



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

November 9, 2021

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

SUBJECT: SUMMARY OF OCTOBER 22, 2021, TELECONFERENCE WITH ENERGY HARBOR NUCLEAR CORP. REGARDING FALL 2021 STEAM GENERATOR INSPECTIONS AT BEAVER VALLEY POWER STATION, UNIT 2 (EPID L-2021-LRO-0047)

Dear Grabnar:

On October 22, 2021, a teleconference was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Energy Harbor Nuclear Corp. (the licensee) regarding the ongoing steam generator inspection activities at the Beaver Valley Power Station, Unit 2. The list of participants is provided as Enclosure 1 and the teleconference summary is provided as Enclosure 2.

Based on the information provided by the licensee, the NRC staff did not identify any issues that warranted immediate follow-up action. However, the NRC staff asked to be notified if any unusual conditions were detected during the remainder of the outage.

Please direct any inquiries to me at (301) 415-8004 or Sujata.Goetz@nrc.gov.

Sincerely,

/RA/

Sujata Goetz, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosures:

1. List of Participants
2. Teleconference Summary

cc: Listserv

LIST OF PARTICIPANTS

OCTOBER 22, 2021, TELECONFERENCE WITH

ENERGY HARBOR NUCLEAR CORP.

BEAVER VALLEY POWER STATION, UNIT 2

FALL 2021 STEAM GENERATOR INSPECTIONS

Name	Participant
Paul Klein	U.S. Nuclear Regulatory Commission (NRC)
Andrew Johnson	NRC
Steven Bloom	NRC
Sujata Goetz	NRC
Eve Elise	NRC
Phil Lashley (Licensing)	Energy Harbor Nuclear Corp. (Energy Harbor)
Josh Goodman	Energy Harbor
Tim Saibena	Energy Harbor
Gary Alberti	Energy Harbor
Mark Manoleras	Energy Harbor
Kristy Gillespie	Energy Harbor
Jay Smith	Energy Harbor
Andrew Crotty	Energy Harbor
Pat Pauvlinch	Energy Harbor

SUMMARY OF CONFERENCE CALL
WITH ENERGY HARBOR NUCLEAR CORP.
BEAVER VALLEY POWER STATION, UNIT 2
FALL 2021 STEAM GENERATOR TUBE INSPECTIONS
DOCKET NO. 50-412

On October 22, 2021, the staff of the Corrosion and Steam Generator Branch of the Division of New and Renewed Licenses, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission (NRC) participated in a conference call with Energy Harbor Nuclear Corp. (the licensee), regarding the ongoing steam generator (SG) tube inspection activities at Beaver Valley Power Station, Unit 2 (Beaver Valley, Unit 2) during Refueling Outage (RFO) 22.

Beaver Valley, Unit 2 is a three-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 carbon steel tube support plates and alloy 600 anti-vibration bars. The tubes were roll expanded for the full depth of the tubesheet. The entire length of tube interior within the tubesheet was shot-peened on both the hot-leg and cold-leg side of the SG prior to operation. The U-bend region of the small radius tubes was in-situ stress-relieved prior to operation.

In addition to the depth-based tube repair criteria, the licensee is also authorized to apply the Generic Letter (GL) 95-05 voltage-based tube alternate repair criteria for predominantly axially-oriented outside diameter stress corrosion cracking (ODSCC) within the tube support plates (Agencywide Documents Access and Management System (ADAMS) Accession No. ML031070113). The licensee is also authorized to leave flaws within the tubesheet region in service, provided they satisfy the F* repair criterion (ADAMS Accession No. ML12143A445).

Highlights from the conference call are summarized below:

- SG tube inspections were nearly complete at the time of the call. The inspection data was approximately 96 percent acquired and 93 percent analyzed. The overall inspection results were similar to the previous outage. There were no indications in the analyzed data that required in-situ pressure testing to demonstrate tube integrity.
- A total of 162 indications of anti-vibration bars wear were reported in 88 tubes, with the majority in SG A and SG B. One SG B indication, sized at 41 percent through-wall (TW), exceeded the Technical Specifications 40 percent TW repair limit.
- At the time of the call, a total of 1,142 axial ODSCC indications (also called distorted support indications or DSIs) at tube support plates were evaluated using the GL 95-05 voltage-based alternate repair criteria. All of these indications were below the repair limits and the voltage distribution was bounded by previous inspection results. For comparison, a total of 1,292 DSIs were reported during RFO 21.-

- Other than the tube support plates locations, most stress corrosion cracking indications were detected at the hot-leg top-of-tubesheet expansion transition region, including:
 - Ninety tubes (55 in SG A, 33 in SG B, and 2 in SG C) contained circumferential ODSCC indications. These indications had +Point™ voltages ranging from 0.06 volts to 0.30 volts, which met condition monitoring requirements and were below the initial screening criteria for in-situ pressure testing.
 - Seven axial ODSCC cracks were detected at the top-of-tubesheet in five tubes. The largest indication measured 0.19 volts and 50 percent TW using a +Point™ probe.
 - One indication of axial primary water stress corrosion cracking was detected. This indication exceeded the initial voltage screening criteria for in-situ pressure testing but did not require testing due to a total crack length of 0.13 inches. This indication was depth profiled and had a structural effective depth of 89 percent TW and a structural effective length of 0.11 inches.
- All previously installed tube sleeves were inspected with a combination +Point™ and Ghent (Version 2) probe. The +Point™ probe evaluates the region outside the nickel band region while the Ghent probe inspects the nickel band region. Circumferential indications were detected in two tubes at the lower sleeve roll-joint transition, below the nickel band. Due to the complexity of the eddy current signals, evaluation of the indications was still in progress at the time of the outage call. Preliminary analysis suggested the indications were in the parent tubes. Both sleeves were installed in RFO 20 in 2018. These tubes will be removed from service during this outage.
- One indication of circumferential ODSCC was detected at a 7-volt ding in the tubing freespan. This indication was inspected as part of the 100 percent +Point™ ding inspection program.
- Cold-leg thinning was observed in one tube for the first time in the prior refueling outage (RFO 21). This tube was reinspected during this outage with no change in the 25 percent TW depth. A second tube with a cold-leg thinning indication was detected in the current outage with a 10 percent TW depth.
- At the time of the call, 91 tubes were candidates for plugging or sleeving. The preliminary assessment was 75 tubes for repair by sleeving and 16 tubes for plugging. In addition, outage schedule permitting, the licensee was planning to return some previously plugged tubes to service using the sleeve repair.

The NRC staff did not identify any issues that required follow-up action at the time of the call; however, the staff asked to be notified if any unusual conditions were detected during the remainder of the outage.

SUBJECT: SUMMARY OF OCTOBER 22, 2021, TELECONFERENCE WITH ENERGY HARBOR NUCLEAR CORPORATION REGARDING FALL 2021 STEAM GENERATOR INSPECTIONS AT BEAVER VALLEY POWER STATION, UNIT 2 (EPID L-2021-LRO-0047) DATED NOVEMBER 9, 2021

DISTRIBUTION:

PUBLIC	RidsNrrDorlLpl1 Resource
PM File Copy	PKlein, NRR
RidsNrrLAKZeleznock Resource	GMakar, NRR
RidsACRS_MailCTR Resource	AJohnson, NRR
RidsRgn1MailCenter Resource	SBloom,NRR
RidsNrrDnrINcsg Resource	LTerry, NRR
RidsNrrPMBeaverValley Resource	AJohnson, NRR

ADAMS Accession No.: ML21308A071

*by memorandum

OFFICE	DORL/LPL1/PM	DORL/LPL1/LA	DNRL/NCSSG/BC*	DORL/LPL1/BC	DORL/LPL1/PM
NAME	SGoetz	KZeleznock	SBloom	JDanna	SGoetz
DATE	11/09/2021	11/09/2021	11/02/2021	11/09/2021	11/09/2021

OFFICIAL RECORD COPY