



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 23, 2013

Mr. Joe W. Shea
Vice President, Nuclear Licensing
Tennessee Valley Authority
P.O. Box 2000
Soddy-Daisy, TN 37384

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2, LICENSE RENEWAL
APPLICATION – SET 19 (TAC NOS. MF0481 AND MF0482)

Dear Mr. Shea:

By letter dated January 7, 2013, Tennessee Valley Authority submitted an application pursuant to Title 10 of the *Code of Federal Regulations* (CFR) Part 54, to renew the operating license DPR-77 and DPR-79 for Sequoyah Nuclear Plant, Units 1 and 2, for review by the U.S. Nuclear Regulatory Commission staff. The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review.

These requests for additional information, outlined in the enclosure were discussed with Henry Lee, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-1427 or by e-mail at Richard.Plasse@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard A. Plasse".

for
Richard A. Plasse, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosure:
Requests for Additional Information

cc w/encl: Listserv

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/RA by Juan Uribe for/
Richard A. Plasse, Project Manager
Projects Branch 1
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DATE	12/20/2013	12/20/2013	12/23/2013

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Letter to J. Shea from R. Plasse dated December 23, 2013

**SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
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SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION

RAI A.1-2, License Renewal Commitments and the USAR

Background:

By letter dated January 7, 2013, Tennessee Valley Authority (TVA) submitted an application pursuant to Title 10 of the Code of Federal Regulations (CFR) Part 54, to renew the operating license, DPR-77 and DPR-79 for Sequoyah Nuclear Plant, Units 1 and 2 (SQN), for review by the U.S. Nuclear Regulatory Commission (NRC) staff. The staff of NRC is reviewing this application in accordance with the guidance in NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants." During the review of the SQN license renewal application (LRA) by the NRC staff, TVA made commitments related to aging management programs (AMPs), aging management reviews (AMRs), and time-limited aging analyses, as applicable, related to managing the aging effects of structures and components prior to the period of extended operation (PEO). The list of these commitments, as well as the implementation schedules and the sources for each commitment, will be included as a Table in Appendix A to the LRA and the SER with Open Items.

In Section 1.7, "Summary of Proposed License Conditions," of the SER with Open Items, the staff stated that following its review of the LRA, including subsequent information and clarifications provided by the applicant, it identified proposed license conditions. The first license condition requires the information in the updated safety analysis report (USAR) supplement, submitted pursuant to 10 CFR 54.21(d), as revised during the LRA review process, be made a part of the USAR. The second license condition in part states that the new programs and enhancements to existing programs listed in Appendix A of the SER and the applicant's USAR supplement be implemented no later than 6 months prior to the PEO. This license condition also states, in part, that activities in certain other commitments shall be completed by 6 months prior to the PEO or the end of the last refueling outage prior to the PEO, whichever occurs later.

The NRC plans to revise Appendix A of the SER to align with this guidance and to reformat the license condition to be as follows:

The USAR supplement submitted pursuant to 10 CFR 54.21(d), as revised during the license renewal application review process, and as supplemented by Appendix A of NUREG [XXXX], "Safety Evaluation Report Related to the License Renewal of Sequoyah Nuclear Plant, Units 1 and 2" dated [Month Year], describes certain programs to be implemented and activities to be completed prior to the PEO.

- a) The licensee shall implement those new programs and enhancements to existing programs no later than 6 months prior to PEO.

ENCLOSURE

- b) The licensee shall complete those inspection and testing activities, as noted in Commitment Nos. x through xx of Appendix A of NUREG XXXX, by the 6 month date prior to PEO or the end of the last refueling outage prior to the PEO, whichever occurs later.

The licensee shall notify the NRC in writing within 30 days after having accomplished item (a) above and include the status of those activities that have been or remain to be completed in item (b) above.

The staff also notes that in the course of its evaluating multiple commitments to be implemented in the future in order to arrive at a conclusion of reasonable assurance that requirements of 10 CFR 54.29(a) have been met, these license renewal commitments must be incorporated either into a license condition or into a mandated licensing basis document, such as the USAR. Those commitments that are incorporated into the USAR are typically done so by incorporating each one verbatim (or by a summary and a commitment reference number) into the respective USAR summaries in the applicant's LRA Appendix A.

Issue:

As proposed by the applicant and as reflected in the SER Appendix A, the implementation schedule for some commitments may conflict with the implementation schedule intended by the generic license condition. In addition, these licensing commitments need to be incorporated either into a license condition or into the applicant's USAR summary in such a manner as discussed above.

Request:

1. Identify those commitments to implement new programs and enhancements to existing programs. Indicate the expected date for completing the implementation of each of these programs and enhancements.
2. Identify those commitments to complete inspection or testing activities prior to the PEO. Indicate the expected dates for the completion of each of these inspection and testing activities.
3. For each commitment provided by the applicant in the SER Appendix A, identify the location and the process that TVA intends to follow to incorporate the commitments either into a license condition or into the SQN USAR.

RAI 3.0.3-1-3a

Background:

As amended by letter dated November 4, 2013, LRA Sections A.1.31 and B.1.31, "Periodic Surveillance and Preventive Maintenance Program" provide the following:

Extent of inspection:

Each inspection occurs at least once every 5 years, with the exception of coating inspections for which frequency is based on coating condition. For each activity that refers to a representative sample, a representative sample is 20 percent of the population (defined as components having the same material, environment, and aging effect combination) with a maximum of 25 components

Prior to the PEO, perform a visual inspection of a 20 percent sample of the following coated piping systems or a maximum of 25 locations for each combination of type of coating, material the coating is protecting, and environment. Visually inspect the surface condition of the coated components to manage loss of coating integrity due to cracking, debonding, delamination, peeling, flaking, and blistering.

Acceptance criteria:

For loss of coating integrity, the acceptance criteria include (1) peeling and delamination are not permitted, (2) cracking is not permitted if accompanied by delamination or loss of adhesion, and (3) blisters are limited to intact blisters that are completely surrounded by sound coating bonded to the surface.

LRA Sections A.1.38 and B.1.38, "Service Water Integrity Program," include the same proposed changes to the acceptance criteria for the program.

Issue:

The staff lacks sufficient information to conclude that the above proposed changes to the two programs will provide reasonable assurance that the effects of aging for internally coated in-scope components will be adequately managed. Specifically:

Extent of inspection:

Although sampling 20 percent of a population with a maximum of 25 locations is consistent with the representative sample size in several GALL Report AMPs (e.g., XI.M32, "One-Time Inspection," XI.M33, "Selective Leaching"), the staff notes that components within the scope of these programs were generally procured, installed, and tested in accordance with industry consensus documents (e.g., ASTM Standards, ASME Code Section III). However, internal piping coatings, even when installed in accordance with manufacturer's recommendations, did not have the benefit of being procured, installed, and tested in accordance with industry consensus documents that cover the same level of detail as covered in those associated with power piping or nuclear construction codes. Consequently, the staff considers that the representative sample size to manage loss of coating integrity for piping internal coatings should be greater than the representative sample size for other GALL Report AMPs. In

addition, while components are discreet objects, locations on a surface need to include an area to be adequately defined. Finally, the proposed changes to the programs do not include criteria for location selection.

The staff has concluded that:

1. The appropriate sample size for piping is either 73 piping segments (1 foot long), or 50 percent of the total length of each coating type, substrate material, and environment combination. The inspection surface includes the entire inside surface of the 1-foot sample. If geometric limitations impede movement of remote or robotic inspection tools, the number of inspection segments should be increased in order to cover an equivalent area of 73 1-foot sections.
2. Inspection location selection should be based on an evaluation of the effect of a coating failure on the in-scope component's intended function, potential problems identified during prior inspections, and known service life history.

Acceptance criteria:

The acceptance criteria do not include any specificity related to the use of additional inspection techniques to determine the extent of delamination, peeling, or blisters when detected. The staff has concluded that when these conditions are detected, (a) followup physical testing should be performed where physically possible (i.e., sufficient room to conduct testing), (b) the test should consist of destructive or nondestructive adhesion testing using ASTM International standards endorsed in Regulatory Guide 1.54, and (c) a minimum number of sample points should be specified (e.g., three or more). In addition, if coatings are credited for corrosion prevention, the component's base material in the vicinity of delamination, peeling, or blisters where base metal has been exposed should be inspected to determine if unanticipated corrosion has occurred.

Request:

Extent of inspection:

1. In light of the above discussion, provide information to demonstrate that a sample consisting of either 20 percent of the total length for each combination of coating type, substrate material, and environment, or a maximum of 25 locations will provide reasonable assurance that the effects of aging for internally coated in-scope piping will be adequately managed. Alternatively, revise the LRA to reflect the staff's above recommended sample size.
2. Specify the minimum surface area that will be inspected when the sample is based on a number of locations and not on a percentage of the total coating length.
3. State the basis for sample selection.

Acceptance criteria:

4. When delamination, peeling, or blisters are detected, state what additional inspection techniques will be used to demonstrate that adjacent areas are completely surrounded by sound coatings bonded to the substrate.