

### PART 52, MAINTENANCE RULE

PROGRAM APPLICABILITY: 2504

#### 62712-01 INSPECTION OBJECTIVE

01.01 To determine whether there is reasonable assurance that the licensee's Maintenance Rule (MR) program will meet the requirements set forth by 10 CFR 50.65, Requirements for monitoring the effectiveness of maintenance at nuclear power plants and the maintenance rule program as specified in the FSAR, once it is fully implemented after the Commission's 10 CFR 52.103(g) finding.

#### 62712-02 INSPECTION REQUIREMENTS AND GUIDANCE

##### 02.01 General Guidance

Combined license (COL) holders are required to have a fully functional MR program after the Commission's 10 CFR 52.103(g) finding. Certain elements of the licensee's MR program cannot be implemented prior to startup; in these cases, the inspector should verify that there is reasonable assurance of future compliance. This should be done by reviewing licensee procedures, training and qualification, and any other tools that the licensee will use to implement the MR program.

Inspectors should review procedures to verify that they are of sufficient detail and scope to provide reasonable assurance that they can be implemented properly. For general guidance on determining the adequacy of a procedure, see IP 42401, Plant Procedures.

If the licensee has existing units on the same site, they may credit parts of their existing MR program. If this is the case, inspectors should ensure that plant-specific differences are accounted for and that any credited aspects of the MR program are applicable to new reactors. For example, a new passive plant (AP1000 or ESBWR) may be built next to an active PWR/BWR.

The detailed description of the licensee's MR program should be consistent with the high level programmatic requirements described by the COL Final Safety Analysis Report (FSAR). In general, it is expected that most licensees will adopt a program that adheres to the guidance contained in NEI 07-02A with supplementary information contained in the FSAR. Licensees may supplement their MR program to include a condition monitoring program for underground or inaccessible cables which is described in NRC Generic Letter 2007-01. The inspector should become familiar with the specifics of the licensee's program by reviewing the FSAR Section 17.6 and any other applicable documentation.

Where the licensee's MR program deviates from what is described in the FSAR, the licensee must be able to demonstrate that such deviations or alternate methods meet the requirements of the MR. Where deviations or alternate methods are judged to be in compliance with the MR, but are not consistent with the licensee's MR program as described in approved licensing basis documents, the licensee will be expected to resolve the discrepancies by either modifying the program or its implementation to conform to approved licensing basis documents or obtain approval for amendments to its licensing basis documents as necessary.

Due to the performance-based nature of the maintenance rule, all potential violations should be carefully evaluated to ensure that they are dispositioned correctly. Specific guidance about actions involving the maintenance rule is available in Section 7.11 of the U.S. NRC Enforcement Manual and Inspection Manual Chapters (IMC) 0613, Power Reactor Construction Inspection Reports.

Once a plant is operational, the implementation of the MR will be inspected using inspection procedures IP 62706, IP 71111.12, and IP 71111.13.

02.02 Review the licensee's MR scoping procedure and independently verify that the structures, systems, and components (SSCs) within the scope of the MR program include safety-related SSCs and certain nonsafety-related SSCs.

Note: This inspection requirement is on a sampling basis. The sample size is to be determined based on the number of inspectors and duration of the inspection.

- a. Confirm that the scoping procedure addresses:
  - Safety-related SSCs.
  - Nonsafety-related SSCs that mitigate accidents or transients.
  - Nonsafety-related SSCs that are used in Emergency Operating Procedures (EOPs), where 'used' means directly used to mitigate the accident or transient via explicit reference in the EOP or used in steps of procedures referenced by the EOP. Additionally, SSCs explicitly referenced in back-up or lower-tier methods in the EOPs and provide reasonable assurance of mitigation success, or whose use is implied in an EOP and essential to the completion of an EOP step, are considered within scope of the MR.
  - Nonsafety-related SSCs whose failure would prevent safety-related SSCs from fulfilling their safety-related functions.
  - Nonsafety-related SSCs whose failure would cause a scram or actuate safety systems.
- b. Independently verify that the SSCs within the scope of the MR program are evaluated against performance criteria to determine which SSCs will have goals established and monitoring activities performed in accordance with 10 CFR 50.65(a)(1).
- c. Confirm that safety significance classifications and bases of in-scope SSCs, e.g., high safety significance (HSS) or low safety significance (LSS) are determined using processes consistent with Section 9.3.1 of NUMARC 93-01 or another NRC-approved

methodology. This should include determination of risk significance criteria and appropriate consideration of operating experience, generic failure data, component reliability information, probabilistic risk assessment (PRA) results and insights that cover the initiating events and modes of operation of the PRA required under 10 CFR 50.71(h), and the recommendations of an expert panel.

- d. Independently verify that all SSCs within the scope of the Reliability Assurance Program (RAP) are included within the initial MR scope and are scoped in as HSS SSCs.
- e. Independently verify that an expert panel was established prior to fuel load and in accordance with NUMARC 93-01 that utilizes operating, maintenance and systems expertise, PRA insights, and other applicable information to update and maintain the MR scope and SSC classifications.

As part of the inspection, if possible, witness the expert panel engaged in their various responsibilities in the MR program. If the expert panel is not engaged in MR activities at the time of this inspection, review meeting minutes from several expert panel meetings.

#### 02.03 Evaluate Licensee's Plan for Monitoring and Corrective Action per 10 CFR 50.65(a)(1)

Note: SSCs within the scope of the MR may be initially classified as (a)(2) except where it is determined that an SSC should be initially classified as (a)(1), e.g., an SSC that fails during start-up testing, if determined to be maintenance related. Although it is expected that all in-scope SSCs will be classified as (a)(2) during this inspection, confirm that the licensee has controls in place that provide guidance about when to place an SSC into (a)(1) and clearly define appropriate corrective actions.

- a. Independently verify that procedures are in place that call for MR expert panel reviews to determine whether SSCs are to be classified as (a)(1).
- b. Independently verify that the monitoring goals established for SSCs classified as (a)(1) are commensurate with safety significance and consider industry operating experience with the objective of providing reasonable assurance that the SSC is proceeding to acceptable performance levels and that the corrective actions taken were effective.

#### 02.04 Evaluate Licensee's Plan for Preventive Maintenance per 10 CFR 50.65(a)(2)

- a. Independently verify that the licensee's MR program includes procedures for managing SSC performance in accordance with 10 CFR 50.65(a)(2) requirements during plant operation consistent with NUMARC 93-01.
- b. Independently verify that the effectiveness of maintenance performed on the various SSCs, performance criteria are established at the plant, system, train, or component level commensurate with safety, risk significance and SSC function. SSC performance criteria (e.g., failure rate, unavailability or condition-based) are chosen that are reasonable, measurable, and technically appropriate for the purpose of timely identification of degraded SSC performance or condition.

- c. For licensee's that use PRA to develop their risk significant criteria, independently verify that for RAP SSCs within the scope of the maintenance rule, performance criteria are consistent with the reliability and availability assumptions used in the PRA.
- d. Confirm that when a MR Program performance criterion is not met, the SSC is evaluated for (a)(1) classification in accordance with MR program procedures, including review by the expert panel. Should the expert panel conclude that the SSC should not be classified as (a)(1), or that no (a)(1) monitoring goals need be established, verify that a technical justification establishing the appropriateness of continued management of SSC performance under (a)(2) is documented and maintained.
- e. Confirm the SSCs that provide little or no contribution to system safety function or can be allowed to run to failure due to an acceptable risk are categorized in a "run-to-failure" status (i.e., perform corrective maintenance rather than preventive maintenance) are consistent with NUMARC 93-01.

02.05 Review Licensee's Plan for Periodic Evaluation of Monitoring and Preventive Maintenance per 10 CFR 50.65(a)(3)

- a. Independently verify that the MR program includes procedures for the periodic evaluation of the performance and condition monitoring activities and associated goals and preventive maintenance activities in accordance with 50.65(a)(3). The licensee's controlling documents should have clear guidance on:
  - How procedures govern the scheduling and timely performance of (a)(3) evaluations.
  - Documenting, reviewing and approving evaluations, providing and implementing results.
  - Review of 50.65(a)(1) goals and 50.65(a)(2) performance criteria, condition monitoring criteria, SSC performance and condition history and effectiveness of corrective action.
  - Making adjustments to achieve or restore balance between reliability and availability.
  - How to use industry operating experience.

02.06 Evaluate Licensee's Plan for Risk Assessment and Risk Management per 10 CFR 50.65(a)(4)

- a. Independently verify that the MR program includes procedures for maintenance risk assessment and management in accordance with 10 CFR 50.65(a)(4), employing the methods described in NUMARC 93-01, Section 11 or an alternate methodology described by the FSAR. For licensees using PRA to perform risk assessment, the methodology employed to meet 10 CFR 50.65(a)(4) should cover the initiating events and modes of operation of the PRA required under 10 CFR 50.71(h). Additional guidance on evaluating the technical adequacy of the licensee's PRA used to perform risk assessments will be issued in a separate inspection procedure after the NRC reaches resolution on this issue.

- b. Verify that controls are in place so that the risk from maintenance activities is both assessed (i.e., using a risk-informed process to evaluate the overall contribution to risk of the planned maintenance activities) and managed (i.e., providing plant personnel with proper awareness of the risk, and taking actions as appropriate to control the risk). This may include the review of the stations “protective equipment” program (i.e., for example, the placement of signage in the area of one train of an operable safety-related pump while performing maintenance on the opposite train, safety-related pump).
- c. Confirm that the MR program and procedures reflect, as appropriate, consideration of issues associated with grid/offsite power reliability as identified in NRC Generic Letter 2006-02, items 5 and 6 and IP 71111.01.

#### 02.07 Evaluate the Licensee’s MR Training and Qualification Program

- a. Independently verify that the MR program is supported by appropriate training and qualification for designated personnel. Training should be commensurate with MR responsibilities, including MR program administration, the expert panel process, operations, engineering, maintenance, licensing, and plant management, as appropriate.

Note: MR program administration may include on-site staff and off-site staff located at corporate offices or corporate headquarters.

- b. Independently verify that MR Program training and qualification materials are based on regulatory requirements and guidance, and training records are maintained in accordance with plant procedures.

#### 02.08 Evaluate the Licensee’s Program for Incorporating Operating Experience

- a. Confirm that the licensee has a program in place to review industry operating experience (IOE) for plant-specific applicability and, where appropriate, is applied in various elements of the MR program and procedures. This includes:
  - 1. Scoping
  - 2. Performance/condition criteria
  - 3. Monitoring
  - 4. Goal-setting
  - 5. Corrective action
  - 6. Training
  - 7. Program assessment
  - 8. Maintenance & procurement activities

Note: Sources of IOE may include information programs organized by the reactor vendor, safety-related equipment suppliers, the NRC, the Institute of Nuclear Power Operations (INPO) and the Electric Power Research Institute (EPRI).

## 62712-03 RESOURCE ESTIMATE

A maintenance rule inspection team consisting of one team leader and three to four inspectors is required to complete the inspection. In addition, one specialist inspector, utilizing PRA expertise, determines whether the licensee is adequately using its PRA in the maintenance rule program. The time needed to complete the onsite MR inspection is estimated to be between one to two weeks. The resource estimate for this inspection procedure is approximately 200 to 460 hours of direct inspection effort.

## 62712-04 REFERENCES

10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"

IMC 0613, "Power Reactor Construction Inspection Reports"

Inspection Procedure (IP) 42401, "Part 52, Plant Procedures"

IP 62706, "Maintenance Rule"

IP 62709, "Configuration Risk Assessment and Risk Management Process"

IP 71111.01, "Adverse Weather Protection"

IP 71111.12, "Maintenance Effectiveness"

IP 71111.13, "Maintenance Risk Assessments and Emergent Work Control"

NRC Generic Letter 2006-02, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power"

NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures the Disable Accident Mitigation Systems or Cause Plant Transients"

Regulatory Guide 1.160, Rev. 3, May 2012, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"

Regulatory Guide 1.206, June 2007, "Combined License Applications for Nuclear Power Plants (LWR Edition)"

NEI-07-02A, Revision 0–November 2010, "Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52"

Nuclear Management and Resources Council, Inc., "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," NUMARC 93-01, Rev. 4A, April 2011

62712-05      PROCEDURE COMPLETION

This procedure is complete upon satisfactory inspection results verifying that an MR program exists that adequately implements the program required by regulation and described in the COL.

The target of the inspections conducted in Section 02.02 is to verify that at least one entire system identified for each category in Section 02.02a is reviewed and that all of the SSCs within the scope of the RAP in Section 02.02d are verified to be included within the initial MR scope and are scoped in as HSS SSCs. The goal of the inspections conducted in Sections 02.03, 02.04, 02.05, 02.06, 02.07, and 02.08 is to verify that the specified plans, training and qualification programs exist and meet the particular requirements of each section.

END

Attachment:  
Revision History for IP 62712

ATTACHMENT 1  
Revision History for IP 62712

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment and Feedback Resolution Accession Number
N/A	ML13098A126 08/13/13 CN 13-017	Initial issue to support inspections of construction programs described in IMC 2504, Construction Inspection Program: Inspection of Construction and Operational Programs.	N/A	ML13098A127