

# Technical Safety Requirements for the 216-Z-9 Waste Storage Crib Facility

Prepared for the U.S. Department of Energy  
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy  
under Contract DE-AC06-08RL14788

**CH2MHILL**  
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# Technical Safety Requirements for the 216-Z-9 Waste Storage Crib Facility

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for the  
216-Z-9 Waste Storage Crib Facility**

**Prepared by:**

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Richland, Washington

October 2019

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**LIST OF TERMS**

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**Acronyms, Abbreviations, and Symbols**

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AC	administrative control
BED	Building Emergency Director
CFR	<i>Code of Federal Regulations</i>
CPS	Criticality Prevention Specification
CSER	Criticality Safety Evaluation Report
D&D	decontamination and decommissioning
DE	dose equivalent
DE-Ci	dose equivalent curie
DF	design feature
DID	defense in depth
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
ISMS	Integrated Safety Management System
LCO	limiting condition for operation
LCS	limiting control setting
MAR	material at risk
MDSA	Master Documented Safety Analysis
NDA	nondestructive assay
NDE	nondestructive examination
RL	U.S. Department of Energy, Richland Operations Office
S&M	surveillance and maintenance
SAC	specific administrative control
SL	safety limit
SMP	Safety Management Program
SR	surveillance requirement
SS	safety significant
SSC	structure, system, and component

SWOC	Solid Waste Operations Complex
TRU	transuranic
TSD	Transportation Safety Document
TSR	Technical Safety Requirement
USQ	Unreviewed Safety Question
WAC	Waste Acceptance Criteria
WAP	Waste Acceptance Program
WIPP	Waste Isolation Pilot Project

**Section 1**  
**Use and Application**

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# 1 USE AND APPLICATION

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## 1 USE AND APPLICATION

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Title 10, *Code of Federal Regulations*, Part 830.205 (10 CFR 830) “Nuclear Safety Management,” 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). TSRs identify controls for operating a nuclear facility as determined by the Documented Safety Analysis.

This document contains the TSRs for the 216-Z-9 Waste Storage Crib Facility surveillance and maintenance activities.

This TSR document was prepared in accordance with DOE G 423.1-1B, *Implementation Guide for Use In Developing Technical Safety Requirements*, and DOE-STD-1186-2016, *Specific Administrative Controls*, applying a graded approach for changes to existing TSR requirements. Specific administrative controls (SACs) have been designated for those administrative controls (ACs) whose preventive or mitigative functions, credited in the safety analysis, would rise to the level of safety class or safety significant if the functions were performed by the structures, systems, and components. Compliance with all TSR ACs is expected, and training on this TSR document and SAC designation will provide the desired heightened assurance of effectiveness and reliability of the credited functional requirements in the SACs. The controls designated as SACs are clearly labeled as such in Section 5.6 of this TSR.

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**1 USE AND APPLICATION**

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# 1 USE AND APPLICATION

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## 1.1 Definitions

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

<u>Term</u>	<u>Definition</u>
ACTION	An ACTION statement describes the action or actions to be taken in the event that a limiting control setting (LCS) is exceeded or a limiting condition for operation (LCO) statement is not met. ACTION statements should be broken down whenever possible into separate statements describing a single, deviated condition requiring operator action. ACTION statements should cover all reasonably expected combinations of OPERABLE and inoperable components in the systems described.
ACTIVITY/ACTIVITIES	An ACTIVITY is the term representing the collection of tasks or steps commonly associated with a process.
ADMINISTRATIVE CONTROL	The provisions related to organization and management, procedure, record keeping, review and audit, and necessary reporting to ensure that the facility operates in a safe manner. When abbreviated Administrative Control (AC), is referring to the uniquely identified control sets in this Technical Safety Requirement (TSR) document.
COMPLETION TIME	The amount of time allowed to complete an ACTION.
DOSE EQUIVALENT	A method of normalizing the radiotoxicity of various radionuclides to <sup>239</sup> Pu for use in determining the relative hazard of radioactive materials. The normalization is based on the ratio of the relative adult inhalation committed effective DOSE EQUIVALENT for each radionuclide to that of <sup>239</sup> Pu using the inhalation dose conversion factors from ICRP 71, <i>Age Dependent Doses to Members of the Public from Intake of Radionuclides - Part 4, Inhalation Dose Coefficients</i> .

# 1 USE AND APPLICATION

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## 1.1 Definitions (continued)

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<u>Term</u>	<u>Definition</u>
EACH USE	Term used to indicate that the FREQUENCY applied to a SR is to be completed during performance of the specified activity.
FREQUENCY	FREQUENCY is defined in Section 1.3.
GRACE PERIOD	The GRACE PERIOD is the time frame in which the facility is allowed to recover from missed surveillances without entering the LCO or specific administrative control (SAC) ACTION statements. The GRACE PERIOD is 24 hr or the time limit of the specified surveillance FREQUENCY, whichever is less. Use of the GRACE PERIOD may delay the TIME OF DECLARATION. However, failure to meet the SR FREQUENCY SHALL be reported in accordance with Sections 5.8.1 and 5.8.2. The GRACE PERIOD allowed to delay the TIME OF DECLARATION should not be confused with the 25 percent extension that is allowed for the performance of SRs.
IMMEDIATE/ IMMEDIATELY	Term used as a COMPLETION TIME for ACTION statements when a step is to be initiated as soon as possibly achievable after discovery without creating a less stable condition and continuously and aggressively pursued until complete.
LIMITING CONDITION FOR OPERATION	The limits that represent the lowest functional capability or performance level of safety structures, systems, and components (SSCs) required for safe operation.

# 1 USE AND APPLICATION

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## 1.1 Definitions (continued)

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<u>Term</u>	<u>Definition</u>
MATERIAL AT RISK	The amount of radioactive material available to be acted on by a given physical stress. For facilities, processes, and activities the material at risk (MAR) is a value representing some maximum quantity of radioactive material present or reasonably anticipated for the process or structure being analyzed.
MODE	The status or operating condition of the 216-Z-9 Facility. See Section 1.2 for the descriptions of individual MODES.
OPERABLE /OPERABILITY/ OPERATING	A system, subsystem, train, component or device SHALL be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s) and all necessary support systems are capable of performing their related support functions. A system, subsystem, train, component, or device SHALL be OPERATING when it is performing its specified function.
PRIOR TO	Term used as a COMPLETION TIME for SR frequency when the action is to be initiated within 24 hr of stated event (i.e., PRIOR TO MOVEMENT, PRIOR TO USE, PRIOR TO VENT ACTIVITY, etc.).  NOTE: 24 hr is the default value unless otherwise specified.
SAFE CONFIGURATION	SAFE CONFIGURATION SHALL be considered the minimization of risk during ongoing processes or operations by the chemical and/or physical form of material and/or arrangement of material and/or equipment. Material in primary confinement and in an isolated and stable condition is in a SAFE CONFIGURATION.

# 1 USE AND APPLICATION

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## 1.1 Definitions (continued)

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<u>Term</u>	<u>Definition</u>
SHALL	Denotes a mandatory requirement that must be complied with to maintain the requirements, assumptions, or conditions of the facility Safety Basis.
SPECIFIC ADMINISTRATIVE CONTROL	An AC that provides a specific preventive or mitigative function for accident scenarios identified in the Documented Safety Analysis (DSA) where the safety function has importance similar to, or the same as, the safety function of a safety SSC (e.g., discrete operator actions, combustible loading program limits, hazardous material limits protecting hazard analyses or facility categorization).
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.
TIME OF DECLARATION	The actual time when the facility manager or designee declares that an LCO, SAC, or AC element is not met. As soon as possible upon notification of a problem, the problem should be evaluated and a declaration made by the facility manager or his designee if it is determined that an LCO, SAC, or AC element is not met. TIME OF DECLARATION may be delayed for SRs not completed within the specified FREQUENCY if the GRACE PERIOD is entered. Time specified for completion of the ACTION is measured from the TIME OF DECLARATION unless otherwise specified within the ACTION statement.
VERIFY	To confirm and substantiate that an ACTIVITY or condition has been implemented in conformance with the specified requirements. Manipulation of equipment or instrumentation to conform to the specified requirements is not permitted. Formal methods other than direct observation may be used.
VIOLATION	LCO VIOLATION, SAC VIOLATION, directive action SAC VIOLATION, and AC VIOLATION are defined in 5.8.2.

# 1 USE AND APPLICATION

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## 1.2 Modes

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The purpose of this section is to explain the use and application of MODES for the 216-Z-9 Facility.

The MODES of operation for 216-Z-9 are the states of the facility with respect to the ability to perform the intended mission. Different MODES may be applicable for designated portions (e.g., facility areas, buildings, zones) or separate activities at 216-Z-9. Operations in specific portions of the facility may be restricted or limited by management directives, standing orders, corrective action plans, or other approved means while in the decontamination and decommissioning (D&D) MODE. Operations under such restrictions will be recorded in facility logs. Daily operating memos, shift turnover checklists, or other proceduralized facility status documentation will be maintained as a facility record to document the operational restrictions. For instance, movements of fissile materials and other ACTIVITIES that could impact fissile material in specified operational areas, may be prohibited in response to criticality nonconformances, while other authorized ACTIVITIES continue.

The LCOs are applicable to MODES specified in MODE applicability. When a facility is in D&D MODE and a situation occurs that causes noncompliance with an LCO statement, and when other appropriate compensatory ACTIONS that allow conditional compliance with the LCO under D&D MODE have been exhausted, these TSRs may specify entry into surveillance and maintenance (S&M) MODE.

These MODES are defined below. Authorized ACTIVITIES are shown in Table 1-1. Two MODES, ranging from highest to lowest levels of activity, are D&D and S&M. D&D is the MODE in general use throughout the workweek to conduct work activities. S&M is the MODE the facility is in upon initial implementation of this Safety Basis.

### MODE 1 – D&D

- ACTIVITIES approved under the safety basis may be conducted.

### MODE 2 – S&M

- ACTIVITIES needed to achieve S&M from D&D MODE may be conducted.
- To achieve S&M, the facility area or ACTIVITY must be in a SAFE CONFIGURATION.

# 1 USE AND APPLICATION

## 1.2 Modes (continued)

- ACTIVITIES that could introduce an operational accident may not be performed except as required to restore OPERABILITY. This prohibition does not preclude entry into S&M MODE to perform maintenance on systems addressed by LCO or TSR ACs.
- Work processes are controlled by approved work packages, procedures, or other hazard controls appropriate to the specific tasks to ensure that no new hazards or accident initiators are introduced into the affected area.
- Closed containers of radioactive waste may be present in a safe and stable configuration in the 216-Z-9 Facility. Waste generated during authorized ACTIVITIES may be managed in accordance with Site Radiological Control practices. Radioactive waste outside of the waste container, but within an OPERABLE glovebag or greenhouse, is acceptable.

Table 1-1 identifies which ACTIVITIES can be conducted in 216-Z-9 for a given MODE.

**Table 1-1. 216-Z-9 Facility ACTIVITIES by MODE**

Activity	Ch 2 DSA Ref. Location	S&M	D&D
Surveillance & Maintenance of Barriers and Postings	2.2.1.1	X	X
Radiological Surveys	2.2.1.2	X	X
Inspection for and Response to Spills	2.2.1.3	X	X
General Inspections and Tours	2.2.1.4	X	X
Grouting Structural Stabilization	2.2.2		X
Maintenance	2.2.3	X	X
Equipment Calibration, Testing, Maintenance, and Repair	2.2.3.1	X	X
Repair and Upgrades of Confinement Systems	2.2.3.2	X	X
Repair and Upgrades of Structural Components	2.2.3.3	X	X
Removal of Equipment	2.2.4	X	X
Nondestructive Assay Waste Characterization and Sampling	2.2.5	X	X
Generating Waste	2.2.6.1	X	X
Staging Waste Containers Inside Facility	2.2.6.2	X	X
Staging Waste Containers Outside Facility and Shipping	2.2.6.3	X	X
Container Management	2.2.6.4	X	X
Administrative Operations	2.2.7	X	X

# 1 USE AND APPLICATION

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## 1.3 Frequency

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PURPOSE	The purpose of this section is to explain the application and use of FREQUENCY notation.
BACKGROUND	Each SR has a specified FREQUENCY in which the surveillance SHALL be performed.
FREQUENCY NOTATION	The FREQUENCY notations used in this TSR document are defined in Table 1-2.
USE OF FREQUENCY	<p>Failure to complete LCO SRs within the required FREQUENCY SHALL constitute failure to meet the LCO. For LCO SRs, SAC SRs, and fire protection AC surveillances and assessments, the FREQUENCY requirement is extended to 1.25 times the specified interval. This extension applies only to the FREQUENCY specification for LCO SRs, SAC surveillances, and fire protection AC surveillances and assessments; it <u>does not</u> apply to the COMPLETION TIME requirement for ACTION statements. The time extension is intended to provide operational flexibility for completion of LCO SRs, SAC surveillances, and fire protection AC surveillances and assessments. It should not be relied upon as a routine extension of the specified interval.</p> <p>Completion of LCO and SAC SURVEILLANCES SHALL be documented. Failure to complete the LCO or SAC SR within the specified FREQUENCY (including the 25 percent extension - see Table 1-2, Columns 2 and 3), as qualified in the table notes, SHALL constitute a TSR VIOLATION. Failure to complete the fire protection AC surveillances and assessments within the specified FREQUENCY (including the 25 percent extension - see Table 1-2, Columns 2 and 3), as qualified in the table notes, SHALL constitute an AC element not met.</p>

**1 USE AND APPLICATION****1.3 Frequency (continued)****Table 1-2. Frequency Notation**

<b>Notation<sup>a</sup></b>	<b>FREQUENCY</b>	<b>With 25% Extension<sup>b</sup></b>
Shiftly <sup>c</sup>	At least once during the regularly scheduled shift	10 hours
Daily <sup>c</sup>	At least once during the calendar day	30 hours
Weekly <sup>d</sup>	At least once during the calendar week	9 days
Bi-weekly	At least once per 14 days	18 days
Monthly <sup>e</sup>	At least once during the calendar month	39 days
Quarterly <sup>f</sup>	At least once during the calendar quarter	115 days
Semi-annually <sup>f</sup>	At least once during the six calendar month period	230 days
Annually <sup>f</sup>	At least once during the calendar year	456 days
Biennial <sup>f</sup>	At least once during the two calendar year period	912 days

## Notes:

- <sup>a</sup> The completion of SR will be recorded with dates (and times for frequencies with extensions specified in hours) that the surveillances are completed. Times of completion are required to be recorded only for SHIFTLY and DAILY requirements.
- <sup>b</sup> This column represents 1.25 times the specified interval, and applies from the beginning of the applicable period. This extension applies only to the FREQUENCY specification for LCO and SAC surveillances/assessments. It is intended to provide operational flexibility for the completion of LCO and SAC surveillances/assessments. It should not be relied upon as a routine extension of the specified interval. Use of the extension does not reset the frequency interval.
- <sup>c</sup> SHIFT specific and DAILY surveillances are only required when OPERATING the affected system under the applicable LCO. Regularly scheduled shifts are assumed to be 8 hours. If shifts in excess of 8 hours are worked, the frequency SHALL be the length of the shift. The extension period will be 25 percent of the shift duration rounded down to the nearest hour. Daily is further defined to mean at least once in a calendar day (24-hour period) when required.
- <sup>d</sup> WEEKLY Surveillances are required to be performed any time during the calendar week (Monday through Sunday). A 25 percent extension period is applicable to this work and begins the first day of the following week.
- <sup>e</sup> MONTHLY surveillances and inspections are required to be performed any time during the calendar month (e.g., January, March, December) versus once every 31 calendar days. A 25 percent extension period is applicable to this work and begins on the first day of the following month. Use of the extension does not reset the frequency interval. It is recognized that the 39-day duration (with the extension) may exceed 25 percent for months with less than 31 days.
- <sup>f</sup> Applies to LCO and SAC surveillances/assessments with a frequency greater than 31 days.
- Specific calendar dates (e.g., August 12) are not to be used for determining the next scheduled due date, nor late date.

**1 USE AND APPLICATION**

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**1.3 Frequency (continued)**

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**Table 1-2. Frequency Notation**

Notation <sup>a</sup>	FREQUENCY	With 25% Extension <sup>b</sup>
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- Surveillance/Assessments with frequencies longer than a month SHALL be scheduled to occur during the last month of the frequency periodicity specified for the given ACTIVITY. The ACTIVITY SHALL not be considered delinquent until the first day of the month following the scheduled month. For example, if an ANNUAL ACTIVITY is originally to be performed in January it SHALL next be scheduled for performance during January of the following year and SHALL comply with these criteria if performed on or before January 31.
- The allowance for performance of a surveillance/assessment by the end of a calendar month does not apply to the 25 percent extension. Surveillances/Assessments SHALL be performed within the maximum time allotted by the extension. Surveillance/Assessments that are performed late, whether delinquent or as permitted by the 25 percent extension period, SHALL continue to be scheduled using the original by-month sequence. For example, an ANNUAL ACTIVITY scheduled for March but actually performed in June SHALL next be scheduled for performance the following March. Likewise, an ANNUAL ACTIVITY scheduled for performance in August but performed in July due to resource availability or operational restraints would continue to be scheduled for performance during August of subsequent years with a 25 percent extension being applicable after August 31. Frequency due dates that are QUARTERLY or longer may be pulled forward permanently and a new performance month established. For example, a QUARTERLY SR that is scheduled to be performed in May 2018 (permanently pulled forward due to resource limitations) must be performed no later than June 23, 2018, (115 days from the start of the calendar quarter [March 1-May 31]). It cannot be extended/deferred to the end of June.
- As noted in the examples provided above, a calendar quarter consists of any three calendar months (e.g., January through March, February through April, July through September). A semi-annual frequency consists of any six calendar months (e.g., February through July, April through October). A calendar year consists of any 12 calendar months (e.g., February through January, July through June).

# 1 USE AND APPLICATION

## 1.3 Frequency (continued)

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# 1 USE AND APPLICATION

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## 1.4 Logical Connectors

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PURPOSE	The purpose of this section is to explain the use and application of logical connectors.
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BACKGROUND	Logical connectors are used in TSRs to discriminate between (and yet connect) discrete conditions, ACTIONS, COMPLETION TIMES, SRs, and FREQUENCIES. The logical connectors include the “ <b><u>AND</u></b> ” and “ <b><u>OR</u></b> .” 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.
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USE OF LOGICAL CONNECTORS	<p>Several levels of logic may be used to state ACTIONS. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each ACTION. The first level of logic is identified by the first digit of the number assigned to an ACTION and the placement of the logical connector in the first level of nesting (e.g., left-justified with the number of the ACTION). The successive levels of logic are identified by additional digits of the ACTION number and by successive indenting of the logical connectors.</p> <p>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. For cases where successive levels of logic are used the lower level is identified solely by indenting the logical connector because subparts of a condition statement are not numbered separately.</p>
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DEFINITION OF LOGIC TERMS	The defined terms of this section appear in capitalized type, bolded, and underlined throughout the TSR document. ACTION statements are read top to bottom (e.g., a, b, c, d, etc.). A more detailed definition for logic connector interpretations for each TSR can be found in the BASES.
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<b>Term</b>	<b>Definition</b>
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<b><u>AND</u></b>	Used to connect two or more sets of criteria that must both (all) be satisfied for a given logical decision.
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<b><u>OR</u></b>	Used to denote alternate combinations or conditions, meaning either one or the other criterion will satisfy a given logical decision.
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# 1 USE AND APPLICATION

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## 1.4 Logical Connectors (continued)

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APPLICATION See Table 1-3 on the following page for an example of the application of logical connectors used in this TSR document.

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**Table 1-3. Use and Application of Logical Connectors**

CONDITION	ACTION	COMPLETION TIME
Situation that does not meet LCO statement	A.1 Terminate A,	IMMEDIATELY
	<b><u>AND</u></b>	
	A.2 Perform BC,	1 hour
	<b><u>AND</u></b>	
	A.3.1 Restore V,	1 hour
	<b><u>OR</u></b>	
A.3.2.1 Initiate S,	2 hours	
<b><u>AND</u></b>		
A.3.2.2 Place the facility in MODES.	4 hours	

The logic shown in Table 1-3, allows only two approved outcomes upon occurrence of the specified situation that does not meet the LCO:

- (1) A.1 (Terminate A), and A.2 (Perform BC), and A.3.1 (Restore V), or
- (2) A.1 (Terminate A), and A.2 (Perform BC), and A.3.2.1 (Initiate S), and A.3.2.2 (Place the facility in MODES).

**1 USE AND APPLICATION**

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**1.4 Logical Connectors (continued)**

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**Table 1-4. Use and Application of Logical Connectors for SAC Surveillances**

CONDITION	ACTION	COMPLETION TIME
SAC Surveillance Requirement	a) Provide Procedure Number, <u>AND</u> b) 1. List package identification number (PIN), <u>AND</u> 2. List Abatement Date, <u>AND</u> 3. List Release Date, <u>OR</u> c) Provide a Statement.	ANNUALLY

The logic shown in Table 1-4 allows only two approved outcomes for completion of the SAC SR:

- (1) a) (Provide Procedure Number), and b.1) (List PIN), and b.2) (List Abatement Date), and b.3) (List Release Date)
- or
- (2) a) (Provide Procedure Number) and c) (Provide a Statement)

# 1 USE AND APPLICATION

## 1.4 Logical Connectors (continued)

**Table 1-5. Use and Application of Logical Connectors for SAC Surveillances**

CONDITION	ACTION	COMPLETION TIME
SAC Surveillance Requirement	a) Provide Procedure Number, <u>AND</u> b) 1. Month of Facility Log, <u>AND</u> 2. Results of Log Review, <u>AND</u> c) 1. Document Management Approval, <u>OR</u> 2. Provide Statement, <u>AND</u> d). Provide Results of Field Verification.	ANNUALLY

The logic shown in Table 1-5 allows only two approved outcomes for completion of the SAC SR:

- (1) a) (Provide Procedure Number), and b.1) (Month of Facility Log), and b.2) (Results of Log Review), and c.1) (Document Management Approval), and d) (Provide Results of Field Verification)

or

- (2) a) (Provide Procedure Number), and b.1) (Month of Facility Log), and b.2) (Results of Log Review), and c.2) (Provide Statement), and d) (Provide Results of Field Verification)

# 1 USE AND APPLICATION

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## 1.4 Logical Connectors (continued)

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**Table 1-6. Use and Application of Logical Connectors for SAC Surveillances**

CONDITION	ACTION	COMPLETION TIME
SAC Surveillance Requirement	a) 1. Provide Documentation of Staged Waste Inventory Field Verification, <u>AND</u> 2. Perform a Physical Reconciliation of MAR Inventory  <u>OR</u> b) Provide Statement Indicating No Containers Were Staged Outside in the Past Year.	ANNUALLY

The logic shown in Table 1-6 allows only two approved outcomes for completion of the SAC SR:

- (1) a.1) (Provide Documentation of Staged Waste Inventory Field Verification) and a.2) (Perform a Physical Reconciliation of MAR Inventory).
- or
- (2) b) (Provide Statement Indicating No Containers Were Staged Outside in the Past Year).

# **1 USE AND APPLICATION**

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## **1.4 Logical Connectors (continued)**

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# 1 USE AND APPLICATION

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## 1.5 Completion Time

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PURPOSE	The purpose of this section is to explain the use and application of COMPLETION TIMES.
BACKGROUND	The LCO specifies the lowest functional capabilities or performance levels that are required to ensure safe operation of the facility. The LCO identifies conditions for which these functional or performance requirements are not met, and the LCO states ACTION(s) that may be taken within a limited time (the COMPLETION TIME) or within a specified periodicity under these conditions. The ACTION Statements provide interim remedial ACTION(s) or compensatory protection for the same safety concerns as the LCO while attempting to restore the functional capabilities or performance levels required by the LCO. Failure to complete the ACTION(s) within the COMPLETION TIME results in a VIOLATION of the LCO (see definition of "VIOLATION" in Section 1.2).
USE OF COMPLETION TIME	<p>The COMPLETION TIME is the amount of time allowed to complete an ACTION. It is referenced to the TIME OF DECLARATION.</p> <p>If situations require entry into more than one condition within a single LCO or SAC ACTION (multiple conditions), the ACTION(s) for each condition SHALL be performed within the associated COMPLETION TIMES. When in multiple conditions, separate COMPLETION TIMES are tracked for each condition, starting from the TIME OF DECLARATION of the situation that required entry into the condition.</p> <p>Once a condition has been entered, subsequent discovery of subsystems, components, or variables that are inoperable or not within limits as a result of cascading effects from entering the condition SHALL <u>NOT</u> result in separate entry into the condition. The ACTION(s) of the condition continue to apply to each additional failure, and COMPLETION TIMES are based on initial entry into the condition.</p> <p>Entry into an LCO or SAC ACTION and LCO or SAC ACTION COMPLETION TIMES SHALL be documented.</p>

# **1 USE AND APPLICATION**

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## **1.5 Completion Time**

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**Section 2**  
**Safety Limits**

## **2 Safety Limits**

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## **2 SAFETY LIMITS**

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### **2 Safety Limits**

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As defined in 10 CFR 830.3, safety limits (SLs) are limits on process variables associated with those generally passive physical barriers that, if exceeded, could directly cause the failure of one or more barriers that prevent the uncontrolled release of radioactive or other hazardous material. The safety analysis for the 216-Z-9 Facility did not specify any single limit that, if exceeded, could directly cause the failure of a barrier that prevents the release of radioactive or hazardous material. Therefore, there are no SLs.

**2 SAFETY LIMITS**

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**2 Safety Limits**

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## **2 SAFETY LIMITS**

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### **2.1 Limiting Control Settings**

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As defined in 10 CFR 830.3, LCSs are associated with SLs and SHALL be conservatively selected such that automatic or manual protective action will correct the abnormal situation before an SL is exceeded. No SLs have been identified for the 216-Z-9 Facility. Therefore, there are no LCSs.

## **2 SAFETY LIMITS**

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### **2.1 Limiting Control Settings**

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**3/4 LIMITING CONDITIONS FOR OPERATION AND  
SURVEILLANCE REQUIREMENTS**

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**Section 3/4  
Limiting Conditions for Operation  
and  
Surveillance Requirements**

**3/4 LIMITING CONDITIONS FOR OPERATION AND  
SURVEILLANCE REQUIREMENTS**

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## **3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS**

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### **3/4.0 Limiting Conditions for Operation and Surveillance Requirements**

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10 CFR 830.3 defines LCO as the lowest functional capability or performance level of safety SSCs and their support systems required for normal safe operation of the facility. The safety analysis for the 216-Z-9 Facility did not specify any active support systems that, if disabled, could directly cause the failure of a barrier that prevents the release of radioactive or hazardous material. Therefore, there are no LCOs.

**3/4 LIMITING CONDITIONS FOR OPERATION AND  
SURVEILLANCE REQUIREMENTS**

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**5 ADMINISTRATIVE CONTROLS**

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**Section 5  
Administrative Controls**

## **5 ADMINISTRATIVE CONTROLS**

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## **5 ADMINISTRATIVE CONTROLS**

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### **5.1 Responsibility**

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The Facility Manager is responsible for the 216-Z-9 Facility. During any unavailability of the Facility Manager, a qualified individual SHALL be designated to assume the management function as defined in PRC-PRO-EM-40360, *Building Emergency Plans and Facility Response Plans*. Supervisors or other operations personnel may perform the facility management function, provided they are trained and qualified to an Operations supervisory position, familiar with current facility operations, and management approval is obtained. As part of this responsibility, the Facility Manager or designee SHALL ensure that operation of the facility is in accordance with an approved TSR.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.1 Responsibility**

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## **5 ADMINISTRATIVE CONTROLS**

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### **5.2 Organization**

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Lines of authority, responsibility, and communication SHALL be established for the highest management levels, through intermediate levels, up 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 Facility or Project Manager. However, they SHALL have sufficient freedom to ensure their independence from operating pressures.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.2 Organization**

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## **5 ADMINISTRATIVE CONTROLS**

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### **5.3 Facility Staff**

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#### **5.3.1 Minimum Operations Shift Complement**

The number of qualified supervisors and operators available SHALL be adequate to operate and support 216-Z-9 activities safely. Abnormal conditions SHALL be considered in determining operator assignments. The specific actions that the minimum staff performs in abnormal conditions include stopping all work activities and placing the affected area in a SAFE CONFIGURATION. Management SHALL provide additional personnel, as necessary, to support other activities, which include less frequent surveillances, such as system calibrations, functional tests, and other specific administrative requirements that are planned and scheduled to ensure TSR compliance. The minimum operations shift complement per shift for 216-Z-9 SHALL be as specified in Table 5-1. The supervisor availability will be described in facility procedures.

The minimum complement can be one less than the required number for a period of time not to exceed 2 hr to accommodate unexpected absences, provided IMMEDIATE ACTION is taken to restore the shift complement to within the minimum shift requirements. Engineers, supervisors, or other exempt personnel may perform any duties for which they are trained and qualified where required, to an equivalent or greater level than the personnel they are replacing.

The minimum staffing during D&D MODE is one Supervisor, one Operator, and the Health Physics Technician is "As Required." There are no minimum staffing requirements during S&M MODE. As noted under Table 5-1, minimum staffing for D&D MODE is only applicable while 216-Z-9 is occupied, when unoccupied, a Supervisor and Operator are "As Required."

#### **5.3.2 Support Organizations**

Organizations provide support functions and personnel necessary for 216-Z-9 operations as described in HNF-11724, *CH2M HILL Plateau Remediation Company Safety Management Program*, Chapter 17. The noted reference provides the information specified by the guidance in DOE G 423.1-1B.

## 5 ADMINISTRATIVE CONTROLS

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### 5.3 Facility Staff

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**Table 5-1. 216-Z-9 Facility Minimum Staffing**

216-Z-9 MODE	Personnel	
D&D <sup>e</sup>	Supervisor <sup>c</sup>	1 <sup>e</sup>
	Operators <sup>d</sup>	1 <sup>e</sup>
	Health Physics Technician <sup>d</sup>	As Required <sup>a</sup>
S&M	Supervisor <sup>c</sup>	0 <sup>b</sup>
	Operators <sup>d</sup>	0 <sup>b</sup>
	Health Physics Technician <sup>d</sup>	0 <sup>b</sup>

Notes:

- <sup>a</sup> Minimum staffing for Health Physics Technician personnel is specified by radiological work permit for specific activities being performed.
- <sup>b</sup> As determined through the work planning process for activities authorized for S&M.
- <sup>c</sup> Supervisor - A qualified person designated by 216-Z-9 Management to direct activities of personnel. Substitute titles may be utilized for positions of equivalent functions.
- <sup>d</sup> Engineers, supervisors, or other exempt personnel may perform any duties (e.g., Operators or Health Physics Technicians) for which they are trained and qualified where required, to an equivalent or greater level than the personnel being replaced.
- <sup>e</sup> Minimum staffing for D&D MODE is only applicable while 216-Z-9 is occupied, when unoccupied a Supervisor and Operator are "As Required."

## **5 ADMINISTRATIVE CONTROLS**

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### **5.4 TSR Control**

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Proposed changes to the TSR SHALL be reviewed and approved by U.S. Department of Energy, Richland Operations Office (RL) prior to implementation. Changes to the TSR Bases could be made without RL approval provided they are as follows:

- a. Editorial in nature, and
- b. Do not make significant changes. Significant changes are those changes that alter the intent, scope, limitations, functional requirements, or application of a TSR.

All other changes must be approved by RL.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.4 TSR Control**

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## 5 ADMINISTRATIVE CONTROLS

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### 5.5 Safety Management Programs

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This section contains commitments to safety management programs (SMPs). These SMPs may not be specifically credited in the accident analysis, but all are an important part of defense-in-depth. Key elements of credited SMPs are included in specific TSR ACs. In addition to worker safety, the cumulative effect of the programmatic details is important to facility safety and is an integral part of safe operations.

#### 5.5.1 Safety Management Programs

- a. The following SMPs, as described in HNF-11724, *CH2M HILL Plateau Remediation Company Safety Management Programs*, SHALL be established, implemented, and maintained as applicable to each nuclear facility, unless otherwise noted in the 216-Z-9 DSA.
  - Prevention of Inadvertent Criticality\* - as applicable per HNF-7098, *Criticality Safety Program* (Chapter 6)
  - Radiation Protection\* (Chapter 7)
  - Hazardous Material Protection\* (Chapter 8)
  - Radioactive and Hazardous Waste Management\* (Chapter 9)
  - Initial Testing, In-Service Surveillance, and Maintenance (Chapter 10)
  - Operational Safety\* (Conduct of Operations/Fire Protection/Hoisting and Rigging) (Chapter 11)
  - Procedures and Training (Chapter 12)
  - Human Factors - as applicable to major modifications of existing facilities (Chapter 13)
  - Quality Assurance\* (Chapter 14)
  - Emergency Preparedness Program\* (Chapter 15)
  - Provisions for Decontamination and Decommissioning (Chapter 16)
  - Management, Organization, and Institutional Safety Provisions (Chapter 17)

Note: Program key element c, listed below, only applies to those SMPs identified above by an asterisk.

- b. 216-Z-9 Management SHALL ensure the overall safety function of a Safety Management Program (SMP) is maintained through implementation of all applicable program key attributes identified in HNF-11724, as modified by the 216-Z-9 DSA. 216-Z-9 Management SHALL ensure facility level assessments are performed as required by the continuous improvement process of the Integrated Safety Management System (ISMS).

## **5 ADMINISTRATIVE CONTROLS**

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### **5.5 Safety Management Programs**

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- c. For those SMPs identified above by an asterisk, the resulting facility-level assessment data will be provided to the appropriate program manager for tracking and trending, and corrective action management required by PRC-PRO-QA-052, *Issues Management*, or successor document.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.6 Specific Administrative Controls/Plans and Programs**

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This section contains the SACs required with the issuance of DOE-STD-1186-2004, to provide increased attention and heightened assurance of effectiveness and reliability of the safety functions performed by the ACs designated as SACs.

The SACs identified in this section were designated based on their roles in the accident analyses in Section 3.4 of the 216-Z-9 DSA (HNF-58818) as being relied on in preventing and mitigating postulated accident scenarios. These SACs, along with the other programmatic ACs, SHALL be established, implemented, and maintained. Designation of SACs does not reduce the requirement for compliance with the other ACs in this TSR.

TSR control implementing procedures are traceable by procedure number to specific Safety Basis requirements through the CP S&M Safety Basis Compliance Matrix. Development and maintenance of the CP S&M Safety Basis Compliance Matrix is a required function for 216-Z-9 operations.

The requirements in Section 3.0, *General Limiting Conditions for Operation* and Section 4.0, *General Surveillance Requirements* are applicable to the performance of SACs and their SURVEILLANCE REQUIREMENTS.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.6 Specific Administrative Controls/Plans and Programs**

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## 5 ADMINISTRATIVE CONTROLS

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### 5.6 Specific Administrative Controls/Plans and Programs

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#### 5.6.1 Material Management (SAC)

This Directive Action SAC provides controls to ensure that externally-staged packaged waste radioactive inventories assumed in the accident analysis will not be exceeded, which would place the facility outside the analyzed Safety Basis.

**MODE Applicability:** This SAC is applicable during all MODES.

**Location Applicability:** This SAC is applicable anywhere within the 216-Z-9 Facility boundary.

**Critical Safety Function:**

The Material Management control is the initial underlying assumption for the accident analysis performed in Section 3.4 of the 216-Z-9 DSA, HNF-58818. The MAR limit protects accident assumptions and ensures that the consequences determined in the accident scenario are not invalidated, thereby placing the facility in unanalyzed space.

**Control Description**

- a. Inventory Control: The MAR within the 216-Z-9 Facility boundary SHALL remain the same or decrease; introduction of outside radiological waste material is prohibited.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.6 Specific Administrative Controls/Plans and Programs**

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## **5 ADMINISTRATIVE CONTROLS**

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### **5.7 Administrative Controls/Plans and Programs**

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This section contains ACs generally credited in the Safety Basis with preventive or mitigative actions.

The ACs identified in this section SHALL be established, implemented, and maintained. Designation of SACs does not reduce the requirement for compliance with the other ACs in this TSR.

If an AC element is discovered not to have been performed or not to have been followed, this would not necessarily result in a TSR AC VIOLATION. If failure to meet an AC element does not result in a TSR VIOLATION based on the criteria in Section 5.8.2, this would be reported as a noncompliance with a hazard control.

If the non-compliant condition is not managed in accordance with applicable TSR AC elements within specified limitations, the TSR AC elements will be declared “not met” and the applicable notifications and corrective actions will be pursued.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.7 Administrative Controls/Plans and Programs**

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## 5 ADMINISTRATIVE CONTROLS

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### 5.7 Administrative Controls/Plans and Programs

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#### 5.7.1 Nuclear Criticality Safety (AC)

This AC establishes a Criticality Safety Program and provides measures that ensure that Criticality Safety Program key elements are in place to prevent an accidental criticality at 216-Z-9.

**MODE Applicability:** This AC is applicable during all MODES.

**Location Applicability:** This AC is applicable where non-exempt quantities of fissionable material are present.

This AC includes the following elements:

- a. Limits and Controls - Criticality limits and controls SHALL be derived in Criticality Safety Evaluation Reports (CSER) and implemented in Criticality Prevention Specifications (CPSs) and/or procedures.
- b. Engineered Safety Features - Engineered safety features important to criticality safety will be evaluated for safety significance and this TSR updated where needed as specified by the Criticality Safety Program (HNF-7098).
- c. Notification - A process SHALL be in place to provide notification, determine cause, and provide corrective action in the event a Criticality Safety Program (HNF-7098) requirement is not met.
- d. Nonconformances - Criticality Safety Nonconformances that involve a Programmatic Noncompliance (i.e., one of the above key elements is not met) SHALL be reported as TSR AC elements not met. More serious nonconformances or infractions that indicate a programmatic breakdown that renders the DSA summary invalid SHALL be reported as TSR VIOLATIONS in accordance with Section 5.8.2.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.7 Administrative Controls/Plans and Programs**

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## 5 ADMINISTRATIVE CONTROLS

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### 5.7 Administrative Controls/Plans and Programs

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#### **5.7.2 Waste Acceptance Program (AC)**

This AC defines measures to protect the assumptions made associated with waste container-related accidents. Specific elements include provisions for ensuring that waste containers created at 216-Z-9 are consistent with the accident analysis assumptions and other regulatory requirements. Additionally, this AC ensures that waste containers have a path forward with respect to removal from the 216-Z-9 Facility boundary.

**MODE Applicability:** This AC is applicable during all MODES.

**Location Applicability:** This AC is applicable wherever waste containers are present.

#### **Waste Acceptance Program (WAP)**

This element defines measures used to manage newly generated wastes such that noncompliance with HNF-EP-0063 requirements is minimized. The program includes the use of approved containers, procedures for nondestructive assay (NDA)/nondestructive examination (NDE), and a process for remediation of deficiencies.

Containers generated at 216-Z-9 that meet the WAP are acceptable for transportation as well as handling and storage at the SWOC. This element is applicable in all MODES where TRU waste containers are created.

The WAP includes the following elements:

- a. Newly Generated Waste - Newly generated waste containers SHALL meet the Hanford Waste Acceptance Criteria (WAC) as defined on the day the container is generated.
- b. Noncompliant Waste - Waste containers that are not compliant with the Hanford WAC may only be generated upon written approval from RL.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.7 Administrative Controls/Plans and Programs**

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## **5 ADMINISTRATIVE CONTROLS**

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### **5.7 Administrative Controls/Plans and Programs**

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#### **5.7.3 Traffic Control Program (AC)**

This AC defines specific measures, policies, and actions to prevent or minimize the occurrence of vehicle or other heavy equipment impact related accidents at the 216-Z-9 Facility.

**MODE Applicability:** This AC is applicable during all MODES.

**Location Applicability:** This AC is applicable in all accessible 216-Z-9 locations.

This AC includes the following element:

- a. Physical Barriers – Physical barriers SHALL be present to protect the 216-Z-9 Crib.

## **5 ADMINISTRATIVE CONTROLS**

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## **5 ADMINISTRATIVE CONTROLS**

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### **5.8 Reporting Requirements**

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#### **5.8.1 General Requirements**

Written reports and oral notifications SHALL be provided and 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.

#### **5.8.2 TSR Violations**

A TSR VIOLATION occurs as the result of any of the following circumstances:

- Failure to complete an ACTION statement within the required time limit following failure to comply with a LCO or a LCO/SR formatted SAC
- Failure to perform a surveillance within the required time limit
- Failure to comply with a directive action SAC requirement
- Failure to comply with an AC element

ACTIONS are not taken within the required time limits following:

- Failure to meet a LCO or a LCO/SR formatted SAC
- Failure to successfully perform an SR.

The following ACTION(s) SHALL be taken in the event that a LCO or SAC VIOLATION occurs:

1. Terminate ACTIVITIES IMMEDIATELY in the affected facility area except as necessary to achieve a SAFE CONFIGURATION.
2. Enter LCO ACTION Not Met or Action Not Provided, and continue to pursue completion of required Actions.
3. Make appropriate entries documenting the violation in the facility record, indicating any operational areas affected and restrictions imposed. Maintain the status of restrictions and operational areas affected in the facility record as recovery progresses.
4. Notify RL of the VIOLATION in accordance with DOE occurrence reporting requirements.
5. Prepare an Occurrence Report. Implement the corrective action management process.

Failure to perform a Surveillance within the required time limit:

Failure to perform an SR (i.e., failure to perform the SR for all applicable elements/areas/zones) within the required time limit is considered a failure to perform the SR.

The following ACTION(s) SHALL be taken in the event of a failure to perform a SR within the required time limit:

## **5 ADMINISTRATIVE CONTROLS**

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1. Enter SR FREQUENCY Extension and Exceptions, and perform the SR within the GRACE PERIOD or continue to pursue completion of required Actions.
2. Make appropriate entries documenting the violation in the facility record, indicating any operational areas affected and restrictions imposed. Maintain the status of restrictions and operational areas affected in the facility record as recovery progresses.
3. Notify RL of the VIOLATION in accordance with DOE occurrence reporting requirements.
4. Prepare an Occurrence Report. Implement the corrective action management process.

## 5 ADMINISTRATIVE CONTROLS

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### 5.8 Reporting Requirements

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Failure to comply with a directive action SAC requirement:

The following ACTION(s) SHALL be taken in the event that a directive action SAC VIOLATION occurs:

1. Terminate ACTIVITIES IMMEDIATELY in the affected facility area except as necessary to achieve a SAFE CONFIGURATION.
2. Make appropriate entries documenting the violation in the facility record, indicating any operational areas affected and restrictions imposed. Maintain the status of restrictions and operational areas affected in the facility record as recovery progresses.
3. Perform and document a technical evaluation of the VIOLATION, if appropriate, to determine if any damage occurred.
4. Notify RL of the VIOLATION in accordance with DOE occurrence reporting requirements.
5. Prepare an Occurrence Report. Implement the corrective action management process.

An AC element is not met because:

- A required program has not been established.
- The program has been established but the facility has not attempted to implement the program.
- Time periods or ACTIONS specified upon failure to meet an AC key program element are not met.
- Failure to comply with the program requirements specified in this document results in multiple recurrences of a specific key element not being met indicating a programmatic breakdown.

The following ACTION(s) SHALL be taken in the event that a TSR AC VIOLATION occurs:

1. Make appropriate entries documenting the VIOLATION in the facility record, indicating any operational areas affected and restrictions imposed. Maintain the status of restrictions and operational areas affected in the facility record as recovery progresses.
2. Perform and document a technical evaluation of the VIOLATION, if appropriate, to determine if any damage occurred.
3. Notify RL of the VIOLATION in accordance with DOE occurrence reporting requirements.
4. Prepare an Occurrence Report. Implement the corrective action management process.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.8 Reporting Requirements**

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#### **5.8.3 AC Elements Not Met**

If an AC element is discovered not to have been performed or not to have been followed, this would not necessarily result in a TSR AC VIOLATION. If failure to meet an AC element does not result in a TSR VIOLATION based on the criteria in Section 5.8.2, this would be reported as a noncompliance with a hazard control.

Note that if during implementation of the required program a procedural element is discovered not to have been performed or not to have been followed, then a procedural noncompliance would result, but not necessarily a TSR AC VIOLATION unless the noncompliance demonstrates a programmatic breakdown of a key element of an AC (i.e., multiple recurrences of a specific key element not being met).

The following ACTION(s) SHALL be taken in the event that a TSR AC element is not met:

1. Make appropriate entries documenting the failure to meet the AC element in the facility record, indicating any operational areas affected and restrictions imposed. Maintain the status of restrictions and operational areas affected in the facility record as recovery progresses.
2. Notify RL in accordance with DOE occurrence reporting requirements.
3. Prepare an Occurrence Report and implement the corrective action management process, as required.

#### **5.8.4 Conditions Outside TSR**

In an emergency, if a situation develops that is not addressed by the TSR, site personnel are expected to use their training and expertise to take ACTION(s) to correct or mitigate the situation.

Site personnel may take ACTION(s) that departs from a requirement in the TSRs provided that:

1. No ACTION consistent with the TSR can provide adequate or equivalent protection,
2. These ACTION(s) are needed IMMEDIATELY to protect the health and safety of workers,
3. These ACTION(s) are needed IMMEDIATELY to protect the health and safety of the public, and/or
4. These ACTION(s) are needed IMMEDIATELY to protect the environment.

Such ACTION must be approved, at a minimum, by a qualified Operator or Supervisor. If emergency ACTION is taken, a RL Facility Representative SHALL be notified per applicable company directives and procedures.

## **5 ADMINISTRATIVE CONTROLS**

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### **5.8 Reporting Requirements**

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#### **5.8.5 Occurrence Reporting Program**

Occurrence reporting is completed as specified by the key attributes of Chapter 7.7 and 7.12 of the 216-Z-9 DSA (HNF-58818). The noted reference provides the information specified by the guidance in DOE G 423.1-1B.

## **6 Design Features**

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### **Section 6 Design Features**

## **6 Design Features**

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The 216-Z-9 Crib Facility Soil Overburden is designated as a defense in depth (DID) DESIGN FEATURE, to prevent releases of potentially contaminated soil. The soil overburden adjacent to the facility is designated as an Inactive Waste Site (assumed to be less than Hazard Category 3 facility) in accordance with PRC-PRO-NS-8366. Removal of the soil or any soil disturbing activity must be evaluated in accordance with the PRC-PRO-NS-062, Unreviewed Safety Question (USQ) Process to prevent inadvertent releases of potentially contaminated soils.

A preventive maintenance inspection for this passive design feature (DF) is added to the 216-Z-9 Crib Facility annual surveillance work instruction.

**7 References**

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**Section 7  
References**

## 7 References

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- 10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations*, as amended.
- DOE G 423.1-1B, *Implementation Guide for Use in Developing Technical Safety Requirements*, as amended, U.S. Department of Energy, Washington, D.C.
- DOE/RL-2001-36, *Hanford Sitewide Transportation Safety Document*, Rev. 2, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-STD-1186-2016, 2016, *Specific Administrative Controls*, U.S. Department of Energy, Washington, D.C.
- HNF-7098, *Criticality Safety Program*, as amended, CH2M HILL Plateau Remediation Company, Richland, Washington.
- HNF-11724, 2018, *CH2M HILL Plateau Remediation Company Safety Management Program*, Revision 14, CH2M HILL Plateau Remediation Company, Richland, Washington.
- HNF-58818, 2018, *Documented Safety Analysis for the 216-Z-9 Waste Storage Crib Facility*, Revision 2, CH2M HILL Plateau Remediation Company, Richland, Washington.
- HNF-EP-0063, *Hanford Site Solid Waste Acceptance Criteria*, as amended, CH2M HILL Plateau Remediation Company, Richland, Washington.
- ICRP 71, 1995, *Age Dependent to Members of the Public from Intake of Radionuclides – Part 4 Inhalation Dose Coefficients*, International Commission on Radiological Protection, Pergamon Press, Oxford, Great Britain.
- PRC-PRO-EM-40360, *Building Emergency Plans and Facility Response Plans*, as amended, CH2M HILL Plateau Remediation Company, Richland, Washington.
- PRC-PRO-NS-062, *Unreviewed Safety Question Process*, as amended, CH2M HILL Plateau Remediation Company, Richland, Washington.
- PRC-PRO-NS-8366, *Facility Hazard Categorization*, as amended, CH2M HILL Plateau Remediation Company, Richland, Washington.
- PRC-PRO-QA-052, *Issues Management*, as amended, CH2M HILL Plateau Remediation Company, Richland, Washington.

**Appendix A: BASES**

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**Appendix A**  
**BASES**

**Appendix A: BASES**

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## Appendix A: BASES

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### **A5.6.1 Basis for TSR SAC 5.6.1 – Material Management**

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<b>Background Summary</b>	The Material Management SAC 5.6.1 mitigates release consequences by bounding the MAR at the 216-Z-9 Facility. The functional requirement of this SAC is to protect the analytical assumptions on MAR used in the accident analyses in Chapter 3 of the 216-Z-9 DSA. The discussions below provide the bases for the MAR limit imposed by this SAC, and the actions to be taken if conditions are discovered that do not comply with this SAC.
<b>Application to Safety Analysis</b>	This SAC is applicable to all accidents at 216-Z-9. Source term limits serve to preserve accident analysis assumptions, and the SAC is credited with bounding potential dose consequences. Criticality Safety CSERs use the assumptions protected by this control as well.
<b>SAC 5.6.1</b>	This control provides the following element:
<b>SAC 5.6.1.a Inventory Control</b>	<p>This control prohibits the introduction of outside radiological waste material.</p> <p>This control maintains the 216-Z-9 Facility radiological inventory as defined in the DSA, and does not apply to non-waste items such as detector calibration and check sources required to conduct operations.</p> <p>Restoration of the SAC element would include the notification to management of a procedure violation, and the verification that outside radiological waste has been removed to an approved location, in its entirety.</p>
<b>MODE AND LOCATION APPLICABILITY</b>	This SAC is applicable during all MODES. This SAC is applicable everywhere within the facility boundary.

**Appendix A: BASES**

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