



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

May 11, 2022

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 2021
MID-CYCLE STEAM GENERATOR TUBE INSPECTION REPORT
(EPID L-2022-LRO-0028)

Dear Mr. Barstow:

By letter dated March 28, 2022, Tennessee Valley Authority (TVA) submitted information summarizing the results of the fall 2021 steam generator (SG) inspections performed at Watts Bar Nuclear Plant (Watts Bar), Unit 2 during the mid-cycle outage (F214). The U.S. Nuclear Regulatory Commission (NRC) staff summarized conference calls regarding these inspections in a letter dated November 3, 2021. The NRC staff provided its review of the Generic Letter 95-05 voltage-based alternate repair criteria report from the fall 2021 SG tube inspections in a letter dated March 28, 2022. This was the final inspection before replacing these steam generators during the spring 2022 refueling outage.

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.

J. Barstow

- 2 -

If you have any questions, please contact me at 301-415-1627 or via e-mail at 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



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

REVIEW OF THE FALL 2021 MID-CYCLE STEAM GENERATOR TUBE

INSPECTION REPORT

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-391

By letter dated March 28, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22087A039), Tennessee Valley Authority (the licensee) submitted information summarizing the results of the steam generator (SG) inspections performed at Watts Bar Nuclear Plant (Watts Bar), Unit 2 during the fall 2021 mid-cycle outage (F214). The U.S. Nuclear Regulatory Commission (NRC) staff summarized conference calls regarding these inspections in a letter dated November 3, 2021 (ML21279A090). The NRC staff provided its review of the Generic Letter 95-05 voltage-based alternate repair criteria report from the fall 2021 SG tube inspections in a letter dated March 28, 2022 (ML22070A002).

This was the final inspection before replacing the four original Westinghouse Model D3 SGs at Watts Bar, Unit 2 during the spring 2022 refueling outage. Each SG contains 4,674 mill-annealed Alloy 600 tubes with 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 (AVBs) 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 the SG tube inspections in its March 28, 2022, letter. In addition, the licensee described the corrective actions (e.g., tube plugging), if any were taken in response to the inspection findings. Based on the review of the information provided, the NRC staff has the following observations:

- One new degradation mechanism was found during F214: oblique outside diameter stress corrosion cracking (ODSCC) at paired TSP dings (dings at the same TSP).
- Of the 384 tubes plugged during F214, 366 were plugged due to indications of axial ODSCC at TSPs (206 tubes) and circumferential ODSCC at the top of the hot-leg top-of-tubesheet (160 tubes). The other 18 tubes were plugged due to other forms of stress corrosion cracking, foreign object wear and surrounding tubes, possible loose parts signals, and one pre-service volumetric indication not previously reported.
- No tubes were repaired by installing sleeves.

- All tubes with observed degradation satisfied the condition monitoring criteria for structural and leakage integrity.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by its technical specifications. In addition, the staff concludes there are no technical issues that warrant additional follow-up action at this time, since 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.

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 2 – REVIEW OF THE FALL 2021
 MID-CYCLE STEAM GENERATOR TUBE INSPECTION REPORT
 (EPID L-2022-LRO-0028) DATED MAY 11, 2022

DISTRIBUTION:

PUBLIC	RidsRgn2MailCenter Resource
PM File Copy	RidsNrrDnrlNcsg Resource
RidsACRS_MailCTR Resource	AJohnson, NRR
RidsNrrDorlLpl2-2 Resource	PKlein, NRR
RidsNrrPMWattsBar Resource	GMakar, NRR
RidsNrrLARButler Resource	SBloom, NRR

ADAMS Accession No.: ML22123A241

OFFICE	NRR/DORL/LPL2-2/PM	NRR/DORL/LPL2-2/LA	NRR/DNRL/NCSEG/BC
NAME	KGreen	RButler	SBloom
DATE	05/03/2022	05/04/2022	04/28/2022
OFFICE	NRR/DORL/LPL2-2/BC	NRR/DORL/LPL2-2/PM	
NAME	DWrona	KGreen	
DATE	05/04/2022	05/11/2022	

OFFICIAL RECORD COPY