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

May 21, 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 (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 (NRC) 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 were discussed with Henry Lee, and a mutually agreeable date for the response is within 60 days from the date of this letter. If you have any questions, please contact me at 301-415-1427 or e-mail Richard.Plasse@nrc.gov.

Sincerely,

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

May 21, 2013

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SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION

## LRA Section B.1.4 – Buried and Underground Piping and Tanks

### RAI B.1.4-1

Background:

LRA Section B.1.4 states that the Buried and Underground Piping and Tanks Program will be consistent with the program described in NUREG-1801, Section XI.M41. However, LRA Section 2.1.3, "Interim Staff Guidance Discussion," states, in relation to LR-ISG-2011-03, "Changes to the Generic Aging Lessons Learned (GALL) Report Revision 2 Aging Management Program (AMP) XI.M41, 'Buried and Underground Piping and Tanks'," that, "[t]he revised guidance has been considered in the integrated plant assessment and is reflected in the aging management results presented in Section 3 and the aging management program description presented in Appendix B, Section B.1.4."

LR-ISG-2011-03 was issued on August 2, 2012. It represents the current staff position on the aging management of buried and underground piping and tanks.

Issue:

It is not clear to the staff with which AMP the applicant will be consistent-- LR-ISG-2011-03, as stated in LRA Section 2.1.3, or GALL Report AMP XI.M41.

Request:

State with which program you will be consistent. Revise the LRA to reflect any changes that may be needed.

### RAI B.1.4-2

Background:

LRA Table 3.3.2-1, "Fuel Oil System," states that steel tanks exposed to concrete (embedded in concrete) have no aging effects requiring management and no recommended AMP. LRA Table 3.3.2-1 cites Item 3.3.1-112.

LR-ISG-2011-03 defines "buried" as tanks in direct contact with soil or concrete and includes these tanks within the scope of the Buried and Underground Piping and Tanks AMP. SRP-LR Table 3.4-1, Item 3.4.1-47 states that steel tanks exposed to concrete or soil should be managed for loss of material by GALL Report AMP XI.M41, "Buried and Underground Piping and Tanks."

Issue:

It is the staff's intent that to be consistent with LR-ISG-2011-03, tanks buried in concrete are managed by LR-ISG-2011-03, and Item 3.4.1-47 is cited instead of 3.3.1-112. The ambiguity between the two items occurred because during the development of GALL Report Revision 2, Item 3.3.1-112 was not changed to be consistent with the newly developed AMP XI.M41.

Request:

State the basis for why reasonable assurance can be established that the buried (encased in concrete) fuel oil storage tanks will be appropriately age managed to meet their intended function consistent with the current licensing basis if no AMP is used to manage potential aging effects, or include these tanks within the scope of the Buried and Underground Piping and Tanks Program.

**RAI B.1.4-3**

Background:

During the audit, the staff noted the following with regard to the "preventive actions" program element of the Buried and Underground Piping and Tanks AMP:

a) Section 4.7.5, Category I Backfill of procedure G9, "Earth and Rock Foundations and Fills During Construction, Modification and Maintenance for Nuclear Plants," states that, "[u]nless otherwise specified by engineering documents, earthfill, fine granular fill, coarse granular fill, and rockfill may be used as Category I fill, and the particular type suited for the conditions shall be specified in engineering documents." Earthfill is, in part, defined as possibly containing organic material. Rockfill has no size limit except for the longest dimension must be less than three times the thickness.

b) Problem Evaluation Report (PER) 63662 stated that the granular backfill for the refill of a fire protection piping excavation did not meet specifications for the number 16 and 30 sieve requirements. The initiator requested that the engineering organization accept the backfill as-is.

c) PER 525994 stated that coating damage occurred to buried radioactive waste piping due to fretting from a copper grounding wire.

d) PER 22693 stated that damage occurred to buried nonsafety-related essential raw water cooling piping that is used to fill the safety-related fire pump forebay during a flooding event. During the audit, the applicant stated that this piping is in scope because the pumps are used to fill the steam generators and reactor coolant system during a flood event. The PER further stated that the damage occurred because the piping is not coated.

LR-ISG-2011-03 recommends that backfill in the vicinity of buried steel pipe meet ASTM D448-08, size 67. In addition, it is recommended that coatings meet Table 1, "Generic External Coating Systems with Material Requirements and Recommended Practices for Application" of NACE SP0169-2007, "Control of External Corrosion on Underground or Submerged Metallic Piping Systems," or use of other coatings is justified in the License Renewal Application.

Issue:

a) It is not clear to the staff that earthfill (due to the potential presence of organic materials) and rockfill (due to its size) are consistent with the backfill recommendations of LR-ISG-2011-03, or whether either of these types of backfill was or could be used in the vicinity of in-scope components.

b) It is not clear to the staff how the backfill described in PER 63662 compares to that recommended in LR-ISG-2011-03 and whether the backfill was subsequently used as backfill in the vicinity of in-scope piping.

c) The piping described in PER 525994 is not in scope; however, it is not clear whether the procedure controls for backfill in the vicinity of this piping are the same as for those of in-scope piping, and if this is the case, whether the condition was an isolated event.

d) It is not clear to the staff how much in-scope buried piping is not coated or how the program, when implemented, will account for non-coated buried piping.

Request:

1. State if earthfill or rockfill has been or will be used as backfill in the vicinity of buried in-scope components. If this backfill had or will be used, state the basis for why reasonable assurance can be established that the buried in-scope components will meet their intended function consistent with the current licensing basis.

2. If the nonconforming backfill described in PER 63662 was used in the vicinity of buried in-scope piping, state how it compares to the recommendations for backfill quality in LR-ISG-2011-03. If the nonconforming backfill is not consistent with the backfill quality recommendations in LR-ISG-2011-03, state the basis for why reasonable assurance can be established that the buried in-scope components will meet their intended function consistent with the current licensing basis.

3. State if the procedure controls for backfilling buried in-scope piping components are or were similar to those for the piping described in PER 525994. If they are or were, state the basis for why reasonable assurance can be established that the buried in-scope components will meet their intended function consistent with the current licensing basis.

4. State the plant system, material type, and quantity of in-scope buried piping that is not coated. State what adjustments will be made to the Buried and Underground Piping and Tanks Program to account for uncoated, buried in-scope piping.

**RAI B.1.4-4**

Background:

LRA Section B.1.4 states, "[i]f cathodic protection is not provided prior to the period of extended operation, the program will include documented justification that cathodic protection is not warranted."

LR-ISG-2011-03 states that the justification for not having cathodic protection must be provided in the LRA.

Issue:

During the audit, the staff reviewed a Corrpro Report titled, "TVA - Sequoyah Nuclear Plant – Buried Piping Integrity Program Corrosion Assessment Report." This report cited several examples demonstrating that the soil at Sequoyah is corrosive and recommended installation of cathodic protection in some locations with in-scope piping. Based on input received during audit breakout sessions, it was noted that a new study was recently completed by a different vendor. The new study was not available for review by the staff during the audit.

Request:

1. If cathodic protection will not be installed, provide an analysis for not providing cathodic protection 10 years prior to commencing the period of extended operation consistent with the recommended detail in LR-ISG-2011-03 Section 2.a.iii.

2. If cathodic protection will not be installed, state the results of a 10-year search of plant-specific operating experience related to in-scope and out-of-scope buried piping consistent with the recommended detail in LR-ISG-2011-03 Section 2.a.iv.

3. Based on the results of (a) and (b) above, state what adjustments to the program will be implemented if cathodic protection is not installed and the study results demonstrate adverse results. If no adjustments will be made, state the basis for why reasonable assurance can be established that the buried in-scope components will meet their intended function consistent with the current licensing basis.

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