

From: Dennis Galvin
Sent: Monday, December 5, 2022 2:52 PM
To: Dacia.Dallago@aps.com
Cc: Matthew.Cox@aps.com
Subject: Palo Verde Unit 1 – Request for Additional Information - U1R23 Inspection Summary Report for Steam Generator Tubing (EPID: L 2022-LRO-0145)
Attachments: Palo Verde Unit 1 RFO 23 SG Report Draft RAIs Issued 2022-12-05.pdf

Dear Ms. Dallago,

By letter dated November 4, 2022 (Agencywide Documents Access and Management Systems Accession No. ML22308A166), Arizona Public Service Company (the licensee) submitted information summarizing the results of the spring 2022 steam generator (SG) inspections performed at Palo Verde Nuclear Generating Station (Palo Verde), Unit 1. These inspections were performed during refueling outage 23 (U1R23).

To complete its review, the NRC staff has prepared a request for additional information (RAI) in DRAFT form.

To arrange a clarification call for the draft RAIs and to discuss the due date for the RAI response, please contact me at (301) 415-6256.

Respectfully,

Dennis Galvin
Project Manager
U.S Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Operating Reactor Licensing
Licensing Project Branch 4
301-415-6256

Docket No. 50-528

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DRAFT REQUEST FOR ADDITIONAL INFORMATION

SPRING 2022 STEAM GENERATOR TUBE INSPECTION REPORT

ARIZONA PUBLIC SERVICE COMPANY

PALO VERDE NUCLEAR GENERATING STATION, UNIT 1

DOCKET NO. STN 50-528

By letter dated November 4, 2022 (Agencywide Documents Access and Management Systems Accession No. ML22308A166), Arizona Public Service Company (the licensee) submitted information summarizing the results of the spring 2022 steam generator (SG) inspections performed at Palo Verde Nuclear Generating Station (Palo Verde), Unit 1. These inspections were performed during refueling outage 23 (U1R23).

All pressurized water reactors have Technical Specifications (TS) according to Section 50.36 of Title 10 of the *Code of Federal Regulations* that include a SG Program with specific criteria for the structural and leakage integrity, repair, and inspection of SG tubes. Palo Verde Unit 1 TS 5.6.8 requires that a report be submitted within 180 days after the initial entry into hot shutdown (MODE 4) following completion of an inspection of the SGs performed in accordance with TS Section 5.5.9, which requires that a SG Program be established and implemented to ensure SG tube integrity is maintained.

To complete its review of the inspection report, the NRC staff requests the following additional information:

1. Section 2.0, "Scope of Examination Performed," of the spring 2022 SG tube inspection report states that bobbin probe inspections were performed as partial lengths from both the hot leg and cold leg due to black sludge on the inside diameter (ID) of some tubes. Based on Table 1, "Examination Summary," it appears that the partial exams were only performed on less than half of the tubes in SG 12. The report also stated that the black sludge caused excessive probe wear and poor data quality when the probe passed around both square ends. Please provide the following information regarding the black sludge:
 - a. Identify if this is the first time black sludge has been detected on the ID of SG tubes at Palo Verde Unit 1 or when it was first detected.
 - b. Identify if there is any black sludge present on the ID of tubes in SG 11 or is it just limited to tubes in SG 12.
 - c. Describe the extent of the black sludge and its composition, if available (e.g., number of tubes affected, how much of the ID of the affected tubes are covered, are the affected tubes located throughout the tube bundle or located close together).
 - d. Identify what the typical signal to noise ratio for the SG tubes with black sludge on the ID compared to similar tubes without black sludge was.
 - e. Provide insights on what may have caused the black sludge on the ID of the SG tubes.
 - f. Identify what actions have been taken or are being considered to address the black sludge since it appears to impact eddy current data quality.
2. Table 2, "Indication Summary," of the spring 2022 SG tube inspection report states that 138 and 140 total tubes have been plugged in SGs 11 and 12, respectively. However,

Appendix E, "Plug Maps," states that there were 184 and 183 plugged tubes in SGs 11 and 12, respectively, prior to U1R23. The staff notes that the number of plugged tubes identified on the plug maps are consistent with the information reported in the Palo Verde, Unit 1 spring 2019 SG tube inspection report, dated October 18, 2019 (ML19291F576), and the associated NRC review, dated January 16, 2020 (ML20015A012). Please provide the total number of tubes plugged in SGs 11 and 12.