



Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

May 29, 2015

10 CFR 50.4

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Sequoyah Nuclear Plant, Unit 2
Facility Operating License No. DPR-79
NRC Docket No. 50-328

Subject: Response to NRC Request for Additional Information Related to the Spring 2014 Steam Generator Tube Inspection (TAC No. MF5422)

- Reference: 1. NRC letter to TVA, "Sequoyah Nuclear Plant, Units 1 and 2, Request for Additional Information Related to The Spring 2014 Steam Generator Tube Inspection (TAC No. MF5422)," dated April 2, 2015
2. TVA letter to NRC, "Unit 2 Cycle 19 - 180 Day Steam Generator Tube Inspection Report," dated December 1, 2014

This letter provides the response to the NRC request for additional information (Reference 1) regarding the Sequoyah Nuclear Plant, Unit 2, steam generator tube inspection report submitted under Reference 2.

Enclosure 1 contains TVA's response to NRC's request for information (RAI). The response to RAI 1 is provided separately in Enclosure 2 and includes information provided by Westinghouse that is considered proprietary in nature. Pursuant to 10 CFR 2.390, "Public inspections, exceptions, requests for withholding," paragraph (a)(4), TVA requests that this information be withheld from public disclosure. Enclosure 3 contains the affidavit from Westinghouse supporting this request. Enclosure 4 provides a redacted version of Enclosure 2 that is suitable for public disclosure.

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Page 2

May 29, 2015

There are no new regulatory commitments contained in this letter. If you have any questions concerning this report, please contact Erin Henderson at (423) 843-7170.

Respectfully,

 *M. Brucini* *M. Giacomin* *for John Carlin*
Acting VP. *5/29/15*

John T. Carlin
Site Vice President
Sequoyah Nuclear Plant

Enclosures:

1. TVA Response to NRC Request for Additional Information
2. LTR-SGMP-15-25 P, Response to NRC Request for Additional Information on the Design Features of the Sequoyah Unit 2 Replacement Steam Generators (Proprietary)
3. Westinghouse Affidavit for LTR-SGMP-15-25 P
4. LTR-SGMP-15-25 NP, Response to NRC Request for Additional Information on the Design Features of the Sequoyah Unit 2 Replacement Steam Generators (Non-Proprietary)

cc (Enclosure):

NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Sequoyah Nuclear Plant

ENCLOSURE 1

TVA RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

Request No. 1

General information concerning the design of your replacement steam generators (SGs) was provided in the submittal. In order for the staff to better understand the design of your replacement SGs, please provide the following information:

- a. A tubesheet map depicting the row and column numbers
- b. Tube pitch (e.g., triangular, 1.00-inch center-to-center)
- c. Expansion method and extent (e.g., hydraulic expansion for the full length of the tubesheet)
- d. Tube support plate and U-bend support material and design
- e. Flow distribution baffle design, if applicable
- f. Whether tubes were stress relieved after bending, and if so, the rows that were stress relieved
- g. The smallest U-bend radius
- h. Tubesheet thickness with and without clad
- i. The naming convention for the U-bend support structures and a more detailed diagram (since it appears that there are various supports running between the vertical straps within the tube bundle)

Response No. 1

Enclosure 2 of this letter contains the proprietary response to information concerning the design of the replacement steam generators. Enclosure 4 of this letter contains a redacted version of the response that is suitable for public disclosure.

Request No. 2

Please discuss the results of the foreign object search and retrieval inspections.

Response No. 2

Foreign Object Search and Retrieval was performed in each steam generator as described in the 180 day report (Reference 1). Eddy current testing (ECT) identified no possible loose parts (PLP) calls, and there were no indications of loose part wear. Visual inspections of the top-of-tubesheet (TTS) and tube lane and no-tube lane area were performed for foreign objects after completion of sludge lancing. Foreign objects found are listed in the table below. Each of the foreign objects found were retrieved.

Steam Generator:	Location	Item Description
1	R93, C89 HL Annulus Area	3-7/8" L x 1/8" W - Flexitallic
1	R93, C89 HL Annulus Area	1/8" diameter Metallic ball
2	R85, C103 HL Annulus Area	4-1/4" L x 1/8" W x 0.020" thick Metallic Shard
4	Hot Leg Annulus 90	4" L x 1/8" W x 0.030" thick Flexitallic
4	Hot Leg Annulus	2-1/2" L x 1/8" W x 0.030" thick Flexitallic
4	Hot Leg Annulus	5/8" L x 0.045" thick Flex piece – wire-like
4	Hot Leg Annulus	1/4" L x 1/8" metallic object

Steam Generator:	Location	Item Description
4	Hot Leg Annulus	3/8" L x 1/4" W x 0.060" thick non-metallic object

Request No. 3

Please clarify Table 2-1 since the "planned exams" and "tests acquired" columns do not match. Please confirm all tubes were inspected and analyzed full length with a bobbin coil. Please clarify the number of tubes inspected with an array probe in both the hot leg and cold leg in all four SGs.

Response No. 3

Each tube was examined full length with either a bobbin probe or a bobbin/array combo probe. When a bobbin/array combo probe is used for these examinations, the bobbin data can be separated from the array data. This allows an analysis of the bobbin data, the array data, or both data sets per the planned scope requirement.

The difference between "planned exams" and "test acquired," specifically when N/A is listed, pertains to accounting of when the data was taken. For example, bobbin data of cold leg (C/L) straight rows 1 through 4, was taken while conducting array examination of C/L from support C07 to cold-leg-tube-end (CTE) using the bobbin/array combo probe. However, it was necessary during data acquisition to retrieve data above a C07 support to achieve full tube inspection to support the C/L straight rows 1 through 4. Similarly, peripheral tube array examinations of rows 5 and above from support H01 to the hot-leg-tube-end (HTE) and support C01 to CTE were fulfilled by data acquisition from the full length bobbin examination using the bobbin/array combo probe.

As stated in Reference 1, 4816 array coil inspections were performed. These include examinations of periphery tubes, tubes in the no-tubes lane, and tubes with prior bobbin indications.

References

1. TVA letter to NRC, "Unit 2 Cycle 19 - 180 Day Steam Generator Tube Inspection Report," dated December 1, 2014