

June 28, 2005

Mr. Gregg R. Overbeck  
Senior Vice President, Nuclear  
Arizona Public Service Company  
P. O. Box 52034  
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION, UNITS 1 AND 3 -  
RESPONSE TO GENERIC LETTER 2004-01, "REQUIREMENTS FOR STEAM  
GENERATOR TUBE INSPECTIONS" (TAC NOS. MC4837 AND MC4839)

Dear Mr. Overbeck:

On August 30, 2004, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2004-01, "Requirements For Steam Generator Tube Inspections." The purpose of GL 2004-01 was to obtain information that would enable the NRC staff to determine whether licensee's steam generator tube inspection programs comply with the existing tube inspection requirements (the plant technical specifications in conjunction with Appendix B to Title 10 of the *Code of Federal Regulations* Part 50).

By letter dated October 28, 2004, Arizona Public Service Company responded to GL 2004-01 for Palo Verde Nuclear Generating Station, Units 1 and 3. As discussed in the enclosed evaluation, the staff concludes that the licensee's overall response to the GL is acceptable

If you have any questions regarding this matter, please contact me at (301) 415-3062.

Sincerely,

/RA/  
Mel B. Fields, Senior Project Manager, Section 2  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos.: STN 50-528 and STN 50-530

Enclosure: As stated

cc w/encl: See next page

EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO GENERIC LETTER 2004-01

“REQUIREMENTS FOR STEAM GENERATOR TUBE INSPECTIONS”

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

PALO VERDE NUCLEAR GENERATING STATION, UNITS 1 AND 3

DOCKET NOS. STN 50-528 AND STN 50-530

On August 30, 2004, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2004-01, “Requirements For Steam Generator Tube Inspections.” The purpose of GL 2004-01 was to obtain information that would enable the NRC staff to determine whether licensee’s steam generator tube inspection programs comply with the existing tube inspection requirements (the plant Technical Specifications (TSs)) in conjunction with Appendix B to Title 10 of the *Code of Federal Regulations*, Part 50 (10 CFR Part 50, Appendix B).

Licenses who concluded that their steam generator tube inspections have not been or are not being performed consistent with the NRC’s position on the requirements in the TSs in conjunction with Appendix B, were requested to submit a safety assessment. As part of this safety assessment, licensees were to address whether their safety basis for limiting inspections within the tubesheet constitutes a change to the “method of evaluation” for establishing the structural and leakage integrity of the tube-to-tubesheet joint. The staff requested this information since it was expected that licensees’ safety basis relied on a mechanical expansion joint rather than the tube-to-tubesheet weld. Since the original tube-to-tubesheet joint was most probably designed by demonstrating that the stresses in the tube, weld, and tubesheet satisfy the allowable stress values in Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) (or other similar standard), the staff questioned whether the safety basis for limiting inspections relied on demonstrating that the expansion joint satisfied some criteria (e.g., minimum tube pullout load criteria, allowable leakage) beyond those specified in Section III of the ASME Code.

By letter dated October 28, 2004, Arizona Public Service Company responded to GL 2004-01 for Palo Verde Nuclear Generating Station (Palo Verde), Units 1 and 3. The licensee concluded that the safety basis used to support Palo Verde’s tube inspection practices does not constitute a change to the method of evaluation. This conclusion appears to be based, in part, on an assumption that the GL was implying that the selection of non-destructive evaluation techniques defines the limits of the reactor coolant pressure boundary. The GL’s discussion of the original design basis, however, was related to the “safety analysis” performed by certain licensees to support a conclusion that flaws located a certain distance below the top of the tubesheet do not have any safety implications. This safety basis relies on a mechanical interference fit between the tube and the tubesheet for establishing the tube-to-tubesheet joint (i.e., forming the reactor coolant pressure boundary). However, for many plants (if not all), the original design of the steam generator gave no credit for this interference fit since the weld between the tube and the tubesheet ensured the integrity of the tube-to-tubesheet joint. In fact,

the design rules (ASME Code, Section III) do not address the use of an interference fit for maintaining pressure boundary integrity. As a result, the staff questioned whether licensees were using a different method of evaluation for assessing the adequacy of the tube-to-tubesheet joint.

Although Palo Verde's response to the "method of evaluation" item did not focus on the NRC staff's area of concern, the staff concludes that Palo Verde's overall response to the GL is acceptable, since it indicated that the tube inspection practices at Palo Verde Units 1 and 3 meet the NRC staff position, with one exception. The exception is that the Palo Verde, Unit 1 and Unit 3, SG tube inspection programs are not consistent with the NRC's position with respect to inspections performed within the tubesheet. This exception has been entered into the licensee's corrective action program and a license amendment to clarify steam generator tube inspection practices in the tubesheet region was submitted to the NRC on May 26, 2005.

Palo Verde Generating Station, Units 1, 2, and 3

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June 28, 2005

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