September 4, 1997

Mr. James M. Levine
Executive Vice President, Nuclear
Arizona Public Service Company
Post Office Box 53999
Phoenix, Arizona 85072-3999

SUBJECT: ISSUANCE OF AMENDMENT FOR THE PALO VERDE NUCLEAR GENERATING STATION UNIT NO. 2 (TAC NO. M99461)

Dear Mr. Levine:

The Commission has issued the enclosed Amendment No. 105 to Facility Operating License No. NPF-51 for the Palo Verde Nuclear Generating Station, Unit No. 2. The amendment consist of changes to the Technical Specifications (TS) in response to your application dated August 28, 1997, as supplemented by letter dated September 3, 1997.

The amendment revises TS Table 4.3-2 to allow for a one-time, five-day extension of the required surveillance interval for the main steam isolation system portion of the engineered safety feature actuation system logic.

A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

Original Signed By

Kristine M. Thomas, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. STN 50-529

Enclosures: 1. Amendment No. 105 to NPF-51
2. Safety Evaluation

cc w/encls: See next page

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

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-529

PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 105
License No. NPF-51

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the Arizona Public Service Company (APS or the licensee) on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority dated August 28, 1997, as supplemented by letter dated September 3, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. NPF-51 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 105 , and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Kristine M. Thomas

Kristine M. Thomas, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: September 4, 1997

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 105 TO FACILITY OPERATING LICENSE NO. NPF-51

DOCKET NO. STN 50-529

Replace the following page of the Appendix A Technical Specifications with the enclosed page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change. The corresponding overleaf page is also provided to maintain document completeness.

REMOVE	INSERT
3/4 3-3	3/4 3-3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

ESFA SYSTEM FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
IV. MAIN STEAM LINE ISOLATION (MSIS)				
A. Sensor/Trip Units				
1. Steam Generator Pressure - Low	S	R	Q	1, 2, 3, 4
2. Steam Generator Level - High	S	R	Q	1, 2, 3, 4
3. Containment Pressure - High	S	R	Q	1, 2, 3, 4
B. ESFA System Logic				
1. Matrix Logic	N.A.	N.A.	Q*	1, 2, 3, 4
2. Initiation Logic	N.A.	N.A.	Q*	1, 2, 3, 4
3. Manual MSIS	N.A.	N.A.	Q*	1, 2, 3, 4
C. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	Q(2)*	1, 2, 3, 4
Actuation Subgroup Relays	N.A.	N.A.	M(1) (3)	1, 2, 3, 4

*These surveillance intervals may be extended on a one-time basis for five days. This provision expires on September 9, 1997.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

ESFA SYSTEM FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
V. RECIRCULATION (RAS)				
A. Sensor/Trip Units				
Refueling Water Storage Tank - Low	S	R	Q	1, 2, 3
B. ESFA System Logic				
1. Matrix Logic	N.A.	N.A.	Q	1, 2, 3, 4
2. Initiation Logic	N.A.	N.A.	Q	1, 2, 3, 4
3. Manual RAS	N.A.	N.A.	Q	1, 2, 3, 4
C. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	Q(2)	1, 2, 3, 4
Actuation Subgroup Relays	N.A.	N.A.	M(1) (3)	1, 2, 3, 4
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1)				
A. Sensor/Trip Units				
1. Steam Generator #1 Level - Low	S	R	Q	1, 2, 3
2. Steam Generator Δ Pressure SG2 > SG1	S	R	Q	1, 2, 3

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 105 TO FACILITY OPERATING LICENSE NO. NPF-51

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 2

DOCKET NO. STN 50-529

1.0 INTRODUCTION

By letter dated August 28, 1997, as supplemented by letter dated September 3, 1997, the Arizona Public Service Company (APS or the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License No. NPF-51) for the Palo Verde Nuclear Generating Station (PVNGS), Unit 2. The Arizona Public Service Company 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 Technical Specification (TS) Table 4.3-2 to allow for a one-time, five-day extension of the required surveillance interval for the main steam isolation system (MSIS) portion of the engineered safety feature actuation system (ESFAS) logic.

2.0 EVALUATION

The proposed TS amendment would increase the surveillance interval on a one-time basis for the ESFAS MSIS instrumentation surveillance requirement of TS 4.3.2.1. Specifically, the quarterly CHANNEL FUNCTIONAL TEST requirements of Table 4.3-2, "Engineered Safety Features Actuation System Instrumentation Surveillance Requirements," items 1, 2 and 3 of IV.B, "ESFA System Logic," and item IV.C, "Automatic Actuation Logic," would be extended for five days beyond the 25 percent extension of the surveillance interval allowed by TS 4.0.2.

The surveillance tests cannot be performed because there is a degraded contact block on the control room manual MSIS switch for Channel C which could cause a spurious trip input to the MSIS initiation logic. Spurious actuation of this switch during the performance of the quarterly MSIS channel functional tests may cause an inadvertent MSIS signal and result in tripping the unit. The quarterly surveillances are due September 4, 1997, which includes the maximum extension of 25 percent allowed by TS 4.0.2. A five day surveillance extension would allow the unit to begin a controlled shut down for the scheduled refueling outage on September 6, 1997, and proceed to Mode 5 by September 9, 1997, where the surveillance is not required. The switch will be replaced after the unit enters Mode 5 and tested prior to unit startup.

Although APS has replaced these switches on-line before, this evolution is considered to be high risk due to the physical location of the switch and the close proximity to other ESFAS channels and reactor protection system channels.

By letter dated September 3, 1997, APS provided the results of a historical review of the performance of the switches. The historical review spanned the last three years of Licensee Event Reports, Condition/Disposition Requests and Equipment Failure Data Trending. The review concluded that there have been no failures of the matrix logic, initiation logic, automatic actuation logic, or manual actuation that would have prevented the ESFAS MSIS from performing its design function. As such, delaying the surveillance by five days is not expected to miss the identification of a condition that would result in the inability of the equipment to perform its intended function.

Further, in July, 1994, the TS surveillance intervals for the MSIS CHANNEL FUNCTIONAL TEST were increased from monthly to quarterly. Probabilistic risk analysis techniques were used to demonstrate that the proposed surveillance interval extensions to quarterly did not result in increased risk when compared to the monthly surveillance interval. Specifically, the studies found that the decrease in core melt frequency due to the reduced exposure to test-induced transients is 8.78 x 10(-8) per year while the increase in core melt frequency due to the increase in system unavailability is less than 6.3 x 10(-8) per year. Therefore, the net impact of increasing the surveillance interval from 30 days to 90 days resulted in a slight decrease in the overall core melt frequency.

The increase in the surveillance test interval that is being requested by this TS amendment request is five days beyond the 25 percent extension of the interval. Given the results of the probabilistic risk analysis discussed above, where the overall core damage frequency would actually decrease for longer test intervals in this range, the requested extension would have a negligible effect on core damage frequency.

Based on the above, the staff concludes that the one-time, five-day extension of the quarterly surveillance interval beyond the 25 percent extension for the channel functional test for the ESFAS MSIS is acceptable.

3.0 DESCRIPTION OF EXIGENT CIRCUMSTANCES

The degradation of the Channel C manual MSIS switch was identified by the licensee on August 14, 1997, when a spurious trip of MSIS leg 1-3 initiation logic occurred. Subsequent troubleshooting determined that a higher than normal voltage drop exists across the switch, making it highly susceptible to spurious operation. As a result, the licensee concluded that the surveillance tests in TS Table 4.3-2 for the MSIS logic cannot be performed because the degraded control room manual MSIS switch for Channel C could cause a spurious trip input to the MSIS initiation logic. Spurious actuation of this switch during the performance of the quarterly MSIS channel functional tests required by TS Table 4.3-2 may cause an inadvertent MSIS signal and result in tripping the unit. The quarterly surveillances are due September 4, 1997, which

includes the maximum extension of 25 percent allowed by TS 4.0.2. A five-day surveillance extension would allow the Unit to begin a controlled shut down for the scheduled refueling outage on September 6, 1997, and proceed to Mode 5 by September 9, 1997, where the surveillance is not required. The switch will be replaced after the unit enters Mode 5 and tested prior to unit startup.

Although APS has replaced these switches on-line before, this evolution is considered high risk due to the physical location of the switch and the close proximity to other ESFAS channels and reactor protection system channels. APS has determined that the risk associated with switch replacement outweighs the risk associated with increasing the allowed surveillance interval by five days.

The exigent situation exists and cannot be avoided because (1) the degraded condition of the MSIS manual switch did not occur until August 14, 1997, and could not have been predicted, (2) performance of the ESFAS logic channel functional tests with the degraded switch could cause an inadvertent MSIS (and a resulting plant trip), and (3) the quarterly surveillance requirements cannot be extended beyond September 4, 1997, without exceeding TSs 3.3.2 and 4.0.2 periodicity requirements which would require entering TS 3.0.3 Action Statements to shut down the unit.

The staff finds the licensee acted in a timely manner and there was not sufficient time to process this amendment request in the routine manner as described in 10 CFR 50.91 without causing an unnecessary shutdown.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission has made a final determination that the amendment involves no significant hazards consideration. Under the Commission's regulations in 10 CFR 50.92(c), this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

The staff has evaluated the proposed changes against the above standards as required by 10 CFR 50.91(a) and has concluded that:

1. The proposed change does not involve a significant increase in the probability or consequences of any accident previously evaluated.

   The proposed amendment would increase the surveillance interval on a one-time basis for the ESFAS MSIS instrumentation surveillance requirement of TS 4.3.2.1. Specifically, the quarterly CHANNEL FUNCTIONAL TEST requirements of Table 4.3-2, "Engineered Safety Features Actuation System Instrumentation Surveillance

Requirements," items 1, 2 and 3 of IV.B, "ESFA System Logic," and IV.C, "Automatic Actuation Logic," would be extended for five days beyond the 25 percent extension of the surveillance interval allowed by TS 4.0.2.

Increasing the surveillance interval does not constitute a physical change to the unit or make changes in the setpoints, system logic or manual actuation. In addition, this change does not alter physical plant equipment or the way in which plant equipment is operated. Therefore, it does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The ESFAS is designed such that a single failure in the system will not prevent actuation of the system if required to do so. The manual initiation logic is designed in a selective two-out-of-four arrangement. Either Channel A or C will actuate leg 1-3 of the initiation logic. Either Channel B or D will actuate leg 2-4 of the initiation logic. When both legs have been actuated, then the appropriate signal will be generated, a MSIS in this case. The Channel C manual MSIS handswitch is still capable of performing its intended function - actuating MSIS leg 1-3 initiation logic. Therefore, the system may sustain a single failure and still be capable of performing its intended safety function of mitigating certain design basis events. Since the system actuation capability has not been changed by the requested surveillance interval extension, the proposed TS amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment would increase the surveillance interval on a one-time basis for the ESFAS MSIS instrumentation surveillance requirement of 4.3.2.1. Specifically, the quarterly CHANNEL FUNCTIONAL TEST requirements of Table 4.3-2, "Engineered Safety Features Actuation System Instrumentation Surveillance Requirements," items 1, 2 and 3 of IV.B, "ESFA System Logic," and IV.C "Automatic Actuation Logic," would be extended for five days beyond the 25 percent extension of the surveillance interval allowed by TS 4.0.2.

The proposed one-time surveillance interval extension does not introduce any new modes of plant operation or new accident precursors. No physical alterations to plant configurations or changes to system setpoints or logic are proposed by this request. The proposed TS amendment is requesting a one-time extension of the quarterly surveillance interval for the MSIS system logic and does not represent any activity which could initiate a new or different kind of accident. No new failure modes have been

defined, nor any new system interactions introduced, for any plant system or component. In addition, no new limiting failure has been identified as a result of the proposed change.

The ESFAS MSIS system logic remains the same and is capable of performing its design function. Therefore, the proposed TS amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed change does not involve a significant reduction in a margin of safety.

The proposed amendment would increase the surveillance interval on a one-time basis for the ESFAS MSIS instrumentation surveillance requirement of 4.3.2.1. Specifically, the quarterly CHANNEL FUNCTIONAL TEST requirements of Table 4.3-2, "Engineered Safety Features Actuation System Instrumentation Surveillance Requirements," items 1, 2 and 3 of IV.B, "ESFA System Logic," and IV.C, "Automatic Actuation Logic," would be extended for five days beyond the 25 percent extension of the surveillance interval allowed by TS 4.0.2.

Under the proposed TS amendment, the ESFAS MSIS instrumentation, including the manual trip switches, remain capable of performing their safety functions. The proposed TS amendment does not affect the design or performance of the ESFAS MSIS logic. As such, the response of the MSIS actuation instrumentation would not change and, therefore, there would be no change in analyzed accident scenarios and/or outcomes. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Accordingly, the Commission has determined that this amendment involves no significant hazards consideration.

5.0 STATE CONSULTATION

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

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change 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 made a final no significant hazards consideration determination with respect to this amendment. 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.

7.0 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.

Principal Contributor: K. Thomas

Date: September 4, 1997