



Strengthening Line Management Oversight and
Federal Monitoring of Nuclear Facilities

Standard Review Plan

Volume 4 - Nuclear Safety Basis Program Review During
Facility Decommissioning and Environmental Restoration



February 2015

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Nuclear Safety Basis Program Review during Facility Decommissioning and Environmental Restoration

Facility Life Cycle Applicability					
CD-1	CD-2	CD-3	CD-4	Operations and Transitions	Decommissioning & Environmental Restoration
					✓



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Acronyms

DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
HA	Hazard Analysis
LOI	Line of Inquiry
SAC	Specific Administrative Control
SRP	Standard Review Plan
SSC	Structures, Systems and Components
TSR	Technical Safety Requirements
USQ	Unreviewed Safety Question

Introduction

Subpart B of the DOE Nuclear Safety Management regulation (10 CFR Part 830) establishes safety basis requirements for DOE nuclear facilities. This SRP, *Safety Basis Program Review*, contains five volumes to help strengthen the technical rigor of line management oversight and federal monitoring of DOE nuclear facilities during the entire facility life cycle¹. The SRP provides a set of LOIs for the review of safety basis programs and documents of nuclear facilities. These LOIs were developed based on the review of the DOE safety basis directives and technical standards, as well as from best management practices. These LOIs provide consistency in the safety basis review process and using the graded approach. They can be tailored to specific circumstances and additional and specific LOIs can also be developed beyond these LOIs.

The contents of the five SRP volumes are described below. This volume contains LOIs for the review of the safety basis activities during facility decommissioning and environmental restoration.

Management Oversight	Volume 1 Safety Basis Process Overview	Volume 1 Management LOIs for DOE Field Office Review	Volume 1 Management LOIs for Contractor Review
Facility Lifecycle	Volume 2 LOIs for Design **	Volume 3 LOIs for: <ul style="list-style-type: none"> • Operations • Transitioning From Operations to Post - Operations 	Volume 4 LOIs for: <ul style="list-style-type: none"> • Decommissioning • Environmental Restoration
Cross Cutting	Volume 5 LOIs for TSR	Volume 5 LOIs for USQ	Volume 5 LOIs for SER

** The review of the Safety Design Strategy (SDS) and the Code of Record (COR) is an important part of the safety-in-design review process. The LOIs for SDS and COR are contained in two stand-alone SRPs.

¹ Facility life cycle includes design, construction, commissioning, operations, transitions, decommissioning and environmental restoration.

References

The following references were used to develop the LOIs for safety basis review during facility decommissioning and environmental restoration. Also used were best management practices from field implementation, if any.

1. 10 CFR 830, Subpart B, *Safety Basis Requirements*
2. 10 CFR 830, Subpart B, § 830.204, *Documented Safety Analysis*
3. DOE O 430.1B, Chg 2, *Real Property and Asset Management*, September 2003
4. DOE G 430.1-2, *Implementation Guide for Surveillance and Maintenance during Facility Transition and Disposition*, September 1999
5. DOE G 430.1-3, *Deactivation Implementation Guide*, September 1999
6. DOE G 430.1-4, *Decommissioning Implementation Guide*, September 1999
7. DOE-STD-1186, *Specific Administrative Controls*, March 2004
8. DOE-STD-1120, *Integration of Environment, Safety, and Health into Facility Disposition Activities*, April 2005
9. DOE-STD-3009, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, Change Notice 3, March 2006²

Safety Basis Program Review LOIs for Facility Decommissioning and Environmental Restoration

The two Attachments contain LOIs for the review of safety basis process and documentation for: 1) facility decommissioning; and 2) environmental restoration. Volume 5 contains LOIs for SER, TSR and USQ and they are also applicable to these facility lifecycle phases.

² DOE-STD-3009-2014, *Preparation of Nonreactor Nuclear Facility Documented Safety Analysis*, was released in November 2014 and will be used for the update of the next version of the SRP.

Attachment 1 - Lines of Inquiry (LOIs) for Review of DSA for Decommissioning

Decommissioning LOIs ³	Yes	No
Was the DSA developed using the method described in DOE-STD-1120 and the provisions of 29 CFR 1910.120 or 29 CFR 1926.65, <i>Hazardous Waste Operations and Emergency Response</i> ?		
Is the description of the facility and scope of planned work activities consistent with information presented in the Decommissioning Plan as described in DOE O 430.1B, its guides, and DOE-STD-1120?		
Facility and Work Description		
Does the DSA comply with the following requirements of 10 CFR 830, Subpart B, § 830.204? <ul style="list-style-type: none"> • Facility and Work Description • Systematic Identification of Natural and Man-Made Hazards Associated with the Facility • Evaluation of Normal, Abnormal and Accident Conditions • Derivation of Hazard Controls • Description of Safety Management Program, including Criticality Safety 		
Does the DSA identify the location of the decommissioning site, the location of the facility within the site, its proximity to the public and to other facilities?		
Does the DSA identify a basis for site meteorological data and assumptions used in accident analysis calculations?		
Does the DSA provide a complete description of SSCs being decommissioned, their current configuration and any degradation or changes that may have occurred relative to the original design?		
Are planned decommissioning end states for the building and SSCs provided (i.e., at completion of decommissioning)?		
Does the DSA describe the operational history, including previous facility processes?		
Does the DSA describe planned decommissioning activities, techniques and equipment to be used? Is sequencing of decommissioning activities provided? Does the description of decommissioning techniques address supplemental power, hazardous chemicals, or heat or ignition sources that may be required or generated?		
Does the DSA describe the locations and quantities of remaining radioactive materials and contamination?		

³ These LOIs are based on 10 CFR 830, Subpart B; DOE-STD-1120; and Best Management Practices (italicized) . They provide a starting point for a set of corporate Performance Expectations and Criteria. Review teams are expected to build on these and develop additional project-specific LOIs, as needed.

Hazard and Accident Analyses		
Is the hazard and accident analysis methodology consistent with DOE-STD-3009?		
Does the HA give consideration to remaining or newly introduced hazardous materials, existing or newly introduced energy sources, hazards related to the physical degradation of SSCs, and worker hazards associated with decommissioning activities (e.g., exposures during equipment removal)?		
Is the HA based on the best-available information and records (e.g., where facility records are poor, the contractor has reviewed available records, interviewed past or present employees, performed a walk down of systems where feasible, performed non-intrusive or intrusive characterization)?		
Is hazard and accident analysis information consistent with the anticipated types and sequences of decommissioning activities?		
Does the DSA provide an evaluation of natural phenomena hazards and external events that could impact decommissioning operations?		
Hazard Controls		
Do hazard controls follow the hierarchy presented in DOE-STD-3009 (i.e., engineered safety features over administrative controls, and preventive over mitigative controls)? If not, does the DSA provide adequate justification for control selection decisions?		
Are hazard controls linked to the results of hazard/accident analysis results?		
Are SACs designated in accordance with DOE-STD-1186?		
Are safety management programs summarized as applicable based on requirements of items 5 and 6 of 10 CFR 830.204(b)?		
Where safety SSCs are required, does the DSA present information consistent with DOE-STD-3009?		
Are step-out criteria specified for those safety SSCs that will be retired during the decommissioning process?		
Where TSR controls are required, does the DSA derive the controls consistent with Chapter 5 of DOE-STD-3009?		
When SACs are selected in lieu or support of an engineered feature, does the TSR derivation information justify this decision?		

Attachment 2 - Lines of Inquiry (LOIs) for DSA Review for Environmental Restoration

Environmental Restoration LOIs⁴	Yes	No
Has a DSA been prepared for environmental restoration activities ⁵ that are not performed within a permanent structure as required by 10 CFR 830, Subpart B?		
Was the DSA developed using the method described in DOE-STD-1120 and the provisions of 29 CFR 1910.120 or 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response?		
<i>Is the description of the scope of planned work activities consistent with information presented in the project plan for environmental restoration?</i>		
Project and Site Description		
Does the DSA provide an adequate description of the planned restoration activities and techniques, as well as the anticipated final state upon completion of the project?		
Is the DSA description of planned work activities consistent with the scope of activities as agreed upon with federal and authorized State environmental regulators?		
Does the DSA clearly identify the size and location of the environmental restoration site and its proximity to the public and to other facilities?		
Does the DSA present background information on activities that led to the condition requiring restoration (e.g., previous waste disposal site)?		
Does the DSA clearly identify a basis for site meteorological data and assumptions used in accident analysis calculations?		
Does the DSA clearly describe the locations and quantities of remaining radioactive materials and contamination?		
Hazard and Accident Analyses		
Is the hazard and accident analysis methodology consistent with DOE-STD-3009?		
Does the HA give consideration to remaining or newly introduced hazardous materials, existing or newly introduced energy sources, and worker hazards associated with restoration activities?		
Is the HA based on the best-available information and records (e.g., where facility records are poor, the contractor has reviewed available records, interviewed past or present employees, and performed intrusive characterization)?		
Is hazard and accident analysis information consistent with the anticipated types and sequences of restoration activities?		

⁴ These LOIs are based on 10 CFR 830, Subpart B; DOE-STD-1120; and Best Management Practices (italicized) if any. They provide a starting point for a set of corporate Performance Expectations and Criteria. Review teams are expected to build on these and develop additional project-specific LOIs, as needed.

⁵ These activities are also subject to regulation under the Resource Conservation and Recovery Act and/or the Comprehensive Environmental Response, Compensation, and Liability Act, as well as requirements specified in federal facility agreements and agreements with authorized States.

Does the DSA provide an evaluation of natural phenomena hazards and external events where applicable?		
Hazard Controls		
Do hazard controls follow the hierarchy presented in DOE-STD-3009 (i.e., engineered safety features over administrative controls, and preventive over mitigative controls)? If not, does the DSA provide adequate justification for control selection decisions?		
Are hazard controls linked to the results of hazard/accident analysis results?		
Are SACs designated in accordance with DOE-STD-1186?		
Are safety management programs summarized as applicable based on requirements of items 5 and 6 of 10 CFR 830.204(b)?		
Where safety SSCs are required, does the DSA present information consistent with DOE-STD-3009?		
