

# NRC INSPECTION MANUAL

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## INSPECTION PROCEDURE 71111 ATTACHMENT 13

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### MAINTENANCE RISK ASSESSMENTS AND EMERGENT WORK CONTROL

EFFECTIVE DATE: January 1, 2018

PROGRAM APPLICABILITY: IMC 2515 Appendix A

CORNERSTONES:     Initiating Events  
                         Mitigating Systems  
                         Barrier Integrity

INSPECTION BASES:     See IMC 0308, Attachment 2

#### SAMPLE REQUIREMENTS:

Sample Requirements		Minimum Baseline Sample Completion Requirements		Budgeted Range	
Sample Type	Section(s)	Frequency	Sample Size	Samples	Hours
Risk Assessment and Management	03.01	Annual*	14 per site	14 to 24	90 +/-10

\*If appropriate, perform one-fourth of the yearly planned samples every quarter.

#### 71111.13-01 INSPECTION OBJECTIVES

To verify that appropriate risk assessments (RAs) and corresponding work controls and risk management actions (RMAs) (including the use of risk-informed completion times (RICTs) if applicable) are implemented during planned and emergent maintenance activities.

#### 71111.13-02 GENERAL GUIDANCE

This inspection procedure (IP) shall be used to examine plant configuration changes associated with scheduled or emergent maintenance activities that may be planned, in progress, or completed. The plant configuration changes to be inspected are those involving structures, systems, or components (SSCs) within the scope of the Maintenance Rule or the limited scope as allowed by Title 10 of the Code of Federal Regulations (10 CFR) 50.65(a)(4)) and certain other risk-significant SSCs.

This IP is not intended to be used to perform a programmatic review of the licensee's 10 CFR 50.65(a)(4) program or to address changes to plant configuration for nonmaintenance purposes. In-depth examination of (1) the limited scope or the risk-informed evaluation process used to develop it, (2) the licensee's RA tool(s) or process(es) themselves, and (3) licensee risk bands or categories and RMAs is reserved for supplemental inspection by U.S. Nuclear

Regulatory Commission (NRC) regional or Headquarters inspectors and senior reactor analysts under IP 62709, "Configuration Risk Assessment and Risk Management Process."

Before performing this procedure, develop an understanding of the licensee's program for conducting RAs and managing risk and become familiar with the associated procedures. Although it is not within the scope of this inspection to perform a programmatic review of the licensee's 10 CFR 50.65(a)(4) procedures, it would be appropriate to question and bring to the licensee's attention anything in the procedures discovered in the course of this familiarization that is not clear or appears to be incorrect.

Considering opportunities, risk, and judgment, select appropriate scheduled or emergent work activities for sampling. During plant tours and plant status, look for potential activities that increase plant risk or that may not have been fully evaluated.

Licensees that have adopted technical specification RICTs can, under certain circumstances, determine completion times for maintenance and emergent work.

For emergent work activities, verify that work schedules and work plans are being followed and that precautions are being taken to preclude affecting adjacent SSCs. Observe equipment lineups and tagging when potential errors could affect other operating systems. When appropriate, verify that redundant components remain operable. Reference IP 71111.04, "Equipment Alignment," for additional guidance. Consider whether potential maintenance errors could initiate an event or affect defense in depth when selecting work activities to review. When work activities involve the replacement of safety-significant parts, verify the appropriateness of using commercial-grade parts. Limit the review to emergent work activities that could cause an initiating event or affect the functional capability of mitigating systems or barrier integrity.

Each quarter, ensure that a portion of the inspection effort is directed at conducting a routine review of problem identification and resolution activities using IP 71152, "Problem Identification and Resolution."

## 71111.13-03 INSPECTION SAMPLES

### 03.01 Risk Assessment and Management Sample

- a. Verify that RAs are appropriately performed to address planned or emergent plant configuration changes.**

#### Specific Guidance:

1. Verify the performance of RAs when required by 10 CFR 50.65(a)(4), with emphasis on higher safety/risk-significant configurations and in accordance with licensee procedures, promptly before emergent work and before changes in plant configuration for maintenance activities, including preventive maintenance, surveillance, and testing, during all modes of plant operation.
2. For emergent work, verify that the licensee performs the RA (to the extent practicable and commensurate with safety) before changing the plant configuration further but, in any case, promptly and to the extent practicable concurrently with, but without delaying, plant stabilization and restoration.

3. Verify by walkdowns that work activities do not introduce new configuration risk, such as by breaching fire, flooding, or security barriers or blocking sprinklers, fire hose stations, or security response equipment, and that they do not introduce temporary systems that create flooding hazards, violate electrical separation, or otherwise present new risk.
4. If a RICT is or has been in effect, verify equipment capable of performing the (specified) safety function of the inoperable equipment remains OPERABLE\*. If the licensee credits PRA functionality of inoperable equipment, verify that the functionality and associated RICT are consistent with licensee procedures. Verify that all the constraints specified in the TS Administrative Section and individual technical specifications, as applicable, are met. If required, verify additional RMAs are promptly and effectively implemented in accordance with licensee procedures. Confirm that the RICT and the limits on annual accumulated risk are not exceeded.

\*Note that if the plant specific Technical Specifications for the RICT has included loss of function, equipment to perform the SSF must satisfy the additional constraints on loss of function that are specified in the TS Administrative Controls.

**b. Verify that RAs are complete and accurate.**

Specific Guidance:

1. Verify the accuracy and completeness of the information considered in the RA.
2. Verify that the RA tool is appropriately used, that is, that the licensee uses it in a manner consistent with (1) its capabilities and limitations, (2) plant conditions and evolutions, (3) external events and containment status, and (4) licensee procedures. Engage the licensee when necessary to ensure that inadequate RAs are promptly addressed.
3. For completed work for which the normal plant configuration has been restored, the licensee may still need to perform (or correctly re-perform) an omitted (or inadequate) RA, or the NRC may need to independently evaluate the configuration in question, if possible, in order to determine the associated change in plant risk for significance determination purposes.

**c. Verify that appropriate work controls or RMAs are implemented in response to RAs.**

Specific Guidance:

1. Verify that the licensee recognizes and enters as applicable the appropriate licensee-established risk category or band according to RA results and licensee procedures.
2. Verify that normal work controls or RMAs are promptly and effectively implemented as required, commensurate with the risk band in effect and in accordance with licensee procedures.

3. Verify that RMAs are effectively implemented in the plant and remain implemented over the course of the entire required period.
4. Verify that the key safety functions for the plant mode of operation are preserved.
5. Re-verify the implementation of RMAs (or different RMAs) that may now be required by licensee procedures following performance (or re-performance) of previously omitted (or inadequate) RAs.
6. During emergent work (combined with scheduled work in progress or alone), verify that the licensee takes actions to minimize the probability of initiating events, maintain the functional capability of mitigating systems, and maintain barrier integrity.
7. Review emergent work-related activities such as troubleshooting, work planning and scheduling, establishing plant conditions and aligning equipment, tagging (clearances), temporary modifications, and equipment restoration to ensure that the plant is not placed in an unacceptable configuration (including violation of technical specifications).

#### 71111.13-04 REFERENCES

Cross-Reference of Generic Communications to IP 71111.13 and Inspection Resources:

<http://nrr10.nrc.gov/rop/ip71111-13.html>

Operating Experience:

<http://nrr10.nrc.gov/ope-info-gateway/index.html>

IHS Codes and Standards:

<http://www.internal.nrc.gov/TICS/library/standards/ihs.html>

NRC Technical Library:

<http://www.internal.nrc.gov/TICS/library/index.html>

Maintenance Effectiveness:

<http://www.nrc.gov/reactors/operating/ops-experience/maintenance-effectiveness.html>

ATTACHMENT 1 - Revision History for IP 71111.13

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public)
N/A	3/13/2007	Revision history reviewed for the last four years - no generic requirements incorporated during this period.	None	N/A
[C1] SRM M050426	03/23/07 CN 07-011	This IP is revised to incorporate inspections for the offsite power system and the alternate AC power source.	Yes 12/13/2006	ML070680061
N/A	01/31/08 CN 08-005	This IP is revised to incorporate results of the ROP realignment in 2007, the references were updated to reflect the deletion of TI 2515/165 in CN 07-28 and minor typographical errors were corrected.	None	N/A
N/A	11/16/09 CN 09-027	This IP is revised to incorporate results from the ROP realignment in 2009. Recommendations from ROPFF 71111.13-1360 and 71111.12-1407 were also added. The table in the General Guidance section was deleted and editorial corrections were made.	None	ML093010336
N/A	ML11201A172 10/28/11 CN 11-025	This revision modifies the resource estimate to reflect the 2011 ROP Realignment.	None	
N/A	ML15023A099 02/03/16 CN 16-005	Revision 3 to RG 1.160 and Revision 4A to NUMARC 93-01 were recently issued. IP 71111.12 has been revised to update references to the new revision numbers.  Changes made in accordance with ROP Enhancement Project (see ML14017A381).		ML16007A383  71111.13-1951 ML16033A375 71111.13-2135 ML16033A384

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public)
N/A	ML17194A934 12/20/17 CN 17-030	Adding inspection of RICT times and risk management actions. These are a subset of maintenance activities and are included in the samples. This change includes information to facilitate inspection of RICT and PRA functionality.  Streamline IP formatting		ML17205A097 71111.13-2261 ML17205A261