SRR-RP-2009-00558-003

STANDARDS/REQUIREMENTS IDENTIFICATION DOCUMENT

FUNCTIONAL AREA 03.0

CONFIGURATION MANAGEMENT (U)

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Revision 19-05

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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03.00 CONFIGURATION 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 Savannah River Remediation LLC (SRR) S/RID. The reader should refer to S/RID Functional Area 00 for a complete understanding of this S/RID functional area.

Configuration Management (CM) is a method of doing business that maintains consistency among design requirements, physical configuration, and facility documentation for Nuclear facilities (hazard category (HC) 1, 2, and 3). CM is a key element of the Cognizant System Engineer (CSE) Program as defined in DOE Order 420.1C, **Change 2**, Chapter V.

Requirements of DOE Order 420.1C, **Change 2**, Attachment 2, Chapter V apply to all HC 1, 2, and 3 nuclear facilities that have attained operational status (such as achieving Critical Decision 4 (CD-4) per DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets, dated 11-29-10) and have:
a. Active safety-class or safety-significant SSCs, as defined in the facility's DOE-approved safety basis documentation; or,
b. Other active systems that perform important defense-in-depth functions, as designated by facility line management.

Note: This chapter does not apply to passive systems or design features. Facility management should consider establishing CSE programs before CD-4 to ensure their stability and operation at CD-4. CSE programs should remain in place as long as the covered systems are credited in the safety basis or designated by facility line management.

A CM program provides a necessary link with other United States Department of Energy (DOE) programs for maintaining consistency, documenting results, facilitating information usage, and providing effective methods and mechanisms. Specifically, the CM S/RID contains program requirements for design control and maintaining design life of Structures, Systems and Components (SSCs) and the importance of the System Engineer in achieving these requirements. Requirements specific to the design of SSCs are contained in the Engineering Program S/RID Functional Area.

The source document of CM program criteria is DOE Order 420.1C, **Change 2**, Facility Safety. DOE Order 420.1C, **Change 2**, states that it is applicable to DOE nuclear facilities, however, the concepts can be adapted and applied to DOE non-nuclear facilities as appropriate.

Facilities at Savannah River Site (SRS) are so diverse in character and age (many at SRS have been operating for several decades), therefore, it is impossible to develop a single set of requirements directly applicable to them all. However, a wide variety of facilities can be accommodated by means of a Graded Approach to adapt general requirements. Note that details concerning Facility Categories including referenced Code of Federal Regulations as listed on page 4 (Table 1 Format and Content) are found in Functional Area 00.

A Graded Approach should be used to determine the depth of detail necessary and the magnitude of resources to be invested in implementation of each requirement in this S/RID in a specific Facility or Project.

The Configuration Management S/RID Functional Area is prepared in alignment with DOE Order 420.1C, **Change 2**.

The functional area is being revised to incorporate the requirements of DOE Order 420.1C, **Change 2**, Facility Safety. SRR modifications are as outlined in OSQA-14-0044.

Clarifications are annotated in the requirements text in Table 1 using "Modified for **LW Contractor** use." The letter noted above is referenced in the remarks section in Table 2 for the affected requirements.

03.01 MANAGEMENT AND ADMINISTRATION

This section identifies requirements for establishing and maintaining the integration of CM, Identification of Scope and Systems, and assignment of CSEs to support operations and maintenance of assigned systems, including application of the Graded Approach.

03.02 CONFIGURATION MANAGEMENT

This section includes requirements for establishing and maintaining consistency among system requirements and performance criteria, documentation, and physical configuration for the SSCs within the scope of the System Engineer program.

03.03 SYSTEM ENGINEER SUPPORT

This section includes requirements for site and facility processes to support CSE functions, responsibilities, and authorities.

03.04 GRADED APPROACH

This section includes requirements for tailoring to facility hazards and systems based on remaining lifetime and the safety significance of the remaining operations and systems.

03.05 KEY INTERFACES

The key interfaces between the Configuration Management S/RID Functional Area and other S/RID Functional Areas are identified and described in the following sections.

03.05.01 Management Systems

Management Systems is a primary consideration in the performance of assessments to support CM. Refer to the Management Systems S/RID Functional Area 01 for specification of such requirements.

03.05.02 Engineering Program

The Configuration Management S/RID Functional Area contains requirements for the System Engineer program and design control. These requirements should be integrated with the overall engineering process as defined in the Engineering Program S/RID Functional Area 07. In addition, the Engineering program contains requirements for component design (pressure safety, etc.). Refer to the Engineering Program Functional Area 07 for specification of such requirements.

03.05.03 Operations

The Conduct of Operations S/RID Functional Area provides requirements to ensure that the proper technical reviews are conducted to guard against inadvertent and undocumented changes. In addition, the Conduct of Operations S/RID Functional Area specifies component labeling requirements, which are key to the CM process. Refer to Conduct of Operations S/RID Functional Area 09 for specification of such requirements.

03.05.04 Maintenance

Maintenance activities contribute significantly to changes in the configuration, and the Maintenance S/RID Functional Area provides requirements to ensure proper technical reviews are performed to guard against inadvertent configuration changes. Refer to Maintenance S/RID Functional Area 10 for specification of such requirements.

03.05.05 Nuclear Safety

The Nuclear and Process Safety S/RID Functional Area includes appropriate safety requirements which are included in the Technical Baseline documents. The Technical Baseline is the foundation of the CM program. Refer to Nuclear and Process Safety S/RID Functional Area 18 for specification of additional Nuclear Safety requirements.

03.05.06 Quality Assurance

The Quality Assurance S/RID Functional Area establishes oversight requirements that impact many requirements found in CM. Oversight requirements relating to CM are in most of the sub-elements of the Quality Assurance S/RID Functional Area. However, specific requirements relating to design control are in sub-element 02.07, entitled "Design." Refer to the Quality Assurance S/RID Functional Area 02 for specification of such requirements.

03.06 DOCUMENTS

03.06.01 Reference Documents

DOEO420.1C	FACILITY SAFETY, CHANGE 2, 7/26/2018

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 as specified in 40 CFR 302.4, Appendix B.
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 SRR facilities/bldgs.

TABLE 1 - S/RID FUNCTIONAL AREA 03 (CONFIGURATION 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
03.01.012	DOEO420.1C	Att. 2.Ch. V.3.a.	3. REQUIREMENTS. a. General. The protocols for implementing the site or facility CSE program must be documented, must include the functions, responsibilities and authorities of CSEs, and must address the following elements: (1) Identification of systems covered by the CSE program and identification of systems assigned for coverage; (2) Configuration management; (3) Support for operations and maintenance; and, (4) Training and qualifications of CSEs. Modified for **LW Contractor** use by OSQA-14-0044: This is addressed through several methods. Each facility maintains a list of CSEs and their assigned systems. Management Policy, Procedure 5.39, Configuration Management, and E7-1.05, Technical Baseline Identification, require each facility to develop a Configuration Management Implementation Plan (CMIP) which implements the documented CM program. E7-1.10, Engineering Program R2A2, defines the roles and responsibilities for CSEs including support for operations and maintenance. Training and qualification information for Liquid Waste Facilities is captured in LWOTS000, Liquid Waste Operations, Engineering Technical Staff Training Program Description.	X						X	
03.01.013	DOEO420.1C	Att. 2.Ch. V.3.b.(1).	3. REQUIREMENTS. b. CSE Program Coverage. (1) The CSE program must be applied to active safety-class and safety-significant systems, as defined in the facility's DOE-approved safety basis, as well as to other active systems that perform important defense-in-depth functions, as designated by facility line management. The designated systems and the rationale for assignment of CSEs in a graded approach (see below) must be documented.	X						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
03.02.010	DOEO420.1C	Att. 2.Ch. V.3.c.(1).	3. REQUIREMENTS. c. Configuration Management. (1) A documented configuration management program must be established and implemented that ensures consistency among system requirements and performance criteria, system documentation, and physical configuration of the systems within the scope of the program. DOE-STD-1073-**2016,** Configuration Management, describes an acceptable methodology for establishing configuration management programs. The configuration management program must address: (a) system design documentation; (b) system assessments; (c) control of maintenance; (d) change control; and, (e) **aging degradation and technical** obsolescence. Modified for **LW Contractor** use by OSQA-14-0044: Manual E7, procedure 1.05 establishes requirements for Configuration Management Implementation Plans (CMIPs) which provide documentation of the CM program for each facility. System assessments are conducted in accordance with procedure E7-3.04A, LW SSC Performance Monitoring. This procedure provides for the identification, testing, collection and analysis of performance data for SSCs in order to improve their reliability and availability through early detection of degradation. SSC performance monitoring includes an evaluation of aging effects and technical obsolescence.	X						X	

TABLE 1 - S/RID FUNCTIONAL AREA 03 (CONFIGURATION 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
03.02.011	DOEO420.1C	Att. 2.Ch. V.3.c.(2).	3. REQUIREMENTS. c. Configuration Management. (2) System design documents and supporting documents must be identified and kept current using formal change control and work control processes. DOE-STD-3024-2011, Content of System Design Descriptions, describes an acceptable methodology to achieve this function. Design documentation must include: (a) system requirements and performance criteria essential to performance of the system's safety functions; (b) the basis for system requirements; and, (c) a description of how the current system configuration satisfies the requirements and performance criteria. Modified for **LW Contractor** use by OSQA-14-0044: The Department recognizes that System Design Descriptions are not mandated by this Order.	X						X	
03.02.012	DOEO420.1C	Att. 2.Ch. V.3.c.(3).	3. REQUIREMENTS. c. Configuration Management. (3) System assessments must include periodic reviews of system operability, reliability, and material condition. Reviews must assess the system for: (a) the ability to perform design and safety functions; (b) physical configuration as compared to system documentation; and, (c) system and component performance in comparison to established performance criteria.	X						X	
03.02.013	DOEO420.1C	Att. 2.Ch. V.3.c.(4).	3. REQUIREMENTS. c. Configuration Management. (4) System maintenance and repair and modification must be controlled through a formal change control process to ensure that changes are not inadvertently introduced and that required system performance is not compromised. Post maintenance or modification testing must be conducted to confirm continued capability to fulfill system requirements.	X						X	

TABLE 1 - S/RID FUNCTIONAL AREA 03 (CONFIGURATION 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
03.03.016	DOEO420.1C	Att. 2.Ch. V.3.d.	3. REQUIREMENTS. d. CSE Support for Operations and Maintenance. The CSE must: (1) ensure that system configuration is being managed effectively (see Section 3.c of this chapter); (2) remain apprised of operational status and ongoing modification activities; (3) assist operations review of key system parameters and evaluate system performance; (4) initiate actions to correct problems; (5) remain cognizant of system-specific maintenance and operations history and industry operating experience, as well as manufacturer and vendor recommendations and any product warnings regarding their assigned systems; (6) identify trends from operations and maintenance; (7) provide assistance in determining operability, correcting out-of-specification conditions, and evaluating questionable data; (8) provide or support analysis when the system is suspected of inoperability or degradation; (9) review and concur with design changes, use-as-is, equivalency, and commercial grade dedication determinations; and, (10) review, and provide input into the development of, and concur on operating, maintenance, and test procedures related to their assigned systems.	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
03.03.017	DOEO420.1C	Att. 2.Ch. V.3.e.	3. REQUIREMENTS. e. CSE Qualification Requirements. Qualification requirements for CSEs must be consistent with those defined for Technical Support personnel in DOE O 426.2, Admin Chg. 1, Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities, dated 04-21-10 (see associated CRD), as applicable. (See Note 1) Qualification requirements must include knowledge of: (1) related facility safety bases including safety system functions, safety system performance criteria, and any relationship to **SACs;** (2) system functional classification and bases; (3) codes and standards applicable to assigned systems; (4) system design, procurement, replacement, and related quality assurance requirements; (5) the existing condition of the systems; (6) related facility operations; and, (7) vendor manuals, product warnings, and updates related to assigned systems, available (in print or online). Note 1: DOE O 426.2 Admin Chg. 1 is covered in Functional Area 04.	X						X	
03.04.005	DOEO420.1C	Att. 2.Ch. V.3.b.(2).(a).	3. REQUIREMENTS. b. CSE Program Coverage. (2) A graded approach must be used in applying the requirements of the CSE program. The program must be tailored to facility hazards and the systems relied upon to prevent or mitigate those hazards, considering: (a) Remaining Facility Lifetime and the Safety Significance of Remaining Operations. Facilities undergoing deactivation or decontamination/decommissioning may undergo frequent changes, modifications, or removal of systems no longer needed to support the safety basis of those operations. CSE programs may require more CSE attention in these operations than during normal operations. After deactivation, or when a facility is in long-term surveillance and maintenance, there may be less need for CSE attention.	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
03.04.006	DOEO420.1C	Att. 2.Ch. V.3.b.(2).(b).	3. REQUIREMENTS. b. CSE Program Coverage. (2) A graded approach must be used in applying the requirements of the CSE program. The program must be tailored to facility hazards and the systems relied upon to prevent or mitigate those hazards, considering: (b) Safety Importance of the System. Not all systems are equal as measured by the likelihood and consequences of the hazard and the accidents that they prevent or mitigate. The level of system documentation detail in configuration management should be tailored to the importance of the system.	X						X	
03.04.007	DOEO420.1C	Att. 2.Ch. V.3.b.(3).	3. REQUIREMENTS. b. CSE Program Coverage. (3) A qualified CSE must be assigned to each active system within the scope of the program. Consistent with the graded approach, large, complex, or very important systems may require assignment of more than one CSE. Conversely, a single individual may be assigned to be the CSE for more than one system.	X						X	