

## ATTACHMENT 71111.17

INSPECTABLE AREA: Permanent Plant Modifications

CORNERSTONES: Initiating Events (10%)  
Mitigating Systems (70%)  
Barrier Integrity (20%)

INSPECTION BASES: Modifications to risk-significant structures, systems, and components (SSCs) can adversely affect their availability, reliability, or functional capability. Modifications to one system may also affect the design bases and functioning of interfacing systems. Similar modifications to several systems could introduce potential for common cause failures that affect plant risk. Modifications performed during increased risk configurations could place the plant in an unsafe condition. This inspectable area verifies aspects of the Initiating Events, Mitigating Systems, and Barrier Integrity cornerstones for which there are no indicators to measure performance.

LEVEL OF EFFORT Biennial review of 5 to 10 permanent plant modifications. Annual review of 1 to 2 risk-significant permanent plant modifications performed on-line as they occur.

### 71111.17-01 INSPECTION OBJECTIVES

01.01 To verify that the design bases, licensing bases, and performance capability of risk significant SSCs have not been degraded through modifications.

01.02 To verify that modifications performed during increased risk-significant configurations do not place the plant in an unsafe condition.

### 71111.17-02 INSPECTION REQUIREMENTS

02.01 Selection of Modifications. This procedure is performed both as an annual and a biennial review. Select modifications to be reviewed, depending on the type of review to be performed, as outlined in the following table.

For the purpose of this inspection, permanent plant modifications include permanent plant changes, design changes, set point changes, procedure changes, equivalency evaluations, suitability analyses, calculations, and commercial grade dedications.

<b>Review Type</b>	<b>Frequency</b>	<b>Scope and Focus</b>	<b>Applicable Inspection Activities</b>
Biennial Review	Once every two years	<p>Emphasis on modifications which affect SSCs with high probabilistic risk analysis (PRA) rankings</p> <p>Primarily modifications which affect mitigating systems</p> <p>At least one modification which affects barrier integrity</p>	<p>Section 02.02a. Design Review</p> <p>Section 02.02c. Testing Review</p> <p>Section 02.02d. Updating Review</p> <p>Section 02.03 Ident. and Resolution of Problems</p>
Annual Review	Once every year	<p>A minimum of one modification with one additional modification identified by Plant Status reviews.</p> <p>Modifications planned to be performed when the plant is either on-line or during increased shutdown risk configuration</p>	<p>Section 02.02a. Design Review</p> <p>Section 02.02b. Implementation Review</p> <p>Section 02.02c. Testing Review</p>

## 02,02 Inspection

a. Design Review. During inspection preparation, identify which affected parameters listed in the following table are to be inspected. Emphasis should be placed on those parameters not verified by testing. Review the design adequacy of the modification by performing the inspection activities for the selected parameters. A pre-inspection visit by regional specialists for the biennial review should be included, if necessary, during inspection preparation to obtain necessary documentation to perform that review.

Affected Parameter	Inspection Activity
Energy Needs <ul style="list-style-type: none"> <li>• electricity</li> <li>• steam</li> <li>• fuel + air</li> <li>• air</li> </ul>	Verify energy requirements can be supplied by supporting systems when required under accident/event conditions.  Verify energy requirements of modified SSCs will not deprive other SSCs of required energy under accident/event conditions.
Materials/Replacement Components <ul style="list-style-type: none"> <li>• material compatibility</li> <li>• functional properties</li> <li>• environmental qualification</li> <li>• seismic qualification</li> <li>• classification</li> </ul>	Verify materials/replacement components are compatible with physical interfaces.  Verify material/replacement component properties serve functional requirements under accident/event conditions.  Verify materials/replacement components are environmentally qualified for application.  Verify replacement components are seismically qualified for application.  Verify Code and safety classification of replacement SSCs is consistent with design bases.  Verify replacement schedule consistent with inservice/equipment qualification life.  Verify that new SSCs added to the plant have been reviewed for inclusion in the maintenance rule scope.
Timing <ul style="list-style-type: none"> <li>• Sequence</li> <li>• Response Time</li> <li>• Duration</li> </ul>	Verify that any sequence changes are bounded by accident analyses and loading on support systems are acceptable.  Verify SSC response time is sufficient to serve accident/event functional requirements assumed by design analyses.  Verify modified SSC response time does not cause an unintended interaction with other SSCs.  Verify equipment will be able to function for the duration required under accident/event conditions.
Heat Removal	Verify that heat removal requirements can be addressed by support systems under accident/event conditions.
Control Signals <ul style="list-style-type: none"> <li>• initiation</li> <li>• shutdown</li> <li>• control</li> </ul>	Verify that control signals will be appropriate under accident/event conditions.

Affected Parameter	Inspection Activity
Equipment Protection <ul style="list-style-type: none"> <li>• Fire</li> <li>• Flood</li> <li>• Missile</li> <li>• high energy line break</li> <li>• Freeze</li> </ul>	Verify that equipment protection barriers and systems have not been compromised.
Operations	Verify that affected operation procedures and training have been identified and necessary changes are in process.  Verify that the plant simulator has been updated as required.
Flowpaths	Verify that revised flowpaths serve functional requirements under accident/event conditions.
Pressure Boundary	Verify pressure boundary integrity is not compromised.
Ventilation Boundary	Verify that changes to ventilation boundaries do not increase risk of spreading contamination.  Verify that changes to ventilation boundaries do not adversely affect functionality of ventilation system under accident/event conditions.
Structural	Verify modified SSCs structural integrity acceptable for accident/event conditions.  Verify modified SSCs structural effects upon attachment points acceptable.  Verify modified SSCs effect on seismic evaluations acceptable.
Process Medium <ul style="list-style-type: none"> <li>• Fluid Pressures</li> <li>• Fluid Flowrates</li> <li>• Voltages</li> <li>• Currents</li> </ul>	Verify that affected process medium properties will be acceptable for both modified SSCs and unmodified SSCs under accident/event conditions.
Licensing Basis <ul style="list-style-type: none"> <li>• 10 CFR 50.59</li> </ul>	Verify that necessary Technical Specification changes have been identified and NRC approvals, if required, were obtained prior to modification implementation.  Verify acceptability of licensee's conclusions for those modifications where evaluations in accordance with 10 CFR 50.59 were not performed.
Failure Modes	Verify those failure modes introduced by the modification are bounded by existing analyses.

- b. Implementation Review. Verify that modification preparation, staging, and implementation does not impair the following:

1. In-plant emergency/abnormal operating procedure actions
2. Key safety functions
3. Operator response to loss of key safety functions

(For biennial reviews, Section 02.02b.inspection activity is optional)

- c. Testing Review. Verify that post-modification testing will maintain the plant in a safe configuration during testing. Verify that post-modification testing will establish operability by:
1. Verifying that unintended system interactions will not occur.
  2. Verifying SSC performance characteristics, which could have been affected by the modification, meet the design bases.
  3. Validating the appropriateness of modification design assumptions.
  4. Demonstrating that the modification test acceptance criteria have been met.

NOTE: Licensees often use existing procedures, such as surveillance procedures, for post-modification testing. Although performance of existing procedures may have been reviewed by inspectors for other inspectable areas, inspectors still need to verify the appropriateness of using the existing procedures for validating the modification (as opposed to simply confirming continued operability).

- d. Updating Review

1. Verify that design and licensing documents have either been updated or are in the process of being updated to reflect the modifications. Examples of design documents which could be affected by modifications are: updated final safety analysis report, drawings, supporting calculations and analyses, plant equipment lists, and vendor manuals.
2. Verify that significant plant procedures, such as normal, abnormal, and emergency operating procedures, testing and surveillance procedures, and licensed operator training manuals are updated to reflect the effects of the modification prior to being used.
3. If the plant modification added or deleted functions that could affect the plant specific SDP worksheets, inform the Regional SRA.

(For annual reviews, Section 02.02d inspection activity is optional.)

02.03 Identification and Resolution of Problems. Verify that the licensee is identifying permanent plant modification issues at an appropriate threshold and entering them in the corrective action program. As it relates to permanent plant modifications, select a sample of problems documented by the licensee and verify appropriateness of the corrective actions. See Inspection Procedure 71152, "Identification and Resolution of Problems," for additional guidance.

(For annual reviews, Section 02.03 inspection activity is optional.)

Cornerstone	Inspection Objective	Risk Priority	Examples
Initiating Events	Verify modifications have maintained system availability, reliability, and functional capability.	Modifications that increase the likelihood of initiating events	Modifications to reactor coolant pressure boundary  Modifications to switchyard or feedwater controls
Mitigating Systems		Modifications which affect <ul style="list-style-type: none"> <li>• protection against external events such as fire, weather, and flooding</li> <li>• risk-significant design features and assumptions</li> <li>• functionality of mitigating systems used during risk-significant accident sequences</li> </ul>	Modification of reactor building drain system  Replacement of a low pressure safety injection system injection valve with a valve of a different design
Barrier Integrity		Modifications which affect fuel cladding, reactor coolant system, or containment	Modification of personnel access hatch seal

## 71111.17-04

## RESOURCE ESTIMATE

The inspection procedure is estimated to take 68 to 92 hours for the biennial review, and 14 to 18 hours a year for the annual review at a site regardless of the number of units at that site.

The biennial reviews should be performed by engineering specialists. Annual reviews may be performed by either a specialist or a resident inspector periodically during the year or at a scheduled time.

## 71111.17-05

## COMPLETION STATUS

Inspection of the minimum sample size will constitute completion of this procedure in the RPS. That minimum sample size will consist of the review of one permanent plant modification on an annual basis for those intended to be performed when the plant is on-line or during an increased shutdown risk configuration, and five permanent plant modifications on a biennial basis to assess those that impact risk significant SSCs, mitigating systems, and risk significant barriers.

## 71111.17-06

## REFERENCES

Inspection Procedure 71152, "Identification and Resolution of Problems"

END