SRR-RP-2009-00558-016

# STANDARDS/REQUIREMENTS IDENTIFICATION DOCUMENT

## FUNCTIONAL AREA 16.0

## WASTE MANAGEMENT (U)

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This document was approved by DOE-SR on the above date.

A. L. Morrison
Manager, Contractor Assurance

2/24/15
Date

Savannah River Remediation LLC
Savannah River Site
Aiken, SC 29808

PREPARED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT NO. DE-AC09-09SR22505

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# 16.00 WASTE MANAGEMENT

Standards/Requirements Identification Document (S/RID) Functional Area 00, S/RID Purpose and Development, contains general information on the development (including the type of source documents considered), assessment, approval, and maintenance of the SRR S/RID which is pertinent to the understanding of this functional area S/RID. The reader should refer to S/RID FA 00 for a complete understanding of this functional area S/RID.

This document addresses the Environmental, Safety and Health (ES&H) requirements related to Waste Management activities undertaken by SRR on behalf of the Department of Energy (DOE) at the Savannah River Site (SRS). The sources for the requirements included in this functional area are portions of DOE Order 435.1, Change 1, DOE Manual 435.1-1, Admin Change 2, Radioactive Waste Management, Federal Facility Agreement (FFA) and EM - Waste Acceptance Product Specification for Vitrified High-Level Waste Forms (WAPS). In addition DOE G 435.1-1 was reviewed for any additional requirements. The Guide, DOE G 435.1-1, Implementation Guide for DOE M 435.1-1, shall be reviewed when implementing the requirements of DOE M 435.1-1. The Guide provides additional information and acceptable methods for meeting the requirements. Other methods may be used but must ensure an adequate level of safety commensurate with the hazards associated with the work and be consistent with the radioactive waste management basis. Applicable requirements from Federal and State regulations (for example RCRA, CERCLA, CAA, etc.) have not been included in this S/RID functional area, as they are presented in the Environmental Protection S/RID functional area. The Waste Management functional area is prepared in general alignment with the Revision 0, July 30, 1993 version of the DOE-HQ ES&H Configuration Guide, with the following qualifications.

Portions of the ES&H Configuration Guide for this S/RID functional area specify inclusion of requirements that were considered by SRR as more appropriate for inclusion in other S/RID functional areas. Rather than repeating requirements in multiple functional areas, reference is made to the S/RID functional areas that contain requirements associated with the Waste Management functional area.

The scope of the Waste Management (WM) Program includes the management of DOE radioactive, mixed, infectious, solid and hazardous wastes. This S/RID functional area identifies requirements related to radioactive wastes and the radioactive portion of mixed waste, radioactive toxic waste and/or radioactive PCB waste. Applicable and necessary requirements for the management of other non-radioactive wastes, such as hazardous, (the non-radioactive portion) mixed, infectious, toxic, and PCBs are not included in this functional area, as they have been addressed in the Environmental Protection S/RID functional area, which addresses environmental regulations, including: Resource Conservation Recovery Act (RCRA), Toxic Substances Control Act (TSCA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and SC State regulations, including Infectious Wastes Management.

This section addresses the Radioactive Waste Management Basis documentation as required by DOE Order 435.1, Change 1.

A number of the requirements identified in this S/RID functional area only apply to a certain facility or to a certain group of facilities. These requirements are identified as applicable to a particular facility list based on the waste form identifier specified in the "Facility-specific" column in Table 1. The facilities included for each waste form are identified in S/RID Functional Area 00 (Facilities List).

Key Interfaces with other functional areas are discussed in Section 16.13.

## 16.01 WASTE CHARACTERIZATION AND CERTIFICATION

The WM S/RID functional area identifies requirements for the characterization and certification of radioactive wastes generated at SRS by SRR.

## 16.02 PACKAGING AND LABELING COMPLIANCE

The WM S/RID functional area identifies requirements which are applicable for properly packaging and labeling of radioactive wastes not covered in S/RID FA 13, "Packaging and Transportation."

## 16.03 TRANSPORTATION

The WM S/RID functional area identifies requirements, which are applicable for the transportation of radioactive wastes for treatment, storage or disposal to facilities on-site and off-site, including manifests and shipping papers and certification of the off-site facility.

## 16.04 PLANS, RECORDS AND REPORTING

The WM S/RID functional area identifies requirements which are included for the development and implementation of plans for accumulation, storage, treatment and disposal of wastes required under the DOE Orders for the management of radioactive waste and vitrified glass from DWPF.

## 16.05 PERMITTING

The WM S/RID functional area identifies requirements, which are for activities required for permitting under DOE requirements.

## 16.06 WASTE ACCEPTANCE CRITERIA

The WM S/RID functional area identifies requirements for the development of waste acceptance criteria for all onsite treatment, storage or disposal facilities for radioactive waste.

## 16.07 WASTE MINIMIZATION

The WM S/RID functional area identifies requirements for waste minimization and waste segregation.

## 16.08 WASTE TREATMENT AND DISPOSAL TECHNOLOGY

The WM S/RID functional area identifies requirements, which provide for the development of acceptable onsite waste treatment and disposal technologies, as necessary, based on DOE requirements and standards.

## 16.09 RADIOLOGICAL PERFORMANCE ASSESSMENT

The WM S/RID functional area identifies requirements, which ensure the conduct of a systematic analysis of each waste management disposal facility to demonstrate compliance with predefined radiological performance objectives.

## 16.10 WASTE CATEGORIES

No requirements have been identified in this element of the WM S/RID functional area.

## 16.11 MONITORING AND RESPONSIBILITIES

The WM S/RID functional area includes requirements for monitoring, emergency preparedness, personnel responsibilities and the corrective action program.

## 16.12 SITE EVALUATION AND FACILITY DESIGN

The WM S/RID functional area includes requirements for evaluating waste facilities to identify relevant features that should be avoided or must be considered in facility design and analyses.

## 16.13 KEY INTERFACE

The Department of Energy has, with the implementation of DOE Order 435.1, Change 1, Radioactive Waste Management, significantly broadened the field of requirements related to this S/RID functional area. The Manual 435.1-1, Admin Change 2, lists additional DOE Orders, Manuals, Policies, Executive Order, etc. that are identified as being an integral part of complying with DOE Order 435.1, Change 1. The applicable orders, manuals, etc. are listed in this section under the appropriate S/RID functional area heading where the requirements are delineated are, for the most part, obsolete. Each functional area is addressed as 16.13.xx below, where xx is the S/RID functional area number. See each functional area for current requirements.

### 16.13.01 Management Systems

The Management Systems S/RID functional area interfaces with the WM S/RID functional area in relation to the requirements to provide the policy, accountability, and resources to implement the ES&H programs and to ensure consistent and adequate management oversight. Refer to the Management Systems S/RID functional area for specific requirements.

### 16.13.02 Quality Assurance

The Quality Assurance S/RID functional area interfaces with the WM S/RID functional area in relation to the requirements that ensure risks and environmental impacts are minimized and safety reliability and performance are maximized through the application of effective management systems commensurate with the risks posed by the facility and its operation. -Refer to the Quality Assurance S/RID functional area for specific requirements.

### 16.13.03 Configuration Management

Refer to the Configuration Management functional area for requirements associated with WM facilities.

### 16.13.04 Training and Qualification

The Training and Qualification S/RID functional area interfaces with the WM S/RID functional area by listing or referencing the training requirements which must be satisfied to ensure that SRR personnel are adequately trained and qualified to safely and effectively operate and maintain SRS facilities. Refer to the Training and Qualification S/RID functional area for specific requirements.

## 16.13.05 Emergency Management

The Emergency Management S/RID functional area interfaces with the WM S/RID functional area in relation to the plans and programs for responding to emergency situations. Refer to the EM S/RID functional area for specific requirements.

## 16.13.06 Safeguards and Security

This outline element is maintained for continuity with the DOE ES&H Configuration Guide. However, there are no unique requirements that apply to FA 06 (Safeguards and Security). The Safeguards and Security Program interfaces with the WM S/RID functional area in relationship to requirements specific to SRS Safeguards and Security Programs. DOE Manual 435.1-1, Admin Change 2, Chapter 1-1.e lists requirements and DOE Directives that are required for all DOE radioactive waste management facilities, operations and activities as applicable to show compliance with DOE M 435.1-1, Admin Change 2. The requirements listed in DOE M 435.1-1, Admin Change 2, Chapter 1-1e are not S/RID requirements. The listed DOE Directives associated with Safeguards and Security are obsolete. The current Safeguards and Security Directives are addressed as Non-ESH Source Documents in the list of applicable Non-ESH directives available from the S/RID web page.

SRR compliance with these directives is addressed outside the S/RID process in the Compliance Assessment and Implementation Report (CAIR) available for each directive.

## 16.13.07 Engineering Program

The Engineering Program S/RID functional area interfaces with the WM S/RID functional area in relation to planning and execution of engineering studies and designs for construction, modification and inspection for compliance with design contract documents. The applicable engineering requirement from DOE M 435.1-1, Admin Change 2, is included in FA07. Due to the specific nature of the requirements listed in DOE O 435.1, Change 1, and DOE M 435.1-1, Admin Change 2, these requirements are listed in S/RID functional area 16. There is a cross reference between FA07 and FA16 so that these requirements can be tracked.

## 16.13.08 Construction Program

The Construction Program S/RID functional area interfaces with the WM S/RID functional area in relation to the construction of new facilities and the modification, or disposition, of existing facilities. Refer to the Construction Program S/RID functional area for specific requirements.

## 16.13.09 Operations

The Operations S/RID functional area interfaces with the WM S/RID functional area in that the operations program encompasses all aspects of operation in a safe, disciplined, cost effective manner, while providing for constant growth and improvement. Refer to the Operations S/RID functional area for specific requirements.

## 16.13.10 Maintenance

The Maintenance S/RID functional area interfaces with the WM S/RID functional area in that the Maintenance functional area covers the activities required to monitor and maintain structures, systems, and components to support safe and efficient operations at Savannah River Site (SRS). Refer to the Maintenance

S/RID functional area for specific requirements.

### 16.13.11 Radiation Protection

The Radiation Protection S/RID functional area interfaces with the WM S/RID functional area in that the requirements related to radiation protection activities are in FA11. Refer to the Radiation Protection S/RID functional area for specific requirements.

### 16.13.12 Fire Protection

The Fire Protection S/RID functional area interfaces with the WM S/RID functional area in that the FP S/RID functional area includes administrative procedures for the control of hazardous substances or processes, inspection, maintenance and testing of fire protection features and for other relevant fire protection activities. Refer to the FP S/RID functional area for requirements for fire hazard control at waste generation, accumulation, storage, treatment and disposal facilities.

### 16.13.13 Packaging and Transportation

The Packaging and Transportation S/RID functional area is an important interface with the WM S/RID functional area in that the P&T S/RID functional area includes packaging and transportation requirements applicable to hazardous and radioactive materials and wastes shipment and storage. The applicable requirements for P&T of DWPF glass and the requirements for the Department of Transportation (49 CFR) are addressed in this S/RID functional area. Refer to P&T S/RID functional area for specific requirements.

### 16.13.14 Environmental Restoration

Refer to the Environmental Restoration functional area for requirements associated with WM facilities.

### 16.13.15 Facility Disposition

Refer to the Facility Disposition functional area for requirements associated with WM facilities.

### 16.13.16 Waste Management

Not applicable.

### 16.13.17 R&D Programs

This outline element is maintained for continuity with the DOE ES&H Configuration Guide. However, there are no unique requirements that apply to FA 17 (R&D Experimental Activities).

### 16.13.18 Nuclear and Process Safety

The Nuclear and Process Safety S/RID functional area interfaces with the WM S/RID functional area in relation to the requirements that ensure radioactive, fissionable materials and other hazardous materials are produced, processed, stored, transferred, and handled, in such a manner that the probability and consequences of an accident are acceptably low. Refer to the Nuclear and Process Safety S/RID functional area for specific requirements.

### 16.13.19 Occupational Safety and Health

The Occupational Safety and Health S/RID functional area interface with the WM S/RID functional area in relation to the OSH requirements for hazardous waste operations. All OSH requirements apply to radioactive operations. Refer to the OSH S/RID functional area for specific requirements.

### 16.13.20 Environmental Protection

The WM S/RID functional area interfaces with the EP S/RID functional area in that the EP S/RID establishes the elements for compliance with environmental monitoring, surveillance and inspection, recordkeeping, permitting, and pollution prevention requirements. All relevant federal and state environmental regulations for the management of waste (non-radioactive) have been identified in the EP S/RID functional area. RCRA requirements for P&T are addressed in the EP S/RID functional area. Refer to the EP S/RID functional area for specific requirements.

## 16.14 DOCUMENTS

### 16.14.01 Reference Documents

| | |
|---|---|
| 10 CFR 962 | BYPRODUCT MATERIAL |
| ADN-89-05-FF | FEDERAL FACILITY AGREEMENT FOR THE SAVANNAH RIVER SITE, 8/16/1993 |
| DOEM435.1-1AChg2 | RADIOACTIVE WASTE MANAGEMENT MANUAL, ADMIN CHANGE 2, 6/8/2011 |
| DOEO435.1_AChg1 | RADIOACTIVE WASTE MANAGEMENT, CHANGE 1, 7/9/1999 |
| EM-WAPS | WASTE ACCEPTANCE PRODUCT SPECIFICATIONS (WAPS) FOR VITRIFIED HIGH-LEVEL WASTE FORMS, 12/16/1996 |
| Public Law 108-375 | NATIONAL DEFENSE AUTHORIZATION ACT FOR FY 2005 |

## TABLE 1 FORMAT AND CONTENT

| | |
|---|---|
| S/RID Requirement Number | Unique number for each requirement that links the statement to the ES&H Configuration Guide |
| Source Document | Number of the source document |
| Source Document Requirement Number | Unique reference from the source document. |
| Requirement Text | Requirement statement |

**Facility Categories ***

Requirement applicability is shown in relation to the following facility categories:

| | |
|---|---|
| Nuclear HC-1,2,3 | Representing nuclear hazard category 1, 2 and 3 facilities (as defined by DOE Standard 1027-92) and includes any facility(s) required to support a nuclear facility(s). |
| Radiological | Representing facilities below Hazard Category 3 but still contain quantities of radioactive material at or above the Reportable Quantity value listed in 40 CFR 302.4. |
| High Hazard Chemical | Representing facilities with radiological hazards below 40 CFR 302.4 thresholds for radiological materials, but with any chemical hazard at or above threshold quantities listed in 29 CFR 1910.119 or 40 CFR 68. These facilities may also contain nuclear materials exempt from the nuclear facility definition, e.g., check and calibration sources, radioactive sources in research and experimental and analytical laboratory activities, electron microscopes, and x-ray machines, as defined by 10 CFR 830.3. |
| Low Hazard Chemical | Representing facilities with radiological hazards below 40 CFR 302.4 thresholds-, but with chemical hazards both below 29 CFR 1910.119 or 40 CFR 68 thresholds and at or above reportable quantities in 40 CFR 302.4. These facilities may also contain nuclear materials exempt from the nuclear facility definition, e.g., check and calibration sources, radioactive sources in research and experimental and analytical laboratory activities, electron microscopes, and x-ray machines, as defined by 10 CFR 830.3. |
| Other Industrial | Representing facilities with all radiological and chemical hazards below 40 CFR 302.4 thresholds. These facilities may also contain nuclear materials exempt from the nuclear facility definition, e.g., check and calibration sources, radioactive sources in research and experimental and analytical laboratory activities, electron microscopes, and x-ray machines, as defined by 10 CFR 830.3. |
| Facility Specific | These are requirements that are applicable to specific facilities. Facility identification is included in this column, when applicable. |

**Phase I Compliance Approach**

| | |
|---|---|
| Common | Implementation of these requirements is covered by common procedures and policies. |
| Facility Specific | Implementation of these requirements is covered by facility specific procedures. |

* Refer to the "SRR Facilities List" contained in Functional Area 00 for the category for specific SRS facilities/ bldgs.

## FACILITY SPECIFIC LIST(S)

| **ADN** |
|---|
| See FA 00 for list of facilities |

| **ETP** |
|---|
| See FA 00 for list of facilities |

| **HLW** |
|---|
| See FA 00 for list of facilities |

| **LLW** |
|---|
| See FA 00 for list of facilities |

| **MCU** |
|---|
| See FA 00 for list of facilities |

| **SALT** |
|---|
| See FA 00 for list of facilities |

| **VITR** |
|---|
| See FA 00 for list of facilities |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.001 | DOEO435.1_A Chg1 | Att. 1.1.a. | In the performance of this contract, the contractor is required to: Systematically plan, document, execute, and evaluate the management of DOE radioactive waste and assist the government in planning, executing and evaluating the management of DOE radioactive waste in accordance with the requirements of DOE O 435.1, Radioactive Waste Management. | X | X | | | | | X | |
| 16.00.002 | DOEO435.1_A Chg1 | Att. 1.1.b. | In the performance of this contract, the contractor is required to: Assist the government in managing DOE radioactive waste so as to: (1) Protect the public from exposure to radiation from radioactive materials. (2) Protect the environment. (3) Protect workers including following requirements for radiation protection. | X | X | | | | | X | |
| 16.00.003 | DOEO435.1_A Chg1 | Att. 1.1.d.(1) | In the performance of this contract, the contractor is required to: Comply with the requirements in DOE M 435.1-1, Radioactive Waste Management Manual, unless such activities are specifically exempted by DOE O 435.1, Section 3.d., as described below. (1) Activities conducted under the authority of the Director, Naval Nuclear Propulsion Program, as described in Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1985, Public Law 98-525.<br><br>Note: This requirement is not applicable to SRR. | X | X | | | | | X | |
| 16.00.004 | DOEO435.1_A Chg1 | Att. 1.1.d.(3) | In the performance of this contract, the contractor is required to: Comply with the requirements in DOE M 435.1-1, Radioactive Waste Management Manual, unless such activities are specifically exempted by DOE O 435.1, Section 3.d., as described below. (3) Requirements that duplicate or conflict with requirements of NRC or an Agreement State do not apply to facilities and activities licensed by the NRC or an Agreement State. | X | X | | | | | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.005 | DOEO435.1_A Chg1 | Att. 1.1.d.(5) | In the performance of this contract, the contractor is required to:<br>Comply with the requirements in DOE M 435.1-1, Radioactive Waste Management Manual, unless such activities are specifically exempted by DOE O 435.1, Section 3.d., as described below.<br>(5) Unless managed in a low-level waste facility, requirements in DOE O 435.1 do not apply to byproduct material as defined in section 11e.(2) of the Atomic Energy Act of 1954, as amended, or naturally occurring radioactive material.<br><br>Note: This requirement is not applicable to SRR.(6) Spent nuclear fuel or non-waste materials. | X | X | | | | | X | |
| 16.00.006 | DOEO435.1_A Chg1 | Att. 1.1.d.(6) | In the performance of this contract, the contractor is required to:<br>Comply with the requirements in DOE M 435.1-1, Radioactive Waste Management Manual, unless such activities are specifically exempted by DOE O 435.1, Section 3.d., as described below.<br>(6) Spent nuclear fuel or non-waste materials.<br><br>Note: This requirement is not applicable to SRR. | X | X | | | | | X | |
| 16.00.007 | DOEO435.1_A Chg1 | Att. 1.1.d.(7) | In the performance of this contract, the contractor is required to:<br>Comply with the requirements in DOE M 435.1-1, Radioactive Waste Management Manual, unless such activities are specifically exempted by DOE O 435.1, Section 3.d., as described below.<br>(7) Upon request or on its own initiative, DOE may grant exemptions from the requirements of DOE O 435.1 in accordance with the process provided by DOE M 251.1-1A, Directives System Manual.<br>Incorporate these requirements into the contracts of all sub-contractors which are involved in the management of DOE radioactive waste. | X | X | | | | | X | |
| 16.00.008 | DOEO435.1_A Chg1 | Att. 1.1.e. | In the performance of this contract, the contractor is required to:<br>Incorporate these requirements into the contracts of all sub-contractors which are involved in the management of DOE radioactive waste. | X | X | | | | | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.009 | DOEM435.1-1AChg2 | 4.0 | IMPLEMENTATION. The requirements of this Manual apply to all new and existing DOE radioactive waste management facilities, operations, and activities. Implementation of the requirements shall begin at the earliest possible date, and all DOE entities shall be in compliance with this directive within one year of its issuance. Compliance with this directive includes implementing the requirements or an approved implementation or corrective action plan. If compliance with this Order cannot be achieved within one year of its issuance, the Field Element Manager must request approval to extend the compliance date to no later than October 1, 2001, from the cognizant Program Secretarial Officer (PSO). Failure to implement the requirements of this directive shall, through the appropriate lines of management, result in corrective actions including, if necessary, shutdown of radioactive waste management facilities, operations, or activities until the appropriate requirements are implemented. Any of the requirements in this Manual may be waived or modified through application of a DOE-approved requirements tailoring process, such as the "Necessary and Sufficient Closure Process" in DOE P 450.3 and DOE M 450.3-1 and DOE P 450.4, Safety Management System Policy, the applicable or relevant and appropriate requirements identification process for actions taken pursuant to the Department's CERCLA authorities, or by an exemption processed in accordance with the requirements of DOE M 251.1-1A, Directives System Manual. | X | X | | | | | X | |
| 16.00.010 | DOEM435.1-1AChg2 | Ch. 1-2.f. 1. | Field Element Managers. Field Element Managers are responsible for: (1) Site-Wide Radioactive Waste Management Programs. Developing, documenting, implementing, and maintaining a Site-Wide Radioactive Waste Management Program. The Program shall use a systematic approach for planning, executing, and evaluating the site-wide management of radioactive waste in a manner that supports the Complex-Wide Radioactive Waste Management Programs and ensures that the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual are met.<br><br>Note: For SRS application DOE has tasked the contractor with the implementation of this requirement. | X | X | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.011 | DOEM435.1-1AChg2 | Ch. 1-2.f. 2. | Field Element Managers. Field Element Managers are responsible for:<br>(2) Radioactive Waste Management Basis. Ensuring a radioactive waste management basis is developed and maintained for each DOE radioactive waste management facility, operation, and activity; and ensuring review and approval of the basis before operations begin. The Radioactive Waste Management Basis shall:<br>(a) Reference or define the conditions under which the facility may operate based on the radioactive waste management documentation;<br>(b) Include the applicable elements identified in the specific waste-type chapters of this Manual; and<br>(c) Be developed using the graded approach process.<br><br>(f) Host States and State Compacts where non-DOE facilities are located shall be consulted prior to approval of an exemption to use such facilities and notified prior to shipments being made.<br><br>Note: For SRS application DOE has tasked the contractor with the implementation of this requirement. | X | X | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.012 | DOEM435.1-1AChg2 | Ch. 1-2.f. 4. | Field Element Managers. Field Element Managers are responsible for:<br>(4) Approval of Exemptions for Use of Non-DOE Facilities. DOE radioactive waste shall be treated, stored, and in the case of low-level waste, disposed of at the site where the waste is generated, if practical; or at another DOE facility. If DOE capabilities are not practical or cost effective, exemptions may be approved to allow use of non-DOE facilities for the storage, treatment, or disposal of DOE radioactive waste based on the following requirements:<br>(a) Such non-DOE facilities shall:<br>1. Comply with applicable Federal, State, and local requirements;<br>2. Have the necessary permit(s), license(s), and approval(s) for the specific waste(s); and<br>3. Be determined by the Field Element Manager to be acceptable based on a review conducted annually by DOE.<br>(b) Exemptions for the use of non-DOE facilities shall be documented to be cost effective and in the best interest of DOE, including consideration of alternatives for on-site disposal, an alternative DOE site, and available non-DOE facilities; consideration of life-cycle cost and potential liability; and protection of public health and the environment.<br>(c) DOE waste shall be sufficiently characterized and certified to meet the facility's waste acceptance criteria.<br>(d) Appropriate National Environmental Policy Act (NEPA) review must be completed. For actions taken under the Comprehensive Environmental Response, Compensation, and Liability Act(CERCLA), it is DOE's policy to incorporate NEPA values into the CERCLA documentation.<br>(e) The Office of Health, Safety and Security, the Office of Environmental Management, and the Program Secretarial Officer shall be notified of the basis for using any non-DOE radioactive waste disposal facility prior to the use of such facilities.<br>(f) Host States and State Compacts where non-DOE facilities are located shall be consulted prior to approval of an exemption to use such facilities and notified prior to shipments being made.<br><br>Note: For SRS application DOE has tasked the contractor with the implementation of this requirement with the exception that DOE will approve all exemptions. It is understood that radioactive waste designated for this off-site management and disposal must meet the applicable requirements governing the licensed disposal facility (e.g., at a DOE facility, management and disposal shall meet the requirements of DOE O 435.1 and DOE M 435.1-1). | | | | | | (+) LLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.013 | DOEM435.1-1AChg2 | Ch. 1-2.f. 5. | Field Element Managers. Field Element Managers are responsible for:<br>(5) Environmental Restoration, Decommissioning, and Other Cleanup Waste. Ensuring the management and disposal of radioactive waste resulting from environmental restoration activities, including decommissioning, meet the substantive requirements of DOE O 435.1, Radioactive Waste Management, and this Manual. Environmental restoration activities using the CERCLA process (in accordance with Executive Order 12580) may demonstrate compliance with the substantive requirements of DOE O 435.1, Radioactive Waste Management, and this Manual (including the Performance Assessment and performance objectives, as well as the Composite Analysis) through the CERCLA process. However, compliance with all substantive requirements of DOE O 435.1 not met through the CERCLA process must be demonstrated. Environmental restoration activities which will result in the off-site management and disposal of radioactive waste must meet the applicable requirements of DOE O 435.1, Radioactive Waste Management, and this Manual for the management and disposal of those off-site wastes. Field Elements performing environmental restoration activities involving development and management of radioactive waste disposal facilities under the CERCLA process shall:<br>(a) Submit certification to the Deputy Assistant Secretary for Environmental Restoration that compliance with the substantive requirements of DOE O 435.1 have been met through application of the CERCLA process; and<br>(b) Submit the decision document, such as the Record of Decision, or any other document that serves as the authorization to dispose, to the Deputy Assistant Secretary for Environmental Restoration for approval.<br><br>Note: For SRS application DOE has tasked the contractor with the implementation of this requirement. Currently SRS has no plans to dispose of radioactive waste using the CERCLA process (i.e., dispose of radioactive waste within the 'CERCLA' waste unit). Current plans are to dispose of environmental restoration waste off-site (i.e., dispose of the radioactive waste at a disposal location outside of the CERCLA waste unit). It is understood that radioactive waste designated for this off-site management and disposal must meet the applicable requirements governing the licensed disposal facility (e.g., at a DOE facility, management and disposal shall meet the requirements of DOE O 435.1 and DOE M 435.1-1). | X | X | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.014 | DOEM435.1-1AChg2 | Ch. 1-2.f. 7. | Field Element Managers. Field Element Managers are responsible for:<br>(7) Radioactive Waste Generator Requirements. Ensuring development, review, approval, and implementation of a program for waste generation planning, characterization, certification, and transfer. This program shall address characterization of waste, preparation of waste for transfer, certification that waste meets the receiving facility's radioactive waste acceptance requirements, and transfer of waste.<br><br>Note:- For SRS application DOE has tasked the contractor with the implementation of this requirement. | X | X | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.015 | DOEM435.1-1AChg2 | Ch. 1-2.f. 9. | Field Element Managers. Field Element Managers are responsible for:<br>(9) Defense-In-Depth. Ensuring defense-in-depth principles are incorporated where potential uncertainties or vulnerabilities warrant their use when reviewing and approving radioactive waste management activities and documents. These principles advocate the use of multiple levels of engineered and administrative controls to provide protection to the public, workers, and the environment.<br><br>Note: For SRS application DOE has tasked the contractor with the implementation of this requirement.Waste Incidental to Reprocessing.<br>Waste resulting from reprocessing spent nuclear fuel that is determined to be incidental to reprocessing is not high-level waste, and shall be managed under DOE's regulatory authority in accordance with the requirements for transuranic waste or low-level waste, as appropriate. When determining whether spent nuclear fuel reprocessing plant wastes shall be managed as another waste type or as high-level waste, either the citation or evaluation process described below shall be used:<br>(1) Citation. Waste incidental to reprocessing by citation includes spent nuclear fuel reprocessing plant wastes that meet the description included in the Notice of Proposed Rulemaking (34 FR 8712) for proposed Appendix D, 10 CFR Part 50, Paragraphs 6 and 7. These radioactive wastes are the result of reprocessing plant operations, such as, but not limited to: contaminated job wastes including laboratory items such as clothing, tools, and equipment.<br>(2) Evaluation. Determinations that any waste is incidental to reprocessing by the evaluation process shall be developed under good record-keeping practices, with an adequate quality assurance process, and shall be documented to support the determinations. Such wastes may include, but are not limited to, spent nuclear fuel reprocessing plant wastes that:<br>(a) Will be managed as low-level waste and meet the following criteria:<br>1. Have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; and<br>2. Will be managed to meet safety requirements comparable to the performance objectives set out in 10 CFR Part 61, Subpart C, Performance Objectives; and | -X | -X | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.015 *(cont'd)* | DOEM435.1-1AChg2 | Ch. 1-2.f. 9. | 3. Are to be managed, pursuant to DOE's authority under the Atomic Energy Act of 1954, as amended, and in accordance with the provisions of Chapter IV of this Manual, provided the waste will be incorporated in a solid physical form at a concentration that does not exceed the applicable concentration limits for Class C low-level waste as set out in 10 CFR 61.55, Waste Classification; or will meet alternative requirements for waste classification and characterization as DOE may authorize.<br>(b) Will be managed as transuranic waste and meet the following criteria:<br>1. Have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; and<br>2. Will be incorporated in a solid physical form and meet alternative requirements for waste classification and characteristics, as DOE may authorize; and<br>3. Are managed pursuant to DOE's authority under the Atomic Energy Act of 1954, as amended, in accordance with the provisions of Chapter III of this Manual, as appropriate. | -X | -X | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.016 | DOEM435.1-1AChg2 | Ch. 2-b. | Waste Incidental to Reprocessing. Waste resulting from reprocessing spent nuclear fuel that is determined to be incidental to reprocessing is not high-level waste, and shall be managed under DOE's regulatory authority in accordance with the requirements for transuranic waste or low-level waste, as appropriate. When determining whether spent nuclear fuel reprocessing plant wastes shall be managed as another waste type or as high-level waste, either the citation or evaluation process described below shall be used:<br>(1) Citation. Waste incidental to reprocessing by citation includes spent nuclear fuel reprocessing plant wastes that meet the description included in the Notice of Proposed Rulemaking (34 FR 8712) for proposed Appendix D, 10 CFR Part 50, Paragraphs 6 and 7. These radioactive wastes are the result of reprocessing plant operations, such as, but not limited to: contaminated job wastes including laboratory items such as clothing, tools, and equipment.<br>(2) Evaluation. Determinations that any waste is incidental to reprocessing by the evaluation process shall be developed under good record-keeping practices, with an adequate quality assurance process, and shall be documented to support the determinations. Such wastes may include, but are not limited to, spent nuclear fuel reprocessing plant wastes that:<br>(a) Will be managed as low-level waste and meet the following criteria:<br>1. Have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; and<br>2. Will be managed to meet safety requirements comparable to the performance objectives set out in 10 CFR Part 61, Subpart C, Performance Objectives; and<br>3. Are to be managed, pursuant to DOE's authority under the Atomic Energy Act of 1954, as amended, and in accordance with the provisions of Chapter IV of this Manual, provided the waste will be incorporated in a solid physical form at a concentration that does not exceed the applicable concentration limits for Class C low-level waste as set out in 10 CFR 61.55, Waste Classification; or will meet alternative requirements for waste classification and characterization as DOE may authorize.<br>(b) Will be managed as transuranic waste and meet the following criteria:<br>1. Have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; and<br>2. Will be incorporated in a solid physical form and meet alternative requirements for waste classification and characteristics, as DOE may authorize; and<br>3. Are managed pursuant to DOE's authority under the Atomic Energy Act of 1954, as amended, in accordance with the provisions of Chapter III of this Manual, as appropriate. | | | | | | (+) HLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.016 *(cont'd)* | DOEM435.1-1AChg2 | Ch. 2-b. | Notes:<br><br>1. Performance of a Waste Determination (WD) by DOE in accordance with Section 3116(a) of the National Defense Authorization Act has been determined (Letter WDPD-06-098 to R.A. Pedde from J.M. Allison dated 03/21/2006) to satisfy the need to perform a Waste Incidental to Reprocessing (WIR) evaluation as described in "(2) Evaluation" above.<br><br>2. High-level waste (HLW) tanks will be closed under Chapter II.U.(2) (S/RID requirement 16.00.021) or (3) (S/RID requirement 16.00.022), even though they do not contain HLW at the time of closure. | | | | | | (+) HLW | X | |
| 16.00.017 | DOEM435.1-1AChg2 | Ch. 2-c. | Management of Specific Wastes. The following provide for management of specific wastes as high-level waste in accordance with the requirements in this Chapter:<br>(1) Mixed High-Level Waste. Unless demonstrated otherwise, all high-level waste shall be considered mixed waste and is subject to the requirements of both the Atomic Energy Act of 1954, as amended, the Resource Conservation and Recovery Act, as amended, DOE O 435.1, Radioactive Waste Management, and this Manual.<br>(2) TSCA-Regulated Waste. High-level waste containing polychlorinated biphenyls, asbestos, or other such regulated toxic components shall be managed in accordance with requirements derived from the Toxic Substances Control Act, as amended, DOE O 435.1, Radioactive Waste Management, and this Manual. | | | | | | (+) HLW | X | |
| 16.00.018 | DOEM435.1-1AChg2 | Ch. 2-f. | Radioactive Waste Management Basis. High-level waste facilities, operations, and activities shall have a radioactive waste management basis consisting of physical and administrative controls to ensure the protection of workers, the public, and the environment. The following specific waste management controls shall be part of the radioactive waste management basis:<br>(1) Generators. The waste certification program.<br>(2) Pretreatment and Treatment Facilities. The waste acceptance requirements and waste certification program.<br>(3) Storage Facilities. The waste acceptance requirements and the waste certification program. | | | | | | (+) HLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.019 | DOEM435.1-1AChg2 | Ch. 2-n. | Waste Transfer. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Authorization. High-level waste shall not be transferred to a storage, treatment, or disposal facility until personnel responsible for the facility receiving the waste authorize the transfer.<br>(2) Data. Waste characterization data and generation, storage, pretreatment, treatment, and transportation information for high-level waste shall be transferred with or be traceable to the waste.<br>(3) Records and Transfer Reporting. The records and transfer requirements for canistered high-level waste forms shall comply with DOE/EM-0093, Waste Acceptance Product Specification for Vitrified High-Level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.00.020 | DOEM435.1-1AChg2 | Ch. 2-u.(1) | Closure. The following requirements for closure of deactivated high-level waste facilities and sites are in addition to those in Chapter I of this Manual.<br>(1) Decommissioning. Deactivated high-level waste facilities/sites shall meet the decommissioning requirements of DOE O 430.1A, Life-Cycle Asset Management and the requirements of DOE 5400.5, Radiation Protection of the Public and the Environment, for release; or | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.00.021 | DOEM435.1-1AChg2 | Ch. 2-u.(2) | Closure. The following requirements for closure of deactivated high-level waste facilities and sites are in addition to those in Chapter I of this Manual.<br>(2) CERCLA Process. Deactivated high-level waste facilities/sites shall be closed in accordance with the CERCLA process as described in Section I.2.F.(5); or | | | | | | (+) HLW<br>(+) VITR | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.022 | DOEM435.1-1AChg2 | Ch. 2-u.(3) | Closure. The following requirements for closure of deactivated high-level waste facilities and sites are in addition to those in Chapter I of this Manual.<br>(3) Closure. Deactivated high-level waste facilities/sites shall be closed in accordance with an approved closure plan as specified below. Residual radioactive waste present in facilities to be closed shall satisfy the waste incidental to reprocessing requirements of this Chapter.<br>(a) Facility/Site Closure Plans. A closure plan shall be developed for each deactivated high-level waste facility/site being closed that defines the approach and plans by which closure of each facility within the site is to be accomplished. This plan shall be completed and approved prior to the initiation of physical closure activities, and updated periodically to reflect current analysis and status of individual facility closure actions. The plan shall include, at a minimum, the following elements:<br>1. Identification of the closure standards/performance objectives to be applied from Chapter III or IV, as appropriate;<br>2. A strategy for allocating waste disposal facility performance objectives from the closure standards identified in the closure plan among the facilities/units to be closed at the site;<br>3. An assessment of the projected performance of each unit to be closed relative to the performance objectives allocated to each unit under the closure plan;<br>4. An assessment of the projected composite performance of all units to be closed at the site relative to the performance objectives and closure standards identified in the closure plan; and<br>5. Any other relevant closure controls including a monitoring plan, institutional controls, and land use limitations to be maintained in the closure activity.<br><br>Note: If the residual radioactive waste present in facilities to be closed is defined using a waste determination performed in accordance with Public Law 108-375, Section 3116 (S/RID requirement 16.00.031), then the performance objectives of 10 CFR 61 will be applied versus “Chapter III or IV, as appropriate” as mentioned above. | | | | | | (+) HLW<br>(+) VITR | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.023 | DOEM435.1-1AChg2 | Ch. 2-v. | Specific Operations. Specific requirements are provided for the operation of lifting devices and facilities for receipt and retrieval of high-level waste.<br>(1) Operation of Lifting Devices. Hoisting and rigging activities shall be conducted in accordance with the guidance provided in the DOE Standard "Hoisting and Rigging" (DOE-STD-1090-96).<br>(2) Operation of Facilities for Receipt and Retrieval of High-Level Waste. High-level waste receipt and retrieval systems shall be operated and maintained consistent with high-level waste system features incorporated in the facilities. Strategies for retrieval of waste shall be analyzed to ensure that structural and radiological impacts are consistent with the facility design basis. | | | | | | (+) HLW | X | |
| 16.00.024 | DOEM435.1-1AChg2 | Ch. 3-b.(1) | Management of Specific Wastes. The following provide for management of specific wastes as transuranic waste in accordance with the requirements in this Chapter:<br>(1) Mixed Transuranic Waste. Transuranic waste determined to contain both a hazardous component subject to the Resource Conservation and Recovery Act (RCRA), as amended, and a radioactive component subject to the Atomic Energy Act of 1954, as amended, shall be managed in accordance with the requirements of RCRA and DOE O 435.1, Radioactive Waste Management, and this Manual.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.00.025 | DOEM435.1-1AChg2 | Ch. 3-b.(2) | Management of Specific Wastes. The following provide for management of specific wastes as transuranic waste in accordance with the requirements in this Chapter:<br>(2) TSCA-Regulated Waste. Transuranic waste containing polychlorinated biphenyls, asbestos, or other such regulated toxic components shall be managed in accordance with requirements derived from the Toxic Substances Control Act, as amended, DOE O 435.1, Radioactive Waste Management, and this Manual.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.026 | DOEM435.1-1AChg2 | Ch. 3-d. | Radioactive Waste Management Basis. Transuranic waste facilities, operations, and activities shall have a radioactive waste management basis consisting of physical and administrative controls to ensure the protection of workers, the public, and the environment. The following specific waste management controls shall be part of the radioactive waste management basis:<br>(1) Generators. The waste certification program.<br>(2) Treatment Facilities. The waste acceptance requirements and the waste certification program.<br>(3) Storage Facilities. The waste acceptance requirements and the waste certification program.<br>(4) Disposal Facilities. The performance assessment, disposal authorization statement, waste acceptance requirements, and monitoring plan.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.00.027 | DOEM435.1-1AChg2 | Ch. 4-b. | Management of Specific Wastes. The following provide for management of specific wastes as low-level waste in accordance with the requirements in this Chapter:<br>(1) Mixed Low-Level Waste. Low-level waste determined to contain both source, special nuclear, or byproduct material subject to the Atomic Energy Act of 1954, as amended, and a hazardous component subject to the Resource Conservation and Recovery Act (RCRA), as amended, shall be managed in accordance with the requirements of RCRA and DOE O 435.1, Radioactive Waste Management, and this Manual.<br>(2) TSCA-Regulated Waste. Low-level waste containing polychlorinated biphenyls, asbestos, or other such regulated toxic components shall be managed in accordance with requirements derived from the Toxic Substances Control Act, as amended, DOE O 435.1, Radioactive Waste Management, and this Manual. (3) Accelerator-Produced Waste. Radioactive waste produced as a result of operations of DOE accelerators is low-level waste and shall be managed in accordance with DOE O 435.1, Radioactive Waste Management, and this Manual, and all applicable Federal or State requirements.<br>(4) 11e.(2) and Naturally Occurring Radioactive Material. Small quantities of 11e.(2) byproduct material and naturally occurring radioactive material may be managed as low-level waste provided they can be managed to meet the requirements for low-level waste disposal in Section IV.P of this Manual. | | | | | | (+) LLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.028 | DOEM435.1-1AChg2 | Ch. 4-d. | Radioactive Waste Management Basis. Low-level waste facilities, operations, and activities shall have a radioactive waste management basis consisting of physical and administrative controls to ensure the protection of workers, the public, and the environment. The following specific waste management controls shall be part of the radioactive waste management basis:<br>(1) Generators. The waste certification program.<br>(2) Treatment Facilities. The waste acceptance requirements and the waste certification program.<br>(3) Storage Facilities. The waste acceptance requirements and the waste certification program.<br>(4) Disposal Facilities. The performance assessment, composite analysis, disposal authorization statement, closure plan, waste acceptance requirements, and monitoring plan. | | | | | | (+) LLW | X | |
| 16.00.029 | DOEM435.1-1AChg2 | Ch. 4-q.(1) | Closure. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Disposal Facility Closure Plans. A preliminary closure plan shall be developed and submitted to Headquarters for review with the performance assessment and composite analysis. The closure plan shall be updated following issuance of the disposal authorization statement to incorporate conditions specified in the disposal authorization statement. Closure plans shall:<br>(a) Be updated as required during the operational life of the facility.<br>(b) Include a description of how the disposal facility will be closed to achieve long-term stability and minimize the need for active maintenance following closure and to ensure compliance with the requirements of DOE 5400.5, Radiation Protection of the Public and the Environment.<br>(c) Include the total expected inventory of wastes to be disposed of at the facility over the operational life of the facility. | | | | | | (+) SALT | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.030 | DOEM435.1-1AChg2 | Ch. 4-q.(2) | Closure. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Disposal Facility Closure. Closure of a disposal facility shall occur within a five-year period after it is filled to capacity, or after the facility is otherwise determined to be no longer needed.<br>(a) Prior to facility closure, the final inventory of the low-level waste disposed in the facility shall be prepared and incorporated in the performance assessment and composite analysis which shall be updated to support the closure of the facility.<br>(b) A final closure plan shall be prepared based on the final inventory of waste disposed in the facility, the plan implemented, and the updated performance assessment and composite analysis prepared in support of the facility closure.<br>(c) Institutional control measures shall be integrated into land use and stewardship plans and programs, and shall continue until the facility can be released pursuant to DOE 5400.5, Radiation Protection of the Public and the Environment.<br>(d) The location and use of the facility shall be filed with the local authorities responsible for land use and zoning. | | | | | | (+) SALT | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.00.031 | Public Law 108-375 | Sec. 3116 | (a) IN GENERAL. – Notwithstanding the provisions of the Nuclear Policy Act of 1982, the requirements of section 202 of the Energy Reorganization Act of 1974, and other laws that define classes of radioactive waste, with respect to material stored at a Department of Energy site at which activities are regulated by a covered State pursuant to approved closure plans or permits issued by the State, the term "high-level radioactive waste" does not include radioactive waste resulting from the reprocessing of spent nuclear fuel that the Secretary of Energy (in this section referred to as the "Secretary"), in consultation with the Nuclear Regulatory Commission (in this section referred to as the "Commission"), determines -<br>(1) does not require permanent isolation in a deep geologic repository for spent fuel or high-level radioactive waste;<br>(2) has had highly radioactive radionuclides removed to the maximum extent practical; and<br>(3)(A) does not exceed concentration limits for Class C low-level waste as set out in section 61.55 of title 10, Code of Federal Regulations, and will be disposed of -<br>(i) in compliance with the performance objectives set out in subpart C of part 61 of title 10, Code of Federal Regulations; and<br>(ii) pursuant to a State-approved closure plan or State-issued permit, authority for the approval or issuance of which is conferred on the State outside of this section; or<br>(B) exceeds concentration limits for Class C low-level waste as set out in section 61.55 of title 10, Code of Federal Regulations, but will be disposed of -<br>(i) in compliance with the performance objectives set out in subpart C of part 61 of title 10, Code of Federal Regulations;<br>(ii) pursuant to a State-approved closure plan or State-issued permit, authority for the approval or issuance of which is conferred on the State outside of this section; and<br>(iii) pursuant to plans developed by the Secretary in consultation with the Commission.<br>(c) INAPPLICABILITY TO CERTAIN MATERIALS. – Subsection (a) shall not apply to any material otherwise covered by that subsection that is transported from the covered State.<br>(d) COVERED STATE. – For the purpose of this section, the following States are covered States:<br>(1) The State of South Carolina.<br>(2) The State of Idaho.<br><br>Note: The above text has been excerpted from the Section 3116. Subsection (b) is not applicable to WSRC and therefore, not included. | | | | | | (+) HLW | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.01.024 | EM-WAPS | 1.1.1 | In the WQR, the Producer shall project the chemical composition, identify crystalline phases expected to be present, and project the amount of each crystalline phase, for each waste type. The method to obtain the required data shall be described by the Producer in the WCP. The data shall be provided in the WQR. Waste form compositions not available for reporting in the initial WQR shall be included in an addendum to the WQR. | | | | | | (+) VITR | | X |
| 16.01.025 | EM-WAPS | 1.1.2 | In the Production Records, the Producer shall report the oxide composition of the waste form. The reported composition shall include all elements, excluding oxygen, present in concentrations greater than 0.5 percent by weight of the glass, for each waste type. The Producer shall describe the method to be used for compliance in the WCP. An estimate of the error of the reported composition and the basis for the estimate shall be reported in the WQR. | | | | | | (+) VITR | | X |
| 16.01.026 | EM-WAPS | 1.2 | The Producer shall report the inventory of radionuclides (in Curies) that have half-lives longer than 10 years and that are, or will be, present in concentrations greater than 0.05 percent of the total radioactive inventory for each waste type, indexed to the years 2015 and 3115. | | | | | | (+) VITR | | X |
| 16.01.027 | EM-WAPS | 1.2.1 | The Producer shall provide in the WQR estimates of the total quantities of individual radionuclides to be shipped to the repository, for each waste type. The Producer shall also report the upper limit of these radionuclides for any canistered waste form, and an average calculated radionuclide inventory per canister for each waste type. The method to be used to obtain the required data shall be described by the Producer in the WCP. The data shall be provided in the WQR. Radionuclide inventory estimates not available for reporting in the initial WQR shall be included in an addendum to the WQR. | | | | | | (+) VITR | | X |
| 16.01.028 | EM-WAPS | 1.2.2 | The Producer shall provide in the Production Records estimates of the inventories of individual reportable radionuclides for each canister and for each waste type. The Producer shall also report the estimated error of these estimates in the WQR. | | | | | | (+) VITR | | X |
| 16.01.029 | DOEM435.1-1AChg2 | Ch. 2-l.(1) | Waste Characterization. High-level waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.<br>(1) Data Quality Objectives. The data quality objectives process, or a comparable process, shall be used for identifying characterization parameters and acceptable uncertainty in characterization data. | | | | | | (+) HLW<br>(+) VITR | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.01.030 | DOEM435.1-1AChg2 | Ch. 2-l.(2) | Waste Characterization. High-level waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.<br>(2) Minimum Waste Characterization. Characterization data shall, at a minimum, include the following information relevant to the management of the waste:<br>(a) Physical and chemical characteristics;<br>(b) Volume, including the waste and any solidification media;<br>(c) Radionuclides or source information sufficient to describe the approximate radionuclide content of the waste; and<br>(d) Any other information which may be needed to demonstrate compliance with the requirements of the DOE/EM-0093, Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.01.031 | DOEM435.1-1AChg2 | Ch. 2-l.(3) | Waste Characterization. High-level waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.<br>(3) Hazardous Characteristics. Waste characterization processes shall yield sufficient chemical and physical data to clearly identify any hazardous characteristics that may degrade the ability of structures, systems, and components to perform their radioactive waste management function. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.01.032 | DOEM435.1-1AChg2 | Ch. 2-m.(1) | Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving high-level waste for storage, pretreatment, treatment, and disposal are met.<br>(1) Certification Program. The waste certification program shall designate the officials who have the authority to certify and release waste for shipment; and specify what documentation is required for waste generation, characterization, shipment, and certification. The program shall provide requirements for auditability, retrievability, and storage of required documentation and specify the records retention period. | | | | | | (+) HLW<br>(+) VITR | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.01.033 | DOEM435.1-1AChg2 | Ch. 2-m.(2) | Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving high-level waste for storage, pretreatment, treatment, and disposal are met.<br>(2) Certification Before Transfer. High-level waste shall be certified as meeting the waste acceptance requirements before it is transferred to the facility receiving the waste. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.01.034 | DOEM435.1-1AChg2 | Ch. 2-m.(3) | Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving high-level waste for storage, pretreatment, treatment, and disposal are met.<br>(3) Maintaining Certification. High-level waste that has been certified as meeting the waste acceptance requirements for transfer to a storage, pretreatment, treatment, or disposal facility shall be managed in a manner that maintains its certification status. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.01.035 | DOEM435.1-1AChg2 | Ch. 3-i.(1) | Waste Characterization. Transuranic waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.<br>(1) Data Quality Objectives. The data quality objectives process, or a comparable process, shall be used for identifying characterization parameters and acceptable uncertainty in characterization data.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.01.036 | DOEM435.1-1AChg2 | Ch. 3-i.(2) | Waste Characterization. Transuranic waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.<br>(2) Minimum Waste Characterization. Characterization data shall, at a minimum, include the following information relevant to the management of the waste:<br>(a) Physical and chemical characteristics;<br>(b) Volume, including the waste and any stabilization or absorbent media;<br>(c) Weight of the container and contents;<br>(d) Identities, activities, and concentrations of major radionuclides;<br>(e) Characterization date;<br>(f) Generating source;<br>(g) Packaging date; and<br>(h) Any other information which may be needed to prepare and maintain the disposal facility performance assessment or demonstrate compliance with applicable performance objectives.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.01.037 | DOEM435.1-1AChg2 | Ch. 3-j.(1) | Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving transuranic waste for storage, treatment, or disposal are met.<br>(1) Certification Program. The waste certification program shall designate the officials who have the authority to certify and release waste for shipment; and specify what documentation is required for waste generation, characterization, shipment, and certification. The program shall provide requirements for auditability, retrievability, and storage of required documentation and specify the records retention period.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.01.038 | DOEM435.1-1AChg2 | Ch. 3-j.(2) | Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving transuranic waste for storage, treatment, or disposal are met.<br>(2) Certification Before Transfer. Transuranic waste shall be certified as meeting waste acceptance requirements before it is transferred to the facility receiving the waste.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.01.039 | DOEM435.1-1AChg2 | Ch. 3-k.(1) | Waste Transfer. A documented process shall be established and implemented for transferring responsibility for management of transuranic waste and for ensuring availability of relevant data. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Authorization. Transuranic waste shall not be transferred to a storage, treatment, or disposal facility until personnel responsible for the facility receiving the waste authorize the transfer.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.01.040 | DOEM435.1-1AChg2 | Ch. 4-i.(1) | Waste Characterization. Low-level waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.<br>(1) Data Quality Objectives. The data quality objectives process, or a comparable process, shall be used for identifying characterization parameters and acceptable uncertainty in characterization data. | | | | | | (+) LLW | X | |
| 16.01.041 | DOEM435.1-1AChg2 | Ch. 4-i.(2) | Waste Characterization. Low-level waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.<br>(2) Minimum Waste Characterization. Characterization data shall, at a minimum, include the following information relevant to the management of the waste:<br>(a) Physical and chemical characteristics;<br>(b) Volume, including the waste and any stabilization or absorbent media;<br>(c) Weight of the container and contents;<br>(d) Identities, activities, and concentrations of major radionuclides;<br>(e) Characterization date;<br>(f) Generating source; and<br>(g) Any other information which may be needed to prepare and maintain the disposal facility performance assessment, or demonstrate compliance with applicable performance objectives. | | | | | | (+) LLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.01.042 | DOEM435.1-1AChg2 | Ch. 4-j.(1) | Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving low-level waste for storage, treatment, and disposal are met.<br>(1) Certification Program. The waste certification program shall designate the officials who have the authority to certify and release waste for shipment; and specify what documentation is required for waste generation, characterization, shipment, and certification. The program shall provide requirements for auditability, retrievability, and storage of required documentation and specify the records retention period. | | | | | | (+) LLW | X | |
| 16.01.043 | DOEM435.1-1AChg2 | Ch. 4-j.(2) | Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving low-level waste for storage, treatment, and disposal are met.<br>(2) Certification Before Transfer. Low-level waste shall be certified as meeting waste acceptance requirements before it is transferred to the facility receiving the waste. | | | | | | (+) LLW | X | |
| 16.01.044 | DOEM435.1-1AChg2 | Ch. 4-j.(3) | Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving low-level waste for storage, treatment, and disposal are met.<br>(3) Maintaining Certification. Low-level waste that has been certified as meeting the waste acceptance requirements for transfer to a storage, treatment, or disposal facility shall be managed in a manner that maintains its certification status. | | | | | | (+) LLW | X | |
| 16.01.045 | DOEM435.1-1AChg2 | Ch. 4-k.(1) | Waste Transfer. A documented process shall be established and implemented for transferring responsibility for management of low-level waste and for ensuring availability of relevant data. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Authorization. Low-level waste shall not be transferred to a storage, treatment, or disposal facility until personnel responsible for the facility receiving the waste authorize the transfer. | | | | | | (+) LLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.01.046 | DOEM435.1-1AChg2 | Ch. 4-k.(2) | Waste Transfer. A documented process shall be established and implemented for transferring responsibility for management of low-level waste and for ensuring availability of relevant data. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Data. Waste characterization data, container information, and generation, storage, treatment, and transportation information for low-level waste shall be transferred with or be traceable to the waste. | | | | | | (+) LLW | X | |
| 16.02.003 | EM-WAPS | 1.5 | The Producer shall determine and report to DOE/RW the presence or absence of any hazardous waste listed in 40 CFR 261.31 through 40 CFR 261.33[5], in the waste or in any feed stream proposed for storage or disposal. Any RCRA-listed component in a waste shall require the Producer to petition EPA and receive exemption to delist the waste.<br><br>The Producer shall perform the appropriate tests and procedures, as described in 40 CFR 261.20 through 40 CFR 261.24 [6], using samples from production runs or prototypical specimens to determine if the waste that will be received by DOE/RW, for transportation and disposal, has hazardous characteristics. Any waste that is shown to have hazardous characteristics shall be treated to remove such characteristics.<br><br>The Producer shall report and certify in the WQR that the waste is not hazardous, including the absence of any listed components. The characteristic testing methods to be used shall be described in the WCP and the results documented in the WQR. Any modification to these methods needs prior approval from DOE/RW. | | | | | | (+) VITR | | X |
| 16.02.004 | EM-WAPS | 2.1 | The waste form canister, the canister label, and any secondary canister applied by the Producer shall be fabricated from austenitic stainless steel. Applicable ASTM [7] or other nationally recognized alloy specifications and the compositions of the canister materials, the canister label materials, any secondary canister material, and any filler material used in welding shall be included in the WCP. Documentation of compliance shall be included in the Production Records. | | | | | | (+) VITR | | X |
| 16.02.005 | EM-WAPS | 2.2 | The canister fabrication and closure methods shall be identified in the WCP. The outermost closure shall be leaktight to less than 1x10E-04 atm-cc/sec. helium. The method for demonstrating compliance shall be described by the Producer in the WCP. The WQR shall provide evidence that the canister fabrication and closure methods are capable of complying with the leaktightness criterion. Compliance during production shall be documented in the Production Records. | | | | | | (+) VITR | | X |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.02.006 | EM-WAPS | 2.3.1 | The Producer shall assign a unique alphanumeric identifier to label each outermost canister that is produced. This label shall appear on the canistered waste form and on all documentation pertinent to that particular canistered waste form. | | | | | | (+) VITR | | X |
| 16.02.007 | EM-WAPS | 3.1 | The Producer shall ensure that the canistered waste form does not contain detectable amounts of free liquids. The Producer shall describe the method of compliance in the WCP and provide documentation of the ability to comply, and of the detection limits, in the WQR. | | | | | | (+) VITR | | X |
| 16.02.008 | EM-WAPS | 3.10 | The Producer shall design a waste form to ensure that, under normal and accident conditions, a nuclear criticality accident is not possible unless at least two unlikely, independent, and concurrent or sequential changes have occurred in the conditions essential to nuclear criticality safety. The calculated effective multiplication factor, K eff, shall be sufficiently below unity to show at least a 5% margin after allowing for bias in the method of calculation and the uncertainty in the experiments used to validate the methods of calculation. The Producer shall describe the method of demonstrating compliance in the WCP and provide supporting documentation in the WQR. The WQR shall also include sufficient information on the nuclear characteristics, such as fissile density, of the canistered waste form to enable subcriticality to be confirmed under transportation, storage and disposal conditions. | | | | | | (+) VITR | | X |
| 16.02.009 | EM-WAPS | 3.2 | The Producer shall ensure that the canistered waste form does not contain detectable amounts of free gas other than air, the residuals of air, inert cover, and radiogenic gases. The internal gas pressure immediately after closure shall not exceed 150 kPa (22 psia) at 25 degree C. The Producer shall describe the method of compliance in the WCP and provide documentation of the ability to comply with this specification, and of the detection limits, in the WQR. The Producer shall also document in the WQR the quantities and compositions of any gases that might accumulate inside the canister from radiogenic decay in the event the canistered waste form exceeds 400 degree C. If a canistered waste form exceeds 400 degree C, it is nonconforming and shall be resolved in accordance with section 4.0. Data/information reporting in the WQR, during the qualification process, shall be limited to temperatures to 500 degree C. | | | | | | (+) VITR | | X |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.02.010 | EM-WAPS | 3.3 | The Producer shall ensure that the canistered waste form does not contain detectable amounts of explosive, pyrophoric, or combustible materials. The Producer shall describe the method of compliance in the WCP and provide documentation of the detection limits, and the ability to comply with this specification for the range of waste types, in the WQR. The Producer shall document in the WQR that the canistered waste forms remain nonexplosive, nonpyrophoric, and noncombustible in the event that the temperature exceeds 400 degree C. If a canistered waste form exceeds 400 degree C, it is nonconforming and shall be resolved in accordance with section 4.0. Data/Information reporting in the WQR, during the qualification process, shall be limited to temperature up to 500 degree C. | | | | | | (+) VITR | | X |
| 16.02.011 | EM-WAPS | 3.4 | The Producer shall ensure that after closure the canistered waste form does not contain detectable amounts of organic materials. The Producer shall describe the method for complying with this specification in the WCP and provide documentation of the ability to comply, and of the detection limits, in the WQR. | | | | | | (+) VITR | | X |
| 16.02.012 | EM-WAPS | 3.5 | The Producer shall ensure that the contents of the canistered waste form do not cause internal corrosion of the canister which could adversely affect normal handling during storage, or during an abnormal occurrence such as a canister drop accident. The Producer shall describe the method of demonstrating compliance in the WCP. Interactions between the canister and its contents, including any reaction products generated within the canistered waste form, in the event that the temperature exceeds 400 degree C shall be discussed in the WQR. If a canistered waste form exceeds 400 degree C, it is nonconforming and shall be resolved in accordance with Section 4.0. Data/information in the WQR, during the qualification process, shall be limited to temperatures up to 500 degree C. | | | | | | (+) VITR | | X |
| 16.02.013 | EM-WAPS | 3.6 | The Producer shall fill the canister to a height equivalent to at least 80 % of the volume of the empty canister. The Producer shall report this height in the Production Records and describe the method of compliance in the WCP. Documentation supporting the selected method of compliance shall be provided in the WQR. | | | | | | (+) VITR | | X |
| 16.02.014 | EM-WAPS | 3.8 | The heat generation rate for each canistered waste form shall not exceed 1500 watts per canister at the year of shipment. | | | | | | (+) VITR | | X |
| 16.02.015 | EM-WAPS | 3.8.1 | The Producer shall document in the WQR the expected thermal output of the canistered waste forms and range of the expected variation for each waste type, indexed to the year 2015. The method to be used for demonstrating compliance shall be described by the Producer in the WCP. Projections for composition not available for reporting in the initial WQR shall be included in an addendum to the WQR. | | | | | | (+) VITR | | X |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.02.016 | EM-WAPS | 3.8.2 | The Producer shall report in the Storage and shipping Records the estimated heat generation rate for each canistered waste form. The Producer shall describe the method for compliance in the WCP. | | | | | | (+) VITR | | X |
| 16.02.017 | EM-WAPS | 3.9 | The canistered waste form shall not exceed a maximum surface (on contact) gamma dose rate of 1.0E +05 rem/hr and a maximum neutron dose rate of 10 rem/hr, at the time of shipment. | | | | | | (+) VITR | | X |
| 16.02.018 | EM-WAPS | 3.9.1 | The Producer shall report in the WQR the expected values and the range of expected variation for both gamma and neutron dose rates indexed to year 2015. The Producer shall describe the method for demonstrating compliance in the WCP. | | | | | | (+) VITR | | X |
| 16.02.019 | EM-WAPS | 3.9.2 | The Producer shall provide in the Storage and Shipping Records either the calculated or measured values for both gamma and neutron dose rates at the time of shipment for each canistered waste form. The Producer shall describe the method of compliance in the WCP. | | | | | | (+) VITR | | X |
| 16.02.020 | EM-WAPS | 4 | The Producer shall establish, maintain, and execute a quality assurance (QA) program that applies to the testing and analysis activities that demonstrate compliance with these EM-WAPS during waste form qualification, production, acceptance, handling, storage, and preparation for shipment. The Producer shall impose a QA program consistent with the QA requirements that govern HLW as identified in the RW Quality Assurance Requirements Description (QARD) [8] and the Civilian Radioactive Waste Management System Waste Acceptance Systems Requirements Document (WA-SRD) [1].<br><br>The Producer shall submit an action plan, signed by authorized personnel, through EM to DOE/RW for correction or disposition of nonconforming waste forms for verification and documented approval from RW. The action plan must identify and describe the nonconformance and any action to change or correct the existing nonconformance. | | | | | | (+) VITR | | X |
| 16.02.021 | EM-WAPS | 5.11 | The Producer shall provide written documentation and certification, in accordance with the requirements of 10 CFR 71.87, concerning the cask conditions and contents prior to transfer of the canistered waste forms. | | | | | | (+) VITR | | X |
| 16.02.022 | EM-WAPS | 5.12 | The Producer shall provide written documentation and certification that the transportation cask subsystem has been packaged to meet DOE, Department of Transportation, and Nuclear Regulatory Commission requirements and to transfer care, custody, and control of the shipment. | | | | | | (+) VITR | | X |
| 16.02.023 | EM-WAPS | 5.13 | The Producer shall provide written documentation and certification of the activities in terms of the appropriate SI units (the International System of Units, e.g., Becquerel, etc.) contained in each shipping package and the name of each radionuclide in each shipping package in accordance with 49 CFR 172.203(d)(1) and (4). | | | | | | (+) VITR | | X |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.02.024 | EM-WAPS | 1.6 | The Producer shall report the following in the production records:<br><br>(1) The total and fissile uranium and plutonium content of each canister in grams.<br><br>(2) The concentration of plutonium in grams per cubic meter for each canister.<br><br>(3) The ratio by weight of the total element of the following isotopes: U-233, U-234, U-235, U-236, U-238, Pu-238, Pu-239, Pu-240, Pu-241, and Pu-242 | | | | | | (+) VITR | | X |
| 16.02.025 | EM-WAPS | 2.3.2 | Each canister shall be labeled in two locations: one visible from the top and one from the side of the canister. The identification code shall be printed in a type size of at least 92 points using a sans serif type face. A proposed layout shall be provided in the WCP. Labels shall be applied to the exterior of the outermost canister and shall not cause the dimensional limits (Specification 3.11) to be exceeded.<br><br>The label shall be designed to be legible after filling and storage at the Producer's facility and shipment to the repository. The label shall be an integral part of the canister (e.g. embossed) and shall not impair the integrity of the canister. | | | | | | (+) VITR | | X |
| 16.02.026 | DOEM435.1-1AChg2 | Ch. 2-o. | Packaging and Transportation. The following requirement is in addition to those in Chapter I of this Manual.<br>(1) Canistered Waste Form. Immobilized high-level waste shall meet the requirements of the DOE/EM-0093, Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste. | | | | | | (+) VITR | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.02.027 | DOEM435.1-1AChg2 | Ch. 3-l .(1) | Packaging and Transportation. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Packaging.<br>(a)Transuranic waste shall be packaged in a manner that provides containment and protection for the duration of the anticipated storage period and until disposal is achieved or until the waste is removed from the container.<br>(b)Vents or other mechanisms to prevent pressurization of containers or generation of flammable or explosive concentrations of gases shall be installed on containers of newly-generated waste at the time the waste is packaged. Containers of currently stored waste shall meet this requirement as soon as practical unless analyses demonstrate that the waste can otherwise be managed safely.<br>(c) When transuranic waste is packaged, defense waste shall be packaged separately from non-defense waste, if feasible.<br>(d) Containers of transuranic waste shall be marked such that their contents can be identified.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.02.028 | DOEM435.1-1AChg2 | Ch. 4-l.(1) | Packaging and Transportation. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Packaging. If containers are used:<br>(a) Low-level waste shall be packaged in a manner that provides containment and protection for the duration of the anticipated storage period and until disposal is achieved or until the waste has been removed from the container.<br>(b) When waste is packaged, vents or other measures shall be provided if the potential exists for pressurizing or generating flammable or explosive concentrations of gases within the waste container.<br>(c) Containers of low-level waste shall be marked such that their contents can be identified. | | | | | | (+) LLW | X | |
| 16.03.009 | EM-WAPS | 2.4 | The Producer must describe in the WCP that the strategy for meeting these specifications will meet the requirements of the WA-SRD. | | | | | | (+) VITR | | X |
| 16.03.010 | EM-WAPS | 2.4.1 | The overall length of the unfilled canister, after accounting for closure method, shall be 3.00 m (+0.005m, -0.020m), including the neck and lifting flange. The measured length of the unfilled canister shall be reported in the Production Records. | | | | | | (+) VITR | | X |
| 16.03.011 | EM-WAPS | 2.4.2 | The outer diameter of the unfilled canister shall be 61.0 cm (+1.5 cm, -1.0 cm). The measured diameter of the unfilled canister shall be reported in the Production Records. | | | | | | (+) VITR | | X |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.03.012 | EM-WAPS | 3.11 | The configuration, dimensions, and weight of the canistered waste form shall not exceed the maximum size and weight that can be received, handled, and placed in the repository. These parameters shall be controlled as indicated below and shall be documented at the time of shipment. The Producer shall describe the method of compliance in the WCP and the basis for compliance in the WQR. | | | | | | (+) VITR | | X |
| 16.03.013 | EM-WAPS | 3.11.1 | The weight of the canistered waste form shall not exceed 2,500 kg. The measured weight and estimated error shall be reported in the Storage and Shipping Records. | | | | | | (+) VITR | | X |
| 16.03.014 | EM-WAPS | 3.11.2 | The dimensions of the canistered waste form shall be such that, at the time of delivery, the canistered waste form will stand upright without support on a flat horizontal surface and will fit completely without forcing when lowered vertically into a right-circular, cylindrical cavity, 64.0 cm in diameter and 3.01 m in length.<br><br>The Producer shall estimate in the WQR the minimum canister wall thickness of the filled, decontaminated canister. The Producer shall also provide in the WQR an estimate of the amount of canister material that is removed during surface decontamination and basis for estimate. The Producer shall document the unfilled canister wall thickness in the Production Records. | | | | | | (+) VITR | | X |
| 16.03.015 | EM-WAPS | 3.12 | The canistered waste form shall be capable of withstanding a 7 meter drop onto a flat, essentially unyielding surface without breaching or dispersing radionuclides (leak tight < 1x10E -04 atm-cc/sec helium). The Producer shall describe the method of compliance in the WCP and provide test results and any supporting analyses in the WQR. The test results shall include information on measured canister leak rates and canister deformation after the drop. | | | | | | (+) VITR | | X |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.03.016 | EM-WAPS | 3.13 | The canistered waste form shall have a concentric neck and lifting flange. The lifting flange geometry and maximum loading capacity shall be described in the WCP.<br><br>The Producer shall design a grapple, suitable for use in loading and unloading a transportation cask with a standard HLW canister at the repository, which satisfies the following requirements:<br><br>(a) The grapple shall be capable of being remotely engaged and disengaged from the flange.<br><br>(b) The grapple, when attached to the suitable hoist, and when engaged with the flange, shall be capable of raising and lowering a (standard) canistered waste form in a vertical direction.<br><br>(c) The grapple shall be capable of engaging and disengaging the canister flange within a right-circle cylindrical cavity with a maximum diameter of 62.5 cm.<br><br>(d) The grapple shall be designed to prevent an inadvertent release of a suspended (standard) canistered waste form when the grapple is engaged with flange.<br><br>The Producer shall describe the grapple in the WCP and provide the designs in the WQR. | | | | | | (+) VITR | | X |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.03.017 | EM-WAPS | 3.7 | The level of non-fixed (removable) radioactive contamination on the exterior surface of each canistered waste form may be determined by wiping an area of 300cm2 of the surface concerned with an absorbent material, using moderate pressure, and measuring the activity on the wiping material. At the time of shipment, the nonfixed radioactive contamination on the wiping material shall not exceed 22,000 dpm / 100 cm2 of canister surface wiped for beta and gamma emitting radionuclides and 2,200 dpm / 100 cm2 of canister surface wiped for alpha emitting radionuclides. Sufficient measurements shall be taken in the most appropriate locations to yield a representative assessment of non-fixed contamination levels<br><br>In addition, the Producer shall visually inspect each canistered waste forms and remove visible waste glass on the exterior before shipment.<br><br>The Producer shall describe the method of compliance in the WCP. The Producer shall provide the non-fixed radioactive contamination level results in the Storage and Shipping Records. | | | | | | (+) VITR | | X |
| 16.03.018 | EM-WAPS | 5.3 | The Producer shall obtain delivery and procedure confirmation from DOE/RW prior to delivery of other than standard canistered waste. DOE/RW will advise the Producer within 60 days after receipt of confirmation request as to the technical feasibility of accepting nonstandard HLW on the currently agreed to schedule and any schedule adjustment for such services. | | | | | | (+) VITR | | X |
| 16.03.019 | EM-WAPS | 5.5 | The Producer shall not transfer title of improperly described canistered waste form unless DOE/RW agrees in writing to accept title. If the canistered waste form is determined by WA to have been improperly described prior to acceptance by DOE/RW, DOE/RW reserves the right to refuse acceptance. | | | | | | (+) VITR | | X |
| 16.03.020 | EM-WAPS | 5.6 | If WA notifies the Producer in writing that, subsequent to acceptance WA finds a canistered waste form which has been improperly described, the Producer shall provide WA with a proper written description within 30 days of such notification. | | | | | | (+) VITR | | X |
| 16.03.021 | EM-WAPS | 5.7 | The Producer shall provide a designated facility at the site, for HLW title transfer and acceptance of the canistered waste forms to DOE-RW.<br><br>The Producer shall provide the HLW loaded and prepared for shipment.<br><br>The Producer shall have no claim against DOE/RW or the Government of such HLW to which DOE/RW has taken title. | | | | | | (+) VITR | | X |
| 16.03.022 | EM-WAPS | 3.14 | The concentration of plutonium in each HLW standard canister shall be less than 2,500 grams/cubic meter. | | | | | | (+) VITR | | X |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.03.023 | EM-WAPS | 5.4 | The Producer shall allow a designated RW representative access to the Producer's site to observe preparatory activities prior to canistered waste form shipment and to assist in RW verification of the HLW description prior to loading the transportation casks. | | | | | | (+) VITR | | X |
| 16.03.024 | DOEM435.1-1AChg2 | Ch. 3-l .(2) | Packaging and Transportation. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Transportation. To the extent practical, the volume of waste and number of transuranic waste shipments shall be minimized.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.03.025 | DOEM435.1-1AChg2 | Ch. 4-l.(2) | Packaging and Transportation. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Transportation. To the extent practical, the volume of waste and number of low-level waste shipments shall be minimized. | | | | | | (+) LLW | X | |
| 16.04.001 | ADN-89-05-FF | Section IX.A.2 | The permit application submitted under Section A.1 above shall include a description of past leaks and demonstrations, subject to the review and approval of SCDHEC, that each high-level waste tank system is not leaking. The permit application submitted by DOE under A.1 shall include proposed methods and schedule for ongoing demonstrations that these tanks system(s) are not leaking. Such methods and schedules shall be complied with until such time as the waste tank system(s) is removed from service under Subsection E herein. The demonstrations submitted under Subsection A.1 above shall be in the form of a written assessment reviewed and certified by registered professional engineer that attests to the tank system's structural integrity or, if applicable, the waste tank system's secondary containment. | | | | | | (+) ADN | | X |
| 16.04.002 | ADN-89-05-FF | Section IX.B.2(a) | Except as provided in subparagraph (c) below, for each F and H Area high-level waste tank system or component installed after assessment, certified by a registered professional engineer, that the waste tank system or component has sufficient structural integrity and is acceptable for the storing or treating of hazardous and/or radioactive substances. | | | | | | (+) ADN | | X |
| 16.04.003 | ADN-89-05-FF | Section IX.B.2(b) | For new or replacement tanks, the assessment shall be submitted by DOE and approved by SCDHEC before installation and entry into service of the tank For new or replacement waste tank system components, the assessments shall be submitted annually. These assessments shall be submitted each year within 60 days of the anniversary date of the execution of this Agreement for all components installed during the previous year. | | | | | | (+) ADN | | X |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.04.004 | ADN-89-05-FF | Section IX.E.1 | The DOE shall submit to EPA and SCDHEC for review and approval of plan(s) and schedule(s) for the removal from service of waste tank systems(s)/component(s) that do not meet the secondary containment standards of Subsection C herein, or that leak or have leaked. This plan(s) and schedule(s) shall be submitted and/or amended by DOE as follows: (a) within ninety (90) days of the effective date of this Agreement for tank system(s) or secondary containment system(s) known to leak or have leaked prior to the effective date of this Agreement that will not be repaired in accordance with Subsection D herein; (b) within ninety (90) days of discovery of leaks from tank system(s) or secondary containment system(s) not known before the effective date of this Agreement that will not be required in accordance with Subsection D herein; and (c) within ninety (90) days of receipt of written notification from SCDHEC of the determination that any waste tank system(s)/component(s) do not meet the secondary containment standards of Subsection C herein. After approval of the schedule by EPA and SCDHEC, DOE shall remove the tanks from service according to the approved plan(s) and schedule(s). In lieu of the requirement of E.1(c) above, DOE may submit a plan that meets the requirements of Subsection C herein to provide secondary containment for substandard tank system(s)/component(s). Subject to the applicable requirements of Appendix B, the DOE may continue to use tanks systems/components scheduled to be removed from service for receipt and storage of waste according to the approved schedule and prior to approval of the schedule, unless SCDHEC notifies DOE in writing that specific tanks are unsuitable for continued service. Waste tanks deemed unsuitable by SCDHEC shall not receive additional waste prior to schedule approval for such receipt and only if waste receipt is approved as a part of the plan associated with such schedule. | | | | | | (+) ADN | | X |
| 16.04.005 | ADN-89-05-FF | Section IX.E.3 | The DOE will submit to EPA and SCDHEC an annual report on the status of tanks being removed from service under Subsection E.1 herein. This report will include any requests, subject to review and approval, for changes to the existing plan(s) and schedule(s) approved under Subsection E.1. This annual report shall be submitted in conjunction with the assessments submitted under Subsection B.3 herein. | | | | | | (+) ADN | | X |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.04.013 | EM-WAPS | 1.4.1 | The Procedure shall provide the following data for each projected waste type:<br>(a) The glass transition temperature; and<br>(b) A time-temperature-transformation (TTT) diagram that identifies the duration of exposure at any temperature that causes significant changes in either the phase structure or the phase composition.<br><br>The methods to be used to obtain the required data shall be described in the WCP. The data shall be provided in the WQR. | | | | | | (+) VITR | | X |
| 16.04.014 | EM-WAPS | 1.4.2 | At the time of shipment, the Producer shall certify that after the initial cool-down, the waste form temperature has not exceeded 400 degree C. The Producer shall describe the method of compliance in the WCP. | | | | | | (+) VITR | | X |
| 16.04.015 | EM-WAPS | 5.1.1 | The following waste acceptance documentation shall be developed by the waste form Producer, maintained as lifetime QA records, and provided to RW:<br><br>Waste Form Compliance Plan (WCP):<br>The WCP shall describe the Producer's plan for demonstrating compliance with requirements of the EM-WAPS, including a description of tests, analysis and process controls to be performed by the Producer and records that will be provided as evidence. | | | | | | (+) VITR | | X |
| 16.04.019 | EM-WAPS | 5.1.2 | The following waste acceptance documentation shall be developed by the waste form Producer, maintained as lifetime QA records, and provided to RW:<br><br>Waste Form Qualification Report (WQR):<br>The WQR shall compile the results from waste form testing and analysis to demonstrate the ability of the Producer to comply with the requirements of the EM-WAPS. | | | | | | (+) VITR | | X |
| 16.04.020 | EM-WAPS | 5.1.3 | The following waste acceptance documentation shall be developed by the waste form Producer, maintained as lifetime QA records, and provided to RW:<br><br>Production Records (PR):<br>The PR shall describe each canistered waste form through production. Appendix E, Contents for HLW Production Records, lists the PR table of contents for DWPF and WVDP which has been accepted by EM-32 and the Office of Civilian Radioactive Waste Management. The PR identifies the EM-WAPS specifications. (Note: The WVDP PR contains additional production data as required by their WQR.) | | | | | | (+) VITR | | X |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.04.021 | EM-WAPS | 5.1.4 | The following waste acceptance documentation shall be developed by the waste form Producer, maintained as lifetime QA records, and provided to RW:<br><br>Storage and Shipping Records:<br>The Storage and Shipping Records shall describe the physical attributes of each canistered waste form and identify any abnormal events, such as thermal excursions, which have occurred during storage.<br><br>Specifications 5.2 - 5.14 are requirements from WA-SRD which are imposed on either the Producer, or DOE, i.e. EM and/or RW, as designated. These specifications are included in the EM-WAPS for completeness. Documentation addressing specifications 5.2 - 5.14 will not appear in either WCP or the WQR. The format for complying with specifications 5.2 -5.14 is encompassed in the specifications themselves. | | | | | | (+) VITR | | X |
| 16.04.022 | EM-WAPS | 5.2 | The Producer shall complete and distribute a Nuclear Material Transaction Report (DOE/NRC Form-741) to DOE/RW whenever HLW is transferred or received into the CRWMS. | | | | | | (+) VITR | | X |
| 16.04.023 | EM-WAPS | 5.14 | The Producer shall provide and pay the costs of interim storage, until HLW is accepted by WA. | | | | | | (+) VITR | | X |
| 16.04.024 | DOEM435.1-1AChg2 | Ch. 2-e. | Site-Wide Radioactive Waste Management Program. In addition to the items in Chapter I of this Manual, documentation of the Site-Wide Radioactive Waste Management Program shall include a description of the High-Level Waste Systems Engineering Management Program to support decision-making related to nuclear safety, including high-level waste requirements analysis, functional analysis and allocation, identification of alternatives, and alternative selection and system control. | | | | | | (+) HLW | X | |
| 16.04.025 | DOEM435.1-1AChg2 | Ch. 2-k.(1) | Waste Generation Planning. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Life-Cycle Planning. Prior to waste generation, planning shall be performed to address the entire life cycle for all high-level waste streams. | | | | | | (+) HLW | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.04.026 | DOEM435.1-1AChg2 | Ch. 2-k.(2) | Waste Generation Planning. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Waste With No Identified Path to Disposal. High-level waste streams with no identified path to disposal shall be generated only in accordance with approved conditions which, at a minimum, shall address:<br>(a) Programmatic need to generate the waste;<br>(b) Characteristics and issues preventing the disposal of the waste;<br>(c) Safe storage of the waste until disposal can be achieved; and<br>(d) Activities and plans for achieving final disposal of the waste (compliance with DOE/EM-0093, Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms). | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.04.027 | DOEM435.1-1AChg2 | Ch. 3-h. | Waste Generation Planning. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Life-Cycle Planning. Prior to waste generation, planning shall be performed to address the entire life cycle for all transuranic waste streams.<br>(2) Waste With No Identified Path to Disposal. Transuranic waste streams with no identified path to disposal shall be generated only in accordance with approved conditions which, at a minimum, shall address:<br>(a) Programmatic need to generate the waste;<br>(b) Characteristics and issues preventing the disposal of the waste;<br>(c) Safe storage of the waste until disposal can be achieved; and<br>(d) Activities and plans for achieving final disposal of the waste.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.04.028 | DOEM435.1-1AChg2 | Ch. 4-h.(1) | Waste Generation Planning. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Life-Cycle Planning. Prior to waste generation, planning shall be performed to address the entire life cycle for all low-level waste streams. | | | | | | (+) LLW | X | |
| 16.04.029 | DOEM435.1-1AChg2 | Ch. 4-h.(2) | Waste Generation Planning. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Waste With No Identified Path to Disposal. Low-level waste streams with no identified path to disposal shall be generated only in accordance with approved conditions which, at a minimum, shall address:<br>(a) Programmatic need to generate the waste;<br>(b) Characteristics and issues preventing the disposal of the waste;<br>(c) Safe storage of the waste until disposal can be achieved; and<br>(d) Activities and plans for achieving final disposal of the waste. | | | | | | (+) LLW | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.05.001 | ADN-89-05-FF | Section IX.B.1 | For each F- and H- Area High-level waste tank system(s) installed or modified after the approval of the wastewater permit application for the F- and H-Area High-level waste Tank System(s), the DOE shall prepare and submit for SCDHEC approval, a wastewater construction permit application or application for permit modification in accordance with applicable SCDHEC regulations. Replacement of individual components with identical items meeting the secondary containment standards of Appendix B, subsection B (i.e., items that match the description in the permit and that have been previously addressed in a plan under Subsection A.1(b) or localized repair of small sections of pipe shall not require permit modification. Replacement of components that do not meet the secondary containment standards may require permit modification. | | | | | | (+) ADN | | X |
| 16.06.008 | EM-WAPS | 1.3 | The Producer shall demonstrate control of waste form production by comparing, either directly or indirectly, production samples to the Environmental Assessment (EA) benchmark glass [2]. The Producer shall describe the method for demonstrating compliance in the WCP and shall provide verification in Production Records. The Producer shall demonstrate the ability to comply with specifications in the WQR. | | | | | | (+) VITR | | X |
| 16.06.009 | EM-WAPS | 1.3.1 | The consistency of the waste form shall be demonstrated using the Product Consistency Test (PCT) [3]. For acceptance, the mean concentration of lithium, sodium and boron in the leachate, after normalizing for the concentration in the glass, shall each be less than those of the benchmark glass described in the Environmental Assessment for selection of the DWPF waste form [4]. The measured or projected mean PCT results for lithium, sodium and boron shall be provided in Production Records. The Producer shall define the statistical significance of the reported data in the WQR. One acceptable method of demonstrating that the acceptance criterion is met, would be to ensure that the mean PCT results for each waste type are at least two standard deviations below the mean PCT results of the EA glass. | | | | | | (+) VITR | | X |
| 16.06.010 | EM-WAPS | 1.3.2 | The capability of the waste form to meet this specification shall be derived from production glass samples and/or process control information.<br><br>Production Records shall contain data derived from production samples, or process control information used for verification, separately or in combination. When using process control information to project PCT results, the Producer shall demonstrate in the WQR that the method used will provide information equivalent to the testing of samples of actual production glass. | | | | | | (+) VITR | | X |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.06.011 | DOEM435.1-1AChg2 | Ch. 2-j.(1) | Waste Acceptance. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Technical and Administrative. Waste acceptance requirements for all high-level waste storage, pretreatment, or treatment facilities, operations, and activities shall specify, at a minimum, the following:<br>(a) Allowable activities and/or concentrations of specific radionuclides;<br>(b) Acceptable waste form that ensures the chemical and physical stability of the waste under conditions that might be encountered during transfer, storage, pretreatment, or treatment;<br>(c) The basis, procedures, and levels of authority required for granting exceptions to the waste acceptance requirements, which shall be contained in each facility's waste acceptance documentation. Each exception request shall be documented, including its disposition as approved or not approved; and<br>(d) Pretreatment, treatment, storage, packaging, and other operations shall be designed and implemented in a manner that will ultimately comply with DOE/EM-0093, Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.06.012 | DOEM435.1-1AChg2 | Ch. 2-j.(2) | Waste Acceptance. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Evaluation and Acceptance. The receiving facility shall evaluate waste for acceptance, including confirmation that the technical and administrative requirements have been met. A process for the disposition of non-conforming wastes shall be established. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.06.013 | DOEM435.1-1AChg2 | Ch. 2-q.(1) | Storage. The following requirements are in addition to those in Chapter I of this Manual and also apply to facilities intended for management of high-level waste awaiting pretreatment, treatment or disposal, unless stated otherwise.<br>(1) Operation of Confinement Systems.<br>(a) Confinement systems shall be operated and maintained so as to preserve the design basis.<br>(b) Secondary confinement systems, where provided, shall be operated to prevent any migration of wastes or accumulated liquid out of the waste confinement systems. | | | | | | (+) HLW<br>(+) VITR | X | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.06.014 | DOEM435.1-1AChg2 | Ch. 2-q.(2) | Storage. The following requirements are in addition to those in Chapter I of this Manual and also apply to facilities intended for management of high-level waste awaiting pretreatment, treatment or disposal, unless stated otherwise.<br>(2) Structural Integrity Program.<br>(a) Leak-Tight Tanks In-Service. A structural integrity program shall be developed for each high-level waste storage tank site to verify the structural integrity and service life of each tank to meet operational requirements for storage capacity. The program shall be capable of: 1. Verifying the current leak-tightness and structural strength of each tank in service;<br>2. Identifying corrosion, fatigue, and other critical degradation modes;<br>3. Adjusting the chemistry of tank waste, calibrating cathodic protection systems, wherever employed, and implementing other necessary corrosion protection measures;<br>4. Providing credible projections as to when structural integrity of each tank can no longer be assured; and<br>5. Identifying the additional controls necessary to maintain an acceptable operating envelope.<br>(b) In-Service Tanks that Have Leaked or Are Suspect. For each high-level waste storage tank in-service that is known to have leaked, or is suspect, a modified structural integrity program shall be developed and implemented to identify the safe operational envelope. The modified program shall be capable of:<br>1. Verifying the structural strength of each tank in-service which has leaked or is suspect;<br>2. Identifying corrosion, fatigue and other critical degradation modes;<br>3. Adjusting the chemistry of tank waste, calibrating cathodic protection systems, wherever employed, and implementing other necessary corrosion protection measures;<br>4. Determining which of the tanks that have leaked or are suspect may remain in service by identifying an acceptable safe operating envelope;<br>5. Providing credible projections as to when the acceptable safe operational envelope can no longer be assured; and<br>6. Identifying the additional controls necessary to maintain the acceptable safe operational envelope.<br>When physical activities, as part of a structural integrity program, pose additional vulnerabilities, alternative measures shall be implemented to provide an acceptable storage operational envelope.<br>(c) Other Storage Components. The structural integrity of other storage components shall be verified to assure leak tightness and structural strength. | | | | | | (+) HLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.06.015 | DOEM435.1-1AChg2 | Ch. 2-q.(3) | Storage. The following requirements are in addition to those in Chapter I of this Manual and also apply to facilities intended for management of high-level waste awaiting pretreatment, treatment or disposal, unless stated otherwise.<br>(3) Canistered Waste Form Storage. Canisters of immobilized high-level waste awaiting shipment to a repository shall be:<br>(a) Stored in a suitable facility;<br>(b) Segregated and clearly identified to avoid commingling with low-level, mixed low-level, or transuranic wastes; and<br>(c) Monitored to ensure that storage conditions are consistent with DOE/EM 0093, Waste Acceptance Product Specifications for Vitrified High-level Waste Forms, or DOE/RW-0351, Waste Acceptance System Requirements Document, for non-vitrified immobilized high-level waste. Facilities and operating procedures for storage of vitrified high-level waste shall maintain the integrity of the canistered waste form. | | | | | | (+) VITR | X | |
| 16.06.016 | DOEM435.1-1AChg2 | Ch. 3-g.(1) | Waste Acceptance. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Technical and Administrative. Waste acceptance requirements for all transuranic waste storage, treatment, or disposal facilities, operations, and activities shall specify, at a minimum, the following:<br>(a) Allowable activities and/or concentrations of specific radionuclides;<br>(b) Acceptable waste form and/or container requirements that ensure the chemical and physical stability of waste under conditions that might be encountered during transportation, storage, treatment, or disposal;<br>(c) Restrictions or prohibitions on waste, materials, or containers that may adversely affect waste handlers or compromise facility or waste container performance;<br>(d) Requirement to identify transuranic waste as defense or non-defense, and limitations on acceptance; and<br>(e) The basis, procedures, and levels of authority required for granting exceptions to the waste acceptance requirements, which shall be contained in each facility's waste acceptance documentation. Each exception request shall be documented, including its disposition as approved or not approved.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.06.017 | DOEM435.1-1AChg2 | Ch. 3-g.(2) | Waste Acceptance. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Evaluation and Acceptance. The receiving facility shall evaluate waste for acceptance, including confirmation that technical and administrative requirements have been met. A process for the disposition of non-conforming wastes shall be established.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.06.018 | DOEM435.1-1AChg2 | Ch. 3-j.(3) | Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving transuranic waste for storage, treatment, or disposal are met.<br>(3) Maintaining Certification. Transuranic waste that has been certified as meeting the waste acceptance requirements for transfer to a storage, treatment, or disposal facility shall be managed in a manner that maintains its certification status.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.06.019 | DOEM435.1-1AChg2 | Ch. 3-k.(2) | Waste Transfer. A documented process shall be established and implemented for transferring responsibility for management of transuranic waste and for ensuring availability of relevant data. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Data. Waste characterization data, container information, and generation, storage, treatment, and transportation information for transuranic waste shall be transferred with or be traceable to the waste.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.06.020 | DOEM435.1-1AChg2 | Ch. 3-n.(1) | Storage. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Storage Prohibitions. Transuranic waste in storage shall not be readily capable of detonation, explosive decomposition, reaction at anticipated pressures and temperatures, or explosive reaction with water. Prior to storage, pyrophoric materials shall be treated, prepared, and packaged to be nonflammable.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.06.021 | DOEM435.1-1AChg2 | Ch. 3-n.(2) | Storage. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Storage Integrity. Transuranic waste shall be stored in a location and manner that protects the integrity of waste for the expected time of storage and minimizes worker exposure.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.06.022 | DOEM435.1-1AChg2 | Ch. 3-n.(3) | Storage. The following requirements are in addition to those in Chapter I of this Manual.<br>(3) Container Inspection. A process shall be developed and implemented for inspecting and maintaining containers of transuranic waste to ensure container integrity is not compromised.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.06.023 | DOEM435.1-1AChg2 | Ch. 3-n.(4) | Storage. The following requirements are in addition to those in Chapter I of this Manual.<br>(4) Retrievable Earthen-Covered Storage. Plans for the removal of transuranic waste from retrievable earthen-covered storage facilities shall be established and maintained. Prior to commencing waste retrieval activities, each waste storage site shall be evaluated to determine relevant information on types, quantities, and location of radioactive and hazardous chemicals as necessary to protect workers during the retrieval process.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.06.024 | DOEM435.1-1AChg2 | Ch. 4-g.(1) | Waste Acceptance. The following requirements are in addition to those in Chapter I<br>of this Manual.<br>(1) Technical and Administrative. Waste acceptance requirements for all low-level waste storage, treatment, or disposal facilities, operations, and activities shall specify, at a minimum, the following:<br>(a) Allowable activities and/or concentrations of specific radionuclides.<br>(b) Acceptable waste form and/or container requirements that ensure the chemical and physical stability of waste under conditions that might be encountered during transportation, storage, treatment, or disposal.<br>(c) Restrictions or prohibitions on waste, materials, or containers that may adversely affect waste handlers or compromise facility or waste container performance.<br>(d) The following are additional waste acceptance requirements that shall be specified in low-level waste disposal facility waste acceptance requirements:<br>1. Low-level waste must contribute to and not detract from achieving long-term stability of the facility, minimizing the need for long-term active maintenance, minimizing subsidence, and minimizing contact of water with waste. Void spaces within the waste and, if containers are used, between the waste and its container shall be reduced to the extent practical.<br>2. Liquid low-level waste or low-level waste containing free liquid must be converted into a form that contains as little freestanding liquid as is reasonably achievable, but in no case shall the liquid exceed 1 percent of the waste volume where the low-level waste is in a disposal container, or 0.5 percent of the waste volume after it is processed to a stable form.<br>3. Low-level waste must not be readily capable of detonation or of explosive decomposition or reaction at anticipated pressures and temperatures, or of explosive reaction with water. Pyrophoric materials contained in waste shall be treated, prepared, and packaged to be nonflammable.<br>4. Low-level waste must not contain, or be capable of generating by radiolysis or biodegradation, quantities of toxic gases, vapors, or fumes harmful to the public or workers or disposal facility personnel, or harmful to the long-term structural stability of the disposal site.<br>5. Low-level waste in a gaseous form must be packaged such that the pressure does not exceed 1.5 atmospheres absolute at 20EC.<br>(e) The basis, procedures, and levels of authority required for granting exceptions to the waste acceptance requirements, which shall be contained in each facility's waste acceptance documentation. Each exception request shall be documented, including its disposition as approved or not approved. | | | | | | (+) LLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.06.025 | DOEM435.1-1AChg2 | Ch. 4-g.(2) | Waste Acceptance. The following requirements are in addition to those in Chapter I of this Manual. (2) Evaluation and Acceptance. The receiving facility shall evaluate waste for acceptance, including confirmation that the technical and administrative requirements have been met. A process for the disposition of non-conforming wastes shall be established. | | | | | | (+) LLW | X | |
| 16.06.026 | DOEM435.1-1AChg2 | Ch. 4-n.(1) | Storage and Staging. The following requirements are in addition to those in Chapter I of this Manual. (1) Storage Prohibitions. Low-level waste in storage shall not be readily capable of detonation, explosive decomposition, reaction at anticipated pressures and temperatures, or explosive reaction with water. Prior to storage, pyrophoric materials shall be treated, prepared, and packaged to be nonflammable. | | | | | | (+) LLW | X | |
| 16.06.027 | DOEM435.1-1AChg2 | Ch. 4-n.(2) | Storage and Staging. The following requirements are in addition to those in Chapter I of this Manual. (2) Storage Limit. Low-level waste that has an identified path to disposal shall not be stored longer than one year prior to disposal, except for storage for decay, or as otherwise authorized by the Field Element Manager. | | | | | | (+) LLW | X | |
| 16.06.028 | DOEM435.1-1AChg2 | Ch. 4-n.(3) | Storage and Staging. The following requirements are in addition to those in Chapter I of this Manual. (3) Storage Integrity. Low-level waste shall be stored in a location and manner that protects the integrity of waste for the expected time of storage and minimizes worker exposure. | | | | | | (+) LLW | X | |
| 16.06.029 | DOEM435.1-1AChg2 | Ch. 4-n.(4) | Storage and Staging. The following requirements are in addition to those in Chapter I of this Manual. (4) Waste Characterization for Storage. (a) Low-level waste that does not have an identified path to disposal shall be characterized as necessary to meet the data quality objectives and minimum characterization requirements of this Chapter, to ensure safe storage, and to facilitate disposal. (b) Characterization information for all low-level waste in storage shall be maintained as a record in accordance with the requirements for Records Management in Chapter I of this Manual. | | | | | | (+) LLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.06.030 | DOEM435.1-1AChg2 | Ch. 4-n.(5) | Storage and Staging. The following requirements are in addition to those in Chapter I of this Manual.<br>(5) Container Inspection. A process shall be developed and implemented for inspecting and maintaining containers of low-level waste to ensure container integrity is not compromised. | | | | | | (+) LLW | X | |
| 16.06.031 | DOEM435.1-1AChg2 | Ch. 4-n.(6) | Storage and Staging. The following requirements are in addition to those in Chapter I of this Manual.<br>(6) Storage Management. Low-level waste storage shall be managed to identify and segregate low-level waste from mixed low-level waste. | | | | | | (+) LLW | X | |
| 16.06.032 | DOEM435.1-1AChg2 | Ch. 4-n.(7) | Storage and Staging. The following requirements are in addition to those in Chapter I of this Manual.<br>(7) Staging. Staging of low-level waste shall be for the purpose of the accumulation of such quantities of waste as necessary to facilitate transportation, treatment, and disposal. Staging longer than 90 days shall meet the requirements for storage above and in Chapter I of this Manual. | | | | | | (+) LLW | X | |
| 16.07.012 | DOEO435.1_AChg1 | Att. 1.1.c.(1) | 1. In the performance of this contract, the contractor is required to:<br>Assist DOE in meeting its obligations and responsibilities under Executive Order 12856, Federal Compliance with Right-to-Know Laws | X | X | | | | | X | |
| 16.07.013 | DOEO435.1_AChg1 | Att. 1.1.c.(2) | 1. In the performance of this contract, the contractor is required to:<br>Assist DOE in meeting its obligations and responsibilities under Executive Order 13101, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition, and The Pollution Prevention Act of 1990. | X | X | | | | | X | |
| 16.08.077 | 10 CFR 962 | All | Comply with 10 CFR 962 (Byproduct Material) at SRS | X | X | X | X | X | | X | |
| 16.08.078 | DOEM435.1-1AChg2 | Ch. 1-2.f.14. | Field Element Managers. Field Element Managers are responsible for:<br>(14) Treatment. Ensuring all radioactive waste requiring treatment is treated in a manner that protects the public, workers, and the environment and in accordance with a radioactive waste management basis.<br><br>Note: For SRS application these requirements are addressed by the contractor. | X | X | | | | | X | |
| 16.08.079 | DOEM435.1-1AChg2 | Ch. 2-r. | Treatment. Treatment shall be designed and implemented in a manner that will ultimately comply with DOE/EM 0093, Waste Acceptance Product Specifications for Vitrified High-level Waste Forms, or DOE/RW-0351P, Waste Acceptance System Requirements Document, for non-vitrified, immobilized high-level waste. | | | | | | (+) VITR | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.08.080 | DOEM435.1-1AChg2 | Ch. 2-s. | Disposal. Disposal of high-level waste must be in accordance with the provisions of the Atomic Energy Act of 1954, as amended, the Nuclear Waste Policy Act of 1982, as amended, or any other applicable statutes. | | | | | | (+) VITR | X | |
| 16.08.081 | DOEM435.1-1AChg2 | Ch. 3-o. | Treatment. Transuranic waste shall be treated as necessary to meet the waste acceptance requirements of the facility receiving the waste for storage or disposal.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.08.082 | DOEM435.1-1AChg2 | Ch. 4-o. | Treatment. Low-level waste treatment to provide more stable waste forms and to improve the long-term performance of a low-level waste disposal facility shall be implemented as necessary to meet the performance objectives of the disposal facility. | | | | | | (+) ETP<br>(+) SALT | X | |
| 16.08.083 | DOEM435.1-1AChg2 | Ch. 4-p.(5) | Disposal. Low-level waste disposal facilities shall meet the following requirements.<br>(5) Disposal Authorization. A disposal authorization statement shall be obtained prior to construction of a new low-level waste disposal facility. Field Elements with existing low-level waste disposal facilities shall obtain a disposal authorization statement in accordance with the schedule in the Complex-Wide Low-Level Waste Management Program Plan. The disposal authorization statement shall be issued based on a review of the facility's performance assessment, composite analysis, performance assessment and composite analysis maintenance, preliminary closure plan, and preliminary monitoring plan. The disposal authorization statement shall specify the limits and conditions on construction, design, operations, and closure of the low-level waste facility based on these reviews. A disposal authorization statement is a part of the radioactive waste management basis for a disposal facility. Failure to obtain a disposal authorization statement by the implementation date of this Order shall result in shutdown of the disposal facility. | | | | | | (+) SALT | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.09.011 | DOEM435.1-1AChg2 | Ch. 2-g. | Quality Assurance Program. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Product Quality. The requirements of RW-0333P, Quality Assurance Requirements and Description, shall apply to those high-level waste items and activities important to waste acceptance/product quality.<br>(2) Audits and Assessments. The evaluation and assessment requirements of RW 0333P, Quality Assurance Requirements Document and Description, and associated implementing procedures shall be met for high-level waste acceptance and product quality activities, in addition to the assessment requirements of other DOE directives and requirements identified in Chapter I of this Manual. | | | | | | (+) VITR | X | |
| 16.09.012 | DOEM435.1-1AChg2 | Ch. 4-p.(1) | Disposal. Low-level waste disposal facilities shall meet the following requirements.<br>(1) Performance Objectives. Low-level waste disposal facilities shall be sited, designed, operated, maintained, and closed so that a reasonable expectation exists that the following performance objectives will be met for waste disposed of after September 26, 1988:<br>(a) Dose to representative members of the public shall not exceed 25 mrem (0.25 mSv) in a year total effective dose equivalent from all exposure pathways, excluding the dose from radon and its progeny in air.<br>(b) Dose to representative members of the public via the air pathway shall not exceed 10 mrem (0.10 mSv) in a year total effective dose equivalent, excluding the dose from radon and its progeny.<br>(c) Release of radon shall be less than an average flux of 20 pCi/m 2 /s (0.74 Bq/m 2 /s) at the surface of the disposal facility. Alternatively, a limit of 0.5 pCi/1 (0.0185 Bq/l) of air may be applied at the boundary of the facility. | | | | | | (+) SALT | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.09.013 | DOEM435.1-1AChg2 | Ch. 4-p.(2) | Disposal. Low-level waste disposal facilities shall meet the following requirements.<br>(2) Performance Assessment. A site-specific radiological performance assessment shall be prepared and maintained for DOE low-level waste disposed of after September 26, 1988. The performance assessment shall include calculations for a 1,000 year period after closure of potential doses to representative future members of the public and potential releases from the facility to provide a reasonable expectation that the performance objectives identified in this Chapter are not exceeded as a result of operation and closure of the facility.<br>(a) Analyses performed to demonstrate compliance with the performance objectives in this Chapter, and to establish limits on concentrations of radionuclides for disposal based on the performance measures for inadvertent intruders in this Chapter shall be based on reasonable activities in the critical group of exposed individuals. Unless otherwise specified, the assumption of average living habits and exposure conditions in representative critical groups of individuals projected to receive the highest doses is appropriate. The likelihood of inadvertent intruder scenarios may be considered in interpreting the results of the analyses and establishing radionuclide concentrations, if adequate justification is provided.<br>(b) The point of compliance shall correspond to the point of highest projected dose or concentration beyond a 100 meter buffer zone surrounding the disposed waste. A larger or smaller buffer zone may be used if adequate justification is provided.<br>(c) Performance assessments shall address reasonably foreseeable natural processes that might disrupt barriers against release and transport of radioactive materials.<br>(d) Performance assessments shall use DOE-approved dose coefficients (dose conversion factors) for internal and external exposure of reference adults.<br>(e) The performance assessment shall include a sensitivity/uncertainty analysis.<br>(f) Performance assessments shall include a demonstration that projected releases of radionuclides to the environment shall be maintained as low as reasonably achievable (ALARA).<br>(g) For purposes of establishing limits on radionuclides that may be disposed of near-surface, the performance assessment shall include an assessment of impacts to water resources. | | | | | | (+) SALT | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.09.013 *(cont'd)* | DOEM435.1-1AChg2 | Ch. 4-p.(2) | (h) For purposes of establishing limits on the concentration of radionuclides that may be disposed of near-surface, the performance assessment shall include an assessment of impacts calculated for a hypothetical person assumed to inadvertently intrude for a temporary period into the low-level waste disposal facility. For intruder analyses, institutional controls shall be assumed to be effective in deterring intrusion for at least 100 years following closure. The intruder analyses shall use performance measures for chronic and acute exposure scenarios, respectively, of 100 mrem (1 mSv) in a year and 500 mrem (5 mSv) total effective dose equivalent excluding radon in air. | | | | | | (+) SALT | X | |
| 16.09.014 | DOEM435.1-1AChg2 | Ch. 4-p.(3) | Disposal. Low-level waste disposal facilities shall meet the following requirements.<br>(3) Composite Analysis. For disposal facilities which received waste after September 26, 1988, a site-specific radiological composite analysis shall be prepared and maintained that accounts for all sources of radioactive material that may be left at the DOE site and may interact with the low-level waste disposal facility, contributing to the dose projected to a hypothetical member of the public from the existing or future disposal facilities. Performance measures shall be consistent with DOE requirements for protection of the public and environment and evaluated for a 1,000 year period following disposal facility closure. The composite analysis results shall be used for planning, radiation protection activities, and future use commitments to minimize the likelihood that current low-level waste disposal activities will result in the need for future corrective or remedial actions to adequately protect the public and the environment. | | | | | | (+) SALT | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.09.015 | DOEM435.1-1AChg2 | Ch. 4-p.(4) | Disposal. Low-level waste disposal facilities shall meet the following requirements.<br>(4) Performance Assessment and Composite Analysis Maintenance. The performance assessment and composite analysis shall be maintained to evaluate changes that could affect the performance, design, and operating bases for the facility. Performance assessment and composite analysis maintenance shall include the conduct of research, field studies, and monitoring needed to address uncertainties or gaps in existing data. The performance assessment shall be updated to support the final facility closure. Additional iterations of the performance assessment and composite analysis shall be conducted as necessary during the post-closure period.<br>(a) Performance assessments and composite analyses shall be reviewed and revised when changes in waste forms or containers, radionuclide inventories, facility design and operations, closure concepts, or the improved understanding of the performance of the waste disposal facility in combination with the features of the site on which it is located alter the conclusions or the conceptual model(s) of the existing performance assessment or composite analysis.<br>(b) A determination of the continued adequacy of the performance assessment and composite analysis shall be made on an annual basis, and shall consider the results of data collection and analysis from research, field studies, and monitoring.<br>(c) Annual summaries of low-level waste disposal operations shall be prepared with respect to the conclusions and recommendations of the performance assessment and composite analysis and a determination of the need to revise the performance assessment or composite analysis. | | | | | | (+) SALT | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.09.016 | DOEM435.1-1AChg2 | Ch. 4-p.(6) | Disposal. Low-level waste disposal facilities shall meet the following requirements.<br>(6) Disposal Facility Operations. The disposal facility design and operation must be consistent with the disposal facility closure plan and lead to disposal facility closure that provides a reasonable expectation that performance objectives will be met. Low-level waste shall be disposed in such a manner that achieves the performance objectives stated in this Chapter, consistent with the disposal facility radiological performance assessment. Additional requirements include:<br>(a) Operating procedures shall be developed and implemented for low-level waste disposal facilities that protect the public, workers, and the environment; ensure the security of the facility; minimize subsidence during and after waste emplacement; achieve long-term stability and minimize the need for long-term active maintenance; and meet the requirements of the closure/post-closure plan.<br>(b) Permanent identification markers for disposal excavations and monitoring wells shall be emplaced.<br>(c) Low-level waste placement into disposal units shall minimize voids between waste containers. Voids within disposal units shall be filled to the extent practical. Uncontainerized bulk waste shall also be placed in a manner that minimizes voids and subsidence.<br>(d) Operations are to be conducted so that active waste disposal operations will not have an adverse effect on any other disposal units.<br>(e) Operations shall include a process for tracking and documenting low-level waste placement in the facility by generator source. | | | | | | (+) SALT | X | |
| 16.09.017 | DOEM435.1-1AChg2 | Ch. 4-p.(7) | Disposal. Low-level waste disposal facilities shall meet the following requirements.<br>(7) Alternate Requirements for Low-Level Waste Disposal Facility Design and Operation. Requirements other than those set forth in this Section for the design and operation of a low-level waste disposal facility may be approved on a specific basis if a reasonable expectation is demonstrated that the disposal performance objectives will be met. | | | | | | (+) SALT | X | |
| 16.11.001 | DOEM435.1-1AChg2 | Ch. 1-2.g. 1. | All Personnel. All personnel are responsible for:<br>(1) Problem Identification. Identifying and reporting radioactive waste management facilities, operations, or activities that do not meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual, or that pose a threat to the safety of the public, workers, or the environment. | X | X | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.11.002 | DOEM435.1-1AChg2 | Ch. 1-2.g. 2. | All Personnel. All personnel are responsible for:<br>(2) Shutdown or Curtailment of Activities. Stopping or curtailing work, through the appropriate level of management, to prohibit continuation of conditions or activities which pose an imminent danger or other serious hazard to workers or the public, or are not protective of the environment | X | X | | | | | X | |
| 16.11.003 | DOEM435.1-1AChg2 | Ch. 2-h.(1) | Contingency Actions. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Contingency Storage. For off-normal or emergency situations involving high-level waste storage or treatment, spare capacity with adequate capabilities shall be maintained to receive the largest volume of waste contained in any one storage vessel, pretreatment facility, or treatment facility. Tanks or other facilities that are designated for high-level waste contingency storage shall be maintained in an operational condition when waste is present and shall meet all the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual. | | | | | | (+) HLW | X | |
| 16.11.004 | DOEM435.1-1AChg2 | Ch. 2-h.(2) | Contingency Actions. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Transfer Equipment. Pipelines and auxiliary facilities necessary for the transfer of waste to contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual. | | | | | | (+) HLW | X | |
| 16.11.005 | DOEM435.1-1AChg2 | Ch. 2-i.(1) | Corrective Actions. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Order Compliance. Corrective actions shall be implemented whenever necessary to ensure the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual are met. | | | | | | (+) HLW | X | |
| 16.11.006 | DOEM435.1-1AChg2 | Ch. 2-i.(2) | Corrective Actions. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Operations Curtailment. Operations shall be curtailed or facilities shut down for failure to establish, maintain, or operate consistent with an approved radioactive waste management basis. | | | | | | (+) HLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.11.007 | DOEM435.1-1AChg2 | Ch. 2-t. | Monitoring. High-level waste pretreatment, treatment, storage, and transportation facilities shall be monitored for chemical, physical, radiological, structural, and other changes that could indicate failure of system confinement, integrity, or safety, and which could lead to abnormal events or accidents. Parameters that shall be sampled or monitored, at a minimum, include: temperature, pressure (for closed systems), radioactivity in ventilation exhaust and liquid effluent streams, flammable or explosive mixtures of gases, level and/or waste volume, and significant waste chemistry parameters for non-immobilized high-level waste. Facility monitoring programs shall also include physical inspections to verify that control systems have not failed. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.11.008 | DOEM435.1-1AChg2 | Ch. 3-f.(1) | Corrective Actions. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Order Compliance. Corrective actions shall be implemented whenever necessary to ensure the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual are met.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.11.009 | DOEM435.1-1AChg2 | Ch. 3-f.(2) | Corrective Actions. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Operations Curtailment. Operations shall be curtailed or facilities shut down for failure to establish, maintain, or operate consistent with an approved radioactive waste management basis.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.11.010 | DOEM435.1-1AChg2 | Ch. 3-q.(1) | Monitoring. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) All Waste Facilities. Parameters that shall be sampled or monitored, at a minimum, include: temperature, pressure (for closed systems), radioactivity in ventilation exhaust and liquid effluent streams, and flammable or explosive mixtures of gases. Facility monitoring programs shall include verification that passive and active control systems have not failed.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.11.011 | DOEM435.1-1AChg2 | Ch. 3-q.(2) | Monitoring. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Stored Wastes. All transuranic wastes in storage shall be monitored, as prescribed by the appropriate facility safety analysis, to ensure the wastes are maintained in safe condition.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.11.012 | DOEM435.1-1AChg2 | Ch. 4-e. | Contingency Actions. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Contingency Storage. For off-normal or emergency situations involving high activity or high hazard liquid low-level waste storage or treatment, spare capacity with adequate capabilities shall be maintained to receive the largest volume of liquid contained in any one storage tank or treatment facility. Tanks or other facilities that are designated low-level waste contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual.<br>(2) Transfer Equipment. Pipelines and auxiliary facilities necessary for the transfer of high activity or high hazard liquid low-level waste to contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual. | | | | | | (+) LLW | X | |
| 16.11.013 | DOEM435.1-1AChg2 | Ch. 4-f. | Corrective Actions. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Order Compliance. Corrective actions shall be implemented whenever necessary to ensure the requirements of DOE O 435.1, Radioactive Waste Management, and this Manual are met.<br>(2) Operations Curtailment. Operations shall be curtailed or facilities shut down for failure to establish, maintain, or operate consistent with an approved radioactive waste management basis. | | | | | | (+) LLW | X | |
| 16.11.014 | DOEM435.1-1AChg2 | Ch. 4-r.(1) | Monitoring. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) All Waste Facilities. Parameters that shall be sampled or monitored, at a minimum, include: temperature, pressure (for closed systems), radioactivity in ventilation exhaust and liquid effluent streams, and flammable or explosive mixtures of gases. Facility monitoring programs shall include verification that passive and active control systems have not failed. | | | | | | (+) ETP<br>(+) MCU<br>(+) SALT | X | |
| 16.11.015 | DOEM435.1-1AChg2 | Ch. 4-r.(2) | Monitoring. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Liquid Waste Storage Facilities. For facilities storing liquid low-level waste, the following shall also be monitored: liquid level and/or waste volume, and significant waste chemistry parameters. | | | | | | (+) ETP<br>(+) MCU<br>(+) SALT | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.11.016 | DOEM435.1-1AChg2 | Ch. 4-r.(3) | Monitoring. The following requirements are in addition to those in Chapter I of this Manual.<br>(3) Disposal Facilities. A preliminary monitoring plan for a low-level waste disposal facility shall be prepared and submitted to Headquarters for review with the performance assessment and composite analysis. The monitoring plan shall be updated within one year following issuance of the disposal authorization statement to incorporate and implement conditions specified in the disposal authorization statement.<br>(a) The site-specific performance assessment and composite analysis shall be used to determine the media, locations, radionuclides, and other substances to be monitored.<br>(b) The environmental monitoring program shall be designed to include measuring and evaluating releases, migration of radionuclides, disposal unit subsidence, and changes in disposal facility and disposal site parameters which may affect long-term performance.<br>(c) The environmental monitoring programs shall be capable of detecting changing trends in performance to allow application of any necessary corrective action prior to exceeding the performance objectives in this Chapter. | | | | | | (+) ETP<br>(+) MCU<br>(+) SALT | X | |
| 16.12.001 | DOEM435.1-1AChg2 | Ch. 2-p.(1) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Site Evaluation. Proposed locations for high-level waste facilities shall be evaluated to identify relevant features that should be avoided or must be considered in facility design and analyses.<br>(a) Each site proposed for a new high-level waste facility or expansion of an existing high-level waste facility shall be evaluated considering environmental characteristics, geotechnical characteristics, and human activities.<br>(b) Proposed sites with environmental characteristics, geotechnical characteristics, or human activities for which adequate protection cannot be provided through facility design shall be deemed unsuitable for the location of the facility. | | | | | | (+) HLW<br>(+) VITR | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.002 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(a) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(a) Safety (Safety Class and Safety-Significant) Structures, Systems, and Components. Safety structures, systems, and components for high-level waste storage, pretreatment, and treatment facilities shall be designated and designed consistent with the provisions of DOE O 420.1, Facility Safety and 10 CFR 830, Subpart B, Safety Basis Requirements.<br><br>This requirement has been modified to reflect revision to 10 CFR 830 subsequent to issuance of DOE M 435.1-1. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.12.003 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(b) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(b) Confinement. High-level waste systems and components shall be designed to maintain waste confinement. The following requirements apply to new or modifications to existing high-level waste systems, ancillary systems, and components:<br>1. Secondary confinement systems shall be designed to prevent any migration of wastes or accumulated liquid out of the waste system; shall be capable of detecting, collecting, and retrieving releases into the secondary confinement; and shall be constructed of, or lined with, materials that are compatible with the waste(s) to be placed in the waste system.<br>2. Tank and piping systems used for high-level waste collection, pretreatment, treatment, and storage shall be welded construction, except where remote configurations or periodic rerouting of high-level waste streams require non-welded construction. | | | | | | (+) HLW<br>(+) VITR | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.004 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(c) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(c) Lifting Devices. The design of hoisting and rigging devices shall comply with the following specific requirements.<br>1. Lifting devices that are designated as safety class or safety significant shall be designed to prevent free fall of loads.<br>2. Loading and unloading systems for lifting devices that are designated as safety class or safety significant shall be designed with a reliable system of interlocks that will fail safely upon malfunction. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.12.005 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(d)(1) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(d) Ventilation.<br>1. Design of high-level waste pretreatment, treatment, and storage facilities shall include ventilation through an appropriate filtration system to maintain the release of radioactive material in airborne effluents within the applicable requirements. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.12.006 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(d)(2) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(d) Ventilation.<br>2. When conditions exist for generating gases in flammable and explosive concentrations, ventilation systems or other measures shall be provided to keep the gases in a non-flammable and non-explosive condition. Where concentrations of explosive or flammable gases are expected to approach the lower flammability limit, measures shall be taken to prevent deflagration or detonation. | | | | | | (+) HLW<br>(+) VITR | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.007 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(e) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(e) Consideration of Decontamination and Decommissioning. Areas in new and modifications to existing high-level waste management facilities that are subject to contamination with radioactive or other hazardous materials shall be designed to facilitate decontamination. For such facilities a proposed decommissioning method or a conversion method leading to reuse shall be described. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.12.008 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(f) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(f) Maintenance Exposure Reduction. Remote maintenance features and other appropriate techniques to maintain as low as reasonably achievable (ALARA) personnel exposures shall be incorporated into each high-level waste facility. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.12.009 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(g) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(g) Facilities for Receipt and Retrieval of High-Level Waste.<br>1. Designs for storage facilities shall incorporate features to facilitate retrieval capability.<br>2. High-level waste receipt and retrieval systems shall be designed to complement the existing storage facilities for safe storage and transfer of high-level waste. | | | | | | (+) HLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.010 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(h) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(h) Structural Integrity. Designs for new tanks shall contribute to the confinement requirement at Section II.P.(2)(b) of this Manual by:<br>1. Incorporating features to avoid critical degradation modes at the proposed site where practicable, or minimize degradation rates for the critical modes; and<br>2. Incorporating features to facilitate execution of the Structural Integrity Program required by Section II.Q.(2) of this Manual. | | | | | | (+) HLW | X | |
| 16.12.011 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(i) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(i) Instrumentation and Control Systems. Engineering controls shall be incorporated in the design and engineering of high-level waste treatment storage, pretreatment, and treatment facilities to provide volume inventory data and to prevent spills, leaks and overflows from tanks or confinement systems. | | | | | | (+) HLW<br>(+) VITR | X | |
| 16.12.012 | DOEM435.1-1AChg2 | Ch. 2-p.(2)(j) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility design requirements, at a minimum, apply:<br>(j) Volume Monitoring Systems. Monitoring and/or leak detection capabilities shall be incorporated in the design and engineering of high-level waste storage, pretreatment, and treatment facilities to provide rapid detection of failed confinement and/or other abnormal conditions. | | | | | | (+) HLW<br>(+) VITR | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.013 | DOEM435.1-1AChg2 | Ch. 3-m.(1) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Site Evaluation. Proposed locations for transuranic waste facilities shall be evaluated to identify relevant features that should be avoided or must be considered in facility design and analyses.<br>(a) Each site proposed for a new transuranic waste facility or expansion of an existing transuranic waste facility shall be evaluated considering environmental characteristics, geotechnical characteristics, and human activities.<br>(b) Proposed sites with environmental characteristics, geotechnical characteristics, and human activities for which adequate protection cannot be provided through facility design shall be deemed unsuitable for the location of the facility.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.12.014 | DOEM435.1-1AChg2 | Ch. 3-m.(2)(a) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(a) Confinement. Transuranic waste systems and components shall be designed to maintain waste confinement.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.12.015 | DOEM435.1-1AChg2 | Ch. 3-m.(2)(b)(1) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(b) Ventilation.<br>1. Design of transuranic waste treatment and storage facilities shall include ventilation, if applicable, through an appropriate filtration system to maintain the release of radioactive material in airborne effluents within the requirements and guidelines specified in applicable requirements.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.016 | DOEM435.1-1AChg2 | Ch. 3-m.(2)(b)(2) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(b) Ventilation.<br>2. When conditions exist for generating gases in flammable or explosive concentrations in treatment or storage facilities, ventilation or other measures shall be provided to keep the gases in a non-flammable and non-explosive condition. Where concentrations of explosive or flammable gases are expected to approach the lower flammability limit, measures shall be taken to prevent deflagration or detonation.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.12.017 | DOEM435.1-1AChg2 | Ch. 3-m.(2)(c) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(c) Consideration of Decontamination and Decommissioning. Areas in new and modifications to existing transuranic waste management facilities that are subject to contamination with radioactive or other hazardous materials shall be designed to facilitate decontamination. For such facilities a proposed decommissioning method or a conversion method leading to reuse shall be described.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.12.018 | DOEM435.1-1AChg2 | Ch. 3-m.(2)(d) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(d) Instrumentation and Control Systems. Engineering controls shall be incorporated in the design and engineering of transuranic waste treatment and storage facilities to provide volume inventory data and to prevent spills, leaks, and overflows from tanks or confinement systems.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.019 | DOEM435.1-1AChg2 | Ch. 3-m.(2)(e) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(e) Monitoring. Monitoring and/or leak detection capabilities shall be incorporated in the design and engineering of transuranic waste storage, treatment, and disposal facilities to provide rapid identification of failed confinement and/or other abnormal conditions.<br><br>Note: This requirement is not applicable to SRR. | | | | | | | X | |
| 16.12.020 | DOEM435.1-1AChg2 | Ch. 4-m.(1)(a) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Site Evaluation. Proposed locations for low-level waste facilities shall be evaluated to identify relevant features that should be avoided or must be considered in facility design and analyses.<br>(a) Each site proposed for a new low-level waste facility or expansion of an existing low-level waste facility shall be evaluated considering environmental characteristics, geotechnical characteristics, and human activities, including for a low-level waste disposal facility, the capability of the site to demonstrate, at a minimum, whether it is:<br>1. Located to accommodate the projected volume of waste to be received;<br>2. Located in a flood plain, a tectonically active area, or in the zone of water table fluctuation; and<br>3. Located where radionuclide migration pathways are predictable and erosion and surface runoff can be controlled. | | | | | | (+) LLW | X | |
| 16.12.021 | DOEM435.1-1AChg2 | Ch. 4-m.(1)(b) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Site Evaluation. Proposed locations for low-level waste facilities shall be evaluated to identify relevant features that should be avoided or must be considered in facility design and analyses.<br>(b) Proposed sites with environmental characteristics, geotechnical characteristics, and human activities for which adequate protection cannot be provided through facility design shall be deemed unsuitable for the location of the facility. | | | | | | (+) LLW | X | |

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| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.022 | DOEM435.1-1AChg2 | Ch. 4-m.(1)(c) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(1) Site Evaluation. Proposed locations for low-level waste facilities shall be evaluated to identify relevant features that should be avoided or must be considered in facility design and analyses.<br>(c) Low-level waste disposal facilities shall be sited to achieve long-term stability and to minimize, to the extent practical, the need for active maintenance following final closure. | | | | | | (+) LLW | X | |
| 16.12.023 | DOEM435.1-1AChg2 | Ch. 4-m.(2)(a) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Low-Level Waste Treatment and Storage Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(a) Confinement. Low-level waste systems and components shall be designed to maintain waste confinement. | | | | | | (+) LLW | X | |
| 16.12.024 | DOEM435.1-1AChg2 | Ch. 4-m.(2)(b)(1) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Low-Level Waste Treatment and Storage Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(b) Ventilation.<br>1. Design of low-level waste treatment and storage facilities shall include ventilation, if applicable, through an appropriate filtration system to maintain the release of radioactive material in airborne effluents within the requirements and guidelines specified in applicable requirements. | | | | | | (+) LLW | X | |
| 16.12.025 | DOEM435.1-1AChg2 | Ch. 4-m.(2)(b)(2) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Low-Level Waste Treatment and Storage Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(b) Ventilation.<br>2. When conditions exist for generating gases in flammable or explosive concentrations, ventilation systems or other measures shall be provided to keep the gases in a non-flammable and non-explosive condition. Where concentrations of explosive or flammable gases are expected to approach the lower flammability limit, measures shall be taken to prevent deflagration or detonation. | | | | | | (+) LLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.026 | DOEM435.1-1AChg2 | Ch. 4-m.(2)(c) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Low-Level Waste Treatment and Storage Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(c) Consideration of Decontamination and Decommissioning. Areas in new and modifications to existing low-level waste management facilities that are subject to contamination with radioactive or other hazardous materials shall be designed to facilitate decontamination. For such facilities a proposed decommissioning method or a conversion method leading to reuse shall be described. | | | | | | (+) LLW | X | |
| 16.12.027 | DOEM435.1-1AChg2 | Ch. 4-m.(2)(d) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Low-Level Waste Treatment and Storage Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(d) Instrumentation and Control Systems. Engineering controls shall be incorporated in the design and engineering of low-level waste treatment and storage facilities to provide volume inventory data and to prevent spills, leaks, and overflows from tanks or confinement systems. | | | | | | (+) LLW | X | |
| 16.12.028 | DOEM435.1-1AChg2 | Ch. 4-m.(2)(e) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(2) Low-Level Waste Treatment and Storage Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(e) Monitoring. Monitoring and/or leak detection capabilities shall be incorporated in the design and engineering of low-level waste treatment and storage facilities to provide rapid identification of failed confinement and/or other abnormal conditions. | | | | | | (+) LLW | X | |
| 16.12.029 | DOEM435.1-1AChg2 | Ch. 4-m.(3)(a) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(3) Low-Level Waste Disposal Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(a) Confinement. Low-level waste systems and components shall be designed to maintain waste confinement. | | | | | | (+) LLW | X | |

**TABLE 1 - S/RID FUNCTIONAL AREA 16 (WASTE MANAGEMENT) REQUIREMENTS**

| S/RID Requirement Number | Source Document | Source Document Reqt Number | Requirement Text | SRR Applicability | | | | | | Phase I Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Nuclear HC-1,2,3 | Radi-ological | High Hazard Chemical | Low Hazard Chemical | Other Industrial | Facility Specific | Common | Facility Specific |
| 16.12.030 | DOEM435.1-1AChg2 | Ch. 4-m.(3)(b)(1) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(3) Low-Level Waste Disposal Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(b) Ventilation.<br>1. Design of low-level waste disposal facilities shall include ventilation, if applicable, through an appropriate filtration<br>system to maintain the release of radioactive material in airborne effluents within the requirements and guidelines specified in applicable requirements. | | | | | | (+) LLW | X | |
| 16.12.031 | DOEM435.1-1AChg2 | Ch. 4-m.(3)(b)(2) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(3) Low-Level Waste Disposal Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(b) Ventilation.<br>2. When conditions exist for generating gases in flammable or explosive concentrations, ventilation systems or other<br>measures shall be provided to keep the gases in a non-flammable and non-explosive condition. Where concentrations of explosive or flammable gases are expected to approach the lower flammability limit, measures shall be taken to prevent deflagration or detonation. | | | | | | (+) LLW | X | |
| 16.12.032 | DOEM435.1-1AChg2 | Ch. 4-m.(3)(c) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(3) Low-Level Waste Disposal Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(c) Stability. Low-level waste disposal facilities shall be designed to achieve long-term stability and to minimize to the extent practical, the need for active maintenance following final closure. | | | | | | (+) LLW | X | |
| 16.12.033 | DOEM435.1-1AChg2 | Ch. 4-m.(3)(d) | Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.<br>(3) Low-Level Waste Disposal Facility Design. The following facility requirements and general design criteria, at a minimum, apply:<br>(d) Control of Water. Low-level waste disposal facilities shall be designed to minimize to the extent practical, the contact of waste with water during and after disposal. | | | | | | (+) LLW | X | |