



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

July 8, 2019

Mr. Joseph W. Shea
Vice President, Nuclear Regulatory Affairs
and Support Services
Tennessee Valley Authority
1101 Market Street, LP 3R-C
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 2 – SUMMARY OF APRIL 26, 2019,
CONFERENCE CALL WITH TENNESSEE VALLEY AUTHORITY RE: SPRING
2019 STEAM GENERATOR INSPECTIONS (EPID L-2019-LRO-0014)

Dear Mr. Shea:

On April 26, 2019, the U.S Nuclear Regulatory Commission staff participated in a conference call with representatives of the Tennessee Valley Authority (the licensee) regarding the ongoing steam generator inspection activities at the Watts Bar Nuclear Plant, Unit 2. A list of participants is provided as Enclosure 1. A summary of the conference call is provided as Enclosure 2.

If you have any questions regarding this matter, I may be reached at (301) 415-6020 or Robert.Schaaf@nrc.gov.

Sincerely,

/RA/

Robert G. Schaaf, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-391

Enclosures:

1. List of Participants
2. Conference Call Summary

cc: via Listserv

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LIST OF PARTICIPANTS
APRIL 26, 2019, CONFERENCE CALL
WITH TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT, UNIT 2
SPRING 2019 STEAM GENERATOR INSPECTIONS

U.S. Nuclear Regulatory Commission

Robert Schaaf
Alan Huynh
Paul Klein
Andrew Johnson
Alexander Butcavage

Tennessee Valley Authority

Russell Wells
Jeremy Mayo
Tony Brown

Westinghouse

Jesse Baron

SUMMARY OF APRIL 26, 2019, CONFERENCE CALL

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNIT 2

SPRING 2019 STEAM GENERATOR TUBE INSPECTIONS

DOCKET NO. 50-391

On April 26, 2019, the U.S. Nuclear Regulatory Commission staff participated in a conference call with Tennessee Valley Authority (the licensee), regarding the ongoing steam generator (SG) tube inspection activities at Watts Bar Nuclear Plant (Watts Bar), Unit 2, during the unit's second refueling outage (U2R2).

The four Model D3 SGs at Watts Bar, Unit 2, were designed by Westinghouse. Each SG contains 4,674 mill-annealed tubes with a nominal outside diameter of 0.75 inches and a nominal wall thickness of 0.043 inches. The SGs have an integral preheater with flow distribution baffles. The tubes are supported by carbon steel drilled tube support plates (TSPs).

Information provided by the licensee during the conference call is summarized below:

- No indications of primary-to-secondary leakage were observed during the recently completed cycle. No secondary side pressure tests were performed during the outage. No exceptions were taken to the industry guidelines. No in-situ pressure tests or tube pulls were planned.
- Inspections were performed in all four SGs. At the time of the call, the licensee stated that the base scope of inspection data was approximately 100 percent acquired and 99 percent analyzed. The special interest inspections data was approximately 84 percent acquired and 80 percent analyzed. The inspection scope included:
 - 100 percent full length bobbin examinations in all tubes except Row 1-4 U-bends
 - 100 percent +Point™ probe examinations of Row 1-4 U-bends from the top of the tubesheet (TTS) on the hot leg (HL) side of the SG, to the TSP plate on the cold leg (CL) side of the SG
 - 100 percent +Point™ probe examination at the HL TTS
 - X-probe examination up to the 6th TSP in a checkerboard pattern on the CL side
 - +Point™ examination for the special interest scope on tube locations with non-resolved bobbin and/or Array probe signals
 - 100 percent +Point™ or Array probe examinations of dents and dings greater than or equal to 5 volts from HL to CL
- Eddy current techniques are used to identify possible loose parts. Foreign object search and retrieval (FOSAR) secondary side inspections are performed to characterize and remove loose parts. The licensee stated that an extensive FOSAR campaign was performed prior to the SGs being placed in service and, as a result, the SGs were found to have fewer loose parts than expected. Some loose parts were identified during the outage but all of them were removed from the SGs. Two pieces of strip metal were removed from SG 1, a piece of legacy weld slag was removed from SG 2, a gasket and

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piece of scale were removed from SG 3, and a wire and a remnant were removed from SG 4. There were no indications of tube damage associated with loose parts.

- Anti-vibration bar (AVB) wear, TSP wear and outside diameter stress corrosion cracking (ODSCC) indications were identified during the outage. The largest AVB and TSP wear indications were approximately 18 and 22 percent through-wall, respectively. There were five indications of circumferential ODSCC at the TTS, and six indications of axial ODSCC at TSPs. The largest circumferential extent was 198 degrees at a location with multiple circumferential indications. The number of tubes plugged due to ODSCC at the time of the call are shown in the table below.

Plugged Tubes				
	SG 1	SG 2	SG 3	SG 4
Circumferential ODSCC	1	0	2	3
Axial ODSCC	1	0	5	2

- Sludge lancing was scheduled to be performed on all SGs during the outage. At the time of the call, sludge lancing was complete in SGs 1, 2, and 3, and had not yet commenced in SG 4. The licensee reported that approximately 16.5, 14.5, 19, and 26.5 pounds of sludge were removed from SGs 1, 2, 3, and 4, respectively (the licensee provided the SG 4 total after the phone call). Upper internals inspections were performed on SG 2 and had yet to be performed in SG 3, with more attention being given to internals where pre-service modifications were performed.

The NRC staff did not identify any issues that required follow-up action at the time of the call; however, the staff asked to be notified in the event that any unusual conditions were detected during the remainder of the outage.

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 CONFERENCE CALL WITH TENNESSEE VALLEY AUTHORITY RE: SPRING
 2019 STEAM GENERATOR INSPECTIONS (EPID L-2019-LRO-0014)
 DATED JULY 8, 2019

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