

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
OFFICE OF NEW REACTORS
WASHINGTON, DC 20555-0001

August 6, 2014

**NRC REGULATORY ISSUE SUMMARY 2014-09:
MAINTAINING THE EFFECTIVENESS OF LICENSE RENEWAL AGING MANAGEMENT
PROGRAMS**

ADDRESSEES

All holders of, and applicants for, an operating license or construction permit for a nuclear power reactor under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

All holders of, and applicants for, a power reactor early site permit, combined license, standard design certification, standard design approval, or manufacturing license under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

All holders of renewed licenses for nuclear power reactors under 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."

INTENT

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to remind holders of renewed licenses issued under 10 CFR Part 54 of the requirements to maintain the effectiveness of their aging management programs and activities. In general, renewed license holders are obligated to maintain the effectiveness of these programs and activities under their quality assurance program used to meet the criteria of 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." This obligation is in accordance with the requirements of 10 CFR Part 50, Appendix B, and 10 CFR 50.54. This RIS explains the applicability of these existing requirements as they pertain to maintaining the effectiveness of programs and activities credited for license renewal. The NRC is providing this RIS to non-renewed license holders and license applicants for information purposes. This RIS requires no action or written response on the part of an addressee.

BACKGROUND INFORMATION

Requirements for License Renewal

When the NRC issues a renewed license, it includes a finding by the NRC staff that actions with respect to managing the effects of aging will be taken so that certain plant systems, structures, and components (SSCs) will continue to perform their intended functions during the period of

extended operation. Section 54.4, "Scope," of 10 CFR identifies the SSCs that are potentially subject to aging management, which fall within the following three categories:

- (1) safety-related SSCs
- (2) nonsafety-related SSCs whose failure could prevent satisfactory accomplishment of a safety-related function
- (3) all SSCs that perform a function for compliance with NRC regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, and station blackout

The scope of the license renewal rule includes both safety-related and nonsafety-related SSCs because the second and third categories include SSCs that are nonsafety-related. From this scope, the NRC then requires license renewal applicants to identify those specific SSCs subject to aging management.

The SSCs subject to aging management are identified based on the integrated plant assessment and the evaluation of time-limited aging analyses. Applicants submit this information as part of their license renewal application (following the requirements of 10 CFR 54.21(a) and 10 CFR 54.21(c), respectively). The demonstrations used to satisfy the integrated plant assessment and the evaluation of time-limited aging analyses requirements identify programs and activities for managing the effects of aging. In accordance with the requirements of 10 CFR 54.21(d), applicants must develop a final safety analysis report (FSAR) supplement containing a summary description of these programs and activities. In accordance with 10 CFR 54.31(c), the renewed license becomes effective immediately upon issuance and supersedes the operating license or combined license previously in effect. At this time, the aging management programs and activities described in the FSAR supplement become part of the plant's current licensing basis. Additionally, as required by 10 CFR 54.33, the renewed license is subject to the conditions set forth in 10 CFR 50.54. 10 CFR 50.54(a)(1) requires the quality assurance program to be implemented as it is described or referenced in the safety analysis report, including changes to that report¹.

Requirements for Quality Assurance Programs

Appendix B to 10 CFR Part 50 contains requirements for quality assurance programs for nuclear power plants. "Quality assurance," as defined in this appendix, comprises all those planned and systematic actions necessary to provide adequate confidence that an SSC will perform satisfactorily in service (*i.e.*, provide assurance that an SSC will perform its intended function). In accordance with the requirements of 10 CFR Part 50, Appendix B, the quality assurance program must meet, in part, specific criteria for corrective actions and document control. The corrective actions criterion requires measures to assure the prompt identification and correction of conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances. In the case of significant conditions adverse to quality, measures are required to determine the cause of the condition and to take corrective actions to preclude repetition. The document control criterion requires measures to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. These

¹ For the purposes of this RIS, the term safety analysis report also includes the safety analysis report, the FSAR, and any updates to the FSAR.

measures are required to assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel. These criteria of 10 CFR Part 50, Appendix B, normally apply to only safety-related SSCs.

SUMMARY OF ISSUE

The NRC has issued renewed operating licenses for 73 nuclear power plants and an increasing number of these plants are beginning to operate in the period of extended operation. Aging management programs and activities play a larger role in ensuring the safe operation of these plants as they approach and operate in this period. Events such as the one on September 2, 2011, where corrosion products blocked flow in the fire protection system at Monticello Nuclear Generating Plant, Unit 1, illustrate the importance of continuously maintaining the effectiveness of aging management programs and activities. The subsequent NRC Special Inspection Team Report 05000263/2011010, which is available in the NRC's Agencywide Documents Access and Management System (ADAMS) under Accession Number ML11363A182, identifies several instances where the licensee failed to address age-related issues and did not implement corrective actions under its quality assurance program to maintain the effectiveness of its Fire Water System aging management program. Given the increasing importance of aging management across the industry, the NRC is issuing this RIS to remind renewed license holders of their obligations, upon their receipt of renewed licenses or upon any specific effective date stated in the renewed license or FSAR, to maintain the effectiveness of their aging management programs and activities.

The need to maintain the effectiveness of these programs and activities post-renewal was envisioned during the original license renewal rulemaking in 1991. As indicated in the Statements of Consideration that established the requirements for license renewal, the NRC never intended for the license renewal aging management programs to become fixed in time with no further modification or improvement (56 FR 64958). Further, the NRC recognized that new information discovered after the renewed license is issued may need to be factored into the aging management programs to ensure the safe operation of the plant in conformance with its licensing basis (56 FR 64963). Despite this recognition that the effectiveness of the aging management programs and activities must be maintained post-renewal, the NRC did not include a specific requirement in 10 CFR Part 54 to accomplish this. Instead, the NRC staff has addressed this need through the license renewal application review process. This RIS explains how certain activities covered in this review process, and subsequently incorporated into the licensing basis for renewed license holders, apply to maintaining the effectiveness of the aging management programs and activities once they become effective upon issuance of the renewed license or upon any specific effective date stated in the renewed license or FSAR.

The NRC staff assesses the technical adequacy of aging management programs and activities based on the guidance in NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR). The current version of the SRP-LR, Revision 2, dated December 2010, is available in ADAMS under Accession Number ML103490036. Consistent with this guidance, an acceptable aging management program consists of 10 elements. Three of these elements concern quality assurance for the SSCs subject to aging management for license renewal. These three elements are summarized as follows:

- Corrective Actions—corrective actions, including root cause determination and prevention of recurrence, should be timely.

- Confirmation Process—the confirmation process should ensure that preventive actions are adequate and that appropriate corrective actions have been completed and are effective.
- Administrative Controls—administrative controls should provide a formal review and approval process.

In addition, the SRP-LR states that one acceptable approach for implementing these elements is through the quality assurance program established under the criteria of 10 CFR Part 50, Appendix B. However, to use this approach, a license renewal applicant would need to expand the scope of its 10 CFR Part 50, Appendix B, quality assurance program to include the nonsafety-related SSCs subject to aging management. An applicant would also need to commit to such an approach, or to a comparable approach, in its FSAR supplement required by 10 CFR 54.21(d). This commitment is necessary because the criteria of 10 CFR Part 50, Appendix B, normally only apply to safety-related SSCs, and adequate regulatory controls are needed to address quality assurance for the nonsafety-related SSCs that are within the scope of 10 CFR Part 54 and subject to aging management. Incorporation of such a commitment into the FSAR supplement means that the licensee must apply the criteria of 10 CFR 50.59 to any future changes to the commitment.

The SRP-LR has contained the same 10-element criteria for acceptable aging management programs since the NRC issued a working draft of the guidance in September 1997. Since that time, the SRP-LR has also included the NRC staff's position that the use of a 10 CFR Part 50, Appendix B, quality assurance program is acceptable for meeting the corrective actions, confirmation process, and administrative controls elements of acceptable aging management programs for both safety-related and nonsafety-related SSCs subject to aging management. The NRC published the working draft of the SRP-LR prior to submission of the first license renewal application. As such, the NRC staff has based its review of every license renewal application on these same basic criteria. Based on an analysis of FSARs, license renewal applications, and licensing correspondence, the NRC staff has determined that all current holders of renewed licenses have committed to address the quality assurance aspects of aging management through the use of specific portions of their 10 CFR Part 50, Appendix B, quality assurance programs for both safety-related and nonsafety-related SSCs subject to aging management. Because these commitments constitute part of the quality assurance program description in the safety analysis report, once described or referenced in the safety analysis report they become requirements of the renewed license under 10 CFR 50.54(a)(1).

The measures for corrective actions and document control in the quality assurance program require renewed license holders to take appropriate action to maintain the effectiveness of the aging management programs and activities that are applied to the SSCs subject to aging management. Consistent with the requirements of 10 CFR Part 50, Appendix B, the quality assurance program must include measures that assure the prompt identification of conditions adverse to quality. Some conditions adverse to quality could have an impact on, or may exist as a result of, the effectiveness of aging management programs and activities. For example, age-related degradation detected through the inspections, tests, or analyses implemented as part of the aging management programs and activities; age-related degradation that was observed but not directly detected or prevented by an aging management program; or a plant event in which age-related degradation was a contributing factor could all result in a condition adverse to quality. Under the quality assurance program, the licensee must take actions to correct such conditions and preclude repetition for any such conditions that are significant.

Licensees are allowed to determine what corrective action is most appropriate. However, with the incorporation of the aging management programs and activities into its licensing basis, it is important for a renewed license holder to consider whether the corrective actions need to involve changes to these aging management programs and activities. For example, it may be prudent to make adjustments to preventive measures, increase an inspection frequency, incorporate additional inspection locations, or employ more rigorous inspection methods. Further, the document control measures of the 10 CFR Part 50, Appendix B, quality assurance program ensure that any necessary changes to the aging management programs and activities are captured within appropriate implementing procedures.

As part of their quality assurance programs, renewed license holders are required to identify and consider what impacts, if any, a condition adverse to quality could have on the effectiveness of their aging management programs and activities. For safety-related SSCs subject to aging management, this requirement is based on 10 CFR Part 50, Appendix B. For nonsafety-related SSCs subject to aging management, this requirement is based on 10 CFR 50.54(a)(1), which requires the implementation of the quality assurance program once described or referenced in the safety analysis report. Therefore, the NRC staff encourages current renewed license holders to review the activities conducted under their quality assurance programs to ensure that these activities are being used to maintain the effectiveness of the aging management programs and activities. Violations of the requirements of 10 CFR Part 50, Appendix B, and 10 CFR 50.54 can be subject to enforcement action. If NRC finds in the future that more explicit requirements for maintaining the effectiveness of license renewal aging management programs and activities are needed, it may implement them accordingly.

BACKFIT AND ISSUE FINALITY DISCUSSION

This RIS reminds addressees of existing requirements for maintaining the effectiveness of license renewal aging management programs and activities. This RIS requires no action or written response on the part of an addressee outside of following these existing requirements. Inasmuch as the RIS does not require any action, the RIS does not represent backfitting as defined in 10 CFR 50.109(a)(1), and is not otherwise inconsistent with any issue finality provision in 10 CFR Part 52. Therefore, the NRC did not prepare a backfit analysis for this RIS or further address the issue finality criteria in Part 52.

FEDERAL REGISTER NOTIFICATION

A notice of opportunity for public comment on this RIS was published in the *Federal Register* (79 FR 2913) on January 16, 2014. The NRC received one set of comments from the Nuclear Energy Institute. The NRC staff considered all comments that were received. The NRC staff's evaluation of the comments is publicly available through the NRC's ADAMS under Accession Number ML14071A434.

CONGRESSIONAL REVIEW ACT

This RIS is not a rule as defined in the Congressional Review Act (5 U.S.C. §§ 801-808).

PAPERWORK REDUCTION ACT STATEMENT

This RIS does not contain new or amended information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing requirements were

approved by the Office of Management and Budget (OMB) under approval numbers 3150-0011 and 3150-0155.

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