Waste Isolation Pilot Plant
Technical Safety Requirements

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List of Acronyms

AC	Administrative Control
acfm	actual cubic feet per minute
ALARA	As Low As Reasonably Achievable
ASME	American Society of Mechanical Engineers
ANSI	American National Standards Institute
CAM	Continuous Air Monitor
CBFO	Carlsbad Field Office
CCP	Central Characterization Program
CFR	*Code of Federal Regulations*
CH	Contact-Handled
CLR	Conveyance Loading Room
CMR	Central Monitoring Room
CMS	Central Monitoring System
CUR	Cask Unloading Room
CVS	Confinement Ventilation System
CW	co-located worker
DF	Design Feature
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
ECO	Engineering Change Order
ETO	Evaluation of Technical Operability
FCLR	Facility Cask Loading Room
FM	Factory Mutual Research
FP	Fire Protection
FPE	Fire Protection Engineer
FSM	Facility Shift Manager
FSS	Fire Suppression System
FW	facility worker
gpm	gallons per minute
HalfPACT	Half-Package Transporter
HEPA	High Efficiency Particulate Air
HWFP	*Waste Isolation Pilot Plant Hazardous Waste Facility Permit* NM4890139088-TSDF
ICE	Integrated Cooling Material
ISBC	Interim Safety Basis Change
ISI	IN SERVICE Inspections
IVS	Interim Ventilation System
JCO	Justification for Continued Operations
KE	Key Element
LCO	Limiting Condition for Operation
LED	Light Emitting Diode
LPF	leak path factor
LWFC	Light Weight Facility Cask

List of Acronyms (continued)

M&O	management and operating
MAR	Material at Risk
MSHA	Mine Safety and Health Administration
MOI	Maximally Exposed Offsite Individual
NDA	Non-Destructive Assay
NFB	New Filter Building
NFPA	National Fire Protection Association
NPH	Natural Phenomenon Hazard
PAC	Programmatic Administrative Control
PDI	pressure differential indicator
PDT	pressure differential transmitter
PISA	Potential for Inadequate Safety Analysis
psig	pounds per square inch gauge
RH	Remote-Handled
RWP	Radiological Work Permit
SAC	Specific Administrative Control
SC	Safety Class
SDD	System Design Description
SIMCO	Salado Isolation Mining Contractors
SL	Safety Limit
SMP	Safety Management Program
SR	Surveillance Requirement
SS	Safety Significant
SRS	Salt Reduction System
SSC	Structures, Systems, and Components
STD	Standard
TRU	Transuranic
TRUDOCK	TRUPACT-II Unloading Dock
TRUPACT-II	Transuranic Package Transporter Model II
TRUPACT-III	Transuranic Package Transporter Model III
TMF	TRUPACT Maintenance Facility
TSRs	Technical Safety Requirements
UL	Underwriters Laboratories, Inc.
USQ	Unreviewed Safety Question
UVFS	Underground Ventilation Filtration System
UVS	Underground Ventilation System
VFD	variable frequency drive
WAC	Waste Acceptance Criteria
WAP	Waste Analysis Plan
WCP	WIPP Certified Program
WDS	WIPP Waste Data System
WHB	Waste Handling Building
WH	Waste Handling
WIPP	Waste Isolation Pilot Plant

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 (TSRs) 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 423.1-1B, *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 5.0, "Derivations of Technical Safety Requirements."

1.1 Definitions

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

Term	Definition
ACTION(S)	The part of a Limiting Condition for Operation (LCO) that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
ACTIVE PANEL	A Panel that contains emplaced WASTE and has not been isolated by a closure system, as described in the DSA Sections 2.4.4.6 and 2.4.4.6.1.
ACTIVE ROOM	A room in a Panel that contains emplaced WASTE and has not been isolated by a ventilation or isolation structure (e.g., bulkhead or a substantial barrier and bulkhead). This includes the intake drift portion of the room, the main body of the room, and the exhaust drift portion of the room.
ACTIVITY/ACTIVITIES	The collection of tasks or steps commonly associated with a process.
AFFECTED/AFFECTED AREA	The area identified by the Facility Shift Manager (FSM) that identifies the part or all of a PROCESS AREA(S) where a credited control is not available. The AFFECTED AREA is determined by the situation.
ATTEND(ED)/ ATTENDANT	An ATTENDANT is an individual assigned to attend a vehicle/equipment having liquid combustible capacity. An ATTENDANT is trained and is responsible for two basic functions. One function (referred to in the WIPP DSA Chapter 3.0 as a “Spotter”) is a Spotter and is preventive in nature and includes the responsibilities of recognizing potential collision risks and vehicle/equipment anomalies or malfunctions that could result in a fire and taking appropriate action, including alerting the vehicle/equipment operator. Battery-powered vehicles utilized near waste are within the equipment domain of the ATTENDANT function. An ATTENDANT assigned to a stationary vehicle/equipment having liquid or liquid combustible storage location is responsible for alerting the operator of any vehicle/equipment moving in their proximity. The other function (referred to in the WIPP DSA Chapter 3.0 as “Notification”) is mitigative in nature and includes the responsibilities of making appropriate notifications to the Central Monitoring Room (CMR). The ATTENDANT duties are separate from the duties of the designated FIRE WATCH. The ATTENDANT may ride the vehicle/equipment being ATTENDED while moving or may be in close proximity and having visual contact with the vehicle/equipment. The ATTENDANT SHALL not be the operator of a vehicle/equipment.

1.1 Definitions (continued)

Term	Definition
CALIBRATE(D)/ CALIBRATION	The comparison of a measurement standard or instrument with another standard or instrument to report, or reduce by adjustment, any variation (deviation) in the accuracy of the item being compared. A requirement to perform a CALIBRATION on an instrument (e.g., alarm) also requires a CALIBRATION to be performed on all components in the circuit that are subject to drift and that could adversely affect the performance of the instrument.
CLOSED	Refers to site-derived WASTE CONTAINERS as follows: Standard Waste Box container with the lid in place and a minimum of eight bolts (two on each side) are installed and hand tight. **OR** A drum with the lid on, bung ring in place, and the bolt and nut are hand tight. Refers to Type B SHIPPING PACKAGES as follows: Transuranic Package Transporter Model II (TRUPACT-II) or Half-Package Transporter (HalfPACT) Model with the outer lid bolted in place with all bolts present. **OR** Transuranic Package Transporter Model III (TRUPACT-III) Shipping Container with the Outer Cover in place with all bolts in place.
CLOSED PANEL	A Panel with an installed closure system, as described in DSA Section 2.4.4.6 and 2.4.4.6.1, such that entry into the Panel is prevented.
CVS ZONE	The area where CH BAY and ROOM 108 air is filtered by the CH WH CVS.
DISPOSAL ROOM	A room in either an active, closed, or open Panel designated for emplacement of WASTE.
DISPOSAL PANEL	A Panel designated for emplacement of WASTE. A DISPOSAL PANEL can be an ACTIVE PANEL or a CLOSED PANEL.
DOWNLOAD(ING)	The transfer of WASTE CONTAINERS from the Waste Shaft Collar Room to the WASTE SHAFT STATION via the Waste Shaft Conveyance or from the WASTE SHAFT STATION to the Waste Shaft Collar Room.
ENSURE(ING)	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 permitted.

1.1 Definitions (continued)

Term	Definition
FIRE WATCH	A trained person assigned to an AFFECTED AREA for the purpose of making fire safety observations, notifying building occupants and the CMR of an emergency, minimizing the potential for a fire to occur, and/or extinguishing incipient fires. The person assigned a FIRE WATCH can have no other duties.
FREQUENCY(IES)	How often a specific surveillance must be performed. See Section 1.3 of this TSR for detailed information on the use of this term.
FUNCTIONAL(LY) TEST(ED)	An active check or test to determine if equipment is OPERABLE. For an instrument, it is typically performed by inputting a signal as close as possible to the sensor, using a CALIBRATED device or a traceable physical standard and VERIFYING the credited safety response (+/– the allowed tolerance) and/or that an indicator reports the corresponding values (+/– the allowed tolerance) over the required range.
IMMEDIATELY	Without delay. IMMEDIATELY is used as a Completion Time when a Condition cannot be permitted to continue and the corresponding Required Action must be initiated without delay and continued until completed.
IN SERVICE	A system, subsystem, train, component, or device required to perform its specified function.
INTERIM SAFETY BASIS CHANGE (ISBC)	A documented plan used to recover from a condition where the credited safety function has not been met or is newly identified. The ISBC SHALL include a description of the noncompliant condition, compensatory measures (as needed), and corrective actions. (See Section 1.6 of this TSR.)
MODE	The status or operating condition of the facility or a PROCESS AREA. Section 1.2 of this TSR describes the individual MODES.
NOT OPERABLE	A system, structure, component, or device is NOT OPERABLE when it is not capable of performing its specified safety function(s) or when any necessary associated 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 not capable of performing their related support function(s). The requirements for each system, structure, component, or device to be OPERABLE are defined in each LCO. Failure to meet Surveillance Requirements (SRs) within the specified FREQUENCY must be evaluated to determine if a system, subsystem, component, or device should be declared NOT OPERABLE.
OBSERVER	An individual assigned to perform specific duties within the CH BAY. The OBSERVER SHALL have no other assigned duties and is trained.

1.1 Definitions (continued)

Term	Definition
OPERABLE/ OPERABILITY	A system, structure, component, or device is OPERABLE when it is capable of performing its specified safety function(s) and when all necessary associated 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 function(s). The requirements for each system, structure, component, or device to be OPERABLE are defined in each LCO. Successful completion of SRs 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).
RESPONSE PLAN	A document that specifies, based on existing conditions, the detailed plan of action for restoring compliance with the LCO or Administrative Control. Section 5.4.4 discusses the use and content of RESPONSE PLANS. A RESPONSE PLAN can be used to restore compliance with an LCO or Administrative Control. RESPONSE PLANS SHALL be approved by DOE prior to implementation.
ROVING FIRE WATCH	A roving inspection of AFFECTED AREAS for the purpose of making fire safety observations, notifying building occupants and the CMR of an emergency, minimizing the potential for a fire to occur, and/or extinguishing incipient fires. A ROVING FIRE WATCH may have other duties between inspections.
SAFE CONFIGURATION	A configuration that minimizes risk by placing an ACTIVITY or equipment in the least vulnerable location/state. This includes maintaining compliance with the applicable TSRs (e.g., LCOs, design features (DFs), and administrative controls) other than the LCO associated with the SAFE CONFIGURATION. The appropriate SAFE CONFIGURATION is determined by the FSM.
SHALL	A mandatory requirement that must be complied with to maintain the requirements, assumptions, or conditions of the facility safety basis.
SHIPPING PACKAGE	Nuclear Regulatory Commission – authorized Type B SHIPPING PACKAGE, excluding its contents. Type B SHIPPING PACKAGES used at WIPP are TRUPACT-II, TRUPACT-III, and HalfPACT.
SUSPEND WASTE HANDLING ACTIVITIES	The minimum number of discrete steps needed to stop moving WASTE and place WASTE in a SAFE CONFIGURATION.

1.1 Definitions (continued)

Term	Definition
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 Required Actions within an LCO is measured from the TIME OF DECLARATION unless otherwise specified within the action statement.
TRANSPORT PATH	The route below ground that the WASTE travels during WASTE HANDLING ACTIVITIES. The TRANSPORT PATH includes the width of the drift between the ribs.
VERIFY/VERIFIED/ VERIFIES/VERIFYING 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.
WASTE	Content in a WASTE CONTAINER that is outside of a CLOSED SHIPPING PACKAGE on the surface or outside of a CLOSED PANEL UNDERGROUND, and SHALL be: CH – Transuranic (TRU) WASTE with a surface dose rate less than 200 millirem per hour per container. **OR** Site-derived – TRU WASTE generated at the WIPP facility as a direct result of managing the TRU WASTE received from the generator sites.
WASTE CONTAINER	Payload container authorized for shipment in Type B SHIPPING PACKAGES (see the WIPP DSA Chapter 3.0, Table 3.3-8).
WASTE FACE	The area of the emplaced WASTE array where the WASTE is susceptible to damage from collisions, fires, explosions, and other events that could lead to a release of radiological material.
WASTE HANDLING VEHICLES/EQUIPMENT	Vehicles and equipment used to load, unload, transport, emplace, and retrieve WASTE. The Waste Shaft Conveyance is not defined as WASTE HANDLING EQUIPMENT.
WASTE HANDLING ACTIVITY(IES)	Activities involving WASTE being handled. Examples of WASTE HANDLING ACTIVITIES include unloading, transporting, emplacing, retrieving outside a CLOSED SHIPPING PACKAGE, or loading WASTE into a SHIPPING PACKAGE to be returned to a generator site, or a MgO sack being placed at the WASTE FACE in the ACTIVE ROOM.
WASTE SHAFT STATION	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.

1.1 Definitions (continued)

Term	Definition
WHB PARKING AREA UNIT	The asphalt and concrete surface extending from north of the rail sidings to the Waste Handling Building (WHB), within the Waste Storage Areas, as depicted in WIPP DSA Chapter 2.0, Figure 2.4-1.

1.1 Definitions (continued)

Table 1.1-1. Process Area Description

PROCESS AREA NAME	PROCESS AREA DESCRIPTION
CH BAY	Area of the WHB used for CH WASTE HANDLING ACTIVITIES.
ROOM 108	Area within the CH WHB used for CH WASTE HANDLING ACTIVITIES for TRUPACT-III.
OUTSIDE AREA	The aboveground areas external to the WHB, within the Property Protection Area.
UNDERGROUND	The Waste Shaft, WASTE SHAFT STATION, TRANSPORT PATH, and DISPOSAL ROOM(S).
WASTE SHAFT ACCESS AREA	Area of the WHB that includes the Facility Cask Loading Room (FCLR), Conveyance Loading Room (CLR), Waste Shaft Collar Room, and Waste Hoist Tower.

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. MODE changes are administrative declarations made by the FSM or designee.

Table 1.2-1. Mode Descriptions

MODE	CONDITION
WASTE HANDLING	A MODE in which WASTE is permitted to be handled, stored, or placed in a storage configuration **OR** WASTE is permitted to be moved outside of a CLOSED SHIPPING PACKAGE **OR** an MgO sack is permitted to be placed at the WASTE FACE in an ACTIVE ROOM.
WASTE STORAGE	A MODE in which WASTE may be temporarily stored, but no WASTE HANDLING ACTIVITIES are permitted. WASTE may be outside of a CLOSED SHIPPING PACKAGE. Site-derived WASTE (when present in the CH BAY or RH Bay) must be in a CLOSED WASTE CONTAINER.
DISPOSAL	A MODE in which no WASTE HANDLING ACTIVITIES are permitted in the UNDERGROUND.
STANDBY	A MODE in which WASTE is not permitted to be present unless in a CLOSED SHIPPING PACKAGE. Site-derived WASTE (when present in the CH BAY or RH Bay) must be in a CLOSED WASTE CONTAINER.

1.2 Operational MODES (continued)

Table 1.2-2. MODE and Process Area Matrix

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

Note: OUTSIDE AREA has no MODES assigned. OUTSIDE AREA is indicated by LCO applicability statements and is applicable at all times.

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. The FREQUENCY notation used in this TSR document is in agreement with DOE-G-423.1-1.

FREQUENCY Notation

The FREQUENCY notations used in this TSR are defined in Table 1.3-1.

Use of FREQUENCY/ Periodicity

Failure to complete the LCO SR within the required FREQUENCY (see Table 1.3-1), as qualified in the table notes, SHALL constitute an LCO violation. Failure to complete LCO SRs within the required FREQUENCY SHALL constitute failure of the SR requiring entry into the applicable Condition of 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.

1.3 Frequency (continued)

Table 1.3-1. Surveillance Requirement Frequency

NOTATION	FREQUENCY	FREQUENCY +25%
EACH SHIFT (Notes 1 and 2)	Once per Shift	N/A
DAILY (Notes 1 and 3)	Once per day	N/A
WEEKLY (Note 1)	7 Days	8 Days
MONTHLY	31 Days	38 Days
QUARTERLY	92 Days	115 Days
SEMIANNUAL(LY)	184 Days	230 Days
ANNUAL(LY)	365 Days	456 Days
5 YEAR(S)	1826 Days	2282 Days

Note 1: For the UNDERGROUND, surveillances are required to be performed only when personnel are present in the UNDERGROUND.

Note 2: EACH SHIFT means that the surveillance is required to be performed once anytime during the standard working shift of the performing organization. Exceptions are stated in specific LCOs.

Note 3: DAILY means that the surveillance is performed once each day anytime during the day that the equipment/system is to be used, or prior to the initial use of the vehicle/equipment when specified.

1.3 Frequency (continued)

EXAMPLES

The following example illustrates the way that FREQUENCIES are specified. In this example, the LCO MODE applicability is WASTE HANDLING and WASTE STORAGE.

EXAMPLE 1.3-1

Surveillance Requirements

SURVEILLANCE REQUIREMENT	FREQUENCY
SR 4.x.x.x VERIFY one CVS exhaust fan 41-B-816 **OR** 41-B-817 IN SERVICE.	DAILY

Example 1.3-1 contains the type of SR most often encountered in the TSR. The FREQUENCY specifies an interval (DAILY) during which the associated surveillance must be performed at least one time. Performance of the surveillance initiates the subsequent interval. Although the FREQUENCY is stated as DAILY, an extension of the time interval to 1.25 times the stated FREQUENCY is allowed by SR 4.0.2 for operational flexibility. The 25% extension should be used on an “as needed” basis and should not be considered as a “normally relied on” FREQUENCY. If a SR is not performed within the specified interval, then SR 4.0.3 becomes applicable.

If the interval specified by SR 4.0.2 is exceeded while the facility is not in a MODE or other specified condition in the applicability of the LCO for which performance of the SR is required, the surveillance must be performed within the FREQUENCY requirements prior to entry into the MODE or other specified condition. Failure to do so would violate SR 4.0.4.

Special conditions may dictate when a surveillance is to be met. These conditions apply to the surveillance, the FREQUENCY, or both. They are “otherwise stated” conditions allowed by SR 4.0.1. They may be stated as clarifying notes in the surveillance, the FREQUENCY, or both.

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, Required 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-423.1-1B.

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 Required Action. The first level of logic is identified by the first digit of the number assigned to each Required Action and the placement of the logical connector in the first level of nesting (for example, left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required 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
AND	Used to connect two or more sets of criteria that must both (all) be satisfied for a given logical decision.
OR	Used to denote alternate combinations or Conditions, meaning either one or the other criterion is acceptable.

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 Required 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

The Completion Time is the amount of time allowed to complete a Required Action. It is referenced to the TIME OF DECLARATION. A Required Action can be done any time during the specified completion interval.

If situations require entry into more than one Condition within a single LCO (multiple Conditions), the Required 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.

Once a Condition has been entered, subsequent discovery of subsystems, components, or variables that are NOT OPERABLE or not within limits as a result of cascading effects from entering the Condition SHALL not result in separate entry into the Condition. The Required Action(s) of the Condition continue to apply to each additional failure, and Completion Times are based on initial entry into the Condition.

Entry into an LCO ACTION and LCO Required Action Completion Times SHALL be documented.

1.6 Interim Safety Basis Changes

Purpose

The purpose of this section is to establish the use and application for conditions that require an ISBC.

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 safety basis. Due to the broad spectrum of the way equipment can fail and operational events can arise, preparation and approval of an ISBC may be required. The development, preparation, and approval of the ISBC 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.

ISBCs may include Justifications for Continued Operations (JCO), Safety Basis Supplements, and Evaluation of the Safety of the Situation. JCOs provide a temporary change to the facility safety basis that would allow the facility to continue operating in view of a specific and unexpected situation, considering the safety significance of the situation and any compensatory measures being applied during this period. Safety Basis Supplements establish new temporary requirements to supplement the existing TSR. Evaluation of the Safety of the Situation is a qualitative assessment of relative risk of the situation and provides evidence to DOE for addition or removal of controls. All must be approved by DOE prior to implementation.

ISBC

The ISBC 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

The WIPP Management and Operating (M&O) Contractor SHALL evaluate a discrepant as-found condition to determine if the condition requires the preparation, development, and approval of an ISBC. The ISBC 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 (SLs) are limits on process variables associated with safety class physical barriers, generally passive, that are necessary for the intended facility function and that are required to guard against the uncontrolled release of radioactive materials.” If exceeded, could directly cause the failure of one or more barriers that prevent the uncontrolled release of radiological 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 radiological or hazardous material. Therefore, there are no SLs.

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

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 Structures, Systems, and Components (SSCs), their support systems required for normal safe operation of the facility, and Specific Administrative Controls (SACs).

LCO 3.0.1

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

LCO 3.0.2

Upon discovery of a failure to meet an LCO, the associated ACTIONS SHALL be met, except as provided in LCO 3.0.5 and LCO 3.0.6. If the LCO is restored or is no longer applicable before the specified Completion Time(s) expires, completion of the ACTION is not required, unless otherwise stated.

The Completion Time(s) for Required Action(s) are also applicable when a system or component is intentionally removed from service. Acceptable reasons for intentionally entering Required Action(s) for an LCO include, but are not limited to, performance of SRs, preventive maintenance, corrective maintenance, or investigation of operational problems.

LCO 3.0.3

When an LCO statement is not met and the associated ACTIONS are not met, or when an associated ACTION is not provided, the applicable PROCESS AREA SHALL be placed in a MODE or other specified condition in which the LCO is not applicable. If the LCO is applicable in all MODES, 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. The applicable PROCESS AREA SHALL be in a SAFE CONFIGURATION within 12 Hours.

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

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

(continued)

3.0 General Limiting Conditions for Operation (continued)

LCO 3.0.4

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 or that are part of a shutdown of the AFFECTED PROCESS AREA(S).

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

LCO 3.0.5

Equipment removed from service or declared NOT OPERABLE to comply with ACTIONS may be returned to service under Administrative Control (AC) 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 AC to perform the testing required to demonstrate OPERABILITY.

LCO 3.0.6

When a support system is declared inoperable, the supported systems are also required to be declared inoperable. However, only the support system's ACTIONS are required to be entered, provided they reflect the supported system's degraded safety condition. This is an exception to LCO 3.0.2 for the supported system.

4.0 GENERAL SURVEILLANCE REQUIREMENTS

SR 4.0.1	SRs SHALL be met during the MODES or other specified conditions in the applicability for individual LCOs unless otherwise stated in the SR. Failure to meet a surveillance, whether such failure is experienced during the performance of the surveillance or between performances of the surveillance, SHALL be failure to meet the LCO, except as provided in SR 4.0.3. Surveillances do not have to be performed on NOT OPERABLE equipment or variables outside specified limits.
SR 4.0.2	Each SR SHALL be performed within the specified FREQUENCY. The specified FREQUENCY of each SR is met if the SR is performed within 1.25 times the interval specified in the FREQUENCY, as measured from the previous performance or as measured from the time a specified condition of the FREQUENCY is met, as identified in Table 1.3-1. For FREQUENCIES specified as “once,” the above interval extension does not apply. Exceptions to this specification are stated in the individual specifications.
SR 4.0.3	Failure to perform a SR within 1.25 times the specified time interval (TSR violation) SHALL constitute a failure to meet the OPERABILITY requirements for the LCO. The LCO ACTIONS SHALL be entered at the time it is determined that the SR has not been performed or is not met, except as provided below. If it is discovered that a surveillance was not performed within its specified FREQUENCY, then 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 delay period is permitted to allow performance of the surveillance. If the SR is not performed within the delay period, the LCO must IMMEDIATELY be declared not met, and the applicable Condition(s) must be entered. When the SR is performed within the delay period and the surveillance is not met, the LCO must IMMEDIATELY be declared not met, and the applicable Condition(s) must be entered.
SR 4.0.4	Entry into a MODE or other specified condition SHALL not be made unless the SRs associated with the LCO have been performed within the stated surveillance interval or as otherwise specified. When an LCO is not met due to surveillances not having been met, entry into a MODE or other specified condition in the applicability SHALL only be made in accordance with LCO 3.0.4.

3/4.1 Fire Suppression Systems

3.1.1 WHB Fire Suppression System

LCO 3.1.1 The Fire Suppression System (FSS) for the WHB SHALL be OPERABLE. An OPERABLE FSS consists of the following elements:

- One unobstructed and undiverted flow path from Fire Water Storage Tank 25-D-001A to the applicable PROCESS AREA sprinklers.
- Two fire pumps (electric fire pump 45-G-601 and diesel fire pump 45-G-602) each with a capability to deliver greater than or equal to 490 gallons per minute (gpm) to the ROOM 108 riser at greater than or equal to 120 pounds per square inch gauge (psig).
- Fire pump auto-start at a fire water distribution system pressure of greater than or equal to 125 psig for the electric fire pump (45-G-601), and greater than or equal to 115 psig for the diesel fire pump (45-G-602).
- One of the two diesel fire pump batteries must be capable of providing greater than 9 volts when the pump is starting.
- Fire Water Storage Tank 25-D-001A level indication of greater than or equal to 51 percent.
- Level indication for Fire Water Storage Tank loop 25F00601 (Level transmitter, 456-LT-006-001, and local indicator, 456-LI-006-001).

MODE Applicability WASTE HANDLING, WASTE STORAGE

PROCESS AREA Applicability CH BAY, ROOM 108, WASTE SHAFT ACCESS AREA

----------**NOTE 1**----------

LCO 3.1.1 PROCESS AREA Applicability excludes the FCLR.

----------**NOTE 2** ----------

During surveillance testing of the fire pumps, the FSS is considered OPERABLE when one fire pump (45-G-601 or 45-G-602) is OPERABLE.

(continued)

3/4.1 Fire Suppression Systems (continued)

3.1.1 WHB Fire Suppression System (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The Fire Water Storage Tank loop 25F00601 is NOT OPERABLE.	----------**NOTE**---------- LCO 3.0.4 is not applicable. ----------	
	A.1 VERIFY Fire Water Storage Tank level greater than or equal to 51 percent by visual verification of water overflowing Fire Water Storage Tank.	2 Hours **AND** every 12 Hours thereafter
	AND	
	A.2.1 Restore Fire Water Storage Tank loop (25F00601) to OPERABLE status.	92 Days
	OR	
	A.2.2 Place the AFFECTED PROCESS AREA(S) in STANDBY.	92 Days

(continued)

3/4.1 Fire Suppression Systems (continued)

3.1.1 WHB Fire Suppression System (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One fire pump is NOT OPERABLE.	----------**NOTE**---------- LCO 3.0.4 is not applicable. ---------- B.1 ENSURE second fire pump is OPERABLE.	1 Hour
	AND	
	B.2.1 Restore NOT OPERABLE fire pump to OPERABLE status.	92 Days
	OR	
	B.2.2 Place the AFFECTED PROCESS AREA(S) in STANDBY.	92 Days

(continued)

3/4.1 Fire Suppression Systems (continued)

3.1.1 WHB Fire Suppression System (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE---------- Condition C is not entered for FSS inoperability due to an inoperable Fire Water Tank level loop 25F00601. Condition C is entered for inoperability due to a fire hydrant flow test only when Condition D is not met. **----------**	**----------NOTE----------** LCO 3.0.4 is not applicable. **----------**	
C. The FSS for the WHB is NOT OPERABLE in a PROCESS AREA(S). **OR** Required Actions and Completion Times of Condition B or D are not met. **OR** No OPERABLE fire pumps available.	C.1 Do not introduce new CLOSED Type B SHIPPING PACKAGES into AFFECTED PROCESS AREA(S).	IMMEDIATELY
	AND	
	C.2 Stop hot work ACTIVITIES in WHB not related to restoration of FSS in AFFECTED PROCESS AREA(S).	1 Hour
	AND	
	C.3 Establish a FIRE WATCH in the AFFECTED PROCESS AREA(S) when in WASTE HANDLING MODE.	1 Hour
	C.4 Remove liquid-fueled vehicles/equipment from RH Bay.	
	AND	
	C.5 Establish a ROVING FIRE WATCH in AFFECTED PROCESS AREA(S) at locations not covered by Required Action C.3.	1 Hour **AND** Every 2 Hours thereafter
	AND	

(continued)

3/4.1 Fire Suppression Systems (continued)

3.1.1 WHB Fire Suppression System (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.6.1 Restore FSS to OPERABLE status. **OR** C.6.2 Place the AFFECTED PROCESS AREA(S) in STANDBY.	31 Days 31 Days
D. The FSS for the WHB is NOT OPERABLE in a PROCESS AREA(S) due to a hydrant flowing.	D.1 Assign firefighter to be present at the hydrant during fire hydrant flowing. **AND** D.2 Upon indication of fire, secure the open hydrant. **AND** D.3 Restore FSS to OPERABLE status in AFFECTED PROCESS AREA(S).	Prior to start of a fire hydrant flowing IMMEDIATELY 12 Hours

(continued)

3/4.1 Fire Suppression Systems (continued)

3.1.1 WHB Fire Suppression System (continued)

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.1.1.1	VERIFY that the level in the Fire Water Storage Tank is greater than or equal to 51 percent using the local level indicator (456-LI-006-001).	EACH SHIFT
4.1.1.2	Perform an automatic start test of each fire pump (electric fire pump 45-G-601 and diesel fire pump 45-G-602). Verify that • the electric pump starts upon fire water distribution system pressure of greater than or equal to 125 psig. • the diesel pump starts upon fire water distribution system pressure of greater than or equal to 115 psig. • diesel fire pump (45-G-602) battery voltage is greater than 9 volts when the pump is starting.	WEEKLY
4.1.1.3	VERIFY that the diesel fire pump fuel tank (45-D-601) fuel level is greater than or equal to 12 inches.	WEEKLY
4.1.1.4	VERIFY that valves providing at least one unobstructed and undiverted flow path from Fire Water Storage Tank 25-D-001A to the applicable PROCESS AREA sprinklers are locked in the proper position.	MONTHLY
4.1.1.5	Open the Inspector's Test Valve associated with each riser as identified below and VERIFY water flow through the associated riser: Riser — Inspector's Test Valve CH BAY — FW-411-V-023 and FW-412-V-002 ROOM 108 — FW-411-V-062	SEMI-ANNUALLY

(continued)

3/4.1 Fire Suppression Systems (continued)

3.1.1 WHB Fire Suppression System (continued)

Surveillance Requirements (continued)

SURVEILLANCE REQUIREMENT		FREQUENCY
4.1.1.6	Perform a Main Drain Test for the CH BAY and ROOM 108 risers to VERIFY less than 10% reduction in pressure from the previous satisfactory test for that lineup.	ANNUALLY **AND** Upon any FSS alignment change
4.1.1.7	Perform a CALIBRATION on the level indicators and transmitter for the Fire Water Storage Tank (Level transmitter, 456-LT-006-001, and local indicator, 456-LI-006-001).	ANNUALLY
4.1.1.8	Perform a hydrant flow test for each fire pump (45-G-601 and 45-G-602) to VERIFY a flowrate of greater than or equal to 500 gpm while maintaining at least 141 psig residual pressure using hydrants #12 and #13.	ANNUALLY
4.1.1.9	Perform an internal visual inspection of the CH BAY and ROOM 108 risers to VERIFY components operate correctly, move freely, are in good condition, and fire suppression piping is free of excessive foreign material and unobstructed.	------**NOTE**------- SR 4.0.2 is not applicable. ---------- 5 YEARS

3/4.1 Fire Suppression System (continued)

3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System

LCO 3.1.2

The FSS on UNDERGROUND vehicles/equipment near WASTE SHALL be OPERABLE.

An OPERABLE FSS consists of the following elements:

- Control Panel with functional status indicating light(s).
- Control Panel with functional audible tone indication.
- Functional automatic fire detection system.
- Charged suppressant system in accordance with Table 3.1.2-2.
- Components required to disperse the suppression agent functional.
- Functional automatic engine/motor shutdown.

MODE Applicability

WASTE HANDLING, DISPOSAL

PROCESS AREA Applicability

UNDERGROUND

When CH WASTE is present in the WASTE SHAFT STATION.

When CH WASTE is present in the TRANSPORT PATH.

When liquid-fueled/battery-powered vehicles/equipment having significant liquid combustible quantities are less than or equal to the minimum standoff distance from a CH WASTE FACE as specified in Table 3.1.2-1.

(continued)

3/4.1 Fire Suppression System (continued)

3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. FSS on UNDERGROUND vehicle/equipment NOT OPERABLE.	A.1 ATTEND the vehicle/equipment with the NOT OPERABLE FSS.	IMMEDIATELY
	AND	
	A.2 Place vehicle/equipment in a SAFE CONFIGURATION.	IMMEDIATELY
	AND	
	A.3.1 Replace noncompliant vehicle/equipment with vehicle/equipment with an OPERABLE FSS.	4 Hours
	OR	
	A.3.2 SUSPEND WASTE HANDLING ACTIVITIES not associated with the affected vehicle.	4 Hours
	AND	
	A.4 Restore compliance with the LCO.	30 Days

(continued)

3/4.1 Fire Suppression System (continued)

3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Surveillance Requirements

	SURVEILLANCE REQUIREMENT	FREQUENCY
4.1.2.1	VERIFY only the green (solid or flashing) light illuminates and no other lights or audible tones are on the FSS electronic display panel for vehicles and equipment in use.	DAILY (prior to use)
4.1.2.2	----------**NOTE**---------- SR 4.0.2 is not applicable. ---------- Perform a FUNCTIONAL TEST of the FSS controls for vehicles/equipment to VERIFY the following attributes are operational: • Control Panel status indicating light(s). • Control Panel audible tone indication. • Automatic fire detection system. • Charged suppressant system as specified in Table 3.1.2-2. • Components required to disperse suppression agent. • Automatic engine/motor shutdown.	SEMIANNUALLY

(continued)

3/4.1 Fire Suppression System (continued)

3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Table 3.1.2-1. Standoff Distances from WASTE FACE for Vehicles/Equipment Containing Liquid Combustibles

----------NOTE 1----------

When transported, liquid combustibles are included as the vehicle/equipment liquid combustible quantities.

Liquid Combustible Capacity (gallons)	Minimum Standoff Distance (feet)
≤**29**	N/A
>29 to ≤50	40
>50 to ≤100	55
>100 to ≤150	70
>150 to ≤200	85
>200 to ≤250	100
>250 to ≤300	115
>300 to ≤400	145
>400 to ≤500	175

Table 3.1.2-2. Adequately Charged Suppressant System

Ansul System: Wet Chemical Vertical Agent Cylinders ONLY	
Tank Size	**Chemical Level***
LVS-3	2.5 – 3.5 inches
LVS-5	4.5 – 5.5 inches
LVS-10	3.5 – 4.5 inches
Ansul System: Wet Chemical Horizontal Agent Cylinders ONLY	
Tank Size	**Chemical Level***
LVS-10	3.0 – 4.0 inches
Ansul System: Dry Chemical	
Tank Size	**Chemical Level***
101-10	≤ 5 ¼ inches
101-20	≤ 6 ¼ inches
101-20	≤ 5 inches (Low Profile)
101-30	≤ 7 ½ inches
101-50	≤ 8 ½ inches
Ansul System: Adequately Charged Suppressant System	
Verify weight is within 0.5 ounce of weight stamped on the cartridge.	
Amerex System: Adequately Charged Suppressant System	
Verify yellow pointer on the pressure gauge is within the green pie area.	
* Chemical level is the distance from the top of the fill opening to the top of the chemical.	

3/4.2 Confinement Ventilation Systems

3.2.1 CH WASTE Handling (WH) Confinement Ventilation System

LCO 3.2.1 The CH WH Confinement Ventilation System (CVS) SHALL be OPERABLE. An OPERABLE CH WH CVS consists of the following elements:

- Differential pressure across each IN SERVICE HEPA unit's HEPA filter banks is equal to or within the range of +3.90 inches w.g. and +0.30 inches w.g. locally.
- Differential pressure less than or equal to -0.04 inches w.g. in CH BAY with respect to ambient outside air pressure, locally.
- Differential pressure less than or equal to -0.04 inches w.g. in ROOM 108, with respect to ambient outside air pressure, locally.
- One exhaust fan (41-B-816 or 41-B-817) IN SERVICE.
- One OPERABLE High-efficiency Particulate Air (HEPA) filter unit (41-B-814 or 41-B-815) IN SERVICE.
- IN SERVICE HEPA filter unit efficiency of greater than or equal to 99%.
- OPERABLE pressure differential instrumentation as identified in Table 3.2.1-1.
- Differential pressure greater than or equal to +0.03 inches w.g. in the RH Bay with respect to the CH BAY.

MODE Applicability	WASTE HANDLING, WASTE STORAGE
PROCESS AREA Applicability	CH BAY within the CVS ZONE (depicted in Figure 3.2.1-1) and ROOM 108

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.1 CH WH Confinement Ventilation System (continued)

ACTIONS

----------NOTE 1----------
Fifteen minutes are allowed to clear CH BAY differential pressure exceedances, due to temporary ambient outside pressure effects, before entry into the LCO.

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE 2---------- Condition A is not applicable to RH Bay Gauge 411-PDI-059-36 or RH Bay differential pressure loss. Instead enter Condition B. **----------** A. The CH WH CVS is NOT OPERABLE in an applicable PROCESS AREA. **OR** IN SERVICE local gauge specified in Table 3.2.1-1 is NOT OPERABLE.	**----------NOTE----------** LCO 3.0.4 is not applicable. **----------** A.1 Do not introduce new CLOSED Type B SHIPPING PACKAGES containing WASTE into AFFECTED AREA(S).	IMMEDIATELY
	AND A.2 Stop hot work ACTIVITIES in AFFECTED AREA(S) not related to restoration of CH WH CVS.	IMMEDIATELY
	AND A.3 Establish a ROVING FIRE WATCH at the WASTE storage locations in AFFECTED AREA(S).	1 Hour **AND** Every 6 Hours thereafter
	AND A.4.1 Restore the CH WH CVS to OPERABLE status.	14 Days
	OR A.4.2 Place the AFFECTED AREA(S) in STANDBY.	14 Days

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.1 CH WH Confinement Ventilation System (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------**NOTE 3**---------- Condition B is not applicable to ROOM 108. ---------- B. RH Bay Gauge 411-PDI-059-36 is NOT OPERABLE. **OR** RH Bay differential pressure is less than Table 3.2.1-1 set point.	----------**NOTE**---------- LCO 3.0.4 is not applicable. ---------- B.1 Align RH Bay pressure to outside ambient air pressure or greater.	IMMEDIATELY **AND** Every 12 Hours thereafter
	AND B.2 ENSURE Doors 41-N-158 and 41-N-159 are closed.	IMMEDIATELY **AND** Every 12 Hours thereafter
	AND B.3 ENSURE the RH Bay ventilation system Exhaust Fans 41-B-805, 41-B-806, 41-B-878a, and 41-B-878b are not IN SERVICE and are secured.	IMMEDIATELY **AND** Every 12 Hours thereafter
	AND B.4 ENSURE the Upper Hot Cell shield plug is installed.	IMMEDIATELY **AND** Every 12 Hours thereafter
	AND B.5.1 Restore RH Bay gauge/differential pressure to OPERABLE status.	60 Days
	OR B.5.2 Place the CH BAY in STANDBY.	60 Days

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.1 CH WH Confinement Ventilation System (continued)

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.2.1.1	VERIFY differential pressure across each IN SERVICE HEPA unit's HEPA filter banks is equal to or within the range of +3.90 inches w.g. and +0.30 inches w.g. at differential pressure local gauges per Table 3.2.1-1.	DAILY
4.2.1.2	VERIFY differential pressure less than or equal to -0.04 inches w.g. in the CH BAY and ROOM 108 with respect to ambient outside air pressure at differential pressure local gauges per Table 3.2.1-1.	DAILY
4.2.1.3	VERIFY one CH WH CVS exhaust fan and one OPERABLE HEPA filter unit are IN SERVICE.	DAILY
4.2.1.4	VERIFY each HEPA filter bank of each IN SERVICE HEPA filter unit has an efficiency of greater than or equal to 99%.	---------**NOTE**-------- SR 4.0.2 is not applicable. ---------- ANNUALLY
4.2.1.5	Perform a CALIBRATION on the pressure differential gauges listed in Table 3.2.1-1.	ANNUALLY
4.2.1.6	DELETED	DELETED
4.2.1.7	DELETED	DELETED
4.2.1.8	Perform smoke testing of the CVS ZONE (as depicted in Figure 3.2.1-1) to VERIFY air is exhausted by the CH WH CVS.	SEMIANNUALLY
4.2.1.9	VERIFY differential pressure greater than or equal to +0.03 inches w.g. in the RH Bay with respect to the CH BAY pressure at the differential pressure local gauge per Table 3.2.1-1.	DAILY

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.1 CH WH Confinement Ventilation System (continued)

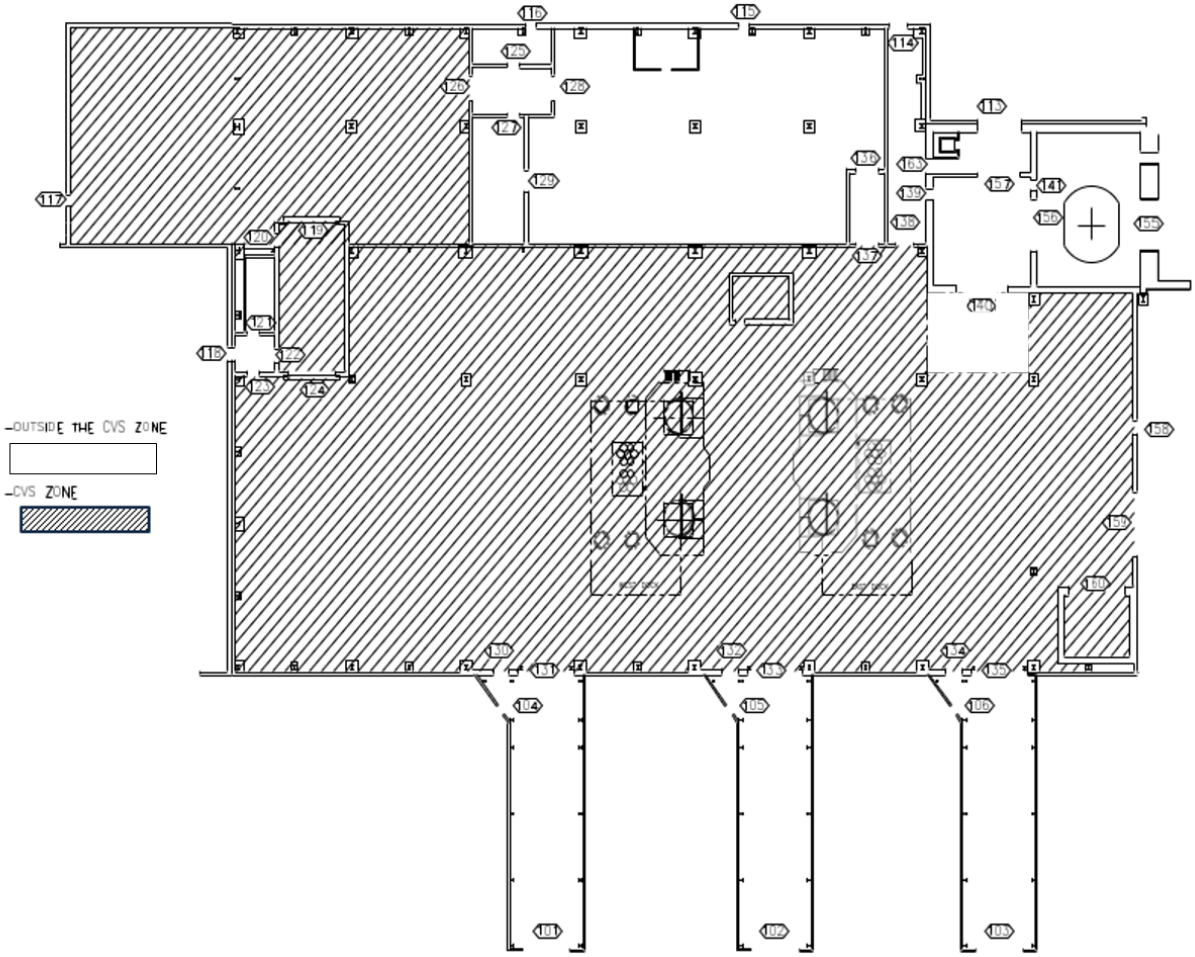
Table 3.2.1-1. CH WH CVS, Local Differential Pressure Instrumentation

Description	Local Gauge	Acceptable Range
41-B-814, 1st HEPA Bank	411-PDI-052-023B	≤+3.90 inches w.g. (High) ≥+0.30 inches w.g. (Low)
41-B-814, 2nd HEPA Bank	411-PDI-052-024B	≤+3.90 inches w.g. (High) ≥+0.30 inches w.g. (Low)
41-B-815, 1st HEPA Bank	411-PDI-052-030B	≤+3.90 inches w.g. (High) ≥+0.30 inches w.g. (Low)
41-B-815, 2nd HEPA Bank	411-PDI-052-031B	≤+3.90 inches w.g. (High) ≥+0.30 inches w.g. (Low)
Description	**Local Gauge**	**Set Point**
CH BAY	411-PDI-059-026BB	≤-0.04 inches w.g. (with respect to atmosphere)
ROOM 108	411-PDI-059-026EB	≤-0.04 inches w.g. (with respect to atmosphere)
RH Bay	411-PDI-059-36	≥+0.03 inches w.g (with respect to the CH BAY)

3/4.2 Confinement Ventilation Systems (continued)

3.2.1 CH WH Confinement Ventilation System (continued)

Figure 3.2.1-1. CH BAY Diagram Depicting the CVS ZONE



3/4.2 Confinement Ventilation Systems (continued)

3.2.2 Hot Cell Complex Confinement Ventilation System (Deleted)

3/4.2 Confinement Ventilation Systems (continued)

3.2.3 UNDERGROUND Ventilation Filtration System/Interim Ventilation System (Deleted)

3/4.2 Confinement Ventilation Systems (continued)

3.2.4 309 Bulkhead OPERABILITY During DOWNLOAD of WASTE CONTAINERS (Deleted)

3/4.2 Confinement Ventilation Systems (continued)

3.2.5 Battery Exhaust System

LCO 3.2.5 The WHB Battery Exhaust System Confinement Ventilation System (CVS) SHALL be OPERABLE. An OPERABLE Battery Exhaust System CVS consists of the following elements:

- One OPERABLE HEPA filter unit (41-B-834 or 41-B-979) IN SERVICE.
- Differential pressure across each IN SERVICE HEPA unit's HEPA filter banks is equal to or within the range of +3.92 inches w.g. and +0.28 inches w.g., locally.
- IN SERVICE HEPA filter unit efficiency of greater than or equal to 99%.
- OPERABLE pressure differential instrumentation as identified in Table 3.2.5-1.

MODE Applicability WASTE HANDLING MODE and WASTE STORAGE MODE when the Battery Exhaust System exhaust fans are IN SERVICE.

PROCESS AREA Applicability CH BAY, ROOM 108

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.5 Battery Exhaust System (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The WHB Battery Exhaust System is NOT OPERABLE. **OR** IN SERVICE local gauge specified in Table 3.2.5-1 is NOT OPERABLE.	A.1 Secure operation of IN SERVICE battery exhaust fan (41-B-835 and/or 41-B-836).	IMMEDIATELY

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.5 Battery Exhaust System (continued)

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.2.5.1	VERIFY differential pressure across each IN SERVICE HEPA unit's HEPA filter banks is equal to or within the range of +3.92 inches w.g. and +0.28 inches w.g. at differential pressure local gauges per Table 3.2.5-1.	DAILY
4.2.5.2	VERIFY each HEPA filter bank of each IN SERVICE HEPA filter unit has an efficiency of greater than or equal to 99%.	---------**NOTE**-------- SR 4.0.2 is not applicable. ---------- ANNUALLY
4.2.5.3	Perform CALIBRATION on the pressure differential local gauges listed in Table 3.2.5-1.	ANNUALLY

Table 3.2.5-1. Battery Exhaust System, Local Differential Pressure Instrumentation

Description	Local Gauge	Acceptable Range
41-B-834, 1st HEPA Bank	411-PDI-052-007B	≤+3.92 inches w.g. (High) ≥+0.28 inches w.g. (Low)
41-B-834, 2nd HEPA Bank	411-PDI-052-008B	≤+3.92 inches w.g. (High) ≥+0.28 inches w.g. (Low)
41-B-979, 1st HEPA Bank	411-PDI-052-018B	≤+3.92 inches w.g. (High) ≥+0.28 inches w.g. (Low)
41-B-979, 2nd HEPA Bank	411-PDI-052-019B	≤+3.92 inches w.g. (High) ≥+0.28 inches w.g. (Low)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System

LCO 3.2.6 The Underground Ventilation System (UVS) SHALL be OPERABLE. An OPERABLE UVS consists of the following elements:

- CMR alarm panel 711-AP-451 and associated differential pressure instrumentation loop as identified in Table 3.2.6-1.
- CMR alarm panel 416-CP-031-207 and associated differential pressure instrumentation loop as identified in Table 3.2.6-2.
- Airflow into an ACTIVE ROOM(s) from the entry towards the WASTE FACE and out the exhaust, when the ACTIVE ROOM(s) is manned.
- Efficiency of each IN SERVICE HEPA unit's second HEPA filter bank ≥ 99 percent.
- Differential pressure across each IN SERVICE HEPA unit's second HEPA filter bank is within the range, as identified in Table 3.2.6-2.
- Differential pressure across the 308 Bulkhead more negative than or equal to -0.09 inches w.g.
- Alignment of Salt Reduction System (SRS) double isolation inlet and outlet dampers, and HEPA bypass double isolation dampers, as identified in Table 3.2.6-3.
- Leakage requirements met for SRS double isolation inlet and outlet dampers; HEPA bypass double isolation dampers as identified in Table 3.2.6-4.
- UVS exhaust fan(s) running and IN SERVICE HEPA unit(s).

MODE Applicability WASTE HANDLING, DISPOSAL

PROCESS AREA Applicability UNDERGROUND (except closed DISPOSAL ROOM(s))

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE---------- Condition A is not applicable if no UVS exhaust fans are running or if Local Gauge 534-PDIT-160-528B is NOT OPERABLE. Instead enter Condition E. **----------** A. CMR alarm panel 711-AP-451 indicating lights or audible alarm NOT OPERABLE as identified in Table 3.2.6-1. **OR** Associated differential pressure instrumentation loop NOT OPERABLE as identified in Table 3.2.6-1.	**----------NOTE----------** LCO 3.0.4 is not applicable. **----------** A.1 VERIFY UVS exhaust fans are running locally at the UVS exhaust fans. **AND** A.2 VERIFY differential pressure at 534-PDIT-160-528B local reading is less than or equal to -0.09 inches w.g. when the UNDERGROUND is manned. **AND** A.3 Restore CMR alarm panel 711-AP-451 and associated differential pressure instrumentation loop as identified in Table 3.2.6-1 to OPERABLE status.	1 Hour **AND** Every 4 Hours thereafter Within 1 Hour of manning the UNDERGROUND **AND** Every 4 Hours thereafter when UNDERGROUND is manned 60 Days

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE---------- Condition B is not applicable if no UVS exhaust fans are running. Instead enter Condition E. **----------** **----------NOTE----------** A separate entry is allowed for each indicating light, audible alarm, and instrument loop being NOT OPERABLE. **----------** B. CMR alarm panel 416-CP-031-207 indicating lights or audible alarm NOT OPERABLE as identified in Table 3.2.6-2. **OR** Associated differential pressure instrument loop NOT OPERABLE as identified in Table 3.2.6-2.	**----------NOTE----------** LCO 3.0.4 is not applicable. **----------** B.1 VERIFY differential pressure for affected IN SERVICE HEPA units' HEPA filter banks at local gauge is within the range as identified in Table 3.2.6-2. **AND** B.2 Restore CMR alarm panel 416-CP-031-207 and associated differential pressure instrument loop as identified in Table 3.2.6-2 to OPERABLE status.	1 Hour **AND** Every 4 Hours thereafter 60 Days

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. No airflow into an ACTIVE ROOM(s) from the entry towards the WASTE FACE and out the exhaust, when the ACTIVE ROOM is manned.	C.1 Do not introduce new WASTE CONTAINERS into the UNDERGROUND.	IMMEDIATELY
	AND	
	C.2 Place the ACTIVE ROOM in SAFE CONFIGURATION.	2 Hours
	AND	
	C.3 Place WASTE CONTAINERS in SAFE CONFIGURATION.	2 Hours
	AND	
	C.4.1 Restore compliance by ENSURING ACTIVE ROOM(s) is not manned.	4 Hours
	OR	
	C.4.2 Restore compliance by restoring airflow into the ACTIVE ROOM(s).	4 Hours

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE 1 ---------- Condition D is not applicable if no UVS exhaust fans are running. Instead enter Condition E. **----------** **----------NOTE 2----------** For planned activities or HEPA filter unit autorecovery, fifteen minutes are allowed for UVS differential pressure alarms to clear before entry into Condition D is required. **----------** D. IN SERVICE second HEPA filter bank is less than 99 percent efficient. **<u>OR</u>** IN SERVICE second HEPA filter bank differential pressure is not within the range as identified in Table 3.2.6-2.	D.1 Restore compliance by removing noncompliant HEPA unit(s) from service.	2 Hours

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE 1---------- The use of electric carts to transport personnel is allowed in executing the Required Actions in Condition E. **----------** **----------NOTE 2----------** For planned UVS fan configuration changes, fifteen minutes are allowed for Bulkhead 308 differential pressure alarms to clear before entry into Condition E is required. **----------** E. No UVS exhaust fans are running. **OR** Differential pressure across the 308 Bulkhead less negative than -0.09 inches w.g. **OR** Local gauge 534-PDIT-160-528B as indicated in Table 3.2.6-1 is not OPERABLE.	E.1 Do Not introduce new WASTE CONTAINERS into UNDERGROUND. **AND** E.2 Place UNDERGROUND WASTE CONTAINERS in SAFE CONFIGURATION. **AND** E.3 Place vehicles/equipment within 200 feet of WASTE CONTAINER(s) into a SAFE CONFIGURATION. **AND** E.4 Restore the UVS exhaust fans, or differential pressure across the 308 Bulkhead, or local gauge 534-PDIT-160-528B, as applicable.	IMMEDIATELY 2 Hours 2 Hours 31 Days

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE ---------- The use of electric carts to transport personnel is allowed in executing the Required Actions in Condition F. **----------**	F.1 Do Not introduce new WASTE CONTAINERS into UNDERGROUND.	IMMEDIATELY
	AND	
F. SRS double isolation inlet dampers do not meet leakage and alignment requirements as identified in Table 3.2.6-3 and Table 3.2.6-4.	F.2 Place UNDERGROUND WASTE CONTAINERS in SAFE CONFIGURATION.	2 Hours
OR	**AND**	
SRS double isolation outlet dampers do not meet leakage and alignment requirements as identified in Table 3.2.6-3 and Table 3.2.6-4	F.3 Place UNDERGROUND vehicles/equipment within 200 feet of WASTE CONTAINER(s) in a SAFE CONFIGURATION.	2 Hours
OR	**AND**	
HEPA bypass double isolation dampers do not meet leakage and alignment requirements as identified in Table 3.2.6-3 and Table 3.2.6-4.	F.4 Restore at least one OPERABLE SRS double isolation inlet and one OPERABLE outlet and one OPERABLE HEPA bypass double isolation damper by closing an OPERABLE damper.	4 Hours

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.2.6.1	Perform a FUNCTIONAL TEST on CMR Panel 711-AP-451 indicators and alarms as identified in Table 3.2.6-1.	MONTHLY
4.2.6.2	Perform a FUNCTIONAL TEST on CMR Panel 416-CP-031-207 indicators and alarms as identified in Table 3.2.6-2.	MONTHLY
4.2.6.3	----------**NOTE**---------- Entry into the ACTIVE ROOM(s), up to 20 feet from the entrance, is permitted for 1 Hour or less, to perform SR 4.2.6.3. ---------- VERIFY airflow into an ACTIVE ROOM(s) from the entry towards the WASTE FACE and out the exhaust, when manned.	DAILY When manned **AND** Following a change of the UVS alignment When manned **AND** Following a change in bulkhead configuration impacting airflow into an ACTIVE ROOM When manned
4.2.6.4	----------**NOTE**---------- The second HEPA filter bank is allowed to exceed the DP range identified in Table 3.2.6-2 for up to 12 Hours during the in-place leak test. Entry into CONDITION D is not required for the associated filter bank during testing. ---------- VERIFY each second HEPA filter bank of each IN SERVICE HEPA filter unit has an efficiency of ≥ 99%.	----------**NOTE**---------- SR 4.0.2 is not applicable. ---------- ANNUALLY
4.2.6.5	----------**NOTE**---------- DP instrumentation is allowed to be manipulated outside the established operational range identified in Table 3.2.6-2 for up to 12 Hours during the instrument loop calibration. Entry into CONDITION B is not required for the associated instrument loop during calibration. ---------- Perform an instrument loop CALIBRATION of each second HEPA filter bank's differential pressure transmitter and associated differential pressure indicators as identified in Table 3.2.6-2.	ANNUALLY
4.2.6.6	Perform a FUNCTIONAL TEST of the Bulkhead 308 differential pressure alarm instrument loop as identified in Table 3.2.6-1.	ANNUALLY

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

Surveillance Requirements (continued)

SURVEILLANCE REQUIREMENT		FREQUENCY
4.2.6.7	Perform an instrument loop CALIBRATION of the Bulkhead 308 differential pressure transmitter and associated differential pressure indicators as identified in Table 3.2.6-1.	ANNUALLY
4.2.6.8	Perform a FUNCTIONAL TEST of each OPERABLE HEPA filter banks high and low differential pressure alarm instrument loop as identified in Table 3.2.6-2.	ANNUALLY
4.2.6.9	----------**NOTE**---------- Prior to opening one of the redundant dampers, this surveillance must be performed to VERIFY the companion damper is closed and has a satisfactory leakage surveillance (i.e., SR 4.2.6.10). ---------- Alignment of SRS double isolation inlet and outlet dampers, and HEPA bypass double isolation dampers, as identified in Table 3.2.6-3.	SEMIANNUALLY
4.2.6.10	Leakage requirements met for SRS double isolation inlet and outlet dampers, and HEPA bypass double isolation dampers as identified in Table 3.2.6-4.	ANNUALLY

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

Table 3.2.6-1. 308 Bulkhead Differential Pressure Instrumentation

Description	Differential Pressure Instrument Loop	Transmitter/Local Indicator	Alarm Condition
308 Bulkhead Pressure Differential Indicating Transmitter	54A160528	534-PDIT-160-528B	Less negative than -0.09 inches w.g.
Description	**Differential Pressure Instrument Loop**	**CMR Alarm Panel**	**Panel Status**
CMR Alarm Panel	54A160528	711-AP-451	OPERABLE panel power light, 308 bulkhead differential pressure alarm light, trouble light, and associated audible CMR alarm

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

Table 3.2.6-2. HEPA Filter Differential Pressure Instrumentation

Description	Differential Pressure Instrument Loop	Transmitter/Local Indicator	Alarm Setpoint(s) (Range)
2nd Stage HEPA Bank Pressure Differential Indicating Transmitter	416A005zz0D Where zz is the HEPA unit number (01-22)	416-PDIT-005-zz0D Where zz is the HEPA unit number (01-22)	≥-1.15 inches w.g. (High) ≤-0.35 inches w.g. (Low) (within -1.15 to -0.35 inches w.g.)
Description	**Differential Pressure Instrument Loop**	**CMR Alarm Panel**	**Panel Status**
CMR alarm panel	416A005zz0D Where zz is the HEPA unit number (01-22)	416-CP-031-207	OPERABLE panel power light, HEPA differential pressure high and low alarm lights, and associated CMR audible alarm

(continued)

3/4.2 Confinement Ventilation Systems (continued)

3.2.6 UNDERGROUND Ventilation System (continued)

Table 3.2.6-3. HEPA Filtration Damper Component Requirements

Component	Requirement for OPERABILITY
HEPA Filtration System Bypass Double Isolation Dampers	One damper closed.
Salt Reduction System (SRS) Inlet and Outlet Double Isolation Dampers	One inlet and one outlet damper closed.

Table 3.2.6-4. Damper Leak Testing Requirements for OPERABILITY

Component(s)	Leak Testing Requirements for OPERABILITY
HEPA Filtration System Bypass Double Isolation Dampers	One damper acceptable leakage shall be less than or equal to 100 cfm.
Salt Reduction System (SRS) Inlet and Outlet Double Isolation Dampers	One inlet and one outlet damper acceptable leakage shall be less than or equal to 25,000 cfm.

3/4.3 Vehicle/Equipment Control

3.3.1 Vehicle Control in the OUTSIDE AREA (Deleted)

3/4.3 Vehicle/Equipment Control (continued)

3.3.2 Aboveground Liquid-fueled Vehicle/Equipment Prohibition

LCO 3.3.2 Liquid-fueled vehicles/equipment SHALL not be present.

MODE Applicability WASTE HANDLING, WASTE STORAGE

----------NOTE ----------

Non-liquid-fueled vehicles/equipment transporting liquid combustible quantities are considered equivalent to liquid-fueled vehicles/equipment.

PROCESS AREA Applicability CH BAY, ROOM 108, WASTE SHAFT ACCESS AREA (when CH WASTE is present in a PROCESS AREA)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Liquid-fueled vehicle/ equipment is present in an applicable PROCESS AREA.	A.1 SUSPEND WASTE HANDLING ACTIVITIES.	IMMEDIATELY
	AND	
	A.2. Establish an ATTENDANT for the liquid-fuel vehicle/equipment.	IMMEDIATELY
	AND	
	A.3 Remove the liquid-fueled vehicle/equipment from the AFFECTED PROCESS AREA using an ATTENDANT.	IMMEDIATELY

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.3.2.1	VERIFY no liquid-fueled vehicles/equipment are in the CH BAY.	EACH SHIFT when CH WASTE is present
4.3.2.2	VERIFY no liquid-fueled vehicles/equipment are in ROOM 108.	EACH SHIFT when CH WASTE is present
4.3.2.3	VERIFY no liquid-fueled vehicles/equipment are in the WASTE SHAFT ACCESS AREA.	EACH SHIFT when CH WASTE is present

3/4.3 Vehicle/Equipment Control (continued)

3.3.3 Vehicle/Equipment Control in the SHAFT ACCESS AREA (Deleted)

3.3.4 Control of Propane-Powered Vehicles/Equipment (Deleted)

3/4.3 Vehicle/Equipment Control (continued)

3.3.5 UNDERGROUND Lube Trucks Operation

LCO 3.3.5 UNDERGROUND Lube Trucks SHALL be prohibited within:

- 200 feet of a CH WASTE FACE in an ACTIVE PANEL.

  AND

- The WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION.

MODE Applicability WASTE HANDLING, DISPOSAL

PROCESS AREA Applicability UNDERGROUND

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. A Lube Truck is within 200 feet of a CH WASTE FACE in an ACTIVE PANEL. **OR** A Lube Truck is in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION.	A.1 ATTEND the Lube Truck. **AND** A.2 Place any CH WASTE in the AFFECTED AREA in a SAFE CONFIGURATION. **AND** A.3 Remove the Lube Truck from the AFFECTED AREA.	IMMEDIATELY IMMEDIATELY 4 Hours

(continued)

3/4.3 Vehicle/Equipment Control (continued)

3.3.5 UNDERGROUND Lube Trucks Operation (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Actions and Completion Times of Condition A are not met.	B.1 ATTEND the Lube Truck when the UNDERGROUND is manned.	IMMEDIATELY
	AND	
	B.2 Place the Lube Truck in a SAFE CONFIGURATION.	IMMEDIATELY
	AND	
	B.3 Suspend maintenance ACTIVITIES in the AFFECTED AREA other than those related to Lube Truck repair.	IMMEDIATELY
	AND	
	B.4 Suspend Conveyance loading in the Waste Shaft Collar Room.	IMMEDIATELY
	AND	
	B.5 Remove the Lube Truck from the AFFECTED AREA.	14 Days

(continued)

3/4.3 Vehicle/Equipment Control (continued)

3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.3.5.1	VERIFY that the Lube Truck is greater than 200 feet from a CH WASTE FACE in an ACTIVE PANEL.	EACH SHIFT when a Lube Truck is moved within the ACTIVE PANEL **OR** EACH SHIFT when the Lube Truck is located in the ACTIVE PANEL and CH WASTE is being emplaced.
4.3.5.2	VERIFY that the Lube Truck is not in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION.	Prior to CH WASTE entering the WASTE SHAFT STATION

3/4.3 Vehicle/Equipment Control (continued)

3.3.6 Underground Waste Transport Path (Deleted)

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

3/4.3 Vehicle/Equipment Control (continued)

3.3.8 Vehicle/Equipment Control

LCO 3.3.8 Liquid-fueled vehicles/equipment SHALL be controlled as follows:

- ATTENDED in the WASTE SHAFT STATION when CH Waste is present in the WASTE SHAFT STATION.
- ATTENDED in the TRANSPORT PATH when CH WASTE is present in the TRANSPORT PATH.
- ATTENDED when within 25 feet from a CH WASTE FACE.
- Limited to no more than two liquid-fueled vehicles/equipment within 25 feet of a CH WASTE FACE.

MODE Applicability WASTE HANDLING, DISPOSAL

---------- NOTE ----------

This LCO also applies to non-liquid-fueled vehicles/equipment transporting or containing liquid combustible quantities.

PROCESS AREA Applicability UNDERGROUND

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Liquid-fueled vehicle/equipment in the WASTE SHAFT STATION is not ATTENDED when CH WASTE is present in the WASTE SHAFT STATION.	A.1 Place the vehicle/equipment in a SAFE CONFIGURATION. **AND** A.2 ATTEND the affected liquid-fueled vehicle/equipment.	IMMEDIATELY 1 Hour
B. Liquid-fueled vehicle/equipment in the TRANSPORT PATH is not ATTENDED when CH WASTE is present in the TRANSPORT PATH.	B.1 Place the vehicle/equipment in a SAFE CONFIGURATION. **AND** B.2 ATTEND the affected liquid-fueled vehicle/equipment.	IMMEDIATELY 1 Hour

(continued)

3/4.3 Vehicle/Equipment Control (continued)

3.3.8 Vehicle/Equipment Control (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Liquid-fueled vehicle/equipment is not ATTENDED when less than 25 feet from a CH WASTE FACE.	C.1 Place the vehicle/equipment in a SAFE CONFIGURATION. **AND** C.2 ATTEND the affected liquid-fueled vehicle/equipment.	IMMEDIATELY 1 Hour
D. More than two liquid-fueled vehicles/equipment are within 25 feet of a CH WASTE FACE.	D.1 Move the excess vehicle/equipment to a distance greater than 25 feet from the CH WASTE FACE using an ATTENDANT.	IMMEDIATELY

(continued)

3/4.3 Vehicle/Equipment Control (continued)

3.3.8 Vehicle/Equipment Control (continued)

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.3.8.1	VERIFY required ATTENDANT(S) is present for liquid-fueled vehicles/equipment in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION.	Prior to CH WASTE entering the WASTE SHAFT STATION
4.3.8.2	VERIFY required ATTENDANT(S) is present for liquid-fueled vehicles/equipment in the TRANSPORT PATH when CH WASTE is present in the TRANSPORT PATH.	Prior to introduction of CH WASTE into the TRANSPORT PATH.
4.3.8.3	VERIFY liquid-fueled vehicles/equipment are ATTENDED when less than 25 feet from a CH WASTE FACE.	Upon entry into ACTIVE ROOM EACH SHIFT while UNDERGROUND is manned
4.3.8.4	VERIFY no more than two liquid-fueled vehicles/equipment are within 25 feet of a CH WASTE FACE.	Upon entry into ACTIVE ROOM EACH SHIFT while UNDERGROUND is manned

3/4.3 Vehicle/Equipment Control (continued)

3.3.9 Attendance of Areas ≤25 Feet of TRU WASTE CONTAINERS When Vehicles/Equipment are Present (Deleted)

3/4.4 Fuel Confinement

3.4.1 Fuel Confinement in the RH Bay (Deleted)

3.4.2 Fuel Barrier in the UNDERGROUND (Deleted)

3/4.4 Fuel Confinement (continued)

3.4.3 Temporary Liquid-combustible Storage

LCO 3.4.3 Temporary liquid-combustible storage locations south of S-90 and east of W-170 SHALL:

- Be located at least 200 feet from the TRANSPORT PATH.
- Be located at least 200 feet from each CH WASTE FACE in an ACTIVE PANEL.
- Be limited to two (2) locations separated by at least 300 feet.
- Be limited to a maximum of 534 gallons of total liquid-combustibles.

MODE Applicability WASTE HANDLING, DISPOSAL

----------**NOTE 1**----------

Temporary storage of liquid combustibles less than 200 feet from the TRANSPORT PATH or less than 200 feet from a CH WASTE FACE in an ACTIVE PANEL is allowed when the liquid is placed behind an approved isolation structure (such as bulkheads and barriers).

PROCESS AREA Applicability UNDERGROUND (south of S-90 and east of W-170)

(continued)

3/4.4 Fuel Confinement (continued)

3.4.3 Temporary Liquid-combustible Storage (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. A temporary liquid-combustible storage location is less than 200 feet from a CH WASTE FACE in an ACTIVE PANEL	A.1 ATTEND the noncompliant temporary liquid-combustible storage location when the ACTIVE PANEL is manned or during WASTE Transport.	IMMEDIATELY
OR	**AND**	
A temporary liquid-combustible storage location is less than 200 feet from the TRANSPORT PATH.	A.2 Place CH WASTE in the affected TRANSPORT PATH in SAFE CONFIGURATION.	IMMEDIATELY
	AND	
	A.3 Relocate the noncompliant liquid-combustible containers in the temporary liquid-combustible storage location at least 200 feet from the TRANSPORT PATH and at least 200 feet from a CH WASTE FACE in the ACTIVE PANEL.	48 Hours

(continued)

3/4.4 Fuel Confinement (continued)

3.4.3 Temporary Liquid-combustible Storage (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. The temporary liquid-combustible locations are not separated by at least 300 feet.	B.1 Relocate the noncompliant liquid-combustible containers in the temporary liquid-combustible storage locations to establish at least 300 feet between each temporary liquid-combustible storage location.	48 Hours
C. The number of temporary liquid-combustible locations is greater than 2.	C.1 Reduce the number of temporary liquid-combustible locations to 2 or less.	72 Hours
D. The total contained volume of temporarily stored liquid-combustibles exceeds 534 gallons.	D.1 ATTEND each temporary liquid-combustible storage location when the ACTIVE PANEL is manned or during WASTE Transport.	IMMEDIATELY
	AND	
	D.2 Place CH WASTE in the affected TRANSPORT PATH in SAFE CONFIGURATION.	IMMEDIATELY
	AND	
	D.3 Reduce the total volume of temporarily stored liquid-combustibles to 534 gallons or less.	48 Hours

(continued)

3/4.4 Fuel Confinement (continued)

3.4.3 Temporary Liquid-combustible Storage (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Actions and Completion Times of Condition A, B, C or D are not met.	E.1 ATTEND each noncompliant temporary liquid-combustible storage location when the ACTIVE PANEL is manned.	IMMEDIATELY
	AND	
	E.2 SUSPEND WASTE HANDLING ACTIVITIES in the UNDERGROUND other than those related to re-establishing compliance of temporary liquid-combustible storage locations.	IMMEDIATELY
	AND	
	E.3 Restore compliance with the LCO	14 Days

(continued)

3/4.4 Fuel Confinement (continued)

3.4.3 Temporary Liquid-combustible Storage (continued)

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.4.3.1	VERIFY that each temporary liquid-combustible storage location is either 200 feet or greater from the TRANSPORT PATH, or is placed behind an installed isolation structure.	MONTHLY **AND** Following a change of TRANSPORT PATH **AND** Upon establishment of a temporary liquid-combustible storage area location
4.4.3.2	VERIFY that each temporary liquid-combustible storage location is either 200 feet or greater from a CH WASTE FACE in an ACTIVE PANEL, or is placed behind an installed isolation structure.	MONTHLY
4.4.3.3	VERIFY that temporary liquid-combustible storage locations are limited to 2 and, if 2 locations exist, that the locations are separated by 300 feet or greater.	MONTHLY
4.4.3.4	VERIFY that the combined total of temporarily stored liquid-combustibles is no greater than 534 gallons.	MONTHLY

3/4.5 Waste Handling

3.5.1 CH WASTE Handling (Deleted)

3.5.2 Waste Conveyance Operations (Deleted)

3.5.3 Waste Handling in the OUTSIDE AREA (Deleted)

3/4.6 Compressed Gas Cylinder Program

3.6.1 Storage of Compressed Gas Cylinders (Deleted)

3.6.2 Use of Compressed Gas Cylinders (Deleted)

3.6.3 Transport of Compressed Gas Cylinders (Deleted)

3/4.7 Suspect Container Response

3.7.1 Waste Acceptability Control

LCO 3.7.1 WASTE CONTAINERS SHALL be compliant with the WIPP Waste Acceptance Criteria (WAC).

MODE Applicability At all times

PROCESS AREA Applicability CH BAY, ROOM 108, WASTE SHAFT ACCESS AREA, UNDERGROUND, OUTSIDE AREA

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Discrepancy between Shipment Manifest and Waste Data System (WDS).	A.1 Keep WASTE CONTAINER(S) in their CLOSED Type B SHIPPING PACKAGE.	IMMEDIATELY
	AND	
	A.2 Restore compliance to WIPP WAC.	7 Days
B. WASTE CONTAINER(S) determined to be noncompliant through observable container configuration, structural defect, damage, degradation, or confirmation of removable surface contamination exceeding the limits of Table 3.7.1-1.	B.1 Place WASTE CONTAINER(S) in a SAFE CONFIGURATION.	IMMEDIATELY
	AND	
	B.2.1 Place accessible WASTE CONTAINER(S) in a WIPP WAC compliant overpack container.	4 Days
	OR	
	B.2.2 Implement a RESPONSE PLAN.	10 Days

(continued)

3/4.7 Suspect Container Response (continued)

3.7.1 Waste Acceptability Control (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. WASTE CONTAINER(S) suspected of being noncompliant through observable indications of pressurization (past or present).	C.1 SUSPEND WASTE HANDLING ACTIVITIES in accessible AFFECTED AREA.	IMMEDIATELY
	AND	
	C.2 Evacuate and post signage and/or erect barricades for the accessible AFFECTED AREA.	IMMEDIATELY
	AND	
	C.3 Implement a RESPONSE PLAN.	10 Days
D. WASTE CONTAINER(S) received is NOT the WASTE CONTAINER(s) approved for shipment in accordance with WDS.	D.1 Place WASTE CONTAINER(S) in a SAFE CONFIGURATION.	IMMEDIATELY
	AND	
	D.2 Resolve WASTE CONTAINER(S) discrepancy.	7 Days

(continued)

3/4.7 Suspect Container Response (continued)

3.7.1 Waste Acceptability Control (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Notification or discovery of a WASTE CONTAINER(S) that can potentially result in internal energetic events such as fires, deflagrations/explosions, or other exothermic reactions; exceed WIPP WAC fissile mass and/or non-fissile mass limits; or exceed WIPP WAC PE-Ci limits.	E.1 Locate and place noncompliant WASTE CONTAINER(S) in a SAFE CONFIGURATION.	IMMEDIATELY
	AND	
	E.2 SUSPEND WASTE HANDLING ACTIVITIES in accessible AFFECTED AREA.	IMMEDIATELY
	AND	
	E.3 Evacuate and post the accessible AFFECTED AREA.	IMMEDIATELY
	AND	
	E.4 Implement a RESPONSE PLAN.	10 Days
F. Required Action and/or Completion Times for Required Actions A.2 or D.2 cannot be met.	F.1 Implement a RESPONSE PLAN.	10 Days

(continued)

3/4.7 Suspect Container Response (continued)

3.7.1 Waste Acceptability Control (continued)

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.7.1.1	Perform receipt inspection to determine if the Shipment Manifest is consistent with the WIPP WDS.	Upon Receipt
4.7.1.2	---------- **NOTE:** 24 Hours are allowed to analyze removable surface contamination on WASTE CONTAINERS before entry to Condition B is required. ---------- Perform the following inspections, through direct observation of accessible areas of WASTE CONTAINER(S): • No rust or corrosion that indicates wall thinning, pin holes, or a breach. • No visible split seams, tears, obvious holes, punctures (of any size), creases, broken welds, or cracks. • No payload container improperly closed. • No dents, scrapes, or scratches that could affect the structural integrity of the container. • No obvious discoloration, indicating leakage of material from the container. • No obvious damage or obstruction to vents. • Confirmation of no removable surface contamination from a TRU radionuclide originating from the WASTE CONTAINER(s) being surveilled, exceeding the limits of Table 3.7.1-1 as measured from accessible areas of the SHIPPING PACKAGE or WASTE CONTAINER(S) surfaces.	Upon removal of WASTE CONTAINER(S) from SHIPPING PACKAGE
4.7.1.3	Perform a direct observation of WASTE CONTAINER(S) that no evidence that the WASTE CONTAINER(S) is or has been pressurized.	Upon removal of WASTE CONTAINER(S) from SHIPPING PACKAGE
4.7.1.4	Perform a direct observation of the observable WASTE CONTAINER(s) identification label and compare with WIPP WDS to determine compliance with approved shipment.	Upon removal of WASTE CONTAINER(S) from SHIPPING PACKAGE

(continued)

3/4.7 Suspect Container Response (continued)

3.7.1 Waste Acceptability Control (continued)

Surveillance Requirements

Table 3.7.1-1. CH TRU Waste Removable Surface Contamination Limits[a]

Removable Surface Contamination
≤ 2,000 dpm/100 cm^2 alpha[b]
≤ 20,000 dpm/100 cm^2 beta-gamma

a This control is only applicable to TRU radionuclides known to be present in the WASTE CONTAINER(s) being surveilled.

b If compliance with these limits is not met within 24 Hours of detection, enter CONDITION B.

3/4.8 Waste Hoist System

3.8.1 Waste Hoist Brakes

LCO 3.8.1 The Waste Hoist Brakes SHALL be OPERABLE.
OPERABLE Waste Hoist Brakes consist of the following elements:

- Four OPERABLE brake units composed of calipers, springs, with brake release at 1882 psi or greater, a brake force as measured by the caliper piston travel distance of 0.137 to 0.157 inch at 2364 psi or greater, and brake pads greater than or equal to 0.47 inch thick.
- Two OPERABLE Emergency Dump Valves (SV-2 and SV-5).
- An OPERABLE Lilly Controller to include the fly-ball governor and associated contacts that will automatically set the brakes upon an over speed condition of less than or equal to 550 fpm.

MODE Applicability WASTE HANDLING (during DOWNLOADING)

PROCESS AREA Applicability WASTE SHAFT ACCESS AREA and UNDERGROUND

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Waste Hoist Brakes are NOT OPERABLE.	A.1 Suspend introduction of new CH into Waste Shaft Collar.	IMMEDIATELY
	AND	
	A.2 Place WASTE in SAFE CONFIGURATION.	24 Hours

(continued)

3/4.8 Waste Hoist System (continued)

3.8.1 Waste Hoist Brakes (continued)

Surveillance Requirements

SURVEILLANCE REQUIREMENT		FREQUENCY
4.8.1.1	Perform a FUNCTIONAL TEST to VERIFY an over speed condition, loss of electric power condition, and the emergency dump valves set all four Waste Hoist Brakes.	DAILY (prior to use)
4.8.1.2	Perform FUNCTIONAL TEST of the Lilly Controller to ENSURE OPERABILITY of the over speed governors to lift the link between the contacts thereby removing electrical power to the hydraulic system.	WEEKLY
4.8.1.3	VERIFY the brake pad thickness is greater than or equal to 0.47 inch, the brake release pressure is at 1882 psi or greater, and the caliper piston travel distance is within 0.137 and 0.157 inch at 2364 psi or greater.	MONTHLY

3/4.9 Unfiltered Underground Ventilation

3.9.1 Radiological Monitoring System in an ACTIVE PANEL (Deleted)

3/4.9 Unfiltered Underground Ventilation (continued)

3.9.2 700 Fan Shutdown System (Deleted)

Section 5
Administrative Controls

5.0 ADMINISTRATIVE CONTROLS

5.1 Purpose

The purpose of ACs is to state provisions relating to organization and management, procedures, record keeping, assessment, and reporting necessary to ENSURE safe operation of a facility. Two types of ACs are used in nuclear facilities at WIPP. The first type is termed SAC, which is an Administrative Control needed to prevent or mitigate an accident scenario; and the second type is termed Programmatic Administrative Controls (PACs) that commits the facility operator to establish, maintain, and implement one or more elements of a Safety Management Program (SMP).

The functions of SACs and PACs are as follows:

- SACs provide specific preventive or mitigative functions for accident scenarios identified in the WIPP DSA Chapter 3.0, where the safety function has importance similar to, or the same as, the safety function of a safety SSC.
- PACs are designed to provide broad programmatic support for SMPs supporting defense-in-depth, or worker safety.

5.2 Management Responsibilities

Lines of authority, responsibility, and communication SHALL be defined and 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.

5.2.1 Contractor Responsibilities

The WIPP M&O Contractor's Operations Manager is responsible for overall safe operation of the WIPP facility. The Operations Manager SHALL delegate in writing the succession for this responsibility during any absences.

The Facility Shift Manager (FSM) is responsible for local command of WIPP operation. During any unavailability of the FSM at the WIPP facility, 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 safety basis (current DSA and TSRs).

The FSM has the authority to take emergency actions in accordance with Section 5.4.3.

5.2.2 Support Organizations

Organizations provide support functions and personnel necessary for WIPP Operations.

A list of facility support personnel by name, title, work, and home telephone number SHALL be available to the FSM. The list should include management, radiation safety, and technical support personnel.

5.0 Administrative Controls (continued)

5.3 Minimum Staffing

5.3.1 Minimum Operations Shift Complement

The available number of managers and operators with qualifications conforming to the requirements of DOE Order 426.2 SHALL be adequate to safely operate and support WIPP activities. Personnel fulfilling the FSM, CMR Operator, and Roving Watch positions will meet the qualification requirements for those positions. 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 one FSM, one CMR Operator, and one Facility Operations Roving Watch, along with all qualified staff required to implement TSR required actions associated with activities being performed. The function of the FSM is to provide facility command and control. The CMR Operator provides continuous monitoring of facility conditions in the CMR (i.e., monitoring and responding to alarms and indications and communicating with ATTENDANTS). The Facility Operation Roving Watch provides the capability to meet, in a timely fashion, any Action Statement required by the TSR. Shaft Tenders SHALL be present when moving WASTE in the Waste Shaft Collar and WASTE SHAFT STATION to support SAC 5.5.6, Waste Conveyance Operations.

The supervisor availability will be described in facility procedures.

During a shift, to accommodate unexpected absences of on-duty shift crew members, the shift crew composition may be one less than the minimum requirements for not more than 2 Hours provided immediate action is taken to restore the shift crew composition to within the minimum requirements. This provision is not applicable at the time of shift turnover.

5.3.2 Control of Working Hours

The WIPP M&O Contractor’s administrative procedures SHALL limit the working hours of staff who perform safety-related functions.

5.3.3 Procedures

Operations procedures SHALL provide sufficient direction to ensure that the WIPP facility is operated within its approved design basis. Topics covered include:

- Operating procedures for all MODEs of operation.
- Emergency Operating Procedures.
- Maintenance Requirements.
- Required surveillances.
- Emergency Plans.
- Fire Protection.
- Safety Management Program Implementation procedures.
- Administration.

Procedures associated with TSR compliance SHALL be developed, approved, revised, and controlled in accordance with WIPP DSA Chapter 12.0.

5.0 Administrative Controls (continued)

5.3.4 Staff Qualifications and Training

5.3.4.1 Qualification

A program SHALL be established to ensure that identified staff meets established qualification requirements for their positions. This program SHALL adhere to the qualification requirements established in accordance with the Procedures and Training Program.

The following personnel that perform credited safety responses are qualified to recognize events and complete the response: FSM, CMR Operator, Roving Watch, ATTENDANT, OBSERVER, and Shaft Tenders.

5.3.4.2 Training

An initial training and retraining program for the identified staff SHALL be established and maintained. This program SHALL adhere to training requirements established in accordance with the Procedures and Training Program.

5.4 TSR Control

Proposed changes to the TSR SHALL be reviewed and approved by DOE prior to implementation.

5.4.1 Requirements for Deviation from TSRs

5.4.1.1 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.

5.4.1.2 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.

5.0 Administrative Controls (continued)

5.4.2 TSR Violations

Purpose

The purpose of this section is to establish the use and application of TSR violation criteria.

Background

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.

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 DSA for the facility.

If WIPP violates a TSR, notification of DOE is required.

TSR Violation

Violations of a TSR occur as a result of the following criteria:

1. Failure to complete Required Actions within the specified Completion Time following failure to comply with an LCO.
2. Failure to perform a SR within the required FREQUENCY.
3. Failure to comply with a directive action SAC statement.
4. Programmatic breakdown of a PAC (or SMP by reference).
5. Failure to comply with Minimum Operations Shift Complement.

NOTE: Determination of a programmatic breakdown is determined by tracking and trending noncompliances and deviations, including KEs. A single noncompliance would not necessarily constitute a TSR violation. To qualify as a TSR violation, the failure to meet the intent of the referenced program is significant enough to render the DSA summary invalid.

A determination of a programmatic breakdown does not apply for noncompliance with Minimum Operations Shift requirement. Not meeting shift requirements in Section 5.3.1 is a TSR violation.

Reporting

Violations SHALL be reported. TSR notification and reporting requirements are provided in AC 5.4.1, Requirements for Deviations from TSRs.

If evaluation of a potential PAC (or SMP by reference) issue does not constitute a programmatic violation, it could still constitute noncompliance with a hazard control.

Causal Analysis

A causal analysis in accordance with approved procedures 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.

5.0 Administrative Controls (continued)

5.4.3 Conditions Outside TSR

Purpose

The purpose of this section is to establish the use and application for conditions outside 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 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 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 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. The FSM SHALL contact Nuclear Safety to perform an Unreviewed Safety Question (USQ) review to determine whether subsequent action requires DOE approval. If DOE approval is required, an ISBC SHALL be developed by the contractor to address any additional actions to be taken and approved by the DOE.

5.4.4 Response Plans

The purpose of a RESPONSE PLAN is to ensure that additional analysis or administrative and management controls are in place when abnormal situations arise and when the PROCESS AREA is outside of normal operating limits defined by the TSR. The RESPONSE PLAN has two functions. The first function is to restore the PROCESS AREA to TSR compliance. The second function is to determine what further actions are required to ensure that the PROCESS AREA operates within the framework of the TSRs. RESPONSE PLANS are intended to provide personnel with the direction needed to safely achieve a stated endpoint. These plans, however, do not prohibit reliance upon operator training and experience in the correction of the condition for immediate mitigation of an unsafe or worsening condition.

5.0 Administrative Controls (continued)

5.4.4 Response Plans (continued)

The RESPONSE PLAN addresses the situation where a TSR cannot be met (e.g., due to equipment inoperability) and the PROCESS AREA must operate in continual TSR noncompliance (e.g., there is no MODE in which the noncompliant LCO or Administrative Control is not applicable). During the time that the TSR requirements are being restored, the PROCESS AREA operations SHALL be bounded by an approved RESPONSE PLAN.

The RESPONSE PLAN SHALL evaluate PROCESS AREA conditions to determine the risk to the PROCESS AREA and the public from the limited operations allowed in the applicable MODE. These plans will typically implement compensatory actions or surveillances to reduce risk.

For a RESPONSE PLAN written to address external WASTE CONTAINER(s) damage sustained at the WIPP site, restoring the PROCESS AREA within the framework of the TSR may be accomplished by evaluating the damage to the WASTE CONTAINER(s) and demonstrating that the existing condition is bounded by the current approved safety analysis and becomes the means of compliance with LCO 3.7.1.

RESPONSE PLAN actions should not be constrained by the Required Actions specified in the TSR. The RESPONSE PLAN may permit any ACTIVITY required to establish or maintain a safe condition or to restore compliance with the LCO or Administrative Control.

Following review by the appropriate WIPP M&O Contractor's organizations, the RESPONSE PLANS SHALL be approved by Operations Manager (or designee) before submittal to DOE and processed in accordance with TSR change procedures, including obtaining DOE approval. Upon DOE approval of the RESPONSE PLAN all future PROCESS AREA ACTIVITIES necessary to restore compliance with the associated LCO are required to be performed under the RESPONSE PLAN. DOE approval for closure or termination of the RESPONSE PLAN is not required once LCO compliance is restored.

5.5 Specific Administrative Controls

SACs provide a safety function equivalent to engineered controls that would be classified as Safety Class (SC) or Safety Significant (SS). SACs specifically credited in WIPP DSA Chapter 3.0, "Hazards and Accident Analysis, and Control Selection," are provided in LCO format in Section 3/4: "Limiting Conditions for Operations and Surveillance Requirements," or developed in the directive action format, below.

5.0 Administrative Controls (continued)

5.5.1 Pre-operational Checks of Vehicles/Equipment in Proximity to CH WASTE

SAC: DAILY (prior to use)
Vehicles/Equipment to be operated within 25 feet of a CH WASTE FACE, in the TRANSPORT PATH when CH WASTE is present in the TRANSPORT PATH, or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION, SHALL be inspected for the following attributes:

- Brake operation, as applicable.
- Steering, as applicable.
- No excessive leaks.
- Operating lights and horn, as applicable.
- Fluid levels are within operating range, as applicable.
- Cleanliness.
- Containment integrity of the battery-powered vehicle battery.

This SAC also applies to vehicles/equipment transporting liquid combustible quantities.

BASES: The safety function of the Pre-operational Checks of Vehicles/Equipment in proximity to CH WASTE is to prevent vehicle/equipment pool fires involving CH WASTE CONTAINERS by ENSURING vehicles/equipment operating near CH WASTE are checked for such conditions as braking, steering, leaks, and cleanliness prior to being permitted to operate near CH WASTE to reduce the likelihood of pool fire formation due to leaks and/or collisions.

The following are specific attributes of the pre-operational check of Vehicles/Equipment in Proximity to CH WASTE:

- Demonstrate brake operation by driving vehicle/equipment and bringing vehicle/equipment to stop with braking system.
- Demonstrate adequate steering operation, as applicable (demonstrated by turning vehicle both to left and right and VERIFY proper response).
- VERIFY no excessive leaks as indicated by visible flow of fluid under pressure, puddles beneath the equipment, or abnormal loss of hydraulic fluid.
- Demonstrate operating lights and horn, as applicable (VERIFY head lights, backup lights, brake lights, rear lights, caution/strobe lights, and horn operate when actuated).
- VERIFY vehicle/equipment and battery fluid levels within operating range, as applicable. VERIFICATION that fluid levels are within operating range DAILY (prior to use) may rely on Preventive Maintenance records under the purview of DSA Chapter 10, “Initial Testing, In Service Surveillance, and Maintenance Programs.”
- VERIFY acceptable status of the battery containment integrity, demonstrated by no loose or missing caps or cables, no worn or bare cables, and no breaks, fractures, or leaks.
- VERIFY acceptable cleanliness (minimal accumulation of oils/greases [oil sheen / dampness / droplets]).

5.0 Administrative Controls (continued)

5.5.1 Pre-operational Checks of Vehicles/Equipment in Proximity to CH WASTE (Continued)

The operation of vehicles/equipment at WIPP is required for transporting and emplacement of CH WASTE CONTAINERS as well as for maintenance. Maintenance may involve the use of vehicles/equipment in transporting and handling liquid combustibles in proximity of CH WASTE CONTAINERS. These operations present the opportunity for radiological material release from vehicle/equipment fires resulting from exposure to liquid-combustibles and ignition sources.

The term “as applicable” is necessary as some vehicles/equipment may not have each feature and therefore, the feature would not be available to test. For instance, the roof bolter does not have a horn and therefore, testing the horn would not apply.

Pre-operational checks provide assurance that the vehicle and/or equipment is operating properly and has no obvious signs of degradation that could lead to its malfunction.

5.0 Administrative Controls (continued)

5.5.2 WASTE HANDLING Program—Pre-operational Checks of Surface WASTE HANDLING Vehicle/Equipment Inspections (Deleted)

5.0 Administrative Controls (continued)

5.5.3 TRU WASTE Outside the WHB

SAC: WASTE, excluding site-derived WASTE, in the OUTSIDE AREA SHALL be in CLOSED Type B SHIPPING PACKAGES.

Bases: The safety function of the TRU WASTE outside the WHB control is to prevent the release of radiological material due to fires, explosions, collisions and/or Natural Phenomenon Hazard (NPH) events when WASTE (excluding site-derived WASTE) is located in the OUTSIDE AREA by reducing the likelihood for WASTE CONTAINERS to not be protected by a Type B SHIPPING PACKAGE when in the OUTSIDE AREA.

Type B SHIPPING PACKAGES are credited as an Initial Condition in the hazards analysis when WASTE is inside a CLOSED Type B SHIPPING PACKAGE. The WIPP WAC requires the WASTE received at WIPP to be in a Type B SHIPPING PACKAGE. CH WASTE is received from WASTE generators in CLOSED Type B SHIPPING PACKAGES and not opened until positioned in the CH BAY or ROOM 108, as applicable. In the event that WASTE needs to be placed outside of the WHB, the WASTE CONTAINER is placed into a Type B SHIPPING PACKAGE and CLOSED prior to exiting the WHB. Site-derived WASTE is excluded because it is directly loaded in a Type A container and stored inside the WHB until disposal in the UNDERGROUND. Since WASTE is vulnerable while in the OUTSIDE AREA, controls are required to reduce the risk. Therefore, ACs are required to reduce the likelihood of occurrence, and the WASTE outside the WHB control is designated as a SAC since there are no engineered means to interlock WHB access doors with WASTE CONTAINER position to prevent movement of WASTE CONTAINER outside the confines of the WHB. An operational procedure inspection VERIFIES on a routine basis that the SHIPPING PACKAGES meet the requirements in this SAC.

Periodic Review: MONTHLY, VERIFY SHIPPING PACKAGES in the OUTSIDE AREA are CLOSED.

5.0 Administrative Controls (continued)

5.5.4 VEHICLE EXCLUSION ZONE (Deleted)

5.0 Administrative Controls (continued)

5.5.5 Fuel Tanker Prohibition

SAC: Fuel Tankers delivering fuel to the Surface Fuel Station Storage Tanks are prohibited from entering the WHB PARKING AREA UNIT.

Bases: The safety function of the Fuel Tanker Prohibition control is to prevent tanker truck pool fires by ENSURING that Fuel Tankers are precluded from the WHB PARKING AREA UNIT, thereby reducing the likelihood for a large source of liquid fuel to contribute a critical heat flux to a container through the WHB wall.

The WIPP safety analysis identified the potential for fuel delivery fire events in the WHB PARKING AREA UNIT. These events could contribute a critical heat flux to a waste container through the WHB wall and involve radiological material contained inside the WHB. Prohibiting Fuel Tankers from entering WHB PARKING AREA UNIT reduces the likelihood of critical heat flux from fire events outside the WHB wall affecting WASTE containers inside the WHB. This prohibition only applies to Fuel Tankers delivering fuel to the Surface Fuel Station Storage Tanks. The Prohibition does not apply to fuel containers and tanks that are used for moving fuel on site.

These operations present the opportunity for radiological material release due to critical heat flux from vehicle/equipment fires radiating through the south wall of the WHB resulting from the presence of liquid-combustibles and ignition sources. The use of Fuel Tankers is required by the activities at WIPP and no limited set of practical and reliable SSCs is available to prevent the occurrence of these events. Therefore, ACs are required to reduce the likelihood of occurrence and the Fuel Tanker Prohibition control is designated as a SAC, since engineered controls are not available to prevent occurrence of events requiring Safety Significant protection.

5.0 Administrative Controls (continued)

5.5.6 Waste Conveyance Operations

SAC: The Waste Shaft Conveyance SHALL:

- be present at the Waste Shaft Collar prior to moving WASTE into or out of the Waste Shaft Collar Room.
- move WASTE between the Waste Shaft Collar and the WASTE SHAFT STATION only when Doors 155 and 156 are closed.
- be present at the WASTE SHAFT STATION prior to bringing WASTE into the WASTE SHAFT STATION from the TRANSPORT PATH.
- remain at the WASTE SHAFT STATION until WASTE is removed from the Waste Conveyance and is moving away from the Waste Shaft.

Bases: The safety function of the Waste Conveyance Operations control is to prevent vehicles, equipment, and/or loads from dropping down an open Waste Shaft and impacting WASTE CONTAINERS by reducing the likelihood of vehicle/equipment drops down the shaft through requiring the presence of the conveyance when preparing to load or off-load, and requiring access to the shaft to be prevented when WASTE is being moved in the Waste Shaft.

The Waste Shaft Collar Room is accessed through Waste Shaft Access Doors 155 and 156. If the Waste Shaft Conveyance is present (visually VERIFIED by top lander) at the Waste Shaft Collar prior to moving WASTE into the Waste Shaft Collar Room, it prevents the inadvertent drop of any WASTE down the Waste Shaft. It also prevents the inadvertent drop of objects capable of impacting WASTE on the Waste Shaft Conveyance. If Doors 155 and 156 remain closed while the Waste Shaft Conveyance moves WASTE between the Waste Shaft Collar and the WASTE SHAFT STATION and the WASTE is removed from the Waste Shaft Conveyance, it prevents the inadvertent drop of any vehicle/equipment down the Waste Shaft from impacting WASTE.

If the Waste Shaft Conveyance remains present (visually VERIFIED by bottom lander) at the WASTE SHAFT STATION until WASTE is removed from the Waste Shaft Conveyance, placed on the Waste transporter, and is moving away from the Waste Shaft, it prevents the inadvertent drop of any WASTE down the Waste Shaft. WASTE that remains on the Waste Shaft Conveyance and is not offloaded can be moved back to the Waste Shaft Collar Room.

Prior to bringing WASTE into the WASTE SHAFT STATION from the TRANSPORT PATH, the Waste Conveyance must be present at the WASTE SHAFT STATION. If the Waste Conveyance is at the WASTE SHAFT STATION, it will prevent inadvertently dropping the WASTE down the Waste Shaft. If the WASTE has not entered the TRANSPORT PATH, then the WASTE can be loaded back on the Waste Shaft Conveyance as long as the Waste Shaft Conveyance is at the WASTE SHAFT STATION before the WASTE transporter moves towards the Waste Shaft.

5.0 Administrative Controls (continued)

5.5.7 CH BAY Alternative Vehicle Barrier Provision

SAC: Liquid-fueled vehicles/equipment SHALL be prohibited within the WHB PARKING AREA UNIT unless the following conditions are met:

- Vehicle Barriers are installed as described in DF 6.12.

OR

- Liquid-fueled vehicles/equipment SHALL be ATTENDED when inside the exclusion zone footprint.

AND

- Moving liquid-fueled vehicles/equipment in the WHB PARKING AREA UNIT SHALL be ATTENDED when the Vehicle Barriers are not fully installed.

Bases: The safety function of the CH BAY Alternative Barriers Provision control is to reduce the likelihood for release of radiological material from CH WASTE in the WHB due to impacts by vehicles and/or fires adjacent to the southwest wall of the CH BAY by maintaining control of liquid-fueled vehicles/equipment in and around the exclusion zone when the concrete Vehicle Barriers are not fully installed.

The area protected by the Vehicle Barriers is the southwest part of the CH BAY. The specific wall section, referred to hereinafter as the southwest wall, that is protected is that portion of the south exterior CH BAY wall starting at Airlock 100 running in a westerly direction approximately 85 feet to a point approximately 5 feet west of the CH BAY/TRUPACT Maintenance Facility (TMF) common wall. The exclusion zone is defined as the area within the placement of the Vehicle Barriers, at least 25 feet south of the CH BAY wall and from Airlock 100 to a point approximately 5 feet west of the CH BAY/TMF common wall. WIPP Drawing 24-C-070-W1 shows the placement of the Vehicle Barriers when sections are not removed per this SAC.

This SAC requires the CH BAY Vehicle Barriers as shown in DSA Chapter 2.0, Figure 2.4-7 (note: Figure 2.4-7 shows nominal dimensions) to be in place, or if sections of the Vehicle Barriers are temporarily removed, all liquid-fueled vehicles/equipment inside the exclusion zone and all moving liquid-fueled vehicles in the WHB PARKING AREA UNIT must be ATTENDED.

CH BAY Vehicle Barriers (e.g., concrete barriers) are DFs described in DSA Chapter 4.0, Section 4.4.14 and as shown in DSA Chapter 2.0, Figure 2.4-7. The Vehicle Barriers, which form an exclusion zone between the CH BAY southwest wall and the Vehicle Barriers based on the placement of the Vehicle Barriers, prevent vehicles from crashing through the CH BAY wall and into the CH BAY where CH WASTE may be stored. Additionally, the Vehicle Barriers prevent combustible liquid-fueled vehicles/equipment from being in the exclusion zone which prevents critical heat flux from a large fire in the exclusion zone from impacting any WASTE that may be stored in the CH BAY. If the Vehicle Barriers are in place, the vehicles or equipment in the WHB PARKING AREA UNIT do not have to be ATTENDED.

5.0 Administrative Controls (continued)

5.5.7 CH BAY Alternative Vehicle Barrier Provision (continued)

To support maintenance and operational ACTIVITIES, it may be necessary to temporarily move single or multiple barrier units (i.e., one or more of the individual concrete barriers) to allow vehicles or equipment into the exclusion zone. Barrier sections that are not removed SHALL remain in place per the diagram in DSA, Chapter 2.0, Figure 2.4-7. When sections of the Vehicle Barrier DF are temporarily removed and vehicles/equipment enter the exclusion zone, the liquid-fueled vehicles/equipment in the exclusion zone SHALL be ATTENDED. This minimizes the potential for impacts with the southwest wall of the CH BAY and liquid combustible spills. If any portion of the Vehicle Barriers is not in place, any vehicle/equipment containing combustible liquids that is moving in the WHB PARKING AREA UNIT outside of the exclusion zone, SHALL also be ATTENDED. Vehicles or equipment, even if they contain combustible liquids, that are stationary outside the exclusion zone do not require an ATTENDANT.

If the barriers are moved per the allowances in this SAC, when the barriers are replaced, the Work Package will require verification that the barriers are installed correctly. The ISI program associated with the barriers as a DF will periodically VERIFY the location of the barriers. The operational procedure inspection and ISI Program along with normal Conduct of Operations and Maintenance and routine visual observation of the barriers is sufficient to ENSURE the barriers are not inadvertently removed or significantly damaged to the point that the safety function cannot be met. Additionally, a MONTHLY inspection will be performed to VERIFY the barriers were not subjected to significant damage or inadvertently moved.

5.0 Administrative Controls (continued)

5.5.8 Real-Time Monitoring for Exothermic Chemical Reaction of Noncompliant Containers in Panel 6 and/or Panel 7, Room 7 (Deleted)

5.0 Administrative Controls (continued)

5.5.9 Active Room Vehicle/Equipment Prohibition (Deleted)

5.0 Administrative Controls (continued)

5.5.10 Shutdown of Unfiltered Underground Ventilation (Deleted)

5.0 Administrative Controls (continued)

5.5.11 OBSERVER

SAC: An OBSERVER is required at all times when a WASTE CONTAINER is present in the CH BAY outside of the CVS ZONE:

- Upon assuming duties, the OBSERVER SHALL perform a walk-down of the CH BAY to establish initial compliance with SAC 5.5.11.
- Prior to terminating duties, the OBSERVER SHALL perform a walk-down of the CH BAY to establish final compliance with SAC 5.5.11.
- OBSERVER duties are as follows:
  - Monitor WASTE HANDLING and maintenance ACTIVITIES for conditions that can pose fire risks to waste present in the CH BAY.
  - Limit the placement and quantities of ordinary and liquid combustibles near waste to quantities determined by the Fire Protection Program.
  - Monitor moving vehicles carrying waste or moving in proximity of waste to notify the vehicle operator so that the operator takes actions necessary to avoid a collision.
  - Monitor the movements of compressed gas cylinders within the CH BAY:
    - ENSURE dolly has safety chain when in transit.
    - ENSURE bottle cap is secured on bottle when in transit.
    - ENSURE personnel moving compressed gas cylinders have a clear path for executing movement of cylinders.
    - During replacement or installation of compressed gas cylinders, ENSURE replaced or installed cylinder is secured by a safety chain or bracket.
- The OBSERVER SHALL make notifications to the CMR of hazardous conditions or damage to WASTE CONTAINERS and follow direction of the FSM to protect personnel and equipment.
- The CMR SHALL make log entries when an OBSERVER is assigned to the CH BAY.

An OBSERVER SHALL have knowledge of each ACTIVITY under her or his purview and SHALL have the authority to suspend any ACTIVITY that is not clearly observable due to physical obstruction or viewing distance. This requirement also imparts OBSERVERS with the authority to suspend any coincident ACTIVITY described above if the ACTIVITY can distract or impede the OBSERVER from meeting the monitoring requirements of this SAC.

In accordance with the authority described in the previous paragraph, an OBSERVER SHALL be allowed to monitor more than one ACTIVITY at a time when WASTE CONTAINER (s) are present in the CH BAY outside of the CVS ZONE. Additional OBSERVERS SHALL be assigned, as needed, to monitor coincident ACTIVITIES.

An OBSERVER SHALL be in place when WASTE is moved outside of the CVS ZONE and SHALL remain in place until no WASTE is present outside the CVS ZONE.

5.0 Administrative Controls (continued)

5.5.11 OBSERVER (continued)

Bases: This SAC addresses when an OBSERVER in the CH BAY is required. The OBSERVER is required when one or more WASTE CONTAINER(S) is present in the CH BAY outside of the CVS ZONE. The safety function of the OBSERVER is to reduce the likelihood of ordinary combustible fires and container punctures involving CH WASTE CONTAINERS by ensuring personnel are observant of the ACTIVITIES and can readily respond to upset conditions to reduce the likelihood for fires and punctures, and to alert Facility Workers of conditions potentially requiring their relocation to reduce their consequences.

In accordance with DSA Chapter 3.0, Section 3.3.2.3, “Results of Hazard Evaluation,” the OBSERVER is required for ordinary combustible fire potential, not for pool fires. Thus, monitoring inside the CVS ZONE is required when ordinary combustibles are placed near WASTE or vehicle ACTIVITIES occur near WASTE outside the CVS ZONE, where the fire can propagate from inside the CVS ZONE to outside the CVS ZONE. This requirement is expanded to monitor all WASTE HANDLING and maintenance ACTIVITIES for adverse conditions that could involve WASTE outside the CVS ZONE.

Monitoring of the movements and maintenance of compressed gas cylinders is required anywhere in the CH BAY, not just near WASTE outside the CVS ZONE. Unlike the monitoring of ordinary combustible fire risk and vehicle collision risk near WASTE outside the CVS ZONE, a failed compressed gas cylinder can have a projectile path that starts anywhere in the CH BAY on its way to impact WASTE outside the CVS ZONE.

Applicable OBSERVERS SHALL be in place before WASTE is moved outside of the CVS ZONE and remain in place until no WASTE is present outside of the CVS ZONE. The periodic VERIFICATION of compliance with SAC 5.5.12, prior to initiating CH BAY ACTIVITIES when WASTE is present outside the CVS ZONE, ENSURES that the risk of ordinary combustible fires remains low. The MONTHLY VERIFICATION of log entries to ENSURE OBSERVERS have been present during ACTIVITIES and the VERIFICATIONS of SAC 5.5.12 is judged to be adequate since the SAC requirement for an OBSERVER requires a log entry each time an OBSERVER is assigned.

An OBSERVER SHALL have the authority to suspend any single ACTIVITY described in this SAC when a physical condition exists that can impede observation, such as physical obstructions or proximity of the OBSERVER with the ACTIVITY being observed. OBSERVER also has the authority to suspend any coincident ACTIVITY, as described above, that can distract or impede the OBSERVER from meeting the monitoring requirements of this SAC. When the ACTIVITIES to be monitored, as described above, are allowed to proceed coincidentally, then additional OBSERVERS SHALL be required when the ACTIVITIES are sufficiently diverse to distract the OBSERVER from meeting the monitoring requirements of this SAC.

This SAC allows an OBSERVER to monitor more than one ACTIVITY at a time when WASTE CONTAINER(S) are present in the CH BAY outside of the CVS ZONE.

The events of concern involve fires, as described above, and impacts of compressed gas cylinders with WASTE CONTAINERS. For WASTE CONTAINERS outside of the CVS ZONE, in some CH BAY configurations, air flow paths can exist that allow for air to flow from the CH BAY, through the Waste Hoist Tower and WASTE SHAFT STATION, and into the UNDERGROUND without being filtered. Therefore, during ACTIVITIES that could initiate upset conditions that could release radioactive material from WASTE CONTAINERS that are outside of the CVS ZONE, the OBSERVER is necessary to monitor ACTIVITIES in the CH BAY and to alert the CMR in the event of an upset within the CH BAY that may result in a radiological material release.

5.0 Administrative Controls (continued)

5.5.11 OBSERVER (continued)

This SAC does not apply to WASTE CONTAINERS inside of a CLOSED Type B Shipping Package. ACTIVITIES of concern generally involve use of vehicles, equipment, and pressurized cylinders where there is the potential for fires, collisions, or impacts that could result in the release of radiological materials. ACTIVITIES such as general rounds, readings, radiological surveys, and administrative duties are exempted from the requirement for an OBSERVER.

Periodic Review: MONTHLY, VERIFY log entries to ENSURE OBSERVERS were present at all times when WASTE CONTAINERS were outside the CH WH CVS ZONE and the VERIFICATIONS of SAC 5.5.12 have been performed.

5.0 Administrative Controls (continued)

5.5.12 CH BAY Combustible Materials and Ignition Sources Control

SAC: The following controls SHALL be established when WASTE is present in the CH BAY outside the CVS ZONE:

- Transient combustible material SHALL be limited to those materials and quantities necessary to support immediate work ACTIVITIES or stored in a storage area that has been evaluated and approved for storage by the Fire Protection Engineer (FPE).

- Transient combustible/flammable liquids SHALL be limited to those materials and quantities necessary to support immediate work activities or stored in flammable/combustible liquids storage cabinets that have been verified to meet the requirements of NFPA 30, Section 9.5.

- No combustible material SHALL be stored or staged within 10 feet of WASTE CONTAINERS residing outside the CVS ZONE.

- Hot Work activities SHALL be prohibited in the CH BAY outside the CVS ZONE.

Bases: The safety function of the CH BAY Combustible Loading control is to reduce the likelihood of ordinary combustible fires and to reduce consequences by limiting the fire size/heat, thereby limiting the quantity of radiological material released. The safety function of the CH BAY Ignition Source control is to reduce the likelihood of ordinary combustible fires by prohibiting ignition sourced from hot work ACTIVITIES outside the CVS ZONE when CH WASTE is located in the CH BAY but outside of the CVS ZONE.

5.0 Administrative Controls (continued)

5.5.12 CH BAY Combustible Materials and Ignition Sources Control (continued)

This SAC addresses two controls: CH BAY Control of Combustible Materials, and CH BAY Control of Ignition Sources. The events of concern are fires involving WASTE in the CH BAY. CH WASTE is the primary contributor to dose for WHB fire events; therefore, the primary concern is a fire in the CH BAY when CH WASTE is present outside the CVS ZONE.

WIPP-021 credits the WIPP WAC compliance as an Initial Condition. As such, Generator site supplied WASTE CONTAINERS are certified to be of sound integrity, noncombustible, vented, and closed. A compliant WASTE CONTAINER resists damage from exposure to an ordinary combustible fire. Limitation of combustible package sizes and maintenance of an adequate separation distance between WASTE CONTAINERS and combustible materials suffices to prevent radiological material releases, given ignition of transient or fixed combustible materials.

The Fire Protection Program maintains procedures for Fire Protection system impairments and control of combustible material (see DSA Chapter 4.0, Section 4.5.18). The required fire control measures are for the purpose of decreasing the propagation possibility and consequences of fire to ensure protection of the workers and the public.

For this control, transient combustible materials are considered to be flammable or combustible material not permanently installed or stored in a permanent storage area. An exception to this is combustible materials associated with payload assembly (e.g., plastic wrap, slip sheets, tie downs, etc.).

These reviews are required to be performed prior to WASTE being placed outside the CVS ZONE and WEEKLY when WASTE is present outside the CVS ZONE. By performing these reviews, combustible and flammable materials are VERIFIED to be in a SAFE CONFIGURATION prior to moving WASTE CONTAINERS outside of the CVS ZONE. The SAFE CONFIGURATION of WASTE CONTAINERS is protected in SAC 5.5.11 with a CH BAY OBSERVER ensuring that no unapproved combustible or flammable materials exist in the vicinity of WASTE CONTAINERS outside the CVS ZONE. Therefore, a WEEKLY FREQUENCY is sufficient to VERIFY that no uncontrolled flammable or combustible materials have been inappropriately introduced into the vicinity of WASTE CONTAINERS that reside outside the CVS ZONE.

Periodic Review: Prior to WASTE moved outside the CVS ZONE and WEEKLY when WASTE is present outside the CVS ZONE, VERIFY transient combustible and flammable material (including flammable and combustible liquids) are limited to those materials and quantities approved by the FPE.

Periodic Review: Prior to WASTE moved outside the CVS ZONE and WEEKLY when WASTE is present outside the CVS ZONE, VERIFY no combustible materials are present less than 10 feet from WASTE CONTAINERS outside the CVS ZONE.

Periodic Review: Prior to WASTE moved outside the CVS ZONE and WEEKLY when WASTE is present outside the CVS ZONE, VERIFY no hot work activities are scheduled or in progress outside the CVS ZONE.

Periodic Review: Prior to initiating CH BAY ACTIVITIES, when WASTE is present outside the CVS ZONE, the OBSERVER SHALL VERIFY that the CH BAY is compliant with SAC 5.5.12.

5.0 Administrative Controls (continued)

5.5.13 Vehicle/Equipment and Compressed Gas Cylinder Prohibition in the Active Panel (Deleted)

5.5.14 Ventilation Isolation for the Active Room (Deleted)

5.0 Administrative Controls (continued)

5.6 Programmatic Administrative Controls

PACs represent commitments to establish, implement, and maintain SMPs that are required to support the WIPP operations and are described below. These requirements are not specifically credited in the Hazard and Accident Analysis but are important contributors to defense-in-depth. In general, PACs provide broad programmatic support for SMPs supporting defense-in-depth and worker safety.

5.6.1 Safety Management Programs

This section contains commitments to SMPs. Although these SMPs are not specifically credited in the hazard or accident analysis for risk reduction, they are an important part of defense-in-depth. SMPs are part of an Integrated Safety Management System to ensure the health and safety of the public and workers, and protection of the environment. 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 DSA Chapters 6.0–18.0.

Safety Management Programs

As described in DOE-STD-3009-2014, *Preparation of Nonreactor Nuclear Facility Documented Safety Analysis*, Key Elements (KEs) may be identified for SMPs. KEs are those that: (1) are specifically assumed to function for mitigated scenarios in the hazard evaluation, but not designated as an SAC; or, (2) are not specifically assumed to function for mitigated scenarios, but are recognized by facility management or DOE as an important capability warranting special emphasis. KEs are noted in these TSRs, and discussed in the SMP chapters of the WIPP DSA (Chapters 6.0–18.0).

TSR violations with regard to the KEs only occur in the event of a programmatic breakdown of the SMP. That is, a programmatic breakdown is determined by tracking and trending noncompliances and deviations. TSR violations of PACs are governed by TSR 5.4.2.

The SMP owners SHALL ENSURE the KEs and overall safety functions of an SMP are implemented and maintained. Management SHALL ENSURE facility-level assessments are performed according to WP 15-CA1004 as part of the continuous improvement process of the Integrated Safety Management System.

SMPs for WIPP are, by DSA chapter, as follows:

Chapter 6.0, Prevention of Inadvertent Criticality

The Prevention of Inadvertent Criticality Program describes the Nuclear Criticality Safety Program. WASTE accepted for disposal at the WIPP facility is required to be characterized and certified to meet the requirements of the WIPP WAC prior to being approved for shipment to the WIPP. Nuclear Criticality Safety Evaluations analyze the activities involved in the handling and disposal of WASTE and demonstrate criticality incredibility. The Nuclear Criticality Safety Evaluations for CH WASTE are documented in the *Nuclear Criticality Safety Evaluation for Contact-handled Transuranic Waste at the Waste Isolation Pilot Plant* and the *Nuclear Criticality Safety Evaluation for Remote-handled Waste at the Waste Isolation Pilot Plant*, respectively. The Nuclear Criticality Safety Program meets the requirements of DOE Order 420.1C, *Facility Safety*, Chapter III, “Nuclear Criticality Safety.”

No KEs have been identified for the Prevention of Inadvertent Criticality Program.

5.0 Administrative Controls (continued)

5.6.1 Safety Management Programs (continued)

Chapter 7.0, Radiation Protection

The Radiation Protection Program describes the organization and functional responsibilities for radiological control, documents the Radiation Protection Program structure, and defines the radiological control management systems necessary to implement the program in accordance with the requirements of 10 CFR 835. The program includes ALARA (As Low As Reasonably Achievable) practices, training, radiation monitoring, radiation exposure control, radiation protection instrumentation, and record keeping. The Radiation Protection Program includes specific program documents, and procedures developed and maintained to implement the program.

The KEs of this program ENSURE that programs and equipment are maintained to protect facility personnel from radiation involved with contamination and direct streaming. While the detailed aspects of the program will vary with the assessment of the hazards, the KEs will be in place as follows.

KE 7-1: Proper placement and operation of Continuous Air Monitors.

KE 7-2: [DELETED]

KE 7-3: [DELETED]

KE 7-4: [DELETED]

KE 7-5: When the exhaust flow path of an ACTIVE ROOM is occupied, at least one portable CAM is required in the exhaust flow path of an ACTIVE PANEL. Portable CAMs are used and are not required to communicate with the CMR but are placed in a manner that provides visual or audible notification to personnel present in the exhaust flow path. The use of portable devices is managed under the Radiation Protection Program.

Chapter 8.0, Hazardous Material Protection

The Hazardous Material Protection Program is established to protect human health and the environment by controlling chemical hazards in accordance with 10 CFR 851, W*orker Health and Safety Program*, and 29 CFR 1910.1200, *Hazard Communication*. The program defines the scope of chemicals covered and provides direction and references to analyze the hazards that are inherent in their storage and use. Aspects of the program include Hazard Communications, training, Hazardous Material Exposure Control, Hazardous Material Monitoring, instrumentation, and recordkeeping. It describes the processes and systems used for work performed by the WIPP M&O Contractor and by subcontractors for their activities to control chemical hazards to protect personnel, the public, and the environment. The KE of the WIPP Hazardous Material Program is:

- **KE 8-1**: Establish provisions to monitor and control air quality to ensure workers are protected from VOCs; protective measures include posting hazardous areas, establishing monitoring requirements, ensuring local ventilation, and requiring personal protective equipment such as respiratory protection as needed.

5.0 Administrative Controls (continued)

5.6.1 Safety Management Programs (continued)

Chapter 9.0, Radioactive and Hazardous Waste Management

The Radioactive and Hazardous Waste Management Program established to manage radioactive, mixed, and hazardous wastes that are generated as a result of operations pertaining to the mission or from recovery actions. The waste management programs and organizations, the sources of the site waste streams and characteristics, the waste management process, including the overall waste management policy/philosophy, and DF and ACs for the waste handling or treatment system for site-derived WASTE and site-generated waste are the significant aspects of this Program. Wastes generated during maintenance and operation of the facilities and equipment or from decontamination activities are managed in accordance with this Program. These wastes include radioactive and mixed waste as either the low-level or TRU WASTE with radiological material from the TRU waste handling and disposal process, as defined in the Hazardous Waste Facility Permit, and site-generated hazardous waste.

Chapter 10.0, The Initial Testing, In Service Surveillance, and Maintenance

The Initial Testing, IN SERVICE Surveillance, and Maintenance Programs present programs for:

> Demonstrating that testing is performed to ensure that safety significant SSCs and Design Features subject to degradation; other systems that perform important defense-in-depth functions; equipment relied on for the safe operation, safe shutdown of the nuclear facility, and for maintaining the facility in a safe shutdown condition as documented in the safety basis and safety support systems meet their functional requirements and performance criteria such that the WIPP operations have assurance SSCs fulfill normal and safety functions described in this DSA; and,
>
> ENSURING that maintenance activities are conducted, in accordance with DOE Order 433.1B, *Maintenance Management Program for DOE Nuclear Facilities*, to preserve and restore the availability, operability, and reliability of the WIPP SSCs important to the operation of the facility.

The following KEs apply to SSCs identified in accordance with DOE Order 433.1B. The KEs of this SMP are programs implemented to ENSURE appropriate initial and periodic verifications of the functionality of important SSCs, with long-term performance monitoring to assess the continuing functionality of the equipment as follows:

KE 10-1: Development and implementation of ISI for DFs.

KE 10-2: Testing, calibration, OPERABILITY, and preventive/corrective maintenance in accordance with applicable code requirements, manufacturer recommendations, established technical requirements, and engineering judgement consistent with tracking, trending, and failure history.

KE 10-3: Tracking and trending of the performance and deficiencies of the equipment covered by KE 10-2 above.

5.0 Administrative Controls (continued)

5.6.1 Safety Management Programs (continued)

Chapter 11.0, Operational Safety

The Operational Safety Program provides safety through conduct of operations and fire protection programs. In accordance with regulatory requirements, the conduct of operations specifically focuses on the bases of operations such as management, organization, the institutional safety provisions, procedures, training, and human factors. Opportunities for improvements in Conduct of Operations as identified in the Accident Investigation Board Reports (March 2014, April 2014, and April 2015) and other sources were evaluated and incorporated into the program as appropriate.

The Fire Protection Program addresses both Fire Prevention and Fire Suppression. Major topics of the Fire Protection Program include: Fire Hazards, Fire Protection Program and Organization, Combustible Loading Program, Control of "Hot Work," Firefighting Capabilities, and Firefighting Readiness Assurance.

The Conduct of Operations Program addresses each of the salient features identified in DOE Order 422.1, *Conduct of Operations*.

The KEs of Operational Safety ENSURE that: 1) significant Fire Safety considerations from the Fire Hazards Analysis are addressed programmatically; 2) Hoisting and Rigging is treated programmatically; and, 3) all major aspects of mine safety assurance are explicitly covered programmatically as follows:

KE 11-1: Routine maintenance and inspection of non-waste handling vehicles in the UNDERGROUND for leaks and accumulation of combustible materials (fire protection).

KE 11-2: Formal Fire Protection Engineering combustible control inspections to include inspection criteria, specified frequency of inspections, documentation of identified issues, issue disposition, tracking and trending of issues, and performance metrics.

KE 11-3: OPERABILITY and testing of equipment (audible, visual) used for abnormal event communication/notification between workers (both aboveground and UNDERGROUND) and the CMR.

KE 11-4: Placement of fuel barrier of absorbent materials at the static WASTE FACE when waste emplacement or retrieval has not occurred for a period of 10 days.

5.0 Administrative Controls (continued)

5.6.1 Safety Management Programs (continued)

KE 11-5: Fire prevention/suppression controls include the following KEs:

- UNDERGROUND equipment is evaluated for fire risk in accordance with National Fire Protection Association (NFPA) 122. All equipment determined to pose an unacceptable fire risk in the NFPA 122 analysis will be protected with an automatic fire suppression system prior to use, unless alternate risk reduction measures are approved by DOE.
- Areas in the UNDERGROUND where there is an increased combustible loading are evaluated for fire risk in accordance with the WIPP FPP. Areas determined to pose an unacceptable fire risk will be protected by automatic fire suppression systems.
- Ignition sources (e.g., hot work, designated smoking areas, portable heaters, electrical equipment) are controlled in accordance with the WIPP Fire Protection Program and design control program.
- UNDERGROUND combustible materials are controlled in accordance with the WIPP Fire Protection Program (e.g., combustible control zone around personnel conveyances, combustible load permit process).

KE 11-6: Hoisting and Rigging Program which protects safety SSCs, waste packaging, and personnel from dropped loads.

KE 11-7: Mine entrance requirements impacting personnel safety (e.g., continuous air monitor operation, radiological conditions, ventilation capabilities, personnel training, personnel limits for IN SERVICE conveyances, back-up power).

KE 11-8: Mine evacuation requirements (e.g., unobstructed planned escape routes per the Life Safety Code and DOE approved Fire Protection (FP) Equivalency for NFPA 101, the Life Safety Code, and Alternative Egress Provisions [DOE 2016] mine egress markings, communications, Abnormal Operations Procedures).

KE 11-9: Equipment deficiency tracking (including equipment in reduced status) that identifies, tracks, and evaluates safety impacts and implements compensatory measures until equipment is returned to service.

KE 11-10: Isolation structures emplaced east of the air intake and air exhaust closure barriers of Room 7, Panel 7 are inspected, where physical access is possible. The accessible areas around these isolation structures are inspected and maintained in accordance with the Hazardous Waste Facility Permit and 30 CFR 57, Subpart B as described in Section 2.4.4.3, *Ground Control*, and Section 2.4.4.7, *Geotechnical Monitoring Program*.

KE 11-11: Maintenance and configuration management of ground control equipment.

KE 11-12: Procedures address the actions to be performed by operators in response to CMR notifications, annunciators, and other types of facility displays that indicate an abnormal condition.

5.0 Administrative Controls (continued)

5.6.1 Safety Management Programs (continued)

KE 11-13: The TRANSPORT PATH will be inspected for hazards (including collision hazards, sources of fuel or hydraulic fuels such as storage tanks, excess transient ordinary combustible material, and compressed gas cylinders) and obstructions prior to moving CH WASTE along the designated path.

KE 11-14: The TRANSPORT PATH will be identified by the use of flashing lights or by placement of physical indicators (e.g., temporary gates, traffic cones with appropriate signage) when CH WASTE is present in the TRANSPORT PATH.

Chapter 12.0, Procedures and Training

The Procedures and Training program provides the processes used to develop, verify, and validate the technical content of procedures and the WIPP training programs as well as the processes used to keep them current through feedback, periodic reviews, and continuous improvement processes. The ongoing implementation of these processes is a necessary part of safety assurance. Through their effective implementation, the WIPP facility is operated and maintained using established processes by personnel who are trained commensurate with their responsibilities. Training requirements for the WIPP staff conform to the requirements of DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*, or successor document.

The Procedures Program focuses on the Development and Maintenance of Procedures while the Training Program addresses the Development and Maintenance of Training as well as the Modification of Training Materials.

The Procedures and Training KEs ENSURE that the proven foundational aspects of high performing Procedures and Training organizations are explicitly institutionalized in the program. Additionally, KE 12-2 ENSURES that the unique aspects of WIPP as a DOE facility have comparably special treatment in the program.

KE 12-1: Preparation of procedures related to safe operation of the facility and/or safety SSCs with participation by end users and appropriate subject matter experts, verified to be technically correct, validated to be workable as written.

KE 12-2: Worker training and qualifications on responding to incidents (e.g., use of rescue equipment, assembly areas).

KE 12-3: Training and Qualification Programs are designed and developed to ensure personnel obtain initial requisite knowledge and skills resulting in abilities to effectively execute assigned duties during normal, abnormal, and emergency conditions. Continuing training is provided to maintain requisite knowledge and skills as warranted for changes such as emergent Evaluation of the Safety of the Situation documents. Personnel are not permitted to perform assigned duties independently until requisite training and qualification are complete.

Chapter 13.0, Human Factors – Deleted

5.0 Administrative Controls (continued)

5.6.1 Safety Management Programs (continued)

Chapter 14.0, Quality Assurance

Facility nuclear safety is ENSURED in part through implementation of a Quality Assurance Program based on 10 CFR 830, Subpart A requirements and other pertinent regulations, standards, and DOE Orders. The principal features of the Program include organization, quality improvement (including corrective measures), document control and records management for the WIPP work processes, and independent assessments. The WIPP M&O Contractor applies a graded approach for the application of Quality Assurance (QA) requirements to WIPP items and activities in accordance with regulatory guidance. The graded-approach process determines the level of quality-related controls appropriate for each item or activity. In accordance with the graded approach, the highest level of quality controls is applied to nuclear safety–related items and services. The WIPP M&O Contractor's QA Department independently verifies quality by measures such as procurement reviews, supplier qualification, assessments, and inspections.

The QA Key Element singles out Programmable Logic Controller related safety equipment to ENSURE password protection.

KE 14-1: Password protection of Safety Significant Programmable Logic Controllers.

Chapter 15.0, Emergency Preparedness Program

The Emergency Management Program provides an organized structure for response to the scope of emergencies identified at WIPP that meets the requirements of DOE Order 151.1D, *Comprehensive Emergency Management System*. The objective of the Program is to minimize the impact of emergency events on the health and safety of plant personnel, the public, property, and the environment. The Emergency Management Program is implemented through emergency response procedures, and emergency management administrative procedures. In emergency events that could threaten human health or the environment, including hazardous material (radioactive and non-radioactive) or waste events, the plan, procedures, and standard operating guides are implemented.

The program addresses the Emergency Response Organization, Assessment Actions, Notification, Emergency Facilities and Equipment, Protective Actions, Training and Exercises, and Recovery and Reentry. Emergency Preparedness and Management enhancements are embodied in the KEs below:

KE 15-1: Hazards are identified and analyzed through a technical planning basis process to provide pre-determined protective actions and Protective Action Recommendations to protect workers and the public.

KE 15-2: Emergency plans and procedures provide the framework for actions to be taken by workers and responders.

KE 15-3: Emergency response capabilities (e.g., OPERABLE equipment, minimum staffing, Incident Command System, Emergency Operations Center) are identified and maintained to respond and protect workers, public, property, and environment.

KE 15-4: Emergency drills and exercises are planned and conducted to provide validation of plans, procedures, and response capabilities.

5.0 Administrative Controls (continued)

5.6.1 Safety Management Programs (continued)

Chapter 16.0, Provisions for Decontamination and Decommissioning – Deleted

Chapter 17.0, Management, Organization, and Institutional Safety Provisions

The Management, Organization, and Institutional Safety Provisions Program establishes the overall structure of the organizations and entities involved in safety-related functions, including key responsibilities and interfaces; and establishes the safety programs that promote safety consciousness and morale, including safety culture, Contractor Assurance, configuration control, occurrence reporting, and staffing and qualification. The organization structure is displayed in WIPP DSA Chapter 17.0, Figure 17.3-1, "Organization Structure."

The Key Element of Chapter 17.0 restates the prime performance requirement for Configuration Management to ENSURE that the WIPP program maintains the following focus:

> **KE 17-1**: Configuration management of SSCs identified in accordance with DOE Order 433.1B, *Maintenance Management Program for DOE Nuclear Facilities*.

Chapter 18.0, WIPP Waste Acceptance Criteria Compliance Program

The Waste Acceptance Criteria Compliance Program addresses the WIPP WAC Compliance process. The Hazards Analysis of this DSA uses selected WIPP WAC requirements as Initial Conditions in the analyses of postulated release scenarios to provide bounding radiological consequences to the onsite and offsite receptors. WIPP has a limited number of activities, which support WIPP WAC compliance given that Waste Containers are received as certified as meeting the WIPP WAC prior to shipment to WIPP. Waste Containers are restricted from being opened for examination of the contents or repackaging at WIPP. The chapter describes the National TRU Program and its measures that, although many are beyond the activities subject to this DSA, ENSURE compliance with the WIPP WAC.

5.0 Administrative Controls (continued)

5.6.1 Safety Management Programs (continued)

The KEs of Chapter 18.0 ENSURE that WIPP maintains it outreach efforts to the generator sites as follows:

KE 18-1: The WIPP management and operating (M&O) Contractor verifies each container is part of an approved waste stream with the enhanced Acceptable Knowledge process prior to authorizing shipment in WDS.

KE 18-2: The WIPP M&O Contractor reviews approved Waste Stream Profile Forms to verify the information provided is complete and accurate, and that the waste stream complies with Hazardous Waste Facility Permit (HWFP) Waste Analysis Plan (WAP) and the WIPP WAC (DOE/WIPP 02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*) prior to authorization for shipment.

KE 18-3: The WIPP M&O Contractor verifies the HWFP requirement for confirmation of certified waste prior to shipment to the WIPP from the DOE Sites.

KE 18-4: The WIPP M&O Contractor performs Generator Site Technical Reviews, which are independent reviews of DOE sites' waste management programs and processes involved with treatment, packaging, and other TRU waste-related activities that occur prior to and during the transfer of the waste to the WIPP Certified Programs (WCPs).

KE 18-5: The MAR statistics for waste certified for future shipment to WIPP are reviewed periodically by the WIPP M&O Contractor (no less frequently than annually) to ENSURE the values stated in the WIPP DSA, Chapter 3.0, Tables 3.4-1 and 3.4-2 (based on DOE-STD-5506 statistical analysis methodology) continue to provide conservative, unmitigated consequences in the Safety Analysis; further, each payload proposed for shipment to WIPP is additionally screened to ENSURE handling and emplacement of small groupings of containers will remain bounded by the Safety Analysis.

5.0 Administrative Controls (continued)

5.7 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. 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 WIPP M&O Contractor policies, programs, and procedures.

The Operations Manager SHALL ENSURE the performance of 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.

Reviews and audits of activities and programs affecting nuclear safety performed independently of WIPP staff should include these same items and in addition:

a. Conformance with TSRs.

b. Violations of codes, orders, and procedures that have safety and health significance.

c. Occurrence Reports.

d. Staff training, qualifications, and performance.

e. Quality Assurance Program adherence.

f. Unanticipated deficiencies of SSCs that could affect nuclear safety.

g. Significant unplanned radiological or toxic material releases.

h. Significant operating abnormalities.

5.0 Administrative Controls (continued)

5.8 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 and exiting ACTIONS, Completion Times of Required Actions, determination of AFFECTED AREA(S), 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.

d. Completed SR packages.

Any records generated as part of the TSR process are handled in accordance with departmental Records Inventory and Disposition Schedules. Records Inventory and Disposition Schedules documentation includes record type, retention period, storage requirements, and location.

Section 6
Design Features

6.0 DESIGN FEATURES

Chapter 3.0 of the WIPP DSA identifies DFs for which credit is taken. DFs are those SSCs that are passive features of the facility that, if altered or degraded, would have a significant effect on safety. For each DF, the physical features and a summary description (Bases) of the DF safety function and key features are provided. TSR Section 1.3, "Frequency," applies to the surveillance intervals of each DF (e.g., text and Table 1.3-1).

Any changes to DFs that could affect the safe operation of the facility will be analyzed for safety implications and be appropriately approved prior to making such modifications through the WIPP M&O Contractor' Configuration Management and USQ Programs.

WIPP has an established ISI Program as described in DSA Chapter 10.0, which provides KEs in Section 5.6, above. The Cognizant System Engineers develop the ISI requirements for those items to be inspected and the inspection frequencies based on the DF performance criteria. The appropriate ISI requirements and frequencies will be identified in WIPP procedures and the ISIs will be completed by qualified personnel. Deviations or changes to the ISIs will be subject to the Configuration Management process, including the USQ Program.

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

6.1 Waste Handling Building Structure
6.2 TRUDOCK 6-ton Cranes (Deleted)
6.3 Facility Pallet
6.4 UNDERGROUND Liquid-fueled WASTE HANDLING VEHICLES (Deleted)
6.5 RH Bay Design (Deleted)
6.6 Waste Hoist Support System
6.7 UNDERGROUND Fuel and Oil Storage Areas
6.8 RH Waste Casks (Deleted)
6.9 Type B SHIPPING PACKAGE
6.10 FCLR, CUR, and Transfer Cell Shielding (Deleted)
6.11 Isolation Structures for Segregating Noncompliant Containers in Panel 6 and Panel 7, Room 7 (Deleted)
6.12 Vehicle Barriers

6.1 Waste Handling Building Structure

The structure of the WHB, including the CH BAY, ROOM 108, RH Bay, Hot Cell Complex, and Waste Hoist Tower is of noncombustible construction and designed to withstand design basis NPH loading without collapse (i.e., tornado, tornado generated missile, earthquake, high wind, high wind generated missiles, and snow/ice loading on the roof). The concrete curbing is part of the building foundation that extends above grade. The route of vehicle/equipment to the waste shaft prevents a direct, unencumbered path to the waste shaft.

The structural design features of the TMF, Support Building, and Main Access Corridor are equivalent to the structural design features of the WHB and prevent damage to the WHB or WASTE in the WHB during a NPH event. As these buildings prevent damage to the WHB during NPH events, the structural design features of these three buildings must be protected. The structural design features of the, Support Building, TMF, and Main Access Corridor that will prevent damage to the WHB during a NPH event are specifically included in this Design Feature. The TRUDOCK Cranes are designed for the design basis earthquake.

6.0 Design Features (continued)

6.1 Waste Handling Building Structure (continued)

Bases: The safety function of the WHB structure, is to prevent the release of radiological materials due to building collapse with impact to WASTE CONTAINERS caused by NPH events (i.e., tornado, earthquake, high wind, tornado, wind/tornado generated missile, and snow/ice loading on the roof), propagating fires through the structure from externally initiated fires or through roof collapse from credible internal fire scenarios, or loss of confinement from vehicle/equipment drop down the Waste Shaft.

The WHB structure must also ensure that it does not contribute to the combustible loading in a manner that can propagate fires into the building to staged WASTE CONTAINERS. External to the south side of the WHB, curbs are credited to protect the external walls of the WHB from the potential for liquid fuel pools from entering the WHB. The WHB design layout must ensure that vehicles/equipment will not have a direct and unrestricted vehicle/equipment access to the Waste Shaft Collar (e.g., physical configuration of the CLR is depicted in DSA Chapter 2.0, Figure 2.4-4 between sections B.8 and E.10).

The WHB structure is designed to prevent structural failure or damage during and following natural phenomenon and fire events. The TRUDOCK Cranes are designed to prevent their collapse and drop to the CH BAY floor during a design basis earthquake. The WHB is constructed in accordance with the requirements of NFPA 220, Standards on Types of Building Construction, Type II construction. The roof design and construction of the WHB, including the CH BAY, ROOM 108, RH Bay, Hot Cell Complex, and Waste Hoist Tower, prevent building collapse from snow/ice loading on the roof from impacting WASTE CONTAINERS outside a CLOSED Type B SHIPPING PACKAGE. The noncombustible materials (steel and concrete) used in the construction of the WHB and curbing minimize fire propagation into and within the WHB and provide a confinement barrier for radiological or hazardous material releases occurring inside the WHB caused by NPH events (i.e., tornado, earthquake, high wind, and snow/ice loading on the roof) and fire.

Four WHB steel support columns (E.3-10, E.7-10, E.3-11, and E.7-11), located near the CH BAY / RH Bay roll-up door, are protected by a fire retardant coating insulation. As described in Section 2.4.1.2.1, the WHB is protected from a pool fire in this area having the potential to weaken structural steel columns and collapse the WHB roof onto CH Waste located in the CH BAY.

The design of the CLR provides right angle access and limited straight line distance from the access point to the Shaft Entry Room access door. DSA Chapter 2.0, Figure 2.4-4 shows the limited size and the structure that prevent direct and unrestricted vehicle/equipment access to the Waste Shaft Collar, preventing WASTE or vehicles/equipment from being dropped down the Waste Shaft. Right angle access to Shaft Entry Room after entering the CLR or FCLR, and a limited straight-line distance between the access point and Shaft Entry Room prevent significant vehicle acceleration that could lead to uncontrolled vehicle movements. Additionally, the Waste Conveyance Control described in DSA Section 4.5.7 (TSR SAC 5.5.6) ensures that Doors 155 and 156 are closed when WASTE is present in the WASTE SHAFT ACCESS AREA and the conveyance is not secured at the Waste Shaft Collar.

As the TMF, Support Building, and Main Access Corridor are contiguous to and attached to the WHB, failure of one or more of these buildings could result in damage to the WHB in a NPH event. Analysis has demonstrated that these buildings will not fail in a manner to degrade the ability for the WHB to perform its Safety Function. Therefore, damage to the WHB and any WASTE in the WHB is prevented in the postulated NPH events.

6.0 Design Features (continued)

6.2 TRUDOCK 6-ton Cranes (Deleted)

6.0 Design Features (continued)

6.3 Facility Pallet

The Facility Pallet has a stainless-steel surface that provides a contiguous flame barrier preventing direct flame impingement on CH WASTE and has a robust construction, as depicted in DSA Chapter 2.0, Figure 2.6-37.

Bases: The safety function of the Facility Pallet is to prevent direct flame impingement on CH WASTE in a pool fire to mitigate a release of radiological material.

IN SERVICE Facility Pallets (see System Design Description (SDD) WH00) are noncombustible, fabricated-steel units. Facility Pallets are designed to accommodate the transport of CH WASTE assemblies, as discussed in DSA, Chapter 3.0, Table 3.3-8, to the UNDERGROUND. Facility Pallets have a rated load capacity of 25,000 pounds.

The Facility Pallet provides a noncombustible surface with no through hole penetrations that could result in direct flame impingement on CH WASTE surfaces. The Facility Pallet provides a stainless-steel noncombustible surface, excluding eight three-inch diameter hold down holes. This feature creates a barrier between the WASTE and a burning pool fire that limits their exposure to flame and reduces the potential for lid ejection. Without lid ejection, the CH WASTE burns as confined material, which has a lower airborne release fraction than unconfined burning of material. Facility Pallet structural design is such that it supports the design capacity loading in a pool fire event. DSA Chapter 2.0, Figure 2.6-37 provides the overall dimensions of the Facility Pallet. The Facility Pallet provides the contiguous flame barrier and the internal structure provides the rated load capacity.

6.0 Design Features (continued)

6.4 UNDERGROUND Liquid-fueled WASTE HANDLING VEHICLES (Deleted)

6.5 RH Bay Design (Deleted)

6.0 Design Features (continued)

6.6 Waste Hoist Support System

The Waste Hoist Support System has robust noncombustible steel components and is designed to support the Waste Hoist and a maximum load conveyance under all normal, upset, and design basis NPH conditions.

Bases: The safety function of the Waste Hoist Support System is to prevent a radiological material release due to an uncontrolled Waste Conveyance movement that results in a loss of confinement, a fire, or an NPH initiated failure of the Waste Hoist Support System by establishing a basis for the low unmitigated likelihood assignments.

The Waste Hoist Support System includes the physical structure that fully supports the Waste Hoist and is designed to withstand design basis NPHs. The Waste Hoist support structure is capable of supporting static, dynamic, and seismic load combinations in accordance with the structural loading design requirements of SDD-UH00, Chapter III. The Waste Hoist Support System includes the physical structure that consists of four steel I-beam columns, mounted on a substantial concrete foundation, supporting four steel I-beam girders. The Waste Hoist Support System also includes the bedplate, friction drum, drum shaft, and six head ropes of the Waste Conveyance that are supported by the Waste Hoist support structure. The Waste Hoist support structure is constructed of noncombustible materials. The Waste Hoist support structure is interconnected with and enclosed by the WHB.

6.7 UNDERGROUND Fuel and Oil Storage Areas

The locations of the UNDERGROUND Fuel and Oil Storage Areas are at or north of the S-90 and west of the W-170 drifts.

Bases: The safety function of the UNDERGROUND Fuel and Oil Storage Areas is to preclude or eliminate the flammable or combustible liquid hazard resulting in a pool fire or explosion at either storage location from affecting WASTE through the provision of a substantial separation distance. Prevention of the involvement of the WASTE from a fire or explosion at the UNDERGROUND Fuel or Oil Storage is accomplished by physically separating the WASTE from the combustible liquid storage locations. The locations of the UNDERGROUND Fuel and Oil Storage Areas at or north of the S-90 and west of the W-170 drifts prevents the involvement of WASTE should fires and/or explosions occur at these locations. This location provides a minimum separation distance of 300 feet, which serves to preclude fires and explosions in the UNDERGROUND Fuel and Oil Storage Areas from impacting the WASTE.

6.0 Design Features (continued)

6.8 RH Waste Casks (Deleted)

6.9 Type B SHIPPING PACKAGE

The Type B SHIPPING PACKAGE is a robust structure designed, constructed, and assembled according to the requirements and specifications of 10 CFR 71 certified in accordance with 49 CFR 173.

Bases: The safety function of the Type B SHIPPING PACKAGE is to limit the release of radiological material from fires, payload deflagration, and/or collisions due to its robust construction and qualification under accident conditions, thereby mitigating the consequences of an event.

Type B SHIPPING PACKAGES are designed and constructed to the requirements presented in 10 CFR 71, *Packaging and Transportation of Radioactive Material*, and are certified in accordance with the requirements of 49 CFR 173, Subpart I, *Class 7 (Radioactive) Materials*. To meet the certification, the package design is required to successfully pass the criteria provided in 10 CFR 71.71, *Normal Conditions of Transport*, and 10 CFR 71.73, *Hypothetical Accident Conditions*, which include demonstration that no release of contents occurs after a 30-ft drop onto an unyielding surface 1 meter puncture bar drops, or a thermal exposure of 800°C (1,475°F) for 30 minutes. Type B SHIPPING PACKAGES are not specifically designed nor constructed for mitigation of explosions from internal or external sources. However, the Type B SHIPPING PACKAGE is judged, due to its robust construction, to maintain confinement integrity when subjected to internal deflagrations. The WIPP WAC (DSA Section 4.5.8) is relied upon to preclude shipment of waste that could result in an internal container fire or deflagration.

6.0 Design Features (continued)

6.10 FCLR, CUR, and Transfer Cell Shielding (Deleted)

6.11 Isolation Structures for Segregating Noncompliant Containers in Panel 6 and Panel 7, Room 7 (Deleted)

6.0 Design Features (continued)

6.12 Vehicle Barriers

The Vehicle Barriers are robust concrete barriers that are configured as depicted in DSA Chapter 2.0, Figure 2.4-7.

Bases: The safety function of the CH BAY Vehicle Barriers is to reduce the likelihood for release of radiological material from CH WASTE in the WHB due to impacts by vehicles and/or fires adjacent to the southwest wall of the CH BAY by providing a standoff distance from the CH BAY and substantial resistance to vehicular impacts.

Vehicle Barriers are a configured set of concrete barriers consisting of two continuous sections. The first section includes two rows of interconnected concrete barriers, installed approximately 5 feet west of the CH BAY/TMF common wall extending south from the TMF exterior wall a minimum distance of 25 feet. The second section consists of one row of interconnected concrete barriers positioned a minimum of 25 feet south of the CH BAY exterior southwest wall extending west between Airlock 100 to a point approximately 5 feet west of the CH BAY/TMF common wall (approximately 85 feet in total length) to intersect with the double row barriers. An opening with a gap less than or equal to 3 feet at the intersection of the single barrier section and the two-barrier section is permitted for fire department access. Vehicle barriers are assembled using robustly constructed commercially available, concrete barrier type traffic control devices of precast reinforced concrete in a standard shape. A concrete vehicle barrier is approximately 32 inches high, with a 24-inch base, in a variety of lengths, and weighs 400 pounds or more per lineal foot. The barrier contains links (typically steel loops) at the end of each barrier that allow multiple barriers to be connected in series using connectors (e.g., steel J-J hooks or pin-and-loop) provided by the barrier manufacturer. As noted above, multiple barriers are connected in series using the manufacturer’s recommended connectors to form a configured vehicle barrier of the desired length a minimum distance of 25 feet from the exterior of the southwest wall of the CH BAY. WIPP Drawing 24-C-070-W1 shows the placement of the Vehicle Barriers. The Vehicle Barriers prevent vehicles from crashing through the southwest CH BAY wall and into the CH BAY where CH WASTE may be staged, as well as precluding liquid-fueled vehicles/equipment from being in this area. An opening with a gap less than or equal to 3 feet is permitted between the north-south and east-west sections to permit access and placement of fire hose(s) by the fire department. The less than or equal to 3-foot gap is less than the width of liquid-fueled vehicles traversing this area and will protect the CH BAY southwest wall while providing the working space required by the fire department.

Appendix A
Bases

APPENDIX A BASES

B3/4.0 General Application

B3.0 General Limiting Conditions for Operation

Bases

Background Summary:	LCOs 3.0.1 through 3.0.6 establish the general requirements applicable to all LCOs and apply at all times, unless otherwise stated. The general requirements contained in LCOs 3.0.1–3.0.6 provide overall rules to guide the use and application of the specific requirements of the LCOs in Section 3.0 of this TSR. When exceptions to the general requirements contained in LCOs 3.0.1–3.0.6 are allowed, they are stated as notes in the individual LCO.
LCO 3.0.1	LCO 3.0.1 establishes the applicability statements within each LCO as the requirement for when conformance to the LCO is required to be met (i.e., when the facility is in the MODES or other specified conditions of the applicability statement of each LCO).
LCO 3.0.2	LCO 3.0.2 establishes that, upon discovery of a failure to meet an LCO, the associated ACTIONS SHALL be met. The Completion Time of each Required Action for an ACTION Condition is applicable from the TIME OF DECLARATION or other time as specified in the LCO. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This LCO establishes that: • Completion of the Required Actions within the specified Completion Times constitutes compliance with an LCO, and • Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. There are two basic types of ACTIONS. The first type of ACTION specifies a time limit in which the LCO SHALL be met or an additional ACTION is needed. This time limit is the Completion Time to restore a NOT OPERABLE 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, the applicable PROCESS AREA may be required to be placed in an operating configuration in which the LCO is not applicable. Whether stated as an ACTION or not, restoration of NOT OPERABLE equipment or a condition to within limits is an ACTION that may always be considered on entering LCO ACTIONS.

(continued)

B3/4.0 General Application (continued)

B3.0 General Limiting Conditions for Operation (continued)

Bases (continued)

LCO 3.0.2 (continued)

Some LCO ACTIONS specify a completion time to initiate ACTION to place the applicable PROCESS AREA in a specified MODE or other safe condition. This wording allows operations a reasonable amount of time to determine what actions are necessary, to determine the correct course of action to safely perform the necessary actions, and to perform any necessary administrative functions associated with the actions. When completion times were not specified for completion of facility reconfiguration or MODE change to allow reasonable operational flexibility, the intent is not to delay placing the facility in a safe condition or MODE. Necessary actions should be completed in a minimum time frame and not extended for operational convenience.

The second type of ACTION specifies the remedial measures that permit continued operation of the facility without further restriction by the Completion Time of the ACTION. In this case, conformance to the ACTION 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 nature of some ACTIONS for some Conditions necessitates that, once the Condition is entered, ACTIONS SHALL be completed even though the associated Conditions are resolved. The ACTIONS of the individual LCOs specify where this is the case.

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 or corrective maintenance, or investigation of operational problems. ACTIONS for these reasons SHALL be performed in a manner that does not compromise safety.

When a change in MODE or other specified condition is required to comply with Required Actions, the facility may enter a MODE or other specified condition in which a new LCO becomes applicable. In this case, the Completion Times of the associated Required Action would apply from the point in time that the new LCO becomes applicable, and any Condition(s) are entered.

(continued)

B3/4.0 General Application (continued)

B3.0 General Limiting Conditions for Operation (continued)

Bases (continued)

LCO 3.0.3

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.

This LCO delineates the time limit to initiate the ACTION for placing the facility in a safe operating configuration when operation cannot be maintained within the limits for safe operation, as defined by the LCO and its ACTIONS. It is not an operational convenience that permits routine, voluntary removal of redundant or standby systems or components from service in lieu of other alternatives that would result in redundant or standby systems or components being OPERABLE.

(continued)

B3/4.0 General Application (continued)

B3.0 General Limiting Conditions for Operation (continued)

Bases (continued)

LCO 3.0.3 (continued)	Upon entry into LCO 3.0.3, ACTIVITIES SHALL be initiated IMMEDIATELY to prepare for a change in facility operation. The time limit specified to initiate actions permits the change to proceed in a controlled and orderly manner that is well within the capabilities of the facility. This reduces the potential for a facility upset that could challenge safety systems under operating configurations to which this LCO applies. Change in facility operation required in accordance with LCO 3.0.3 may be orderly terminated and LCO 3.0.3 exited, if any of the following occurs: • The LCO is now met. • A Condition exists for which the ACTION has been performed. • ACTIONS exist that do not have expired COMPLETION TIMES. These COMPLETION TIMES are applicable from the point in time that the Condition was initially entered and not from the time LCO 3.0.3 is exited. LCO 3.0.3 requires actions to be taken IMMEDIATELY to initiate ACTIVITIES to place the facility in a SAFE CONFIGURATION and 12 Hours to complete the SAFE CONFIGURATION. The exceptions to LCO 3.0.3 are provided in instances where requiring a facility change in accordance with LCO 3.0.3 would not provide appropriate remedial measures for the associated Condition of the facility. These exceptions are addressed in the individual LCOs.
LCO 3.0.4	LCO 3.0.4 establishes limitations on changes in MODES or other specified conditions in the applicability when an LCO is not met. It precludes placing the applicable PROCESS AREA in a different MODE or other specified condition when the following exists: 1. The requirements of an LCO in the MODE or other specified condition to be entered are not met. 2. Continued noncompliance with these requirements would result in requiring that the applicable PROCESS AREA be placed in a MODE or other specified condition in which the LCO does not apply with the ACTIONS.

(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. Exceptions to LCO 3.0.4 are stated in individual LCOs. Exceptions may apply to all the ACTIONS or to a specific ACTION of an LCO. When changing MODES or other specified conditions while in a condition (in compliance with LCO 3.0.4 or where an exception to LCO 3.0.4 is stated) the ACTIONS define the remedial measures that apply. Surveillances do not have to be performed on the associated NOT OPERABLE 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 NOT OPERABLE equipment. However, SRs SHALL be met to demonstrate OPERABILITY before declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance to the affected LCO.
LCO 3.0.5	LCO 3.0.5 establishes the allowance of restoring equipment to service under administrative/procedural controls when it has been removed from service or declared NOT OPERABLE 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; or 2. OPERABILITY of other associated equipment.

(continued)

B3/4.0 General Application (continued)

B3.0 General Limiting Conditions for Operation (continued)

Bases (continued)

LCO 3.0.5 (continued)	An example of demonstrating the OPERABILITY of other equipment is taking a NOT OPERABLE channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of a SR on another channel in the other trip system. Another similar example of demonstrating the OPERABILITY of other equipment is taking a channel out of the tripped condition to permit the logic to function and indicating the appropriate response during performance of a SR on another channel in the same trip system.
LCO 3.0.6	LCO 3.0.6 establishes an exception to LCO 3.0.2 for support systems that have an LCO or ACTION statement specified in the TSR. This exception is necessary because LCO 3.0.2 requires that the Conditions and ACTIONS of the associated NOT OPERABLE supported system LCO be entered solely from the NOT OPERABILITY of the support system. This exception is justified because the ACTIONS that are required to ensure that the facility is maintained in a safe operating configuration are specified in the support system ACTIONS. These ACTIONS may include entering the supported system's Conditions and ACTIONS or may specify other ACTIONS. When a support system is NOT OPERABLE and there is no LCO or Action Statement specified for it in the TSR, the effects on the supported system(s) operability is required to be evaluated and a formal declaration made. However, it is not necessary to enter into the supported system's Conditions and ACTIONS unless directed to do so by the support system's ACTIONS. The confusion and inconsistency of interpretation of requirements related to the entry into multiple Conditions and ACTIONS SHALL be eliminated by providing all actions that are necessary to be taken to ensure that the facility is maintained in a safe operating configuration in the support system's ACTIONS. When a support system is NOT OPERABLE and there is no LCO specified for it, the impact of the degradation of the support system function on the supported systems' OPERABILITY SHALL be evaluated. The degradation of the support system may or may not affect the OPERABILITY of the supported systems. OPERABILITY of the supported system SHALL depend on the intended function of the supported system and the level of support that the supported system provides. Unless otherwise justified (on determination that the supported system is NOT OPERABLE), the Conditions and ACTIONS of the supported system's LCO SHALL apply or other compensatory actions or requirements SHALL apply, as otherwise justified. Administrative/procedural controls 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. The general requirements contained in LCOs 4.0.1–4.0.4 provide overall rules to guide the use and application of the specific requirements of the LCOs in Section 4.0 of this TSR. When exceptions to the general requirements contained in LCOs 4.0.1–4.0.4 are allowed, they are stated as notes in the individual LCO.
SR 4.0.1	SR 4.0.1 establishes that SRs must be met during the MODES or other specified conditions in the applicability statements for individual LCOs, unless otherwise stated 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 SR 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 NOT OPERABLE, although still meeting the SRs; or 2. The requirements of the surveillance(s) are not met between required surveillance performances. Surveillances do not have to be performed when the applicable PROCESS AREA is in a MODE or other specified operating configuration for which the requirements of the associated LCO are not applicable, unless otherwise specified.

(continued)

B3/4.0 General Application (continued)

B4.0 General Surveillance Requirements (continued)

Bases (continued)

SR 4.0.1 (continued)

Surveillances, including surveillances invoked by ACTIONS, do not have to be performed on NOT OPERABLE equipment because the sole purpose of a surveillance is to determine OPERABILITY. If the equipment has been declared NOT OPERABLE and/or out-of-service, an OPERABILITY determination has already been made. ACTIONS because of the equipment being NOT OPERABLE define the remedial measures that apply. SRs have to be met in accordance with SR 4.0.2 before returning equipment to OPERABLE status.

Measurement devices used to demonstrate compliance with LCO SRs SHALL be CALIBRATED to plant design, manufacturer's specifications, and/or industry standards as described in the Facility Calibration Program. SR results SHALL be documented in an auditable and traceable manner.

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 specified operating configuration 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 will allow operation to a specified operating configuration where other necessary post-maintenance tests can be completed.

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

(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. Surveillance FREQUENCIES should be based on historical data, engineering or manufacturer's information or safety analysis to allow the longest reasonable time period between surveillances to ENSURE OPERABILITY. Failure to perform the SR within the specified FREQUENCIES may allow operation beyond the assumptions specified in the DSA.

SR 4.0.2 permits a 25% extension of the interval specified in the SR FREQUENCY. This SR is designed to facilitate SR scheduling in conditions where performance would represent an operational hardship or cause an unsafe transient. It allows consideration of facility operating conditions that may not be suitable for conducting the SR (e.g., transient states or other ongoing SRs or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the SR surveillance at its specified FREQUENCY. This is based on the recognition that the most probable result of any particular SR being performed is the VERIFICATION of conformance with the SRs. The exceptions to SR 4.0.2 are those SRs 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 SR 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 itself, 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."

The provisions of SR 4.0.2 are not intended to be used repeatedly merely as an operational convenience to extend SR 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 NOT OPERABLE 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.

To avoid subjecting the facility to unnecessary transients, upon discovery of a missed surveillance, 24 Hours or the time limit of the specified surveillance FREQUENCY, whichever is less, is allowed to complete the SR before taking the required ACTION of the LCO. This delay period provides an adequate time limit to complete missed SRs.

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 configuration, 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 SR.

The provisions of SR 4.0.3 also provide a time limit for completion of surveillances that become applicable as a consequence of 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. This extension also does not preclude notification of a violation of SR 4.0.2.

(continued)

B3/4.0 General Application (continued)

B4.0 General Surveillance Requirements (continued)

Bases (continued)

SR 4.0.3 (continued)	This allows performance of SRs when the prerequisite conditions specified in a SR procedure require entry into the MODE or other specified operating configuration in the applicability Statements of the associated LCO prior to the performance or completion of a SR. A SR, which could not be performed until after entering the LCO applicability statements, would have its FREQUENCY specified such that it is not “due” until the specific operating configuration needed is met. Alternately, the SR may be stated in the form of a note as not required (to be met or performed) until a particular event, operating configuration, or time has been reached. If a SR is not completed within the allowed delay period, the equipment is considered NOT OPERABLE or the variable is considered outside the specified limits and the Completion Times of the ACTIONS for the applicable LCO conditions begin IMMEDIATELY on expiration of the delay period. If a SR is failed within the delay period, the equipment is NOT OPERABLE or the variable is outside the specified limits and the Completion Times of the ACTIONS for the applicable LCO conditions begin IMMEDIATELY upon the failure of the SR. Completion of the SR within the delay period allowed by this LCO, 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 must be met before entry into a MODE or other specified operation configuration in the applicability statements.

This SR ensures that system and component OPERABILITY requirements and variable limits are met before entry into a MODE or other specified operation configuration in the applicability statements for which these systems and components ensure safe operation of the facility. This SR applies to changes in MODES or other specified operation configuration in the applicability statements associated with the PROCESS AREA.

The provisions of SR 4.0.4 SHALL not prevent changes in MODES or other specified operation configuration in the applicability statements 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 SR, or both.

B3/4.1 Fire Suppression Systems

B3.1.1 WHB Fire Suppression System

Bases

Background Summary

The WHB FSS (FP00 [Ref. 3]) includes portions of the Water Distribution System, Fire Water Supply and Distribution System (FP01), and FSS (FP02). The WHB FSS includes the Fire Water Storage Tank, electric and diesel driven fire water pumps, distribution piping (from Fire Water Storage Tank to sprinkler heads), post indicating valves that are part of the Fire Water Supply and Distribution System, and associated sprinkler heads. The boundary of the WHB FSS includes the supply risers and distribution piping with sprinklers that provide fire suppression capability to the WHB. Three risers, one in ROOM 108, one in the CH BAY, and one in the RH Bay, supply the WHB. The RH Bay riser and associated piping and sprinklers are not credited in the safety analysis.

The fire water supply and distribution consists of a water tank, two fire pumps, a pressure maintenance jockey pump, and a loop yard piping distribution system. The Fire Water Supply System receives its normal water supply from an onsite, nominal 180,000-gallon aboveground Fire Water Storage Tank. This tank is configured to supply the fire pumps in parallel, flowing water into a common supply header shared by both fire pumps. Each of the process area sprinklers is provided an inspector's test valve that is located on the end of the branch line most remote from the sprinkler riser. For the ROOM 108 system, valve FW-411-V-062 is used. For the CH BAY two valves are provided: FW-411-V-023 and FW-412-V-002.

Fire water level instrumentation for the Fire Water Storage Tank, loop 25F00601 (Level transmitter, 456-LT-006-001, and local indicator, 456-LI-006-001) provide local indication. The instrument loop includes the level transmitter and local indicator. The local indication is available from the associated level indicating transmitter. The level indicating transmitter has been upgraded to support a SS classification.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Background Summary (continued)

There are two fire pumps (electric-motor-driven and diesel-engine-driven) in the WHB FSS and both fire pumps are required to be OPERABLE for the FSS to be considered OPERABLE. The fire pumps are configured to start on demand via a drop in pressure from the firewater main. This drop in pressure may be activated by either the opening of a fire hydrant or by the activation of a sprinkler system. The fire pump starting sequence is the electric-motor-driven pump first and the diesel-engine-driven pump second. This start sequence saves wear on the diesel pump. Each pump is tested to VERIFY it can deliver greater than or equal to 490 gpm at greater than or equal to 120 psig at the most demanding riser (ROOM 108) to meet maximum sprinkler demand as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*.

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 is used to prevent the large fire pumps from experiencing an excessive number of starts for minor pressure fluctuations. The jockey pump does not serve a credited safety function and is not designated as SS.

Should there be a demand for fire water that exceeds the capacity of the jockey pump, the fire water demand will cause the system pressure to drop, which automatically starts a fire pump. The fire pumps are arranged so that the electric fire pump starts first, and if the demand exceeds its capacity, the diesel fire pump starts.

The fire water supply system piping configuration 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 pipeline exiting the pump house via the discharge piping cross-connect.

The diesel-driven pump must have enough diesel fuel to run for at least 90 minutes at 100% of the rated pump capacity. The 90-minute requirement is based on NFPA 13-1983 (code of record). This translates to a fuel level in the existing tank of 11 inches. The fuel level of greater than or equal to 12 inches conservatively accounts for errors in reading the fuel level. The diesel-driven pump has two 12-volt lead acid batteries. Based on NFPA 25 and NFPA 20 the voltage of one of the two batteries must be greater than 9 volts when the pump is starting.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Background Summary (continued)	The WIPP WHB FSS design meets applicable DOE orders by compliance with applicable portions of NFPA 13-1983 (code of record) (Ref. 1). One exception in NFPA 13 compliance is pumping capability. NFPA 13 requires including firefighting hose capacity in addition to the FSS sprinkler requirements in determining the required pumping capacity. This LCO only considers the FSS sprinkler pumping capacity requirements that are needed to perform the credited Safety Function and not the additional firefighting hose capacity.
Application to Safety Analysis	The safety analysis (Ref. 5) identified events that credit the FSS to prevent small fires from becoming large fires in the CH BAY and ROOM 108 of the WHB. Fires analyzed included the following events: • Pool fires. • Vehicle collisions followed by fires. • Ordinary combustibles fires. • Propagating fire. Assumptions for the analyses included the following: • WASTE inside a CLOSED SHIPPING PACKAGE is protected from involvement in any fire event. • Site-derived WASTE in a CLOSED WASTE CONTAINER provides the same protection as a CH WASTE CONTAINER in a fire event. The CH WASTE MAR is the primary contributor to dose for fire events. Fire events were determined to result in high consequences to UNDERGROUND facility worker or co-located workers with low consequences to the maximally exposed offsite individual (MOI). The FSS is credited for the reduction of risk to co-located workers. To accomplish this reduction, the FSS must be OPERABLE as described in the following section.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

LCO

The FSS for the WHB minimizes fire propagation and the growth of fires. This LCO requires that the WHB FSS SHALL be OPERABLE. An OPERABLE FSS consists of the following elements:

- One unobstructed flow path from Fire Water Storage Tank 25-D-001A to the applicable PROCESS AREA sprinklers. There is one Fire Water Storage Tank with a nominal capacity of 180,000 gallons. The Fire Water Storage Tank, 25-D-001A, is connected via existing piping to the WHB FSS. The CH BAY riser provides fire water to the CH BAY and the ROOM 108 riser provides fire water to ROOM 108, a portion of the CH BAY, and in the WASTE SHAFT ACCESS AREA (including the waste shaft tower). DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*, analyzed possible flow paths from the Fire Water Storage Tank to the sprinkler heads and showed that if the fire pump meets the hydraulic requirements of the FSS SRs (which are based on the most hydraulically demanding of the flow paths) then the FSS can perform its safety function using any of the flow paths. The unobstructed and undiverted flow path to the PROCESS AREA sprinklers also includes the condition that all fire hydrants in the unobstructed and undiverted flow path are secured and not open to prevent pressure drop. Periodic VERIFICATION is made that the valves providing at least one unobstructed flow path (as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*) are locked in the proper position. In addition, a riser Main Drain Test VERIFIES flow to each of the required risers ANNUALLY and whenever system alignment is changed.
- Two fire pumps (electric fire pump 45-G-601 and diesel fire pump 45-G-602) with a capability to deliver greater than or equal to 490 gpm to the ROOM 108 riser at greater than or equal to 120 psig. Each of the two fire pumps can supply the required flow and pressure to the risers. Both the electric-driven fire pump 45-G-601 and diesel-driven fire pump 45-G-602 are designed to provide greater than or equal to 490 gpm to the ROOM 108 riser at greater than or equal to 120 psig. The ROOM 108 riser feeds the fifth floor of the Waste Hoist Tower which represents the most demanding design area for fire suppression. The 490 gpm and 120 psig requirements provide the design density suppression at each fifth-floor sprinkler head, as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*. This required capability is determined without accounting for firefighting hoses during fire fighter response. The system will be declared inoperable anytime a hydrant is open (e.g., during hydrant testing).

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

LCO (continued)

- Fire pump auto-start at a fire water distribution system pressure of greater than or equal to 125 psig for the electric fire pump, and greater than or equal to 115 psig for the diesel fire pump.

  The start pressure and start pressure setpoints for the electric fire pump and diesel fire pump are documented in DSA Chapter 4.0, Section 4.4.3.4. The electric fire pump start pressure is 140 psig and the diesel fire pump start pressure is 130 psig. Set points are established for each fire pump by applying uncertainties to the start pressure. To account for pressure transducer output and pressure reading inaccuracies, 15.1 psi is subtracted from the starting pressure point for each fire pump. The electric fire pump operability value for automatic start of 124.9 psig and the diesel fire pump operability value for automatic start of 114.9 psig. For operational convenience, the electric fire pump set point for automatic start is implemented at 125 psig and the diesel fire pump set point for automatic start is implemented at 115 psig, which will ensure operability of the fire water pumps. The electric-motor-driven pump is set to come on at a higher pressure than the diesel-engine driven pump. These setpoints are established to minimize pressure excursions. The diesel fire pump has two 12-volt lead acid batteries. The voltage for one of the two diesel fire pump batteries must be greater than 9 volts when the pump is starting. For the diesel-engine driven pump, this auto-start test associated with this operability requirement also serves as a functional test of the components required to start the diesel engine (e.g., starting batteries and circuitry, etc.).

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

- Fire Water Storage Tank 25-D-001A level indication of greater than or equal to 51 percent. A water supply capacity of at least 72,180 gallons is required. The 72,180-gallon requirement is based on the maximum water demand (at any pressure) of 802 gpm for 90 minutes (Ref. 7). The 802 gpm value is documented in WIPP 023, (Ref. 7), Table 7.2-1, "WIPP Major Surface Building Water Requirements." The 802 gpm comes from the hydraulic calculations for the Waste Hoist Tower 4th floor sprinkler systems and is the bounding flow rate for any of the credited FSS areas in the WHB. This flowrate value includes the 250 gpm hose flow requirement. The 90-minute requirement is based on NFPA 13-1983 (code of record) (as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*). Fire Water Storage Tank 25-D-001A has a capacity of 180,000 gallons. The required level is 51 percent to account for instrument uncertainty and includes a 3-foot height above the tank bottom to the position of the vortex plate (as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*).
- Level indicator for Fire Water Storage Tank, loop 25F00601 (local indicator, 456-LI-006-001). This level indicator is used to VERIFY that the level in the Fire Water Storage Tank is greater than or equal to 51 percent. The instrument loop includes the level transmitter and local indicator.

These elements provide assurance that the WHB FSS has sufficient capacity, capability, and readiness to perform its credited safety function.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

MODE Applicability	The events of concern involve the burning of WASTE in the WHB. CH WASTE is the primary contributor to dose for these fire events. CH WASTE may be present in a PROCESS AREA during WASTE HANDLING and WASTE STORAGE. During STANDBY, CH WASTE is not present or is in a CLOSED SHIPPING PACKAGE with site-derived WASTE in a CLOSED WASTE CONTAINER. Therefore, this requirement applies during WASTE HANDLING and WASTE STORAGE.
PROCESS AREA Applicability	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, WASTE SHAFT ACCESS AREA, or a fire propagating into the CH BAY, ROOM 108, or WASTE SHAFT ACCESS AREA when CH WASTE is present. Fires may propagate into the CH BAY, ROOM 108, or WASTE SHAFT ACCESS AREA from the RH Bay, TMF, Support Building, or OUTSIDE AREA. The FSS applies to the CH BAY, ROOM 108, and WASTE SHAFT ACCESS AREA. NOTE 1 clarifies that the RH Bay sprinklers are not credited for fire suppression in the FCLR and therefore are excluded from the PROCESS AREA Applicability. NOTE 2 allows the FSS to remain in OPERABLE status during SR 4.1.1.2 with only one fire pump OPERABLE. Each of the two fire pumps is capable of supplying the required flow and pressure to the risers, as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*. Therefore, the risk of having only one OPERABLE fire pump available is acceptable.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS

As permitted by LCO 3.0.4, an exception to its requirements is made for this LCO. The exception permits the PROCESS AREA in Condition A or B to change between WASTE HANDLING and WASTE STORAGE for administrative purposes provided the Required Actions and associated Completion Times for the Condition are met (i.e., no new Completion Time clock for each MODE change). The current Required Actions of the Condition do not require placement of the PROCESS AREA into a defined MODE but allow continued operation provided the Required Actions and Completion Times are met. This exemption is allowed because MODE changes that are of an administrative nature, (e.g., shift complement) do not result in a reduced safety posture in that the LCO Required Actions and Completion Times are being met. Therefore, changes between WASTE HANDLING and WASTE STORAGE for administrative purposes do not inject any additional risk than was previously allowed. This exception is therefore, consistent with the text and intent of LCO 3.0.4.

A.1

In the event the FSS has become NOT OPERABLE due to an inoperable Fire Water Storage Tank level local indicator (indicator 456-LI-006-001), Condition A is entered.

With the Fire Water Storage Tank level local indicator loop NOT OPERABLE, the capability to determine the Fire Water Storage Tank level is still provided by visual verification of water overflowing the Fire Water Storage Tank. Therefore, visual verification method SHALL be used to VERIFY adequate Fire Water Storage Tank level exists within 2 Hours and every 12 Hours thereafter. If the local indicator indicates that adequate level is not available, Condition C is entered in addition to continuing the Required Actions of Condition A. A Completion Time of 2 Hours is required to provide adequate time to read the local tank level indicator or VERIFY tank overflow conditions and minimize the time-at-risk. VERIFICATION every 12 Hours thereafter is adequate since any use of fire water from the tank would be known and managed and any leakage large enough to change water level quickly would be evident.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

A.2.1/A.2.2	With the compensatory action of Required Actions A.1 implemented, these Required Actions allow 92 Days to perform either Required Action A.2.1 or A.2.2. Required Action A.2.1 requires restoration of the FSS to OPERABLE status by restoring the Fire Water Storage Tank loop to OPERABLE status. Required Action A.2.2 requires the AFFECTED PROCESS AREA(S) to be placed in STANDBY so that the hazard no longer exists and the LCO no longer applies. A Completion Time of 92 Days is sufficient to perform either of these Required Actions while the facility is at minimal risk since Required Action A.1 ensures adequate fire water is available in the Fire Water Storage Tank. Also, LCO 3.3.2 prevents the introduction of any liquid-fueled vehicles/equipment into the CH BAY. The CVS for the WHB is also required to be OPERABLE which would mitigate any fire events, if they were to occur. All of these factors were considered to support the Completion Time of 92 Days.
B.1	If one of the two fire pumps is NOT OPERABLE (and the other fire pump is OPERABLE), Condition B is entered. Note that if both fire pumps are NOT OPERABLE, Condition C is entered. Required Action B.1 requires ensuring the second fire pump is OPERABLE. This Required Action must be completed in one Hour. This action allows activities in the WHB to continue uninterrupted. Either of the two fire pumps can supply the required flow and pressure to the risers.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

B.2.1	Required Action B.2.1 requires restoration of the NOT OPERABLE fire pump to OPERABLE status within 92 Days. The OPERABLE fire pump can deliver greater than or equal to 490 gpm to the Room 108 riser at greater than or equal to 120 psig and satisfying the credited safety function. The Completion Time of 92 Days is sufficient to address the NOT OPERABLE fire pump while the facility is at minimum risk.
B.2.2	Required Action B.2.2 requires the AFFECTED PROCESS AREA(S) to be placed in STANDBY so that the hazard of a radiological material release no longer exists and the LCO no longer applies. Prior to entering STANDBY, WASTE must be removed from the AFFECTED PROCESS AREA or placed in a CLOSED SHIPPING PACKAGE, and site-derived WASTE must be in a CLOSED WASTE CONTAINER. This limits the time at risk that the facility can operate with one OPERABLE fire pump. A Completion Time of 92 Days is sufficient time to restore the affected fire pump to OPERABLE in most situations. A Completion Time of 92 Days is allowed since one fire pump is OPERABLE and Required Action B.1 has been successfully completed.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

C.1	Condition C is entered in the event the FSS has become NOT OPERABLE or Required Actions and Completion Times of Condition B are not met, or no OPERABLE fire pumps are available. Two exceptions are that Condition C is not entered for FSS inoperability due to 1) inoperable Fire Water Storage Tank level loop, or 2) inoperability due to a fire hydrant flow test, as noted in the LCO. Condition A is entered for inoperable Fire Water Storage Tank level loop. If the fire hydrant flow test cannot be completed within the requirements of Condition D, Condition C is entered. This Required Action requires that the introduction of additional CLOSED Type B SHIPPING PACKAGES into the CH BAY or ROOM 108 is IMMEDIATELY prohibited. This prohibition limits the amount of MAR in the PROCESS AREA and eliminates the risk from movement of CLOSED Type B SHIPPING PACKAGES into the AFFECTED PROCESS AREA. This Condition allows waste handling and waste storage operations to continue with those packages already present in the PROCESS AREAS. The prohibition of additional CLOSED Type B SHIPPING PACKAGES prevents additional MAR from being introduced into the PROCESS AREA. This action limits the amount of MAR to the MAR already present when the Condition was entered. A Completion Time of IMMEDIATELY initiates prompt and sustained actions to prevent introduction of additional MAR and ACTIVITIES associated with movement of CLOSED Type B SHIPPING PACKAGES.
C.2	With the FSS NOT OPERABLE, the capability to suppress fires is reduced or lost. 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 while in this condition, hot work ACTIVITIES that are not related to restoration of the FSS in the AFFECTED PROCESS AREA(S) 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.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

C.3	Required Action C.3 requires a FIRE WATCH to be established within 1 Hour at each AFFECTED PROCESS AREA(S) when in WASTE HANDLING MODE. One FIRE WATCH is required for each AFFECTED PROCESS AREA when in WASTE HANDLING MODE. WASTE HANDLING ACTIVITIES are not permitted in WASTE STORAGE MODE. Any ACTIVITY requiring a Fire Watch in WASTE STORAGE MODE is controlled in accordance with the Fire Protection Program. A FIRE WATCH provides for visual observation, identification, and reporting of actions or conditions that could initiate a fire, and prompt reporting of a fire to initiate emergency response should one occur. Training also allows for extinguishing incipient fires if safe to do so. This Required Action reduces the potential for fire initiation and incipient fire growth. WASTE HANDLING ACTIVITIES are allowed to continue during this Condition as there is low risk for a significant fire event to occur without observation with the FIRE WATCH in place. Combustible material loading is controlled by the Fire Protection Program and liquid-fueled vehicles and equipment are prohibited from being within the CH BAY or ROOM 108. A Completion Time of 1 Hour provides time to determine the WASTE HANDLING ACTIVITIES being performed and their locations, and to identify qualified individuals and their assignments to perform the required FIRE WATCH. The FIRE WATCH remains in place for the duration of this Condition.
C.4	This Required Action requires liquid-fueled vehicles/equipment to be removed from the RH Bay in 1 Hour. A fuel leak from liquid-fueled vehicles/equipment that are in the RH Bay could potentially result in fuel running under the rollup door and into the CH BAY and result in a fire in the CH BAY. Removal of any liquid-fueled vehicles/equipment in the RH Bay prevents this possibility during the time the CH BAY FSS is NOT OPERABLE. A completion time of 1 Hour is required to provide adequate time to safely remove the liquid-fueled vehicles/equipment and minimize the time at risk.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

C.5	This Required Action requires a ROVING FIRE WATCH to be established in the AFFECTED PROCESS AREA(S) at locations not covered by Required Action C.3 within 1 Hour and complete a round every 2 Hours thereafter. The ROVING FIRE WATCH performs an inspection of AFFECTED AREAS for the purpose of making fire safety observations, notifying building occupants and the CMR of an emergency, and minimizing the potential for a fire to occur, and/or extinguishing incipient fires, thus compensating for the lack of an OPERABLE FSS. A Completion Time of 1 Hour is adequate to identify the AFFECTED AREA(S), identify required personnel, and establish the ROVING FIRE WATCH. The 2-Hour interval allows sufficient time to complete the previous inspection and is frequent enough to reduce the risk of a fire while the FSS is restored to OPERABLE status.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

C.6.1/C.6.2	With the compensatory actions of Required Actions C.1, C.2, C.3, C.4, and C.5 implemented, this Required Action allows 31 Days to perform either Required Action C.6.1 or C.6.2. Because the Required Actions are separated by an “OR”, one of these Required Actions must be completed within 31 Days of entering the Condition. Successful performance of either Required Action removes the facility from the LCO Condition. Required Action C.6.1 requires restoration of the FSS to OPERABLE status in the AFFECTED AREA(S). Required Action C.6.2 requires the AFFECTED PROCESS AREA(S) to be placed in STANDBY so that the hazard no longer exists and the LCO no longer applies. This Action is completed by the removal of the MAR from the AFFECTED PROCESS AREA or placing it in a CLOSED SHIPPING PACKAGE.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

D.1/D.2/D.3	Condition D is entered when the FSS is NOT OPERABLE in a PROCESS AREA(S) due to a hydrant flowing. The FSS becomes inoperable when the credited flow path from Fire Water Storage Tank 25-D-001A to the applicable PROCESS AREA sprinklers is diverted through a hydrant. Multiple hydrants may be flowed. However, only one hydrant is allowed to be actively flowing at a time. When transitioning from one flowing hydrant to a second hydrant, the second hydrant may be opened while the first hydrant is being shut down. This evolution is allowed to minimize system hydraulic transients (such as water hammer), provided a firefighter is present at each hydrant. The risk is acceptable when a firefighter is present at the hydrant during the short-duration flow and the firefighter can secure the hydrant upon indication of a fire. Firefighter qualification training is adequate to satisfy the performance of Required Action D.1. Required Action D.1 is met when the firefighter is present in the work area during flowing and has the capability to execute Required Action D.2. Required Action D.2 requires IMMEDIATELY securing the open hydrant. Otherwise, Required Action D.3 provides a 12-Hour time period in which to conduct hydrant flowing. If the Required Actions of Condition D cannot be met, Condition C is entered.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Surveillance Requirements

SR 4.1.1.1	VERIFICATION SHALL be made EACH SHIFT that the level in the Fire Water Storage Tank is greater than or equal to 51 percent using the local level indicator (local indicator, 456-LI-006-001). The 51 percent level accounts for instrument uncertainty (as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*). This SR ensures a sufficient supply of fire water is available within the water distribution system for at least 90 minutes of usage. The Fire Water Storage Tank water level history demonstrates that it is stable with only gradual changes, well trended variations over time. Therefore, performance of this SR DAILY is sufficient to ensure adequate fire water supply. Failure to meet or perform this SR requires entry into Condition A.
SR 4.1.1.2	An automatic start test SHALL be performed WEEKLY on each of the two available fire pumps, 45-G-601 and 45-G-602. This automatic start test is performed to VERIFY that the fire pump automatically starts before system pressure decreases below their set point. The electric fire pump is verified to start automatically at a system pressure of greater than or equal to 125 psig. The diesel fire pump is verified to start automatically at a system pressure of greater than or equal to 115 psig. For the diesel-engine driven pump, this auto-start test also serves as a functional test of the components required to start the diesel engine, including VERIFICATION of battery voltage greater than 9 volts when starting. Only one of the two batteries is required to meet this requirement. To perform the test, a valve is opened downstream of each pump to reduce the system pressure until the pump automatically starts. The system pressure at which the pump starts and pump parameters during the run time, are recorded to complete the surveillance. During the pump run, observations are made periodically, and adjustments are conducted per NFPA 25 and any abnormalities are recorded. This ENSURES that any pump maintenance issues are detected and provides assurance that the pump can run for 90 minutes if required. The pressure gauge used SHALL be CALIBRATED and the reading SHALL take instrument uncertainty into consideration. A minimum FREQUENCY of WEEKLY is required per NFPA 25 (Ref. 6). Failure to meet or perform this SR requires entry into Condition B if one fire pump is NOT OPERABLE and Condition C if both fire pumps are NOT OPERABLE.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.1.1.3	VERIFICATION SHALL be made WEEKLY that the diesel fire pump fuel tank (tank 45-D-601) fuel level is greater than or equal to 12 inches. The fuel level is checked by reading a dip stick. The VERIFICATION is performed to ensure that sufficient diesel fuel is available to operate the diesel-driven fire pump (45-G-602) for at least 90 minutes per the requirements of NFPA 13-1983 (code of record) (Ref. 1). The diesel-driven fire pump is normally shutdown and is operated periodically for testing per NFPA 25. The WEEKLY FREQUENCY has been determined to be adequate based upon operational experience and can be checked after the WEEKLY automatic pump start test. The level value of 12 inches conservatively accounts for errors in reading the fuel level (as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*). Failure to meet or perform this SR renders the diesel fire pump (45-G-602) NOT OPERABLE and requires entry into Condition B (or Condition C if pump 45-G-601 is NOT OPERABLE).
SR 4.1.1.4	VERIFICATION SHALL be made MONTHLY, that the valves providing at least one unobstructed and undiverted flow path (as analyzed in DSA Chapter 4.0, Section 4.4.3.4, System Evaluation) from Fire Water Storage Tank 25-D-001A to the applicable PROCESS AREA sprinklers are locked in the proper position providing assurance of an unobstructed and undiverted flow path of water supply to the sprinklers and that fire hydrants in the flow path are secured (i.e., not open). These valves must be locked in the proper position and fire hydrants in the flow path secured or entry into the applicable LCO condition is required as the systems will not be OPERABLE. VERIFICATION that these valves are in the proper position is made by visually VERIFYING that each of the valves are in the proper position and locked and that any fire hydrants in the flow path are secured during a walkdown of the system. The FREQUENCY of MONTHLY has been determined to be adequate based on NFPA 25 criteria for locked control valves and operational experience. Failure to meet or perform this SR requires entry into Condition C.
SR 4.1.1.5	The following Inspector's Test Valve(s) SHALL be opened SEMIANNUALLY for each credited WHB riser. The test is performed to VERIFY the flow of fire suppression water from the inspector's test connection orifice indicating that there is a flow path in the piping from the riser to the sprinklers. Each of the process area sprinklers is provided an inspector's test valve that is located on the end of the branch line most remote from the sprinkler riser. For the ROOM 108 system, valve FW-411-V-062 is used. For the CH BAY two valves are provided: FW-411-V-023 and FW-412-V-002. The SEMIANNUAL FREQUENCY meets the requirements of NFPA 25 (Ref. 6). Failure to meet or perform this SR requires entry into Condition C.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.1.1.6

A Main Drain Test for the CH BAY and ROOM 108 risers SHALL be performed ANNUALLY and upon any FSS alignment change affecting the flow path last verified by SR 4.1.1.4. If the flow path last verified by SR 4.1.1.4 is not affected by an FSS alignment change, no additional Main Drain Test is required except ANNUALLY.

The Main Drain Test for each riser provides reasonable assurance that the supply side of the system is correctly aligned and free of obstructions and trending of the test results to allow monitoring for degradation of the water supply system. The Main Drain Test results must show less than 10 percent reduction of full flow pressure when compared to the original acceptance test or the previous satisfactory comparable test. The test is performed by fully opening the main drain valve (FW-411-V-003 for the CH BAY riser or FW-411-V-012 for the ROOM 108 riser) and measuring residual pressure at the riser (411-PI-003-001 for the CH BAY riser or 411-PI-003-003 for the ROOM 108 riser). Pressure variations are observed when flowing water through the 2-inch main drain valve at each riser. A fully or partially closed valve or other obstruction in the supply piping will cause an abnormally large drop in full flow pressure of the 2-inch main drain. Normal variations in pressure indicate that all valves in the flow path from the supply tank up to the sprinkler riser are open and that no other obstructions in the piping leading to the sprinkler riser exist. The FREQUENCY of ANNUALLY and upon any FSS alignment (when applicable) affecting the flow path last verified by SR 4.1.1.4 is based on NFPA 25 (Ref. 6).

Failure to meet or perform this SR requires entry into Condition C.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

Surveillance Requirement (continued)

SR 4.1.1.7	A CALIBRATION on the level indicators and transmitter for the Fire Water Storage Tank (Level transmitter, 456-LT-006-001, and local indicator, 456-LI-006-001) SHALL be performed ANNUALLY. The CALIBRATION will include the level transmitter, level indicator in the CMR and local indicator. The CALIBRATION is performed by trained and qualified maintenance personnel. The FREQUENCY of ANNUALLY meets the CALIBRATION FREQUENCY assumed in the associated instrument uncertainty analysis. Failure to meet or perform this SR for the local indicator, 456-LI-006-001, requires entry into Condition A.
SR 4.1.1.8	VERIFICATION SHALL be made ANNUALLY that each of the two fire pumps (45-G-601 and 45-G-602) is capable of supplying greater than or equal to 500 gpm while maintaining at least 141 psig residual pressure using hydrants #12 and #13 (as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*). The fire pump automatic start pressure set points do not impact the required flow and pressure for the WHB Fire Suppression System as specified in this SR. Hydrant tests are completed by attaching a flow meter on one hydrant and a pressure gauge on another hydrant up stream. Water is flowed from the downstream hydrant and is measured. The residual pressure (pressure of the system when water is flowing) is taken from the pressure gauge on the upstream hydrant. This flow test is used to VERIFY that the flowrate and pressure at the riser in ROOM 108 is greater than or equal to 490 gpm at 120 psig as analyzed in DSA Chapter 4.0, Section 4.4.3.4, *System Evaluation*. The ANNUAL FREQUENCY has been determined to be adequate based on NFPA 25 criteria. Failure to meet or perform this SR requires entry into Condition B if one fire pump is NOT OPERABLE and Condition C if both fire pumps are NOT OPERABLE.
SR 4.1.1.9	Perform an internal visual inspection of the CH BAY and ROOM 108 risers. This surveillance performs a visual inspection every 5 YEARS of the internals (e.g., alarm valves, check valves, strainers, filters, orifices, and representative sample(s) of FSS piping) of the CH BAY and ROOM 108 risers. Visual inspections SHALL be performed and evaluated with approved vendor or site procedures that meet NFPA criteria. This SR VERIFIES components operate correctly, move freely, are in good condition, and fire suppression piping is free of excessive foreign material and unobstructed. A 5 YEAR FREQUENCY has been determined to be adequate based on NFPA criteria. The 25% extension allowed by SR 4.0.2 is not applicable to this FREQUENCY. Failure to meet or perform this SR requires entry into Condition C.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.1 WHB Fire Suppression System (continued)

Bases (continued)

References

1. NFPA 13, 1983, *Standard for the Installation of Sprinkler Systems*, 1983 Edition, National Fire Protection Association, Quincy, MA.

2. Deleted.

3. SDD FP00, *Fire Protection System (FP00) System Design Description (SDD)* (current revision), Waste Isolation Pilot Plant, Carlsbad, NM.

4. Deleted.

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

6. NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 2014 Edition, National Fire Protection Association, Quincy, MA.

7. WIPP-023, *Fire Hazard Analysis for the Waste Isolation Pilot Plant* (FHA) (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.

8. NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*, 2016 Edition, National Fire Protection Association, Quincy, MA.

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System

Bases

Background Summary

An automatic FSS required by the hazard evaluation completed per NFPA 122 is required on vehicles/equipment with a significant combustible liquid capacity operating in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION, in the TRANSPORT PATH when CH WASTE is present in the TRANSPORT PATH, and operating within the minimum standoff distance of a CH WASTE FACE (Ref. 4) as specified in Table 3.1.2-1. Combustible liquids are considered to be fuel and hydraulic fluid.

The UNDERGROUND vehicles/equipment automatic FSS required by the hazard evaluation completed per NFPA 122, provides a credited wet or dry chemical fire suppressant to suppress vehicle/equipment fires associated with fuel/hydraulic line leaks and engine/motor compartment fires. Amerex Dry chemical fire suppressant systems may incorporate a liquid based cooling agent, but this feature is not credited for suppressing fires in the safety analysis.

The FSS is composed of an electric-powered sensor detection capability in expected fire locations on the vehicles/equipment. The FSS can be actuated manually. Once actuated, the FSS releases the fire suppressant to extinguish the fire. The fire suppressant is forced through the distribution network to the developing stage fire at high pressure. The system is equipped with a Control Panel that includes system status lights to indicate normal and trouble conditions, and a provision to test the status lights.

The FSS actuates automatically when the detection circuit activates due to heat generated by a fire source. The Control Panel interprets the sensor signal or operator activation and sends a signal to activate the release of the suppressant via pressure from the cylinders through the distribution system. The Control Panel includes a green status light that indicates that the system has not discharged and the detection circuit is functioning properly. The Control Panel is mounted such that the operator of the vehicle or equipment can see the system status indication. Additional description and requirements of the FSS are in the *Fire Hazards Analysis for the Waste Isolation Pilot Plant* (Ref. 2) and DSA Chapters 4.0 and 5.0 (Ref. 4).

The UNDERGROUND vehicle/equipment FSSs are installed by a qualified service technician or manufacturer’s representative. The installer SHALL certify that the installation has been made in accordance with the approved plans, where required, and the manufacturer’s design, installation, and maintenance manual.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

Background Summary (continued)

Dry chemical FSSs for vehicles/equipment are designed in accordance with NFPA 17, Chapter 9, and for a liquid FSSs in accordance with NFPA 17A. Both FSSs are essentially equivalent in the level of protection credited in the safety analysis as described in DSA Chapter 4.0, Section 4.4.2, NFPA 17/17A requires that only listed pre-engineered systems be installed on mobile equipment. NFPA 17/17A defines a "Pre-Engineered System" as "those systems having predetermined flow rates, nozzle pressures, and quantities of extinguishing agent and having specific pipe size, maximum and minimum pipe lengths, flexible-hose specifications, number of fittings, and number and types of nozzles." The fire suppression systems are Factory Mutual Research (FM) approved, thereby meeting the requirement for a listed pre-engineered system. The design parameters for pipe sizes, maximum pipe lengths, specifications, fittings, number and types of nozzles are qualified during examination by FM. During the examination process, the designs are evaluated to identify the most adverse configurations of the extinguishing system. At a minimum, the following parameters are evaluated during fire testing:

- Area of coverage for each nozzle
- Location of nozzles with respect to the protected area
- Caps on nozzles
- Minimum system operating temperature
- Maximum piping and discharge nozzle limitations, including the most conservative piping configuration, length of pipe, number of fittings, and discharge nozzle configuration
- Minimum flow rate for the nozzle
- Maximum system operating temperature
- Minimum piping and discharge nozzle limitations including the lease conservative piping configuration, length of pipe, number of fittings, and discharge nozzle configuration
- Maximum flow rate for the nozzle

During testing, the fire is required to develop to a size within protection limitations specified in the design. The design is qualified by observation of successful fire extinguishment during the test. The qualified design limitations are flowed into the FM approved manuals that specify the design parameters for the pre-engineered systems. Both the Amerex and Ansul systems are proprietary and flow rates are not provided in the FM approved manuals.

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B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

Background Summary (continued)	However, as part of the listing process for flow distribution tests, the manufacturer's installation instructions are required to be within the limitations fire test performed. Therefore, flow rate requirements are ensured by following the limitations provided in the applicable manufacturer's FM approved installation manuals. The manuals specify the maximum/minimum hose lengths, number of nozzles, number of fittings, operating temperatures, etc., to ensure that the qualified design rates are achieved. The FSS on UNDERGROUND vehicles/equipment with a significant combustible liquid capacity that have a FSS required by the hazard analysis completed per NFPA 122 are fully Factory Mutual approved and/or Underwriters Laboratory listed and comply with the requirements for pre-engineered FSSs. The systems are installed and tested per NFPA 17/17A design to ensure that all required features (including detection, annunciation, automatic and manual actuation features) are incorporated into the vehicle FSS, and that they are designed and tested in accordance with requirements for pre-engineered FSSs. Both the dry and wet chemical FSSs manufactured by Ansul and Amerex are FM approved systems. NFPA 17 and NFPA 17A along with the manufacturers provide specific details for Inspection, Maintenance, and Recharging of the systems. Compliance with NFPA 17 and 17A requirements ensure that only system components referenced in the manufacturer's design, installation and maintenance manual or alternative suppliers' components that are listed for use with the specific extinguishing system shall be used.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

Application to Safety Analysis

The DSA (Ref. 4) identified the potential for pool fires in the WASTE SHAFT STATION, along the TRANSPORT PATH and near a WASTE FACE. A pool fire resulting from a breached combustible liquid tank or a spill could impact the CH WASTE CONTAINERS and cause a release of airborne radiological materials. The safety analysis identified a potential for high radiological consequences to the Facility and co-located workers.

The DSA credits the FSS required by the hazard evaluation completed per NFPA 122 and installed per the NFPA 17/17A requirements on the vehicles/equipment to extinguish a vehicle/equipment fire in the developing stage before the fire can impact the CH WASTE CONTAINERS in the AFFECTED AREA. This action will prevent the radiological material release. A pool fire can result from vehicle/equipment fires, collisions/impacts, or from a fuel spill/leak in the presence of an ignition source. Activation of the vehicle/equipment FSS by the operator or automatic activation upon detection of a developing stage fire will extinguish the fire on the vehicle/equipment and may prevent a small pool fire associated with a leak from the vehicle/equipment before it grows and impacts the WASTE CONTAINERS. The credited control is the automatic activation of the FSS with operator activation a noncredited additional measure.

DOE-STD-5506-2007 describes the potential damage to WASTE CONTAINERS caused by non-engulfing pool fires and exposure fires (radiant heat exposure on one side of the WASTE CONTAINER). Exposure fires result only in damage to a container's seal (seal failure) and do not cause lid ejection. Seal failure is only possible if the container receives a sufficient radiant heat flux. Appendix C of the DOE Standard cites a conservative heat flux criterion of 15.9 kW/m^2 below which seal failure does not occur.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

Application to Safety Analysis (continued)

The minimum standoff distance from a CH WASTE FACE is a calculated distance intended to prevent significant damage to WASTE CONTAINERS from an (exposure) pool fire involving vehicles/equipment that have significant combustible liquids. The UNDERGROUND vehicle/equipment FSS is credited with reducing the likelihood of a fire involving the vehicle/equipment or combustible liquids that could impact the CH WASTE CONTAINERS and result in a radioactive material release.

The UNDERGROUND vehicles/equipment with a significant combustible liquid capacity that require an automatic FSS were determined by the hazard evaluation completed per the NFPA 122 requirements. WIPP-058 describes the methodology for developing liquid combustible limits for the vehicles that have the potential to plug the HEPA filters. The UNDERGROUND vehicle/equipment FSS is credited with reducing the likelihood of a fire involving the vehicle/equipment or combustible liquids that could impact the CH WASTE CONTAINERS and result in a radioactive material release.

WIPP-058, *DSA Supporting Calculations, Fuel Spill, HEPA Filter Plugging, and Compartment Over Pressurization*, concludes that a liquid combustible spill, from a Lube Truck loaded to fluid capacity in a 16-foot drift, extends approximately 108 feet on each side of the spill. Additionally, a standoff distance of approximately 8 feet from the edge of the pool is sufficient to maintain the radiant heat flux to less than 15.9 kW/m^2 on the CH WASTE CONTAINERS. The distance for the safety analysis is conservatively established as 200 feet for the Lube Truck (LCO 3.3.5).

For vehicles/equipment with smaller quantities of liquid combustible, the minimum standoff distances are provided in DSA Chapter 5.0, Section 5.5.2. DSA Section 5.5.2 uses the methodology in WIPP-058 for calculating standoff distances, and provides the standoff distance as a function of the quantity of liquid combustible associated with the vehicles/equipment. Within these distances to a CH WASTE FACE, UNDERGROUND vehicles/equipment are required to have an automatic FSS. The values in DSA Section 5.5.2 are conservatively calculated for UNDERGROUND vehicles/equipment that have a FSS required by the NFPA 122 analysis.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

Application to Safety Analysis (continued)

Therefore, any vehicle/equipment that contains significant combustible liquids (e.g., fuel or hydraulic fluid either singly or in combination) that can be within the minimum standoff distance as specified in Table 3.1.2-1 of a CH WASTE FACE, in the TRANSPORT PATH when CH WASTE is present, or in the WASTE SHAFT STATION when CH WASTE is present must have an OPERABLE FSS.

To ensure the safety analysis is protected, credit is taken for the automatic FSS required per NFPA 122 requirements on vehicles and equipment, with a significant combustible liquid capacity, that are that will be operating less than or equal to the minimum standoff distance as specified in Table 3.1.2-1 from a CH WASTE FACE, in the TRANSPORT PATH when CH WASTE is present in the TRANSPORT PATH, or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. Selected for use means the vehicles/equipment that are designated EACH SHIFT to be used for activities in the areas noted.

If a vehicle/equipment does not have a FSS required based on the evaluation completed per the NFPA 122 requirements, the vehicle/equipment is not subject to this LCO.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

LCO

This LCO addresses the OPERABILITY requirements of the UNDERGROUND vehicles/equipment with a FSS required by the hazard evaluation completed per NFPA 122 on vehicles/equipment with significant combustible liquids and states:

The FSS on UNDERGROUND vehicles/equipment required by the hazard evaluation completed per NFPA 122 SHALL be OPERABLE. An OPERABLE FSS consists of the following elements:

- Control Panel with functional status indicating light(s).
- Control Panel with functional audible tone indication.
- Functional automatic fire detection system.
- Charged suppressant system in accordance with Table 3.1.2-2.
- Components required to disperse the suppression agent.
- Functional automatic engine/motor shutdown.

This LCO applies to any UNDERGROUND vehicle/equipment with an automatic FSS required by the evaluation completed per NFPA 122 that is within the minimum standoff distance as specified in Table 3.1.2-1, or transporting WASTE.

The UNDERGROUND vehicle/equipment FSS is composed of the following components. The status lights and audible tone indication (i.e., a green credited and red or yellow noncredited lights on the Control Panel) indicate the status of the system as being OPERABLE or NOT OPERABLE based on the Control Panel monitoring of the system. A heat sensor system (fire detection) that runs within significant fire hazard areas. The temperature detection elements measure the temperature and upon the elevated temperatures from a fire send a signal to the controller to discharge the suppressant.

The Control Panel interprets the heat detection signals, initiates discharge of the system, shuts down the vehicle engine/motor, and performs diagnostic tests of the system to confirm the system is OPERABLE. The suppressant is a wet or dry chemical fire suppressant that is stored in a container and is dispersed through the fire hazard area. As the suppressant is being discharged, the Control Panel also sends a signal to shutdown the engine/motor to limit the amount of combustible liquid that will be available for the fire.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

LCO (continued)

In both the dry and wet chemical systems, there are no operator replaceable components and the operator cannot change the system control parameters.

Sensors are located in expected fire source locations to provide the necessary monitoring in areas of the engine/motor compartment and other areas vulnerable to fire. The systems installed on WIPP UNDERGROUND vehicles/equipment are generally a linear detection cable run throughout the hazard area. The detection cables detect the heat from a fire and provide an input into the Control Panel. The Control Panel interprets the signal from the detection cable and initiates discharge activation. Relay timers provide a signal to shutdown the engine/motor when the controller initiates discharge of the suppressant. A suppression system status light indicates the system monitoring and actuation functions are OPERABLE.

The Amerex agent cylinders are initially charged to a nominal 350 psi at 70°F from the factory. Each Amerex agent cylinder is equipped with a pressure gauge with a tic mark at 350 and a green pie area to provide indication that the system is charged. The green pie area of the gauge indicates the operable pressure range of the system. Minimum and maximum values are not provided on the gauge; however, the green pie area on the system is intended to provide an operator or inspector an acceptance criterion to verify the system is operable. The system is operable when the yellow pointer on the agent cylinder pressure gauge is in the green pie area. The operable design ranges are determined and qualified during the FM approval process and protected by incorporation into the FM approved Amerex installation manuals. The FM approval requires the working pressure for the gauges to exhibit an accuracy of ± 4 percent and a full scale accuracy of ± 15 percent. The pressure gauge is initially installed to meet this requirement at the factory. Each Amerex agent cylinder is subject to a six-year internal examination required by NFPA 17/17A where depressurization of the stored pressure cylinder is required. After the examination is complete, the system is to be recharged in accordance with the applicable Amerex design, installation, and maintenance manual. The Amerex manual requires that the system be recharged to a nominal 350 psi at 70°F and to confirm pressurization by using a calibrated pressure gauge, corresponding to the requirements of the FM approval and original factory install conditions.

The pressure gauges are not connected to the inputs to the Control Panel, however a low-pressure switch that is mounted on each agent cylinder is connected to the control panel.

The Ansul system relies on measurement of cylinder weight and volume of agent as specified in Table 3.1.2-2 to determine whether the system is adequately charged with suppressant.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

MODE Applicability

CH WASTE is present in the UNDERGROUND during WASTE HANDLING, DISPOSAL. In WASTE HANDLING, CH WASTE is moved from the Waste Conveyance at the WASTE SHAFT STATION along the TRANSPORT PATH to the ACTIVE CH WASTE DISPOSAL ROOM. WASTE HANDLING ACTIVITIES use WASTE HANDLING VEHICLES/EQUIPMENT with a combustible liquid capacity. The vehicles/equipment are susceptible to a vehicle fire or a fire resulting from fuel leaks and vehicle collisions.

This LCO is applicable at all times for vehicles/equipment during WASTE HANDLING when CH WASTE is present in the WASTE SHAFT STATION; when CH WASTE is present in the TRANSPORT PATH; and when UNDERGROUND vehicles/equipment having significant liquid combustible quantities are less than or equal to the minimum standoff distance from a CH WASTE FACE as specified in Table 3.1.2-1. It also applies to non-waste handling vehicles/equipment with a FSS required by the hazard evaluation completed per NFPA 122 that are less than or equal to the minimum standoff distance as specified in Table 3.1.2-1 of a CH WASTE FACE in the WASTE HANDLING MODE. In DISPOSAL MODE, the LCO is applicable when UNDERGROUND vehicles/equipment with a safety significant FSS required by the NFPA 122 hazards analysis are less than or equal to the minimum standoff distance as specified in Table 3.1.2-1 from a CH WASTE FACE. As indicated in Table 3.1.2-1, LCO 3.1.2 does not apply to vehicles/equipment with less than or equal to 29 gallons of total liquid combustible capacity. Vehicles/equipment with less than or equal to 29 gallons of total liquid combustible capacity do not require a safety significant FSS and have no standoff distance requirements. DSA Chapter 4.0, Section 4.4.5, *Underground Ventilation System*, evaluated the impact of incremental filter loading during a fire for which the UVS is credited for mitigation. The limiting case of plugging of HEPA filters is associated with UVS, which could occur with greater than 29 gallons of diesel fuel. When vehicles/equipment that could be near the WASTE FACE that have a combined quantity of diesel and hydraulic fluid that exceed 29 gallons, they are required to have a safety significant FSS in accordance with NFPA 122. As demonstrated in DSA Chapter 4.0, Section 4.4.2, *Underground Vehicle/Equipment Fire Suppression Systems*, these systems are credited with detecting and suppressing an incipient fire, thereby limiting the size of the fire and the resultant smoke and particulate loading of the HEPA filters.

MODE applicability is at all times in either WASTE HANDLING, DISPOSAL. Therefore, this LCO is applicable when the UNDERGROUND is in WASTE HANDLING, DISPOSAL.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a 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 WASTE HANDLING VEHICLES/EQUIPMENT with a combustible liquid capacity are conducted in the UNDERGROUND. Non-WASTE HANDLING ACTIVITIES using vehicles/equipment with a combustible liquid capacity could also be in close proximity to a CH WASTE FACE while in WASTE HANDLING or DISPOSAL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION or in the TRANSPORT PATH when CH WASTE is present in the TRANSPORT PATH. Therefore, this LCO only applies to the UNDERGROUND PROCESS AREA.
ACTIONS	
A.1	Note 1 clarifies that liquid combustibles being transported (e.g., 300-gallon fuel tank or drums containing liquid combustibles) are included in the total capacity of the vehicle/equipment transporting the liquid combustible when evaluating the standoff distance requirements in Table 3.1.2-1. DAILY (prior to use of the vehicle/equipment), SR 4.1.2.1 must be completed which ensures that only vehicles/equipment with an OPERABLE FSS are in use. However, it is possible for an OPERABLE FSS to become NOT OPERABLE during use. Therefore, the ACTIONS in Conditions A are applied to vehicles/equipment in which the green (credited) or red or yellow (noncredited) FSS status lights indicate the system may be NOT OPERABLE after the vehicle/equipment is placed in use. This ACTION requires that an ATTENDANT be assigned to the vehicle/equipment upon discovery that the FSS is NOT OPERABLE as indicated by the absence of the green status light (i.e., credited green status light is not illuminated or flashing and/or noncredited red or yellow status light is illuminated or a sounding tone). The addition of the ATTENDANT will minimize the potential for vehicle/equipment impacts or collisions that could result in combustible liquid leaks and reduce the risk that a fire could impact the CH WASTE. The ATTENDANT will look for leaks or spills of the combustible liquids from a vehicle and identify potential ignition sources and potential collision conditions. A Completion Time of IMMEDIATELY limits the time a vehicle/equipment with an inoperable FSS poses an unmitigated fire risk to the CH WASTE. As is the case for all LCO conditions, the restoration of compliance with the LCO statement is preferred. The Required Action is taken along with the understood action of IMMEDIATELY, if possible, moving the vehicle/equipment with the inoperable FSS to greater than the minimum standoff distance as specified in Table 3.1.2-1 from the CH WASTE FACE.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

A.2 (continued)	DAILY (prior to use of the vehicle/equipment), SR 4.1.2.1 must be completed which ensures that only vehicles/equipment with an OPERABLE FSS are used. However, it is possible for an OPERABLE FSS to become NOT OPERABLE during use. Therefore, the ACTIONS in Conditions A are to be applied to vehicles/equipment in which the FSS status light(s) indicate the system may be NOT OPERABLE after the vehicle/equipment is placed in use. LCO 3.1.2 defines the elements necessary for the FSS required by the evaluation completed per the NFPA 122 requirements on UNDERGROUND vehicles/equipment with a combustible liquid capacity, to be considered OPERABLE. If any one or more of these elements are not met, the capability of the FSS to automatically detect and extinguish a fire is impaired and the UNDERGROUND vehicles/equipment FSS is considered NOT OPERABLE. Note that this Required Action applies to a FSS that is NOT OPERABLE even if the vehicle/equipment is otherwise OPERABLE. Note that in the options described below, the preferred option is to always move the vehicle/equipment with the inoperable FSS to greater than the minimum standoff distance, as specified in Table 3.1.2-1, from the CH WASTE FACE as this restores LCO compliance. If the FSS on non-WASTE HANDLING VEHICLES/EQUIPMENT is determined to be NOT OPERABLE, the affected vehicle/equipment must be placed in a SAFE CONFIGURATION IMMEDIATELY. This Required Action requires, with the presence and assistance of the ATTENDANT, moving an operable vehicle/equipment greater than or equal to the minimum standoff distance, as specified in Table 3.1.2-1, from a CH WASTE FACE or the WASTE SHAFT STATION IMMEDIATELY or the TRANSPORT PATH IMMEDIATELY as this will restore compliance with the LCO. If the vehicle/equipment with the NOT OPERABLE FSS is also inoperable (i.e., incapable of being moved under its own power), placing the vehicle/equipment in a SAFE CONFIGURATION may require shutting off the vehicle engine/motor and taking other steps to minimize the potential for a fire or collision with the inoperable vehicle. If the vehicle is shut off while waiting for the ATTENDANT or for other reasons, this Required Action will allow restarting the vehicle to move it without completion of SR 4.1.2.1 IMMEDIATELY prior to starting the vehicle.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

A.2 (continued)

This may include efforts to move the vehicle to greater than the minimum standoff distance, as specified in Table 3.1.2-1, from the CH WASTE FACE as this would restore LCO compliance. Other vehicles/equipment cannot be in the TRANSPORT PATH and other controls enforce this prohibition. This ensures that the vehicle/equipment with the NOT OPERABLE FSS is in a condition that significantly reduces the fire risk or the vehicle is at a distance where a fire involving the vehicle/equipment will not affect the CH WASTE.

If the FSS on the WASTE HANDLING VEHICLE/EQUIPMENT is determined to be NOT OPERABLE while transporting or emplacing CH WASTE, placing the vehicle/equipment in a SAFE CONFIGURATION may include maintaining the presence of the ATTENDANT and shutting off the vehicle/equipment engine/motor and taking other steps to prevent a potential fire or collision with the vehicle. If the vehicle is shut off while waiting for the ATTENDANT or for other reasons, this Required Action will allow restarting the vehicle to move it. For WASTE HANDLING VEHICLES/EQUIPMENT another option to placing the vehicle/equipment in a SAFE CONFIGURATION may include transferring the CH WASTE to a vehicle/equipment with an OPERABLE FSS from the vehicle/equipment with the inoperable FSS. The intent is to reduce the risk of a fire that could impact the CH WASTE from the vehicle with an inoperable FSS. This will allow moving the vehicle with the NOT OPERABLE FSS to greater than the minimum standoff distance as specified in Table 3.1.2-1 from a CH WASTE FACE or removal from the WASTE SHAFT STATION or from the TRANSPORT PATH, as applicable. Another option to ensure the vehicle will not present an increased fire risk may be that with the ATTENDANT to continue the transport for a short distance and place the CH WASTE in the WASTE FACE, and move the vehicle/equipment the minimum standoff distance as specified in Table 3.1.2-1 from the CH WASTE FACE. The fire risk is minimized with the ATTENDANT and the Facility Pallet through transition from the transporter to the waste handling forklift. Once removed from the Facility Pallet the risk is minimized with the ATTENDANT and the UVS. The IMMEDIATE Completion Time limits the time fire events could impact the CH WASTE.

The ACTION applies to UNDERGROUND vehicles/equipment with a FSS in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION, when CH WASTE is present in the TRANSPORT PATH in the TRANSPORT PATH, and within the minimum standoff distance as specified in Table 3.1.2-1 from a CH WASTE FACE.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

A.3.1	This Required Action requires the vehicle/equipment with the NOT OPERABLE FSS to be replaced with a vehicle/equipment with an OPERABLE FSS. If the FSS becomes NOT OPERABLE during use, replacing the vehicle/equipment with the NOT OPERABLE FSS with a vehicle/equipment with an OPERABLE FSS minimizes the potential for fire events. Replacing the WASTE HANDLING VEHICLE/EQUIPMENT having a NOT OPERABLE FSS with a WASTE HANDLING VEHICLE/EQUIPMENT having an OPERABLE FSS will allow completion of one of the options in Required Action A.2. Specifically, it will allow moving the CH WASTE from the vehicle/equipment with the inoperable FSS to the replacement vehicle/equipment with the OPERABLE FSS, which will reduce the fire risk to the CH WASTE. Once the vehicle/equipment with the inoperable FSS is removed from the WASTE SHAFT STATION or from the TRANSPORT PATH, as applicable or is greater than the minimum standoff distance as specified in Table 3.1.2-1 from the CH WASTE FACE, LCO Compliance has been restored and Condition A can be exited. A Completion Time of 4 Hours provides adequate time to replace a vehicle/equipment with an OPERABLE FSS.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

A.3.2	This Required Action requires that if there is no vehicle/equipment with an OPERABLE FSS available for use, WASTE HANDLING ACTIVITIES must be suspended except for those ACTIVITIES directly related to the affected vehicle. Selected ACTIVITIES such as moving the WASTE from the affected vehicle/equipment with the NOT OPERABLE FSS to another vehicle or moving the CH WASTE to the CH WASTE FACE and offloading the WASTE from the affected vehicle is allowed by this Required Action. SUSPENDING all other WASTE HANDLING ACTIVITIES minimizes the potential for a fire that could affect the CH WASTE. SUSPENDING WASTE HANDLING ACTIVITIES allows a minimum number of discrete steps to place the WASTE in a SAFE CONFIGURATION. If the Actions in A.3.1 cannot be completed in 4 Hours, the WASTE may still be on the Waste Transporter. This Action allows placing the WASTE at risk in a SAFE CONFIGURATION as part of the WASTE suspension ACTIVITIES. This may involve placing the CH WASTE in a SAFE CONFIGURATION, moving a WASTE HANDLING VEHICLE with an OPERABLE FSS to the NOT OPERABLE vehicle/equipment and moving the CH WASTE from the vehicle/equipment with the NOT OPERABLE FSS to a vehicle/equipment with an OPERABLE FSS. The intent is to minimize the fire risk to the WASTE. Note that LCO 3.3.8 will require the vehicle to be ATTENDED. This Action will continue until the FSS on a suitable vehicle/equipment is restored to an OPERABLE condition. A Completion Time of 4 Hours ensures the potential for a vehicle or pool fire to impact the WASTE is minimized.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

ACTIONS (continued)

A.4	This Required Action requires restoration with LCO compliance. This action requires completion of any one of several actions. This may include moving the vehicle with the inoperable FSS to a distance greater than the minimum standoff distance as specified in Table 3.1.2-1 from the CH WASTE FACE or removing the vehicle from the WASTE SHAFT STATION or TRANSPORT PATH, as applicable. Alternatively, repairing the inoperable FSS will restore compliance with the LCO. Another action may involve moving any CH WASTE from an inoperable WASTE HANDLING VEHICLE to an OPERABLE WASTE HANDLING VEHICLE and moving the CH WASTE beyond the inoperable WASTE HANDLING VEHICLE toward the ACTIVE WASTE FACE for emplacement. The intent is to prevent a vehicle fire or a combustible liquid pool fire associated with a vehicle from impacting the WASTE and causing a seal failure or lid ejection. Any action that either restores the inoperable FSS to an OPERABLE status or moves the vehicle at least the minimum standoff distance as specified in Table 3.1.2-1 from the CH WASTE FACE, or removes the WASTE from the IN OPERABLE vehicle/equipment from the WASTE SHAFT STATION or TRANSPORT PATH, as applicable, restores compliance with the LCO. A Completion Time of 30 Days ensures the potential for a vehicle or pool fire to impact the WASTE is minimized.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

Surveillance Requirements

SR 4.1.2.1	This SR requires VERIFICATION DAILY (prior to use of the vehicle/equipment) that the FSS required by the evaluation completed per the NFPA 122 requirements on vehicles/equipment with a combustible liquid capacity is OPERABLE as evidenced by the Control Panel status light. The VERIFICATION, which is performed DAILY (prior to use), VERIFIES the FSS monitoring and actuation functions are OPERABLE as indicted by the illumination of the green system status light only, solid or flashing and will function as expected in the event of a fire. This SR VERIFIES that the wet or dry chemical cylinder has not discharged and the system is OPERABLE based on the signals received and processed by the Control Panel. If all components of the FSS are OPERABLE as determined by the Control Panel inputs, only the green status light is illuminated on either system. Note that the green status light is the only light that is credited to VERIFY system operability provided no other lights or audible tones are indicated. This complies with the manufacturer's recommendations and VERIFIES that the FSS, to include the credited green status light and Control Panel, on the selected vehicle is in an OPERABLE status. The manufacturer guidance in the operating manual is that this VERIFICATION be performed DAILY. However, the VERIFICATION FREQUENCY has been amended to be performed prior to starting the vehicle for the first time on the shift in which the vehicle is to be used. A Completion Time of DAILY (prior to use) ensures that the FSS on the vehicle/equipment is available to extinguish developing stage fires. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.1.2.2	This SR requires a FUNCTIONAL TEST of the vehicle/equipment FSS control system to VERIFY that the FSS is OPERABLE. This test SHALL be performed SEMIANNUALLY by a qualified fire systems technician. The test is normally performed in conjunction with the SEMIANNUAL maintenance completed on the FSS. The SEMIANNUAL FREQUENCY testing of this system is adequate based on the FSS manufacturer's recommendations and is per the requirements of NFPA 17/17A. As a minimum the test SHALL VERIFY the following components are OPERABLE: the Control Panel with functional status indicating light(s) and audible tone indication, automatic fire detection system, an adequately charged suppressant system, a distribution system for dispersing the suppressant, and the automatic engine/motor shutdown. The testing of the FSS is in accordance with the NFPA 17/17A criteria and the manufacturer's recommendations. The FUNCTIONAL TEST VERIFIES the Control Panel is OPERABLE by checking that the Control Panel input and output signals are functional. The Control Panel is tested by inputting a signal into the controller that simulates the action of the inputs and outputs of the Control Panel. The FUNCTIONAL TEST verifies the Control Panel is operable by inputting various trip (e.g., high temperature and low pressure) and system status signals into the controller and obtaining the correct system response for the various system components as required by the system manufacturer. The FUNCTIONAL TEST VERIFIES the status lights are working correctly, the heat detection device will accurately detect a heat source based on the specific heat detection temperature for each vehicle/equipment and upon detection sends a signal to the system Control Panel to actuate the suppressant, that the discharge system is capable of distributing (e.g., is in the proper pressure range) the suppressant and a simulated signal is sent to automatically shut down the vehicle/equipment engine/motor. In addition, for the dry chemical system, an inspection to VERIFY there is no evidence of caking of the Ansul System dry powder suppressant in the cylinder SHALL be completed. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.1 Fire Suppression Systems (continued)

B3.1.2 UNDERGROUND Vehicles and Equipment with a Fire Suppression System (continued)

Bases (continued)

References

1. Deleted.

2. WIPP-023, *Fire Hazard Analysis for the Waste Isolation Pilot Plant* (current revision), Waste Isolation Pilot Plant, Carlsbad, NM.

3. ETO-Z-403, *Evaluation of Using Ansul LVS Fire Suppression System in Lieu of a Dry Chemical Fire Suppression System*, Waste Isolation Pilot Plant, Carlsbad, NM, May 2017.

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. Deleted.

6. WIPP-058, *DSA Supporting Calculations, Fuel Spill, HEPA Filter Plugging, and Compartment Over Pressurization.*

B3/4.2 Confinement Ventilation Systems

B3.2.1 CH WASTE Handling Confinement Ventilation System

Bases

Background Summary

The CH WH CVS exhaust system is designated as HV01 CVS (Ref. 1). The system is designed to maintain the CH BAY and ROOM 108 air space at a pressure that is negative with respect to the outside ambient air pressure and the RH Bay pressure to ENSURE air from the CH BAY and ROOM 108 is filtered prior to being released to the outside environment.

Components used to control the negative differential pressures within the PROCESS AREAS of the WHB are the air supply fans, air ducts and dampers, exhaust fans, and a pressure control system, which maintain negative differential air pressure with respect to outside ambient air pressure in the CH BAY and ROOM 108.

Air is supplied to the CH BAY Area from one of two CH WH CVS air handling units. CH BAY and ROOM 108 air is exhausted by one of two exhaust fans that draw air through one of two parallel HEPA filter units.

Two CH WH CVS HEPA Filter Trains provide the air filtration function for exhaust air from CH BAY and ROOM 108. Each CH WH CVS HEPA Filter Train includes the air handling unit supply fan, HEPA filter unit, and an exhaust fan. Each HEPA filter unit consists of one moderate efficiency filter bank and two, in series, HEPA filter banks. The exhaust system is comprised of two exhaust fans and two HEPA filter units. Each HEPA filter unit is sized to support the air flow rate from one exhaust fan. The filter units are designated 41-B-814 and 41-B-815 and the exhaust fans are designated 41-B-816 and 41-B-817.

Each filter unit has an inlet and outlet electronically operated damper. A cross-connection is provided between the two exhaust trains located between the filter unit outlets and the exhaust fan inlets. An electronically 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 changeover 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)	Pressure differential gauges are provided to ENSURE that negative differential pressures are maintained within the CH BAY and ROOM 108 with respect to outside ambient air pressure and the RH Bay pressure. The differential pressure with respect to outside ambient air pressure is measured by a pressure differential gauge located in the CH BAY and another pressure differential gauge located in ROOM 108. The differential pressure between the RH Bay and the CH BAY is measured by a differential pressure gauge located in the RH Bay. Likewise, pressure differential gauges are used to indicate the differential pressures across each HEPA filter bank of the IN SERVICE HEPA filter units to ENSURE that exhaust air is being drawn through the HEPA filter units prior to release to the environment. The differential pressure across each HEPA filter bank of each HEPA filter unit is read locally by a pressure differential gauge for each HEPA filter bank.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

Application to Safety Analysis

The DSA (Ref. 2) identified events involving pool fires, ordinary combustible material fires, internal CH WASTE CONTAINER fires, and impact of CH WASTE CONTAINER by pressurized container impacts that could occur within the CH BAY and ROOM 108. Each of these events can release radiological material into the CH BAY atmosphere, which if left unfiltered could be released to the environment and affect co-located workers outside of the WHB. The hazard analysis identified a potential for high consequences to co-located workers.

Assumptions for the analysis (DSA Chapter 3.0, Section 3.3.2) include the following:

- Waste generator sites' compliance with the WIPP WAC.
- The WHB design (e.g., metal and concrete construction) minimizes the likelihood of ignition and/or propagation of fires.
- The WHB design wind velocity exceeds the basic wind velocity specified for the geographical location of the WIPP facility.
- The WHB design and construction can withstand the design-basis earthquake.
- Type B SHIPPING PACKAGES provide robust confinement of radiological materials.

Using a CH exhaust fan to draw the CH atmosphere through a HEPA filter with greater than or equal to 99% efficiency reduces the consequences to co-located workers. An IN SERVICE exhaust fan provides the required negative differential pressure with respect to outside atmospheric air pressure in the CH BAY and ROOM 108 to ENSURE all air is exhausted through an OPERABLE HEPA filter unit. The HEPA filter unit ENSURES that the exhaust air is filtered. Therefore, the operation of one CH WH CVS exhaust fan drawing through either exhaust HEPA filter unit is sufficient to provide the safety function assumed in the DSA.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

LCO

The LCO states:

The CH WH CVS SHALL be OPERABLE. An OPERABLE CH WH CVS consists of the following elements:

- Differential pressure across each IN SERVICE HEPA unit's HEPA filter banks is equal to or within the range of +3.90 inches w.g and +0.30 inches w.g. locally
- Differential pressure less than or equal to -0.04 inches w.g. in CH BAY with respect to ambient outside air pressure, locally.
- Differential pressure less than or equal to -0.04 inches w.g. in ROOM 108, with respect to ambient outside air pressure locally.
- One exhaust fan (41-B-816 or 41-B-817) IN SERVICE.
- One OPERABLE HEPA filter unit (41-B-814 or 41-B-815) IN SERVICE.
- IN SERVICE HEPA filter unit efficiency of greater than or equal to 99%.
- OPERABLE pressure differential instrumentation as identified in Table 3.2.1-1.
- Differential pressure greater than or equal to +0.03 inches w.g. in the RH Bay with respect to the CH BAY.

This LCO addresses the OPERABILITY requirements for the CH WH CVS. This lowest functional capability is met by an operating CH WH CVS exhaust fan maintaining a negative pressure with respect to the environment and the RH Bay, and drawing CH BAY or ROOM 108 atmosphere through an OPERABLE HEPA filter before discharging 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 pool fires, combustible material fires, and internal CH WASTE CONTAINER fires. Therefore, an OPERABLE CH WH CVS is satisfied by one operating exhaust fan aligned to and drawing air through an OPERABLE HEPA filter unit.

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.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

LCO (continued)

The HEPA filter units (41-B-814 or 41-B-815) are considered OPERABLE when the differential pressure across each HEPA filter bank of each IN SERVICE HEPA filter unit measured locally is equal to or within the range of +3.90 inches w.g. and +0.30 inches w.g., and each HEPA filter bank of each HEPA filter unit has been tested to ENSURE it is greater than or equal to 99% efficient.

The HEPA filter bank high value is based on a safety analysis differential pressure of less than +4.0 inches w.g. and applying calculated instrument loop uncertainty (as analyzed in Section 4.4.6.4, *System Evaluation*), which gives a value of +3.90 inches w.g. The maximum differential pressure allowed ensures that the HEPA filter banks are functioning properly and that the HEPA filter unit banks are not clogged or damaged. Establishing a maximum differential pressure limit also prevents filter blowout that could release unfiltered air into the exhaust stream.

Likewise, the HEPA filter bank minimum differential pressure ensures that the HEPA filter banks are not being bypassed. This value is based on a safety analysis differential pressure of greater than +0.20 inches w.g. and applying calculated instrument loop uncertainty (as analyzed in Section 4.4.6.4, *System Evaluation*). The instrument uncertainty for the pressure differential local gauges gives a value of +0.30 inches w.g. for the minimum differential pressure allowed.

Instrumentation for each pressure differential local gauge as indicated in Table 3.2.1-1 is CALIBRATED ANNUALLY to ENSURE its assumed accuracy. The values for the acceptable ranges for local pressure instrumentation in the tables may contain different numbers for the same instrument loop. This fact is based upon the applied uncertainties for the gauges may possess different values. However, each listed value supports OPERABILITY from the safety analysis.

Each HEPA filter bank of each IN SERVICE HEPA filter unit is tested ANNUALLY in accordance with ASME N510 to provide filtration efficiency of greater than or equal to 99%. The in-place leak test described by ASME N510 is used to conduct a periodic surveillance to reconfirm the performance of the HEPA filtration system. The in-place leak test confirms the safety basis assumptions of filtration system efficiency greater than 99 percent. The in-place leak tests use a poly-dispersed aerosol test and determines the system efficiency of each HEPA filter bank is greater than or equal to 99% accounting for the system components (i.e., gaskets, frame, housing, etc.) that are typically challenged. The test is performed under actual conditions and at operational airflow. For the HEPA filter unit to be considered OPERABLE with respect to efficiency, both filter banks in the unit must be greater than 99%.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

LCO (continued)

CH WH CVS OPERABILITY requires that a differential pressure is maintained of less than or equal to -0.04 inches w.g. in the CH BAY and less than or equal to -0.04 inches w.g. in ROOM 108 with respect to outside ambient air pressure when read locally. This value is based on a safety analysis differential pressure of being less than outside ambient air pressure (i.e., -0.01 inches w.g.) and applying calculated instrument loop uncertainty for the CH BAY (as analyzed in Section 4.4.6.4, *System Evaluation*), which gives a value of -0.04 inches w.g for the CH BAY. The instrument uncertainty value for ROOM 108 (as analyzed in Section 4.4.6.4, *System Evaluation*) also gives a value of -0.04 inches w.g.

CH WH CVS OPERABILITY also requires differential pressure greater than or equal to +0.03 inches w.g. in the RH Bay with respect to the CH BAY. This value is based on a safety analysis differential pressure value of +0.01 inches w.g. and applying an instrument loop uncertainty of +0.02 inches w.g. (CALC-22-004), which gives a value of +0.03 inches w.g. for the RH Bay.

CH WH CVS OPERABILITY also requires that the pressure differential gauges with associated instrumentation identified in Table 3.2.1-1 are CALIBRATED ANNUALLY to ENSURE assumed accuracy.

CH WH CVS OPERABILITY ensures the flow of air from the CH BAY or ROOM 108 exhausts through a HEPA filter in order to provide the required level of mitigation for pool fires, combustible material fires, and internal CH WASTE CONTAINER fires. Operation of the RH Bay ventilation system (Exhaust Fans 41-B-805, 41-B-806, 41-B-878a, and 41-B-878b) can affect the ventilation flow path to the CH WH CVS HEPA filter. Configurations within the WHB can exist that could make the RH Bay / Hot Cell Complex and the Conveyance Loading Room more negative with respect to the CH BAY. For example, with the RH Bay CVS operating, the building ventilation could potentially discharge through the uncredited RH WH CVS bypassing the credited CH WH CVS. The configurations of potential concern include starting an exhaust fan in the RH Bay ventilation system, removing the Upper Hot Cell shield plug with the CUR shield door open, opening Lower Hot Cell Door 153, or opening either Door 145 or 146 in conjunction with Doors 142 or 155.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

LCO (continued)

To ensure that airflow in the CH BAY and ROOM 108 flows through the SS credited CH WH CVS, local differential pressure gauges are used to monitor air flow. Differential pressure between the RH Bay and CH BAY is measured using a SS local gauge (411-PDI-059-36) and is routinely monitored by performance of the surveillance requirement at the specified periodicity. This ensures the CH BAY is maintained at a lower pressure relative to the RH Bay.

DSA Chapter 4.0, Section 4.4.6.2, in Section *4.4.6, Contact-Handled Waste Handling Confinement Ventilation System*, considered the effectiveness of the CH WH CVS and determined that certain releases would not be fully entrained within the CH BAY exhaust air flow. That is, CH BAY air may be drawn into the RH Bay or into the CLR.

The RH Bay flow path is resolved as described above. Smoke testing of the CH BAY was required to assess which areas of the CH BAY can be reliably exhausted through the CH WH CVS. DSA Chapter 4.0, Section 4.4.6.2, *System Description*, describes the area as being within the CVS ZONE. The CVS ZONE is depicted in Figure 3.2.1-1. Loss of gauge 411-PDI-059-36 OPERABILITY or RH Bay differential pressure restricts the use of the RH Bay ventilation system exhaust fans and the removal of the Upper Hot Cell shield plug. For events occurring with CH Waste outside the CVS ZONE, the CH WH CVS could not reliably exhaust and filter a release. Chapter 4.0, Section 4.4.6, describes the CVS ZONE that could be reliably exhausted in the event of a release. Events involving CH Waste outside of the CVS ZONE require alternative means to mitigate the risk (see SACs 5.5.11 and 5.5.12). With CH Waste only located in the CVS ZONE, the filtration of any release by the CH WH CVS is ensured.

Differential pressure monitoring between the RH Bay and CH BAY COMPLEX is credited in the WHB to ensure WHB ventilation always exhausts through the CH WH CVS.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

MODE Applicability	CH WASTE is brought into the CH BAY or ROOM 108 in CLOSED Type B SHIPPING PACKAGES. The Type B SHIPPING PACKAGES are opened and CH WASTE is removed, prepared, and transferred to the Waste Shaft Conveyance for disposal in the UNDERGROUND. Some CH WASTE may be stored in the CH BAY for a time period prior to transfer to the UNDERGROUND. This CH WASTE may be subject to fires, container drops, or impacts to CH WASTE CONTAINERS when the CH WASTE is outside the CLOSED Type B SHIPPING PACKAGES. Because CH WASTE is allowed to be outside of CLOSED Type B SHIPPING PACKAGES in the WASTE HANDLING and WASTE STORAGE MODES, this LCO is applicable to both MODEs. When all CH WASTE in the CH BAY or ROOM 108 is in a CLOSED Type B SHIPPING PACKAGES or all CH WASTE is removed from the CH BAY and ROOM 108, then CH exhaust ventilation is not required. If there is no CH 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. CH WASTE enclosed in CLOSED Type B SHIPPING PACKAGES is protected during any credible event. Therefore, the CH WH CVS is not required to be OPERABLE when the CH BAY and ROOM 108 are in STANDBY MODE.
PROCESS AREA Applicability	The events identified in the safety analysis were located in the CH BAY within the CVS ZONE (depicted in Figure 3.2.1-1) and/or ROOM 108. Therefore, this LCO applies to the CH BAY within the CVS ZONE (depicted in Figure 3.2.1-1) and ROOM 108.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

ACTIONS A.1

Note 1 states "Fifteen minutes is allowed to clear CH BAY and/or ROOM 108 differential pressure exceedances, due to temporary ambient outside pressure effects, before entry into LCO." Sudden changes in the CH BAY and/or ROOM 108 differential pressure due to the use of an airlock door or due to windy conditions (gusts) can temporarily cause an increase in pressure in the CH BAY and/or ROOM 108 outside the CH WH CVS OPERABLE range. These situations are expected to occur, are of short duration, and are not indicative of a system failure. In such cases, allowing fifteen minutes for the situation to clear, prior to entering LCO 3.2.1, imposes no significant risk to workers or the public.

Condition A is entered if the CH WH CVS is NOT OPERABLE in an applicable PROCESS AREA. LCO 3.2.1 defines eight elements that are necessary for the CH WH CVS to be considered OPERABLE. In the event that any one or more of these elements are not met, then the capability of the CH WH CVS to filter potentially contaminated air during a fire or internal CH WASTE CONTAINER fire event is impaired and the CH WH CVS is considered NOT OPERABLE.

Note 2 states Condition A is not applicable to RH Bay Gauge 411-PDI-059-36 or RH Bay differential pressure loss. Instead enter Condition B. The differential pressure between the RH and CH BAYs only affects the size of the CVS ZONE within the CH BAY. The CH WH CVS is still OPERABLE and capable of performing its safety function within the CVS ZONE (Figure 3.2.1-2).

As permitted by LCO 3.0.4, an exception to its requirements is made for LCO Condition A. The exception permits the PROCESS AREA in Condition A to alternate from the WASTE HANDLING and WASTE STORAGE MODES for administrative purposes provided the Required Actions and associated Completion Times for the CONDITION are met (i.e., no new Completion Time clock for each MODE change). The current ACTIONS of the Condition do not require placement of the AFFECTED AREA into a defined MODE but allow continued operation provided the Required Actions and Completion Times are met. MODE changes that are of an administrative nature, (e.g., shift complement) do not result in a reduced safety posture in that the LCO allows continued operation for a limited time (i.e., 14 Days). Therefore, the movement between WASTE HANDLING and WASTE STORAGE MODES does not inject any additional risk than was previously allowed.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

A-1 (continued)	This Required Action requires that the introduction of additional CLOSED Type B SHIPPING PACKAGES containing WASTE into the CH BAY or ROOM 108 is IMMEDIATELY prohibited. This prohibition limits the amount of MAR in the PROCESS AREA and eliminates the risk from movement of CLOSED Type B SHIPPING PACKAGES into the AFFECTED AREA. This Condition allows waste handling and waste storage operations to continue with those packages already present in the PROCESS AREAS. The prohibition of additional CLOSED Type B SHIPPING PACKAGES containing WASTE prevents additional MAR from being introduced into the PROCESS AREA. This action limits the amount of MAR to the MAR already present when the Condition was entered. A Completion Time of IMMEDIATELY initiates prompt and sustained actions to prevent introduction of additional MAR and ACTIVITIES associated with movement of CLOSED Type B SHIPPING PACKAGES Containing WASTE.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

ACTIONS (continued)

A.2	The Required Action requires hot work ACTIVITIES not related to restoration of the CH WH CVS OPERABILITY to be stopped in the AFFECTED AREAS IMMEDIATELY. Hot work ACTIVITIES being conducted in the WHB have the potential to initiate a fire event. Therefore, if the CH WH CVS is NOT OPERABLE the risk of fires should be reduced. Stopping hot work ACTIVITIES reduces the likelihood of fire events. An exception is allowed for those hot work ACTIVITIES that could be necessary to restore the CH WH CVS to OPERABLE status. These specific hot work ACTIVITIES are allowed to continue until the CH WH CVS is returned to OPERABLE status. A Completion Time of IMMEDIATELY initiates prompt and sustained action to stop hot work not related to restoration of the CH WH CVS OPERABILITY and to properly secure the ACTIVITY and work area while minimizing the time-at-risk.
A.3	Required Action A.4 requires a ROVING FIRE WATCH to be established within 1 Hour and every 6 Hours thereafter at each location in the AFFECTED AREA(S) where WASTE storage ACTIVITIES are being conducted. A ROVING FIRE WATCH provides for a roving inspection of AFFECTED AREAS for the purpose of making fire safety observations, notifying building occupants and the CMR of an emergency, minimizing the potential for a fire to occur, and/or extinguishing incipient fires. A ROVING FIRE WATCH may have other duties between inspections. This Action reduces the potential for fire initiation and incipient fire growth. WASTE storage ACTIVITIES are allowed to continue during this Condition as there is low risk for a significant fire event to occur without observation with the ROVING FIRE WATCH in place. Combustible material loading is controlled by the Fire Protection Program and liquid-fueled vehicles and equipment are prohibited from being within the CH BAY or ROOM 108. Ignition sources in the WHB are limited. Additionally, the WHB FSS is required to be OPERABLE during the WASTE HANDLING and WASTE STORAGE MODES (LCO 3.1.1). An initial Completion Time of 1 Hour provides time to determine the WASTE storage ACTIVITIES locations and to identify qualified individuals and their assignments to perform the required ROVING FIRE WATCH. Performance of a ROVING FIRE WATCH every 6 Hours thereafter provides verification that no excessive combustible material accumulation has occurred or other conditions that could potentially initiate a fire. The 6 Hours is based upon the lack of transient combustible loading increase for storage activities.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

ACTIONS (continued)

A.4.1/A.4.2

These Required Actions provide an equivalent level of compensatory measures to be implemented within 14 Days in the event that the CH WH CVS is NOT OPERABLE. Required Action A.4.1 requires restoration of the CH WH CVS to OPERABLE status within 14 Days and A.4.2 requires placing the AFFECTED AREA(S) in STANDBY MODE within 14 Days.

Required Action A.4.1 requires the CH WH CVS to be restored to OPERABLE status within 14 Days. In the event that the CH WH CVS is NOT OPERABLE and Condition A was entered, Actions A.2 and A.3 have significantly reduced the potential for fire initiation in the AFFECTED AREAS by stopping hot work ACTIVITIES, and establishing a ROVING FIRE WATCH at locations where WASTE storage ACTIVITIES are being performed. Therefore, the risk of a large fire event is significantly reduced. The 14 Days allows WASTE CONTAINERS that are outside of their CLOSED Type B SHIPPING PACKAGES and in the CH BAY or ROOM 108 to be transferred to the UNDERGROUND for storage.

Additionally, determination of the cause of the Condition and efforts to restore the CH WH CVS is required. A Completion Time of 14 Days may be necessary to identify the cause of the CH WH CVS Condition, to obtain the necessary parts and/or components required to repair the CH WH CVS and to perform the work to restore the CH WH CVS OPERABILITY. A Completion Time of 14 Days is considered sufficient to restore the system while minimizing the time-at-risk.

Required Action A.4.2 requires the AFFECTED AREA(S) to be placed into STANDBY MODE within 14 Days from when the CH WH CVS was declared to be NOT OPERABLE and Condition A was entered. In this MODE, WASTE is not permitted to be present unless in a CLOSED SHIPPING PACKAGE. Site-derived WASTE (when present in the CH BAY or RH Bay) must be in a WASTE CONTAINER with the lid CLOSED. The Completion Time of 14 allows sufficient time to transfer WASTE CONTAINERS that are outside of their CLOSED Type B SHIPPING PACKAGES and in the CH BAY or ROOM 108 to the UNDERGROUND for storage or to restore the CH WH CVS OPERABILITY.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

ACTIONS (continued)

B.1

Condition B is entered if RH Bay gauge 411-PDI-059-36 is not OPERABLE or if RH Bay differential pressure is less than Table the 3.2.1-1 set point. In the event that either of these situations occur, The CH WH CVS is still OPERABLE and capable of performing its safety function within the CVS ZONE, therefore WASTE HANDLING ACTIVITIES are allowed to continue in the CH BAY provided required actions are met.

NOTE 3 states Condition B is not applicable to ROOM 108. The differential pressure between the RH and CH BAYs does not affect WASTE HANDLING ACTIVITIES in ROOM 108.

As permitted by LCO 3.0.4, an exception to its requirements is made for LCO Condition B. The exception permits the PROCESS AREA in Condition B to alternate from the WASTE HANDLING and WASTE STORAGE MODES for administrative purposes provided the Required Actions and associated Completion Times for the CONDITION are met (i.e., no new Completion Time clock for each MODE change). The current ACTIONS of the Condition allow continued operation for a limited time (i.e., 60 Days) provided the Required Actions and Completion Times are met. MODE changes that are of an administrative nature, (e.g., shift complement) do not result in a reduced safety posture in that the LCO allows continued operation for a limited time. Therefore, the movement between WASTE HANDLING and WASTE STORAGE MODES does not inject any additional risk than was previously allowed.

This Required Action requires aligning the RH Bay pressure to outside ambient air pressure or greater IMMEDIATELY. This action ensures a more positive air pressure in the RH Bay with respect to the CH BAY is maintained, maintains the integrity of the CVS ZONE in the CH BAY, and prevents building ventilation conditions that could potentially direct building exhaust through the uncredited RH WH CVS. This action may be achieved by opening one or more large RH Bay exterior doors (41-N-109). This action may also be achieved by ensuring at least one RH Bay air handling unit is operating. An initial Completion Time of IMMEDIATELY initiates prompt actions to prevent the possibility of air pressure in the RH Bay becoming more negative with respect to the CH BAY. Verification of this action every 12 Hours thereafter ensures that the RH Bay pressure alignment remains in the correct configuration. The FREQUENCY of 12 Hours is based on shift rotation.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

ACTIONS (continued)

B.2	This Required Action requires IMMEDIATELY ENSURING Doors 41-N-158 and 41-N-159 are closed. This action ensures the CVS ZONE integrity in the CH BAY is maintained, and prevents building ventilation conditions that could potentially direct building exhaust through the uncredited RH WH CVS. An initial Completion Time of IMMEDIATELY initiates prompt actions to protect the integrity of the CVS ZONE. This ensures that any radiological release from WASTE containers in the CVS ZONE would be directed to the CH BAY CVS. Performance of this action every 12 Hours thereafter provides verification that Doors 41-N-158 and 41-N-159 remain in the closed configuration. The FREQUENCY of 12 Hours is based on shift rotation.
B.3	This Required Action requires ensuring the RH Bay ventilation system Exhaust Fans 41-B-805, 41-B-806, 41-B-878a, and 41-B-878b are not IN SERVICE and are secured IMMEDIATELY. This action prevents the possibility of air pressure in the RH Bay becoming more negative with respect to the CH BAY that could potentially direct building exhaust through the uncredited RH WH CVS. An initial Completion Time of IMMEDIATELY initiates prompt actions to protect the integrity of the CVS ZONE. This ensures that any radiological release from WASTE containers in the CVS ZONE would be directed to the CH BAY CVS. Performance of this action every 12 Hours thereafter provides verification that the RH Bay ventilation system remains secured. The FREQUENCY of 12 Hours is based on the infrequent manipulation of the RH Bay CVS.
B.4	This Required Action requires ensuring the upper hot cell shield plug is installed IMMEDIATELY. This action prevents the possibility of air pressure in the RH Bay becoming more negative with respect to the CH BAY that could potentially direct building exhaust through the uncredited RH WH CVS. An initial Completion Time of IMMEDIATELY initiates prompt actions to protect the integrity of the CVS ZONE. This ensures that any radiological release from WASTE containers in the CVS ZONE would be directed to the CH BAY CVS. Performance of this action every 12 Hours thereafter provides verification that the upper hot cell shield plug is installed. The FREQUENCY of 12 Hours is based on the infrequent removal of the hot cell shield plug.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

ACTIONS (continued)

B.5.1/B.5.2	These Required Actions provide recovery measures to be implemented within 60 days in the event that gauge 411-PDI-059-36 is not OPERABLE or RH Bay differential pressure is less than Table 3.2.1-1 set point. Required Action B.5.1 requires restoring RH Bay gauge/differential pressure to OPERABLE status within 60 days and B.5.2 requires placing the CH BAY in STANDBY MODE within 60 days. Required Action B.5.1 requires gauge 411-PDI-059-36 to be restored to OPERABLE status within 60 days. In the event that gauge 411-PDI-059-36 is NOT OPERABLE and Condition B was entered, Actions B.1 through B.4 have significantly reduced the potential for ordinary fires, or damage to WASTE CONTAINERS outside the CVS ZONE, ensured that building ventilation will not exhaust through the uncredited RH WH CVS, and that the CH WH CVS is capable of performing its credited safety function within the CVS ZONE. The FREQUENCY of 60 days allows the cause of the condition to be determined, parts and/or components for repair are obtained, and the work to restore the RH Bay gauge/differential pressure is performed. A Completion Time of 60 days is considered sufficient to restore the RH Bay gauge/differential pressure while minimizing the time at risk. Required Action B.5.2 requires the CH BAY to be placed into STANDBY MODE within 60 Days from when Condition B was entered. In this MODE, WASTE is not permitted to be present unless in a CLOSED SHIPPING PACKAGE. Site-derived WASTE (when present in the CH BAY or RH Bay) must be in a WASTE CONTAINER with the lid CLOSED. The Completion Time of 60 allows sufficient time to transfer WASTE CONTAINERS that are outside of their CLOSED Type B SHIPPING PACKAGES and in the CH BAY or ROOM 108 to the UNDERGROUND.

(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	The SR requires DAILY VERIFICATION that the differential pressure across each HEPA filter bank of each IN SERVICE HEPA filter unit is equal to or within the range of +3.90 inches w.g. and +0.30 inches w.g. The SR is performed by reading the pressure differential local gauges specified in Table 3.2.1-1. VERIFICATION that the differential pressure across each HEPA filter bank of each IN SERVICE HEPA filter unit is within the specified acceptable range DAILY is adequate to demonstrate HEPA filter unit OPERABILITY. Failure to meet or perform this SR requires entry into Condition A.
SR 4.2.1.2	This SR requires DAILY VERIFICATION that the differential pressure in the CH BAY and ROOM 108 with respect to outside ambient air pressure is less than or equal to -0.04 inches w.g. The SR is performed by reading the pressure differential local gauge for the CH BAY and ROOM 108 as specified in Table 3.2.1-1. VERIFICATION of the differential pressure in the CH BAY and ROOM 108 with respect to outside ambient air pressure DAILY is adequate to demonstrate OPERABILITY. Failure to meet or perform this SR requires entry into Condition A.
SR 4.2.1.3	This SR requires DAILY VERIFICATION that one CH WH CVS exhaust fan and one OPERABLE HEPA filter unit are IN SERVICE. VERIFICATION is required to confirm that exhaust fan 41-B-816 or 41-B-817 is drawing through HEPA filter unit 41-B-814 or through HEPA filter unit 41-B-815. VERIFICATION of an exhaust fan and HEPA filter unit being IN SERVICE is performed by visual observation of the exhaust fan and HEPA filter unit status and alignment as indicated in the CMR by graphic visual display on one or more CMR monitors or as indicated locally. DAILY VERIFICATION that the CH WH CVS exhaust fan and HEPA filter unit are properly aligned and IN SERVICE is adequate to demonstrate OPERABILITY. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

Surveillance Requirements (continued)

SR 4.2.1.4	This SR requires VERIFICATION that each CH WH CVS HEPA filter bank of each IN SERVICE HEPA filter unit 41-B-814 and 41-B-815 to have a filtration efficiency of greater than or equal to 99% ANNUALLY. This is confirmed by an in-place leak test performed in accordance with ASME N510. The in-place leak tests use a poly-dispersed aerosol test and determines the system efficiency accounting for the system components (i.e., gaskets, frame, housing, etc.) that are typically challenged. The test is performed under actual conditions and at operational airflow in accordance with ASME N510 guidance by qualified/trained individuals. The performance testing allows for correction and maintenance of the HEPA filter banks in the event that efficiency values are not a minimum of 99%. ANNUAL VERIFICATION of HEPA filter bank efficiency as recommended by ASME N510 is adequate to demonstrate that the HEPA filter unit is OPERABLE (Ref. 3) Failure to meet or perform this SR requires entry into Condition A. It is noted that the extension of SR 4.0.2 is not applicable to this SR. This SR is driven by a national standard that does not provide for a time frame extension for performance of this SR.
SR 4.2.1.5	This SR requires that a CALIBRATION be performed on each pressure differential local gauge as indicated in Table 3.2.1-1 ANNUALLY. Differential pressure instrumentation is stable and not typically subjected to adverse conditions that would cause it to lose accuracy. The ANNUAL FREQUENCY interval is based upon industry recommended standard CALIBRATION frequencies for this type of instrumentation. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

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

Bases (continued)

Surveillance Requirements (continued)

SR 4.2.1.8	This SR requires VERIFICATION that CVS ZONE air is exhausted by CH WH CVS SEMIANNUALLY. This is confirmed by a smoke test performed in accordance with ASME N510. The test disperses a colored smoke along the eastern boundary of the CVS ZONE and confirms that the smoke is drawn into the CH WH CVS. The test is performed under actual conditions and at operational airflow in accordance with ASME N510 guidance by qualified/trained individuals. The performance testing allows for adjustment of the marked boundary to ensure CVS ZONE air is drawn into the CH WH CVS. SEMIANNUAL VERIFICATION of CVS ZONE air flow as recommended by ASME N510 is adequate to demonstrate that CVS ZONE air is exhausted and filtered by the CH WH CVS. Failure to meet or perform this SR requires entry into Condition A.
SR 4.2.1.9	This SR requires DAILY VERIFICATION that the differential pressure in the RH Bay with respect to the CH BAY pressure is greater than or equal to +0.03 inches w.g. The SR is performed by reading the RH Bay differential pressure local gauge as specified in Table 3.2.1-1. VERIFICATION of differential pressure in the CH BAY with respect to the RH Bay pressure DAILY is adequate to demonstrate OPERABILITY. Failure to meet or perform this SR requires entry into Condition B.

References

1. SDD HV00, *Heating, Ventilation and Air Conditioning System 0.7-micron Design Description (SDD)* (current revision), Waste Isolation Pilot Plant, 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. ASME N510-1989, *Testing of Nuclear Air-Treatment Systems*, American Society of Mechanical Engineers, New York, NY.
4. Deleted.
5. Deleted.
6. Deleted.
7. Deleted.
8. CALC-22-004, *Remote-Handled (RH) and Contact Handled (CH) BAY Pressure Indicator Gauge Uncertainty Calculation*, Revision 0, Waste Isolation Pilot Plant, Carlsbad, NM.

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.2 Hot Cell Complex Confinement Ventilation System (Deleted)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.3 UNDERGROUND Ventilation Filtration System/Interim Ventilation System (Deleted)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.4 309 Bulkhead OPERABILITY During DOWNLOAD of WASTE CONTAINERS (Deleted)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.5 Battery Exhaust System

Bases

Background Summary

The WHB Battery Exhaust System provides HEPA filtration of exhaust from the TRUDOCK exhaust hoods and the TRUPACT-III exhaust hoods. Exhaust air from the TRUDOCK and TRUPACT-III exhaust hoods contain only minor levels of contamination during normal operations. However, the Battery Exhaust System could also cause exhaust air bypass of the CH WH CVS for radiological release events that could occur within the CH BAY or ROOM 108, which is the safety basis purpose of this LCO.

The Battery Charging Station that is located on the north side of the CH BAY has a separate exhaust system from the CH WH CVS. The TRUDOCK and TRUPACT-III exhaust hoods are connected to the Battery Exhaust System that provides HEPA filtration prior to exhaust to the environment.

The Battery Exhaust System includes two HEPA filter units (41-B-834 and 41-B-979) with two in series exhaust fans (41-B-835 and 41-B-836). The IN-SERVICE HEPA filter unit (41-B-834 or 41-B-979) is aligned to an IN-SERVICE exhaust fan (41-B-835 or 41-B-836). One exhaust fan and HEPA filter unit is on standby status. Each HEPA filter unit includes one bank of moderate efficiency filters and two banks of HEPA filters.

Pressure differential transmitters are used to indicate the differential pressure across each HEPA filter bank of the IN SERVICE HEPA filter units to ENSURE that exhaust air is being drawn through the HEPA filter units prior to release to the environment. The differential pressure across each HEPA filter bank of each HEPA filter unit is read by a local pressure differential gauge for each HEPA filter bank.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.5 Battery Exhaust System (continued)

Bases (continued)

Application to Safety Analysis	The DSA (Ref. 1) identified events involving pool fires, ordinary combustible material fires, internal CH WASTE CONTAINER fires, and impact of CH WASTE CONTAINER by pressurized container impacts that could occur within the CH BAY or ROOM 108. Each of these events can release radiological material into the CH BAY atmosphere, which if left unfiltered could be released to the environment and affect co-located workers outside of the WHB. The hazard analysis identified a potential for high consequences to co-located workers. The CH WH CVS provides for mitigation of these events. However, if the Battery Exhaust System is IN SERVICE during these events, there is potential that some of the radiological material released during the event could bypass the CH WH CVS by being drawn into the Battery Exhaust System. As such, the Battery Exhaust System provides mitigation for the same events for which the CH WH CVS is credited. Using a Battery Exhaust System exhaust fan to draw the CH atmosphere through a HEPA filter with greater than or equal to 99% efficiency reduces the consequences to co-located workers. An IN SERVICE exhaust fan ENSURES that all air that is drawn into the Battery Exhaust System is exhausted through an OPERABLE HEPA filter unit. The HEPA filter unit ENSURES that the exhaust air is filtered. Therefore, the operation of one Battery Exhaust System exhaust fan drawing air through a HEPA filter unit is sufficient to provide the safety function assumed in the DSA.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.5 Battery Exhaust System (continued)

Bases (continued)

LCO

The LCO states:

The Battery Exhaust System SHALL be OPERABLE. An OPERABLE Battery Exhaust System consists of the following elements:

- One OPERABLE HEPA filter unit (41-B-834 or 41-B-979) IN SERVICE.
- Differential pressure across each IN SERVICE HEPA unit's HEPA filter banks is equal to or within the range of +3.92 inches w.g and +0.28 inches w.g locally.
- IN SERVICE HEPA filter unit efficiency of greater than or equal to 99%.
- OPERABLE pressure differential instrumentation as identified in Table 3.2.5-1.

This LCO addresses the OPERABILITY requirements for the Battery Exhaust System. This lowest functional capability is met by an OPERABLE HEPA filter unit being IN SERVICE when a battery exhaust fan(s) is IN SERVICE.

The flow of air from the WHB Battery Charging Station, the TRUDOCK exhaust hoods, and the TRUPACT-III exhaust hoods, through an OPERABLE HEPA filter unit before being exhausted, is sufficient to provide the assumed level of mitigation for pool fires, combustible material fires, and internal CH WASTE CONTAINER fires.

The Battery Exhaust System includes two HEPA filter units (41-B-834 and 41-B-979) with two in series exhaust fans (41-B-835 and 41-B-836). The IN-SERVICE HEPA filter unit (41-B-834 or 41-B-979) is aligned to an IN-SERVICE exhaust fan (41-B-835 or 41-B-836). One exhaust fan and HEPA filter unit is on standby status.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.5 Battery Exhaust System (continued)

Bases (continued)

LCO (continued)

The HEPA filter units (41-B-834 or 41-B-979) are considered OPERABLE when the differential pressure across each IN SERVICE HEPA filter bank of each HEPA filter unit measured locally is equal to or within the range of +3.92 inches w.g. and +0.28 inches w.g. and the HEPA filter bank of each HEPA filter unit has been tested to ENSURE it is greater than or equal to 99% efficient.

The HEPA filter bank high differential pressure value is based on a safety analysis differential pressure of less than +4.0 inches w.g. and applying calculated instrument loop uncertainty (as analyzed in Section 4.4.6.4, *System Evaluation*), which gives a value of +3.92 inches w.g. The maximum differential pressure allowed ensures that the HEPA filter banks are functioning properly and that the HEPA filter unit banks are not clogged or damaged. Establishing a maximum differential pressure limit also prevents filter blowout that could release unfiltered air into the exhaust stream.

Likewise, the HEPA filter bank minimum differential pressure ensures that the HEPA filter banks are not being bypassed. This is based on a safety analysis differential pressure of greater than +0.20 inches w.g. and applying calculated instrument loop uncertainty (as analyzed in Section 4.4.6.4, *System Evaluation*). The instrument uncertainty for the pressure differential local gauges gives a value of +0.28 inches w.g. for the minimum differential pressure allowed.

Each HEPA filter bank of each IN SERVICE HEPA filter unit is tested ANNUALLY in accordance with ASME N510 to provide filtration efficiency of greater than or equal to 99%. The in-place leak test described by ASME N510 is used to conduct a periodic surveillance to reconfirm the performance of the HEPA filtration system. The in-place leak test confirms the safety basis assumptions of filtration system efficiency greater than 99 percent. The in-place leak tests use a poly-dispersed aerosol test and determines the system efficiency of each HEPA filter bank is greater than or equal to 99% accounting for the system components (i.e., gaskets, frame, housing, etc.) that are typically challenged. The test is performed under actual conditions and at operational airflow. For the HEPA filter unit to be considered OPERABLE with respect to efficiency, both HEPA filter banks in the unit must be greater than 99%.

Battery Exhaust System OPERABILITY also requires that the local pressure differential instrumentation in Table 3.2.5-1 is CALIBRATED ANNUALLY to ENSURE assumed accuracy.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.5 Battery Exhaust System (continued)

Bases (continued)

MODE Applicability	CH WASTE is brought into the CH BAY or ROOM 108 in CLOSED Type B SHIPPING PACKAGES. The Type B SHIPPING PACKAGES are opened and CH WASTE is removed, prepared, and transferred to the Waste Shaft Conveyance for disposal in the UNDERGROUND. The TRUDOCK and TRUPACT-III exhaust systems are utilized during evacuation and opening of the Type B SHIPPING PACKAGES. Therefore, LCO 3.2.5 is applicable in the WASTE HANDLING MODE and WASTE STORAGE MODE when the Battery Exhaust System exhaust fans are IN SERVICE.
PROCESS AREA Applicability	The events identified in the safety analysis were located in the CH BAY and ROOM 108.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.5 Battery Exhaust System (continued)

Bases (continued)

ACTIONS

A.1

Condition A is entered if the WHB Battery Exhaust System is NOT OPERABLE or if a pressure differential local gauge specified in Table 3.2.5-1 is NOT OPERABLE.

LCO 3.2.5 defines four elements that are necessary for the Battery Exhaust System to be considered OPERABLE. In the event that any one or more of these elements are not met, then the capability to of the Battery Exhaust System to filter potentially contaminated air during a fire or internal CH WASTE CONTAINER fire event is impaired and the Battery Exhaust Filtration System is considered NOT OPERABLE.

This Required Action requires securing operation of the IN SERVICE battery exhaust fan (41-B-835 or 41-B-836) IMMEDIATELY. This action is required if any of the four elements required for the Battery Exhaust System to be considered OPERABLE are not met.

Securing operation of the exhaust fan prevents use of HEPA filters that may not be operating within their prescribed differential pressure ranges or requisite HEPA filter efficiency, or if pressure differential local gauge indications are NOT OPERABLE, thus preventing a potential release of contamination. Suspending operation of the exhaust fans IMMEDIATELY also prevents potential bypass of the CH WH CVS.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.5 Battery Exhaust System (continued)

Bases (continued)

Surveillance Requirements

SR 4.2.5.1	The SR requires VERIFICATION that the differential pressure across each HEPA filter bank of each IN SERVICE HEPA filter unit is equal to or within the range of +3.92 inches w.g. and +0.28 inches w.g. DAILY by reading the pressure differential local gauges as specified in Table 3.2.5-1. VERIFICATION that the differential pressure across each HEPA filter bank of each IN SERVICE HEPA filter unit is within the specified acceptable range DAILY is adequate to demonstrate HEPA filter unit OPERABILITY. Failure to meet or perform this SR requires entry into Condition A.
SR 4.2.5.2	This SR requires each Battery Exhaust System HEPA filter bank of each IN SERVICE HEPA filter unit 41-B-834 and 41-B-979 to have a filtration efficiency of greater than or equal to 99%. This is confirmed by an in-place leak test performed in accordance with ASME N510. The in-place leak tests use a poly-dispersed aerosol test and determines the system efficiency accounting for the system components (i.e., gaskets, frame, housing, etc.) that are typically challenged. The test is performed under actual conditions and at operational airflow in accordance with ASME N510 guidance by qualified/trained individuals. The performance testing allows for the correction and maintenance of the HEPA filter banks in the event the efficiency values are not a minimum of 99%. ANNUAL VERIFICATION of HEPA filter unit efficiency as recommended by ASME N510 is adequate to demonstrate that the HEPA filter unit is OPERABLE (Ref. 2). Failure to meet or perform this SR requires entry into Condition A. It is noted that the extension of SR 4.0.2 does not apply to this SR. This SR is driven by a national standard that does not provide for a time frame extension for performance of this SR.
SR 4.2.5.3	This SR requires that a CALIBRATION be performed on each local pressure differential gauge listed in Table 3.2.5-1 ANNUALLY. Differential pressure instrumentation is stable and not typically subjected to adverse conditions that would cause it to lose accuracy. The ANNUAL FREQUENCY interval is based upon industry recommended standard CALIBRATION frequencies for this type of instrumentation. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.5 Battery Exhaust System (continued)

Bases (continued)

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. ASME N510-1989, *Testing of Nuclear Air-Treatment Systems*, American Society of Mechanical Engineers, New York, NY.
3. Deleted.
4. Deleted.

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System

Bases

Background Summary

The UNDERGROUND Ventilation System (UVS) is designated as VU08 within the WIPP Ventilation System Design Description (Ref. 1). The system is designed to maintain the UNDERGROUND disposal circuit air pressure negative with respect to the outside atmosphere ambient air pressure and to the construction and north air circuits to ENSURE air from the UNDERGROUND disposal circuit is filtered prior to being released to the outside environment.

UNDERGROUND ventilation is divided into four separate flow paths supporting the waste disposal area, the construction area, the north area, and the Waste Shaft Station. The waste disposal, construction, and north areas receive their air supply from the Air Intake Shaft and the Salt Handling Shaft. The WASTE SHAFT STATION receives its air supply from the Waste Shaft via the Waste Hoist Tower and the Auxiliary Air Intake Tunnel. Airlocks and bulkheads separate the different circuits. The four air circuits combine near the Exhaust Shaft, which is the common discharge from the UNDERGROUND.

The bulkheads, overcasts, airlocks, and ventilation regulators in bulkheads used to segregate the UNDERGROUND ventilation circuits are made of noncombustible material, except for flexible flashing used to accommodate salt movement. The bulkheads, overcasts, airlocks, and ventilation regulators are constructed in accordance with 30 CFR 57. DOE/WIPP 07-3372, Figure 2.7-9 (Ref. 2) shows a typical bulkhead with an airflow regulator installed.

Air is directed to active DISPOSAL ROOMS in a panel using bulkheads and air regulators. After a DISPOSAL ROOM is filled, it is closed against entry and isolated from the UVS.

The UVS serves the WIPP UNDERGROUND to provide acceptable working conditions and a life-sustaining environment (e.g., maintenance of a habitable temperature, provision of an adequate breathing air supply, dilution/removal of contaminants such as carbon monoxide, carbon dioxide, and VOCs) during normal operations and off-normal events. The safety function of the UVS is to mitigate the consequences of radiological material releases from internal container fires or deflagrations/over-pressurizations, fire involving ordinary combustible materials, fires associated with fuel leaks near the WASTE FACE (limited in size due to other preventive controls), and loss of confinement (LOC) to acceptable levels by (1) filtering UNDERGROUND exhaust air prior to its release to the environment; and (2) providing directional airflow towards the WASTE FACE and away from workers in an active DISPOSAL ROOM.

Different UNDERGROUND operations (maintenance, mining, salt removal, WASTE emplacement, etc.) have individual associated requirements for air flow in the UG. Therefore, the UVS may be required to provide air flow at differing minimum levels up to the full capacity of the system depending on the UNDERGROUND operations being supported at the time.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Background Summary (continued)	The UVS is composed of six backward inclined centrifugal exhaust fans, each capable of providing 140,000 actual cubic feet per minute (acfm), 22 identical HEPA filter units arranged in parallel in the New Filter Building (NFB), and associated ductwork, dampers, and variable speed drives. Exhaust ductwork conveys air flow from the Exhaust Shaft to the NFB and from the NFB to the Exhaust Stack. Any four of the six fans will provide up to 540,000 acfm of airflow from the UNDERGROUND, as controlled by variable frequency drives (VFDs). The fans are arranged in two groups of three and the electrical bus design for each group allows for a maximum of two fans in each group of three to be in operation at any time. Each filter unit consists of four banks of filters: one mod pre-filter bank, one high pre-filter, and two HEPA filter banks. Only the second HEPA filter bank is credited as safety significant to maintain the efficiency and integrity of each HEPA filter unit. Eighteen filter elements make up each stage, with each element being 2 feet × 2 feet in size. Each filter unit has a flow control damper at its discharge in order to permit balancing of differential pressure across the filters. Flow balancing can be accomplished manually. Filter units are capable of a maximum flow of 27,000 acfm each. The UVS ductwork is provided with bypass/isolation dampers which permit the filtration system or the SRS to be bypassed. The SRS inlet and outlet dampers are double isolation dampers. One inlet and one outlet isolation damper SHALL remain closed and secured from operation to prevent significant radiological consequences to the co-located worker (CW).

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Background Summary (continued)	The UVS ductwork is provided with dampers to bypass the HEPA filtration system. These bypass isolation dampers are double dampers. One isolation damper SHALL remain closed and secured from operation to prevent significant radiological consequences to the CW. UVS in filtration lineup mitigates the consequences of an UNDERGROUND accident involving waste by directing the UNDERGROUND exhaust through up to 22 HEPA filter units. The operating status of each exhaust fan is displayed in the CMR and locally. Instruments and system components are accessible for periodic testing and inspection during normal plant operation. Under normal operating conditions the UVS functions continuously. Differential pressure across the 308 Bulkhead is measured to ensure that negative air pressure is maintained in the exhaust drift to draw air to the Exhaust Shaft. The 308 Bulkhead is located in the exhaust drift in S-400 at E-300. The 308 Bulkhead differential pressure shows which way the air is flowing through the regulator in the bulkhead. A negative pressure indicates flow from E-140 towards E-300 and the Exhaust Shaft. A pressure differential indicator/transmitter at the 308 Bulkhead provides a signal to a CMR alarm panel(711-AP-451). A visual and audible alarm installed on the alarm panel is indicated and sounded in the CMR if the differential pressure indication is outside the acceptable range. Indication of the differential pressure across the 308 Bulkhead is also provided by pressure differential local gauge (534-PDIT-160-528B).

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Application to Safety Analysis	The DSA (Ref. 2) identifies the potential for fires and internal WASTE CONTAINER fires or deflagration/overpressurizations within the UNDERGROUND. These events could cause a release of radiological material into the UNDERGROUND atmosphere which could affect facility workers at the WASTE FACE, and if left unfiltered would be released to the environment and could affect co-located workers outside the UNDERGROUND. The safety analysis identified a potential for high consequences to the facility workers and co-located workers. The safety function of the UVS is to mitigate the consequences of radiological material releases from internal container fires or deflagrations/overpressurizations, fires involving ordinary combustible materials, fires associated with fuel leaks near the WASTE FACE (limited in size due to other preventive controls), and LOC to acceptable levels by (1) filtering UNDERGROUND exhaust air prior to its release to the environment; and (2) providing directional airflow towards the WASTE FACE and away from workers in an ACTIVE DISPOSAL ROOM. In the Hazard Evaluation Tables, the UVS is represented as one system having the attributes of HEPA filtration and providing air flow in the UNDERGROUND. The UVS incorporates two banks of HEPA filtration through each of up to 22 filter units with >99 percent removal efficiency for UNDERGROUND air prior to release to the atmosphere. Of the two HEPA filter banks, only the second bank is credited as safety significant to maintain the efficiency and integrity of each HEPA filter unit.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

LCO

The UNDERGROUND Ventilation System (UVS) SHALL be OPERABLE. An OPERABLE UVS consists of the following elements:

- CMR alarm panel 711-AP-451 and associated differential pressure instrumentation loop as identified in Table 3.2.6-1.
- CMR alarm panel 416-CP-031-207 and associated differential pressure instrumentation loop as identified in Table 3.2.6-2.
- Airflow into an ACTIVE ROOM(s) from the entry towards the WASTE FACE and out the exhaust, when the ACTIVE ROOM(s) is manned.
- Efficiency of each IN SERVICE HEPA unit's second HEPA filter banks ≥ 99 percent.
- Differential pressure across each IN SERVICE HEPA unit's second HEPA filter banks is within range, as identified in Table 3.2.6-2.
- Differential pressure across the 308 Bulkhead more negative than or equal to -0.09 inches w.g.
- Alignment of SRS double isolation inlet and outlet dampers, HEPA bypass double isolation dampers as identified in Table 3.2.6-3.
- Leakage requirements met for SRS double isolation inlet and outlet dampers, HEPA bypass double isolation dampers as identified in Table 3.2.6-4.
- UVS exhaust fan(s) running and IN SERVICE HEPA unit(s).

This LCO addresses the OPERABILITY requirements for the UVS. An OPERABLE UVS protects FWs at the WASTE FACE, and CWs aboveground from the consequences of a release of radiological particulate material.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

LCO (continued)

CMR alarm panel 711-AP-451 and associated differential pressure instrumentation loops as identified in Table 3.2.6-1. UVS OPERABILITY requires that this instrumentation, which is to provide accurate and timely indication of conditions affecting safety, is OPERABLE. This includes instrumentation that provides indication of 308 Bulkhead differential pressure, and corresponding instrument loops with associated instrumentation.

CMR alarm panel 416-CP-031-207 and associated differential pressure instrumentation loop as identified in Table 3.2.6-2. UVS OPERABILITY requires that this instrumentation, which is to provide accurate and timely indication of conditions affecting safety, is OPERABLE. This includes instrumentation that provides indication of HEPA filter units filter banks differential pressures, and corresponding instrument loops with associated instrumentation.

Airflow into an ACTIVE ROOM(s) from the entry towards the WASTE FACE and out the exhaust when the ACTIVE ROOM(s) is manned. OPERABILITY of the UVS requires that airflow be drawn into the ACTIVE ROOM(s) from the entry towards the WASTE FACE and out the exhaust when manned. This condition provides assurance that the air is directed to the DISPOSAL PANEL exhaust drift. When the ACTIVE ROOM(s) air pathway is present, it directs air away from FWs working at the entry towards the CH WASTE FACE and provides protection in the event of a radiological release event. When the differential pressure at the 308 Bulkhead is maintained negative, the exhaust side of the ACTIVE ROOM(s) is at a lower pressure than the inlet side of the ACTIVE ROOM(s). Because air flow moves from high pressure to low pressure, the air must move into the room. The layout of the DISPOSAL ROOM for waste emplacement includes bulkheads on the exhaust side that can control the airflow in the room and direct airflow towards the waste exhaust drift. Therefore, airflow in the appropriate direction towards the WASTE FACE and away from personnel is ensured. No quantitative flow rate is necessary to achieve the OPERABILITY requirements; only VERIFICATION of flow direction. VERIFICATION of flow at the ACTIVE ROOM(s) entrance is a direct representation of the flow into the room towards the WASTE FACE and out the exhaust.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

LCO (continued)

Efficiency of each OPERABLE HEPA filter units' second HEPA filter bank is greater than or equal to 99 percent. Each HEPA filter bank of each UVS HEPA filter unit is tested ANNUALLY in accordance with ASME N511, *In-Service Testing of Nuclear Air Treatment, Heating, Ventilating and Air-Conditioning Systems*, in accordance with the system code of record to provide filtration efficiency of greater than or equal to 99%. The in-place leak test, described by ASME N511, is used to conduct a periodic surveillance to reconfirm the performance of the HEPA filtration system. The in-place leak test confirms the safety basis assumptions of filtration system efficiency greater than 99 percent. The in-place leak tests use a poly-dispersed aerosol test and determine the system efficiency of each HEPA filter bank, which is required to be greater than or equal to 99% accounting for the system components (i.e., gaskets, frame, housing, etc.) that are typically challenged. The test is performed under actual conditions and at operational airflow.

Differential Pressure across the 308 Bulkhead more negative than or equal to -0.09 inches w.g. OPERABILITY of the UVS requires that a negative differential pressure be maintained more negative than or equal to -0.09 inches w.g. across the 308 Bulkhead, which represents the flow direction from E-140 to E-300. This value is based on a safety analysis differential pressure of being more negative than or equal to -0.05 inches w.g. and applying a calculated instrument loop uncertainty of value of -0.04 inches w.g. (Ref. 5). This gives a value of -0.09 inches w.g. The audible alarm value set in the CMR is more negative than -0.09 inches w.g. Ventilation modeling (Ref. 8) confirms that maintaining negative differential pressure across the 308 Bulkhead is sufficient to ensure adequate UNDERGROUND ventilation.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

LCO (continued) Differential pressure across each IN SERVICE HEPA unit's second HEPA filter bank is within the range of -1.15 inches w.g. and -0.35 inches w.g. Differential pressure across each second stage HEPA filter bank of each IN SERVICE HEPA filter unit(s) is measured by the differential pressure instruments to VERIFY it is maintained in the range of -1.30 inches w.g. and -0.20 inches w.g., as adjusted to account for instrument loop uncertainties.

Alignment of SRS double isolation inlet and outlet dampers, HEPA bypass double isolation dampers as identified in Table 3.2.6-3. UVS OPERABILITY requires a specific configuration for the SRS inlet and outlet double isolation dampers, and HEPA bypass double isolation dampers per Table 3.2.6-3.

Table 3.2.6-3 delineates the requirements for alignment of the SRS double isolation inlet and outlet dampers, and HEPA double isolation dampers. These include:

- VERIFICATION one HEPA damper is closed
- VERIFICATION one SRS inlet and one SRS outlet damper is closed

Isolation of the SRS by closure of one of the SRS double isolation inlet dampers and one of the SRS double isolation outlet dampers. One of the HEPA bypass double isolation dampers directs all UNDERGROUND exhaust air to the UVS duct and HEPA filters prior to exhaust to the environment which is adequate to protect the above ground CW.

The alignment is VERIFIED SEMIANNUALLY. This VERIFICATION confirms that proper alignment is met for UVS OPERABILITY. Prior to opening one of the double isolation dampers, this surveillance must be performed to VERIFY the companion damper is closed and has a satisfactory leakage surveillance (i.e., SR 4.2.6.10).

Performance of the SEMIANNUAL VERIFICATION of the alignment is adequate to VERIFY UVS system OPERABILITY based upon industry operational experience.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

LCO (continued)

Leakage requirements met for one of the SRS double isolation inlet and of the SRS double isolation outlet dampers and one of the HEPA bypass double isolation dampers as identified in Table 3.2.6-4. UVS OPERABILITY requires one of the SRS inlet and one of the SRS outlet double isolation dampers and one of the HEPA bypass double isolation dampers is confirmed through successful leak testing per the requirements stated in Table 3.2.6-4.

The SRS inlet and outlet double isolation dampers are to be ANNUALLY tested in accordance with the requirements identified in Table 3.2.6-4 for measuring damper leakage.

Acceptable leakage shall be less than or equal to 25,000 cfm by using ASME N511 approved methods.

The SRS inlet and outlet double isolation dampers SHALL be closed and secured from operation position as identified in Table 3.2.6-3 to provide effective isolation of flow through them. These isolation dampers are to be ANNUALLY tested in accordance with the requirements of ASME N511 for measuring damper leakage.

The HEPA filtration system bypass double isolation dampers are to be ANNUALLY tested in accordance with the requirements identified in Table 3.2.6-4 for measuring damper leakage.

Acceptable leakage shall be less than or equal to 100 cfm is equivalent to 3E-4 Leak Path Factor (LPF) which bounds the equivalent LPF of the UVS HEPA Filters 1E-2.

Damper leakage is measured using ASME N511 approved methods and to the conservative value(s) identified in Damper Schedule 500655-416-HV-LS-10004.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

LCO (continued)

At least one of the HEPA filtration system bypass double isolation dampers that has passed the required leakage surveillance SHALL be placed in a closed and secured position as identified in Table 3.2.6-3 to provide effective isolation of flow through them.

These dampers are to be ANNUALLY tested in accordance with the requirements of ASME N511 for measuring damper leakage.

OPERABILITY of the HEPA filtration system bypass double isolation dampers is confirmed through successful leak testing per the requirements stated in Table 3.2.6-4.

UVS exhaust fan(s) running and IN SERVICE HEPA unit(s). The lowest functional capability for an OPERABLE UVS is met by a UVS exhaust fan maintaining a negative pressure across the 308 Bulkhead, maintaining airflow into the ACTIVE ROOM(s) when manned, and discharging UNDERGROUND air from the exhaust drift through IN SERVICE HEPA filters before discharging to the environment. For each running exhaust fan, a corresponding number of HEPA filter units must also be IN SERVICE. During normal operations, the second bank HEPA filter DPs must be within their operating range identified in Table 3.2.6-2 to avoid damaging the HEPA filters, protect their structural integrity due to loading, and protect filter efficiency. The DP is allowed to exceed the operational range identified in Table 3.2.6-2 during the periodic HEPA filter leakage test.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

MODE Applicability	WASTE is brought into the UNDERGROUND in CH WASTE CONTAINERS. The CH WASTE CONTAINERS could be subject to pool fires, combustible material fires, internal WASTE CONTAINER fires, loss of confinement while in transit in the UNDERGROUND or during long-term storage. Therefore, this LCO is applicable during WASTE HANDLING and DISPOSAL.
PROCESS AREA Applicability	The events identified in the safety analysis are located in the UNDERGROUND except for closed DISPOSAL ROOM(s).

ACTIONS

A.1

Condition A is entered if the 308 Bulkhead differential pressure indication lights or audible alarms in the CMR alarm panel 711-AP-451 are NOT OPERABLE or if the associated differential pressure instrument loop is NOT OPERABLE. These indications include the alarm indication and the differential pressure indication.

It is noted that Condition A is not applicable if no UVS exhaust fans are running. Condition E is to be entered to address this condition. If the UVS exhaust fan(s) stops running when in Condition A, exit Condition A and enter Condition E. Upon restoration of the UVS exhaust fan(s), if the CMR alarm panel and associated differential pressure loop have not been restored, exit Condition E and enter Condition A. When entering from Condition E, the Completion Time associated with Condition A starts at the time that Condition A is re-entered. This is justified because the restrictions imposed by Condition E places the UNDERGROUND into a SAFE CONDITION, thereby limiting activities that could release radioactive material. Therefore, the risk associated with restarting the Completion Time is justified.

Similarly, Condition A is not applicable if the Local Gauge 534-PDIT-160-528B is NOT OPERABLE. If the Local Gauge 534-PDIT-160-528B becomes NOT OPERABLE when in Condition A, exit Condition A and enter Condition E. Upon restoration of Local Gauge 534-PDIT-160-528B if the CMR alarm panel and associated differential pressure loop have not been restored, exit Condition E and enter Condition A. When entering from Condition E, the Completion Time associated with Condition A starts at the time that Condition A is re-entered.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

A.1 (continued)

As permitted by LCO 3.0.4, an exception to its requirements is made for LCO Condition A. The exception permits the PROCESS AREA in Condition A to alternate between DISPOSAL to WASTE HANDLING MODE and back for administrative purposes provided the Required Actions and associated Completion Times for the Condition are met (i.e., no new Completion Time clock for each MODE change). The current ACTIONS of the Condition do not require placement of the PROCESS AREA into a defined MODE but allow continued operation provided the Required Actions and Completion Times are met. MODE changes that are of an administrative nature, (e.g., shift complement) do not result in a reduced safety posture in that the LCO allows continued operation for a limited time (i.e., 60 Days). Therefore, the movement between WASTE HANDLING and DISPOSAL MODES does not introduce any additional hazards.

The compensatory Required Action provides an equivalent level of compensatory measures to be implemented within 1 Hour and every 4 Hours thereafter in the event that the instrument loop (54A160528) that provides alarm and differential pressure indication of the differential pressure across 308 Bulkhead to the CMR alarm panel 711-AP-451 is NOT OPERABLE. The Required Action A.1 provides confirmation that the UVS is providing ventilation to the UNDERGROUND and that the exhaust air from the UNDERGROUND is being drawn into the Exhaust Shaft and exhausted through the UVS HEPA filter units.

The A.1 Required Action requires VERIFICATION that UVS exhaust fan(s) is/are running to maintain the negative differential pressure across the 308 Bulkhead within 1 Hour and every 4 Hours thereafter, until the CMR differential pressure monitor indication is restored.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

A.2	These compensatory Required Action provides an equivalent level of compensatory measures to be implemented within 1 Hour of manning the UNDERGROUND and every 4 Hours thereafter when the UNDERGROUND is manned in the event that the instrument loop (54A160528) that provides indication of the differential pressure across 308 Bulkhead to the CMR alarm panel 711-AP-451 is NOT OPERABLE. The Required Action A.2 provides confirmation that the UVS is providing adequate ventilation to the UNDERGROUND and that the exhaust air from the UNDERGROUND is being drawn into the Exhaust Shaft and exhausted through the UVS HEPA filter units. The A.2 Required Action requires VERIFICATION that the differential pressure across the 308 Bulkhead is less than or equal to -0.09 inches w.g. per the pressure differential transmitter (534-PDIT-160-528B) local gauge within 1 Hour of manning the UNDERGROUND each time and every 4 Hours afterwards if the UNDERGROUND is manned until the CMR differential pressure monitor indication is restored. With consideration of calculated instrument loop uncertainties, the value read locally SHALL be less than or equal to -0.09 inches w.g. This ACTION provides an alternate methodology to confirm that required negative differential pressure is being maintained across the 308 Bulkhead. An initial Completion Time of 1 Hour of manning the UNDERGROUND provides time to VERIFY differential pressure locally. The 1 Hour time for completion is acceptable insofar as the negative differential pressure at the 308 Bulkhead is ensured by continued operation of the UVS. Every 4 Hours thereafter when the UNDERGROUND is manned is adequate to ensure that the necessary negative differential pressure is being maintained.
A.3	This A.3 Required Action requires that CMR alarm panel 711-AP-451, which provides for indication of the differential pressure cross 308 Bulkhead in the CMR, be restored within 60 Days. A Completion Time of 60 Days allows sufficient time to repair or CALIBRATE the differential pressure instrument loop as identified in Table 3.2.6-1, to the CMR while minimizing the time at risk for not having real time display of the 308 Bulkhead differential pressure indicated in the CMR.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

B.1 Condition B is entered if any IN SERVICE HEPA filter unit's second HEPA filter banks differential pressure indication lights or audible alarms in the CMR alarm panel 416-CP-031-207 are NOT OPERABLE. These indications include the alarm indication for high or low differential pressure, and the differential pressure indicating pressure reading within the range as identified in Table 3.2.6-2. A separate entry is allowed for indicating lights associated with each IN SERVICE HEPA filter unit, the power light, audible alarm, and instrument loop being NOT OPERABLE.

It is noted that Condition B SHALL not be entered if no UVS exhaust fans are running. Condition E is to be entered to address this condition. If the UVS exhaust fan(s) stops running when in Condition B, exit Condition B and enter Condition E. Upon restoration of the UVS exhaust fan(s), if the CMR alarm panel and associated differential pressure loop have not been restored, exit Condition E and enter Condition B. The Completion Time associated with Condition B starts at the time that Condition B is re-entered. This is justified because the restrictions imposed by Condition E places the UNDERGROUND into a SAFE CONDITION, thereby limiting activities that could release radioactive material. Therefore, the risk associated with restarting the Completion Time is justified.

As permitted by LCO 3.0.4, an exception to its requirements is made for LCO Condition B. The exception permits the PROCESS AREA in Condition B to change from DISPOSAL to WASTE HANDLING MODE and back for administrative purposes provided the Required Actions and associated Completion Times for the Condition are met (i.e., no new Completion Time clock for each MODE change). The current ACTIONS of the Condition do not require placement of the PROCESS AREA into a defined MODE but allow continued operation provided the Required Actions and Completion Times are met. MODE changes that are of an administrative nature, (e.g., shift complement) do not result in a reduced safety posture in that the LCO allows continued operation for a limited time (i.e., 60 Days). Therefore, the movement between WASTE HANDLING and DISPOSAL MODES does not inject any additional hazards. Required Action B.1 requires VERIFICATION that the affected IN SERVICE HEPA units' HEPA filter banks differential pressure indication at the local differential pressure instrument is within range as identified in Table 3.2.6-2 (local indicator specified in Table 3.2.6-2) within 1 Hour and every 4 Hours thereafter until the affected HEPA unit's filter bank's instrument loop is restored to OPERABLE status. With consideration of calculated instrument loop uncertainties (Ref. 10), the value read locally SHALL be equal to or within range as identified in Table 3.2.6-2.

If the affected HEPA unit's HEPA filter bank is taken out of service, Required Action B.1 is no longer applicable. Required Action B.2 is applicable until the CMR panel is restored.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

B.2.	The B.2 Required Action requires that the panel and affected instrument loop, as identified in Table 3.2.6-2, which provides for indication of the differential pressure for the affected IN SERVICE HEPA units' HEPA filter banks in the CMR, be restored within 60 Days. A Completion Time of 60 Days allows sufficient time to repair the panel, or repair and CALIBRATE the differential pressure instrument loop to the CMR while minimizing the time at risk for not having real time display of the IN SERVICE HEPA units' second HEPA filter banks differential pressure indicated in the CMR.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

C.1	Condition C SHALL be entered if there is no detectable airflow into an ACTIVE ROOM(s) from the entry towards the Wast Face and out the exhaust when the ACTIVE ROOM(s) is manned. This Required Action requires that no new WASTE CONTAINERS be introduced into the UNDERGROUND IMMEDIATELY. This prohibition limits the risk associated with additional movement CH WASTE CONTAINERS in the TRANSPORT PATH to the ACTIVE ROOM(s). A Completion Time of IMMEDIATELY initiates prompt and sustained actions to prevent introduction of new CH WASTE CONTAINERS into the UNDERGROUND.
C.2	This Required Action requires placing the ACTIVE ROOM(s) in a SAFE CONFIGURATION within 2 Hours. The SAFE CONFIGURATION should include placement of vehicles/equipment in the least vulnerable location while minimizing time at risk for personnel inside the ACTIVE ROOM(s). A Completion Time of 2 Hours allows for safe placement of vehicles/equipment within the ACTIVE ROOM(s).
C.3	This Required Action should include placing WASTE CONTAINERS that are not stored within the ACTIVE ROOM(s) in a SAFE CONFIGURATION within 2 Hours. This should include placement of CH WASTE CONTAINERS that could be in transit in the TRANSPORT PATH in the least vulnerable location. This location could include the ACTIVE ROOM(s). A Completion Time of 2 Hours allows for safe placement of any vulnerable WASTE CONTAINERS.
C.4.1	This Required Action requires ENSURING that the ACTIVE ROOM(s) are not manned within 4 Hours. This ENSURES that no personnel remain in the ACTIVE ROOM(s) until such time that positive air flow is restored into the ACTIVE ROOM(s). The Completion Time of 4 Hours allows for completion of Required Actions C.2 and C.3 and for safe personnel egress from the ACTIVE ROOM(s). The Required Action is judged to sufficiently reduce the risk from radiological exposure for personnel inside of ACTIVE ROOM(s). Completion of this ACTION restores compliance with the LCO Operability requirements.
C.4.2	This Required Action requires restoring airflow into the ACTIVE ROOM(s) within 4 Hours. The Completion Time of 4 Hours allows for completion of Required Actions C.2 and C.3 and for safe personnel egress from the ACTIVE ROOM(s). The Required Action is judged to sufficiently reduce the time at risk from potential radiological exposure for personnel inside of ACTIVE ROOM(s). Completion of this ACTION restores compliance with the LCO Operability requirements.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

D.1. NOTE 1 states: Condition D SHALL not be entered if no UVS exhaust fans are running. Condition E is to be entered to address this condition.

NOTE 2 states: For planned activities or HEPA filter unit autorecovery, fifteen minutes are allowed for UVS differential pressure alarms to clear before entry into Condition D is required. For some planned activities, fault alarms are expected to occur, are of short duration, and are not indicative of a system failure. During auto recovery of a filter unit with a fault condition, the UVS control system will produce safety significant alarms while the filter unit in fault is automatically removed from service, and the next sequentially available filter unit is automatically placed IN SERVICE. During this automatic transition, low differential pressure fault alarms are expected to occur for both the outgoing and incoming HEPA filter units. These alarms are of short duration, and are not indicative of a system failure. In such cases, allowing fifteen minutes for fault alarms to clear, prior to entering Condition D, imposes no significant risk to workers or the public.

This Required Action allows for the removal of a noncompliant HEPA filter unit(s) from service. This Required Action assumes a HEPA filter unit's second HEPA filter banks has failed to meet the 99% or greater filtration efficiency, or is not equal to or within the range as identified in Table 3.2.6-2. A Completion Time of 2 Hours initiates safe actions to restore compliance.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

E.1

Condition E is entered if no UVS fan is running, or the differential pressure across the 308 Bulkhead is less negative than -0.09 inches w.g.

NOTE 1 states: The use of electric carts to transport personnel is allowed in executing the Required Actions in Condition E. The NOTE clarifies that electric carts with less than or equal to 29 gallons of total liquid combustible capacity do not require a safety significant FSS and have no standoff distance requirements as identified in Table 3.1.2-1. They may be used to transport personnel to meet the requirements of Condition E. For example, when the loss of ventilation airflow requires adjustments to bulkhead regulators, “golf carts” may be used to move personnel in a timely manner to the location of interest. They are not prohibited for use as implied in Condition E.3. However, electric carts that contain liquid combustible/flammable capacities greater than 29 gallons of total liquid combustible capacity shall adhere to the requirements of Condition E. For example, an electric forklift used to transport personnel is not exempt from the Required Actions in Condition E.

NOTE 2 states: For planned UVS fan configuration changes, fifteen minutes are allowed for Bulkhead 308 differential pressure alarms to clear before entry into Condition E is required. For planned UVS fan configuration changes, fault alarms are expected to occur, are of short duration, and are not indicative of a system failure. In such cases allowing fifteen minutes for fault alarms to clear, prior to entering Condition E, imposes no significant risk to workers or the public.

While the system is swapping fans, for example, the system will bring both operating fans down in speed, and allow the fan being secured to stop completely while locking the fan speed for the remaining fan in operation. The system will then bring the new fan being placed into operation up to speed to match the remaining fan and then bring the operating fans up to speed together until the system meets the selected operating parameters (flow or fan speed). While only one fan is running at reduced speeds, it is possible that pressure on Bulkhead 308 may not be maintained. Once the two fans begin to come up together the alarm clears. This sequence resolves itself in a shorter time frame than the required actions are required to be completed.

This Required Action requires that no new WASTE CONTAINERS be introduced into the UNDERGROUND IMMEDIATELY. This prohibition limits the risk associated with the movement of CH WASTE CONTAINERS in the TRANSPORT PATH. A Completion Time of IMMEDIATELY initiates prompt and sustained actions to prevent introduction of new CH and CONTAINERS into the UNDERGROUND.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Confinement Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

E.2	This Required Action requires placing the UNDERGROUND WASTE CONTAINERS into a SAFE CONFIGURATION within 2 Hours. This Required Action should include placing WASTE CONTAINERS that are either within the ACTIVE ROOM and/or in transit in the TRANSPORT PATH and/or in the WASTE SHAFT STATION and/or in the WASTE SHAFT into the least vulnerable location. A Completion Time of 2 Hours allows for safe placement of any vulnerable WASTE CONTAINERS.
E.3	This Required Action requires placing UNDERGROUND liquid-fueled vehicles/equipment within 200 feet of WASTE CONTAINERS into a SAFE CONFIGURATION within 2 Hours. The SAFE CONFIGURATION should include relocation and securing of vehicles/equipment that are within 200 feet of WASTE CONTAINERS into the least vulnerable location and configuration (e.g., chocking vehicle/equipment tires, turned off, lowered loads) while minimizing time at risk for personnel.
E.4	The E.4 Required Action requires restoration of the UVS to OPERABLE status within 31 Days by restoring the UVS exhaust fan(s) to running status, or restoring the differential pressure across the 308 Bulkhead to more negative than -0.09 inches w.g., or restoring the local gauge 534-PDIT-160-528B as indicated in Table 3.2.6-1 to OPERABLE status, as applicable. “As applicable” indicates that it is only necessary to restore the deficient condition(s). Efforts to restore the UVS OPERABILITY will continue as the introduction of new WASTE CONTAINERS into the UNDERGROUND remains prohibited, and WASTE CONTAINERS in the UNDERGROUND have been placed in a SAFE CONFIGURATION. A Completion Time of 31 Days may be necessary to identify the cause of the UVS condition, to obtain the necessary parts and/or components required to repair the UVS, and to perform the work to restore the UVS OPERABILITY. The compensatory actions in place during the 31 Days to complete this Required Action reduces the risk.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Confinement Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

F.1	Condition F is entered if an IN SERVICE SRS double isolation inlet or outlet or HEPA bypass double isolation damper does not meet leakage requirements as identified in Table 3.2.6-4 or alignment requirements as identified in Table 3.2.6-3. The NOTE clarifies that electric carts with less than or equal to 29 gallons of total liquid combustible capacity does not require a safety significant FSS and have no standoff distance requirements as identified in Table 3.1.2-1. They may be used to transport personnel to meet the requirements of Condition F. For example, when the loss of ventilation airflow requires adjustments to bulkhead regulators, “golf carts” may be used to move personnel in a timely manner to the location of interest. They are not prohibited for use as implied in Condition F.3. However, electric carts that contain liquid combustible/flammable capacities greater than 29 gallons of total liquid combustible capacity shall adhere to the requirements of Condition F. For example, an electric forklift used to transport personnel is not exempt from the Required Actions in Condition F. Required Action F.1 requires that no new WASTE CONTAINERS be introduced into the UNDERGROUND IMMEDIATELY. This prohibition limits the risk for associated with additional movement of CH WASTE CONTAINERS in the TRANSPORT PATH. A Completion Time of IMMEDIATELY initiates prompt and sustained actions to prevent introduction of new CH WASTE CONTAINERS into the UNDERGROUND.
F.2	This Required Action requires placing the UNDERGROUND WASTE CONTAINERS into a SAFE CONFIGURATION within 2 Hours. This Required Action should include placing WASTE CONTAINERS that are either within the ACTIVE ROOM and/or in transit in the TRANSPORT PATH and/or in the WASTE SHAFT STATION and/or in the WASTE SHAFT into the least vulnerable location. A Completion Time of 2 Hours allows for safe placement of any vulnerable WASTE CONTAINERS.
F.3	This Required Action requires placing UNDERGROUND liquid-fueled vehicles/equipment within 200 feet of WASTE CONTAINERS into a SAFE CONFIGURATION within 2 Hours. The SAFE CONFIGURATION should include relocation and securing of vehicles/equipment that are within 200 feet of WASTE CONTAINERS into the least vulnerable location and configuration (e.g., chocking vehicle/equipment tires, turned off, lowered loads) while minimizing time at risk for personnel.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Confinement Ventilation System (continued)

Bases (continued)

ACTIONS (continued)

F.4	The F.4 Required Action ENSURES at least one OPERABLE SRS double isolation inlet, one OPERABLE SRS double isolation outlet, and one OPERABLE HEPA bypass double isolation damper are closed and have acceptable leakage. By ENSURING at least one OPERABLE SRS double isolation inlet, one OPERABLE SRS double isolation outlet, and one OPERABLE HEPA bypass double isolation damper are closed and have acceptable leakage, flow from the UG is directed passed the SRS and through the UVS HEPA filters prior to being released from the UG to the environment. A Completion Time of 4 Hours is acceptable because Actions F.1 through F.3 reduce the probability of an event leading to a release of radioactive material. The 4-Hour Completion Time is adequate for closing the damper and verifying it meets the associated leakage criteria, which restore compliance.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Surveillance Requirements

SR 4.2.6.1 This SR requires MONTHLY, VERIFICATION that the light indications and the audible alarm are operable. The lights and audible alarm redundantly indicate the same inoperable condition, and are continuously monitored on panel 711-AP-451 in the CMR. Therefore, a MONTHLY surveillance FREQUENCY is adequate to VERIFY OPERABILITY of visual and audible panel alarms. The 308 Bulkhead high DP audibly alarms in the CMR, which is constantly manned to initiate required response actions. This is based upon the successful loop calibration, and functional testing of the alarm indication in the CMR. Therefore, DAILY routine surveillance of actual DP values is not required.

A satisfactory surveillance is met by illumination of the panel power light, 308 Bulkhead differential pressure light, and trouble light; and by sounding of the audible alarm when the panel test function is initiated.

Failure to meet or perform this SR for panel 711-AP-451 requires entry into Condition A.

SR 4.2.6.2 This SR requires MONTHLY VERIFICATION that the light indications and the audible alarm are operable. The status of these alarms, which redundantly indicate the same inoperable condition, are continuously monitored on panel 416-CP-031-207 in the CMR. Therefore, a MONTHLY surveillance FREQUENCY is adequate to VERIFY OPERABILITY of visual and audible panel alarms. Each HEPA filter bank's low and high DP indication audibly alarms in the CMR, which is constantly manned to initiate required response actions. This is based upon the successful loop calibration, and functional testing of the alarm indication in the CMR. Therefore, DAILY routine surveillance of actual DP values is not required.

A satisfactory surveillance is met by illumination of the panel power light and HEPA filter differential pressure high and low lights, and by sounding of the audible alarm when the panel test function is initiated.

Failure to meet or perform this SR for panel 416-CP-031-207 requires entry into Condition B.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.2.6.3 The NOTE states entry into the ACTIVE ROOM(s), up to 20 feet from the entrance is permitted for 1 Hour or less, to perform Surveillance 4.2.6.3. This is necessary to perform Surveillance 4.2.6.3.

This SR requires VERIFICATION of airflow direction into an ACTIVE ROOM(s) from the entry towards the WASTE FACE and out the exhaust DAILY and following a change in the UVS alignment or bulkhead configuration impacting airflow into an ACTIVE ROOM(s) when manned. Indication of airflow direction into the ACTIVE ROOM(s) DAILY when manned is obtained manually via a smoke test or via a CALIBRATED anemometer to confirm satisfactory air direction. The anemometer flowrate measurement or smoke test is taken in the intake drift of the ACTIVE ROOM(s). This SR is adequate to demonstrate that the UVS is OPERABLE and providing airflow into the ACTIVE ROOM(s) to allow facility workers safe entry and habitation of the room while work is being performed. The method can be in accordance with ETO-Z-269 (Ref. 11). Either of the methods is acceptable to support directional flow from the entry towards the ACTIVE WASTE FACE to the exhaust drift.

The FREQUENCY of DAILY and following a change in the UVS alignment or bulkhead configuration impacting airflow into an ACTIVE ROOM(s) when manned is adequate to demonstrate that the UVS is OPERABLE, which includes providing airflow into the ACTIVE ROOM(s) to allow facility workers safe entry and habitation of the room while performing work at the WASTE FACE. The “DAILY” when manned FREQUENCY is typically completed at the start of the shift and once successfully completed will remain valid for the entire day that it was performed in. Therefore, the DAILY when manned FREQUENCY allows the VERIFICATION of directional flow DAILY when manned based upon the other conditional performances if conditions change. If there are changes to the UVS it could affect the air flow towards the ACTIVE WASTE FACE. When manned each time there is a change in either the bulkhead alignment impacting airflow into the ACTIVE ROOM(s) or the exhaust fan alignment, the flow test must be re-performed to VERIFY the air flow is directed at the entry towards the WASTE FACE and out the exhaust.

Failure to meet or perform this SR requires entry into Condition C.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.2.6.4 This SR requires VERIFICATION that the second filter bank of each IN SERVICE HEPA filter unit has a filtration efficiency of ≥ 99% ANNUALLY. This is confirmed by an in-place leak test performed in accordance with ASME N511 in accordance with the system code of record. The in-place leak tests use a poly-dispersed aerosol test and determines the system efficiency accounting for the system components (i.e., gaskets, frame, housing, etc.) that are typically challenged. The test is performed under actual conditions in accordance with the applicable system code of record ASME N511 guidance by qualified/trained individuals.

The NOTE indicates the HEPA filter unit is not taken out of service and the second HEPA filter bank is allowed to exceed the DP range identified in Table 3.2.6-2 for up to 12 Hours during the in-place leak test. Entry into CONDITION D is not required for the associated filter bank during testing. The ASME N511 standard requires performing the HEPA filter bypass leakage test at ±10 percent of the filter's operating range with respect to airflow. This may require operating the second HEPA filter bank past the -1.15 inches w.g., activating the alarm on the SS DP alarm panel. Operating the second HEPA filter bank 10 percent beyond the filter's operating range with respect to airflow is calculated to result in filter DPs between -1.15 inches w.g. and -2.0 in w.g., depending on variability between HEPA filter banks. The potential DP exceedance is notably below the manufacturer design pressure limit of -10.2 inches w.g. and does not compromise the integrity of the HEPA filter. Twelve Hours allows the qualified/trained individuals one shift to complete the in-place leak test.

The performance testing allows for correction and maintenance of the second HEPA filter bank in the event that efficiency values are not a minimum of 99%. ANNUAL VERIFICATION of HEPA filter bank efficiency as recommended by ASME N511 in accordance with the system code of record is adequate to demonstrate that the HEPA filter unit is OPERABLE (Refs. 3, 4). It is noted that SR 4.0.2 does not apply to this SR. This SR is driven by a national standard that does not provide for a time frame extension for performance of this SR.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.2.6.5	This SR requires that an instrument loop CALIBRATION be performed on each of the second HEPA filter bank's pressure differential transmitters and applicable instrumentation for the instrument loop as indicated in Table 3.2.6-2 ANNUALLY. In service testing and CALIBRATIONS are performed under the Initial Testing, In Service Surveillance, and Maintenance Programs, which provides the means for evaluating and documenting decisions relating to in-service testing and calibration requirements. The NOTE indicates the DP instrumentation is allowed to be manipulated outside the established operational range during calibration while the second HEPA filter bank is in service, which will result in a DP alarm on the SS UVS control panel. Entry into CONDITION B is not required for the associated instrument loop being calibrated. The DP across the HEPA filter unit is not impacted and will continue to provide its credited safety function. Changes in differential pressure may still be detected during the CALIBRATION activity by monitoring the DPs of the remaining IN-SERVICE HEPA second filter banks. The 12-Hour interval is a one shift time period based on the estimated time needed to recalibrate instrumentation such as a PDIT. The time frame is appropriate because the calibration activities do not cause a change in the DP on the credited HEPA filter bank. The 12-Hour time period only applies for the calibration activity. These instrument loops are CALIBRATED to a span of -5.00 to 0.00 inches w.g. with a tolerance of ±1% span (±0.05 inches w.g.).

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.2.6.5 (continued)	The output of differential pressure instrumentation is evaluated within the CALIBRATION FREQUENCY, and based on operating experience, is stable and not typically subjected to adverse conditions that would cause it to lose accuracy. Therefore, the ANNUAL CALIBRATION FREQUENCY interval is justified based on operating experience with this instrumentation, and the evaluations performed under the in-service surveillance program. Failure to meet or perform this SR requires entry into Condition B.
SR 4.2.6.6	This SR requires that an ANNUAL FUNCTIONAL TEST be performed on the Bulkhead 308 differential pressure transmitter alarm function that reports to the CMR. UVS OPERABILITY requires that a differential pressure is maintained more negative than or equal to -0.09 inches w.g. at the 308 Bulkhead. This value is based on a desired differential pressure of being more negative than -0.05 inches w.g. to ensure adequate air draw in the Exhaust Drift towards the Exhaust Shaft and applying an instrument loop uncertainty. This value is the basis for the differential pressure audible and visual alarm setpoint in the CMR that allows for corrective action. SR 4.2.6.6 supports SR 4.2.6.1. The ANNUAL FREQUENCY interval is justified based on operating experience with this instrumentation, and the evaluations performed under the in-service surveillance program. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.2.6.7

This SR requires that an instrument loop CALIBRATION be performed on the Bulkhead 308 pressure differential transmitter and applicable instrumentation for the instrument loop indicated in Table 3.2.6-1 ANNUALLY.

IN SERVICE testing and calibrations are performed under the Initial Testing, IN SERVICE Surveillance, and Maintenance Programs, which provides the means for evaluating and documenting decisions relating to IN-SERVICE testing and calibration requirements.

The output of differential pressure instrumentation is evaluated within the CALIBRATION FREQUENCY, and based on operating experience, is stable and not typically subjected to adverse conditions that would cause it to lose accuracy. Therefore, the ANNUAL CALIBRATION FREQUENCY interval is justified based on operating experience with this instrumentation, and the evaluations performed under the in-service surveillance program.

These instrument loops are calibrated to a span of -2.00 to 1.00 inches w.g. with a tolerance of ±0.03 inches w.g.

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

SR 4.2.6.8

This SR requires that an ANNUAL FUNCTIONAL TEST be performed on each UVS HEPA filter bank's high and low differential pressure alarm instrument loops as indicated in Table 3.2.6-2.

The ANNUAL differential pressure instrumentation loop FUNCTIONAL TEST consists of injection of a simulated or actual signal into the instrument loop, at the input of the pressure differential transmitter, to VERIFY OPERABILITY of the differential pressure instrumentation and audible CMR alarm and visual indication on one or more monitors, if the values are outside the range of Table 3.2.6-2. SR 4.2.6.8 supports SR 4.2.6.2.

The ANNUAL FREQUENCY is based upon industry recommended FUNCTIONAL TEST frequencies for this type of instrumentation.

Failure to meet or perform this SR requires entry into Condition B.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.2.6.9 The NOTE clarifies that prior to opening one of the redundant dampers, this surveillance must be performed to VERIFY the companion damper is closed and has a satisfactory leakage surveillance (i.e., SR 4.2.6.10).

This SR requires that a SEMIANNUAL alignment VERIFICATION be performed on the SRS double isolation inlet and outlet dampers, and HEPA bypass double isolation dampers identified in Table 3.2.6-3.

The VERIFICATION confirms that the alignment of one of the SRS double isolation inlet and one of the SRS double isolation outlet dampers, and one of the HEPA bypass double isolation dampers identified in Table 3.2.6-3 are closed.

Performance of the SEMIANNUAL VERIFICATION of the UVS SRS double isolation inlet and outlet dampers, and HEPA bypass double isolation dampers alignment is VERIFIED by visually confirming the damper position.

Failure to meet this SR is a TSR violation and would require entry into LCO 3.0.3.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.2.6.10

This SR requires that an ANNUAL Leakage Test of the closed HEPA filtration system bypass double isolation dampers be performed.

Leak tightness of the HEPA bypass double isolation dampers is tested in accordance with the ASME requirements for measuring damper leakage as indicated in Table 3.2.6-4 that states the following requirements:

1. Acceptable leakage will be established prior to startup as defined by AMSE AG-1, Article DA-4110 (Maximum Permissible Leakage per Table DA-1-1000-1 for a Class 0 Damper) and Damper Schedule 500655-416-HV-LS-10004.
2. Damper leakage is measured using ASME N511 approved methods which are required every two years; however, this SR is requiring that an ANNUAL Leakage Test of the closed SRS inlet and outlet double isolation dampers be performed.

Leak tightness of the SRS inlet and outlet double isolation dampers is tested in accordance in the ASME requirements for measuring damper leakage as indicated in Table 3.2.6-4. Table 3.2.6-4 states the following requirements:

1. “Minimum leakage boundary” between the closed double isolation dampers as defined in ASME AG-1, Article DA-4110 (Maximum Permissible Leakage per Table DA-1-1000-1 for a Class II Damper) and Damper Schedule 500655-416-HV-LS-10004.
2. Damper leakage is measured using ASME N511 approved methods which are required every two years; however, this SR is requiring performance of an ANNUAL FUNCTIONAL TEST of the leak tightness of the HEPA filter system bypass double isolation dampers, and SRS inlet and outlet double isolation dampers is adequate to VERIFY UVS system OPERABILITY based upon industry operational experience.

A satisfactory surveillance for the HEPA bypass double isolation dampers is a leakage of less than or equal to 100 cfm. A satisfactory surveillance for the SRS inlet and outlet double isolation dampers is a leakage of less than or equal to 25,000 cfm.

Failure to meet or perform this SR requires entry into Condition F.

(continued)

B3/4.2 Confinement Ventilation Systems (continued)

B3.2.6 UNDERGROUND Ventilation System (continued)

Bases (continued)

References

1. SDD VU00, *Underground Ventilation System Design Description (SDD)*, Revision 36, Waste Isolation Pilot Plant, 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. (deleted)
4. ASME N511-2007, In-Service Testing of Nuclear Air Treatment, Heating, Ventilating and Air-Conditioning Systems, American Society of Mechanical Engineers, New York, NY.
5. (deleted)
6. (deleted)
7. Memorandum, Keith Wallace to Jill Farnsworth, Nuclear Waste Partnership LLC, *Fan Power Failures Risk Assessment Input*, Revision 4, January 2016, Mine Ventilation Services, Inc., Clovis, CA.
8. Memorandum from Keith Wallace, Mine Ventilation Services, Inc., to Jill Farnsworth, Nuclear Waste Partnership, *Modeling UVFS/IVS Fan Configurations with Various NVPs and Upset Conditions*, April 13, 2016.
9. WIPP-021, *Hazards Analysis for the Waste Isolation Pilot Plant Transuranic Waste Handling Safety Basis*, Revision 23, Waste Isolation Pilot Plant, Carlsbad, NM.
10. SSCVS HEPA Filter Differential Pressure Uncertainty and Alarm Setpoint Analysis, current draft.
11. ETO-Z-269, *Engineering Recommendations on how to Perform Air Flow Volume Readings in the WIPP Underground*, Revision 1, Waste Isolation Pilot Plant, Carlsbad, NM, March 2016.
12. SRK-486300, *Ventilation Analyses in Response to DOE PPR of the SSCVS and Shaft 5 Projects.*
13. ASME AG-1-2015, *Code on Nuclear Air and Gas Treatment*, American Society of Mechanical Engineers, New York, NY.

B3/4.3 Vehicle/Equipment Control

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

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Aboveground Liquid-fueled Vehicle/Equipment Prohibition

Bases

Background Summary

The CH BAY is a large bay containing two TRUDOCKs for unloading Type B SHIPPING PACKAGES, storage area for CH WASTE, electric vehicles, and other equipment required for CH WASTE processing. ROOM 108 is a large room containing a Bolting Station, a Payload Transfer Station for removing Standard Large Box 2 from the TRUPACT-III, pallet dispensing station, Facility Transfer Vehicles, and other equipment required for CH WASTE processing.

CH WASTE is brought into the CH BAY or ROOM 108 in a CLOSED Type B SHIPPING PACKAGE using electric powered vehicles/equipment. A TRUPACT-II or HalfPACT SHIPPING PACKAGE is placed in the TRUDOCK in the CH BAY while the TRUPACT-III is placed in the TRUPACT-III Bolting Station in ROOM 108. While in the CLOSED Type B SHIPPING PACKAGES, the CH WASTE is not subject to damage from a fire or impact. The CH WASTE is removed from the CLOSED Type B SHIPPING PACKAGES in the CH BAY and/or ROOM 108. From there CH WASTE is transferred to the WASTE SHAFT ACCESS AREA or temporarily stored in the CH BAY. When no longer in a CLOSED Type B SHIPPING PACKAGE, the WASTE CONTAINER may be impacted by fire and result in a release of the radiological material.

The WASTE SHAFT ACCESS AREA is an area in the WHB where WASTE is prepared for and moved to the Waste Shaft for transfer to the UNDERGROUND. The CLR serves as an airlock between the CH BAY and the Waste Shaft Collar Room and contains the Conveyance Loading Car and necessary equipment to load the WASTE CONTAINERS onto the Waste Shaft Conveyance. The CLR can also be entered on the north side of the Room through a set of doors (159) that is used by Hoisting and Mining for material handling to and from the UNDERGROUND. The CLR may also be entered on the east side of the room, from the FCLR through Doors 142 or 155.

Battery-powered vehicles operating in the WHB are used to reduce the potential for fires that could impact the CH WASTE and result in a radiological material release.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Aboveground Liquid-fueled Vehicle/Equipment Prohibition (continued)

Bases (continued)

Background Summary (continued)	WHB FSS (LCO 3.1.1) requires the FSS to be OPERABLE when CH WASTE is present in the CH BAY and ROOM 108. CH WH CVS (LCO 3.2.1) is also required to be OPERABLE for mitigation of fires in the CH BAY or ROOM 108.
Application to Safety Analysis	The DSA (Ref. 1) identified fire events that could result from the operation of liquid-fueled vehicles/equipment in the CH BAY, ROOM 108, and WASTE SHAFT ACCESS AREA. Liquid-fueled vehicles/equipment present sources of ignition and fuel. Assumptions for the analyses included the following: • CH WASTE inside a CLOSED Type B SHIPPING PACKAGE is protected from involvement in any fire event. • Site-derived WASTE in a CLOSED WASTE CONTAINER provides the same protection as a CH WASTE CONTAINER in a fire event. Note that there is no prohibition on using electric powered vehicles/equipment, including those with hydraulic fluid, in these areas even when CH WASTE is present. Although the WHB FSS (See LCO 3.1.1) and the WHB CVS (LCO 3.2.1) are required to be OPERABLE, additional controls are necessary to protect the CH WASTE from a potential liquid-fueled vehicle/equipment pool fire. Per the Fire Hazards Analysis (Ref. 2), the WHB FSS may not fully prevent a vehicle fire from impacting the CH WASTE. Prohibiting the presence of liquid-fueled vehicles/equipment in the CH BAY, ROOM 108, and the WASTE SHAFT ACCESS AREA when CH WASTE is present is credited with reducing the frequency of fires and vehicle/equipment collisions that could result in a pool fire.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Aboveground Liquid-fueled Vehicle/Equipment Prohibition (continued)

Bases (continued)

LCO

This LCO addresses the aboveground liquid-fueled vehicle/equipment prohibition and states:

Liquid-fueled Vehicles/Equipment SHALL not be present.

Vehicles/equipment SHALL not be present in the CH BAY, ROOM 108, or the WASTE SHAFT ACCESS AREA when CH WASTE is present. This control is based on the following elements identified in the DSA:

- Liquid-fueled vehicles/equipment SHALL not be present in the CH BAY and/or ROOM 108 when CH WASTE is present in these areas and not in a CLOSED Type B SHIPPING PACKAGE.
- Liquid-fueled vehicles/equipment SHALL not be present in the WASTE SHAFT ACCESS AREA when CH WASTE is present in the WASTE SHAFT ACCESS AREA.

The presence of liquid-fueled vehicles/equipment in the CH BAY, ROOM 108, or the WASTE SHAFT ACCESS AREA has the potential to initiate or be involved in fire and/or collision/impact events. Prohibiting liquid-fueled vehicles/equipment from being present in the CH BAY, ROOM 108, and/or the WASTE SHAFT ACCESS AREA ENSURES there is no fuel available for a pool fire when CH WASTE is present, and reduces the potential for pool fires that could impact any WASTE CONTAINERS that may be present.

This LCO does not apply to electric vehicles/equipment that may contain hydraulic fluid.

This LCO is applicable only when CH WASTE is present in the applicable PROCESS AREAS during the applicable MODES.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Aboveground Liquid-fueled Vehicle/Equipment Prohibition (continued)

Bases (continued)

MODE Applicability	WASTE inside an opened Type B SHIPPING PACKAGE or outside the SHIPPING PACKAGE is susceptible to fire events. CH WASTE outside of a Type B SHIPPING PACKAGE can be in the CH BAY and ROOM 108, during WASTE HANDLING and WASTE STORAGE. CH WASTE can be in the WASTE SHAFT ACCESS AREA during WASTE HANDLING. Fires in the applicable PROCESS AREAS can impact the CH WASTE outside the Type B SHIPPING PACKAGE resulting in the release of radiological material. It is possible for each of the three AFFECTED PROCESS AREAS to be in different MODES. WASTE is not outside its SHIPPING PACKAGE during STANDBY and therefore is not affected by fires during this MODE. Therefore, this LCO is applicable during WASTE HANDLING and WASTE STORAGE in the applicable PROCESS AREAS only. This LCO does not apply to electric vehicles/equipment that may contain hydraulic and lubrication fluids that could be involved in a pool fire. Hydraulic and lubrication fluids have a significantly higher flash point than diesel. Without an engine being present, the high temperature ignition source is removed from the event. This vulnerability is additionally mitigated with the SS WHB FSS. As noted, this LCO also prohibits the use of non-liquid-fueled vehicles/equipment for transporting liquid combustible quantities. For example, a fuel tank transported by an electric vehicle is prohibited in the AFFECTED PROCESS AREAS during WASTE HANDLING and WASTE STORAGE MODES.
PROCESS AREA Applicability	CH WASTE may be in the CH BAY, ROOM 108, and the WASTE SHAFT ACCESS AREA in sufficient quantities to adversely affect co-located workers if released due to a fire. Therefore, this LCO is applicable to the CH BAY, ROOM 108, and the WASTE SHAFT ACCESS AREA.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Aboveground Liquid-fueled Vehicle/Equipment Prohibition (continued)

Bases (continued)

ACTIONS

A.1	In the event that liquid-fueled vehicles/equipment are present in the CH BAY or ROOM 108 or the WASTE SHAFT ACCESS AREA, WASTE HANDLING ACTIVITIES SHALL be suspended IMMEDIATELY. WASTE HANDLING ACTIVITIES are suspended in the AFFECTED PROCESS AREA to prevent ongoing WASTE HANDLING ACTIVITIES from increasing the risk of fire involving the liquid-fueled vehicle/equipment. Suspending the WASTE HANDLING ACTIVITIES will reduce the potential for impacts that could cause pool fire events. Suspending WASTE HANDLING ACTIVITIES permits placement of CH WASTE in a SAFE CONFIGURATION, reduces the potential for ignition sources, and permits attention to be focused on removing the liquid-fueled vehicles/equipment. A Completion Time of IMMEDIATELY is required to safely SUSPEND WASTE HANDLING ACTIVITIES and minimizes the time-at-risk.
A.2	This Required Action requires that an ATTENDANT be IMMEDIATELY established for the liquid-fuel vehicle/equipment. The ATTENDANT should primarily focus on the liquid-fueled vehicles/equipment to ENSURE that fuel or other combustible liquids are not leaking and that ignition sources are not present that could lead to a fire involving the vehicle/equipment or any leaking combustible liquids. A Completion Time of IMMEDIATELY is required to provide an ATTENDANT for the liquid-fueled vehicles/equipment without delay to minimize the time at risk for a potential pool fire event.
A.3	This Required Action removes the liquid-fueled vehicle/equipment from the AFFECTED PROCESS AREA using an ATTENDANT, IMMEDIATELY. This action will eliminate the potential for a pool fire that could affect the CH WASTE, and restore compliance with the LCO. A Completion Time of IMMEDIATELY allows safe removal of the vehicle/equipment from the AFFECTED PROCESS AREA while minimizing the time at risk. Because the removal of the offending vehicle maybe through other PROCESS AREAS with ongoing WASTE HANDLING ACTIVITIES, the removal is required to be ATTENDED until outside any applicable PROCESS AREA. The performance of Required Actions A.1 and A.2 serve to further reduce the risk of a fire during the time it takes to remove the liquid-fueled vehicle/equipment from the AFFECTED PROCESS AREA.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.2 Aboveground Liquid-fueled Vehicle/Equipment Prohibition (continued)

Bases (continued)

Surveillance Requirements

SR 4.3.2.1	This SR requires visual VERIFICATION EACH SHIFT when CH WASTE is present that liquid-fueled vehicles/equipment are not present in the CH BAY. Based on operational experience, a FREQUENCY of EACH SHIFT when CH WASTE is present is sufficient to VERIFY that the vehicles/equipment selected for use during that shift are not liquid-fueled; and to prevent liquid-fueled vehicles/equipment from being present when CH WASTE is present and not in a CLOSED Type B SHIPPING PACKAGE(S). Failure to meet or perform this SR requires entry into Condition A.
SR 4.3.2.2	This SR requires visual VERIFICATION EACH SHIFT when CH WASTE is present that liquid-fueled vehicles/equipment are not present in ROOM 108. Based on operational experience, a FREQUENCY of EACH SHIFT when CH WASTE is present is sufficient to VERIFY that the vehicles/equipment selected for use during that shift are not liquid-fueled and to prevent liquid-fueled vehicles/equipment from being present when CH WASTE is present and not in a CLOSED Type B SHIPPING PACKAGE(S). Failure to meet or perform this SR requires entry into Condition A.
SR 4.3.2.3	This SR requires visual VERIFICATION EACH SHIFT, when CH WASTE is present in this PROCESS AREA, that liquid-fueled vehicles/equipment are not present in the WASTE SHAFT ACCESS AREA. Based on operational experience, a FREQUENCY of EACH SHIFT when CH WASTE is present is sufficient to VERIFY that the vehicles/equipment selected for use during that shift are not liquid-fueled and to prevent vehicles/equipment from being present when CH WASTE is present and not in a CLOSED Type B SHIPPING PACKAGE(S). Failure to meet or perform this SR 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. WIPP-023, *Fire Hazard Analysis for the Waste Isolation Pilot Plant* (current revision), Waste Isolation Pilot Plant, Carlsbad, NM.

B3/4.3 Vehicle/Equipment Control (continued)

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

B3.3.4 Control of Propane-Powered Vehicles/Equipment (Deleted)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation

Bases

Background Summary

CH WASTE is delivered to the UNDERGROUND by use of the Waste Shaft Conveyance. CH WASTE is introduced into the WASTE SHAFT STATION during DOWNLOADING operations. The CH WASTE is transported using liquid-fueled vehicles via a TRANSPORT PATH to a designated offloading location. CH WASTE may also be brought to the WASTE SHAFT STATION from the WASTE FACE to be returned to the surface (uploading).

UNDERGROUND vehicles/equipment require services such as lubrication, replenishing the hydraulic fluid, or refueling to operate. It is difficult to bring some of this equipment to the Maintenance Area for these services. Therefore, an UNDERGROUND Lube Truck is used as a mobile fueling, lubrication, or hydraulic fluid replenishment source for many of the UNDERGROUND vehicles/equipment. The vehicles/equipment that are serviced by the Lube Trucks include the WASTE HANDLING EQUIPMENT, the mining operations equipment, and the general-purpose vehicles and equipment.

There are two Lube Trucks used in the UNDERGROUND to supply fuel, hydraulic fluids, and lubricating products to the UNDERGROUND equipment. Each Lube Truck contains a large quantity (approximately 534 gallons) of combustible liquids per calculation WIPP-058 (Ref. 1).

The hazard analysis determined that the Lube Truck presented a significant fire risk to the CH WASTE and that because of the fire hazards, controls are necessary to prevent the Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

Application to Safety Analysis

This control ensures an UNDERGROUND Lube Truck will be at least 200 feet from a CH WASTE FACE in an ACTIVE PANEL and not in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION.

The DSA (Ref. 2) identified fire events in the UNDERGROUND that could impact the CH WASTE resulting in a breach of the CH WASTE Container and an airborne radiological material release. Fuel pool fires in proximity to CH WASTE involving the Lube Trucks were analyzed and determined to result in high consequences to facility workers and co-located workers and low consequences to the MOI. Prohibiting the UNDERGROUND Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION (Ref. 2) provides a safe stand-off distance in the event of a fire but it does not eliminate the potential for fire as there are other potential fire scenarios that could impact the CH WASTE in the AFFECTED AREA.

Prohibiting the Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or within the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION was credited with reducing the likelihood of a fire event involving the CH WASTE. Prohibiting the Lube Truck from being in the AFFECTED AREAS removes the potential for collisions with the Lube Truck or leaks from the Lube Truck tanks, which could result in the release of combustible liquid and an exposure of the combustible liquids to ignition sources. Prohibiting the Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION establishes a safe stand-off distance such that a fire involving the Lube Truck will not impact the CH WASTE and reduces the likelihood of consequences to the workers and MOI.

The intent is to prevent the Lube Truck from being within 200 feet of a CH WASTE FACE and from in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. However, as this is an AC, it is vulnerable to human error such that the Lube Truck could inadvertently be introduced into the AFFECTED AREA when CH WASTE is present. However, if the Lube Truck is inadvertently introduced into these areas, this event in and of itself does not create an adverse event as it will take a collision or a combustible liquid spill and an ignition source to initiate the fire or a fire involving the Lube Truck engine or other components. Removal of the Lube Truck as rapidly as possible is required to ensure that a fire involving the Lube Truck does not occur and to restore compliance with the LCO.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

Application to Safety Analysis (continued)	The use of the UNDERGROUND Lube Truck is required by the activities at WIPP and no limited set of practical and reliable SSCs is available to prevent the Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. Therefore, ACs are required to prohibit the Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL and in the WASTE SHAFT STATION when CH WASTE is present. The control is designated as a SAC since engineered controls are not available to prevent occurrence of events requiring SS protection. If a panel has been closed (i.e., there is a closure barrier), entry into the panel is prevented. The closure barrier can be either of the types described in Section 2.4.4.6 or 2.4.4.6.1. The barrier on the CLOSED PANEL ensures that the WASTE FACE is at least 200 feet from the drift where the Lube Truck could be located. Based on their construction and the distances from a CH WASTE FACE, the barriers are qualitatively judged to protect the WASTE FACE from operational events such as fires and vehicle collisions. The closure barriers are substantial and robust barriers that prevent entry into the CLOSED PANEL. Therefore, this LCO does not apply to a CLOSED PANEL with an installed closure barrier. Vehicles/equipment that contain combustible liquids (e.g., fuel and/or hydraulic fluid) have the potential to significantly impact the CH WASTE if a fire occurs on or around the vehicle or from a pool fire involving leaked or spilled combustible liquids. LCO 3.3.8 establishes the requirements for vehicles containing combustible liquids to be ATTENDED. The TRANSPORT PATH related controls (includes LCOs 3.1.2 and 3.3.8 and SAC 5.5.1) limit the potential for a fire external to the CH WASTE Container to negatively impact the CH WASTE.
LCO	This LCO addresses the requirement to prohibit the Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. Specifically, the LCO addresses the following elements: An UNDERGROUND Lube Truck SHALL be prohibited within: • 200 feet of a CH WASTE FACE in an ACTIVE PANEL. **AND** • The WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

LCO (continued)

Prohibiting the Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION ensures a safe stand-off distance such that a fire involving a Lube Truck will not involve the CH WASTE. Each Lube Truck has a capacity of approximately 534 gallons of combustible liquids.

WIPP-058, *DSA Supporting Calculations, Fuel Spill, HEPA Filter Plugging, and Compartment Over Pressurization*, concludes that a liquid combustible spill, from a Lube Truck loaded to fluid capacity in a 16-foot drift, extends approximately 108 feet on each side of the spill. Additionally, a standoff distance of approximately 8 feet from the edge of the pool is sufficient to maintain the radiant heat flux to less than 15.9 kW/m^2 on the CH WASTE CONTAINERS. The total standoff distance of approximately 116 feet would be sufficient to include the pool size and radiant heat flux exposure. The distance for the safety analysis is conservatively established as 200 feet for the Lube Truck (Ref. 2). This was conservatively set at 200 feet for the stand-off distance. Therefore, the lowest functional capability of this control is met by prohibiting a Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL. To protect the safety analysis, a Lube Truck is not allowed in the WASTE SHAFT STATION when CH WASTE is present at the WASTE SHAFT STATION (Ref. 2). If CH WASTE is not present, the Lube Truck may enter the WASTE SHAFT STATION. To ENSURE the Lube Truck is not in the WASTE SHAFT STATION when CH WASTE is present, the Lube Truck SHALL be prohibited in the WASTE SHAFT STATION.

This LCO only applies to the Lube Truck when within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

MODE Applicability	CH WASTE is present in the UNDERGROUND during WASTE HANDLING and DISPOSAL. Fires involving a Lube Truck which could impact the CH WASTE could occur during either of these MODES. The Lube Truck will operate in the UNDERGROUND during both MODES. While the likelihood of a fire event is reduced when there are no WASTE HANDLING ACTIVITIES, other ACTIVITIES involving a Lube Truck could result in collisions and/or ignition sources. Therefore, at all times the prohibition on the Lube Truck being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or being in the WASTE SHAFT STATION when CH WASTE is present must be applied in all UNDERGROUND MODES.
PROCESS AREA Applicability	The events identified in the safety analysis were located in an ACTIVE ROOM when CH WASTE is present or in the WASTE SHAFT STATION when CH WASTE is present in the UNDERGROUND. CH WASTE is available and susceptible to fires in the UNDERGROUND. Therefore, this LCO only applies to the UNDERGROUND. Note that the AFFECTED AREAS are within 200 feet of a CH WASTE FACE in an ACTIVE PANEL and in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

ACTIONS

A.1	LCO 3.3.5 defines the requirement to prohibit a Lube Truck from being within 200 feet of a CH WASTE FACE in an ACTIVE PANEL and in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. However, this is an administrative control and is vulnerable to inadvertent personnel errors by which a Lube Truck could be positioned within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present. To ENSURE a Lube Truck is not in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION, a Lube Truck SHALL be kept outside of these zones. This ACTION requires that an ATTENDANT be assigned to the Lube Truck IMMEDIATELY upon discovery that it is within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. The addition of the ATTENDANT will minimize the potential for Lube Truck impacts or collisions that could result in combustible liquid leaks and reduce the risk that a fire could impact the CH WASTE. The ATTENDANT will look for leaks or spills of the combustible liquids from a Lube Truck and identify potential ignition sources and potential collision conditions. A Completion Time of IMMEDIATELY limits the time a Lube Truck poses an unmitigated fire risk to the CH WASTE. As is the case for all LCO conditions, the restoration of compliance with the LCO statement is preferred. The Required Action is taken along with the understood action of IMMEDIATELY, if possible, removing the Lube Truck from the AFFECTED AREA.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

ACTIONS (continued)

A.2	This Required Action requires placing the CH WASTE in the AFFECTED AREA in a SAFE CONFIGURATION IMMEDIATELY. Placing the CH WASTE in a SAFE CONFIGURATION may require moving the CH WASTE from the WASTE SHAFT STATION or from any point on the TRANSPORT PATH past a Lube Truck to an ACTIVE ROOM. It may also involve taking a different route in the UNDERGROUND to move the CH WASTE to the ACTIVE ROOM. Additionally, it may include returning the CH WASTE to the Waste Shaft Collar. Any of these ACTIONS will place the CH WASTE in a SAFE CONFIGURATION thereby reducing the potential for fires or other accidents that could impact the CH WASTE and restore LCO Compliance. Leaving the CH WASTE where it is may not be the most SAFE CONFIGURATION possible for the WASTE. A decision must be made as to whether the risk associated with leaving the CH WASTE as and where it is or the short-term risk of continuing to move the CH WASTE to an ACTIVE ROOM or returning it to the Waste Shaft Collar is acceptable. If these risks are acceptable when compared to the long-term reduced risk associated with placing the CH WASTE in the most SAFE CONFIGURATION possible and exiting the LCO, one of the options listed above should be completed. Placing the CH WASTE in a SAFE CONFIGURATION ENSURES that a fire involving a Lube Truck or the combustible liquids on a Lube Truck will not impact the CH WASTE Containers and cause a radiological material release. The completion time of IMMEDIATELY is sufficient to ENSURE the CH WASTE is placed in a SAFE CONFIGURATION as quickly as possible and LCO Compliance is restored.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

ACTIONS (continued)

A.3	This Required Action requires a Lube Truck be removed from the AFFECTED AREA within 4 Hours. A Lube Truck is not permitted to be within 200 feet of a CH WASTE FACE in an ACTIVE PANEL at any time or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. Note that the Lube Truck can be in the WASTE SHAFT STATION in any MODE except when CH WASTE is present. If a Lube Truck is in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION, the Lube Truck must be moved outside the WASTE SHAFT STATION before any CH WASTE on the Waste Conveyance can be transported from the shaft collar to the WASTE SHAFT STATION or CH WASTE is brought into the WASTE SHAFT STATION (e.g., uploading) from the TRANSPORT PATH. While the presence of a Lube Truck in and of itself does not cause an adverse event, within 4 Hours the Lube Truck SHALL be removed beyond 200 feet from the AFFECTED AREA to reduce the fire risk. Removing the Lube Truck at least 200 feet from the AFFECTED AREA restores compliance with the LCO. Removing the Lube Truck within 4 Hours limits the time at risk to an acceptable level and allows the time to identify any barriers to removal of the Lube Truck. The 4-Hour limit is sufficient to assign an ATTENDANT and remove a functional Lube Truck from the AFFECTED AREA.
B.1	This Required Action is entered when the ACTIONS or Completion Times of Condition A are not met. The Required Action is to ENSURE that a Lube Truck is and remains ATTENDED when the UNDERGROUND is manned, especially if it will be in the AFFECTED AREA for more than 4 Hours and on EACH SHIFT thereafter that the Lube Truck remains in the AFFECTED AREA. An ATTENDANT is required to be assigned to the Lube Truck by ACTION A.1 who SHALL perform the duties outlined in that ACTION. This ACTION will ENSURE that the ATTENDANT remains assigned to a Lube Truck until the Lube Truck can be removed from the AFFECTED AREA. If the UNDERGROUND is not manned, an ATTENDANT is not required to be maintained on the Lube Truck if it remains in the AFFECTED AREA during the shifts when personnel are not in the UNDERGROUND, and Required Actions B.2, B.3, and B.4 have been completed and the Lube Truck is in a SAFE CONFIGURATION. A Completion Time of IMMEDIATELY is required to limit the time a Lube Truck poses a potential fire risk to the CH WASTE.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

ACTIONS (continued)

B.2	If the Actions or Completion Times of Condition A are not met, i.e., a Lube Truck will remain in the AFFECTED AREA for more than 4 Hours, this Required Action requires that a Lube Truck in the AFFECTED AREA be placed in a SAFE CONFIGURATION IMMEDIATELY, unless precluded by the exceptions below. Placing the Lube Truck in a SAFE CONFIGURATION as a minimum includes, but is not limited to, ensuring the vehicle is stopped, the engine is shutdown, the engine and other hot components have cooled down, a VERIFICATION of the fire suppression operability has been completed (i.e., green status light on FSS Control Panel is illuminated), and a check for obvious combustible liquid leaks has been completed to limit the potential for a fire involving the Lube Truck. IMMEDIATELY placing the Lube Truck in a SAFE CONFIGURATION will minimize the fire risk to the CH WASTE in the AFFECTED AREA. A Completion Time of IMMEDIATELY is sufficient to initiate ACTIONS to place the Lube Truck in a SAFE CONFIGURATION. It is recognized that actions may be ongoing or initiated to repair or remove the Lube Truck from the AFFECTED AREA. If activities to repair or remove the Lube Truck from the AFFECTED AREA are ongoing, resumed, or started, the Lube Truck does not have to be placed in or can be removed from the SAFE CONFIGURATION to allow removal of the Lube Truck from the AFFECTED AREA to restore LCO compliance. This action does not prevent starting or completing maintenance on the Lube Truck, even if it removes the Lube Truck from a SAFE CONFIGURATION, as it may be necessary to repair an inoperable Lube Truck before the Lube Truck can be moved from the AFFECTED AREA.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

ACTIONS (continued)

B.3

If the Actions or Completion Times of Condition A are not met, i.e., a Lube Truck will remain in the AFFECTED AREA for more than 4 Hours, this Required Action requires Maintenance ACTIVITIES in the AFFECTED AREA be suspended IMMEDIATELY if the Lube Truck is within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. Maintenance ACTIVITIES in the AFFECTED AREA have the potential to initiate a fire event or provide additional fuel to the fire. Maintenance activities include those activities that can increase the potential for a fire near the CH WASTE and include, but are not limited to, the following examples: cutting, grinding, welding, lubricating or fueling vehicles/equipment, painting, mining activities (e.g., bolting), and equipment repair or preventative maintenance. Therefore, if a Lube Truck is in the AFFECTED AREA for more than 4 Hours when CH WASTE is present in the WASTE SHAFT STATION, the risk of fires must be reduced. Suspending Maintenance ACTIVITIES reduces the likelihood of fire events involving a Lube Truck that is within 200 feet of a CH WASTE FACE or in the WASTE SHAFT STATION impacting the CH WASTE. IMMEDIATELY stopping Maintenance ACTIVITIES is necessary to minimize the risk. A Completion Time of IMMEDIATELY is sufficient to suspend Maintenance ACTIVITIES in the AFFECTED AREA.

This Required Action does not prevent starting or completing maintenance on the Lube Truck as it may be necessary to repair an inoperable Lube Truck or complete activities to otherwise move (e.g., tow) the Lube Truck before the Lube Truck can be moved from the AFFECTED AREA. Other Maintenance ACTIVITIES, e.g., checking the roof or bolting activities, that are required to allow safe and unrestricted access for maintenance on a Lube Truck are permitted under this Required Action. Other Maintenance ACTIVITIES in the UNDERGROUND and/or both AFFECTED AREAS do not have to be suspended if these Maintenance ACTIVITIES would or do not affect a Lube Truck that is within 200 feet of CH WASTE. Only those in the AFFECTED AREA where a Lube Truck is within 200 feet of CH WASTE must be suspended.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

ACTIONS (continued)

B.4	This Required Action requires the suspension of Waste Conveyance loading activities at the Waste Shaft Collar Room if the Required Actions and/or Completion Times of Condition A are not met, i.e., a Lube Truck will be in the AFFECTED AREA longer than 4 Hours. To ENSURE CH WASTE is not brought into the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION, bringing CH WASTE into the WASTE SHAFT STATION SHALL be suspended. In the event that the Required Actions and Completion Times of Condition A.3 cannot be met, additional CH WASTE must not be brought into the WASTE SHAFT STATION as this will increase the MAR at risk in the AFFECTED AREA or the UNDERGROUND. Therefore, to prevent bringing additional CH WASTE to the WASTE SHAFT STATION, the loading of CH WASTE onto the Waste Conveyance in the Waste Shaft Collar Room SHALL be suspended IMMEDIATELY. Suspending the loading of CH WASTE onto the Waste Conveyance IMMEDIATELY in the Waste Shaft Collar Room will prevent the introduction of additional CH WASTE into the AFFECTED AREA and prevent additional MAR from being placed at risk in the UNDERGROUND.
B.5	This Required Action requires restoration of compliance with the LCO by removing a Lube Truck that is within 200 feet of a CH WASTE FACE in an ACTIVE PANEL or in the WASTE SHAFT STATION if CH WASTE is present in the WASTE SHAFT STATION. If the Completion Times of Condition A cannot be met, it will generally indicate that there is a problem with a Lube Truck that will prevent it from being moved under its own power. Therefore, time must be allowed to determine the cause and repair the Lube Truck or make other arrangements (e.g., towing) that will allow removal of the Lube Truck from the AFFECTED AREA. The ACTIONS required by B.1 through B.4 above will place the CH WASTE and the Lube Truck, as necessary, in a SAFE CONFIGURATION and minimize the fire and collision risk associated with a Lube Truck to the lowest level possible while a Lube Truck is in the AFFECTED AREA. A Completion Time of 14 Days is sufficient time to develop and implement the ACTIONS to remove a Lube Truck from the AFFECTED AREA and restore compliance with the LCO.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

Surveillance Requirements

SR 4.3.5.1	This SR verifies that when a Lube Truck is present in an ACTIVE PANEL a visual observation will confirm that the Lube Truck is further than 200 feet from a CH WASTE FACE in the ACTIVE PANEL. There is a potential that a Lube Truck could remain in the ACTIVE PANEL after a shift is over. This SR SHALL be completed once per EACH SHIFT when a Lube Truck is moved within the ACTIVE PANEL or once per EACH SHIFT when a Lube Truck is located in the ACTIVE PANEL and CH WASTE is being emplaced. The surveillance is performed only when the UNDERGROUND is manned and operational. Operator training and experience is sufficient to ensure a Lube Truck will not be positioned within 200 feet of a CH WASTE FACE. The once per Shift will ENSURE the operator verifies that a Lube Truck is not within 200 feet of the ACTIVE CH WASTE FACE. This will prevent a fire involving a Lube Truck or the combustible liquids on a Lube Truck from impacting the CH WASTE in an ACTIVE PANEL. The FREQUENCY of once per EACH SHIFT when the Lube Truck is moved or CH Waste is being emplaced in the ACTIVE PANEL is adequate based on operator training and experience. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.5 UNDERGROUND Lube Trucks Operation (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.3.5.2

This SR VERIFIES that a Lube Truck is not present in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. Prior to CH WASTE entering the WASTE SHAFT STATION. This SR will visually VERIFY that a Lube Truck is not in these zones. This ensures that a Lube Truck will not in the WASTE SHAFT STATION when CH WASTE is present in or being bought into the WASTE SHAFT STATION.

The surveillance will be performed Prior to CH WASTE entering these zones. Performance of the surveillance each time Prior to these ACTIVITIES will allow a Lube Truck into the WASTE SHAFT STATION or the TRANSPORT PATH to support operations if there is no CH WASTE present in or being introduced into these zones.

As a Lube Truck can enter into the WASTE SHAFT STATION when the UNDERGROUND is in the WASTE HANDLING MODE, there is a requirement to ENSURE a Lube Truck will not be in the WASTE SHAFT STATION when CH WASTE is being brought to or is in the WASTE SHAFT STATION.

ENSURING the Lube Truck is not in the WASTE SHAFT STATION protects the requirement to prevent the Lube Truck from being within this zone when CH WASTE is present. The VERIFICATION prior to CH WASTE entering the WASTE SHAFT STATION that a Lube Truck is not in these zones is sufficient to ensure a fire involving a Lube Truck, or the combustible liquids on a Lube Truck that could impact the CH WASTE is prevented. The SR FREQUENCY is adequate based on operator training and experience. The WASTE SHAFT STATION surveillance FREQUENCY of Prior to CH WASTE entering the WASTE SHAFT STATION has been determined to be adequate based on operational experience. Failure to meet or perform this SR requires entry into Condition A.

References

1. WIPP-058, *DSA Supporting Calculations, Fuel Spill, HEPA Filter Plugging, and Fire Compartment Over-Pressurization*, Revision 9.
2. 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 Underground Waste Transport Path (Deleted)

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

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Vehicle/Equipment Control

Bases

Background Summary	Liquid-fueled vehicles/equipment are required to perform various activities in the UNDERGROUND. These activities must be controlled to reduce the likelihood of collision events. Collision events can result in pool fires (i.e., leaks, impact with leak) and collisions resulting in loss of confinement and release of radioactive material. Pool fires may breach the WASTE CONTAINER(S) leading to a loss of confinement and a release of radioactive material in the UNDERGROUND or CH BAY. To protect against a pool fire in the UNDERGROUND involving CH WASTE, liquid-fueled vehicles/equipment SHALL be ATTENDED when moving CH WASTE or when near enough to CH WASTE that a fire at the vehicle/equipment could cause a release of radioactive material. When vehicles/equipment are ATTENDED, the risk of fire or impacts to CH WASTE is reduced. This LCO ensures liquid-fueled vehicles/equipment are ATTENDED during periods when a risk of a pool fire that could affect CH WASTE exists.
Application to Safety Analysis	The safety analysis (Ref. 2) identified pool fires and impacts (collisions) that could result in pool fires in the UNDERGROUND as significant accident scenarios that could result in a release of radiological material. The CH WASTE MAR is the primary contributor to dose for fire events. The consequences of these events were determined to be high to the facility worker and high to co-located workers.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Vehicle/Equipment Control (continued)

Bases (continued)

Application to Safety Analysis (continued)	To reduce the likelihood and consequences of pool fires caused by leaks or collision events, liquid-fueled vehicles/equipment operating in the UNDERGROUND must be controlled by requiring an ATTENDANT at specified times and by limiting the number of liquid-fueled vehicles/equipment within 25 feet of a WASTE FACE.
LCO	This LCO requires that liquid-fueled vehicles/equipment SHALL be controlled as follows: • ATTENDED in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION. • ATTENDED in the TRANSPORT PATH when CH WASTE is present in the TRANSPORT PATH. • ATTENDED when less than 25 feet from a CH WASTE FACE. • No more than two liquid-fueled vehicles/equipment within 25 feet of a CH WASTE FACE.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Vehicle/Equipment Control (continued)

Bases (continued)

LCO (continued)

In the above situations when an ATTENDANT is required, each vehicle/equipment that is not in a SAFE CONFIGURATION (e.g., does not have its parking brake set and engine/motor turned off) SHALL have one dedicated ATTENDANT. When a vehicle/equipment that requires that an ATTENDANT passes or moves within 25 feet of one or more liquid-fueled vehicles/equipment that are in a SAFE CONFIGURATION, the dedicated ATTENDANT of the liquid-fueled vehicles/equipment with its engine/motor running may also act as the ATTENDANT of the liquid-fueled vehicles/equipment that are in a SAFE CONFIGURATION in these situations. An ATTENDANT SHALL not ATTEND more than one vehicle/equipment that has its engine/motor running.

To protect against a fire in the UNDERGROUND involving CH WASTE, liquid-fueled vehicles/equipment SHALL be ATTENDED when moving CH WASTE or when near enough to CH WASTE that a fire at the vehicles/equipment could cause a release of radiological material. This is achieved by the first four bulleted controls listed in the LCO. The first bullet states that liquid-fueled vehicles/equipment in the WASTE SHAFT STATION SHALL be ATTENDED when CH WASTE is present in the WASTE SHAFT STATION. ATTENDANCE of liquid-fueled vehicles/equipment in the WASTE SHAFT STATION when CH WASTE is present in the WASTE SHAFT STATION reduces the probability of collisions and/or leaks that may result in a pool fire. ATTENDANCE of liquid-fueled vehicles/equipment also provides assurance that reasonable mitigative action is taken and UG facility workers are notified in the event of a need to take precautions such as evacuation.

The second bullet states that liquid-fueled vehicles/equipment SHALL be ATTENDED in the TRANSPORT PATH when CH WASTE is present in the TRANSPORT PATH. ATTENDANCE of liquid-fueled vehicles/equipment in the TRANSPORT PATH when CH WASTE is present in the TRANSPORT PATH reduces the probability of collisions and/or leaks that may result in a pool fire. ATTENDANCE of liquid-fueled vehicles/equipment also provides assurance that reasonable mitigative action is taken and UG facility workers are notified in the event of a need to take precautions such as evacuation.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Vehicle/Equipment Control (continued)

Bases (continued)

LCO (continued)	The third bullet states that liquid-fueled vehicles/equipment SHALL be ATTENDED when less than 25 feet from a CH WASTE FACE. ATTENDANCE of liquid-fueled vehicles/equipment within 25 feet of a CH WASTE FACE reduces the probability of collisions that may result in a pool fire. ATTENDANCE of liquid-fueled vehicles/equipment also provides assurance that reasonable mitigative action is taken and UG facility workers are notified in the event of a need to take precautions such as evacuation. When vehicles/equipment is ATTENDED, the risk of pool fires affecting WASTE is reduced. This control ENSURES all liquid-fueled vehicles/equipment are ATTENDED when within 25 feet of a WASTE FACE. The fourth bullet states that no more than two liquid-fueled vehicles/equipment SHALL be present within 25 feet of a CH WASTE FACE. Limiting the number of liquid-fueled vehicles/equipment within 25 feet of a CH WASTE FACE to no more than two prevents excessive vehicle/equipment congestion in this limited area, thus, reducing the probability of collisions that may result in a pool fire. If more than two vehicles/equipment, even if ATTENDED, are within 25 feet of a CH WASTE FACE, there is an increased likelihood of a collision with pool fire that could breach a WASTE CONTAINER resulting in a radiological material release.
MODE Applicability	WASTE is present in the UNDERGROUND during WASTE HANDLING and DISPOSAL. Therefore, these controls must apply in WASTE HANDLING and DISPOSAL to protect WASTE. As noted, this LCO also applies to non-liquid-fueled vehicles/equipment transporting or containing liquid combustible quantities. For example, LCO 3.3.8 would apply to a fuel tank transported by an electric vehicle. LCO 3.3.8 would also apply to battery-powered vehicles which utilize hydraulic liquids or otherwise present a fire risk to WASTE.
PROCESS AREA Applicability	This LCO applies to the UNDERGROUND because this area contains CH WASTE that could be impacted by a pool fire.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Vehicle/Equipment Control (continued)

Bases (continued)

ACTIONS

A.1	In the event a liquid-fueled vehicle/equipment in the WASTE SHAFT STATION is not ATTENDED when CH WASTE is present in the WASTE SHAFT STATION, Condition A is entered. Required Action A.1 requires the affected liquid-fueled vehicles/equipment in the WASTE SHAFT STATION to be placed in a SAFE CONFIGURATION (e.g., stopped and the parking brake set if installed) and engine/motor turned off, or other actions as determined by the FSM) IMMEDIATELY. This reduces the risk of collisions that may lead to a pool fire while Required Action A.2 is being accomplished. The Completion Time of IMMEDIATELY is needed to minimize the time at risk.
A.2	This Required Action requires the affected liquid-fueled vehicles/equipment to be ATTENDED within 1 Hour. Completion of this Required Action brings the affected vehicle/equipment back within compliance with the LCO. The Completion Time of 1 Hour is sufficient to ENSURE the vehicle/equipment is ATTENDED while limiting the time at risk.
B.1	In the event a liquid-fueled vehicle/equipment in the TRANSPORT PATH is not ATTENDED when CH WASTE is present in the TRANSPORT PATH, Condition B is entered. Required Action B.1 requires the affected liquid-fueled vehicle/equipment to be placed in a SAFE CONFIGURATION (e.g., stopped and the parking brake set (if installed) and engine/motor turned off, or other actions as determined by the FSM) IMMEDIATELY. This reduces the risk of collisions that may lead to a pool fire while Required Action B.2 is being accomplished. The Completion Time of IMMEDIATELY is needed to minimize the time at risk.
B.2	This Required Action requires the affected liquid-fueled vehicle/equipment to be ATTENDED within 1 Hour. Completion of this Required Action brings the affected vehicle/equipment back within compliance with the LCO. The Completion Time of 1 Hour is sufficient to ensure the vehicle/equipment is ATTENDED while limiting the time at risk.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Vehicle/Equipment Control (continued)

Bases (continued)

ACTIONS (continued)

C.1	In the event liquid-fueled vehicle/equipment is not ATTENDED in an ACTIVE PANEL when less than 25 feet from a CH WASTE FACE, Condition C is entered. Required Action C.1 requires all vehicles/equipment within 25 feet of a CH WASTE FACE to be placed in a SAFE CONFIGURATION (e.g., stopped and the parking brake set (if installed) and engine/motor turned off, or other actions as determined by the FSM) IMMEDIATELY. This reduces the risk of collisions that may lead to a pool fire while Required Action C.2 is being accomplished. The Completion Time of IMMEDIATELY is needed to minimize the time at risk.
C.2	This Required Action requires the affected liquid-fueled vehicle/equipment to be ATTENDED within 1 Hour. Completion of this Required Action brings the affected vehicle/equipment back within compliance with the LCO. The Completion Time of 1 Hour is sufficient to ensure the vehicle/equipment is ATTENDED while limiting the time at risk.
D.1	In the event more than two liquid-fueled vehicles/equipment are within 25 feet of a CH WASTE FACE, Condition D is entered. The safety analysis assumes that two ATTENDED UNDERGROUND vehicles/equipment may be within 25 feet of a CH WASTE FACE. If more than two vehicles/equipment, even if ATTENDED, are within 25 feet of a CH WASTE FACE, there is an increased likelihood of a fire or impact that could breach a WASTE CONTAINER resulting in a radiological material release. Required Action D.1 requires the excess vehicles/equipment to be moved a distance greater than 25 feet from the CH WASTE FACE IMMEDIATELY using an ATTENDANT. The use of an ATTENDANT reduces the risk of collisions that may lead to a pool fire while the excess vehicles/equipment are being removed. Completion of this Required Action brings the affected vehicles/equipment back within compliance with the LCO. The Completion Time of IMMEDIATELY is needed to minimize the time at risk.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Vehicle/Equipment Control (continued)

Bases (continued)

Surveillance Requirements

SR 4.3.8.1	This SR requires VERIFICATION be made prior to CH WASTE entering the WASTE SHAFT STATION that the required ATTENDANT(S) be present for liquid-fueled vehicles/equipment in the WASTE SHAFT STATION. The FREQUENCY of "Prior to CH WASTE entering the WASTE SHAFT STATION" requires an ATTENDANT to be present before the CH WASTE is moved onto the Waste Shaft Conveyance to DOWNLOAD or, if returning WASTE to the surface, prior to entering the WASTE SHAFT STATION from the TRANSPORT PATH, thus ENSURING the liquid-fueled vehicles/equipment are ATTENDED in compliance with this LCO requirement. Failure to meet or perform this SR requires entry into Condition A.
SR 4.3.8.2	This SR requires VERIFICATION be made prior to introduction of CH WASTE into the TRANSPORT PATH, that the required ATTENDANT(S) be present. The FREQUENCY of "Prior to introduction of CH WASTE into the TRANSPORT PATH" requires an ATTENDANT to be present with any liquid-fueled vehicle in the TRANSPORT PATH, thus ensuring the liquid-fueled vehicles/equipment in the TRANSPORT PATH is ATTENDED in compliance with this LCO requirement. Failure to meet or perform this SR requires entry into Condition B.

(continued)

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.8 Vehicle/Equipment Control (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.3.8.3	This SR requires VERIFICATION be made upon entry into an ACTIVE ROOM EACH SHIFT, while the UNDERGROUND is manned, that liquid-fueled vehicles/equipment are ATTENDED when less than 25 feet from a CH WASTE FACE. Based on operational experience a FREQUENCY of upon entry into an ACTIVE ROOM EACH SHIFT while UNDERGROUND is manned is sufficient to ensure compliance with this LCO requirement. This SR is not required when the UNDERGROUND is not manned. Failure to meet or perform this SR requires entry into Condition C.
SR 4.3.8.4	This SR requires VERIFICATION be made upon entry into an ACTIVE ROOM EACH SHIFT while the UNDERGROUND is manned that no more than two liquid-fueled vehicles/equipment are within 25 feet of a CH WASTE FACE. Based on operational experience, a FREQUENCY of upon entry into an ACTIVE ROOM EACH SHIFT while the UNDERGROUND is manned is sufficient to ensure compliance with this LCO requirement. This SR is not required when the UNDERGROUND is not manned. Failure to meet or perform this SR 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.

2. WIPP-058, *DSA Supporting Calculations, Fuel Spill, HEPA Filter Plugging, and Fire Compartment Over-Pressurization*, Revision 9, Waste Isolation Pilot Plant, Carlsbad, NM.

B3/4.3 Vehicle/Equipment Control (continued)

B3.3.9 Attendance of Areas ≤ 25 Feet of TRU WASTE CONTAINERS When Vehicle/Equipment are Present (Deleted)

B3/4.4 Fuel Confinement

B3.4.1 Fuel Confinement in the RH Bay (Deleted)

B3.4.2 Fuel Barrier in the UNDERGROUND (Deleted)

B3/4.3 Fuel Confinement

B3.4.3 Temporary Liquid-Combustible Storage

Bases

Background Summary

Temporary storage of liquid-combustibles in the UG is required until such time as a means of disposition is determined. Used liquid-combustibles (e.g., diesel, lube oil) extracted from vehicles/equipment located in the contaminated area of the UG, for example, are considered contaminated and therefore cannot be removed to a clean area for disposal. Temporary storage of liquid-combustibles presents an opportunity for radiological material release due to collisions with the stored liquid-combustibles. However, storage of these liquid-combustibles can be limited in volume such that a collision with the liquid-combustible storage containers resulting in the maximum pool size could not reach areas where CH Waste may be present in the TRANSPORT PATH and/or a CH WASTE FACE in an ACTIVE PANEL.

The temporary liquid-combustible storage controls are established to reduce the likelihood of pool fires involving CH WASTE originating from a temporary liquid-combustible storage location. This is accomplished by ensuring that 534 gallons total of liquid-combustibles or less are contained in temporary storage locations, and that the temporary storage locations are 200 feet or greater from the TRANSPORT PATH and/or a CH WASTE FACE in an ACTIVE PANEL. The liquid capacity limit and separation distance requirement is based on analysis for the Lube Truck (LCO 3.3.5). The Lube Truck can contain up to 534 gallons of liquid-combustibles and is therefore required to be 200 feet or greater from a CH WASTE FACE.

Temporary liquid combustible storage controls apply to locations south of S-90 and east of W-170. The designated repositories of UG fuel and oil are located in areas north of S-90 and are addressed as a Design Feature in Section 5.5.7.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

Application to Safety Analysis

The DSA (Ref. 2) identified fire events in the UNDERGROUND that could impact the CH WASTE resulting in a breach of the CH WASTE container and an airborne radiological material release. Fuel pool fires in proximity to CH WASTE involving the storage of temporary liquid-combustibles were analyzed. The event of concern is a vehicle collision at an arbitrary temporary liquid combustible storage location. Unmitigated consequences were determined to be high to facility workers and co-located workers, and low to the MOI.

The temporary storage of liquid combustibles could occur at any location in the UNDERGROUND south of S-90 and east of W-170. Restricting the total volume of liquid-combustibles to 534 gallons and separating each location from the TRANSPORT PATH and any CH WASTE FACE in an ACTIVE PANEL by a distance of at least 200 feet reduces the likelihood of fire events involving radiological material.

A limit of no more than two temporary liquid-combustible storage locations is established. If two locations are used, then they are separated by at least 300 feet. This limits the number of storage locations that are susceptible to collisions and ensures that a fuel spill from a temporary storage location cannot affect CH WASTE and cannot combine with the second storage location in close proximity. Limiting the total quantity of liquid combustibles, together with the separation requirements, provide a safe stand-off distance in the event of a fire but it does not eliminate the potential for fire as there are other potential fire scenarios that could impact the CH WASTE in the AFFECTED AREA.

The intent of this control is to prevent unlimited temporary liquid combustible storage near a TRANSPORT PATH and/or a CH WASTE FACE in an ACTIVE PANEL. However, as this is an AC, it is vulnerable to human error. Limits on the total quantity of liquid combustibles, separation requirements, and the allowable number of storage locations may fail to be followed. However, any such failures (single or multiple control failures) do not in and of themselves create a collision or a combustible liquid spill and an ignition source to initiate the fire.

Re-establishing operation within these control boundaries as rapidly as possible is required to ensure that a fire involving temporary liquid combustible storage does not occur and to restore compliance with the LCO.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

LCO

This LCO addresses the requirement to prohibit temporary liquid-combustible storage from exceeding a total of 534 gallons at two locations combined. The LCO prohibits each storage location from being less than 200 feet from a CH WASTE FACE in an ACTIVE PANEL, and prohibits each storage location from being less than 200 feet from the TRANSPORT PATH. The LCO limits the number of temporary liquid-combustible storage locations to two, separated by no less than 300 feet. Specifically, the LCO addresses the following elements:

Temporary Liquid-combustible Storage south of S-90 and east of W-170 shall be:

- Be located at least 200 feet from the TRANSPORT PATH.
- Be located at least 200 feet from each CH WASTE FACE in an ACTIVE PANEL.
- Be limited to two (2) locations separated by at least 300 feet.
- Be limited to a maximum of 534 gallons of total liquid-combustibles.

Prohibiting the combined volume of liquid-combustibles in temporary liquid-combustible storage locations to 534 gallons or less ensures that the maximum size of a fuel pool resulting from a liquid-combustible storage location will not affect CH WASTE in the TRANSPORT PATH and/or any CH WASTE FACE in an ACTIVE PANEL. WIPP-058 (Ref. 1), DSA Supporting Calculations, Fuel Spill, HEPA Filter Plugging, and Compartment Over Pressurization, concludes that a 534-gallon fuel spill in a 16-foot drift extends approximately 108 feet on either side of the spill. This is significantly less than the required 200-foot separation distance. To ensure the total fuel volume assumption used in WIPP-058 is protected, the combined liquid-combustible inventory of temporary liquid-combustible storage locations is established as 534 gallons. Based on this evaluation in combination with the 200-foot separation distance requirement, CH WASTE cannot be affected by a pool fire when protected by the SAC restrictions.

Liquid-combustibles placed in temporary storage locations are contained in multiple containers (e.g., 55-gallon drums). Placement of these containers in a temporary storage location is accomplished using vehicles (e.g., forklifts) which also contain liquid-combustibles. Vehicles operating in the limited confines of the UNDERGROUND operate at low speeds and therefore, the likelihood of a collision involving the vehicle and all the containers in the storage location is low.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

LCO (continued)

Additionally, as described above, there is significant distance margin for an event involving the rupture of all the temporarily located liquid-combustible containers. The additional liquid-combustible capacity of the vehicle would not challenge the integrity of CH WASTE located greater than the minimum 200-foot separation distance.

The number of temporary liquid-combustible storage locations is limited to 2 locations separated by 300 feet or greater. This limits the number of storage locations that are susceptible to collisions and ensures that a fuel spill from a temporary storage location cannot affect CH WASTE and cannot combine with the second storage location in close proximity. The separation distance allows for distribution of the liquid-combustible volume but also is judged to minimize the potential for inadvertent vehicle interactions with established temporary storage locations.

Prohibiting a temporary liquid-combustible storage location from being within 200 feet of a TRANSPORT PATH and a CH WASTE FACE in an ACTIVE PANEL ensures that a pool fire involving the temporary liquid-combustible storage location will not affect CH WASTE in the TRANSPORT PATH or a CH WASTE FACE in an ACTIVE PANEL. The combined volume of liquid-combustibles contained in temporary storage locations is limited to 534 gallons. WIPP-058 (Ref. 1) concludes that a 534-gallon fuel spill in a 16-foot drift extends approximately 108 feet on either side of the spill. Additionally, a standoff distance of approximately 8 feet from the edge of the pool is sufficient to maintain the radiant heat flux to less than 15.9 kW/m2 on the CH WASTE containers. To ensure the total standoff distance calculated in WIPP-058 is protected, the distance for the safety analysis is conservatively established as 200 feet. Based on this evaluation in combination with the 534-gallon liquid volume limit, CH WASTE cannot be affected by a pool fire when protected by the SAC restrictions.

The note states that temporary storage of liquid combustibles less than 200 feet from the TRANSPORT PATH or less than 200 feet from a CH WASTE FACE in an ACTIVE PANEL is allowed when the liquid is placed behind an installed isolation structure. The isolation structure located between the storage location and the TRANSPORT PATH or a CH WASTE FACE in an ACTIVE PANEL replaces the 200-foot standoff distance. It affords an alternate means of protecting the stored liquid combustible from vehicle collisions and fires. An isolation structure as described in the DSA Section 2.4.4.6.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

MODE Applicability	CH WASTE is present in the UNDERGROUND during WASTE HANDLING and DISPOSAL. Fires involving temporary storage of liquid combustible, which could impact the CH WASTE, could occur during either of these MODES. The WASTE HANDLING VEHICLES/EQUIPMENT and other vehicles/equipment (e. g., bolters, scalers, etc.) are utilized to support operations in the UNDERGROUND during both MODES. While the likelihood of a fire event is reduced when there are no WASTE HANDLING ACTIVITIES, other activities, such as ground control activities, could result in collisions and/or ignition sources. Therefore, during WASTE HANDLING and DISPOSAL Modes, the prohibition on the total temporary liquid-combustible storage must not exceed a total of 534 gallons at two locations no less than 300 feet apart, and each storage location must not be less than 200 feet from a CH WASTE FACE in an ACTIVE PANEL and from the TRANSPORT PATH.
PROCESS AREA Applicability	The events identified in the safety analysis involve the interaction of temporary liquid-combustible storage locations with CH WASTE in the TRANSPORT PATH and/or a CH WASTE FACE in an ACTIVE PANEL. CH WASTE is present and susceptible to fires in the UNDERGROUND. Therefore, this LCO only applies to the UNDERGROUND south of S-90 and east of W-170. The designated repository of UG fuel and oil are located in areas north of S-90 and are addressed as a Design Feature in Section 4.4.8. The AFFECTED AREAS are within 200 feet of the TRANSPORT PATH and/or a CH WASTE FACE in an ACTIVE PANEL, and within the 300 feet of separation between two temporary liquid-combustible storage locations.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

ACTIONS

A.1

LCO 3.4.3 defines the requirement to prohibit a temporary liquid-combustible storage location from being within 200 feet of the TRANSPORT PATH and CH WASTE FACE in an ACTIVE PANEL. However, this is an administrative control and is vulnerable to inadvertent personnel errors by which a temporary liquid-combustible storage location could be positioned within 200 feet of the TRANSPORT PATH or CH WASTE FACE in an ACTIVE PANEL. This ACTION requires that an ATTENDANT be assigned, when the ACTIVE PANEL is manned or during WASTE Transport, at the noncompliant temporary liquid-combustible storage location IMMEDIATELY upon discovery that it is within 200 feet of the TRANSPORT PATH or CH WASTE FACE in an ACTIVE PANEL. The addition of the ATTENDANT will minimize the potential for impacts or collisions that could result in combustible liquid leaks and reduce the risk that a fire could involve the CH WASTE. The ATTENDANT will look for potential collision conditions and identify potential ignition sources. If the ACTIVE PANEL is not manned and no WASTE is being transported, an ATTENDANT is not required to be maintained as there would be no vehicle/equipment activity to create a collision with the temporary liquid-combustible storage location.

Temporary storage of liquid combustible less than 200 feet from the TRANSPORT PATH is allowed when the liquid is placed behind an installed isolation structure (such as bulkheads and barriers described in Section 2.4.4.6.1). The isolation structure located between the storage location and the TRANSPORT PATH replaces the 200-foot standoff distance. Therefore, Condition A is not entered if the temporary storage of liquid combustible is less than 200 feet from the TRANSPORT PATH but the temporary storage is behind an isolation structure.

A Completion Time of IMMEDIATELY limits the time this condition poses an unmitigated fire risk to the CH WASTE. As is the case for all LCO conditions, the restoration of compliance with the LCO statement is preferred. The Required Action is taken along with the understood action of IMMEDIATELY, if possible, relocating any noncompliant liquid-combustible storage containers at least 200 feet from the TRANSPORT PATH and/or CH WASTE FACE in an ACTIVE PANEL.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

ACTIONS (continued)

A.2	This Required Action requires the facility to place CH WASTE in a SAFE CONFIGURATION in the affected TRANSPORT PATH IMMEDIATELY. Placing CH WASTE in a SAFE CONFIGURATION may suspend the movement of CH WASTE in the affected TRANSPORT PATH to reduce the potential for collisions between WASTE HANDLING VEHICLES/EQUIPMENT and temporary liquid-combustible storage when the storage location is less than 200 feet of the TRANSPORT PATH and/or CH WASTE FACE in an ACTIVE PANEL. Depending on the situation, placing CH WASTE in a SAFE CONFIGURATION may also mean completing the transport to the WASTE FACE or returning the CH WASTE to the WASTE SHAFT STATION. The use of other vehicles/equipment is allowed to relocate misplaced containers of stored liquid combustible. The risk is acceptable since ACTION A.1 requires an ATTENDANT, when the ACTIVE PANEL is manned or during WASTE Transport, to minimize the potential for impacts or collisions that could result in combustible liquid leaks and reduce the risk that a fire could involve CH WASTE. The ATTENDANT will look for potential collision conditions during recovery and identify potential ignition sources. Failure to comply with the 200-foot standoff distance from the TRANSPORT PATH and CH WASTE FACE in an ACTIVE PANEL does not in and of itself create a collision or a combustible liquid spill and an ignition source to initiate the fire. However, re-establishing operations within the standoff distance as rapidly as possible is necessary to restore compliance with the LCO.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

ACTIONS (continued)

A.3	This Required Action requires relocating the temporary liquid-combustible storage location at least 200 feet from the TRANSPORT PATH and at least 200 feet from a CH WASTE in the ACTIVE PANEL from the AFFECTED AREA within 48 Hours. The two, temporary liquid-combustible storage locations are not permitted to be within 200 feet of the TRANSPORT PATH and/or a CH WASTE FACE in an ACTIVE PANEL at any time. While failure to comply with the 200-foot standoff distance from the TRANSPORT PATH and CH WASTE FACE in an ACTIVE PANEL does not in and of itself create a collision or a combustible liquid spill and an ignition source to initiate the fire, relocating temporary liquid-combustible storage 200 feet or greater from the TRANSPORT PATH and/or a CH WASTE FACE in an ACTIVE PANEL within 48 Hours is judged to pose acceptable risk until LCO compliance is restored. LCO compliance is restored when all containers temporarily storing liquid combustibles are moved at least 200 feet away from the TRANSPORT PATH and/or a CH WASTE FACE in an ACTIVE PANEL. The use of other vehicles/equipment is allowed to relocate noncompliant containers of stored liquid combustible. The risk is acceptable since ACTION A.1 requires an ATTENDANT to minimize the potential for impacts or collisions that could result in combustible liquid leaks and reduce the risk that a fire could involve CH WASTE. The ATTENDANT will look for potential collision conditions during recovery and identify potential ignition sources.
B.1	This Required Action is entered when temporary liquid-combustible locations are not separated by at least 300 feet. The number of temporary liquid-combustible storage locations is limited to two locations separated by 300 feet or greater. This limits the number of storage locations that are susceptible to collisions and ensures that a fuel spill from a temporary storage location cannot affect CH WASTE and cannot combine with the second storage location in close proximity. The separation distance allows for distribution of the liquid-combustible volume but also is judged to minimize the potential for inadvertent vehicle interactions with established temporary storage locations.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

ACTIONS (continued)

B.1

This Required Action requires re-establishing the 300-foot separation distance between the temporary liquid-combustible storage locations within 48 Hours. Up to two temporary liquid-combustible storage locations are not permitted to be less than 300 feet of each other at any time.

While failure to comply with the 300-foot separation distance between the temporary liquid-combustible storage locations does not in and of itself create a collision or a combustible liquid spill and an ignition source to initiate the fire, relocating temporary liquid-combustible storage location greater than 300 feet apart within 48 Hours is judged to pose acceptable risk until LCO compliance is restored. LCO compliance is restored when all containers temporarily storing liquid combustibles in one location are moved at least 300 feet away from liquid combustibles containers in the second location.

The use of other vehicles/equipment is allowed to relocate noncompliant containers of stored liquid combustible. The risk is acceptable since ACTION A.1 and ACTION D.1 require an ATTENDANT to minimize the potential for impacts or collisions that could result in combustible liquid leaks and reduce the risk that a fire could involve CH WASTE, when the ACTIVE PANEL is manned or during WASTE Transport. Each ATTENDANT will look for potential collision conditions during recovery and identify potential ignition sources. Compliance with total volume of liquid-combustibles of 534 gallons for the combined temporary liquid-combustible storage locations and compliance with the separation from the TRANSPORT PATH and any CH WASTE FACE in an ACTIVE PANEL by a distance of at least 200 feet significantly reduce the risk of pool fires involving temporary liquid-combustible storage locations.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

ACTIONS (continued)

C.1

This Required Action is entered when temporary liquid-combustible locations are greater than two. The number of temporary liquid-combustible storage locations is limited to two locations separated by 300 feet or greater. This limits the number of storage locations that are susceptible to collisions and ensures that a fuel spill from a temporary storage location cannot affect CH WASTE and cannot combine with the second storage location in close proximity. The separation distance allows for distribution of the liquid-combustible volume but also is judged to minimize the potential for inadvertent vehicle interactions with established temporary storage locations.

This Required Action reduces the number of temporary liquid-combustible locations to no more than two within 72 Hours. Up to two temporary liquid-combustible storage locations are permitted at any time.

The 72-Hour COMPLETION TIME is justified for the following reason. While failure to comply with the limit of two temporary liquid-combustible storage locations, each storage location is presumably compliant with all other LCO requirements. Compliance with total volume of liquid-combustibles of 534 gallons for the combined temporary liquid-combustible storage locations, compliance with the separation from the TRANSPORT PATH and any CH WASTE FACE in an ACTIVE PANEL by a distance of at least 200 feet, and compliance with temporary liquid-combustible storage locations being separated by at least 300 feet significantly reduce the risk of pool fires involving temporary liquid-combustible storage locations.

The use of other vehicles/equipment is allowed to reduce the number of temporary liquid-combustible storage locations to two. The risk is acceptable since ACTION A.1 and ACTION D.1 require an ATTENDANT to minimize the potential for impacts or collisions that could result in combustible liquid leaks and reduce the risk that a fire could involve CH WASTE, when the ACTIVE PANEL is manned or during WASTE Transport. The ATTENDANT reduces the potential for impacts or collisions that could result in combustible liquid leaks, and reduces the risk that a fire could involve the CH WASTE. Each ATTENDANT will look for potential collision conditions during recovery and identify potential ignition sources.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

ACTIONS (continued)

D.1

This Required Action is entered when the total contained volume of temporarily stored liquid-combustibles exceeds 534 gallons. By ensuring that 534 gallons total of liquid-combustibles or less are contained in temporary storage locations, the standoff distances of 200 feet or greater from the TRANSPORT PATH and/or a CH WASTE FACE in an ACTIVE PANEL reduce the likelihood of pool fires originating from a temporary liquid-combustible storage location involving CH WASTE. The liquid capacity limit and separation distance requirement is based on analysis for the Lube Truck (LCO 3.3.5). The Lube Truck can contain up to 534 gallons of liquid-combustibles and is therefore required to be 200 feet or greater from a CH WASTE FACE.

This ACTION requires that an ATTENDANT be assigned, when the ACTIVE PANEL is manned or during WASTE Transport, IMMEDIATELY upon discovery that the total contained volume of temporarily stored liquid-combustibles exceeds 534 gallons inclusive of one or both storage locations. The ATTENDANT will serve to minimize the potential for impacts or collisions that could result in combustible liquid leaks and reduce the risk that a fire could involve CH WASTE. The ATTENDANT will look for potential collision conditions and identify potential ignition sources. If the ACTIVE PANEL is not manned and no WASTE is being transported, the ATTENDANT is not required as there would be no vehicle/equipment activity to create a collision between vehicle/equipment and the temporary liquid-combustible storage locations.

A Completion Time of IMMEDIATELY limits the time this condition poses an unmitigated fire risk to the CH WASTE. As is the case for all LCO conditions, the restoration of compliance with the LCO statement is preferred. The Required Action is taken along with the understood action of IMMEDIATELY, if possible, reducing the total contained volume of temporarily stored liquid-combustibles to less than 534 gallons inclusive of one or both storage locations.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

ACTIONS (continued)

D.2

This Required Action requires the facility to place CH WASTE in a SAFE CONFIGURATION in the affected TRANSPORT PATH IMMEDIATELY. Placing CH WASTE in a SAFE CONFIGURATION may suspend the movement of CH WASTE in the affected TRANSPORT PATH to reduce the potential for collisions between WASTE HANDLING VEHICLES/EQUIPMENT and temporary liquid-combustible storage when the total contained volume of temporarily stored liquid-combustibles exceeds 534 gallons inclusive of one or both storage locations. Depending on the situation, placing CH WASTE in a SAFE CONFIGURATION may also mean completing the transport to the WASTE FACE or returning the CH WASTE to the WASTE SHAFT STATION.

The use of other vehicles/equipment is allowed to reduce the volume of liquid combustibles to less than 534 gallons. The risk is acceptable for the reasons stated above, and since ACTION D.1 requires an ATTENDANT when the ACTIVE PANEL is manned or during WASTE Transport. The ATTENDANT reduces the potential for impacts or collisions that could result in combustible liquid leaks, and reduces the risk that a fire could involve the CH WASTE. Each ATTENDANT will look for potential collision conditions during recovery and identify potential ignition sources.

Failure to comply with the allowable number of temporary liquid-combustible storage locations does not in and of itself create a collision or a combustible liquid spill and an ignition source to initiate the fire. However, reducing the total volume of liquid combustibles to less than 534 gallons is necessary to restore compliance with the LCO.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

ACTIONS (continued)

D.3	This Required Action reduces the contained volume of temporarily stored liquid-combustibles to less than 534 gallons within 48 Hours. While up to two temporary liquid-combustible storage locations are permitted at any time, the total stored volume must not exceed 534 gallons. Exceeding the 534-gallon limit does not in and of itself create a collision or a combustible liquid spill and an ignition source to initiate the fire. Reducing the temporary liquid-combustible storage volume to less than 534 gallons within 48 Hours is judged to pose acceptable risk until LCO compliance is restored. LCO compliance is restored when the combined total volume of liquid combustible, at up to two locations, is 534 gallons or less. The use of other vehicles/equipment is allowed to reduce the combined total volume of liquid combustible, at up to two locations, is 534 gallons or less. The risk is acceptable for the reasons stated above, and since ACTION D.1 requires an ATTENDANT when the ACTIVE PANEL is manned or during WASTE Transport. The ATTENDANT reduces the potential for impacts or collisions that could result in combustible liquid leaks, and reduces the risk that a fire could involve the CH WASTE. The ATTENDANT will look for potential collision conditions during recovery and identify potential ignition sources.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

ACTIONS (continued)

E.1

This Required Action is entered when Required Actions and/or Completion Times of CONDITION A, B, C, or D are not met. The CONDITIONS address discoveries where the total volume of liquid-combustibles exceeds 534 gallons, the temporary liquid-combustible storage locations are less than 200 feet from the TRANSPORT PATH and any CH WASTE FACE in an ACTIVE PANEL, and where more than two temporary liquid-combustible storage locations exist or are not separated by at least 300 feet.

ACTION E.1 requires that an ATTENDANT be assigned, when the ACTIVE PANEL is manned at each temporary liquid-combustible storage location IMMEDIATELY upon discovery that Required Actions and/or Completion Times cannot be met. Each ATTENDANT will serve to minimize the potential for impacts or collisions that could result in combustible liquid leaks and reduce the risk that a fire could involve the CH WASTE. Each ATTENDANT will look for potential collision conditions and identify potential ignition sources. If the ACTIVE PANEL is not manned, ATTENDANTs are not required as there would be no vehicle/equipment activity to create a collision between vehicle/equipment and the temporary liquid-combustible storage locations.

A Completion Time of IMMEDIATELY limits the time this condition poses an unmitigated fire risk to the CH WASTE. As is the case for all LCO conditions, the restoration of compliance with the LCO statement is preferred. The Required Action is taken along with the understood action of IMMEDIATELY, if possible, satisfying the Required Actions and/or Completion Times.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

ACTIONS (continued)

E.2	This Required Action requires the facility to SUSPEND WASTE HANDLING ACTIVITIES in the UNDERGROUND IMMEDIATELY other than those related to re-establishing compliance of temporary liquid-combustible storage locations. Suspending WASTE HANDLING ACTIVITIES in the UNDERGROUND reduces any potential for collisions between WASTE HANDLING VEHICLES/EQUIPMENT and noncompliant temporary liquid-combustible storage locations. ACTIVITIES related to re-establishing compliance of temporary liquid-combustible storage locations are allowed under this Required Action. The risk associated with allowing activities to be performed to re-establish compliance of temporary liquid-combustible storage locations is acceptable since all WASTE HANDLING ACTIVITIES unrelated to restoring compliance with the LCO are SUSPENDED. ACTION E.1 requires ATTENDANTs at each location, when the ACTIVE PANEL is manned. Each ATTENDANT will look for potential collision conditions during recovery and identify potential ignition sources. Failure to comply with the allowable number of temporary liquid-combustible storage locations does not in and of itself create a collision or a combustible liquid spill and an ignition source to initiate the fire. However, reducing the temporary liquid-combustible storage locations to two is necessary to restore compliance with the LCO.
E.3	This Required Action restores LCO compliance. The action requires completion of any one of several actions A.3, B.1, C.1, and D.3. This may include restoring the total volume of liquid-combustibles to a maximum of 534 gallons, restoring the temporary liquid-combustible storage locations to less than 200 feet from the TRANSPORT PATH and any CH WASTE FACE in an ACTIVE PANEL, and restoring the temporary liquid-combustible storage locations to no more than two separated by at least 300 feet. Condition E.3 allows 14 Days to restore LCO compliance. The risk associated with allowing 14 Days to restore LCO compliance is acceptable since all WASTE HANDLING ACTIVITIES unrelated to restoring compliance with the LCO are SUSPENDED. ACTION E.1 requires ATTENDANTs at each location, when the ACTIVE PANEL is manned. Each ATTENDANT will look for potential collision conditions during recovery and identify potential ignition sources.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

Surveillance Requirements

SR 4.4.3.1	This SR verifies that each temporary liquid-combustible storage location is either 200 feet or greater from the TRANSPORT PATH, or is placed behind an installed isolation structure. This ensures that a fuel spill from a temporary liquid combustible storage location cannot affect CH Waste that may be present in the TRANSPORT PATH in use. Small quantities of combustible liquids are controlled procedurally through the Fire Protection Program (FPP), Key Element KE 11-5, and the work control process. The small quantities of liquid combustibles that can be safely stored (e. g., in a small standard fireproof or flammable storage cabinet of less than 15 gallons) are judged to be an insignificant contributor to pool fire risk and not be subject to the controls under this SAC. The storage of these quantities of liquid combustibles is subject to Fire Protection Program evaluation and approval. The FREQUENCY of MONTHLY, and following a change of TRANSPORT PATH and upon establishment of a temporary liquid-combustible storage area is adequate to ensure a fire involving a liquid-combustible in temporary storage that could affect CH WASTE is prevented. The FREQUENCY of MONTHLY has been determined to be adequate based on operator training and experience, and because a temporary liquid-combustible storage area is seldom established. If there is a change of TRANSPORT PATH or an establishment of a temporary liquid-combustible storage area this SR must be performed to verify compliance with the control of 200 feet or greater between the TRANSPORT PATH and the location of a temporary liquid-combustible storage area. Failure to meet or perform this SR requires entry into Condition A.
SR 4.4.3.2	This SR verifies that each temporary liquid-combustible storage location is either 200 feet or greater from a CH WASTE FACE in an ACTIVE PANEL, or is placed behind an installed isolation structure. This ensures that a fuel spill from a temporary liquid combustible storage location cannot affect CH Waste that may be present in a CH WASTE FACE in an ACTIVE PANEL. Small quantities of combustible liquids are controlled procedurally through the Fire Protection Program (FPP), Key Element KE 11-5, and the work control process. The small quantities of liquid combustibles that can be safely stored (e.g., in a small standard fireproof or flammable storage cabinet of less than 15 gallons) is judged to be an insignificant quantity and not be subject to the controls under this SAC. The storage of these quantities of liquid combustibles is subject to Fire Protection Program evaluation and approval. The surveillance will be performed MONTHLY. The MONTHLY verification is sufficient to monitor a designated temporary storage location, ensuring a fire involving a liquid-combustible in temporary storage that could affect CH Waste, is prevented. The FREQUENCY of MONTHLY has been determined to be adequate based on operator training and experience. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.3 Fuel Confinement (continued)

B3.4.3 Temporary Liquid-Combustible Storage (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.4.3.3	This SR verifies that temporary liquid-combustible storage locations are limited to 2 and, if 2 locations exist, that the locations are separated by 300 feet or greater. This control limits the number of storage locations that are susceptible to collisions and ensures that a fuel spill from a temporary storage location cannot affect CH WASTE and cannot combine with the second storage location in close proximity. The separation distance allows for distribution of the liquid-combustible volume but also is judged to minimize the potential for inadvertent vehicle interactions with established temporary storage locations. The surveillance will be performed MONTHLY. The MONTHLY verification is sufficient to monitor the number of temporary storage locations and the distance separating them, ensuring a fire involving a liquid-combustible in temporary storage that could affect CH Waste, is prevented. The FREQUENCY of MONTHLY has been determined to be adequate based on operator training and experience. Failure to meet or perform this SR requires entry into Condition B or C.
SR 4.4.3.4	This SR verifies that the total inventory of temporarily stored liquid-combustibles is no greater than 534 gallons in up to two locations combined. The surveillance will be performed MONTHLY. The MONTHLY verification is sufficient to monitor the number of temporary storage locations, ensuring a fire involving a liquid-combustible in temporary storage that could affect CH Waste, is prevented. The FREQUENCY of MONTHLY has been determined to be adequate based on operator training and experience. Failure to meet or perform this SR requires entry into Condition D.

References

1. WIPP-058, *DSA Supporting Calculations, Fuel Spill, HEPA Filter Plugging, and Fire Compartment Over-Pressurization*, Revision 9, Waste Isolation Pilot Plant, 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.

B3/4.5 Waste Handling

B3.5.1 CH WASTE Handling (Deleted)

B3.5.2 Waste Conveyance Operations (Deleted)

B3.5.3 Waste Handling in the OUTSIDE AREA (Deleted)

B3/4.6 Compressed Gas Cylinder Program

B3.6.1 Storage of Compressed Gas Cylinders (Deleted)

B3.6.2 Use of Compressed Gas Cylinders (Deleted)

B3.6.3 Transport of Compressed Gas Cylinders (Deleted)

B3/4.7 Suspect Container Response

B3.7.1 Waste Acceptability Control

Bases

Background Summary

The WIPP WAC (Ref. 1) includes requirements regarding waste forms and packaging. The allowed packaging provides confinement to resist adverse events (e.g., impacts, package compatibility with the waste, package integrity at increased temperature). The allowed waste forms prohibit incompatible and reactive materials (e.g., pyrophorics, oxidizers, water reactive chemicals, exothermic chemical reactions). Limiting flammable gas and volatile organic compound concentrations in the innermost confinement layer reduces the likelihood of formation of combustible or flammable atmospheres within each container. Limiting curie content protects assumptions regarding the quantity of radiological material involved in an event and therefore, the consequences of such events.

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 Type B SHIPPING PACKAGES, moves the CLOSED Type B SHIPPING PACKAGES into the WHB, opens the Type B SHIPPING PACKAGES, 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 is an Initial Condition to the hazard and accident analyses.

WIPP is responsible for VERIFYING that the labels on containers, as 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 Type B SHIPPING PACKAGE, either in actual or stated contents, can result in a suspect container being received and disposed.

On occasion, WIPP receives a WASTE CONTAINER that has physical characteristics (e.g., surface contamination, container degradation, bulging), or documentation inconsistencies that cause the container to be considered suspect. Additionally, WIPP may receive notification from the waste generator that a container is suspect, potentially not compliant with the WIPP WAC. Waste Acceptability Control (LCO 3.7.1) allows for WIPP to take pre-determined actions for certain analyzed container conditions to reduce the likelihood for a hazardous event involving the suspect container.

Waste Acceptability Control does not replace or circumvent the USQ process. Any identified Waste Container noncompliance with the WAC could be evaluated as an “as-found condition” in accordance with the WIPP Unreviewed Safety Question (USQ) process, including an evaluation for a Potential Inadequacy in the Safety Analysis (PISA).

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

Application to Safety Analysis

This LCO protects the requirements for the receiving of WASTE at WIPP. The DSA (Ref. 2) assumes that WASTE transported to WIPP is in compliance with the requirements in the DOE approved WIPP WAC.

The hazard analysis (Ref. 3) credits the WIPP WAC requirements as Initial Conditions or the starting point for postulating hazardous events as follows:

- CH WASTE CONTAINERS subject to waste stream certification requirements [compliance with the WIPP WAC, the Contact-handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC) (Ref. 4), and the Transuranic Package Transporter Model III TRU Waste Authorized Methods for Payload Control (TRUPACT-III TRAMPAC) (Ref. 5).

- WASTE CONTAINER inventories are in compliance with the plutonium-239 equivalent curies (PE-Ci) limits and fissile gram equivalent limits, which are calculated by the generator facility for comparison with the WIPP WAC.

- Generator sites-supplied WASTE CONTAINER inventories are in compliance with WIPP WAC and reduce the likelihood of WASTE CONTAINER fires by prohibiting ignitable and corrosive material and non-radiological pyrophoric material in the waste, and by limiting radiological pyrophorics to less than 1% by weight, by prohibiting known incompatible chemicals (e.g., reactive) in the waste, and by installing vents in the WASTE CONTAINERS, which reduces hydrogen buildup in WASTE CONTAINERS.

- Generator sites that ship waste to the WIPP facility for disposal comply with the required fissile mass limits, special reflector/moderator mass limits, WASTE CONTAINER types, and waste characteristics. The fissile mass limits are derived from the CH Nuclear Criticality Safety Evaluation (WIPP-016 (Ref. 7)) identified fissile mass limits and are specific to the WIPP waste handling, storage, and disposal configurations.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

Application to Safety Analysis (continued)

- WASTE CONTAINERS supplied by the generator sites are assumed to be compliant with packaging requirements (of sound integrity, noncombustible, vented, and closed) in accordance with the WIPP WAC and the Hazardous Waste Facility Permit (Ref. 9). This is significant since packaged material will burn in a confined manner and material ejected from a container would burn in an unconfined manner. Additionally, WASTE CONTAINERS from the generator sites are certified free of surface contamination above 10 CFR 835, Appendix D limits upon shipment.

- CH WASTE CONTAINERS are shipped to WIPP in Nuclear Regulatory Commission Certified CLOSED Type B SHIPPING PACKAGES, which protect their inner containers from releasing their radiological inventory when they are in the WHB PARKING AREA UNIT. CLOSED Type B SHIPPING PACKAGES prevent release of radiological material. Type B SHIPPING PACKAGE external surfaces are required to measure a dose rate equal to or less than 200 mrem per hour.

The Central Characterization Program (CCP), or another CBFO approved program, is tasked with characterizing WASTE on behalf of the waste generator sites to obtain information to satisfy the WIPP WAC before WASTE CONTAINERS have been certified for disposition at WIPP. Characterization at the generator sites includes compilation of Acceptable Knowledge (AK) into an auditable record, radiography and/or visual examination, flammable gas analysis, and Non-Destructive Assay (NDA) and/or radiochemistry. This work is conducted in accordance with the CBFO, Quality Assurance Program Document, the WIPP Quality Assurance Program Description (WP 13-1), and the CBFO *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (QAPPD, CCP-PO-001) (or equivalent approved plan if CCP is not responsible for the work).

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

Application to Safety Analysis (continued)	The actual WASTE CONTAINER contents cannot be VERIFIED at WIPP. Upon receipt of WASTE at WIPP the shipping manifests are examined to VERIFY their compliance with the WIPP WDS. After WASTE is received and manifests are compared with WDS data entries for consistency at WIPP, the Type B SHIPPING PACKAGES are unloaded; WASTE CONTAINERS are removed from their Type B SHIPPING PACKAGES 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 that may occur. LCO 3.7.1 defines the ACTIONS to evaluate and respond to a suspect WASTE CONTAINER identified to be noncompliant with the WIPP WAC.
LCO	The LCO states that, WASTE CONTAINERS SHALL be compliant with the WIPP WAC. LCO 3.7.1 requires that WASTE be compliant with the WIPP WAC prior to acceptance at WIPP. This is implemented by the SRs to determine that the Shipping Manifest is consistent with the WIPP WDS at the time the WASTE is received at the WIPP security portal. 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 may identify discrepancies in the shipper paperwork and the certification data that may indicate that a suspect WASTE CONTAINER was received at WIPP. WASTE CONTAINER integrity issues may be discovered during or after WASTE CONTAINER receipt, processing, and disposal by WIPP. WIPP is then responsible for determining the location of that WASTE CONTAINER and ensuring the safety of personnel and environment until such time as the final disposition of the subject container can be determined. The ACTIONS associated with the LCO provide for a disciplined response in the event that a noncompliant WASTE CONTAINER is identified. Entry into the LCO does not replace or circumvent the USQ process for determining if a PISA exists. A noncompliant determination requires entry into the LCO. Independently, the USQ process and PISA evaluation is determined. The DSA evaluates deflagrations/over pressurizations in unique and representative events and prescribes controls. Indication of pressurization may not result in a PISA. For these instances, the RESPONSE PLAN describing the planned action to be taken to comply with the LCO is required.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

MODE Applicability	WASTE is received at the WIPP site and transported to the UNDERGROUND for long-term disposition. Therefore, this LCO is applicable in all MODES corresponding to PROCESS AREAS, as defined in Table 1.2-2. In addition, The OUTSIDE AREA does not have any defined MODE and is applicable is at all times after WASTE receipt at WIPP.
PROCESS AREA Applicability	The PROCESS AREAS that house WASTE CONTAINERS include the CH BAY, ROOM 108, WASTE SHAFT ACCESS AREA, OUTSIDE AREA, and UNDERGROUND. A suspect WASTE CONTAINER could be identified at any point during WASTE HANDLING and WASTE STORAGE ACTIVITIES. The storage of WASTE, in a CLOSED Type B SHIPPING PACKAGES, is permitted in the OUTSIDE AREA. A noncompliant WASTE CONTAINER could be identified when stored in the OUTSIDE AREA.
ACTIONS	
A.1	In the event the Shipping Manifest is found to be discrepant with the WDS, Condition A is entered. The WDS entries are established and approved prior to shipment and must match the approved manifest upon arrival. Since the Shipping Manifest is examined prior to removal of any WASTE CONTAINER(S), any inconsistencies with the WDS will keep the waste in its CLOSED Type B SHIPPING PACKAGE until the noncompliance can be dispositioned. The CLOSED Type B SHIPPING PACKAGE is designed and credited to protect personnel and the environment from release of the radiological material it contains.
A.2	The Shipping Manifest may be discrepant for a number of reasons. Minor discrepancies could include paperwork errors and could be corrected quickly. Experience at WIPP has shown that rectifying discrepancies with the Shipping Manifest and restoring compliance with WIPP WAC within the Completion Time of 7 Days provides adequate time to contact the CCP or another CBFO approved organization to resolve the noncompliant items and return a suspect container to a WIPP WAC compliant state, while minimizing risk. Should the noncompliant items not be readily rectified, a RESPONSE PLAN is developed in accordance with Required Action F.1.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

ACTIONS (continued)

B.1	In the event that a WASTE CONTAINER(S) is determined to be noncompliant through observable configuration, damage, or degradation, Condition B is entered. Condition B is also entered for damage to WASTE CONTAINER(s) that occurs at the WIPP site. Upon receipt of WASTE CONTAINERS, WIPP completes a series of checks upon WASTE processing to VERIFY container integrity after receipt. Although WASTE CONTAINER integrity issues may be discovered during processing or disposal of WASTE, suspect WASTE CONTAINER(S) may be identified after the WASTE is emplaced. Identifying the suspect WASTE CONTAINER IMMEDIATELY upon removal of WASTE CONTAINER(S) from its SHIPPING PACKAGE supports the disposition and resolution of the noncompliant WASTE CONTAINER. This Required Action requires accessible WASTE CONTAINER(S) with improper configuration, structural defects, damage, or degradation to be placed in a SAFE CONFIGURATION IMMEDIATELY, thereby reducing the potential for fires or other accidents that could impact the CH WASTE.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

ACTIONS (continued)

B.2.1

Condition B provides the option of either placing the accessible noncompliant WASTE CONTAINER(S) in a WIPP WAC compliant overpack container or implementing a RESPONSE PLAN.

Required Action B.2.1 requires accessible WASTE CONTAINER(S) with structural defects, damage, or degradation to be overpacked in a WIPP WAC compliant WASTE CONTAINER within 4 Days of entering in Condition B. WIPP does not open or modify WASTE CONTAINERS received from generator sites. However, overpacking noncompliant containers is an allowed ACTIVITY in the DSA.

Based on the availability of shift crew, the 4 Days allotted to complete an overpack ACTIVITY is needed for staging a WIPP WAC compliant overpack, disassembly of the payload, dunnage adjustments, mockups, modifying the WDS with new entries, and documentation and approvals. Allowing adequate time to mockup and procedure walkthroughs for the overpacking operations reduces the potential for errors and reduces risk to workers. During this time period, the noncompliant WASTE CONTAINER is in a SAFE CONFIGURATION in accordance with Required Action B.1.

WASTE CONTAINERS are visually inspected for proper configuration, physical damage (e.g., severe rusting, apparent structural defects, etc.) and leakage to ENSURE they are in good condition prior to storage. WASTE CONTAINERS are also checked for removable external surface contamination. WIPP may initiate local decontamination on containers above the WIPP WAC limits, in good condition, and free of leakage. Removable external surface contamination in excess of the Table 3.7.1-1 limits is controlled in accordance with established operational and radiological control procedures. Should the noncompliant items not be readily rectified, Required Action B.2 provides the option to develop a RESPONSE PLAN in accordance with Required Action B.2.2.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

ACTIONS (continued)

B.2.2	Required Action B.1 requires WIPP to place WASTE CONTAINER(S) in a SAFE CONFIGURATION. Required Action B.2.1 requires placing accessible WASTE CONTAINER(S) in a WIPP WAC compliant overpack container. Should the noncompliant items not be rectified within the required Completion Time, a RESPONSE PLAN is developed in accordance with Required Action B.2.2. A CBFO-approved RESPONSE PLAN SHALL be implemented within 10 Days of entry into Condition B.2.2. To support the completion of this Required Action within 10 Days, the RESPONSE PLAN must be prepared and submitted to CBFO for approval. Following CBFO approval, the plan must be implemented. All of these actions should be considered in achieving the required Completion Time of 10 Days. Since IMMEDIATE action is taken in B.1 to place WASTE CONTAINER(S) in a SAFE CONFIGURATION, a 10 Day Completion Time is deemed adequate to minimize the risk. The RESPONSE PLAN SHALL provide an evaluation of the available information on the suspect WASTE CONTAINER and SHALL include the appropriate actions to disposition the suspect WASTE CONTAINER(S). Required Action B.2.2 implements the M&O Contractor / DOE approved RESPONSE PLAN which contains adequate direction and compensatory measures to resolve the WASTE CONTAINER noncompliance. The plan content should specify, based on existing conditions, the detailed plan of action for restoring compliance with the LCO. Section 5.4.4 of this TSR discusses the use and content of RESPONSE PLANS. For a RESPONSE PLAN written to address external WASTE CONTAINER(s) damage sustained at the WIPP site, restoring the PROCESS AREA within the framework of the TSR may be accomplished by evaluating the damage to the WASTE CONTAINER(s) and demonstrating that the existing condition is bounded by the current approved safety analysis and becomes the means of compliance with LCO 3.7.1. Required Action B.2.2 does not replace or circumvent the USQ process for determining if a PISA exists. A positive PISA determination will still require entry into LCO 3.7.1 for a suspect noncompliant WASTE CONTAINER(S). Because the safety analysis evaluates loss of confinement events, indication of WASTE CONTAINER defects may not result in a positive PISA determination. For these instances, the RESPONSE PLAN describing the planned action to be taken to comply with TSR requirements is required.

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

ACTIONS (continued)

C.1	In the event that a WASTE CONTAINER(S) is suspected of being noncompliant through observable indications of pressurization (past or present), Condition C is entered. Evidence that a WASTE CONTAINER(S) has been under pressure and has experienced pressure relief or indications that a WASTE CONTAINER(S) is pressurized, requires immediate attention to protect workers from a potentially imminent event. Pressurization can be indicated by a fairly uniform expansion of the sidewalls, bottom or top. Past pressurization can be indicated by a notable outward deflection of the bottom or top and/or material discharge from the container. Warping of surfaces is also an indication the container has experienced pressurization. Required Action C.1 requires WASTE HANDLING ACTIVITIES to be suspended IMMEDIATELY. SUSPENDING WASTE HANDLING ACTIVITIES IMMEDIATELY due to the potential hazards also minimizes risk. Once compensatory measures are determined by the FSM then this action no longer applies.
C.2	Required Action C.2 requires evacuation of the accessible AFFECTED AREA IMMEDIATELY and limiting access to the area where the WASTE CONTAINER(S) are stored by posting signage and/or erecting barricades. Due to the potential hazard that exists, the FSM SHALL determine the AFFECTED AREA and place signage and/or erect barricades to prevent access to the accessible AFFECTED AREA. The Completion Time of IMMEDIATELY is required to evacuate, and limit access to the accessible AFFECTED AREA to minimize risk. The FSM SHALL contact Nuclear Safety to enter the USQ process to determine whether subsequent action requires DOE approval.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

ACTIONS (continued)

C.3

Required Action C.1 requires WIPP to SUSPEND WASTE HANDLING ACTIVITIES in accessible AFFECTED AREA and Required Action C.2 requires evacuating personnel from the accessible AFFECTED AREA and restricting access to that area.

Once the nature of the suspect container is understood, a CBFO-approved RESPONSE PLAN SHALL be implemented within 10 Days of entry into Condition C. To support the completion of this Required Action within 10 Days, the RESPONSE PLAN must be prepared and submitted to CBFO for approval. Following CBFO approval, the plan must be implemented. All of these actions should be considered in achieving the required Completion Time of 10 Days. Since IMMEDIATE action is taken in C.1 and C.2 to SUSPEND WASTE HANDLING ACTIVITIES in the accessible AFFECTED AREA and to evacuate and post the AFFECTED AREA respectively, a 10 Day Completion Time is deemed adequate to minimize the risk. The RESPONSE PLAN SHALL provide an evaluation of the available information on the suspect WASTE CONTAINER and SHALL include the appropriate actions to disposition the suspect WASTE CONTAINER(S).

Required Action C.3 implements the WIPP M&O Contractor / DOE approved RESPONSE PLAN which contains adequate direction and compensatory measures to resolve the WASTE CONTAINER noncompliance. Depending on the hazards of concern, acceptable compensatory measures include container overpacking or other containment such as a CLOSED Type B SHIPPING PACKAGE, isolation through physical location, or similar protective measures specified in DOE STD-5506 for WASTE CONTAINER(S). The plan content should specify, based on existing conditions, the detailed plan of action for restoring compliance with the LCO. Section 5.4.4 of this TSR discusses the use and content of RESPONSE PLANS.

Required Action C.3 does not replace or circumvent the USQ process for determining if a PISA exists. A positive PISA determination will still require entry into LCO 3.7.1 for a suspect noncompliant WASTE CONTAINER(S). Because the safety analysis evaluates deflagrations/over pressurizations in bounding events and prescribes controls, indication of pressurization may not result in a PISA USQ. For these instances, the RESPONSE PLAN describing the planned action to be taken to comply with TSR requirements is required.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

ACTIONS (continued)

D.1	If after opening the SHIPPING PACKAGE, it is found that the WASTE CONTAINERS inside the SHIPPING PACKAGE are not the containers that were to be shipped per the shipping manifest and the WDS system, the incorrectly shipped WASTE CONTAINERS must be placed in a SAFE CONFIGURATION. This may include moving the WASTE CONTAINERS to a storage location in the CH BAY and holding the containers in storage until the discrepancy with the shipping manifest and the WDS has been resolved. The Completion Time of IMMEDIATELY to place the undetermined SHIPPING CONTAINERS in a SAFE CONFIGURATION minimizes the risk associated with these containers. The IMMEDIATE Completion Time is sufficient to ENSURE the suspect containers are isolated and placed in a SAFE CONFIGURATION to limit the risk of storing unauthorized containers in the UNDERGROUND.
D.2	The discrepancy between the WASTE CONTAINER(S) received and the WDS must be resolved to determine the disposition of the WASTE CONTAINER(S). Resolution of the discrepancy will determine if the WASTE CONTAINER(S) can be emplaced in the WIPP UNDERGROUND or returned to the WASTE Shipper. A Completion Time of 7 Days is sufficient to research the WDS, the shipping manifest and, if necessary, contact the shipper for additional details or confirmation of the materials in the containers. The 7 Days will allow sufficient time to resolve the discrepancy while minimizing the risk associated temporary storage of the containers. Entry into Condition F.1 is required if Action D.2 cannot be completed with 7 Days. After the resolution of the discrepancy, a decision will be made as to the disposition of the WASTE CONTAINERS (i.e., to emplace in the UNDERGROUND or return to the shipper). The actual activities to disposition the containers may occur after the 7-day period allotted to resolve the paperwork discrepancy. Should the noncompliant items not be readily rectified, a RESPONSE PLAN is developed in accordance with Required Action F.1.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

ACTIONS (continued)

E.1	Notification or discovery of a WASTE CONTAINER(S) that can potentially result in internal fires, deflagrations/ explosions, or other exothermic reactions, Condition E is entered. WIPP assumes that the container is pressurized or the material inside the suspect WASTE CONTAINER(S) is reactive. Under this ACTION, WIPP also assumes the potential for internal energetic events such as fires, deflagrations/explosions, exothermic reactions, criticality, or MAR greater than the WIPP WAC allowable limits cannot be ruled out based on the notification or when no additional information regarding the noncompliant container is available. This situation requires immediate attention to protect workers from a potentially imminent event. The WDS database records the location of each WASTE CONTAINER entering the WIPP Site. Required Action E.1 requires that the suspect WASTE CONTAINER(S) be located IMMEDIATELY. The Completion Time of IMMEDIATELY is required to locate the hazardous WASTE CONTAINER to minimize risk.
E.2	Once the noncompliant containers are located, Required Action E.2 requires WASTE HANDLING ACTIVITIES to be suspended IMMEDIATELY. SUSPENDING WASTE HANDLING ACTIVITIES IMMEDIATELY due to the potential hazards also minimizes risk. Once compensatory measures are determined by the FSM then this action no longer applies.
E.3	Once the noncompliant containers are located, Required Action E.3 requires evacuation and restricting access to the AFFECTED AREA IMMEDIATELY. Due to the potential hazard that exists, the FSM SHALL place the accessible AFFECTED AREA in a SAFE CONFIGURATION. The Completion Time of IMMEDIATELY is required to evacuate, limit access, and place the accessible AFFECTED AREA in a SAFE CONFIGURATION to minimize risk. The FSM SHALL contact Nuclear Safety to enter the USQ process to determine whether subsequent action requires DOE approval.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

ACTIONS (continued)

E.4

Once the nature of the noncompliance is understood, a CBFO-approved RESPONSE PLAN SHALL be implemented within 10 Days of entry into Condition E. To support the completion of this Required Action within 10 Days, the RESPONSE PLAN must be prepared and submitted to CBFO for approval. Following CBFO approval, the plan must then be implemented. All of these actions should be considered in achieving the required Completion Time of 10 Days. Since IMMEDIATE action is taken in Required Action E.1, E.2, and E.3 to place the noncompliant WASTE CONTAINER(S) in a SAFE CONFIGURATION, the 10 Day Completion Time is deemed adequate to minimize risk. The RESPONSE PLAN SHALL provide an evaluation of the available information on the noncompliant WASTE CONTAINER and SHALL include the appropriate actions to disposition the noncompliant WASTE CONTAINER(S).

Required Action E.4 implements the WIPP M&O Contractor / DOE approved RESPONSE PLAN which contains adequate direction and compensatory measures to resolve the WASTE CONTAINER noncompliance. Depending on the hazards of concern, acceptable compensatory measures include container overpacking or other containment such as a CLOSED Type B SHIPPING PACKAGE, isolation through physical location, or similar protective measures specified in DOE STD-5506 for WASTE CONTAINER(S). The plan content should specify, based on existing conditions, the detailed plan of action for restoring compliance with the LCO. Section 5.4.4 of this TSR discusses the use and content of RESPONSE PLANS.

If the noncompliant WASTE CONTAINER(S) is already emplaced in the UNDERGROUND, compensatory measures might include retrieving the noncompliant container(s) or installing bulkheads to isolate them.

Required Action E.4 does not replace or circumvent the USQ process for determining if a PISA exists. A positive PISA determination will still require entry into LCO 3.7.1 for a noncompliant WASTE CONTAINER(S). Because the safety analysis evaluates some WIPP WAC noncompliances in bounding events and prescribes controls, notification of a noncompliance may not result in a PISA USQ. For these instances, the RESPONSE PLAN describing the planned action to be taken to comply with TSR requirements is required.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

ACTIONS (continued)

F.1	In the event that Required Action A.2, B.2, or D.2 cannot be met or completed within the Completion Time, then a CBFO-approved RESPONSE PLAN SHALL be implemented within 10 Days of entry into Condition F. To support the completion of this Required Action within 10 Days, the RESPONSE PLAN must be prepared and submitted to CBFO for approval. Following CBFO approval, the plan must then be implemented. All of these actions should be considered in achieving the required Completion Time of 10 Days. The RESPONSE PLAN SHALL provide an evaluation of the available information on the noncompliant WASTE CONTAINER. The RESPONSE PLAN SHALL include the appropriate actions to disposition the suspect WASTE CONTAINER(S), including shipping the CLOSED Type B SHIPPING PACKAGE back to the generator site. In the event an overpack was required for a Standard Large Box 2 or 10-Drum Overpack, a RESPONSE PLAN would identify the disposition paths, since no standard overpacks for these containers are identified in the WIPP WAC. The RESPONSE PLAN provides an evaluation of the available information and method chosen to overpack or disposition (by other means) the degraded noncompliant WASTE CONTAINER(S). The plan content should specify, based on existing conditions, the detailed plan of action for restoring compliance with the LCO. Section 5.4.4 of this TSR discusses the use and content of RESPONSE PLANS.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

Surveillance Requirements

SR 4.7.1.1	SR 4.7.1.1 determines if the Shipping Manifest is consistent with the WIPP WDS. Upon receipt, each SHIPPING PACKAGE manifest SHALL be inspected to VERIFY it meets the attributes of the LCO. Failure to meet or perform this SR requires entry into Condition A.
SR 4.7.1.2	SR 4.7.1.2 determines if there is obvious damage or degradation to any of the accessible WASTE CONTAINER(S). Obviously degraded means clearly visible and potentially significant defects in the container or container surface. Rust or corrosion is assessed in terms of its type, extent, and location. Pitting, pocking, flaking, or dark coloration characterizes potentially significant rust or corrosion. This includes the extent of the WASTE CONTAINER surface area covered, thickness, and if it occurs in large flakes or built-up (caked) areas. Rusted containers may not be accepted if rust is present in caked layers or deposits, or rust is present in the form of deep metal flaking, or built-up areas of corrosion products. Wall thinning, pinholes, and breaches can be a result of rust/corrosion. In addition, the location of rust should be evaluated for noncompliance; for example, on a drum: top lid; filter region; locking chine (fastener ring); top one-third, above the second rolling hoop; middle one-third, between the first and second rolling hoops; bottom one-third, below the second rolling hoop; and on the bottom. WASTE CONTAINER(S) may still be considered acceptable if the signs of rust show up as some discoloration on the container, or if rubbed would produce fine grit or dust or minor flaking (such that wall thinning does not occur). WASTE CONTAINER(S) with obvious leaks, holes or openings, cracks, deep crevices, creases, tears, broken welds, sharp edges or pits, are either breached or on the verge of being breached are considered WIPP WAC noncompliant. Warpage could cause the container to be unstable or prevent it from fitting properly on the payload pallet. Visible parts of the fastener and chine, if applicable, are examined for damage or excessive corrosion. Alignment of the fastener is observed to the extent possible to ENSURE that it is in firm contact around the entire lid and the container will not open during transport.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.7.1.2 (continued)

Deep gouges, scratches, or abrasions over wide areas are not acceptable. If top and bottom surfaces are not parallel, this would indicate that the container is warped. For containers other than CCO and POC drums, dents should be less than 1/4 inch deep by 3 inches long and between 1/2 inch to 6 inches wide. Denting/creasing of CCO and POC 55-gallon drum sidewalls up to 3 inches deep is allowed (CCO-CAL-0010). All other dents must be examined to determine impact of structural integrity.

Discoloration which would indicate leakage or other evidence of leakage of material from the WASTE CONTAINER(S), containers with evidence of leakage near vents, top lid fittings, bottom fittings, welds, seams, and intersections of one or more metal sheets or plates must be considered noncompliant.

Outer containers that have visible and accessible vent ports and/or filter(s) (e.g., standard waste box, ten-drum overpack, standard large box 2) will be inspected for obvious damage, pluggage/blockage/obstruction to vent ports and/or filter(s). Inspection will also ensure vents/filters appear open for venting.

The NOTE allows 24 Hours to analyze removable surface contamination on WASTE CONTAINERS before entry to Condition B is required.

WASTE CONTAINER(S) with external surface contamination in excess of 2,000 dpm/100 cm^2 alpha or 20,000 dpm/100 cm^2 beta-gamma could be due to loss of container integrity.

The WASTE generator site ensures removable surface contamination levels comply with the WAC prior to shipment.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.7.1.2 (continued)

At the WIPP site, radiological surveys are performed to detect evidence of potential WASTE CONTAINER noncompliance through means other than visual examination or document reviews. Exceedance of Table 3.7.1-1 limits in and of itself, does not determine a breach or noncompliant container, but requires additional evaluation (e.g., visual, shipment documentation, TRU radionuclide, and/or decay product analysis) to verify a breach or noncompliant container. The Radiological Control program analyzes removable surface contamination to distinguish between TRU radionuclides of interest and non-TRU radionuclides (e.g., radon).

Twenty-four Hours is considered sufficient time to complete the Radiological Control analysis to differentiate between the presence of TRU activity or a short-lived, non-TRU radionuclides (e.g., radon). Condition B is entered within 24 Hours of detecting removable surface contamination if the Radiological Control analysis suggests or cannot rule out the presence of a TRU radionuclide.

The Radiological Control Program considers the 2,000 dpm/100 cm^2 alpha and 20,000 dpm/100 cm^2 beta-gamma limits as reasonable indication to suspect a breached or nonconforming container because there is typically no other available source of radiological contamination.

The 2,000 dpm/100 cm^2 alpha and 20,000 dpm/100 cm^2 beta-gamma removable surface contamination limit values are consistent with 10 CFR 835 Appendix D definition of a high contamination area.

Failure to meet or perform this SR requires entry into Condition B.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.7.1.3	SR 4.7.1.3 determines if there is evidence that the WASTE CONTAINER(S) has been or is pressurized. Pressurization can be indicated by a fairly uniform expansion of the sidewalls, bottom or top (bulging). Past pressurization can be indicated by a notable outward deflection of the bottom or top or material discharge from the lid. A pressurized WASTE CONTAINER(S) is WIPP WAC noncompliant. In the case of a drum, bulging is indicated by: • A fairly uniform expansion of the sidewalls, bottom, or top (e.g., in the case of a drum, either the top or bottom surface protrudes beyond the planar surface of the top or bottom ring), • A protrusion of the side wall (e.g., in the case of a drum, beyond a line connecting the peaks of the surrounding rolling hoops or a line between a surrounding rolling hoop and the bottom or top ring), or • Expansion of the sidewall (e.g., in the case of a drum, such that it deforms any portion of a rolling hoop). Failure to meet or perform this SR requires entry into Condition C.
SR 4.7.1.4	SR 4.7.1.4 requires that for any WASTE CONTAINER with an observable identification label, a visual observation SHALL be completed of the label and the identification number on the label compared to the WIPP WDS. This will ensure that the containers received are the correct ones as identified in the WIPP WDS or are suspect containers that do not agree with the WIPP WDS. The observation of the identification label will be completed after the WASTE CONTAINERS are removed from the SHIPPING PACKAGE and the inspections required by SRs 4.7.1.2 and 4.7.1.3 are completed. The identification can only be completed after the container is removed from the SHIPPING PACKAGE as the identification label cannot be seen when the containers are in the SHIPPING PACKAGE. Failure to complete this SR or if the identification label information does not match the WIPP WDS requires entry into Condition D.

(continued)

B3/4.7 Suspect Container Response (continued)

B3.7.1 Waste Acceptability Control (continued)

Bases (continued)

References

1 DOE/WIPP 02-3122, *Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant*, Revision 13, U.S. Department of Energy, Carlsbad Field Office, 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 WIPP-021, *Hazards Analysis for the Waste Isolation Pilot Plant Transuranic Waste Handling Safety Basis*, Revision 23, Waste Isolation Pilot Plant, Carlsbad, NM.

4 CCP-PO-003, *Contact-handled Transuranic Waste Authorized Methods for Payload Control* (CCP CH-TRAMPAC) (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.

5 CCP-PO-050, *CCP TRUPACT-III TRU Waste Authorized Methods for Payload Control* (CCP TRUPACT-III TRAMPAC), (current revision), Waste Isolation Pilot Plant, Carlsbad, NM.

6 CCP-PO-505, *CCP Remote-Handled Transuranic Waste Authorized Methods for Payload Control* (CCP RH-TRAMPAC): (current revision), U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.

7 WIPP-016, *Nuclear Criticality Safety Evaluation for Contact-Handled Transuranic Waste at the Waste Isolation Pilot Plant*, Revision 8, Waste Isolation Pilot Plant, Carlsbad, NM.

8 WIPP-020, *Nuclear Criticality Safety Evaluation for Remote-Handled Waste at the Waste Isolation Pilot Plant* (current revision), Waste Isolation Pilot Plant, Carlsbad, NM.

9 Waste Isolation Pilot Plant Hazardous Waste Facility Permit, NM4890139088-TSDF (current revision), New Mexico Environment Department, Santa Fe, NM.

10 CCO-CAL-0010, Compressive Axial Load Evaluation of a Damaged 55-Gallon CCO Drum, Revision 0, December 2023, Waste Isolation Pilot Plant, Carlsbad, NM.

B3/4.8 Waste Hoist System

B3.8.1 Waste Hoist Brakes

Bases

Background Summary

WASTE is transported up and down the Waste Shaft on the Waste Conveyance using the Waste Hoist. The Waste Hoist Brakes are used to prevent an uncontrolled Waste Conveyance movement in the Waste Shaft and to ensure the Waste Conveyance remains securely in the correct position at the Waste Collar and at the WASTE SHAFT STATION.

The primary safety function of the Waste Hoist Brakes is to prevent an uncontrolled movement of the Waste Conveyance. The Waste Hoist Brakes work in conjunction with the Waste Hoist System to control movement of the conveyance up and down the Waste Shaft. The Waste Hoist, described in SDD UH00, *Underground Hoisting System Design Description* (Ref. 1), has four independent brake units. There are two brake units mounted approximately 180° apart on each braking disc of the hoist wheel. The Waste Hoist Brakes are designed so that any two OPERABLE brake units can stop a fully loaded conveyance. The brakes (four, total) are spring set, and are released by applying hydraulic pressure. The brakes are normally in the applied (set) position, i.e., there is no hydraulic pressure and the springs hold the brake pads against the disc. The brakes are released when transporting WASTE (during DOWNLOADING), personnel, or equipment within the Waste Shaft.

The brakes are automatically applied upon a loss of hydraulic pressure resulting from a loss of electric power or when the conveyance is in an over speed condition. If the brakes are not applied after a failure of any of the brake components when the Waste Conveyance is loaded with WASTE, the conveyance could continue to move in an uncontrolled manner (e.g., over speed or impact the retarder beam at the top or bottom of the shaft).

The Waste Hoist Brakes are described in the SDD (Ref. 1) and in Chapters 4.0 and 5.0 of the WIPP DSA (Ref. 2). Chapters 4.0 and 5.0 describe the control system and Hoist Brake operation that prevents an uncontrolled descent of the Waste Conveyance.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

Application to Safety Analysis

The DSA (Ref. 2) identified the potential for uncontrolled movement of the Waste Conveyance in the Waste Shaft to result in an impact/collision that could cause a breach of the WASTE payload on the conveyance and an airborne radiological material release. The DSA (Ref. 2) credits the Waste Hoist Brakes to prevent the uncontrolled movement of the Waste Shaft Conveyance which could lead to damaged WASTE CONTAINERS and a radiological material release. In this case, the uncontrolled conveyance movement results in an impact with the shaft floor, shaft or hoist structure, or other components that results in significant damage to the WASTE CONTAINERS.

The unmitigated consequences for the event were determined to be high for the facility worker and the co-located worker, and low for the MOI.

Assumptions for the analyses include the following:

- As a prerequisite to operation, the Waste Hoist Brakes are inspected as required by 30 CFR 57, “Safety and Health Standards–Underground Metal and Nonmetal Mines,” Subpart R, “Personnel Hoisting’” (Ref. 3). The design, operation, and maintenance of the Waste Hoist meet or exceed the criteria specified by 30 CFR 57.
- The Waste Hoist Brakes operate as designed and do not result in uncontrolled movement of the Waste Shaft Conveyance.

The Waste Hoist Brakes are composed of many components. However, not all the components are required to ensure OPERABILITY of the brakes to prevent a radiological material release. WIPP DSA Chapters 4.0 and 5.0 identify and define those components and functions of the Waste Hoist Brakes that are required to prevent a potential radiological material release from an uncontrolled or over speed impact of the Waste Conveyance loaded with WASTE.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

LCO

This LCO addresses the OPERABILITY requirements of the Waste Hoist Brakes.

The Waste Hoist Brakes SHALL be OPERABLE. OPERABLE Waste Hoist Brakes consist of the following elements:

- Four OPERABLE brake units composed of calipers, springs with brake release at 1882 psi or greater, a brake force as measured by the caliper piston travel distance of 0.137 to 0.157 inch at 2364 psi or greater, and brake pads greater than or equal to 0.47 inch thick.
- Two OPERABLE Emergency Dump Valves (SV-2 and SV-5).
- An OPERABLE Lilly Controller to include the fly-ball governor and associated contacts that will automatically set the brakes upon an over speed condition of less than or equal to 550 fpm.

An OPERABLE brake unit consists of two modules that, when automatically applied, engage the brakes on a loss of power or over speed condition. There are four brake units but only two are required to stop the conveyance as shown in ETO-H-228 (Ref. 4) and the supporting calculation CALC-15-017 (attached to the ETO). Although only two brake units are required to stop a fully loaded conveyance, all four brake units SHALL be OPERABLE. Requiring all four brake units to be OPERABLE is acceptable as MSHA regulations require all four brake units be OPERABLE before the Waste Conveyance can be used and all four brake units are tested and VERIFIED to be OPERABLE before the Waste Hoist can be used to transport TRU WASTE.

An OPERABLE brake unit consists of calipers that move the brake pads, the springs that apply the force (approximately 37,000 pounds) to set the brakes, and brake pads that are a minimum of 0.47 inch thick. To apply the brake pads, the caliper pistons travel from 0.137 to 0.157 inch.

Both of the emergency dump valves, SV-2 and SV-5, are required to be OPERABLE. The dump valves, which are designed to fail open, are closed when energized to allow the hydraulic system to apply pressure on the calipers to relieve brake springs pressure. When de-energized the dump valves open to drain the hydraulic fluid to the reservoir. When the dump valves de-energize, the hydraulic pressure is released from the caliper pistons allowing the springs to apply the required pressure (approximately 37,000 pounds) to the brake pads.

The waste hoist brake units and emergency dump valves are physically connected such that they are always aligned. There are no means to change the alignment without physically disconnecting and reconnecting components. All four brake units have to operate as do both dump valves or the waste hoist cannot move the conveyance, if any of the components do not work the hoist drum cannot rotate.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

LCO (continued)

A Lilly Controller interrupts electric power to the control circuit and causes the dump valves to de-energize and open. An OPERABLE Lilly Controller measures the conveyance travel speed and upon reaching an over speed condition, the fly ball governor in the Lilly Controller lifts the bar between two electrical contacts. Lifting the bar between the contacts removes electrical power from the system causing the emergency dump valves to open.

The manufacturer recommends that the brake unit pads be at least 0.47 inch thick to ensure adequate pressure and piston travel such that a minimum of two OPERABLE brake units will stop the maximally loaded Waste Conveyance. However, all four brake units are required to be OPERABLE.

The SDD (Ref. 1), Chapter 3, Section 2.2.1.1 states that the operating speed of the Waste Conveyance is 500 fpm. With an over speed allowance of 10%, the OPERABILITY limit for the over speed controller will be less than or equal to 550 fpm. It is recognized that WIPP normally does not operate a fully loaded Waste Conveyance at 500 fpm. Additionally, the pre-operational test of the over speed controller is done at a slower speed than the 550-fpm limit. ETO-H-228 (Ref. 4) documents that two Waste Hoist Brake Units will stop the conveyance within a 30-foot travel distance at speeds of 550 and 600 fpm. The FUNCTIONAL TEST of the over speed controller at a lower speed demonstrates that the over speed controller is OPERABLE and will stop a fully loaded conveyance at speeds less than the maximum design speed. The DAILY (prior to use) FUNCTIONAL TEST and the ETO verification adequately demonstrate that the LCO OPERABILITY requirement is VERIFIED and protected.

This LCO requires the Waste Hoist Brakes to be OPERABLE prior to loading and transporting WASTE on the Waste Conveyance. Controls that ensure the OPERABILITY of the Waste Hoist Brakes are necessary to prevent an uncontrolled movement of the loaded Waste Shaft Conveyance to avoid impacts that could damage the WASTE CONTAINERS with a subsequent radiological material release. The Waste Hoist Brakes depend upon the design of the Waste Hoist Support Structure, the Waste Hoist systems in the Waste Shaft, and all shaft furnishings to be available to perform their safety function such that application of the brakes will stop the Waste Conveyance. For the Waste Hoist System to be capable of meeting its intended safety function, the Waste Hoist Brakes must be OPERABLE. The OPERABILITY of the Waste Hoist Brakes represents the lowest functional capability of the system.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

LCO (continued)	There are manually activated E-stop buttons that will stop the hoist if activated by an operator. However, as this requires an operator action, the E-stop buttons are not credited as a control. Note that the Nuclear Safety definition of the OPERABLE Waste Hoist Brakes may not be the same as the MSHA requirements. The MSHA requirements focus on personnel safety while the nuclear safety requirements are intended to prevent a radiological material release that could harm personnel or the environment.
MODE Applicability	The events of concern involve uncontrolled movement of the Waste Shaft Conveyance that could result in damage to the WASTE CONTAINERS leading to a loss of confinement and a radiological material release. Although the WASTE Shaft Conveyance can be used at times when WASTE is not present on the conveyance, this LCO is only applicable in the WASTE HANDLING during DOWNLOADING CH WASTE. CH WASTE may be present in the WASTE SHAFT ACCESS AREA during WASTE HANDLING.
PROCESS AREA Applicability	WASTE may be present in the CLR, the FCLR, the Waste Shaft Collar Room, the Waste Shaft, and the WASTE SHAFT STATION during WASTE HANDLING. This LCO is primarily applicable during DOWNLOADING. Therefore, the LCO applies while WASTE is on the Waste Shaft Conveyance or from the time WASTE is placed on the conveyance until it is removed. The WASTE SHAFT ACCESS AREA is an area in the WHB that includes the FCLR, CLR, and the Waste Shaft Collar Room. The UNDERGROUND, specifically the Waste Shaft and the WASTE SHAFT STATION, are the other AFFECTED AREAS. Therefore, this LCO is applicable to the WASTE SHAFT ACCESS AREA, Waste Shaft, and the WASTE SHAFT STATION during WASTE HANDLING while DOWNLOADING.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

ACTIONS

A.1

LCO 3.8.1 defines the necessary elements for the Waste Hoist Brakes to be OPERABLE. In the event the Waste Hoist Brakes are declared NOT OPERABLE, WASTE cannot be moved onto the Waste Conveyance. To avoid the potential to bring additional WASTE into the Waste Shaft Collar and place it on the Waste Conveyance or create conditions where the WASTE could inadvertently fall down the Waste Shaft, additional WASTE must not be brought into the Waste Shaft Collar. This Action requires IMMEDIATE Actions be taken to prevent introduction of additional waste into the Waste Shaft Collar.

Suspending the introduction of additional or new WASTE into the Waste Shaft Collar will limit the MAR that could be available in an accident involving the Waste Shaft or the Waste Shaft Conveyance. A Completion Time of IMMEDIATELY ENSURES additional MAR is not introduced into the Waste Shaft Collar.

Note that CH WASTE may be in the CLR but this WASTE must be in a SAFE CONFIGURATION applicable to these rooms and remain outside of the Waste Shaft Collar.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

ACTIONS (continued)

A.2

This Required Action requires that any WASTE on the Waste Conveyance be placed in a SAFE CONFIGURATION. If the loaded Waste Conveyance is at the Waste Shaft Collar, the WASTE must be removed from the Waste Conveyance and moved to the FCLR or CLR as appropriate and placed in a SAFE CONFIGURATION approved for those areas. If the loaded Waste Conveyance is at the WASTE SHAFT STATION, the WASTE must be removed from the Waste Conveyance.

A situation could arise where a noncredited or credited component of the Waste Hoist Brakes (e.g., motor, hydraulic pump, etc.) could fail as WASTE is being DOWNLOADED. The Brakes could still set leaving the loaded Waste Conveyance suspended in the Waste Shaft. If a noncredited component fails, then the Brakes are still fully OPERABLE and entry into this LCO is not required. If a credited component fails, entry into the LCO and this Action is required.

Regardless of the reason for the failure, if the loaded Waste Conveyance is stopped while it is traveling in the shaft, the WASTE is not in the most SAFE CONFIGURATION possible. The situation must be evaluated by operations to determine how to place the WASTE in the most SAFE CONFIGURATION possible.

If it is possible to safely lower the Waste Conveyance to the WASTE SHAFT STATION, then Actions must be taken to complete DOWNLOADING. Once at the WASTE SHAFT STATION, the WASTE will be removed from the Waste Conveyance restoring compliance with the LCO. This is the preferred action as it will place the WASTE in the most SAFE CONFIGURATION.

The evaluation may determine that actions to place the WASTE in the most SAFE CONFIGURATION possible is to return the WASTE to the Waste Collar and unload the conveyance, which will restore compliance with the LCO. This will depend upon several factors including how close the conveyance is to the Waste Collar.

Depending upon the location of the conveyance and the components that failed, the safest condition may be to leave the WASTE suspended in the shaft until the brakes are returned to an OPERABLE status. This situation is expected to occur only if the Waste Hoist Brakes fail in such a manner that the hoist cannot be moved up or down the shaft in a safe and controlled manner (e.g., if the brakes are released to move the conveyance, there is a high probability that the brakes could not be reapplied to safely stop the conveyance). This is the least preferred

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

ACTIONS (continued)

A.2 (continued)

option, but may be necessary to ensure the WASTE is in the most SAFE CONFIGURATION possible until the Waste Hoist Brakes are restored to an OPERABLE status.

The Completion Time of 24 Hours is sufficient to remove any WASTE from the Waste Conveyance if the conveyance is at the Waste Shaft Collar or the WASTE SHAFT STATION. Additionally, it is sufficient time to determine if the Waste Conveyance can be safely lowered to the WASTE SHAFT STATION or returned to the Waste Shaft Collar if some component on the Waste Hoist Brakes fails while the loaded conveyance is traveling up or down the Waste Shaft.

As is the case for all LCO conditions, the restoration of compliance with the LCO statement is preferred and placing the TRU WASTE in a SAFE CONFIGURATION does this. However, the Required Action is taken along with the understood action of IMMEDIATELY returning the Waste Hoist or Waste Hoist Brakes to an OPERABLE condition.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

Surveillance Requirements

SR 4.8.1.1

This SR requires VERIFICATION that DAILY (prior to use) of the Waste Shaft Conveyance a FUNCTIONAL TEST as defined in the applicable sections of Chapter G of the SDD (Ref. 1) has been completed. This FUNCTIONAL TEST is completed as part of the Pre-operational test of the Waste Hoist Brakes that is performed DAILY (prior to use) of the Waste Shaft Conveyance for DOWNLOADING. This FUNCTIONAL TEST is different than the WEEKLY FUNCTIONAL TEST required by SR 4.8.1.2. The FUNCTIONAL TEST required by this SR VERIFIES that the Waste Hoist Brakes are operational and that upon an over speed condition or loss of electric power condition, the emergency dump valves alone will set all four Waste Hoist Brakes. Stated another way, the SR VERIFIES the over speed and loss of power signals de-energize the emergency dump valves such that the brakes set. The over speed control tested is the Lilly Controller. The Lilly Controller is FUNCTIONALLY TESTED when the Waste Conveyance is moving by having the electronic process controller put the hoist is a limited over speed condition. This test VERIFIES that the governors on the Lilly Controller detect the over speed condition and set the brakes through the governor action of lifting the connector between two contacts interrupting the electrical supply to the hydraulic pumps and emergency dump valves. (Note that this is a test of the over speed control when the hoist is moving and is not the same as the test required in SR 4.8.1.2 in which the hoist is not moving.) The over speed test will be conducted at a speed slower than 550 fpm. However as noted in the LCO Bases above, this verifies OPERABILITY of the Lilly Controller over speed function and along with Reference 4 demonstrates that the over speed control will stop the Waste Conveyance at a speed of less than or equal to 550 fpm if required. The FUNCTIONAL TEST VERIFIES OPERABILITY of the emergency dump valves SV-2 and SV-5 by interrupting electrical power to the valves such that only the emergency dump valves open on a loss of electrical power and relieve the hydraulic pressure which sets the brakes. This SR requires a specific test to VERIFY that the emergency dump valves open and set the brakes. VERIFICATION that the brakes set due to either an over speed or loss of electrical power condition and upon activation of an emergency dump valve is required. As the Brake Set Light illuminates when the brakes set during these FUNCTIONAL TESTS, this VERIFIES that the brakes set and that the Brake Set Light is OPERABLE. The FUNCTIONAL TEST SHALL be completed DAILY (prior to use) and VERIFIES the Waste Hoist Brakes are OPERABLE. The DAILY (prior to use) FREQUENCY is based on operational experience that demonstrates that VERIFICATION of Waste Hoist Brakes OPERABILITY is adequate to ensure that the brakes will fulfill their safety function. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.8.1.1 (continued)	To ensure the brakes will stop a maximally loaded conveyance, during the pre-operational tests, a 2000-amp current is applied to the Waste Hoist motor, which is more than 150% of the design load, while the brakes are set. The brakes are verified to prevent movement of the hoist against the torque supplied by the motors at this amperage loading and the Brake Set light is also verified to be lit when in this condition. This is not a requirement for the Waste Hoist Brakes to be determined OPERABLE but is an important function that demonstrates the brakes when set will hold against a force that is over 150% of the design load of the brakes.
SR 4.8.1.2	This SR requires a WEEKLY FUNCTIONAL TEST of Lilly Controller operation. The FUNCTIONAL TEST confirms that the Lilly Controller and fly-ball governors are working correctly. Specifically, it will VERIFY the functionality and OPERABILITY of the governor as this is a manual check for binding, free movement, and that the parts are lubricated. The test VERIFIES the mechanical linkages associated with the governors lift the link between two electrical contacts and interrupts the electrical control power and causes the brakes to set as indicated by the Brake Set light illuminating. This test is different than the pre-operational test, in that in this WEEKLY test, the conveyance is not moving. Instead, the hoist is operated to move the conveyance such that in the first part of the test, the roller is on the retarding cam in the Lilly Controller and stopping the hoist. The second part of the test requires moving the conveyance to an intermediate point such that the rollers are not on the retarding cam and stopping the hoist. In each location, the fly-ball arms on one of the governors are lifted manually to ensure that the governors and associated mechanical links work correctly (e.g., work smoothly without binding, and lift the link) and set the brakes in an over speed condition. One governor is tested at each location so that both governors are tested. Manually lifting the fly-balls on the governor allows visual verification that the over speed switch opens (i.e., link between the contacts is physically removed from between the contacts). Additionally, the test verifies that the brakes set. Personnel can hear the brakes set. The WEEKLY FREQUENCY is based on operating experience and the manufacturer's recommendation and is sufficient to ensure the Lilly Controller and governors remain operational. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

Surveillance Requirements (continued)

SR 4.8.1.3

This SR requires MONTHLY VERIFICATION of the Waste Hoist Brake pad thickness and braking force. This surveillance, which is completed on each of the four brake units (eight modules), VERIFIES that the brake pad thickness is greater than or equal to 0.47 inch, VERIFIES that the brake releases at 1882 psi or greater, and the braking force is VERIFIED by a caliper piston travel distance of 0.137 to 0.157 inch at 2364 psi or greater to ensure the brakes are OPERABLE (Ref. 5). The brake pads when received from the manufacturer are approximately 1 inch. If the pad thickness is less than 0.47-inch pad adjustment will not ensure the required piston travel of 0.137 to 0.157 inch at the specified minimum hydraulic pressure. To VERIFY the pads are held firmly against the disc, the brake hydraulic pressure is set to 1882 psi or greater and an attempt is made to manually move the brake pads. If the brake pads do not move, the SR has been met. If the pads move, the SR has not been met and the springs need replacing.

The current springs, supplied by the brake manufacturer, have a force of at least 37,000 pounds (Ref. 5). The brake force cannot be measured directly by WIPP personnel. The force is VERIFIED indirectly by a measurement of the caliper piston travel distance, which VERIFIES the springs are in the normal force range (minimum of 37,000 pounds). During each piston movement a measurement of the caliper piston travel distance for all 8 calipers is made. If the piston movement is 0.137 to 0.157 inch, the brake force is at least 37,000 pounds and is sufficient to hold the brake pads against the disc and stop the conveyance within 30 feet upon loss of power or overspeed condition. The brake piston travel distance is measured at a hydraulic pressure of 2364 psi or greater.

The MONTHLY FREQUENCY is sufficient to VERIFY the brake pad thickness and the braking force will stop the Waste Conveyance upon loss of power or overspeed condition. This FREQUENCY is based on operational experience and the manufacturer’s recommendations. Failure to meet or perform this SR requires entry into Condition A.

(continued)

B3/4.8 Waste Hoist System (continued)

B3.8.1 Waste Hoist Brakes (continued)

Bases (continued)

References

1. SDD UH00, *Underground Hoisting System Design Description* (current revision), Waste Isolation Pilot Plant, 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. 30 CFR 57, "Safety and Health Standards – Underground Metal and Nonmetal Mines, Subpart R 'Personnel Hoisting,'" *Code of Federal Regulations*.

4. ETO-H-228, *Evaluation of the Stopping Distance of a Descending Waste Shaft Conveyance Utilizing Two Brake Units*, Waste Isolation Pilot Plant, Carlsbad, NM, October 2015.

5. Brake Manufacturer's manual M1128, *Installation, Operating, and Maintenance Instructions for Disc Brake Caliper Type VS MK2*, Issue 2, March 2001.

B3/4.9 Unfiltered Underground Ventilation

B3.9.1 Radiological Monitoring System in an ACTIVE PANEL (deleted)

B3/4.9 Unfiltered Underground Ventilation (Continued)

B3.9.2 700 Fan Shutdown System (Deleted)