

# NRC INSPECTION MANUAL

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## INSPECTION PROCEDURE 71002

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### LICENSE RENEWAL INSPECTION

PROGRAM APPLICABILITY: IMC 2516

#### 71002-01 INSPECTION OBJECTIVES

01.01 To verify the applicant's license renewal program, including supporting activities, are planned or implemented consistent with the requirements of Title 10 of the *Code of Federal Regulation (10 CFR)*, Part 54, "Requirements for the Renewal of Operating Licenses for Nuclear Power Plants", hereinafter referred to as the "rule", and the applicant's license renewal application (LRA).

01.02 To verify the applicant has adequate programs planned or in place to implement aging management for the systems, structures and components (SSCs) that require an aging management review, such that these SSCs will be adequately maintained consistent with the rule, the staff's existing safety evaluations, and the applicant's license renewal program.

01.03 To verify the information and documentation required by or necessary to document compliance with the provisions of the rule are retrievable, auditable and consistent with the rule and applicant approved programs and procedures.

#### 71002-02 DEFINITIONS

Passive Structures and Components (SCs). Structures and Components that perform an intended function without moving parts or without a change in configuration, change in properties, or change of state. These may include SCs that are classified as inherently reliable under the maintenance rule, or SCs for which aging degradation is not readily monitored.

Long-lived Structures and Components. Structures and components that are not subject to replacement based on a qualified life or specified time period.

Current Licensing Basis (CLB). As defined in 10 CFR 54.3, CLB is the set of NRC requirements applicable to a specific plant and a licensee's written commitments for ensuring compliance with and operation within applicable NRC requirements and the plant-specific design basis (including all modifications and additions to such commitments over the life of the license) that are docketed and in effect.

#### 71002-03 INSPECTION REQUIREMENTS

##### 03.01 General Inspection Requirements

The License Renewal Inspections (LRI) verify, on a sampling basis:

- a. The applicant's implementation of the scoping and screening methodology includes nonsafety-related structures, and components whose failure could prevent safety-related SSCs from accomplishing a safety function.
- b. Passive, long-lived SSCs within the scope of license renewal are subject to an aging management review (AMR), and have existing or planned aging management programs (AMPs) that conform with descriptions contained in the LRA. The AMPs can reasonably manage the effects of aging.
- c. The documentation used to support the application is auditable and retrievable and contains information that supports the application.

### 03.02 Specific Inspection Requirements

- a. Scoping and Screening Inspection. The scoping portion of this inspection verifies on a sampling basis, through onsite review and walkdown of selected areas of the plant, that the nonsafety-related SSCs whose failure could prevent safety-related SSCs from accomplishing a safety function are correctly included within scope of license renewal. Depending on insights gained from the staff's review, the inspection may also include safety-related SSCs and SSCs relied on to mitigate regulated events as specified in 10 CFR 54.4(a). The LRI verifies that there is reasonable assurance that the applicant has adequately documented all the identified passive and long-lived SSCs requiring an AMR. Using a set of samples selected based on insights from the staff's review of the LRA, uniqueness, safety impact, and risk insights, the inspection should emphasize evaluation of whether the scoping process adequately includes nonsafety-related SSCs whose failure could prevent safety-related SSCs from accomplishing a safety function. Conduct walkdowns in selected plant areas to assess whether the applicant identified all the SSCs required to be in scope.

The scoping criterion required under 10 CFR 54.4(a)(2) does not apply to functions identified in 10 CFR 54.4(a)(3) "Regulated Events."

One of the samples selected should include at least one system, structure, or commodity group not identified as being within the scope of license renewal.

- b. Aging Management Programs Inspection. This portion of the inspection is intended to assess the implementation of the AMPs resulting from the applicant's license renewal program, and may be performed in conjunction with the scoping and screening inspection. The inspection verifies that there is reasonable assurance that the applicant has adequately addressed all the identified passive and long-lived SSCs identified during the AMR. The inspection verifies, through review of supporting documents and a walkdown of select systems, that the effects of aging can be adequately managed in the period of extended operation. For selected SSCs within the scope of the rule the following inspection activities should be performed.
  1. For the selected SSCs, determine from the LRA the AMPs that are credited with preventing applicable aging effects. Verify the AMPs will ensure the aging effects will be managed so that there is reasonable assurance that the intended function will be maintained consistent with the CLB throughout the period of extended operation. The applicant should have addressed the recommendations in the GALL Report and any applicable interim staff guidance.

2. Review the description of these AMPs from the LRA, updated final safety analysis report, plant procedures, and related engineering support documentation. Interview the on-site engineering staff responsible for implementation of these AMPs to assess their knowledge and involvement in the license renewal effort. Discuss AMP program methods, past results, past weaknesses and corrections, and future plans.
  3. Verify the applicant evaluated site-specific information such as surveillance test results, preventive maintenance records, corrective maintenance records, equipment history files, inservice test and inspection results in determining aging effects. Verify the applicant evaluated industry operational experience such as generic communications, vendor notifications, INPO notifications, etc., in determining aging effects.
  4. Perform walkdowns of selected in-scope SSCs to verify that any observable aging effects were identified by the applicant for these SSCs. If possible, the inspector should have a representative from the on-site responsible engineering staff accompany the inspector during the walkdown to discuss observations at the equipment location. The purpose of these walkdowns is to assess how plant equipment is currently being maintained and to visually observe examples of nonsafety-related equipment determined to be in scope due to their proximity to safety-related equipment and their potential for failure due to aging effects. If possible, a part of this inspection should be performed during a unit outage, to allow visual observation of equipment inaccessible during power operation, i.e., inside containment, normal high radiation areas, etc. Containment inspection shall be performed if (a) there is evidence that some aging effects are not adequately addressed in the application, or (b) there is an open item, generated either by the inspection or the application review, that is related to an area inaccessible during the regularly scheduled inspection.
  5. Observed aging effects not addressed by the LRA and resulting AMPs should be discussed and addressed to the applicant and resolved with the support of NRR.
  6. It is recommended that a system be selected to perform a vertical slice review in order to determine if the applicant properly accounted for all possible environmental aging effects on that system in the LRA. The purpose of this selection is to assess for a single system whether the applicant properly identified operating experience, including historical site experience, regarding the effects of aging on the system and placed the system, structures and components for the selected system into an established aging management program.
  7. For previously existing AMPs, review the results of past tests and inspections. Verify the proposed and existing programs adequately demonstrate adequate scope and methodology to detect, monitor, trend, and correct age-related degradations through performance and/or condition monitoring, technical specification surveillances, and other aging management activities.
- c. Annual Update/Open Item Inspection. The applicant may make changes to the plant or the current licensing basis while the NRC performs its review of the LRA. Annually, after the initial application, the applicant is required to submit an amendment to the original application describing any change that materially affects the contents of the original application. The applicant may also make changes or

commitments to satisfy an issue raised during the NRC review process or raised during a license renewal inspection. Additional inspection to review open items will be conducted at the option of the Regional Administrator. During this inspection, the following tasks should be accomplished.

1. Select a sample of plant modifications and CLB changes the applicant made since the date of the original LRA submittal. Determine that these changes were included in an annual LRA update. For newly installed plant equipment required to be in the scope of license renewal, verify that the equipment is included in appropriate aging management programs.
2. Compile the issues raised by previous inspections and determine the current status from the applicant. Determine if the issue has been resolved. If the issue has not been resolved, determine what the applicant's plans are to resolve the issue and coordinate with NRR to determine the acceptability of those plans.
3. Determine that the applicant has compiled a list of future tasks to be accomplished as a result of commitments made during the license renewal process and entered these items into an official plant work tracking system. This review is to ensure that committed tasks are being tracked to be accomplished prior to and during the period of extended operation.

#### 71002-04 INSPECTION GUIDANCE

04.01 General Inspection Guidance. This license renewal inspection procedure will be implemented, prior to the approval of an application for renewed license, to verify that an applicant, requesting a renewed license under 10 CFR Part 54, meets the requirements of the rule and has planned or implemented license renewal programs and activities consistent with their LRA and existing safety evaluations developed by the NRC staff. Inspections will be performed by NRC regional offices and will include visits to the applicant's site. The inspection may include the annual LRA update process, and unresolved open items resulting from previous inspections or staff review of the LRA.

Inspectors should familiarize themselves with the LRA and associated safety evaluations performed by the staff for the specific plant to be inspected. License renewal requirements and guidance documents that should be reviewed prior to an inspection are listed in the References.

Throughout the license renewal inspection, the inspectors should review the supporting documentation associated with an applicant's license renewal program to verify that documentation required by the rule, or otherwise necessary to verify compliance with the rule, is being maintained in an auditable and retrievable form consistent with the requirements of 10 CFR 54.13 and 54.37, the applicant's LRA, and applicant's approved programs and procedures.

#### 04.02 Specific Inspection Guidance.

- a. Scoping and Screening Requirements. The license renewal program must include nonsafety-related SSCs whose failure could prevent safety-related SSCs from accomplishing a safety function. These nonsafety-related SSCs are included in order to provide protection against safety function failure in cases where the safety-related structure or component is not itself impaired by age-related degradation but is vulnerable to failure from the failure of another structure or component that may be impaired. Consideration of hypothetical failures that could

result from system interdependencies that are not part of the current licensing bases and that have not been previously experienced is not required. The scoping criterion required under 10 CFR 54.4(a)(2) does not apply to functions identified in 10 CFR 54.4(a)(3) "Regulated Events".

Verify that the licensee established processes and procedures consistent with the NRC accepted guidance contained in Nuclear Energy Institute 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule," Revision 6, Appendix F, Sections 3, 4, and 5. Specifically, the applicant assessed: (1) nonsafety-related systems, structures and components within the scope of the current licensing basis, (2) nonsafety-related systems, structures and components directly connected to safety-related systems, structures and components, and (3) nonsafety-related systems, structures and components not directly connected to safety-related systems, structures and components, respectively. Conduct walkdowns in selected plant areas to assess whether the applicant identified all the SSCs required to be in scope.

- b. Aging Management Programs Inspection. As required under 10 CFR 54.21(a)(3), an applicant is required to demonstrate that the aging effects will be adequately managed so the intended function will be maintained consistent with the CLB for the period of extended operation. To fulfill this requirement an applicant must first identify the applicable aging effects for each in-scope SSC, and the AMPs and activities that will manage each aging effect.

As part of the inspection process of AMP documentation, the inspector should verify that the implementation of the program is producing results consistent with the LRA. Each program should clearly state how the AMP will manage the aging effect. The supporting documentation, along with the material condition of the SSCs, must be consistent with these claims. For any AMP that has little detail or no specific implementation guidance (i.e., new AMPs or enhancements not yet implemented for existing AMPs), the inspector should discuss the plans with the applicant and use their best judgment since the program does not have to be in place until the period of extended operation.

Some AMPs may have an objective to monitor and trend ongoing degradation and implement corrective actions prior to anticipated failure of a structure or component to perform its intended function consistent with the applicant's CLB. During the site inspection, any trends identified as being less conservative with respect to the objectives of the AMPs in the LRA and/or applicant approved procedures need to be identified to NRR and included in the inspection report.

- c. Review of Operating Experience. The problem identification and resolution database should have been searched, by the applicant, for a period of not less than 5 years prior to the date the license renewal application analysis was terminated (Note: many times the applicant's operating experience review is 1 to 2 years old by the time the review team arrives onsite). This operating experience search should be verified by the inspector independently in two ways:
  - (a) The results of the applicant's database search will result in corrective actions being flagged because the corrective action used age-related keywords, (e.g., corrosion or cracking). Each flagged corrective action then has to be evaluated by the applicant for applicability to aging management. The inspector should then select and review a sample of flagged corrective actions, including both those where the applicant concluded there was an aging effect and those where the applicant concluded there was not an aging effect.

- (b) The inspector should independently query the applicant's problem identification and resolution program for selected keywords, for selected periods of time, to identify issues that were not included in the applicant's evaluation. The inspector is not required to learn how to independently manipulate the applicant's system but may ask the applicant to perform the search using the inspector's keywords.
- (c) Because NEI 95-10 guidance for operational experience review states that a site specific search of 5 to 10 years should be sufficient, the inspector should choose the samples above during a period of 10 years to determine if the applicant's cut-off date is appropriate. The inspector should also emphasize known issues, when possible (e.g., containment corrosion at a BWR Mark I unit, buried pipe leaks, small bore piping socket weld issues, submerged cables, and Boral/Boraflex issues in spent fuel pool storage racks) for a period prior to the applicant's cut-off date.

#### 71002-05 RESOURCE ESTIMATES

License renewal inspection activities will require approximately two weeks of inspection time on site involving a team of four inspectors and a team leader. An additional week will be allocated each to inspection preparation, in-office review between two onsite weeks, and for documentation of the inspection results. In addition, from past experience, the team leader will need approximately 15 additional working days to finalize the inspection report. Based on past experience, the final follow-up inspection, if needed, can be accomplished by one inspector with one preparation week, one week of inspection on site, plus two additional weeks for documentation. Based on these estimates, each application will require approximately 32 inspector-weeks of inspection activities prior to the approval of a renewed license.

#### 71002-06 REFERENCES

10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants"

U.S. Nuclear Regulatory Commission, Regulatory Guide 1.188, Revision 1, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," September 2005

Nuclear Energy Institute, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," NEI 95-10, Revision 6, June 2005

NUREG 1568, "License Renewal Demonstration Program: NRC Observation and Lessons Learned," December 1996

NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2, ~~September 2005~~ December 2010

NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," Volumes 1 and 2, Revision 2, December 2010

U.S. Nuclear Regulatory Commission, "Nuclear Power Plants License Renewal; Revisions," Federal Register, Vol. 60, No. 88, Monday, May 8, 1995, pages 22461 to 22495

NRC approved Interim Staff Guidance positions relating to license renewal  
IMC 2516, "Policy and Guidance for the License Renewal Inspection Program"

END

Attachment 1  
Revision History for IP 71002

Commitment Tracking Number	Issue Date	Description of Change	Training Needed	Training Completion Date	Comment Resolution Accession Number
71002-1545	11/23/11 CN 11-038 ML11238A010	The regions determined that some clarification and updating of guidance would improve the procedure. Region IV made initial changes and consolidated comments from the other regional offices into the attached draft.	No	n/a	71002-1545 earlier version has responses.