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May 16, 2013

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

SUBJECT: SCOPING AND SCREENING METHODOLOGY AUDIT REPORT REGARDING  
THE SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 (TAC NOS. MF0481 AND  
MF0482)

Dear Mr. Shea:

By letter dated January 7, 2013, Tennessee Valley Authority submitted an application for renewal of operating licenses DPR-77 and DPR-79 for the Sequoyah Nuclear Plant (SQN), Units 1 and 2. On March 15, 2013, the staff of the U.S. Nuclear Regulatory Commission completed the on-site audit of the license renewal scoping and screening methodology. The audit report is enclosed.

If you have any questions, please contact me by telephone at 301-415-1427 or by e-mail at [Richard.Plasse@nrc.gov](mailto:Richard.Plasse@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "R. Plasse", is positioned above the typed name.

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:  
Audit Report

cc: Listserv

May 16, 2013

Mr. Joe W. Shea  
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/RA/

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OFFICE	PM:RPB1:DLR	LA:RPB1:DLR	BC:RASB:DLR	BC:RPB1:DLR	PM:RPB1:DLR
NAME	RPlasse	YEdmonds	MMarshall	YDiaz-Sanabria	RPlasse
DATE	5/10/13	5/9/13	5/15/13	5/16/13	5/16/13

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Letter to J. Shea from Richard A. Plasse dated May 16, 2013

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RidsNrrDlrRpb1 Resource

RidsNrrDlrRpb2 Resource

RidsNrrDlrRerb Resource

RidsNrrDlrRarb Resource

RidsNrrDlrRasb Resource

beth.mizuno@nrc.gov

brian.harris@nrc.gov

john.pelchat@nrc.gov

gena.woodruff@nrc.gov

siva.lingam@nrc.gov

wesley.deschaine@nrc.gov

galen.smith@nrc.gov

scott.shaeffer@nrc.gov (RII)

jeffrey.hamman@nrc.gov (RII)

craig.kontz@nrc.gov (RII)

caudle.julian@nrc.gov (RII)

generette.lloyd@epa.gov (RIV)

gmadkins@tva.gov

clwilson@tva.gov

hlee0@tva.gov

dllundy@tva.gov

## **Scoping And Screening Methodology Trip Report For The Sequoyah Nuclear Plant License Renewal Application**

### **I. Introduction**

The Division of License Renewal performed an audit of the Tennessee Valley Authority (TVA), Sequoyah Nuclear Plant (SQN), Units 1 and 2 (Sequoyah, the applicant), license renewal scoping and screening methodology, developed to support the Sequoyah license renewal application (LRA). The audit was performed during the week of March 11-14, 2013, at the applicant's facility located in Hamilton County, Tennessee. The purpose of the audit was to review the applicant's administrative controls governing implementation of the scoping and screening methodology and the technical basis for selected scoping and screening results for various plant systems, structures, and components (SSCs). The audit team also reviewed selected examples of component material and environment combinations, information contained in the applicant's corrective action database relevant to plant-specific age related degradation, quality practices applied during development of the LRA and the training of personnel that participated in the development of the LRA.

The regulatory bases for the audit were Title 10 of the *Code of Federal Regulations*, Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," (10 CFR Part 54) and NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2 (SRP-LR). In addition, the applicant developed the LRA in accordance with the guidance contained in Nuclear Energy Institute (NEI) 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule," Revision 6 (NEI 95-10), which the NRC has endorsed via Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," (RG 1.188).

### **II. Background**

The requirements of 10 CFR 54.21, "Contents of Application – Technical Information," states that each application for license renewal contain an integrated plant assessment (IPA). The IPA must list, for SSCs within the scope of license renewal, the structures and components (SCs) that are subject to an aging management review (AMR). 10 CFR 54.4(a), "Scope," provides the criteria for inclusion of SSCs within the scope of license renewal and 10 CFR 54.21(a)(1) requires that SCs within the scope of license that are determined to be passive and not periodically replaced are subject to an AMR.

### **III. Scoping Methodology**

The scoping evaluations for the LRA were performed by the applicant's license renewal project personnel. The audit team conducted detailed discussions with the applicant's management and staff. In addition, the audit team reviewed documentation pertinent to the scoping process. The audit team assessed whether the scoping methodology outlined in the LRA and implementing procedures was appropriately implemented and consistent with 10 CFR Part 54.4(a).

ENCLOSURE

### Verification of Scoping and Screening Results for Sampled Systems and Components

The audit team reviewed a sample of the scoping and screening implementation for portions of the auxiliary feed water system and the turbine building. The staff reviewed applicable portions of the Updated Final Safety Analysis Report (UFSAR), scoping and screening reports, and license renewal drawings and performed a walkdown to confirm information identified during the review.

In addition, the audit team conducted a review of selected components from the applicant's controlled plant equipment database to confirm the results of the applicant's determination of whether the components were within the scope of license renewal and subject to an AMR. The audit team reviewed the selected components, which included mechanical, electrical and structural components, using the UFSAR; system information; and piping and instrumentation drawings to perform its review. The controlled plant equipment database, which provided a list of components, was a primary source of information used during the license renewal scoping and screening process, including scoping and screening reviews, aging management reviews, and assignment of aging management programs (AMP).

The NRC staff independently selected a random sample of 85 components from the approximately 166,000 components listed in the plant equipment database and reviewed the component information to determine whether the components were appropriately included within the scope of license renewal and determined to be subject to an AMR. The staff reviewed the component information including the component name, system, function, tag number, location and other documentation. Of the 85 randomly selected components, the applicant had included 30 components within the scope of license renewal and determined the components to be subject to an AMR. The applicant had determined 55 components were either not within the scope of license renewal or not subject to an AMR (because the component was active or replaced on a periodic basis). The NRC staff reviewed the 55 components and confirmed the applicant's conclusion that the 55 components were not required to be within the scope of license renewal or subject to an AMR, as applicable.

### Areas Requiring Additional Information

The audit team determined that the applicant's scoping methodology was generally consistent with the requirements of 10 CFR Part 54 for the identification of SSCs that meet the scoping criteria of 10 CFR 54.4(a). However, the audit team determined that additional information was required in order for the staff to complete its review:

- The methods used and the basis for any conclusions, in which components identified as safety-related in the plant equipment data base were not included within the scope of license renewal in accordance with 10 CFR 54.4(a)(1).
- The methods used and the basis for any conclusions, in which Category 1 structures were not included within the scope of license renewal in accordance with 10 CFR 54.4(a)(1).
- The methods used and the basis for any conclusions, in which non-safety related structures, adjacent to in-scope Category 1 safety-related structures, were not included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2).

#### **IV. Screening Methodology**

The audit team reviewed the methodology used by the applicant to determine if mechanical, structural, and electrical components within the scope of license renewal would be subject to an AMR (screening). The applicant provided the audit team with a detailed discussion of the processes used for each discipline and used the auxiliary feed water system and turbine building as examples in their scoping and screening presentations. The audit team reviewed the applicable implementing procedures and reports and focused on a sample of the documentation for the auxiliary feed system and the turbine building. The audit team noted that the applicant's screening process was performed in accordance with its written requirements and was consistent with the guidance provided in the SRP-LR and NEI 95-10. The audit team determined that the screening methodology was consistent with the requirements of 10 CFR Part 54 for the identification of SSCs that meet the screening criteria of 10 CFR 54.21(a)(1).

#### **V. Component Material and Environment Combinations**

The staff performed a verification of component material and environment information contained in the LRA to validate the specified generic component material and environment information contained in the LRA. The staff performed the verification for a randomly selected sample of 35 components by performing visual verifications by walkdown and through review of plant specific reference materials. The reference material included the UFSAR, plant system and design drawings, and component vendor manuals. The staff was able to visually inspect 21 of the 35 randomly selected generic component types from Table 2 of the LRA. The staff determined during the plant walkdown of systems and components that one component contained in the heater drains and vents system, identified in LRA Table 3.4.2-3-5 as a carbon steel valve body with an internal oil environment, appeared to be made from stainless steel. Upon subsequent review of documentation provided by the applicant, this material was confirmed to be made from stainless steel.

#### **VI. Site-Specific Operating Experience**

The SRP-LR provides guidance to the staff on the process to be followed when assessing the ten program elements for each AMP submitted in an LRA. Operating experience (OE) is one of the ten elements and is defined in the SRP-LR and the GALL Report. The site-specific and industry OE also relates to two other AMP elements: detection of aging effects and monitoring and trending. The SRP-LR addresses the importance of the applicant's specific OE in relation to aging management reviews and time-limited aging analysis activities.

The staff performed an independent search of the applicant's corrective action report database, using staff selected keywords, to identify occurrences of age related degradation. The staff identified corrective action reports that contained information concerning age related degradation that would be used by the staff during the performance of the AMP audit.

#### **VII. Aging Management Program Quality Assurance Attributes**

The audit team reviewed the AMPs quality assurance elements to verify consistency with the staff's guidance described in SRP-LR, Appendix A, "Branch Technical Positions," Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)." The AMP quality assurance elements are corrective action, confirmation process, and administrative controls.

The applicant AMP quality assurance elements are described in LRA Appendix A, Section A1, "Aging Management Programs," and LRA Appendix B, Section B.0.3, "Corrective Actions, Confirmation Process and Administrative Controls," and the individual AMPs. LRA Appendices A and B stated that the applicant's existing 10 CFR 50 Appendix B Quality Assurance Program corrective action, confirmation process, and administrative controls requirements are applicable to all safety-related and nonsafety-related SSCs subject to AMPs and activities required during the period of extended operation. The applicant's AMPs incorporate portions of various quality assurance procedures as required to ensure the elements of corrective action program, confirmation process, and administrative controls are in compliance with 10 CFR Part 50, Appendix B. The audit team reviewed the AMPs and basis documents and confirmed that the AMPs incorporate corrective action programs, confirmation processes, and administrative controls. The applicant has identified no exceptions to these program elements and has specified a variety of enhancements to them for specific AMPs.

Based on the audit team's evaluation, review of the AMPs and information contained in LRA Appendix A, Section A1 and Appendix B, Section B.0.3, the staff determined the AMP quality assurance elements to be generally consistent with the staff's position regarding QA for aging management.

#### **VIII. Quality Assurance Controls Applied to LRA Development**

The staff reviewed the quality controls used by the applicant during development of the LRA, which included:

- Performing scoping and screening activities using approved documents and procedures.
- Using databases to guide and support scoping and screening and to generate license renewal documents.
- Employing the Entergy standard process for scoping, screening, and LRA preparation.
- Using processes and procedures that incorporate preparation, review, comment and owner acceptance.
- Incorporating industry lessons learned and RAIs from other plan license renewals.
- Including independent review by industry senior consultants, industry peer review, and review by the Onsite Review Committee in the LRA preparation process.

The audit team performed a review of implementing procedures and guides, examined the applicant's documentation of activities in reports, reviewed the applicant's activities performed to assess the quality of the LRA, and held discussions with the applicant's license renewal management and staff. The audit team determined that the applicant's activities provide assurance that the LRA was developed consistent with the applicant's license renewal program requirements.

## **IX. Training for License Renewal Project Personnel**

The staff reviewed the applicant's training processes to ensure the guidelines and methodology for the scoping and screening activities were applied in a consistent and appropriate manner. As outlined in procedures, the applicant required training for personnel participating in the development of the LRA and used trained and qualified personnel to prepare the scoping and screening implementing procedures. The training included the following activities:

- Using existing Sequoyah Plant procedures were used to define, request, and document personnel on license renewal activities.
- Providing license renewal and subject matter expert training that included:
  - 10 CFR Part 54
  - relevant NRC and industry guidance documents
  - lessons learned from other nuclear power plant license renewals
  - applicable procedures

The staff discussed training activities with the applicant's management and staff and reviewed applicable documentation. The audit team determined that the applicant had developed and implemented adequate controls for the training of personnel performing LRA activities.

## **X. Final Briefing**

A final briefing was held with the applicant on March 14, 2013, to discuss the results of the scoping and screening methodology audit. The audit team identified preliminary areas where additional information would be required to support completion of the staff's LRA review.

## **XI. Documents Reviewed**

1. NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2
2. NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Revision 6
3. License Renewal Application – Sequoyah Nuclear Plant, Units 1 and 2
4. EN-FAP-LR-003, System and Structure Scoping for License Renewal
5. EN-FAP-LR-004, Mechanical System Screening and Aging Management Reviews
6. EN-FAP-LR-005, Electrical System Scoping, Screening and Aging Management Reviews
7. EN-FAP-LR-006, Structural Screening and Aging Management Reviews
8. SQN-RPT-10-LRD01, System and Structure Scoping Results
9. SQN-RPT-10-AM, Mechanical System Aging Management Review Series
10. SQN-RPT-10-AM, Structural Aging Management Review Series



11. SQN-RPT-10-AME01, Electrical Screening and Aging Management Review

**XII. NRC Audit Team Members**

Bill Rogers	NRR/DLR
Rui Li	NRR/DLR
Angela Buford	NRR/DLR
Donald Brittner	NRR/DLR
Cimberly Nickell	NRR/DLR
Edward Smith	NRR/DSS
Evan Davidson	NRR/DSS

**XIII. Applicant Personnel Contacted During Audit**

John Carlin	Gary Adkins
Alan Cox	Henry Lee
Rusty Proffitt	William Pierce, Jr.
Mike Casner	Chuck Wilson
Dennis Lundy	Roger Jennings
Jacque Lingenfeller	Andy Taylor
Reza Ahrabil	Roger Rucker