



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

July 3, 2024

Adam Heflin
Executive Vice President/
Chief Nuclear Officer
Mail Station 7605
Arizona Public Service Company
P.O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION UNIT 2 -REVIEW OF THE
SPRING 2023 STEAM GENERATOR TUBE INSPECTION REPORT
(EPID L-2023-LRO-0075)

Dear Adam Heflin:

By letter dated October 17, 2023 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML23290A275), Arizona Public Service Company (the licensee) submitted information summarizing the results of the spring 2023 steam generator tube inspections performed at Palo Verde Nuclear Generating Station (Palo Verde), Unit 2. These inspections were performed during Refueling Outage 24. The steam generator tube inspection report was submitted in accordance with Technical Specification (TS) 5.6.8, "Steam Generator Tube Inspection Report."

The U. S. Nuclear Regulatory Commission (NRC) staff has completed its review of the submittal and concludes that the licensee provided the information required by Palo Verde, Unit 2, TS 5.6.8. In addition, the NRC staff concludes that there are no technical issues that warrant follow-up actions at this time. Enclosed is the NRC staff's review of the Palo Verde, Unit 2, steam generator tube inspection report.

A. Heflin

- 2 -

If you have any questions, please contact me at 301-415-3329 or via email at William.Orders@nrc.gov.

Sincerely,

/RA/

William Orders, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-529

Enclosure:
Review of Steam Generator
Tube Inspection Report

cc: Listserv

REVIEW OF THE SPRING 2023 STEAM GENERATOR TUBE INSPECTION REPORT

ARIZONA PUBLIC SERVICE COMPANY

PALO VERDE NUCLEAR GENERATING STATION, UNIT 2

DOCKET NO. STN 50-529

By letter dated October 17, 2023 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML23290A275), Arizona Public Service Company (the licensee) submitted information summarizing the results of the spring 2023 steam generator (SG) inspections performed at Palo Verde Nuclear Generating Station (Palo Verde), Unit 2. These inspections were performed during Unit 2, Refueling Outage 24 (U2R24).

Palo Verde, Unit 2 has two replacement SGs manufactured by Ansaldo. Each SG has 12,580 thermally treated Alloy 690 tubes with an outside diameter of 0.75 inches and a nominal wall thickness of 0.042 inches. The straight portion of the SG tubes are supported by a series of stainless steel eggcrate tube supports. Diagonal bars (batwing), and vertical straps support the U-bend portion of the SG tubes.

The licensee provided the scope, extent, methods, and results of the SG tube inspections in the letter dated October 17, 2023. In addition, the licensee described 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 U.S. Nuclear Regulatory Commission (NRC) staff has the following observations:

- The only degradation mechanism detected during U2R24 was tube wear. A chemical cleaning (deposit minimization treatment) was performed in both SGs with a total material (mostly iron) removal of approximately 10,000 pounds.
- A threaded step stud loose part was found wedged between the periphery tubes in the cold leg top of the tubesheet region. This object was a component of plant tooling that was lost in the feedwater system during Unit 2, Operating Cycle 24 (U2C24). The two tube locations affected by wear from this loose part were plugged and staked. Since the step stud dimensions, mass, and timing of introduction into the SG is known, the tube wear from the step stud provides a good opportunity to benchmark industry predictive loose part wear programs.
- Appendix F, Form NIS-1, provides the list of tubes plugged during U2R24. For SG 21, the plugged tube list contains a typographical error identified as tube Row 64, Column 129. The tube that was plugged is Row 164, Column 129. This typographical error was confirmed by the licensee in an email to the NRC project manager on December 13, 2023.

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 that there are no technical issues that warrant 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.

Enclosure

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION UNIT 2 -REVIEW OF THE SPRING 2023 STEAM GENERATOR TUBE INSPECTION REPORT (EPID L-2023-LRO-0075) DATED JULY 3, 2024

DISTRIBUTION:

PUBLIC

- RidsACRS_MailCTR Resource
- RidsNrrDoriLp4 Resource
- RidsNrrLAPBlechman Resource
- RidsNrrPMPaloVerde Resource
- RidsNrrDnrINcsg Resource
- RidsRgn4MailCenter Resource
- PKlein, NRR
- AJohnson, NRR
- GMakar, NRR
- LTerry, NRR

ADAMS Accession No. ML24129A052

OFFICE	NRR/DORL/LPL4/PM	NRR/DORL/LPL4/LA	NRR/DNRL/NCSSG/BC
NAME	WOrders	PBlechman	SBloom
DATE	5/9/2024	5/9/2024	6/4/2024
OFFICE	NRR/DORL/LPL4/BC	NRR/DORL/LPL4/PM	
NAME	JRankin	WOrders	
	7/2/2024	7/3/2024	

OFFICIAL RECORD COPY