

Management Control Procedure

Nuclear Facility Change

**Idaho
Cleanup
Project**

CH2M • WG Idaho, LLC is the Idaho Cleanup Project contractor for the U.S. Department of Energy

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 1 of 28
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CONTENTS

1.	INTRODUCTION	2
1.1	Purpose.....	2
1.2	Scope and Applicability	2
2.	RESPONSIBILITIES	4
3.	PREREQUISITES	4
4.	INSTRUCTIONS.....	4
4.1	Reviewing Technical Baseline.....	4
4.2	Initiating the Nuclear Facility Change Process.....	5
4.3	Design Input.....	6
4.4	Design Output and Verification Planning.....	7
4.5	Design Output Verification.....	8
4.6	Facility Change Implementation and Field Support	11
4.7	FCF Revisions.....	12
4.8	Operations Partial Turnover.....	13
4.9	Operations Turnover	14
4.10	FCF Closeout	15
4.11	FCF Cancellation	16
5.	RECORDS	16
6.	DEFINITIONS.....	16
7.	REFERENCES	18
8.	APPENDIXES	19
	Appendix A—Nuclear Facility Change Process.....	20
	Appendix B—MCP-2811 Procedure Basis	21

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 2 of 28

1. INTRODUCTION

1.1 Purpose

The *nuclear facility change* ([see def.](#)) process is a key *configuration management* ([see def.](#)) tool for controlling nuclear facility changes that require design and development of *engineered items* ([see def.](#)) or that change the form, fit, or function of the *structure, system, or component* (SSC; [see def.](#)) being modified.

This process provides the system engineer with the primary tool used to maintain and document changes to the physical configuration of nuclear facilities.

1.2 Scope and Applicability

The process starts with reviewing the required *technical baseline* ([see def.](#)) documents, per [MCP-1492](#), “Technical Baseline,” and continues through proposing and making a facility change, which may be a new design or a change to an existing SSC design, and completes with either turnover and closeout or cancellation of the change. [Appendix A](#), “Nuclear Facility Change Process,” illustrates the MCP-2811 process.

This procedure applies to changes and additions to ICP nuclear (Hazard Category 1, 2, and 3) facilities.

The process also applies to *portable engineered equipment or tools* ([see def.](#)) that are used in a nuclear facility and that could negatively impact the facility authorization basis.

NOTE: *This process can also be useful in nonnuclear facilities. For example, the rigor of the nuclear facility change process can be beneficial if the system or facility is complex, if a high level of information tracking and control for future reference is necessary, or if the change will be applied widely in several systems or facilities.*

This process does **not** apply to:

- A. Changes to quality level (QL)-4 SSCs within a nuclear facility. Such changes may be made using the [MCP-1308](#), “Field Design Change,” process.
- B. Changes to QL-3 SSCs within a nuclear facility that meet **ALL** of the following criteria. Such changes may be made using the [MCP-1308](#) process;
 - 1. Does not affect or require new technical and functional requirements (T&FRs)
 - 2. Does not affect essential or master facility drawings
 - 3. Does not affect facility operating or emergency alarm response procedures

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 3 of 28
--------------------------------	---

4. Has minimal effect on other technical baseline documents
5. Does not affect facility operations (such as requiring an SSC to be taken out of service).

NOTE: *Where it is uncertain if the above criteria are met, it can be helpful to discuss application of this exclusion provision with the A/PCE.*

- C. Less than Hazard Category 3 (LTHC3) facilities, which use [MCP-1308](#) to manage the change process.
- D. Change control for computer systems (hardware and software) within the scope of [MCP-550](#), “Software Management.”
- E. Change control for instrumentation and control (I&C) systems (hardware and software) within the scope of [MCP-3630](#), “Digital Instrumentation and Control System Management,” unless those systems are being changed in conjunction with a facility change per this procedure.
- F. DOE “excepted,” “strong-tight,” and “industrial packaging (IP-1)” packaging for shipment of low-specific-activity (LSA) materials and surface contaminated objects (SCOs) in accordance with 49 *Code of Federal Regulations* (CFR), Subtitle B, “Hazardous Material Regulations,” Sections 171 through 180.

Facility changes that are in process at the time revision 16, 17, or 18 of this procedure is issued must comply with the instructions of this revision from the point in the process to which the change has progressed (no retroactive implementation necessary). For example, a facility change that has completed design verification need not implement revision 18 instructions prior to that point in the process, but must comply with revision 18 instructions for subsequent steps in the process.

In-process facility changes may be completed on the revision of the facility change form (FCF) on which the change was initiated, and new provisions of the form may be added to the existing form. However, the information contained in draft FCFs that have not received any signatures must be transferred to the new form with the entire facility change completed per revision 18 of this procedure.

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 4 of 28
-------------------------	---

2. RESPONSIBILITIES

NOTE: *The performer designations called out in this procedure are based on function rather than organization. As such, performer responsibilities may be assigned to individuals with titles other than those specified.*

Performer	Responsibilities
System Engineer (SE)	<p>Has overall technical responsibility for assigned SSC(s), which include: 1) developing and maintaining the system technical baseline, 2) ensuring technical adequacy of all nuclear SSCs, and 3) overseeing SSC changes.</p> <p>Manages nuclear facility engineering changes.</p> <p>Provides any needed updates to the Facility Hazards List as a result of the change.</p> <p>Maintains configuration of SSCs in accordance with approved safety basis.</p>
Area/Project Chief Engineer (A/PCE)	<p>Provides <i>design authority</i> (see def.) approval and verification of key stages of the facility change process.</p> <p>The A/PCE may assign a design authority manager for design authority function responsibilities.</p>
<i>Operations Manager</i> (see def.)	<p>Accepts <i>operations turnover</i> (see def.) of the applicable SSC.</p>
Design Engineer (DE)	<p>Produces engineering deliverables that meet the design inputs.</p>

3. PREREQUISITES

None

4. INSTRUCTIONS

4.1 Reviewing Technical Baseline

- 4.1.1 SE: Review *technical baseline* ([see def.](#)) documentation identified per [MCP-1492](#), “Technical Baseline,” and listed on Form [431.76](#), “SSC Technical Baseline Verification and Validation,” to determine how technical baseline documentation may be affected by the facility change.
- 4.1.2 SE: If this facility change will result in new technical baseline documentation, use the process directed by [MCP-1492](#) to establish the technical baseline in conjunction with FCF closeout.

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 5 of 28
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4.2 Initiating the Nuclear Facility Change Process

NOTE: When a [Form 431.37](#), “Facility Change Form,” (FCF) is initiated for a large, complex, overall facility change, it can be helpful to parse some SSC changes within the overall change to separate FCFs.

4.2.1 **SE:** Initiate [Form 431.37](#), “Facility Change Form,” (FCF).

4.2.1.1 Obtain an ICP Electronic Document Management System ([EDMS](#)) FCF number by:

- A. Clicking the “Numbering” tab on the [EDMS homepage](#)
- B. Clicking the “Get FCF number” in the “Get a Facility Change Form (FCF) Number” field
- C. Filling out the required fields
- D. Clicking “Submit.”

4.2.1.2 In the FCF header, provide the FCF number and revision.

4.2.1.3 Provide the following information, as available, in the associated numbered blocks of FCF Section I, “Initiation of Facility Change Process”:

- A. **Change Title:** Name of the facility change
- B. **Area:** Site area(s) serviced by the affected facility
- C. **BSR:** Building, structure, or road (BSR) number of the affected facility (see the [Facility Planning Database](#) for BSR numbers)
- D. **Project File No.:** Project number or “NA”
- E. **System:** Identifier for the system that is to be modified by the proposed change
- F. **System Safety Category (SC, SS, NA):** System safety category (see the [ICP Safety SSC List](#))
- G. **Description and Justification:** General description of:
 - Current problem
 - Scope of work for the change
 - Anticipated impacts due to the change
 - Specific boundaries involved with the change
 - Justification as to why the proposed change should be made.

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 6 of 28

H. **Affected SSC(s):** Identifiers and descriptions of SSC(s) affected by the proposed change, including interfacing SSCs.

4.2.2 SE: If, at any time during FCF development, the size of an FCF section is insufficient for the needed information, expand the section or attach the additional information to the FCF and reference it in that section of the FCF.

4.3 Design Input

4.3.1 SE: Plan technical and design aspects of the engineering project per [MCP-1450](#), “Conduct of Engineering.”

4.3.2 SE: Determine the need for a fire safety assessment (FSA) or for a new or changed fire hazards analysis (FHA) [see [MCP-583](#), “Performing Fire Hazards Analysis (FHA), Fire Safety Assessments (FSA), & Abbreviated Fire Assessments (AFA)”].

4.3.2.1 If assistance in making the determination(s) is required, obtain the services of the site area fire protection engineer.

4.3.2.2 Identify in the FCF whether an FSA or FHA is required.

4.3.2.3 If an FSA or FHA is required, obtain the services of a qualified fire protection engineer to perform the FSA or FHA per [MCP-583](#).

4.3.2.4 Attach any FSA or FHA documentation to the FCF or list it in FCF Section VIII, “Activities, Documents, and Drawings.”

4.3.3 SE: Complete T&FR development per [MCP-9185](#), “Technical and Functional Requirements.”

4.3.3.1 In FCF Section II, “Design Input,” identify whether T&FRs are documented as a standalone document, attached to the FCF, or documented in FCF Section II.

4.3.3.2 If T&FRs are documented in or attached to the FCF for a facility change that will impact a QL-1 or QL-2 SSC, obtain Nuclear Safety review and signature approval in FCF Section II.

NOTE: [Form 412.15](#), “ICP Controlled Document Approval Sheet,” can be useful for capturing any additional signatures for T&FRs that are documented in or attached to the FCF.

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 7 of 28

4.3.4 SE: In FCF Section II, provide any other design input not captured in the T&FRs.

NOTE: *Other design input can include:*

- *Special instructions to the design engineer*
- *Pertinent historical information*
- *Need to determine inspection requirements (such as welding)*
- *Need to determine vendor data requirements*
- *Need to determine component test requirements (such as pressure tests)*

4.3.5 SE: Complete quality level determinations (QLDs) per [MCP-540](#), “Assigning Quality Levels.”

4.3.5.1 Identify the quality level of the system being modified and associated quality level determination (QLD) number in FCF Section II.

4.3.5.2 Include any other useful quality level information (such as how quality levels were parsed among affected SSCs).

4.3.6 SE: List affected activities, documents (including technical baseline documents), databases, procedures, and training in FCF Section VIII, “Activities, Documents, and Drawings,” and identify those that must be completed before *operations turnover* ([see def.](#)).

NOTE: *Documents that must be completed before operations turnover are those that are required to be updated and issued for facility operations (see the note following step 4.9.4 for a list of examples).*

4.3.7 SE: Regardless of how T&FRs are documented, provide signature approval in FCF Section II that T&FRs and design input are complete.

4.3.8 A/PCE: Regardless of how T&FRs are documented, provide signature approval in FCF Section II that T&FRs and design input are complete and the facility change can proceed to design.

4.3.9 SE: Provide the DE with the FCF and attachments to design the facility change.

NOTE: *Although it is not required, submitting a copy of the FCF and attachments to Records Management staff at this stage of the process can protect against inadvertent loss of or damage to the package.*

4.4 Design Output and Verification Planning

4.4.1 DE: Manage the design-related activities, and develop the design to meet the design inputs per [MCP-1450](#), “Conduct of Engineering.”

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 8 of 28

- 4.4.2 SE and DE: Plan development of the design output documents to include consideration of need for:
- A. New drawings, specifications, or statements of work
 - B. Changes to existing drawings or specifications per [MCP-1308](#), “Field Design Change”
 - C. Identification of requirements and acceptance criteria for inspections (such as welding) and component tests (such as pressure test)
 - D. Identification of vendor data requirements
 - E. Identification of material storage requirements.
- 4.4.3 SE and DE: Working with others as needed, plan design verification per [MCP-9217](#), “Design Verification.”

NOTE 1: *The methods of design verification identified in MCP-9217, are:*

- *Technical checking*
- *Informal design review*
- *Formal design review*
- *Alternate calculations*
- *Qualification testing.*

NOTE 2: *As directed in MCP-9217, the method(s) and depth of design verification are selected based upon:*

- *Importance to safety*
- *Design complexity*
- *Degree of standardization or similarity to existing designs*
- *Maturity of the technology employed in similar applications.*

4.5 Design Output Verification

- 4.5.1 SE: Complete design output verification and approval activities per [MCP-9217](#), “Design Verification.”

NOTE: [MCP-1308](#), “Field Design Change,” provides a process to change design output documents, which includes performing technical checking and obtaining applicable reviews.

- 4.5.1.1 Identify design verification method(s) used in FCF Section III, “Design Output Verification.”

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
 Revision*: 18
 Page: Page 9 of 28

- 4.5.1.2 If all design output documents are not available at the same time and it is important to be able initiate change implementation, complete partial scope design verification in stages and document as such in FCF Section III, “Design Output Verification.”
- 4.5.1.3 If this is an NRC-licensed facility, provide justification for the selected design verification method(s) in FCF Section III.
- 4.5.1.4 List in FCF Section VIII, “Activities, Documents, and Drawings,” any new, revised, or affected design output documents.
- 4.5.1.5 List in FCF Section VIII any new or revised formal design review closeout documentation, alternate calculations, or qualification testing, if performed.
- 4.5.1.6 If design documents changed by an FDC, also list the FDC in FCF Section VIII.
- 4.5.1.7 If the facility change will also require an I&C system change per [MCP-3630](#), “Digital Instrumentation and Control System Management,” and a computer system change form (CSCF) has been initiated, then also list the CSCF in FCF Section VIII.
- NOTE:** *Design drawings, including essential and master facility drawings, that are affected by the facility change could also be relevant to the I&C system change. It is important that such drawings are listed on both the FCF and the CSCF. This is especially true where, as allowed by [MCP-3630](#), as-building of the drawings listed on the CSCF is handed off to the FCF.*
- 4.5.2 **SE:** If the proposed change is for a DOE nuclear facility or activity, determine whether the unreviewed safety question (USQ) process applies per [MCP-123](#), “Unreviewed Safety Question.”
- 4.5.2.1 Determine USQ applicability using [Form 431.62](#), “ICP USQ Process Proposed Change Form,” Section I, “Applicability.”
- 4.5.2.2 If any of the answers to [Form 431.62](#) questions a. through e. are “Yes,” check “NA” in the USQ block of FCF Section III, and go to step 4.5.4; otherwise, go to step 4.5.2.3.

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811

Revision*: 18

Page: Page 10 of 28

- 4.5.2.3 If the answers to all of questions a. through e. are “No,” request a qualified USQ preparer or evaluator to complete the USQ process on the proposed change and associated design output documents per [MCP-123](#).
- 4.5.2.4 **If the USQ is deferred**, proceed as follows.
- 4.5.2.4.1 Check “Deferred” in FCF Section III.
- 4.5.2.4.2 Identify the USQ determination as deferred in FCF Section VIII, “Activities, Documents, and Drawings,” and check “Ops Turn.”
- 4.5.2.4.3 **DO NOT** implement the proposed change in a Hazard Category 1, 2, or 3 nuclear facility until all required USQ documentation is completed.
- 4.5.2.5 When the USQ process is complete, check “USQ documentation completed” and enter the USQ number in the USQ block of FCF Section III.
- NOTE:** *USQ documentation can consist of the first page of [Form 431.62](#) (if the process stops at the Applicability review), or the entire form. There will be no USQ number to reference if any answer is “Yes” to questions a. through e. on the first page of Form 431.62.*
- 4.5.3 **SE:** If the proposed change is for an NRC-licensed facility or activity, initiate the NRC screening process per [MCP-2925](#), “Screen and Evaluate Changes.”
- 4.5.3.1 Perform NRC screening using [Form 431.48](#), “10 CFR Part 72 Screen.”
- 4.5.3.2 In FCF Section III, indicate the results of the screening process and list applicable evaluation documentation.
- 4.5.4 **SE:** Coordinate as needed with an environmental screener per [MCP-3480](#), “Environmental Instructions for Facilities, Processes, Materials, and Equipment,” step 4.1.4 (see also [MCP-3480](#), Appendix A).
- 4.5.4.1 In FCF Section III, indicate whether an environmental checklist is required.
- 4.5.4.2 If an environmental checklist is required, attach the completed checklist to the FCF.

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 11 of 28

- 4.5.5 SE: Provide signature approval in FCF Section III that:
- A. Design is acceptable and verified
 - B. All design documents are listed in FCF Section VIII
 - C. Applicable USQ, NRC, and environmental determinations have been performed on new and revised documents.
- 4.5.6 A/PCE: Provide signature approval in FCF Section III that:
- A. Design meets objectives
 - B. Facility change is appropriate to make from an engineering perspective
 - C. Appropriate organizations were involved in the design
 - D. There are no engineering issues that require resolution prior to releasing the design for implementation
 - E. All design documents are listed in Section VIII
 - F. Applicable USQ, NRC, and environmental determinations have been performed on new and revised documents
 - G. Facility change can proceed.
- 4.5.7 SE: Submit the verified *nuclear facility change package* ([see def.](#)) to Records Management staff per [MCP-557](#), “Records Management.”
- 4.5.8 SE: Update the status of the FCF in [EDMS](#) to indicate the facility change is design output verified.

4.6 Facility Change Implementation and Field Support

- 4.6.1 SE: Provide the implementing organizations with the design documents needed to implement the facility change.
- 4.6.1.1 Ensure design documents necessary to construct, fabricate, and install the change are included with the associated work order per [MCP-101](#), “ICP Integrated Work Control Process.” Include the FCF as needed.
 - 4.6.1.2 If inspection (such as welding inspection) or component testing (such as pressure testing) is required, ensure the inspection and testing requirements, including acceptance criteria, are included in the [MCP-101](#) work order.
 - 4.6.1.3 If an I&C system change is being made in conjunction with the facility change, coordinate change implementation between the facility change and I&C system change per [MCP-3630](#).

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 12 of 28

4.6.1.4 Provide other affected organizations and disciplines (such as training) with documentation necessary to implement the change.

4.6.2 SE: If component testing is required, ensure that testing instructions, including acceptance criteria, are developed per [MCP-3465](#), “Component Test Control,” and the test instruction document (such as procedure (TPR) or work order (WO) is identified in FCF Section VIII, “Activities, Documents, and Drawings.”

4.6.3 SE: If system operational (SO) testing or other testing is required, ensure that testing instructions, including acceptance criteria, are developed per [MCP-3056](#), “Test Control,” and the test instruction document (such as procedure (TPR) or work order (WO) is identified in FCF Section VIII, “Activities, Documents, and Drawings.”

4.6.4 SE: Obtain input from operations management for training that may be required prior to or after operations turnover and identify the required training in FCF Section VIII, “Activities, Documents, and Drawings.”

NOTE: *Operations management is responsible for identifying and implementing required training. Whether training is required may depend on the scope and complexity of the change and whether there are significant system configuration changes or whether operating parameters or controls have been modified. New or modified training may include system training, process overview training, emergency response training, and SAR/TSR training. This generally does not include informal training, on the job training, or training on operating procedures. Identifying training on the FCF will help ensure required training is identified and documented.*

4.7 FCF Revisions

NOTE: *FCF revisions do not include informational corrections that do not change the intent, scope, or technical content of the FCF. These corrections are made to the FCF as needed.*

4.7.1 SE: If during the facility change process a change to FCF Section I, II, or III is needed, revise the FCF or generate a new FCF.

4.7.1.1 In the description and justification block of FCF Section I, document:

- A. Purpose and scope of the revision
- B. Whether the revision completely supersedes the previous revision
- C. Whether the revision makes changes only per the attached pages and documents, and the unchanged pages remain effective.

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 13 of 28
--------------------------------	--

4.7.1.2 Return to the applicable sections of this procedure for process completion, which may include completing USQ, 10 CFR 72, and environmental processes (documented in FCF Section III).

4.7.1.3 Obtain revision approval of appropriate personnel from the functions, or current equivalent, that approved the original FCF.

4.8 Operations Partial Turnover

NOTE 1: *Operations partial turnover is used when some portion of the facility change must be operational before all of the physical work and SO testing associated with the change can be completed.*

NOTE 2: *Operations partial turnover is also used when one or more essential drawings are affected by two or more FCFs and as-building of the essential drawings cannot occur until physical work or testing for all FCFs is complete and drawings are field verified for as-building per [MCP-2377](#), “Development, Assessment, and Maintenance of Drawings.”*

4.8.1 SE: In FCF Section IV, “Operations Partial Turnover,” identify:

- A. SSCs approved for operation in the partial turnover
- B. SSC turnover interfaces and boundaries
- C. Justification for performing the partial turnover
- D. Actions and documents required to be satisfied or completed and released prior to the partial turnover.

NOTE: *The “Ops Turn” box in FCF Section VIII is not applicable under an operations partial turnover.*

4.8.2 SE: Make sure all affected design documents are listed in FCF Section VIII, “Activities, Documents, and Drawings.”

4.8.3 SE: If USQ determinations were deferred, complete the USQ process as it applies to SSCs being turned over per step 4.5.2.

4.8.4 SE: Provide signature approval that the change package is ready for operations partial turnover in FCF Section IV, “Operations Partial Turnover.”

4.8.5 A/PCE: Provide design authority signature verification that the change package is ready for operations partial turnover in FCF Section IV, “Operations Partial Turnover.”

4.8.6 Operations Manager: Provide signature acceptance of the operations partial turnover in FCF Section IV.

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 14 of 28
-------------------------	--

4.8.7 SE: If multiple partial turnovers occur, repeat the steps in this section, document the results on a copy of the applicable FCF page, and attach the page to the FCF.

4.9 Operations Turnover

4.9.1 SE: If a partial operations turnover was not performed, check “Section IV not used” in FCF Section IV.

4.9.2 SE: Confirm all affected activities, documents, databases, procedures, and training are listed in FCF Section VIII, “Activities, Documents, and Drawings.”

4.9.3 SE: If USQ determinations were deferred, complete the USQ process per step 4.5.2.

4.9.4 SE: Confirm all affected activities, documents, databases, procedures, and training that **must be** completed before [operations turnover](#) (see def.) are completed.

NOTE: *Documents that must be completed before operations turnover are those that are required to be updated and issued for facility operations. Examples include:*

1. *Essential drawings that must be as-built prior to turnover to operations unless an extension has been obtained per [MCP-2377](#), “Development, Assessment, and Maintenance of Drawings.”*
2. *Operating technical procedures (TPRs) and emergency alarm response procedures (EARs)*
3. *Work orders for change implementation or instrument calibration (final closeout completed)*
4. *Preventative maintenance justifications (PMJs) to provide to maintenance for Master Equipment List (MEL) data input*
5. *Computer system change forms (CSCFs) where the facility change under the FCF also required an I&C system change per [MCP-3630](#), “Digital Instrumentation and Control System Management.”*
6. *Training plans or courses for training that may be required prior to facility operations*

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 15 of 28

4.9.5 SE: In FCF Section V, provide signature approval that all actions required for operations turnover are completed and the change package is ready for operations turnover.

NOTE: *Before obtaining operations turnover signature acceptance by the operations manager, a meeting with the manager to discuss the facility change and associated operations turnover can facilitate the turnover process. Possible agenda items can include discussion of facility change operational impacts and review of documents and actions required for operations turnover (see step 4.9.4) or for completion at closeout. The extent and rigor of this meeting would be based on the scope and complexity of the facility change.*

4.9.6 A/PCE: In FCF Section V, provide design authority signature verification that all required actions have been completed and the change package is ready for operations turnover.

4.9.7 Operations Manager: Provide signature acceptance of *operations turnover* ([see def.](#)) in FCF Section V.

4.9.8 SE: Submit a copy of the approved nuclear facility change package to Records Management staff per [MCP-557](#), “Records Management.”

4.9.9 SE: Update the status of the FCF in [EDMS](#) to indicate the facility change has been turned over to operations.

4.10 FCF Closeout

4.10.1 SE: Ensure all affected activities, documents (including technical baseline documents), databases, procedures, and training listed in FCF Section VIII, “Activities, Documents, and Drawings,” are completed for FCF closeout and update the completion status in FCF Section VIII.

4.10.2 SE: If any new hazards were introduced or if any hazards were modified, update the [Facility Hazards List](#) (FHL) per [MCP-3562](#), “Hazard Identification, Analysis, and Control of Operational Activities,” with the new or modified hazards and the mitigating assumptions, actions, or features related to those hazards.

4.10.3 SE: In FCF Section VI, provide signature approval that records management tasks are completed and the FCF is closed out.

4.10.4 A/PCE: In FCF Section VI, provide design authority signature verification that the FCF is completed and closed out.

4.10.5 SE: Submit the closed facility change package to Records Management staff per [MCP-557](#), “Records Management.”

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 16 of 28
--------------------------------	--

- 4.10.6 SE: Update the status of the FCF in [EDMS](#) to indicate the facility change is closed.

4.11 FCF Cancellation

NOTE: *FCF cancellation can occur at any time during the facility engineering change process, except when the work order associated with the FCF has been completed, which requires FCF closeout.*

- 4.11.1 SE: If the work order associated with the FCF has been completed, close out the FCF per Section 4.10.
- 4.11.2 SE: Ensure all activities, documents (such as technical baseline documents), databases, procedures, and training requirements associated with the FCF have been returned to pre-change condition.
- 4.11.3 SE: If canceling an FCF that has **not** received any signature approvals, go to step 4.11.6 to complete FCF cancellation; otherwise, go to step 4.11.4 to approve FCF cancellation.
- 4.11.4 SE: In FCF Section VII, “FCF Cancellation,” provide signature approval that all FCF cancellation actions are complete and the FCF is cancelled.
- 4.11.5 A/PCE: In FCF Section VII, “FCF Cancellation,” provide design authority signature verification that FCF cancellation actions are complete and the FCF is cancelled.
- 4.11.6 SE: Provide a copy of the canceled FCF to Records Management staff per [MCP-557](#), “Records Management.”
- 4.11.7 SE: Update the status of the FCF in [EDMS](#) to indicate the facility change is canceled.

5. RECORDS

Form 431.37, “Facility Change Form”

NOTE: [MCP-557](#), “Records Management,” the [INL Records Schedule Matrix](#), and associated [record types list\(s\)](#) provide current information on the storage, turnover, and retention requirements for these records.

6. DEFINITIONS

configuration management (CM). The process that establishes consistency among design requirements, physical configuration, and documentation; and maintains this consistency throughout the life of the SSC as changes occur.

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 17 of 28

design authority. The function having the responsibility and authority for establishing and maintaining the design requirements; ensuring design output documents accurately reflect the design basis; and approving the design bases, configuration, and changes thereto. This function is performed by a system engineer assigned by the area/project chief engineer as the design authority for assigned system(s).

engineered item. A structure, system, component, or other non-catalog product that is constructed, fabricated, operated, or maintained based on ICP-approved engineering design process deliverables (such as calculations, drawings, engineering sketches, and specifications).

nuclear facility change. Establishing a new or modified SSC through a process that provides appropriate attention to design error and deficiency control, design changes, computer software design and control, technical reviews, peer reviews, experimental and developmental activity control, and data qualification. This process may be applied to decommissioning, decontamination, and dismantlement (DD&D) activities.

nuclear facility change package. The facility change form (FCF) together with the technical and functional requirements (T&FRs) and any attached technical inputs, design verification records, environmental checklists, USQ or 10 CFR 72.48 screens and evaluations, and supporting documentation, such as calculations and engineering design files. Controlled documents are normally included as part of the package by reference only. The facility change design package is a living package until the process is complete, so, at any given stage of the process, it may not contain or reference all items mentioned above.

operations manager. Individual responsible for managing the conduct of business pertaining to hardware, related facilities, or systems that produce products or services such as experimental test facilities, nuclear reactors, or waste processing and storage facilities. Shift supervisors, facility supervisors, or tenant managers having this responsibility are also operations managers.

operations turnover. A stage in the facility change process when operations management is informed, and then confirms by an acceptance signature, that the facility change has been physically accomplished and the SSC is ready for operational use.

portable engineered equipment or tools. Tools or equipment engineered or designed for a specific application within a facility or for a project. Examples can include 1) fuel handling or removal tools or fixtures or 2) tools or fixtures for process vessel or equipment assembly and disassembly.

safety basis documents. This includes the following types of safety documents considered to be documented safety analyses (DSAs):

- A. Preliminary documented safety analyses (PDSAs)
- B. Safety analysis reports (SARs)
- C. Technical safety requirement (TSR) documents
- D. Hazard assessment documents (HADs)

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 18 of 28

- E. Evaluations of the safety of the situation (ESSs)
- F. DOE safety evaluation reports (SERs)
- G. Safety basis lists
- H. Unreviewed safety question (USQ) screenings and evaluations.

structures, systems, or components (SSCs). Structures are elements that provide support or enclosure, such as buildings, freestanding tanks, basins, dikes, or stacks. Systems are collections of components assembled to perform functions, such as piping; cable trays; conduit; or heating, ventilation, and air conditioning (HVAC). Components are items of equipment, such as pumps, valves, relays, or elements of a larger array, such as computer software, lengths of pipe, elbows, or reducers.

technical baseline. The documentation that defines SSC design, operation, and maintenance requirements and depicts SSC physical configuration. The technical baseline could have all, some, or more documents than those identified below:

- A. *Safety basis documents* ([see def.](#))
- B. System design descriptions (SDDs)
- C. Technical and functional requirements (T&FRs)
- D. Master equipment list (MEL) , or equivalent company-approved equipment list
- E. Engineering design files (EDFs; Form 431.02)
- F. Vendor data
- G. Operation and maintenance (O&M) procedures
- H. Testing procedures and test results
- I. Emergency alarm response (EAR) procedures
- J. Facility change forms (FCFs; Form 431.37)
- K. Computer system change forms (CSFCs; Form 431.85 and 431.86)
- L. Essential drawings
- M. Master facility drawings (MFDs)
- N. Drawings that define boundaries of safety systems
- O. Quality level determinations (QLDs; Form 431.67)
- P. Software design descriptions and/or process software documents
- Q. Preventive maintenance justifications.

7. REFERENCES

10 CFR 72, “License Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Great than Class C Waste”

10 CFR 851, “Worker Safety and Health Program,” Sections 20 and 21

NUCLEAR FACILITY CHANGE

Identifier: MCP-2811
Revision*: 18
Page: Page 19 of 28

49 CFR, Subtitle B, “Hazardous Material Regulations,” Sections 171 through 180
Form 431.48, “10 CFR Part 72 Screen”
MCP-101, “ICP Integrated Work Control Process.”
MCP-123, “Unreviewed Safety Questions”
MCP-583, “Performing Fire Hazards Analysis (FHA), Fire Safety Assessments (FSA), & Abbreviated Fire Assessments (AFA)”
MCP-550, “Software Management”
MCP-557, “Records Management”
MCP-1308, “Field Design Change”
MCP-1450, “Conduct of Engineering”
MCP-1492, “Technical Baseline”
MCP-2377, “Development, Assessment, and Maintenance of Drawings”
MCP-2925, “Screen and Evaluate Changes”
MCP-3056, “Test Control”
MCP-3465, “Component Test Control”
MCP-3480, “Environmental Instructions for Facilities, Processes, Materials, and Equipment”
MCP-3562, “Hazard Identification Analysis and Control of Operational Activities”
MCP-3630, “Digital Instrumentation and Control System Management”
MCP-9185, “Technical and Functional Requirements”
MCP-9217, “Design Verification”
Form 431.37, “Facility Change Form”
Form 431.52, “Design Review Checklist”
Form 431.62, “ICP USQ Process Proposed Change Form”
Form 431.76, “SSC Technical Baseline Verification and Validation”

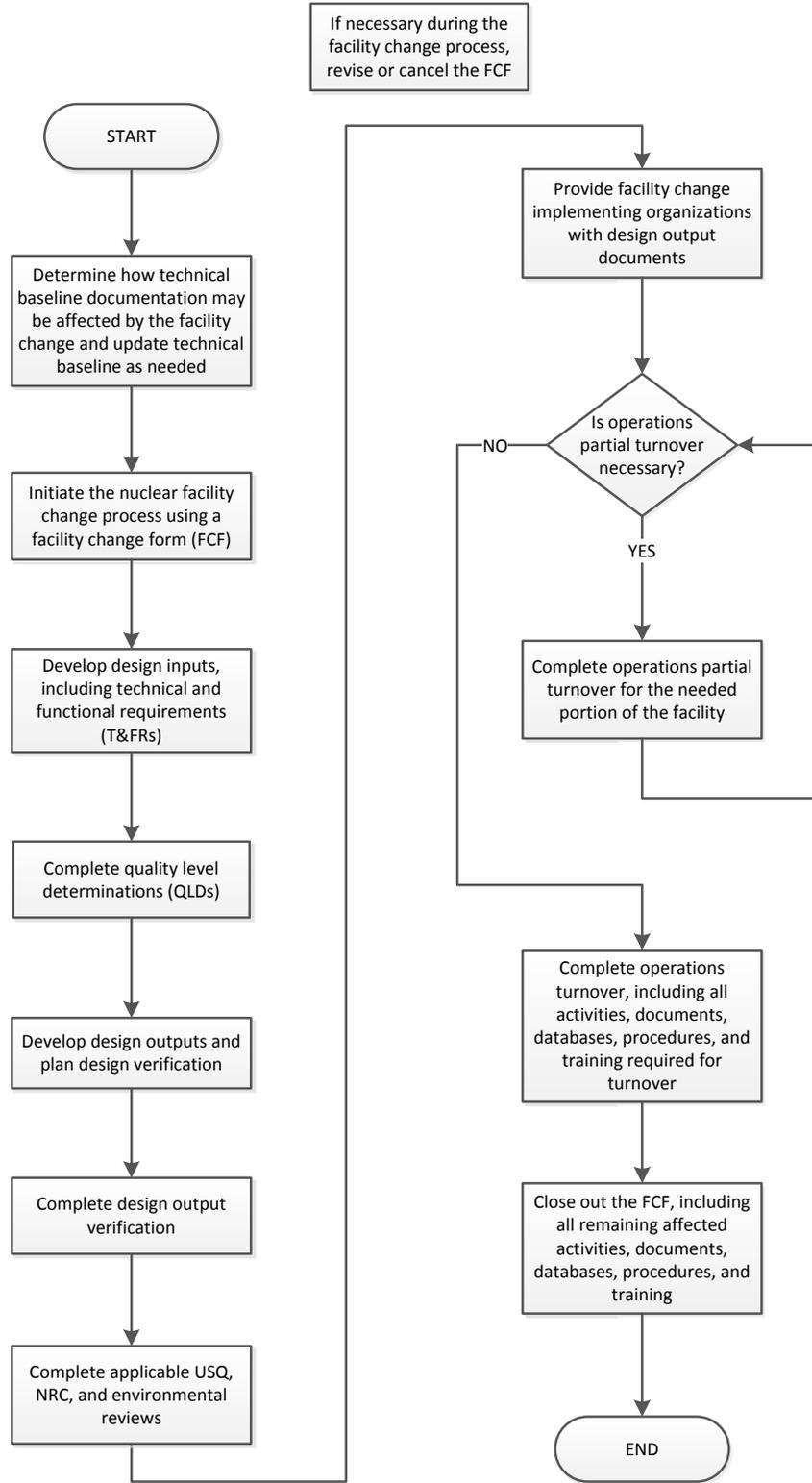
8. APPENDIXES

Appendix A, Nuclear Facility Change Process
Appendix B, MCP-2811 Procedure Basis

<p>NUCLEAR FACILITY CHANGE</p>	<p>Identifier: MCP-2811 Revision*: 18 Page: Page 20 of 28</p>
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Appendix A

Nuclear Facility Change Process



NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 21 of 28
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Appendix B

MCP-2811 Procedure Basis

Step	Basis	Source	Citation
All, Form 431.37	The design will be defined, controlled, and verified.	PRD-5074, “Design Control”	4.1.1.1
All, Form 431.37	<p>Changes to design inputs, final designs, field changes, and temporary and permanent modifications to operating facilities will be justified and will be subject to design control measures commensurate with those applied to the original design.</p> <p>These design control measures will include provisions to evaluate the effect of the changes on the overall previously verified design and ensure that the design analyses for the item are still valid. The evaluation will include facility configurations that occur during operation, maintenance, test, surveillance, and inspection activities.</p>	PRD-5074	4.1.10.1 4.2.6.1.1 4.2.6.1.2 (SNL & HLW only)
All, Form 431.37	<p>(1) CM must be used to develop and maintain consistency among system requirements and performance criteria, documentation, and physical configuration for the SSCs within the scope of the Program.</p> <p>(2) CM must integrate the elements of system requirements and performance criteria, system assessments, change control, work control, and documentation control.</p>	PRD-115, “Configuration Management”	3.1
All, Form 431.37	Contractors should establish the design authority for each SSC. The design authority is the single organization responsible for establishing and maintaining the design requirements, ensuring that design output documents accurately reflect the design basis, and maintaining design control and ultimate technical adequacy of the design process.	PRD-115	3.2

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 22 of 28
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Step	Basis	Source	Citation
All, Form 431.37	The objective of the design requirements element of CM is to document the design requirements. The design requirements define the constraints and objectives placed on the physical and functional configuration. The design requirements to be controlled under CM will envelope the safety basis and, typically, the authorization basis. Consequently, proper application of the CM process should facilitate the contractor’s efforts to maintain the safety basis and the authorization basis.	PRD-115	3.2
All, Form 431.37	The responsible design organization will prescribe and document the design activities on a timely basis and to the level of detail necessary to permit the design process to be carried out in a correct manner, and to permit verification that the design meets requirements.	PRD-5074	4.1.4.1
All, Form 431.37	The Engineering organizations are responsible for: D. Determining the need for and controlling facility design and modifications. J. Implementing configuration management for facilities, systems, and components under its control.	PRD-5074	3.1.D and J
All, Form 431.37	Changes shall be approved by the same affected groups of organizations which reviewed and approved the original design documents. Except where an organization which originally was responsible for approving a particular design document is no longer responsible, then a new responsible organization will be designated.	PRD-5074	4.2.6.1.2 (SNL & HLW only)
All, Form 431.37	Design efforts shall be coordinated among participating design organizations and across technical disciplines...	PRD-5074	4.2. 7.1 (SNL & HLW only)
All, Form 431.37	Design documents will adequately support facility design, fabrication, construction, and operation.	PRD-5074	4.1.4.2
All, 4.7	Design changes will be governed by control measures commensurate with those applied to the original design.	PRD-5074	4.1.1.5
2., 4.	Design interfaces will be identified and controlled.	PRD-5074	4.1.1.3
2., 4.	Interface controls will include the integration of activities of organizations that can affect the approved configuration.	PRD-5074	4.1.11.5

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 23 of 28
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Step	Basis	Source	Citation
2., 4.	Procedures implementing configuration management requirements will be established and documented at the earliest practical time prior to facility operation. These procedures will include the responsibilities and authority of the organizations whose functions affect the configuration of the facility, including activities such as operations, design, maintenance, construction, licensing, and procurement.	PRD-5074	4.1.11.1
4.	The preparation, issue, and change of documents that specify quality requirements or prescribe activities affecting quality such as instructions, procedures, and drawings will be controlled to ensure that correct documents are being employed.	PRD-5077, "Document Control"	4.1.1.1 4.2.2.1 (SNL & HLW only)
4.	Configuration management requirements will include measures to ensure changes that may affect the approved configuration are recognized and processed.	PRD-5074	4.1.11.2
4., Form 431.37	Interface controls shall include the assignment of responsibility and the establishment of implementing documents among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces...	PRD-5074	4.1.3.1
4.1	The Technical Support organization is responsible for...Preparing technical baseline documents and approving changes thereto.	PRD-5074	3.4.D
4.1, 4.8, 4.9	The configuration will be established and approved at the earliest practical time prior to the initial operation of the facility, and maintained for the life of the facility.	PRD-5074	4.1.11.3
4.1, 4.3.1, 4.5	Measures will be established and implemented to assure that proposed changes to the configuration are evaluated for their conformance to the design bases.	PRD-5074	4.1.11.7
4.1, 4.3, 4.4.1, 4.4.2, 4.4.3, 4.5, 4.6	The configuration will include, as applicable, characteristics derived from regulatory requirements and commitments, calculations and analyses, design inputs, installation and test requirements, supplier manuals and instructions, operating and maintenance requirements, and other applicable sources.	PRD-5074	4.1.11.4
4.1.1, 4.10, Form 431.37	Documentation will identify the design bases and the approved configuration for the approved modes of operation.	PRD-5074	4.1.11.6

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 24 of 28
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Step	Basis	Source	Citation
4.2.1, 4.3.5, 4.4.3, 4.5.1, 4.9.3	Safety category assignments are documented and entered into a CM database and are used as input to applying the graded approach, wherein the level of analysis, documentation, and actions necessary to comply with the requirements are commensurate with the relative importance of the item.	PRD-115	3.2
4.3	Design inputs will be specified, translated into design documents, and approved on a timely basis.	PRD-5074	4.1.1.2
4.3	The design input will be specified to the level of detail necessary to permit the design activities to be carried out in a correct manner and to provide a consistent basis for making design decisions, accomplishing design verification measures, and evaluating design changes.	PRD-5074	4.1.2.2
4.3	Applicable information derived from experience, as set forth in reports or other documentation, will be made available to cognizant design personnel.	PRD-5074	4.1.4.4
4.3, 4.4	Documentation, traceability, and accountability must be maintained for each unique pressure vessel or system, including descriptions of design, pressure conditions, testing, inspection, operation, repair, and maintenance.	PRD-851, "10 CFR 851 Program Requirements Matrix"	Appendix A to Part 851, 4., "Pressure Safety," (c) (3)
4.3, 4.5.1	Identified "systems" must have defined system boundaries and component lists. Defined systems should contain those components necessary to accomplish the system's function and meet the system's design requirements.	PRD-115	3.2
4.3, 4.4, 4.5	The Engineering organizations are responsible for: F. Evaluating environmental and safety impacts.	PRD-5074	3.1.F
4.3, 4.4, 4.5	Contractors must establish and implement a hazard prevention and abatement process to ensure that all identified and potential hazards are prevented or abated in a timely manner. For hazards identified either in the facility design or during the development of procedures, controls must be incorporated in the appropriate facility design or procedure.	PRD-851	851.22, "Hazard prevention and abate- ment," (a) 851.22.(a) (1)
4.3, 4.4	Applicable design inputs will be identified and documented and their selection reviewed and approved by those responsible for the design.	PRD-5074	4.1.2.1

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 25 of 28
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Step	Basis	Source	Citation
4.3.2	FHAs and combination FHA/FSAs using a graded approach conducted for Hazard Category 1, 2, and 3 nuclear facilities, significant new facilities, and facilities that represent unique fire safety risks to be revised...when a modification to an associated facility or process adds a significant new fire safety risk.	PRD-199, “ICP Fire Protection Program”	5.2.19.1
4.3.6, 4.5.1, 4.5.5, 4.5.6, 4.9	The configuration of the facility will be documented in drawings, specifications, procedures, and other documents which reflect the operational status of the facility. The process utilized to control the current revision and issuance of these documents will take into account the use of the document and the need for revision to support operation.	PRD-5074	4.1.11.10
4.3.7, 4.3.8, 4.5, 4.8.4, 4.8.5, 4.8.6, 4.9.5, 4.9.6, 4.9.7, Form 431.37	Through the change control process, contractors must ensure that... changes receive appropriate technical and management review to evaluate the consequences of the change	PRD-115	3.4
4.4, 4.5.1, 4.6.1, Form 431.37	The final design including drawings, specifications, and other design output documents will: A. Be relatable to the design input by documentation in sufficient detail to permit design verification. B. Specify required inspections and tests and include or reference appropriate acceptance criteria. C. Identify assemblies and/or components that are part of the item being designed....	PRD-5074	4.1.4.5
4.4, 4.5, Form 431.37	The Engineering organizations are responsible for: K. Ensuring design output documents are consistent with design inputs and authorization basis documents. L. Developing detailed design output documents. M. Maintaining alignment of design output documents with design input document requirements.	PRD-5074	3.1.K, L, and M

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 26 of 28
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Step	Basis	Source	Citation
4.4, 4.5, Form 431.37	Design analyses will be planned, controlled, and documented. Design analyses will be sufficiently detailed such that a person technically qualified in the subject can review and understand the analyses and verify the adequacy of the results without recourse to the originator.	PRD-5074	4.1.5.1 4.2.4.2 through 4.2.4.5 (SNL & HLW only)
4.4, 4.5, 4.6	The Engineering organizations are responsible for: G. Reviewing design change documents, as required H. Participating in peer/technical reviews, as required N. Providing technical support organization interface	PRD-5074	3.1.G, H, and N 4.2.4.2 through 4.2.4.5 4.2.7.1
4.4.2, 4.5, 4.9, Form 431.37	The Engineering organizations are responsible for: P. Successful turnover of the project to the user. Q. Establishing inspection and test acceptance criteria R. Ensuring test and inspection plans are prepared S. Approving test and inspection plans	PRD-5074	3.1.P through S
4.5	Analyze designs of new facilities and modifications to existing facilities and equipment for potential workplace hazards.	PRD-851	851.21, "Hazard identification and assessment," a. (4)
4.5, 4.6	Verify or validate work before approval and implementation of the design.	10 CFR 830, "Nuclear Safety Management"	830.122(e) (5)
4.5.1, Form 431.37	The responsible design organization will identify and document the particular design verification method(s) used.	PRD-5074	4.1.6.7 4.2.4.2 (SNL & HLW only)
4.5.1	Design adequacy will be verified by individuals other than those who designed the item or computer program.	PRD-5074	4.1.1.4 4.2.4.3 (SNL & HLW only)
4.5.1, 4.7	Reviews are to be performed by personnel of the same disciplines who approved the original design, and typically only if their areas are affected by the change.	PRD-5074	4.1.10.2 4.2.4.3 (SNL & HLW only)
4.5.1, 4.5.5, 4.5.6	The design methods, materials, parts, equipment, and processes that are essential to the function of the items will be selected and reviewed for suitability of application.	PRD-5074	4.1.4.3

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 27 of 28
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Step	Basis	Source	Citation
4.5.2	Execution of the USQ Process for Proposed Changes	MCP-123, “Unreviewed Safety Question”	4.2
4.5.2, 4.5.5, 4.5.6, 4.7.1, 4.8.3, 4.9.5, Form 431.37	Provisions to ensure that physical changes, including those affecting safety SSCs, are evaluated via the USQ process and that any USQ is resolved prior to modification	PRD-115	3.4
4.5.3	Screening for 10 <i>Code of Federal Regulations</i> (CFR) 7210 CFR 72, “License Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Great than Class C Waste” applicability will be performed.	10 CFR 72	General
4.5.4	Initiate the Environmental Checklist process.	MCP-3480, “Environmental Instructions for Facilities, Processes, Materials, and Equipment”	4.1.4
4.5.5, 4.5.6, 4.8.5, 4.8.6, 4.9.5, 4.9.6	Approval by the design authority will be required prior to implementation of a change to the design bases.	PRD-5074	4.1.11.9
4.6, 4.8.4, 4.8.5, 4.9.5, 4.9.6, Form 431.37	The implementation sequence for approved configuration changes will be reviewed to determine that the configuration conforms to the design bases.	PRD-5074	4.1.11.8
5	All records designated in implementing documents as quality assurance records will be controlled in accordance with PRD-5088, “Quality Assurance Records.”	PRD-5074	5.1

NUCLEAR FACILITY CHANGE	Identifier: MCP-2811 Revision*: 18 Page: Page 28 of 28
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Step	Basis	Source	Citation
5, Form 431.37	Design documentation and records will include not only final design documents, such as drawings and specifications and revisions to those documents, but also documentation which identifies the important steps in the design process, including sources of design inputs that support the final design.	PRD-5074	5.2