



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

July 11, 2019

Mr. Rod L. Penfield
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop P-BV-SSEB
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT 2 - REVIEW OF STEAM
GENERATOR TUBE INSPECTION REPORT FOR THE FALL 2018 REFUELING
OUTAGE (EPID L-2019-LRO-0000)

Dear Mr. Penfield:

By letters dated January 31, 2019, and March 28, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML19035A607 and ML19087A050, respectively), FirstEnergy Nuclear Operating Company (FENOC) submitted information summarizing the results of the fall 2018 steam generator (SG) tube inspections performed at Beaver Valley Power Station (Beaver Valley), Unit 2. The inspections were performed during Refueling Outage 20. The information was submitted in accordance with Beaver Valley Technical Specification 5.6.6.2, "Unit 2 SG Tube Inspection Report."

In addition to this report, the U.S. Nuclear Regulatory Commission (NRC) staff summarized a conference call regarding the fall 2018 steam generator tube inspections at Beaver Valley, Unit 2, in a letter dated November 28, 2018 (ADAMS Accession No. ML18325A023).

The NRC staff has completed its review of FENOC's submittals, as documented in the enclosed evaluation. The NRC staff concludes that FENOC has provided the information required by the technical specifications and that no additional followup is required at this time. This completes the NRC staff's efforts for EPID L-2019-LRO-0000.

R. Penfield

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If you have any questions, please contact me at 301-415-1603 or Carleen.Parker@nrc.gov.

Sincerely,

/RA/

Carleen J. Parker, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosure:
Review of the Fall 2018 Steam Generator
Tube Inspection Report

cc: Listserv

OFFICE OF NUCLEAR REACTOR REGULATION
REVIEW OF THE FALL 2018 STEAM GENERATOR TUBE INSPECTION REPORT
FIRSTENERGY NUCLEAR OPERATING COMPANY
BEAVER VALLEY POWER STATION, UNIT 2
DOCKET NO. 50-412

1.0 INTRODUCTION

By letters dated January 31, 2019, and March 28, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML19035A607 and ML19087A050, respectively), FirstEnergy Nuclear Operating Company (the licensee) submitted information summarizing the results of the fall 2018 steam generator (SG) tube inspections performed at Beaver Valley Power Station (Beaver Valley), Unit 2. The inspections were performed during Refueling Outage 20. The information was submitted in accordance with Beaver Valley Technical Specification 5.6.6.2, "Unit 2 SG Tube Inspection Report."

In addition to this report, the U.S. Nuclear Regulatory Commission (NRC) staff summarized a conference call regarding the fall 2018 SG tube inspections at Beaver Valley, Unit 2, in a letter dated November 28, 2018 (ADAMS Accession No. ML18325A023).

2.0 BACKGROUND

Beaver Valley, Unit 2, is a 3-loop plant with Westinghouse Model 51M SGs. Each SG contains 3,376 mill-annealed Alloy 600 tubes with a nominal outside diameter of 0.875 inches and a nominal wall thickness of 0.050 inches. The tubes are supported by a number of carbon steel tube support plates and Alloy 600 anti-vibration bars. The tubes were roll-expanded at both ends for the full depth of the tubesheet. The portion of tubes from about 3 inches above the top of the tubesheet to about 1 inch above the tube ends was shot-peened on both the hot-leg and cold-leg side of the SG prior to operation. In addition, the U-bend region of the small radius tubes was in-situ stress relieved prior to operation.

3.0 EVALUATION

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

After reviewing the information provided by the licensee, the NRC staff has the following comments and observations:

- Five tubes surrounding two foreign objects (a small wire and gasket) in SG A were removed from service. A stabilizer was installed in each tube before plugging both ends of each tube. No tube wear was detected because of these foreign objects.
- Based on the 481 sleeves in service and the assumed per-sleeve leak rates in WCAP-15919, Revision 2, "Steam Generator Tube Repair for Westinghouse Designed

Plants with 7/8 Inch Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves” (0.000543 gallons per hour (gph) at normal operating conditions and 0.000863 gph during main steam or feedwater line break conditions), the assumed total leak rates for normal operating conditions and accident conditions are 6.27 gallons per day (gpd) and 9.96 gpd, respectively.

- No tubes required in situ pressure testing.

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 NRC staff concludes that there are no technical issues that warrant followup 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.

Principal Contributor: Andrew Johnson

Date: July 11, 2019

SUBJECT: BEAVER VALLEY POWER STATION, UNIT 2 - REVIEW OF STEAM GENERATOR TUBE INSPECTION REPORT FOR THE FALL 2018 REFUELING OUTAGE (EPID L-2019-LRO-0000) DATED JULY 11, 2019

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ADAMS Accession No.: ML19177A020

*by memo dated

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