June 2, 1995

Mr. William L. Stewart Executive Vice President, Nuclear Arizona Public Service Company Post Office Box 53999 Phoenix, Arizona 85072-3999

ISSUANCE OF AMENDMENTS FOR THE PALO VERDE NUCLEAR GENERATING SUBJECT: STATION UNIT NO. 1 (TAC NO. M89855), UNIT NO. 2 (TAC NO. M89856), AND UNIT NO. 3 (TAC NO. M89857)

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 92 to Facility Operating License No. NPF-4}, Amendment No. 80 to Facility Operating License No. NPF-51, and Amendment No. 63 to Facility Operating License No. NPF-74 for the Palo Verde Nuclear Generating Station, Unit Nos. 1, 2, and 3, respectively. The amendments consist of changes to the Technical Specifications in response to your application dated May 4, 1994.

These amendments revise Limiting Condition for Operation (LCO) 3.4.8.3 and Surveillance Requirement 4.4.8.3.1, "Overpressure Protection Systems." Specifically, the LCO and surveillance requirements are revised to clarify that both shutdown cooling system (SCS) suction relief valves shall be OPERABLE and aligned to provide overpressure protection not only during reactor (RCS) cooldown or heatup evolutions, but also during any steady state temperature periods maintained in the course of RCS cooldown or heatup evolutions.

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

> Sincerely. Original Signed By Brian E. Holian, Senior Project Manager **Project Directorate IV-2** Division of Reactor Projects III/IV Office of Nuclear Reactor Regulation

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

Enclosures:	 Amendment No. ⁹² to NPF-41 Amendment No. ⁸⁰ to NPF-51 Amendment No. ⁶³ to NPF-74 Safety Evaluation 	<u>DISTRIBUTION</u> Docket File RIV, WCFO (4) KPerkins, WCF
cc w/encls:	See next page	OPA, O2G5 JRoe

PUBLIC EPeyton GHill (6), T5C3 OC/LFDCB, T9E10 PDIV-2/RF OGC, 015B18 ACRS (4), T2E26 BHolian LHurley, RIV

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UNITED STATES NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

June 2, 1995

Mr. William L. Stewart Executive Vice President, Nuclear Arizona Public Service Company Post Office Box 53999 Phoenix, Arizona 85072-3999

SUBJECT: ISSUANCE OF AMENDMENTS FOR THE PALO VERDE NUCLEAR GENERATING STATION UNIT NO. 1 (TAC NO. M89855), UNIT NO. 2 (TAC NO. M89856), AND UNIT NO. 3 (TAC NO. M89857)

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 92 to Facility Operating License No. NPF-41, Amendment No. 80 to Facility Operating License No. NPF-51, and Amendment No. 63 to Facility Operating License No. NPF-74 for the Palo Verde Nuclear Generating Station, Unit Nos. 1, 2, and 3, respectively. The amendments consist of changes to the Technical Specifications in response to your application dated May 4, 1994.

These amendments revise Limiting Condition for Operation (LCO) 3.4.8.3 and Surveillance Requirement 4.4.8.3.1, "Overpressure Protection Systems." Specifically, the LCO and surveillance requirements are revised to clarify that both shutdown cooling system (SCS) suction relief valves shall be OPERABLE and aligned to provide overpressure protection not only during reactor (RCS) cooldown or heatup evolutions, but also during any steady state temperature periods maintained in the course of RCS cooldown or heatup evolutions.

A copy of the related Safety Evaluation is also enclosed. A notice of issuance will be included in the Commission's next regular biweekly <u>Federal</u> <u>Register</u> notice.

Sincerely,

Br E Holi

Brian E. Holian, Senior Project Manager Project Directorate IV-2 Division of Reactor Projects III/IV Office of Nuclear Reactor Regulation

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

Enclosures:	1.	Amendment No. 92 to NPF-41
	2.	Amendment No. ⁸⁰ to NPF-51
	3.	Amendment No. 63 to NPF-74
	4.	Safety Evaluation

cc w/encls: See next page

Mr. William L. Stewart

June 2, 1995

cc w/encls: Mr. Steve Olea Arizona Corporation Commission 1200 W. Washington Street Phoenix, Arizona 85007

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Regional Administrator, Region IV U. S. Nuclear Regulatory Commission Harris Tower & Pavillion 611 Ryan Plaza Drive, Suite 400 Arlington, Texas 76011-8064

Chairman, Maricopa County Board of Supervisors 111 South Third Avenue Phoenix, Arizona 85003

Mr. Aubrey V. Godwin, Director Arizona Radiation Regulatory Agency 4814 South 40 Street Phoenix, Arizona 85040

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WASHINGTON, D.C. 20555-0001

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-528

PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 92 License No. NPF-41

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 May 4, 1994, 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-41 is hereby amended to read as follows:
 - (2) <u>Technical Specifications and Environmental Protection Plan</u>

The Technical Specifications contained in Appendix A, as revised through Amendment No. 92 , 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. The license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

BEAL

Brian E. Holian, Senior 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: June 2, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 92 TO FACILITY OPERATING LICENSE NO. NPF-41

DOCKET NO. STN 50-528

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE

INSERT

3/4 4-31*	
3/4 4-32	3/4 4-32
3/4 4-33	3/4 4-33
B 3/4 4-1	B 3/4 4-1
B 3/4 4-2*	, · · · <u>-</u>

*No changes were made to these pages; reissued to become overleaf pages.

PRESSURIZER HEATUP/COOLDOWN LIMITS

LIMITING CONDITION FOR OPERATION

3.4.8.2 The pressurizer temperature shall be limited to:

a. A maximum heatup rate of 200°F per hour, and

b. A maximum cooldown rate of 200°F per hour.

APPLICABILITY: At all times.

ACTION:

With the pressurizer temperature limits in excess of any of the above limits, restore the temperature to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in at least HOT STANDBY within the next 6 hours and reduce the pressurizer pressure to less than 500 psig within the following 30 hours.

SURVEILLANCE REQUIREMENTS

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4.4.8.2.1 The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown.

4.4.8.2.2 The spray water temperature differential shall be determined for use in Table 5.7-2 for each cycle of main spray with less than four reactor coolant pumps operating and for each cycle of auxiliary spray operation.

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.8.3 Both shutdown cooling system (SCS) suction line relief valves with lift settings of less than or equal to 467 psig shall be OPERABLE and aligned to provide overpressure protection for the Reactor Coolant System.

<u>APPLICABILITY</u>: When the reactor vessel head is installed and the temperature of one or more of the RCS cold legs is less than or equal to:

- a. 214°F during cooldown
- b. 291°F during heatup

In addition, once one or more cold legs reach 214°F, this LCO remains applicable during periods of steady state temperature conditions until all RCS cold legs reach 291°F. If a cooldown is terminated prior to reaching 214°F and a heatup is commenced, this LCO is applicable until all RCS cold legs reach 291°F.

ACTION:

- a. With one SCS relief valve inoperable in MODE 4, restore the inoperable valve to OPERABLE status within 7 days or depressurize and vent the RCS through at least a 16 square inch vent(s) within the next 8 hours. Do not start a reactor coolant pump if the steam generator water temperature is greater than 100°F above any RCS cold leg temperature.
- b. With one SCS relief value inoperable in MODES 5 or 6, either (1) restore the inoperable value to OPERABLE status within 24 hours or (2) reduce T_{cold} to less than 200°F and, complete depressurization and venting of the RCS through at least a 16 square inch vent(s) within a total of 32 hours. Do not start a reactor coolant pump if the steam generator secondary water temperature is greater than 100°F above any RCS cold leg temperature.
- c. With both SCS relief valves inoperable, reduce T_{cold} to less than 200°F and, depressurize and vent the RCS through a greater than or equal to 16 square inch vent(s) within eight hours. Do not start a reactor coolant pump if the steam generator secondary water temperature is greater than 100°F above any RCS cold leg temperature.
- d. With the RCS vented per ACTIONS a, b, or c, verify the vent pathway at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise, verify the vent pathway every 12 hours.

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

- e. In the event either the SCS suction line relief valves or an RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the SCS suction line relief valves or RCS vent(s) on the transient and any corrective action necessary to prevent recurrence.
- f. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.4.8.3.1 Each SCS suction line relief valve shall be verified to be aligned to provide overpressure protection for the RCS at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise verify alignment every 12 hours.

4.4.8.3.2 The SCS suction line relief valves shall be verified OPERABLE with the required setpoint at least once per 18 months.

BASES

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both reactor coolant loops and associated reactor coolant pumps in operation, and maintain DNBR above 1.231 during all normal operations and anticipated transients. In MODES 1 and 2 with one reactor coolant loop not in operation, this specification requires that the plant be in at least HOT STANDBY within 1 hour.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, single failure considerations require that two loops be OPERABLE.

In MODE 4, and in MODE 5 with reactor coolant loops filled, a single reactor coolant loop or shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops (either shutdown cooling or RCS) be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires that two shutdown cooling loops be OPERABLE.

In MODE 5 with reactor coolant loops not filled, a single shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations, and the unavailability of the steam generators as a heat removing component, require that at least two shutdown cooling loops be OPERABLE.

The operation of one reactor coolant pump or one shutdown cooling pump provides adequate flow to ensure mixing, prevent stratification, and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. A flow rate of at least 3400 gpm (actual) will circulate one equivalent Reactor Coolant System volume of 12,097 cubic feet in approximately 27 minutes. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control. The 3780 gpm in the specification includes all instrument uncertainties including the 300°F calibration temperature of the flow transmitters.

The restrictions on starting a reactor coolant pump in MODES 4 and 5, with one or more RCS cold legs less than or equal to 214°F during cooldown or 291°F during heatup are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 100°F above each of the RCS cold leg temperatures.

3/4.4.2 SAFETY VALVES

The pressurizer code safety values operate to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. Each safety value is designed to relieve a minimum of 460,000 lb per hour of saturated steam at the value setpoint. The relief capacity of a single safety value is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety values are OPERABLE, an operating shutdown cooling loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization.

PALO VERDE - UNIT 1

BASES

SAFETY VALVES (Continued)

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. The combined relief capacity of these valves is sufficient to limit the system pressure to within its Safety Limit of 2750 psia following a complete loss of turbine generator load while operating at RATED THERMAL POWER and assuming no reactor trip until the first Reactor Protective System trip setpoint (Pressurizer Pressure-High) is reached (i.e., there is no direct reactor trip on the loss of turbine) and also assuming no operation of the steam dump valves.

Demonstration of the safety valves' lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Vessel Code.

3/4.4.3 PRESSURIZER

An OPERABLE pressurizer provides pressure control for the Reactor Coolant System during operations with both forced reactor coolant flow and with natural circulation flow. The minimum water level in the pressurizer assures the pressurizer heaters, which are required to achieve and maintain pressure control, remain covered with water to prevent failure, which could occur if the heaters were energized uncovered. The maximum water level in the pressurizer ensures that this parameter is maintained within the envelope of operation assumed in the safety analysis. The maximum water level also ensures that the RCS is not a hydraulically solid system and that a steam bubble will be provided to accommodate pressure surges during operation. The steam bubble also protects the pressurizer code safety valves against water relief. The requirement to verify that on an Engineered Safety Features Actuation test signal concurrent with a loss-of-offsite power the pressurizer heaters are automatically shed from the emergency power sources is to ensure that the non-Class 1E heaters do not reduce the reliability of or overload the emergency power source. The requirement that a minimum number of pressurizer heaters be OPERABLE enhances the capability to control Reactor Coolant System pressure and establish and maintain natural circulation.

The auxiliary pressurizer spray is required to depressurize the RCS by cooling the pressurizer steam space to permit the plant to enter shutdown cooling. The auxiliary pressurizer spray is required during those periods when normal pressurizer spray is not available, such as during natural circulation and during the later stages of a normal RCS cooldown. The auxiliary pressurizer spray also distributes boron to the pressurizer when normal pressurizer spray is not available. Use of the auxiliary pressurizer spray is required during the recovery from a steam generator tube rupture and a small loss of coolant accident.



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. 80 License No. NPF-51

2

- 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 May 4, 1994, 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) <u>Technical Specifications and Environmental Protection Plan</u>

The Technical Specifications contained in Appendix A, as revised through Amendment No. 80, 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. The license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

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Brian E. Holian, Senior 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: June 2, 1995

- 2 -

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 80 TO FACILITY OPERATING LICENSE NO. NPF-74

DOCKET NO. STN 50-530

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE

INSERT

3/4 4-31*	
3/4 4-32	3/4 4-32
3/4 4-33	3/4 4-33
B 3/4 4-1	B 3/4 4-1
B 3/4 4-2*	,

*No changes were made to these pages; reissued to become overleaf pages.

PRESSURIZER HEATUP/COOLDOWN LIMITS

LIMITING CONDITION FOR OPERATION

3.4.8.2 The pressurizer temperature shall be limited to:

a. A maximum heatup rate of 200°F per hour, and

b. A maximum cooldown rate of 200°F per hour.

APPLICABILITY: At all times.

ACTION:

With the pressurizer temperature limits in excess of any of the above limits, restore the temperature to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in at least HOT STANDBY within the next 6 hours and reduce the pressurizer pressure to less than 500 psig within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.8.2.1 The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown.

4.4.8.2.2 The spray water temperature differential shall be determined for use in Table 5.7-2 for each cycle of main spray with less than four reactor coolant pumps operating and for each cycle of auxiliary spray operation.

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.8.3 Both shutdown cooling system (SCS) suction line relief valves with lift settings of less than or equal to 467 psig shall be OPERABLE and aligned to provide overpressure protection for the Reactor Coolant System.

<u>APPLICABILITY</u>: When the reactor vessel head is installed and the temperature of one or more of the RCS cold legs is less than or equal to:

- a. 214°F during cooldown
- b. 291°F during heatup

In addition, once one or more cold legs reach 214°F, this LCO remains applicable during periods of steady state temperature conditions until all RCS cold legs reach 291°F. If a cooldown is terminated prior to reaching 214°F and a heatup is commenced, this LCO is applicable until all RCS cold legs reach 291°F.

ACTION:

- a. With one SCS relief valve inoperable in MODE 4, restore the inoperable valve to OPERABLE status within 7 days or depressurize and vent the RCS through at least a 16 square inch vent(s) within the next 8 hours. Do not start a reactor coolant pump if the steam generator water temperature is greater than 100°F above any RCS cold leg temperature.
- b. With one SCS relief value inoperable in MODES 5 or 6, either (1) restore the inoperable value to OPERABLE status within 24 hours or (2) reduce T_{cold} to less than 200°F and, complete depressurization and venting of the RCS through at least a 16 square inch vent(s) within a total of 32 hours. Do not start a reactor coolant pump if the steam generator secondary water temperature is greater than 100°F above any RCS cold leg temperature.
- c. With both SCS relief valves inoperable, reduce T_{cold} to less than 200°F and, depressurize and vent the RCS through a greater than or equal to 16 square inch vent(s) within eight hours. Do not start a reactor coolant pump if the steam generator secondary water temperature is greater than 100°F above any RCS cold leg temperature.
- d. With the RCS vented per ACTIONS a, b, or c, verify the vent pathway at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise, verify the vent pathway every 12 hours.

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

- e. In the event either the SCS suction line relief valves or an RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the SCS suction line relief valves or RCS vent(s) on the transient and any corrective action necessary to prevent recurrence.
- f. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.4.8.3.1 Each SCS suction line relief valve shall be verified to be aligned to provide overpressure protection for the RCS at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise verify alignment every 12 hours.

4.4.8.3.2 The SCS suction line relief valves shall be verified OPERABLE with the required setpoint at least once per 18 months.

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3/4.4 REACTOR COOLANT SYSTEM

BASES

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both reactor coolant loops and associated reactor coolant pumps in operation, and maintain DNBR above 1.231 during all normal operations and anticipated transients. In MODES 1 and 2 with one reactor coolant loop not in operation, this specification requires that the plant be in at least HOT STANDBY within 1 hour.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, single failure considerations require that two loops be OPERABLE.

In MODE 4, and in MODE 5 with reactor coolant loops filled, a single reactor coolant loop or shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops (either shutdown cooling or RCS) be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires that two shutdown cooling loops be OPERABLE.

In MODE 5 with reactor coolant loops not filled, a single shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations, and the unavailability of the steam generators as a heat removing component, require that at least two shutdown cooling loops be OPERABLE.

The operation of one reactor coolant pump or one shutdown cooling pump provides adequate flow to ensure mixing, prevent stratification, and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. A flow rate of at least 3400 gpm (actual) will circulate one equivalent Reactor Coolant System volume of 12,097 cubic feet in approximately 27 minutes. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control. The 3780 gpm in the specification includes all instrument uncertainties including the 300°F calibration temperature of the flow transmitters.

The restrictions on starting a reactor coolant pump in MODES 4 and 5, with one or more RCS cold legs less than or equal to 214°F during cooldown or 291°F during heatup are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 100°F above each of the RCS cold leg temperatures.

3/4.4.2 SAFETY VALVES

The pressurizer code safety values operate to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. Each safety value is designed to relieve a minimum of 460,000 lb per hour of saturated steam at the value setpoint. The relief capacity of a single safety value is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety values are OPERABLE, an operating shutdown cooling loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization.

PALO VERDE - UNIT 2

Amendment No. 47,80

- 1

BASES

SAFETY VALVES (Continued)

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. The combined relief capacity of these valves is sufficient to limit the system pressure to within its Safety Limit of 2750 psia following a complete loss of turbine generator load while operating at RATED THERMAL POWER and assuming no reactor trip until the first Reactor Protective System trip setpoint (Pressurizer Pressure-High) is reached (i.e., there is no direct reactor trip on the loss of turbine) and also assuming no operation of the steam dump valves.

Demonstration of the safety valves' lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Vessel Code.

3/4.4.3 PRESSURIZER

An OPERABLE pressurizer provides pressure control for the Reactor Coolant System during operations with both forced reactor coolant flow and with natural circulation flow. The minimum water level in the pressurizer assures the pressurizer heaters, which are required to achieve and maintain pressure control, remain covered with water to prevent failure, which could occur if the heaters were energized uncovered. The maximum water level in the pressurizer ensures that this parameter is maintained within the envelope of operation assumed in the safety analysis. The maximum water level also ensures that the RCS is not a hydraulically solid system and that a steam bubble will be provided to accommodate pressure surges during operation. The steam bubble also protects the pressurizer code safety valves against water relief. The requirement to verify that on an Engineered Safety Features Actuation test signal concurrent with a loss-of-offsite power the pressurizer heaters are automatically shed from the emergency power sources is to ensure that the non-Class 1E heaters do not reduce the reliability of or overload the emergency power source. The requirement that a minimum number of pressurizer heaters be OPERABLE enhances the capability to control Reactor Coolant System pressure and establish and maintain natural circulation.

The auxiliary pressurizer spray is required to depressurize the RCS by cooling the pressurizer steam space to permit the plant to enter shutdown cooling. The auxiliary pressurizer spray is required during those periods when normal pressurizer spray is not available, such as during natural circulation and during the later stages of a normal RCS cooldown. The auxiliary pressurizer spray also distributes boron to the pressurizer when normal pressurizer spray is not available. Use of the auxiliary pressurizer spray is required during the recovery from a steam generator tube rupture and a small loss of coolant accident.



UNITED STATES NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-530

PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 63 License No. NPF-74

- 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 May 4, 1994, 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-74 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. 63, 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. The license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

BREHL

Brian E. Holian, Senior 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: June 2, 1995

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ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 63 TO FACILITY OPERATING LICENSE NO. NPF-51

DOCKET NO. STN 50-529

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE

INSERT

3/4 4-31*	
3/4 4-32	3/4 4-32
3/4 4-33	3/4 4-33
B 3/4 4-1	B 3/4 4-1
B 3/4 4-2*	

*No changes were made to these pages; reissued to become overleaf pages.

PRESSURIZER HEATUP/COOLDOWN LIMITS

LIMITING CONDITION FOR OPERATION

3.4.8.2 The pressurizer temperature shall be limited to:

a. A maximum heatup rate of 200°F per hour, and

b. A maximum cooldown rate of 200°F per hour.

APPLICABILITY: At all times.

ACTION:

With the pressurizer temperature limits in excess of any of the above limits, restore the temperature to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in at least HOT STANDBY within the next 6 hours and reduce the pressurizer pressure to less than 500 psig within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.8.2.1 The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown.

4.4.8.2.2 The spray water temperature differential shall be determined for use in Table 5.7-2 for each cycle of main spray with less than four reactor coolant pumps operating and for each cycle of auxiliary spray operation.

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.8.3 Both shutdown cooling system (SCS) suction line relief valves with lift settings of less than or equal to 467 psig shall be OPERABLE and aligned to provide overpressure protection for the Reactor Coolant System.

<u>APPLICABILITY</u>: When the reactor vessel head is installed and the temperature of one or more of the RCS cold legs is less than or equal to:

- a. 214°F during cooldown
- b. 291°F during heatup

In addition, once one or more cold legs reach 214°F, this LCO remains applicable during periods of steady state temperature conditions until all RCS cold legs reach 291°F. If a cooldown is terminated prior to reaching 214°F and a heatup is commenced, this LCO is applicable until all RCS cold legs reach 291°F.

ACTION:

- a. With one SCS relief value inoperable in MODE 4, restore the inoperable value to OPERABLE status within 7 days or depressurize and vent the RCS through at least a 16 square inch vent(s) within the next 8 hours. Do not start a reactor coolant pump if the steam generator water temperature is greater than 100°F above any RCS cold leg temperature.
- b. With one SCS relief value inoperable in MODES 5 or 6, either (1) restore the inoperable value to OPERABLE status within 24 hours or (2) reduce T_{cold} to less than 200°F and, complete depressurization and venting of the RCS through at least a 16 square inch vent(s) within a total of 32 hours. Do not start a reactor coolant pump if the steam generator secondary water temperature is greater than 100°F above any RCS cold leg temperature.
- c. With both SCS relief values inoperable, reduce T_{cold} to less than 200°F and, depressurize and vent the RCS through a greater than or equal to 16 square inch vent(s) within eight hours. Do not start a reactor coolant pump if the steam generator secondary water temperature is greater than 100°F above any RCS cold leg temperature.
- d. With the RCS vented per ACTIONS a, b, or c, verify the vent pathway at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise, verify the vent pathway every 12 hours.

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

- e. In the event either the SCS suction line relief valves or an RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the SCS suction line relief valves or RCS vent(s) on the transient and any corrective action necessary to prevent recurrence.
- f. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.4.8.3.1 Each SCS suction line relief valve shall be verified to be aligned to provide overpressure protection for the RCS at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise verify alignment every 12 hours.

4.4.8.3.2 The SCS suction line relief valves shall be verified OPERABLE with the required setpoint at least once per 18 months.

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BASES

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

The plant is designed to operate with both reactor coolant loops and associated reactor coolant pumps in operation, and maintain DNBR above 1.24 during all normal operations and anticipated transients. In MODES 1 and 2 with one reactor coolant loop not in operation, this specification requires that the plant be in at least HOT STANDBY within 1 hour.

In MODE 3, a single reactor coolant loop provides sufficient heat removal capability for removing decay heat; however, single failure considerations require that two loops be OPERABLE.

In MODE 4, and in MODE 5 with reactor coolant loops filled, a single reactor coolant loop or shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops (either shutdown cooling or RCS) be OPERABLE. Thus, if the reactor coolant loops are not OPERABLE, this specification requires that two shutdown cooling loops be OPERABLE.

In MODE 5 with reactor coolant loops not filled, a single shutdown cooling loop provides sufficient heat removal capability for removing decay heat; but single failure considerations, and the unavailability of the steam generators as a heat removing component, require that at least two shutdown cooling loops be OPERABLE.

The operation of one reactor coolant pump or one shutdown cooling pump provides adequate flow to ensure mixing, prevent stratification, and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. A flow rate of at least 3400 gpm (actual) will circulate one equivalent Reactor Coolant System volume of 12,097 cubic feet in approximately 27 minutes. The reactivity change rate associated with boron reductions will, therefore, be within the capability of operator recognition and control. The 3780 gpm in the specification includes all instrument uncertainties including the 300°F calibration temperature of the flow transmitters.

The restrictions on starting a reactor coolant pump in MODES 4 and 5, with one or more RCS cold legs less than or equal to 214°F during cooldown or 291°F during heatup are provided to prevent RCS pressure transients, caused by energy additions from the secondary system, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 100°F above each of the RCS cold leg temperatures.

3/4.4.2 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. Each safety valve is designed to relieve a minimum of 460,000 lb per hour of saturated steam at the valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. In the event that no safety valves are OPERABLE, an operating shutdown cooling loop, connected to the RCS, provides overpressure relief capability and will prevent RCS overpressurization.

PALO VERDE - UNIT 3

Amendment No. 18,33,63

BASES

SAFETY VALVES (Continued)

During operation, all pressurizer code safety valves must be OPERABLE to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. The combined relief capacity of these valves is sufficient to limit the system pressure to within its Safety Limit of 2750 psia following a complete loss of turbine generator load while operating at RATED THERMAL POWER and assuming no reactor trip until the first Reactor Protective System trip setpoint (Pressurizer Pressure-High) is reached (i.e., there is no direct reactor trip on the loss of turbine) and also assuming no operation of the steam dump valves.

Demonstration of the safety valves' lift settings will occur only during shutdown and will be performed in accordance with the provisions of Section XI of the ASME Boiler and Pressure Vessel Code.

3/4.4.3 PRESSURIZER

An OPERABLE pressurizer provides pressure control for the Reactor Coolant System during operations with both forced reactor coolant flow and with natural circulation flow. The minimum water level in the pressurizer assures the pressurizer heaters, which are required to achieve and maintain pressure control, remain covered with water to prevent failure, which could occur if the heaters were energized uncovered. The maximum water level in the pressurizer ensures that this parameter is maintained within the envelope of operation assumed in the safety analysis. The maximum water level also ensures that the RCS is not a hydraulically solid system and that a steam bubble will be provided to accommodate pressure surges during operation. The steam bubble also protects the pressurizer code safety valves against water relief. The requirement to verify that on an Engineered Safety Features Actuation test signal concurrent with a loss-of-offsite power the pressurizer heaters are automatically shed from the emergency power sources is to ensure that the non-Class 1E heaters do not reduce the reliability of or overload the emergency power source. The requirement that a minimum number of pressurizer heaters be OPERABLE enhances the capability to control Reactor Coolant System pressure and establish and maintain natural circulation.

The auxiliary pressurizer spray is required to depressurize the RCS by cooling the pressurizer steam space to permit the plant to enter shutdown cooling. The auxiliary pressurizer spray is required during those periods when normal pressurizer spray is not available, such as during natural circulation and during the later stages of a normal RCS cooldown. The auxiliary pressurizer spray also distributes boron to the pressurizer when normal pressurizer spray is not available. Use of the auxiliary pressurizer spray is required during the recovery from a steam generator tube rupture and a small loss of coolant accident.

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UNITED STATES NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 92 TO FACILITY OPERATING LICENSE NO. NPF-41,

AMENDMENT NO. 80 TO FACILITY OPERATING LICENSE NO. NPF-51,

AND AMENDMENT NO. 63 TO FACILITY OPERATING LICENSE NO. NPF-74

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

PALO VERDE NUCLEAR GENERATING STATION, UNIT NOS. 1, 2, AND 3

DOCKET NOS. STN 50-528, STN 50-529, AND STN 50-530

1.0 INTRODUCTION

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By letter dated May 4, 1994, the Arizona Public Service Company (APS or the licensee) submitted a request for changes to the Technical Specifications (TS) for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3 (Appendix A to Facility Operating License Nos. NPF-41, NPF-51, and NPF-74, respectively). 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 Limiting Condition for Operation (LCO) 3.4.8.3 and Surveillance Requirement 4.4.8.3.1, "Overpressure Protection Systems." Specifically, the LCO and surveillance requirements are revised to clarify that both shutdown cooling system (SCS) suction relief valves shall be OPERABLE and aligned to provide overpressure protection not only during reactor (RCS) cooldown or heatup evolutions, but also during any steady state temperature periods maintained in the course of RCS cooldown or heatup evolutions.

In addition, the licensee requested to correct Bases Section 3/4.4.1, "Reactor Coolant Loops and Coolant Circulation." Specifically, the restriction on starting a reactor coolant pump in MODES 4 and 5, with one or more RCS cold legs less than or equal to 255°F during cooldown or 295°F during heatup is being changed to 214°F and 291°F, respectively. The changes were overlooked in a previous amendment which was submitted by letter dated March 13, 1990, to incorporate the requirement of Generic Letter 88-11, "NRC Position on Radiation Embrittlement of Reactor Vessel Materials and Its Impact on Plant Operation."

2.0 BACKGROUND/DISCUSSION

The purpose of TS 3.4.8.3 is to provide overpressure protection for the reactor coolant system (RCS). The operability and alignment of two shutdown cooling suction line relief valves, one located in each shutdown cooling suction line, while maintaining the limits imposed on the RCS heatup and cooldown rates, ensures that the RCS will be protected from pressure transients which could exceed the limits of Appendix G to 10 CFR Part 50 when one or more of the RCS cold legs are less than or equal to 214°F during cooldown or to 291°F during heatup.

Currently, TS 3.4.8.3 addresses limiting condition for operation during cooldown and heatup evolutions. Specifically, this TS is applicable only when the temperature of one or more of the RCS cold legs is less than or equal to 214°F during cooldown evolution and less than or equal to 291°F during heatup evolution. The licensee stated that since it is possible to achieve and maintain a steady state condition in the course of either a cooldown or heatup evolution (i.e., a condition that is outside the current LCO and surveillance requirement), a clarification is necessary to address these conditions.

The licensee has proposed to incorporate the following paragraph under the APPLICABILITY section of TS 3.4.8.3 to address the steady state condition in the course of a heatup or cooldown evolutuion:

In addition, once one or more cold legs reach 214°F, this LCO remains applicable during periods of steady state temperature conditions until all RCS cold legs reach 291°F. If a cooldown is terminated prior to reaching 214°F and a heatup is commenced, this LCO is applicable until all RCS cold legs reach 291°F.

The licensee stated that incorporating the noted clarification will not change the bases or assumptions contained in the safety analysis for this system. The most limiting low-temperature overpressure protection (LTOP) transients, the starting of an idle reactor coolant pump (RCP) and the inadvertent actuation of two high pressure safety injection (HPSI) pumps into a solid RCS, are not affected by the proposed clarification. The clarification will enhance LCO 3.4.8.3 and Surveillance Requirement 4.4.8.3.1 for heatup and cooldown evolutions by ensuring operators are aware of this applicability during periods of steady state conditions.

3.0 EVALUATION

The most limiting low-temperature overpressure protection (LTOP) transients, in terms of energy and mass addition are: (1) starting of an idle reactor coolant pump (RCP) and (2) inadvertent actuation of two high pressure safety injection (HPSI) pumps into a solid RCS, respectively. As stated in Bases Section 3/4.4.8, either one of the two SCS suction relief valves provides relieving capability to protect the RCS from overpressurization. As such, these transients are not limited to heatup and cooldown evolutions (i.e., these transients are possible during any potential steady state period in the course of a heatup or cooldown).

The proposed amendments provide further clarification for this TS and represent an additional operating limitation. Specifically, the revision to the LCO and surveillance requirements to clarify that both shutdown cooling system (SCS) suction relief valves shall be OPERABLE and aligned to provide overpressure protection not only during reactor (RCS) cooldown or heatup evolutions, but also during any steady state temperature periods maintained in the course of RCS cooldown or heatup evolutions.

Incorporating the noted clarification to address the applicability of the LCO's and surveillance for steady state periods achieved or maintained during either a heatup or cooldown evolution will ensure that the operators are aware of the steady state conditions since the most limiting low-temperature overpressure protection (LTOP) transients could exist during this time. Based on the above, the staff concludes that revising the LCO and surveillance requirements to add an operational limit to address the steady condition in the course of a heatup or cooldown evolution is acceptable.

With regards to the correction to TS page B 3/4 4-1 (the change from 255°F to 214°F and from 295°F to 291°F for the RCS cold legs), these changes constitute an administrative change since the associated LCO was correspondingly changed in a previously approved amendment (NRC letter dated July 20, 1990) and the Bases section was not updated.

4.0 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.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve 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 previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (59 FR 42333). Accordingly, the amendments meet 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 amendments.

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6.0 <u>CONCLUSION</u>

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 Contributors: L. Tran B. Holian

Date: June 2, 1995