



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

November 3, 2022

Mr. John J. Grabnar
Site Vice President
Energy Harbor Nuclear Corp.
Beaver Valley Power Station
Mail Stop P-BV-SSEB
P.O. Box 4, Route 168
Shippingport, PA 15077-0004

SUBJECT: BEAVER VALLEY POWER STATION, UNIT 2 – REVIEW OF THE REFUELING
OUTAGE 22 GENERIC LETTER 95-05 VOLTAGE BASED ALTERNATE
REPAIR CRITERIA AND STEAM GENERATOR F* REPORTS
(EPID L-2022-LRO-0014)

Dear Mr. Grabnar:

By letter dated February 10, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22041B540), as supplemented by letter dated August 22, 2022 (ML22234A133), Energy Harbor Nuclear Corp. submitted the Refueling Outage 22 (2R22) Generic Letter (GL) 95-05 Voltage-Based Alternate Repair Criteria (ARC) and Steam Generator (SG) F* (F Star) Reports for Beaver Valley Power Station, Unit 2. The SG tube inspections were performed during the fall 2021 refueling outage.

The U.S. Nuclear Regulatory Commission staff has completed its review of the information provided and concludes that the licensee provided the information required by its technical specifications and that no follow-up is required at this time. The staff's review summary is enclosed.

J. Grabnar

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If you have any questions, please contact me at 301-415-0680 or by email to Brent.Ballard@nrc.gov.

Sincerely,

/RA/

Brent T. Ballard, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosure:
GL 95-05 Voltage-Based ARC
and SG F* Report Summary

cc: Listserv

REVIEW OF THE REFUELING OUTAGE 22
GENERIC LETTER 95-05 VOLTAGE-BASED ALTERNATE REPAIR CRITERIA
AND F* REPORTS
BEAVER VALLEY POWER STATION, UNIT 2
DOCKET NO. 50-412

By letter dated February 10, 2022, Energy Harbor Nuclear Corp. (the licensee), submitted the "Beaver Valley Unit 2 Refueling Outage 22 Generic Letter 95-05 Voltage-Based Alternate Repair Criteria Final Report," Revision 1, and the "Unit #2 – 2R22 Steam Generator F* (F Star) Report" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22041B540). The reports document the steam generator (SG) tube inspections performed at Beaver Valley Power Station, Unit 2 during refueling outage 22 (2R22). When the voltage-based alternate repair criteria and the F Star (F*) methodology have been applied, Beaver Valley Unit 2 Technical Specification (TS) Sections 5.6.6.2.2 and 5.6.6.2.4, respectively, requires that a report be submitted within 90 days after the initial entry into hot shutdown (MODE 4) following completion of an inspection of the SGs performed in accordance with TS Section 5.5.5.2, which requires that a SG Program be established and implemented to ensure SG tube integrity is maintained. In a letter dated August 22, 2022 (ML22234A133), the licensee provided additional information and submitted Revision 2 of the "Beaver Valley Unit 2 Refueling Outage 22 Generic Letter 95-05 Voltage-Based Alternate Repair Criteria Final Report," to correct errors in Revision 1 of the report.

Based on the review of the information provided, the U.S. Nuclear Regulatory Commission (NRC) staff has the following observations:

- The licensee clarified and corrected the following information in Revision 2 of "Beaver Valley Unit 2 Refueling Outage 22 Generic Letter 95-05 Voltage-Based Alternate Repair Criteria Final Report."
 - For Cycle 23, SG-C is the limiting SG for probability of burst and for leakage.
 - The number of distorted support indications (DSIs) that were not +Point™ probe tested were 85, 35, and 0, respectively, for the 0.3, 0.6, and 1.1 voltage bins.
 - Fourteen tubes in SG-B contained 18 DSIs and were unplugged.
 - Tube Row 7, Column 18 that exceeded the 1.5 volt criteria did not have to be retested during 2R22 because the licensee determined that it satisfied the wear limit criteria.
 - License Amendment No. 195 (ML20285A266) increased the allowable accident-induced primary-to-secondary SG tube leakage limit from 2.1 gallons per minute (gpm) to 8.1 gpm. The primary-to-secondary leakage in the faulted SG is assumed to be at the maximum allowable operational leakage (0.1 gpm) prior to the accident. Therefore, the allowable accident-induced primary-to-secondary SG tube leak rate increases to 8.2 gpm (8.1 gpm + 0.1 gpm) in the faulted SG, to account for all sources.

Enclosure

- The eddy current analysis codes Historical Axial Indication and Historical Circumferential Indication were used for the first time during 2R22. These codes are used to indicate the original crack indication for tubes that were unplugged and sleeved or returned to service with the voltage-based alternate repair criteria.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by their TS. 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.

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 REPAIR CRITERIA AND STEAM GENERATOR F* REPORTS
 (EPID L-2022-LRO-0014) DATED NOVEMBER 3, 2022

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