

September 11, 2002

Mr. Gregg R. Overbeck
Senior Vice President, Nuclear
Arizona Public Service Company
P. O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3 -
ISSUANCE OF AMENDMENTS ON CONTAINMENT PENETRATIONS DURING
REFUELING OPERATIONS (TAC NOS. MB5128, MB5129, AND MB5130)

Dear Mr. Overbeck:

The Commission has issued the enclosed Amendment No. 144 to Facility Operating License No. NPF-41, Amendment No. 144 to Facility Operating License No. NPF-51, and Amendment No. 144 to Facility Operating License No. NPF-74 for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3, respectively. The amendments consist of changes to the Technical Specifications in response to your application dated May 15, 2002 (102-04701), as supplemented by letter dated August 29, 2002 (102-04833).

The amendments revise Limiting Condition for Operation (LCO) 3.9.3, "Containment Penetrations," to allow the containment air lock and other penetrations that provide direct access to the outside atmosphere to be open during core alterations or movement of irradiated fuel assemblies within containment.

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,

/RA/

Jack Donohew, Senior Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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

Enclosures: 1. Amendment No.144 to NPF-41
2. Amendment No.144 to NPF-51
3. Amendment No. 144 to NPF-74
4. Safety Evaluation

cc w/encls: See next page

Palo Verde Generating Station, Units 1, 2, and 3

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ISSUANCE OF AMENDMENTS ON CONTAINMENT PENETRATIONS DURING
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Dear Mr. Overbeck:

The Commission has issued the enclosed Amendment No. 144 to Facility Operating License No. NPF-41, Amendment No. 144 to Facility Operating License No. NPF-51, and Amendment No. 144 to Facility Operating License No. NPF-74 for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3, respectively. The amendments consist of changes to the Technical Specifications in response to your application dated May 15, 2002 (102-04701), as supplemented by letter dated August 29, 2002 (102-04833).

The amendments revise Limiting Condition for Operation (LCO) 3.9.3, "Containment Penetrations," to allow the containment air lock and other penetrations that provide direct access to the outside atmosphere to be open during core alterations or movement of irradiated fuel assemblies within containment.

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.

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/RA/

Jack Donohew, Senior Project Manager, Section 2
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Division of Licensing Project Management
Office of Nuclear Reactor Regulation

DISTRIBUTION

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

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Enclosures: 1. Amendment No. 144 to NPF-41
2. Amendment No. 144 to NPF-51
3. Amendment No. 144 to NPF-74
4. Safety Evaluation

cc w/encls: See next page

TS: ML022600251 **PKG: ML022600454**

ACCESSION NO: LTR. ML022250390 **BWI ML022250675** ***See previous concurrence**

OFFICE	PDIV-2/PM	PDIV-1/LA	TSS/SC	OGC	PDIV-2/SC
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ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-528

PALO VERDE NUCLEAR GENERATING STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.144
License No. NPF-41

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Arizona Public Service Company (APS or the licensee) on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority dated May 15, 2002, as supplemented by letter dated August 29, 2002, 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. 144, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of the date of issuance and shall be implemented within 60 days of the date of issuance, including completing the changes to the Technical Specification Bases, as described in the licensee's letters of May 15 and August 29, 2002.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by R. Gramm Acting for/
Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: September 11, 2002

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-529

PALO VERDE NUCLEAR GENERATING STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.144
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 May 15, 2002, as supplemented by letter dated August 29, 2002, 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. 144, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of the date of issuance and shall be implemented within 60 days of the date of issuance, including completing the changes to the Technical Specification Bases, as described in the licensee's letters of May 15 and August 29, 2002.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by R. Gramm Acting for/
Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: September 11, 2002

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-530

PALO VERDE NUCLEAR GENERATING STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.144
License No. NPF-74

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Arizona Public Service Company (APS or the licensee) on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority dated May 15, 2002, as supplemented by letter dated August 29, 2002, 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. 144, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of the date of issuance and shall be implemented within 60 days of the date of issuance, including completing the changes to the Technical Specification Bases, as described in the licensee's letters of May 15 and August 29, 2002.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by R. Gramm Acting for/
Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: September 11, 2002

ATTACHMENT TO LICENSE AMENDMENT NOS. 144, 144, AND 144

FACILITY OPERATING LICENSE NOS. NPF-41, NPF-51, AND NPF-74

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

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.9.3-1

INSERT

3.9.3-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO.144 TO FACILITY OPERATING LICENSE NO. NPF-41,
AMENDMENT NO. 144 TO FACILITY OPERATING LICENSE NO. NPF-51,
AND AMENDMENT NO. 144 TO FACILITY OPERATING LICENSE NO. NPF-74
ARIZONA PUBLIC SERVICE COMPANY, ET AL.
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3
DOCKET NOS. STN 50-528, STN 50-529, AND STN 50-530

1.0 INTRODUCTION

By application dated May 15, 2002, as supplemented by letter dated August 29, 2002, the Arizona Public Service Company (the licensee) requested changes to the Technical Specifications (TSs) for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3 (PVNGS). The licensee 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 to the TSs would revise Limiting Condition for Operation (LCO) 3.9.3, "Containment Penetrations." The amendments would (1) modify the requirement in LCO 3.9.3.b that one door in each air lock is closed by adding the words "capable of being " before the word "closed" and (2) add a note to LCO 3.9.3 stating that containment penetration flow paths providing direct access from the containment to the outside atmosphere may be unisolated under administrative controls. The amendments would allow the containment air locks and containment penetrations that provide direct access to the outside atmosphere to be open during core alterations or movement of irradiated fuel assemblies within containment, which is not allowed in the current TSs. The licensee has also included in an attachment to its application the changes to the TS Bases that reflect and are consistent with the proposed amendments.

The licensee provided supplemental information in its letter of August 29, 2002. The supplemental information clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on June 25, 2002 (67 FR 42816).

2.0 BACKGROUND

The licensee adopted the Improved Technical Specifications (ITS) in License Amendments No. 117 (issued May 20, 1998) based on NUREG-1432, "Standard Technical Specifications [STS] for Combustion Engineering Plants," Revision 1, dated April 1995. Since then, industry and the NRC staff have been working to improve the ITS, in NUREG-1430 through NUREG-1434 for the different plant vendors. As a result, generic changes have been developed for the standard ITS in NUREG-1432.

In its application, the licensee stated that the proposed amendment is consistent with the NRC-approved Technical Specification Task Force (TSTF) Travelers (1) Number 68, Revision 2, "Containment Personnel Air Lock Doors Open During Fuel Movement," and (2) Number 312, Revision 1, "Administratively Controlled Containment Penetrations," which were approved for use by licensees on August 16, 1999. These two TSTFs were approved by the NRC staff for the use of licensees in proposing changes to plant-specific TSs based on NUREG-1432 for Combustion Engineering plants. The TSs for PVNGS are based on NUREG-1432. In reviewing the TSTFs, the NRC staff agrees that the TSTFs apply to PVNGS, and the proposed amendments are consistent with the two TSTFs.

TSTF-68 revises LCO 3.9.3 to allow the containment personnel air lock doors to remain open during core alterations or movement of irradiated fuel assemblies within containment. TSTF-312 adds a Note to LCO 3.9.3 to allow containment penetrations that have direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative controls during core alterations or movement of irradiated fuel assemblies within containment. The licensee's purpose for proposing to add TSTF-68 and TSTF-312 to the TSs is the same as that approved by the NRC staff in its approval of the TSTFs for NUREG-1432.

3.0 EVALUATION

In its application, the licensee proposed the following: (1) modify the requirement in LCO 3.9.3.b that one door in each air lock is closed by adding the words "capable of being" before the word "closed" and (2) add a note to LCO 3.9.3 stating that containment penetration flow paths providing direct access from the containment to the outside atmosphere may be unisolated under administrative controls. As stated in the TSs, the applicability of LCO 3.9.3 is during core alterations and during movement of irradiated fuel assemblies within containment. This would be for Modes 5 and 6 because TSs 3.6.2, "Containment Air Locks," and 3.6.3, "Containment Isolation Valves," on the operability of air locks and containment penetrations (i.e., the valves which isolate the penetrations), respectively, apply to Modes 1 through 4. The amendments would allow the containment air lock and other penetrations that provide direct access to the outside atmosphere to be open during core alterations or movement of irradiated fuel assemblies within containment. This allowance would be used during refueling operations when the reactor is shut down.

In its application, the licensee discussed the use of the two air locks, which are part of the containment pressure boundary. One is located such that it opens to the outside yard area. The other air lock opens into the Auxiliary Building. The licensee stated that the air locks provide means for personnel access to and egress from containment. Each air lock is comprised of two doors, which are interlocked to prevent simultaneous opening of both doors during Modes 1 through 4 as required by TS 3.6.2. During periods of plant shutdown when

containment closure is not required, the door interlock mechanism may be disabled to allow both doors of an air lock to be open for extended periods when frequent containment entry is needed. Currently containment closure is required for plant shutdown during core alterations or movement of irradiated fuel assemblies within containment and one door is required to be closed if the door interlock mechanism is disabled.

The licensee explained that, during refueling operations, a large number of personnel can be in containment at any given time. Therefore, should containment evacuation be needed, such as during a fuel handling accident (FHA) inside containment, it would take a number of cycles of the air locks to evacuate containment if both air lock doors were not allowed to be open during the refueling operations. The licensee stated that this would cause the personnel waiting to exit to be unnecessarily exposed to any radioactivity or other hazardous material that might be released inside containment.

The licensee stated that the proposed amendments would allow both doors of each air lock to be open to expedite the evacuation and reduce the potential exposure to personnel without increasing the potential exposure to the public. Additionally, the licensee stated that the amendments would reduce the expected maintenance of the doors by limiting the open/close cycling of the doors.

The licensee stated that, although there is a provision in Note 1 of TS 3.6.3 that allows penetration flow paths that open directly to outside to be opened intermittently under administrative controls, this provision does not apply to when a plant is shut down. TS 3.9.3 does not allow this. The licensee stated that the proposed amendments will allow these penetrations to be open under administrative controls, which will support the performance of outage activities concurrent with fuel handling activities and permit more efficient performance of outage work. The NRC staff believes that the proposed amendments could reduce the overall risk of outages by allowing the licensee more flexibility to better plan outages with respect to the containment penetrations that open directly to the outside atmosphere.

The postulated accidents that could result in a release of radioactive material through the open air locks or containment penetrations that open directly to outside would be the FHA inside containment and the loss of cooling to the core that leads to core boiling and uncover. These are discussed below.

3.1 Administrative Controls

If the licensee opens an air lock in outages when there are core alterations or fuel movement inside containment, the licensee has proposed to have the air lock under administrative controls such that, in the event of an FHA inside containment, the air locks will be promptly closed after evacuation of the containment. The licensee provided the following description in the changes that are to be made to the TS Bases for LCO 3.9.3 for the air locks:

The containment personnel air lock doors may be open during movement of irradiated fuel in the containment and during CORE ALTERATIONS provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, one personnel air lock door will be closed following an evacuation of containment.

Personnel are stationed in the vicinity of the air locks open to the outside and within communication with the control room to close the air locks in case of an FHA inside containment. The air locks would be closed after the evacuation of personnel from containment during the accident. The air locks are closed by these personnel without electric power, and the licensee stated that the air locks would be closed within the same time frame given for closing the equipment hatch (i.e., within an hour) for PVNGS in Amendments No. 143, issued on July 25, 2002, to allow the equipment hatch to be open during core alterations or movement of irradiated fuel assemblies within containment.

For the administrative controls on the containment penetrations flow paths with direct access from containment to the outside, the licensee provided the following description in the changes that are to be made to the TS Bases for LCO 3.9.3 for the flow paths:

The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident.

Based on the description of the administrative controls provided by the licensee for the open air locks and containment penetrations with direct access to the outside, the NRC staff concludes that there are sufficient administrative controls to ensure that the air locks and penetrations will be closed following the FHA inside containment. The above descriptions of the administrative controls to be added to the TS Bases may be changed after the amendments are approved; however, the changes would be controlled by TS 5.5.14, "Technical Specification (TS) Bases Control Program." This change control process is acceptable to the NRC staff.

3.2 Tornado Missiles

The licensee addressed tornado missiles in its application. PVNGS Updated Final Safety Analysis Report (UFSAR) Sections 3.5.1.4 and 3.5.1.5 address the generation of missiles from natural phenomena and events near the site, and states that tornado-generated missiles were considered in the design of structures that are required for safe shutdown of the plants. The tornado missiles considered in the design and their characteristics are listed in UFSAR Table 3.5-8. Missiles generated by other natural phenomena were not considered credible.

Of the two personnel air locks, one has direct access to the outside yard and the other opens into the Auxiliary Building. During Modes 1 through 4, when containment integrity is required, tornado missile protection is provided by the containment, the equipment hatch missile shield which covers the equipment hatch and is located outside the containment, and the Auxiliary Building. For Modes 5 and 6, the two air locks do not provide missile protection for equipment inside containment. The licensee stated that UFSAR Section 3.5.2.2, "Missile Barriers Inside Containment," describes the barriers that would provide protection if a missile entered containment through an air lock opening. The secondary shield, the primary shield, the refueling cavity walls, the reactor vessel and pressurizer missile shield, the various structural beams, and the operating floor are the missile barriers.

For open containment penetrations with direct access to the outside, there is the existing missile protection for inside the containment, which is provided by the containment itself and surrounding structures, which are not being changed by the proposed amendments. Therefore, this missile protection will continue to provide missile protection for the inside of the containment.

In addressing what would happen during refueling with severe weather approaching the site, the licensee stated that it has a procedure in place to suspend all fuel handling activities and close the air locks if (1) the national weather service has issued a high, severe weather, severe thunderstorm, or tornado warning for the area where the plant is located, (2) the national weather service has issued a tornado watch for the area, or (3) the meteorological tower is indicating sustained or gusting winds of 50 mph or higher. A warning means a severe thunderstorm or tornado has been reported or is imminent, and people should take the necessary precautions. A watch is that severe weather is possible within the designated watch area, and people should be alert to adverse weather changes. The NRC staff concludes that the procedure adequately addresses severe weather for the open air locks.

Based on the missile protection for the air locks and the containment penetrations, and the severe weather procedure described above, the NRC staff concludes that the licensee has acceptably addressed the potential for tornado missiles through the open air locks and containment penetrations.

3.3 Postulated Accidents

The limiting event during refueling when there are core alterations or fuel handling inside containment is the FHA inside containment. The licensee has described this event in Section 15.7.4 of the UFSAR and the NRC staff's acceptance criteria are given in Standard Review Plan (SRP) 15.7.4 of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants." The parameters assumed by the NRC staff for this accident are in Regulatory Guide (RG) 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors."

The licensee's calculated potential dose consequences for the FHA inside containment, at the exclusion area boundary and low population zone, and the assumptions used for the calculated dose consequences are in the attached Tables 1 and 2, respectively. The calculated values of the potential dose consequences to the control room operators are also given in Table 1, and the assumptions are also provided in Table 2. The acceptance criteria for the potential exposure of the control room operators is in General Design Criterion (GDC) 19 in Appendix A to 10 CFR Part 50.

The licensee's potential dose consequences in Table 1 came from its application and UFSAR Table 15.7.4-5, for the exclusion area boundary and low population zone, and from the application for the control room operator doses. The assumptions for the dose consequences are in the application; UFSAR Tables 15.7.4-1, 15B-5, and 15B-6; and UFSAR Section 6.4.

In NUREG-0857, "Safety Evaluation Report Related to the Operation of Palo Verde Nuclear Generating Station, Units 1, 2, and 3," dated November 1981, the safety evaluation that was part of licensing the units, the NRC staff addressed the accident, but did not report what it

concluded were the potential dose consequences of FHAs. In Section 15.4.6, "Fuel Handling Accident," of NUREG-0857, the NRC staff stated that it reviewed the licensee's analysis of the accident in the UFSAR and found that certain parameters assumed by the licensee were less conservative than values given in RG 1.25. However, the NRC staff concluded that, with irradiated fuel movement delayed 100 hours after reactor shutdown, the potential dose consequences for the accident were within the criteria in SRP 15.7.4, and acceptable.

The NRC staff also has not reported potential dose consequences for the control room operators. In Section 6.4, "Control Room Habitability," of NUREG-0857, Supplement No. 5, dated November 1983, the NRC staff stated that it evaluated the control room doses following a postulated loss-of-coolant accident (LOCA) in accordance with SRP 6.4, "Control Room Habitability System," and concluded that the calculated whole body and thyroid doses are within the criteria of SRP 6.4 (i.e., GDC 19). Based on this, the NRC staff concluded at the licensing of PVNGS that the doses for the control room operators were acceptable. The exposure of the control room operators from the postulated LOCA was considered to bound the exposure of the operators from other accidents, which includes the FHA inside containment.

The licensee's assumptions for the accident are listed in Table 2 with the values in RG 1.25 for the same parameters. The assumptions made by the licensee are the same values as those in RG 1.25, or are more conservative than the values in RG 1.25. The licensee stated that the computer code ORIGEN was used to calculate the inventory of long-lived radioisotopes in the fuel assembly damaged in the accident, and that this inventory was conservatively based on a core power of 4070 megawatts thermal (MWt). The core power is above the current licensed power of 3876 MWt by the anticipated power uprate increase of 2.94 percent and an additional power uncertainty of 2 percent of the licensed power. In its application dated December 21, 2001, for PVNGS Unit 2, the licensee proposed a power uprate for Unit 2 from the 3876 to 3990 MWt, which is a power uprate of 2.94 percent. Based on the conservative assumptions made by the licensee and the NRC staff's acceptance at PVNGS licensing of the use of the licensee's calculated dose consequences in the UFSAR, the NRC staff concludes that the licensee's calculated dose consequences for the FHA inside containment can be compared to the criteria in SRP 15.7.4 for the potential dose consequences at the exclusion area boundary and low population zone. Because the potential dose consequences provided by the licensee for the FHA inside containment (for the case that the equipment hatch is not closed) are within the acceptance criteria given in SRP Section 15.7.4, the NRC staff concludes that the potential dose consequences for the proposed amendments are acceptable.

For the doses to the control room operators, the proposed amendments do not affect the NRC staff's evaluation of control room habitability given in Section 6.4 of NUREG-0857, Supplement No. 5, because the proposed amendments do not change the assumption that all radioactive releases to the control room are ground level releases, and do not change anything with respect to the control room and the operators. Also, the dose consequences for the control room operators provided by the licensee in its application and given in Table 1 are less than the GDC 19 criteria. Based on this the NRC staff concludes that the potential dose consequences to control room operators for the proposed amendments are acceptable.

For the case of a loss of cooling to the core during refueling, the licensee has stated that the minimum time for the core to start boiling is greater than 4.5 hours (at the beginning of fuel offload, which is a minimum of 100 hours after plant shutdown). Fuel damage would occur after fuel uncovering from core boiling. With loss of cooling to the core, LCO 3.9.4, "Shutdown Cooling

(SDC) and Coolant Circulation," which requires at least one SDC loop to be operating, would not be met and Required Action A.4 for LCO 3.9.4 would have all containment penetrations that provide direct access from the containment to the outside closed in 4 hours, which includes, as the licensee stated, both air locks. Because the 4 hours for Required Action A.4 is less than the time for the core to start boiling, the NRC staff concludes that the licensee has satisfactorily addressed the potential loss of core cooling for the amendments.

The time to core boiling for reduced water inventory in mid-loop operation in a refueling outage is not applicable to this review because TS 3.9.7 requires 23 feet of water above the top of the reactor vessel flange during movement of irradiated fuel assemblies within containment. Therefore, the proposed amendments do not apply to mid-loop operations.

3.4 TSTF-68, Revision 2

The licensee stated in its application that the proposed changes for the air lock doors were consistent with TSTF-68, Revision 2, for the containment personnel air locks, during core alterations or movement of irradiated fuel assemblies within containment. The NRC staff compared the NRC-approved TSTF to the licensee's proposed changes to LCO 3.9.3 for the air lock doors and found them to be the same. The licensee also identified in its application that the changes to the TS Bases shown in the TSTF are to be added to the TS Bases for TS 3.9.3 for PVNGS, including the description of the administrative controls addressed in Section 2.1 of this safety evaluation.

3.5 TSTF-312, Revision 1

The licensee stated in its application that the proposed changes for the air lock doors are consistent with TSTF-312, Revision 1, for the containment penetration flow paths that have direct access from the containment atmosphere to the outside atmosphere, during core alterations or movement of irradiated fuel assemblies within containment. The NRC staff compared the NRC-approved TSTF to the licensee's proposed changes to LCO 3.9.3 for these containment penetrations and found them to be the same. The licensee also identified in its application that the changes to the TS Bases shown in the TSTF are to be added to the TS Bases for TS 3.9.3 for PVNGS, including the description of the administrative controls addressed in Section 2.1 of this safety evaluation.

3.6 Conclusion

Based on the administrative controls described in the licensee's application, which will be added to the TS Bases, to close the air locks and the containment penetrations providing direct access to the outside in case of an FHA inside containment; the potential consequences of the design basis FHA inside containment (including the doses to control room operators), which are acceptable; and the procedure discussed above to respond to severe weather during refueling; the NRC staff concludes that the proposed changes to LCO 3.9.3 are acceptable. The proposed changes to LCO 3.9.3 are consistent with the NRC-approved TSTFs 68, Revision 2 and 312, Revision 1.

Although the licensee proposed, in its application dated December 13, 2001, to add a surveillance requirement (SR) to the TSs to assure the administrative controls to close the equipment hatch are in place when the hatch is open during core alterations or movement of

irradiated fuel inside containment, the licensee did not propose such a SR for this amendment. Because the air locks and the penetrations providing direct access to the outside are normally opened and closed during refueling outages and are more easily opened and closed than the equipment hatch, the NRC staff concludes that such a SR is not needed for this amendment.

Based on the above, the NRC staff concludes that the proposed amendment is acceptable.

The NRC staff has reviewed the description of the administrative controls in the licensee's application and has no disagreement with the description. In its application, the licensee agreed to add this description to the TS Bases during the implementation of the amendments. This will be a condition of the amendments. Therefore, when the amendments are incorporated into the TSs, the description of the administrative controls will be in the Bases of the TSs. Any changes to the description of the administrative controls will then be controlled by Section 5.5.14 of the Administrative Section of the TSs. This is acceptable to the NRC staff.

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 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 (67 FR 42816 dated June 25, 2002). 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.

Attachments: 1. Table 1, Calculated Radiological Dose Consequences (Rem)
2. Table 2, Assumptions Used in Calculating Radiological Dose Consequences

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Date: September 11, 2002

TABLE 1

CALCULATED RADIOLOGICAL DOSE CONSEQUENCES (REM)

<u>Exclusion Area Boundary</u>	<u>Licensee Doses*</u>	<u>NRC Acceptance Criteria SRP 15.7.4 Criteria</u>
Whole Body	0.39	6
Thyroid	74.7	75
<u>Low Population Zone</u>	<u>Licensee Doses*</u>	<u>NRC Acceptance Criteria SRP 15.7.4 Criteria</u>
Whole Body	0.11	6
Thyroid	20.8	75
<u>Control Room (operator)</u>	<u>Licensee Doses</u>	<u>NRC Acceptance Criteria GDC-19 Criteria</u>
Whole Body	0.13	5
Thyroid	11.5	Equivalent to 5 rem whole body**

* The doses are from: (1) the application and PVNGS Updated Final Safety Analysis Report (UFSAR) Table 15.7.4-5 for the radiological consequences at the exclusion area boundary and (2) the application for the control room operator exposures.

** Guideline doses provided in Standard Review Plan (SRP) Section 6.4 define the dose equivalent as 30 rem to the thyroid.

TABLE 2

ASSUMPTIONS USED IN CALCULATING RADIOLOGICAL DOSE CONSEQUENCES
FUEL HANDLING ACCIDENT INSIDE CONTAINMENT

<u>Parameters</u>	<u>Licensee Value¹</u>	<u>NRC Staff Value RG 1.25²</u>
Power level (MWt)	4070	
Number of fuel rods damaged	236	
Number of assemblies affected	1.0	1.0
Shutdown time (hours)	72	100
Power radial peaking factor	1.7	1.65
Percentage of gap activity released to pool	100	100
Minimum water depth over fuel (feet)	23	23
Pool decontamination factors: thyroid/noble gases	100/1	100/1
Fission product release duration (hours)	2.0	2.0
Release fractions:		
Radioiodine	15.0%	12.0% ³
Noble gases	15.0%	10.0%
Krypton gases	30.0%	30.0%
Radioiodine forms:		
Elemental	75.0%	75.0%
Organic	25.0%	25.0%
<u>Receptor Point Variables (per TID-14844)</u>		
Exclusion area boundary		
Atmospheric relative concentration, X/Q (sec/m ³)		
0-2 hours	1.6 x 10 ⁻⁴	Use site-specific data
Control room		
Atmospheric Dispersion, X/Q (sec/m ³)	1.56 x 10 ⁻³	
Control room volume (feet ³)	1.61 x 10 ⁺⁵	
Unfiltered intake (scfm)	10	
Intake and recirculation filter efficiency (iodine)		
elemental (%)	95	
organic (%)	95	
particulate (%)	99	
Minimum filtration rate (feet ³ /minute)	25,740	

¹ The application and PVNGS Updated Final Safety Analysis Report (UFSAR) Tables 15.7.4-1, 15B-5, and 15B-6, and Section 6.4 on the potential dose consequences parameters.

² NRC Regulatory Guide (RG) 1.25.

³ Higher extended burnup (70,000 MWD/MTU) release fraction for Iodine 131 from NUREG/CR-5009