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Technical Safety Requirements for the Radioactive Waste Management Complex

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Revision 9

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**Idaho National Engineering and Environmental Laboratory
Bechtel/BWXT Idaho, LLC
Idaho Falls, Idaho 83415**

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REVISION LOG

Rev.	Date	Affected Pages	Revision Description
3	05/28/98	All	LCOs on removal of source term from air support buildings that are no longer required. See DAR: EO-RS-3433.
4	11/24/99	All	Changes made to comply with DOE directions and maintain consistency with DOE-Company contract. See DAR: EO-RS-4995.
5	04/17/01	All	This revision incorporates requirements for Real-Time Radioscopy operations. See DAR: EO-RS-6297. Approved by DOE-ID R. M. Stallman letter to D. M. Bright, "Approval of changes to the Radioactive Waste Management Complex Safety Analysis Report and Technical Safety Requirements." EM-WM-01-027, March 23, 2001. This revision also incorporates the results of "Criticality Safety Evaluation for Probing in the Subsurface Disposal Area at the INEEL," INEEL/INT-00-00658, Revision 1. See DAR: EO-RS-6066. Approved by R. M. Stallman Letter to D. M. Bright, "Approval of changes to the Radioactive Waste Management Complex Technical Safety Requirements" EM-WM-01-033, April 5, 2001. This document has been completely rewritten resulting in no revision bars.
6	3/13/02	See revision bars	This revision incorporates requirements for the overpacked drum recovery project. See DAR 89082.
7	4/16/02	See revision bars	The revision describes the acceptance criteria for the daily check of the emergency shutdown switches on the RTRs. See DAR 89935.
8	5/04/02	See revision bars	This revision incorporates requirements for absorbent addition operations. See DAR 33235. Approved by W. E. Bergholz Letter to D. M. Bright "Approval of Radioactive Waste Management Complex Safety Analysis Report Revision, Addendum F and Technical Safety Requirements." EM-WM-02-103, May 3, 2002.
9	5/5/03	See Addendum A	This revision incorporates RWMC Technical Safety Requirements (TSR) Addendum A for the OU 7-10 Glovebox Excavator Method Project. See DAR 95958 Approved by W. E. Bergholz Letter to D. M. Bright "Department of Energy-Idaho Operations Office (DOE-ID) Approval of the Operable Unit 7-10 Glovebox Excavator Method Project Documented Safety Analysis (Addendum I) and Technical Safety Requirements (Addendum A) to the Radioactive Waste Management Complex Documented Safety Analysis," EM-WM-03-043, March 17, 2003. Also Approved by "DOE-ID Review of Operable Unit 7-10 Glovebox Excavator Method Project Documented Safety Analysis (Addendum J) and Technical Safety Requirements (Addendum A) to the Radioactive Waste Management Complex Documented Safety Analysis," EM-WM-03-053, April 8, 2003.

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Addendum A for the OU 7-10 Glovebox Excavator Method Project

TABLE

1.	Notation, frequency, and extension	1-7
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ACRONYMS

AC	Administrative Control
AS	Action Statement
BLEVE	Boiling Liquid Expanding Vapor Explosion
CCA	Criticality Control Area
CFR	Code of Federal Regulations
D&D	decontamination and decommissioning
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office
DVS	Drum Vent System
EG	evaluation guideline
INEEL	Idaho National Engineering and Environmental Laboratory
LCO	Limiting Condition for Operation
LCS	Limiting Control Setting
LEL	Lower Explosive Limit
LLW	Low-Level Waste
M&O	management and operating
RGD	radiation generating device
RTR	Real-Time Radioscopy
RWMC	Radioactive Waste Management Complex
SAR	Safety Analysis Report
SDA	Subsurface Disposal Area
SL	Safety Limit
SR	Surveillance Requirement
SSC	structure, system, or component
TRU	Transuranic
TSA	Transuranic Storage Area
TSR	Technical Safety Requirement
USQ	unreviewed safety question
WSF	Waste Storage Facility

1. USE AND APPLICATION

The **TECHNICAL SAFETY REQUIREMENTS (TSRs)** presented in this document set forth specific limits and other requirements as specified in Department of Energy (DOE) Order 5480.22, *Technical Safety Requirements*, to ensure the safe operation of the Radioactive Waste Management Complex (RWMC). The TSRs are based on the *Safety Analysis Report (SAR) for the Radioactive Waste Management Complex at the Idaho National Engineering Laboratory*, INEL-94/0226, current revision and its addendum.

1.1 Definitions

Defined terms in this list appear in capitalized type throughout these TSRs.

ACTION STATEMENT	Steps listed in each limiting condition for operation that are required to be performed, to return the facility or process to a safe and stable condition, when a specific requirement has not been met.
ADMINISTRATIVE CONTROLS	The provisions relating to organization and management, operating procedures, record keeping, review and audit, and reporting necessary to ensure that the facility operates in a safe manner.
DISPOSAL	The emplacement of low-level waste in pits and vaults at the RWMC Subsurface Disposal Area (SDA).
FISSILE OR FISSIONABLE MATERIAL	Radioactive isotopes that are capable of sustaining a nuclear fission reaction when subjected to certain conditions of content, geometry, physical form, and/or surroundings. The following isotopes shall be considered fissionable material: U-233, U-235, Np-237, Pu-238, Pu-239, Pu-241, Am-241, and Cm-244.
IMMEDIATE OR IMMEDIATELY	A term used as a completion time to indicate that a TSR ACTION is to be pursued without delay and in a controlled manner, taking priority over routine operations.
LIMITING CONDITIONS FOR OPERATION	Limits placed on general or technical characteristics of the facility necessary for safe operation. LIMITING CONDITIONS FOR OPERATION usually define allowable quantities for parameters such as temperature, pressure, mass of FISSILE MATERIAL, concentration of radioactive material, allowable configuration of equipment, etc. LIMITING CONDITIONS FOR OPERATION of equipment define the lowest functional capability or performance levels of equipment required for normal safe operation at the facility.
LOADING MODE	The placement of waste container(s) into a shipping package.
NUCLEAR FACILITY	A NUCLEAR FACILITY operational condition specified in the TSR document for that facility.
	Any system, process, activity, equipment, structure, or grounds designated as a nuclear hazard category 1, 2, or 3 facility in accordance with DOE Standard (STD)-1027-92.

OPERABLE

A system, subsystem, component, or device is considered OPERABLE when it is capable of performing its specified safety function(s) and all the required instrumentation, controls, normal or alternate electrical power, cooling and seal water, lubrication, and other auxiliary equipment for the system, subsystem, component, or device to perform its specified safety function are capable of performing their related support function(s).

General principles of operability are as follows:

1. A system is considered OPERABLE as long as assurance, such as surveillance records, exists that the system is capable of performing its specified safety function(s).
2. A system can perform its specified safety function(s) only when all of the system's necessary support systems are capable of performing their related support functions.
3. Ensuring the capability of a system to perform a safety function is an ongoing process.
4. When a system designed to perform a certain safety function is not capable of performing that safety function, a loss of function condition exists. A facility operation shall be controlled through the specific ACTIONS and completion times detailed in the applicable LCO(s).
5. When a system is determined to be incapable of performing its intended safety function(s), the declaration of inoperability shall be performed IMMEDIATELY.
6. Any exception to an IMMEDIATE declaration of inoperability shall be justified.

OPERATING

A structure, system, or component is performing its intended function in the required manner.

QUALIFIED

A QUALIFIED individual is one who has completed a formal training program that may include 1) classroom instruction, 2) plant orientation, 3) on-the-job training, and 4) written examinations. The training program must have provisions for continuing training and maintaining proficiency

SAFETY LIMITS

A limit on a process variable associated with a physical barrier(s), generally passive, that is necessary for the intended NUCLEAR FACILITY function and is found to be required to guard against an uncontrolled release of radioactive or hazardous material that results in significant consequences to the public.

SURVEILLANCE REQUIREMENTS

The testing, monitoring, inspecting, servicing, and/or auditing that is performed to ensure and maintain the necessary quality and operability of systems and components.

**TECHNICAL SAFETY
REQUIREMENTS**

Those requirements that define the conditions, safe boundaries, and management or ADMINISTRATIVE CONTROLS necessary to ensure the safe operation of a nuclear facility and to reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive materials or from radiation exposures caused by inadvertent criticality. A TSR consists of SAFETY LIMITS, LIMITING CONDITIONS FOR OPERATION, SURVEILLANCE REQUIREMENTS, ADMINISTRATIVE CONTROLS, use and application instructions, and the bases for these. TSRs were formerly known as Operational Safety Requirements for nonreactor nuclear facilities and Technical Specifications for reactor facilities.

TSR VIOLATION

A TSR VIOLATION occurs as a result of four circumstances:

1. exceeding an SL
2. failing to complete the ACTIONS required within the required time limit following a) exceeding an LCS or b) failing to meet an LCO
3. failing to perform a surveillance within the specified frequency (including the allowable extension)
4. failing to comply with an AC requirement.

STORAGE

Placement of waste containers within the Transuranic Storage Area (TSA) after UNLOADING, retrieval, or examination, which remain stationary for a minimum of 90 days. The temporary staging of waste containers that is circumstantial to an ongoing operation is not considered STORAGE. Examples of temporary staging of containers not considered STORAGE are:

1. The staging of waste containers during UNLOADING operations.
2. The temporary staging of drums on or near the Drum Vent System (DVS) conveyors during periods of drum venting.

TRANSPORT

The act of moving a given waste container from one building/area to another.

UNLOADING

The removal of waste container(s) from a shipping package or a transport vehicle.

1.2 Logic Connectors

Logic connectors are used in TSRs to discriminate between and connect discrete conditions, ACTIONS, completion times, surveillances, and frequencies. The only logic connectors that are used in TSRs are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.

Figures 1 and 2 illustrate the use of logical connectors.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Condition not met.	A.1 Restore . . . <u>AND</u> A.2 Verify . . .	

In this example, the logic connector AND is used to indicate that both required ACTIONS A.1 and A.2 must be completed when in Condition A.

Figure 1. Example of logic connectors.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Condition not met.	A.1 Restore. . . A.1.1 Verify. . . <u>OR</u> A.1.2 Reduce. . . <u>OR</u> A.2 Shut. . .	

This example represents a more complicated use of logic connectors and the associated alphanumeric labeling system. “A” identifies all of the required ACTIONS that apply to Condition A. Required ACTIONS A.1 and A.2 are alternative choices, only one of which must be performed as indicated by the use of the left-justified logic connector OR. Either of the two ACTIONS A.1 or A.2 may be chosen. If A.1 is performed, then either A.1.1 or A.1.2 must be performed as indicated by the indented logic connector OR.

Figure 2. Example of multiple use of logic connectors.

1.3 Operational Modes

Operations at RWMC consist mainly of waste container handling, nondestructive examination, storage, disposal, and loading and unloading operations. The following description of the operational modes provides a definition of the varying levels of operations:

OPERATION	The facility is performing its intended function (for example, addition of absorbent to sludge drums, waste container HANDLING, nondestructive examination, retrieval, STORAGE, disposal, LOADING, and/or UNLOADING operations are being conducted).
REPAIR	The facility or operation is not capable of performing its intended function. Operations in various sections of the facility may require the affected section to be in repair mode, while other unaffected sections of the facility are in OPERATION.
SHUTDOWN	The facility is not capable of performing its intended function (for example, waste container HANDLING, nondestructive examination, retrieval, disposal, LOADING, and/or UNLOADING operations may not be conducted; STORAGE operations <u>may</u> be conducted).

1.4 Completion Times

If a facility is in a MODE of operation that is specified in the applicability statement of an LCS/LCO, the specified ACTION must be taken whenever equipment or process variables exceed an LCS or an LCO cannot be met. The completion time allowed for the required ACTION is referenced to the time of discovery (not the time of occurrence) of the out-of-limits condition. Failure to complete the required ACTION within the allowed completion time is a TSR VIOLATION. When the equipment or process variable out-of-limits condition is corrected or if the facility operating MODE is changed to one in which the LCS/LCO no longer applies, further ACTION is not required.

If more than one limit is exceeded within single or multiple TSRs, the required ACTION for each condition must be performed within their specified completion times beginning from the discovery time of the respective conditions. Figure 3 is an example of completion times applicable to hypothetical operation and standby MODES. ACTIONS are generally structured to allow alternative ACTION (for example, placing the facility in a MODE of operation where the LCS/LCO is not applicable) if operations can not be returned to within limits in the specified completion time. This allows alternate safe action to be taken without a TSR VIOLATION. Figure 4 illustrates the use of logic connectors to allow placing the facility into an alternate MODE to prevent violation of a TSR during recovery ACTIONS.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Condition not met.	A.1 Achieve WARM STANDBY MODE.	6 hours
	<u>AND</u>	
	A.2 Achieve COLD STANDBY MODE.	12 hours

Condition A has two required ACTIONS. Each required ACTION has its own separate completion time. Each completion time is referenced to the time that Condition A is entered.

The required ACTIONS of Condition A are (1) to achieve the WARM STANDBY MODE within 6 hours **AND** (2) to achieve the COLD STANDBY MODE within 12 hours. A total of 6 hours is allowed for reaching the WARM STANDBY MODE and a total of 12 hours (not 18 hours) is allowed for reaching the COLD STANDBY MODE from the time that Condition A was entered. If the WARM STANDBY MODE is reached with 3 hours, the time allowed to reach the COLD STANDBY MODE is during the next 9 hours, because the total time allowed to reach the COLD STANDBY MODE is 12 hours.

If Condition A is entered while in the WARM STANDBY MODE, the time allowed to reach the COLD STANDBY MODE is during the next 12 hours. (In this example the LCO is also applicable in the WARM STANDBY MODE.)

Figure 3. Use of completion time—Example 1.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pump P-xx-xx inoperable.	A.1 Restore pump to OPERABLE status.	24 hours
	<u>OR</u>	
	A.2 Perform Systematic Shutdown.	
	A.2.1 Achieve WARM STANDBY MODE.	30 hours
	<u>AND</u>	
A.2.2 Achieve COLD STANDBY MODE.	60 hours	

When the pump is declared inoperable, Condition A is entered. If the pump is not restored to the OPERABLE status in 24 hours, ACTION A.2 is entered. A total of 30 hours is allowed to reach the WARM STANDBY MODE and a total of 60 hours is allowed to reach the COLD STANDBY MODE. For example, if at the end of 24 hours the pump has not been restored to OPERABLE status, then there are only 6 additional hours, not 30 hours, to achieve WARM STANDBY. The completion times are not additive. Failure to meet the required ACTION of Condition A within the completion time is clearly an LCO VIOLATION.

Figure 4. Use of completion time—Example 2.

1.5 Frequency Notation

Completion of each SR is required within a specified frequency. The normal SR frequency notations, their frequencies, and allowable extensions are defined in Table 1. Other frequencies may be specified in facility-specific SRs, if necessary, but the notations in Table 1 must not be used for other frequencies. Failure to meet required SR frequencies results in a TSR VIOLATION. When it is discovered that a surveillance has been missed, completion of the surveillance within 24 hours, or one SR interval if less than 24 hours, is allowed to avoid immediately declaring the system/component inoperable. Figures 5 and 6 illustrate the various ways that frequencies are specified.

Table 1. Notation, frequency, and extension.

Notation	Frequency	Total Time Including a 25% Extension
Each 8-hour shift	At least once every 8 hours.	10 hours
Each 10-hour shift	At least once every 10 hours.	12.5 hours
Each 12-hour shift	At least once every 12 hours.	15 hours
Daily	At least once every 24 hours.	30 hours
Weekly	At least once every 7 days.	9 days
Monthly	At least once every 31 days.	39 days
Quarterly	At least once every 92 days.	115 days
Semiannually	At least once every 184 days.	230 days
Annually	At least once every 366 days.	457 days
Campaign	Prior to each campaign startup.	NA
Restart	Prior to each restart.	NA

SURVEILLANCE	FREQUENCY
Verify that temperature T-xx-xx is within limits.	Each 8-hour shift.

This type of SR is often encountered in TSRs. The frequency specifies a shift interval (hours) during which the associated surveillance must be performed at least one time. Though the frequency is stated as each shift, an extension of the time interval to 1.25 times the stated frequency is allowed for operational flexibility. Each SR shall be performed within the specified interval, with a maximum extension of 25% of the interval between any two consecutive surveillances. (This extension is intended to provide operational flexibility both for scheduling and for performing surveillances. However, the extension should not be relied upon as a routine extension of the specified time interval.)

Figure 5. Most common type of SURVEILLANCE REQUIREMENT in TECHNICAL SAFETY REQUIREMENTS.

SURVEILLANCE	FREQUENCY
Verify that temperature T-xx-xx is within limits. <u>NOTE:</u> Only required when valve-xx-xx is open.	Once within 2 hours following restart. <u>AND</u> Each 12-hour shift.

This type of SR has two frequencies. The first is a one-time performance frequency following a restart. The second is of the type shown in Figure 5. The logic connector **AND** indicates that both frequency requirements must be met. The use of a specified time of 2 hours does not qualify for an extension. An explanatory note may also be in the MODE applicability statement as needed.

Figure 6. SURVEILLANCE REQUIREMENT with two frequencies in the TECHNICAL SAFETY REQUIREMENT.

1.6 Safety Limits

SLs are limits on process variables associated with those physical barriers, typically passive, that are necessary for the intended facility function and are found to be required to guard against an uncontrolled release of radioactive or hazardous material that results in significant consequences to the public. Thresholds that determine whether SLs are appropriate are provided in Attachment III in DOE-ID Order 420.D. Evaluation guidelines (EGs) are used to determine whether SLs are needed in a facility's TSR.

The application of SLs is described in terms of five basic rules:

1. Compliance with SLs is required in all MODES specified in the SL applicability statement.
2. Upon exceeding an SL, the following steps are to be taken:
 - a. The affected parameter must be IMMEDIATELY brought within the SL, if possible.
 - b. The activity or facility must be placed in the most stable, safe condition attainable as specified in the TSR ACTION.
 - c. All other ACTION requirements must be met.
3. The TSR VIOLATION must be reported in accordance with the INEEL reporting program.
4. An evaluation of the SL VIOLATION is required to determine whether any damage may have occurred and to evaluate the capacity of systems and components to restart.
5. After a VIOLATION of an SL, restart of the affected systems and components is prohibited until approval from the cognizant DOE Program Manager is received.

1.7 Limiting Control Settings

LCSs support SLs and need to be developed only when SLs are identified. LCSs are described in terms of their process variable parameters for safety systems that function to prevent exceeding SLs.

The application of LCSs is described in terms of five basic rules:

1. Compliance with an LCS is required in all MODES specified in the LCS applicability statement.
2. Upon discovery that the instrumentation or interlock setpoint is less conservative than required by the LCS, the associated ACTION statement must be met.
3. If an LCS is reached and the safety system does not have automatic response, the associated operator ACTION statement must be met.
4. Failure to comply with the ACTION statement within the stated completion time is a TSR VIOLATION and must be reported in accordance with the INEEL reporting program.
5. If an automatic safety system does not function as required, the appropriate ACTION such as a manual response must be taken to compensate for inoperable equipment.

1.8 Limiting Conditions for Operation

LCOs specify operability requirements for safety class and safety significant SSCs that are not passive, and other conditions that must be met as prerequisites for entering a particular facility MODE and for continuing activities in that MODE.

The application of LCOs follows six basic rules.

1. Compliance with an LCO is required in all MODES specified in the LCO applicability statement.
2. Upon failure to meet an LCO, the associated ACTION statement must be met.
3. Failure to comply with the ACTION statement in the stated completion time is a TSR VIOLATION and must be reported in accordance with the INEEL reporting program.
4. Restoration of the LCO prior to the expiration of the specified completion time(s) of the ACTION statement removes the requirement to complete the ACTION statement.
5. When an LCO is not met, unless provided for differently in the ACTION statement, IMMEDIATE ACTION should be initiated to place the facility in a different MODE for which the LCO does not apply. If the LCO is applicable in all MODES, the ACTION statement should require the facility to be placed in the safest MODE, and require the rapid restoration of the capability or compensatory measures.
6. Entry into a different MODE should not be made unless all of the LCOs are met for that MODE, except when the passage through a different MODE is required to comply with ACTION statements.

1.9 Surveillance Requirements

SRs are paired with LCSs and LCOs. They specify checks that must be performed at specific frequencies to determine whether LCSs and /or LCOs are met.

The application of SRs follows four basic rules:

1. SRs must be met for a system, subsystem, component, or device to be considered OPERABLE.
2. Each SR shall be performed within the specified interval, with a maximum extension of 25% of the interval between any two consecutive surveillances. (This extension is intended to provide operational flexibility both for scheduling and for performing surveillances. However, the extension shall not be relied upon as a routine extension of the specified time interval.)
3. When equipment or a component fails a surveillance test, the equipment or component shall be declared inoperable and the ACTION required by the TSR must be taken for failing to meet the LCS or the LCO. When an SR is not performed within its required time frequency, to avoid subjecting the affected facility to unnecessary transients, additional time may be allowed to complete a surveillance before declaring the associated LCSs or LCOs as not met and taking the required ACTION. In this case, from the time of discovery up to the lesser of 24 hours or the time limit of the specified surveillance frequency is allowed for performing a surveillance test. The length of the allowed delay period must be fully justified in the TSR basis appendix.
4. A different MODE may not be entered unless all of the SRs for equipment, components, or conditions of that different MODE are current, except when the passage through a different MODE is required to comply with ACTION statements.

There are three possible outcomes for an SR:

1. The surveillance is performed within the frequency interval and the surveillance conditions are met. Surveillances are continued at the specified frequency.
2. The surveillance is performed within the frequency interval and the surveillance criteria are not met. The equipment/component is declared inoperable and applicable ACTIONS for the LCS or the LCO are entered and must be completed.
3. The surveillance is not performed within the specified frequency interval. This constitutes a TSR VIOLATION, and, in this case, two further alternatives apply:
 - a. From the time of discovery of the missed surveillance, a correction surveillance is completed within the surveillance frequency interval or within 24 hours, whichever is shorter. If the equipment and components in the applicable LCS or LCO are OPERABLE and/or the LCS is met, the SRs continue as specified. If not, the specified ACTIONS are entered and must be completed.
 - b. From the time of discovery of the missed surveillance, a correction surveillance is not completed within the surveillance frequency interval or within the delay period of 24 hours, whichever is shorter. The equipment and components in the applicable LCS or LCO are declared inoperable or the LCS is not met, the LCS or LCO ACTIONS are entered, and the required ACTIONS must be completed.

1.10 Administrative Controls

ACs are those provisions (programs) relating to organization and management, procedures, recordkeeping, reviews, and audits necessary to ensure safe operation of the facility. Facility-specific ACs are developed based on the SAR hazard/accident analysis and engineering judgment in order to control the operation of the facility.

Failure to comply with a facility-specific AC is a TSR VIOLATION. For programmatic ACs, a failure to establish or implement the program constitutes a TSR VIOLATION, whereas the violation of a procedure that implements the program is not a TSR VIOLATION.

2. SAFETY LIMITS

There are no generic SLs or corresponding LCSs required for the processes associated with the operation of the RWMC.

There are no facility-specific SLs or corresponding LCSs required for the processes associated with the operation of the RWMC.

3/4. LIMITING CONDITIONS FOR OPERATION/SURVEILLANCE REQUIREMENTS

The LCOs, Section 3, and the companion Surveillance Requirements, Section 4, are combined. Section 3/4 documents the results of this merger.

3.0 GENERIC LCOs

The following generic LCOs apply to RWMC LCOs.

LCO 3.0.1 COMPLIANCE REQUIREMENT

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

LCO 3.0.2 ACTION REQUIREMENT

Upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met, except as provided in LCO 3.0.5. If the LCO is restored before the specified completion time(s) expires, completion of the ACTION is not required, unless otherwise stated.

LCO 3.0.3 DEFAULT ACTION REQUIREMENT

When an associated ACTION is not provided or an LCO is not met and the associated ACTIONS are not met, the facility shall be IMMEDIATELY placed in a MODE or other specified condition in which the LCO is not applicable. If the LCO is applicable in all MODEs, the facility shall be placed in the safest MODE defined in the facility-specific TSRs.

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

LCO 3.0.3 is applicable to all MODES. Exceptions to LCO 3.0.3 may be stated in the facility-specific LCOs.

LCO 3.0.4 MODE CHANGE RESTRICTION

A MODE may not be entered unless all of the LCOs for that MODE are met without reliance on their ACTION statements. A MODE may be entered relying on an LCO ACTION statement if the ACTION statement allows the facility to remain in that MODE for an unlimited time in that condition. LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the applicability statement that are required to comply with the ACTIONS.

Exceptions to LCO 3.0.4 are stated in the facility-specific LCOs. When a facility-specific LCO states that LCO 3.0.4 does not apply, the facility-specific LCO allows entry into MODES or other specified conditions in the applicability statement 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 TESTING OF INOPERABLE EQUIPMENT

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

4.0 GENERIC SURVEILLANCE REQUIREMENTS

The following generic SRs apply to RWMC SRs required for LCOs.

SR 4.0.1 COMPLIANCE REQUIREMENT

SRs shall be met during the MODES or other conditions specified in the applicability statement for facility-specific LCOs unless the SR specifies otherwise. Failure to meet an SR, whether such a failure is experienced during the performance of the surveillance or between performances of the surveillance, shall constitute a failure to meet the facility-specific LCO. Failure to perform a surveillance at the specified frequency shall constitute a failure to meet the facility-specific LCO, except as provided in SR 4.0.3. Surveillances do not have to be performed on inoperable equipment or on variables outside specified limits.

SR 4.0.2 EXTENSION OF THE SURVEILLANCE FREQUENCY

The specified frequency for each facility-specific SR is met if the surveillance is performed within 1.25 times the interval specified in the frequency, as measured from the previous performance or as measured from the time a specified condition of the frequency is met.

For frequencies specified as “once,” the above interval extension does not apply.

If a completion time for an ACTION requires periodic performance of a surveillance “once every . . . ,” the above frequency extension applies to each performance after the initial performance.

Exceptions to this SR are stated in facility-specific SRs.

SR 4.0.3 DELAY PERIOD FOR A MISSED SURVEILLANCE

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

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

SR 4.0.4 SURVEILLANCE REQUIREMENTS FOR MODE CHANGE

Entry into a MODE or other specified condition in the applicability statements of a facility-specific LCO shall not be made unless the LCO surveillances have been met for that MODE within their specified frequency. This provision shall not prevent passage through or to MODES or other specified conditions in compliance with ACTIONS.

3/4.1 RWMC SPECIFIC LCOs/SURVEILLANCE REQUIREMENTS

LCO 3.1.1

RTR door interlocks, audible and visual warning signals, minimum 20 second delay function, and emergency shutdown switches shall be operable when the associated RTR x-ray unit is generating x-rays.

APPLICABILITY: All modes.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Interlocks, or audible and visual warning signals, or minimum 20 second delay function, or emergency switches are inoperable.	A.1 Achieve Repair Mode.	Immediately
	AND A.2 Repair equipment.	Prior to RTR operation

SURVEILLANCE REQUIREMENTS

SURVEILLANCE FOR COMPLIANCE WITH LCO 3.1.1	FREQUENCY
SR 4.1.1 Verify operability of door interlocks, audible and visual warning signals, minimum 20 second delay function, and emergency shutdown switches.	Daily
SR 4.1.2 Inspect/test door interlocks, audible and visual warning signals, minimum 20 second delay function, and emergency shutdown switches to ensure operability.	Semiannually

LCO 3.1.2

Drum recovery operations in the containment tent must be performed with the HEPA-filtered air sweep system operating.

APPLICABILITY: Operation mode.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The associated HEPA-filtered air sweep unit becomes inoperable.	A.1 Place recovered drum in a safe and stable condition.	Immediately
	<p style="text-align: center;"><u>AND</u></p>	
	A.2 Stop drum recovery operations associated with the inoperable air sweep unit.	Immediately
	<p style="text-align: center;"><u>AND</u></p>	
	A.3 Achieve repair mode.	Immediately
	<p style="text-align: center;"><u>AND</u></p>	
	A.4 Repair equipment.	Prior to drum recovery operation with the associated air sweep unit

SURVEILLANCE REQUIREMENTS

SURVEILLANCE FOR COMPLIANCE WITH LCO 3.1.2	FREQUENCY
SR 4.1.3 Visually inspect the exterior of the air sweep units and ducting for evidence of obstruction(s) that could impair flow.	Daily for each day of drum recovery operations
SR 4.1.4 Record and evaluate the pressure differential on the HEPA-filtration units.	Daily for each day of drum recovery operations
SR.4.1.5 Verify the air sweep flow rates (minimum 6 air changes per hour).	Monthly during drum recovery operations

LCO 3.1.3

The silo ventilation system and silo fume hood shall be operable during absorbent addition operations.

APPLICABILITY: Operation mode.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The silo ventilation system or silo fume hood becomes inoperable.	A.1 Replace lid (if removed).	Immediately
	AND	
	A.2 Place drum in a safe and stable condition.	Immediately
	AND	
	A.3 Stop drum treatment operations.	Immediately
	AND	
	A.4 Achieve repair mode.	Immediately
	AND	
	A.5 Repair equipment.	Prior to resuming absorbent addition operations.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE FOR COMPLIANCE WITH LCO 3.1.3		FREQUENCY
SR 4.1.6	The differential pressure for each HEPA filter shall be recorded and evaluated.	Daily for each day of absorbent additions operations
SR 4.1.7	Verify the average silo fume hood face velocity to be 125 (+/- 25) lfpm.	Monthly during absorbent addition operations

5. ADMINISTRATIVE CONTROLS

5.1 Organization and Management

Administrative procedures shall be in place that delineate the clear lines of responsibility of the RWMC site management and operation organizations while conducting operations, approvals, reviews, and compliance relative to these TSRs.

5.2 Procedures

Procedures required to implement programs stated in the TSRs, and changes to those procedures shall be reviewed and approved in accordance with the RWMC current document control review process. The following written procedures shall be established, implemented, and maintained, as a minimum:

- Facility maintenance
- Monitoring and maintenance of the propane system to ensure leaks are minimized
- Facility operating/material handling
- Procedures for seismic protection (minimization of dynamic loading) of aboveground stored transuranic (TRU) waste containers
- Procedures governing the administrative aspects of operation of the RWMC
- Packaging and repackaging of waste
- Shielding, interlocks, audible and visual warning signals, minimum 20 second delay function, and emergency shutdown switches
- Procedures governing abnormal and emergency conditions
- Waste disposal/storage configurations
- Container integrity inspections and criteria

5.3 Programs

5.3.1 Radiation Protection Program

A radiation protection program shall be established and maintained in accordance with 10 CFR 835, *Occupational Radiation Protection*, as implemented by the *INEEL Radiological Control Manual 15A* and *Radiological Procedures Manual*.

5.3.2 Industrial Hygiene Protection Program

Industrial hygiene personnel shall evaluate RWMC operations and processes to identify and quantify potential health hazards, as required by DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*.

5.3.3 Occupational Safety and Health Program

Occupational safety personnel shall evaluate RWMC operations and processes to identify and quantify potential occupational hazards, as required by DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*.

5.3.4 Quality Program

The RWMC shall have a quality program plan in accordance with 10 CFR 830.120, *Quality Assurance Requirements* and implemented through ID Order 414.1, *Quality Assurance*.

5.3.5 Fire Protection Program

A fire protection program shall be established and maintained in accordance with the requirements of DOE Order 420.1, *Facility Safety*.

5.3.6 Criticality Control Program

A criticality control program shall be established and maintained in accordance with the requirements of DOE Order 420.1, *Facility Safety*. Physical and administrative restrictions to be defined include the following:

- Container fissile gram concentration limits which are provided in Chapter 6 of the SAR.
- HFEF-5 Container – 200 g Pu-239 per container limit
- Any container found to have > 380 g fissile material will be isolated pending evaluation.
- U-233 limit for 6M drums is 500 g
- Requirements for coring and probing in the SDA:
 - a. The maximum internal diameter of probe casings and core holes shall be 6-inches.
 - b. There shall be a minimum distance of 5-ft inside edge-to-edge distance between unfilled non-ferrous probe casings and core holes.
 - c. Unfilled non-ferrous casings or core holes may be allowed closer than 5 ft inside, edge-to-edge, if the existing casing/hole is filled with a material to effectively displace waste OR a demonstrated assaying technique is used to verify that an unsafe mass does not exist between casings/holes. The use of fill material and methods/controls for assaying requires review and approval from the Criticality Safety Group.
- Maintain & post CCAs; log activities as required
- Generator requirements:
 - a. must submit written plan for approval prior to shipping any waste to RWMC
 - b. annual audit of plans required

5.3.7 Configuration Control Program

A program shall be established, implemented, and maintained for control of facility configuration. The program shall identify and document the technical baseline of safety structures, systems, components, and computer software. The program shall ensure that changes to the technical baseline are developed, assessed, approved, issued, and implemented. The program shall ensure the continued effectiveness of those design features for which safety credit is taken in the SAR at the safety class or safety significant levels.

5.3.8 Document Control Program

A program shall be established, implemented, and maintained for document control. The program shall provide requirements to ensure that facility personnel receive the documents necessary to operate the facility safely.

5.3.9 Facility Recordkeeping Program

A program shall be established, implemented, and maintained for retention of facility records, including records retention schedules. Records to be retained shall include at least the following:

1. records and logs of facility operations
2. records and logs of principal maintenance activities, inspections, repairs, and replacements of equipment items related to nuclear safety
3. records of surveillance activities, inspections, and calibrations required by TSRs
4. records of changes made to operating procedures
5. records and drawing changes reflecting modifications made to SSCs described in the SAR
6. records of facility tests and experiments
7. records of training and qualification for current members of the facility operations staff.

5.4 Waste Container Stack Stability

Drums that are stored in the Waste Storage Facility (WSF) must be stacked as specified in the operating procedures; this control ensures that a release of radioactive material during a design basis earthquake remains an incredible event. The procedures will specify the pallet and spacer requirements which prevent individual container vibration during a design basis earthquake (in WSF). Also, to ensure maximum stability, drums weighing over 700-lbs must be stacked only on floor level.

5.5 Staffing

Minimum shift staffing for waste handling operations shall be established and documented as determined by the Operations Work Group Supervisor. Maintenance and construction activities minimum shift staffing shall be established by appropriate management.

1. At least one QUALIFIED RGD operator shall be present in the control room and responsible for operation of the RTR when x-rays are being generated.

5.6 Operating Support

A current list of facility support personnel shall be maintained at the facility. The list shall include management, cognizant professional, and technical support personnel.

5.7 Facility Staff Qualifications and Training

The RWMC shall have a training program in accordance with DOE Order 5480.20A, *Personnel Selection, Qualification and Training Requirements at DOE Nuclear Facilities*. Individuals who operate, maintain, provide support to, or supervise activities at the RWMC shall receive training commensurate with their specific duties. Training standards shall be established, implemented, maintained, and documented in the RWMC training program.

5.8 Reviews and Audits

Independent review of safety documentation shall be conducted by an independent group not directly involved in the formulation of the safety basis documentation. The independent review shall include the elements listed as ADMINISTRATIVE CONTROLS (as a minimum).

Audits of the RWMC shall be performed by a qualified auditor. These audits shall include, but are not limited to ADMINISTRATIVE CONTROLS.

5.9 Reporting Requirements

The reporting requirements established for the RWMC shall be in accordance with DOE Order 232.1A, *Occurrence Reporting and Processing of Operations Information*.

5.10 Flood Control

Culverts, drainage channels, and the SDA Dike shall be maintained to prevent flooding of the RWMC.

- The culverts, drainage channels, and the SDA Dike shall be maintained to prevent flooding of the RWMC.
- Regular visual inspections of the dike shall be performed monthly (weather permitting); inspecting for obvious obstructions and failures. The SDA Dike shall be physically inspected for signs of failure in the fall of each year (annually).

5.11 Real-Time Radioscopy (RTR) Units

1. RTR Shielding Validation
 - A radiation survey shall be performed semiannually or after configuration changes or modifications to verify adequacy of the shielding.
 - Shielding inadequacies will be addressed in accordance with the Radiological Control Manual.

5.12 Emergency Preparedness

Emergency plans shall be in place that define specific measures, policies, and actions to prevent or minimize injuries to personnel, damage to property, and impact on the environment caused by accidents including those initiated by natural phenomena.

The Company shall ensure that: (1) facility emergency plans are maintained, (2) emergency plan implementation procedures are developed and maintained, (3) facility personnel are trained in emergency preparedness procedures, actions, and responsibilities, (4) emergency preparedness training drills are conducted for NUCLEAR FACILITIES to demonstrate the adequacy of emergency planning, procedures, and training, and (5) facility personnel participate in emergency training drills and exercises.

5.13 TSR Basis Control

Changes may be made to the TSR basis appendix without prior DOE approval provided the changes do not involve: (1) a change in the TSR, (2) a change to the corresponding SAR that involves an unreviewed safety question (USQ), (3) a change to the way the operability or the TSR could be met, applied, or interpreted.

Changes that meet criteria 1, 2, or 3 shall be reviewed and approved by the DOE prior to implementation. Changes to the bases that have been implemented without prior DOE approval shall be provided to the DOE.

5.14 Absorbent Addition Operations

The following administrative controls are required for absorbent addition operations in the DVF:

- 5.14.1** The silo fume hood shall be positioned over the drum prior to drum lid removal. The silo fume hood shall not be removed from over the drum until the drum lid is replaced on the drum and securely fastened.
- 5.14.2** The power to the conveyor where the drum lid is to be removed shall be de-energized prior to drum lid removal using the disconnect switch, and shall not be energized until the drum lid is replaced on the drum and securely fastened.
- 5.14.3** The silo fume hood and gantry shall be restrained prior to drum lid removal.
- 5.14.4** Unvented drum lids shall not be removed and unvented drum liners shall not be opened in the silo.

APPENDIX A

Technical Safety Requirement Bases

1. PURPOSE

TECHNICAL SAFETY REQUIREMENT (TSR) bases show how the numeric values, conditions, SURVEILLANCE REQUIREMENTS, and ACTION statements fulfill the purpose derived from the safety documentation. The primary purpose for describing the basis of each requirement is to ensure that any future changes to the requirement will not affect its original intent or purpose. This appendix provides brief summary statements of the reasons for SAFETY LIMITS (SLs), LIMITING CONTROL SETTINGS (LCSs), LIMITING CONDITIONS FOR OPERATIONS (LCOs), and SURVEILLANCE REQUIREMENTS (SRs). ADMINISTRATIVE CONTROLS (ACs) do not require basis statements.

2. BASES

Safety Limits

There are no RWMC SLs and, therefore, no bases are provided.

Limiting Control Settings

There are no RWMC LCSs and, therefore, no bases are provided.

Limiting Conditions for Operation

LCOs 3.0.1 through 3.0.6 establish the general requirements applicable to all facility-specific LCOs and LCSs at all times, unless otherwise stated.

LCO 3.0.1 COMPLIANCE REQUIREMENT

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

LCO 3.0.2 ACTION REQUIREMENT

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

This LCO establishes the following:

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

There are two basic types of ACTIONS. The first type of ACTION specifies a time limit in which the LCO shall be met. This time limit is the completion time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of ACTION is not completed within the specified completion time, a shutdown may be required to place the facility in a MODE or condition in which the LCO is not applicable. Correcting a condition to within limits or restoring inoperable equipment, whether stated as ACTIONS or not, are actions that may always be considered upon entering ACTIONS.

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

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

The nature of some ACTIONS for some conditions necessitates that, once the conditions are entered, ACTIONS shall be completed even though the associated conditions are resolved. The facility-specific LCOs ACTIONS specify where this is the case.

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

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

LCO 3.0.3 DEFAULT ACTION REQUIREMENT

LCO 3.0.3 establishes the ACTIONS required when an LCO is not met and one of the following occurs:

1. Associated ACTIONS and completion times are not met and no other condition applies.
2. The condition is not specifically addressed by the associated ACTIONS. This means that no combination of conditions stated in the ACTIONS can be made that exactly corresponds to the actual condition. Sometimes, possible combinations of conditions are such that entering LCO 3.0.3 is warranted. In such cases, the ACTIONS specifically state a condition corresponding to such combinations and also that LCO 3.0.3 must be entered IMMEDIATELY.

This LCO states that the system or component shall be placed in a safe MODE or other specified condition IMMEDIATELY when operation cannot be maintained within the limits for safe operation, as defined by the LCO and its ACTIONS. It is not intended to be used as an operational convenience that permits routine voluntary removal of redundant systems or components from service in lieu of other alternatives that would not result in redundant systems or components being inoperable.

Upon entry into LCO 3.0.3, preparation for an orderly change in unit operation shall begin IMMEDIATELY. Lower MODES of operation shall proceed in a controlled and orderly manner that is well within the capabilities of the unit, assuming that only the minimum required equipment is OPERABLE. This reduces the potential for a facility upset that could challenge safety systems under the conditions to which this LCO applies.

A facility MODE change required in accordance with LCO 3.0.3 may be terminated and LCO 3.0.3 exited if any of the following occurs:

1. The LCO is met.
2. A condition exists for which the ACTIONS have been performed.
3. ACTIONS exist that do not have expired completion times. These completion times are applicable from the time that the condition was initially entered and not from the time LCO 3.0.3 is exited.

Exceptions to LCO 3.0.3 are provided in instances where requiring a MODE 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 facility-specific LCOs.

LCO 3.0.4 MODE CHANGE RESTRICTION

LCO 3.0.4 establishes limitations on changes in MODES or other specified conditions in the applicability statement when an LCO is not met. It precludes placing the unit 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 the system or component to be placed in a MODE or other specified condition to which the LCO does not apply to comply with the ACTIONS.

Compliance with ACTIONS that permit continued operation of the facility 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 facility before or after the MODE change. Therefore, in such cases, entry into a MODE or other condition in the applicability statement 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 prior to entering the MODE requiring operability of the systems.

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

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

LCO 3.0.5 TESTING OF INOPERABLE EQUIPMENT

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

1. Operability of the equipment being returned to service
2. Operability of other equipment.

The intent of the ADMINISTRATIVE CONTROLS is to limit the time that the equipment is returned to service in conflict with the requirements of the ACTIONS to that which is absolutely necessary to perform the allowed SR. This LCO does not provide time to perform any other preventive or corrective maintenance.

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

LCO 3.1.1 RTR DOOR INTERLOCK SYSTEMS, AUDIBLE AND VISUAL WARNING SIGNALS, MINIMUM 20 SECOND DELAY FUNCTION, AND EMERGENCY SHUTDOWN SWITCHES OPERABILITY.

RTR door interlock systems are designed to disable x-ray generation when the door is open to prevent an accident scenario in which a worker opens the door during x-ray generation. The consequences of this scenario could be lethal to the worker. This LCO ensures the door interlock systems, which prevent this scenario, are in place before x-ray generation is started, and they are capable of performing their intended function.

The audible and visual warning signals, the minimum 20 second delay function, and the emergency shutdown switches, located inside the x-ray shielded room/vault, are designed to prevent an accident scenario in which a worker is trapped inside the x-ray shielded room/vault and is exposed to a lethal radiation dose. The audible and visual warning signals are designed to automatically activate a minimum of 20 seconds before the generation of x-rays to allow a worker time to activate an emergency shutdown switch. The minimum 20 second delay function delays generation of x-rays for a minimum of 20 seconds after actuation of the x-ray activation switch. This LCO ensures the audible and visual warning signals, the minimum 20 second delay function, and emergency shutdown switches are capable of performing their design function.

LCO 3.1.2 DRUM RECOVERY OPERATION IN THE CONTAINMENT TENT MUST BE PERFORMED WITH THE HEPA-FILTERED AIR SWEEP SYSTEM OPERATING.

The term “system operating” means the air sweep unit associated with the location where recovery operations are in progress is operating. If recovery is being done at both locations, then both air handling units must be operating.

The safety analysis has shown that a drum breach accident could result in a dose to workers in the containment tent that exceeds the evaluation guidelines. The air sweep system protects an operator by drawing contaminated air from near the top of the overpacks. If a drum breaches while being recovered from the overpack, the air sweep will rapidly suck in the contaminated air, thus significantly reducing radiation exposure. The air flow rate is approximately 6 air changes per hour for each of the two air sweep system air handling units. This air flow is consistent with INEEL radiation protection procedures (6 to 12 air changes per hour) and with industrial guidelines for face velocity (100 lfpm).

LCO 3.1.3 THE SILO VENTILATION SYSTEM AND SILO FUME HOOD SHALL BE OPERABLE DURING ABSORBENT ADDITION OPERATIONS.

For the silo ventilation system, the term “operable” means the system is capable of providing a minimum of 6 air changes per hour in the silo or one every 10 minutes. This may be calculated by dividing the silo volume in cubic feet by the exhaust rate in cubic feet per minute.

The silo ventilation system protects workers from radiological and hazardous materials during routine operations and potential accidents. It reduces contamination levels inside the silo by providing a minimum of six air changes per hour. It also prevents out-leakage of contaminated air by maintaining a negative pressure compared to the outside atmosphere. The silo ventilation system protects workers and co-located workers by passing ventilation air through two testable HEPA filters before discharging it to the environment.

For the silo fume hood, the term “operable” means the air flow into the silo fume hood has an average face velocity of at least 125 (+/- 25) lfpm. This measurement is made in accordance with company procedures. If the 100 lfpm is maintained, the six air exchanges per hour are maintained.

The silo fume hood protects workers from radiological and hazardous materials during routine operations and potential accidents. It draws contaminated air from the immediate vicinity of the drum top surface and routes it to the silo ventilation system. It operates with an average linear face velocity of 125 (+/- 25) lfpm.

SURVEILLANCE REQUIREMENTS

SRs 4.0.1 through 4.0.4 establish the general requirements applicable to all RWMC SRs (including those for LCSs) and apply at all times, unless otherwise stated.

SR 4.0.1 COMPLIANCE REQUIREMENT.

SR 4.0.1 establishes the requirement that SRs shall be met during the MODES or other specified conditions in the applicability statement for which the requirements of the LCO apply, unless otherwise specified in the facility-specific SRs. This SR ensures that surveillances are performed to verify the operability of systems and components and that variables are within specified limits. Failure to meet a SURVEILLANCE REQUIREMENT within the specified frequency, in accordance with SR 4.0.2, constitutes a failure to meet an LCO.

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

1. The systems or components are known to be inoperable, although still meeting the SR.
2. It is known that the requirements of the surveillance(s) are not met between the required surveillance performances.

Surveillances do not have to be performed when the facility is in a MODE or other specified condition for which the requirements of the associated LCO are not applicable, unless otherwise specified. The SRs associated with a test exception are only applicable when the test exception is used as an allowable exception to the requirements of a specification.

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

Upon completion of maintenance activities, appropriate post-maintenance testing is required to declare equipment OPERABLE. This includes meeting applicable SRs in accordance with SR 4.0.2. Post-maintenance testing may not be possible in the current MODE or other specified conditions in the applicability statement because the necessary parameters were not established.

In these situations, the equipment may be considered OPERABLE, provided that testing has been satisfactorily completed to the extent possible and that the equipment is not otherwise believed to be incapable of performing its function. This shall allow operation to proceed to a MODE or other specified condition where other necessary post-maintenance tests can be completed.

SR 4.0.2 EXTENSION OF THE SURVEILLANCE FREQUENCY.

SR 4.0.2 establishes the requirements for meeting the specified frequency for surveillances and any ACTION with a completion time that requires the periodic performance of the ACTION on a “once every . . .” interval.

SR 4.0.2 permits a 25% extension of the interval specified in the frequency. This facilitates surveillance scheduling and considers facility operating conditions that may not be suitable for conducting the surveillance (e.g., transient conditions or other ongoing surveillances or maintenance activities). Frequency notations and their associated frequencies are defined in Section 1.5, Frequency Notation. Other frequencies may be specified in facility-specific SRs, as long as they do not use the notations in Section 1.5.

The 25% extension does not significantly degrade the reliability that results from performing the surveillance at its specified frequency. This is based on the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the SR. The exceptions to SR 4.0.2 are those surveillances for which the 25% extension of the interval specified in the frequency does not apply. These exceptions are stated in the facility-specific SRs. An example of where SR 4.0.2 would not apply is a surveillance that is required to be completed at a frequency specified in a federal regulation where a 25% extension is not allowed. The requirements of federal regulations take precedence over the TSRs. The TSRs cannot, in and of themselves, extend a test interval specified in the regulations. In such a case the SR frequency would reflect that required by the federal regulation and would state, “SR 4.0.2 is not applicable.”

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

The provisions of SR 4.0.2 are not intended to be used repeatedly as an operational convenience to extend surveillance intervals or periodic completion time intervals beyond those specified. A surveillance not performed within the 25% extension is a TSR VIOLATION. Regular usage of the 25% extension may lead to enforcement action.

SR 4.0.3 DELAY PERIOD FOR A MISSED SURVEILLANCE.

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

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

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

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

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

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

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

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

SR 4.0.4 SURVEILLANCE REQUIREMENTS FOR MODE CHANGE.

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

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

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

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

SR 4.1.1 SURVEILLANCE REQUIREMENT FOR DAILY CHECK OF RTR DOOR INTERLOCK SYSTEMS, AUDIBLE AND VISUAL WARNING SIGNALS, MINIMUM 20 SECOND DELAY FUNCTION, AND EMERGENCY SHUTDOWN SWITCHES.

Daily operability checks of these SSCs when the RTR is operating ensure these safety SSCs are available to perform their safety function, and are required by the vendor and ANSI N43.3.

There are several ways to meet the vendor and ANSI N43.3 requirements. The following methods meet the ANSI N43.3 requirements and have been approved by the company RGD Coordinator.

- The shield room/vault door interlock is tested by opening the door and trying to generate X-rays. The test is successful if X-rays cannot be generated with the door open.
- In the SWEPP RTR, the emergency shutdown switches are tested by actuating each switch and ensuring that the “E-STOP OCCURRED” light is energized.
- In the mobile RTR, the emergency shutdown switches are tested by actuating each switch and ensuring that the PLC program terminates.

If other methods are developed, they will be reviewed and approved by the company RGD Coordinator. Implementation and interpretation of the operability requirement will be in the RTR operating procedures.

The audible and visual warning signals are tested to ensure they all operate as designed and the X-ray machine does not come on until the minimum 20 second delay is complete. A checklist is completed by the operator and the record is maintained by RWMC document control. “Daily” is defined for purposes of this TSR as the 24-hour period from 7:00 a.m. of one calendar day to 7:00 a.m. of the

next. The daily check is to be performed after 7:00 a.m., prior to that day's operation. If the RTR is not operated on day shift (7:00 a.m. to 7:00 p.m.), but is to be operated on night shift (7:00 p.m. to 7:00 a.m.) the SR should be performed on night shift prior to any operation. The next surveillance would be required on day shift, after 7:00 a.m., prior to any operation on day shift that day.

SR 4.1.2 SURVEILLANCE REQUIREMENT FOR INSPECTION/TESTING OF RTR DOOR INTERLOCK SYSTEMS, AUDIBLE AND VISUAL WARNING SIGNALS, MINIMUM 20 SECOND DELAY FUNCTION, AND EMERGENCY SHUTDOWN SWITCHES.

Inspection/testing of door interlock systems, audible and visual warning signals, minimum 20 second delay function and emergency shutdown switches semiannually ensures proper preventive maintenance of these safety SSCs, and are required by the vendor and ANSI N43.3.

The semiannual inspection/test is slightly more complete than the daily check in that it also tests each of the three redundant door interlocks on each door separately. A radiation survey is conducted for the administrative control listed in 5.11. The records are reviewed by the Radiological Control Supervisor or a Radiological Engineer, forwarded to the company Radiation Generating Device (RGD) Coordinator and reviewed and approved. Records are maintained by the company RGD coordinator and the RGD Custodian.

SR 4.1.3 VISUALLY INSPECT THE EXTERIOR OF THE AIR SWEEP UNITS AND DUCTING DAILY FOR EVIDENCE OF OBSTRUCTION(S) THAT COULD IMPAIR FLOW.

The air sweep system must be operating during drum recovery operations. To effectively perform its function, the system must be in good operating condition. This surveillance requirement assures that the system is properly configured with an unobstructed flow path. For purposes of this TSR, the term "daily" is defined as the 24 hr period from 7 a.m. of one calendar day to 7 a.m. of the next. The daily check is to be performed after 7 a.m. but prior to that day's operation. If the associated air sweep system is not operated on the day shift (7 a.m. to 7 p.m.), but is to be operated on the night shift (7 p.m. to 7 a.m.), the SR must be performed before night shift operation.

SR 4.1.4 RECORD AND EVALUATE THE PRESSURE DIFFERENTIAL ON THE HEPA-FILTRATION UNITS DAILY.

The air sweep system must be operating during drum recovery operations. To perform its function, the ventilation rate must be above 6 air changes per hour. This surveillance requirement assures that the HEPA filter is in place and that air is flowing through the filter above the minimum value. Daily differential pressure (DP) measurements are tracked for trends of increasing or decreasing DP. If DP exceeds 4 inches-water, the air flow rate is measured as required by SR 4.1.5. The DP value of 4 inches-water is based on filter vendor data and may be adjusted based on actual measured system performance. If the DP is below 0.5 inches-water, the system is assessed for degradation (for example, flow decrease, open filter). The low DP value is based on deviation from normal operating values and may also be adjusted. Any change to these DP values will comply with TSR 5.13, TSR Basis Control.

For purposes of this TSR, the term "daily" is defined as the 24 hr period from 7 a.m. of one calendar day to 7 a.m. of the next. The daily check is to be performed after 7 a.m. but prior to that day's operation. If the associated air sweep system is not operated on the day shift (7 a.m. to 7 p.m.), but is to be operated on the night shift (7 p.m. to 7 a.m.), the SR must be performed before night shift operation.

SR 4.1.5 VERIFY THE AIR SWEEP FLOW RATES MONTHLY (MINIMUM 6 AIR CHANGES PER HOUR).

The air sweep system must be operating during drum recovery operations. To effectively perform its function, the system must be in good operating condition. This surveillance requirement assures that the flow rate is correct. Monthly is defined, for purposes of this TSR, as starting the first day of operation of the month of the associated air sweep system.

SR 4.1.6 DIFFERENTIAL PRESSURE FOR EACH HEPA FILTER SHALL BE RECORDED AND EVALUATED DAILY

For the silo ventilation system to effectively perform its function, the HEPA filters must be in good operating condition. HEPA filters must remove airborne particulate and still allow adequate airflow through the system. HEPA filter performance is measured by differential pressure across the filter. The pressure drop across the filters will be no less than the installed baseline to verify air is flowing and the filter is intact and functioning. The pressure drop across the filters will be less than 4 in.-water to verify the filter is not clogged.

For this SR, “daily” is defined as the 24-hr period from 7 a.m. of one calendar day to 7 a.m. of the next. The daily check is to be performed after 7 a.m. but prior to that day’s operation. If absorbent addition operations are not performed on the day shift (7 a.m. to 7 p.m.), but are to be operated on the night shift (7 p.m. to 7 a.m.), the SR must be performed on night shift prior to moving drums in the silo.

SR 4.1.7 VERIFY MONTHLY THE AVERAGE SILO FUME HOOD FACE VELOCITY TO BE 125 (+/-25) LFPM.

The silo fume hood removes air that may contain removal contamination and airborne radioactivity material or hazardous materials from the area where the operators are adding absorbent to the drum. To function effectively, it must maintain an average face velocity of 125 (+/-25) lfpm. This surveillance confirms the silo fume hood is operating correctly.