

## **NRR-PMDAPem Resource**

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**Sent:** Wednesday, November 01, 2017 1:31 PM  
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**Cc:** Pascarelli, Robert; Alley, David; Tsao, John; Render, Diane; Werner, Greg; Miller, Geoffrey; Peabody, Charles; Collins, Jay; Cumblidge, Stephen; Thomas.N.Weber@aps.com; 'Delbert.Elkinton@aps.com'; Cox Matthew S  
**Subject:** RE: Palo Verde, Unit 1 - Verbal Authorization for Relief Request 57, Alternative Inspection Requirements for Reactor Vessel Closure Head Nozzles per ASME Code Case N-729-4 as Conditioned in 10 CFR 50.55a(g)(6)(ii)(D) Until the End of Operating Cycle 21

NRC EPID: L-2017-LLR-0132

By teleconference call on November 1, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff provided verbal authorization to Arizona Public Service Company (APS, the licensee) for the subject relief request (RR) based on the following explanation.

Participants:

NRC

John Tsao, Acting Branch Chief (provided technical justification)  
Nuclear Regulatory Affairs  
Robert F. Pascarelli, Branch Chief (provided authorization)  
Department Leader, Nuclear Regulatory Affairs  
Diane Render, Materials Engineer  
Leader, Nuclear Regulatory Affairs  
Siva P. Lingam, Project Manager  
Engineer, Nuclear Regulatory Affairs  
Greg Werner, (Region IV Branch Chief)  
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Engineer, Nuclear Regulatory Affairs  
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Lorraine Weaver, Licensing  
Michael Wickham, Compliance  
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VERBAL AUTHORIZATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELIEF REQUEST 57  
ALTERNATE INSPECTION OF REACTOR VESSEL CLOSURE HEAD  
PENETRATION NOZZLES  
PALO VERDE NUCLEAR GENERATING STATION, UNIT 1  
ARIZONA PUBLIC SERVICE COMPANY  
DOCKET NO. 50-528  
November 1, 2017

**Technical Evaluation read by John Tsao, Acting Chief of the Piping and Head Penetration Branch,  
Office of Nuclear Reactor Regulation**

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated October 26, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17299B333), Arizona Public Service Company (the licensee) submitted Relief Request 57 for the inspection of reactor vessel head nozzles at Palo Verde Nuclear Generating Station, Unit 1. In Relief Request 57, the licensee proposed to use alternative inspection requirements for reactor vessel head nozzles in accordance with American Society of Mechanical Engineers (ASME) Code Case N-729-4, paragraph 3142.2, as conditioned in 10 CFR 50.55a(g)(6)(ii)(D) until the end of operating cycle 21.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(2), the licensee submitted Relief Request 57 on the basis that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

During the current refueling outage at Palo Verde, Unit 1, (1R20), the licensee performed a required visual examination of the reactor vessel closure head penetration nozzles. Fourteen (14) nozzles were determined to have relevant conditions pursuant to ASME Code Case N-729-4. The licensee was unable to confirm that these relevant conditions were not indicative of possible nozzle leakage. In accordance with ASME Code Case N-729-4, paragraph 3142.2, nozzles with relevant conditions indicative of possible nozzle leakage must undergo supplemental inspections. The licensee identified a radiological dose hardship of 0.75 to 1 person-REM to perform these supplemental examinations over a possible 5 week period.

In lieu of the supplemental examinations required by paragraph 3142.2, the licensee proposed an alternative to perform a bare metal visual examination of the 14 applicable reactor vessel closure head nozzles at the next refueling outage in accordance with ASME Code Case N-729-4.

In order to support this proposed alternative the licensee noted the following;

- Previous examinations on the head found no indications
- Structural adequacy of penetration nozzles and welds made with Alloy 690 materials
- Reactor coolant system operational leakage performance
- Chemistry analysis of samples taken of the boric acid residue in 1R20
- Actions taken to review and inspect the 14 nozzles during the current refueling outage.

Due to these factors, the licensee stated that performing the required supplemental examinations of the subject 14 nozzles would represent a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The NRC staff reviewed the licensee's proposed alternative, technical basis, hardship and the as found results of the reactor vessel head nozzles. The NRC staff finds that the licensee has provided sufficient information for the following NRC staff conclusions:

1. Given the operating experience, and use of Alloy 690 materials in the replacement reactor pressure vessel head, the licensee has demonstrated that the reactor vessel head degradation is not likely to occur in the next fuel cycle of operation;
2. The licensee's bare metal visual examinations did not identify any areas of significant corrosion;
3. The licensee has demonstrated that there was an alternate possible source other than nozzle leakage of the relevant condition for each of the nozzles for which relief is requested;
4. The licensee's chemistry analysis supports the position that it is unlikely that an active leak exists.

In addition, the NRC staff notes that the licensee has identified the use of administrative controls entitled RCS Leakage Source Determination that will take Action Level 1 when the rolling average of the last seven performances of the unidentified RCS leak rate exceeds 0.1 gallons per minute (gpm) during the next

operating cycle. Enhanced leakage monitoring actions at this level of unidentified leakage will aid in providing reasonable assurance of structural integrity for the reactor vessel closure head.

The NRC staff finds that performing the required supplemental examinations, as compared to the licensee's proposed alternative, constitutes a hardship without a compensating increase in quality and safety.

Given the licensee's identified hardship, the NRC staff's review of the licensee's technical basis, and the enhanced leakage monitoring activities, the NRC staff finds that the licensee's proposed alternative to perform a bare metal visual examination of 14 reactor vessel head nozzles in accordance with ASME Code Case N-729-4, during the operating cycle 21, will provide reasonable assurance of the structural integrity of the reactor vessel closure head until the next scheduled volumetric or visual examination.

**Authorization read by Robert Pascarelli, Chief of the Plant Licensing Branch IV, Office of Nuclear Reactor Regulation**

As Chief of the Plant Licensing Branch IV, Office of Nuclear Reactor Regulation, I concur with the Piping and Head Penetration Branch's determinations.

The NRC staff concludes that Relief Request 57 will provide reasonable assurance of the structural integrity of the reactor vessel head and attached nozzles. The NRC staff finds that complying with the specified inspection in accordance with ASME Code Case N-729-4 would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2) and is in compliance with the requirements of the ASME Code, Section XI, ASME Code Case N-729-4 as conditioned by 10 CFR 50.55a(g)(6)(ii)(D). Therefore, on November 1, 2017, the NRC authorizes the use of Relief Request 57 at Palo Verde Nuclear Generating Station, Unit 1 until the end of operating cycle 21.

All other requirements of ASME Code, Section XI, and 10 CFR 50.55a(g)(6)(ii)(D) for which relief was not specifically requested and authorized by the NRC staff remain applicable, including the third party review by the Authorized Nuclear Inservice Inspector.

This verbal authorization does not preclude the NRC staff from asking additional clarification questions regarding Relief Request 57 while preparing the subsequent written safety evaluation.

Siva P. Lingam  
U.S. Nuclear Regulatory Commission  
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