INTERLOCKS

LCO 3.3.3 WHB Interlocks- FCLR grapple hoist and shield bell, telescoping port shield, facility cask and shield valves, and TRANSFER CELL ceiling shield valve (continued)

SURVEILLANCE REQUIREMENT

SURVEILLANCE REQUIREMENT		**FREQUENCY**
4.3.3.1	VERIFY that the facility cask top shield valve cannot be opened unless the grapple is at position B as indicated by the position B light on control panel 411-CP-264-04. The facility cask top shield valve cannot be closed unless the grapple is at position B as indicated by the associated position lights on control panel 411-CP-264-04 and the grapple is open.	QUARTERLY and after maintenance on the facility cask, the grapple hoist, or the associated controls.
4.3.3.2	VERIFY that the TRANSFER CELL ceiling shield valve cannot be opened unless the telescoping port shield is in contact with the facility cask lower shield valve. If the facility cask is not present, the TRANSFER CELL ceiling shield valve cannot be opened unless the FCLR grapple hoist shield bell is in contact with the telescoping port shield at position E as indicated by the position E indicating light on control panel 411-CP-264-04. The TRANSFER CELL ceiling shield valve cannot be closed when lifting a RH WASTE canister unless the grapple hoist is at position B, C, or D as indicated by the associated position lights on control panel 411-CP-264-04.	QUARTERLY and after maintenance on the grapple hoist, the telescoping port shield, or the TRANSFER CELL ceiling shield valve, or the associated controls.
4.3.3.3	VERIFY the facility cask lower shield valve cannot be opened unless the TRANSFER CELL ceiling shield valve is open and the grapple hoist is at position D as indicated by the position D light on control panel 411-CP-264-04. The facility cask lower shield valve cannot be closed unless the grapple hoist is at position B or C as indicated by the associated position lights on control panel 411-CP-264-04.	QUARTERLY and after maintenance on the grapple hoist or the TRANSFER CELL ceiling shield valve or the associated controls.

3/4.3 INTERLOCKS

LCO 3.3.4 WHB Interlocks - TRANSFER CELL shuttle car, CUR shield valve, UPPER HOT CELL shield valve, and TRANSFER CELL ceiling shield valve

LCO: The interlocks between the TRANSFER CELL shuttle car, the UPPER HOT CELL shield valve, the CUR shield valve, and the TRANSFER CELL ceiling shield valve shall be OPERABLE during transfer of RH WASTE between the TRANSFER CELL, FCLR, CUR, and UPPER HOT CELL. OPERABLE interlocks consist of the following:

- The TRANSFER CELL shuttle car cannot be moved unless the UPPER HOT CELL shield valve, the CUR shield valve, and the TRANSFER CELL ceiling shield valve are closed.

MODE Applicability: RH WASTE HANDLING

PROCESS AREA Applicability: TRANSFER CELL, FCLR, CUR, UPPER HOT CELL (only during transfer of RH WASTE between areas)

ACTIONS

Condition	Required ACTION	Completion Time
A. Interlocks for TRANSFER CELL shuttle car are INOPERABLE.	A.1 Place RH WASTE in a safe condition and stop RH WASTE HANDLING OPERATIONS **AND** A.2 Restore interlocks to OPERABLE condition.	2 weeks Prior to resuming RH WASTE HANDLING OPERATIONS in the TRANSFER CELL, FCLR, CUR, UPPER HOT CELL.

SURVEILLANCE REQUIREMENT

SURVEILLANCE REQUIREMENT	FREQUENCY
4.3.4.1 VERIFY that the TRANSFER CELL shuttle car cannot be moved unless the shield valves in the UPPER HOT CELL, TRANSFER CELL and CUR are closed.	QUARTERLY and after maintenance on the shield valves, the TRANSFER CELL shuttle car or the associated controls.

3/4.3 INTERLOCKS

LCO 3.3.5 WHB Interlocks - Grapple Hoist and Shield Bell, Telescoping Port Shield, and the Facility Cask Rotating Device

LCO: The interlocks between the grapple hoist and shield bell, telescoping port shield, and the facility cask rotating device (FCRD) shall be OPERABLE during transfer of RH WASTE between the TRANSFER CELL and FCLR. OPERABLE interlocks consist of the following:

- The FCRD cannot rotate the facility cask from vertical to horizontal unless the grapple hoist is in the highest position and the telescoping port shield is retracted.

MODE Applicability: RH WASTE HANDLING

PROCESS AREA Applicability: TRANSFER CELL, FCLR (during transfer of RH WASTE between areas)

ACTIONS

Condition	Required ACTION	Completion Time
A. Interlocks for grapple hoist, telescoping port shield, the FCRD, are INOPERABLE.	A.1 Place RH WASTE in a safe condition and stop RH WASTE HANDLING OPERATIONS **AND** A.2 Restore interlocks to OPERABLE condition.	4 hours Prior to resuming RH WASTE HANDLING OPERATIONS in the TRANSFER CELL and FCLR.

SURVEILLANCE REQUIREMENT

SURVEILLANCE REQUIREMENT		FREQUENCY
4.3.5.1	VERIFY that the FCRD cannot rotate the facility cask from vertical to horizontal unless the grapple hoist and shield bell is in the highest position and the telescoping port shield is retracted.	QUARTERLY and after maintenance on the grapple hoist and shield bell, the telescoping port shield, the FCRD, or the associated controls.

3/4.3 INTERLOCKS

LCO 3.3.6 UNDERGROUND Interlocks - HERE transfer mechanism, facility cask, shield collar

LCO: The interlocks between the HERE transfer mechanism, facility cask, and alignment fixture/shield collar shall be OPERABLE. OPERABLE interlocks include the following:

- The front shield valve on the facility cask cannot be opened unless the tilt sensors on the HERE indicate that the waste transfer machine is aligned with the alignment fixture as indicated by the tilt status array on the control console for the waste transfer machine, the proximity switches on the alignment fixture detect the facility cask, and the proximity switches on the transfer mechanism detect the facility cask.
- The rear shield valve on the facility cask cannot be opened unless the tilt sensors on the HERE indicate that the waste transfer machine is aligned with the alignment fixture as indicated by the tilt status array on the control console for the waste transfer machine, the proximity switches on the alignment fixture detect the facility cask, and the proximity switches on the transfer mechanism must detect the facility cask.
- The front shield valve on the facility cask cannot be closed if the transfer mechanism is extended through the rear shield valve greater than 33 inches and the grapple detects a pintle as indicated on the control console for the waste transfer machine.
- The rear shield valve on the facility cask cannot be closed unless the transfer mechanism is retracted to less than 14 inches and the grapple is open as indicated on the control console for the waste transfer machine.

MODE Applicability: RH WASTE HANDLING

PROCESS AREA Applicability: UNDERGROUND

ACTIONS

Condition	Required ACTION	Completion Time
A. The interlocks between the HERE transfer mechanism, facility cask, and alignment fixture/shield collar are INOPERABLE.	A.1 Place RH WASTE in a safe condition and stop RH WASTE HANDLING OPERATIONS **AND** A.2 Restore interlocks to OPERABLE condition.	24 hours Prior to resuming RH WASTE HANDLING OPERATIONS in the UNDERGROUND.

3/4.3 INTERLOCKS

LCO 3.3.6 UNDERGROUND Interlocks - HERE transfer mechanism, facility cask, shield collar (continued)

SURVEILLANCE REQUIREMENT

SURVEILLANCE REQUIREMENT		FREQUENCY
4.3.6.1	VERIFY that the front shield valve on the facility cask cannot be opened unless the tilt sensors on the HERE indicate that the waste transfer machine is aligned with the alignment fixture as indicated by the tilt status array on the control console for the waste transfer machine, the proximity switches on the alignment fixture detect the facility cask, and the proximity switches on the transfer mechanism detect the facility cask.	QUARTERLY and after maintenance on the facility cask, the alignment fixture, or the transfer mechanism, the proximity switches, or the tilt sensors, or the associated controls.
4.3.6.2	VERIFY that rear shield valve on the facility cask cannot be opened unless the tilt sensors on the HERE indicate that the waste transfer machine is aligned with the alignment fixture as indicated by the tilt status array on the control console for the waste transfer machine, the proximity switches on the alignment fixture detect the facility cask, and the proximity switches on the transfer mechanism must detect the facility cask.	QUARTERLY and after maintenance on the facility cask, the alignment fixture, or the transfer mechanism, the proximity switches, or the tilt sensors, or the associated controls.
4.3.6.3	VERIFY that the front shield valve on the facility cask cannot be closed if the transfer mechanism is extended through the rear shield valve greater than 33 inches and the grapple detects a pintle as indicated on the control console for the waste transfer machine.	QUARTERLY and after maintenance on the transfer mechanism or the HERE controls.
4.3.6.4	VERIFY that the rear shield valve on the facility cask cannot be closed unless the transfer mechanism is retracted to less than 14 inches and the grapple is open as indicated on the control console for the waste transfer machine.	QUARTERLY and after maintenance on the transfer mechanism or the HERE controls.

Section 5

Administrative CONTROLS

5.0 ADMINISTRATIVE CONTROLS

5.1 Purpose

The purpose of the ACs is to state the provisions relating to organization and management, procedures, record keeping, review and assessment, reporting, and SMPs necessary to ensure safe operation of the WIPP facility, such that the TSRs are met.

Unless otherwise noted, these ACs are applicable to the facility at all times.

5.2 Management Responsibilities

5.2.1 Facility Manager

The facility manager (or designee) is responsible for the following:

a. Overall management of the facility and shall delegate in writing the succession of this responsibility during any absences.

b. Facilitation and control of physical changes in facility configuration.

c. Ensuring that all facility operations are performed under a qualified facility manager/facility shift manager.

5.2.2 Facility Shift Manager

The facility shift manager(s) or designee(s) is responsible for the following:

a. Overall facility operation and shall delegate in writing the succession of this responsibility during any absences.

b. Operation of the facility in accordance with approved TSRs.

c. Facilitation and control of physical changes in facility configuration, and coordination of the activities of work groups within the facility.

d. Ensuring that all facility operations are performed under a trained supervisor.

NOTE: This does not require the supervisor to be present at the work site. This means that the supervisor is trained to perform the tasks commensurate with management expectation for the associated facility operations.

e. Ensuring personnel performing surveillance, maintenance testing, or other activities that could affect SSCs as credited in the facility safety basis meet established training requirements for the activity/activities being performed.

The facility shift manager(s) or designee has the authority to take emergency actions in accordance with Section 5.7.4.

5.3 Minimum Staffing

The minimum required operating staff to maintain the facility in a safe condition is specified below.

Staffing Requirements for RH WASTE HANDLING OPERATIONS on the SURFACE and UNDERGROUND, RH WASTE HANDLING MODE, RH WASTE STORAGE MODE, and RH STANDBY MODE in the applicable PROCESS AREA:

1. Facility shift manager (one)
2. Central monitoring room operator (one)
3. Surface roving watch (one)

5.3.1 Staffing Requirements for RH WASTE HANDLING

Staffing over and above those required in Section 5.3 are only necessary during RH WASTE HANDLING OPERATIONS. One RH WASTE HANDLING engineer is required on-site when RH WASTE HANDLING OPERATIONS are in progress.

1. **Staffing Requirements for RH WASTE HANDLING OPERATIONS on the SURFACE, RH BAY, CUR (for 72-B), or FCLR**

   a. Required personnel identified in Section 5.3

   b. Radiological control technician

   c. Two RH waste handling technicians (one to operate the trailer jockey, RH BAY 140/25-ton crane, road cask transfer car, or CUR crane, and a spotter)

2. **Staffing Requirements for RH WASTE HANDLING OPERATIONS for 10-160B process in the CUR, UPPER HOT CELL, and TRANSFER CELL**

   a. Required personnel identified in Section 5.3

   b. Radiological control technician

   c. Two RH waste handling technicians (one to operate the UPPER HOT CELL crane, overhead powered manipulator, or wall mounted manipulators, and a spotter)

3. **Staffing Requirements for RH WASTE HANDLING OPERATIONS in the UNDERGROUND**

   a. Required personnel identified in Section 5.3

   b. Waste hoist operator (only during loading, transport, and offloading RH WASTE on the waste shaft conveyance)

      Toplander at the waste shaft (only during loading, transport, and offloading RH WASTE on the waste shaft conveyance)

c. Bottom lander at the waste shaft (only during loading, transport, and offloading RH WASTE on the waste shaft conveyance)

d Radiological control technician

e. Two RH waste handling technicians (one to operated the FCTC and a spotter, or one to operate the 41-ton forklift and a spotter, or one to operated the HERE and a spotter, or one to operate the 20-ton forklift and a spotter). The RH WASTE HANDLING engineer can simultaneously serve in the capacity of a RH WASTE HANDLING technician.

f. Underground facility operations engineer

g. Underground roving watch

5.4 TECHNICAL SAFETY REQUIREMENTS

5.4.1 General

The TSR shall:

1. Be complied with except for reasonable action taken in an emergency as described in Section 5.7.4.

2. Be procedurally controlled to require that changes are:

   a. Prepared with a submittal package, including a description of the revision, justification for the change, and supporting analyses.

   b. Reviewed and approved by the Contractor.

   c. Approved by the DOE prior to incorporation of the TSR change

      NOTE: Changes to the TSR bases do not require DOE approval if they meet the conditions of Section 5.4.3.

5.4.2 Compliance

The Contractor is responsible for ensuring that the requirements of the WIPP RH TSR are met. Compliance shall be demonstrated by:

1. Operating within the LCOs, and the associated SRs during their applicability.
2. Operating within the ACTIONS of LCOs when required.
3. Performing all SRs as required.
4. Establishing, implementing, and maintaining the required ACs.
5. Tracking AC noncompliances.

5.4.3 TSR Bases Control

Revisions to the bases sections can be made without DOE approval if the changes are editorial in nature and do not make significant changes.

5.4.4 Proposed Changes

Proposed changes that do not meet the conditions of Section 5.4.3 shall be reviewed and approved by the DOE prior to implementation. Changes to the bases that may be implemented without prior DOE approval will be provided to the DOE at least annually.

5.5 PROGRAMMATIC ADMINISTRATIVE CONTROLS

5.5.1 Initial Testing, In-Service Inspection and Test, Configuration Management and Maintenance Program

An initial testing, in-service inspection and test, configuration management, and maintenance program shall be established, implemented, and maintained to ensure SSCs supporting safe operation of the WIPP and DESIGN FEATUREs subject to degradation perform their intended functions. This shall ensure the DESIGN FEATUREs of equipment remain consistent with those assumed in the RH DSA.[1]

5.5.2 Document Control

A document control program and associated procedures shall be established, implemented, and maintained to control WIPP documents. The program shall establish minimum review and approval requirements, change control, and minimum record retention requirements for the WIPP.

5.5.3 Quality Assurance Program

A quality assurance program and associated procedures shall be established, implemented, and maintained. The basic elements of the quality assurance program include work planning; training and personnel development; preparing, reviewing, approving, and verifying designs; qualifying suppliers; preparing, reviewing, approving, and issuing instructions, procedures, schedules, and procurement documents; purchasing; verifying supplier work; identifying and controlling hardware and software; manufacturing; managing and operating facilities; calibrating and controlling measuring and test equipment; conducting investigations and acquiring data; performing maintenance, repair, and improvements; performing assessments; tracking non-conformances and corrective actions, and controlling records.

5.5.4 Training

A training program for the WIPP facility operation staff and technical support personnel shall be established and maintained to ensure that operators are trained to properly operate the RH waste handling equipment during normal operations and to properly respond to off-normal operations. The CMR operator(s) and RH waste handling personnel are trained in the proper response to a fire in the UNDERGROUND during RH WASTE HANDLING OPERATIONS.

5.5.5 Conduct of Operations

The Conduct of Operations program shall contain elements of organization and administration of facility operations to ensure that operations activities are controlled to be consistent with assumptions in the RH DSA.[1] Effective implementation and control of operating activities are primarily achieved through

established written standards for operations, periodic monitoring and performance assessment, and holding personnel accountable for their performance.

The basic elements of the Conduct of Operations program include, as applicable, guidance for: operations organization and administration; shift routines and operating practices; control area activities; communications; control of on-shift training; control of equipment and system status; lockouts and tagouts; independent verification; log keeping; operations turnover; timely orders to operators; operations procedures; operator aid postings; and equipment and piping labeling.

Preoperational checks shall be performed to ensure that equipment performing RH WASTE HANDLING OPERATIONS operates as required prior to RH WASTE HANDLING OPERATIONS.

5.5.6 Emergency Response Program

An emergency response program and associated procedures shall be established, implemented, and maintained that provides preparedness, training, and operational response capabilities (including notification, evacuation, and direct responses to events) to minimize consequences to workers and the public from accidents involving WIPP operations. The program provides emergency response actions for events such as:

- Fires or flammable gas explosions in the WHB and UNDERGROUND
- Other events resulting in a breach of RH WASTE containers at the WIPP

5.5.7 Radiation Protection Program

A radiation protection program and associated procedures shall be established, implemented, and maintained to ensure personnel radiation protection for all operations involving personnel radiation exposure.

The radiation protection program shall include considerations and general facility DESIGN FEATUREs employed to maintain radiation exposures as low as reasonably achievable (ALARA); radiological control zoning and access control; radiation shielding; ventilation systems; differential pressure; radiation monitoring equipment, and effluent monitoring and sampling systems.

Access control ensures that personnel do not enter areas where RH WASTE is outside of a closed shipping cask or facility cask in the WHB. Access control is required for the UPPER HOT CELL and lower hot cell when RH WASTE is present in the UPPER HOT CELL. Access control is required for the TRANSFER CELL when RH WASTE is in the TRANSFER CELL and during RH WASTE transfer to the FCLR or during transfer from the UPPER HOT CELL. Access to the crane maintenance room is prohibited unless the crane maintenance room shield door is closed when RH WASTE is in the UPPER HOT CELL. The CUR is required to be unoccupied with the CUR shield door closed when removing drums from a 10-160B shipping cask or when RH WASTE is in the UPPER HOT CELL and the shield plugs are removed. Access to the CUR is limited during 72-B RH WASTE processing to only RH WASTE handling personnel and radiological control personnel.. The radiation protection program shall ensure consistency with the assumptions in Chapter 5 of the RH DSA.[1]

5.5.8 Unreviewed Safety Questions

A USQ program and associated procedures shall be established, implemented, and maintained that ensures the WIPP remains consistent with the RH DSA[1] and credited DESIGN FEATUREs.

5.5.9 Fire Protection Program

The WIPP fire protection program shall be established to, at a minimum, provide for periodic inspection and testing of fire suppression, detection and alarm equipment to meet the requirements of the National Fire Protection Association (NFPA). The program includes combustible loading control for structures or areas of the facility with the potential to impact RH WASTE at WIPP and ensures that combustible loading is maintained such that small fires will not propagate into larger fires with sufficient heat to cause a significant release from RH WASTE containers in close proximity to the fire. The fire protection program includes control of transient combustible loading in the WHB and TRUPACT Maintenance Facility. The combustible loading program will incorporate assumptions from the most current fire hazard analysis and the SPECIFIC ADMINISTRATIVE CONTROLS[5] in Section 5.6 of these RH TSRs applicable to the WHB, and the DISPOSAL PATH and ACTIVE RH DISPOSAL ROOM in the UNDERGROUND.

5.5.10 Ground Control and Geotechnical Monitoring Program

A ground control and geotechnical monitoring program shall be established, implemented and maintained to initiate remedial action for unstable salt and to characterize, monitor, and trend salt behavior to minimize the likelihood of falling objects from the overhead and prevent a roof fall event in the UNDERGROUND. The program shall include periodic ground control inspections as stated in Section 5.6 of this RH TSR document.

5.5.11 Waste Hoist Structure and Structural Support Integrity Program

A waste hoist structure and structural integrity support program shall be established and shall determine the periodic inspections, tests, and/or maintenance activities and periodicity for those activities that are needed to maintain the integrity of the load bearing components associated with the waste hoist.

5.6 SPECIFIC ADMINISTRATIVE CONTROLS

5.6.1 Criticality Safety Program

a. ***AC Statement***: A Waste Characterization/Certification Program at each generator site ensures that only RH WASTE that meets the *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*,[6] referred to in this TSR document as the RH WAC[6] is shipped to the WIPP for disposal, and that any exceptions are evaluated against all applicable baseline documents prior to their authorization for shipment. The following criticality safety requirements shall be met before RH WASTE is disposed of at the WIPP:

- The maximum fissile loading shall not exceed 325 Fissile-Gram Equivalent (FGE), including measurement uncertainty, for a 72-B RH WASTE canister. If beryllium is present with the RH WASTE, the DIRECT LOADED 72-B canister is limited to a maximum beryllium content of 25 kg.[7, 8]

- The maximum fissile loading for any 55-gallon drum shipped in a in a 10-160B shipping cask shall not exceed 200 FGE, including measurement uncertainty, and a maximum beryllium content of 5 kg. If greater than 5kg up to a maximum of 100 kg beryllium is present in any 55-gallon containing RH WASTE, fissile mass shall not exceed 100 FGE, including measurement uncertainty.[9]

- The maximum fissile loading for any 30-gallon drum shipped in a 10-160B shipping cask shall not exceed 200 FGE, including measurement uncertainty, with no beryllium or graphite.

Basis:

The purpose of this requirement is to protect assumptions for Nuclear Criticality Safety Evaluations that show criticality in transport containers is not credible. Violation of the stated limits is a violation of the TSRs by WIPP only if the generator site certification documentation included characterization data that was not in compliance with the stated limits, but the RH WASTE was accepted by WIPP.

b. ***AC Statement***: The RH WASTE handling, storage, and disposal configuration at the WIPP is as follows:

- Drums are stored in the UPPER HOT CELL such that they are not stacked prior to being emplaced in a facility canister. No more than 10 drums are in the UPPER HOT CELL outside of a facility canister.[7]

- Loaded canisters are stored in the UPPER HOT CELL storage wells. No more than 6 fully loaded facility canisters are stored in the UPPER HOT CELL.[7]

- Facility canisters are loaded such that no more than three 30- or 55-gallon drums are placed in a canister. The FGE content of the fully loaded facility canister containing only 55-gallon drums is limited to 600 FGE, including measurement uncertainty, with no single drum exceeding 200 FGE, including measurement uncertainty.[9] 30-gallon drums shall be loaded into the facility canisters such that each canister is administratively limited to a maximum of 325 FGE, including measurement uncertainty.[7]

- The RH WASTE canisters are to be emplaced in horizontal positions in the walls of the UNDERGROUND disposal area within an analyzed minimum center-to-center spacing of greater than 30 inches.[7, 8]

- The shield plugs in the boreholes will be at least 4 feet long to ensure that RH WASTE is at least 4 feet from the CH WASTE containers.[7]

Basis:

The purpose of these requirements is to preserve assumptions in the criticality safety evaluations for RH WASTE and to ensure criticality remains incredible at the WIPP.

5.6.2 RH WASTE Characteristics Control

RH WASTE characteristics are ensured by a RH WASTE characterization/certification program at each generator site that ensures that only RH WASTE that meets the RH WAC[6] is shipped to the WIPP for disposal and that any exceptions are evaluated against all applicable baseline documents prior to their authorization for shipment.

a. ***AC Statement***: The following are prohibited in RH WASTE approved for disposal at the WIPP:

- Pyrophoric radioactive materials in excess of 1% by weight of RH WASTE

- Any pyrophoric non-radioactive materials

- Explosives

- Compressed gases (pressurized containers)

- RH WASTEs exhibiting the characteristic of ignitability, corrosivity, or reactivity (Environmental Protection Agency hazardous waste numbers of D001, D002, or D003)

Basis:

The purpose of this requirement is to prevent fires and explosions in RH WASTE containers by eliminating ignition sources in the RH WASTE containers. Inclusion of prohibited items in RH WASTE handled at the WIPP is a violation of the TSRs by WIPP only if the generator site certification documentation included characterization data that was not in compliance with the stated prohibited items, but the RH WASTE was accepted by WIPP.

b. ***AC Statement***: RH WASTE containers accepted for disposal at the WIPP as RH WASTE do not exceed 1000 Rem/hr on contact.

Basis:

The purpose of this requirement is to ensure that RH WASTE accepted for disposal at the WIPP meets the requirement for RH WASTE as identified in the Land Withdrawal Act.[11] RH WASTE handled at the WIPP that exceeds 1000 Rem/hr on contact is a TSR violation only if the generator site documentation identifies this condition as not being met and the RH WASTE is accepted by WIPP.

c. ***AC Statement***: Acceptable RH WASTE containers shall be limited to metal 30- or 55-gallon drums shipped in a 10-160B shipping cask and metal 72-B canisters that meet DOT Type 7A requirements or equivalent. The weight of a loaded 72-B RH WASTE canister shall not exceed 5,980 pounds and the canister lid shall have a welded or mechanical lid and an installed pintle that structurally support the canister when lifted by the pintle.

Basis:

The purpose of this requirement is to ensure that the weight of the facility cask loaded with a 72-B RH WASTE canister does not exceed the rated load capacity of the waste hoist and that the lid and pintle is secured to the canister body to prevent separation and drop of the canister during transfer from the 72-B shipping cask to the facility cask. This requirement is implemented at generator sites as required by the RH WAC [6] prior to being accepted for shipment to the WIPP

d. ***AC Statement:*** Lifting bails installed at generator sites on 30- or 55-gallon drums shipped in a 10-160B are required to be verified to be load bearing prior to shipment.

Basis:

The purpose of this requirement is to ensure that the drums can be lifted and are not dropped as a result of improperly installed bails during loading drums into a facility canister at the WIPP. This requirement is implemented at generator sites prior to being accepted for shipment to the WIPP.

e. ***AC Statement***: All RH WASTE containers are vented.

Basis:

The purpose of this requirement is to prevent pressure buildup in the RH WASTE containers. This requirement is implemented at generator sites as required by the RH WAC prior to being accepted for shipment to the WIPP.

f. ***AC Statement***: The Pu-239 Equivalent Curie (PE-Ci) limits shall be as follows:

- ≤ 240 PE-Ci per 72-B canister
- ≤ 80 PE-Ci per 30- or 55-gallon drum shipped in a 10-160B shipping cask
- ≤ 1800 PE-Ci/waste container of solidified/vitrified waste

Basis:

The purpose of this requirement is to protect basic inventory assumptions. Violation of the stated limits is a violation of the TSRs by WIPP only if the generator site certification documentation included characterization data that was not in compliance with the stated limits, but the RH WASTE was accepted and emplaced by WIPP.

g. ***AC Statement*:** RH WASTE shall only be shipped to the WIPP in a 72-B shipping cask or 10-160B shipping cask.

Basis:

Protects hazard evaluation initial conditions as the casks are designed to withstand impacts and drops, and fires, and provide shielding for an RH container up to 1,000 Rem/hr. This requirement is implemented at generator sites as required by the RH WAC [6] prior to being accepted for shipment to the WIPP.

5.6.3 Combustible Loading Control Program - Waste Handling Building

a. ***AC Statement***: Use of flammable gas or flammable compressed gas cylinders(except for those cylinders covered by DOT EXEMPTION DOT-E-7607) is prohibited in the following areas of the RH portion of the WHB when RH WASTE is as specified below.

- RH BAY when a 10-160B shipping cask is loaded with RH WASTE and the lid is unbolted.
- Hot cell operating gallery when RH WASTE is present in the UPPER HOT CELL.
- Crane maintenance room with the shield door open unless there is no RH WASTE in the UPPER HOT CELL.
- TRANSFER CELL when RH WASTE is present. Also not used in the TRANSFER CELL when RH WASTE is in the UPPER HOT CELL or CUR without the UPPER HOT CELL and CUR floor shield valves closed.
- Service room when RH WASTE is present in the TRANSFER CELL.
- UPPER HOT CELL when RH WASTE is present. Also not used in the UPPER HOT CELL when RH WASTE is present in the CUR or TRANSFER CELL unless the UPPER HOT CELL floor shield valve is closed and the UPPER HOT CELL floor shield plugs are installed.
- CUR when RH WASTE is present. Also not used in the CUR when RH WASTE is present in the UPPER HOT CELL unless the UPPER HOT CELL floor shield plugs are installed.

Basis:

The purpose of this requirement is to prevent fires and explosions/fires due to release of flammable gas in the WHB with the potential to breach RH WASTE containers. Although the 72-B and 10-160B shipping casks protect RH WASTE containers from the impact of explosion generated missiles, RH WASTE in the 10-160B shipping cask is vulnerable if the lid is dislodged. While the thick concrete walls and shield glass windows surrounding the UPPER HOT CELL minimize the effects of an explosion in the hot cell operating gallery, the windows are vulnerable and should they be broken as a result of an explosion, shielding provided by the windows is compromised such that workers are exposed. When RH WASTE is present in the remaining areas, access restrictions prevent personnel occupancy and therefore use of flammable gas or flammable compressed gas in those areas.

b. ***AC Statement***: Any diesel powered vehicle operating in the RH BAY within 15 ft of the common RH/CH wall requires a firewatch.

Basis:

The purpose of this requirement is to prevent a fire near the common RH/CH wall with the potential to breach CH WASTE containers stored in the northeast corner of the Shaft conveyance of the WHB.

c. ***AC Statement***: Storage of flammable gas and flammable compressed gas cylinders is prohibited in the WHB.

Basis:

The purpose of this requirement is to prevent fires and explosions/fires due to release of flammable gas in the RH portion of the WHB when RH WASTE is present.

d. *AC Statement:* Transient combustible material shall not be stored in the UPPER HOT CELL, CUR, TRANSFER CELL, FCLR, Crane Maintenance Room, Service Room, or within 15 ft of the common RH/CH wall in the RH BAY.

Basis:

The purpose of this requirement is to prevent fires by controlling the amount of combustible material in areas where RH WASTE is present, in areas adjacent to areas with RH WASTE, and in areas that could affect both RH and CH WASTE. By controlling transient combustibles, there is no continuity of combustible material that would support propagation of fires.

5.6.4 Waste Handling Restrictions

a. ***AC Statement***: RH WASTE 72-B canisters shall not be removed from shipping casks outside TRANSFER CELL. RH WASTE drums shall only be removed from the 10-160B shipping cask inside the CUR with the CUR shield door closed.

Basis:

The purpose of this requirement is to ensure that RH WASTE is shielded to protect workers.

b. ***AC Statement***: Non-waste handling vehicles shall not be allowed in the RH portion of the WHB when RH WASTE is present in the RH BAY when the 10-160B shipping cask containing RH WASTE has its lid bolts loosened.

Basis:

This requirement prevents vehicle collisions with the 10-160B shipping cask when the lid bolts are loosened such that a loss of shielding or breach of RH WASTE containers does not occur.

c. ***AC Statement****:* The RH WASTE inventory, allowed storage locations, and configuration in the RH portion of the WHB shall be as follows:

- Two loaded shipping casks in the RH BAY (on the transportation trailers or on a RCTC)
- Six loaded RH WASTE canisters and ten 30- or 55-gallon drums in the UPPER HOT CELL (one canister per storage well and drums on the concrete portion of the UPPER HOT CELL)

- One loaded shipping cask in the CUR (on a RCTC)
- One canister in the TRANSFER CELL (in the 72-B shipping cask or shielded insert in the shuttle car basket)
- One canister in the facility cask in the FCLR (in the facility cask with the facility cask shield valves closed.

Basis:

The purpose of this requirement is to protect the inventory assumptions established during the Hazard Evaluation which limit the amount of material available for release during accident conditions. Protecting this limit ensures that the facility will remain within the operating envelope developed in the RH DSA.[1] *The allowed storage locations also ensure that RH WASTE is protected from impacts, fires, and explosions by the shipping cask, the shielded insert, the hot cell complex structure, or the facility cask.*

d. ***AC Statement***: A loaded10-160B shipping cask shall not be left unattended in the RH BAY with the lid bolts loosened and shall only be stored in the CUR with the CUR shield door closed when the lid bolts are loosened.

Basis:

The purpose of this requirement is to prevent a loaded 10-160B shipping cask lid from becoming dislodged outside of a shielded area in the RH portion of the WHB.

e. ***AC Statement***: Prior to rotating the facility cask when over the port between the FCLR and TRANSFER CELL, the FCTC must be mated and latched to the FCRD.

Basis:

The purpose of this requirement is to prevent the FCTC from moving during transfer of an RH WASTE canister between the TRANSFER CELL and FCLR that could result in crushing a RH WASTE container or the FCLR grapple hoist ropes resulting in a drop and possible breach of a RH WASTE container. This requirement also prevents worker exposure due to loss of shielding if the car supporting the facility cask were to move during canister transfer.

f. ***AC Statement***: Prior to moving the facility cask loaded with RH WASTE onto the waste shaft conveyance, the weight of the loaded canister shall be verified to not exceed 3220 lbs. If the weight exceeds 3220lbs, the facility cask shall not be moved onto the waste shaft conveyance until the maintenance work platform has been removed from the conveyance.

Basis:

The purpose of this requirement is to prevent overloading the waste hoist in excess of its rated capacity.

g. ***AC Statement***: Prior to moving the FCTC loaded with the facility cask from the FCLR to the waste shaft collar area, the waste shaft conveyance is verified to be at the collar of the waste shaft.

Basis:

Prevents a load from inadvertently entering the waste shaft with the waste shaft conveyance out of position.

h. ***AC Statement***: In the UPPER HOT CELL, drum carriages loaded with RH WASTE shall be carried over and stored on the concrete portion or the UPPER HOT CELL floor. Facility canisters loaded with RH WASTE shall carried over the concrete portion of the UPPER HOT CELL floor and shall only be stored in the UPPER HOT CELL canister storage wells.

Basis:

Prevents RH WASTE containers, if dropped, from falling to the lower hot cell and breaching.

i. ***AC Statement***: The crane maintenance room shield door is normally closed and is only opened to transfer the UPPER HOT CELL crane to and from the crane maintenance room when RH WASTE is in the UPPER HOT CELL.

Basis: Prevents fires in the crane maintenance room from propagating to the UPPER HOT CELL and damaging RH WASTE containers.

j. ***AC Statement***: The grapple override port shield plugs in the service room are installed except when the grapple override tool is in use. The crane override port shield plugs in the RH BAY and hot cell operating gallery shall be installed except when the override tools are in use.

Basis: Provides shielding for protection of workers when RH WASTE is in the TRANSFER CELL or UPPER HOT CELL. Also prevents fires from propagating from the service room to the TRANSFER CELL.

k. ***AC Statement***: A spotter is required when operating the RH 41-ton waste handling forklift loaded with the facility cask, operating the RH 41-ton, 20-ton, or 6-ton waste handling forklifts within 75 ft of the CH disposal array face, or operating any diesel powered equipment within 75 feet of the HERE/facility cask aligned on a borehole in the UNDERGROUND.

Basis:

The purpose of this requirement is to protect the RH WASTE from drops, collisions, and punctures and to prevent collisions with the HERE/facility cask aligned on a borehole to prevent loss of shielding. This requirement also prevents collisions between RH waste handling equipment and the CH disposal array face that result in loss of confinement from CH WASTE or result in fires from vehicle collisions with the CH disposal array face.

l. ***AC Statement***: RH WASTE shall be transported to the UNDERGROUND by way of the waste shaft only. No other shaft to the UNDERGROUND may be used for transportation of RH WASTE.

Basis:

The purpose of this requirement is to ensure that the RH WASTE is transported by the appropriate means and eliminates the potential to encounter hazards other than the conditions that were analyzed in the DSA.[1]

m. ***AC Statement***: In the UNDERGROUND, no RH WASTE shall be moved to a location outside the designated DISPOSAL PATH.

Basis:

The purpose of this requirement is to restrict the RH WASTE to locations for which all of the hazards have been adequately analyzed and the risk of involvement in an accident is controlled.

n. ***AC Statement***: Personnel access in E-300 shall be restricted from the exit of the ACTIVE RH DISPOSAL ROOM to the UNDERGROUND ventilation exhaust shaft during RH WASTE HANDLING OPERATIONS.

Basis:

The purpose of this requirement is to reduce the potential consequences to workers in the UNDERGROUND in the event a release of material occurs.

o. ***AC Statement***: A shield plug shall be installed in a RH disposal borehole containing a RH WASTE canister prior to removal of the facility cask from the HERE.

Basis:

The purpose of this requirement is to prevent worker exposure in the ACTIVE RH DISPOSAL ROOM. This requirement also ensures that RH WASTE canisters are neutronically isolated from CH WASTE that will be placed in disposal rooms after RH WASTE disposal.

p. ***AC Statement***: RH disposal boreholes shall be 17 ft. deep (-0/+2 ft.) and placed nominally 34 ft. from the projected corner of salt pillars (corners are mitered) along the short axis of pillars that separate the disposal rooms and nominally 26 ft. from the projected corners of the salt pillars along the long axis.

Basis: The purpose of this requirement is to ensure that there is a sufficient amount of salt surrounding boreholes installed in the salt pillars to provide shielding for worker protection, to ensure that canisters in boreholes are neutronically isolated from each other and the CH WASTE that is disposed after RH WASTE disposal.

q. ***AC Statement*:** A spotter is required when backing the RH transportation trailers into the RH BAY. A spotter is required when operating any vehicle within 15 ft. of the common RH/CH wall in the RH BAY when CH WASTE is present in the northeast corner of the CH BAY.

Basis: Prevents collisions with the common RH/CH wall from vehicle operation in the RH BAY with the potential to breach CH WASTE containers stored in the northeast corner of the CH BAY.

r. ***AC Statement***: The UPPER HOT CELL shield plugs are required to be installed when the CUR shield door is open and RH WASTE is in the UPPER HOT CELL.

Basis: This requirement prevents direct radiation exposure to workers.

s. ***AC Statement*:** The FCTC is required to be latched to the FCRD prior to rotation of the facility cask during RH WASTE HANDLING that involves transfer of a RH WASTE canister between the TRANSFER CELL and facility cask.

Basis: This requirement prevents crushing a RH WASTE canister, during canister transfer between the TRANSFER CELL and the facility cask in the FCLR, or the FCLR grapple hoist ropes.

t. ***AC Statement***: The facility cask shield valves are closed when RH WASTE is in the facility cask and are only opened when transferring a RH WASTE canister from the TRANSFER CELL to the facility cask, or the facility cask to a disposal borehole.

Basis: This requirement prevents direct radiation exposure to workers.

u. ***AC Statement***: Electrical equipment associated with the HERE or the borehole machine must be at least 10 ft. from the CH WASTE array face, or a FIRE WATCH is posted.

Basis: This requirement prevents fires associated with the electrical equipment for the HERE or the borehole machine that may be used near a CH WASTE FACE from propagating and breaching CH WASTE containers.

v. **AC Statement**: Battery charging for the RH 41-ton, 20-ton, and 6-ton waste handling forklifts shall not be done within 75 ft. of the CH WASTE FACE. Battery charging for the RH waste handling forklifts shall not be done in the DISPOSAL PATH during CH WASTE transport in the DISPOSAL PATH. Charging must be performed in a cross-cut or in an unused room in the disposal circuit.

Basis: This requirement prevents missiles associated with battery explosions from impacting CH WASTE in the DISPOSAL PATH or ACTIVE CH DISPOSAL ROOM.

5.6.5 Combustible Loading Control Program - DISPOSAL PATH

AC Statement: The following requirements for combustible loading control in the DISPOSAL PATH shall be met:

- Only electric or diesel powered equipment is used in the UNDERGROUND.
- When RH WASTE is in transit, vehicles not performing RH WASTE HANDLING OPERATIONS shall be moved to a cross-cut and be secured until the RH 41-ton forklift transporting RH WASTE has passed and is greater than 75 ft away. Vehicles that may have become disabled (excluding the lube truck) may be in the DISPOSAL PATH but must be secured along the wall of the DISPOSAL PATH.

- No combustibles, flammable gas, or flammable compressed gas cylinders shall be stored in the DISPOSAL PATH. (Note: a disabled vehicle is not considered to be in storage.)

- No flammable gas or flammable compressed gas cylinders shall be used in the DISPOSAL PATH during RH WASTE HANDLING OPERATIONS.

- The RH 41-ton waste handling forklift with WASTE and a loaded CH WASTE transporter must maintain at least 75 ft. separation between each other during transport of WASTE in the DISPOSAL PATH. This separation distance does not apply if either waste handling vehicle becomes disabled while loaded with WASTE and it is necessary to move the other vehicle past the disabled vehicle. If this occurs a FIRE WATCH is required to move a vehicle loaded with WASTE past another vehicle loaded with WASTE.

- The lube truck shall not be allowed in the DISPOSAL PATH while RH WASTE is in transit from the waste shaft station to the ACTIVE RH DISPOSAL ROOM.

- No flammable gas or flammable gas cylinders stored between air intake shaft and South 1000 in West 30 or on the North ventilation side within 100 ft. of bulkhead 303.

- No construction work involving flammable gas cylinders at bulkhead 309 during RH WASTE HANDLING OPERATIONS.

- No construction work involving flammable gas between the disposal panel supply overcast and the construction bulkhead to the south in E-300 during RH WASTE HANDLING OPERATIONS. When panel 4 is added to the disposal path no construction work involving flammable gas/liquid or flammable compressed gas cylinders is allowed between the overcast at E-140/S-3310 and the construction bulkhead to the west of this overcast in S-3310 during RH WASTE HANDLING OPERATIONS.

Basis:

The purpose of these requirements is to prevent fires and flammable gas explosions in the DISPOSAL PATH or other areas with the potential to affect RH WASTE in the DISPOSAL PATH. In addition, these requirements prevent vehicle collisions that could result in a fire during RH WASTE HANDLING OPERATIONS with the potential to impact RH or CH WASTE.

5.6.6 Combustible Loading Control Program - ACTIVE RH DISPOSAL ROOM

AC Statement: The following requirements for combustible loading control in the ACTIVE RH DISPOSAL ROOM shall be met:

- No non-waste handling vehicles are allowed in the ACTIVE RH DISPOSAL ROOM during RH WASTE HANDLING OPERATIONS.

- No flammable gas or flammable compressed gas cylinders shall be used in the ACTIVE RH DISPOSAL ROOM without a FIRE WATCH being posted.

- No use of flammable gas or flammable compressed gas cylinders in the ACTIVE RH DISPOSAL ROOM during RH WASTE HANDLING OPERATIONS.

- No flammable gas and flammable gas cylinders shall be stored in the ACTIVE RH DISPOSAL ROOM.

- The lube truck shall not be allowed in the ACTIVE RH DISPOSAL ROOM.

Basis:

The purpose of these requirements is to prevent fires and flammable gas explosions with the potential to impact RH WASTE containers being emplaced or after emplacement, and prevent missiles and collisions that can compromise shielding.

5.6.7 Ground Control Program

AC Statement: There shall be weekly ground control inspections in the UNDERGROUND RH WASTE HANDLING areas. The completion of inspections will be documented.

Basis:

The purpose of this requirement is to minimize the likelihood of falling objects from the overhead and prevent a roof fall event in the UNDERGROUND RH WASTE HANDLING areas. This program is designed to detect conditions that indicate instability and initiate corrective action.

5.6.8 Waste Hoist Brake Performance

AC Statement: Procedures shall be established, implemented, and maintained to ensure that the preoperational checks of the Waste Hoist Brake System shall be performed on each shift prior to transporting RH WASTE.
Basis:

The purpose of this requirement is to prevent the uncontrolled movement of the waste shaft conveyance upon loss of power or loss of hydraulic pressure.

5.6.9 Nonflammable Compressed Gas Cylinder Control

AC Statement: No more than four nonflammable compressed gas cylinders (no larger than DOT Type 3AA, style K) shall be in the RH BAY when CH WASTE is in the northeast corner of the CH BAY; no more than two nonflammable compressed gas cylinders shall be in the hot cell operating gallery to support radiological swipe evaluation. This limit does not apply to hand held fire extinguishers. Nonflammable compressed gas cylinders shall not be stored in the hot cell complex, the crane maintenance room, the FCLR, at the bottom of the waste shaft, in the DISPOSAL PATH or ACTIVE RH DISPOSAL ROOM. Nonflammable compressed gas cylinders shall not be used in the UPPER HOT CELL, the CUR, the TRANSFER CELL, or the FCLR when RH WASTE is present. Nonflammable compressed gas cylinders shall not be used in the DISPOSAL PATH or ACTIVE RH DISPOSAL ROOM during RH WASTE HANDLING. This does not apply to handheld fire extinguishers, SCSRs or oxygen bottles in trauma kits.

Basis:

The purpose of this requirement is to minimize the potential for improper handling or storage of compressed gas cylinders which could result in missiles with the potential to breach shielding or and impact RH WASTE containers.

5.6.10 Qualified Operators

AC Statement: Only operators who are trained in the appropriate response to fires in the UNDERGROUND shall be authorized to man the CMR or to operate plant equipment for WASTE HANDLING OPERATIONS.

Basis:

The purpose of this requirement is to ensure that the CMR operator(s) and operations personnel in the UNDERGROUND performing WASTE HANDLING OPERATIONS communicate and take the appropriate actions in the event of a fire in the UNDERGROUND such that the CMR operators(s) block the automatic shift to filtration of underground ventilation until personnel are out of danger. This requirement also ensures that operations personnel in the UNDERGROUND take the necessary immediate actions to notify the CMR and proceed to a safe location.

5.6.11 Toplander Control

AC Statement: The toplander shall approve entry of loads onto the waste shaft conveyance through control of the gate at the waste shaft collar.

Basis:

The purpose of this requirement is to prevent a load from inadvertently entering the waste shaft with the waste shaft conveyance out of position. This control also prevents any load from being dropped down the waste shaft or a load from inadvertently entering waste shaft.

5.7 General Requirements

5.7.1 Occurrence Reporting

A program shall be established, implemented, and maintained for reporting of operational occurrences. Written reports and oral notifications shall be submitted to DOE in accordance with DOE regulations regarding reporting requirements. These reports and notifications shall be prepared in accordance with approved procedures and shall be reviewed and approved by management prior to submittal to DOE.

5.7.2 TSR Violations

Violations of a TSR occur as a result of the following three circumstances. (Note that there are no SLs or LCSs associated with the WIPP facility.)

1. Failure to complete ACTIONS within the required completion time. Entrance into these ACTIONS is made through the following pathways:

   - Exceeding an LCO.
   - Failing to successfully meet an SR.

2. Failure to perform a surveillance within the required FREQUENCY.

3. Failure to comply with an AC.

Failure to comply with the SACs in Section 5.6 constitutes a TSR violation. Failure to comply with a PAC is a TSR violation when either the AC is directly violated, or the intent of a referenced program is

not fulfilled. To qualify as a TSR violation for PACs, the failure to meet the intent of the referenced program would need to be significant enough to render the DSA SMP summary description invalid.

A grace period of 24 hours is provided to perform a missed surveillance, thereby avoiding the need for facility personnel to take immediate, possibly unnecessary corrective action. Entering the grace period remains a TSR violation even though an immediate corrective action may not be required.

5.7.3 Response to TSR Violations

The following actions are required for response to an LCO violation:

a. Place the affected PROCESS AREA(s) in a safe condition by entering LCO 3.0.3.

b. Notify the DOE of the violation in accordance with the occurrence reporting program.

c. Prepare an Occurrence Report.

The following actions are required for response to an SR Violation (when an SR has not been performed within the required FREQUENCY):

a. Enter SR 4.0.3, and perform the SR within 24 hours or up to the limit of the specified FREQUENCY, whichever is less, prior to entering the required ACTION(s) to permit completion of the SR and thus allow recovery in accordance with LCO 3.0.2. The delay period commences at the time it is determined that a surveillance has not been performed.

   i. If the SR is successfully met, exit SR 4.0.3 and continue operation in a compliant condition.

      NOTE: Steps (b) and (c) of Section 5.7.3 must still be completed.

   ii. If the SR is not successfully met, enter the ACTIONS of the applicable LCO.

      NOTE: Steps (b) and (c) of Section 5.7.3 must still be completed.

b. Notify DOE of the violation in accordance with the occurrence reporting program.

c. Prepare an Occurrence Report.

The following actions are required for response to an AC Violation:

a. Notify the DOE of the violation in accordance with the occurrence reporting program.

b. Prepare an Occurrence Report.

c. Prepare a Corrective Action Plan describing the steps leading to compliance with the AC.

d. Perform and document a technical evaluation, if appropriate, of the AC violation to determine if any damage occurred.

5.7.4 Conditions Outside TSR

Emergency actions that depart from an approved TSR may be taken when no actions consistent with the TSR are IMMEDIATELY apparent, and when these actions are needed to protect workers, the public, or the environment from imminent and significant harm. Such actions must be approved by a person in

authority as designated in the TSR. This authority is delegated to the Facility Shift Manager (or designee).

In an emergency, if a situation develops that is not addressed by the TSR, the Facility Shift Manager (or designee) is expected to use his/her training and expertise to take actions to correct or mitigate the situation. Also, the Facility Shift Manager (or designee) may take actions that depart from a requirement in the TSRs provided that (1) an emergency situation exists; (2) these actions are needed IMMEDIATELY to protect the workers, public, and environment from imminent and significant harm; and (3) no action consistent with the TSR can provide adequate or equivalent protection. If emergency action is taken, both a verbal notification shall be made to the DOE, and a written report shall be made to the DOE as soon as practical. If, during normal operations, an off normal condition occurs that is not addressed by the TSRs, the Facility Shift Manager (or designee) shall place the facility in a safe condition. With the facility in a safe condition, a Response Plan shall be developed by the contractor to address any additional actions to be taken and approved by the DOE.

5.8 Reviews and Assessments

5.8.1 General

This section describes the methods established to conduct independent reviews and audits of all activities associated with maintaining compliance with the TSR. These methods may include creating an organizational unit or a standing or ad hoc committee, or assigning individuals capable of conducting these reviews. When an individual performs a review function, a cross-disciplinary review determination may be necessary. Individual reviewers shall not review their own work or work over which they have direct responsibility. Management shall specify the functions, organizational arrangement, responsibilities, appropriate qualifications of reviewers, and reporting requirements of each functional element or unit that contributes to these processes.

The goal of the review and assessment program is to provide a cohesive program to provide senior level management with an assessment of facility operation and to recommend actions to improve nuclear safety and facility reliability. The program should include an assessment of the effectiveness of reviews conducted by facility staff. The goal of the independent oversight is to provide an outside look at day-to-day operations. The goal of the independent program is to VERIFY compliance with established contractor policies and programs.

5.8.2 Facility Reviews

The Facility Manager (or designee) shall review activities affecting the safe operation of the WIPP to ensure that day-to-day activities are conducted in a safe manner. These reviews shall include, as a minimum, the following elements:

a. USQ Determinations
b. Proposed tests and experiments
c. Procedures and programs (required by the TSR)
d. Facility changes and modifications
e. TSR changes
f. Facility operation, maintenance, and testing
g. DOE and industry issues of safety significance
h. Other safety related issues

Additional reviews may be performed by individual reviewers or by a review committee. If individual reviews are used, reviewers shall not perform the above required review of their own work or work for which they have direct responsibility. Reviewers shall possess sufficient education, experience, expertise, and safety analysis and technical training in the review subject area. When performing reviews, a cross-disciplinary determination is necessary. If a cross-disciplinary review is deemed necessary, personnel of the appropriate discipline shall perform such reviews.

5.8.3 Independent Oversight

Reviews shall be conducted by a group independent of the facility functional organization being reviewed. This program should include a review of the following elements:

a. USQ Determinations
b. Proposed changes to the TSR
c. All violations of codes, DOE Orders, and procedures that have a safety and health significance
d. Occurrence Reports
e. Staff performance
f. Significant unplanned radiological or hazardous material releases
g. Unanticipated deficiencies of SSCs that could affect nuclear safety
h. Significant operating abnormalities

5.8.4 Self-Assessments

Periodic management self-assessments shall be performed in accordance with the Quality Assurance Program to VERIFY effective implementation.

5.9 Staff Qualifications and Training

5.9.1 Qualification

A program shall be established to ensure that identified facility staff meet established qualification requirements for their positions.

5.9.2 Training

An initial training and retraining program for the identified facility staff shall be established and maintained.

5.10 Record Retention

The following records shall be retained for the period specified by the Records Inventory and Disposition Schedule in accordance with the quality assurance program:

a. Records and logs of facility operation.

b. Records and logs of principal maintenance activities, inspections, repairs, and replacements of principal equipment items related to nuclear safety.

c. All reportable events/occurrences.

d. Records of surveillance activities, inspections, and calibrations required by TSRs.

e. Records of changes made to procedures.

f. Records and drawing changes reflecting facility design modifications made to systems and equipment described in the DSA.[1]

g. Records of radiation exposure for all individuals entering radiologically controlled areas.

h. Records of training and qualification for current members of the facility operations staff.

i. Records of USQs performed for changes made to procedures or equipment.

5.11 OPERABILITY Principles

General principles of OPERABILITY are as follows:

a. A system is considered OPERABLE as long as there is assurance that it is capable of performing its specified safety function(s).

b. A system can perform its specified safety function(s) only when all of its necessary support systems are capable of performing their related support functions.

c. Ensuring the capability of a system to perform a safety function is an ongoing and continuous process.

d. When a system designed to perform a certain safety function is not capable of performing that safety function, a loss of function condition exists. Applicable PROCESS AREA operation shall be controlled through specific ACTIONS and completion times detailed in the LCO.

e. When a system is determined to be incapable of performing its intended safety function(s), the declaration of INOPERABILITY shall be performed IMMEDIATELY.

f. Any exception to an immediate determination of INOPERABILITY shall be justified.

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Section 6

DESIGN FEATUREs

6.0 DESIGN FEATURES

DESIGN FEATUREs are normally passive characteristics of the facility not subject to change by operations personnel. This section is needed so that any change in these design characteristics that could affect the safe operation of the facility will be done consciously, analyzed for safety implications, and approved at the appropriate level prior to making the modification.

The areas of the DESIGN FEATUREs credited in the safety analysis are passive components, configuration and/or physical arrangement. The feature and/or function being controlled is the actual design or function of the SSCs. As such, the DESIGN FEATUREs are controlled to the existing drawings, specifications, code of record, etc. The DESIGN FEATURE or function is being controlled to ensure that if the SSC is modified or replaced that the modification or new equipment has essentially the same feature, form, fit and function as the original equipment. Typically, the material, construction or the actual physical dimensions of the item are controlled as a DESIGN FEATURE. As such, the ACs of the: Configuration Management; Quality Assurance; Initial Testing, In Service Surveillance and Maintenance; and USQ Programs apply to these DESIGN FEATUREs.

The following DESIGN FEATUREs are credited in the DSA[1] as performing a safety function:

- **PPA is paved or graveled and surrounded by a gravel road**.

  The gravel and pavement surfaces maintain a physical separation greater than 200 ft between the WHB and the indigenous low profile vegetation surrounding the site, which minimizes the likelihood of a wildfire spreading to the WHB.

- **Underground bulkheads, overcasts, and airlocks**

  The bulkheads, overcasts, and airlocks are of non-combustible construction and provide separation between the construction ventilation circuit and the disposal ventilation circuit and waste shaft station and prevents fires outside the waste DISPOSAL PATH from propagating into the DISPOSAL PATH or disposal area of the UNDERGROUND.

- **140/25-ton RH Bay crane, CUR crane, UPPER HOT CELL crane and overhead powered manipulator, lift fixtures, shuttle car, and FCLR grapple hoist.**

  The 140/25-ton RH bay crane, CUR crane, UPPER HOT CELL crane and overhead powered manipulator, lift fixtures, shuttle car, and FCLR grapple hoist are designed to hold their load during the design basis earthquake (DBE) or loss of power.

- **Facility Cask Transfer Car**

  The FCTC structurally supports the facility cask during transfer of a RH WASTE container from the TRANSFER CELL to the facility cask and subsequent transfer to the UNDERGROUND on the waste shaft conveyance. The FCTC mates with the FCRD and latches to prevent the FCTC from moving during canister transfer that could result in crushing the RH WASTE canister or the FCLR grapple hoist ropes and dropping a canister. This feature also prevents loss of shielding in the FCLR.

- **Waste Handling Building**

  The WHB includes the waste hoist tower. The WHB is designed to withstand the DBE postulated for the WIPP of .1 g peak acceleration with a 1,000-year return interval to prevent the WHB from structurally collapsing and breaching waste containers.

  The WHB is required to meet NFPA 220, *Standard on Types of Building Construction*,[10] Type II construction. The WHB is constructed primarily of steel and concrete. The hot cell complex is comprised of rooms that are segregated from each other and the remainder of the RH portion of the WHB with thick concrete walls, floors, ceilings, shield plugs, shield valves, oil filled shield windows, and shield doors such that the nonflammable construction not only provides shielding for worker protection but prevents propagation of fire from one portion of the complex from propagating to another portion of the complex or to the RH BAY.

  The WHB is grounded, and has a lightning protection system to prevents direct lightning strikes from impacting waste containers in the WHB.

  The WHB is designed to withstand a roof loading of 27 lb/sq ft. to prevent the roof from collapsing and impacting waste in the WHB.

  The WHB is designed to withstand (1) a tornado with a 183-mile-per-hour (mph) wind speed at a 1,000,000-year return frequency, (2) straight winds with a wind speed of 110 mph with a 1,000-year return frequency. The WHB including the waste hoist tower is designed to withstand the DBT with 183 miles per hour and a translational velocity of 41 miles per hour, a maximum rotational velocity radius of 325 ft, a pressure drop of 0.5 pounds per square inch ($lb/in.^2$) and a pressure drop rate of 0.09 $lb/in.^2/s$. The WHB is not designed to withstand wind or tornado driven missiles.

  The structural beams in the UPPER HOT CELL under the canister storage wells prevent a waste canister from falling to the lower hot cell.

- **UPPER HOT CELL Canister Storage Wells**

  The UPPER HOT CELL canister storage wells provide structural support to keep a facility canister from toppling over onto other RH WASTE containers and protects the canister from dropped objects. The wells also prevent direct flame impingement on facility canisters containing RH WASTE.

- **Transfer Cell Shuttle Car**

  The TRANSFER CELL shuttle car is designed to remain on its support rails in a DBE. It accommodates only one RH waste canister at a time.

- **UPPER HOT CELL Crane Grapple and FCLR Grapple Hoist Grapple**

  The grapples used with the UPPER HOT CELL crane and the FCLR are designed with three pivot dogs that move together to hold a canister pintle. This prevents the grapple from dropping a RH waste canister or other loads that could be dropped on RH WASTE.

- **UPPER HOT CELL Wall Mounted Manipulators**

  Wall mounted manipulators have counterweights to limit speed of travel in the event that an operator releases the manipulator. This prevents breaking the shield windows with the manipulators resulting in loss of shielding.

- **Metal Facility Canister**

  The facility canister has a mechanical or pinned lid and pintle that structurally supports the canister when lifted with the UPPER HOT CELL crane grapple and the FCLR grapple hoist.

- **Waste Shaft Conveyance**

  The waste shaft conveyance is designed such that the height, width, and length of the materials deck can hold only one facility cask containing RH WASTE. The conveyance is not sized to accommodate both RH and CH WASTE at the same time. This limits the RH inventory that can be transferred on the waste shaft conveyance to only one RH waste canister. The material deck is located below the man deck such that RH WASTE is protected from falling objects and tornado missiles. The waste shaft conveyance is designed such that a facility cask can only be loaded using the rail mounted FCTC.

- **Waste Hoist Brakes**

  The waste hoist brake system must be energized to release both independent sets of brakes. During loss of power, the brakes fail safe to the engaged position. This design prevents the uncontrolled movement of the waste shaft conveyance upon loss of power or loss of hydraulic pressure.

- **Waste Hoist Structure and Structural Support**

  The waste hoist structure and structural support including the waste hoist head frame, waste shaft conveyance, counter weight, ropes, waste hoist drum, and waste hoist tower are designed for design basis loads to prevent an uncontrolled drop of the conveyance loaded with RH WASTE down the waste shaft.

- **Fence around Waste Shaft Collar**

  The fence around the waste shaft collar defines the restricted area surrounding the waste shaft and prevents uncontrolled access to the shaft.

- **Facility Cask**

  The RH facility cask holes only one RH canister. The cask mates with the FCTC for transport of and RH waste canister to the UNDERGROUND. The cask can be rotated on trunnions such that the cask is vertical over the transfer port between the FCLR and the TRANSFER CELL. The RH facility cask is also mates with the forks on the 41-ton forklift used to transfer the cask from the transfer car to the active waste emplacement room. The cask also mates with the HERE for transfer of a loaded RH canister into an RH borehole. The cask is equipped with two shield valves that can be opened from the control console in the FCLR the control console for the HERE. This design limits the amount of RH WASTE at risk and protects the waste canister from fires and explosions or drops and provides shielding for worker protection. The facility cask also protects a RH WASTE canister from tornado and wind generated missiles.

- **Boreholes and Borehole Shield Plugs**

  The borehole and borehole shield plugs provide shielding after RH WASTE canister disposal for protection of workers in the ACTIVE RH DISPOSAL ROOM. Borehole placement ensures shielding for worker protection and protects spacing assumptions in the RH disposal criticality safety evaluations. The borehole shield plugs are made of concrete at least 4 ft. in length. The shield plug length and material protects workers from radiological exposure associated with RH WASTE and protects assumptions in the criticality safety evaluation for disposed RH WASTE. The shield plug also protects the disposed RH WASTE canister from the effects of an explosion/fire in the ACTIVE RH DISPOSAL ROOM.

- **HERE and Shield Collar**

  The HERE transfer mechanism and shield collar provide shielding for worker protection when mated with the facility cask during transfer of a RH waste canister from the facility cask into a disposal borehole, prevents direct flame impingement on the waste canister, and protects the canister from explosions.

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Section 7

References

7.0 REFERENCES

1. DOE/WIPP-03-3174, Revision 0, *WIPP Remote Handled (RH) Transuranic Waste Documented Safety Analysis*, 2005.

2. Title 10 Code of Federal Regulations Part 830, Subpart B, Safety Basis Requirements.

3. DOE/WIPP 95-2125, Revision 9, *WIPP Contact Handled (CH) Technical Safety Requirements*.

4. DOE/WIPP 95-2065, Revision 9, *WIPP Contact Handled (CH) Documented Safety Analysis*.

5. DOE-STD-1186-2004, *Specific Administrative Controls*, August 2004.

6. DOE/WIPP-02-3122, Revision 5 (Draft), *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant.*

7. WSMS-WIPP-00-003, Rev.1, *Waste Isolation Pilot Plant Nuclear Criticality Safety Evaluation Remote Handled Waste*, December 20, 2001.

8. CS-2003-003, *Determination of Beryllium Mass Limit for the 72-B Direct Loaded Canister with Beryllium Reflection*, January 2004.

9. CS-2003-001, Revision 1, *Waste Isolation Pilot Plant Nuclear Criticality Safety Evaluation for Contact Handled Transuranic Waste Storage*, August 2003.

10. National Fire Protection Association 220, *Standard on Types of Building Construction*.

11. Public Law 102-579, 102nd Congress, Waste Isolation Pilot Plant Land Withdrawal Act, October 30, 1992 [as amended by Public Law 104-201].

Appendix A

Bases

APPENDIX A - BASES

B3.0 LIMITING CONDITIONS FOR OPERATION

GENERAL

These generic LCOs establish the general requirements applicable to all LCOs in this document. These requirements are based on 10 CFR Part 830, Subpart B,[1] Safety Basis Requirements, and guidance of DOE G 423.1-1,[2] *Implementation Guide for Use in Developing Technical Safety Requirement.*

LCO 3.0.1

LCO 3.0.1 establishes the MODE applicability statement within each LCO as the requirement for conformance to the LCO for safe operation of the facility or PROCESS AREA. The ACTIONS establish the remedial measures that must be taken within specified completion times when the requirements of an LCO are not met as required by LCO 3.0.2.

LCO 3.0.2 establishes the exception for requiring each LCO to be met.

LCO 3.0.2

LCO 3.0.2 establishes that, on discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The completion time of each ACTION is applicable from the time that a condition is entered. The ACTIONS establish those remedial measures that shall be taken within specified completion times when the requirements of an LCO are not met.

This LCO establishes that:

a. Completion of the ACTIONS within the specified completion times constitutes compliance with an LCO.

b. Completion of the ACTIONS is not required when an LCO is met within the specified completion time, unless otherwise specified.

There are two basic types of ACTIONS. The first type of ACTION specifies a time limit in which the LCO shall be met. This time limit is the completion time to restore an INOPERABLE system or component to OPERABLE status or to restore variables to within specified limits. If this type of ACTION is not completed within the specified completion time, a shutdown may be required to place the applicable PROCESS AREA in a MODE or condition in which the LCO is not applicable. (Whether stated as an ACTION or not, restoration of INOPERABLE equipment or a condition back to within limits is an action that may always be considered on entering ACTIONS.)

The second type of ACTION specifies the remedial measures that permit continued operation of the FACILITY not further restricted by the completion time. In this case, conformance to the ACTIONS provides an acceptable level of safety for continued operation.

Completion of ACTIONS is not required when an LCO is met or is no longer applicable within the associated completion times, unless otherwise stated in the individual LCO.

LCO 3.0.2 (continued) The nature of some ACTIONS for some conditions necessitates that, once the condition is entered, ACTIONS shall be completed even though the associated conditions are resolved. The individual LCO's ACTIONS specify where this is the case.

The completion times of the ACTIONS are also applicable when a system or component is intentionally removed from service. The reasons for intentionally relying on the ACTIONS include, but are not limited to, performance of surveillances, preventive maintenance, or corrective maintenance, or investigation of operational problems. ACTIONS for these reasons shall be performed in a manner that does not compromise safety. It is not intended that ACTIONS be intentionally entered for operational convenience. This requirement is to limit routine voluntary removal of redundant equipment from service in lieu of other alternatives that would not result in redundant equipment being INOPERABLE. This limits the time both subsystems or trains of a safety function are INOPERABLE and limits the time other conditions exist that result in LCO 3.0.3 being entered. Individual LCOs may specify a time limit for performing an SR when equipment is removed from service or bypassed for testing. In this case, the completion times of the ACTIONS are applicable when this time limit expires, if the SR has not been completed.

When a change in MODE or other specified condition is required to comply with ACTIONS, the FACILITY may enter a MODE or other specified condition in which a new LCO becomes applicable. In this case, the completion times of the associated ACTIONS would apply from the point in time that the new LCO becomes applicable, and the condition(s) is entered.

LCO 3.0.3 LCO 3.0.3 establishes the ACTIONS that shall be implemented when an LCO is not met:

a. An associated ACTION and completion time are not met and no other condition applies.

b. The facility condition is not specifically addressed by the associated ACTIONS. This means that no combination of conditions stated in the ACTIONS can be made that exactly corresponds to the actual condition of the facility. Sometimes, possible combinations of conditions are such that entering LCO 3.0.3 is warranted; in such cases, the ACTIONS specifically state a condition corresponding to such combinations and also that LCO 3.0.3 must be entered IMMEDIATELY.

This LCO delineates the time limits for placing the applicable PROCESS AREA in a safe condition or other specified condition when operation cannot be maintained within the limits for safe operation, as defined by the LCO and its ACTIONS. It is not intended to be used as an operational convenience that permits routine voluntary removal of redundant systems or components from service in lieu of other alternatives that would not result in redundant systems or components being INOPERABLE.

LCO 3.0.3 (continued) Placing a PROCESS AREA in a safe and stable MODE or condition required in accordance with LCO 3.0.3 may be terminated and LCO 3.0.3 exited if any of the following occurs:

1. The LCO is now met.

2. A condition exists for which the ACTIONS have now been performed.

3. ACTIONS exist that do not have expired completion times. These completion times are applicable from the point in time that the condition was initially entered and not from the time LCO 3.0.3 is exited.

The time limits of LCO 3.0.3 dictate that activities shall be initiated IMMEDIATELY to place the applicable PROCESS AREA in MODE or other specified condition in which the LCO is not applicable or in a safe condition if the LCO is applicable in all MODES. The time limits specified to reach lower MODES of operation or a safe condition permit the shutdown to proceed in a controlled and orderly manner that is well within the capabilities of the facility, assuming that only the minimum required equipment is OPERABLE. This reduces the potential for a facility upset that could challenge safety systems under conditions to which this LCO applies.

With the facility in a safe condition the current safety and operational situations must be reassessed and a plan must be developed, known as a "Response Plan," by the contractor. This response plan shall detail the cause of INOPERABLE equipment and efforts made to restore the outage. The plan shall also detail the condition of the material at risk and relay any foreseen hazards to the material expected while continuing to either remove the material or restore the equipment according the particular Response Plan. Once developed, the Response Plan must be submitted to DOE for approval prior to execution of the plan.

The requirements of LCO 3.0.3 do not apply when the ACTIONS of individual LCOs sufficiently define the remedial measures to be taken.

The exceptions to LCO 3.0.3 are provided in instances where requiring a facility shutdown in accordance with LCO 3.0.3 would not provide appropriate remedial measures for the associated condition of the facility. These exceptions are addressed in the individual LCOs.

LCO 3.0.4 LCO 3.0.4 establishes limitations on changes in MODES or other specified conditions in the Applicability when an LCO is not met. It precludes placing the applicable PROCESS AREA in a different MODE or other specified condition when the following exists:

1. The requirements of an LCO in the MODE or other specified condition to be entered are not met.

2. Continued noncompliance with these requirements would result in requiring that the applicable PROCESS AREA be placed in a MODE or other specified condition in which the LCO does not apply with the ACTIONS.

LCO 3.0.4 (continued) Compliance with ACTIONS that permit continued operation of the applicable PROCESS AREA for an unlimited period of time in an applicable MODE or other specified condition provides an adequate level of safety for continued operation. This is without regard to the status of the applicable PROCESS AREA before or after the MODE change. Therefore, in such cases, entry into a MODE or other condition in the Applicability may be made in accordance with the provisions of the ACTIONS. The provisions of this LCO shall not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before applicable PROCESS AREA is allowed to change MODES.

The provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the applicability that are required to comply with ACTIONS.

Exceptions to LCO 3.0.4 are stated in the individual LCOs. Exceptions may apply to all the ACTIONS or to a specific ACTION of an LCO.

When changing MODES or other specified conditions while in a condition (in compliance with LCO 3.0.4 or where an exception to LCO 3.0.4 is stated), the ACTIONS define the remedial measures that apply. Surveillances do not have to be performed on the associated INOPERABLE equipment (or on variables outside the specified limits), as permitted by SR 4.0.1. Therefore, a change in MODE or other specified condition in this situation does not violate SR 4.0.1 or 4.0.4 for those surveillances that do not have to be performed because of the associated INOPERABLE equipment. However, SRs shall be met to demonstrate OPERABILITY before declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected LCO.

LCO 3.0.5 LCO 3.0.5 establishes the allowance of restoring equipment to service under ACs when it has been removed from service or declared INOPERABLE to comply with ACTIONS. The sole purpose of this LCO is to provide an exception to LCO 3.0.2 to allow the performance of SRs to demonstrate the following:

1. OPERABILITY of the equipment being returned to service.

2. OPERABILITY of other equipment.

The ACs are to ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the allowed SR. This LCO does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of other equipment is taking an INOPERABLE channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of an SR on another channel in the other trip system. Another similar example of demonstrating the OPERABILITY of other equipment is taking a channel out of the tripped condition to permit the logic to function and indicating the appropriate response during the performance of an SR on another channel in the same trip system.

LCO 3.0.6

LCO 3.0.6 establishes an exception to LCO 3.0.2 for support systems that have an LCO specified in the TSRs. This exception is necessary because LCO 3.0.2 would require that the conditions and ACTIONS of the associated INOPERABLE supported system LCO be entered solely from the INOPERABILITY of the support system. This exception is justified because the actions that are required to ensure that the plant is maintained in a safe condition may all be specified in the support system's ACTIONS including those that relate to protecting the supported system. These support system ACTIONS may include entering the supported system's conditions and ACTIONS or may specify other ACTIONS that appropriately protect the supported system. For example, loss of a battery charger (support system) may allow the battery (supported system) to operate for up to 2 hours because that is the minimum time capability for charged battery.

When a support system is INOPERABLE and there is an LCO specified for it in the TSRs, the supported system(s) is required to be declared INOPERABLE as a result of the support system INOPERABILITY. However, it is not necessary to enter into the supported system's conditions and ACTIONS unless directed to do so by the support system's ACTIONS. The confusion and inconsistency of interpretation of requirements related to the entry into multiple conditions and ACTIONS shall be eliminated by providing all the actions that are necessary to be taken to ensure that the facility is maintained in a safe condition in the support system's ACTIONS. If the support system ACTIONS have not been developed to account for protection of the supported system, then the supported system ACTIONS must be entered IMMEDIATELY upon loss of the support system. There is no intent here to neglect entering the supported systems ACTIONS when the support system ACTIONS have failed to provide the necessary protection for both itself and the supported system.

Some support system LCOs are at a level where evaluations of impact on the OPERABILITY of the supported system are not required. Although the support system may result in some degradation of the supported system, it does not, in and of itself, always cause instantaneous INOPERABILITY of the supported system. Examples of this type of support system are fuel oil and battery charging.

When a support system is INOPERABLE and there is no LCO specified for it, the impact of the degradation of the support system function on the OPERABILITY of its supported systems shall be evaluated. The degradation of the support system may or may not affect the OPERABILITY of the supported systems. OPERABILITY of the supported system shall depend on the intended function of the supported system and the level of support that the supported system provides. Unless otherwise justified (on determination that the supported system is INOPERABLE), the conditions and ACTIONS of the supported system's LCO shall apply or other compensatory actions or requirements shall apply, as otherwise justified.

B4.0 SURVEILLANCE REQUIREMENTS

General

SRs 4.0.1 through 4.0.4 establish the general requirements applicable to all SRs and apply at all times, unless otherwise stated.

SR 4.0.1

SR 4.0.1 establishes the requirement that SRs shall be met during the MODES or other specified conditions in the applicability for which the requirements of the LCO apply, unless otherwise specified in the individual SRs. This SR ensures that surveillances are performed to VERIFY the OPERABILITY of systems and components and that variables are within specified limits. Failure to meet a surveillance within the specified FREQUENCY, in accordance with SR 4.0.2, constitutes a failure to meet an LCO.

Systems and components are assumed to be OPERABLE when the associated SRs have been met. Nothing in this SR, however, is to be construed as implying that systems or components are OPERABLE when:

1. The systems or components are known to be INOPERABLE, although still meeting the SRs.

2. The requirements of the surveillance(s) are known not to be met between required surveillance performances.

Surveillances do not have to be performed when the applicable PROCESS AREA is in a MODE or other specified condition for which the requirements of the associated LCO are not applicable, unless otherwise specified.

Surveillances, including surveillances invoked by ACTIONS, do not have to be performed on INOPERABLE equipment because the ACTIONS define the remedial measures that apply. SRs have to be met in accordance with SR 4.0.2 before returning equipment to OPERABLE status.

Upon completion of maintenance, appropriate post-maintenance testing is required to declare equipment OPERABLE. This includes meeting applicable SRs in accordance with SR 4.0.2. Post-maintenance testing may not be possible in the current MODE or other specified conditions in the applicability because the necessary FACILITY parameters were not established. In these situations, the equipment may be considered OPERABLE, provided that testing has been satisfactorily completed to the extent possible and that the equipment is not otherwise believed to be incapable of performing its function. This shall allow operation to proceed to a MODE or other specified condition where other necessary post-maintenance tests can be completed.

SR 4.0.2

SR 4.0.2 establishes the requirements for meeting the specified FREQUENCY for surveillances and any ACTION with a completion time that requires the periodic performance of the ACTION on a, "every..." interval.

SR 4.0.2 permits a 25% extension of the interval specified in the FREQUENCY. This facilitates surveillance scheduling and considers facility operating conditions that may not be suitable for conducting the surveillance (e.g., transient conditions or other ongoing surveillance or maintenance activities).

SR 4.0.2 (continued)

The 25% extension does not significantly degrade the reliability that results from performing the surveillance at its specified FREQUENCY. This is based on the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the SRs. The exceptions to SR 4.0.2 are those surveillances for which the 25% extension of the interval specified in the FREQUENCY does not apply. These exceptions are stated in the individual SRs. An example of where SR 4.0.2 does not apply is a surveillance with a FREQUENCY of "in accordance with another DOE regulation." The requirements of regulations take precedence over the TSRs. The TSRs cannot, in and of themselves, extend a test interval specified in the regulations. Therefore, there would be a note in the FREQUENCY stating, "SR 4.0.2 is not applicable."

As stated in SR 4.0.2, the 25% extension also does not apply to the initial portion of a periodic completion time that requires performance on a, "every..." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the ACTION, whether it is a particular surveillance or some other remedial action, is considered a single action with a single completion time. One reason for not allowing the 25% extension to this completion time is that such an ACTION usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the INOPERABLE equipment in an alternative manner.

The provisions of SR 4.0.2 are not intended to be used repeatedly as an operational convenience to extend surveillance intervals or periodic completion time intervals beyond those specified.

SR 4.0.3

SR 4.0.3 establishes the flexibility to defer declaring affected equipment INOPERABLE or an affected variable outside the specified limits when a surveillance has not been completed within the specified FREQUENCY. A delay period of up to 24 hours applies from the time it is discovered that the surveillance has not been performed, in accordance with SR 4.0.2, and not at the time the specified FREQUENCY was not met.

This delay period provides an adequate time limit to complete missed surveillances. This delay period permits the completion of a surveillance before compliance with ACTIONS or other remedial measures would be required that may preclude completion of the surveillance.

The basis for this delay period includes consideration of facility conditions, adequate planning, availability of personnel, the time required to perform the surveillance, the safety significance of the delay in completing the required surveillance, and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the SRs.

When a surveillance with a FREQUENCY, based not on time intervals but on specified facility conditions or operational situations, is discovered not to have been performed when specified, SR 4.0.3 allows the full 24-hour delay period in which to perform the surveillance.

The provisions of SR 4.0.3 also provide a time limit for completion of surveillances that become applicable as a consequence of MODE changes imposed by ACTIONS.

SR 4.0.3 (continued)

Failure to comply with specified frequencies for SRs is expected to be an infrequent occurrence. Use of the delay period established by SR 4.0.3 is a flexibility that is not intended to be used as an operational convenience to extend surveillance intervals.

If a surveillance is not completed within the allowed delay period, the equipment is considered INOPERABLE or the variable is considered outside the specified limits. The completion times of the ACTIONS for the applicable conditions begin IMMEDIATELY on expiration of the delay period. If a surveillance is failed within the delay period, the equipment is INOPERABLE or the variable is outside the specified limits. The completion times of the ACTIONS for the applicable conditions begin IMMEDIATELY on the failure of the surveillance.

Completion of the surveillance within the delay period allowed by this SR or within the completion time of the ACTIONS restores compliance with SR 4.0.1.

SR 4.0.4

SR 4.0.4 establishes the requirement that all applicable SRs shall be met before entry into a MODE or other specified condition in the applicability.

This SR ensures that system and component OPERABILITY requirements and variable limits are met before entry into a MODE or other specified conditions in the applicability for which these systems and components ensure safe operation of the facility. This specification applies to changes in MODES or other specified conditions in the applicability associated with facility shutdown as well as start-up.

The provisions of SR 4.0.4 shall not prevent changes in MODES or other specified conditions in the applicability that are required to comply with ACTIONS.

The precise requirements for performance of SRs are specified such that exceptions to SR 4.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs in accordance with the requirements of SR 4.0.4 are specified in the FREQUENCY, in the surveillance, or both. This allows performance of surveillances when the prerequisite condition(s) specified in a surveillance procedure require entry into the MODE or other specified condition in the applicability of the associated LCO before the performance or completion of a surveillance. A surveillance (which could not be performed until after entering the LCO applicability) would have its FREQUENCY specified such that it is not "due" until the specific conditions needed are met. Alternately, the surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event, condition, or time has been reached. The SRs are annotated consistent with the requirements of Section 1.6, "SURVEILLANCE REQUIREMENT FREQUENCY."

B3.1.1 Fire Suppression System For the Waste Handling Building

Background Summary

The WIPP fire protection system is designed to ensure personnel safety, mission continuity, and property conservation. Building designs incorporate features for fire prevention. The plant design meets the improved risk level of protection defined in DOE O 420.1A[3] and satisfies applicable sections of the National Fire Protection Association codes, DOE Orders, and Waste Isolation Pilot Plant Fire Hazard Analysis Report, May 2002.

The WIPP fire protection system design incorporates the following features:

- Most buildings and their support structures are protected by fixed, automatic fire suppression systems designed to the individual hazards of each area.
- Noncombustible construction, fireproof masonry construction, and fire resistant materials are used whenever possible.
- Fire separations are installed where required because of different occupancies per the Uniform Building Code.
- In multistory buildings, vertical openings are protected by enclosing stairways, elevators, pipe-ways, electrical penetrations, etc., to prevent fire from spreading to upper floors.
- A combustible loading control program is in place to minimize the accumulation of combustibles within the WHB and to ensure that combustibles will not have sufficient energy for a fire to propagate.

The components of the electrical service and distribution system are listed by Underwriters Laboratory (UL), or approved by Factory Mutual (FM) Engineering Corporation, and are installed to minimize possible ignition of combustible material and maximize safety.

Adequate provisions for the safe exit of personnel are available for all potential fire occurrences with evacuation alarm signals provided throughout occupied areas. Building evacuation plans help ensure the safe evacuation of building occupants during emergency conditions. The WIPP emergency management program contains the underground emergency procedures, the underground evacuation routes, and the designated assembly areas.

The WIPP fire protection system two main subsystems addressed in this TSR are:

- Fire water supply system
- Fire suppression system

The fire water supply system is described in LCO 3.1.2 .

Background Summary (continued)

Fire Suppression System:

The fire suppression system consists of several different fire extinguishing systems or equipment that service the SURFACE buildings and facilities and the UNDERGROUND areas. These may include any one or more of the following fire extinguishing capabilities: automatic wet pipe sprinkler system, fire hose connections, automatic dry and wet chemical extinguishing systems, and portable fire extinguishers.

The automatic wet pipe sprinkler system is the principal above ground fire suppression system at the WIPP, including the WHB system that is protected by this TSR. Its actuation is totally mechanical, by fusible sprinklers, and requires no electrical signal or power.

A wet pipe sprinkler system consists of a fixed piping network with installed fusible sprinklers. The system also has a main drain, a pressure gage, a water flow detection device, and an Inspectors Test Connection, which includes the inspector's test valve (ITV). Additional sprinkler system features may include an isolation valve and alarm check valve, a water motor gong, and a fire department connection.

Sprinkler systems are maintained full of water and pressurized by the fire water supply and distribution system. When a fire occurs, the heat produced will fuse one or more sprinklers in the area, causing water to flow through these sprinklers. This water flow will activate the sprinkler system water flow device, which will send a signal to the local fire panel, causing an annunciator to alarm and an alarm signal to be sent to the Central Monitoring Room (CMR). The sprinkler system will continue to flow until it is shut off manually.

A majority of sprinkler systems with an alarm check valve have a relief valve installed downstream of the check to maintain system pressure at or below 175 psig, which is the designed working pressure of the systems.[4] The relief valves protect the piping from high pressures due to pressure surges and thermal expansion of the trapped water.

Post indicator valves (PIVs) are provided for isolation and sectional control of the distribution system. A PIV is a buried gate valve with an attached, above ground operator post, which also provides valve position indication. A PIV is installed in every branch line to a building sprinkler system. PIVs are also installed in the main piping to provide sectional control. These PIVs are spaced to minimize the impact of a break in the main piping.

Application to Safety

LCO 3.1.1 ensures the OPERABILITY of the fire suppression system for the WHB. The fire suppression system for the WHB is credited preventing a small fire in the WHB from becoming a large fire that could cause damage to RH WASTE or a combination of RH and CH WASTE.[5]. [1]

RH WASTE is protected from fires when it is inside a CLOSED RH SHIPPING CASK or when RH waste containers are inside the hot cell complex where the thick concrete walls, floors, ceiling, shield valves, shield plugs, shield windows, and shield doors prevent propagation of a fire. The fires of concern include those that impact the waste hoist during transport of RH WASTE to the UNDERGROUND, fires in the crane maintenance room, fires in the hot cell operating gallery, and a fire in the RH BAY near the common RH/CH wall when CH WASTE is stored in the northeast corner of the CH BAY in the WHB that may result from use of diesel powered equipment in the RH BAY. A fire associated with the diesel powered trailer jockey or the transportation tractor, or any other diesel powered equipment in the RH BAY could potentially impact CH WASTE in addition to RH WASTE in a 10-160B shipping cask with the lid bolts loosened. A fire in the hot cell operating gallery could damage the UPPER HOT CELL lead glass shield windows resulting in a loss of shielding. A fire in the crane maintenance room could propagate to the UPPER HOT CELL. A fire could also originate in an area of the WHB and propagate into the RH portion of the WHB or the waste hoist tower. Sprinklers are installed in the RH BAY, the FCLR, the hot cell operating gallery, and the crane maintenance room. Therefore, the fire suppression system the in WHB is essential to preventing fires from spreading and impacting RH WASTE. In the FCLR, RH WASTE is further protected by the facility cask. In the TRANSFER CELL, RH WASTE is protected by the 72-B shipping cask or the shielded insert. In the CUR, RH WASTE is protected by the shipping cask. SPECIFIC ADMINISTRATIVE CONTROL 5.6.4 also requires:

- that the override port shield plugs in the service room, RH BAY, and hot cell operating gallery be installed except for when the override tools are in use.
- that the shield door to the crane maintenance room be kept normally closed and opened only for transferring the UPPER HOT CELL crane to and from the crane maintenance room when RH WASTE is present in the UPPER HOT CELL.
- RH waste drums are only removed from the 10-160B shipping cask in the CUR with the CUR shield door closed
- A 72-B RH waste canister is not removed from the 72-B shipping cask outside the TRANSFER CELL.

These controls further protect RH WASTE in areas that are not covered by sprinklers.

LCO

The WHB is protected by an automatic wet-pipe sprinkler system. The sprinkler system must be OPERABLE to respond to a fire. OPERABILITY of the sprinkler system consists of the following:

- The static pressure at each riser identified in Table 3.1.1-1 shall be greater than or equal to 125 psig.

- The primary or alternate ~~main~~ isolation valves ~~for each riser~~ identified in Table 3.1.1-1 shall be locked in the open position.

- All other system isolation valves identified in Table 3.1.1-2 shall be locked in the open position.

- ~~The post indicator valve(s) (PIV) identified in Table 3.1.1-1 shall be locked in the open position.~~

- Water flow indication when the inspector's test valve(s) (ITV) identified in Table 3.1.1-1 is opened.

- Main drain test results are less than or equal to 20% pressure change.

OPERABILITY is verified by performing periodic checks of system pressure, routine inspection of system components and testing to ensure system operation (see SRs and Bases for 4.1.1.1, 4.1.1.2, 4.1.1.3, ~~4.1.1.4,~~ 4.1.1.5, and 4.1.1.6).

MODE Applicability

The MODEs in which RH WASTE is susceptible to a fire in the above ground areas are RH WASTE HANDLING and RH WASTE STORAGE. These are the only two MODEs that allow the RH WASTE to be present outside of the shipping casks in the above ground areas. The shipping casks are designed to withstand a fire; therefore, these containers protect RH WASTE and minimizes the potential release. In addition, RH WASTE HANDLING is the only MODE in which RH waste canisters or drums can be physically handled. Refraining from handling the RH WASTE reduces the number of possible initiators for a fire and exposure of the RH WASTE to these initiators. RH WASTE drums in the UPPER HOT CELL are vulnerable during WASTE STORAGE when maintenance work on the UPPER HOT CELL crane is being performed in the crane maintenance room. A fire in the hot cell operating gallery could potentially damage the UPPER HOT CELL lead glass shield windows and result in a loss of shielding during RH WASTE HANDLING OPERATIONS or RH WASTE STORAGE in the UPPER HOT CELL. Therefore, this LCO is applicable during the RH WASTE HANDLING and RH WASTE STORAGE MODEs.

PROCESS AREA Applicability

The fire suppression system for the WHB is credited with preventing the growth of a small-scale fire in the WHB. This LCO is applicable in the following PROCESS AREA under the specified conditions:

RH BAY (When RH WASTE is present in the RH BAY in a 10-160B shipping cask with the lid bolts loosened or when diesel powered equipment is used in the RH BAY.)

UNDERGROUND (During transport of RH WASTE using the waste hoist.)

UPPER HOT CELL

FCLR

ACTIONS

ACTION A.1

When the fire suppression system in the WHB is INOPERABLE, any diesel powered equipment operating in the RH BAY must be removed from the RH BAY. This requirement shall apply IMMEDIATELY upon entering Condition A. The Completion Time of IMMEDIATELY is appropriate for this Required ACTION due to the fact that the presence of diesel powered equipment in the RH BAY increases the likelihood of a fire that may result from leaking fuel.

ACTION A.2

When the fire suppression system in the WHB is INOPERABLE, a FIRE WATCH shall be posted IMMEDIATELY in the AFFECTED AREA(s). As defined, the FIRE WATCH provides continuous monitoring of the area and allows for the notification and/or extinguishment of an incipient fire. The Completion Time of IMMEDIATELY is appropriate for this Required ACTION because the FIRE WATCH performs the same safety function as the fire suppression system. Therefore, when the fire suppression system is INOPERABLE it is essential that there be an alternate form of fire detection to prevent the development of a large-scale fire.

Separate portions of the fire suppression system in the WHB may become INOPERABLE independently, therefore, the FIRE WATCH is only required for the AFFECTED AREA(s).

ACTION A.3

Other than use of diesel powered equipment to back the transportation trailers into the RH BAY, RH WASTE HANDLING OPERATIONS introduce few initiators for a fire. The safest MODE for the RH portion of the WHB is RH STANDBY in which there is no RH WASTE present in the WHB outside of a CLOSED RH SHIPPING CASK. The next safest MODE is RH WASTE STORAGE. RH WASTE HANDLING OPERATIONS may need to continue to place RH WASTE in a safe condition. This includes moving a 10-160B shipping cask with the lid bolts loosened from the RH BAY to the CUR and closing the CUR shield door, completing drum placement into facility canisters and moving filled canisters to the storage wells in the UPPER HOT CELL or downloading a facility canister containing RH WASTE to the TRANSFER CELL, completing a transfer of a RH waste canister to the facility cask, and completing transfer of the facility cask loaded with RH WASTE to the UNDERGROUND. These activities can be accomplished in a timely fashion with placing drums in the UPPER HOT CELL in canisters requiring the most time to complete. The ACTION requires all RH WASTE HANDLING OPERATIONS in the WHB to be stopped within 48 hours.

The Completion Time of 48 hours is an appropriate time-frame for this Required ACTION. This allows ample time to complete RH WASTE HANDLING OPERATIONS in progress and place the RH WASTE in the safest possible configuration. The risk of a fire is relatively low within this short time period and the FIRE WATCH established in accordance with ACTION A.2 is capable of detecting and providing notification and/or extinguishment of incipient fires.

~~ACTION A.4~~ ~~The INOPERABLE portion of the fire suppression system for the WHB shall be restored to OPERABLE within 2 weeks. The successful completion of this ACTION limits the time that the WASTE is unprotected and susceptible to fire damage. The Completion Time of 2 weeks provides adequate time to complete maintenance activities to return the system to OPERABLE status. This time frame is acceptable based on the low probability of a fire event within this period and recognizes the reduction in risk provided by the suspension of RH WASTE HANDLING OPERATIONS and the implementation of a FIRE WATCH. The two-week period is expected to allow sufficient time to perform the needed repairs to the WHB fire suppression system.~~

SRs

SR 4.1.1.1 Adequate water supply pressure is required for the proper functioning of the WHB fire suppression system. VERIFICATION shall be made on a MONTHLY basis that the water supply pressure is greater than or equal to 125 psig at each sprinkler system. This pressure is considered to be adequate based on engineering judgment and past observations of tests that water is available to the waste hoist tower at this pressure. VERIFICATION consists of reading the specified gauges listed in Table 3.1.1-1for each system.

The above instrument value is not supported by an instrument uncertainty measurement calculation. Instead, it is supported by engineering judgment and expected margins to accommodate instrument measurement uncertainty. This FREQUENCY is based upon the Exception Paragraph 2.2.4.2 of NFPA Standard 25, *Testing and Maintenance of Water Based Fire Protection Systems*.[7] Failure to meet or perform this SR requires entry into Condition A.

The specified gauges, listed in Table 3.1.1-1 for each section of the WHB fire suppression system, are a sealed type gauge, calibrated to a specified accuracy from the manufacture, and, therefore, cannot be recalibrated. During the MONTHLY verification of the 125 psig, if a gauge is found to be INOPERABLE the system must be declared INOPERABLE, and Condition A entered.

SR 4.1.1.2 VERIFICATION shall be made MONTHLY that the primary or alternate ~~main~~ isolation valves ~~on each of risers~~ in the WHB fire suppression system as listed in Table 3.1.1-1 are ~~is~~ locked open. This SR ensures that ~~all~~ required primary or alternate ~~main~~ isolation valves for the Waste Handling Building sprinkler system is verified in the locked open position providing assurance that an unobstructed flow path exists and that water supply is available to the sprinklers. The MONTHLY FREQUENCY has been determined to be adequate based upon NFPA criteria, past experience, and engineering judgment. Failure to meet or perform this SR requires entry into Condition A.

SR 4.1.1.3 VERIFICATION shall be made MONTHLY that the isolation valves listed in Table 3.1.1 2 within the WHB suppression system is locked open. This SR ensures that these valves are verified in the locked open position providing assurance that an unobstructed flow path exists and that water supply is available to the sprinklers. The MONTHLY FREQUENCY has been determined to be adequate based upon engineering judgment and NFPA FREQUENCY requirements for other such in-line valves. Failure to meet or perform this SR requires entry into Condition A.

SR 4.1.1.4 ~~VERIFICATION shall be made MONTHLY that the PIV(s) for the WHB fire suppression system as listed in Table 3.1.1-1 is locked open. This SR ensures that all required PIVs for the WHB sprinkler system is verified in the locked open position providing assurance that an unobstructed flow path exists and that water supply is available to the sprinklers. The MONTHLY FREQUENCY has been determined to be adequate based upon NFPA criteria, past experience, and engineering judgment. Failure to meet or perform this SR requires entry into Condition A~~. DELETED

SR 4.1.1.5 The ITV(s) shall be opened QUARTERLY for each riser in the Waste Handling Building sprinkler system listed in Table 3.1.1-1. The test is performed to ensure that the systems operate as expected. The QUARTERLY FREQUENCY meets the requirements of NFPA Standard 25.[7] Failure to meet or perform this SR requires entry into Condition A.

SR 4.1.1.6 A Main Drain Test shall be performed ANNUALLY on each WHB riser listed in Table 3.1.1-1 to demonstrate that riser supply pressure responds appropriately to indicate flow path obstructions when the main drain valve is cycled. This SR allows those normal pressure variations that occur when water flows through the main drain valve at the riser. A fully or partially closed valve or other obstruction in the supply piping will cause an abnormally large drop in full flow pressure of the main drain when opened and a slow return to normal static pressure when closed. Acceptable variation in pressure indicates that all valves in the flow path from fire main up to the riser are open and that no other obstructions in the piping leading up to the riser exist. The acceptable variation is a pressure drop of less than or equal to 20% pressure change. System pressure must return to normal operating pressure upon closure of the main drain valve. The ANNUALLY FREQUENCY meets the requirements of NFPA Standard 25.[7] Failure to meet or perform this SR requires entry into Condition A.

B3.1.2 Fire Water Supply System

Background Summary

The fire water supply system provides fire water at the design pressure and quantity to the yard fire hydrants and the automatic wet pipe sprinkler systems. The system consists of two fire pumps and a pressure maintenance (jockey) pump located in the water pump house.

One fire pump is electric motor driven and the other pump is diesel engine driven. Both pumps are rated for 1,500 gallons (5678 L) per minute at 105 psi (8.8 kg/cm^2).[4] The system is required to provide fire water at a rate of 1,500 gallons (5678 L) per minute for 2 hours for a total of 180,000 gallons (681,354 L). All major components of the fire water supply system are UL-listed and FM-approved.

Operation of the two fire pumps and the jockey pump is controlled by distribution system pressure changes. The pumps are arranged for sequential operation. Under normal conditions, the jockey pump operates to maintain the designed system static pressure. The jockey pump starts when the system pressure falls to 130 psig and stops at 140 psig.[4]

Should there be a demand for fire water which exceeds the capacity of the jockey pump, the fire water demand should cause the system pressure to drop which automatically starts the electric fire pump. The electric fire pump is arranged to start automatically when the system pressure falls to 120 psig. The pump will stop automatically when the system pressure reaches 140 psig and a preset time delay of 6.5 minutes has elapsed.[4]

If the jockey and electric fire pumps cannot maintain system pressure, the diesel pump automatically starts. The diesel fire pump is arranged to start automatically when the system pressure falls to 110 psig. The normal shutdown MODE of the pump is manual, by depressing the STOP button on the front of the pump's controller.[4]

The fire water supply system receives its normal water supply from one of two on-site 180,000 gallons (681,354 L) ground-level storage tanks, which are part of the water distribution system. The second tank supplies water to the domestic/utility water system, which is a separate system from the fire water supply system. The domestic/utility water tank reserves approximately 100,000 gallons (378,540 L) of water for use as fire water if the need arises.

The system's piping configuration allows for the system to be supplied water from either water storage tank. The piping configuration also allows either fire pump to be removed from service without impacting the operation of the other fire pump. Additionally, the fire pumps can discharge through either pipe line exiting the pump house via the discharge piping cross-connect. This cross-connect also allows either pump to use the "test header" and the recirculation pipe back to the south storage tank.

To avoid an unprotected cross-connect with the domestic water/utility system, which uses the north water storage tank as its supply source, the fire water suction piping to the north water storage tank contains a spool piece, which is normally not installed. The spool piece is installed when it is necessary to use the water in the north tank as source of fire water.

Application to Safety

LCO 3.1.2 ensures the OPERABILITY of the fire water supply system which is essential to the proper performance of the sprinkler systems in the individual facilities. Again, the event of concern is the large fire and the fire water supply system is required to provide water to prevent the propagation of small fires within the WHB.

LCO

The fire water supply system provides water to the fire suppression systems identified in LCO 3.1.1. In order for the fire suppression systems to operate properly, the fire water supply system must be OPERABLE. OPERABILITY of the fire water supply system consists of the following:

- The system shall maintain a water capacity of ≥ 135,000 gallons.
- The system shall have two OPERABLE fire pumps.
- The following isolation valves shall be open: FW-456-V-001, FW-456-V-019, FW-456-V-020, and FW-456-V-003.

OPERABILITY is verified by performing periodic checks of the available water supply, routine inspection of system components, and testing to ensure system operation (see SRs and Bases for 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.2.4, and 4.1.2.5).

MODE Applicability

The MODEs in which RH WASTE is susceptible to a fire in the above ground areas are WASTE HANDLING and WASTE STORAGE. These are the only two MODEs that allow the RH WASTE to be present outside of the shipping casks in the above ground areas. The shipping casks are designed to withstand a fire; therefore, these containers protect RH WASTE and minimizes the potential release. In addition, RH WASTE HANDLING is the only MODE in which RH WASTE can be physically handled. Refraining from handling the RH WASTE also reduces the number of possible initiators for a fire and exposure of the RH WASTE to these initiators. RH WASTE drums in the UPPER HOT CELL are vulnerable during WASTE STORAGE when maintenance work on the UPPER HOT CELL crane is performed in the crane maintenance room. Therefore, this LCO is applicable during the RH WASTE HANDLING and RH WASTE STORAGE MODEs.

PROCESS AREA Applicability

The fire suppression system for the WHB is credited with reducing the frequency of a large fire by preventing the growth of a small-scale fire in the WHB. This LCO is applicable in the following PROCESS AREAs under the specified conditions:

RH BAY (When RH WASTE is present in the RH BAY in a 10-160B shipping cask with the lid bolts loosened or when diesel powered equipment is used in the RH BAY.)

UNDERGROUND (During transport of RH WASTE using the waste hoist.)

UPPER HOT CELL (When RH WASTE drums are present outside of closed facility canisters.)

ACTIONS

ACTION A.1

When the fire water capacity is < 135,000 gallons, the OPERABILITY of the WHB fire suppression system is in jeopardy. The limit of 135,000 gallons provides enough fire water to supply the system for 1-1/2 hours, based on the output of the fire pumps. The most significant fire initiator introduced during RH WASTE HANDLING OPERATIONS is when the transportation trailer is backed into the RH BAY using the diesel powered trailer jockey or the tractor for the transportation trailer. Therefore, when the fire water capacity is below the required level, any diesel powered equipment operating in the RH BAY should be removed from the RH BAY. This requirement shall apply IMMEDIATELY upon entering Condition A. The Completion Time of IMMEDIATELY is appropriate for this Required ACTION due to the fact that the operation of diesel powered equipment in the RH BAY increases the potential consequences of a fire.

ACTION A.2

When the fire water capacity is below the required level, actions shall be initiated to restore the water volume. The initiation of these actions shall be performed IMMEDIATELY upon entering Condition A. The Completion Time of IMMEDIATELY is appropriate for this Required ACTION because the fire water supply supports all of the fire suppression systems for the site, including those identified in LCO 3.1.1. Therefore, it is essential that efforts begin as soon as possible to restore the water to the system.

ACTION A.3.1

The fire water capacity shall be restored to≥ 135,000 gallons within 8 hours. The successful completion of this ACTION limits the time that the WASTE is unprotected and susceptible to damage due to a fire. The Completion Time of 8 hours provides adequate time to restore the water capacity under the most likely circumstances.

ACTION A.3.2

Other than use of diesel powered equipment to back the transportation trailers into the RH BAY, RH WASTE HANDLING OPERATIONS introduce few initiators for a fire. The safest MODE for the RH portion of the WHB is RH STANDBY in which there is no RH WASTE present in the PROCESS AREA outside of a CLOSED RH SHIPPING CASK. The next safest MODE is RH WASTE STORAGE. In order to decrease potential fire consequences, RH WASTE HANDLING OPERATIONS may need to continue to place RH WASTE in a safe condition. This includes moving a 10-160B shipping cask with the lid bolts loosened from the RH BAY to the CUR and closing the CUR shield door, completing drum placement into facility canisters and moving filled canisters to the storage wells in the UPPER HOT CELL, completing a transfer of a RH waste canister to the facility cask if already in process, completing transfer of the facility cask loaded with RH WASTE to the UNDERGROUND if already in process, completing transfer of RH WASTE between PROCESS AREAs within the hot cell complex if already in process. These activities can be accomplished in a timely fashion with placing drums in the UPPER HOT CELL in canisters requiring the most time to complete. The ACTION requires all RH WASTE HANDLING OPERATIONS in the WHB to be stopped within 48 hours.

The Completion Time of 48 hours is an appropriate time-frame for this Required ACTION. This allows ample time to complete RH WASTE HANDLING OPERATIONS in progress and place the RH WASTE in the safest possible configuration.

ACTION B.1.1

This ACTION requires all WASTE HANDLING OPERATIONS in the RH portion of the WHB to be stopped within 1 week. Other than use of diesel powered equipment to back the transportation trailers into the RH BAY, RH WASTE HANDLING OPERATIONS introduce few initiators for a fire. The safest MODE for the RH portion of the WHB is RH STANDBY in which there is no RH WASTE present in the PROCESS AREA outside of a CLOSED RH SHIPPING CASK. The next safest MODE is RH WASTE STORAGE. In order to decrease potential fire consequences, RH WASTE HANDLING OPERATIONS may need to continue to place RH WASTE in a safe condition. This includes moving a 10-160B shipping cask with the lid bolts loosened from the RH BAY to the CUR and closing the CUR shield door, completing drum placement into facility canisters and moving filled canisters to the storage wells in the UPPER HOT CELL, completing a transfer of a RH waste canister to the facility cask if already in process, completing transfer of the facility cask loaded with RH WASTE to the UNDERGROUND if already in process, completing transfer of RH WASTE between PROCESS AREAs within the hot cell complex if already in process. These activities can be accomplished in a timely fashion with placing drums in the UPPER HOT CELL in canisters requiring the most time to complete. A completion time of one week is reasonable as there is still one fire pump available and little risk from continuation of RH WASTE HANDLING OPERATIONS.

ACTION B.1.2

The alternative to stopping WASTE HANDLING OPERATIONS is to restore the OPERABLITY of the affected fire pump within 1 week. The successful completion of this ACTION restores the redundancy of the system, thereby eliminating the increased risk. The Completion Time of 1 week provides adequate time to complete most maintenance activities to return the pump to OPERABLE status. The Completion Time of 1 week is based on engineering judgment and recognizes the low level of risk involved with the INOPERABILITY of only one fire pump.

ACTION C.1

When both fire pumps are INOPERABLE no means exist to distribute the fire water to the individual sprinkler systems in the WHB. Therefore, when both fire pumps are INOPERABLE, any diesel powered equipment shall be removed from the RH BAY IMMEDIATELY. Taking this ACTION IMMEDIATELY removes the most significant fire initiator associated with the RH portion of the WHB.

ACTION C.2.1

At least one fire pump shall be restored to OPERABLE within 1 WEEK. The successful completion of this ACTION limits the time that the WASTE is unprotected and susceptible to fire damage. The Completion Time of 8 hours provides adequate time to complete maintenance activities to return at least one pump to OPERABLE status. This time frame is acceptable based on the low probability of a fire event within this period and recognizes the reduction in risk provided by the suspension of RH WASTE HANDLING OPERATIONS and the removal of any diesel powered equipment in the RH BAY.

ACTION C.2.2

If one Fire Pump cannot be restored to an OPERABLE status, RH WASTE HANDLING OPERATIONS is required to stop. Other than use of diesel powered equipment to back the transportation trailers into the RH BAY, RH WASTE HANDLING OPERATIONS introduce few initiators for a fire. The safest MODE for the RH portion of the WHB is RH STANDBY in which there is no RH WASTE present in the PROCESS AREA outside of a CLOSED RH SHIPPING CASK. The next safest MODE is RH WASTE STORAGE. In order to decrease potential fire consequences, RH WASTE HANDLING OPERATIONS may need to continue to place RH WASTE in a safe condition. This includes moving a 10-160B shipping cask with the lid bolts loosened from the RH BAY to the CUR and closing the CUR shield door, completing drum placement into facility canisters and moving filled canisters to the storage wells in the UPPER HOT CELL, completing a transfer of a RH WASTE canister to the facility cask if already in process, completing transfer of the facility cask loaded with RH WASTE to the UNDERGROUND if already in process, completing transfer of RH WASTE between PROCESS AREAS within the hot cell complex if already in process. These activities can be accomplished in a timely fashion with placing drums in the UPPER HOT CELL in canisters requiring the most time to complete. The ACTION requires all RH WASTE HANDLING OPERATIONS in the WHB to be stopped within 8 hours.

The Completion Time of 8 hours is an appropriate time frame for this Required ACTION. This allows time to complete the most essential RH WASTE HANDLING OPERATIONS and place the RH WASTE in the safest possible configuration. The risk of a fire is relatively low within this short time period.

SRs

SR 4.1.2.1 Adequate water supply is required for the proper functioning of the WHB fire suppression system. VERIFICATION shall be made prior to EACH SHIFT that there is greater than 135,000 gallons of water to fight fires within the fire water distribution system. The initial SR is measured at the 180,000 gallon capacity fire water tank. If the fire water tank is out of service for maintenance, the VERIFICATION is made at the domestic water tank.

The prior to EACH SHIFT FREQUENCY is adequate based upon the fact that, with pump out of 1500 gpm, the 135,000 gallon level allows for a 1-1/2 hour fire fighting capacity.

SR 4.1.2.2 VERIFICATION shall be made prior to EACH SHIFT that the isolation valves FW-456-V-001, FW-456-V-019, FW-456-V-020 and FW-456-V-003 ~~at the base of the fire water tank is~~ are locked open. This SR ensures that the main isolation valve for the fire water distribution system is verified in the locked open position providing assurance that an unobstructed flow path exists and that water supply is available to the sprinklers. The prior to EACH SHIFT FREQUENCY has been determined to be adequate based upon current practices and far exceeds the NFPA criteria for this type of SR. Failure to meet this SR requires entry into Condition A~~ because if the valve is closed it is the same as having an inadequate water supply~~.

SR 4.1.2.3 VERIFICATION shall be made prior to EACH SHIFT that there is greater than 125 gallons of diesel fuel in the diesel fire pump fuel tank. Both the 125 gallon level and the FREQUENCY of prior to EACH SHIFT are based on current SR practices. The 125 gallons of is judged to be adequate due to the fact that it will fuel the diesel fire pump for a period beyond the required 4 hour time period to empty the 180,000-gallon fire water tank. The FREQUENCY of prior to EACH SHIFT is again judged to be adequate due to the infrequent number of times the diesel fire pump is required to be started from one shift to the next and there is also an electric fire pump that has the same capacity that is also maintained but is not under a formal surveillance program.

Failure to meet this SR requires entry into Condition B.

SR 4.1.2.4 Perform an automatic start test on the both the electric and the diesel fire pumps WEEKLY. This automatic start test is performed to assure that the diesel fire pump automatically starts when system pressure decreases to 110 ±3 psig and the electric fire pump automatically starts when system pressure decreases to 120 ± 3 psig. The WEEKLY FREQUENCY has been determined to be adequate based upon NFPA criteria. Failure to meet or perform this SR requires entry into Condition B or C according to the number of pumps found to INOPERABLE at a time.

SR 4.1.2.5 VERIFICATION shall be made ANNUALLY that the each fire pump is capable of pumping 1,500 gpm at 105 psi.

The 1,500 gpm at 105 psi net discharge is the rated capacity of the pumps to adequately deliver water supply to the required areas of the WHB and Support Buildings.[4]

The ANNUAL FREQUENCY has been determined to be adequate based upon NFPA criteria. Failure to meet or perform this SR requires entry into Condition B or C according to the number of pumps found to INOPERABLE at a time.

The gauges used during normal operation of both the diesel and the electric fire pumps are removed and replaced with M&TE equipment during the ANNUAL VERIFICATION of the output flow and pressure. Therefore, the sealed gauges normally installed are only used to confirm the output accuracy of the pump(s) under normal operation. Therefore, there is no requirement to calibrate the sealed gauges installed on either the electric or the diesel fire pumps to confirm OPERABILITY.

B3.1.3 UNDERGROUND RH WASTE HANDLING EQUIPMENT Automatic/Manual Fire Suppression System

Background Summary

The RH WASTE HANDLING EQUIPMENT automatic/manual fire suppression system provides a dry chemical fire suppressant available to extinguish vehicle fires associated with fuel line leaks and the vehicle engine. The system is comprised of electric powered detection capability, a compressed nitrogen gas cartridge that, when actuated, fluidizes the fire suppressant powder and forces the powder to the distribution network. The system is equipped with a control module that includes system status lights to indicate normal and trouble conditions, and a provision to test the status lights.

The system automatically actuates when the detection circuit shorts due to heat generated by fire causing current to a squib. The squib is an electrically actuated component containing a small charge of powder which forces a pin to puncture the cap/seal on the compressed nitrogen gas cartridge. The gas is directed via tubing to the fire suppressant container where the suppressant is fluidized and dispersed into the distribution piping. The system also has a manual capability that bypasses the electrical squib, such that the manual actuator forces the pin to break the cap/seal on the compressed nitrogen gas cartridge.

The control module includes status lights that indicate that the system is not discharged and that the detection circuit is functioning properly. The control module is mounted such the operator of the RH WASTE HANDLING EQUIPMENT can see the system status indication.

Application to Safety

LCO 3.1.3 ensures the OPERABILITY of the automatic/manual fire suppression system on RH WASTE HANDLING EQUIPMENT, selected for use, to extinguish any RH WASTE HANDLING EQUIPMENT fire resulting from ignition of diesel fuel, hydraulic fluid, or electrical failure. The event of concern is preventing a small fire from becoming a larger fire with the potential to cause RH waste containers to breach.

LCO

The RH WASTE HANDLING EQUIPMENT automatic/manual fire suppression system OPERABILITY is required for the equipment selected for use as identified in LCO 3.1.3. OPERABILITY of the automatic/manual fire suppression system consists of the following:

- System status lights are functioning properly and no trouble lights are illuminated on the automatic fire suppression system control module.
- A charged fire suppressant system on the RH WASTE HANDLING EQUIPMENT selected for use.

OPERABILITY is verified by performing verification of system status and semi-annual maintenance of the system that includes verification that the control system actuates and that the compressed nitrogen gas cylinder is charged. See SRs and Bases for SRs 4.1.3.1, 4.1.3.2, 4.1.3.3, and 4.1.3.4

MODE Applicability

The MODE in which RH WASTE is susceptible to a fire resulting from fuel leaks from RH WASTE HANDLING EQUIPMENT is in the UNDERGROUND during RH WASTE HANDLING OPERATIONS.

PROCESS AREA Applicability	The automatic/manual fire suppression system is required RH WASTE HANDLING EQUIPMENT in the UNDERGROUND to prevent a small fire associated with leaking hydraulic fluid or fuel or the diesel powered 41-ton and 20-ton forklift engines from becoming a large fire. The PROCESS AREA includes the base of the waste shaft where the facility cask containing RH WASTE is transferred from the FCTC to the RH 41-ton waste handling forklift, transported in the DISPOSAL PATH to the ACTIVE RH DISPOSAL ROOM, and transfer of facility cask containing RH WASTE from the 41-ton forklift to the HERE which uses hydraulic motive force for emplacement of the RH WASTE into a disposal borehole. WASTE HANDLING continues with the placement of a borehole shield plug into the borehole after the canister. The RH 20-ton forklift is typically used for transfer of the shield plug carriage onto the HERE. Once the shield plug is in place, the RH WASTE canister is protected from accident events that may occur in the room. This requirement not only protects the RH WASTE but also the CH disposal array during operation of the RH forklifts or HERE within 75 feet of the array face. This LCO is applicable to the UNDERGROUND during RH WASTE HANDLING MODE.

ACTIONS

ACTION A.1	If the automatic/manual fire suppression system is compromised as evidenced by trouble indication on the control module, inadvertent actuation of the fire suppressant powder, or other OPERABILITY concerns discovered during the required surveillance, the system is INOPERABLE. A FIRE WATCH shall be posted IMMEDIATELY with the affected diesel powered RH WASTE HANDLING EQUIPMENT in use to provide monitoring of the equipment and allows for the notification and/or extinguishment of an incipient fire. In this condition, the manual initiation of the fire suppression system remains available. The Completion Time of IMMEDIATELY is appropriate for this Required ACTION because the FIRE WATCH performs the same safety function as the detection and automatic control capability of the automatic portion of the fire suppression system. Therefore, when the automatic fire suppression system capabilities are diminished it is essential that there be an alternate form of fire detection to prevent the development of a large-scale fire.
ACTION A.2.1	This ACTION allows restoring the OPERABILITY of the automatic fire suppression system for the affected equipment used for WASTE HANDLING OPERATIONS in order to continue RH WASTE HANDLING OPERATIONS with the affected equipment beyond 48 hours. Completion of this ACTION completes the requirements to exit this LCO. The safest location for RH WASTE is in the disposal borehole, and WASTE HANDLING OPERATIONS may need to continue so that WASTE can be placed in the disposal borehole. With the posting of a FIRE WATCH IMMEDIATELY in ACTION A.1, the automatic fire detection capability has been replaced by the FIRE WATCH. WASTE HANDLING OPERATIONS can be continued with a relatively low risk as the manual actuation capability is still available. Therefore, the Completion Time of 48 hours is sufficient to not only remove RH WASTE from the affected piece of diesel powered waste handling equipment in use, dispose of the RH WASTE, and move the affected piece of diesel powered waste handling equipment for automatic fire suppression system repair/recharge. If it is not possible to complete this ACTION, ACTIONS A.3 must be taken.

ACTION A.2.2

This ACTION requires RH WASTE HANDLING OPERATIONS in the UNDERGROUND using the affected equipment to be stopped within 48 hours if ACTION A.2 cannot be completed within 48 hours. Performance of this ACTION completes actions to exit this LCO. The safest location for RH WASTE is in the disposal borehole, and RH WASTE HANDLING OPERATIONS may need to continue so that RH WASTE can be placed in the disposal borehole. The posting of a FIRE WATCH IMMEDIATELY in ACTION A.1 allows RH WASTE HANDLING OPERATIONS to be continued with a relatively low risk, as the manual actuation capability is still available, and the automatic fire detection capability has been replaced by the FIRE WATCH. The completion time of 48 hours is sufficient to remove RH WASTE from the affected piece of diesel powered waste handling equipment, and either restore the automatic fire suppression capability or replace the affected piece of equipment with equipment that has an OPERABLE automatic fire suppression system.

ACTION B.1

If the both the automatic and manual portions of the fire suppression system is compromised as evidenced by an inadvertent actuation of the fire suppressant powder, the system is INOPERABLE. A FIRE WATCH shall be posted IMMEDIATELY with the affected diesel powered waste handling equipment in use to provide monitoring of the equipment and allows for the notification and/or extinguishment of an incipient fire. The Completion Time of IMMEDIATELY is appropriate for this Required ACTION because the FIRE WATCH performs the same safety function as the detection and suppression capability of the automatic/manual fire suppression system.

ACTION B.2

This ACTION requires RH WASTE HANDLING OPERATIONS with the affected equipment to stop within 4 hours. A Completion Time of 4 hours is deemed appropriate since the safest location for RH WASTE is in the disposal borehole, and RH WASTE HANDLING OPERATIONS may need to continue so that RH WASTE in the UNDERGROUND can be placed in the disposal borehole. With the posting of a FIRE WATCH IMMEDIATELY in ACTION B.1, the fire detection capability has been replaced by the FIRE WATCH. RH WASTE HANDLING OPERATIONS can be continued with relatively low risk for the time needed to place RH WASTE in the disposal array, and move the affected piece of RH diesel powered waste handling equipment for automatic/manual fire suppression system repair/recharge. Completion of ACTION B.2 completes the requirements to exit this LCO.

SRs

SR 4.1.3.1

A VERIFICATION shall be made of the automatic fire suppression system on the RH 41-ton and 20-ton forklifts and the HERE to ensure that the system is operating properly as evidenced by no trouble indications on the control module and a test to ensure that the indicating lights are working properly. This VERIFICATION ensures that there are no indications that the detection portion of the automatic fire suppression system is impaired and that the compressed nitrogen gas cylinder has not discharged, thereby ensuring that the system is ready to operate in the event of equipment fire.

The 48 hours* FREQUENCY VERIFICATION of the automatic fire suppression system status on the selected waste handling equipment ensures that the detection capability of the system is not diminished and that the system indicates that no discharge or depressurization of the compressed nitrogen gas cylinder has occurred. VERIFICATION that there are no trouble indications on the system control module and that the status lights are working properly ensures that the system is charged and available in the event of a vehicle fire.

Failure to meet this requirement requires entry into Condition A.

SR 4.1.3.2

This SURVEILLANCE REQUIREMENT provides for a visual verification to confirm the fire suppressant powder has not discharged. While it will likely be obvious if an inadvertent discharge of the fire suppressant powder has occurred, the Each Shift Prior to Initial Use* FREQUENCY VERIFICATION will document that the suppressant is available to be manually actuated to extinguish a fire associated with fuel leaks or the engine.

Failure to meet this requirement requires entry into Condition B.

* FREQUENCY of surveillance applies only to equipment in use. The term “in use” mean when the equipment is being used to support RH WASTE HANDLING OPERATIONS. The 25% extension allowance of SR 4.0.2 does not apply to these FREQUENCIES.

SR 4.1.3.3

A semi-annual VERIFICATION of the components associated with the automatic fire suppression system on RH diesel powered waste handling equipment is charged. This is done by checking the dry chemical agent and actuator cartridges. The level of the dry chemical agent in the agent tank is verified and the compressed actuator cartridges are removed and weighed. This semi-annual VERIFICATION of system components is judged to be adequate based on the system status checks that are made on the equipment every 48 hours.

Failure to meet this SR requires entry into Condition A.

SR 4.1.3.4

A semi-annual test of the automatic fire suppression system is required to ensure that the system control module not only receives the signal from the detection portion of the system, but sends a signal to the squib such that it actuates to puncture the cap/seal on the compressed nitrogen gas cartridge.

The semi-annual FREQUENCY testing of this system is judged to be adequate based on the system status checks that are made on the system every 48 hours when the equipment is in service.

Failure to meet or perform this SR requires entry into Condition A

B3.2.1 Ventilation in the UNDERGROUND

Background Summary

Ventilation in the UNDERGROUND is required to operate diesel powered equipment for any activities including RH WASTE HANDLING. Because the disposal area at the WIPP is in a mine with vertical shaft access, WIPP is required to meet 30CFR56/57/58[8, 9, 10] and Part 62, Federal Mine Safety and Health Regulations for Metal/Nonmetal Mines. Air quality and fire prevention are two specific areas that are heavily regulated by MSHA for worker protection. Ventilation is required by MSHA 57.8518[11] for operation of diesel powered equipment in an underground mine and to ensure an adequate minimum airflow to ensure diesel particulate emissions do not exceed specified limits. The WIPP only uses diesel and electric powered equipment in the UNDERGROUND. Without ventilation, no operation of diesel equipment is allowed, hence, RH WASTE HANDLING does not start or resume until ventilation is operating. Similarly any mining or ground control operations must have ventilation. Ventilation provides fresh air for worker evacuation in the event of a fire. In accordance with operating procedures, the automatic shift to filtration of the underground ventilation exhaust is blocked, based on fire conditions, by the CMR operator until personnel are out of danger.

As discussed in Chapter 2 of the CH DSA,[5] underground ventilation is divided into four separate flow paths supporting the waste disposal area, the construction area, north area, and the waste shaft station. The waste disposal, construction and north areas receive their air supply from common sources, the air intake shaft and the salt handling shaft. The waste disposal area receives its supply air from the construction supply air. The waste shaft station receives its air supply from the waste shaft and an associated auxiliary air intake and is separated from the other three circuits by bulkheads and airlocks. All four air circuits combine near the exhaust shaft, which acts as the common discharge from the UNDERGROUND.

Different levels of ventilation can be established to support UNDERGROUND activities including:

1) Normal Ventilation in which two main exhaust fans operate to provide a nominal flow of 425,000 standard cubic feet per minute (scfm) unfiltered

2) Alternate Ventilation: One main exhaust fan operating to provide a nominal flow of 260,000 scfm unfiltered

3) Reduced Ventilation: Two filtration fans operating as ventilation fans to provide a nominal flow of 60,000 scfm each unfiltered

4) Minimum Ventilation: One filtration fan operating as a ventilation fan to provide a nominal flow of 60,000 scfm unfiltered

5) Maintenance Ventilation: Simultaneous operation of one or two main ventilation fans with one or two of the filtration fans in support of flow calibration and maintenance activities.

Under normal operating conditions, the ventilation system functions continuously. If the normal flow of 425,000 scfm is not available, underground operations may proceed, but the number of activities that can be performed in parallel may be limited depending on the quantity of air available. Approximately 140,000 ft^3 per minute actual is normally supplied to the disposal area and is adequate to supply three active rooms in a panel during operations

Approximately 35,000 scfm is required in each active room in a pane to support the personnel and diesel equipment expected to be operating in the area, and meets or exceeds the minimum air velocity of 60 feet per minute per ACTIVE RH DISPOSAL ROOM as specified in the WIPP Mine Ventilation Plan.[8] Disposal rooms that are filled and isolated, or rooms that are not in use do not require a specific airflow.

Air is routed through the individual disposal rooms within a panel using bulkheads and air regulators. Ventilation is maintained only in active rooms within a disposal panel. RH WASTE disposal will precede CH WASTE disposal. Once a disposal room is filled with RH WASTE in the walls of an active room, the room remains open until CH WASTE has filled the room. After the room is filled, it is closed against entry and isolated from the mine ventilation system by constructing barricades at each end. Filled rooms are not ventilated. After all rooms within a panel are filled, the panel will be closed with a substantial concrete block wall. The ventilation path for the waste disposal circuit is separated from the construction side by means of bulkheads, overcasts, and airlocks.

Application to Safety

LCO 3.1.3 ensures the OPERABILITY of underground ventilation. With the underground ventilation system in operation, there is sufficient airflow to operate diesel powered RH WASTE HANDLING equipment and any other diesel powered equipment. Additionally, in the event of a RH waste container breach, airflow is directed away from personnel in the UNDERGROUND towards the exit of the ACTIVE RH DISPOSAL ROOM. Underground ventilation also provides fresh air for worker evacuation in the event of a fire. In accordance with operating procedures, the automatic shift to filtration of the underground ventilation exhaust is blocked, based on fire conditions, by the CMR operator until personnel are out of danger.

LCO

The underground ventilation system shall be OPERABLE for RH WASTE HANDLING OPERATIONS in the UNDERGROUND. An OPERABLE underground ventilation system consists of the following elements:

- A minimum of 42,000 actual cubic feet per minute in the ACTIVE RH DISPOSAL ROOM.
- A minimum of 20,000 actual cubic feet per minute in the waste shaft ventilation circuit as measured on the waste shaft side of regulator 74-B-308.

OPERABILITY is verified by performing daily preoperational verification of system status. See SRs and Bases for 4.2.1.1 and 4.2.1.2.

MODE Applicability	Ventilation is required is for RH WASTE HANDLING MODE in the UNDERGROUND. This ensures that there is sufficient airflow for operation of RH diesel powered waste handling equipment and that in the event of a RH WASTE container breach, airflow is directed away from workers and towards the ACTIVE RH DISPOSAL ROOM exit.
PROCESS AREA Applicability	The PROCESS AREA includes the base of the waste shaft where the facility cask containing RH WASTE is transferred from the FCTC to the RH 41-ton waste handling forklift, transported in the DISPOSAL PATH to the ACTIVE RH DISPOSAL ROOM, and transfer of facility cask containing RH WASTE from the 41-ton forklift to the HERE which uses hydraulic motive force for emplacement of the RH WASTE into a disposal borehole. RH WASTE HANDLING continues with the placement of a borehole shield plug into the borehole after the canister. The RH 20-ton forklift is typically used for transfer of the shield plug carriage onto the HERE. Once the shield plug is in place, the RH WASTE canister is protected from accident events that may occur in the room. This requirement not only protects the RH WASTE but also the CH disposal array during operation of the RH forklifts or HERE within 75 feet of the array face. This LCO is applicable to the UNDERGROUND during RH WASTE HANDLING MODE.

ACTIONS

ACTION A.1	If the UNDERGROUND ventilation is INOPERABLE, the diesel powered RH WASTE HANDLING equipment in the UNDERGROUND is required to be shut down until ventilation is re-verified. RH WASTE HANDLING MODE in the UNDERGROUND requires the diesel powered RH 41-ton waste handling forklift to transfer the facility cask containing RH WASTE from the FCTC to the forklift, transport the facility cask to the ACTIVE RH DISPOSAL ROOM for placement on the HERE for subsequent RH WASTE canister transfer into a disposal borehole, and use of the RH 20-ton forklift for transfer of a shield plug and carriage onto the HERE for shield plug installation. The lack of ventilation requires that the diesel powered waste handling equipment in the UNDERGROUND be secured until the required flows are re-verified. The ACTION requires that RH WASTE be placed in a safe condition, which may necessitate continued movement of suspended loads to put the RH WASTE in the safest condition. The facility cask or shield plug and shield plug carriage, if suspended, may either be lowered to the ground or placed on the HERE, whichever takes the least amount of time. In the case of RH WASTE being transported on the waste shaft conveyance when ventilation is lost, the RH WASTE will either continue to the waste shaft station in the UNDERGROUND or be returned to the top of the shaft. The Completion Time of IMMEDIATELY is appropriate for this Required ACTION because without ventilation, the diesel emissions are not sufficiently diluted to provide fresh air to workers.

ACTION A.2

This ACTION requires airflows be verified in the ACTIVE RH DISPOSAL ROOM and in the waste shaft ventilation circuit prior to RH WASTE HANDLING OPERATIONS in the UNDERGROUND. VENTILATION CONFIGURATION changes may still meet the minimum required airflow in the ACTIVE RH DISPOSAL ROOM or in the waste shaft ventilation circuit. However, the flow must be verified prior to RH WASTE HANDLING OPERATIONS in the UNDERGROUND in order to determine if the conditions of the UNDERGROUND ventilation system OPERABILITY are satisfied. The flow is verified with calibrated hand held instrumentation (pitot-tube traverse or anemometer).

SRs

SR 4.2.1.1

VERIFICATION shall be made daily and after any change in VENTILATION CONFIGURATION to ensure that airflow provided by the underground ventilation system in the ACTIVE RH DISPOSAL ROOM is a minimum of 42,000 actual cubic feet per minute.

The Daily FREQUENCY has been determined to be appropriate as mining practices ensure that underground ventilation is operating at the beginning of each shift prior to the commencement of work. This ensures that there is sufficient directional airflow to operate the diesel powered waste handling equipment prior to entering RH WASTE HANDLING MODE in the UNDERGROUND. This further provides directional airflow so that in the event of a RH WASTE container breach, airflow is away from the worker towards the disposal array. It also provide sufficient airflow to facilitate worker evacuation from the UNDERGROUND in the event of a fire. Because the disposal ventilation circuit receives its airflow from the construction ventilation circuit, this VERIFICATION in the ACTIVE RH DISPOSAL ROOM ensures that there is at least that much airflow in the transport path.

VENTILATION CONFIGURATION changes may still meet the minimum required airflow in the ACTIVE RH DISPOSAL ROOM. However, the flow must be verified after any changes in VENTILATION CONFIGURATION in order to determine if the conditions of the underground ventilation system OPERABILITY are satisfied.

Failure to meet this requirement requires entry into Condition A.1.

SR 4.2.1.2

VERIFICATION shall be made daily and after any change in VENTILATION CONFIGURATION to ensure that airflow provided in the waste shaft ventilation circuit as measured on the waste shaft side of regulator 74-B-308 is a minimum of 20,000 actual cubic feet per minute.

The Daily FREQUENCY has been determined to be appropriate as mining practices ensure that underground ventilation is operating at the beginning of each shift prior to the commencement of work. This ensures that there is sufficient directional airflow to operate the diesel powered waste handling equipment prior to entering RH WASTE HANDLING MODE in the UNDERGROUND.

VENTILATION CONFIGURATION changes may still meet the minimum required airflow in the waste shaft ventilation circuit. However, the flow must be verified after any changes in VENTILATION CONFIGURATION in order to determine if the conditions of the underground ventilation system OPERABILITY are satisfied.

Because of the limited space available at the base of the waste shaft to operate additional equipment, a lower airflow than that required in the ACTIVE RH DISPOSAL ROOM is needed to support the RH 41-ton forklift at the bottom of the waste shaft to remove the facility cask from the FCTC. Further, a waste handling restriction prevents non-waste handling diesel powered equipment from being operated within 75 feet of the 41-ton forklift transporting the facility cask loaded with RH WASTE in the UNDERGROUND. This further ensures that the airflow is adequate to support operation of the 41-ton forklift.

Failure to meet this requirement requires entry into Condition A.1.

B3.3.1 WHB Shielding Interlocks - CUR Shield Door, UPPER HOT CELL Shield Plugs, and UPPER HOT CELL Crane

Background Summary

The interlocks between the CUR shield door and the UPPER HOT CELL crane ensure that the UPPER HOT CELL shield plugs cannot be removed unless the CUR shield door is closed and that when the shield plugs are removed, the CUR shield door cannot be opened. The interlocks prevents the UPPER HOT CELL crane hook from being raised when positioned over the center of the shield plugs in the floor of the UPPER HOT CELL.

The UPPER HOT CELL crane control circuit requires that a limit switch associated with the CUR shield door being closed is a permissive in addition to the crane position over the shield plugs before the UPPER HOT CELL crane hook can be raised. Without the ability to raise, the shield plugs cannot be removed. The control circuit for the CUR shield door requires a proximity switch permissive associated with the shield plugs being installed in the floor of the UPPER HOT CELL before the CUR shield door can be opened.

Application to Safety

LCO 3.3.1 ensures the OPERABILITY of the interlocks to prevent loss of shielding during transfer of items including RH WASTE from the CUR to the UPPER HOT CELL and in the CUR during processing of RH WASTE in a 72-B shipping cask, retrieving an empty 72-B cask from the TRANSFER CELL, or installing and removing a shielded insert from the TRANSFER CELL. This LCO ensures that the CUR shield door cannot be inadvertently opened during transfer of RH WASTE or other items between the CUR and the UPPER HOT CELL. If the CUR shield door were inadvertently opened during transfer of RH WASTE into the UPPER HOT CELL, workers in the RH BAY could be exposed to direct radiation from the RH WASTE in the CUR.

This LCO also ensures that when RH WASTE is being transferred into the TRANSFER CELL from the CUR or other items are being removed from the TRANSFER CELL that the floor shield plugs in the UPPER HOT CELL are not inadvertently removed. If the shield plugs in the UPPER HOT CELL are removed when workers are present in the CUR, those workers could receive direct radiation exposure from the RH WASTE being stored in the UPPER HOT CELL.

LCO

The interlocks between the CUR shield door, the UPPER HOT CELL crane, and the UPPER HOT CELL floor shield plugs are required to be OPERABLE such as stated in LCO 3.3.1. OPERABILITY of the interlocks is determined by ensuring that the UPPER HOT CELL crane hook cannot be raised when the crane is positioned over the center of the floor shield plugs unless the CUR shield door is closed and that the CUR shield door cannot be opened unless the UPPER HOT CELL shield plugs are installed in the floor of the UPPER HOT CELL.

OPERABILITY is verified QUARTERLY that the interlocks function as stated in the LCO. See the SR and Bases for SR 4.3.1.1 and 4.3.1.2.

MODE Applicability

The MODE in which workers are susceptible to direct radiation exposure in the CUR is during RH WASTE HANDLING OPERATIONS in the CUR or during STORAGE of RH WASTE in the CUR or UPPER HOT CELL.

PROCESS AREA Applicability

The PROCESS AREA includes the CUR and UPPER HOT CELL. This LCO is applicable to the CUR and UPPER HOT CELL during RH WASTE HANDLING and STORAGE MODE in the CUR and UPPER HOT CELL.

ACTIONS

ACTION A.1

If the interlocks between the CUR shield door, the UPPER HOT CELL crane and the UPPER HOT CELL floor shield plugs are INOPERABLE, The UPPER HOT CELL shield plugs shall not be removed.

The Completion Time of IMMEDIATELY is appropriate for this action to ensure that additional RH WASTE is not introduced into the UPPER HOT CELL. If the interlock is INOPERABLE due to something in the UPPER HOT CELL that requires repair, the introduction of additional RH WASTE will delay the repair until the UPPER HOT CELL is cleared of RH WASTE.

ACTION A.2

The ACTION requires that RH WASTE be placed in a safe condition, which may require continued movement of suspended loads to put the RH WASTE in the safest condition. RH WASTE HANDLING OPERATIONS in the CUR and UPPER HOT CELL shall be suspended until the interlock operability is restored.

The Completion Time of 2 weeks is appropriate for this Required ACTION because the necessary repair may be in the UPPER HOT CELL. Two weeks allows sufficient time to continue processing RH WASTE from the UPPER HOT CELL without adding any additional RH WASTE to the UPPER HOT CELL such that interlock repairs can be made. The RH WASTE HANDLING procedure specifies the sequence of operations in both the CUR and UPPER HOT CELL. The UPPER HOT CELL shield plugs are normally installed and are only removed to accommodate transfer of RH WASTE and empty facility canisters into the UPPER HOT and transfer of empty drum carriages and the 10-160B cask lid out of the UPPER HOT CELL. The shield plugs can be controlled such that they are not removed until RH WASTE in the UPPER HOT CELL is removed and any remaining RH WASTE is configured such that repairs to the INOPERABLE interlock can be made.

ACTION A.3

This ACTION requires OPERABILITY of the interlocks to be re-established prior to resuming RH WASTE HANDLING in the UPPER HOT CELL. The ACTION also requires OPERABILITY of the interlocks prior to resuming RH WASTE HANDLING or STORAGE of 10-160B RH WASTE in the CUR. This Completion Time is appropriate as the interlocks are needed for protection of personnel when RH WASTE is outside of a CLOSED RH SHIPPING CASK in the CUR or UPPER HOT CELL. If there is no RH WASTE in the UPPER HOT CELL and no processing of RH WASTE from a 10-160B shipping cask in the CUR, the interlocks can remain INOPERABLE indefinitely.

SRs

SR 4.2.1

VERIFICATION shall be made QUARTERLY to ensure that the CUR shield door cannot be opened with the UPPER HOT CELL floor shield plugs removed. This VERIFICATION shall also be made after any maintenance on the CUR shield door, the switch associated with the UPPER HOT CELL floor shield plugs or the controls for CUR shield door.

The FREQUENCY of QUARTERLY and after any maintenance associated with the equipment is determined to be appropriate as the process does not result in equipment control configuration changes and procedural controls are in place to protect workers. Further, only qualified operators are allowed to operated the UPPER HOT CELL crane for the purpose of removing the UPPER HOT CELL floor shield plugs or to move RH WASTE from the CUR to the UPPER HOT CELL or TRANSFER CELL. Any operations in the UPPER HOT CELL and the CUR require that communications be established between the workers in those two areas prior to equipment operation.

Failure to meet this requirement requires entry into Condition A.1.

SR 4.2.2

VERIFICATION shall be made QUARTERLY to ensure that the UPPER HOT CELL crane cannot be raised when centered over the UPPER HOT CELL floor shield plugs unless the CUR shield door is closed. This VERIFICATION shall also be made after any maintenance on the CUR shield door, the UPPER HOT CELL crane, or the proximity switch associated with the UPPER HOT CELL floor shield plugs or the controls for the UPPER HOT CELL crane or the CUR shield door.

The FREQUENCY of QUARTERLY and after any maintenance associated with the equipment is determined to be appropriate as the process does not result in equipment control configuration changes and procedural controls are in place to protect workers. Further, only qualified operators are allowed to operated the UPPER HOT CELL crane for the purpose of removing the UPPER HOT CELL floor shield plugs or to move RH WASTE from the CUR to the UPPER HOT CELL or TRANSFER CELL. Any operations in the UPPER HOT CELL and the CUR require that communications be established between the workers in those two areas prior to equipment operation.

Failure to meet this requirement requires entry into Condition A.1.

B3.3.2 WHB Interlocks - UPPER HOT CELL Crane and FCLR Grapple Pintle Contact Interlock with Pivot Dogs

Background Summary

Grapples used with the FCLR grapple hoist or the UPPER HOT CELL crane are designed to engage a RH pintle for lifting or moving a RH waste canister or the lift fixtures used to move UPPER HOT CELL shield plugs or drum carriages. The safety function of the UPPER HOT CELL crane grapple and the FCLR grapple is to structurally support a canister or a lift fixture and prevent dropping RH WASTE or dropping items on RH waste containers that could result in a breach.

Either grapple has a lift capacity of 21,000 pounds. The grapple has an axially mounted electrically operated actuator that rotates a drive gear that drives three pivot dogs (lifting lugs) into or out of engagement under the pintle. The grapples are equipped with an interlock that, when suspending a load, senses the grapple is not contacting the pintle such that the permissive for driving the grapple pivot dogs is absent and the drive motor cannot rotate the pivot dogs to the open position. In the event of a power failure or seismic event, the three lifting lugs remain engaged under the pintle by the gear drive.

When a suspended load is set down on a surface such that the grapple is in contact with the pintle, the drive motor for the pivot dogs can rotate the pivot dogs to the open position. Indication of grapple position and pintle contact is provided on control panels 41P-CP03/104A, B, C, and D for the UPPER HOT CELL crane control. The panels are located at the UPPER HOT CELL shield windows to allow the operator to change operating stations for different evolutions in the UPPER HOT CELL. Indication of FCLR grapple position and pintle contact is provided on control panel 411-CP-264-04 in the FCLR.

Application to Safety

LCO 3.3.2 ensures OPERABLE interlocks to prevent loss of confinement due to dropping RH waste containers or dropping items on RH waste containers.

LCO

The interlocks are required to be OPERABLE as stated in LCO 3.3.2. OPERABLE interlocks is determined by ensuring:

The UPPER HOT CELL grapple pivot dogs cannot be rotated open unless the grapple is in contact with the pintle as indicated by the pintle contact indicating light on panels 41P-CP03/104A, B, C, and D for the UPPER HOT CELL crane control.

The FCLR grapple pivot dogs cannot be rotated open unless the grapple is in contact with the pintle as indicated by the pintle contact indicating light on Panel 411-CP-264-04 in the FCLR.

OPERABILITY is verified QUARTERLY that the interlocks function as stated in the LCO. See the SR and Basis for SR 4.3.2.1 and 4.3.2.2.

MODE Applicability

The MODE in which LCO 3.3.2 applies is during RH WASTE HANDLING when there is RH WASTE in the UPPER HOT CELL, TRANSFER CELL, or RH WASTE in a 10-160B shipping cask in the CUR.

PROCESS AREA Applicability

The PROCESS AREA includes:

The UPPER HOT CELL, the CUR, and the TRANSFER CELL when RH WASTE HANDLING OPERATIONS that involve lifting a RH waste canister, canister lid, or lift fixture with the UPPER HOT CELL grapple is being conducted in the PROCESS AREA.

The FCLR and TRANSFER CELL when RH WASTE HANDLING OPERATIONS that involve lifting a RH waste canister with the FCLR grapple hoist grapple is being conducted in the PROCESS AREA.

ACTIONS

ACTION A.1

If the UPPER HOT CELL grapple pintle contact interlock with the pivot dogs is not OPERABLE, RH WASTE must be placed in a safe condition, which may necessitate continued movement of suspended loads to put the RH WASTE in the safest condition. Once RH WASTE is in a safe condition, any RH WASTE HANDLING using the UPPER HOT CELL grapple shall be stopped and shall not resume until the interlock is restored to an OPERABLE condition.

The Completion Time of 2 weeks is appropriate for this Required ACTION because waste handling in the UPPER HOT CELL may need to continue to remove RH WASTE from the UPPER HOT CELL so that the repair to the interlock can be made. The waste handling process controls evolutions such that the grapple is not procedurally allowed to open until a load is set down. Additionally there is a load cell associated with the UPPER HOT CELL crane that can be used to further VERIFY that there is no load on the grapple prior to opening the pivot dogs. Further, only qualified operators are authorized to operate RH WASTE HANDLING equipment such that the risk is acceptable.

ACTION A.2

If the FCLR grapple pintle contact interlock with the pivot dogs is not OPERABLE, RH WASTE must be placed in a safe condition, which may necessitate continued movement of suspended loads to put the RH WASTE in the safest condition. Once RH WASTE is in a safe condition, any RH WASTE HANDLING using the FCLR grapple shall be stopped and shall not resume until the interlock is restored to an OPERABLE condition.

The Completion Time of IMMEDIATELY is appropriate for this Required ACTION because there is increased risk of breaching a RH waste container to continue handling RH WASTE when the interlock is not OPERABLE. Unlike RH WASTE HANDLING OPERATIONS in the UPPER HOT CELL, transfer of a RH waste container into the facility cask is not visible through shield glass viewing windows. Also, a RH waste container can be returned to the TRANSFER CELL and the TRANSFER CELL ceiling shield valve can be closed such that the grapple interlocks can be repaired prior to resuming RH WASTE HANDLING.

SRs

SR 4.3.2.1 VERIFICATION shall be made QUARTERLY to ensure that the UPPER HOT CELL grapple pivot dogs cannot be rotated open unless the grapple is in contact with a pintle as indicated by the pintle contact indicating light on panels 41P-CP03/104A, B, C, and D for the UPPER HOT CELL crane control. This VERIFICATION shall also be made after any maintenance on the equipment or the controls for the equipment.

The FREQUENCY of QUARTERLY and after any maintenance associated with the equipment is determined to be appropriate as the process does not result in equipment control configuration changes and procedural controls are in place to protect workers.

Failure to meet this requirement requires entry into Condition A.

SR 4.3.2.2 VERIFICATION shall be made QUARTERLY to ensure that the FCLR grapple pivot dogs cannot be rotated open unless the grapple is in contact with a pintle as indicated by the pintle contact indicating light on Panel 411-CP-264-04 in the FCLR. This VERIFICATION shall also be made after any maintenance on the equipment or the controls for the equipment.

The FREQUENCY of QUARTERLY and after any maintenance associated with the equipment is determined to be appropriate as the process does not result in equipment control configuration changes and procedural controls are in place to protect workers.

Failure to meet this requirement requires entry into Condition B.

B3.3.3 WHB Interlocks - FCLR grapple hoist and shield bell, telescoping port shield, facility cask and shield valves, and TRANSFER CELL ceiling shield valve

Background Summary

The interlocks between the FCLR grapple hoist shield bell and grapple, telescoping port shield, facility cask, and TRANSFER CELL ceiling shield valve ensure that a shielded path is established before initiating transfer of a facility canister or 72-B canister loaded with RH WASTE from the TRANSFER CELL to the facility cask in the FCLR. These interlocks also ensure that a RH waste canister cannot be raised into the FCLR using the FCLR grapple hoist unless the facility cask is located over the transfer port between the TRANSFER CELL and the FCLR, and positioned in a vertical configuration such that the FCLR grapple hoist shield bell can mate with the top of the facility cask and the telescoping port shield can mate with the lower part of the facility cask.

The FCLR grapple hoist supports the grapple and shield bell. The shield bell is a steel casting that not only houses the grapple but is designed to rest on the upper part of the facility cask when the cask is vertically positioned over the transfer port in the FCLR. The shield bell provides shielded when the facility cask upper shield valve is opened. The facility cask upper shield valve must be in the open position for the grapple to be lowered though the facility cask and through the transfer port in the floor of the FCLR to engage a RH waste canister in the TRANSFER CELL. The FCLR grapple hoist position is calculated by a microprocessor in the FCLR control console that receives its signal from the grapple hoist position transmitter. Each grapple position is corresponds to a physical grapple location. The grapple positions important to shielding are as follows:

Position A	Grapple in the maximum up position
Position B	Shield bell in contact with the top of the facility cask
Position C	Grapple slightly above the pintle of the RH canister in the facility cask or canister is slightly raised above the facility cask bottom shield valve.
Position D	RH canister resting on the closed bottom shield valve of the facility cask
Position E	FCLR grapple/shield bell in contact with the top of the telescoping port shield
Position F	72-B shipping cask inner lid above the TRANSFER CELL ceiling shield valve

The FCLR grapple hoist is also equipped with a load cell that is used as an aid to the operator to ensure that the 72-B shipping cask lid is fully unbolted prior to lid removal, that the lid or a RH waste canister are not obstructed from being lifted, and to verify weight of the RH waste canister.

The telescoping port shield is a cylindrical ring that is over 2 feet tall with an outer diameter of 54 inches and an inner diameter of 36 inches. The telescoping port shield is located in the floor of the FCLR at the transfer port between the FCLR and the TRANSFER CELL. The telescoping port shield is raised and lowered using motor driven jack screws. After the facility cask is vertically aligned over the transfer port between the FCLR and the TRANSFER CELL, the telescoping port shield is raised to mate with the bottom of the facility cask.

The facility cask is a thick walled cylindrical container made of steel and lead with powered gate shield valves on either end. The shield valves have air operated locking pins that ensure the valves stay shut when a RH waste canister is inside the facility cask. Compressed air is required to retract the locking pins that are held normally closed with spring pressure. The cask includes two trunnions that allow it be supported with the FCTC and two pivot pins at the top shield valve housing that are used to rotate the cask from horizontal to vertical using the FCRD (FCRD).

The TRANSFER CELL ceiling shield valve is located at the transfer port between the TRANSFER CELL and the FCLR. The TRANSFER CELL ceiling shield valve is normally closed and is opened only for removal or replacement of the 72-B shipping cask inner lid or to transfer a RH waste canister from the TRANSFER CELL to the facility cask. The ceiling shield valve controls ensure that the valve cannot be opened unless either the facility cask is in contact with the telescoping port shield or the FCLR grapple hoist shield bell is in contact with the telescoping port shield.

The equipment is further described in Chapter 2 of the RH DSA. The FCTC and FCRD will be further discussed in the bases for LCO 3.3.4.

Application to Safety

LCO 3.3.2 ensures the OPERABILITY of the interlocks to ensure shielding during removal of the 72-B shipping cask inner lid and during transfer of a RH waste canister from the TRANSFER CELL to the facility cask. The interlocks also prevent raising a RH waste canister into the FCLR without the facility cask present and vertically positioned over the transfer port between the FCLR and TRANSFER CELL.

LCO

The interlocks between the FCLR grapple hoist, telescoping port shield, facility cask are required to be OPERABLE such as stated in LCO 3.3.2. OPERABLE interlocks includes the following:

The facility cask top shield valve cannot be opened unless the grapple is at position B as indicated by the position B light on control panel 411-CP-264-04. The facility cask top shield valve cannot be closed unless the grapple is at position B as indicated by the associated position lights on control panel 411-CP-264-04 and the grapple is open.

The TRANSFER CELL ceiling shield valve cannot be opened unless the telescoping port shield is in contact with the facility cask lower shield valve. If the facility cask is not present, the TRANSFER CELL ceiling shield valve cannot be opened unless the FCLR grapple hoist shield bell is in contact with the telescoping port shield at position E as indicated by the position E indicating light on control panel 411-CP-264-04. The TRANSFER CELL ceiling shield valve cannot be closed when lifting a RH waste canister unless the grapple hoist is at position B, C, or D as indicated by the associated position lights on control panel 411-CP-264-04.

The facility cask lower shield valve cannot be opened unless the TRANSFER CELL ceiling shield valve is open and the grapple hoist is at position D as indicated by the position D light on control panel 411-CP-264-04. The facility cask lower shield valve cannot be closed unless the grapple hoist is at position B or C as indicated by the associated position lights on control panel 411-CP-264-04.
OPERABILITY is verified QUARTERLY that the interlocks function as stated in the LCO. See the SR and Bases for SR 4.3.3.1, 4.3.3.2, 4.3.3.3, and 4.3.3.4.

MODE Applicability — The MODE in which workers are susceptible to direct radiation exposure in the FCLR during RH WASTE HANDLING OPERATIONs in the TRANSFER CELL and FCLR when the 72-B shipping cask inner lid is being removed and during transfer of a RH waste canister from the TRANSFER CELL to the facility cask. Workers are also susceptible to direct radiation exposure in the FCLR during RH WASTE STORAGE when a 72B shipping cask with its lid removed is in the TRANSFER CELL.

PROCESS AREA Applicability — The PROCESS AREA includes the TRANSFER CELL and FCLR. This LCO is applicable to the TRANSFER CELL during RH WASTE HANDLING and RH WASTE STORAGE and in the FCLR during RH WASTE HANDLING.

ACTIONS

ACTION A.1 — If the interlocks between the FCLR grapple hoist and shield bell, telescoping port shield, facility cask and shield valves, and TRANSFER CELL ceiling shield valve are INOPERABLE, RH WASTE HANDLING in the TRANSFER CELL and FCLR shall be suspended until the interlock operability is restored. The ACTION requires that RH WASTE be placed in a safe condition, which may necessitate continued movement of suspended loads to put the RH WASTE in the safest condition.

The Completion Time of IMMEDIATELY appropriate for this Required ACTION because of the shielding necessary for worker protection. Although the RH WASTE HANDLING procedure specifies the sequence of operations in both the FCLR and the TRANSFER CELL and the sequence of operation, if followed, will not compromise shielding, the interlocks provide an engineered feature to ensure shielding during a canister transfer and to prevent the TRANSFER CELL ceiling shield valve from being opened with a RH waste canister in the TRANSFER CELL.

ACTION A.2 — This ACTION requires OPERABILITY of the interlocks to be re-established prior to resuming RH WASTE HANDLING in the TRANSFER CELL or FCLR or STORAGE of RH WASTE in the TRANSFER CELL. Any transfer of RH WASTE from the TRANSFER CELL to the facility cask in the FCLR requires that shielding be established and maintained for worker protection. Also during RH WASTE STORAGE in the TRANSFER CELL, workers may be present in the FCLR. The TRANSFER CELL shuttle car may be positioned under the transfer port between the FCLR and TRANSFER CELL during RH WASTE STORAGE in the TRANSFER CELL. If the interlocks are not OPERABLE, workers in the FCLR are at risk if the TRANSFER CELL ceiling shield valve were to be opened without the shield bell or facility cask present and mated with the telescoping port shield over the transfer port.

SRs

SR 4.3.3.1 VERIFICATION shall be made QUARTERLY and after maintenance on the FCLR grapple hoist, the facility cask, or the associated controls to ensure that the facility cask top shield valve cannot be opened unless the grapple is at position B as indicated by the position B light on control panel 411-CP-264-04. The facility cask top shield valve cannot be closed unless the grapple is at position B as indicated by the associated position lights on control panel 411-CP-264-04 and the grapple is open.

The FREQUENCY of QUARTERLY and after any maintenance associated with the equipment or controls is determined to be appropriate as the RH WASTE handling procedure requires that facility cask be present in the FCLR to transfer a RH waste canister from the TRANSFER CELL and it must be vertically oriented over the transfer port for the grapple and shield bell to be lowered to mate with the top shield valve. Movement of the upper shield valve requires specific operator action and is procedurally controlled to ensure that the shield bell is present prior to opening the facility cask upper shield valve. The procedure does not include steps to close the shield valve until the RH waste canister is in the facility cask and the grapple has been disengaged from the canister and the grapple and ropes above the upper shield valve. Further, only qualified operators are allowed to operate the FCLR grapple hoist or facility cask shield valves.

Failure to meet this requirement requires entry into Condition A.

SR 4.3.3.2 VERIFICATION shall be made QUARTERLY and after maintenance associated with the equipment or controls that the TRANSFER CELL ceiling shield valve cannot be opened unless the telescoping port shield is in contact with the facility cask lower shield valve. If the facility cask is not present, the TRANSFER CELL ceiling shield valve cannot be opened unless the FCLR grapple hoist shield bell is in contact with the telescoping port shield at position E as indicated by the position E indicating light on control panel 411-CP-264-04. The TRANSFER CELL ceiling shield valve cannot be closed when lifting a RH waste canister unless the grapple hoist is at position B, C, or D as indicated by the associated position lights on control panel 411-CP-264-04.

The FREQUENCY of QUARTERLY and after maintenance associated with the equipment or controls is determined to be appropriate as the operation of the equipment is procedurally controlled and ensures through the procedural steps that shielding is present prior to opening the TRANSFER CELL ceiling shield valve. Further, only qualified operators are allowed to operate the facility cask, the telescoping port shield, or the TRANSFER CELL ceiling shield valve.

Failure to meet this requirement requires entry into Condition A.

SR 4.3.3.3

VERIFICATION shall be made QUARTERLY and after maintenance on the facility cask, grapple hoist, TRANSFER CELL ceiling shield valve or the associated controls to ensure that the facility cask lower shield valve cannot be opened unless the TRANSFER CELL ceiling shield valve is open and the grapple hoist is at position D as indicated by the position D light on control panel 411-CP-264-04. The facility cask lower shield valve cannot be closed unless the grapple hoist is at position B or C as indicated by the associated position lights on control panel 411-CP-264-04.

The FREQUENCY or QUARTERLY and after maintenance associated with the equipment or controls is determined to be appropriate as, the operation of the equipment is procedurally controlled and ensures through the procedural steps that shielding is present prior to opening the facility cask lower shield valve. Further the facility cask lower shield valve is procedurally controlled to remain open during canister transfer. Since, by design, the canister cannot be disengaged from the grapple unless the canister is resting on the closed lower shield valve, it is necessary for the facility cask lower shield valve to remain open until the canister has cleared the valve and is above it before closing the lower shield valve. Further, only qualified operators are allowed to operate the facility cask and shield valves, grapple hoist, and TRANSFER CELL ceiling shield valves.

Failure to meet this requirement requires entry into Condition A.

B3.3.4 WHB Interlocks - TRANSFER CELL shuttle car, CUR shield valve, UPPER HOT CELL shield valve, and TRANSFER CELL ceiling shield valve

Background Summary

The interlocks between the TRANSFER CELL shuttle car, the CUR shield valve, the UPPER HOT CELL shield valve and the TRANSFER CELL ceiling shield valve ensure that the shuttle car cannot move unless all three shield valves are closed. The interlocks prevent movement of the shuttle car during transfer of a RH waste canister from the CUR to the TRANSFER CELL, the UPPER HOT CELL to the TRANSFER CELL, or the TRANSFER CELL to the facility cask in the FCLR. Movement of the shuttle car could result in crushing the ropes associated with the CUR crane, the UPPER HOT CELL crane, or the FCLR grapple hoist resulting in a drop of a RH waste canister. The interlocks also prevent crushing a RH waste canister during transfer between the TRANSFER CELL and the facility cask.

The shield valves are further interlocked to allow only one to be open at a time such that the shuttle car basket is positioned under the specific shield valve being opened.

Application to Safety

LCO 3.3.3 ensures OPERABLE interlocks to prevent loss of confinement due to dropping or crushing a RH waste canister during transfer between the CUR and the TRANSFER CELL, the UPPER HOT CELL and the TRANSFER CELL or the TRANSFER CELL and the facility cask.

LCO

The interlocks between the CUR shield valve, the UPPER HOT CELL shield valve, and the TRANSFER CELL ceiling shield valve and the TRANSFER CELL shuttle car are required to be OPERABLE as stated in LCO 3.3.3. OPERABLE interlocks is determined by ensuring that the TRANSFER CELL shuttle car cannot move unless the CUR shield valve, the UPPER HOT CELL shield valve and the TRANSFER CELL ceiling shield valve are closed.

OPERABILITY is verified QUARTERLY that the interlocks function as stated in the LCO. See the SR and Basis for SR 4.3.4.1.

MODE Applicability

The MODE in which a RH waste canister is likely to be dropped or crushed is during RH WASTE HANDLING when a RH waste canister is being transferred from the CUR to the TRANSFER CELL, the UPPER HOT CELL to the TRANSFER CELL, or the TRANSFER CELL to the facility cask in the FCLR.

PROCESS AREA Applicability

The PROCESS AREA includes the TRANSFER CELL during RH WASTE HANDLING involving transfer of RH WASTE between the CUR or the UPPER HOT CELL to the TRANSFER CELL or between the TRANSFER CELL and the facility cask.

ACTIONS

ACTION A.1

If the interlocks between the TRANSFER CELL shuttle car, the CUR shield valve, the UPPER HOT CELL shield valve, and the TRANSFER CELL ceiling shield valve are not OPERABLE, transfer of RH WASTE between the CUR and TRANSFER CELL, the UPPER HOT CELL and the TRANSFER CELL, or the TRANSFER CELL and the facility cask shall be stopped. This ACTION requires that RH WASTE be placed in a safe condition, which may necessitate continued movement of suspended loads to put the RH WASTE in the safest condition.

The Completion Time of 2 weeks is appropriate for this Required ACTION because the RH WASTE HANDLING procedure specifies the sequence of operations in the CUR, the UPPER HOT CELL, and between the TRANSFER CELL and the facility cask such that workers are protected. Two weeks allows sufficient time to remove RH WASTE from the UPPER HOT CELL such that any repair to the UPPER HOT CELL floor shield valve limits switches, that may be necessary to restore the interlock to OPERABLE status, can be made. Further, closed circuit televisions are provided at each operating station for the CUR, the UPPER HOT CELL, and the operator station in the FCLR to aid operators in determining shuttle car position and if transfer of RH WASTE into the TRANSFER CELL is already in progress. If RH WASTE is being cleared from the UPPER HOT CELL to repair the limit switches, no new RH WASTE will be added to the UPPER HOT CELL. Further, the shielded insert will be in the shuttle car to receive facility canisters from the UPPER HOT CELL. The logistics of removing the shielded insert to process a 72-B RH waste canister will preclude 72-B RH WASTE from being processed until evolutions associated with the UPPER HOT CELL are complete.

ACTION A.2

This ACTION requires that the interlocks be restored to an OPERABLE condition prior to resuming RH WASTE HANDLING OPERATIONS in the TRANSFER CELL. This Completion Time is appropriate because this action prevents breach of RH waste canisters due to drops or crushes and the risk of drops and crushes is reduced when the interlocks are OPERABLE.

SRs

SR 4.3.4.1

VERIFICATION shall be made QUARTERLY to ensure that the TRANSFER CELL shuttle car cannot be moved unless the CUR shield valve is closed, the UPPER HOT CELL shield valve is closed and the TRANSFER CELL ceiling shield valve is closed. This VERIFICATION shall also be made after any maintenance on the equipment or the controls for the equipment.

The FREQUENCY of QUARTERLY and after any maintenance associated with the equipment is determined to be appropriate as the process does not result in equipment control configuration changes and procedural controls are in place to protect workers. Further only qualified operators are allowed to operate the TRANSFER CELL shuttle car or the shield valves in the CUR, the UPPER HOT CELL, or the TRANSFER CELL. Also, any operation of the shuttle car requires communication between operating stations and there are cameras in the TRANSFER cell to aid operators in determining shuttle car position and the presence or absence of RH WASTE.

Failure to meet this requirement requires entry into Condition A.

3.3.5 WHB Interlocks - FCLR Grapple Hoist and Shield Bell, Telescoping Port Shield, and Facility Cask Rotating Device

Background Summary

To transfer a RH waste canister from the TRANSFER CELL to the facility cask in the FCLR, the facility cask must be vertically positioned over the transfer port between the TRANSFER CELL and the FCLR. The facility cask, as described in Chapter 2 of the RH DSA and in the bases for LCO 3.3.2, includes two trunnions that allow it be supported with the FCTC and two pivot pins at the top shield valve housing that are used to rotate the cask from horizontal to vertical using the FCRD.

The FCTC is a self propelled rail car that is supports the facility cask when it is rotated either horizontally or vertically. The FCTC rails are positioned on either side of the transfer port between the FCLR and the TRANSFER CELL. The facility cask, while supported by the FCTC, is rotated vertically for transfer of a RH waste canister into the cask and horizontally for transfer of the facility cask to the UNDERGROUND on the waste shaft conveyance. The FCTC mates with the FCRD and secured to the FCRD with latches that the operator ensures are properly engaged before rotating the facility cask. The drive motor to the FCTC is secured after the FCTC and FCRD are latched together.

The FCRD is a steel framed, hydraulically operated machine that is mounted on the floor of the FCLR around the transfer port between the TRANSFER CELL and the FCLR and just outside the FCTC rails. The facility cask interface with the FCRD such that after the FCTC is latched to the FCRD, additional latches on the FCRD engaged two pivot pins at the top shield valve housing of the facility cask to allow the FCRD to rotate the facility cask to the vertical position and back to horizontal.

The FCLR grapple hoist and shield bell are stored when not in use in the highest grapple position, indicated on control panel 411-CP-264-04 by a position A light. The telescoping port shield is stored in the lowered position when positioning the FCTC into the FCRD and during rotation of the facility cask.

The interlocks between the FCLR grapple hoist and shield bell, telescoping port shield, and FCRD ensure that the FCRD cannot rotate unless the grapple hoist is in the highest position A and the telescoping port shield is retracted. The interlocks prevent movement of the FCRD during transfer of a RH waste canister from the TRANSFER CELL to the facility cask such that shielding is not compromised during canister transfer. The interlocks also prevent crushing a RH waste canister during transfer between the TRANSFER CELL and the facility cask.

Application to Safety

LCO 3.3.5 ensures OPERABLE interlocks to prevent loss of shielding during transfer of a RH waste canister from the TRANSFER CELL to the facility cask in the FCLR and to prevent loss of confinement due to crushing a canister if the FCRD were to move during canister transfer.

LCO	The interlocks between the CUR shield valve, the UPPER HOT CELL shield valve, and the TRANSFER CELL ceiling shield valve and the TRANSFER CELL shuttle car are required to be OPERABLE as stated in LCO 3.3.4. OPERABLE interlocks is determined by ensuring that the TRANSFER CELL shuttle car cannot move unless the CUR shield valve, the UPPER HOT CELL shield valve and the TRANSFER CELL ceiling shield valve are closed. OPERABILITY is verified QUARTERLY that the interlocks function as stated in the LCO. See the SR and Basis for SR 4.3.4.1.
MODE Applicability	The MODE in which a RH waste canister is likely to be dropped or crushed is during RH WASTE HANDLING when a RH waste canister is being transferred from the TRANSFER CELL to the FCLR.
PROCESS AREA Applicability	The PROCESS AREA includes the TRANSFER CELL during RH WASTE HANDLING involving transfer of RH WASTE between the CUR or the UPPER HOT CELL to the TRANSFER CELL or between the TRANSFER CELL and the facility cask.

ACTIONS

ACTION A.1	If the interlocks between the FCLR grapple hoist and shield bell, telescoping port shield, and FCRD are not OPERABLE, transfer of RH WASTE between the TRANSFER CELL and the facility cask in the FCLR shall be stopped within 4 hours and will not be initiated until the interlock OPERABILITY is restored. The ACTION requires that RH WASTE be placed in a safe condition, which may necessitate continued movement of suspended loads to put the RH WASTE in the safest condition. The Completion Time of 4 hours is appropriate for this Required ACTION because the RH WASTE HANDLING procedure specifies the sequence of operations between the TRANSFER CELL and facility cask and this amount of time is sufficient to either complete the transfer of a RH waste canister into the facility cask, or return the RH waste canister to the TRANSFER CELL. The interlocks in LCO 3.3.3 also ensure that the transfer of a canister cannot be initiated without shielding being in place. If the FCRD were to move during canister transfer, the proximity switch associated with the telescoping port shield contact with the facility cask would indicate that the cask is not present and the grapple would stop movement. Further only qualified operators are authorized to operate the FCTC, the FCRD, the grapple hoist, or the telescoping port shield.
ACTION A.2	This ACTION requires that the interlocks be restored to an OPERABLE condition prior to resuming RH WASTE HANDLING OPERATIONS in the TRANSFER CELL and FCLR. This Completion Time is appropriate as the interlocks prevent FCRD rotation during canister transfer that could result in crushing an RH waste canister or the FCLR grapple hoist rope resulting in a canister drop. Restoration of the interlocks reduces the risk of these events.

SRs

SR 4.3.5.1 VERIFICATION shall be made QUARTERLY and after maintenance on the FCLR grapple hoist and shield bell, the telescoping port shield, and the FCRD, or the associated controls.

The FREQUENCY of QUARTERLY and after any maintenance associated with the equipment or controls is determined to be appropriate as the RH waste handling procedure requires that facility cask be present in the FCLR to transfer a RH waste canister from the TRANSFER CELL and it must be vertically oriented over the transfer port for the grapple to be lowered into the TRANSFER CELL to engage and lift the canister. Further only qualified operators are authorized to operate the FCRD, the grapple hoist, or the telescoping port shield.

Failure to meet this requirement requires entry into Condition A.

3.3.6 UNDERGROUND Interlocks - HERE, Facility Cask, and Shield Collar

Background Summary

To transfer a RH waste canister from the facility cask to a borehole in the wall of the ACTIVE RH DISPOSAL ROOM, a path must be established to provide shielding for worker protection as the canister is transferred. The HERE is used to transfer a RH waste canister from the facility cask to a horizontal borehole in the wall of the ACTIVE RH DISPOSAL ROOM. The facility cask is designed to interface with components on the HERE such that a shielded path is established to transfer the canister.

The HERE includes the alignment fixture/shield collar, waste transfer machine includes leveling platform, staging platform, and transfer carriage, and the shield plug carriage.

The alignment fixture provides a reference plane for aligning the waste transfer machine with respect to the borehole to allow RH WASTE canister and shield plug installation and retrieval. The alignment fixture is a welded carbon steel structure consisting of a base plate with three hydraulic jacks, and a vertical face plate with holes for attaching and bolting the shield collar. The leveling hydraulic jacks are used to realign the alignment fixture with the bore hole in case an adjustment has to be made. The alignment fixture also includes three tilt sensors and three proximity switches. The tilt sensors provide tilt information to permit the operator to realign the alignment fixture if the alignment fixture is not properly aligned on a disposal borehole. The proximity switches are provided to sense the gap between the switchs and the facility cask. The shield collar is a carbon steel shield section used when emplacing a RH WASTE canister and shield plug into a borehole. The shield collar is attached to the alignment fixture and is inserted into the counterbore in the borehole.

The waste transfer machine includes leveling platform, staging platform, and transfer carriage. The leveling platform is a fabricated steel frame that is designed to interface with the alignment fixture and staging platform. The leveling platform is approximately 300 in. long, 113 in. wide, and 24 in. high. The front end of the leveling platform has two alignment holes that interface with and sit on the alignment fixture alignment pins. A hydraulic jack, located at the rear of the leveling platform, is used to align the waste transfer machine axis with the axis of the alignment fixture/shield collar.

The staging platform is a steel fabricated frame that rests on roller bearings which engage and ride on the rails of the leveling platform. The staging platform supports the facility cask and transfer carriage and a hydraulic ram providing linear motion to the transfer carriage. The overall length of the staging platform is 288.5 in.

A tilt sensor, a rotary limit switch, and two position detection limit switches are mounted on the staging platform. The tilt sensor is used to monitor the longitudinal tilt of the assembled waste transfer machine for alignment with the alignment fixture. The rotary limit switch is used to stop the transfer carriage forward and reverse travel motion before the travel limits have been reached.

The two position detection limit switches are activated when the shield plug carriage is seated on the staging platform rails to provide interlocks. A regulated air supply of compressed air is attached to the staging platform for operating pneumatically activated facility cask lock pins.

The transfer carriage is a large hydraulic cylinder with its own hydraulic system that is used to push a RH WASTE canister from the facility cask into a borehole or pull a RH WASTE canister from a borehole into the facility cask. The rear end of the transfer carriage houses the transfer mechanism that mates with the facility cask and includes heavy wall shielding when the facility cask top shield valve is opened. The transfer carriage housing is a steel cylinder with a 30-in. inside diameter and 91-1/4 in. long. The hydraulic system is mounted within or on the transfer carriage housing. The transfer mechanism and grapple provide the capability for transferring a RH WASTE canister from the facility cask into a borehole and vice versa. The transfer mechanism also provides the same capability for shield plug emplacement and retrieval. The transfer carriage is positioned with the front of the housing against the facility cask during emplacement or retrieval of a RH WASTE canister. During shield plug emplacement or retrieval, the transfer carriage is retracted to provide room for installing the shield plug carriage on the staging platform.

The transfer carriage is equipped with four (4) locking clamps to clamp the carriage to both the facility cask and the shield plug carriage. The grapple mounted on the transfer mechanism front plate is used to engage the pintle of the RH WASTE canister or shield plug when conducting a retrieval operation. The following position sensors are provided and mounted on the transfer carriage:

- Two spring-loaded reel type mechanisms attached to multi-turn rotary potentiometers monitor the linear travel distance of the transfer carriage for position indication. The accuracy of the measurement over the 264 in. of travel is ±0.72 in.

- Three proximity metal detecting switches that activate and indicate when the transfer carriage is within 0.50 in. of the facility cask to stop the carriage drive.

- Two grapple mounted induction proximity detection switches, one for the canister and one for the shield plug, to detect when the grapple comes in contact with the pintle of the RH WASTE canister or shield plug.

- Two position limit switches to indicate when the two grapple jaws are open and closed. The jaws drive motor is stopped when the limit switches reach the open and close limits.

The shield plug carriage is a semicircular saddle which holds the shield plug in a horizontal position during emplacement and retrieval operations and aligns the bottom of the shield plug with the bottom of the facility cask cavity. The shield plug carriage is placed on and supported by the rails of the staging platform which also supports the transfer carriage.

The control console for the waste transfer machine provides all the controls and information displays to operate the waste transfer equipment. The cables are 25 ft long to permit locating the console a sufficient distance from the waste transfer machine to ensure proper shielding distance for the console operator. Each step in the operational sequence is initiated or controlled by the operator through a programmable controller mounted within the control console. The programmable controller incorporates the interlock functions to ensure proper sequence of operations.

Application to Safety

LCO 3.3.6 ensures OPERABLE interlocks to ensure a shielded path is established prior to initiating and during transfer of a RH WASTE canister from the facility cask to the disposal borehole.

LCO

The interlocks between the HERE transfer mechanism, the facility cask, and the alignment fixture/shield collar are required to be OPERABLE as stated in LCO 3.3.6. OPERABLE interlocks are determined by ensuring:

The front shield valve on the facility cask cannot be opened unless the tilt sensors on the HERE indicate that the waste transfer machine is aligned with the alignment fixture as indicated by the tilt status array on the control console for the waste transfer machine, the proximity switches on the alignment fixture detect the facility cask, and the proximity switches on the transfer mechanism detect the facility cask.

The rear shield valve on the facility cask cannot be opened unless the tilt sensors on the HERE indicate that the waste transfer machine is aligned with the alignment fixture as indicated by the tilt status array on the control console for the waste transfer machine, the proximity switches on the alignment fixture detect the facility cask, and the proximity switches on the transfer mechanism must detect the facility cask.

The front shield valve on the facility cask cannot be closed if the transfer mechanism is extended through the rear shield valve greater than 33 inches and the grapple detects a pintle as indicated on the control console for the waste transfer machine.

The rear shield valve on the facility cask cannot be closed unless the transfer mechanism is retracted to less than 14 inches and the grapple is open as indicated on the control console for the waste transfer machine.

OPERABILITY is verified QUARTERLY that the interlocks function as stated in the LCO. See the SR and Basis for SR 4.3.6.1 and SR 4.3.6.2.

MODE Applicability

The MODE in which these interlocks are necessary for worker protection is RH WASTE HANDLING in the UNDERGROUND when a RH WASTE canister is being transferred from the facility cask to the disposal borehole in the ACTIVE RH DISPOSAL ROOM.

PROCESS AREA Applicability	The PROCESS AREA includes the UNDERGROUND during RH WASTE HANDLING involving transfer of RH WASTE between the facility cask and the disposal borehole.

ACTIONS

ACTION A.1	If the interlocks between the HERE transfer mechanism, facility cask, and alignment fixture/shield collar are not OPERABLE, transfer of RH WASTE between the facility cask and disposal borehole shall be stopped and will not be initiated until the interlock OPERABILITY is restored. The ACTION requires that RH WASTE be placed in a safe condition, which may necessitate continued movement of RH WASTE to put it in the safest condition. The Completion Time of 24 hours is appropriate for this Required ACTION because the RH WASTE handling procedure specifies the sequence of operation and this amount of time is sufficient to either complete the transfer of a RH WASTE canister into the disposal borehole or return the RH WASTE canister to the facility cask and close the facility cask shield valves until the interlocks can be restored to OPERABLE.
ACTION A.2	This ACTION requires that the interlocks be restored to an OPERABLE condition prior to resuming RH WASTE HANDLING OPERATIONS in the UNDERGROUND. This Completion Time is appropriate as the interlocks prevent crushing a canister either by the transfer mechanism pushing the canister into a closed shield valve or into the wall of the borehole if the HERE and borehole are not aligned. The interlocks also prevent crushing a RH WASTE canister by closing the facility cask shield valves before the canister has cleared the valve opening. Restoration of the interlocks reduces risk.

SRs

SR 4.3.6.1	VERIFICATION shall be made QUARTERLY and after maintenance on the HERE transfer mechanism, facility cask shield valves, and alignment fixture/shield collar, or the associated controls that the front shield valve on the facility cask cannot be opened unless the tilt sensors on the HERE indicate that the waste transfer machine is aligned with the alignment fixture as indicated by the tilt status array on the control console for the waste transfer machine, the proximity switches on the alignment fixture detect the facility cask, and the proximity switches on the transfer mechanism detect the facility cask.
SR 4.3.6.2	VERIFICATION shall be made QUARTERLY and after maintenance on the HERE transfer mechanism, facility cask shield valves, and alignment fixture/shield collar, or the associated controls that the rear shield valve on the facility cask cannot be opened unless the tilt sensors on the HERE indicate that the waste transfer machine is aligned with the alignment fixture as indicated by the tilt status array on the control console for the waste transfer machine, the proximity switches on the alignment fixture detect the facility cask, and the proximity switches on the transfer mechanism must detect the facility cask.

SR 4.3.6.3 VERIFICATION shall be made QUARTERLY and after maintenance on the HERE transfer mechanism, facility cask shield valves, or the associated controls that the front shield valve on the facility cask cannot be closed if the transfer mechanism is extended through the rear shield valve greater than 33 inches and the grapple detects a pintle as indicated on the control console for the waste transfer machine.

SR 4.3.6.4 VERIFICATION shall be made QUARTERLY and after maintenance on the HERE transfer mechanism, facility cask shield valves, or the associated controls that the rear shield valve on the facility cask cannot be closed unless the transfer mechanism is retracted to less than 14 inches and the grapple is open as indicated on the control console for the waste transfer machine.

The FREQUENCY of QUARTERLY and after any maintenance associated with the equipment or controls is determined to be appropriate as the RH WASTE handling procedure requires that facility cask be present on the HERE and mated to the transfer mechanism and shield collar prior to initiating transfer of a RH WASTE canister. Further, only qualified operators are allowed to operate the HERE and facility cask shield valves. The interlocks in LCO 3.3.6 ensure that the transfer of a canister cannot be initiated without shielding being in place. If the tilt sensors indicate that the leveling platform, alignment platform, or the staging platform are not aligned on a disposal borehole, the front and rear shield valves on the facility cask will not open. Further if the shield valve were already opened, the transfer mechanism would stop until the HERE was leveled. Similarly, the operating sequence is programmed and if closure of the shield valves was accidentally initiated, the transfer mechanism would stop movement until the valves were returned to the open position.

Failure to meet any of the SURVEILLANCE requirements above requires entry into Condition A.

References

1. Title 10 CFR Part 830, Subpart B, "*Safety Basis Requirements.*"

2. DOE G 423.1-1, *Implementation Guide for use in Developing Technical Safety Requirements,* October 2001.

3. DOE Order O 420.1A, *Facility Safety*.

4. SDD-FP00, *Fire Protection System System Design Description*.

5. DOE/WIPP-95-2065, *WIPP Contact-Handled Transuranic Waste Documented Safety Analysis*.

6. DOE/WIPP-03-3174, Revision 0, *WIPP Remote-Handled Transuranic Waste Documented Safety Analysis.*

7. NFPA 25, *Testing and Maintenance of Water Based Fire Protection Systems*, Standard for the Inspection.

8. 30 CFR 56, *Safety and Health Standards–Surface Metal and Nonmetal Mines.*

9. 30 CFR 57, *Safety and Health Standards–Underground Metal and Nonmetal Mines.*

10. 30 CFR 58, *Health Standards–Metal and Nonmetal Mines.*

11. *WIPP Mine Ventilation Plan, Attachment Q* of Hazardous Waste Facility Permit No. NM48901390088-TSDF, issued by the New Mexico Environmental Department (as amended).