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

November 8, 2022

Mr. David P. Rhoades
Senior Vice President
Constellation Energy Generation, LLC
President and Chief Nuclear Officer
Constellation Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNIT 2 - REVIEW OF THE FALL 2021 STEAM GENERATOR TUBE INSPECTION REPORT (EPID L-2022-LRO-0057)

Dear Mr. Rhoades:

By letter dated April 27, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22117A045), Constellation Energy Generation, LLC (the licensee) submitted information summarizing the results of the fall 2021 steam generator (SG) inspections performed at Braidwood Station, Unit 2. These inspections were performed during refueling outage 22. The SG tube inspection report was submitted in accordance with Technical Specification 5.6.9, "Steam Generator (SG) Tube Inspection Report."

Based on its review, the U.S. Nuclear Regulatory Commission (NRC) staff concludes that the licensee has provided the information required by Technical Specification 5.6.9, and that no follow-up is required at this time. A summary of the NRC staff's review is enclosed.

If you have any questions, please contact me at 301-415-6606 or via email at Joel.Wiebe@nrc.gov

Sincerely,

/RA/

Joel S. Wiebe, Senior Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-457

Enclosure:
Review of the Braidwood, Unit 2,
Steam Generator Tube Inspection Report

cc: Listserv

REVIEW OF THE FALL 2021 STEAM GENERATOR TUBE INSPECTION REPORT

CONSTELLATION ENERGY GENERATION, LLC

BRAIDWOOD STATION, UNIT NO. 2

DOCKET NO. STN 50-457

By letter dated April 27, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22117A045), Constellation Energy Generation, LLC (the licensee) submitted information summarizing the results of the fall 2021 steam generator (SG) inspections performed at Braidwood Station, Unit 2. These inspections were performed during refueling outage (RFO) 22.

Braidwood Station, Unit 2, has four Westinghouse Model D5 SGs. There are 4,570 thermally treated Alloy 600 tubes in each SG, with a nominal outside diameter of 0.750 inches and a nominal wall thickness of 0.043 inches. The tubes are hydraulically expanded for the full depth of the tubesheet at each end and are welded to the tubesheet at the bottom of each expansion. The tubes are supported by stainless steel tube support plates with quatrefoil shaped holes and chrome plated Alloy 600 anti-vibration bars.

The licensee provided the scope, extent, methods, and results of the SG tube inspections in the documents referenced above. In addition, the licensee described corrective actions (e.g., tube plugging) that were taken in response to the inspection findings. Based on the review of the information provided, the U.S. Nuclear Regulatory Commission (NRC) staff has the following observations:

- A single axial indication of outside diameter stress corrosion cracking was identified in a low row (row 1 column 25) U-bend tube in SG 2B. During the outage, this indication was called as a primary water stress corrosion crack. However, after the outage, the licensee requested an independent review from the Electric Power Research Institute (EPRI). The conclusion of the EPRI independent review, which was also confirmed by a Westinghouse analyst team, was that the indication was an outside diameter stress corrosion crack located at a ding. It was postulated by EPRI that the ding could have been created by over-insertion of the tube during tube installation, since the ding was coincident with a quatrefoil land location on the intrados of the U-bend.

- The 38 low row tubes (in rows 1 and 2), with known geometric anomalies in the U-bend from SG fabrication, were preventatively plugged, as they were assumed to be more susceptible to future stress corrosion cracking.

- One tube in SG 2B (row 25, column 35) had a single volumetric indication reported within a dent at the 11H tube support plate. Historical data re-analysis showed slight changes at this location dating back to 1997, with the most change in the signal occurring over the last inspection interval (from RFO19 to RFO22), which included an additional operating cycle (i.e., three cycles total), due to impacts from the COVID-19 pandemic. The licensee received a license amendment to operate for the one additional cycle (ML20111A000).

- One tube was preventatively plugged because it was screened as a high stress tube with an eddy current signal similar to tubes that have previously experienced outside diameter stress-corrosion cracking.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by their technical specifications. In addition, the staff concludes that 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.

Reviewer: A. Johnson

SUBJECT: BRAIDWOOD STATION, UNIT 2 - REVIEW OF THE FALL 2021 STEAM GENERATOR TUBE INSPECTION REPORT (EPID L-2022-LRO-0057) DATED NOVEMBER 8, 2022

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