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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 121 TO FACILITY OPERATING LICENSE NO. NPF-41,

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

PALO VERDE NUCLEAR GENERATING STATION, UNIT 1

DOCKET NO. STN 50-528

1.0 INTRODUCTION

By application dated October 8, 1999, the Arizona Public Service Company (APS or the licensee) requested changes to the Technical Specifications (TSs) for Palo Verde Nuclear Generating Station, Unit 1. APS submitted this request on behalf of itself, the Salt River Project Agricultural Improvement and Power District, Southern California Edison Company, El Paso Electric Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority. The proposed changes would revise Surveillance Requirement (SR) 3.8.4.8 of TS 3.8.4, "DC Sources - Operating," to allow the licensee to forego the performance of this surveillance until entry into MODE 4 coming out of the ninth refueling outage for Unit 1.

The October 29, 1999, supplement provided clarifying information that was within the scope of the original *Federal Register* notice and did not change the staff's initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

The Class 1E, 125V dc power system for Palo Verde Unit 1 consists of two independent and redundant electrical power subsystems (Train A and B). Each train consists of two 125V dc channels (Channels A and C for Train A, Channels B and D for Train B). Each 125V dc channel is formed by one battery bank, one battery charger, one inverter, and the associated distribution system.

The Class 1E battery banks currently installed in Palo Verde Unit 1 are the high specific gravity AT&T round cell batteries. This battery design has had a history of operability concerns related to its ability to recover full capacity following repetitive discharges. While the AT&T batteries installed in Unit 1 have never demonstrated any deficiencies, the licensee decided to replace these batteries during the fall 1999 refueling outage as a prudent measure to eliminate the possibility of any long-term operability concerns. Due to problems experienced by the vendor of the new low specific gravity rectangular cell batteries, four acceptable battery banks were not available and the planned battery replacement could not be completed as planned. The

licensee will, therefore, operate Unit 1 for one more fuel cycle (approximately 18 months) with the AT&T round cell batteries as the Class 1E battery banks.

One of the TS surveillance requirements associated with the plant's Class 1E batteries is a deep discharge test to be performed every 60 months (SR 3.8.4.8). This test is intended to determine overall battery capacity and demonstrate that there is no significant degradation due to age. The test was scheduled to be performed during the fall 1999 refueling outage for three of the four battery banks currently installed in Unit 1. Since the licensee has committed to replace these batteries at the next refueling outage, and because there is a concern related to deep discharges of the AT&T batteries, the licensee is requesting to amend its TSs so that this test would not need to be performed. The surveillance requirement would be amended to allow the licensee to forego such testing until entry into Mode 4 coming out of the ninth refueling outage for Palo Verde Unit 1 (1R09).

3.0 EVALUATION

In its review of the licensee's request to allow operation of the current Palo Verde batteries until the next refueling outage without conducting the full discharge tests, the staff evaluated a number of factors relevant to the ability of the batteries to perform their design-basis function over the next fuel cycle. Since the licensee has committed to replace the high gravity AT&T round cell batteries during the next Palo Verde Unit 1 refueling outage, the staff limited its evaluation of the batteries operability to the forthcoming fuel cycle. The staff considered the age and past performance of these batteries, the results of service tests conducted during the fall 1999 outage, the battery capacity design margins, and the relevancy of performance concerns observed on other high specific gravity AT&T batteries to the Unit 1 batteries. Each of these factors are discussed in more detail below.

The AT&T round cell batteries were installed in Unit 1 less than 8 years ago, and have successfully passed all required surveillance tests. These tests included both full and partial discharge tests; periodic surveillance of important battery parameters such as electrolyte level, float charge, and specific gravity; and periodic visual surveillances to prevent corrosion product buildup and verify that no physical damage is present.

Service tests were conducted on all four Class 1E batteries during the fall 1999 refueling outage, in accordance with SR 3.4.8.7. Service tests are special capacity tests made to demonstrate the capability of batteries to meet the design requirements of the system to which they are connected. The tests demonstrate that each battery bank is capable of supplying its design loads, as specified in the Updated Final Safety Analysis Report (UFSAR), while maintaining acceptable voltage levels. These tests demonstrated that the batteries satisfied the UFSAR design requirements (battery duty cycle) of the dc electrical power system.

The rated capacities of the Class 1E batteries installed in Palo Verde Unit 1 are substantially greater than that required to supply the design-basis loads of the unit. The highest design-basis load demand for these batteries is less than 50 percent of the actual rated capacity of the batteries.

As noted previously, there have been performance concerns regarding the high specific gravity AT&T round cell batteries. This battery design has had a history of operability concerns related to its ability to recover full capacity following repetitive discharges. The licensee provided additional information in its letter dated October 29, 1999, to address the relevancy of performance concerns observed on other high specific gravity AT&T batteries to the Unit 1 batteries. The battery vendor performed a series of tests in 1996 to determine the optimum method for charging batteries following deep discharge performance tests. The vendor tested seven groups of batteries using different charging methodologies following deep discharges. The testing identified an optimum charging methodology that maximized battery capacity recovery following a deep discharge. The battery group that was tested using the optimum method was deep discharged and recharged nine consecutive cycles varying the duration of the recharge. The testing showed that battery capacity remained above 100 percent in all but the last two tests. In all cases the capacity was well above the 90-percent minimum required by TSs. The licensee adopted the optimum charging method recommended by the battery vendor and uses it following both service and performance tests. This test data, which demonstrated the importance of the recharging method, and the use of the optimum charging method by the licensee, provide an additional level of confidence that the Unit 1 batteries would not exhibit the performance concerns observed on other high specific gravity AT&T round cell batteries.

The staff has considered all the factors discussed above and concludes that there is reasonable assurance that the Unit 1 Class 1E batteries are capable of performing their design basis function without performing the performance discharge tests required by SR 3.8.4.8 for one additional fuel cycle. Therefore, the staff finds acceptable the licensee's proposal to forego the performance of this surveillance until entry into MODE 4 coming out of the ninth refueling outage for Unit 1.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Arizona State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a surveillance requirement. The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant changes in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (64 *FR* 56369). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

At the request of the licensee, the staff considered granting the amendment under exigent circumstances pursuant to 10 CFR 50.91(a)(6). After due consideration of the licensee's request, the staff has determined that the licensee has not sufficiently explained the need for the exigency pursuant to 10 CFR 50.91(a)(6)(vi). Therefore, the staff processed the licensee's

amendment request pursuant to 10 CFR 50.91(a)(2)(ii), which provides for a 30-day comment period.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Date: November 19, 1999