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

Mr. Donald B. Karner Executive Vice President Arizona Nuclear Power Project Post Office Box 52034 Phoenix, Arizona 85072-2034 DISTRIBUTION Docket File NRC & LPDRs PD5 Reading MVirgilio JLee MJDavis OGC (for info) DHagan Region V (4)

EJordan BGrimes TBarnhart (12) Wanda Jones EButcher ACRS (10) GPA/PA ARM/LFMB

Dear Mr. Karner:

SUBJECT: ISSUANCE OF AMENDMENT NO. 37 TO FACILITY OPERATING LICENSE NO. NPF-41, AMENDMENT NO. 24 TO FACILITY OPERATING LICENSE NO. NPF-51, AND AMENDMENT NO. 13 TO FACILITY OPERATING LICENSE NO. NPF-74, FOR THE PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3, RESPECTIVELY (TAC NOS. 68709, 68710 AND 68711)

The Commission has issued the subject Amendments, which are enclosed, to the Facility Operating Licenses for Palo Verde Nuclear Generating Station, Units 1, 2, and 3. The Amendments consist of a change to the Technical Specifications in response to your application dated March 16, 1988, as supplemented by letter dated July 6, 1988.

The amendments revise Technical Specification Surveillance Requirement 4.5.2.h which specifies flow requirements that the Low Pressure Safety Injection (LPSI) subsystem must meet during flow balance testing.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's next regular bi-weekly <u>Federal Register</u> notice.

Sincerely,

original signed by

Michael J. Davis, Project Manager Project Directorate V Division of Reactor Projects - III, IV, V and Special Projects

| End | closures: | | | | |
|-----|-----------|-----|----|----|--------|
| 1. | Amendment | No. | 37 | to | NPF-41 |
| 2. | Amendment | No. | 24 | to | NPF-51 |
| ~ | | M | 10 | 4 | |

- 3. Amendment No. 13 to NPF-74
- 4. Safety Evaluation

cc: See next page
*See previous concurrence

| DRS /PD5 | *DRSP/PD5 | *OGC |
|----------|------------|----------|
| SEE | MJDavis:dr | MYoung |
| 10/07/88 | 10/27/88 | 10/05/88 |



OFFICIAL RECORD COPY





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

October 17, 1988

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

Mr. Donald B. Karner Executive Vice President Arizona Nuclear Power Project Post Office Box 52034 Phoenix, Arizona 85072-2034

Dear Mr. Karner:

SUBJECT: ISSUANCE OF AMENDMENT NO. 37 TO FACILITY OPERATING LICENSE NO. NPF-41, AMENDMENT NO. 24 TO FACILITY OPERATING LICENSE NO. NPF-51, AND AMENDMENT NO. 13 TO FACILITY OPERATING LICENSE NO. NPF-74, FOR THE PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3, RESPECTIVELY (TAC NOS. 68709, 68710 AND 68711)

The Commission has issued the subject Amendments, which are enclosed, to the Facility Operating Licenses for Palo Verde Nuclear Generating Station, Units 1, 2, and 3. The Amendments consist of a change to the Technical Specifications in response to your application dated March 16, 1988, as supplemented by letter dated July 6, 1988.

The amendments revise Technical Specification Surveillance Requirement 4.5.2.h which specifies flow requirements that the Low Pressure Safety Injection (LPSI) subsystem must meet during flow balance testing.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's next regular bi-weekly <u>Federal Register</u> notice.

Sincerely,

Minhal.

Michael J. Davis, Project Manager Project Directorate V Division of Reactor Projects - III, IV, V and Special Projects

Enclosures:

- 1. Amendment No. 37 to NPF-41
- 2. Amendment No. 24 to NPF-51
- 3. Amendment No. 13 to NPF-74
- 4. Safety Evaluation

cc: See next page

Mr. Donald B. Karner Arizona Nuclear Power Project Executive Vice President Post Office Box 52034 Phoenix, Arizona 85072-2034

cc: Arthur C. Gehr, Esq. Snell & Wilmer 3100 Valley Center Phoenix, Arizona 85073

Mr. James M. Flenner, Chief Counsel Arizona Corporation Commission 1200 West Washington Phoenix, Arizona 85007

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Mr. Mark Ginsberg Energy Director Office of Economic Planning and Development 1700 West Washington - 5th Floor Phoenix, Arizona 85007

Mr. Wayne Shirley Assistant Attorney General Bataan Memorial Building Santa Fe, New Mexico 87503

Mr. Tim Polich U.S. Nuclear Regulatory Commission HC-03 Box 293-NR Buckeye, Arizona 85326

Regional Administrator, Region V U. S. Nuclear Regulatory Commission 1450 Maria Lane Suite 210 Walnut Creek, California 94596 Palo Verde

Ms. Lynn Bernabei Government Accountability Project of the Institute for Policy Studies 1901 Que Street, NW Washington, DC 20009

Mr. Charles B. Brinkman, Manager Washington Nuclear Operations Combustion Engineering, Inc. 7910 Woodmont Avenue Suite 1310 Bethesda, Maryland 20814

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Arizona Nuclear Power Project

- 2 - Palo Verde

cc:

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Chairman Arizona Corporation Commission Post Office Box 6019 Phoenix, Arizona 85003

Arizona Radiation Regulatory Agency ATTN: Ms. Clara Palovic, Librarian 4814 South 40 Street Phoenix, Arizona 85040

Mr. Charles Tedford, Director Arizona Radiation Regulatory Agency 4814 South 40 Street Phoenix, Arizona 85040

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



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

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. 37 License No. NPF-41

- The Nuclear Regulatory Commission (the Commission) has found that: 1.
 - The application for amendment, dated March 16, 1988, as Α. supplemented by letter dated July 6, 1988, by the Arizona Public Service Company (APS) 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 (licensees), 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;
 - The facility will operate in conformity with the application, Β. the provisions of the Act, and the regulations of the Commission;
 - There is reasonable assurance (i) that the activities authorized С. 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;
 - The issuance of this amendment will not be inimical to the D. common defense and security or to the health and safety of the public; and
 - The issuance of this amendment is in accordance with 10 CFR Part 51 Ε. of the Commission's regulations and all applicable requirements have been satisfied.
- Accordingly, the license is amended by a change to the Technical 2. Specifications as indicated in the enclosure to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-41 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. 37, 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.

3. This license amendment is effective as of the date of issuance. The changes in the Technical Specifications are to become effective within 30 days of issuance of the amendment. In the period between issuance of amendment and the effective date of the new Technical Specifications, the licensees shall adhere to the Technical Specifications existing at the time. The period of time during changeover shall be minimized.

FOR THE NUCLEAR REGULATORY COMMISSION

George W Knighton, Director Project Directorate V Division of Reactor Projects - III, IV, V and Special Projects

Enclosure: Changes to the Technical Specifications

Date of Issuance: October 17, 1988

ENCLOSURE TO LICENSE AMENDMENT

AMENDMENT NO. 37 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 area of change. Also to be replaced are the following overleaf pages to the amended pages.

| Amendment Page | <u>Overleaf Page</u> |
|----------------|----------------------|
| 3/4 5-6 | 3/4 5-5 |
| B3/4 5-3 | B3/4 5-4 |

BASES

ECCS SUBSYSTEMS (Continued)

assurance that proper ECCS flows will be maintained in the event of a LOCA*. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses. The requirement to dissolve a representative sample of TSP in a sample of RWT water provides assurance that the stored TSP will dissolve in borated water at the postulated post-LOCA temperatures.

The term "minimum bypass recirculation flow," as used in Specification 4.5.2e.3. and 4.5.2f., refers to that flow directed back to the RWT from the ECCS pumps for pump protection. Testing of the ECCS pumps under the condition of minimum bypass recirculation flow in Specification 4.5.2f. verifies that the performance of the ECCS pumps supports the safety analysis minimum RCS pressure assumption at zero delivery to the RCS.

3/4.5.4 REFUELING WATER TANK

The OPERABILITY of the refueling water tank (RWT) as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on RWT minimum volume and boron concentration ensure that (1) sufficient water plus 10% margin is available to permit 20 minutes of engineered safety features pump operation, and (2) the reactor will remain subcritical in the cold condition following mixing of the RWT and the RCS water volumes with all control rods inserted except for the most reactive control assembly. These assumptions are consistent with the LOCA analyses.

The following test conditions, which apply during flow balance tests, ensure that the ECCS subsystems are adequately tested.

- 1. The pressurizer pressure is at atmospheric pressure.
- 2. The miniflow bypass recirculation lines are aligned for injection.
- 3. For LPSI system, (add/subtract) 6.4 gpm (to/from) the 4800 gpm requirement for every foot by which the difference of RWT water level above the RWT RAS setpoint level (exceeds/is less than) the difference of RCS water level above the cold leg centerline.

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BASES

REFUELING WATER TANK (Continued)

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWT also ensure a pH value of between 7.0 and 8.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The limit on the RWT solution temperature ensures that the assumptions used in the LOCA analyses remain valid.

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SURVEILLANCE REQUIREMENTS (Continued)

- 1. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.
- Verifying that a minimum total of 464 cubic feet of solid granular trisodium phosphate dodecahydrate (TSP) is contained within the TSP storage baskets.
- 3. Verifying that when a representative sample of 0.055 ± 0.001 lb of TSP from a TSP storage basket is submerged, without agitation, in 1.0 \pm 0.05 gallons of 77 \pm 9 °F borated water from the RWT, the pH of the mixed solution is raised to greater than or equal to 7 within 4 hours.
- e. At least once per 18 months, during shutdown, by:
 - Verifying that each automatic valve in the flow path actuates to its correct position on (SIAS and RAS) test signal(s).
 - 2. Verifying that each of the following pumps start automatically upon receipt of a safety injection actuation test signal:
 - a. High pressure safety injection pump.
 - b. Low pressure safety injection pump.
 - 3. Verifying that on a recirculation actuation test signal, the containment sump isolation values open, the HPSI, LPSI and CS pump minimum bypass recirculation flow line isolation values and combined SI mini-flow value close, and the LPSI pumps stop.
 - 4. Conducting an inspection of all ECCS piping outside of containment, which is in contact with recirculation sump inventory during LOCA conditions, and verifying that the total measured leakage from piping and components is less than 1 gpm when pressurized to at least 40 psig.
- f. By verifying that each of the following pumps develops the indicated differential pressure at or greater than their respective minimum allowable recirculation flow when tested pursuant to Specification 4.0.5:
 - 1. High pressure safety injection pump greater than or equal to 1761 psid.
 - 2. Low pressure safety injection pump greater than or equal to 165 psid.

PALO VERDE - UNIT 1

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SURVEILLANCE REQUIREMENTS (Continued)

- g. By verifying the correct position of each electrical and/or mechanical position stop for the following ECCS throttle valves:
 - 1. Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE.
 - 2. At least once per 18 months.

| Valve Number | | | <u>Hot Leg Injection</u> Valve Number | | | |
|----------------------|--|-----------------------------|--|----------|--------------------------|--|
| 1. 2. 3. 4. | SIB-UV 61 SIB-UV 62 SIA-UV 63 SIA-UV 64 | 5, SIA-UV 5, SIB-UV 5 | 306 307 | 1. 2. | SIC-HV 321 SID-HV 331 | |

h. By performing a flow balance test, during shutdown, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics and verifying the following flow rates:

HPSI System - Single Pump

The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 816 gpm.

LPSI System - Single Pump

- 1. Injection Loop 1, total flow equal to 4800 + 200 gpm
- 2. Injection Legs 1A and 1B when tested individually, with the other leg isolated, shall be within 200 gpm of each other.
- 3. Injection Loop 2, total flow equal to 4800 + 200 gpm
- 4. Injection Legs 2A and 2B when tested individually, with the other leg isolated, shall be within 200 gpm of each other.

Simultaneous Hot Leg and Cold Leg Injection - Single Pump

- 1. Hot Leg, flow equal to 545 ± 20 gpm
- 2. Cold Leg, flow equal to 545 ± 20 gpm



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

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. 24 License No. NPF-51

- 1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment, dated March 16, 1988, as supplemented by letter dated July 6, 1988, by the Arizona Public Service Company (APS) 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 (licensees), 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 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.
- Accordingly, the license is amended by a change to the Technical Specifications as indicated in the enclosure 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. 24, 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.

3. This license amendment is effective as of the date of issuance. The changes in the Technical Specifications are to become effective within 30 days of issuance of the amendment. In the period between issuance of amendment and the effective date of the new Technical Specifications, the licensees shall adhere to the Technical Specifications existing at the time. The period of time during changeover shall be minimized.

FOR THE NUCLEAR REGULATORY COMMISSION

George W. Knighton, Director Project Directorate V Division of Reactor Projects - III, IV, V and Special Projects

Enclosure: Changes to the Technical Specifications

Date of Issuance: October 17, 1988

ENCLOSURE TO LICENSE AMENDMENT

AMENDMENT NO. 24 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 area of change. Also to be replaced are the following overleaf pages to the amended pages.

| Amendment Page | <u>Overleaf</u> Page |
|----------------|----------------------|
| 3/4 5-6 | 3/4 5-5 |
| B3/4 5-3 | B3/4 5-4 |

BASES

ECCS SUBSYSTEMS (Continued)

assurance that proper ECCS flows will be maintained in the event of a LOCA.* Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses. The requirement to dissolve a representative sample of TSP in a sample of RWT water provides assurance that the stored TSP will dissolve in borated water at the postulated post-LOCA temperatures.

The term "minimum bypass recirculation flow," as used in Specification 4.5.2e.3. and 4.5.2f., refers to that flow directed back to the RWT from the ECCS pumps for pump protection. Testing of the ECCS pumps under the condition of minimum bypass recirculation flow in Specification 4.5.2f. verifies that the performance of the ECCS pumps supports the safety analysis minimum RCS pressure assumption at zero delivery to the RCS.

3/4.5.4 REFUELING WATER TANK

The OPERABILITY of the refueling water tank (RWT) as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on RWT minimum volume and boron concentration ensure that (1) sufficient water plus 10% margin is available to permit 20 minutes of engineered safety features pump operation, and (2) the reactor will remain subcritical in the cold condition following mixing of the RWT and the RCS water volumes with all control rods inserted except for the most reactive control assembly. These assumptions are consistent with the LOCA analyses.

The following test conditions, which apply during flow balance tests, ensure that the ECCS subsystems are adequately tested.

- 1. The pressurizer pressure is at atmospheric pressure.
- 2. The miniflow bypass recirculation lines are aligned for injection.
- 3. For LPSI system, (add/subtract) 6.4 gpm (to/from) the 4800 gpm requirement for every foot by which the difference of RWT water level above the RWT RAS setpoint level (exceeds/is less than) the difference of RCS water level above the cold leg centerline.

BASES

REFUELING WATER TANK (Continued)

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWT also ensure a pH value of between 7.0 and 8.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The limit on the RWT solution temperature ensures that the assumptions used in the LOCA analyses remain valid.

SURVEILLANCE REQUIREMENTS (Continued)

- 1. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.
- 2. Verifying that a minimum total of 464 cubic feet of solid granular trisodium phosphate dodecahydrate (TSP) is contained within the TSP storage baskets.
- 3. Verifying that when a representative sample of 0.055 ± 0.001 lb of TSP from a TSP storage basket is submerged, without agitation, in 1.0 \pm 0.05 gallons of 77 \pm 9 °F borated water from the RWT, the pH of the mixed solution is raised to greater than or equal to 7 within 4 hours.
- e. At least once per 18 months, during shutdown, by:
 - 1. Verifying that each automatic valve in the flow path actuates to its correct position on (SIAS and RAS) test signal(s).
 - 2. Verifying that each of the following pumps start automatically upon receipt of a safety injection actuation test signal:
 - a. High pressure safety injection pump.
 - b. Low pressure safety injection pump.
 - 3. Verifying that on a recirculation actuation test signal, the containment sump isolation values open, the HPSI, LPSI and CS pump minimum bypass recirculation flow line isolation values and combined SI mini-flow value close, and the LPSI pumps stop.
 - 4. Conducting an inspection of all ECCS piping outside of containment, which is in contact with recirculation sump inventory during LOCA conditions, and verifying that the total measured leakage from piping and components is less than 1 gpm when pressurized to at least 40 psig.
- f. By verifying that each of the following pumps develops the indicated differential pressure at or greater than their respective minimum allowable recirculation flow when tested pursuant to Specification 4.0.5:
 - 1. High pressure safety injection pump greater than or equal to 1761 psid.
 - 2. Low pressure safety injection pump greater than or equal to 165 psid.

SURVEILLANCE REQUIREMENTS (Continued)

- g. By verifying the correct position of each electrical and/or mechanical position stop for the following ECCS throttle valves:
 - 1. Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE.
 - 2. At least once per 18 months.

| <u>Valve Number</u> | | | | Hot Leg Injection Valve Number | | |
|---------------------|--------|------|--------|-----------------------------------|----|------------|
| 1. | SIB-UV | 615, | SIA-UV | 306 | 1. | SIC-HV 321 |
| 2. | SIB-UV | 625, | SIB-UV | 307 | 2. | SID-HV 331 |
| 3. | SIA-UV | 635 | | | | |
| 4. | SIA-UV | 645 | | | | |

h. By performing a flow balance test, during shutdown, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics and verifying the following flow rates:

HPSI System - Single Pump

The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 816 gpm.

LPSI System - Single Pump

- 1. Injection Loop 1, total flow equal to 4800 + 200 gpm
- 2. Injection Legs 1A and 1B when tested individually, with the other leg isolated, shall be within 200 gpm of each other.
- 3. Injection Loop 2, total flow equal to 4800 ± 200 gpm
- 4. Injection Legs 2A and 2B when tested individually, with the other leg isolated, shall be within 200 gpm of each other.

Simultaneous Hot Leg and Cold Leg Injection - Single Pump

- 1. Hot Leg, flow equal to 545 ± 20 gpm
- 2. Cold Leg, flow equal to 545 ± 20 gpm



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

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. ¹³ License No. NPF-74

- 1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment, dated March 16, 1988, as supplemented by letter dated July 6, 1988, by the Arizona Public Service Company (APS) 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 (licensees), 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 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.
- Accordingly, the license is amended by a change to the Technical Specifications as indicated in the enclosure 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. 13, 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.

3. This license amendment is effective as of the date of issuance. The changes in the Technical Specifications are to become effective within 30 days of issuance of the amendment. In the period between issuance of amendment and the effective date of the new Technical Specifications, the licensees shall adhere to the Technical Specifications existing at the time. The period of time during changeover shall be minimized.

FOR THE NUCLEAR REGULATORY COMMISSION

George W. Knighton, Birector

Project Directorate V Division of Reactor Projects - III, IV, V and Special Projects

Enclosure: Changes to the Technical Specifications

Date of Issuance: October 17, 1988

ENCLOSURE TO LICENSE AMENDMENT

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AMENDMENT NO. 13 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 area of change. Also to be replaced are the following overleaf pages to the amended pages.

| Amendment Page | <u>Overleat Page</u> |
|----------------|----------------------|
| 3/4 5-6 | 3/4 5-5 |
| B3/4 5-3 | B3/4 5-4 |

BASES

ECCS SUBSYSTEMS (Continued)

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The term "minimum bypass recirculation flow," as used in Specification 4.5.2e.3. and 4.5.2f., refers to that flow directed back to the RWT from the ECCS pumps for pump protection. Testing of the ECCS pumps under the condition of minimum bypass recirculation flow in Specification 4.5.2f. verifies that the performance of the ECCS pumps supports the safety analysis minimum RCS pressure assumption at zero delivery to the RCS.

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BASES

REFUELING WATER TANK (Continued)

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The limit on the RWT solution temperature ensures that the assumptions used in the LOCA analyses remain valid.

SURVEILLANCE REQUIREMENTS (Continued)

- 1. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.
- 2. Verifying that a minimum total of 464 cubic feet of solid granular trisodium phosphate dodecahydrate (TSP) is contained within the TSP storage baskets.
- 3. Verifying that when a representative sample of 0.055 ± 0.001 lb of TSP from a TSP storage basket is submerged, without agitation, in 1.0 \pm 0.05 gallons of 77 \pm 9 °F borated water from the RWT, the pH of the mixed solution is raised to greater than or equal to 7 within 4 hours.
- e. At least once per 18 months, during shutdown, by:
 - 1. Verifying that each automatic valve in the flow path actuates to its correct position on (SIAS and RAS) test signal(s).
 - 2. Verifying that each of the following pumps start automatically upon receipt of a safety injection actuation test signal:
 - a. High pressure safety injection pump.
 - b. Low pressure safety injection pump.
 - 3. Verifying that on a recirculation actuation test signal, the containment sump isolation valves open, the HPSI, LPSI and CS pump minimum bypass recirculation flow line isolation valves and combined SI mini-flow valve close, and the LPSI pumps stop.
 - 4. Conducting an inspection of all ECCS piping outside of containment, which is in contact with recirculation sump inventory during LOCA conditions, and verifying that the total measured leakage from piping and components is less than 1 gpm when pressurized to at least 40 psig.
- f. By verifying that each of the following pumps develops the indicated differential pressure at or greater than their respective minimum allowable recirculation flow when tested pursuant to Specification 4.0.5:
 - 1. High pressure safety injection pump greater than or equal to 1761 psid.
 - 2. Low pressure safety injection pump greater than or equal to 165 psid.

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SURVEILLANCE REQUIREMENTS (Continued)

- g. By verifying the correct position of each electrical and/or mechanical position stop for the following ECCS throttle valves:
 - 1. Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE.
 - 2. At least once per 18 months.

| LPSI System Valve Number | | | | Hot Leg Injection Valve Number | | | |
|-----------------------------|--------|------|--------|-----------------------------------|----|------------|--|
| 1. | SIB-UV | 615. | SIA-UV | 306 | 1. | SIC-HV 321 | |
| 2. | SIB-UV | 625 | SIB-UV | 307 | 2. | SID-HV 331 | |
| 3. | SIA-UV | 635 | | | | | |
| 4. | SIA-UV | 645 | | | | | |

h. By performing a flow balance test, during shutdown, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics and verifying the following flow rates:

HPSI System - Single Pump

The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 816 gpm.

LPSI System - Single Pump

- 1. Injection Loop 1, total flow equal to 4800 + 200 gpm
- 2. Injection Legs 1A and 1B when tested individually, with the other leg isolated, shall be within 200 gpm of each other.
- 3. Injection Loop 2, total flow equal to 4800 ± 200 gpm
- 4. Injection Legs 2A and 2B when tested individually, with the other leg isolated, shall be within 200 gpm of each other.

Simultaneous Hot Leg and Cold Leg Injection - Single Pump

- 1. Hot Leg, flow equal to 545 ± 20 gpm
- 2. Cold Leg, flow equal to 545 ± 20 gpm



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO AMENDMENT NO. 37 TO FACILITY OPERATING LICENSE NO. NPF-41, AMENDMENT NO. 24 TO FACILITY OPERATING LICENSE NO. NPF-51 AND AMENDMENT NO. 13 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

By letter dated March 16, 1988, as supplemented by letter dated July 6, 1988, the Arizona Public Service Company (APS) 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 (licensees), requested a change to the Technical Specifications 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 proposed change would revise Surveillance Requirement 4.5.2h which specifies flow requirements that the Low Pressure Safety Injection (LPSI) subsystem must meet during flow balance testing.

2.0 EVALUATION

The current requirement states that each LPSI injection loop must be capable of delivering a total flow equal to 4900 ± 100 gpm and that each injection leg shall be within 100 gpm of the other. The proposed change will revise the total injection loop flow to 4800 ± 200 gpm and the injection leg maximum deviation to 200 gpm.

The staff concluded in Section 6.3 of the CESSAR SER (NUREG-0852) that the ECCS proposed by CESSAR was acceptable. The LPSI pump design flow specified in Table 6.3-1 of the SER was 4,200 gallons per minute.

CESSAR Section 6.3.2.2.2 describes the LPSI pumps and their functions. One function is to inject large quantities of borated water into the Reactor Coolant System in the event of a large pipe rupture. Along with the high pressure safety injection system and the Safety Injection Tanks the LPSI system accomplishes the functional requirements of preventing significant alteration of core geometry, precludes core melting, limits the cladding metal-water reaction, removes the energy generated in the core, and maintains the core subcritical during the extended period of time following a LOCA. The second function described in CESSAR for the LPSI pumps is to provide shutdown cooling flow through the core and shutdown cooling heat exchangers for normal plant shutdown cooling operation or as required for long term core cooling.

The proposed change will not change the upper limit on LPSI flowrate of 5000 gpm. This will prevent a pump runout condition. The lower limit on LPSI flowrate will be changed from 4700 gpm to 4600 gpm. This flow rate is greater than the 4200 gpm specified in the CESSAR SER (NUREG-0852) and in CESSAR. The slightly reduced flow rate is sufficient to meet the existing ECCS-LOCA analysis in which a LPSI flow rate of approximately 4214 gpm was assumed. The proposed reduced flow rate will be sufficient to keep the reactor vessel downcomer annulus full and, therefore the conclusions from the ECCS-LOCA analysis remain valid.

The proposed change also changes the tolerance for the individual injection leg flow balances from \pm 100 gpm to \pm 200 gpm. The licensee states that the existing flow tolerance is difficult to obtain due to the normal electrical and mechanical variations with the 12 inch, motor operated, LPSI throttle valves. The proposed limit on flow balance will better accommodate variability in throttle valve position during flow balance testing. The change allows a slightly larger variation in LPSI flowrate. The LPSI pumps will still be operated within their design envelope.

On the basis of the above evaluation, the staff concludes that the proposed change to Technical Specifications Surveillance Requirement 4.5.2.h is acceptable.

3.0 CONTACT WITH STATE OFFICIAL

The Arizona Radiation Regulatory Agency was advised of the proposed determination of no significant hazards consideration with regard to this change. No comments were received.

4.0 ENVIRONMENTAL CONSIDERATIONS

The amendments involve changes in the use of a facility component located within the restricted area as defined in 10 CFR Part 20 and a change in a surveillance requirement. The 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. 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 to be prepared in connection with the issuance of these amendments.

5.0 CONCLUSION

The staff 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 these amendments will not be inimical to the common defense and security or to the health and safety of the public. We therefore, conclude that the proposed changes are acceptable.

Principal Contributor: M. Davis

Dated: October 17, 1988