

Weapons and Complex Integration
Radioactive and Hazardous Waste Management Division

**Technical Safety Requirements
for the B695 Segment
of the Decontamination and Waste
Treatment Facility**

October 2007

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Treatment Facility**

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~~Michelle Carson for Erik Brown~~

Erik Brown, Acting Group Leader
Facilities, Safety and Compliance Group

J.M. Bowers

John Bowers, Group Leader
Waste Treatment Group

Kerry Cadwell

Kerry Cadwell, Group Leader
Storage and Disposal Group

David Pinkston

David Pinkston, Section Leader
Authorization Basis Section

For James Mecozzi

James Mecozzi, Team Leader
Hazards Control, ES&H Team 1

Brian K. Perkins

Brian Perkins, Division Leader
Radioactive and Hazardous Waste Management Division

Stephanie Goodwin

Stephanie Goodwin, Department Head
Environmental Protection Department

William A. Bookless

William A. Bookless, Associate Director
Safety and Environmental Protection Directorate

TABLE OF CONTENTS

Introduction.....	iii
Section 1 Use and Application.....	1-1
1.1 Definitions.....	1-1
1.2 Operational Modes.....	1-2
1.3 Frequency Notation.....	1-2
1.4 Abbreviations and Acronyms.....	1-2
1.5 Safety Limits.....	1-3
1.6 Limiting Control Setting.....	1-4
1.7 Limiting Conditions for Operation.....	1-4
1.8 Surveillance Requirements.....	1-4
Section 2 Safety Limits.....	2-1
Section 3/4 Limiting Conditions for Operation and Surveillance Requirements.....	3/4-1
3/4.1 General Application.....	3/4-1
Section 5 Administrative Controls.....	5-1
5.1 Contractor Responsibility.....	5-1
5.2 Contractor Organization.....	5-1
5.2.1 Site Organization.....	5-1
5.2.2 Facility Organizations.....	5-1
5.3 Procedures.....	5-1
5.4 Technical Safety Requirements.....	5-2
5.4.1 General.....	5-2
5.4.2 Compliance.....	5-2
5.4.3 Violation of TSRs.....	5-2
5.4.4 Violation of an Administrative Control.....	5-2
5.4.5 Response to an Administrative Control Violation.....	5-2
5.4.6 Emergency Actions.....	5-3
5.5 Specific Administrative Controls.....	5-3
5.5.1 Inventory.....	5-3
5.5.2 Storage and Handling.....	5-4
5.6 Programmatic Administrative Controls.....	5-4
5.6.1 Configuration Management Program.....	5-5
5.6.2 In-service Inspection & Test, and Maintenance Programs.....	5-5
5.6.3 Emergency Preparedness Program.....	5-6
5.6.4 Hazardous Material Protection Program.....	5-6
5.6.5 Radiation Protection Program.....	5-6
5.6.6 Fire Protection Program.....	5-7
5.6.7 Traffic Control Program.....	5-7
5.6.8 Criticality Safety Program.....	5-7
5.7 Minimum Staffing Requirements.....	5-8
5.8 Operating Support.....	5-8
5.9 Facility Staff Qualifications and Training.....	5-8

5.10 Operability Definition and Implementation Principles.....	5-8
5.11 Reviews and Audits.....	5-8
5.12 Reporting Requirements.....	5-9
Section 6 Design Features.....	6-1
Section 7 References.....	7-1
Appendix A SL and LCO Bases	A-1

TABLES

Table 1-1 Definition of Terms	1-1
Table 1-2 Frequency Notation	1-2
Table 1-3 Abbreviations and Acronyms	1-2

INTRODUCTION

This document contains Technical Safety Requirements (TSRs) for the Radioactive and Hazardous Waste Management (RHWM) Division's B695 Segment of the Decontamination and Waste Treatment Facility (DWTF) at Lawrence Livermore National Laboratory (LLNL). The TSRs constitute requirements regarding the safe operation of the B695 Segment of the DWTF. The TSRs are derived from the Documented Safety Analysis (DSA) for the B695 Segment of the DWTF (LLNL 2004). The analysis presented there determined that the B695 Segment of the DWTF is a low-chemical hazard, Hazard Category 3, nonreactor nuclear facility. The TSRs consist primarily of inventory limits as well as controls to preserve the underlying assumptions in the hazard analyses. Furthermore, appropriate commitments to safety programs are presented in the administrative controls section of the TSRs.

The B695 Segment of the DWTF (B695 and the west portion of B696) is a waste treatment and storage facility located in the northeast quadrant of the LLNL main site. The approximate area and boundary of the B695 Segment of the DWTF are shown in the B695 Segment of the DWTF DSA.

Activities typically conducted in the B695 Segment of the DWTF include container storage, lab-packing, repacking, overpacking, bulking, sampling, waste transfer, and waste treatment. B695 is used to store and treat radioactive, mixed, and hazardous waste, and it also contains equipment used in conjunction with waste processing operations to treat various liquid and solid wastes.

The portion of the building called Building 696 Solid Waste Processing Area (SWPA), also referred to as B696S in this report, is used primarily to manage solid radioactive waste. Operations specific to the SWPA include sorting and segregating low-level waste (LLW) and transuranic (TRU) waste, lab-packing, sampling, and crushing empty drums that previously contained LLW. A permit modification for B696S was submitted to DTSC in January 2004 to store and treat hazardous and mixed waste. Upon approval of the permit modification, B696S rooms 1007, 1008, and 1009 will be able to store hazardous and mixed waste for up to 1 year. Furthermore, an additional drum crusher and a Waste Packaging Unit will be permitted to treat hazardous and mixed waste.

RHWM generally processes LLW with no, or extremely low, concentrations of transuranics (i.e., much less than 100 nCi/g). Wastes processed often contain only depleted uranium and beta- and gamma-emitting nuclides, e.g., ^{90}Sr , ^{137}Cs , ^3H .

Chapter 5 of the DSA documents the derivation of TSRs and develops the operational limits that protect the safety envelope defined for this facility. The DSA is applicable to the handling of radioactive waste stored and treated in the B695 Segment of the DWTF. Section 5 of the TSR, Administrative Controls, contains those Administrative Controls necessary to ensure safe operation of the B695 Segment of the DWTF. A basis explanation follows each of the requirements described in Section 5.5, Specific Administrative Controls. The basis explanation does not constitute an additional requirement, but is intended as an expansion of the logic and reasoning behind development of the requirement. Programmatic Administrative Controls are addressed in Section 5.6.

This introduction to the B695 Segment of the DWTF TSRs is not part of the TSR limits or conditions and contains no requirements related to B695 Segment of the DWTF operations or to the safety analyses in the DSA.

SECTION 1 USE AND APPLICATION

1.1 Definitions

The terms defined in **Table 1-1** appear in uppercase type in those specific locations in this report where emphasis is placed on the definition.

Table 1-1. Definition of terms

Term	Definition
APPROVED TRU WASTE CONTAINER	<p>Following is a description of the containers satisfying the free drop test performance criteria for Type A packaging (see 49 CFR 173.465(c)(1) for the applicable package mass) used to store TRU waste in the B695 Segment of the DWTF:</p> <ul style="list-style-type: none"> • DOT 17C, 17H, or UN1A2, 55-gal (208-L) steel drums with filter vents (waste containers accepted as LLW and converted to TRU WASTE after assay are not required to have vents). • TRUPACT II Standard Waste Boxes (SWBs) refers to oval shaped steel containers with vents, roughly 3-ft H x 6-ft L x 4.5-ft W, designed for efficient loading into TRUPACT II Type B shipping containers. • TRU Oversize Boxes refers to unvented steel containers, rectangular in shape. Built to contain large pieces of contaminated equipment, the dimensions of each TRU oversize box are unique. Heights vary from approximately 53-in to 101-in, widths vary from approximately 47-in to 70-in, and lengths vary from approximately 78-in to 138-in.
LOW-LEVEL WASTE (LLW)	Waste containing radioactive components that do not meet the definition of TRANSURANIC (TRU) WASTE.
MAY	Denotes an acceptable, but not required, way to maintain the requirements, assumptions, or conditions of the facility safety basis.
PE-Ci	Plutonium-239 equivalent curie. The Pu-239 equivalent activities of different radionuclides are determined using radionuclide-specific weighting factors, as described in DOE/WIPP-069 (DOE 1999).
RWSA	Refers to the Radioactive Waste Storage Area, the east end of Building 696.
SHALL	Denotes a mandatory requirement that must be complied with.
SHOULD	Denotes the responsibility of either following the TSR as specified or in a manner that meets the intent of the TSR. The use of "should" recognizes that there may be site- or facility-specific attributes that warrant special treatment and that literal compliance with the TSR may not be required to maintain the requirements, assumptions, or conditions of the facility safety basis.
SWPA	Refers to the Solid Waste Processing Area, the west end of Building 696 and truck bay.

Term	Definition
TRANSURANIC (TRU) WASTE	Without regard to source or form, waste that is contaminated with alpha-emitting transuranic radionuclides (elements above uranium in the periodic table [i.e., atomic number greater than 92]) with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay.

1.2 Operational Modes

Facility modes are not required since there are no Limiting Conditions for Operations. The facilities will be performing their mission throughout the operational life of the facility. RHWB has determined that this section is not applicable to the B695 Segment of the DWTF. It was retained for consistency with the TSR numbering system.

1.3 Frequency Notation

Table 1-2. Frequency notation

Notation	Frequency*	No frequency interval to exceed these values**
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 365 days	456 days
Every 5 years	At least once every 60 months	72 months
Every 10 years	At least once every 120 months	150 months

* Times are elapsed times, not workdays.

** Values represent 1.25 times the specific interval. Values are intended to provide operational flexibility for completion of surveillances, but should not be relied on as a routine extension of a specified interval.

1.4 Abbreviations and Acronyms

Table 1-3 identifies the abbreviations and acronyms used in this TSR.

Table 1-3. Abbreviations and Acronyms

Abbreviation or Acronym	Definition
AC	Administrative Control
CFR	Code of Federal Regulations

Abbreviation or Acronym	Definition
Ci	Curies
CM	Configuration management
CSE	Criticality safety evaluation
DBE	Design Basis Earthquake
DBW	Design Basis Wind
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DSA	Documented Safety Analysis
DWTF	Decontamination and Waste Treatment Facility
ES&H	Environment, Safety, and Health
FPOC	Facility Point of Contact
FSP	Facility Safety Plan
ISMS	Integrated Safety Management System
LCO	Limiting condition for operation
LLNL	Lawrence Livermore National Laboratory
LLW	Low-level waste
NFPA	National Fire Protection Association
PC-2	Performance Category 2
PE-Ci	Plutonium equivalent curie
QA	Quality assurance
RHWM	Radioactive and Hazardous Waste Management
RWSA	Radioactive Waste Storage Area
SL	Safety limit
SR	Surveillance requirement
SSCs	Structures, systems, and components
SWB	Standard waste box
SWPA	Solid Waste Processing Area
TRU	Transuranic
TSR	Technical Safety Requirement
USQ	Unreviewed Safety Question

1.5 Safety Limits

No Safety Limits (SL) have been identified as necessary to support the safety analysis for the B695 Segment of the DWTF; therefore, none have been included in this TSR. Although SLs are not applicable, this section has been retained for consistency with the TSR numbering system.

1.6 Limiting Control Setting

Operation of the B695 Segment of the DWTF includes no SLs; therefore, Limiting Control Settings are not applicable. This section was retained for consistency with the TSR numbering system.

1.7 Limiting Conditions for Operation

No Limiting Conditions for Operation (LCOs) have been identified as necessary to support the safety analysis of the B695 Segment of the DWTF DSA; therefore, none have been included in this TSR. This section was retained for consistency with the TSR numbering system.

1.8 Surveillance Requirements

No Surveillance Requirements (SRs) have been identified as necessary to support the safety analysis of B695 Segment of the DWTF DSA; therefore, none have been included in this TSR. This section was retained for consistency with the TSR numbering system.

SECTION 2 SAFETY LIMITS

Applying the significance criteria and methodology based on 10 CFR 830 did not result in identifying systems, components, or parameters that require SLs. Because no SLs were identified for the B695 Segment of the DWTF, the SL applicability criteria and associated bases are not included in this TSR.

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SECTION 3/4

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.1 General Application

There are no limiting conditions for operations (LCOs) or related surveillance requirements (SRs).

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SECTION 5 ADMINISTRATIVE CONTROLS

5.1 Contractor Responsibility

The RHWB Division Leader/Deputy Division Leader SHALL be responsible for overall facility operation and SHALL delegate in writing the succession of this responsibility to a qualified individual during each absence.

5.2 Contractor Organization

5.2.1 Site Organization

The management team of LLNS, LLC operates and maintains nuclear facilities in a safe, secure, and compliant manner to effectively achieve Laboratory mission objectives. Each of these facilities is managed under a matrix organization. Weapons and Complex Integration has line responsibility. They execute the scope, manage the budget and schedule, and provide day to day direction of the facility managers assigned to Nuclear Operations. The nuclear facility managers are matrixed from Nuclear Operations into the W&CI principal directorate. In this role, they are accountable to the Nuclear Material Technology Deputy Principal Associate Director for the safe and compliant operation of the facility.

5.2.2 Facility Organizations

The RHWB Storage and Disposal Group and Waste Treatment Group Leaders are responsible for B695 and B696S facility operation functions. The group leaders are responsible for overall site safety and have control over those activities necessary for safe operation and maintenance of the B695 Segment of the DWTF.

The Facility Point of Contact (FPOC) for B695 is the Waste Treatment Nuclear Operations Supervisor, and the FPOC for B696S is the RHWB Storage and Disposal Nuclear Operations Supervisor. Some of the FPOC responsibilities include concurring that work can be safely performed in the facility, identifying hazards associated with the work location and communicating them to the responsible work management chain, participating in pre-start review of work (when one is conducted), evaluating proposed operational or activity changes against the facility's existing environment, safety, and health (ES&H) documentation (e.g., the safety basis), and concurring that work can proceed in the building, prior to the onset of work.

5.3 Procedures

DWTF Facility Safety Plans (FSPs) are developed to ensure that facilities and operations are managed in a manner that safeguards workers and protects the environment. In addition, RHWB maintains operational procedures that provide additional instruction to help ensure safe operation of the facility. FSPs and RHWB procedures that affect safety at the B695 Segment of the DWTF are fully reviewed by

management and ES&H personnel, and are signed and dated by the reviewers. Distribution is maintained on a web server so that only approved documents are available.

5.4 Technical Safety Requirements

5.4.1 General

The TSR SHALL be prepared, reviewed independently, and approved in accordance with 10 CFR 830, Subpart B.

5.4.2 Compliance

The TSRs SHALL be complied with, except for reasonable action taken in an emergency (see Section 5.4.6). RHW management is responsible for ensuring that the requirements of these TSRs are met. Compliance SHALL be demonstrated by establishing, implementing, and maintaining the required Administrative Controls (ACs) and AC Programs.

5.4.3 Violation of TSRs

Violation of a TSR can occur as a result of four circumstances:

- Exceeding a safety limit.
- Failure to complete an action statement within the required time limit after exceeding an LCS or failing to comply with an LCO.
- Failure to perform a surveillance within the required time limit.
- Failure to comply with an AC statement.

Because only ACs are specified for the B695 Segment of the DWTF, only the last condition applies.

5.4.4 Violation of an Administrative Control

Failure to comply with the specific ACs in Section 5.5 constitutes a TSR violation. For the programmatic ACs listed in Section 5.6, violation occurs when the failure is of sufficient magnitude that the intent of the referenced program is not fulfilled. The U.S. Department of Energy (DOE) SHALL have the right, in consultation with RHW facility management, to determine if a particular noncompliance will be considered a TSR violation.

5.4.5 Response to an Administrative Control Violation

For all TSR and AC Program failures, the following responses apply:

- Place the facility in a safe condition.

- Notify the DOE and, as necessary, prepare an Occurrence Report in accordance with DOE Order 231.1A, as implemented in *ES&H Manual* Document 4.3, “LLNL Implementation Procedure for Reporting Occurrences to DOE” (LLNL-a latest revision).
- Prepare a recovery plan describing the steps leading to compliance with the TSR or AC Program. For failures that are fixed within 72 hours, no plan is prepared.
- Within as short a time as can be safely accomplished after discovery, return the B695 Segment of the DWTF to compliance.

5.4.6 Emergency Actions

Emergency actions MAY be taken that depart from a requirement in the TSR, provided that:

- An emergency situation exists.
- The actions are needed immediately to protect public health and safety.
- No action consistent with the TSR can provide adequate or equivalent protection.

Such emergency actions SHALL be authorized by the facility manager, designee, or incident commander and performed by personnel trained and qualified for the equipment or systems needed to perform the actions. If an emergency action is taken, both verbal notification and a written report SHALL be made within 24 hours to the DOE Livermore Site Office Manager or designee.

5.5 Specific Administrative Controls

This section establishes nonprogrammatic ACs committed to in the B695 Segment of the DWTF DSA, which preserve critical assumptions in the safety analyses.

5.5.1 Inventory

- a. **AC Statement:** The total radioactive material inventory SHALL be no greater than 56 PE-Ci and the fissile material inventory SHALL be no greater than 450 fissile gram equivalent (FGE).

Basis: The purpose of this requirement is to ensure that the radioactive inventory remains below the 56 PE-Ci radioactive inventory limit for HC-2 facilities as established in DOE-STD-1027, Change Notice No. 1; and ensure that a criticality event is not credible.

- b. **AC Statement:** The radioactive content of waste material in each APPROVED TRU WASTE CONTAINER SHALL be no greater than 50 PE-Ci and the fissile material inventory SHALL be no greater than 200 FGE based on Acceptable Knowledge. Although it is not a TSR violation if a container is determined to exceed 50 PE-Ci after acceptance, the steps in Section 5.4.5 SHALL be followed.

Basis: The container limit of 50 PE-Ci is based on the hazard evaluation presented in the B695 Segment of the DWTF DSA. This is an initial condition for single container scenarios. The limit of 200 FGE ensures that a criticality event involving a container is not credible.

5.5.2 Storage and Handling

- a. **AC Statement:** All TRU WASTE SHALL be stored in APPROVED TRU WASTE CONTAINERS.

Basis: Containers provide a confinement function limiting worker exposures and radioactive waste vulnerability in various accidents. Venting drums minimizes the potential for hydrogen gas buildup. Regarding TRU Oversize Boxes, tests have demonstrated that hydrogen buildup in the boxes is well below the lower flammability limit. The unvented containers are inspected regularly.

- b. **AC Statement:** TRU WASTE stored in APPROVED TRU WASTE CONTAINERS SHALL not be stacked more than two levels high.

Basis: This was identified in seismic scenarios as a mitigative control. Containers satisfying the free drop test performance criteria for Type A packaging (see 49 CFR 173.465(c)(1)) are used to store TRU WASTE. Such containers are designed to survive at least a 4-ft drop consistent with their Type A packaging performance criteria.

- c. **AC Statement:** TRU WASTE staged outside the building SHALL be limited to 36 hours.

Basis: This applies to limit the exposure time for staged TRU WASTE containers that could potentially be involved in a vehicle accident.

- d. **AC Statement:** Drum lid restraining devices SHALL be used during transport of pressurized unvented TRU WASTE drums.

Basis: This is to provide protection for the worker in the event of drum lid loss resulting from a deflagration.

- e. **AC Statement:** The crane lift for TRUPACT-II loading/unloading SHALL be a critical lift.

Basis: This was identified as a credited control in a TRUPACT-II loading/unloading scenario to reduce the probability of a release from a crane lift failure.

- f. **AC Statement:** The tractor SHALL not be present in B696S during TRUPACT-II loading/unloading and payload assembly.

Basis: This is an assumed condition for TRUPACT-II loading/unloading activities.

- g. **AC Statement:** No TRU waste SHALL be handled in the B696S glove box.

Basis: A condition of approval in the Safety Evaluation Report (DOE 2004) for the Updated Documented Safety Analysis for the B695 Segment of the DWTF prohibits TRU waste handling in the glove box in B696S.

5.5.3 Ignition Source Controls

- a. **AC Statement:** Only non-sparking, spark resistant, or spark-proof tools SHALL be used within the B696S glove box. Inspection of the glove box prior to use SHALL verify that only approved tools are available.

Basis: Use of non-sparking tools within the B696S glove box reduces the likelihood of a fire within the glove box that could lead to a radiological material release.

5.6 Programmatic Administrative Controls

This section establishes programmatic ACs committed to in the B695 Segment of the DWTF DSA.

5.6.1 Configuration Management Program

A configuration management program SHALL be established, implemented, and maintained to ensure consistency between the appropriate design requirements, physical configuration, and documentation of SSCs necessary to protect workers and the public as described in Document 41.2, "Configuration Management Program Description," in the *ES&H Manual*. This program includes designated system engineers. The USQ process is performed in accordance with the LLNL Unreviewed Safety Question process.

5.6.2 In-service Inspection & Test, and Maintenance Programs

An in-service inspection & test program including initial testing, and a maintenance program SHALL be established, implemented, and maintained to ensure the integrity of the Design Features in Section 6. Inspections, tests, and maintenance SHALL be performed by qualified personnel. Inspections, tests, and maintenance are described in Chapter 10 of the DSA.

A TRU waste container maintenance program SHALL be established, implemented, and maintained to preserve container integrity of the Design Features in Section 6. This program includes the following:

- Upon acceptance, visually verifying that vents are present on all APPROVED TRU WASTE CONTAINERS, except TRU oversize boxes and LLW converted to TRU WASTE after assay.
- If a TRU waste container is dropped, it will be inspected, and overpacked if necessary, as soon as the appropriate safety precautions can be implemented, but at least within one working day of the drop.
- Weekly inspection of container integrity to include checks for rusting, corrosion, damage, denting, swelling, and damage to filter vents.
- Quarterly monitoring of the dimensions of unvented TRU waste containers for bulging.

This program is implemented through the FSP and RHWM procedures.

A building structure inspection program SHALL be established, implemented, and maintained to ensure that B695 and B696S meet the applicable DOE PC-2 requirements. This program includes inspections

every five years or less by a qualified engineer (e.g., structural or civil) to verify that significant physical deterioration of the structural system has not occurred. The 2-hr fire-rated partition between B696R and the B696 Solid Waste Processing Area (B696S) is inspected every five years to ensure it maintains its fire rating. Any deficiencies identified will be evaluated for potential impact on stored TRU WASTE containers and repaired when approved.

This program is implemented through the FSP consistent with the criteria and methodology for re-evaluation of building design basis in DOE-STD-1020-2002 (DOE 2002).

A visual inspection program for the B696S glove box SHALL be established and performed prior to use to ensure that the glove box acts as the primary confinement structure preventing the spread of contamination. This includes visually inspecting to ensure glove box integrity of gaskets, gloves, windows, hoist, pigtailed bags, and metal surfaces of the box. This program is implemented through the FSP and RHWM procedures.

5.6.3 Emergency Preparedness Program

An emergency preparedness program SHALL be established, implemented, and maintained to ensure that all RHWM personnel react appropriately to emergencies, whether local or site-wide. This program is implemented in *ES&H Manual* Document 22.1, “Emergency Preparedness and Response,” and in the RHWM Contingency Plan (LLNL-e latest revision). This program includes personnel response procedures, evacuation routes, etc. LLNL’s *Emergency Plan* addresses necessary long-term response activities and offsite actions. The FSP and RHWM Contingency Plan address short-term response actions that are the responsibility of the RHWM Division. The Emergency Preparedness Program is discussed in detail in Chapter 15 of the DSA.

5.6.4 Hazardous Material Protection Program

A hazardous material protection program SHALL be established, implemented, and maintained to ensure that exposures to employees, subcontractors, visitors, and members of the general public are controlled in accordance with the LLNL Hazardous Materials Protection Program, as implemented in *ES&H Manual* Part 14, “Chemical.” The Hazardous Materials Protection Program is discussed in detail in Chapter 8 of the DSA.

5.6.5 Radiation Protection Program

A radiation protection program SHALL be established, implemented, and maintained to ensure that radiation exposure to employees, subcontractors, and visitors is controlled in accordance with requirements of 10 CFR 835, as implemented in *ES&H Manual* Document 20.5, “Occupational Radiation Protection: Implementation of 10 CFR 835.” The Radiation Protection Program encompasses:

- Differential pressure when operating the B696S glove box and chopper/shredder.
- Respirators for the worker are required whenever a process batch exceeds 0.52 PE-Ci, e.g., small scale treatment, chopper, and shredder operations.

- The Facility Safety Plan contains process-specific inventory limits that are derived in accordance with the Radiation Protection Program.

The Radiation Protection Program is discussed in detail in Chapter 7 of the DSA.

5.6.6 Fire Protection Program

A fire protection program SHALL be established, implemented, and maintained to minimize the likelihood of fire in accordance with all contractor-applicable provisions of DOE Order 420.1, Change Notice 3, as implemented in *ES&H Manual* Document 22.5, “Fire,” and in the FSP. The Fire Protection Program is discussed in detail in Chapter 11 of the DSA. Key provisions of this program include:

- A limit of an average fire loading of 7 pounds of equivalent ordinary combustibles per square foot, excluding containerized waste in metal containers, in storage and processing areas.
- Only non-combustible pallets are used for storing TRU WASTE containers.
- Maintenance of a 20-ft separation between the B695 Segment and other nuclear segments, with the exception of B696R and B696S, which are separated by a 2-hr fire-rated partition. In addition, the separation (e.g., fire lane) is expanded between adjacent rollup doors in B696 near the segment boundary to prevent fire from impacting both segments through adjacent rollup doors.
- Inspection and testing of fire suppression systems is based on applicable NFPA requirements.
- Forklifts are not fueled inside B695 or B696S.

This TSR does not prohibit the use of propane, diesel, or gasoline-powered vehicles.

5.6.7 Traffic Control Program

A traffic control program SHALL be established, implemented, and maintained to provide protection from vehicular traffic for TRU waste in the yard. The traffic control program is intended to limit the speed of vehicles while in the yard and includes speed limits posted in the yard and vehicles required to stop at the yard gate before entering. This program is implemented through the FSP and discussed in Chapter 11 of the DSA.

5.6.8 Criticality Safety Program

A criticality safety program SHALL be established, implemented, and maintained in accordance with *ES&H Manual* Document 20.6, “Criticality Safety” to ensure that all B695 Segment of the DWTF operations and activities are reviewed, evaluated, and documented by LLNL criticality safety engineers in accordance with DOE Order 420.1, Change Notice 3. Any detailed controls SHALL be documented in the B695 Segment FSP. The Criticality Safety Program is discussed in Chapter 6 of the DSA.

5.7 Minimum Staffing Requirements

The B695 Segment of the DWTF normally operates on a single work shift, with working hours in the range of 7:00 a.m. to 6:00 p.m. Working hours can be extended to complete a given operation. The Facility Manager determines minimum staffing requirements for operating and maintaining the facility. At a minimum, two persons are required for movement of waste if self-rescue cannot be performed, or when waste treatment processes are being conducted. However, only one person is required to initiate process equipment operation. A single person MAY perform inspections and maintenance. No personnel are required for storage.

5.8 Operating Support

ES&H support organizations provide technical support for radiation safety, fire protection, industrial hygiene, industrial safety, and environmental analysis. The Nuclear Operations Directorate provides support to meet safety basis and criticality safety requirements. Health & safety technicians SHALL be on site when work is being performed and SHALL be on call at all other times when radioactive material is present in the B695 Segment of the DWTF. For emergencies (in case of accidents involving radioactive material) after normal working hours, emergency response personnel are to be contacted by calling 911. In the event of an emergency, additional LLNL support can be provided as described in Section 5.6.3.

5.9 Facility Staff Qualifications and Training

A training program SHALL be established, implemented, and maintained to ensure that personnel responsible for RHWM operations are trained and qualified, as applicable, to perform their assigned responsibilities safely. This program includes forklift and crane operators who handle waste containers or who operate a forklift or crane in the vicinity of waste containers. Such personnel SHALL be trained and licensed in accordance with LLNL requirements, with specific reference to safe practices for lifting and handling waste containers. Workers SHALL be trained in emergency response, which includes instructions to evacuate the building immediately in case of fire. The *Training Implementation Matrix* (LLNL-b latest revision) for RHWM addresses the requirements of DOE Order 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*. The Training Program is discussed in detail in Chapter 12 of the DSA for the B695 Segment of the DWTF.

5.10 Operability Definition and Implementation Principles

RHWM has determined that this section is not applicable to the B695 Segment of the DWTF. It was retained for consistency with the TSR numbering system.

5.11 Reviews and Audits

Facility staff perform reviews to ensure that day-to-day activities are conducted in a safe manner. Such reviews are described in the *Inspection Schedule and Guidance for Waste Treatment* (LLNL-c latest revision) and *Inspection Schedule and Guidance for Storage and Disposal Group and Waste Generator Services Group* (LLNL-f latest revision) plans. Appendices in the *Inspection Schedule and Guidance Plan* are updated periodically. Individual reviewers do not review their own work for which they have direct

responsibility. Technical review, audit, and self-assessment of facility activities and programs that affect safety are performed independent of the facility staff by ES&H personnel and Nuclear Operations Directorate analysts and engineers.

Written records of facility reviews, technical reviews, audits, and assessments SHALL be maintained in accordance with the Quality Assurance (QA) Program. In conjunction with the QA Program and the Integrated Safety Management System (ISMS), Configuration Management (CM) ensures that LLNL achieves its safety goal. The *RHWM Nuclear Facility Configuration Management Program* (LLNL-d latest revision), including the USQ process and QA Program, provide a systematic process for assuring the status of facility safety basis requirements, and maintaining the appropriate descriptive documentation. The CM Program implements a graded approach, applying greatest rigor to management of configuration items whose failure poses the greatest risks.

5.12 Reporting Requirements

Events and conditions that violate TSR AC Programs, as defined in Section 5.4.3 and 5.4.4 above, are considered Occurrences. Occurrences SHALL consistently be reported to ensure that both the DOE, including the Office of the Secretary, and LLNL line management are kept fully and currently informed of all events that could (1) affect the health and safety of the public; (2) seriously impact the intended purpose of DOE facilities; (3) have a noticeable adverse effect on the environment; or (4) endanger the health and safety of workers. A system SHALL be established for determining appropriate corrective action and for ensuring that such actions are effectively taken. Reporting is implemented in *ES&H Manual* Document 4.3, "LLNL Implementation Procedure for Reporting Occurrences to DOE." Occurrence reports SHALL be reviewed and approved by LLNL line management.

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SECTION 6 DESIGN FEATURES

Three passive SSCs, as described in Chapter 4 of the DSA for the B695 Segment of DWTF, designated as safety-significant SSCs are specified as TSR design features:

- Approved TRU waste containers satisfy the free drop test performance criteria for Type A packaging (see 49 CFR 173.465(c)(1) for the applicable package mass), and are fitted with vents, vent clips, or similar devices where applicable.
- The B695 and B696S structures and significant appurtenances (e.g., overhead crane) are designed and maintained to PC-2 criteria (e.g., seismic and wind), and the wall between B696S and B696R is a 2-hour fire-rated partition.
- The B696S glove box serves as the primary confinement structure to prevent spread of contamination. The B696S glove box provides a physical barrier from hazardous materials to minimize the occupational exposure.

These design features SHALL be controlled to maintain their design (as specified in applicable design drawings and specifications) as of the effective date of this TSR. Modifications or replacements SHALL maintain the same design features and functions as the original, including materials, methods of construction, physical dimensions, and other parameters specified in applicable industry codes and standards, unless engineering analysis demonstrates equivalency.

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SECTION 7 REFERENCES

- DOE (2002), *Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities*. DOE-STD-1020-2002, U.S. Department of Energy, Washington, DC (January 2002).
- DOE (2004), Safety Evaluation Report for the Updated Documented Safety Analysis and Technical Safety Requirements for the B695 Segment of the Decontamination and Waste Treatment Facility, U.S. Department of Energy, October 2004.
- LLNL (2004), Documented Safety Analysis for the B695 Segment of the Decontamination and Waste Treatment Facility, Lawrence Livermore National Laboratory, Livermore, CA, UCRL-AR-149550, Rev. 2, October 2004.
- LLNL-a (latest revision), Environment, Safety and Health Manual, Lawrence Livermore National Laboratory, Livermore, CA, UCRL-MA-133867.
- LLNL-b (latest revision), Training Implementation Matrix, Lawrence Livermore National Laboratory, Livermore, CA, UCRL-AR-116655.
- LLNL-c (latest revision), Inspection Schedule and Guidance; Waste Treatment Group; Daily, Weekly, and Daily "When-In-Use" Inspections of Radioactive and Hazardous Waste Management Facilities at Lawrence Livermore National Laboratory, Lawrence Livermore National Laboratory, Livermore, CA.
- LLNL-d (latest revision), RHWM Nuclear Facility Configuration Management Program, Lawrence Livermore National Laboratory, Livermore, CA, UCRL-AR-151576.
- LLNL-e (latest revision), *Contingency Plan for Hazardous Waste Management Facilities: Area 612, Area 514, Building 233 CSU, and the Decontamination and Waste Treatment Facility*, Lawrence Livermore National Laboratory, Livermore, CA (UCRL-AR-127066-02).
- LLNL-f (latest revision), Inspection Schedule and Guidance; Storage and Disposal Group and Waste Generator Services Group; Daily, Weekly, and Daily "When-In-Use" Inspections of Radioactive and Hazardous Waste Management Facilities at Lawrence Livermore National Laboratory and Site 300, Lawrence Livermore National Laboratory, Livermore, CA.

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APPENDIX A SL AND LCO BASES

Because no safety limits (SLs) or limiting conditions for operation (LCOs) have been identified as necessary to support the safety analysis of the RHW, no bases explaining the reasons for such requirements have been included in this TSR. The heading of Appendix A was retained for consistency with the numbering system used to identify TSR sections.