



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

September 24, 2021

Mr. James Barstow  
Vice President, Nuclear Regulatory Affairs  
and Support Services  
Tennessee Valley Authority  
1101 Market Street, LP 4A-C  
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 2 – REVIEW OF THE FALL 2020  
STEAM GENERATOR TUBE INSPECTION REPORT (EPID L-2021-LRO-0023)

Dear Mr. Barstow:

By letter dated May 10, 2021, Tennessee Valley Authority (TVA) submitted information summarizing the results of the fall 2020 steam generator (SG) inspections performed at Watts Bar Nuclear Plant (Watts Bar), Unit 2 during refueling outage 3. In addition to this report review, the U.S. Nuclear Regulatory Commission (NRC) staff summarized conference calls regarding the fall 2020 SG tube inspections at Watts Bar, Unit 2, in a letter dated January 11, 2021.

The NRC staff has completed its review of the information provided and concludes that TVA provided the information required by the Watts Bar Nuclear Plant, Unit 2, technical specifications and that no follow-up is needed at this time. The staff's review is enclosed.

If you have any questions, please contact me at 301-415-1627 or via e-mail at [Kimberly.Green@nrc.gov](mailto:Kimberly.Green@nrc.gov).

Sincerely,

*/RA/*

Kimberly J. Green, Senior Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-391

Enclosure: As stated

cc: Listserv



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REVIEW OF THE FALL 2020 STEAM GENERATOR TUBE INSPECTION REPORT

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-391

By letter dated May 10, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21130A040), Tennessee Valley Authority (the licensee) submitted information summarizing the results of the fall 2020 steam generator (SG) inspections performed at Watts Bar Nuclear Plant (Watts Bar), Unit 2, during refueling outage 3 (RFO 3). In addition to this report review, the U.S. Nuclear Regulatory Commission (NRC) staff summarized conference calls regarding the fall 2020 SG tube inspections at Watts Bar 2, in a letter dated January 11, 2021 (ADAMS Accession No. ML20351A219).

Watts Bar, Unit 2 has four Westinghouse Model D3 SGs, each of which contains 4,674 mill-annealed Alloy 600 tubes. Each tube has a nominal outside diameter of 0.75 inches and a nominal wall thickness of 0.043 inches. The tubes are supported by anti-vibration bars and carbon steel drilled tube support plates (TSPs). Each SG has an integral preheater section with flow distribution baffle plates.

The licensee provided the scope, extent, methods, and results of its SG tube inspections in the document referenced above. In addition, the licensee described corrective actions taken in response to the inspection findings.

Based on the review of the information provided, the NRC staff has the following observations:

- Four new degradation mechanisms were found during RFO 3, including axial outside diameter stress corrosion cracking (ODSCC) at hot-leg top-of-tubesheet expansion transitions, axial and circumferential ODSCC at tube freespan dings, and axial primary water stress corrosion cracking at hot-leg top-of-tubesheet expansion transitions.
- A total of 189 tubes were plugged during RFO 3. All tubes with observed degradation satisfied the condition monitoring criteria for structural and leakage integrity with the exception of some tubes with axial ODSCC at TSP intersections, which were evaluated in accordance with NRC Generic Letter 95-05, "Voltage-Based Alternate Repair Criteria" and provided separately in a 90-day report dated July 20, 2021 (ADAMS Accession No. ML21202A062).
- As a result of the observed axial ODSCC at TSP intersections, the licensee's operational assessment concluded that it would not be able to run for a typical 18-month operational cycle and a mid-cycle shutdown and inspection would be required. The licensee plans to install new SGs in the spring of 2022.

Enclosure

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by the Watts Bar Nuclear Plant, Unit 2 technical specifications. In addition, the staff concludes that there are no technical issues that warrant follow-up action at this time because the inspections appear to be consistent with the objective of detecting potential tube degradation, and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units.

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 STEAM GENERATOR TUBE INSPECTION REPORT (EPID L-2021-LRO-0023)  
 DATED SEPTEMBER 24, 2021

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**ADAMS Accession No.: ML21263A004**

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