

From: Lingam, Siva
Sent: Tuesday, March 31, 2020 1:04 PM
To: Matthew.Cox@aps.com
Cc: Dixon-Herrity, Jennifer; Mitchell, Matthew; Honcharik, John; Collins, Jay; Thomas.N.Weber@aps.com; Michael.Dilorenzo@aps.com
Subject: Palo Verde 2 -Verbal Authorization of RR 65, Request for Relief from RPV Bottom Mounted Instrumentation Nozzles and a Pressurizer Surge Line Weld Overlay ISI Examinations (EPID L-2020-LLR-0045)

By teleconference call on March 31, 2020, 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) for Palo Verde Nuclear Generating Station, Unit 2 (Palo Verde, Unit 2) based on the following explanation.

Participants:

NRC

Jay Collins
Jennifer Dixon-Herrity
John Honcharik
Siva Lingam
Matthew Mitchell

APS

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VERBAL AUTHORIZATION BY THE OFFICE NUCLEAR REGULATION
10 CFR 50.55a REQUEST TO DEFER ASME CODE INSERVICE INSPECTION OF
REACTOR PRESSURE VESSEL BOTTOM MOUNTED INSTRUMENTATION NOZZLES AND
PRESSURIZER SURGE LINE WELD OVERLAY DUE TO PANDEMIC (COVID-19)
PALO VERDE NUCLEAR GENERATING STATION, UNIT 2
ARIZONA PUBLIC SERVICE COMPANY
DOCKET NO. 50-529
MARCH 31, 2020

Technical Evaluation read by Matthew Mitchell, Chief of the Piping and Head Penetration Branch, Office of Nuclear Reactor Regulation

By letter dated March 27, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20088A533), as supplemented by letter dated March 30, 2020 (ADAMS Accession No. ML20090L944), Arizona Public Service Company (APS, the licensee), requested an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI and Code Cases N-722-1, "Additional Examinations for PWR [Pressurized Water Reactors] Pressure Retaining Welds in Class 1 Components Fabricated with Alloy 600/82/182 Materials Section XI, Division 1" and N-770-2, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR

Piping and Vessel Nozzle Butt Welds Fabricated With UNS [Unified Numbering System] N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities Section XI, Division 1," as required by Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a, for Palo Verde, Unit 2.

Pursuant to 10 CFR 50.55a(z)(2), the licensee submitted this alternative requesting NRC approval to defer the scheduled Palo Verde, Unit 2 inservice inspection (ISI) examinations for the reactor pressure vessel (RPV) bottom mounted instrumentation (BMI) nozzles and a pressurizer surge line nozzle weld overlay from the currently planned Unit 2 spring of 2020 refueling outage (2R22) to the next refueling outage (2R23) in the fall of 2021 due to the COVID-19 pandemic. The licensee has concluded that complying with the specified 10 CFR 50.55a and ASME Code requirements to inspect the RPV BMI nozzles and the pressurizer surge line nozzle full structural weld overlay would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety, noting that reducing the number of contractors brought onsite during the 2R22 refueling outage will reduce the risk of spreading the coronavirus to Palo Verde personnel who safely operate the plant.

The U.S. Federal Government made a declaration of emergency due to COVID-19 pursuant to the Stafford Act on March 13, 2020, while the U.S. Center for Disease Control (CDC) has determined that COVID-19 poses a serious public health risk. Due to the COVID-19 pandemic, APS has enacted guidelines to limit outside contractors, including those that perform examinations for the ISI program, in order to minimize the potential of inadvertently spreading the COVID-19 virus to Palo Verde personnel. APS's outage scope has been modified to reduce the number of outside contractors accessing Palo Verde site owner-controlled area by approximately 300. APS was able to defer many ISI examinations to the 2R23 outage within the existing APS ISI programmatic controls, except for the two ISI examinations addressed by this alternative. These ISI examinations are for Code Case N-722-1 visual examination of the RV BMI nozzle penetrations and Code Case N-770-2 volumetric examination of the pressurizer surge line nozzle weld overlay. Palo Verde site personnel do not have the equipment and qualifications to perform RV BMI nozzle and pressurizer surge line nozzle weld overlay examinations. Due to the potential spread of COVID-19 to Palo Verde personnel, APS has identified the performance of RPV BMI and pressurizer surge line nozzle weld overlay examinations as a hardship without a compensating increase in the level of quality and safety in accordance with 10 CFR 50.55a(z)(2). APS is proposing to delay the examinations for one refueling cycle from the April 2020, 2R22, refueling outage to the 2R23 refueling outage in the fall of 2021.

In addition, APS addressed the safety basis for their proposal to defer the subject examinations.

For the 61 RV BMI nozzle penetrations, operating experience for the Unit 2 RPV BMI nozzles shows that there have been no leaks, and the last visual inspection of the RPV BMI nozzles in 2017 revealed no relevant indications. Unit 3 had a leaking RPV BMI nozzle in 2013 but was attributed to a fabrication defect. No other Unit 3 RPV BMI nozzles had indications based on ultrasonic and eddy current examinations. In addition, the Unit 2 RPV BMI nozzle material is of a different heat than that of the Unit 3 RPV BMI nozzles and therefore, the same material condition may not be present in the Unit 2 RPV BMI nozzles. The licensee is also crediting enhanced leakage monitoring with the capability of detecting unidentified leakage of 0.1 gallons per minute (gpm) or greater, and plant procedures which require taking appropriate action to identify and address the source of the leak, including, if necessary, shutting down the unit in a controlled manner, as providing adequate protection against a nozzle failure as outlined in the

licensee's letter dated March 30, 2020. The staff found the licensee's evaluation of the operating experience at Unit 2 that records no flaws or leaks at the RPV BMI nozzles based on previous examinations to support the requested alternative. In addition, the staff finds that the Unit 2 enhanced leakage monitoring and actions required by plant procedures provide reasonable assurance of adequate safety to defer the ISI examinations of the RPV BMI nozzles for one refueling outage.

For the pressurizer surge line nozzle weld overlay of dissimilar metal welds 5-34-OL and similar metal weld 20-1-OL, operating experience shows that the pre-emptive Alloy 52 weld overlay installed in 2008 had no indications of flaws during phased array ultrasonic examinations performed in 2008, 2011, 2014 and 2017. In addition, these same ultrasonic examinations recorded no indications in the outer 25 percent of the underlying Alloy 82/182 material of weld 5-34-OL. The licensee is also crediting enhanced leakage monitoring with the capability of detecting unidentified leakage of 0.1 gpm or greater, and plant procedures which require taking appropriate action to identify and address the source of the leak, including, if necessary, shutting down the unit in a controlled manner, as providing adequate protection against a failure at the weld overlay location as outlined in the licensee's letter dated March 30, 2020. The licensee also stated there is additional margin in the ISI examination interval due to the previous conservative fatigue crack growth analysis used to initially determine the examination frequency of the weld overlay, as clarified in the licensee's letter dated March 30, 2020. The fatigue crack growth analysis is conservative and includes all sources of thermal fatigue transients, with conservative transient estimates that are well above actual plant operating conditions as discussed in the licensee's letter dated March 30, 2020. The NRC staff found the licensee's evaluation of the conservatism in the fatigue crack growth evaluation and review of past inspection results to support the requested alternative. In addition, the NRC staff finds that the enhanced Unit 2 leakage monitoring and actions required by plant procedures provides reasonable assurance of adequate safety to defer the ISI examinations of the surge line nozzle weld overlay for one refueling outage.

Based on the results of the information provided above, the NRC staff finds that (1) there is reasonable assurance of adequate protection based on the operating experience of the RPV BMI nozzles which show no recorded indications, and the enhanced leakage monitoring with the capability of detecting 0.1 gpm of unidentified leakage and the associated actions required by plant procedures for deferring the ISI examination until the 2R23 outage in the fall of 2021 for the 61 RPV BMI nozzle penetrations, (2) there is reasonable assurance of adequate protection based on the inspection history of the weld overlay, which shows no recorded indications, conservatism in the licensee's fatigue crack growth analysis for the pressurizer surge line nozzle weld overlay, and the enhanced leakage monitoring with the capability of detecting 0.1 gpm of unidentified leakage and the associated actions required by plant procedures for deferring the ISI examination for the pressurizer surge line nozzle weld overlay until the 2R23 outage in the fall of 2021, and (3) the licensee's hardship justification is acceptable.

**Authorization read by Jennifer Dixon-Herrity, 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 agree with the conclusions of the Piping and Head Penetration Branch.

The NRC staff concludes that the proposed relief for Palo Verde, Unit 2 will provide reasonable assurance of adequate safety for these locations until the next scheduled refueling outage in the

fall of 2021 when an ASME Code, Section XI ISI of the 61 RPV BMI nozzles and pressurizer surge line nozzle weld overlay will be performed. The NRC staff finds that complying with the requirements of the ASME Code, Section XI and Code Cases N-722-1 and N-770-2, as required by 10 CFR 50.55a, 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).

Therefore, effective March 31, 2020, the NRC authorizes the use of the proposed alternative at Palo Verde, Unit 2 until completion of the next scheduled refueling outage, scheduled for the fall of 2021.

All other requirements in ASME Code, Section XI for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

This verbal authorization does not preclude the NRC staff from asking additional clarification questions regarding the proposed relief while subsequently preparing the written safety evaluation.

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