



Waste Isolation Pilot Plant Technical Safety Requirements

Prepared by

Nuclear Waste Partnership, LLC

Carlsbad, NM

U.S. Department of Energy Contract DE-EM001971

Prepared for

U.S. Department of Energy

Carlsbad Field Office

Carlsbad, NM

OCTOBER 2012

This document revision was prepared by Nuclear Waste Partnership under contract and subject to the warranty and other obligations of that contract.

Release to and Use by Third Parties. As it pertains to releases of this document to third parties, and the use of or reference to this document by such third parties in whole or in part, neither Nuclear Waste Partnership, nor its officers, directors, employees, agents, consultants or personal services contractors (i) make any warranty, expressed or implied, (ii) assume any legal liability or responsibility for the accuracy, completeness, or usefulness, of any information, apparatus, product or process disclosed herein or (iii) represent that use of the same will not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trademark, name, manufacture or otherwise, does not necessarily constitute or imply endorsement, recommendation, or favoring of the same by either Nuclear Waste Partnership, or its officers, directors, employees, agents, consultants or personal services contractors.

Table of Contents

SECTION	TITLE	PAGE NO.
1.0	USE AND APPLICATION.....	1-1
1.1	Definitions.....	1-2
1.2	Operational MODES.....	1-7
1.3	FREQUENCY.....	1-8
1.4	Logical Connectors.....	1-9
1.5	Completion Times.....	1-10
1.6	TSR Violations.....	1-11
1.7	Conditions Outside TSR.....	1-12
1.8	Justification for Continued Operations.....	1-13
2.0	SAFETY LIMITS.....	2-1
3/4	LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS.....	3/4-i
3.0	General Limiting Conditions for Operation.....	3/4-1
4.0	General Surveillance Requirements.....	3/4-3
	3/4.1 Fire Suppression Systems.....	3/4-4
	LCO 3.1.1 WHB Fire Suppression System.....	3/4-4
	LCO 3.1.2 Liquid-fueled WASTE HANDLING EQUIPMENT Fire Suppression System.....	3/4-12
	3/4.2 Confinement Ventilation Systems.....	3/4-13
	LCO 3.2.1 CH WH Confinement Ventilation System.....	3/4-13
	LCO 3.2.2 HOT CELL COMPLEX Confinement Ventilation System.....	3/4-18
	3/4.3 Vehicle/Equipment Control.....	3/4-20
	LCO 3.3.1 Vehicle Control in the OUTSIDE AREA.....	3/4-20
	LCO 3.3.2 Vehicle/Equipment Control in the CH WH.....	3/4-21
	LCO 3.3.3 Vehicle/Equipment Control in the SHAFT ACCESS AREA.....	3/4-22
	LCO 3.3.4 Deleted.....	3/4-24
	LCO 3.3.5 Lube Truck Access Control in the UNDERGROUND.....	3/4-24
	LCO 3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH.....	3/4-25
	LCO 3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (WASTE HANDLING MODE).....	3/4-29
	LCO 3.3.8 Liquid-Fueled Vehicle/Equipment Control in a DISPOSAL ROOM.....	3/4-34
	3/4.4 Fuel Confinement.....	3/4-34
	LCO 3.4.1 Deleted.....	3/4-34
	LCO 3.4.2 Fuel Barrier in the UNDERGROUND.....	3/4-34
	3/4.5 WASTE Handling.....	3/4-35
	LCO 3.5.1 Deleted.....	3/4-35
	LCO 3.5.2 WASTE HANDLING in the SHAFT ACCESS AREA.....	3/4-35
	LCO 3.5.3 WASTE HANDLING in the OUTSIDE AREA.....	3/4-36

Table of Contents (continued)

SECTION	TITLE	PAGE NO.
	3/4.6 Deleted	3/4-37
	3/4.7 Noncompliant Container Response	3/4-38
	LCO 3.7.1 Noncompliant Container Response	3/4-38
	LCO 3.8.1 Waste Hoist Brakes	3/4-39
5.0	Administrative Controls	5-i
	5.1 Programs	5-1
	5.1.1 SPECIFIC ADMINISTRATIVE CONTROLS	5-1
	5.1.2 Programmatic Administrative Controls.....	5-4
	5.2 Requirements for Deviation from TSRs	5-6
	5.2.1 General Requirements.....	5-6
	5.2.2 Response to TSR Violations	5-6
	5.3 Organization	5-6
	5.3.1 Contractor Responsibilities	5-6
	5.3.2 Support Organizations	5-6
	5.3.3 Minimum Operations Shift Compliment	5-7
	5.4 Record Keeping	5-8
	5.5 Reviews and Audits	5-9
	5.6 TSR Control	5-9
6.0	Design Features	6-i
	6.1 Waste Handling Building.....	6-1
	6.2 HOT CELL COMPLEX.....	6-2
	6.3 Facility Cask/Light-Weight Facility Cask.....	6-2
	6.4 TRUPACT-II Unloading Dock (TRUDOCK) 6-Ton Cranes	6-2
	6.5 Facility Pallet.....	6-2
	6.6 UNDERGROUND Liquid-Fueled WASTE HANDLING Vehicles	6-2
	6.7 RH Waste Canister	6-2
	6.8 Panel Closure/Substantial Barrier/Isolation Bulkhead	6-3
	6.9 Property Protection Area	6-3
	6.10 UNDERGROUND Design.....	6-3
	6.11 Waste Hoist Structure.....	6-3
	6.12 RH Bay Floor Design.....	6-3
	6.13 Alignment Fixture Assembly	6-3
	APPENDIX A – BASES	A-1

List of Terms

AC	Administrative Control
CBFO	Carlsbad Field Office
CFR	<i>Code of Federal Regulations</i>
CH	contact-handled
CMR	Central Monitoring Room
DF	Design Features
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
FCLR	Facility Cask Loading Room
FM	Factory Mutual
FSM	Facility Shift Manager
gpm	gallons per minute
HalfPACT	Half-Package TRANSPORTER
HEPA	High-Efficiency Particulate Air
ITV	Inspector's test valve
LCO	Limiting Conditions for Operation
LCS	Limiting Control Setting
LOC	Loss of Confinement
MAR	Material At Risk
MOI	Maximally Exposed Offsite Individual
MgO	Magnesium Oxide
NFPA	National Fire Protection Association
NWP	Nuclear Waste Partnership, LLC
PAC	Programmatic Administrative Control
PIV	Post Indicator Valve
PPA	Property Protection Area
psig	Pounds Per Square Inch Gauge
RH	remote-handled

List of Terms (continued)

SAC	Specific Administrative Control
SL	Safety Limit
SLB2	Standard Large Box 2
SMP	Safety Management Program
SR	Surveillance Requirement
SSC	Structures, Systems, And Components
TRU	Transuranic
TRUDOCK	TRUPACT-II Unloading Dock
TRUPACT-II	Transuranic Package Transporter Model II
TRUPACT-III	Transuranic Package Transporter Model III
TSR	Technical Safety Requirement
UL	Underwriters Laboratories
USQ	Unreviewed Safety Question
WAC	Waste Acceptance Criteria
WHB	Waste Handling Building
WIPP	Waste Isolation Pilot Plant
WDS	WIPP Waste Data System (WWIS is a subset of WDS)

Section 1

Use and Application

1.0 Use and Application

Title 10, *Code of Federal Regulations*, Part 830 (10 CFR 830), “Nuclear Safety Management,” Section 205, “Technical safety requirements,” requires U.S. Department of Energy (DOE) contractors responsible for hazard category 1, 2, and 3 DOE nuclear facilities to develop Technical Safety Requirements (TSR) that are based on the Documented Safety Analysis (DSA).

This document contains the TSRs for the Waste Isolation Pilot Plant (WIPP) activities. This TSR document was prepared in accordance with guidance in DOE Guide 423.1-1, *Implementation Guide for Use in Developing Technical Safety Requirements* and DOE-STD-1186-2004, *Specific Administrative Controls*. The derivation of TSRs and operational controls are contained in DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*, Chapter 5, *Derivation of Technical Safety Requirements*.

1.1 Definitions

Note: Defined terms in this list appear in uppercase type throughout this TSR.

<u>Term</u>	<u>Definition</u>
ACTIONS	The steps listed in each requirement that are required to be performed when the specified limiting condition for operation (LCO) is not met.
ACTIVITY	The collection of tasks or steps commonly associated with a process.
AFFECTED AREA	The area identified by the Facility Shift Manager (FSM) that identifies the PROCESS AREA where a credited control is not available. The AFFECTED AREA is situationally determined.
ATTENDED	Individual in visual contact with item of interest.
BELOW-GROUND	Nominally 2,150 feet below the surface.
CLOSED SHIPPING CONTAINER	Transuranic Package Transporter Model II (TRUPACT-II) or Half Package Transporter Model (HalfPACT) with inner containment vessel lid and outer lid is sealed for transporting contact-handled (CH) WASTE <u>OR</u> Sealed TRUPACT-III shipping container with the lid sealed <u>OR</u> 72-B shipping container with the impact limiters in place <u>OR</u> 10-160B shipping container with the impact limiters in place.
DESIGNATED ROUTE	The direct route the fuel delivery truck travels from the security entrance to the fuel storage tank. The direct route travels east from the security entrance and turns left (north) onto the salt handling truck route to the fuel storage tanks on the left. <u>OR</u> The direct route travels south from the salt gate on the salt handling truck route to the fuel storage tanks on the right.
DISPOSAL ROOM	A room in the UNDERGROUND in an active panel in which WASTE is emplaced.
FREQUENCY	How often a specific surveillance must be performed.
IMMEDIATELY	Term used as a completion time for ACTION statements when a step is to be initiated as soon as possibly achievable after discovery without creating a less stable condition and pursued until complete.

1.1 Definitions (continued)

INOPERABLE/ INOPERABILITY	Not OPERABLE.
IN-SERVICE	A system, subsystem, train, component, or device performing its specified function.
JUSTIFICATION FOR CONTINUED OPERATION (JCO)	A documented plan used to recover from a condition where the credited safety function(s) has not been met. The JCO SHALL include a description of the noncompliant condition, compensatory measures (as needed), and corrective actions required to restore the credited safety function. (Sometimes referred to as a Response Plan.)
MODE	Any one inclusive combination of applicable PROCESS AREA conditions used for assigning applicability of safety equipment and limits as specified in Table 1.1-1 with respect to the relative hazards present.
OPERABLE/ OPERABILITY	A system, structure, or component is OPERABLE when it is capable of performing its specified safety 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 safety function(s) are also capable of performing their related support safety function(s). The requirements for each system, structure or component to be OPERABLE are defined in each LCO. Successful completion of surveillance requirements (SR) 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 1.1-1 for PROCESS AREA description).
ROVING FIRE WATCH	A roving inspection of AFFECTED AREAS for the purpose of looking for fire initiators or evidence of a fire in progress. Persons performing a ROVING FIRE WATCH look for and report fire or conditions that could cause a fire. In addition, this person must be trained to recognize and extinguish an incipient fire and alert the appropriate personnel of the condition.
SAFE CONFIGURATION	SAFE CONFIGURATION is the minimization of risk during WASTE HANDLING ACTIVITIES by placing CH AND/OR remote-handled (RH) WASTE in the least vulnerable location. The SAFE CONFIGURATION SHALL be determined by the FSM.

1.1 Definitions (continued)

SHALL	A mandatory requirement that must be complied with to maintain the requirements, assumptions, or conditions of the facility safety basis.
SPECIFIC ADMINISTRATIVE CONTROL	An administrative control (AC) that provides a specific preventive or mitigative function for accident scenarios identified in the DSA where the safety function has importance similar to, or the same as, the safety function of a safety structure, system, and component (SSC) (e.g., discrete operator actions, combustible loading program limits, hazardous material limits protecting hazard analyses or facility categorization.)
STATIC WASTE FACE	A WASTE FACE established when no WASTE emplacement has occurred for ≥ 10 days, or sooner, when declared by Waste Handling Operations.
SUSPEND WASTE HANDLING ACTIVITIES	The minimum number of discrete steps needed to stop moving WASTE and place WASTE in a SAFE CONFIGURATION.
TIME OF DECLARATION	The actual time when the FSM determines that an LCO or SR is not met. As soon as possible upon notification of a problem, the problem should be evaluated and a declaration made by the FSM if it is determined that an LCO is not met. Time specified for completion of an ACTION is measured from the TIME OF DECLARATION unless otherwise specified within the ACTION statement.
TRANSPORT PATH	The route BELOW-GROUND the WASTE travels during WASTE HANDLING ACTIVITIES between the WASTE SHAFT STATION and the DISPOSAL ROOM. The TRANSPORT PATH includes the width of the drift between the ribs. Portable power centers, electrical distribution system, and connex boxes are acceptable in the TRANSPORT PATH.
VEHICLE EXCLUSION ZONE	The moving area surrounding the WASTE HANDLING EQUIPMENT in the TRANSPORT PATH. The VEHICLE EXCLUSION ZONE includes the leading escort, the WASTE HANDLING EQUIPMENT and the lagging escort.
VERIFY/VERIFICATION	To confirm and substantiate that an ACTIVITY or condition has been implemented in conformance with requirements. Manipulation of equipment or instrumentation to conform to the specified requirement is not permitted.

1.1 Definitions (continued)

WASTE	<p>CH - Defense transuranic (TRU) WASTE with a surface dose rate less than 200 millirem per hour per container.</p> <p><u>OR</u></p> <p>RH - Any of the various forms of high beta-gamma defense TRU WASTE requiring remote-handling and with a surface dose rate equal to or greater than 200 millirem per hour per container but less than 1,000 rem per hour.</p> <p><u>OR</u></p> <p>Site-derived - WASTE generated at the WIPP facility as a direct result of managing the TRU and TRU mixed WASTE received from the shipping sites.</p>
WASTE FACE	<p>The area of the emplaced CH WASTE array where the CH WASTE is susceptible to damage from collisions, fires, explosions, and other events that lead to a release of radiological material.</p>
WASTE HANDLING EQUIPMENT	<p>Vehicles and equipment used to load, unload, transport, emplace, and retrieve WASTE. The WASTE hoist conveyance is not WASTE HANDLING EQUIPMENT.</p>
WASTE HANDLING ACTIVITY(IES)	<p>Activities involving WASTE being handled, unloaded, transported, emplaced, retrieved, and/or loaded and magnesium oxide (MgO) sack being placed on the WASTE stack.</p>
WASTE SHAFT STATION	<p>The WASTE SHAFT STATION includes the E-140/S-400 intersection and the portion of the S-400 drift from the E-140/S-400 intersection to the WASTE shaft.</p>

1.1 Definitions (continued)

Table 1.1-1, PROCESS AREA Description

PROCESS AREA Name	PROCESS AREA Description
CH BAY	Area of the Waste Handling Building (WHB) used for CH WASTE HANDLING ACTIVITIES that includes the large bay area, which includes the TRUPACT-II unloading docks (TRUDOCK), and shielded storage room.
ROOM 108	Area within the CH Waste Handling Building (WHB) used for CH WASTE HANDLING ACTIVITIES from TRUPACT-III.
RH BAY	Area of the WHB used for RH WASTE HANDLING ACTIVITIES that includes the large bay area of the WHB, the 140/25-ton crane, and the cask preparation station.
HOT CELL COMPLEX	Area of the WHB that includes the transfer cell, cask unloading room, and the upper hot cell.
OUTSIDE AREA	The above-ground areas external to the WHB within the property protection area (PPA).
UNDERGROUND	The WASTE hoist conveyance, WASTE SHAFT STATION, TRANSPORT PATH, and DISPOSAL ROOM(s).
SHAFT ACCESS AREA	Area of the WHB that includes the Facility Cask Loading Room (FCLR), Conveyance Loading Room, Shaft Entry Room, WASTE Hoist Tower, and WASTE Shaft.

1.2 Operational Modes

The MODES for the applicable PROCESS AREAS are defined in Table 1.2-1. The WIPP consists of multiple PROCESS AREAS that perform specific independent functions in the accomplishment of its mission. In addition, the applicable MODES vary by PROCESS AREAS as indicated in Table 1.2-1. Therefore, each PROCESS AREA can be in a specific MODE independent of any other PROCESS AREA. Table 1.2-2 provides a matrix of MODES that are available for each PROCESS AREA.

Table 1.2-1, MODE Descriptions

MODE	Condition
WASTE HANDLING	A MODE when WASTE is being handled OR moved outside of a CLOSED SHIPPING CONTAINER OR MgO is being placed in a DISPOSAL ROOM.
WASTE STORAGE	A MODE that is used when WASTE is outside of a CLOSED SHIPPING CONTAINER when WASTE is not being handled or moved AND site-derived WASTE (when present in the CH Bay) is in a WASTE container with the lid closed and secured.
DISPOSAL	A MODE when no WASTE HANDLING ACTIVITIES are being conducted in the UNDERGROUND.
STANDBY	A MODE when WASTE is not present OR when WASTE is in a CLOSED SHIPPING CONTAINER AND site-derived WASTE (when present in the CH Bay) is in a WASTE container with the lid closed and secured.

Table 1.2-2. MODE and PROCESS AREA Matrix

MODE	CH BAY	ROOM 108	RH BAY	HOT CELL COMPLEX	SHAFT ACCESS AREA	UNDERGROUND	OUTSIDE AREA
WASTE HANDLING	X	X	X	X	X	X	
WASTE STORAGE	X	X	X	X	X		
DISPOSAL						X	
STANDBY	X	X	X	X	X		

1.3 Frequency

- Purpose** The purpose of this section is to explain the application and use of FREQUENCY notation.
- Background** Each SR has a specified FREQUENCY in which the surveillance SHALL be performed.
- FREQUENCY Notation** The FREQUENCY notations, as used in the SRs and elsewhere, are defined in Table 1.3-1.
- Use of FREQUENCY** Failure to complete the LCO ACTION within the required FREQUENCY becomes an LCO violation. Failure to complete LCO SRs within the required FREQUENCY SHALL constitute failure to meet the LCO. For SRs, the FREQUENCY requirement is extended to 1.25 times the specified interval (SR 4.0.2). This extension applies only to the FREQUENCY specification for SRs; it does not apply to the completion time requirement for ACTION statements. The time extension is intended to provide operational flexibility for completion of SRs. It should not be relied upon as a routine extension of the specified interval. Dates and times that LCO SRs are performed SHALL be documented. Failure to complete the SR within the specified FREQUENCY (see Table 1.3-1), as qualified in the table notes, SHALL constitute an LCO violation.

Table 1.3-1, Surveillance Requirement FREQUENCY

Notation	FREQUENCY	FREQUENCY +25%
EACH SHIFT (Notes 1, 3)	12 hours	15 hours
DAILY (Notes 1 and 2)	24 hours	30 hours
WEEKLY	7 days	8 days
MONTHLY	31 days	38 days
PRIOR TO USE	Note 1	N/A
QUARTERLY	92 days	115 days
SEMIANNUALLY	184 days	230 days
ANNUALLY	365 days	456 days

Note 1: PRIOR TO USE means the initial use of equipment at the beginning of the CH Waste Handling shift or the RH Waste Handling evolution. If the equipment selected for use is used several times throughout a CH Waste Handling shift or a RH evolution that may require multiple shifts to complete, the initial application of the surveillance is adequate for the balance of the CH shift or the RH evolution.

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, then the surveillance is not performed on inactive equipment until the equipment is IN-SERVICE.

Note 3: For the underground, EACH SHIFT means every 12 hours (plus the 25% maximum extension) when personnel are present in the underground.

1.4 Logical Connectors

Purpose The purpose of this section is to explain the use and application of logical connectors.

Background Logical connectors are used in TSRs to discriminate between (and yet connect) discrete conditions, ACTIONS, completion times, SRs, and FREQUENCIES. The logical connectors include the “**AND**” and “**OR**”. The physical arrangement of this connector on a page constitutes a specific meaning in accordance with the convention established in DOE G 423.1-1.

Use of Logical Connectors 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 (for example, 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 indenting 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 a few cases, successive levels of logic are used. This lower level is identified solely by indenting the logical connector because subparts of a condition statement are not numbered separately.

When logical connectors are used to state a completion time, SRs, or FREQUENCY, only the first level of logic is used; and the logical connector is, left justified with the statement of the completion time, SR, or FREQUENCY.

Definition of Logic Terms The defined terms of this section appear in capitalized type, bolded, and underlined throughout the TSR document.

Term	Definition
<u>AND</u>	Used to connect two or more sets of criteria that must both (all) be satisfied for a given logical decision.
<u>OR</u>	Used to denote alternate combinations or conditions, meaning either one or the other criterion will satisfy a given logical decision.

1.5 Completion Times

Purpose	The purpose of this section is to explain the use and application of completion times.
Background	The LCO specifies the lowest functional capabilities or performance levels that are required to ensure safe operation of the facility. The LCO identifies conditions for which these functional or performance requirements are not met, and the LCO states ACTION(s) that may be taken within a limited time (the completion time) or within a specified periodicity under these conditions. The ACTION statements provide interim remedial ACTION(s) or compensatory protection for the same safety concerns as the LCO while attempting to restore the functional capabilities or performance levels required by the LCO. Failure to complete the ACTION(s) within the completion time results in a violation of the LCO.
Completion Time	<p>The completion time is the amount of time allowed to complete an ACTION. It is referenced to the TIME OF DECLARATION.</p> <p>If situations require entry into more than one condition within a single LCO (multiple conditions), the ACTION(s) 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 DECLARATION of the situation that required entry into the condition.</p> <p>Once a condition has been entered, subsequent discovery of subsystems, components, or variables that are INOPERABLE or not within limits as a result of cascading effects from entering the condition SHALL not result in separate entry into the condition. The ACTION(s) of the condition continue to apply to each additional failure, and completion times are based on initial entry into the condition.</p> <p>Entry into an LCO ACTION and LCO ACTION completion times SHALL be documented.</p>

1.6 TSR Violations

Purpose	The purpose of this section is to establish the use and application of TSR violation criteria.
Background	<p>WIPP is required to perform work in accordance with the safety basis and in particular, with the hazard controls that ensure adequate protection of workers, the public, and the environment.</p> <p>The WIPP TSRs establish the limits, controls, and related actions that establish the specific parameters and requisite actions for the safe operation of WIPP. The TSRs govern the work and the hazards identified in the documented safety analysis for the facility.</p> <p>If WIPP violates a TSR they are required to notify DOE.</p>
TSR Violation	<p>Violations of a TSR occur as a result of the following criteria:</p> <ol style="list-style-type: none">1. Failure to complete required ACTIONS within the specified completion time. Entrance into required ACTIONS is made through the following pathways:<ol style="list-style-type: none">a. LCO requirement not met; orb. SR not met.2. Failure to perform a SR within the required FREQUENCY.3. Failure to comply with a directed action SPECIFIC ADMINISTRATIVE CONTROL statement.4. Programmatic breakdown of a programmatic administrative control (PAC) (or SMP by reference). <p>Determination of a programmatic breakdown is determined by tracking and trending noncompliances and deviations. Failure to maintain all aspects of one of these programs will not result in a violation unless the failure is significant enough to render the hazards and accident analysis assumptions invalid. Programmatic breakdown of a PAC (or SMP by reference) could also occur with a single event if the basis of the hazards and accident analysis is invalidated.</p>
Reporting	<p>Violations SHALL be reported. TSR notification and reporting requirements are provided in AC 5.2, <i>Requirements for Deviations from TSRs</i>.</p> <p>If evaluation of a potential PAC (or SMP by reference) issue does not constitute a programmatic violation; it would still constitute a noncompliance with a hazard control.</p>
Causal Analysis	A root cause analysis SHALL be performed on all TSR violations to determine the causal factors and apparent causes.
Corrective Action Plan	A corrective action plan SHALL be developed to address the causal factors and apparent causes, and define the corrective actions to prevent recurrence.

1.7 Conditions Outside TSR

Purpose The purpose of this section is to establish the use and application for conditions outside of a TSR.

Background WIPP may take emergency actions that depart from an approved TSR 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.

Conditions Outside of 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 FSM.

In an emergency, if a situation develops that is not addressed by the TSR, the FSM SHALL take actions to correct or mitigate the situation. Also, the FSM 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 FSM SHALL place the facility in a SAFE CONFIGURATION. With the facility in a SAFE CONFIGURATION, a JUSTIFICATION FOR CONTINUED OPERATIONS (JCO) SHALL be developed by the contractor to address any additional actions to be taken and approved by the DOE.

1.8 Justification for Continued Operations

- Purpose** The purpose of this section is to establish the use and application for conditions that require a JUSTIFICATION FOR CONTINUED OPERATIONS (JCO) in the TSRs.
- Background** In the lifetime of a facility, operational events, changes in conditions, and equipment failures are expected and do occur.
- Situations arise that require a disciplined approach to ensure that WIPP is maintained within the approved hazards. Due to the broad spectrum of the way equipment can fail, operational events can arise, or WASTE containers may be determined to be noncompliant, preparation and approval of a JCO may be required. The development, preparation, and approval of the JCO will ensure that potential impacts to risk are evaluated, compensatory measures are established (if needed), and DOE approval of the disciplined approach or corrective actions to restore the safety function is obtained.
- A JCO (sometimes referred to as a response plan) is written to allow the WIPP to continue to operate within the guideline of the JCO. Approval is required from the DOE for all JCOs, when a noncompliant type of event causes the WIPP to be outside the safety basis.
- Two specific TSRs conditions require the preparation of a JCO:
- A noncompliant WASTE container(s) is identified; or
 - Conditions are identified that are outside the bounds of the TSRs.
- JCO** The JCO SHALL include a description of the noncompliant condition, compensatory measures (as needed), and corrective actions required to restore the safety function. The guidance of DOE G 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Questions* and WP 12-NS3009, *Interim Changes to the WIPP Safety Basis* will be used to establish and document an appropriate set of temporary hazard controls
- Approval** Nuclear Waste Partnership, LLC (NWP) SHALL evaluate a discrepant as-found condition to determine if the condition requires the preparation, development, and approval of a JCO. The JCO SHALL be submitted to the approval authority for approval.
- JCO that change existing TSRs provided in the document SHALL be submitted to the approval authority for approval.

Section 2 Safety Limits

2.0 Safety Limits

As defined in 10 CFR 830.3, Safety Limits (SL) are limits on process variables associated with those physical barriers, generally passive that, if exceeded, could directly cause the failure of one or more barriers that prevent the uncontrolled release of radioactive or other hazardous material. The safety analysis for the WIPP did not specify any single limit that, if exceeded, could directly cause the failure of a barrier that prevents the release of radioactive or hazardous material. Therefore, there are no SLs.

As defined in 10 CFR 830.3, Limiting Control Settings (LCS) are associated with SLs and SHALL be conservatively selected such that automatic or manual protective action will correct the abnormal situation before an SL is exceeded. No SLs have been identified for the WIPP; therefore, there are no LCSs.

Section 3/4
Limiting Conditions for Operation
and
Surveillance Requirements

3.0 General Limiting Conditions for Operation

10 CFR 830.3 defines LCOs as the lowest functional capability or performance level of safety SSCs, their support systems required for normal safe operation of the facility, and SPECIFIC ADMINISTRATIVE CONTROLS.

LCO 3.0.1

LCOs SHALL Be Met

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

ACTIONS SHALL Be Met

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.

A TSR violation SHALL exist when the requirements for an LCO and its associated ACTION statements are not met within the specified time intervals. If compliance with the associated LCO is restored prior to expiration of the specified completion time(s), completion of the ACTION statement is not required, unless otherwise stated. The conditions in an ACTION section of an LCO may be concurrently applicable. In the event that the system failure can be rectified within the ACTION completion time, the operator can reverse the downgrading process and resume the higher MODE.

Required ACTION(s), and the associated completion times, are also applicable when a system or component is intentionally removed from service. Acceptable reasons for intentionally entering the ACTION(s) for an LCO include, but are not limited to, performance of SRs, preventive maintenance, corrective maintenance, investigation of operational problems, or planned facility modifications with no increased risk. Failure to take applicable ACTION(s) prior to performance of planned activities that would be a TSR violation.

continued

3.0 General Limiting Conditions for Operation (continued)

LCO 3.0.3 ACTION Not Met or Not Provided

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, the applicable PROCESS AREA SHALL be placed in a SAFE CONFIGURATION. Activities SHALL be initiated IMMEDIATELY to place the applicable PROCESS AREA in a SAFE CONFIGURATION.

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 is not required.

LCO 3.0.4 MODE Change

When an 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 Return to Service

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.

4.0 General Surveillance Requirements

SR 4.0.1 Surveillance Requirements SHALL Be Met

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 SHALL constitute failure to meet the LCO.

SR 4.0.2 FREQUENCY SHALL Be Met

Each SR SHALL be performed with the specified FREQUENCY. The required FREQUENCY of each SR is met if the SR is performed within 1.25 times the specified time interval as identified in Table 1.3-1. The 25% extension allowance is not applicable to non-periodic or conditional SRs. This exception is intended for operational flexibility both for scheduling and for performing surveillances. It should not be relied upon as a routine extension of the specified interval. Failure to perform 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 conditions outside specified limits.

SR 4.0.3 FREQUENCY Extension and Exceptions

Failure to perform a SR within 1.25 times the required time interval (TSR violation) SHALL constitute a failure to meet the OPERABILITY requirements for a limiting condition for operation, except as provided below for INOPERABLE equipment:

If it is discovered that a surveillance was not performed within its required FREQUENCY, compliance with the requirement to declare the LCO not met may be delayed from the time of discovery (i.e., the actual time when the FSM or designee determines that an SR has not been met) up to 24 hours or up to the limit of the specified FREQUENCY, whichever is less. This grace period is permitted to allow performance of the surveillance. If the surveillance is performed within the grace period, entry into ACTIONS is not required; however, failure to meet the SR FREQUENCY SHALL be reported in accordance with AC 5.2, *Requirements for Deviations from TSRs*.

SR 4.0.4 MODE Changes

Entry into a MODE or other specified condition SHALL not be made unless the SRs associated with the LCO have been met within their stated surveillance interval or as otherwise specified.

3/4.1 Fire Suppression Systems

LCO 3.1.1: WHB Fire Suppression System

The Fire Suppression System for the WHB SHALL be OPERABLE. An OPERABLE fire suppression system consists of the following elements:

- Unobstructed flow path from tank 25-D-001A or 25-D-001B to sprinklers;
- Water supply static pressure at 411-PI-003-001, 411-PI-003-003, **AND** 411-PI-003-005 \geq 105 pounds per square inch gauge (psig);
- Either fire pump 45-G-601 **OR** 45-G-602 is OPERABLE with a capability to pump 1,500 gallons per minute (gpm) at \geq 105 psig; **AND**
- \geq 105,000 gallons of fire water available in the tank selected for fire water use.

MODE Applicability: WASTE HANDLING, WASTE STORAGE

PROCESS AREA CH BAY, ROOM 108, RH BAY, SHAFT ACCESS AREA

Applicability:

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

LCO 3.0.4 is not applicable when entering WASTE HANDLING MODE for the AFFECTED AREA per required ACTION D.5. **OR** E.3.

continued

3/4.1 Fire Suppression Systems (continued)

LCO 3.1.1 WHB Fire Suppression System (continued)

ACTIONS

Condition	Required ACTION	Completion Time
A. The flow path is obstructed <u>OR</u> The water supply static water pressure is < 105 psig.	A.1 Do not introduce new CLOSED SHIPPING CONTAINERS.	IMMEDIATELY
	<u>AND</u>	
	A.2 Stop hot work activities in WHB.	1 hour
	<u>AND</u>	
	A.3 Remove liquid-fueled vehicles/equipment from RH BAY <u>AND</u> SHAFT ACCESS AREA.	1 hour
<u>AND</u>		
A.4 SUSPEND WASTE HANDLING ACTIVITIES.	1 hour	
<u>AND</u>		
A.5 Restore distribution system.	24 hours	

continued

3/4.1 Fire Suppression Systems (continued)

LCO 3.1.1 WHB Fire Suppression System (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time	
B. Fire pumps 45-G-601 AND 45-G-602 are INOPERABLE.	B.1 Do not introduce new CLOSED SHIPPING CONTAINERS.	IMMEDIATELY	
	AND	B.2 Stop hot work activities in the WHB.	1 hour
	AND	B.3 Remove liquid-fueled vehicles/equipment from RH BAY AND SHAFT ACCESS AREA.	1 hour
	AND	B.4 SUSPEND WASTE HANDLING ACTIVITIES.	1 hour
	AND	B.5 Restore one fire pump to OPERABLE.	24 hours

continued

3/4.1 Fire Suppression Systems (continued)

LCO 3.1.1 WHB Fire Suppression System (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
C. < 105,000 gallons of fire water available in the tank selected for fire water use.	C.1 Do not introduce new CLOSED SHIPPING CONTAINERS.	IMMEDIATELY
	<u>AND</u>	
	C.2 Stop hot work activities in WHB.	1 hour
	<u>AND</u>	
	C.3 Remove liquid-fueled vehicles/equipment from RH BAY <u>AND</u> SHAFT ACCESS AREA.	1 hour
	<u>AND</u>	
C.4 SUSPEND WASTE HANDLING ACTIVITIES.	1 hour	
<u>AND</u>		
C.5 Restore water supply tank to ≥ 105,000 gallons.	24 hours	
<u>OR</u>		
C.6 Align other tank with ≥ 105,000 gallons of water	24 hours	

continued

3/4.1 Fire Suppression Systems (continued)

LCO 3.1.1 WHB Fire Suppression System (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
D. Required ACTION and completion time for condition A.5 is not met.	D.1 Stage a fire truck external to the WHB.	1 hour
	<u>AND</u>	
	D.2 Identify AFFECTED AREA(S).	8 hours
	<u>AND</u>	
	D.3 Establish temporary fire water distribution capability to AFFECTED AREA(S).	24 hours
	<u>AND</u>	
	D.4.1 Establish an alternate valve line up to restore fire water distribution to the RH BAY or CH WHB.	24 hours
<u>OR</u>		
	D.4.2 Establish a ROVING FIRE WATCH.	24 hours
<u>AND</u>		
	D.5 Enter WASTE HANDLING MODE.	24 hours
<u>AND</u>		
	D.6 Place AFFECTED AREA in STANDBY.	14 days

continued

3/4.1 Fire Suppression Systems (continued)

LCO 3.1.1 WHB Fire Suppression System (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
E. Required ACTION and completion time for condition B.5 OR C.5 OR C.6 is not met.	E.1 Stage a fire truck external to the WHB.	1 hour
	<u>AND</u>	
	E.2 Establish a ROVING FIRE WATCH.	1 hour
	<u>AND</u>	
	E.3 Enter WASTE HANDLING MODE.	24 hours
<u>AND</u>		
	E.4 Place AFFECTED AREA in STANDBY.	14 days

continued

3/4.1 Fire Suppression Systems (continued)

LCO 3.1.1 WHB Fire Suppression System (continued)

Surveillance Requirements

Surveillance Requirement		FREQUENCY								
4.1.1.1	VERIFY the water supply static pressure at each riser listed below is ≥ 105 psig: <table border="0"> <tr> <td style="text-align: center;"><u>Riser</u></td> <td style="text-align: center;"><u>Gauge Number</u></td> </tr> <tr> <td>CH BAY</td> <td>411-PI-003-001</td> </tr> <tr> <td>ROOM 108</td> <td>411-PI-003-003</td> </tr> <tr> <td>RH BAY</td> <td>411-PI-003-005</td> </tr> </table>	<u>Riser</u>	<u>Gauge Number</u>	CH BAY	411-PI-003-001	ROOM 108	411-PI-003-003	RH BAY	411-PI-003-005	MONTHLY
<u>Riser</u>	<u>Gauge Number</u>									
CH BAY	411-PI-003-001									
ROOM 108	411-PI-003-003									
RH BAY	411-PI-003-005									
4.1.1.2	VERIFY the isolation valve for each riser listed below is locked open: <table border="0"> <tr> <td style="text-align: center;"><u>Riser</u></td> <td style="text-align: center;"><u>Isolation Valves</u></td> </tr> <tr> <td>CH BAY</td> <td>FW-411-V-001</td> </tr> <tr> <td>ROOM 108</td> <td>FW-411-V-010</td> </tr> <tr> <td>RH BAY</td> <td>FW-411-V-052</td> </tr> </table>	<u>Riser</u>	<u>Isolation Valves</u>	CH BAY	FW-411-V-001	ROOM 108	FW-411-V-010	RH BAY	FW-411-V-052	MONTHLY
<u>Riser</u>	<u>Isolation Valves</u>									
CH BAY	FW-411-V-001									
ROOM 108	FW-411-V-010									
RH BAY	FW-411-V-052									
4.1.1.3	Deleted									
4.1.1.4	VERIFY valve FW-456-V-021 is locked closed.	ANNUALLY								

continued

3/4.1 Fire Suppression Systems (continued)

LCO 3.1.1 WHB Fire Suppression System (continued)

Surveillance Requirements (continued)

Surveillance Requirement		FREQUENCY								
4.1.1.5	<p>Open the inspector's test valve (ITV) associated with each riser as identified below and VERIFY water-flow through the associated riser:</p> <table border="0"> <tr> <td><u>Riser</u></td> <td><u>Inspector's Test Valve</u></td> </tr> <tr> <td>CH BAY</td> <td>FW-411-V-023 and FW-412-V-002</td> </tr> <tr> <td>ROOM 108</td> <td>FW-411-V-062</td> </tr> <tr> <td>RH BAY</td> <td>FW-411-V-042 and FW-411-V-044</td> </tr> </table>	<u>Riser</u>	<u>Inspector's Test Valve</u>	CH BAY	FW-411-V-023 and FW-412-V-002	ROOM 108	FW-411-V-062	RH BAY	FW-411-V-042 and FW-411-V-044	QUARTERLY
<u>Riser</u>	<u>Inspector's Test Valve</u>									
CH BAY	FW-411-V-023 and FW-412-V-002									
ROOM 108	FW-411-V-062									
RH BAY	FW-411-V-042 and FW-411-V-044									
4.1.1.6	<p>Perform an automatic start test of each fire pump to assure it starts at the setpoint specified below.</p> <table border="0"> <tr> <td><u>Fire Pump</u></td> <td><u>Setpoint</u></td> </tr> <tr> <td>45-G-601 (electric)</td> <td>≥ 110 psig</td> </tr> <tr> <td>45-G-602 (diesel)</td> <td>≥ 100 psig</td> </tr> </table>	<u>Fire Pump</u>	<u>Setpoint</u>	45-G-601 (electric)	≥ 110 psig	45-G-602 (diesel)	≥ 100 psig	WEEKLY		
<u>Fire Pump</u>	<u>Setpoint</u>									
45-G-601 (electric)	≥ 110 psig									
45-G-602 (diesel)	≥ 100 psig									
4.1.1.7	<p>VERIFY fire pump is capable of supplying ≥ 1500 gpm at ≥ 105 psig net discharge.</p>	ANNUALLY								
4.1.1.8	<p>VERIFY that the diesel supply tank contains ≥ 3/4 full tank of diesel.</p>	WEEKLY								
4.1.1.9	<p>VERIFY that there are ≥ 105,000 gallons of fire water available within the water distribution system.</p>	EACH SHIFT								

3/4.1 Fire Suppression System (continued)

LCO 3.1.2 UNDERGROUND WASTE HANDLING Liquid-fueled Vehicles Fire Suppression System

The fire suppression system on the WASTE HANDLING liquid-fueled vehicles selected for use SHALL be OPERABLE. An OPERABLE fire suppression system consists of the following elements:

- A charged fire suppressant system;
- Detection circuit is IN-SERVICE.

MODE Applicability: WASTE HANDLING when in the VEHICLE EXCLUSION ZONE OR DISPOSAL ROOM

DISPOSAL when in the DISPOSAL ROOM

PROCESS AREA Applicability: UNDERGROUND

ACTIONS

Condition	Required ACTION	Completion Time
A. Fire Suppression System on liquid-fueled equipment selected for use INOPERABLE.	A.1 Place UNDERGROUND in a SAFE CONFIGURATION.	IMMEDIATELY
	<u>AND</u>	
	A.2.1 Replace noncompliant vehicle with a compliant vehicle.	1 hour
	<u>OR</u>	
	A.2.2 Repair Fire Suppression System	PRIOR TO USE

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.1.2.1 VERIFY that the fire suppression system on the WASTE HANDLING liquid-fueled vehicles selected for use has not discharged.	EACH SHIFT
4.1.2.2 Perform a test of the fire suppression system controls.	SEMIANNUALLY
4.1.2.3 VERIFY no trouble lights are illuminated on the selected WASTE HANDLING liquid-fueled vehicles.	EACH SHIFT

3/4.2 Confinement Ventilation Systems

LCO 3.2.1: CH Waste Handling (WH) Confinement Ventilation System

The CH WH Confinement Ventilation System SHALL be OPERABLE. An OPERABLE Confinement Ventilation System consists of the following elements:

- Exhaust fan 41-B-816 OR 41-B-817 SHALL be IN-SERVICE; AND
- CH exhaust air SHALL flow through at least one stage of high efficiency particulate air (HEPA) filters in either filter unit 41-B-814 OR 41-B-815 with $\geq 99\%$ efficiency.

MODE Applicability: WASTE HANDLING, WASTE STORAGE

PROCESS AREA CH BAY and ROOM 108

Applicability:

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

LCO 3.0.4 is not applicable when entering WASTE HANDLING MODE for the AFFECTED AREA per required ACTON D.1.

continued

3/4.2 Confinement Ventilation Systems (continued)

LCO 3.2.1 CH WH Confinement Ventilation System (continued)

ACTIONS

Condition	Required ACTION	Completion Time
A. No exhaust fan IN-SERVICE.	A.1 Do not introduce new CLOSED SHIPPING CONTAINERS into CH BAY or ROOM 108.	IMMEDIATELY
	<u>AND</u>	
	A.2 Stop hot work activities in WHB.	1 hour
	<u>AND</u>	
	A.3 Remove liquid-fueled vehicles/equipment from RH BAY <u>AND</u> SHAFT ACCESS AREA.	1 hour
<u>AND</u>		
A.4 SUSPEND WASTE HANDLING ACTIVITIES.	1 hour	
<u>AND</u>		
A.5 Restore one exhaust fan.	12 hours	

continued

3/4.2 Confinement Ventilation Systems (continued)

LCO 3.2.1 CH WH Confinement Ventilation System (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
B. CH WH exhaust air is not flowing through HEPA filter unit.	B.1 Do not introduce new CLOSED SHIPPING CONTAINERS into CH BAY or ROOM 108.	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p>	
	B.2 Stop hot work activities in WHB.	1 hour
	<p style="text-align: center;"><u>AND</u></p>	
	B.3 Remove liquid-fueled vehicles/equipment from RH BAY <u>AND</u> SHAFT ACCESS AREA.	1 hour
<p style="text-align: center;"><u>AND</u></p>		
B.4 SUSPEND WASTE HANDLING ACTIVITIES.	1 hour	
<p style="text-align: center;"><u>AND</u></p>		
B.5 Restore CH WH exhaust air through HEPA filter unit.	12 hours	

continued

3/4.2 Confinement Ventilation Systems (continued)

LCO 3.2.1 CH WH Confinement Ventilation System (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
C. IN-SERVICE HEPA filter unit has no filter stage \geq 99% efficiency.	C.1 Do not introduce new CLOSED SHIPPING CONTAINERS into CH BAY or ROOM 108.	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p>	
	C.2 Stop hot work activities in WHB.	1 hour
	<p style="text-align: center;"><u>AND</u></p>	
	C.3 Remove liquid-fueled vehicles/equipment from RH BAY <u>AND</u> SHAFT ACCESS AREA.	1 hour
<p style="text-align: center;"><u>AND</u></p>		
D. Required ACTION and completion time for condition A.5 <u>OR</u> B.5 <u>OR</u> C.5 is not met.	C.4 SUSPEND WASTE HANDLING ACTIVITIES.	1 hour
	<p style="text-align: center;"><u>AND</u></p>	
	C.5 Restore one stage of the HEPA filter unit to \geq 99% efficiency.	12 hours
	<p style="text-align: center;"><u>AND</u></p>	
	D.1 Enter WASTE HANDLING MODE.	24 hours
	<p style="text-align: center;"><u>AND</u></p>	
	D.2 Place AFFECTED AREA in STANDBY.	14 days

3/4.2 Confinement Ventilation Systems (continued)

LCO 3.2.1 CH WH Confinement Ventilation System (continued)

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.2.1.1 VERIFY one Confinement Ventilation System exhaust fan 41-B-816 OR 41-B-817 IN-SERVICE.	DAILY
4.2.1.2 VERIFY CH WH exhaust air is flowing from HEPA filter unit to exhaust fan.	DAILY
4.2.1.3 VERIFY one stage of HEPA filter in unit 41-B-814 AND 41-B-815 has an efficiency of $\geq 99\%$.	ANNUALLY

3/4.2 Confinement Ventilation Systems (continued)

LCO 3.2.2: HOT CELL COMPLEX Confinement Ventilation System

The Confinement Ventilation System SHALL be OPERABLE. An OPERABLE Confinement Ventilation System consists of the following elements:

- Exhaust fan 41-B-878A **OR** 41-B-878B SHALL be IN-SERVICE;
- Exhaust air SHALL flow through two of the following filter units: 41-B-877A, 41-B-877B, 41-B-877C; and
- Filter units 41-B-877A **AND** 41-B-877B **AND** 41-B-877C SHALL have one stage of HEPA filters with $\geq 99\%$ efficiency.

MODE WASTE HANDLING when processing 10-160B

Applicability: **AND**

WASTE STORAGE when processing 10-160B

PROCESS AREA HOT CELL COMPLEX

Applicability:

NOTE

LCO 3.0.4 is not applicable when entering WASTE HANDLING MODE for the HOT CELL COMPLEX per required ACTON D.1.

ACTIONS

Condition	Required ACTION	Completion Time
A. No exhaust fan IN-SERVICE.	A.1 SUSPEND WASTE HANDLING ACTIVITIES in HOT CELL COMPLEX. <u>AND</u>	1 hour
	A.2 Restore one exhaust fan.	12 hours
B. HOT CELL COMPLEX exhaust air is not flowing through two HEPA filter units.	B.1 SUSPEND WASTE HANDLING ACTIVITIES in HOT CELL COMPLEX. <u>AND</u>	1 hour
	B.2 Restore HOT CELL COMPLEX exhaust air through two HEPA filter units.	12 hours

3/4.2 Confinement Ventilation Systems (continued)

LCO 3.2.2 HOT CELL COMPLEX Confinement Ventilation System (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
C. HEPA filter units 41-B-877A <u>OR</u> 41-B-877B <u>OR</u> 41-B-877C have no filter stage \geq 99% efficiency.	C.1 SUSPEND WASTE HANDLING ACTIVITIES in HOT CELL COMPLEX.	1 hour
	<u>AND</u> C.2 Restore HEPA filters to \geq 99% efficiency.	12 hours
D. Required ACTION and completion time for condition A.2 <u>OR</u> B.2 <u>OR</u> C.2 is not met.	D.1 Enter WASTE HANDLING MODE.	24 hours
	<u>AND</u> D.2 Complete processing and disposing RH drums from 10-160B.	7 days

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.2.2.1 VERIFY one Confinement Ventilation System exhaust fan 41-B-878A <u>OR</u> 41-B-878B IN-SERVICE.	DAILY
4.2.2.2 VERIFY HOT CELL COMPLEX exhaust air is flowing from at least two HEPA filter units to exhaust fan.	DAILY
4.2.2.3 VERIFY one stage of HEPA filter in units 41-B-877A <u>AND</u> 41-B-877B <u>AND</u> 41-B-877C efficiency \geq 99 %.	ANNUALLY

3/4.3 Vehicle/Equipment Control

LCO 3.3.1 Vehicle Control in the OUTSIDE AREA

Fuel delivery truck SHALL be controlled as follows:

- Fuel delivery truck SHALL have a leading escort between the vehicle trap and the site refueling station; and
- Fuel delivery truck SHALL stay on a DESIGNATED ROUTE.

MODE Applicability: At all times

PROCESS AREA Applicability: OUTSIDE AREA

ACTIONS

Condition	Required ACTION	Completion Time
A. Leading escort not present or becomes disabled.	A.1 Stop fuel delivery truck.	IMMEDIATELY
	<u>AND</u>	
	A.2 Establish a leading escort.	IMMEDIATELY
B. Fuel delivery truck deviates from DESIGNATED ROUTE.	B.1 Direct fuel delivery truck back to DESIGNATED ROUTE.	IMMEDIATELY
	<u>AND</u>	
	B.2 VERIFY fuel deliver truck is on the DESIGNATED ROUTE.	15 minutes

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.3.1.1 VERIFY fuel delivery truck has a leading escort.	Each fuel shipment
4.3.1.2 VERIFY fuel delivery truck stays on DESIGNATED ROUTE or is returned to route immediately during delivery.	Each fuel shipment

Note: The SR will be performed as specified by the non-periodic frequency. The SR documentation may be recorded after completion of the activity

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.2 Vehicle/Equipment Control in the CH WHB

Vehicle/equipment SHALL be controlled as follows:

- Liquid-fueled vehicles/equipment SHALL be prohibited

MODE Applicability: WASTE HANDLING, WASTE STORAGE

PROCESS AREA Applicability: CH BAY, ROOM 108

ACTIONS

Condition	Required ACTION	Completion Time
A. Liquid-fueled vehicle/equipment in CH BAY and/or ROOM 108.	A.1 Remove liquid-fueled vehicle/equipment from CH BAY and/or ROOM 108.	IMMEDIATELY
	<u>OR</u>	
	A.2.1 SUSPEND WASTE HANDLING ACTIVITIES.	IMMEDIATELY
	<u>AND</u>	
	A.2.2 Remove liquid-fueled vehicle/equipment from CH BAY and/or ROOM 108.	30 minutes

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.3.2.1 VERIFY that there are no liquid-fueled vehicles in the CH BAY or ROOM 108.	EACH SHIFT

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.3 Vehicle/Equipment Control in the SHAFT ACCESS AREA

Vehicle/equipment SHALL be controlled as follows:

- Liquid-fueled vehicles/equipment SHALL be prohibited in the Conveyance Loading Room during handling of CH WASTE.

MODE Applicability: WASTE HANDLING, WASTE STORAGE

PROCESS AREA Applicability: SHAFT ACCESS AREA

NOTE

Liquid-fueled vehicles/equipment can be used to download equipment, materials and supplies from the conveyance loading room when RH WASTE is stored in the FCLR.

ACTIONS

Condition	Required ACTION	Completion Time
A. Liquid-fueled vehicle/equipment in SHAFT ACCESS AREA during handling of CH Waste.	A.1 Remove liquid-fueled vehicle/equipment from SHAFT ACCESS AREA.	IMMEDIATELY
	OR	
	A.2.1 SUSPEND WASTE HANDLING ACTIVITIES.	IMMEDIATELY
	AND	
	A.2.2 Remove liquid-fueled vehicle/equipment from SHAFT ACCESS AREA.	30 minutes

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.3.3.1 VERIFY that there are no liquid-fueled vehicles in the SHAFT ACCESS AREA.	Prior to declaring WASTE HANDLING MODE for CH WASTE

Note: The SR will be performed as specified by the non-periodic frequency. The SR documentation may be recorded after completion of the activity.

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.4 Deleted

LCO 3.3.5 Lube Truck Access Control in the UNDERGROUND

The lube truck SHALL be prohibited in DISPOSAL ROOMS:

MODE Applicability: At all times

PROCESS AREA Applicability: UNDERGROUND

ACTIONS

Condition	Required ACTION	Completion Time
A. Lube truck in DISPOSAL ROOM.	A.1 SUSPEND WASTE HANDLING ACTIVITIES in DISPOSAL ROOM.	IMMEDIATELY
	<u>AND</u>	
	A.2 Stop maintenance activities in DISPOSAL ROOM.	IMMEDIATELY
	<u>AND</u>	
	A.3 Remove lube truck from DISPOSAL ROOM.	IMMEDIATELY

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.3.5.1 VERIFY that the lube truck is not in DISPOSAL ROOM.	EACH SHIFT

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH

Liquid-fueled vehicles/equipment SHALL be controlled during WASTE HANDLING ACTIVITIES as follows:

- The TRANSPORT PATH SHALL be established prior to WASTE movement. The TRANSPORT PATH is situationally determined;
- A VEHICLE EXCLUSION ZONE SHALL be established to escort the WASTE through the TRANSPORT PATH with the leading and the lagging escort;
- The VEHICLE EXCLUSION ZONE SHALL be maintained from the S-400/E-140 intersection to the DISPOSAL ROOM entrance;
- WASTE SHALL be moved in a VEHICLE EXCLUSION ZONE;
- Non-WASTE handling vehicles/equipment SHALL be prohibited in the VEHICLE EXCLUSION ZONE; and
- Only one liquid-fueled vehicle SHALL be in the VEHICLE EXCLUSION ZONE.

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

Liquid-fueled vehicles/equipment and non-WASTE handling equipment may enter the VEHICLE EXCLUSION ZONE to repair **OR**, replace disabled WASTE HANDLING EQUIPMENT. The exception does not apply to the Lube Truck. The Lube Truck is not allowed in the VEHICLE EXCLUSION ZONE.

MODE WASTE HANDLING
Applicability:

PROCESS AREA UNDERGROUND
Applicability:

ACTIONS

Condition	Required ACTION	Completion Time
A. TRANSPORT PATH is not established.	A.1 Stop moving WASTE.	IMMEDIATELY
	<u>AND</u> A.2 Establish TRANSPORT PATH.	1 hour

continued

3/4.3 Vehicle/Equipment Control (continued)

**LCO 3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH
 (continued)**

ACTIONS (continued)

Condition	Required ACTION	Completion Time
B. VEHICLE EXCLUSION ZONE not established.	B.1 Stop moving WASTE.	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p> B.2 Establish VEHICLE EXCLUSION ZONE.	IMMEDIATELY
C. VEHICLE EXCLUSION ZONE not maintained.	C.1 Stop moving WASTE.	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p> C.2 Establish VEHICLE EXCLUSION ZONE.	IMMEDIATELY
D. Non-WASTE handling vehicles/equipment in VEHICLE EXCLUSION ZONE.	D.1 Move non-WASTE handling vehicles/ equipment out of VEHICLE EXCLUSION ZONE.	IMMEDIATELY
	<p style="text-align: center;"><u>OR</u></p> D.2.1 Stop moving WASTE.	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p> D.2.2 Move non-WASTE handling vehicles/equipment out of VEHICLE EXCLUSION ZONE.	IMMEDIATELY

continued

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
E. More than one liquid-fueled vehicle/equipment in the VEHICLE EXCLUSION ZONE.	E.1 Move liquid-fueled vehicle/equipment out of VEHICLE EXCLUSION ZONE.	IMMEDIATELY
	<u>OR</u>	
	E.2.1 Stop moving WASTE.	IMMEDIATELY
	<u>AND</u>	
	E.2.2 Move liquid-fueled vehicle/equipment out of VEHICLE EXCLUSION ZONE.	IMMEDIATELY
F. Leading or lagging escort of the VEHICLE EXCLUSION ZONE becomes disabled.	F.1 Stop moving WASTE.	IMMEDIATELY
	<u>AND</u>	
	F.2 Replace disabled escort vehicle.	1 hour
G. CH WASTE HANDLING EQUIPMENT becomes disabled in the VEHICLE EXCLUSION ZONE.	G.1 Repair <u>OR</u> replace disabled CH WASTE HANDLING EQUIPMENT.	12 hours
	<u>AND</u>	
	G.2 Complete WASTE emplacement.	2 hours

continued

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH (continued)

ACTIONS

Condition	Required ACTION	Completion Time
H. RH WASTE HANDLING EQUIPMENT becomes disabled in the VEHICLE EXCLUSION ZONE.	H.1. Repair disabled RH WASTE HANDLING EQUIPMENT.	IMMEDIATELY
	AND H.2 Complete WASTE emplacement.	12 hours
I. Required ACTION and completion time for condition G.2 OR H.2 is not met	I.1 Develop a JCO and submit to CBFO for approval.	10 days

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.3.6.1 VERIFY TRANSPORT PATH established.	Prior to WASTE movement
4.3.6.2 VERIFY VEHICLE EXCLUSION ZONE established.	Prior to WASTE movement
4.3.6.3 Maintain VEHICLE EXCLUSION ZONE.	During WASTE movement

Note: The SR will be performed as specified by non-periodic frequencies. The SR documentation may be recorded after completion of the activity.

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE

Liquid-fueled vehicles and equipment SHALL be controlled in DISPOSAL ROOM during ACTIVITIES as follows:

- Only WASTE HANDLING EQUIPMENT selected for WASTE HANDLING ACTIVITIES may approach the WASTE FACE during emplacement;
- Liquid-fueled vehicles/equipment used for retrieval SHALL be limited to one WASTE HANDLING EQUIPMENT **AND** one liquid-fueled non-WASTE handling vehicle/equipment at the WASTE FACE;
- Non-WASTE handling vehicle/equipment supporting emplacement activities SHALL be ≥ 25 feet from the WASTE FACE when not ATTENDED; and
- Liquid-fueled WASTE HANDLING EQUIPMENT emplacing WASTE SHALL be ATTENDED.

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

Liquid-fueled vehicles/equipment and non-WASTE HANDLING EQUIPMENT may be < 25 feet from the WASTE FACE when ATTENDED to conduct ground control, install chain link and brattice, and install panel closure/substantial barriers and isolation bulkheads and when enroute to or performance of other operational activities as described below.

MODE Applicability: WASTE HANDLING

PROCESS AREA Applicability: UNDERGROUND

ACTIONS

Condition	Required ACTION	Completion Time
A. More than one WASTE handling vehicle approaching OR at WASTE FACE during emplacement.	A.1 Stop moving WASTE.	IMMEDIATELY
	AND A.2 Remove unauthorized vehicle.	IMMEDIATELY

continued

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
B. Unauthorized vehicle/ equipment retrieving or supporting retrieval.	B.1 SUSPEND WASTE HANDLING ACTIVITIES in CH DISPOSAL ROOM.	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p> B.2. Remove unauthorized vehicle/equipment.	IMMEDIATELY
C. Non-WASTE handling vehicle/equipment supporting emplacement activities < 25 feet from the WASTE FACE and not ATTENDED.	C.1 ATTEND non-WASTE Handling vehicle/equipment	IMMEDIATELY
	<p style="text-align: center;"><u>OR</u></p> C.2 Remove unattended vehicle/equipment	IMMEDIATELY
D. Ground control needed at the WASTE FACE.	D.1 SUSPEND WASTE HANDLING ACTIVITIES in CH DISPOSAL ROOM.	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p> D.2 Move liquid-fueled vehicles/equipment (i.e., WASTE HANDLING EQUIPMENT <u>AND/OR</u> liquid-fueled vehicle/equipment supporting retrieval) ≥ 25 feet from WASTE FACE.	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p> D.3 Perform ground control.	7 days
	<p style="text-align: center;"><u>AND</u></p> D.4 Move ground control equipment ≥ 25 feet from WASTE FACE.	30 minutes

continued

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
E. Liquid-fueled WASTE handling equipment supporting operational activities < 25 feet from the WASTE FACE and not ATTENDED.	E.1 ATTEND WASTE Handling vehicle/equipment	IMMEDIATELY
	<p style="text-align: center;"><u>OR</u></p> E.2 Remove unattended vehicle/equipment	IMMEDIATELY
F. WASTE HANDLING EQUIPMENT becomes disabled at WASTE FACE.	F.1 Move WASTE HANDLING EQUIPMENT ≥ 25 feet from WASTE FACE.	IMMEDIATELY
	<p style="text-align: center;"><u>OR</u></p> F.2.1 Place absorbent material on the salt floor of the DISPOSAL ROOM underneath fuel tank of the WASTE HANDLING EQUIPMENT.	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p> F.2.2 Repair WASTE HANDLING EQUIPMENT.	PRIOR TO USE

continued

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.3.7.1 VERIFY only one piece of WASTE HANDLING EQUIPMENT is emplacing WASTE at the WASTE FACE.	EACH SHIFT when waste is being emplaced
4.3.7.2 VERIFY only one WASTE HANDLING EQUIPMENT AND one liquid-fueled non-WASTE handling vehicle/equipment is used for retrieval.	EACH SHIFT when retrieval is being conducted
4.3.7.3 VERIFY non-WASTE handling equipment \geq 25 feet from WASTE FACE when not ATTENDED.	EACH SHIFT

3/4.3 Vehicle/Equipment Control (continued)

LCO 3.3.8 Liquid-Fueled Vehicle/Equipment Control in a DISPOSAL ROOM

Liquid-fueled vehicles/equipment SHALL be controlled in DISPOSAL ROOM as follows:

- SHALL be ≥ 25 feet from the WASTE FACE, when not ATTENDED.

MODE Applicability: DISPOSAL

PROCESS AREA Applicability: UNDERGROUND

ACTIONS

Condition	Required ACTION	Completion Time
A. Liquid-fueled vehicle/equipment < 25 feet from the WASTE FACE is not ATTENDED.	A.1 ATTEND non-waste handling equipment	IMMEDIATELY
	<u>OR</u>	
	A.2 Move liquid-fueled vehicle/equipment ≥ 25 feet from WASTE FACE	2 HOURS

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.3.8.1 VERIFY liquid-fueled vehicle/equipment ≥ 25 feet from the WASTE FACE.	EACH SHIFT
4.3.8.2 VERIFY liquid-fueled vehicle/equipment < 25 feet is ATTENDED	EACH SHIFT

3/4.4 Fuel Confinement

LCO 3.4.1 Deleted

LCO 3.4.2 Fuel Barrier in the UNDERGROUND

A STATIC WASTE FACE SHALL be protected as follows:

- Absorbent material placed along the bottom edge

MODE Applicability: At all times.

PROCESS AREA Applicability: UNDERGROUND

ACTIONS

Condition	Required ACTION	Completion Time
A. STATIC WASTE FACE is not protected.	A.1. Protect the STATIC WASTE FACE.	IMMEDIATELY

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.4.2.1 VERIFY STATIC WASTE FACE is protected.	10 days after no WASTE emplacement, or sooner, when declared by Waste Handling Operations

Note: The SR will be performed as specified by the non-periodic frequency. The SR documentation may be recorded after completion of the activity.

3/4.5 WASTE Handling

LCO 3.5.1 Deleted

LCO 3.5.2: WASTE HANDLING in the SHAFT ACCESS AREA

Access to the WASTE hoist conveyance SHALL be controlled as follows:

- The WASTE hoist conveyance SHALL be present prior to moving WASTE into the shaft entry room.

MODE Applicability: WASTE HANDLING

PROCESS AREA Applicability: SHAFT ACCESS AREA

ACTIONS

Condition	Required ACTION	Completion Time
A. Waste hoist conveyance is not present.	A.1 Stop WASTE HANDLING ACTIVITIES.	IMMEDIATELY
	AND	
	A.2 Remove WASTE from shaft entry room.	IMMEDIATELY

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.5.2.1 VERIFY WASTE hoist conveyance is present prior to moving WASTE into the shaft entry room.	Prior to WASTE entering shaft entry room

Note: The SR will be performed as specified by the non-periodic frequency. The SR documentation may be recorded after completion of the activity.

3/4.5 WASTE Handling (continued)

LCO 3.5.3 WASTE HANDLING in the OUTSIDE AREA

WASTE SHALL be in a CLOSED SHIPPING CONTAINER when outside the WHB.

MODE Applicability: At all times

PROCESS AREA Applicability: OUTSIDE AREA

ACTIONS

Condition	Required ACTION	Completion Time
A. WASTE outside of CLOSED SHIPPING CONTAINER.	A.1 Move WASTE into WHB.	IMMEDIATELY

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.5.3.1 VERIFY WASTE is in a CLOSED SHIPPING CONTAINER.	DAILY

3/4.6 Compressed Gas Cylinder Program - Deleted

3/4.7 Noncompliant Container Response

LCO 3.7.1: Noncompliant Container Response

WASTE containers received, processed, and disposed SHALL be compliant with the WIPP Waste Acceptance Criteria (WAC).

MODE Applicability: At all times

PROCESS AREA Applicability: CH BAY, ROOM 108, RH BAY, HOT CELL COMPLEX, SHAFT ACCESS AREA, UNDERGROUND, OUTSIDE AREA

ACTIONS

Condition	Required ACTION	Completion Time
A. Potentially noncompliant WASTE container(s) identified.	A.1 Locate potentially noncompliant WASTE container(s).	IMMEDIATELY
	<u>AND</u>	
	A.2.1 Disposition noncompliant WASTE container(s).	10 days
	<u>OR</u>	
	A.2.2 Develop a JCO and submit to CBFO for approval.	10 days

Surveillance Requirements

Surveillance Requirement	FREQUENCY
None.	

3/4.8 Waste Hoist System

LCO 3.8.1 WASTE Hoist Brakes

The WASTE Hoist brakes SHALL be OPERABLE prior to transporting waste, personnel, or equipment.

MODE Applicability: WASTE HANDLING

PROCESS AREA Applicability: SHAFT ACCESS AREA

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

If CH WASTE HANDLING ACTIVITIES are suspended in the SHAFT ACCESS AREA, RH WASTE HANDLING activities may continue in the SHAFT ACCESS AREA when transferring RH WASTE from the HOT CELL COMPLEX to the SHAFT ACCESS AREA.

ACTIONS

Condition	Required ACTION	Completion Time
A. WASTE Hoist brakes not IN-SERVICE without WASTE present on conveyance	A.1 Declare WASTE Hoist INOPERABLE	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p> A.2 SUSPEND WASTE HANDLING ACTIVITIES in SHAFT ACCESS AREA	IMMEDIATELY
	<p style="text-align: center;"><u>AND</u></p> A.3 Restore WASTE Hoist brakes to OPERABLE STATUS.	PRIOR TO USE of WASTE Hoist

continued

3/4.8 Waste Hoist System (continued)

ACTIONS (continued)

Condition	Required ACTION	Completion Time
B. WASTE Hoist brakes not IN-SERVICE with WASTE present on conveyance	B.1 Declare WASTE Hoist INOPERABLE	IMMEDIATELY
	<u>AND</u>	
	B.2 Do not introduce new CH WASTE into SHAFT ACCESS AREA	IMMEDIATELY
	B.3.1 Remain in WASTE HANDLING MODE	24 hours
	<u>AND</u>	
	B.3.2 Restore WASTE Hoist brakes	PRIOR TO USE of WASTE Hoist
	B.4.1 Remove WASTE from WASTE shaft conveyance	1 hour
	<u>AND</u>	
	B.4.2 Place WASTE in SAFE CONFIGURATION	24 hours
<u>AND</u>		
B.4.3 Perform pre-operational testing on the WASTE hoist brakes	PRIOR TO USE of WASTE Hoist	

Surveillance Requirements

Surveillance Requirement	FREQUENCY
4.8.1.1 VERIFY WASTE hoist brakes pre-operational test was performed and brakes are IN-SERVICE.	PRIOR TO USE of the WASTE Hoist

Note: The SR will be performed as specified by the non-periodic frequency. The SR documentation may be recorded after completion of the activity.

Section 5

Administrative Controls

5.0 Administrative Controls

5.1 Programs

This section provides the provisions relating to organization and management, procedures, record keeping, reviews, and audits necessary to ensure safe operation of the facility.

5.1.1 Specific Administrative Controls

SPECIFIC ADMINISTRATIVE CONTROLS (SAC) provide a safety function equivalent to engineered controls that would be classified as safety class (SC) or safety significant (SS). Programs specifically credited in DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*, Chapter 3, *Hazards and Accident Analysis* are provided in LCO/Surveillance format in Section 3/4 *Limiting Conditions for Operations and Surveillance Requirements*.

Two of the SPECIFIC ADMINISTRATIVE CONTROLS credited in the DSA were developed in the directed action format, provided below. The remaining SPECIFIC ADMINISTRATIVE CONTROLS have been developed in the LCO format to facilitate consistent implementation and were provided in Section 3/4.

5.0 Administrative Controls (continued)

5.1.1.1 WASTE Hoist System - Deleted

5.1.1.2 Underground Liquid-Fueled Vehicle/Equipment Inspection Program

A program SHALL be established, implemented and maintained to inspect liquid-fueled vehicles/equipment used for WASTE HANDLING ACTIVITIES and non-waste handling liquid-fueled vehicle/equipment at the WASTE FACE.

AC Statement

Attributes of the liquid-fueled vehicles/equipment selected for use SHALL be verified PRIOR TO USE as follows:

- VERIFY that there are no excessive leaks (i.e., battery compartment, hydraulic lines, fuel lines) as indicated by visible flow of fluid under pressure, puddles beneath the equipment, or abnormal loss of hydraulic fluid;
- Fluid levels (i.e., engine oil, transmission fluid, hydraulic fluid and brake fluid);
- Lights and horn are IN-SERVICE.

MODE Applicability

WASTE HANDLING when in the VEHICLE EXCLUSION ZONE OR DISPOSAL ROOM

DISPOSAL when in the DISPOSAL ROOM

PROCESS AREA Applicability:

UNDERGROUND

Critical Safety Function

The inspection and maintenance of liquid-fueled WASTE HANDLING EQUIPMENT selected for use minimizes the likelihood equipment malfunction that could initiate fires or loss of confinement events.

Bases

Liquid-fueled vehicles are required in the CH WASTE and RH WASTE HANDLING ACTIVITIES and represent a hazard that must be minimized. Verification that there are no excessive leaks, fluid levels are properly maintained, and lights and horns are IN-SERVICE ensures that the WASTE HANDLING EQUIPMENT and liquid-fueled non-waste handling vehicles/equipment selected for other operational activities such as ground control are safe to approach the WASTE FACE.

The seals on hydraulic actuators are designed to prevent excessive leakage around the pistons; however, they are also intended to have a controlled seepage of oil which lubricates the seal and prevents binding between the seal and the shaft of the ram. The presence of moisture or drops of hydraulic fluid near the seal is normal and desirable. This seepage is not a problem unless it becomes excessive and results in puddles of hydraulic fluid below the equipment.

5.0 Administrative Controls (continued)

5.1.1.3 Ground Control Program – Deleted

5.1.1.4 WASTE HANDLING PROGRAM - Pre-operational Checks of Surface Waste Handling Vehicle/Equipment Inspections

A program SHALL be established, implemented and maintained to inspect surface WASTE handling vehicles/equipment used for WASTE HANDLING prior to entering the SHAFT ACCESS AREA.

AC Statement Attributes of the surface WASTE handling vehicles/equipment selected for use SHALL be verified PRIOR TO USE in the SHAFT ACCESS AREA as follows:

- VERIFY the design functions that initiate, control, or stop movement operated as designed.
- For vehicles/equipment containing fluid reservoirs, VERIFY that there are no excessive leaks (i.e., battery compartment, hydraulic lines, fuel lines) as indicated by visible flow of fluid under pressure, puddles beneath the equipment, or abnormal loss of hydraulic fluid;
- For vehicles/equipment containing fluid reservoirs, VERIFY fluid levels (i.e., engine oil, transmission fluid, hydraulic fluid and brake fluid).

MODE Applicability WASTE HANDLING

PROCESS AREA Applicability: SHAFT ACCESS AREA

Critical Safety Function The inspection and maintenance of surface WASTE HANDLING vehicle/equipment selected for use minimizes the likelihood equipment malfunction that could initiate fires or loss of confinement events.

Bases Surface vehicles/equipment are required to move CH WASTE and RH WASTE into the SHAFT ACCESS AREA and represent a hazard that must be minimized. Verification of proper movement controlled, there are no excessive leaks, and fluid levels are properly maintained ensures that the Surface WASTE HANDLING vehicles/equipment entering the SHAFT ACCESS AREA protects waste containers from fire and loss of confinement.

For vehicles/equipment that include hydraulic reservoirs, seals on hydraulic actuators are designed to prevent excessive leakage around the pistons; however, they are also intended to have a controlled seepage of oil which lubricates the seal and prevents binding between the seal and the shaft of the ram. The presence of moisture or drops of hydraulic fluid near the seal is normal and desirable. This seepage is not a problem unless it becomes excessive and results in puddles of hydraulic fluid below the equipment.

5.0 Administrative Controls (continued)

5.1.2 Programmatic Administrative Controls

The following PACs were identified in DOE/WIPP 07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*, Chapter 3, *Hazard and Accident Analysis*. In general PACs provide broad programmatic support for safety management programs supporting defense-in-depth and worker safety as follows:

- Training
- Fire Protection Program.

5.1.2.1 Training

A training and qualification program for the Operation staff SHALL be established, implemented, and maintained to ensure that Operators are trained to properly operate the WASTE HANDLING EQUIPMENT during WASTE HANDLING ACTIVITIES.

5.1.2.2 Fire Protection Program

The WIPP Fire Protection Program SHALL be established to, at a minimum, provide for periodic inspection and testing of fire suppression 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 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 release from WASTE containers in close proximity to the fire. The fire protection program includes control of transient combustible loading in the CH BAY, ROOM 108, RH BAY, SHAFT ACCESS AREA, OUTSIDE AREA, and UNDERGROUND. The combustible loading program will incorporate assumptions from the WIPP-023, *Fire Hazards Analysis*.

5.0 Administrative Controls (continued)

5.1.2.3 Safety Management Programs

This section contains commitments to SMPs. These SMPs may not be specifically credited in the accident analysis, but all are an important part of defense-in-depth. The cumulative effect of the programmatic details is important to facility safety and is an integral part of safe operations.

WIPP SMPs are described in DOE/WIPP 07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*, as follows:

- Chapter 6 - Criticality Prevention
- Chapter 7 - Radiation Protection
- Chapter 8 - Hazardous Material Protection
- Chapter 9 - Radioactive and Hazardous Waste Management
- Chapter 10 - Initial Testing, Surveillance and Maintenance
- Chapter 11 - Operational Safety (Conduct of Operations and Fire Protection)
- Chapter 12 - Procedure and Training
- Chapter 13 - Human FactorsChapter 14 - Quality Assurance
- Chapter 15 - Emergency Preparedness
- Chapter 16 - Provisions for Decontamination and Decommissioning
- Chapter 17 - Management, Organization, and Institutional Safety Provisions

The SMP owners SHALL ensure the overall safety functions of an SMP are implemented and maintained. Management SHALL ensure facility level assessments are performed according to WP 15-PA1001as part of the continuous improvement process of the Integrated Safety Management System.

5.0 Administrative Controls (continued)

5.2 Requirements for Deviation from TSRs

5.2.1 General Requirements

Written reports and oral notifications SHALL be submitted 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 line management prior to submittal.

5.2.2 Response to TSR Violations

The following ACTIONS are required for response to a violation:

- a. Notify the DOE of the violation in accordance with the occurrence reporting program; and
- b. Prepare an Occurrence Report.

5.3 Organization

Lines of authority, responsibility, and communication SHALL be established for the highest management levels, through intermediate levels to and including the operating organization positions. The individuals who train the operating staff, carry out radiological control functions, or perform quality assurance functions may report to the Operations Manager; however, they SHALL have sufficient organizational freedom to ensure their independence from operating pressures.

5.3.1 Contractor Responsibilities

The NWP Manager of Operations is responsible for overall operation of the WIPP facility. The Operations Manager SHALL delegate in writing the succession to this responsibility during any absences.

The FSM is responsible for local command of WIPP operation. During any unavailability of the FSM, a qualified individual SHALL be designated to assume the management function. As part of this responsibility, the FSM SHALL ensure operation of the WIPP facility is in accordance with the approved TSRs.

The Operations Manager and the FSM have the authority to take emergency actions in accordance with Section 1.7.

5.3.2 Support Organizations

Organizations provide support functions and personnel necessary for WIPP Operations as described in Chapter 17 of the WIPP DSA (DOE/WIPP-07-3372). The noted reference provides the information specified by the guidance in DOE G 423.1-1.

5.0 Administrative Controls (continued)

5.3.3 Minimum Operations Shift Complement

The number of qualified managers and operators available SHALL be adequate to safely operate and support WIPP activities. Abnormal conditions SHALL be considered in determining operator assignments. Management SHALL provide additional personnel, as necessary, to support other activities. The minimum operations shift complement per shift for WIPP SHALL be as specified in Table 5.3.3-1. The supervisor availability will be described in facility procedures.

Table 5.3.3-1. Minimum Operations Shift Compliment

MODE	Personnel	Contact Handled Waste ACTIVITY(ies)		Remote Handled Waste ACTIVITY(ies)		
		CH BAY AND ROOM 108	UNDERGROUND AND SHAFT ACCESS AREA	RH BAY AND HOT CELL COMPLEX	UNDERGROUND AND SHAFT ACCESS AREA	
DISPOSAL	FSM	N/A	1	N/A	1	
	Central Monitoring Room (CMR) Operator	N/A	1	N/A	1	
WASTE HANDLING	FSM	1	1	1	1	
	CMR Operator	1	1	1	1	
	Waste Handling Technician	NOTE 1	NOTE 3	72-B Process	2	2
				10-160B Process	2	
	Radiological Control Technicians	NOTE 2	NOTE 4	72-B Process	1	1
10-160B Process				1		
WASTE Hoist Operator	0	1	0	1		
WASTE STORAGE	FSM	1	N/A	1	N/A	
	CMR Operator	1	N/A	1	N/A	
STANDBY	FSM	1	N/A	1	N/A	
	CMR Operator	1	N/A	1	N/A	

NOTE 1. One WASTE handling technician per TRUDOCK position in operation, one per operating crane, and one for Room 108 when processing TRUPACT-III

NOTE 2. One per TRUDOCK position in operation and Room 108 when processing TRUPACT-III

NOTE 3. One WASTE handling technician per transporter and/or one for each forklift or facility transfer vehicle

NOTE 4. One RCT per transporter-forklift pair

5.0 Administrative Controls (continued)

5.4 Record Keeping

Records SHALL be kept of all information supporting implementation of the TSRs as follows:

- a. MODE changes, TIME OF DECLARATION, planned and unplanned entry into LCO conditions, entering ACTIONS, determination of AFFECTED AREA, and SAFE CONFIGURATION;
- b. Maintenance activities, inspections, repairs, and replacements of SSCs specifically credited in the WIPP DSA;
- c. Calibration of instruments required by a SR; and
- d. Completion of SR.

5.5 Reviews and Audits

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 comprehensive 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 NWP policies, programs, and procedures.

The Operations Manager 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 TSRs)
- d. Facility changes and modifications
- e. TSR changes
- f. Facility operation, maintenance, and testing
- g. Lessons learned and operations experience summary
- h. Other safety-related issues.

5.0 Administrative Controls (continued)

5.5 Reviews and Audits (continued)

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.

5.6 TSR Control

Proposed changes to the TSR SHALL be reviewed and approved by DOE prior to implementation. Changes to the TSR Bases may be made without prior DOE approval provided the changes do not involve any of the following:

- a. A change to a LCO or SR,
- b. A change that involves an unreviewed safety question (USQ).
- c. A change to the way that OPERABILITY of the TSR could be met, applied, or interpreted.

Changes to the bases that may be implemented without prior DOE approval will be provided to the DOE at least ANNUALLY.

Section 6

Design Features

6.0 Design Features

The Chapter 3 of the WIPP DSA identifies several Safety Significant Design Features (DF) for which credit was taken. DFs by default are those SSCs that are passive, and should remain constant throughout the life of the facility. Any changes to DFs that could affect the safe operation of the facility will be analyzed for the safety implications and approved at the appropriate level prior to making such modifications, through the NWP Unreviewed Safety Question program.

The following DFs are credited in the WIPP DSA (DOE/WIPP 07-3372) as performing a safety function:

- Waste Handling Building
- HOT CELL COMPLEX
- Facility Cask/Light-Weight Facility Cask
- TRUPACT-II Unloading Dock (TRUDOCK) 6-Ton Cranes
- Facility Pallet
- UNDERGROUND Liquid-Fueled WASTE HANDLING Vehicles
- RH Waste Canister
- Panel Closure/Substantial Barrier/Isolation Bulkhead
- Property Protection Area (paved and graveled)
- UNDERGROUND Design
- WASTE Hoist Structure
- RH Bay Floor Design
- Alignment Fixture Assembly

6.1 Waste Handling Building

The WHB structure is designed to prevent structural failure or damage during and following operational or natural phenomena events. The facility structure must withstand the effects of operational and natural phenomena evaluation basis accidents identified and evaluated in Chapter 3 of the WIPP DSA. The WHB is described in Chapters 2 and 4 of the WIPP DSA (DOE/WIPP 07-3372).

The WHB, including the WASTE hoist tower and the TRUPACT Maintenance Facility (TMF), roof design and construction prevents building collapse from snow/ice loading on the roof and impacting WASTE containers outside CLOSED SHIPPING CONTAINERS. The noncombustible construction of the WHB minimizes fire propagation into and within the building.

The WHB provides a confinement barrier for radioactive or hazardous material releases occurring inside the WHB.

6.0 Design Features (continued)

6.2 HOT CELL COMPLEX

The HOT CELL COMPLEX is constructed with thick concrete walls which prevent fires from propagating. The HOT CELL COMPLEX also prevents ionizing radiation exposure to the immediate worker and reduces the likelihood of a WASTE container lid ejection striking an immediate worker.

6.3 Facility Cask/Light-Weight Facility Cask

The Facility Cask/Lightweight Facility Cask SHALL be designed to provide a contiguous barrier between flame and WASTE containers. The design of the Facility Cask/Light-Weight Facility Cask SHALL prevent its puncture or rupture from internally or externally generated missiles, impacts, fires, and explosions such that WASTE remains confined within the cask during any design basis event.

The robust design of the Facility Cask/Light-Weight Facility Cask minimizes radiation exposure to the immediate worker.

6.4 TRUPACT-II Unloading Dock (TRUDOCK) 6-Ton Cranes

The CH BAY TRUDOCK 6-ton cranes are designed to lift loads associated with TRUPACT-II and HalfPACT shipping containers and hold their load during loss of power.

6.5 Facility Pallet

The facility pallet has a solid metal surface designed to provide a contiguous flame barrier between a fire and the WASTE.

6.6 UNDERGROUND WASTE HANDLING Liquid-Fueled Vehicles

The UNDERGROUND liquid-fueled WASTE HANDLING vehicles SHALL be designed to prevent and/or mitigate fires. The design includes fuel tanks and fuel delivery systems within the metal body of the vehicle, metal hydraulic fluid reservoirs and reinforced hydraulic delivery systems with exception to the underground transporters. The underground transporters have nylon reinforced elastomer fuel cells enclosed in metal. UNDERGROUND WASTE HANDLING VEHICLES contains hydraulic fluid with high ignition temperatures. These design features reduce the likelihood of fire initiation, equipment failures, and damage from collisions.

6.7 RH Waste Canisters

The construction of the RH waste canisters provide an additional barrier that prevents or minimizes a release of the RH WASTE it contains when the RH waste canister is inside the facility cask/light-weight facility cask. When contained inside the facility cask/light-weight facility cask, a RH waste canister provides an additional barrier that prevents or minimizes the RH WASTE container's damage from drops, prevents direct flame impingement on the RH WASTE containers it contains, and minimizes a release from an internal deflagration.

6.0 Design Features (continued)

6.8 Panel Closure/Substantial Barrier/Isolation Bulkhead

Panel Closure and Substantial barrier/Isolation bulkhead minimize airflow that could transport radioactive WASTE material to areas outside a filled panel, and protect WASTE FACE from operational events external to the filled panel. Panel closures are a block wall concrete construction that isolates panels 1 and 2 from the underground facility. Isolation bulkheads are typical bulkheads constructed of non-combustible material (i.e., rectangular steel tubing framework with galvanized sheet metal attached to the framing). The framing of bulkheads are attached to the floor, and to accommodate salt creep, bulkheads are constructed of metal frames with telescoping extensions attached to the roof to keep the structure in place, and flexible flashing attached to the structure framing and to the salt surface of the opening provide the ventilation seal. A substantial barrier consists of a run of mine salt (or other suitable non-flammable fill material) placed against the waste face such that the height is halfway up the top tier of waste at the face and extends at least 10 feet beyond the base of the waste array into the panel entries. The chain link and brattice cloth are secured to the ceiling and substantial barrier to minimize airflow through the filled panel.

6.9 Property Protection Area

The gravel and pavement surfaces maintain a physical separation between the indigenous low profile vegetation surrounding the site and the WHB. This separation prevents external fires and fires in the OUTSIDE AREA from propagating to areas that may contain WASTE.

6.10 UNDERGROUND Design

The deep bedded salt formation of the UNDERGROUND provides a noncombustible design. The bulkheads, overcasts, and airlocks are also non-combustible construction that prevents fire from propagating to areas that may contain WASTE.

6.11 WASTE Hoist Structure

The WASTE hoist structure is constructed of structural steel that supports the hoist operating machinery, load conveyance, the load on the conveyance, counter weights, hoist ropes and guide ropes. The WASTE hoist structure is designed to withstand the loads associated with normal operations, emergency conditions and the design basis natural events.

6.12 RH Bay Floor Design

The RH Bay is designed with a sloped floor between the RH and CH Bays that allows a direct fuel pool or other liquids released in the RH Bay to flow away from the rollup door/common wall. This design reduces the likelihood of fuel pool fires from impacting CH waste.

6.13 Alignment Fixture Assembly

The alignment fixture assembly (AFA) shield collar and shield valve is designed to provide shielding during waste emplacement as the RH waste canister is being pushed into a borehole. The safety function of the AFA is to reduce the consequences of a direct radiation exposure.

Appendix A

Bases

B3/4.0 General Application

B3.0 General Limiting Conditions for Operation

Bases

Background Summary

LCOs 3.0.1 through 3.0.5 establish the general requirements applicable to all LCOs at all times, unless otherwise stated. The general requirements contained in LCOs 3.0.1–3.0.5 provide overall rules to guide the use and application of the specific requirements of the LCOs in Section 3.0 of the TSRs. When exceptions to the general requirements contained in LCOs 3.0.1–3.0.5 are allowed, they are stated as notes in the individual LCO.

LCO 3.0.1

LCO SHALL be Met

LCO 3.0.1 establishes the applicability statements within each LCO as the requirement for conformance to the LCO. This statement indicates that the LCO is only required to be met when the conditions of the applicability statement are met. However, if the applicability statement is met, the LCO must also be met. This ensures safe operation of the facility. The ACTIONS establish the remedial measures that must be taken within specified completion times when required LCOs are not met as required by LCO 3.0.2.

A Surveillance Requirement that requires the removal of equipment from service does not constitute failure to meet an LCO. Individual surveillance procedures SHALL describe the appropriate limitations beyond which an out-of tolerance condition would exist.

Measurement devices used to demonstrate compliance with LCOs SHALL be calibrated to plant design, manufacturer's specifications, and/or industry standards.

LCO 3.0.2

LCO ACTIONS SHALL be Met

LCO 3.0.2 establishes that, on discovery of a failure to meet an LCO, the associated ACTIONS SHALL be met within the specified completion time. The completion time of each ACTION is applicable from the TIME OF DECLARATION or other time as specified in the LCO. 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:

- Completion of the ACTIONS within the specified completion times constitutes compliance with an LCO.
- Completion of the ACTIONS is not required when an LCO is met within the specified completion time, unless otherwise specified.

continued

B3/4.0 General Application (continued)

B3.0 General Limiting Conditions for Operation (continued)

Bases (continued)

LCO 3.0.2 (continued)

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.

The completion times of the ACTIONS are also applicable when a system or component is intentionally taken out of service. The reasons for intentionally relying on the ACTIONS include, but are not limited to, the performance of surveillances, preventive maintenance, corrective maintenance, the investigation of operational problems, or planned facility modifications with no increased risk. 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 or standby equipment from service in lieu of other alternatives that would result in redundant or standby equipment being OPERABLE. This limits the time that subsystems or trains of a safety system are INOPERABLE. It also limits the time that other conditions exist that result in LCO 3.0.3 being entered. If the Surveillance Requirement completion time exceeds the completion times, then the applicable ACTION must be completed.

continued

B3/4.0 General Application (continued)

B3.0 General Limiting Conditions for Operation (continued)**Bases (continued)****LCO 3.0.3 ACTION Not Met or Not Provided**

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

1. Associated ACTIONS and completion times are not met and no other condition applies.
2. The condition of the facility is not specifically addressed by the associated ACTIONS. This means that no combination of conditions stated in the ACTIONS corresponds exactly 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.

This LCO is intended to provide a “safe-harbor” provision when either the ACTION cannot be complied with, or the ACTION cannot be complied with within the specified completion time when an LCO is not met. It also provides a default ACTION when the facility is in a condition that is indeterminate or is not readily categorized into the specified limits of an LCO. Entry into LCO 3.0.3 and completion of the associated ACTIONS within the required completion time does not in and of itself constitute a violation of a TSR.

LCO 3.0.4 MODE Change

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; and
2. Continued non-compliance 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.

continued

B3/4.0 General Application (continued)

B3.0 General Limiting Conditions for Operation (continued)

Bases (continued)

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.

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

Return to Service

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; and
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.

B3/4.0 General Application (continued)

B4.0 General Surveillance Requirements

Bases

Background Summary

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 those 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; and
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.

continued

B3/4.0 General Application (continued)

B4.0 General Surveillance Requirements (continued)

Bases (continued)

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).

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.

continued

B3/4.0 General Application (continued)

B4.0 General Surveillance Requirements (continued)

Bases (continued)

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.

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.

continued

B3/4.0 General Application (continued)

B4.0 General Surveillance Requirements (continued)

Bases (continued)

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 1.3, FREQUENCY.

B3/4.1 Fire Suppression Systems

B3.1.1 WHB Fire Suppression System

Bases

Background Summary

The WIPP Fire Suppression System is designed to ensure personnel safety, mission continuity, and property protection. Building designs incorporate features for fire prevention and mitigation. The plant design meets the improved risk level of protection defined in DOE O 420.1B, *Facility Safety* (Ref. 1), and satisfies applicable sections of the National Fire Protection Association codes, DOE Orders, and the *Waste Isolation Pilot Plant Fire Hazard Analysis Report* (Ref. 2).

The WIPP Fire Suppression System consists of the following two main subsystems:

- Fire water supply system; and
- Fire suppression system.

The fire water supply system provides fire water at the design pressure and quantity to the 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 gpm at 125 psig (Ref. 3). However, an engineering analysis determined an excess supply margin would be available for the most demanding system when the fire pump capacity was 1,500 gpm at 105 psig or more (Ref. 6). The system is required to provide fire water at a rate of 1,500 gpm for 1 hour for a total of 90,000 gallons for a warehouse fire. All major components of the fire water supply system are Underwriters Laboratory (UL) - listed and Factory Mutual (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 (Ref. 3).

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

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Background Summary (continued)

If the jockey and electric fire pumps cannot maintain system pressure, the diesel pump automatically starts. The diesel fire pump is arranged to automatically start when the system pressure falls to < 110 psig. The normal pump shutdown is manual by depressing the stop button on the front of the pump's controller (Ref. 3).

The fire water supply system receives its water supply from one onsite 180,000 gallon storage tank. The SR ensures that the volume of fire water supply is maintained \geq 105,000 gallons consistent with FHA requirements (Ref. 2).

The fire water supply system piping configuration also allows either fire pump to be removed from service without affecting 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.

The fire suppression system consists of an automatic wet pipe sprinkler system for the WHB. Fire suppression is initiated when one or more fire sprinkler fusible links melt at a design temperature allowing the pressurized header to spray the AFFECTED AREA. Its actuation is mechanical and requires no electrical signal or power.

The fire suppression system supplies three (3) risers (CH BAY, RH BAY, and ROOM 108) in the WHB. Each riser contains a main drain, a pressure gage, a water flow detection device, and an Inspectors Test Connection, which includes the ITV.

Automatic wet pipe 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 CMR. Water will continue to flow through the sprinkler system until it is manually shut off or the water supply is depleted.

Each fire suppression riser contains an alarm check valve with 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 system (Ref. 3). The relief valves protect the piping from high pressure due to pressure surges and thermal expansion of the trapped water.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Background Summary (continued)

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 each branch line to the WHB risers. PIVs are also installed in the main piping to provide sectional control. These PIVs are spaced to minimize the effect of a break in the main piping.

Application to Safety

The safety analysis (Ref. 4) identified events that credit the fire suppression system to suppress the size of fires in the WHB. Fires analyzed included the following events:

- Pool fires,
- Vehicle collisions followed by fires,
- Ordinary combustibles fires, and
- Propagating fire

Assumptions for the analyses included the following:

- WASTE inside a CLOSED SHIPPING CONTAINER is protected from involvement in any fire event except in the RH BAY; and
- Site-derived WASTE in a container with its lid in place and bolted is protected from involvement in any fire event.

The CH WASTE material at risk (MAR) is the primary contributor to dose for fire events. Fire events were determined to result in high consequences to co-located workers with moderate to high consequences to the maximally exposed offsite individual (MOI). The fire suppression system is credited for the reduction of consequences to both co-located workers and the MOI.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

- Application to Safety (continued)** To accomplish this reduction, the fire suppression system must provide the following capabilities:
- A fire supply and suppression system that is unobstructed from the fire water supply to the WHB fire sprinklers; and
 - A fire water supply system capable of providing the fire suppression system with 1,500 gpm at ≥ 105 psig; and
 - A water supply capacity sufficient to provide for fire suppression at 1,500 gpm for one hour.

-
- LCO** The fire suppression system for the WHB minimizes fire propagation and the size of fires. This LCO requires that the WHB fire suppression system SHALL be OPERABLE. The OPERABILITY of the system is determined by the following characteristics:
- A fire supply and suppression system that is unobstructed from the fire water supply to the WHB fire sprinklers. Although aligned, VERIFICATION of flow through each WHB riser main drain is required to assure system capability.
 - A water supply static pressure ≥ 105 psig at each WHB riser as indicated by pressure indicators 411-PI-003-001, 411-PI-003-003, and 411-PI-003-005 is required. The fire water suppression system is a charged wet-pipe system. A static water pressure of ≥ 105 psig indicates that the fire water supply system is hydraulically connected to the WHB risers.
 - A fire water supply system capable of providing the fire suppression system with 1,500 gpm at ≥ 105 psig. Both the electric driven fire pump 45-G-601 and diesel driven fire pump 45-G-602 are designed to provide 1,500 gpm at ≥ 105 psig. Both pumps can supply the fire suppression system and both pumps are normally aligned to the fire suppression system loop. A fire pump can be removed for testing or repair without impairing the fire suppression system capability.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

- LCO (continued)**
- A water supply capacity sufficient to provide for 1-hour of fire suppression at 1,500 gpm (90,000 gallons). Fire water supply tank 25-D-001A or 25-D-001B has a capacity of 180,000 gallons, and the tank selected for fire water use is maintained at 105,000 gallons or greater (Ref. 2).

These four characteristics provide assurance that the WHB fire suppression system has sufficient capacity, capability, and readiness to supply $\geq 1,500$ gpm flow for at least 1-hour.

MODE Applicability	The events of concern involve the burning of WASTE. CH WASTE is the primary contributor to dose for these fire events. WASTE may be present in a PROCESS AREA during WASTE HANDLING and WASTE STORAGE MODE. During STANDBY MODE, WASTE is not present or is in a CLOSED SHIPPING CONTAINER with site-derived WASTE in a closed and sealed container. Therefore, this requirement applies during WASTE HANDLING and WASTE STORAGE MODES.
---------------------------	---

PROCESS AREA Applicable	The events of concern involve the burning of WASTE in the WHB. CH WASTE is the primary contributor to dose for WHB fire events and therefore, the primary concern is a fire in the CH BAY, ROOM 108, SHAFT ACCESS AREA or a fire propagating into the CH BAY, ROOM 108 or SHAFT ACCESS AREA when WASTE is present. Fires may propagate into the CH BAY, ROOM 108, or SHAFT ACCESS AREA from the RH BAY or OUTSIDE AREA. The fire suppression system does not supply the HOT CELL COMPLEX and the doses from the burning of RH WASTE are relatively low as compared to CH WASTE. Therefore, the fire suppression system applies to the CH BAY, ROOM 108, RH BAY, and SHAFT ACCESS AREA.
--------------------------------	--

ACTION A.1	<p>The fire suppression can become INOPERABLE due to one of the following conditions:</p> <ul style="list-style-type: none"> ● Obstruction in the fire water distribution system; or ● Water supply static pressure < 105 psig. <p>In the event that the fire suppression system is obstructed, the capability to suppress fires is unknown. Low or no water supply static pressure is an indication of a loss of fire suppression capability as well as frequent or continuous operation of the jockey pump. Excessive jockey pump operation may indicate a loss of piping integrity. Therefore, the introduction of new CLOSED SHIPPING CONTAINERS into the WHB is IMMEDIATELY prohibited. A completion time of IMMEDIATELY is required to limit the amount of material that may need to be processed and down-loaded to the UNDERGROUND in the event that the system cannot be readily restored.</p>
-------------------	--

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

ACTION A.2

To reduce the potential for fires, ignition and fuel sources are required to be removed from the WHB. Hot work activities are controlled in accordance with the Fire Protection Program and therefore, there may be hot work activities being conducted in the WHB. To reduce the potential for fire ignition, hot work activities SHALL be stopped within 1 hour. A completion time of 1 hour is required to provide adequate time to safely secure the activity and minimize the time-at-risk.

ACTION A.3

In addition to removing potential ignition sources, fuel sources should be reduced. Liquid-fueled vehicles/equipment may be present in those WHB PROCESS AREAS that are in STANDBY MODE. Therefore, any liquid-fueled vehicles/equipment that is in the RH BAY or SHAFT ACCESS AREA SHALL be removed within 1 hour. A completion time of 1 hour is required to provide adequate time to safely remove the liquid-fueled vehicle/equipment and minimize the time-at-risk.

ACTION A.4

To reduce the potential for vehicle/equipment collisions, WASTE HANDLING ACTIVITIES are required to be suspended within 1 hour. SUSPENDING WASTE HANDLING ACTIVITIES permits placement of WASTE in a SAFE CONFIGURATION, removes a potential for ignition sources, and permits attention to be focused on restoration of the fire suppression system. A completion time of 1 hour is required to provide adequate time to safely SUSPEND WASTE HANDLING ACTIVITIES and minimize the time-at-risk.

ACTION A.5

The fire suppression system is normally aligned with PIVs and main isolation valves locked open, and the jockey pump maintaining system pressure ≥ 105 psig. With WASTE in a SAFE CONFIGURATION and potential ignition and fuel sources reduced in the WHB, determination of the cause for the condition and restoration of the system is required. A completion time of 24 hours is sufficient to restore the system while minimizing the time-at-risk.

ACTION B.1

The fire suppression can become INOPERABLE due to the loss of fire water pumps 45-G-601 and 45-G-602. In the event that the fire water pumps are INOPERABLE, the ability to supply fire water to the postulated 1 hour fire cannot be met. Therefore, the introduction of new CLOSED SHIPPING CONTAINERS into the WHB is IMMEDIATELY prohibited. A completion time of IMMEDIATELY is required to limit the amount of material that may need to be processed and down-loaded to the UNDERGROUND in the event that the system cannot be readily restored.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

ACTION B.2

To reduce the potential for fires, ignition and fuel sources are required to be removed from the WHB. Hot work activities are controlled in accordance with the Fire Protection Program and therefore, there may be hot work activities being conducted in the WHB. To reduce the potential for fire ignition, hot work activities SHALL be stopped within 1 hour. A completion time of 1 hour is required to provide adequate time to safely secure the ACTIVITY and minimize the time-at-risk.

ACTION B.3

In addition to removing potential ignition sources, fuel sources should be reduced. Liquid-fueled vehicles/equipment may be present in those WHB PROCESS AREAS that are in STANDBY MODE. Therefore, any liquid-fueled vehicle/equipment that is in the RH BAY or SHAFT ACCESS AREA SHALL be removed within 1 hour. A completion time of 1 hour is required to provide adequate time to safely remove the liquid-fueled vehicle/equipment and minimize the time-at-risk.

ACTION B.4

To reduce the potential for vehicle/equipment collisions, WASTE HANDLING ACTIVITIES are required to be suspended within 1 hour. SUSPENDING WASTE HANDLING ACTIVITIES permits placement of WASTE in a SAFE CONFIGURATION, removes a potential for ignition sources and permits attention to be focused on restoration of the fire suppression system. A completion time of 1 hour is required to provide adequate time to safely SUSPEND WASTE HANDLING ACTIVITIES and minimize the time-at-risk.

ACTION B.5

The fire water supply system contains electric driven fire pump 45-G-601 and diesel powered fire pump 45-G-602. Both pumps are normally aligned to the fire suppression system and either pump can meet the system's design requirements. With WASTE in a SAFE CONFIGURATION and potential ignition and fuel sources reduced in the WHB, determination of the cause for the condition and restoration of at least one fire pump is required. A completion time of 24 hours is sufficient to restore the system while minimizing the time-at-risk.

ACTION C.1

The fire suppression can become INOPERABLE due to an inadequate supply of fire water. In the event that the fire water supply volume is < 105,000 gallons, the ability to supply fire water to the postulated 1 hour fire cannot be met. Therefore, the introduction of new CLOSED SHIPPING CONTAINERS into the WHB is IMMEDIATELY prohibited. A completion time of IMMEDIATELY is required to limit the amount of material that may need to be processed and down-loaded to the UNDERGROUND in the event that the system cannot be readily restored.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

ACTION C.2

To reduce the potential for fires, ignition and fuel sources are required to be removed from the WHB. Hot work activities are controlled in accordance with the Fire Protection Program and therefore, there may be hot work activities being conducted in the WHB. To reduce the potential for fire ignition, hot work activities SHALL be stopped within 1 hour. A completion time of 1 hour is required to provide adequate time to safely secure the ACTIVITY and minimize the time-at-risk.

ACTION C.3

In addition to removing potential ignition sources, fuel sources should be reduced. Liquid-fueled vehicles/equipment may be present in those WHB PROCESS AREAS that are in STANDBY MODE. Therefore, any liquid-fueled vehicle/equipment that is in the RH BAY or SHAFT ACCESS AREA SHALL be removed within 1 hour. A completion time of 1 hour is required to provide adequate time to safely remove the liquid-fueled vehicle/equipment and minimize the time-at-risk.

ACTION C.4

To reduce the potential for vehicle/equipment collisions, WASTE HANDLING ACTIVITIES are required to be suspended within 1 hour. SUSPENDING WASTE HANDLING ACTIVITIES permits placement of WASTE in a SAFE CONFIGURATION, removes a potential for ignition sources and permits attention to be focused on restoration of the fire suppression system. A completion time of 1 hour is required to provide adequate time to safely SUSPEND WASTE HANDLING ACTIVITIES and minimize the time-at-risk.

ACTION C.5

The fire water supply system is an 180,000 gallon tank and is normally maintained with a water volume significantly greater than 105,000 gallons. With WASTE in a SAFE CONFIGURATION and potential ignition and fuel sources reduced in the WHB, determination of the cause for the condition and restoration of the system is required. Makeup water must be supplied from a connection to the Carlsbad, New Mexico water supply or obtained by tanker truck. A completion time of 24 hours is sufficient to restore the system while minimizing the time-at-risk.

ACTION C.6

The fire suppression system operates with one tank maintained with a system pressure ≥ 105 psig. With WASTE in a SAFE CONFIGURATION and potential ignition and fuel sources reduced in the WHB, a realignment of tanks is required. A completion time of 24 hours is sufficient to restore the system while minimizing the time-at-risk.

ACTION D.1	In the event that the WHB fire suppression system cannot be restored to OPERABLE within the requirements of required ACTIONS A.5, additional ACTIONS are required to place the affected PROCESS AREA(S) in STANDBY MODE. Staging a fire truck external to the WHB reduces the response time in the event of a WHB fire event. A completion time of 1 hour is sufficient to provide adequate time to position the fire truck.
ACTION D.2	The areas affected by the loss of the fire suppression system SHALL be identified within 8 hours. The completion times of Condition A (24 hours) in addition to these 8 hours provides adequate time to identify the extent of the fault, the AFFECTED AREA(S), and to separate the fault from the system, if possible.
ACTION D.3	A temporary fire water distribution system capability to the AFFECTED AREA(S) SHALL be established within 24 hours. The temporary system is required to provide an element of fire suppression to the AFFECTED AREA(S) during WASTE HANDLING ACTIVITIES that are necessary to place the AFFECTED AREA(S) in STANDBY. The completion time of 24 hours provides adequate time to establish an element of fire suppression capability to the AFFECTED AREA(S).
ACTION D.4.1	The fire suppression system SHALL be aligned to the PROCESS AREA(S) to which the system can be aligned and determined OPERABLE per the applicable SRs. The OPERABLE portions of the fire suppression system SHALL be isolated from the fault. A completion time of 24 hours is adequate to identify the required alignment and complete the applicable SRs for those portions of the system.
ACTION D.4.2	In areas that cannot be supplied by the fire suppression system, a ROVING FIRE WATCH SHALL be established. A completion time of 24 hours is adequate to identify the AFFECTED AREA(S), identify required personnel, and establish the ROVING FIRE WATCH.
ACTION D.5	<p>Following the completion of required ACTIONS D.1, D.2, D.3, D.4.1 and D.4.2, as required, the PROCESS AREA SHALL enter WASTE HANDLING MODE. This ACTION is required to permit removal of WASTE from the WHB to reduce the overall risk while the fire suppression system is INOPERABLE. The completion time of 24 hours is sufficient to permit the required ACTIONS to be performed and to safely enter the WASTE HANDLING MODE in the AFFECTED AREA(S).</p> <p>A Note permits the use of the provisions of LCO 3.0.4. This allowance permits entry into WASTE HANDLING MODE while relying on the ACTIONS. This allowance is acceptable based on the Required ACTIONS of Condition D and the limited period of time to complete WASTE HANDLING ACTIVITIES and place the PROCESS AREA in STANDBY.</p>

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)**Bases (continued)****ACTIONS
(continued)**

ACTION D.6 Once WASTE HANDLING MODE is established in the AFFECTED AREA, down-loading of WASTE, placing of WASTE into a CLOSED SHIPPING CONTAINER, and/or closing of site-derived WASTE into a sealed container can be initiated. A completion time of 14 days is adequate to safely remove WASTE from the AFFECTED AREA(S) and to place the AFFECTED AREA(S) in STANDBY MODE while fire suppression system capability is re-established.

ACTION E.1 In the event that the WHB fire suppression system cannot be restored to OPERABLE within the requirements of required ACTIONS B.5, C.5, or C.6 additional ACTIONS are required to place the affected PROCESS AREA(S) in STANDBY MODE. Staging a fire truck external to the WHB reduces the response time in the event of a WHB fire event. A completion time of 1 hour is required to provide adequate time to position the fire truck.

ACTION E.2 Since all areas of the WHB are affected by either the loss of adequate fire water supply or loss of pumping capacity, a ROVING FIRE WATCH SHALL be established in the WHB. A completion time of 1 hour is adequate to identify required personnel and establish the ROVING FIRE WATCH.

ACTION E.3 Following the completion of required ACTIONS E.1 and E.2, the PROCESS AREA SHALL enter WASTE HANDLING MODE. This ACTION is required to permit removal of WASTE from the WHB to reduce the overall risk while the fire suppression system is INOPERABLE. The completion time of 24 hours is sufficient to permit the required ACTIONS to be performed and to safely enter the WASTE HANDLING MODE in the AFFECTED AREA(S).

A Note permits the use of the provisions of LCO 3.0.4. This allowance permits entry into WASTE HANDLING MODE while relying on the ACTIONS. This allowance is acceptable based on the required ACTIONS of Condition E and the limited period of time to complete WASTE HANDLING ACTIVITIES and place the PROCESS AREA in STANDBY.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

**ACTIONS
 (continued)**

ACTION E.4 Once WASTE HANDLING MODE is established, down-loading of WASTE, placing of WASTE into a CLOSED SHIPPING CONTAINER, and/or closing of site-derived WASTE into a sealed container can be initiated. A completion time of 14 days is adequate to safely remove WASTE from the AFFECTED AREA(S) and to place the AFFECTED AREA(S) in STANDBY MODE while fire suppression system capability is re-established.

**Surveillance
 Requirements**

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 ≥ 105 psig at each WHB riser. A system pressure of ≥ 70 psig is needed to ensure the system remains full and thereby reduce the likelihood of system water hammer in the event of a fire pump start. A pressure of ≥ 105 psig was selected to coincide with the fire pump test pressure which is conservative in the prevention of water hammer. VERIFICATION consists of reading the following gauges:

- CH BAY 411-PI-003-001
- ROOM 108 411-PI-003-003
- RH BAY 411-PI-003-005

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 NFPA 25, *Testing and Maintenance of Water Based Fire Protection Systems* (Ref. 5). Failure to meet or perform this SR requires entry into Condition A.

The specified gauges listed above for the WHB fire suppression system are sealed gauges that are calibrated to a specified accuracy from the manufacture and therefore, cannot be recalibrated. During the MONTHLY VERIFICATION of ≥ 105 psig, if a gauge is found to be INOPERABLE the system must be declared INOPERABLE and Condition A entered.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)**Bases (continued)****Surveillance
Requirements
(continued)**

SR 4.1.1.2 VERIFICATION SHALL be made MONTHLY that the isolation valve on each WHB fire suppression riser as listed below is locked open. This SR ensures that the required isolation valve for each WHB riser 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.

CH BAY FW-411-V-001

ROOM 108 FW-411-V-010

RH BAY FW-411-V-052

SR 4.1.1.3 Deleted

SR 4.1.1.4 VERIFICATION SHALL be made ANNUALLY that fire pump recirculation valve FW-456-V-021 is locked closed. This SR ensures that the recirculation valve is verified in the locked closed position providing assurance that the fire suppression flow is not diverted back to the fire water supply tank. The ANNUAL FREQUENCY has been determined to be adequate based upon NFPA criteria and the fact that a blank flange is installed in the recirculation line. Failure to meet or perform this SR requires entry into Condition A.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.1.1.5 The following ITV(s) SHALL be opened QUARTERLY for each WHB riser. The test is performed to ensure the flow of fire suppression water from the supply tank to each riser. The QUARTERLY FREQUENCY meets the requirements of NFPA 25 (Ref. 5). Failure to meet or perform this SR requires entry into Condition A.

CH BAY FW-411-V-023 and FW-412-V-002

ROOM 108 FW-411-V-062

RH BAY FW-411-V-042 and FW-411-V-044

SR 4.1.1.6 Perform an automatic start test on the either 45-G-601 (electric) or 45-G-602 (diesel) fire pumps WEEKLY. This automatic start test is performed to assure that the diesel fire pump automatically starts when system pressure decreases to ≥ 100 psig and the electric fire pump automatically starts when system pressure decreases to ≥ 110 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.

SR 4.1.1.7 VERIFICATION SHALL be made ANNUALLY that each fire pump is capable of pumping 1,500 gpm at ≥ 105 psig. The 1,500 gpm at ≥ 105 psig is the rated capacity of the pumps to adequately deliver water supply to the required areas of WHB fire suppression risers (Ref. 3). 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.

The gauges used during normal operation of both the diesel and the electric fire pumps are removed and replaced with measurement and test equipment during the ANNUAL VERIFICATION of the output flow and pressure. The sealed gauges normally installed are used to confirm the output 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.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.1.1.8 VERIFICATION SHALL be made WEEKLY that the diesel supply tank contains $\geq 3/4$ full tank of diesel. The diesel fuel tank has a 250-gallon capacity. The VERIFICATION is performed to assure that sufficient diesel fuel is available to operate the diesel fire pump (45-G-602) for the postulated fire. The diesel fire pump is normally shutdown and is operated WEEKLY (SR 4.1.1.6) for testing. The WEEKLY FREQUENCY has been determined to be adequate based upon the WEEKLY testing. Failure to meet or perform this SR requires entry into Condition B.

SR 4.1.1.9 VERIFICATION SHALL be made EACH SHIFT that there are $\geq 105,000$ gallons of water to fight fires within the WHB. Performance of this SR EACH SHIFT is adequate since the tank only supplies the fire suppression system. Based on a pump flow capacity of 1,500 gpm, the 105,000-gallon level allows for a 1 hour fire fighting capacity. Failure to meet or perform this SR requires entry into Condition C.

References

1. DOE G 420.1-1, 2000. *Nonreactor Nuclear Safety Design Criteria and Explosives Safety Criteria Guide*, March 28, 2000, U.S. Department of Energy, Washington, DC.
 2. WIPP-023. *Waste Isolation Pilot Plant Fire Hazard Analysis Report*, (current revision), Nuclear Waste Partnership, LLC, Carlsbad, NM.
 3. SDD FP00. *Fire Protection System (FP00) System Design Description (SDD)*, (current revision), Nuclear Waste Partnership, LLC, Carlsbad, NM.
 4. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
 5. NFPA 25. *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 2008 Edition, National Fire Protection Association, Quincy, MA.
 6. ECO 11286. *Calculation – Pressure and Flow For Hoist Tower Sprinklers*, Engineering Change Order 11286, (current revision), Nuclear Waste Partnership, LLC, Carlsbad, NM.
-

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Liquid-Fueled WASTE HANDLING EQUIPMENT Fire Suppression System

Bases

Background Summary

The UNDERGROUND liquid-fueled WASTE HANDLING EQUIPMENT automatic fire suppression system provides a dry chemical fire suppressant available to suppress vehicle fires associated with fuel line leaks and engine compartment fires (Ref. 1). The system is comprised of an 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 actuates automatically 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 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 that the operator of the liquid-fueled WASTE HANDLING EQUIPMENT can see the system status indication.

Application to Safety

LCO 3.1.2 protects the OPERABILITY of the automatic fire suppression system on liquid fueled WASTE HANDLING EQUIPMENT, selected for use. The automatic fire suppression is determined as important to safety to suppress a small fire on liquid-fueled WASTE HANDLING EQUIPMENT resulting from ignition of liquid fuel and/or hydraulic fluid.

LCO

The fire suppression system is available for liquid-fueled WASTE HANDLING EQUIPMENT selected for use as identified in LCO 3.1.2. OPERABILITY is demonstrated by VERIFYING that the fire suppression system on the liquid-fueled WASTE HANDLING EQUIPMENT selected for use has not discharged and the detection circuit is IN-SERVICE as indicated on the control module.

MODE Applicability

WASTE is handled with liquid-fueled WASTE HANDLING EQUIPMENT which is susceptible to a fire resulting from fuel leaks and vehicle collisions. Therefore this LCO is applicable when the UNDERGROUND is in WASTE HANDLING MODE and when liquid-fueled WASTE HANDLING EQUIPMENT is in the VEHICLE EXCLUSION ZONE.

Liquid-fueled WASTE HANDLING EQUIPMENT may be used for non-WASTE HANDLING ACTIVITIES while in DISPOSAL MODE. Therefore this LCO is applicable in DISPOSAL MODE when liquid-fueled WASTE HANDLING EQUIPMENT is in a DISPOSAL ROOM.

continued

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Liquid-fueled WASTE HANDLING EQUIPMENT Fire Suppression System (continued)

Bases (continued)

PROCESS AREA Applicability	The events identified in the safety analysis were located in the UNDERGROUND. WASTE HANDLING ACTIVITIES using liquid-fueled WASTE HANDLING EQUIPMENT are only conducted in the UNDERGROUND. Therefore, this LCO only applies to the UNDERGROUND PROCESS AREA.
-----------------------------------	---

ACTIONS

ACTION A.1	If the automatic Fire Suppression System is determined to be INOPERABLE, placing the UNDERGROUND in a SAFE CONFIGURATION ensures that WASTE is in the safest configuration away from the INOPERABLE vehicle. A completion time of IMMEDIATELY limits the time that fire events could be initiated by engine compartment fires on liquid-fueled WASTE HANDLING EQUIPMENT handling WASTE.
-------------------	---

ACTIONS A.2.1/A.2.2	<p>If the automatic Fire Suppression System is determined to be INOPERABLE, replacing the noncompliant vehicle with a compliant vehicle minimizes the fire events that could be initiated by engine compartment fire. A completion time of 1 hour provides adequate time to locate a compliant vehicle to replace the noncompliant vehicle.</p> <p>If there is no compliant vehicle available, the noncompliant vehicle is repaired PRIOR TO USE. A completion time of PRIOR TO USE ensure the fire suppression system on the equipment is OPERABLE.</p>
----------------------------	--

Surveillance Requirements SR 4.1.2.1.	A VERIFICATION SHALL be made that the automatic Fire Suppression System on the liquid-fueled WASTE HANDLING EQUIPMENT selected for use has not discharged EACH SHIFT. This SR ensures that the compressed nitrogen gas cylinder has not discharged. The FREQUENCY of EACH SHIFT is adequate for VERIFICATION that the automatic Fire Suppression System is charged and capable of suppressing a fire on the equipment. Failure to meet this requirement requires entry into Condition A.
--	--

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Liquid-fueled WASTE HANDLING EQUIPMENT Fire Suppression System (continued)

Bases (continued)

SR 4.1.2.2 A SEMIANNUAL test of the fire suppression system is required to VERIFY 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 SEMIANNUAL FREQUENCY testing of this system is judged to be adequate based on the system status checks that are routinely made on the system when the equipment is IN-SERVICE. Failure to meet or perform this SR requires entry into Condition A

SR 4.1.2.3 A VERIFICATION shall be made of the detection circuit on the liquid-fueled WASTE HANDLING EQUIPMENT selected for use EACH SHIFT 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 fire suppression system is impaired and that the system is ready to operate in the event of equipment fire. A completion time of EACH SHIFT ensures that the fire suppression system on the equipment selected for use is available to extinguish engine compartment fires. Failure to meet or perform this SR requires entry into Condition A.

References None

B3/4.2 Confinement Ventilation Systems

B3.2.1 CH Waste Handling Confinement Ventilation System

Bases

Background Summary

The function of the CH Waste Handling (WH) Confinement Ventilation System is to draw air through a filter mechanism to reduce the release of any airborne radiological particulate beyond the CH BAY or ROOM 108. Airborne radiological particulate can be generated within the CH BAY or ROOM 108 as a result of small fires or loss of confinement (LOC) events. The function of the IN-SERVICE exhaust fan is to ensure air is drawn through the IN-SERVICE HEPA filter train in the exhaust ventilation system. The function of the IN-SERVICE HEPA filter is to reduce the quantity of radiological particulates in the air flow before discharge to the environment.

Large fires will activate the fire suppression system which is designed to extinguish anticipated fires. Mitigation of large fire events is accomplished by the fire suppression system (LCO 3.1.1). A small fire may not actuate the suppression system but may generate airborne radiological particulates. The CH WH Confinement Ventilation System provides for mitigation of small fire events within the CH BAY or ROOM 108.

The CH WH exhaust system is designated as HV01 CVS (Ref. 1). The system is designed to maintain the air space at a pressure that is negative with respect to the outside atmosphere. The exhaust system is comprised of two exhaust fans and two HEPA filter units. The filter units are designated 41-B-814 and 41-B-815. The exhaust fans are designated 41-B-816 and 41-B-817.

Each filter unit has an inlet and outlet pneumatically operated damper. A cross-connection is provided between the two exhaust trains located between the filter unit outlets and the exhaust fan inlets. A pneumatically operated isolation damper is provided in the cross-connection line (Ref. 1).

The system is normally aligned to run as two trains in a lead/lag control scheme with auto change over on a loss of flow in the lead exhaust unit. Normally, exhaust fan 41-B-816 is aligned to draw through filter 41-B-814 as one exhaust train and exhaust fan 41-B-817 is aligned to draw through filter 41-B-815 as the second exhaust train. The cross-connection isolation damper is normally closed. Either exhaust fan can be aligned to draw from either HEPA filter unit (Ref. 1).

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.1 CH Waste Handling Confinement Ventilation System (continued)

Bases (continued)

Background Summary (continued)

Both CH exhaust fans discharge to a common header. The HOT CELL COMPLEX exhaust fans (LCO 3.2.2) also discharge into this same header. A seismic/tornado damper is located in this common header. Closure of this seismic/tornado damper is a common failure of all WHB exhaust fans. The damper in the radiation effluent monitor exhaust duct has a switch in the blade linkage that is closed when the damper closes. This switch energizes the relay which opens the trip circuits of the exhaust fans.

Unfiltered release of radiological material as a result of small fires or LOC events could affect co-located workers outside the CH BAY or ROOM 108. Operation of an exhaust fan through a HEPA filter reduces the consequences to co-located workers. The workers within the CH BAY or ROOM 108 are assumed to be aware of the event and take precautions to limit their consequences.

Application to Safety

The safety analysis (Ref. 2) identified events involving small fires, dropping of WASTE containers, and elevated materials dropping on WASTE containers within the CH BAY or ROOM 108. Each of these events can release airborne radiological material into the CH atmosphere, which if left unfiltered, would be released to the environment and affect co-located workers outside of the CH BAY or ROOM 108. The safety analysis identified a potential for high consequences to co-located workers.

The safety analysis assumes that using a CH exhaust fan to draw the CH atmosphere through a HEPA filter with $\geq 99\%$ efficiency reduces the consequences to any co-located workers to low. Since the CH BAY or ROOM 108 is an enclosed facility, any air flow through the as a result of an IN-SERVICE CH exhaust fan and filter is sufficient to provide the required filtration. Therefore, the operation of one CH exhaust fan drawing through either exhaust HEPA filter is sufficient to provide the safety function assumed in the safety analysis.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.1 CH Waste Handling Confinement Ventilation System (continued)

Bases (continued)

LCO

Facility personnel outside the CH BAY or ROOM 108 may not be aware of releases of airborne radiological material within the CH BAY or ROOM 108. Filtration of the air leaving the CH BAY or ROOM 108 reduces the consequences to personnel outside of the CH BAY or ROOM 108. The lowest functional capability is met by an operating CH exhaust fan drawing CH BAY or ROOM 108 atmosphere through a HEPA filter and discharging through an open seismic/tornado damper to the environment.

The flow of air from the CH BAY or ROOM 108, through a HEPA filter, and exhausted is sufficient to provide the assumed level of mitigation for small fires and LOC events in the BAY. Therefore, an OPERABLE CH WH Confinement Ventilation System is satisfied by one operating exhaust fan aligned to and drawing air through a HEPA filter and discharging through an open seismic/tornado damper. The HEPA filter provides for the removal of particulate from the air flow.

The system is normally aligned for operation with exhaust fan 41-B-816 drawing through filter 41-B-814 and exhaust fan 41-B-817 aligned for operation through filter 41-B-815. However, specific alignment of fan and filter is not essential to accomplish the safety function. The seismic/tornado damper is normally aligned open. The supply and exhaust fans are interlocked to shut down upon closure of the seismic/tornado damper.

**MODE
 Applicability**

WASTE is brought into the CH BAY or ROOM 108 in CLOSED SHIPPING CONTAINERS. The shipping containers are opened and WASTE is removed, prepared, and transferred to the WASTE shaft conveyance for disposal in the UNDERGROUND. Some WASTE may be stored in the CH BAY for a time period prior to transfer to the UNDERGROUND. This WASTE may be subject to fires, container drops, or impacts to WASTE containers when the WASTE is outside of the CLOSED SHIPPING CONTAINERS. Therefore, this LCO is applicable during WASTE HANDLING and WASTE STORAGE MODES.

When all WASTE in the CH BAY or ROOM 108 is enclosed in CLOSED SHIPPING CONTAINERS or all WASTE is removed from the CH BAY or ROOM 108, then CH exhaust ventilation is not required. If there is no WASTE in the CH BAY or ROOM 108, then there are no significant quantities of radiological material available to be involved in the assumed events. WASTE enclosed in CLOSED SHIPPING CONTAINERS is protected by the shipping containers and is assumed to remain within the shipping container during any credible event. Therefore, the CH exhaust ventilation system is not required to be OPERABLE when the CH BAY or ROOM 108 is in STANDBY MODE.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.1 CH Waste Handling Confinement Ventilation System (continued)

Bases (continued)

PROCESS AREA Applicability The events identified in the safety analysis were located in the CH BAY and/or ROOM 108. The CH exhaust ventilation system only provides exhaust and filtration of the CH BAY or ROOM 108 atmosphere. Therefore, this LCO only applies to the CH BAY and/or ROOM 108 PROCESS AREAs.

ACTIONS

ACTION A.1 In the event that neither CH exhaust fan is operating, the capability to filter potentially contaminated air during a fire or LOC event is impaired. Therefore, the introduction of new CLOSED SHIPPING CONTAINERS into the WHB is IMMEDIATELY prohibited. A completion time of IMMEDIATELY is required to limit the amount of material that may need to be processed and down-loaded to the UNDERGROUND in the event that the system cannot be readily restored.

ACTION A.2 Hot work activities being conducted in the WHB have the potential to initiate a fire event. Therefore, if the CH exhaust ventilation system is INOPERABLE the risk of fires should be reduced. Stopping hot work activities reduces the likelihood of fire events. A 1-hour completion time to stop hot work activities provides for properly securing the ACTIVITY and work area while minimizing the time-at-risk.

ACTION A.3 Liquid-fueled vehicles/equipment are permitted to be in the RH BAY and SHAFT ACCESS AREA at any time. Therefore, to reduce the potential of fires which could propagate to the CH BAY or ROOM 108, removal of liquid-fueled vehicles/equipment from the WHB is required to reduce the risk. A 1-hour completion time to stop hot work activities provides for properly removing the vehicles/equipment while minimizing the time-at-risk.

ACTION A.4 To reduce the potential for vehicle/equipment collisions and dropping of containers, WASTE HANDLING ACTIVITIES are required to be suspended within 1 hour. SUSPENDING WASTE HANDLING ACTIVITIES permits placement of WASTE in a SAFE CONFIGURATION, removes a potential for ignition sources and dropping containers, and permits attention to be focused on restoration of the CH WH Confinement Ventilation System. A completion time of 1 hour is required to provide adequate time to safely SUSPEND WASTE HANDLING ACTIVITIES and minimize the time-at-risk.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.1 CH Waste Handling Confinement Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

ACTION A.5 The CH WH CVS is normally aligned with one exhaust fan IN-SERVICE drawing air flow through one filter unit. With potential ignition and fuel sources reduced in the WHB, and the potential for WASTE container drops, determination of the cause for the condition and restoration of the system is required. A completion time of 12 hours is sufficient to restore the system while minimizing the time-at-risk.

ACTION B.1 In the event that the CH exhaust air is not flowing through a HEPA filter unit, the capability to filter potentially contaminated air during a fire or LOC event is impaired. Therefore, the introduction of new CLOSED SHIPPING CONTAINERS into the WHB is IMMEDIATELY prohibited. A completion time of IMMEDIATELY is required to limit the amount of material that may need to be processed and down-loaded to the UNDERGROUND in the event that the system cannot be readily restored.

ACTION B.2 Hot work activities being conducted in the WHB have the potential to initiate a fire event. Therefore, if the CH exhaust ventilation system is INOPERABLE the risk of fires should be reduced. Stopping hot work activities reduces the likelihood of fire events. A 1-hour completion time to stop hot work activities provides for properly securing the ACTIVITY and work area while minimizing the time-at-risk.

ACTION B.3 Liquid-fueled vehicles/equipment are permitted to be in the RH BAY and SHAFT ACCESS AREA at any time. Therefore, to reduce the potential of fires which could propagate to the CH BAY or ROOM 108, removal of liquid-fueled vehicles/equipment from the WHB is required to reduce the risk. A 1-hour completion time to stop hot work activities in the WHB provides for properly removing the vehicles/equipment while minimizing the time-at-risk.

ACTION B.4 To reduce the potential for vehicle/equipment collisions and dropping containers, WASTE HANDLING ACTIVITIES are required to be suspended within 1 hour. SUSPENDING WASTE HANDLING ACTIVITIES permits placement of WASTE in a SAFE CONFIGURATION, removes a potential for ignition sources and permits attention to be focused on restoration of the CH WH Confinement Ventilation System. A completion time of 1 hour is required to provide adequate time to safely SUSPEND WASTE HANDLING ACTIVITIES and minimize the time-at-risk.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.1 CH Waste Handling Confinement Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

ACTION B.5 The CH WH Confinement Ventilation System is normally aligned with one exhaust fan IN-SERVICE drawing air flow through one filter unit. With potential ignition and fuel sources reduced in the WHB, and the potential for WASTE container drops, determination of the cause for the condition and restoration of the system is required. A completion time of 12 hours is sufficient to place the alternate filter unit IN-SERVICE while minimizing the time-at-risk.

ACTION C.1 In the event that the IN-SERVICE HEPA filter is determined to be < 99 % efficient, the capability to filter potentially contaminated air during a fire or LOC event is impaired. Therefore, the introduction of new CLOSED SHIPPING CONTAINERS into the WHB is IMMEDIATELY prohibited. A completion time of IMMEDIATELY is required to limit the amount of material that may need to be processed and down-loaded to the UNDERGROUND in the event that the system cannot be readily restored.

ACTION C.2 Hot work activities being conducted in the WHB have the potential to initiate a fire event. Therefore, if the CH exhaust ventilation system is INOPERABLE the risk of fires should be reduced. Stopping hot work activities reduces the likelihood of fire events. A 1-hour completion time to stop hot work activities provides for properly securing the ACTIVITY and work area while minimizing the time-at-risk.

ACTION C.3 Liquid-fueled vehicles/equipment are permitted to be in the RH BAY and SHAFT ACCESS AREA at any time. Therefore, to reduce the potential of fires which could propagate to the CH BAY or ROOM 108, removal of liquid-fueled vehicles/equipment from the WHB is required to reduce the risk. A 1-hour completion time to stop hot work activities in the CH BAY or ROOM 108 provides adequate time to properly remove the vehicles/equipment while minimizing the time-at-risk.

ACTION C.4 To reduce the potential for vehicle/equipment collisions and dropping WASTE containers, WASTE HANDLING ACTIVITIES are required to be suspended within 1 hour. SUSPENDING WASTE HANDLING ACTIVITIES permits placement of WASTE in a SAFE CONFIGURATION, removes a potential for ignition sources and permits attention to be focused on restoration of the CH WH CVS. A completion time of 1 hour is required to provide adequate time to safely SUSPEND WASTE HANDLING ACTIVITIES and minimize the time-at-risk.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.1 CH Waste Handling Confinement Ventilation System (continued)**Bases (continued)****ACTIONS
(continued)****ACTION C.5**

The CH WH Confinement Ventilation System is normally aligned with one exhaust fan IN-SERVICE drawing air flow through one filter unit. With potential ignition and fuel sources reduced in the WHB, and the potential for WASTE container drops, determination of the cause for the condition and restoration of the system is required. A completion time of 12 hours is sufficient to place the alternate filter unit IN-SERVICE while minimizing the time-at-risk.

ACTION D.1

In the event that the CH WH Confinement Ventilation System cannot be restored to OPERABLE within the requirements of required ACTIONS A.5, B.5, or C.5, it is necessary to place the affected PROCESS AREA(S) in STANDBY MODE. Entry into this condition is made when the CH WH Confinement Ventilation System cannot be readily restored through realignment of the system's configuration. WASTE must be removed from the affected PROCESS AREA(S) to reduce the risk. Therefore, entry into WASTE HANDLING MODE is required to permit down-loading WASTE. A completion time of 24 hours is required to provide adequate time reduce the time-at-risk.

A Note permits the use of the provisions of LCO 3.0.4. This allowance permits entry into WASTE HANDLING MODE. This allowance is acceptable based on the limited period of time to complete WASTE HANDLING ACTIVITIES and place the affected PROCESS AREA(S) in STANDBY.

ACTION D.2

Once WASTE HANDLING MODE is established in the CH BAY and/or Room 108, down-loading of WASTE, placement of WASTE into a CLOSED SHIPPING CONTAINER, and/or place of site-derived WASTE into a sealed container can be initiated. A completion time of 14 days is adequate to safely remove WASTE and place the CH BAY or ROOM 108 and/or in STANDBY MODE while Confinement Ventilation System capability is re-established.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.1 CH Waste Handling Confinement Ventilation System (continued)

Bases (continued)

Surveillance Requirements

SR 4.2.1.1 A CH exhaust fan is normally operating at all times. Fan operation is monitored in the CMR. DAILY VERIFICATION that one CH exhaust fan is IN-SERVICE is adequate to demonstrate OPERABILITY. Failure to meet this requirement requires entry into Condition A.

SR 4.2.1.2 The CH exhaust ventilation system is designed such that the IN-SERVICE exhaust fan draws through one of the two filter trains. Exhaust system alignment is indicated in the CMR. DAILY VERIFICATION of system alignment is adequate to demonstrate that the exhaust system is IN-SERVICE. Failure to meet this requirement requires entry into Condition B.

SR 4.2.1.3 One stage of HEPA filtered exhaust from the CH BAY or ROOM 108 is assumed to be $\geq 99\%$ efficient. Annual VERIFICATION of filter efficiency is adequate to demonstrate that the filter is performing its required function (Ref. 3). Failure to meet this requirement requires entry into Condition C.

References

1. SDD HV00. *Heating, Ventilation and Air Conditioning System System Design Description (SDD)*, (current revision), Nuclear Waste Partnership, LLC, Carlsbad, NM.
 2. DOE/WIPP 07-3373. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
 3. ANSI/ASME N510-1989. *Testing of Nuclear Air-Treatment Systems*, American National Standards Institute, New York, NY.
-

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.2 HOT CELL COMPLEX Confinement Ventilation System

Bases

Background Summary

The function of the HOT CELL COMPLEX Confinement Ventilation System is to draw HOT CELL COMPLEX air through a filter mechanism to reduce the release of any airborne radiological particulate beyond the HOT CELL COMPLEX. Airborne radiological particulate can be generated within the d the HOT CELL COMPLEX as a result of small fires. The function of the IN-SERVICE exhaust fan is to ensure air in the HOT CELL COMPLEX is drawn through the IN-SERVICE HEPA filter units in the exhaust ventilation system. The function of the IN-SERVICE HEPA filters is to reduce the quantity of radiological particulate in the air flow before discharge to the environment.

The HOT CELL COMPLEX exhaust system is designated as HV02 CVS (Ref. 1). The system is designed to maintain the HOT CELL COMPLEX air space at a static pressure which is negative with respect to the outside atmosphere. The exhaust system is comprised of two exhaust fans and three (50% capacity each) HEPA filter housings. The filter housings are designated 41-B-877A, 41-B-877B, and 41-B-877C. The exhaust fans are designated 41-B-878A and 41-B-878B.

Each filter unit and each exhaust fan has an inlet and outlet pneumatically operated damper. Either exhaust fan can be aligned to draw from any two of the three HEPA filter units. The system operates lead/lag and on a loss of air flow for the lead fan the lag fan will automatically start (Ref. 1).

Both HOT CELL COMPLEX exhaust fans discharge to a common header. The CH BAY exhaust fans (LCO 3.2.1) also discharge into this same header. A seismic/tornado damper is located in this common header. Closure of this seismic/tornado damper is a common MODE failure of all WHB exhaust fans. The damper in the radiation effluent monitor exhaust duct has a switch in the blade linkage that is closed when the damper closes. This switch energizes the relay which opens the trip circuits of the exhaust fans (Ref. 1).

Unfiltered release of radiological material as a result of small fires could affect co-located workers outside the HOT CELL COMPLEX. Operation of an exhaust fan through a HEPA filter reduces the consequences to the co-located workers.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.2 HOT CELL COMPLEX Confinement Ventilation System (continued)

Bases (continued)

Application to Safety

The safety analysis (Ref. 2) identified the potential for small fires, internal drum deflagrations, and drops into transfer cell, within the HOT CELL COMPLEX. A small fire event can release airborne radiological material into the HOT CELL COMPLEX atmosphere, which if left unfiltered, would be released to the environment and affect co-located workers outside of the HOT CELL COMPLEX. The safety analysis identified a potential for high consequences to the co-located workers.

The safety analysis assumes that using a HOT CELL COMPLEX exhaust fan to draw the HOT CELL COMPLEX atmosphere through HEPA filters with $\geq 99\%$ efficiency reduces the consequences to any co-located workers to low. Since the HOT CELL COMPLEX is an enclosed facility, any air flow through the complex as a result of an operating HOT CELL COMPLEX exhaust fan is sufficient to provide the required filtration. Therefore, the operation of one HOT CELL COMPLEX exhaust fan drawing through two of the three exhaust HEPA filter units is sufficient to provide the safety function assumed in the safety analysis.

LCO

Facility personnel outside the HOT CELL COMPLEX may not be aware of releases of airborne radiological material within the HOT CELL COMPLEX. Filtration of the air leaving the HOT CELL COMPLEX reduces the consequences to personnel outside of the HOT CELL COMPLEX. The lowest functional capability is met by an OPERABLE HOT CELL COMPLEX exhaust fan drawing HOT CELL COMPLEX atmosphere through HEPA filters and discharging through an open seismic/tornado damper to the environment.

The flow of air from the HOT CELL COMPLEX, through HEPA filters, and exhausted is sufficient to provide the assumed level of mitigation for small fire events in the complex. Therefore, an OPERABLE HOT CELL COMPLEX Confinement Ventilation System is satisfied by one operating exhaust fan aligned to and drawing through HEPA filters. The HEPA filters provide for the removal of particulate from the air flow.

The system is normally aligned for operation with one exhaust fan (41-B-878A or 41-B-878B) drawing through two of three filter units (41-B-877A, 41-B-877B, or 41-B-877C) with $\geq 99\%$ efficiency. However, specific alignment of fan and filter units is not essential to accomplish the safety function. The seismic/tornado damper is normally aligned open. The supply and exhaust fans are interlocked to shut down upon closure of the seismic/tornado damper.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.2 HOT CELL COMPLEX Confinement Ventilation System (continued)

Bases (continued)

MODE Applicability WASTE is brought into the HOT CELL COMPLEX for overpacking into a facility canister, in a 10-160B shipping container with its lid bolts detensioned. The lid is removed in the HOT CELL COMPLEX and WASTE is removed, overpacked, and transferred to the WASTE shaft conveyance for disposal in the UNDERGROUND. WASTE may be placed in a facility canister located in a HOT CELL COMPLEX well for a time period prior to transfer to the UNDERGROUND. WASTE is subject to fires, internal drum deflagration, and drops into the transfer cell, when the WASTE is outside of the 10-160B shipping container. Therefore, this LCO is applicable during WASTE HANDLING and WASTE STORAGE MODES when processing 10-160B WASTE containers.

When all WASTE in the HOT CELL COMPLEX is removed from the complex or the facility is processing a 72-B WASTE container, the HOT CELL COMPLEX exhaust ventilation is not required. If there is no WASTE in the complex, then there are no significant quantities of radiological material available to be involved in the assumed events. The hazards and accident analysis concluded that confinement ventilation was not needed when processing a 72-B container. Therefore, the HOT CELL COMPLEX exhaust ventilation system is only required to be OPERABLE when the processing 10-160B WASTE containers.

PROCESS AREA Applicability The events identified in the safety analysis were located in the HOT CELL COMPLEX. The HOT CELL COMPLEX exhaust ventilation system only provides exhaust and filtration of the complex atmosphere. Therefore, this LCO only applies to the HOT CELL COMPLEX PROCESS AREA.

ACTIONS

ACTION A.1 In the event that neither HOT CELL COMPLEX exhaust fan is operating, the capability to filter potentially contaminated air during a fire event, internal drum deflagration, and drops in the transfer cell, are impaired. SUSPENDING WASTE HANDLING ACTIVITIES in the HOT CELL COMPLEX permits placement of WASTE in a SAFE CONFIGURATION, removes a potential for ignition sources, and permits attention to be focused on restoration of the HOT CELL COMPLEX confinement ventilation system. A completion time of 1 hour is required to provide adequate time to safely SUSPEND WASTE HANDLING ACTIVITIES and minimize the time-at-risk.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.2 HOT CELL COMPLEX Confinement Ventilation System (continued)**Bases (continued)****ACTIONS
(continued)****ACTION A.2**

The HOT CELL COMPLEX Confinement Ventilation System is normally aligned with one exhaust fan IN-SERVICE drawing air flow through two of three filter units. With potential ignition and fuel sources and dropping of WASTE containers reduced in the HOT CELL COMPLEX, and determination of the cause for the condition and restoration of the system is required. A completion time of 12 hours is sufficient to restore the system while minimizing the time-at-risk.

ACTION B.1

In the event that HOT CELL COMPLEX exhaust air is not flowing through HEPA filter units, the capability to filter potentially contaminated air during a fire event, internal drum deflagration, and drops into the transfer cell, is impaired. SUSPENDING WASTE HANDLING ACTIVITIES permits placement of WASTE in a SAFE CONFIGURATION, removes a potential for ignition sources, and permits attention to be focused on restoration of the HOT CELL COMPLEX confinement ventilation system. A completion time of 1 hour is required to provide adequate time to safely SUSPEND WASTE HANDLING ACTIVITIES and minimize the time-at-risk.

ACTION B.2

The HOT CELL COMPLEX Confinement Ventilation System is normally aligned with one exhaust fan IN-SERVICE drawing air flow through two of three filter units. With potential ignition and fuel sources and dropping of WASTE containers reduced in the HOT CELL COMPLEX, determination of the cause for the condition and restoration of the system is required. A completion time of 12 hours is sufficient to restore the system while minimizing the time-at-risk.

ACTION C.1

In the event that the HOT CELL COMPLEX HEPA filters are determined to be < 99 % efficient, the capability to filter potentially contaminated air during a fire event is impaired. SUSPENDING WASTE HANDLING ACTIVITIES permits placement of WASTE in a SAFE CONFIGURATION, removes a potential for ignition sources and dropping of WASTE containers, and permits attention to be focused on restoration of the HOT CELL COMPLEX confinement ventilation system. A completion time of 1 hour is required to provide adequate time to safely SUSPEND WASTE HANDLING ACTIVITIES and minimize the time-at-risk.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.2 HOT CELL COMPLEX Confinement Ventilation System (continued)**Bases (continued)****ACTIONS
(continued)**

ACTION C.2 The HOT CELL COMPLEX Confinement Ventilation System is normally aligned with one exhaust fan IN-SERVICE drawing air flow through two of three filter units with $\geq 99\%$ efficiency each. With potential ignition and fuel sources and dropping of WASTE containers reduced in the HOT CELL COMPLEX, determination of the cause for the condition and restoration of the system is required. A completion time of 12 hours is sufficient to restore the system while minimizing the time-at-risk.

ACTION D.1 In the event that the HOT CELL COMPLEX Confinement Ventilation System cannot be restored to OPERABLE within the requirements of required ACTIONS A.2, B.2, or C.2, it is necessary to place the affected PROCESS AREA(S) in STANDBY MODE. Entry into this condition is made when the HOT CELL COMPLEX Confinement Ventilation System cannot be readily restored through realignment of the system's configuration. WASTE must be removed from the HOT CELL COMPLEX to reduce the risk. Therefore, entry into WASTE HANDLING MODE is required to permit down-loading WASTE. A completion time of 24 hours is required to provide adequate time reduce the time-at-risk.

A note permits the use of the provisions of LCO 3.0.4. This allowance permits entry into WASTE HANDLING MODE. This allowance is acceptable based on the limited period of time to complete WASTE HANDLING ACTIVITIES and place the HOT CELL COMPLEX in STANDBY.

ACTION D.2 Once WASTE HANDLING MODE is established in the HOT CELL COMPLEX, down-loading of the RH WASTE drums from a 10-160B shipping container can be initiated. A completion time of 7 days is adequate to safely remove WASTE from the HOT CELL COMPLEX and to place the HOT CELL COMPLEX in STANDBY MODE while HOT CELL COMPLEX Confinement Ventilation System capability is re-established.

continued

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.2 HOT CELL COMPLEX Confinement Ventilation System (continued)

Surveillance Requirements

SR 4.2.2.1 A HOT CELL COMPLEX exhaust fan is normally operating when processing 10-160B waste. Fan operation is monitored in the CMR. DAILY VERIFICATION that 41-B-878A or 41-B-878B fan is operating is adequate to demonstrate that the exhaust is being filtered. Failure to meet this requirement requires entry into Condition A.

SR 4.2.2.2 The HOT CELL COMPLEX exhaust system is designed such that the IN-SERVICE exhaust fan draws through two of the three filter units. DAILY VERIFICATION of system alignment is adequate to demonstrate that the exhaust system is IN-SERVICE. Failure to meet this requirement requires entry into Condition B.

SR 4.2.2.3 The HOT CELL COMPLEX exhaust filter trains are designed to function with ≥ 99 % efficiency. Annual VERIFICATION of filter efficiency for one stage per filter unit, at least once per year is adequate to demonstrate that the filter is performing its required function (Ref. 3). Failure to meet this requirement requires entry into Condition C.

References

1. SDD HV00. *Heating, Ventilation and Air Conditioning System System Design Description (SDD)*, (current revision), Nuclear Waste Partnership, LLC, Carlsbad, NM.
 2. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
 3. ANSI/ASME N510-1989. *Testing of Nuclear Air-Treatment Systems*, American National Standards Institute, New York, NY.
-

B3/4.3 Vehicle/Equipment Control

B3.3.1 Vehicle/Equipment Control in the OUTSIDE AREA

Bases

Background Summary

A site refueling station was constructed at the WIPP to provide the fuels required for WIPP activities. Liquid-fuel is delivered to the site by fuel delivery trucks which enter through security's vehicle trap. Upon completion of the vehicle security inspection the truck is permitted to enter the fenced area and proceed to the site refueling station located north of the WHB. The truck travels east along the main road directly in front of the Support Building and the WHB. The truck turns left (north) away from the WHB and onto the refueling station access road. After fuel delivery, the truck retraces its route to the vehicle trap and exits the WIPP site.

Fuel delivery truck drivers may not be familiar with the WIPP site and therefore, an individual is assigned to escort the truck on the DESIGNATED ROUTE while travelling between the vehicle trap and the site refueling station to prevent the fuel delivery truck from inadvertently driving in proximity of the WHB.

Application to Safety

The WIPP safety analysis (Ref. 1) identified the potential the fuel delivery fire event in the OUTSIDE AREA. These events could involve the WHB or could propagate to the WHB and involve radiological material contained in the WHB. Routing of fuel trucks away from the WHB reduces the likelihood of fire events involving radiological material.

Fire events were assumed to not impact radiological material in CLOSED SHIPPING CONTAINERS in the onsite parking area unit. All WASTE in the OUTSIDE AREA is required to be in CLOSED SHIPPING CONTAINERS (LCO 3.5.3).

The likelihood of fire events involving radiological material is reduced by designating the route for fuel delivery trucks, escorting the fuel delivery vehicles from entrance into the PPA to the refueling tank and back to the vehicle trap.

LCO

Fuel delivery trucks are required to deliver liquid-fuel products to the WIPP. Fire events involving these products have the potential to impact or propagate to the WHB and involve radiological material contained in the WHB. Therefore, this LCO is required to ensure that events involving fuel delivery trucks do not affect the WHB. The fuel delivery truck is required to have a leading escort and stay on the DESIGNATED ROUTE. These two attributes prevent the fuel delivery truck from interacting with the WHB.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.1 Vehicle/Equipment Control in the OUTSIDE AREA (continued)**Bases (continued)**

MODE Applicability	WASTE may be present in the WHB during WASTE HANDLING and WASTE STORAGE MODES. Fires occurring in the OUTSIDE AREA may affect the WHB. Since there are no MODES defined for the OUTSIDE AREA, this LCO applies at all times.
---------------------------	--

PROCESS AREA Applicability	Fuel delivery trucks are only operated in the OUTSIDE AREA. Therefore, this LCO applies to the OUTSIDE AREA.
-----------------------------------	--

ACTIONS

ACTION A.1	In the event the fuel delivery truck leading escort is not present or becomes disabled, the truck SHALL be IMMEDIATELY stopped. Operation of the fuel delivery truck without a leading escort does not, in and of itself, result in an adverse event. However, the truck driver may not be familiar with the WIPP site and the travel restrictions imposed by this LCO. IMMEDIATELY stopping the truck reduces the likelihood of a vehicle incident involving the fuel delivery truck.
-------------------	--

ACTION A.2	A leading escort SHALL be established for the fuel delivery truck IMMEDIATELY. Since the fuel delivery truck is stopped while the escort is established, the likelihood of an event is reduced and the time-at-risk is minimized. IMMEDIATELY establishing a leading escort reduces the likelihood of the fuel delivery truck inadvertently approaching areas of the WHB that contain WASTE.
-------------------	--

ACTION B.1	In the event of a fuel delivery truck deviates from the DESIGNATED ROUTE, the truck SHALL be IMMEDIATELY routed back to the DESIGNATED ROUTE. Departure from the route does not, in and of itself, result in an adverse event. IMMEDIATELY directing the truck back to the route prevents the further reduction of the distance between the truck and the WHB.
-------------------	--

ACTION B.2	VERIFICATION that the truck is on the DESIGNATED ROUTE SHALL be completed within 15 minutes. Fifteen (15) minutes provides adequate time to inform the truck driver of the condition, maneuver the truck, and return it to the DESIGNATED ROUTE. The time-at-risk is minimized by ensuring the truck has returned to the DESIGNATED ROUTE within 15 minutes.
-------------------	--

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.1 Vehicle/Equipment Control in the OUTSIDE AREA (continued)

Bases (continued)

Surveillance Requirements

SR 4.3.1.1 VERIFICATION that a leading escort for each liquid-fuel shipment SHALL be completed. Fuel deliveries could occur during any MODE. Establishing a leading escort for the fuel delivery truck is necessary to reduce the likelihood that the fuel delivery truck would impact radioactive material. Failure to establish a leading escort, in and of itself, is not an initiator of an adverse event. Failure to meet this requirement requires entry into Condition A.

SR 4.3.1.2 VERIFICATION SHALL be performed that the fuel delivery truck traveled the DESIGNATED ROUTE when delivering fuel and when exiting. Fuel deliveries could occur during any MODE. Escorting the fuel delivery truck along the DESIGNATED ROUTE is adequate to preclude the fuel delivery truck from impacting radioactive material. The deviation of the vehicle from the DESIGNATED ROUTE, in and of itself, does not initiate an adverse event. Failure to meet this requirement requires entry into Condition B.

References

1. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
-

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Vehicle/Equipment Control in the CH BAY and ROOM 108

Bases

Background Summary

WASTE is removed from shipping containers in the CH BAY and ROOM 108 and transferred to the SHAFT ACCESS AREA, temporarily stored in the CH BAY, or stored in the shielded storage room. The CH BAY is a large bay containing two TRUDOCKs for unloading shipping containers, stored WASTE, vehicles, and other equipment required for WASTE processing. ROOM 108 is a large bay area containing a Bolting Station, a Payload Transfer Station for removing SLB2s from the TRUPACT-III, facility pallet stands, FTVs, and other equipment required for WASTE processing. Vehicles/equipment operating in these areas introduces the potential for vehicle collisions resulting in fuel spills with fires and/or LOC with release of radiological material.

Battery powered vehicles operating in the WHB are constructed to reduce their potential for the ignition of fires.

Liquid-fueled vehicles/equipment operating in the CH BAY, ROOM 108 and/or SHAFT ACCESS AREA introduces the potential for fuel spills due to collisions. A fuel pool in coincidence with an ignition source could result in a fire and subsequent release of radiological material release. The presence of liquid-fueled vehicles/equipment does not, in and of itself, result in an adverse event. In order for such an event to occur, an accident resulting in the puncturing of the fuel tank in coincidence with an ignition source would be required. Prohibiting liquid-fueled vehicles/equipment from the CH BAY, ROOM 108, and SHAFT ACCESS AREA reduces the likelihood for fuel-pool fires in these areas.

WHB fire suppression (LCO 3.1.1) requires the suppression system to be OPERABLE when WASTE is present in the CH BAY and ROOM 108. CH WH ventilation (LCO 3.2.1) is also required to be OPERABLE for mitigation of fires and WASTE container drops in the CH BAY or ROOM 108.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Vehicle/Equipment Control in the CH WHB and ROOM 108 (continued)

Bases (continued)

Application To Safety

The safety analysis (Ref. 1) identified fire and LOC events could result due to the operation of vehicles/ equipment in the CH BAY and ROOM 108. Liquid-fueled vehicles/equipment present sources of ignition and fuel. Vehicle operations can result in WASTE impacts and/or drops resulting in LOC.

Assumptions for the analyses included the following:

- WASTE inside a CLOSED SHIPPING CONTAINER is protected from involvement in any fire or LOC event; and
- Site-derived WASTE in a container with its lid in place responds the same as a TRU WASTE container in a fire and LOC event.

Prohibiting the presence of liquid-vehicles in the CH BAY is credited with reducing the FREQUENCY of fire and vehicle collisions.

LCO

The presence of liquid-fueled vehicles/equipment in the CH BAY and ROOM 108 have the potential to initiate or be involved in fire events. Prohibiting the presence of these vehicles when WASTE is present is necessary to minimize the likelihood of these events.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Vehicle/Equipment Control in the CH BAY and Room 108 (continued)**Bases (continued)**

**MODE
Applicability**

WASTE is permitted to be in the CH BAY and ROOM 108 during both WASTE HANDLING and WASTE STORAGE MODES. Fires and LOC in the CH BAY and ROOM 108 can result in the release of radiological material. WASTE can be impacted by WASTE HANDLING EQUIPMENT resulting in LOC of radiological material. WASTE is not present during STANDBY MODE and therefore, is not affected by fires or impact events. Therefore, this LCO is applicable during WASTE HANDLING and WASTE STORAGE MODES.

**PROCESS AREA
Applicability**

Sufficient quantities of WASTE may be stored or transiting the CH BAY which if released due to a fire or LOC event, could adversely affect co-located workers. Therefore, this LCO is applicable to the CH BAY and ROOM 108.

ACTIONS**ACTION A.1**

In the event that liquid-fueled vehicle/equipment is identified as being present in the CH BAY and ROOM 108, removing the liquid-fueled vehicle/equipment IMMEDIATELY reduces the likelihood for initiation of a fire or LOC event. An alternative to this ACTION is provided by ACTIONS A.2.1 and A.2.2.

**ACTIONS
A.2.1/A.2.2**

An alternative to Required ACTION A.1 is to IMMEDIATELY SUSPEND WASTE HANDLING ACTIVITIES. IMMEDIATELY suspending activities reduces the likelihood for initiation of a fire or LOC event.

Liquid-fueled vehicle/equipment SHALL then be removed from the CH BAY and ROOM 108 within 30 minutes. This action is necessary to protect the assumption that such vehicles are not present. The vehicle, in and of itself, is not an initiator of any event and therefore, 30 minutes is adequate for vehicle/equipment removal while minimizing the time-at-risk.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Vehicle/Equipment Control in the CH BAY and ROOM 108 (continued)**Bases (continued)****Surveillance
Requirements**

- SR 4.3.2.1** VERIFICATION EACH SHIFT that liquid-fueled vehicles/equipment in the CH BAY and ROOM 108 are not present is necessary to assure compliance with this LCO. Vehicles are frequently used in the CH BAY and ROOM 108 during all MODES of operation and therefore, VERIFICATION EACH SHIFT is appropriate. Failure to meet this requirement requires entry into Condition A.

References

1. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
-

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.3 Vehicle/Equipment Control in the SHAFT ACCESS AREA**Bases****Background
Summary**

The SHAFT ACCESS AREA is an interim PROCESS AREA that the WASTE travels through as part of the WASTE processing evolution. Vehicles/equipment operating in these areas introduces the potential for vehicle collisions resulting in fuel spills with fires and/or LOC with release of radiological material.

Liquid-fueled vehicles/equipment operating in the SHAFT ACCESS AREA introduces the potential for fuel spills due to collisions. A fuel pool in coincidence with an ignition source could result in a fire and subsequent release of radiological material release. The presence of liquid-fueled vehicles/equipment does not, in and of itself, result in an adverse event. In order for such an event to occur, an accident resulting in the puncturing of the fuel tank in coincidence with an ignition source would be required. Prohibiting liquid-fueled vehicles/equipment from the SHAFT ACCESS AREA reduces the likelihood for fuel-pool fires in these areas.

WHB fire suppression (LCO 3.1.1) requires the suppression system to be OPERABLE when WASTE is present in the SHAFT ACCESS AREA.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.3 Vehicle/Equipment Control in the SHAFT ACCESS AREA (continued)**Bases (continued)****Application To Safety**

The safety analysis (Ref. 1) identified fire and LOC events could result due to the operation of vehicles/equipment in the SHAFT ACCESS AREA. Liquid-fueled vehicles/ equipment present sources of ignition and fuel. Vehicle operations can result in WASTE impacts and/or drops resulting in LOC.

Assumptions for the analyses included the following:

- WASTE inside a CLOSED SHIPPING CONTAINER is protected from involvement in any fire or LOC event; and
- Site-derived WASTE in a container with its lid in place responds the same as a TRU WASTE container in a fire, and LOC event.

Prohibiting the presence of liquid-vehicles in the SHAFT ACCESS AREA is credited with reducing the FREQUENCY of fire events involving CH WASTE.

LCO

The presence of liquid-fueled vehicles/equipment in the SHAFT ACCESS AREA has the potential to initiate or be involved in fire events. Prohibiting the presence of these vehicles when WASTE is present is necessary to minimize the likelihood of these events.

A note permits liquid-fueled vehicles/equipment to be used to download equipment, materials and supplies while RH WASTE is present in the FCLR. RH WASTE in the FCLR is inside the facility cask/light-weight facility cask which prevents radiological releases from analyzed events. Liquid-fueled vehicles are allowed in the conveyance loading room when RH WASTE is present in the FCLR because pool fires will not propagate through the Shaft Entry Room to the FCLR.

MODE Applicability

WASTE is permitted to be in the SHAFT ACCESS AREA during WASTE HANDLING. Fires in either area can result in the release of radiological material. WASTE can be impacted by WASTE HANDLING EQUIPMENT resulting in LOC of radiological material. WASTE is not present during STANDBY MODE and therefore, is not affected by fires or impact events. Therefore, this LCO is applicable during WASTE HANDLING and WASTE STORAGE MODES.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.3 Vehicle/Equipment Control in the SHAFT ACCESS AREA (continued)

Bases (continued)

PROCESS AREA Applicability Sufficient quantities of WASTE may be transiting the SHAFT ACCESS AREA which if released due to a fire or LOC event, could adversely affect co-located workers and the MOI. Therefore, this LCO is applicable to the SHAFT ACCESS AREA.

ACTIONS

ACTION A.1 In the event that liquid-fueled vehicle/equipment is identified as being present in the SHAFT ACCESS AREA, removing the liquid-fueled vehicle/equipment IMMEDIATELY reduces the likelihood for initiation of a fire. An alternative to this ACTION is provided by ACTIONS A.2.1 and A.2.2.

ACTIONS A.2.1/A.2.2 An alternative to required ACTION A.1 is to IMMEDIATELY SUSPEND WASTE HANDLING ACTIVITIES. IMMEDIATELY suspending activities reduces the likelihood for initiation of a fire or LOC events.

Liquid-fueled vehicle/equipment SHALL then be removed from the SHAFT ACCESS AREA within 30 minutes. This ACTION is necessary to protect the assumption that such vehicles are not present. The vehicle, in and of itself, is not an initiator of any event and therefore, 30 minutes is adequate for vehicle/equipment removal while minimizing the time-at-risk.

Surveillance Requirements

SR 4.3.3.1 VERIFICATION prior to declaring WASTE HANDLING MODE for CH WASTE that liquid-fueled vehicles/equipment in the SHAFT ACCESS AREA are not present in the FCLR is necessary to assure compliance with this LCO. Vehicles are frequently used in the SHAFT ACCESS AREA during all MODES of operation and therefore, VERIFICATION prior to declaring MODE is appropriate. Failure to meet this requirement requires entry into Condition A.

References

1. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
-
-

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.4 Deleted

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 Lube Truck Access Control in the UNDERGROUND

Bases

Background Summary

WASTE is delivered to the UNDERGROUND by use of the WASTE hoist conveyance. The WASTE is off-loaded and transported along the TRANSPORT PATH to the DISPOSAL ROOM. During transport, the WASTE travels in the VEHICLE EXCLUSION ZONE which reduces the likelihood of collisions and potential fires involving fuel.

WASTE is disposed or present in the UNDERGROUND at all times and it is continually exposed to the ongoing operations. Large quantities of fuel present the opportunity to be involved in a fire that could affect the stored WASTE. While the fuel, in and of itself, does not initiate a fire event, its presence in coincidence with a spill and ignition source could lead to an event that would subject the co-located worker and the MOI to high consequences. There are limited controls and/or ACTIONS that can be taken to mitigate an UNDERGROUND fire and therefore, prevention of fires is the primary control.

Liquid-fueled vehicles operating in the UNDERGROUND are constructed to reduce their potential for fuel spills and ignition of fires.

A lube truck is located in the UNDERGROUND to supply fuel, hydraulic fluids, and lubricating products to the UNDERGROUND equipment and therefore, it contains a large quantity of combustible liquids. The presence of a lube truck does not, in and of itself, result in an adverse event. In order for such an event to occur, an accident resulting in the release of combustible liquids in coincidence with an ignition source would be required.

Application to Safety

DOE/WIPP 07-3372 (Ref. 1) identified fire events in the UNDERGROUND. Fuel pools in proximity to WASTE were analyzed and determined to result in high consequences to both co-located workers and the MOI. Prohibiting the amount of fuel and lubricants in the TRANSPORT PATH areas prevents the available fuel supply in the event of a fire but it does not eliminate the potential for fire.

Prohibiting the presence of the lube truck in the DISPOSAL ROOM was credited with reducing the likelihood of the event and reducing its consequences should it occur. Prohibiting the lube truck from the DISPOSAL ROOM removes the potential for collisions with the lube truck which could result in the release of combustible liquid and exposure to ignition sources. Prohibiting the lube truck from the DISPOSAL ROOM reduces the quantity of combustible liquid available for consumption in a fire event, reducing the intensity of a fire event, and thereby reducing the consequences to workers and offsite. Higher intensity fires consume more material and provide the mechanism (i.e., lofting) for transporting the radiological material beyond the immediate vicinity.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 Lube Truck Access Control in the UNDERGROUND (continued)**Bases (continued)**

LCO Prohibiting the lube truck from the DISPOSAL ROOM reduces the likelihood of fire events which would involve quantities of flammable liquids. Therefore, the lowest functional capability of this control is met by prohibiting lube truck access to the DISPOSAL ROOM.

MODE Applicability WASTE is present in the UNDERGROUND at all times and fires involving WASTE could occur at any time. While the likelihood of a fire event is reduced when there are no WASTE HANDLING ACTIVITIES, other activities could result in collisions and/or ignition sources. Therefore, prohibiting the lube truck from the DISPOSAL ROOM must be applied at all times.

PROCESS AREA Applicability WASTE is available and susceptible to fires in the UNDERGROUND. Therefore, this LCO applies to the UNDERGROUND.

ACTIONS

ACTION A.1 In the event that the lube truck is identified as being present in the DISPOSAL ROOM, WASTE HANDLING ACTIVITIES SHALL be suspended IMMEDIATELY. SUSPENDING WASTE HANDLING ACTIVITIES IMMEDIATELY reduces the likelihood for collisions and initiation of a fire event.

ACTION A.2 Maintenance activities being conducted in the DISPOSAL ROOM have the potential to initiate a fire event. Therefore, if a lube truck is located in a DISPOSAL ROOM the risk of fires must be reduced. Stopping maintenance activities reduces the likelihood of fire events is increased. IMMEDIATELY stopping maintenance activities is necessary to minimize the risk.

ACTION A.3 The lube truck is not permitted in a DISPOSAL ROOM at any time. While the presence of the lube truck in and of itself is not an initiator of the event, the lube truck SHALL be removed from the DISPOSAL ROOM to reduce the risk. IMMEDIATELY removing the lube truck is necessary to minimize the risk.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 Lube Truck Access Control in the UNDERGROUND

Bases (continued)

Surveillance Requirements

- SR 4.3.5.1** The lube truck is prohibited from the DISPOSAL ROOM at all times. During the backshift on the weekends and on holidays there are no personnel in the underground to perform the surveillance. Therefore, the surveillance SHALL be performed EACH SHIFT when personnel are present in the underground. VERIFICATION EACH SHIFT is adequate to reinforce the prohibition and to ensure that a lube truck is not present in the DISPOSAL ROOM. The presence of the lube truck, in and of itself, is not an initiator of an adverse event. Failure to meet this requirement requires entry into Condition A.
-

References

1. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
-
-

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH

Bases

Background Summary

WASTE is transferred from the WASTE shaft area along the TRANSPORT PATH to the DISPOSAL ROOM. Since WASTE is vulnerable to fires and collisions while in transit, controls are required to reduce the risk. The transport vehicles are liquid-fueled and therefore, the fuel capacity of the transport vehicle is the minimum quantity of fuel that must be considered in a fire event.

The TRANSPORT PATH provides a definitive route along which controls can be established. The path can be walked down prior to WASTE transport to VERIFY that controls are met.

A VEHICLE EXCLUSION ZONE provides a moving definitive envelope within which controls can be established. The zone is established and maintained throughout the period of time that the WASTE is being transported, limits liquid-fueled vehicles in the zone to the transport vehicle/equipment itself, and restricts non-WASTE handling vehicles/equipment from being in close proximity to the WASTE.

Liquid-fueled vehicles operating in the UNDERGROUND are constructed to reduce their potential for fuel spills and ignition of fires.

The presence of multiple vehicles/equipment in the TRANSPORT PATH would increase the likelihood for collisions. The presence of multiple vehicles does not, in and of itself, result in a collision event. Vehicle/equipment operators are required to be trained on vehicle/equipment operation and there are a limited number of vehicles available for WASTE HANDLING.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH (continued)

Bases (continued)

Application to Safety

The safety analysis (Ref. 1) identified the potential for fire and LOC events in the TRANSPORT PATH. Liquid-fueled vehicles/equipment operating in the UNDERGROUND contains large quantities of fuel, hydraulics, and lubricants. Limiting the amount of fuel, hydraulics, and lubricants in these areas reduces the available fuel supply in the event of a fire but it does not eliminate the potential for fire.

Events were identified which involved collision of vehicles handling WASTE. The likelihood of these events is reduced by limiting the number of liquid-fueled vehicles/equipment permitted in the TRANSPORT PATH to those necessary for the required ACTIVITY.

LCO

The safety analysis identified various events that involved vehicles in the TRANSPORT PATH and ACTIVE DISPOSAL ROOM. Controls on the operations of vehicles in the VEHICLE EXCLUSION ZONE are necessary to minimize the likelihood of these events. The minimum functional capability is established by the following specific controls for liquid-fueled vehicles/equipment:

- A TRANSPORT PATH route SHALL be established prior to WASTE movement. The TRANSPORT PATH route is situationally determined. The TRANSPORT PATH provides a definitive route along which controls can be established. The path can be walked down prior to WASTE transport to VERIFY that controls are met.
- A VEHICLE EXCLUSION ZONE SHALL be established to escort the WASTE through the TRANSPORT PATH with the leading and the lagging escort. The VEHICLE EXCLUSION ZONE provides a moving definitive envelope within which controls can be established and maintained for the duration of the transport. The leading and lagging escorts alert personnel in the UNDERGROUND to the approaching WASTE.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH (continued)

Bases (continued)

LCO (continued)

- The VEHICLE EXCLUSION ZONE SHALL be maintained from the S-400/E-140 intersection to the DISPOSAL ROOM entrance. When WASTE is down-loaded, the VEHICLE EXCLUSION ZONE cannot be established until the WASTE is removed from the WASTE hoist conveyance at the WASTE SHAFT STATION. Once the WASTE is positioned between escort vehicles, the VEHICLE EXCLUSION ZONE may begin movement toward the DISPOSAL ROOM. For WASTE retrieval, the transport is reversed.
- WASTE SHALL be moved in a VEHICLE EXCLUSION ZONE. Movement of WASTE within the VEHICLE EXCLUSION ZONE along the TRANSPORT PATH ensures a continuous zone for application of controls.
- Non WASTE handling vehicles/equipment SHALL be prohibited in the VEHICLE EXCLUSION ZONE. This prohibition is necessary to reduce the likelihood of collisions in proximity of WASTE.
- Only one liquid-fueled vehicle SHALL be in the VEHICLE EXCLUSION ZONE. This restriction is necessary to limit the quantity of fuel that could be involved in a fuel-pool fire when the VEHICLE EXCLUSION ZONE approaches the DISPOSAL ROOM and reduces the likelihood of a collision.

MODE Applicability

Fire, collision, and LOC events involving WASTE have the potential to adversely affect co-located workers and the MOI. WASTE is present in the TRANSPORT PATH during WASTE HANDLING transport; this LCO is applicable to WASTE HANDLING MODE.

PROCESS AREA Applicability

The VEHICLE EXCLUSION ZONE exists within the TRANSPORT PATH which is contained in the UNDERGROUND. Therefore, this LCO is applicable to the UNDERGROUND.

continued

B3/4.3 Vehicle/Equipment Control (continued)

**B3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH
(continued)**

Bases (continued)

ACTIONS

ACTION A.1 In the event that the TRANSPORT PATH is not established, movement of the WASTE SHALL be IMMEDIATELY stopped. IMMEDIATELY stopping WASTE movement reduces the likelihood for a collision initiation of a fire or LOC event.

ACTION A.2 A TRANSPORT PATH SHALL be established within 1 hour. This is required to identify and establish the TRANSPORT PATH to reduce the likelihood of vehicle/equipment collisions with subsequent fires during the movement of WASTE. A 1-hour completion time is adequate to identify the route and confirm the TRANSPORT PATH is compliant. The absence of a TRANSPORT PATH does not, in and of itself, result in an adverse event. A TRANSPORT PATH reduces the likelihood of vehicle collisions during the period of movement. The 1-hour completion time limits the time-at-risk.

ACTION B.1 In the event that the VEHICLE EXCLUSION ZONE is not established, movement of the WASTE SHALL be IMMEDIATELY stopped. IMMEDIATELY stopping WASTE movement reduces the likelihood for a collision initiation of a fire or LOC event.

ACTION B.2 A VEHICLE EXCLUSION ZONE be established IMMEDIATELY. This is required to reduce the likelihood of vehicle/equipment collisions with subsequent fires during the movement of WASTE. The absence of a VEHICLE EXCLUSION ZONE does not, in and of itself, result in an adverse event. A VEHICLE EXCLUSION ZONE reduces the likelihood of vehicle collisions during the period of movement. The IMMEDIATE completion time limits the time-at-risk.

ACTION C.1 In the event that WASTE is being moved outside of a VEHICLE EXCLUSION ZONE or the VEHICLE EXCLUSION ZONE is not maintained, the movement of WASTE SHALL be IMMEDIATELY stopped. IMMEDIATELY stopping WASTE movement reduces the likelihood for a collision initiation of a fire or LOC event.

continued

B3/4.3 Vehicle/Equipment Control (continued)

**B3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH
(continued)****Bases (continued)****ACTIONS
(continued)****ACTION C.2**

A VEHICLE EXCLUSION ZONE SHALL be established about the WASTE transport vehicle/equipment IMMEDIATELY. This is required to re-establish a buffer about the WASTE to reduce the likelihood of vehicle/equipment collisions and subsequent fires. Completion time is adequate to locate escort vehicles, place them in front and behind the WASTE transport vehicle, and to move vehicles/equipment away from the WASTE to re-establish compliance. The loss of the VEHICLE EXCLUSION ZONE does not, in and of itself, result in an adverse event. The immediate completion time limits the time-at-risk.

ACTION D.1

In the event that non-WASTE handling vehicles/equipment is located in the VEHICLE EXCLUSION ZONE, the non-WASTE handling vehicles/equipment SHALL be IMMEDIATELY moved out of the zone. IMMEDIATELY relocating the vehicle/equipment outside of the VEHICLE EXCLUSION ZONE reduces the likelihood of a collision with subsequent fire. An alternative to relocating the non-WASTE handling vehicles/equipment is provided by ACTIONS D.2.1 and D.2.2.

**ACTIONS D.2.1/
D.2.2**

An alternative to required ACTION D.1 is to IMMEDIATELY stop WASTE movement and move the non-WASTE handling vehicles/equipment out of the zone. This ACTION is necessary to reduce the likelihood of collisions.

The non-WASTE handling vehicles/equipment SHALL then be moved out of the VEHICLE EXCLUSION ZONE. This ACTION is necessary to reduce the likelihood of collisions and minimize the quantity of fuel that could be involved in a fire event. The presence of non-WASTE handling vehicles/equipment, in and of itself, is not an initiator of any event and therefore, removal of the vehicle/equipment IMMEDIATELY minimizes the time at-risk. Additionally, WASTE movement is stopped IMMEDIATELY.

ACTIONS E.1

In the event that more than one liquid-fueled vehicle/equipment is located in the VEHICLE EXCLUSION ZONE, the additional liquid-fueled vehicles/equipment SHALL be IMMEDIATELY moved out of the zone. IMMEDIATELY relocating the liquid-fueled vehicle/equipment outside of the VEHICLE EXCLUSION ZONE reduces the likelihood of a collision with subsequent fire. An alternative to relocating the non-WASTE handling vehicles/equipment is provided by ACTIONS E.2.1 and E.2.2.

continued

B3/4.3 Vehicle/Equipment Control (continued)

**B3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH
(continued)**

Bases (continued)

**ACTIONS
(continued)**

**ACTIONS E.2.1/
E.2.2**

An alternative to required ACTION E.1 is to IMMEDIATELY stop WASTE movement and move the liquid-fueled vehicles/ equipment out of the zone. This ACTION is necessary to reduce the likelihood of collisions.

The liquid-fueled vehicles/equipment SHALL then be moved out of the VEHICLE EXCLUSION ZONE. This ACTION is necessary to reduce the likelihood of collisions and minimize the quantity of fuel that could be involved in a fire event. The presence of liquid-fueled vehicles/ equipment, in and of itself, is not an initiator of any event and therefore, removal of the vehicle/equipment IMMEDIATELY minimizes the time-at-risk. Additionally, WASTE movement is stopped IMMEDIATELY.

continued

B3/4.3 Vehicle/Equipment Control (continued)

**B3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH
(continued)**

Bases (continued)

**ACTIONS
(continued)**

ACTION F.1 In the event that the VEHICLE EXCLUSION ZONE leading or lagging escort becomes disabled, WASTE movement SHALL be IMMEDIATELY stopped. Stopping WASTE movement reduces the likelihood for initiation of a fire and/or LOC event.

ACTION F.2 The disabled escort vehicle SHALL be replaced within 1 hour. This ACTION is necessary to ensure the continuity of the VEHICLE EXCLUSION ZONE and the transport of WASTE. A disabled escort vehicle, in and of itself, is not an initiator of any event and therefore, replacement of the vehicle within 1 hour minimizes the time-at-risk. Additionally, WASTE movement is stopped during this 1-hour period.

ACTION G.1 In the event that CH WASTE HANDLING EQUIPMENT becomes disabled in the VEHICLE EXCLUSION ZONE, the disabled equipment SHALL be repaired or replaced within 12 hours. A 12-hour repair time is adequate to complete normal repairs or to replace the disabled equipment. Since the CH WASTE HANDLING EQUIPMENT is disabled, it is assumed that the WASTE movement is stopped. Additionally, the VEHICLE EXCLUSION ZONE will continue to be maintained during the repair.

ACTION G.2 Upon completion of the repair or replacement of the disabled vehicle, the WASTE movement SHALL be resumed and the WASTE emplaced within 2 hours of completion of the repair. Since the VEHICLE EXCLUSION ZONE has been maintained throughout the repair, the 2-hour completion time is adequate to complete the move and emplace the WASTE.

continued

B3/4.3 Vehicle/Equipment Control (continued)

**B3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH
(continued)**

Bases (continued)

**ACTIONS
(continued)**

ACTION H.1 In the event that RH WASTE HANDLING EQUIPMENT becomes disabled in the VEHICLE EXCLUSION ZONE, the disabled equipment SHALL be repaired IMMEDIATELY which is adequate to complete normal repairs. Since the RH WASTE HANDLING EQUIPMENT is disabled, it is assumed that the WASTE movement is stopped. Additionally, the VEHICLE EXCLUSION ZONE will continue to be maintained during the repair.

ACTION H.2 Upon completion of the repair, the WASTE movement SHALL be resumed and the WASTE emplaced within 12 hours of completion of the repair. Since the VEHICLE EXCLUSION ZONE has been maintained throughout the repair, the 12-hour completion time is adequate to complete the move and emplace the WASTE.

ACTION I.1 In the event that the ACTIONS and completion times of G.2 or H.2 cannot be met, a JCO SHALL be prepared and submitted to CBFO for approval within 10 days. WASTE movement is stopped during preparation of the JCO and the VEHICLE EXCLUSION ZONE remains in place while the JCO is prepared, submitted, approved and implemented.

**Surveillance
Requirements**

SR 4.3.6.1 VERIFICATION SHALL be made that the TRANSPORT PATH has been established upon completion of WASTE movement. The TRANSPORT PATH SHALL be identified and confirmed to be ready for WASTE to be moved along the route. This ACTION is necessary to reduce the likelihood of vehicle collisions while WASTE is in motion. Since the establishment of each TRANSPORT PATH is independent, this SR is required for each WASTE movement. Failure to meet this requirement requires entry into Condition A.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.6 Liquid-Fueled Vehicle/Equipment Control in the TRANSPORT PATH (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.3.6.2 VERIFICATION SHALL be made that the VEHICLE EXCLUSION ZONE has been established upon completion of WASTE movement. Escort vehicles SHALL be positioned before and after the WASTE HANDLING EQUIPMENT. This ACTION is necessary to reduce the likelihood of vehicle collisions while WASTE is in motion. Since each VEHICLE EXCLUSION ZONE is independent, this SR is required for each WASTE movement. Failure to meet this requirement requires entry into Condition B.

SR 4.3.6.3 VERIFICATION SHALL be made upon completion of WASTE movement, that the VEHICLE EXCLUSION ZONE was maintained throughout the movement of the WASTE along the TRANSPORT PATH. Since each VEHICLE EXCLUSION ZONE is independent, this SR is required for each WASTE movement. Failure to meet this requirement requires entry into Condition C.

References

1. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
-
-

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE**Bases****Background
Summary**

The WIPP disposes of WASTE in DISPOSAL ROOMS in the UNDERGROUND. WASTE emplacement continues in a DISPOSAL ROOM until full or circumstances require permanent exiting of the room. WASTE emplacement starts on the exhaust side of a room and proceeds to the intake side of the room. The emplacement WASTE FACE moves toward the front of the room as emplacement proceeds through the room.

WASTE HANDLING EQUIPMENT and non-WASTE handling vehicles/equipment is required to perform various activities in the DISPOSAL ROOM. These activities must be coordinated to reduce the likelihood of collision events. Collision events have the potential to involve the rupture of a fuel tank with a subsequent fire or LOC. A fuel-pool fire in proximity of the WASTE FACE could involve the significant release of radiological material.

Liquid-fueled vehicles operating in the UNDERGROUND are constructed to reduce their potential for fuel spills and ignition of fires.

Non-WASTE handling vehicles/equipment is required in the DISPOSAL ROOM for activities such as ground control or to assist in the retrieval of a noncompliant container. In general non-WASTE handling vehicles/equipment do not have an operational need to be in the vicinity of the WASTE FACE when WASTE is being emplaced.

**Application to
Safety**

The safety analysis (Ref. 1) identified fire events at the WASTE FACE. Collisions of vehicles in the proximity of the WASTE FACE and/or the impact of the WASTE FACE by vehicles/equipment can result in fuel spills with a coincident fire or collision with the WASTE FACE could result in a LCO event. The consequences of this event were determined to be high to co-located workers and the MOI.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

Bases (continued)

Application to Safety (continued)

To reduce the likelihood of collision events, liquid-fueled vehicles/equipment operating at a WASTE FACE must be controlled as follows:

- Only one piece of WASTE HANDLING EQUIPMENT selected for WASTE HANDLING ACTIVITIES may approach the WASTE FACE during emplacement, when attended;
- Liquid-fueled vehicles/equipment used for retrieval SHALL be limited to one WASTE HANDLING EQUIPMENT and one liquid-fueled non-WASTE handling vehicle/equipment;
- Non-WASTE handling vehicle/equipment SHALL be ≥ 25 feet from the WASTE FACE when not ATTENDED; and
- WASTE HANDLING EQUIPMENT supporting emplacement activities SHALL be ATTENDED, when < 25 feet from the WASTE FACE.

Due to the limited area at the WASTE FACE, only WASTE HANDLING EQUIPMENT selected for emplacement may approach or be < 25 feet from the WASTE FACE. This requirement limits the number of liquid-fueled vehicles at the WASTE FACE to one in order to complete the WASTE emplacement ACTIVITY. Minimizing the number of vehicles/equipment at the WASTE FACE minimizes the likelihood of a collision resulting in a liquid fuel-pool fire or a collision with the WASTE FACE.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

Bases (continued)

Application to Safety (continued)

WASTE HANDLING EQUIPMENT emplacing WASTE increases the likelihood of a fuel-pool fire at the WASTE FACE. Approaching the WASTE FACE is required to complete WASTE emplacement activities. The risk can be reduced by limiting the time when the WASTE HANDLING EQUIPMENT is at the WASTE FACE.

Due to the limited area at the WASTE FACE, liquid-fueled vehicles/equipment used for retrieval is limited to one WASTE HANDLING EQUIPMENT and one liquid-fueled non-WASTE handling vehicle/equipment. This requirement limits the total number of liquid-fueled vehicles at the WASTE FACE to two in order to perform the WASTE retrieval ACTIVITY. Minimizing the number of vehicles/equipment at the WASTE FACE minimizes the likelihood of a collision resulting in a liquid fuel-pool fire or a collision with the WASTE FACE.

Non-WASTE handling vehicles/equipment SHALL be ≥ 25 feet from the WASTE FACE. Non-WASTE handling vehicles/equipment typically do not have any function at the WASTE FACE during normal emplacement activities. The presence of liquid-fueled vehicles/equipment near the WASTE FACE increases the likelihood of a fuel-pool fire event. Therefore, non-WASTE handling vehicles/equipment SHALL remain ≥ 25 feet from the WASTE FACE unless ATTENDED.

NOTE: A portable hand-held measuring device with standard industrial grade accuracy is acceptable for determining safe stand-off distances.

Restricting the number of vehicles and operation of those vehicles/equipment in proximity of the WASTE FACE is required to reduce the likelihood of the identified events.

LCO

This LCO requires control of vehicles operating < 25 feet of a WASTE FACE. The following controls are required:

- Only the WASTE HANDLING EQUIPMENT selected for emplacement may approach the WASTE FACE. This requirement prevents the collision of two vehicles at a WASTE FACE.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

Bases (continued)

LCO (continued)

- WASTE HANDLING EQUIPMENT emplacing WASTE SHALL minimize the time at the WASTE FACE. The risk is minimized by limiting the amount of time that the equipment is < 25 feet of the WASTE FACE.
- Liquid-fueled vehicles/equipment used for retrieval SHALL be limited to one WASTE HANDLING EQUIPMENT and one liquid-fueled non-WASTE handling vehicle/equipment. One WASTE HANDLING EQUIPMENT and one non-liquid fueled non-WASTE handling vehicle/equipment are required to complete retrieval. This requirement minimizes the likelihood of vehicle collisions at a WASTE FACE.
- Non-WASTE handling vehicle/equipment SHALL be ≥ 25 feet from the WASTE FACE when not ATTENDED. This requirement reduces the likelihood of fuel pool formation at a WASTE FACE.

A note is provided that permits liquid-fueled vehicles and non-WASTE handling equipment to be < 25 feet of a WASTE FACE in order to place absorbent material, conduct ground control, install chain link and brattice, to install a panel closure system and other operational activities when ATTENDED. These activities are required to contain fuel pools (should they occur) and to perform routine activities for mine maintenance and room and panel closure. Waste Emplacement activities SHALL not be performed while liquid-fueled non-Waste handling equipment/vehicles are < 25 feet of a WASTE FACE.

**MODE
 Applicability**

WASTE is always present at a WASTE FACE. Equipment must approach the WASTE FACE to perform emplacement and retrieval activities. Other liquid-fueled and non-WASTE handling vehicles/equipment may need to approach the WASTE FACE to perform required tasks for ground control and to provide for DISPOSAL ROOM and panel closure. Therefore, these controls apply in WASTE HANDLING MODE.

**PROCESS AREA
 Applicability**

WASTE FACES exist only in the UNDERGROUND. Therefore, this requirement applies to the UNDERGROUND.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

Bases (continued)

ACTIONS

ACTION A.1 In the event that more than one WASTE handling vehicle approaches the WASTE FACE, the movement of WASTE SHALL be IMMEDIATELY stopped. This ACTION is required to reduce the likelihood of a collision near a WASTE FACE while WASTE is suspended and/or in movement.

ACTION A.2 The unauthorized vehicle/equipment SHALL be IMMEDIATELY moved ≥ 25 feet from the WASTE FACE. This ACTION is required to reduce the likelihood of vehicle/equipment collisions near a WASTE FACE.

ACTION B.1 In the event that more than one WASTE HANDLING EQUIPMENT or more than one non-WASTE handling vehicle/equipment approaches the WASTE FACE during retrieval, SUSPEND WASTE HANDLING ACTIVITIES IMMEDIATELY. This ACTION is required to reduce the likelihood of a collision near WASTE.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

Bases (continued)

**ACTION
(continued)**

ACTION B.2 The unauthorized vehicle/equipment SHALL be IMMEDIATELY moved \geq 25 feet from the WASTE FACE. This ACTION is required to reduce the likelihood of vehicle/equipment collisions near a WASTE FACE.

ACTION C.1/C.2 In the event that non-WASTE handling vehicle/equipment is $<$ 25 feet from the WASTE FACE supporting emplacement is not ATTENDED, the unattended vehicle/equipment SHALL be ATTENDED IMMEDIATELY or moved to a location \geq 25 feet of the WASTE FACE. This ACTION is required to reduce the likelihood of vehicle/equipment collisions near a WASTE FACE.

ACTION D.1 / D.2 Liquid-fueled vehicles/equipment (i.e., WASTE HANDLING EQUIPMENT **AND/OR** liquid-fueled vehicle/equipment supporting retrieval) SHALL be IMMEDIATELY moved to a location \geq 25 feet of the WASTE FACE. This ACTION is required to reduce the number of vehicles/equipment in proximity of the WASTE FACE. This ACTION reduces the likelihood of collisions at the WASTE FACE.

ACTION D.3 / D.4 Ground control SHALL be performed within 7 days and ground control equipment \geq 25 feet from WASTE FACE when ground control is completed. This ACTION reduces the likelihood of collisions at the WASTE FACE.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

Bases (continued)

**ACTIONS
(continued)**

ACTIONS E.1/E.2 In the event that Liquid-fueled WASTE handling equipment < 25 feet from the WASTE FACE and not ATTENDED, the unattended vehicle/equipment SHALL be ATTENDED IMMEDIATELY or moved to a location \geq 25 feet of the WASTE FACE. This ACTION is required to reduce the likelihood of vehicle/equipment collisions near a WASTE FACE.

ACTION F.1 In the event that the WASTE HANDLING EQUIPMENT becomes disabled at the WASTE FACE, the WASTE HANDLING EQUIPMENT SHALL be IMMEDIATELY moved \geq 25 feet from the WASTE FACE. This ACTION is required to minimize the time that WASTE HANDLING EQUIPMENT is in proximity to the WASTE FACE and thereby, reduce the likelihood of a pool fire involving WASTE.

ACTIONS F.2.1/F.2.2 Alternatively, in the event that the WASTE HANDLING EQUIPMENT cannot be removed from the WASTE FACE, absorbent material SHALL be placed on the salt floor of the DISPOSAL ROOM underneath the fuel tank of the WASTE HANDLING EQUIPMENT to confine a potential fuel spill IMMEDIATELY. This ACTION is required to ensure that in the event of a fuel leak, the fuel is absorbed by the material which prevents fuel pool formation at and/or involving the WASTE FACE. A completion time of IMMEDIATELY minimizes the time-at-risk for WASTE HANDLING EQUIPMENT that cannot be located \geq 25 feet from the WASTE FACE.

Following emplacement of absorbent material WASTE HANDLING EQUIPMENT must be repaired PRIOR TO USE.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.7 Liquid-Fueled Vehicle/Equipment Control at a WASTE FACE (continued)

Bases (continued)

Surveillance Requirements

SR 4.3.7.1

VERIFICATION SHALL be made EACH SHIFT when waste is being emplaced, that only one piece of WASTE HANDLING EQUIPMENT is emplacing WASTE at the WASTE FACE. WASTE HANDLING EQUIPMENT is normally placed IN-SERVICE at the start of a shift and used throughout that shift except in the case of equipment breakdown. FREQUENCY of EACH SHIFT is judged to be adequate to ensure compliance with this LCO requirement. Failure to meet this requirement requires entry into Condition B.

SR 4.3.7.2

VERIFICATION SHALL be made EACH SHIFT when retrieval is being conducted that no more than one WASTE HANDLING EQUIPMENT and no more than one liquid-fueled vehicle/equipment is in use for WASTE retrieval. A WASTE retrieval ACTIVITY would require the identification of a WASTE HANDLING EQUIPMENT and potentially, a liquid-fueled vehicle/equipment to assist in the WASTE retrieval at the start of the ACTIVITY. The FREQUENCY is judged to be adequate to ensure compliance with this LCO requirement. Failure to meet this requirement requires entry into Condition C.

SR 4.3.7.3

VERIFICATION SHALL be made EACH SHIFT that non-WASTE HANDLING EQUIPMENT is ≥ 25 feet of the WASTE FACE when not ATTENDED. During the backshift on weekends and on holidays there are no personnel in the underground to perform the surveillance. Therefore, the surveillance SHALL be performed EACH SHIFT when personnel are present in the underground. A FREQUENCY of EACH SHIFT is judged to be adequate to ensure compliance with this LCO requirement. Failure to meet this requirement requires entry into Condition D.

References

1. DOE/WIPP 07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
-

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Liquid-Fueled Vehicle/Equipment Control in a DISPOSAL ROOM

Bases

Background Summary

The WIPP disposes of WASTE in DISPOSAL ROOMS in the UNDERGROUND. WASTE emplacement continues in a DISPOSAL ROOM until full or circumstances require permanent exiting of the room. WASTE emplacement starts on the exhaust side of a room and proceeds to the intake side of the room. The WASTE FACE moves toward the front of the room as emplacement proceeds through the room.

WASTE HANDLING EQUIPMENT and non-WASTE handling vehicles/equipment is required to perform various activities in the DISPOSAL ROOM. These activities must be coordinated to reduce the likelihood of collision events. Collision events have the potential to involve the rupture of a fuel tank with a subsequent fire or LOC. A fuel-pool fire in proximity of the WASTE FACE could involve the significant release of radiological material.

Liquid-fueled vehicles operating in the UNDERGROUND are constructed to reduce their potential for fuel spills and ignition of fires.

Non-WASTE handling vehicles/equipment are required in the DISPOSAL ROOM for activities such as ground control, installation of chain link and brattice cloth, or installation of substantial barrier and isolation bulkheads and panel closures. In some cases, non-waste handling vehicles/equipment need to be < 25 feet of a WASTE FACE when enroute to conduct these activities. In this case, the liquid-fueled vehicle/equipment must be ATTENDED to reduce the likelihood of collision events. In general; these are the only operational needs for liquid-fueled vehicles/equipment to be in the vicinity of the WASTE FACE.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Liquid-Fueled Vehicle/Equipment Control in a DISPOSAL ROOM (continued)**Bases (continued)****Application to Safety**

The safety analysis (Ref. 1) identified fire events at the WASTE FACE and collisions with the WASTE FACE. Collisions of vehicles in the proximity of the WASTE FACE and/or the impact of the WASTE FACE by vehicles/equipment can result in fuel spills with a coincident fire or LOC events. The consequences of this event were determined to be high to co-located workers and the MOI.

To reduce the likelihood of collision events, liquid-fueled vehicles/equipment operating in the DISPOSAL ROOM must be controlled as follows:

- Liquid-fueled vehicles/equipment SHALL be ≥ 25 feet from the WASTE FACE, when not ATTENDED.

NOTE: A portable hand-held measuring device with standard industrial grade accuracy is acceptable for determining safe stand-off distances.

LCO

This LCO requires that the control of liquid-fueled vehicles in the DISPOSAL ROOM. The following controls are required:

- Liquid-fueled vehicles/equipment SHALL be ≥ 25 feet from the WASTE FACE, when not ATTENDED. This requirement reduces the likelihood of fuel-pool formation at a WASTE FACE.

MODE Applicability

WASTE is always present at a WASTE FACE. The likelihood of collisions either with the WASTE FACE or other vehicles/equipment is reduced by not handling WASTE at the same time as these activities. Therefore, liquid-fueled and non-WASTE handling vehicles/equipment may approach the WASTE FACE to perform required operational tasks when ATTENDED. These controls apply in DISPOSAL MODE.

PROCESS AREA Applicability

WASTE FACES exist only in the UNDERGROUND. Therefore, this requirement applies to the UNDERGROUND.

continued

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Liquid-Fueled Vehicle/Equipment Control in a DISPOSAL ROOM (continued)

Bases (continued)

ACTIONS

ACTION A.1/A.2 In the event that Liquid-fueled WASTE handling equipment is < 25 feet from the WASTE FACE and not ATTENDED, the unattended vehicle/equipment SHALL be ATTENDED IMMEDIATELY or moved to a location \geq 25 feet of the WASTE FACE within 2 hours. The completion time of 2 hours is sufficient to relocate the liquid-fueled vehicle \geq 25 feet from the WASTE FACE in a DISPOSAL ROOM. This ACTION is required to reduce the likelihood of collisions with the WASTE FACE or fuel spills with subsequent fire extending into the WASTE FACE while in the DISPOSAL ROOM. IMMEDIATELY relocating the vehicles/equipment minimizes the time-at-risk.

Surveillance Requirements

SR 4.3.8.1 VERIFICATION SHALL be made EACH SHIFT that no liquid-fueled vehicles/equipment are < 25 feet from the WASTE FACE. A FREQUENCY of EACH SHIFT is judged to be adequate to ensure compliance with this LCO requirement.

SR 4.3.8.2 VERIFICATION SHALL be made EACH SHIFT that liquid-fueled vehicles/equipment < 25 feet from the WASTE FACE SHALL be ATTENDED. A FREQUENCY of EACH SHIFT is judged to be adequate to ensure compliance with this LCO requirement.

References

1. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
-

B3/4.4 Fuel Confinement

B3.4.1 Fuel Confinement in the RH BAY - Deleted

B3/4.4 Fuel Confinement

B3.4.2 Fuel Barrier in the UNDERGROUND

Bases

Background Summary

A WASTE FACE is established at the start of a WASTE array. This WASTE FACE becomes a STATIC WASTE FACE. As WASTE is emplaced, the moving front of the WASTE array is an active WASTE FACE until the room is filled. Once the room is filled the WASTE FACE becomes a STATIC WASTE FACE when active emplacement has not occurred in 10 days or when declared by Waste Handling Operations. Liquid-fueled vehicles/equipment operating in proximity of WASTE FACES introduces the potential for fuel spills with subsequent fires. A fuel spill has the potential to enter a WASTE FACE and expose WASTE to direct flame impingement.

The moving or active WASTE FACE is protected by limiting the number of vehicles operating at a WASTE FACE and the time of operation at the WASTE FACE (LCOs 3.3.7 and 3.3.8). A STATIC WASTE FACE requires a barrier against rapid flow of liquid-fuel into the WASTE array. Rapid fuel flow into a WASTE array allows a high intensity fire to engulf the WASTE array. A barrier that restricts the free flow of liquid-fluid into the WASTE array is sufficient to prevent high intensity fires.

The of barrier used at the WIPP is:

- Temporary absorbent material placed along the bottom edge.

Application to Safety

DOE/WIPP-07-3372 (Ref. 1) identified the potential for fire events in the UNDERGROUND involving the WASTE. Fuel spills with subsequent fire in the proximity of a WASTE FACE were evaluated to result in high consequences to co-located workers and the MOI. The consequences of fire events at a WASTE FACE are reduced by limiting the amount of liquid-fuel involved.

continued

B3/4.4 Fuel Confinement (continued)

B3.4.2 Fuel Barrier in the UNDERGROUND (continued)**Bases (continued)****Application to
Safety (continued)**

A barrier of absorbent material can be placed along the bottom edge of the STATIC WASTE FACE. The absorbent material provides sufficient flow resistance to prevent high intensity fires in the WASTE array.

LCO Installation of a barrier to liquid-fuel flow provides the minimum level of protection against pool fires in the WASTE array. A STATIC WASTE FACE can be protected by a temporary absorbent material placed along the bottom edge.

MODE Applicability WASTE is permanently disposed of in the WIPP and STATIC WASTE FACES exist throughout the UNDERGROUND. Therefore, this LCO applies at all times.

PROCESS AREA Applicability STATIC WASTE FACES exist only in the UNDERGROUND and exist throughout the UNDERGROUND. Therefore, this LCO applies to the UNDERGROUND.

ACTIONS

ACTION A.1 The STATIC WASTE FACE SHALL be protected within IMMEDIATELY. This ACTION is required to reduce the likelihood of liquid-fuel entering the WASTE FACE due to a fuel spill in proximity of the WASTE FACE. The completion time is necessary to obtain materials and place the barrier along the bottom edge of the STATIC WASTE FACE. Activities at the WASTE FACE are suspended until the barrier is installed.

continued

B3/4.4 Fuel Confinement (continued)

B3.4.2 Fuel Barrier in the UNDERGROUND (continued)

Bases (continued)

Surveillance Requirements

SR 4.4.2.1 VERIFICATION that the STATIC WASTE FACE is protected SHALL be completed within ten (10) days of no WASTE emplacement, or when declared by Waste Handling Operations. By definition, a WASTE FACE becomes a STATIC WASTE FACE after 10 days of no WASTE emplacement, or when declared by Waste Handling Operations. ACTIVITY near a STATIC WASTE FACE is infrequent and of short duration. Therefore, VERIFICATION of a fuel barrier within 10 days of completing WASTE emplacement is adequate, or when declared by Waste Handling Operations. Failure to meet this requirement requires entry into Condition A.

References

1. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
-

B3/4.5 Waste Handling

B3.5.1 CH WASTE HANDLING - Deleted

B3/4.5 Waste Handling (continued)

B3/4.5 Waste Handling (continued)

B3/4.5 Waste Handling (continued)

B3.5.2 WASTE HANDLING in the SHAFT ACCESS AREA

Bases

Background Summary

The SHAFT ACCESS AREA is composed of the FCLR, WASTE shaft entry room, and conveyance loading room.

The WASTE shaft is located in the shaft entry room and is surrounded by a structure composed of structural steel and chain link fencing. The WASTE hoist conveyance operates within the WASTE shaft and is accessed through gates in the WASTE shaft access structure. The structure provides a barrier to objects accessing the WASTE shaft. The presence of the WASTE hoist conveyance in the shaft entry room at the SHAFT ACCESS AREA blocks the inadvertent drop of large objects down the WASTE shaft should the structure gates be open.

CH WASTE and RH WASTE are brought into the SHAFT ACCESS AREA through access door 140 and shield port, respectively. WASTE is brought into the shaft entry room of the SHAFT ACCESS AREA to load onto the conveyance for transfer to the UNDERGROUND or to retrieve a WASTE load from the conveyance.

Application to Safety

Events were identified in the analysis involving the drop of a WASTE load down the WASTE shaft or a drop of something into the WASTE in the WASTE shaft. These events involved a pool fire at the bottom of the WASTE shaft and a free fall drop down the shaft. Consequences to both the co-located worker and the MOI were evaluated to be high.

The safety analysis credits the presence of the WASTE conveyance at the WASTE shaft collar prior moving vehicles/equipment into the shaft entry room (SHAFT ACCESS AREA) to prevent the inadvertent dropping of WASTE down the shaft. With the WASTE hoist conveyance present at the WASTE shaft collar, vehicles/equipment and WASTE loads cannot inadvertently enter and fall down the WASTE shaft. The WASTE hoist and attendant structure is designed to be single-failure proof and would prevent drops of material down the shaft.

LCO

WASTE loads SHALL not enter the shaft entry room (SHAFT ACCESS AREA) unless the WASTE hoist conveyance is at the WASTE shaft collar prevents the inadvertent drop of WASTE down the shaft.

continued

B3/4.5 Waste Handling (continued)

B3.5.2 WASTE HANDLING in the SHAFT ACCESS AREA (continued)**Bases (continued)****MODE
Applicability**

WASTE is moved through the SHAFT ACCESS AREA during transfer to or retrieval from the UNDERGROUND. It is during the movement of WASTE in or out of the shaft entry room (SHAFT ACCESS AREA) that there is the potential for a WASTE load to be dropped down the WASTE shaft. Therefore, this LCO applies during WASTE HANDLING MODE.

CH WASTE is not stored in the SHAFT ACCESS AREA. On occasion, RH WASTE may be temporarily stored in the FCLR. Since WASTE is not in motion during WASTE STORAGE MODE and is not present during STANDBY MODE, this LCO does not apply during either of these MODES.

**PROCESS AREA
Applicability**

The WASTE shaft collar is located in the SHAFT ACCESS AREA. Therefore, this LCO applies to the SHAFT ACCESS AREA.

ACTIONS**ACTION A.1/A.2**

In the event that the WASTE hoist conveyance is not present at the WASTE shaft collar, WASTE HANDLING ACTIVITIES SHALL be IMMEDIATELY stopped and WASTE removed from the shaft entry room. Stopping WASTE HANDLING activities and removing WASTE from the shaft entry room reduces the likelihood for a WASTE load to be dropped down the WASTE shaft. Stopping WASTE HANDLING ACTIVITIES includes lowering the WASTE to the floor when the WASTE HANDLING EQUIPMENT has the capability.

**Surveillance
Requirements****SR 4.5.2.1**

Verifying that the WASTE hoist conveyance is present prior moving WASTE into the shaft entry room prevents drops down the WASTE shaft.

References

1. DOE/WIPP 02-3122. *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
-

B3/4.5 Waste Handling (continued)

B3.5.3 WASTE HANDLING in the OUTSIDE AREA

Bases

Background Summary

WASTE is transported to the WIPP in U.S. Department of Transportation approved Type B shipping container (Ref. 1, 2). These containers are designed to provide robust protection of their contents during transport over the roads between the WASTE sites and the WIPP. 10 CFR Part 71.43 (f) states, "A package must be designed, constructed, and prepared for shipment so that under the tests specified in §71.71 ("Normal conditions of transport") there would be no loss or dispersal of radioactive contents, no significant increase in external surface radiation levels, and no substantial reduction in the effectiveness of the packaging."

These shipping containers are transported onto the WIPP and staged in the parking area on the south side of the WHB. Shipping containers remain in the parking area until ready for processing. At such time, shipping containers are transferred into the CH BAY or RH BAY, as applicable, for processing and transfer to the UNDERGROUND. No processing of the shipping containers occurs outside the WHB.

Application to Safety

Two events were identified in the safety analysis that involved the collision of vehicles with shipping containers located in the OUTSIDE AREA (Ref.1). Each event credited the design of the Type B shipping containers to protect the contents from fire and LOC events. The assumption for this analysis is that WASTE in the OUTSIDE AREA is contained in CLOSED SHIPPING CONTAINERS.

The likelihood of collision events in the OUTSIDE AREA is not dependent on WASTE being located within Type B shipping containers. However, WASTE outside of a CLOSED SHIPPING CONTAINER would be susceptible to a release of radioactive material as a result of a collision and fire events.

Based on WASTE being contained in Type B shipping containers when located in the OUTSIDE AREA, the safety analysis determined that consequences to workers and the MOI would be negligible.

LCO

The safety analysis assumed that WASTE in the OUTSIDE AREA is contained within Type B shipping containers. This LCO is required to protect the assumption.

WASTE outside of Type B shipping container in the OUTSIDE AREA does not, in and of itself, result in an adverse event. If a collision event occurs with WASTE outside of Type B containers, the consequences would be significantly higher.

continued

B3/4.5 Waste Handling (continued)

B3.5.3 WASTE HANDLING in the OUTSIDE AREA

Bases (continued)

MODE Applicability

WASTE shipments are delivered to the WIPP and staged outside of the WHB. The shipments are staged in the parking area outside of the WHB until such time as the shipping containers can be processed. To process a shipment, the shipping container is moved into the WHB where it is opened and the WASTE is prepared for transfer to the UNDERGROUND.

On occasion, WASTE must be returned its generator. In such a case, the WASTE would be placed into a shipping container prior to moving it into the parking area for the return shipment.

The movement of vehicles and equipment can result in collision events. The presence of trailers in the parking area increases the likelihood that collisions will occur.

Since no processing activities occur outside the WHB then no specific operational MODES were identified. Therefore, this LCO applies at all times.

PROCESS AREA Applicability

Waste shipments originate or terminate in the area outside of the WHB. All WASTE in this area is assumed to be in Type B shipping containers. Therefore, this LCO applies to the OUTSIDE AREA.

ACTIONS

ACTION A.1

In the event that WASTE is discovered outside of a Type B shipping container in the OUTSIDE AREA, it SHALL IMMEDIATELY be moved into the WHB. The safety analysis assumes that no WASTE is present in the OUTSIDE AREA outside of a Type B shipping container. Although WASTE outside of a Type B shipping container does not, in and of itself, cause an event, the consequences of event would be greater than those analyzed. Therefore, WASTE outside of a Type B shipping container SHALL be moved IMMEDIATELY into the WHB which is designed for handling WASTE and where the proper controls can be applied.

continued

B3/4.5 Waste Handling (continued)

B3.5.3 WASTE HANDLING in the OUTSIDE AREA (continued)

Bases (continued)

Surveillance Requirements

SR 4.5.3.1 VERIFICATION that no WASTE is outside of a CLOSED SHIPPING CONTAINER SHALL be performed DAILY. Shipments of Type B shipping containers into and out of the WIPP are ongoing. Transfer of shipping containers into and out of the WHB also occurs on a regular basis. The potential for inadvertently moving WASTE outside of the WHB is low since WASTE is typically processed with the intent to transfer it to the UNDERGROUND. Therefore, a DAILY inspection for WASTE outside of a Type B shipping container is appropriate. Failure to meet this requirement requires entry into Condition A.

References

1. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
 2. 10 CFR 71. "Packaging and Transportation of Radioactive Materials," *Code of Federal Regulations*, as amended.
 3. 49 CFR 173.413, "Requirements for Type B packages," *Code of Federal Regulations*, as amended.
-

B3/4.6 Compressed Gas Cylinder Program - Deleted

B3/4.7 Noncompliant Container Response

B3.7.1 Noncompliant Container Response

Bases

**Background
Summary**

WIPP receives WASTE from generator sites that is characterized and certified to meet the WIPP WAC prior to shipment. The WIPP receives WASTE in CLOSED SHIPPING CONTAINERS, unloads the WASTE containers, and moves the WASTE containers to the UNDERGROUND for disposal. WIPP does not open or modify the contents of WASTE containers received from generator sites. Therefore, the WIPP WAC serves as a government furnished item and is an initial assumption to the hazards and accident analyses.

The WIPP is responsible for verifying that the containers received are in agreement with the shipping documents. The WIPP has no means to VERIFY the stated contents. Therefore, errors in the generation of a WASTE package, either in actual or stated contents, can result in a noncompliant container being received and disposed.

**Application to
Safety**

This LCO protects the requirements for the receipt of WASTE at the WIPP. The safety analysis (Ref.2) assumes that WASTE transported to WIPP is general compliance with the requirements in the DOE approved WIPP WAC. The generator sites are responsible for the characterization, certification, and packaging of WASTE prior to shipment to the WIPP. WASTE container contents cannot be VERIFIED. Shipping manifests are assumed to comply with the WIPP WAC. WASTE container data entered into the WIPP Waste Data System (WDS) and the shipping documentation accompanying the WASTE shipment. Once WASTE is received at WIPP, the shipping containers are unloaded, WASTE containers are removed, and moved to the UNDERGROUND for disposal. WASTE containers are not opened at WIPP. Therefore, WASTE characteristics are the basis for the analysis of all event types which may occur. LCO 3.7.1 defines the ACTIONS to evaluate and respond to a WASTE package identified to be potentially noncompliant to the WIPP WAC.

continued

B3/4.7 Noncompliant Container Response Program (continued)

B3.7.1 Noncompliant Container Response Program (continued)

Bases (continued)

LCO LCO 3.7.1 requires that WASTE is characterized and certified to the WIPP WAC prior to receipt at WIPP (Ref. 1).

A WASTE generator site could discover that a mischaracterized WASTE container was inadvertently shipped to WIPP. If this happens, the generator site is required to notify WIPP of the condition. WIPP is then responsible for determining the location of that WASTE and ensuring the safety of the facility until such time as the final disposition of the subject container can be determined.

The Hazardous Waste Facility Permit (HWFP) does not require 100% VERIFICATION of all WASTE containers. The process to characterize and certify WASTE varies and often times rely on acceptable knowledge. During the operational life of the facility, WIPP has been notified of potential issues related to WASTE container(s).

This requirement provides for a disciplined response in the event that a potentially noncompliant WASTE container(s) is identified.

MODE Applicability WASTE is received at the WIPP site and down-loaded to the mine for long-term disposition. Therefore, this LCO is applicable at all times after WASTE receipt at WIPP.

PROCESS AREA Applicability The process of WASTE containers includes the CH BAY, RH BAY, ROOM 108, HOT CELL COMPLEX, SHAFT ACCESS AREA, OUTSIDE AREA, and UNDERGROUND. A potentially noncompliant WASTE container could be identified at any point during WASTE handling and disposal process.

The storage of WASTE, in a Type B shipping container, is permitted in the OUTSIDE AREA. A potentially noncompliant WASTE container could be identified when stored in the OUTSIDE AREA.

continued

B3/4.7 Noncompliant Container Response (continued)

B3.7.1 Noncompliant Container Response (continued)**Bases (continued)****ACTIONS**

ACTION A.1 WIPP completes a series of checks upon WASTE receipt to VERIFY container integrity after shipment. However, most potentially noncompliant WASTE containers are identified after the WASTE is emplaced. Locating the potentially noncompliant WASTE package IMMEDIATELY supports the disposition and resolution of the potentially noncompliant WASTE container(s).

ACTION A.2.1 A WASTE container may be noncompliant for a broad range of issues. Minor discrepancies could include paperwork errors and could be corrected quickly. Disposition of a noncompliant WASTE container(s) within ten (10) days provides adequate time to research potential issues and identify a path forward for resolution of regulatory concerns. If disposition of the noncompliant container cannot be completed within ten (10) days, a JCO can be developed in accordance with ACTION A.2.2.

ACTION A.2.2 In the event that ACTION A.2.1 cannot be completed within ten (10) days, then a JCO SHALL be developed and submitted within ten (10) days of entry into Condition A to the CBFO for approval. The JCO SHALL provide an evaluation of the available information on the noncompliant WASTE container. The evaluation SHALL determine if the container can remain emplaced, or if the container is required to be removed from the WIPP. A 10 day completion time is adequate to prepare a JCO.

**Surveillance
Requirements**

No SRs were identified that would assure compliance with the LCO. Other DOE sites are certified to prepare WASTE packages for shipment to the WIPP site. The WASTE information on each shipping package is recorded into the WDS and is approved for shipment. At the WIPP, WASTE packages are received and down-loaded for disposal. The WIPP verifies shipping information upon receipt of the WASTE at the site but has no means to VERIFY the accuracy of the information entered into WDS. Thus, the WASTE packages are considered compliant until WIPP is notified of a potential noncompliant container.

continued

B3/4.7 Noncompliant Container Response (continued)

B3.7.1 Noncompliant Container Response (continued)

Bases (continued)

References

1. DOE/WIPP 02-3122. *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.
2. HWFP. *Waste Isolation Pilot Plant Hazardous Waste Facility Permit*, NM4890139088-TSDF, (current revision), New Mexico Environment Department, Santa Fe, NM.
3. DOE/WIPP 07-3372. *Waste Isolation Pilot Plant Documented Safety Analysis*, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM

B3/4.8 Waste Hoist System

B3.8.1 Waste Hoist Brakes**Bases****Background
Summary**

The main function of the WASTE hoist brakes is to control movement of the WASTE hoist. For the WASTE hoist to be OPERABLE, the WASTE hoist brakes must be IN-SERVICE. The OPERABILITY of the WASTE hoist brakes represents the lowest functional capability of the system. The WASTE hoist brakes work in conjunction with the WASTE hoist system to control movement of the conveyance up and down the WASTE shaft. There are two brake units mounted approximately 180 degrees apart on each brake disc of the hoist wheel. The WASTE hoist brakes are designed so that either set of brakes can stop a fully-loaded conveyance when they are IN-SERVICE. The disc brakes (four total) are spring set, and are released by applying hydraulic pressure. The brakes are normally in the applied position. The brakes are released when transporting waste, personnel, or equipment within the waste shaft. A redundant hydraulic power supply exists to supply hydraulic pressure to release the brakes. Each hydraulic power supply has its own motor, pump, and oil reservoir. There is an automatic switchover from the primary supply system to the standby supply system if the hydraulic pressure decreases below the set point. If for any reason the brake hydraulic pressure has not been released after the brake release signal is de-energized, a timed back up pressure relief path exists to set the brakes (Ref. 3).

**Application to
Safety**

The safety analysis (Ref.1) event, CH/RH-WHB-28-001a, credits the WASTE hoist brakes to prevent the uncontrolled movement of the waste shaft conveyance:

- Uncontrolled movement:
 - CH load is less than the counterweight and the Hoist accelerates upward; terminal velocity is not reached
 - CH load is greater than the counterweight and the Hoist accelerates downward; terminal velocity is not reached
 - RH load is greater than the counterweight and the hoist accelerates downward; terminal velocity is not reached

One loaded facility pallet's MAR was determined as the primary contributor to dose for involving damage of WASTE containers caused by the uncontrolled movement of the conveyance. The mitigated consequences for event CH/RH-WHB-28-001a were determined to be low for the facility worker, moderate for the co-located worker, and moderate for the MOI. For this event, the WASTE hoist brakes are credited to prevent the uncontrolled movement of the WASTE shaft conveyance.

continued

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes

Bases (continued)

Application to Safety (continued)

Assumptions for the analyses include the following:

- As a prerequisite to operation, the WASTE Hoist brakes are inspected as required by 30 CFR 57 "Mine Safety and Health Administration - Safety and Health Standards (MSHA) - Underground Metal and Nonmetal Mines, Subpart R, "Personnel Hoisting" (Ref. 2). The design, operation, and maintenance of the WASTE hoist meets or exceeds the criteria specified by 30 CFR 57.
- The WASTE hoist brakes operate as designed and do not result in uncontrolled movement of the WASTE hoist conveyance.

LCO

The LCO for the WASTE hoist brakes requires them to be OPERABLE prior to transporting WASTE. Controls that ensure the OPERABILITY of the WASTE hoist brakes are necessary to prevent the uncontrolled movement up and down the WASTE shaft. The minimum capability is established by the following controls:

- WASTE Hoist Brakes are OPERABLE

A note permits RH WASTE ACTIVITIES to continue in the SHAFT ACCESS AREA when transferring RH WASTE from the HOT CELL COMPLEX into the SHAFT ACCESS AREA (Facility Cask Loading Room).

MODE Applicability

The events of concern involve uncontrolled movement of the WASTE hoist conveyance. The MAR from CH contributes most to the dose for these events. CH or RH WASTE may be present in the SHAFT ACCESS AREA during WASTE HANDLING MODE. There are times when RH WASTE can be present on the RH side of the SHAFT ACCESS AREA when the WASTE hoist is INOPERABLE. In that event, an exception has been added to the LCO that allows RH WASTE HANDLING activities to continue in the SHAFT ACCESS AREA when transferring RH WASTE from the HOT CELL COMPLEX to the SHAFT ACCESS AREA (FCLR).

continued

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes

Bases (continued)

PROCESS AREA WASTE may be present in the Conveyance Loading Room, the shaft entry room, and the WASTE shaft during WASTE HANDLING MODE. While in this MODE WASTE is on the WASTE shaft conveyance and transported down the WASTE shaft. The SHAFT ACCESS AREA is an area in the WHB that includes the Facility Cask Loading Room, Conveyance Loading Room, Shaft Entry Room, WASTE hoist tower, and the WASTE shaft. Therefore, WASTE HANDLING MODE is applicable to this LCO.

Applicable

ACTIONS

ACTION A.1 In the event the WASTE hoist brakes are declared INOPERABLE without WASTE present on the conveyance, the WASTE hoist SHALL be declared INOPERABLE IMMEDIATELY. Therefore, the INOPERABILITY of the WASTE hoist brakes without WASTE present on the conveyance does not, in and of itself, result in an adverse event. IMMEDIATELY declaring the WASTE hoist INOPERABLE prevents any further use of the WASTE hoist until the brakes are restored to an OPERABLE status.

ACTION A.2 In the event the WASTE hoist brakes are declared INOPERABLE without WASTE present on the conveyance, SUSPEND WASTE HANDLING ACTIVITIES in the SHAFT ACCESS AREA. Suspending WASTE HANDLING ACTIVITIES IMMEDIATELY prevents any further movement of WASTE into the SHAFT ACCESS AREA and reduces MAR present in the SHAFT ACCESS AREA.

ACTION A.3 The OPERABILITY of the WASTE hoist brakes is verified through pre-operational testing at the beginning of each shift prior to use of the WASTE conveyance. The pre-operational test determines if the brakes are IN-SERVICE and can perform their safety function to prevent the uncontrolled movement of the WASTE hoist conveyance. Therefore, the WASTE conveyance cannot be used without WASTE present if the WASTE hoist brake system is INOPERABLE. Restoring the brakes to OPERABLE status prior to use ensures the safe operation of the WASTE hoist.

ACTION B.1 In the event the WASTE hoist brakes are not IN-SERVICE with WASTE present on the conveyance, the WASTE hoist SHALL be declared INOPERABLE IMMEDIATELY. IMMEDIATELY declaring the WASTE hoist INOPERABLE prevents any further use of the WASTE hoist until the brakes are restored to an OPERABLE status.

continued

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes

Bases (continued)

ACTIONS (continued)

ACTION B.2 In the event the WASTE hoist brakes are not IN-SERVICE with WASTE present on the conveyance, SUSPEND WASTE HANDLING ACTIVITIES in the SHAFT ACCESS AREA. Suspending WASTE HANDLING ACTIVITIES IMMEDIATELY prevents any further movement of WASTE containers into the SHAFT ACCESS AREA. This reduces the time-at-risk when WASTE is present outside of a closed shipping container. ACTION B.2 does not apply during RH WASTE HANDLING ACTIVITIES.

ACTION B.3.1 If the WASTE hoist brakes are not IN-SERVICE while WASTE is being transferred to the UNDERGROUND, it may be necessary to remain in WASTE HANDLING MODE for up to 24 hours. This completion time is adequate to determine the type of repairs necessary to restore the WASTE hoist brakes to OPERABLE status. The completion time also allows adequate time for RH WASTE HANDLING to transfer WASTE from the HOT CELL COMPLEX INTO THE SHAFT ACCESS AREA (when applicable).

NOTE: During this time, if the conveyance is at the collar or at WASTE SHAFT STATION, the WASTE may be removed from the conveyance and placed in the least vulnerable condition before restoring the brakes to OPERABILITY.

ACTION B.3.2 During activities to repair the WASTE hoist brakes and restore the WASTE hoist OPERABILITY, the hoist may be operated as necessary without performing a pre-operational check. After the brakes are repaired, pre-operational testing is required to verify the brakes are IN-SERVICE and the WASTE hoist is OPERABLE. Repair of the WASTE hoist brakes and restoration of the system may require an indefinite period of time. The completion time, PRIOR TO USE of the WASTE hoist, is adequate to complete the necessary repairs and preoperational testing.

ACTION B.4.1 Once the WASTE hoist brakes have been repaired, WASTE SHALL be removed from the conveyance. A completion time of 1 hour is sufficient time to remove the WASTE from the conveyance.

AND

ACTION B.4.2 After removing the WASTE from the conveyance, the WASTE SHALL be placed in a SAFE CONFIGURATION. A SAFE CONFIGURATION could be emplacement in an UNDERGROUND DISPOSAL ROOM or returning the WASTE to surface, whichever is the least vulnerable. Placing the WASTE in a SAFE CONFIGURATION minimizes the time-at-risk during WASTE HANDLING ACTIVITIES. A completion time of 24 hours is adequate to place the WASTE in a SAFE CONFIGURATION.

ACTION B.4.3 When ACTION B.4.2 has been completed, a pre-operational test SHALL be performed on the WASTE hoist brakes. Pre-operational testing will verify that the brakes are IN-SERVICE. The completion time, PRIOR TO USE of the WASTE conveyance, is required to ensure the brakes are IN-SERVICE and return the WASTE hoist to OPERABLE status.

Surveillance Requirements

SR 4.8.1.1 Verification that pre-operational testing is complete and the brakes are IN-SERVICE is required PRIOR TO USE of the WASTE hoist. Failure to meet this surveillance requirement requires entry into Conditions A or B, as applicable.

REFERENCES

1. DOE/WIPP 07-3372. Waste Isolation Pilot Plant Documented Safety Analysis, (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM
2. 30 CFR 57, "Mine Safety and Health Administration – Safety and Health Standards – Underground Metal and Nonmetal Mines, Subpart R – "Personnel Hoisting", *Code of Federal Regulations*", as amended.
3. SDD UH00. *Underground Hoisting System Design Description*, (current revision), Nuclear Waste Partnership, LLC, Carlsbad, NM.

This page intentionally left blank