

February 22, 1990

Docket No. STN 50-528

Mr. William F. Conway
Executive Vice President
Arizona Public Service Company
Post Office Box 52034
Phoenix, Arizona 85072-2034

Dear Mr. Conway:

SUBJECT: ISSUANCE OF AMENDMENT NO. 47 TO FACILITY OPERATING LICENSE
NO. NPF-41 FOR PALO VERDE NUCLEAR GENERATING STATION UNIT 1
(TAC NO. 75159)

The Commission has issued the subject amendment, which is enclosed, to the Facility Operating License for Palo Verde Nuclear Generating Station, Unit 1. The amendment consists of changes to the Technical Specifications (Appendix A to the license) in response to your application transmitted by letter dated October 25, 1989.

The amendment revises surveillance requirement 4.5.2.h of Technical Specification 3/4.5.2, "Emergency Core Cooling Systems," by specifying minimum flow requirements during simultaneous hot leg and cold leg injection. In addition, a maximum allowable pump flowrate is specified to ensure pump protection. Corresponding editorial changes are made to Bases 3/4.5.2, as well as correction of minor typographical errors.

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 T. CHAN
Terence L. Chan, Senior Project Manager
Project Directorate V
Division of Reactors Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 47 to NPF-41
2. Safety Evaluation

cc: See next page

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

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Sincerely,

A handwritten signature in black ink, appearing to read "Terence L. Chan", is written over a horizontal line.

Terence L. Chan, Senior Project Manager
Project Directorate V
Division of Reactors Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 47 to NPF-41
2. Safety Evaluation

cc: See next page

Mr. William F. Conway
Arizona Public Service Company

Palo Verde

cc:

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

Charles R. Kocher, Esq. Assistant
Council
James A. Boeletto, Esq.
Southern California Edison Company
P. O. Box 800
Rosemead, California 91770

Senior Resident Inspector
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

Mr. Charles B. Brinkman
Washington Nuclear Operations
Combustion Engineering, Inc.
12300 Twinbrook Parkway, Suite 330
Rockville, Maryland 20852

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

Mr. Jack R. Newman
Newman & Holtzinger P.C.
1615 L Street, NW, Suite 1000
Washington, DC 20036

Mr. Jack N. Bailey
Vice President Nuclear
Safety and Licensing
Arizona Public Service Company
P.O. Box 52304
Phoenix, Arizona 85072-2034

Mr. James M. Levine
Vice President, Nuclear Production
Arizona Public Service Company
P.O. Box 52304
Phoenix, Arizona 85072-2034



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. 47
License No. NPF-41

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment, dated October 25, 1989 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;
 - 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 enclosure to this license amendment, and paragraph 2.c(2) of Facility Operating License No. NPF-41 is hereby amended to read as follows:

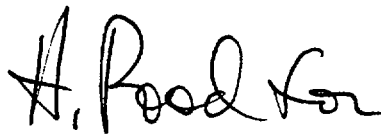
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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No.47, 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.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "H. Poole" or similar, with a stylized flourish at the end.

Charles M. Trammell III, Acting Director
Project Directorate V
Division of Reactor Projects III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
Changes to the Technical
Specifications

Date of Issuance: February 22, 1990

ENCLOSURE TO LICENSE AMENDMENT

AMENDMENT NO. 47 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.

Remove Pages

3/4 5-6

B3/4 5-3

Insert Pages

3/4 5-6

B3/4 5-3

EMERGENCY CORE COOLING SYSTEMS

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-HV 306 | 1. SIC-HV 321 |
| 2. SIB-UV 625, SIB-HV 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. The hot leg flowrate is greater than or equal to 525 gpm;
2. The sum of the cold leg flowrates is greater than or equal to 525 gpm; and
3. The total pump flowrate does not exceed 1200 gpm.

EMERGENCY CORE COOLING SYSTEMS

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. In specification 4.5.2.h, the specified flows include instrumentation uncertainties. 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.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 47 TO FACILITY OPERATING LICENSE NO. NPF-41
ARIZONA PUBLIC SERVICE COMPANY, ET AL.
PALO VERDE NUCLEAR GENERATING STATION, UNIT 1
DOCKET NO. STN 50-528

1.0 INTRODUCTION

By letter dated October 25, 1989 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 changes 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 amendments were requested on an emergency basis for Units 2 and 3 to prevent unnecessary delays in return to power. Emergency relief was granted by letter dated October 26, 1989, followed by their respective amendment dated December 4, 1989. No basis existed to process the application for Unit 1 on an emergency basis, and thus is being handled separately from Units 2 and 3.

The proposed changes would revise surveillance requirement 4.5.2.h to Technical Specification 3/4.5.2, "Emergency Core Cooling Systems," by specifying minimum flow requirements during simultaneous hot leg and cold leg injection. In addition, a maximum pump flowrate requirement would be specified to ensure pump protection against runout.

2.0 DISCUSSION AND EVALUATION

Surveillance requirement 4.5.2.h of Technical Specification (TS) 3/4.5.2, "Emergency Core Cooling Systems" currently specifies a flow rate requirement of 545 ± 20 gpm for high pressure safety injection (HPSI) pump simultaneous hot leg and cold leg injection flow balancing. The intent of the TS was to ensure approximately balanced flow to the hot leg and cold legs during post-LOCA recirculation, and to ensure that a maximum HPSI Pump design flowrate of 1130 gpm, as specified in the CESSAR FSAR, would not be exceeded.

On October 20, 1989, APS discovered that due to an error in the original installation of the flow measuring orifices in the "A" train HPSI pump hot leg injection lines, and the use of inappropriate flow calibration curves during system testing, the existing surveillance acceptance criteria could not be met.

The orifices installed in the "A" train HPSI pump hot leg injection line for each of the three Palo Verde units were larger in diameter than specified in the instrument data sheets. This resulted in the HPSI hot leg injection flow indication reading less than the actual flow during the performance of the simultaneous hot leg and cold leg injection testing required by TS 4.5.2.h. Since the test was performed with the hot leg flow indicators reading lower than actual flow, the actual hot leg flows after correcting for the misinstalled orifices, were approximately 30 gpm higher than the indicated flow, thus exceeding the TS limit. These orifices only provide flow indication and do not provide a flow control function.

The proposed surveillance requirements would maintain the current minimum flowrate required for hot leg and cold leg injection (525 gpm) but would remove the upper limit on injection flowrate to the extent that total pump flowrate would not exceed 1200 gpm. This maximum total flow, to prevent pump runout, is based on the installed capabilities of the HPSI pumps rather than the design specification runout flow of 1130 gpm.

Based upon our review of the pump characteristic curves for the associated HPSI pumps and currently installed impellers, we find that the minimum simultaneous hot leg and cold leg injection flow requirements can be maintained, and that the maximum pump flowrate limit of 1200 gpm is sufficient to provide adequate pump runout protection. The proposed TS changes are therefore acceptable.

The proposed changes to the associated Bases, and the corrections to the typographical errors are also acceptable.

3.0 CONTACT WITH STATE OFFICIAL

The Arizona Radiation Regulatory Agency has been advised of the proposed determination of no significant hazards consideration with regard to these changes. No comments were received.

4.0 ENVIRONMENTAL CONSIDERATIONS

The amendment involves changes in the surveillance requirements of facility components located within the restricted area as defined in 10 CFR 20. The staff has determined that the amendment involves no significant increase in the amount, and no significant change in the type, of any effluent that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need to be prepared in connection with the issuance of this amendment.

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 the amendment 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: T. Chan

DATED: February 22, 1990