

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

March 6, 1996

SUBJECT: ISSUANCE OF AMENDMENTS FOR THE PALO VERDE NUCLEAR GENERATING STATION
UNIT NO. 1 (TAC NO. M94019), UNIT NO. 2 (TAC NO. M94020), AND UNIT
NO. 3 (TAC NO. M94021)

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 104 to Facility Operating License No. NPF-41, Amendment No. 93 to Facility Operating License No. NPF-51, and Amendment No. 76 to Facility Operating License No. NPF-74 for the Palo Verde Nuclear Generating Station (PVNGS), Unit Nos. 1, 2, and 3, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated November 7, 1995, as supplemented by letter dated January 17, 1996.

These amendments modify the current TS Section 5.0, "Design Features", of the Palo Verde Nuclear Generating Station Units 1, 2, and 3 to be consistent, with Sections 4.0 and 5.0 of NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," Revision 1, dated April 7, 1995. The change allows the relocation of various subsections to the Offsite Dose Calculation Manual (ODCM) or the PVNGS Updated Final Safety Analysis Report (UFSAR). An additional statement has been added to Section 5.2.1 allowing the use of other cladding material with an approved exemption from Sections 50.44, Section 50.46 and Appendix K of Title 10 of the Code of Federal Regulations (CFR).

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

Sincerely,

Original Signed By
Charles R. Thomas, 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. 104 to NPF-41
2. Amendment No. 93 to NPF-51
3. Amendment No. 76 to NPF-74
4. Safety Evaluation

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

March 6, 1996

Mr. William L. Stewart
Executive Vice President, Nuclear
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These amendments modify the current TS Section 5.0, "Design Features," of the Palo Verde Nuclear Generating Station Units 1, 2, and 3 to be consistent with Sections 4.0 and 5.0 of NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," Revision 1, dated April 7, 1995. The change allows the relocation of various subsections to the Offsite Dose Calculation Manual (ODCM) or the PVNGS Updated Final Safety Analysis Report (UFSAR). An additional statement has been added to Section 5.2.1 allowing the use of other cladding material with an approved exemption from Sections 50.44, Section 50.46 and Appendix K of Title 10 of the Code of Federal Regulations (CFR).

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

Sincerely,

A handwritten signature in cursive script, reading "Charles R. Thomas", is written over the typed name.

Charles R. Thomas, 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. 104 to NPF-41
2. Amendment No. 93 to NPF-51
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4. Safety Evaluation

cc w/encls: See next page

cc w/encls:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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. 104
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 November 7, 1995, as supplemented by letter dated January 17, 1996, 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) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 104, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of its date of issuance to be implemented within 45 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 6, 1996

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 104 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 marginal lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

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REACTOR COOLANT SYSTEM

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 for each cycle of main spray with less than four reactor coolant pumps operating and for each cycle of auxiliary spray operation.

REACTOR COOLANT SYSTEM

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.

APPLICABILITY: 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 valve inoperable in MODES 5 or 6, either (1) restore the inoperable valve 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.

5.0 DESIGN FEATURES

5.1 SITE LOCATION

The Palo Verde Nuclear Generating Station is located in Maricopa County, Arizona, approximately 50 miles west of the Phoenix metropolitan area. The site is comprised of approximately 4,050 acres. Site elevations range from 890 feet above mean sea level at the southern boundary to 1,030 feet above mean sea level at the northern boundary. The minimum distance from a containment building to the exclusion area boundary is 871 meters.

5.2 REACTOR CORE

FUEL ASSEMBLIES

5.2.1 The reactor core shall contain 241 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy or ZIRLO fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of Zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions. Other cladding material may be used with an approved exemption.

CONTROL ELEMENT ASSEMBLIES

5.2.2 The reactor core shall contain 76 full-length and 13 part-length control element assemblies. The primary control material consists of boron carbide with Inconel alloy 625 used as a wear absorber over a portion of the part-length control element assemblies as approved by the NRC.

5.3 FUEL STORAGE

5.3.1 CRITICALITY

5.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum radially averaged U-235 enrichment of 4.30 weight percent;
- b. $K_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.2 of the UFSAR.
- c. A nominal 9.5 inch center-to-center distance between adjacent storage cell locations.

DESIGN FEATURES

5.3 FUEL STORAGE (Continued)

5.3.1.2 The spent fuel storage pool is organized into three regions for spent fuel storage. Fuel shall be placed in the appropriate region based on appropriate initial enrichment and existing burnup as designated in Figure 5.3-1:

- a. Region 1: Fuel shall be stored in a checkerboard (two-out-of-four) storage pattern. Fuel that qualifies to be stored in Regions 1, 2, or 3 in accordance with Figure 5.3-1, may be stored in Region 1.
- b. Region 2: Fuel shall be stored in a three-out-of-four storage pattern. Fuel that qualifies to be stored in Regions 2 or 3, in accordance with Figure 5.3-1, may be stored in Region 2.
- c. Region 3: Fuel shall be stored in a four-out-of-four storage pattern. Only fuel that qualifies to be stored in Region 3, in accordance with Figure 5.3-1, shall be stored in Region 3.

5.2.1.3 The new fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum radially averaged U-235 enrichment of 4.30 weight percent;
- b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.1 of the UFSAR;
- c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1.1 of the UFSAR; and
- d. A nominal 17 inch center-to-center distance between fuel assemblies placed in the storage racks.

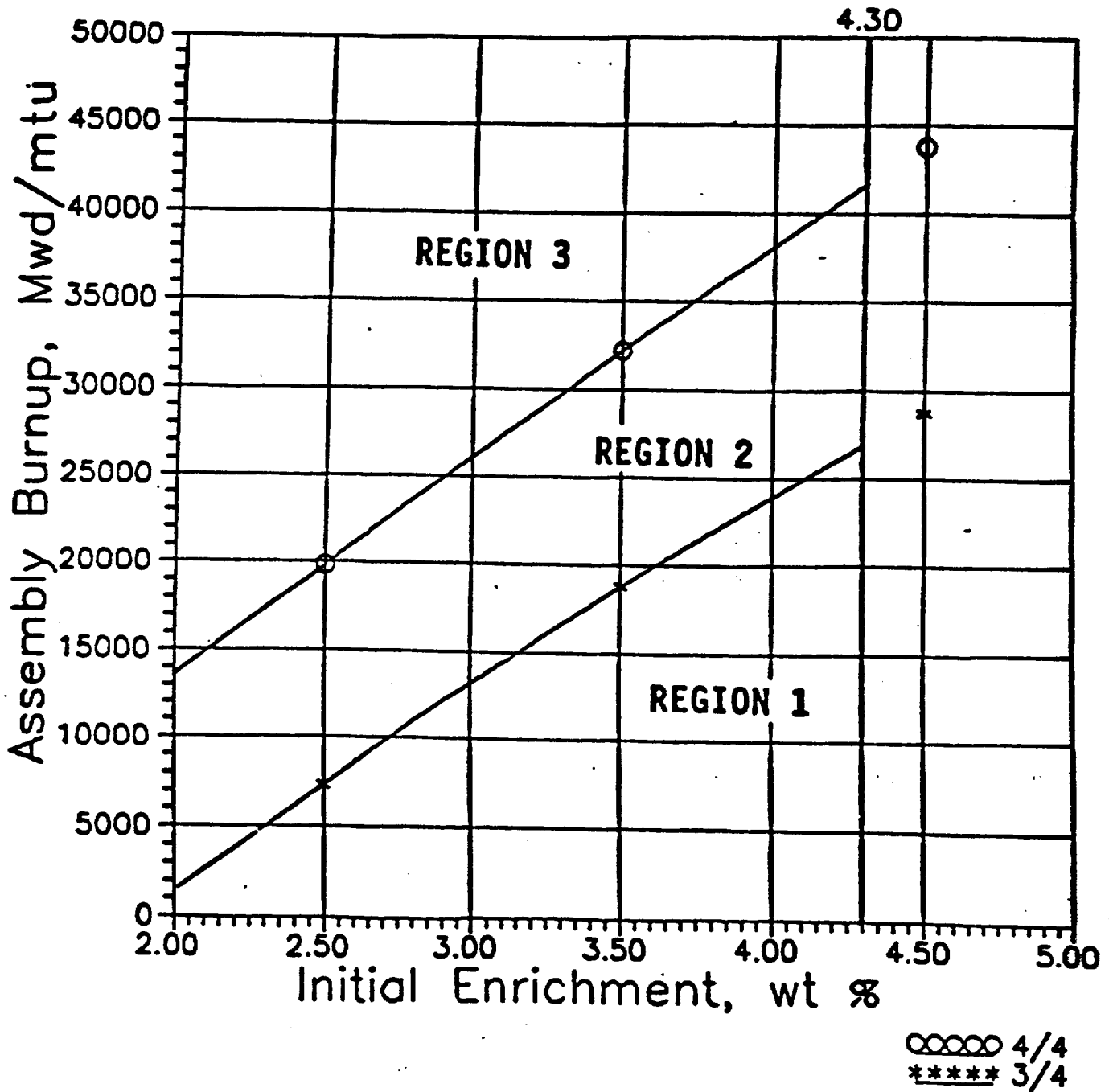
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5.3.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 137 feet - 6 inches.

CAPACITY

5.3.3 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1329 fuel assemblies.

FIGURE 5.3-1
ASSEMBLY BURNUP VERSUS INITIAL ENRICHMENT





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. 93
License No. NPF-51

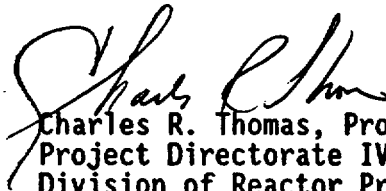
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Arizona Public Service Company (APS or the licensee) on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority dated November 7, 1995, as supplemented by letter dated January 17, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. NPF-51 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 93, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of its date of issuance to be implemented within 45 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 6, 1996

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 93 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 marginal lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

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REACTOR COOLANT SYSTEM

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 for each cycle of main spray with less than four reactor coolant pumps operating and for each cycle of auxiliary spray operation.

REACTOR COOLANT SYSTEM

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.

APPLICABILITY: 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 valve inoperable in MODES 5 or 6, either (1) restore the inoperable valve 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.

5.0 DESIGN FEATURES

5.1 SITE LOCATION

The Palo Verde Nuclear Generating Station is located in Maricopa County, Arizona, approximately 50 miles west of the Phoenix metropolitan area. The site is comprised of approximately 4,050 acres. Site elevations range from 890 feet above mean sea level at the southern boundary to 1,030 feet above mean sea level at the northern boundary. The minimum distance from a containment building to the exclusion area boundary is 871 meters.

5.2 REACTOR CORE

FUEL ASSEMBLIES

5.2.1 The reactor core shall contain 241 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy or ZIRLO fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of Zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions. Other cladding material may be used with an approved exemption.

CONTROL ELEMENT ASSEMBLIES

5.2.2 The reactor core shall contain 76 full-length and 13 part-length control element assemblies. The primary control material consists of boron carbide with Inconel alloy 625 used as a wear absorber over a portion of the part-length control element assemblies as approved by the NRC.

5.3 FUEL STORAGE

5.3.1 CRITICALITY

5.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum radially averaged U-235 enrichment of 4.30 weight percent;
- b. $K_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.2 of the UFSAR.
- c. A nominal 9.5 inch center-to-center distance between adjacent storage cell locations.

DESIGN FEATURES

5.3 FUEL STORAGE (Continued)

5.3.1.2 The spent fuel storage pool is organized into three regions for spent fuel storage. Fuel shall be placed in the appropriate region based on appropriate initial enrichment and existing burnup as designated in Figure 5.3-1:

- a. Region 1: Fuel shall be stored in a checkerboard (two-out-of-four) storage pattern. Fuel that qualifies to be stored in Regions 1, 2, or 3 in accordance with Figure 5.3-1, may be stored in Region 1.
- b. Region 2: Fuel shall be stored in a three-out-of-four storage pattern. Fuel that qualifies to be stored in Regions 2 or 3, in accordance with Figure 5.3-1, may be stored in Region 2.
- c. Region 3: Fuel shall be stored in a four-out-of-four storage pattern. Only fuel that qualifies to be stored in Region 3, in accordance with Figure 5.3-1, shall be stored in Region 3.

5.2.1.3 The new fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum radially averaged U-235 enrichment of 4.30 weight percent;
- b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.1 of the UFSAR;
- c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1.1 of the UFSAR; and
- d. A nominal 17 inch center-to-center distance between fuel assemblies placed in the storage racks.

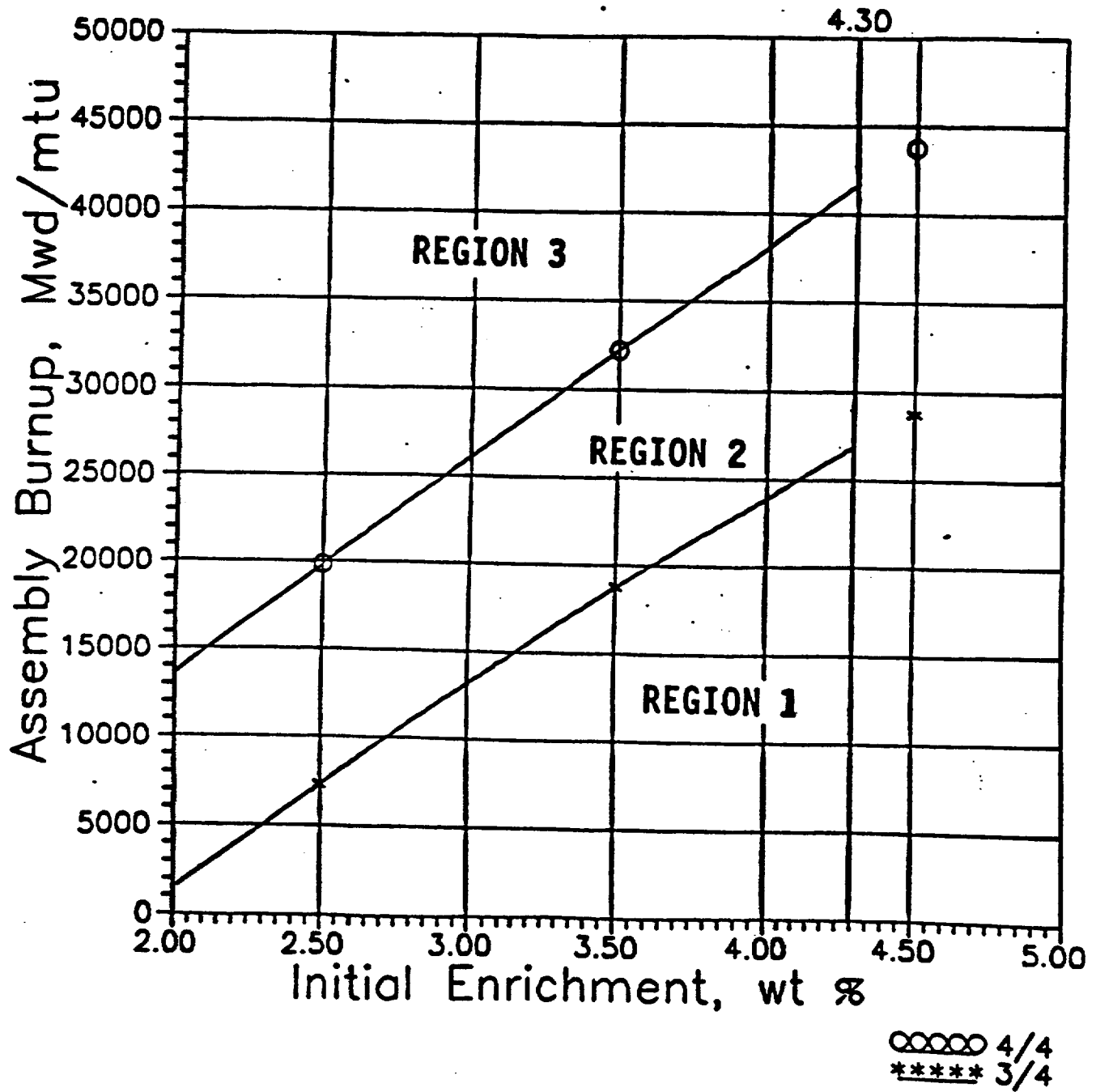
DRAINAGE

5.3.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 137 feet - 6 inches.

CAPACITY

5.3.3 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1329 fuel assemblies.

FIGURE 5.3-1
ASSEMBLY BURNUP VERSUS INITIAL ENRICHMENT





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. 76
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 November 7, 1995, as supplemented by letter dated January 17, 1996, 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. 76, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of its date of issuance to be implemented within 45 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 6, 1996

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 76 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 marginal lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE

XV
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XXII
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REACTOR COOLANT SYSTEM

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 for each cycle of main spray with less than four reactor coolant pumps operating and for each cycle of auxiliary spray operation.

REACTOR COOLANT SYSTEM

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.

APPLICABILITY: 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 valve inoperable in MODES 5 or 6, either (1) restore the inoperable valve 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.

5.0 DESIGN FEATURES

5.1 SITE LOCATION

The Palo Verde Nuclear Generating Station is located in Maricopa County, Arizona, approximately 50 miles west of the Phoenix metropolitan area. The site is comprised of approximately 4,050 acres. Site elevations range from 890 feet above mean sea level at the southern boundary to 1,030 feet above mean sea level at the northern boundary. The minimum distance from a containment building to the exclusion area boundary is 871 meters.

5.2 REACTOR CORE

FUEL ASSEMBLIES

5.2.1 The reactor core shall contain 241 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy or ZIRLO fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of Zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions. Other cladding material may be used with an approved exemption.

CONTROL ELEMENT ASSEMBLIES

5.2.2 The reactor core shall contain 76 full-length and 13 part-length control element assemblies. The primary control material consists of boron carbide with Inconel alloy 625 used as a wear absorber over a portion of the part-length control element assemblies as approved by the NRC.

5.3 FUEL STORAGE

5.3.1 CRITICALITY

5.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum radially averaged U-235 enrichment of 4.30 weight percent;
- b. $K_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.2 of the UFSAR.
- c. A nominal 9.5 inch center-to-center distance between adjacent storage cell locations.

DESIGN FEATURES

5.3 FUEL STORAGE (Continued)

5.3.1.2 The spent fuel storage pool is organized into three regions for spent fuel storage. Fuel shall be placed in the appropriate region based on appropriate initial enrichment and existing burnup as designated in Figure 5.3-1:

- a. Region 1: Fuel shall be stored in a checkerboard (two-out-of-four) storage pattern. Fuel that qualifies to be stored in Regions 1, 2, or 3 in accordance with Figure 5.3-1, may be stored in Region 1.
- b. Region 2: Fuel shall be stored in a three-out-of-four storage pattern. Fuel that qualifies to be stored in Regions 2 or 3, in accordance with Figure 5.3-1, may be stored in Region 2.
- c. Region 3: Fuel shall be stored in a four-out-of-four storage pattern. Only fuel that qualifies to be stored in Region 3, in accordance with Figure 5.3-1, shall be stored in Region 3.

5.2.1.3 The new fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum radially averaged U-235 enrichment of 4.30 weight percent;
- b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.1 of the UFSAR;
- c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1.1 of the UFSAR; and
- d. A nominal 17 inch center-to-center distance between fuel assemblies placed in the storage racks.

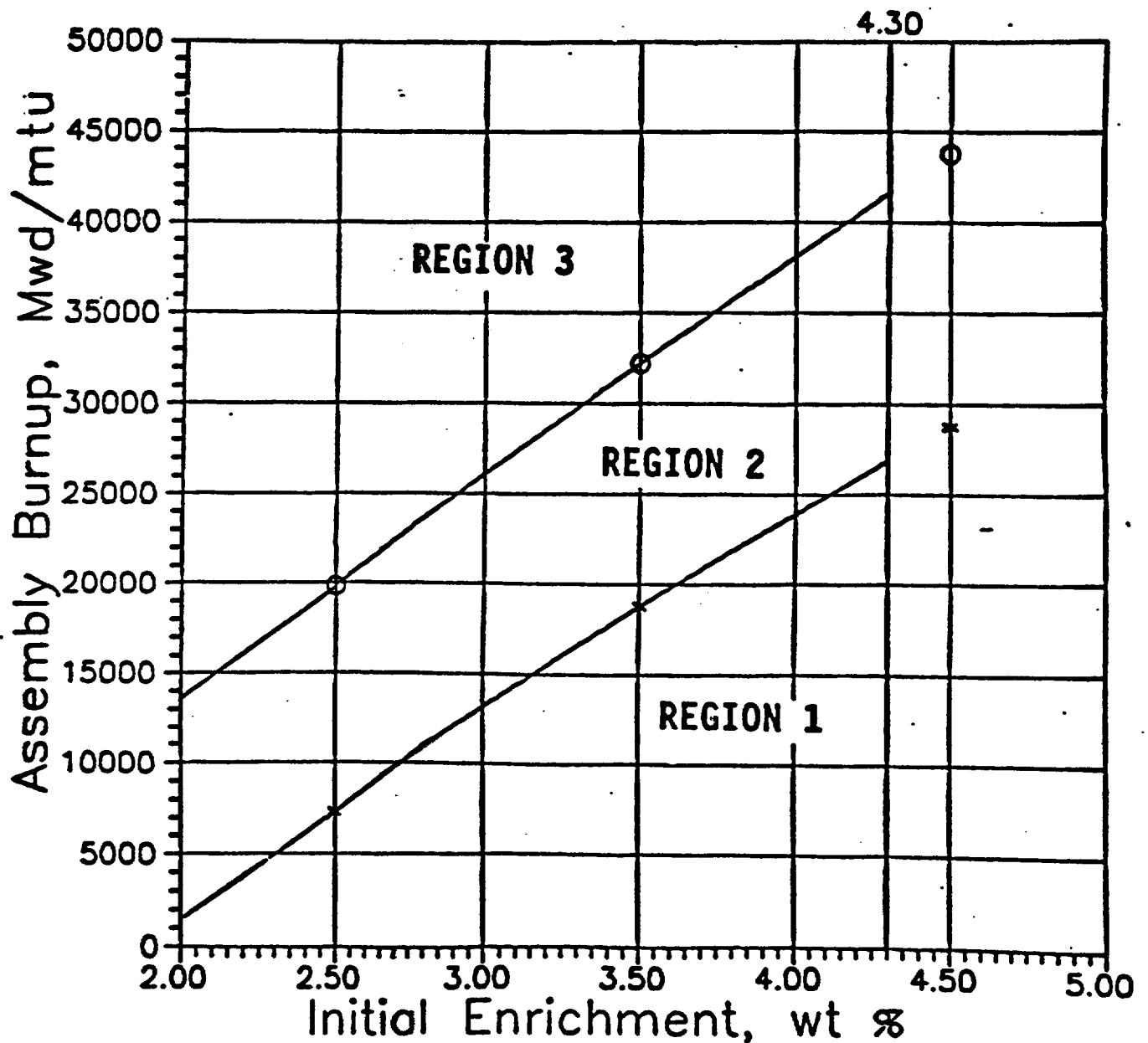
DRAINAGE

5.3.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 137 feet - 6 inches.

CAPACITY

5.3.3 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1329 fuel assemblies.

FIGURE 5.3-1
ASSEMBLY BURNUP VERSUS INITIAL ENRICHMENT



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 ***** 3/4



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 104 TO FACILITY OPERATING LICENSE NO. NPF-41,
AMENDMENT NO. 93 TO FACILITY OPERATING LICENSE NO. NPF-51,
AND AMENDMENT NO. 76 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 application dated November 7, 1995, as supplemented by letter dated January 17, 1996, the Arizona Public Service Company (APS or the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License Nos. NPF-41, NPF-51, and NPF-74, respectively) for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3. 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 modify the current Technical Specification (TS) Section 5.0, "Design Features," of the Palo Verde Nuclear Generating Station Units 1, 2, and 3 to be consistent with Sections 4.0 and 5.0 of NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," Revision 1, dated April 7, 1995. The change allows the relocation of various subsections to the Offsite Dose Calculation Manual (ODCM) or the PVNGS Updated Final Safety Analysis Report (UFSAR). An additional statement has been added to revised Section 5.2.1 allowing the use of other cladding material with an approved exemption from Section 50.44, Section 50.46, and Appendix K of Title 10 of the Code of Federal Regulations (CFR).

The January 17, 1996, supplemental letter provided additional clarifying information and did not change the initial no significant hazards consideration determination published in the Federal Register on December 20, 1995 (60 FR 65673).

2.0 BACKGROUND

The NRC staff undertook efforts in the early 1980's to address problems related to the content of nuclear power plant technical specifications. These projects have resulted in the issuance of various reports, proposed rulemakings, and Commission policy statements. Line item improvements became a mechanism for technical specification improvement as part of the implementation of the Commission's interim policy statement on technical

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specification improvements published on February 6, 1987 (52 FR 3788). The final Commission policy statement on technical specification improvements was published July 22, 1993 (58 FR 39132). The final policy statement provided criteria which can be used to establish, more clearly, the framework for technical specifications. The staff has maintained the line item improvement process, through the issuance of generic letters, in order to improve the content and consistency of technical specifications and to reduce the licensee and staff resources required to process amendments related to those specifications being relocated from the TS to other licensee documents as a result of the implementation of the Commission's final policy statement.

Section 50.36 of Title 10 of the Code of Federal Regulations requires that technical specifications include items in five specified categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls. In addition, the Commission's final policy statement on technical specification improvements and other Commission documents provide guidance regarding the required content of technical specifications. The fundamental purpose of the technical specifications, as described in the Commission's final policy statement, is to impose those conditions or limitations upon reactor operation necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety by identifying those features that are of controlling importance to safety and establishing on them certain conditions of operation which cannot be changed without prior Commission approval.

On July 19, 1995, the NRC issued a Final Rule (60 FR 36953) revising 10 CFR 50.36 to codify the four criteria for determining the content of technical specifications. The criteria were the same as those contained in the final policy statement, which was referenced in the licensee's proposed Technical Specification amendment. A technical specification limiting condition for operation of a nuclear reactor must be established for each item meeting one or more of the following criteria: (1) installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary; (2) a process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; (3) a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; (4) a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.¹ As a result, existing TS

¹ The Commission recently adopted amendments to 10 CFR 50.36, pursuant to which the rule was revised to codify and incorporate these criteria. See Final Rule, "Technical Specifications," 60 FR 36953 (July 19, 1995). The Commission indicated that reactor core isolation cooling, isolation condenser, residual heat removal, standby liquid control, and recirculation pump trip systems are included in the TS under Criterion 4, although it recognized that

requirements which fall within or satisfy any of the criteria in the Final Policy Statement must be retained in the TS, while those TS requirements which do not fall within or satisfy these criteria may be relocated to other, licensee-controlled documents. The proposed TS requirements do not fall within or satisfy any of these criteria in the Final Policy Statement and may be relocated to other licensee-controlled documents.

The Commission's final policy statement recognized, as had previous statements related to the staff's technical specification improvement program, that implementation of the policy would result in the relocation of existing technical specification requirements to licensee-controlled documents such as the UFSAR. Those items relocated to the UFSAR would in turn be controlled in accordance with the requirements of 10 CFR 50.59, "Changes, tests and experiments." Section 50.59 of Title 10 of the Code of Federal Regulations provides criteria to determine when facility or operating changes planned by a licensee require prior Commission approval in the form of a license amendment in order to address any unreviewed safety questions. NRC inspection and enforcement programs also enable the staff to monitor facility changes and licensee adherence to UFSAR commitments and to take any remedial action that may be appropriate.

3.0 EVALUATION

The licensee has proposed changes to make TS Section 5.0, "Design Features," more consistent with NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," Revision 1, dated April 7, 1995. The NRC staff evaluated the licensee's submittal against the applicable sections in the Atomic Energy Act of 1954, as amended; Title 10 of the Code of Federal Regulations; and NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," Revision 1, dated April 7, 1995.

3.1 Sections 5.1 and 5.5

APS, in its November 7, 1995 submittal, proposes to delete the following from the TS: Section 5.1.1, "Site and Exclusion Boundaries"; Section 5.1.2, "Low Population Zone"; Section 5.1.3, "Gaseous Release Points"; Section 5.5.1, "Meteorological Tower Location"; and associated Figures 5.1-1, 5.1-2, and 5.1-3. In addition, the licensee proposes to replace the existing Figure 5.1-1 with a description giving the site location, area, and closest distance from the containment building to the exclusion area boundary. APS states that the deleted figures are contained in existing licensee-controlled documents, the Offsite Dose Calculation Manual (ODCM) and the Updated Final Safety Analysis Report (UFSAR). The ODCM is discussed in Section 6.8 of the PVNGS TS, and changes to both licensee-controlled documents are controlled by the 10 CFR 50.59 review process.

Because the information contained in the deleted figures is controlled under the 10 CFR 50.59 review process and the proposed description is consistent with NUREG-1432, the proposed deletions and the Section 5.1 revision are acceptable.

other structures, systems, and components could also meet these criteria.

3.2 Sections 5.2, 5.4, and 5.7

The licensee proposes to delete the following: Section 5.2.1, "Configuration"; Section 5.2.2, "Design Pressure and Temperature"; Section 5.4.1, "Design Pressure and Temperature"; Section 5.4.2, "Volume"; Section 5.7, "Component Cyclic or Transient Limits"; associated Tables 5.7-1 and 5.7-2; and the reference to Table 5.7-2 in TS Section 4.4.8.2.2. The information for these sections except Section 5.7 is currently located in the UFSAR, with adequate control of reactor coolant system parameters such as temperature, pressure, and boundary degradation being maintained under TS 3/4.4. The licensee intends to relocate the component cyclic or transient limits to UFSAR Section 3.9.1.1.1.

Because the deletion of the sections mentioned above is consistent with NUREG-1432 and the information contained in Section 5.7 is adequately controlled under TS Section 3/4.4 and the 10 CFR 50.59 review process, the above proposed deletions and the relocation of Section 5.7 are acceptable.

3.3 Sections 5.3 and 5.6

The licensee states that Sections 5.3.1 and 5.6 would be modified to be more consistent with NUREG-1432 and that the fuel enrichment information would be relocated to revised Sections 5.3.1.1 and 5.3.1.3. An additional statement would be added to revised Section 5.2.1 allowing the use of other cladding material with an approved exemption from Section 50.44, Section 50.46, and Appendix K of Title 10 of the Code of Federal Regulations (CFR). This section would be renumbered Section 5.2.

Since the modified sections mentioned above are consistent with NUREG-1432 and since the renumbering is purely administrative in nature, thus not affecting the health or safety of the public, the proposed modifications are acceptable.

Further, APS proposes to maintain the current information contained in Section 5.3.2. The licensee contends that the discussion of control material has been omitted because it is currently discussed in the UFSAR. The revised section would be renumbered 5.2.2.

The NRC staff disagrees with the proposed omission of the discussion concerning the control material. Changing the number of control element assemblies or their materials of construction could have a significant impact on safety; therefore, they must be controlled by the TS. In a letter dated January 17, 1996, the licensee has revised Section 5.2.2 to include a description of the control material. Because the modification of the section mentioned above is purely administrative in nature, thus not affecting the health or safety of the public, and because the added revision being consistent with NUREG-1432, the proposed change is acceptable.

Based on its review, the staff concludes that 10 CFR 50.36 does not require these TS requirements to be retained in the TS. The staff determined that these TS requirements are adequately controlled by 10 CFR 50.59 and that their inclusion is an operational detail related to the licensee's safety analysis. Therefore, the continued processing of license amendments related to revisions of the affected TS requirements, where the revisions to those requirements do

not involve an unreviewed safety question under 10 CFR 50.59, would afford no significant benefit with regard to protecting the public health and safety.

The staff has concluded, therefore, that removal of these TS requirements is acceptable because (1) their inclusion in the TS is not specifically required by 10 CFR 50.36 or other regulations, (2) the TS requirements have been incorporated into PVNGS administratively controlled documents, and (3) changes that are not deemed to involve an unreviewed safety question will require NRC approval in accordance with 10 CFR 50.59 9(c).

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. 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 (60 FR 65673). 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.

6.0 CONCLUSION

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

Principal Contributor: E.A. Brown

Date: March 6, 1996