

November 28, 1995

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

SUBJECT: ISSUANCE OF AMENDMENTS FOR THE PALO VERDE NUCLEAR GENERATING STATION
UNIT NO. 1 (TAC NO. M92808), UNIT NO. 2 (TAC NO. M92809), AND UNIT
NO. 3 (TAC NO. M92810)

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 102 to Facility Operating License No. NPF-41, Amendment No. 90 to Facility Operating License No. NPF-51, and Amendment No. 73 to Facility Operating License No. NPF-74 for the Palo Verde Nuclear Generating Station, Unit Nos. 1, 2, and 3, respectively. The amendments consist of changes to the Technical Specifications in response to your application dated July 3, 1995.

These amendments would add Technical Specification (TS) Action Statements 3.8.1.1.f and 3.8.1.1.g to TS 3.8.1.1, A.C. Sources - Operating. These new Action Statements provide a temporary method to respond to a lower switchyard voltage. Also, Bases 3/4.8.1, 3/4.8.2, and 3/4.8.3 ("A.C. Sources," "D.C. Sources," and "Onsite Distribution Systems," respectively) are being revised to provide guidance on detecting a switchyard voltage falling below the level necessary for the electrical distribution system (EDS) to maintain compliance with General Design Criterion (GDC) 17 of Appendix A to 10 CFR Part 50 and to provide the basis for the additional Action Statements.

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. 102 to NPF-41
- 2. Amendment No. 90 to NPF-51
- 3. Amendment No. 73 to NPF-74
- 4. Safety Evaluation

DISTRIBUTION

Docket File	KPerkins, WCFO
PUBLIC	HWong, RIV
PDIV-2 Reading	GHill (6), T5C3
EGA1	BHolian
JRoe	OGC, 015B18
WBateman	CThomas
CGrimes, 011E22	ACRS, T2E26
LHurley, RIV	EPeyton
RHuey, RIV	JBianchi, RIV (2)

cc w/encls: See next page

9512140017 951128
PDR ADOCK 05000528
P PDR

DOCUMENT NAME: PV92808.AMD

OFC	PDIV-2/LA	PDIV-2/PM	NRR:SRXB	NRR:EELB	OGC
NAME	EPeyton	CThomas:ye	RJones	JCalvo	Wong
DATE	11/20/95	11/14/95	11/21/95	11/21/95	11/24/95

110039

OFFICIAL RECORD COPY

2 Fol
11/26

November 28, 1995

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

SUBJECT: ISSUANCE OF AMENDMENTS FOR THE PALO VERDE NUCLEAR GENERATING STATION
UNIT NO. 1 (TAC NO. M92808), UNIT NO. 2 (TAC NO. M92809), AND UNIT
NO. 3 (TAC NO. M92810)

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 102 to Facility Operating License No. NPF-41, Amendment No. 90 to Facility Operating License No. NPF-51, and Amendment No. 73 to Facility Operating License No. NPF-74 for the Palo Verde Nuclear Generating Station, Unit Nos. 1, 2, and 3, respectively. The amendments consist of changes to the Technical Specifications in response to your application dated July 3, 1995.

These amendments would add Technical Specification (TS) Action Statements 3.8.1.1.f and 3.8.1.1.g to TS 3.8.1.1, A.C. Sources - Operating. These new Action Statements provide a temporary method to respond to a lower switchyard voltage. Also, Bases 3/4.8.1, 3/4.8.2, and 3/4.8.3 ("A.C. Sources," "D.C. Sources," and "Onsite Distribution Systems," respectively) are being revised to provide guidance on detecting a switchyard voltage falling below the level necessary for the electrical distribution system (EDS) to maintain compliance with General Design Criterion (GDC) 17 of Appendix A to 10 CFR Part 50 and to provide the basis for the additional Action Statements.

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. 102 to NPF-41
- 2. Amendment No. 90 to NPF-51
- 3. Amendment No. 73 to NPF-74
- 4. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION

- Docket File
- PUBLIC
- PDIV-2 Reading
- EGAI
- JRoe
- WBateman
- CGrimes, 011E22
- LHurley, RIV
- RHuey, RIV
- KPerkins, WCFO
- HWong, RIV
- GHill (6), T5C3
- BHolian
- OGC, 015B18
- CThomas
- ACRS, T2E26
- EPeyton
- JBianchi, RIV (2)
- JKilchense, RIV

DOCUMENT NAME: PV92808.AMD

OFC	PDIV-2/LA	PDIV-2/PM	NRR:SRXB	NRR:EELB	OGC
NAME	EPeyton	CThomas:ye	RJones	JCalvo	Walter
DATE	11/20/95	11/14/95	11/21/95	11/21/95	11/24/95

OFFICIAL RECORD COPY



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

November 28, 1995

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

SUBJECT: ISSUANCE OF AMENDMENTS FOR THE PALO VERDE NUCLEAR GENERATING STATION
UNIT NO. 1 (TAC NO. M92808), UNIT NO. 2 (TAC NO. M92809), AND UNIT
NO. 3 (TAC NO. M92810)

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 102 to Facility Operating License No. NPF-41, Amendment No. 90 to Facility Operating License No. NPF-51, and Amendment No. 73 to Facility Operating License No. NPF-74 for the Palo Verde Nuclear Generating Station, Unit Nos. 1, 2, and 3, respectively. The amendments consist of changes to the Technical Specifications in response to your application dated July 3, 1995.

These amendments would add Technical Specification (TS) Action Statements 3.8.1.1.f and 3.8.1.1.g to TS 3.8.1.1, A.C. Sources - Operating. These new Action Statements provide a temporary method to respond to a lower switchyard voltage. Also, Bases 3/4.8.1, 3/4.8.2, and 3/4.8.3 ("A.C. Sources," "D.C. Sources," and "Onsite Distribution Systems," respectively) are being revised to provide guidance on detecting a switchyard voltage falling below the level necessary for the electrical distribution system (EDS) to maintain compliance with General Design Criterion (GDC) 17 of Appendix A to 10 CFR Part 50 and to provide the basis for the additional Action Statements.

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,

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. 102 to NPF-41
2. Amendment No. 90 to NPF-51
3. Amendment No. 73 to NPF-74
4. Safety Evaluation

cc w/encls: See next page

Mr. William L. Stewart

- 2 -

November 28, 1995

cc w/encls:

Mr. Steve Olea
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, Arizona 85007

T. E. Oubre, Esq.
Southern California Edison Company
P. O. Box 800
Rosemead, California 91770

Senior Resident Inspector
USNRC
P. O. Box 40
Buckeye, Arizona 85326

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

Chairman, Board of Supervisors
ATTN: Chairman
301 W. Jefferson, 10th Floor
Phoenix, Arizona 85003

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

Mr. Curtis Hoskins
Executive Vice President and
Chief Operating Officer
Palo Verde Services
2025 N. 3rd Street, Suite 200
Phoenix, Arizona 85004

Roy P. Lessey, Jr., Esq.
Akin, Gump, Strauss, Hauer and Feld
El Paso Electric Company
1333 New Hampshire Avenue, Suite 400
Washington, DC 20036

Ms. Angela K. Krainik, Manager
Nuclear Licensing
Arizona Public Service Company
P.O. Box 52034
Phoenix, Arizona 85072-2034



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. 102
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 July 3, 1995, 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:

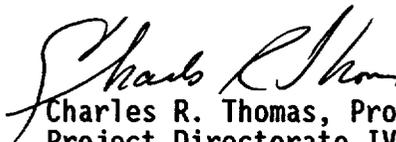
9512140024 951128
PDR ADOCK 05000528
P PDR

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 102, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. The license amendment is effective as of its date of issuance and expires upon the completion of the next refueling outage for Unit No. 1.

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: November 28, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 102 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.

REMOVE

B 3/4 8-3

INSERT

3/4 8-2a
B 3/4 8-3
B 3/4 8-4

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION (Continued)

- f.* With switchyard voltage less than 524 kV and with three startup transformers in service, restore OPERABILITY of one train of A.C. sources by blocking fast bus transfer within 1 hour; AND¹ either:
1. Restore OPERABILITY of the remaining EDG by starting, loading, and separating from offsite power within the next hour; AND² restore the remaining offsite circuit to OPERABLE status within 72 hours AND within 6 days from the discovery of failure to meet the LCO; OR
 2. Restore OPERABILITY of the remaining train of A.C. sources by blocking fast bus transfer within the next hour; OR
 3. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- g.* With switchyard voltage less than 525 kV and with two startup transformers in service, restore OPERABILITY of one train of A.C. sources by blocking fast bus transfer within 1 hour; AND¹ either:
1. Restore OPERABILITY of the remaining EDG by starting, loading, and separating from offsite power within the next hour; AND² restore the remaining offsite circuit to OPERABLE status within 72 hours AND within 6 days from the discovery of failure to meet the LCO; OR
 2. Restore OPERABILITY of the remaining train of A.C. sources by blocking fast bus transfer within the next hour; OR
 3. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*This amendment will expire upon full implementation of the final modification.

¹ Enter applicable conditions and requirements of TS LCO 3.8.1.1 ACTION a and ACTION b for the INOPERABLE train. In addition, with no A.C. power source to one train, enter applicable conditions and ACTIONS of TS LCO 3.8.3.1, "Onsite Power Distribution Systems - Operating."

² Enter applicable conditions and requirements of TS LCO 3.8.1.1 ACTION a for the INOPERABLE offsite circuit.

ELECTRICAL POWER SYSTEMS

BASES

A.C. SOURCES, D.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

ACTION requirements 3.8.1.1.f and 3.8.1.1.g provide restrictions upon continued unit operation commensurate with degradation of switchyard voltage and restoration of OPERABILITY of the required A.C. sources. In an effort to minimize the risk to the health and safety to the public, ACTIONS 3.8.1.1.f and 3.8.1.1.g balance the risk of a forced shutdown against the risk of remaining at power with a switchyard voltage in the lower portion of the expected range. The risk during ACTIONS 3.8.1.1.f and 3.8.1.1.g due to a switchyard voltage in the lower portion of the expected range and an independent accident is less than the risk associated with a normal shutdown including a reactor trip.

Conformance to GDC-17 requires maintenance of switchyard voltages at or above those identified in ACTIONS 3.8.1.1.f and 3.8.1.1.g. At voltages below those identified, a unit trip resulting from an ESF signal, coincident with low switchyard voltages, will result in sequencing of ESF equipment on preferred offsite power. The Class 1E degraded voltage relays will detect a sustained degraded voltage due to the fast bus transfer of non-Class 1E loads from the auxiliary transformers to the startup transformers. The relays will actuate to strip the ESF equipment and resequence it on the emergency diesel generator. This "double sequencing" causes an interruption in equipment credited with specific response time in the UFSAR Chapter 6 and 15 safety analysis, and is unanalyzed. Maintenance of switchyard voltage at or above the specified value prevents this effect as does the configurations authorized by ACTIONS 3.8.1.1.f and 3.8.1.1.g. The required voltage is higher when three units are operating on two startup transformers, as two secondary windings of the startup transformers must each supply ESF power to two units.

ACTIONS 3.8.1.1.f.1 and 3.8.1.1.g.1 are preferred over ACTIONS 3.8.1.1.f.2 and 3.8.1.1.g.2. ACTIONS 3.8.1.1.f.1 and 3.8.1.1.g.1 are designed to balance the probability of double sequencing (should no actions to mitigate be undertaken) due to switchyard voltage in the lower portion of the expected range coincident with an accident, which is unlikely, against the probability of natural circulation (should both trains of fast bus transfer be blocked) due to a unit trip coincident with switchyard voltage in the lower portion of the expected range, which is also unlikely but more probable. ACTIONS 3.8.1.1.f.1 and 3.8.1.1.g.1 provides offsite power to half of the non-class 1E loads for forced circulation to respond to a normal plant trip, as well as EDG power and the second offsite power circuit to the two trains of ESF equipment to respond to any accident. ACTIONS 3.8.1.1.f.2 and 3.8.1.1.g.2 are provided to allow operation of both trains of fast bus transfer blocked in the unlikely event of problems with the emergency diesel generators.

ELECTRICAL POWER SYSTEMS

BASES

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance. The circuit breakers will be tested in accordance with NEMA Standard Publication No. AB-2-1980. For a frame size of 250 amperes or less, the field tolerances of the high and low setting of the injected current will be within +40%/-25% of the setpoint (pickup) value. For a frame size of 400 amperes or greater, the field tolerances will be $\pm 25\%$ of the setpoint (pickup) value. The circuit breakers should not be affected when tested within these tolerances.

The surveillance requirements applicable to lower voltage circuit breakers provide assurance of breaker reliability by testing at least one representative sample of each manufacturer's brand of circuit breaker. Each manufacturer's molded case and metal case circuit breakers are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of circuit breakers it is necessary to divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for surveillance purposes. There are no surveillance requirements on fuses. For in-line fuses, the applicable surveillance would require removing the fuses from the circuit which would destroy the fuse. The test data for surveillance on the other fuses would not indicate whether the fuse was degrading which has been stated by the fuse manufacturer and Idaho National Engineering Laboratory.

The OPERABILITY of the motor-operated valves thermal overload protection and/or bypass devices ensures that these devices will not prevent safety related valves from performing their function. The surveillance requirements for demonstrating the OPERABILITY of these devices are in accordance with Regulatory Guide 1.106, "Thermal Overload Protection for Electric Motors on Motor Operated Valves," Revision 1, March 1977.



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. 90
License No. NPF-51

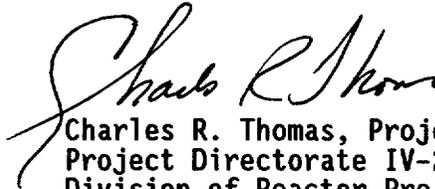
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Arizona Public Service Company (APS or the licensee) on behalf of itself and the Salt River Project Agricultural Improvement and Power District, El Paso Electric Company, Southern California Edison Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority dated July 3, 1995, 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. 90, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. The license amendment is effective as of its date of issuance and expires upon the completion of the next refueling outage for Unit No. 2.

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: November 28, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 90 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.

REMOVE

B 3/4 8-3

INSERT

3/4 8-2a
B 3/4 8-3
B 3/4 8-4

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION (Continued)

- f.* With switchyard voltage less than 518 kV and with three startup transformers in service, restore OPERABILITY of one train of A.C. sources by blocking fast bus transfer within 1 hour; AND¹ either:
1. Restore OPERABILITY of the remaining EDG by starting, loading, and separating from offsite power within the next hour; AND² restore the remaining offsite circuit to OPERABLE status within 72 hours AND within 6 days from the discovery of failure to meet the LCO; OR
 2. Restore OPERABILITY of the remaining train of A.C. sources by blocking fast bus transfer within the next hour; OR
 3. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- g.* With switchyard voltage less than 525 kV and with two startup transformers in service, restore OPERABILITY of one train of A.C. sources by blocking fast bus transfer within 1 hour; AND¹ either:
1. Restore OPERABILITY of the remaining EDG by starting, loading, and separating from offsite power within the next hour; AND² restore the remaining offsite circuit to OPERABLE status within 72 hours AND within 6 days from the discovery of failure to meet the LCO; OR
 2. Restore OPERABILITY of the remaining train of A.C. sources by blocking fast bus transfer within the next hour; OR
 3. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*This amendment will expire upon full implementation of the final modification.

¹ Enter applicable conditions and requirements of TS LCO 3.8.1.1 ACTION a and ACTION b for the INOPERABLE train. In addition, with no A.C. power source to one train, enter applicable conditions and ACTIONS of TS LCO 3.8.3.1, "Onsite Power Distribution Systems - Operating."

² Enter applicable conditions and requirements of TS LCO 3.8.1.1 ACTION a for the INOPERABLE offsite circuit.

ELECTRICAL POWER SYSTEMS

BASES

A.C. SOURCES, D.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

ACTION requirements 3.8.1.1.f and 3.8.1.1.g provide restrictions upon continued unit operation commensurate with degradation of switchyard voltage and restoration of OPERABILITY of the required A.C. sources. In an effort to minimize the risk to the health and safety to the public, ACTIONS 3.8.1.1.f and 3.8.1.1.g balance the risk of a forced shutdown against the risk of remaining at power with a switchyard voltage in the lower portion of the expected range. The risk during ACTIONS 3.8.1.1.f and 3.8.1.1.g due to a switchyard voltage in the lower portion of the expected range and an independent accident is less than the risk associated with a normal shutdown including a reactor trip.

Conformance to GDC-17 requires maintenance of switchyard voltages at or above those identified in ACTIONS 3.8.1.1.f and 3.8.1.1.g. At voltages below those identified, a unit trip resulting from an ESF signal, coincident with low switchyard voltages, will result in sequencing of ESF equipment on preferred offsite power. The Class 1E degraded voltage relays will detect a sustained degraded voltage due to the fast bus transfer of non-Class 1E loads from the auxiliary transformers to the startup transformers. The relays will actuate to strip the ESF equipment and resequence it on the emergency diesel generator. This "double sequencing" causes an interruption in equipment credited with specific response time in the UFSAR Chapter 6 and 15 safety analysis, and is unanalyzed. Maintenance of switchyard voltage at or above the specified value prevents this effect as does the configurations authorized by ACTIONS 3.8.1.1.f and 3.8.1.1.g. The required voltage is higher when three units are operating on two startup transformers, as two secondary windings of the startup transformers must each supply ESF power to two units.

ACTIONS 3.8.1.1.f.1 and 3.8.1.1.g.1 are preferred over ACTIONS 3.8.1.1.f.2 and 3.8.1.1.g.2. ACTIONS 3.8.1.1.f.1 and 3.8.1.1.g.1 are designed to balance the probability of double sequencing (should no actions to mitigate be undertaken) due to switchyard voltage in the lower portion of the expected range coincident with an accident, which is unlikely, against the probability of natural circulation (should both trains of fast bus transfer be blocked) due to a unit trip coincident with switchyard voltage in the lower portion of the expected range, which is also unlikely but more probable. ACTIONS 3.8.1.1.f.1 and 3.8.1.1.g.1 provides offsite power to half of the non-class 1E loads for forced circulation to respond to a normal plant trip, as well as EDG power and the second offsite power circuit to the two trains of ESF equipment to respond to any accident. ACTIONS 3.8.1.1.f.2 and 3.8.1.1.g.2 are provided to allow operation of both trains of fast bus transfer blocked in the unlikely event of problems with the emergency diesel generators.

ELECTRICAL POWER SYSTEMS

BASES

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance. The circuit breakers will be tested in accordance with NEMA Standard Publication No. AB-2-1980. For a frame size of 250 amperes or less, the field tolerances of the high and low setting of the injected current will be within +40%/-25% of the setpoint (pickup) value. For a frame size of 400 amperes or greater, the field tolerances will be $\pm 25\%$ of the setpoint (pickup) value. The circuit breakers should not be affected when tested within these tolerances.

The surveillance requirements applicable to lower voltage circuit breakers provide assurance of breaker reliability by testing at least one representative sample of each manufacturer's brand of circuit breaker. Each manufacturer's molded case and metal case circuit breakers are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of circuit breakers it is necessary to divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for surveillance purposes. There are no surveillance requirements on fuses. For in-line fuses, the applicable surveillance would require removing the fuses from the circuit which would destroy the fuse. The test data for surveillance on the other fuses would not indicate whether the fuse was degrading which has been stated by the fuse manufacturer and Idaho National Engineering Laboratory.

The OPERABILITY of the motor-operated valves thermal overload protection and/or bypass devices ensures that these devices will not prevent safety related valves from performing their function. The surveillance requirements for demonstrating the OPERABILITY of these devices are in accordance with Regulatory Guide 1.106, "Thermal Overload Protection for Electric Motors on Motor Operated Valves," Revision 1, March 1977.



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. 73
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 July 3, 1995, 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. 73, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. APS shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. The license amendment is effective as of its date of issuance and expires upon the completion of the next refueling outage for Unit No. 3.

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: November 28, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 73 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

B 3/4 8-3

INSERT

3/4 8-2a
B 3/4 8-3
B 3/4 8-4

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION (Continued)

- f.* With switchyard voltage less than 518 kV and with three startup transformers in service, restore OPERABILITY of one train of A.C. sources by blocking fast bus transfer within 1 hour; AND¹ either:
1. Restore OPERABILITY of the remaining EDG by starting, loading, and separating from offsite power within the next hour; AND² restore the remaining offsite circuit to OPERABLE status within 72 hours AND within 6 days from the discovery of failure to meet the LCO; OR
 2. Restore OPERABILITY of the remaining train of A.C. sources by blocking fast bus transfer within the next hour; OR
 3. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- g.* With switchyard voltage less than 525 kV and with two startup transformers in service, restore OPERABILITY of one train of A.C. sources by blocking fast bus transfer within 1 hour; AND¹ either:
1. Restore OPERABILITY of the remaining EDG by starting, loading, and separating from offsite power within the next hour; AND² restore the remaining offsite circuit to OPERABLE status within 72 hours AND within 6 days from the discovery of failure to meet the LCO; OR
 2. Restore OPERABILITY of the remaining train of A.C. sources by blocking fast bus transfer within the next hour; OR
 3. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*This amendment will expire upon full implementation of the final modification.

¹ Enter applicable conditions and requirements of TS LCO 3.8.1.1 ACTION a and ACTION b for the INOPERABLE train. In addition, with no A.C. power source to one train, enter applicable conditions and ACTIONS of TS LCO 3.8.3.1, "Onsite Power Distribution Systems - Operating."

² Enter applicable conditions and requirements of TS LCO 3.8.1.1 ACTION a for the INOPERABLE offsite circuit.

ELECTRICAL POWER SYSTEMS

BASES

A.C. SOURCES, D.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

ACTION requirements 3.8.1.1.f and 3.8.1.1.g provide restrictions upon continued unit operation commensurate with degradation of switchyard voltage and restoration of OPERABILITY of the required A.C. sources. In an effort to minimize the risk to the health and safety to the public, ACTIONS 3.8.1.1.f and 3.8.1.1.g balance the risk of a forced shutdown against the risk of remaining at power with a switchyard voltage in the lower portion of the expected range. The risk during ACTIONS 3.8.1.1.f and 3.8.1.1.g due to a switchyard voltage in the lower portion of the expected range and an independent accident is less than the risk associated with a normal shutdown including a reactor trip.

Conformance to GDC-17 requires maintenance of switchyard voltages at or above those identified in ACTIONS 3.8.1.1.f and 3.8.1.1.g. At voltages below those identified, a unit trip resulting from an ESF signal, coincident with low switchyard voltages, will result in sequencing of ESF equipment on preferred offsite power. The Class 1E degraded voltage relays will detect a sustained degraded voltage due to the fast bus transfer of non-Class 1E loads from the auxiliary transformers to the startup transformers. The relays will actuate to strip the ESF equipment and resequence it on the emergency diesel generator. This "double sequencing" causes an interruption in equipment credited with specific response time in the UFSAR Chapter 6 and 15 safety analysis, and is unanalyzed. Maintenance of switchyard voltage at or above the specified value prevents this effect as does the configurations authorized by ACTIONS 3.8.1.1.f and 3.8.1.1.g. The required voltage is higher when three units are operating on two startup transformers, as two secondary windings of the startup transformers must each supply ESF power to two units.

ACTIONS 3.8.1.1.f.1 and 3.8.1.1.g.1 are preferred over ACTIONS 3.8.1.1.f.2 and 3.8.1.1.g.2. ACTIONS 3.8.1.1.f.1 and 3.8.1.1.g.1 are designed to balance the probability of double sequencing (should no actions to mitigate be undertaken) due to switchyard voltage in the lower portion of the expected range coincident with an accident, which is unlikely, against the probability of natural circulation (should both trains of fast bus transfer be blocked) due to a unit trip coincident with switchyard voltage in the lower portion of the expected range, which is also unlikely but more probable. ACTIONS 3.8.1.1.f.1 and 3.8.1.1.g.1 provides offsite power to half of the non-class 1E loads for forced circulation to respond to a normal plant trip, as well as EDG power and the second offsite power circuit to the two trains of ESF equipment to respond to any accident. ACTIONS 3.8.1.1.f.2 and 3.8.1.1.g.2 are provided to allow operation of both trains of fast bus transfer blocked in the unlikely event of problems with the emergency diesel generators.

ELECTRICAL POWER SYSTEMS

BASES

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance. The circuit breakers will be tested in accordance with NEMA Standard Publication No. AB-2-1980. For a frame size of 250 amperes or less, the field tolerances of the high and low setting of the injected current will be within +40%/-25% of the setpoint (pickup) value. For a frame size of 400 amperes or greater, the field tolerances will be $\pm 25\%$ of the setpoint (pickup) value. The circuit breakers should not be affected when tested within these tolerances.

The surveillance requirements applicable to lower voltage circuit breakers provide assurance of breaker reliability by testing at least one representative sample of each manufacturer's brand of circuit breaker. Each manufacturer's molded case and metal case circuit breakers are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of circuit breakers it is necessary to divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for surveillance purposes. There are no surveillance requirements on fuses. For in-line fuses, the applicable surveillance would require removing the fuses from the circuit which would destroy the fuse. The test data for surveillance on the other fuses would not indicate whether the fuse was degrading which has been stated by the fuse manufacturer and Idaho National Engineering Laboratory.

The OPERABILITY of the motor-operated valves thermal overload protection and/or bypass devices ensures that these devices will not prevent safety related valves from performing their function. The surveillance requirements for demonstrating the OPERABILITY of these devices are in accordance with Regulatory Guide 1.106, "Thermal Overload Protection for Electric Motors on Motor Operated Valves," Revision 1, March 1977.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 102 TO FACILITY OPERATING LICENSE NO. NPF-41,
AMENDMENT NO. 90 TO FACILITY OPERATING LICENSE NO. NPF-51,
AND AMENDMENT NO. 73 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 July 3, 1995, 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) for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3, respectively. The Arizona Public Service Company submitted this request on behalf of itself, the Salt River Project Agricultural Improvement and Power District, Southern California Edison Company, El Paso Electric Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority. The proposed Technical Specification (TS) amendment temporarily adds new Action Statements 3.8.1.1.f and 3.8.1.1.g to TS 3.8.1.1, "A.C. Sources -- Operating," to provide a method of responding to switchyard voltages within the expected range but below the level necessary to provide adequate voltage for full potential plant loading. These TSs are supplemented by administrative procedures which are intended to prevent extended operation with inadequate voltages. The staff made changes to the proposed technical specifications which were discussed with the licensee.

The new ACTION statements would require the manual blocking of fast bus transfer (FBT) on one train within the first hour of detecting a switchyard voltage falling below the level necessary for the electrical distribution system (EDS) to maintain compliance with General Design Criterion (GDC) 17 of Appendix A to 10 CFR Part 50. If the switchyard voltage condition continues beyond the first hour, the emergency diesel generator (EDG) for the second train would be started, connected in parallel with the grid through the emergency bus and loaded; the emergency bus would then be separated from the grid before the end of the second hour. Acceptable switchyard voltage is required to be restored within 72 hours or plant shutdown would be required. Alternatively, fast bus transfer for the second train would be blocked before the end of the second hour.

Bases 3/4.8.1, 3/4.8.2, and 3/4.8.3 ("A.C. Sources," "D.C. Sources," and "Onsite Distribution Systems," respectively) are also being revised to provide guidance on how and why offsite power voltage in the lower portion of the expected range and the number of startup transformers in service affect compliance with GDC 17 and to provide the basis for the additional action statements.

9512140031 951128
PDR ADOCK 05000528
PDR
P

2.0 BACKGROUND

The Palo Verde EDS is comprised of two redundant, independent, preferred offsite AC power circuits and two redundant, independent, onsite EDGs. The offsite power is normally supplied via the startup transformers to the Class 1E 4.16-kV buses through the essential safety feature (ESF) transformers. The site has three startup transformers, each of which supplies two power circuits (i.e., six circuits for three units). Each startup transformer supplies two different units; in other words, each unit's Class 1E onsite circuit is fed from different startup transformers. Should a loss of offsite power occur, the Class 1E 4.16-kV buses separate from the ESF transformers and receive power from the EDGs.

The non-Class 1E portions of the EDS are fed from the main generator through the auxiliary transformer. Should a plant/main generator trip, an FBT occurs, transferring the non-Class 1E loads from the auxiliary transformer to the startup transformers. As a result of this transfer, all Class 1E and non-Class 1E loads are fed from the two startup transformers which feed that unit.

In Section 8 of the Palo Verde Safety Evaluation Report (NUREG-0857) and its supplements, the staff documents the adequacy of the offsite and onsite electrical distribution system. Palo Verde was initially licensed with FBT blocking circuits (letter from E. E. Van Brunt, Jr. (APS), to F. J. Miraglia (NRC), dated March 31, 1982). If the switchyard voltage could not provide adequate voltages at the Class 1E 4.16-kV buses after an FBT of non-Class 1E loads from the auxiliary transformer to the startup transformers, the FBT blocking relays would anticipate this and would prevent the transfer of the non-Class 1E loads to the startup transformers. This maintained adequate voltage to the ESF equipment needed for the mitigation of a design basis accident from the Class 1E EDS throughout the entire range of expected switchyard voltages, but resulted in a loss of power to all non-Class 1E loads (e.g., the reactor coolant pumps, circulating water pumps, and normal plant lighting).

Until self-identified by the licensee as a deficiency in 1990, settings for protective relays for the high-voltage electrical distribution systems for Palo Verde were performed by a division of APS not within the scope of the Palo Verde 10 CFR Part 50, Appendix B, Quality Assurance Program; Configuration Control Program; or Design Control Program. The relays that blocked FBT under certain low-voltage conditions were reset lower in 1986 in an effort to enhance a second function (generator coastdown) of the relays. The new relay setting created an unreviewed safety question because it created a system response that had not previously been analyzed. On an accident signal, that response was the loading of ESF equipment onto the offsite source of power, stripping of that equipment off the source due to the action of the degraded voltage relays, and then reconnecting the equipment onto the EDGs (i.e., double sequencing). However, resetting the relay to its pre-1986 setting is not recommended by the licensee because (1) the original setting was determined to be too high for its generator coastdown function and could cause a unit trip under load rejection conditions; (2) assumptions made by the original architect/engineer for the Class 1E electrical distribution system may be inadequate and may have resulted in an inadequate original design

(i.e., the light and heavy loads are more extreme than originally assumed); and (3) the original design did not employ fault-tolerant logic and could, therefore, permit unnecessary challenges to safety systems.

Since the setting for the FBT blocking relays has been identified as inadequate through the licensee's engineering "Design Basis and Calculation Reverification" efforts, switchyard voltage has been administratively controlled above 525-kV to preclude "double sequencing".

Probabilistic risk analysis (PRA) performed by the licensee has compared the probability of a core-melt event for (1) blocking fast bus transfer in one train after 1 hour for the next 71 hours, and in the second train after 2 hours for the next 70 hours; (2) blocking fast bus transfer in one train after the first hour for the next 71 hours and supplying power to the other train from the EDG after the second hour for 70 hours; and (3) a normal shutdown assuming the plant is in a normal configuration and no other transients or accidents, except an uncomplicated reactor trip, occur during the shutdown process. Because the proposed actions would allow operation for up to 72 hours with one offsite circuit inoperable, 72 hours was chosen for comparison purposes.

The PRA has shown that the probability of a core-melt event during power operation with FBT blocked in one train after 1 hour for the next 71 hours, and in the second train after 2 hours for the next 70 hours is approximately $1.91E-6$. The probability of a core-melt event during power operation with FBT blocked in one train after 1 hour for the next 71 hours and the EDG powering the opposite train after the second hour for the next 70 hours (the proposed configuration) is between approximately $1.91E-6$ and $1.93E-6$. The probability of a core-melt event due to a normal shutdown, assuming the plant is in a normal configuration and no other transients or accidents (except an uncomplicated reactor trip) occur during the shutdown process, is $2.4E-6$.

The licensee's temporary change is designed to balance the probability of double sequencing due to low switchyard voltage coincident with an accident, which is unlikely ($4.9E-5/r-y$), against the probability of loss of forced circulation due to a unit trip coincident with low voltage and the FBTs blocked, which is also unlikely but more probable ($4.0E-3/r-y$).

3.0 LICENSEE COMPENSATORY ACTIONS

As an interim measure, the licensee has abnormal operating procedures, which instruct that when all three startup transformers are in service, switchyard voltages are to be maintained at voltages between 525-kV and 535.5-kV. Unit 1 is not vulnerable to double sequencing at or above, including instrument uncertainties, approximately 524-kV; and Units 2 and 3 are not vulnerable at or above, including instrument uncertainties, approximately 518-kV. The difference is due to additional loads on Unit 1 from the water reclamation facility. In addition, with this amendment FBT is to be manually blocked in one train within the first hour when voltages below these values are encountered. The train which is blocked is then capable of supporting ESF loads throughout the entire range of expected switchyard voltages. If the low voltage continues into the second hour, the EDG for the other train is to be started, connected in parallel with the grid, loaded, and separated from the

grid by the end of the second hour. In this configuration, the plant then has only one offsite power circuit inoperable which must be restored within 72 hours or plant shutdown is required. This amendment request includes an option to block FBT in the second train within 2 hours. This option is provided primarily in the event of complications with the EDG.

When only two startup transformers are in service, the voltage provided to all three units must be at or above, including instrument uncertainties, approximately 525-kV. However, the response is the same as with three startup transformers in service.

The blocking of one train of FBT returns one train of offsite and onsite power to conformance with GDC 17 throughout the entire range of expected switchyard voltages. The train not blocked will have the ESF loads supplied by its EDG should the disturbance last beyond the second hour. This action minimizes the potential to double sequence in either train in the event of an accident. The other option of blocking FBT in the second train would return both trains of offsite and onsite power to conformance with GDC 17 throughout the entire credible range of sustained switchyard voltages and is in conformance with the current licensing basis.

Pending modifications to restore automatic voltage protection, administrative controls between the licensee's Energy Control Center (ECC) and the Palo Verde Unit 1 control room have been implemented. The ECC has been instructed to maintain switchyard voltage between 525-kV and 535.5-kV. An alarm has been established at the ECC at 526-kV. When the alarm sounds, the ECC has been instructed to call the Unit 1 control room. Unit 1 will coordinate the response for the site. If the switchyard voltage is below the unit-specific required voltages, the affected units will enter the abnormal operating procedures.

Currently, the licensee administratively maintains the switchyard between 100 percent (525-kV) and 102 percent (535.5-kV) of nominal voltage to preclude, among other things, the voltage at the EDS buses from dropping too low and causing an adverse condition among the Class 1E loads. The licensee has performed additional analyses (including uncertainties) to show that at switchyard voltages above 99.6 percent (523.09-kV), the "double sequencing" scenario cannot occur.

An indicator within the Palo Verde plant monitoring system (PMS) computer has been recently activated. The switchyard voltage is now displayed on a computer terminal in the control room and changes color if the voltage falls below required levels. The event also registers on the computer typer. This indication allows Unit 1 to rely on the PMS in addition to the ECC, to determine if action is required due to sustained switchyard voltage in the lower portion of the expected range and to coordinate the response with Units 2 and 3.

A Region IV inspector reviewed Procedure 41A0-1ZZ57, "Degraded Grid Voltage," Revision 4. This procedure provided operator guidance at all three units to respond to switchyard voltage in the lower portion of the expected range in various plant modes. The basic action was to restore one emergency bus in

each unit by blocking the fast bus transfer of non-safety-related loads to the startup transformers which supplied the safety-related loads. The inspector reviewed the effect of blocking the fast bus transfer and determined that licensee calculations indicated this block would allow safety-related voltage to remain above the degraded voltage relay setpoint.

The inspector reviewed the requirements the licensee provided to the ECC. In addition, the inspector toured the ECC, reviewed the grid information available there, and discussed the Palo Verde site voltage requirements with ECC personnel. The inspector determined that grid voltage and current information were readily available in the ECC.

The inspector reviewed licensee letter file 95-005-419.8, "PVNGS Expectations Regarding Evaluations Potentially Affecting Grid Voltage Range Limits," dated February 23, 1995, and ECC internal instructions and noted that operational expectations were clearly stated. In addition, the inspector noted that the ECC had in place an audible alarm for warning when grid voltage at the site approached 100 percent (525-kV). The inspector concluded that the licensee had taken reasonable corrective actions to identify when a low-voltage condition existed on the grid and what actions to take to ensure that Palo Verde units remain operable or in compliance with the TS.

4.0 NEW TS SECTIONS 3.8.1.1.f and 3.8.1.1.g and BASES

The proposed TS amendment temporarily adds new Action Statements 3.8.1.1.f and 3.8.1.1.g to TS 3.8.1.1, "A.C. Sources-Operating," to provide a method of responding to sustained switchyard voltage in the lower portion of the expected range. These action statements would require the manual blocking of FBT on one train within the first hour of a degraded switchyard voltage should the switchyard voltage fall below the level necessary for the EDS to maintain compliance with GDC 17 of Appendix A to 10 CFR Part 50. If the switchyard voltage condition continues beyond the first hour, (1) the EDG for the second train would be started, connected in parallel with the grid through the emergency bus, loaded, and separated from the grid before the end of the second hour, and the offsite circuit would be restored within 72 hours; or (2) fast bus transfer for the second train would be blocked before the end of the second hour; or (3) the unit would be put in hot standby within the next 6 hours and in cold shutdown within the following 30 hours.

Bases 3/4.8.1, 3/4.8.2, and 3/4.8.3, "A.C. Sources," "D.C. Sources," and "Onsite Distribution Systems," respectively, are being revised to provide guidance on how and why switchyard voltage in the lower portion of its expected range and the number of startup transformers in service affect compliance with GDC 17 and to provide the basis for the additional action statements.

5.0 EVALUATION

The plant has implemented measures in conjunction with the Energy Control Center to avoid operating the plant with the offsite voltage in the lower portion (<525 kV) of its expected range. In the past year, there have been a few times when the voltage dropped below this level; however, none lasted longer than a few minutes. This has provided reasonable assurance that

operation of the plant with the offsite voltage in the area of concern will be avoided to the extent possible. However, if such a situation should persist, the plant has prepared new technical specification provisions.

The plant is currently licensed to have both trains of FBT automatically blocked when low switchyard voltage exists. As stated above, the interim administrative procedures and temporary TS Actions are being added to prevent double sequencing events from occurring. The train that is manually blocked is consistent with previous UFSAR Chapter 6 and Chapter 15 safety analyses. Under this condition, it will be able to contribute to the mitigation of an accident as initially analyzed and licensed. The EDG, which is loaded and isolated from offsite power is also acceptable for the limited period of time since the entire system can withstand a loss of offsite power (LOP). With both trains blocked, the EDS is also in an analyzed condition.

The risk associated with low switchyard voltage, without fast bus transfer blocked, lies in the potential for "double sequencing". The proposed temporary response is to prevent the double sequencing potential in one train of the EDS within the first hour by blocking FBT. This then places the plant in a configuration which has the other train of offsite and onsite power inoperable, since none of the ESF equipment in the second train could be guaranteed to operate after being double sequenced. In this configuration the plant does not meet single failure and therefore response within 1 hour is appropriate.

With one train of FBT blocked, the other train of offsite and onsite power is inoperable. The next most limiting action for the unblocked train is TS 3.8.2.1.a, "D.C. Sources -- Operating," which has an allowed outage time of 2 hours. In a low voltage event, the ability of the Class 1E 125-VDC battery chargers to perform their function is indeterminate since the Class 1E 125-VDC batteries must be assumed to provide the 125-VDC control power to the Class 1E ESF circuit breakers for both of the sequences during the double sequencing and the Class 1E 125-VDC battery capacity calculations assume only one sequence. Exceeding this Limiting Condition of Operation is avoided by starting the EDG, connecting it through the emergency bus in parallel with the grid, loading it, and disconnecting the emergency bus from the grid within the second hour of a low switchyard voltage. This restores the associated Class 1E battery charger to operable status and eliminates the vulnerability to double sequencing on the second train because if an accident occurs, the loads will be automatically loaded onto the EDG only and the second breaker cycling sequence will not occur.

Once power is provided to the second train from the EDG, only one offsite power circuit remains inoperable. Under such a condition, the plant would normally enter Action Statement 3.8.1.1.a, which requires the restoration of the inoperable power source to operable within 72 hours. The proposed actions are consistent with such actions by allowing operation for up to 72 hours from the onset of the low switchyard voltage before requiring the plant be placed in hot standby within the next 6 hours and cold shutdown within the following 30 hours.

Alternately, FBT can be blocked in the second train to return it to operable within the second hour. Since the plant was originally licensed with both

trains blocked in low voltage situations, no further action would then be necessary. However, the licensee's actions provide for a maximum duration in this condition of 72 hours.

The licensee is operating under temporary measures in order to maintain design/operation compliance with UFSAR Section 8.3.1.1.3 and prevent double sequencing during a degraded voltage condition. These amendments will expire upon the implementation of the final modification. Based on the above, the staff finds this temporary change to be acceptable.

6.0 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.

7.0 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 39431). 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.

8.0 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 Contributors: C. Thomas
D. Acker

Date: