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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF FROM ASME CODE SECTION XI

HYDROSTATIC PRESSURE TEST REQUIREMENTS

PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3

ARIZONA PUBLIC SERVICE COMPANY

DOCKETS NOS. 50-528, 50-529, AND 50-530

1.0 INTRODUCTION

In its submittal of December 10, 1992, as supplemented March 11, 1993, the Arizona Public Service Company (APS), the licensee, requested relief from the American Society for Mechanical Engineers (ASME) Code, Section XI, hydrostatic pressure test requirements for steam generators for Units 1, 2, and 3. The relief is necessary for APS to install two 7-inch diameter steam generator secondary side handholes. The handholes would provide access to the secondary tube bundle and tubesheet for the removal of loose parts, tubesheet inspections, and sludge lancing. APS is requesting relief under 10 CFR 50.55a(a)(3) and 10 CFR 50.55a(g)(5)(iii), claiming that conformance to the Code would be impractical and result in undue hardship without a compensating increase in the level of quality and safety.

2.0 DISCUSSION

In installing the handholes, a weld pad build-up is required to reinforce the vessel. After repairs by welding on an ASME Class 2 pressure retaining boundary, a system hydrostatic pressure test is required to be performed under the ASME Code, Section XI, IWA-5000. IWA-5000/IWC-5222 requires a test pressure of 1.25 times the system design pressure.

Hydrostatic pressure testing of this weld modification at 1.25 times design pressure as required by the Code would cause undue hardship for the following reasons: (1) The only feasible time to perform this pressure test is when the reactor is defueled. This would result in 3 weeks delay in startup; (2) It imposes an unwarranted use and movement of the upper guide structure and vessel head; (3) It imposes undue stress on the reactor coolant pump shafts; (4) It imposes the highest and most limiting fatigue cycle the steam generators will encounter.

As an alternative, the licensee proposes to perform an inservice leak test (ISLT) at normal secondary operating pressure in Mode 3. This pressure of about 1170 psig is the highest experienced on the secondary side during normal operation when the reactor coolant system is at normal operating pressure and temperature.

The licensee demonstrated the adequacy of the procedures developed for the handhole modification. The demonstration included nondestructive testing, weld pad build-up, and machining.

To ensure the structural integrity of the handhole following installation, the licensee will ultrasonically examine the area of the weld build-up pad and a 20-inch radius from the center of the pad area. If acceptance criteria are not met, APS will advise the NRC. In addition, during the next two refueling outages after installing the handhole, if the handhole covers are removed for outage activities, the licensee will examine each handhole by liquid penetrant.

The staff finds that the volumetric and surface examinations performed on the subject weldment in concert with the system leakage test will provide reasonable assurance that the modification is structurally sound and, thus, provide an acceptable level of quality and safety.

3.0 CONCLUSION

The staff concludes that the proposed ISLT at normal secondary operating pressure in Mode 3 and the proposed volumetric and surface examinations may be authorized pursuant to 10 CFR 50.55a(a)(3)(i). This alternative will provide an acceptable level of quality and safety.

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