

# **NUCLEAR REGULATORY COMMISSION**

**Docket Nos. STN 50-528, STN 50-529, and STN 50-530**

**Arizona Public Service Company**

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

## **Exemption**

### **I. Background**

Arizona Public Service Company (APS, the licensee) is the holder of Renewed Facility Operating License Nos. NPF-41, NPF-51, and NPF-74, which authorize operation of Palo Verde Nuclear Generating Station, Units 1, 2, and 3 (Palo Verde), respectively. The licenses provide, among other things, that the facility is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC) now or hereafter in effect. The facility consists of pressurized-water reactors (PWRs) located in Maricopa County, Arizona.

### **II. Request/Action**

By application dated January 14, 2022, as supplemented by letter dated February 22, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML22014A415 and ML22053A212, respectively), APS, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.12, "Specific exemptions," requested an exemption from certain requirements of 10 CFR 50.62, "Requirements for reduction of risk from anticipated transients without scram (ATWS) events for light-water-cooled nuclear power plants," for Palo Verde. Specifically, the proposed exemption request would permit Palo Verde Units 1, 2, and 3 to eliminate the specific requirement of 10 CFR 50.62(c)(1) to provide equipment that is diverse from the reactor trip system to automatically initiate the auxiliary (or emergency) feedwater system under conditions indicative of an ATWS. The Palo Verde diverse auxiliary feedwater actuation system (DAFAS) fulfills this requirement in 10 CFR 50.62(c)(1),

and APS has requested approval to allow elimination of DAFAS from the current licensing basis for Units 1, 2, and 3 consistent with the proposed exemption. Palo Verde will continue to comply with the additional requirement in 10 CFR 50.62(c)(1) to provide a diverse turbine trip under ATWS conditions.

### **III. Discussion**

The regulation in 10 CFR 50.62(c)(1) states:

Each pressurized water reactor must have equipment from sensor output to final actuation device, that is diverse from the reactor trip system, to automatically initiate the auxiliary (or emergency) feedwater system and initiate a turbine trip under conditions indicative of an ATWS. This equipment must be designed to perform its function in a reliable manner and be independent (from sensor output to the final actuation device) from the existing reactor trip system.

The regulation in 10 CFR 50.62(c)(1) specifically includes the requirement to provide equipment that is diverse from the reactor trip system to automatically initiate the auxiliary (or emergency) feedwater system under the conditions of an ATWS. The Palo Verde DAFAS fulfills this requirement. Therefore, the proposed removal of the DAFAS from the Palo Verde licensing basis requires an exemption from this section of the regulations.

Pursuant to 10 CFR 50.12, the NRC may, upon application by any interested person or upon its own initiative, grant exemptions from requirements of 10 CFR Part 50 when: (1) the exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security, and (2) special circumstances, as defined in 10 CFR 50.12(a)(2), are present. The licensee's submittal identifies in particular that the special circumstance associated with this exemption request is that continuing to maintain the DAFAS in the licensing basis for Palo Verde Units 1, 2, and 3 represents an undue hardship in accordance with 10 CFR 50.12(a)(2)(iii) due to DAFAS' obsolescence.

**A. The Exemption is Authorized by Law**

The NRC has the authority under 10 CFR 50.12 to grant exemptions from the requirements of 10 CFR Part 50 upon demonstration of proper justification. The licensee has requested a partial exemption to the requirement in 10 CFR 50.62(c)(1) to provide equipment to automatically initiate the auxiliary (or emergency) feedwater system under ATWS conditions that is diverse from the reactor trip system. The licensee will continue to meet all other requirements in 10 CFR 50.62(c)(1). As discussed below, the NRC staff determined that special circumstances exist, which support granting the proposed exemption. Furthermore, granting the exemption would not result in a violation of the Atomic Energy Act of 1954, as amended, or the NRC's regulations. Therefore, the exemption is authorized by law.

**B. The Exemption Presents no Undue Risk to Public Health and Safety**

The NRC staff has concluded in the safety evaluation associated with this exemption under ADAMS Accession No. ML22054A005 (Enclosure 2) that the exemption represents low risk, is of minimal safety impact, and that adequate defense-in-depth and safety margins are preserved. DAFAS is not credited in the Palo Verde UFSAR Chapters 6 and 15 accident analyses for actuating AFS to remove residual heat. AFS is the credited means for initiating AFS in the UFSAR analyses as well as in the Palo Verde PRA model and will be unaffected by the proposed removal of DAFAS. In addition, the NRC staff has concluded that it is acceptable for the licensee to credit existing operator manual actions within the emergency operating procedures to initiate AFS under ATWS conditions as defense-in-depth in support of the requested exemption. Thus, granting this exemption request will not pose undue risk to public health and safety.

**C. The Exemption is Consistent with the Common Defense and Security**

The proposed exemption will allow the removal of DAFAS from the licensing basis for Palo Verde Units 1, 2, and 3 as a diverse automatic actuation of AFS under ATWS conditions satisfying partial requirements of 10 CFR 50.62(c)(1). The NRC staff has reviewed the

exemption request in the SE associated with this exemption. The NRC concluded in the associated SE that the licensee's submittal demonstrates that the reactor protection system, the engineered safety features actuation system (ESFAS) and AFAS, and the supplemental protection system (SPS) are designed and maintained with high reliability to preclude ATWS conditions and are monitored under 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants." The NRC staff also concluded that adequate defense-in-depth and safety margins will be preserved with the removal of DAFAS from the licensing basis for Palo Verde Units 1, 2, and 3. The licensee will continue to meet all other requirements in 10 CFR 50.62(c)(1). Further, the exemption does not involve security requirements and does not create a security risk. Therefore, the exemption is consistent with the common defense and security.

**D. Special Circumstances**

The licensee has asserted that continuing to maintain DAFAS in the plant licensing basis represents an undue hardship in accordance with 10 CFR 50.12(a)(2)(iii) due to its obsolescence. DAFAS is no longer supported by the vendor and spare parts are not readily available for the system. Significant engineering resources are required to reverse-engineer parts and frequent fiber optic communications problems often affect DAFAS system reliability. DAFAS operates on a vendor-supplied proprietary platform that is unique to Palo Verde. The vendor is no longer in business and Palo Verde can no longer obtain the Modicon programmable logic controllers, displays and associated equipment to maintain DAFAS. Since these replacement parts can no longer be obtained through generally available sources, the licensee has established that maintaining or replacing DAFAS in the given circumstances is a hardship. Furthermore, the Statement of Considerations associated with 10 CFR 50.62(c)(1) (49 FR 26038, dated June 26, 1984) state that the installation of diverse equipment to trip the turbine and initiate auxiliary feedwater have only a marginally favorable value/impact for Combustion Engineering plants such as Palo Verde. The NRC staff has

concluded that the licensee has demonstrated that removal of DAFAS from the Palo Verde licensing basis represents low risk and only a minimal safety impact. Therefore, the maintaining or replacing of DAFAS in the given circumstances is an undue hardship on the licensee. For these reasons, granting an exemption to allow removal of DAFAS from the Palo Verde licensing basis supports the claimed special circumstance of undue hardship.

#### **E. Supplemental Information**

For more technical details, refer to the SE associated with this exemption under ADAMS Accession No. ML22054A005 (Enclosure 2).

#### **F. Environmental Considerations**

The NRC staff determined in the associated SE that the exemption discussed herein meets the eligibility criteria for the categorical exclusion set forth in 10 CFR 51.22(c)(9) because the granting of this exemption involves: (i) no significant hazards consideration, (ii) no significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, and (iii) no significant increase in individual or cumulative occupational radiation exposure. Therefore, in accordance with 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the NRC's consideration of this exemption request.

### **IV. Conclusions**

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. Also, special circumstances are present. Therefore, the Commission hereby grants APS an exemption from the specific requirement of 10 CFR 50.62(c)(1) to provide equipment that is diverse from the reactor trip system to automatically initiate the auxiliary (or emergency) feedwater system under conditions

indicative of an ATWS. As stated above, APS will continue to meet all other requirements of 10 CFR 50.62(c)(1) at Palo Verde Units 1, 2, and 3.

Dated at Rockville, Maryland, this 23<sup>rd</sup> day of March 2022.

For the Nuclear Regulatory Commission.

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