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

July 21, 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 NOS. M88901, M90008), UNIT NO. 2 (TAC NOS. M88902, M90009), AND UNIT NO. 3 (TAC NOS. M88903, M90010)

Dear Mr. Stewart:

The Commission has issued the enclosed Amendment No. 96 to Facility Operating License No. NPF-41, Amendment No. 84 to Facility Operating License No. NPF-51, and Amendment No. 67 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 (TS) in response to your applications dated December 30, 1993, and July 12, 1994, as supplemented by letters dated November 30, 1994, May 24, 1995, and June 21, 1995.

These amendments (1) revise the degraded voltage relay trip setpoint and (2) enhance the current presentation of the information regarding the loss-of-voltage relay setpoint. A time-voltage curve has been added to the TS as a more accurate characterization of the inverse-time relay response.

These amendments also enhance the TS by adding a Limiting Condition for Operation (LCO) action statement to Table 3.3-3, "Engineered Safety Features Actuation System (ESFAS) Instrumentation." The action statement requires timely plant shutdown if more than one of the new solid state degraded-voltage relays in either train of the 4.16 kV power system is inoperable or not energized.

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P PDR

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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,

Brian E. Holian, Senior Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

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

Enclosures:
1. Amendment No. 96 to NPF-41
2. Amendment No. 84 to NPF-51
3. Amendment No. 67 to NPF-74
4. Safety Evaluation

cc w/encls: See next page

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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

Brian E. Holian, Senior Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

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

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3. Amendment No. 67 to NPF-74
4. Safety Evaluation

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August 3, 1995

The copies of this amendment sent out originally were done crookedly, and some of the landscape TS pages got chopped. The attached copy or copies are uncrooked.

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

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

DOCKET NO. STN 50-528

PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 96
License No. NPF-41

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The applications 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 December 30, 1993, and July 12, 1994, as supplemented by letters dated November 30, 1994, May 24, 1995, and June 21, 1995, comply 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:

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PDR ADOCK 05000528
P PDR

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 96, 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 must be fully implemented no later than 45 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Brian E. Holian, Senior 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: July 21, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 96 TO FACILITY OPERATING LICENSE NO. NPF-41

DOCKET NO. STN 50-528

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE	INSERT
XIX	XIX
3/4 3-22	3/4 3-22
3/4 3-23	3/4 3-23
---	3/4 3-24a
3/4 3-26	3/4 3-26
3/4 3-27*	3/4 3-27*
---	3/4 3-27a
3/4 3-28*	3/4 3-28*

*No changes were made to these pages; reissued as overleaf pages.

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TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ESFA SYSTEM FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
V. RECIRCULATION (RAS)					
A. Sensor/Trip Units					
Refueling Water Storage Tank - Low	4	2	3	1, 2, 3	13*, 14*
B. ESFA System Logic					
1. Matrix Logic	6	1	3	1, 2, 3	17
2. Initiation Logic	4(c)	2(d)	4	1, 2, 3, 4	12
3. Manual RAS	4(c)	2(d)	4	1, 2, 3, 4	12
C. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	16
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1)					
A. Sensor/Trip Units					
1. Steam Generator #1 Level - Low	4	2	3	1, 2, 3	13*, 14*
2. Steam Generator Δ Pressure - SG2 > SG1	4	2	3	1, 2, 3	13*, 14*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ESFA SYSTEM FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1) (Continued)					
B. ESFA System Logic					
1. Matrix Logic	6	1	3	1, 2, 3	17
2. Initiation Logic	4(c)	2(d)	4	1, 2, 3, 4	12
3. Manual AFAS	4(c)	2(d)	4	1, 2, 3, 4	15
C. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	16
VII. AUXILIARY FEEDWATER (SG-2)(AFAS-2)					
A. Sensor/Trip Units					
1. Steam Generator #2 Level - Low	4	2	3	1, 2, 3	13*,14*
2. Steam Generator Δ Pressure - SG1 > SG2	4	2	3	1, 2, 3	13*,14*
B. ESFA System Logic					
1. Matrix Logic	6	1	3	1, 2, 3	17
2. Initiation Logic	4(c)	2(d)	4	1, 2, 3, 4	12
3. Manual AFAS	4(c)	2(d)	4	1, 2, 3, 4	15
C. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	16
VIII. LOSS OF POWER (LOV)					
A. 4.16 kV Emergency Bus Under-voltage (Loss of Voltage)	4/Bus(e)	2/Bus	3/Bus	1, 2, 3	13*,14*
B. 4.16 kV Emergency Bus Under-voltage (Degraded Voltage)	4/Bus(e)	2/Bus	3/Bus	1, 2, 3	13*,14*,19*
IX. CONTROL ROOM ESSENTIAL FILTRATION	2	1	1	All Modes	18*

TABLE 3.3-3 (Continued)

TABLE NOTATIONS

(a) In MODES 3-4, the value may be decreased manually, to a minimum of 100 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer pressure and this value is maintained at less than or equal to 400 psi; the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer pressure is greater than or equal to 500 psia.

(b) In MODES 3-4, the value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi; the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(c) Four channels provided, arranged in a selective two-out-of-four configuration (i.e., one-out-of-two taken twice).

(d) The proper two-out-of-four combination.

(e) Input to channels.

* The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 12 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 13 - With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. If the inoperable channel is bypassed, the desirability of maintaining this channel in the bypassed condition shall be reviewed in accordance with Specification 6.5.1.6.g. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit	
1. Steam Generator Pressure - Low	Steam Generator Pressure - Low Steam Generator Level 1-Low (ESF) Steam Generator Level 2-Low (ESF)
2. Steam Generator Level (Wide Range)	Steam Generator Level - Low (RPS) Steam Generator Level 1-Low (ESF) Steam Generator Level 2-Low (ESF)

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

ACTION 14 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour.

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below:

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Steam Generator Pressure - Low	Steam Generator Pressure - Low Steam Generator Level 1 - Low (ESF) Steam Generator Level 2 - Low (ESF)
2. Steam Generator Level - Low (Wide Range)	Steam Generator Level - Low (RPS) Steam Generator Level 1 - Low (ESF) Steam Generator Level 2 - Low (ESF)

STARTUP and/or POWER OPERATION may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent STARTUP and/or POWER OPERATION may continue if one channel is restored to OPERABLE status and the provisions of ACTION 13 are satisfied.

ACTION 15 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing provided the other channel is OPERABLE.

ACTION 17 - With the number of OPERABLE channels one less than the Minimum Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 18 - With the number of OPERABLE channels one less than the Minimum Number of Channels, operation may continue for up to 6 hours. After 6 hours operation may continue provided at least 1 train of essential filtration is in operation, otherwise, be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

ACTION 19 - With three of the degraded voltage relays per bus INOPERABLE or not energized:

a. Restore one degraded voltage relay to OPERABLE and comply with the provisions of ACTION 14 within 8 hours, or

b. Restore two degraded voltage relays to OPERABLE and comply with the provisions of ACTION 13 within 8 hours, or

c. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

With four of the degraded voltage relays per bus INOPERABLE or not energized:

a. Restore two degraded voltage relay to OPERABLE and comply with the provisions of ACTION 14 within 8 hours, or

b. Restore three degraded voltage relays to OPERABLE and comply with the provisions of ACTION 13 within 8 hours, or

c. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-4

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

ESFA SYSTEM FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
I. SAFETY INJECTION (SIAS)		
A. Sensor/Trip Units		
1. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
2. Pressurizer Pressure - Low	≥ 1837 psia[1]	≥ 1821 psia[1]
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
II. CONTAINMENT ISOLATION (CIAS)		
A. Sensor/Trip Units		
1. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
2. Pressurizer Pressure - Low	≥ 1837 psia[1]	≥ 1821 psia[1]
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
III. CONTAINMENT SPRAY (CSAS)		
A. Sensor/Trip Units		
Containment Pressure High - High	≤ 8.5 psig	≤ 8.9 psig
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
IV. MAIN STEAM LINE ISOLATION (MSIS)		
A. Sensor/Trip Units		
1. Steam Generator Pressure - Low	≥ 919 psia[3]	≥ 911 psia[3]
2. Steam Generator Level - High	≤ 91.0% NR[2]	≤ 91.5% NR[2]
3. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

ESFA SYSTEM FUNCTIONAL UNIT	TRIP VALUES	ALLOWABLE VALUES
V. RECIRCULATION (RAS)		
A. Sensor/Trip Units		
Refueling Water Storage Tank - Low	7.4% of Span	7.9 ≥ % of Span ≥ 6.9
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation System	Not Applicable	Not Applicable
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1)		
A. Sensor/Trip Units		
1. Steam Generator #1 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG2 > SG1	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VII. AUXILIARY FEEDWATER (SG-2)(AFAS-2)		
A. Sensor/Trip Units		
1. Steam Generator #2 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG1 > SG2	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VIII. LOSS OF POWER		
A. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	≥ 3250 volts	≥ 3250 volts
B. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	3697 to 3786 volts	3697 to 3786 volts
IX. CONTROL ROOM ESSENTIAL FILTRATION	≤ 2×10^{-5} μCi/cc	≤ 2×10^{-5} μCi/cc

TABLE 3.3-4 (Continued)

TABLE NOTATIONS

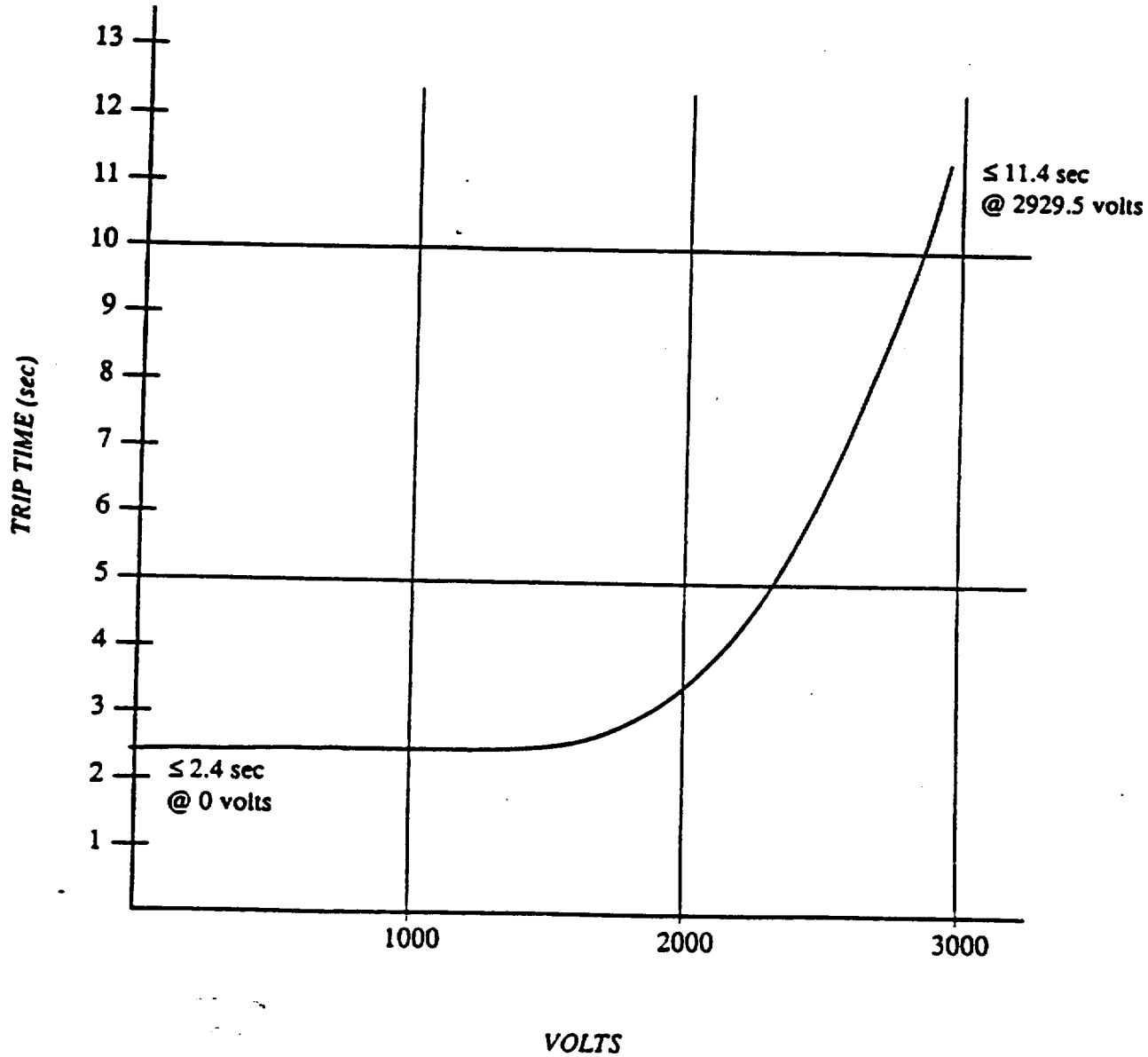
(1) In MODES 3-6, value may be decreased manually, to a minimum of 100 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer pressure and this value is maintained at less than or equal to 400 psi; the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer pressure is greater than or equal to 500 psia.

(2) % of the distance between steam generator upper and lower level narrow range instrument nozzles.

(3) In MODES 3-6, value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi; the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(4) % of the distance between steam generator upper and lower level wide range instrument nozzles.

FIGURE 3.3-1



LOSS OF BUS VOLTAGE TRIP SETTING TIME VS. VOLTS
See Table 3.3-4 item VIII A.

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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. 84
License No. NPF-51

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The applications 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 December 30, 1993, and July 12, 1994, as supplemented by letters dated November 30, 1994, May 24, 1995, and June 21, 1995, comply 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. 84 , 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 must be fully implemented no later than 45 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Brian E. Holian, Senior 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: July 21, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 84 TO FACILITY OPERATING LICENSE NO. NPF-51

DOCKET NO. STN 50-529

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE	INSERT
XIX	XIX
3/4 3-22	3/4 3-22
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---	3/4 3-27a
3/4 3-28*	3/4 3-28*

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TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ESFA SYSTEM FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
V. RECIRCULATION (RAS)					
A. Sensor/Trip Units					
Refueling Water Storage Tank - Low	4	2	3	1, 2, 3	13*, 14*
B. ESFA System Logic					
1. Matrix Logic	6	1	3	1, 2, 3	17
2. Initiation Logic	4(c)	2(d)	4	1, 2, 3, 4	12
3. Manual RAS	4(c)	2(d)	4	1, 2, 3, 4	12
C. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	16
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1)					
A. Sensor/Trip Units					
1. Steam Generator #1 Level - Low	4	2	3	1, 2, 3	13*, 14*
2. Steam Generator Δ Pressure - SG2 > SG1	4	2	3	1, 2, 3	13*, 14*

TABLE 3.3-3 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ESFA SYSTEM FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1) (Continued)					
B. ESFA System Logic					
1. Matrix Logic	6	1	3	1, 2, 3	17
2. Initiation Logic	4(c)	2(d)	4	1, 2, 3, 4	12
3. Manual AFAS	4(c)	2(d)	4	1, 2, 3, 4	15
C. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	16
VII. AUXILIARY FEEDWATER (SG-2)(AFAS-2)					
A. Sensor/Trip Units					
1. Steam Generator #2 Level - Low	4	2	3	1, 2, 3	13*,14*
2. Steam Generator Δ Pressure - SG1 > SG2	4	2	3	1, 2, 3	13*,14*
B. ESFA System Logic					
1. Matrix Logic	6	1	3	1, 2, 3	17
2. Initiation Logic	4(c)	2(d)	4	1, 2, 3, 4	12
3. Manual AFAS	4(c)	2(d)	4	1, 2, 3, 4	15
C. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	16
VIII. LOSS OF POWER (LOV)					
A. 4.16 kV Emergency Bus Under-voltage (Loss of Voltage)	4/Bus(e)	2/Bus	3/Bus	1, 2, 3	13*,14*
B. 4.16 kV Emergency Bus Under-voltage (Degraded Voltage)	4/Bus(e)	2/Bus	3/Bus	1, 2, 3	13*,14*,19*
IX. CONTROL ROOM ESSENTIAL FILTRATION	2	1	1	All Modes	18*

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

TABLE NOTATIONS

(a) In MODES 3-4, the value may be decreased manually, to a minimum of 100 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer pressure and this value is maintained at less than or equal to 400 psi; the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer pressure is greater than or equal to 500 psia.

(b) In MODES 3-4, the value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi; the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(c) Four channels provided, arranged in a selective two-out-of-four configuration (i.e., one-out-of-two taken twice).

(d) The proper two-out-of-four combination.

(e) Input to channels.

* The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 12 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 13 - With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. If the inoperable channel is bypassed, the desirability of maintaining this channel in the bypassed condition shall be reviewed in accordance with Specification 6.5.1.6.g. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit

1.	Steam Generator Pressure - Low	Steam Generator Pressure - Low Steam Generator Level 1-Low (ESF) Steam Generator Level 2-Low (ESF)
2.	Steam Generator Level (Wide Range)	Steam Generator Level - Low (RPS) Steam Generator Level 1-Low (ESF) Steam Generator Level 2-Low (ESF)

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ACTION STATEMENTS

ACTION 14 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour.

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below:

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Steam Generator Pressure - Low	Steam Generator Pressure - Low Steam Generator Level 1 - Low (ESF) Steam Generator Level 2 - Low (ESF)
2. Steam Generator Level - Low (Wide Range)	Steam Generator Level - Low (RPS) Steam Generator Level 1 - Low (ESF) Steam Generator Level 2 - Low (ESF)

STARTUP and/or POWER OPERATION may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent STARTUP and/or POWER OPERATION may continue if one channel is restored to OPERABLE status and the provisions of ACTION 13 are satisfied.

ACTION 15 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing provided the other channel is OPERABLE.

ACTION 17 - With the number of OPERABLE channels one less than the Minimum Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 18 - With the number of OPERABLE channels one less than the Minimum Number of Channels, operation may continue for up to 6 hours. After 6 hours operation may continue provided at least 1 train of essential filtration is in operation, otherwise, be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

ACTION 19 - With three of the degraded voltage relays per bus INOPERABLE or not energized:

a. Restore one degraded voltage relay to OPERABLE and comply with the provisions of ACTION 14 within 8 hours, or

b. Restore two degraded voltage relays to OPERABLE and comply with the provisions of ACTION 13 within 8 hours, or

c. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

With four of the degraded voltage relays per bus INOPERABLE or not energized:

a. Restore two degraded voltage relay to OPERABLE and comply with the provisions of ACTION 14 within 8 hours, or

b. Restore three degraded voltage relays to OPERABLE and comply with the provisions of ACTION 13 within 8 hours, or

c. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-4

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

ESFA SYSTEM FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
I. SAFETY INJECTION (SIAS)		
A. Sensor/Trip Units		
1. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
2. Pressurizer Pressure - Low	≥ 1837 psia[1]	≥ 1821 psia[1]
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
II. CONTAINMENT ISOLATION (CIAS)		
A. Sensor/Trip Units		
1. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
2. Pressurizer Pressure - Low	≥ 1837 psia[1]	≥ 1821 psia[1]
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
III. CONTAINMENT SPRAY (CSAS)		
A. Sensor/Trip Units		
Containment Pressure High - High	≤ 8.5 psig	≤ 8.9 psig
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
IV. MAIN STEAM LINE ISOLATION (MSIS)		
A. Sensor/Trip Units		
1. Steam Generator Pressure - Low	≥ 919 psia[3]	≥ 911 psia[3]
2. Steam Generator Level - High	≤ 91.0% NR[2]	≤ 91.5% NR[2]
3. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

ESFA SYSTEM FUNCTIONAL UNIT	TRIP VALUES	ALLOWABLE VALUES
V. RECIRCULATION (RAS)		
A. Sensor/Trip Units		
Refueling Water Storage Tank - Low	7.4% of Span	7.9 ≥ % of Span ≥ 6.9
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation System	Not Applicable	Not Applicable
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1)		
A. Sensor/Trip Units		
1. Steam Generator #1 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG2 > SG1	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VII. AUXILIARY FEEDWATER (SG-2)(AFAS-2)		
A. Sensor/Trip Units		
1. Steam Generator #2 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG1 > SG2	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VIII. LOSS OF POWER		
A. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	≥ 3250 volts	≥ 3250 volts
B. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	3697 to 3786 volts	3697 to 3786 volts
IX. CONTROL ROOM ESSENTIAL FILTRATION	$\leq 2 \times 10^{-5}$ μCi/cc	$\leq 2 \times 10^{-5}$ μCi/cc

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

TABLE NOTATIONS

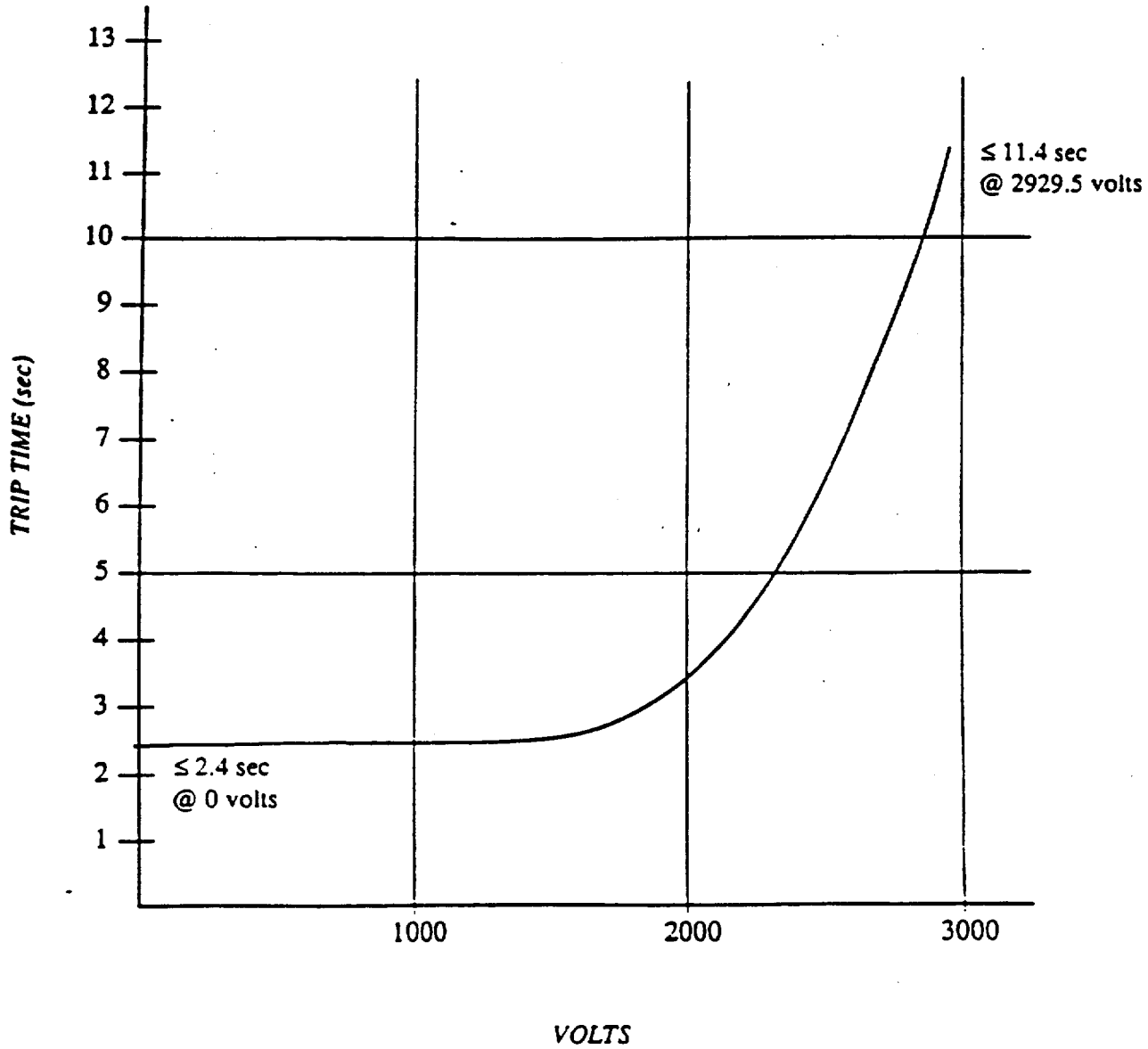
(1) In MODES 3-4, value may be decreased manually, to a minimum of 100 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer pressure and this value is maintained at less than or equal to 400 psi; the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer pressure is greater than or equal to 500 psia.

(2) % of the distance between steam generator upper and lower level narrow range instrument nozzles.

(3) In MODES 3-4, value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi; the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(4) % of the distance between steam generator upper and lower level wide range instrument nozzles.

FIGURE 3.3-1



LOSS OF BUS VOLTAGE TRIP SETTING TIME VS. VOLTS
See Table 3.3-4 item VIII A.

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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. 67
License No. NPF-74

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The applications 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 December 30, 1993, and July 12, 1994, as supplemented by letters dated November 30, 1994, May 24, 1995, and June 21, 1995, comply 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. 87, 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 must be fully implemented no later than 45 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Brian E. Holian, Senior 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: July 21, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 67 TO FACILITY OPERATING LICENSE NO. NPF-74

DOCKET NO. STN 50-530

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE	INSERT
XIX	XIX
3/4 3-22	3/4 3-22
3/4 3-23	3/4 3-23
---	3/4 3-24a
3/4 3-26	3/4 3-26
3/4 3-27*	3/4 3-27*
---	3/4 3-27a
3/4 3-28*	3/4 3-28*

*No changes were made to these pages; reissued as overleaf pages.

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TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ESFA SYSTEM FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
V. RECIRCULATION (RAS)					
A. Sensor/Trip Units					
Refueling Water Storage Tank - Low	4	2	3	1, 2, 3	13*, 14*
B. ESFA System Logic					
1. Matrix Logic	6	1	3	1, 2, 3	17
2. Initiation Logic	4(c)	2(d)	4	1, 2, 3, 4	12
3. Manual RAS	4(c)	2(d)	4	1, 2, 3, 4	12
C. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	16
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1)					
A. Sensor/Trip Units					
1. Steam Generator #1 Level - Low	4	2	3	1, 2, 3	13*, 14*
2. Steam Generator Δ Pressure - SG2 > SG1	4	2	3	1, 2, 3	13*, 14*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ESFA SYSTEM FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1) (Continued)					
B. ESFA System Logic					
1. Matrix Logic	6	1	3	1, 2, 3	17
2. Initiation Logic	4(c)	2(d)	4	1, 2, 3, 4	12
3. Manual AFAS	4(c)	2(d)	4	1, 2, 3, 4	15
C. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	16
VII. AUXILIARY FEEDWATER (SG-2)(AFAS-2)					
A. Sensor/Trip Units					
1. Steam Generator #2 Level - Low	4	2	3	1, 2, 3	13*,14*
2. Steam Generator Δ Pressure - SG1 > SG2	4	2	3	1, 2, 3	13*,14*
B. ESFA System Logic					
1. Matrix Logic	6	1	3	1, 2, 3	17
2. Initiation Logic	4(c)	2(d)	4	1, 2, 3, 4	12
3. Manual AFAS	4(c)	2(d)	4	1, 2, 3, 4	15
C. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	16
VIII. LOSS OF POWER (LOV)					
A. 4.16 kV Emergency Bus Under-voltage (Loss of Voltage)	4/Bus(e)	2/Bus	3/Bus	1, 2, 3	13*,14*
B. 4.16 kV Emergency Bus Under-voltage (Degraded Voltage)	4/Bus(e)	2/Bus	3/Bus	1, 2, 3	13*,14*,19*
IX. CONTROL ROOM ESSENTIAL FILTRATION	2	1	1	All Modes	18*

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

TABLE NOTATIONS

(a) In MODES 3-4, the value may be decreased manually, to a minimum of 100 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer pressure and this value is maintained at less than or equal to 400 psi; the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer pressure is greater than or equal to 500 psia.

(b) In MODES 3-4, the value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi; the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(c) Four channels provided, arranged in a selective two-out-of-four configuration (i.e., one-out-of-two taken twice).

(d) The proper two-out-of-four combination.

(e) Input to channels.

* The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 12 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 13 - With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. If the inoperable channel is bypassed, the desirability of maintaining this channel in the bypassed condition shall be reviewed in accordance with Specification 6.5.1.6.g. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit

1. Steam Generator Pressure - Low	Steam Generator Pressure - Low Steam Generator Level 1-Low (ESF) Steam Generator Level 2-Low (ESF)
2. Steam Generator Level (Wide Range)	Steam Generator Level - Low (RPS) Steam Generator Level 1-Low (ESF) Steam Generator Level 2-Low (ESF)

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ACTION STATEMENTS

ACTION 14 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour.

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below:

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Steam Generator Pressure - Low	Steam Generator Pressure - Low Steam Generator Level 1 - Low (ESF) Steam Generator Level 2 - Low (ESF)
2. Steam Generator Level - Low (Wide Range)	Steam Generator Level - Low (RPS) Steam Generator Level 1 - Low (ESF) Steam Generator Level 2 - Low (ESF)

STARTUP and/or POWER OPERATION may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent STARTUP and/or POWER OPERATION may continue if one channel is restored to OPERABLE status and the provisions of ACTION 13 are satisfied.

ACTION 15 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing provided the other channel is OPERABLE.

ACTION 17 - With the number of OPERABLE channels one less than the Minimum Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 18 - With the number of OPERABLE channels one less than the Minimum Number of Channels, operation may continue for up to 6 hours. After 6 hours operation may continue provided at least 1 train of essential filtration is in operation, otherwise, be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

ACTION 19 - With three of the degraded voltage relays per bus INOPERABLE or not energized:

a. Restore one degraded voltage relay to OPERABLE and comply with the provisions of ACTION 14 within 8 hours, or

b. Restore two degraded voltage relays to OPERABLE and comply with the provisions of ACTION 13 within 8 hours, or

c. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

With four of the degraded voltage relays per bus INOPERABLE or not energized:

a. Restore two degraded voltage relay to OPERABLE and comply with the provisions of ACTION 14 within 8 hours, or

b. Restore three degraded voltage relays to OPERABLE and comply with the provisions of ACTION 13 within 8 hours, or

c. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-4

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

ESFA SYSTEM FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
I. SAFETY INJECTION (SIAS)		
A. Sensor/Trip Units		
1. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
2. Pressurizer Pressure - Low	≥ 1837 psia[1]	≥ 1821 psia[1]
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
II. CONTAINMENT ISOLATION (CIAS)		
A. Sensor/Trip Units		
1. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
2. Pressurizer Pressure - Low	≥ 1837 psia[1]	≥ 1821 psia[1]
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
III. CONTAINMENT SPRAY (CSAS)		
A. Sensor/Trip Units		
Containment Pressure High - High	≤ 8.5 psig	≤ 8.9 psig
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
IV. MAIN STEAM LINE ISOLATION (MSIS)		
A. Sensor/Trip Units		
1. Steam Generator Pressure - Low	≥ 919 psia[3]	≥ 911 psia[3]
2. Steam Generator Level - High	≤ 91.0% NR[2]	≤ 91.5% NR[2]
3. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

ESFA SYSTEM FUNCTIONAL UNIT	TRIP VALUES	ALLOWABLE VALUES
V. RECIRCULATION (RAS)		
A. Sensor/Trip Units		
Refueling Water Storage Tank - Low	7.4% of Span	7.9 ≥ % of Span ≥ 6.9
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation System	Not Applicable	Not Applicable
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1)		
A. Sensor/Trip Units		
1. Steam Generator #1 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG2 > SG1	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VII. AUXILIARY FEEDWATER (SG-2)(AFAS-2)		
A. Sensor/Trip Units		
1. Steam Generator #2 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG1 > SG2	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VIII. LOSS OF POWER		
A. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	≥ 3250 volts	≥ 3250 volts
B. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	3697 to 3786 volts	3697 to 3786 volts
IX. CONTROL ROOM ESSENTIAL FILTRATION	≤ 2 x 10-5 μCi/cc	≤ 2 x 10-5 μCi/cc

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

TABLE NOTATIONS

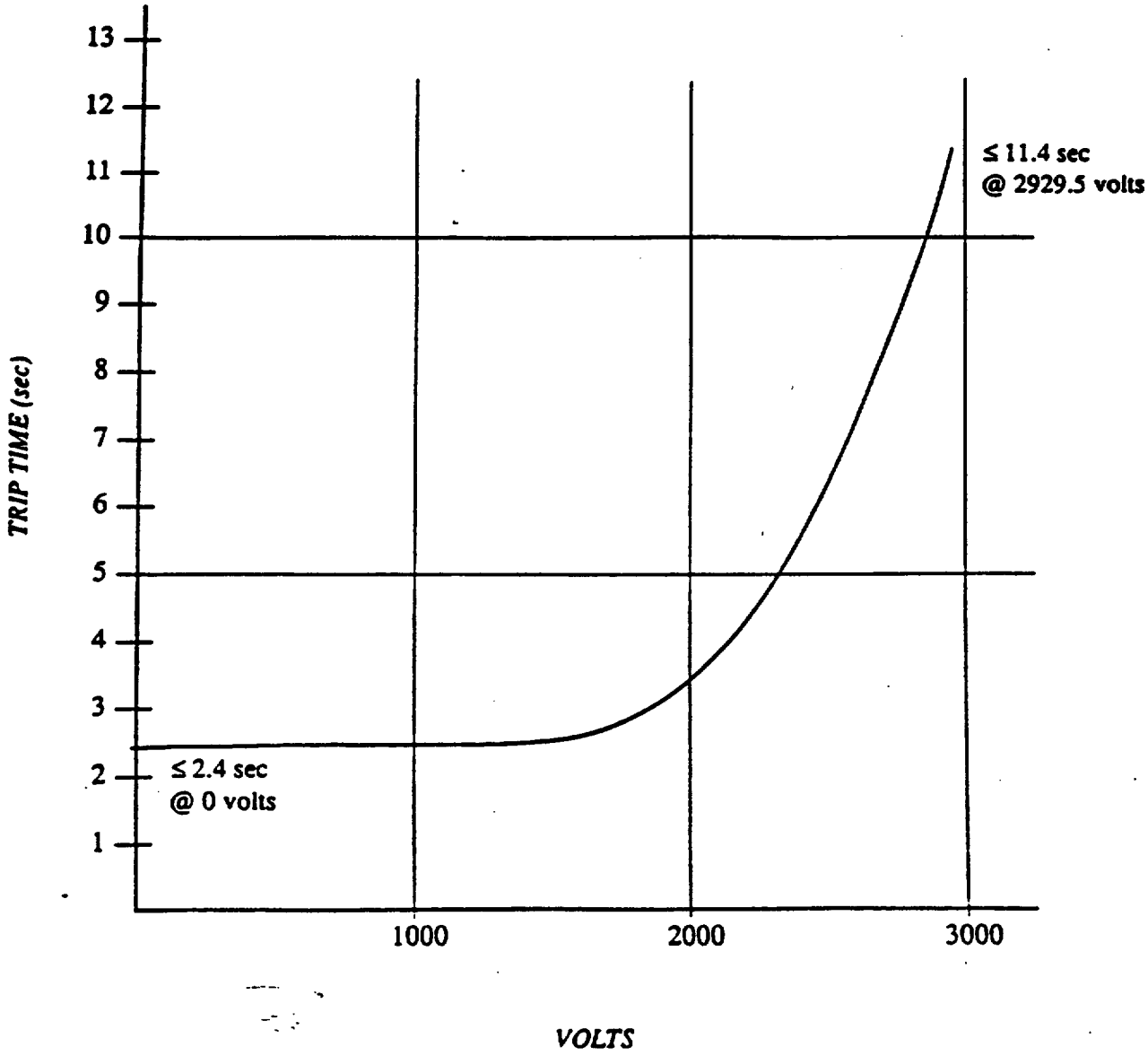
(1) In MODES 3-4, value may be decreased manually, to a minimum of 100 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer pressure and this value is maintained at less than or equal to 400 psi; the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer pressure is greater than or equal to 500 psia.

(2) % of the distance between steam generator upper and lower level narrow range instrument nozzles.

(3) In MODES 3-4, value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi; the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(4) % of the distance between steam generator upper and lower level wide range instrument nozzles.

FIGURE 3.3-1



LOSS OF BUS VOLTAGE TRIP SETTING TIME VS. VOLTS
See Table 3.3-4 item VIII A.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 96 TO FACILITY OPERATING LICENSE NO. NPF-41,

AMENDMENT NO. 84 TO FACILITY OPERATING LICENSE NO. NPF-51,

AND AMENDMENT NO. 67 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 letters dated December 30, 1993 and July 12, 1994, and as supplemented by letters dated November 30, 1994, May 24, 1995, and June 21, 1995, the Arizona Public Service Company (APS or the licensee) submitted a request for changes to the Technical Specifications (TS) for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3 (Appendix A to Facility Operating License Nos. NPF-41, NPF-51, and NPF-74, respectively). The Arizona Public Service Company submitted this request on behalf of itself, the Salt River Project Agricultural Improvement and Power District, Southern California Edison Company, El Paso Electric Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority. The proposed changes would clarify the TS to ensure that trip values are conservative for the 4.16 kV engineered safety features (ESF) bus undervoltage relays. The 4.16 kV ESF bus must remain above a minimum voltage to ensure adequate voltage to loads fed by the bus. The amendments clarify the minimum acceptable voltage and allow the setpoint to be increased in the conservative direction. Changes to the degraded-voltage relay settings were withdrawn by your May 24, 1995, letter, and revised settings were then resubmitted by letter of June 21, 1995.

The proposed changes would also enhance the current presentation of the information regarding the loss-of-voltage relay setpoint. A time-voltage curve has been added to the TS as a more accurate characterization of the inverse-time relay response.

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These amendments would also enhance the TS by adding a Limiting Condition for Operation (LCO) action statement to Table 3.3-3, "Engineered Safety Features Actuation System (ESFAS) Instrumentation." The action statement enhances safe plant operation by requiring timely plant shutdown when less than the specified number of the new solid state degraded-voltage relays in either train of the 4.16 kV power system are inoperable or not energized. (Four new solid state degraded-voltage relays are used in each 4.16 kV bus at PVNGS.)

The licensee's TS amendments submitted by letter of November 30, 1994 (approved by the NRC on February 3, 1995, as amendment nos. 88, 75, 59 to NPF-41, NPF-51, and NPF-74, respectively), relocated TS Table 3.3-5 to the Updated Final Safety Analysis Report (UFSAR). Therefore, the November 30, 1994, submittal modified the December 30, 1993 application by deleting the proposed changes to Table 3.3-5 and revising the changes made to Table 3.3-4. The supplemental letters dated May 24, 1995 and June 21, 1995, responded to staff questions and provided clarification of the intent of the proposed TS wording, and therefore did not change the initial no significant hazards consideration determination published in the Federal Register on June 8, 1994 (59 FR 29625) and August 17, 1994 (59 FR 42334).

The need for Change No. 1 was identified during the Electrical Distribution System Functional Inspection (Inspection Report 50-528, 50-529, and 50-530/90-42). These amendments also address the 4.16 kV bus undervoltage issues identified in NRC Inspection Reports 50-528/91-04 and 50-528/91-35. The need for Change No. 2 was identified following the plant modification that upgraded the degraded-voltage relays. All four relays on each bus are connected to a single control power source (125 vdc) for that bus. These relays fail as-is upon loss of 125 vdc control power. Therefore, the existing TS requirement of a minimum of three operable degraded-voltage relays per 4.16 kV bus cannot be met when the 125 vdc power source is not available. Consequently, the restrictive TS Action Statement 3.0.3 would be invoked. The licensee has proposed a new action statement more applicable to this design relay and commensurate with the risk of losing the Class 1E 4.16 kV bus.

Specifically, the changes would modify the TS as follows.

Change No. 1

In Section 3/4.3.2, Table 3.3-4, item VIII, "LOSS OF POWER," line A, "4.16 kV Emergency Bus Undervoltage (Loss of Voltage)," the amendments delete the table value and add a reference to a new figure, Figure 3.3-1; and in line B, "4.16 kV Emergency Bus Undervoltage (Degraded Voltage)," the amendments delete the existing voltage range and time delay and also specifies a new range for the trip values of "3697 to 3786" volts.

The amendments add Figure 3.3-1, "LOSS OF BUS VOLTAGE TRIP SETTING TIME VS VOLTS."

Change No. 2

The amendments propose a TS enhancement in which a Limiting Condition for Operation (LCO) action statement is added to Table 3.3-3, "Engineered Safety Features Actuation System (ESFAS) Instrumentation," item VIII B. This LCO action statement is entered if more than two of the required four solid state degraded-voltage relays (input to channels) on either 4.16 kV bus are inoperable or not energized. Current action statements already apply for the instances of one or two relays inoperable. The new action statement is as follows:

With three of the degraded voltage relays per bus INOPERABLE or not energized:

a. Restore one degraded voltage relay to OPERABLE and comply with the provisions of ACTION 14 within 8 hours, or

b. Restore two degraded voltage relays to OPERABLE and comply with the provisions of ACTION 13 within 8 hours, or

c. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

With four of the degraded voltage relays per bus INOPERABLE or not energized:

a. Restore two degraded voltage relay to OPERABLE and comply with the provisions of ACTION 14 within 8 hours, or

b. Restore three degraded voltage relays to OPERABLE and comply with the provisions of ACTION 13 within 8 hours, or

c. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

2.0 BACKGROUND

The onsite power system includes the Class 1E power system which provides auxiliary ac and dc power for equipment used to shut down the reactor safely following a design basis event. The Class 1E buses of each unit must be energized in order to provide preferred or standby power to the safety-related loads of each unit. The Class 1E power systems are designed in accordance with IEEE 308-1974. As described in UFSAR Section 8.3.1, each 4.16 kV switchgear bus is equipped with an undervoltage relay for load shedding, diesel generator starting, and undervoltage annunciation in the control room. The undervoltage relays have the following characteristics:

- The selection of voltage and time setpoints was determined from an analysis of the voltage requirements of the safety-related loads at all onsite system distribution levels.

- The use of coincident relay logic (two out of four) was selected to preclude the spurious trip of the offsite sources.

- The time delay relay characteristics will be chosen such that:

  - The allowable time delay, including margin, shall not exceed the maximum time delay that is assumed in accident analyses.

  - The selected time delay shall minimize the ability of short duration disturbances to reduce the availability of the offsite power sources.

  - The allowed time duration of a degraded-voltage condition at all distribution system levels shall not result in failure of safety systems or components.

- The voltage sensors will automatically initiate the disconnection of offsite power sources whenever the voltage setpoint and time delay limits have been exceeded.

- The degraded-voltage sensors will be designed to satisfy the applicable requirements of IEEE 279-1971.

- The TSs will include limiting conditions for operation, surveillance requirements, trip setpoints with minimum and maximum limits, and allowable values for the additional level of voltage protection sensors and their associated time delay devices.

- The PVNGS design has four 4.16 kV safety-related bus induction disc undervoltage (loss-of-voltage) relays. The induction disc relays have a dropout voltage that varies with time, so that they will commence timeout if the voltage falls below 78 percent for a long time or below the 70-percent range for a short time (11.4 seconds or less). The parallel undervoltage (degraded-voltage) relays will commence timeout when the bus voltage drops to less than 90 percent of design, and isolate the bus in 35 seconds or less. Should the bus voltage recover before timeout is completed, the time delay relays will be reset for the full 35 seconds.

<u>Change No. 1</u>

The intent of TS 3/4.3.2 is to ensure that the degraded-voltage relay will trip when the bus voltage is in (or below) the stated 2930 to 3744 volt range, and that the loss of voltage relay will actuate lower than its maximum setting (3250 volts). Inspection Report 50-528/91-35 pointed out that the degraded-voltage setpoint was not consistent with the UFSAR or the Safety Evaluation Report (SER) (NUREG-0857), which both specify a 90-percent degraded-voltage setpoint. The 4.16 kV ESF bus undervoltage trip values are currently set high in the range of 2930 to 3744 volts (70 percent to 90 percent), as required by PVNGS TS Table 3.3-4, item VIII. The amendments originally proposed allowing a more conservative value of ≥3744 for the undervoltage relays to prevent

degraded voltage at the downstream safety loads. Following questions from the staff, this portion of the license amendments was withdrawn by letter dated May 24, 1995. The licensee subsequently submitted a supplement dated June 21, 1995, which further revised the voltage range, specifying a new band for the trip values for the degraded-voltage relay setting.

The amendments also enhance the current presentation of information regarding the loss-of-voltage setpoint. A time-voltage curve (Figure 3.3-1) has been added to the TS to more accurately characterize the inverse-time relay response.

Change No. 2

The licensee replaced the old electromechanical undervoltage and time delay relays with new solid-state relays under the provisions of 10 CFR 50.59. The logic within these four new degraded-voltage relays on each of the 4.16 kV buses is supplied with power from 125 vdc power. All four relays on each bus are connected to this single control power source for that bus. These relays fail as-is upon loss of the 125 vdc control power (for example, due to a blown control circuit fuse). Therefore, the existing TS requirement of a minimum of three operable degraded-voltage relays per 4.16 kV bus cannot be met when the 125 vdc power source is not available. Consequently, TS Action Statement 3.0.3 would be invoked, requiring action within 1 hour to initiate the placement of the unit in Mode 4, in which the specification no longer applies, or to restore the minimum number of relays to operable.

The purpose of TS Table 3.3-3 is to provide a list of ESFAS channels and bypasses matrixed with the corresponding LCO action statements for each channel or input to channel. The ESFAS channels and bypasses in Table 3.3-3 are required to be operable with their trip setpoints set consistent with the values shown in Table 3.3-4. Item VIII B in Table 3.3-3 is the only item affected by these proposed amendments. Item VIII B on Table 3.3-4 provides trip values for the 4.16 kV buses (based on 90 percent of nominal value) with a minimum of three operable channels per 4.16 kV bus, applicable in Modes 1, 2, and 3. Upon ESFAS actuation due to degraded voltage, the appropriate diesel generator is auto-started and is connected to the affected 4.16 kV bus; and the offsite power supply (preferred source) is disconnected from the 4.16 kV bus. In order to minimize unnecessary DG starts and the potential for unnecessary plant shutdowns, the licensee has proposed an additional action statement to include the criterion when more than two relays are inoperable.

3.0 EVALUATION

Change No. 1

The amendments clarify the TS to ensure that trip values are conservative for the 4.16 kV ESF bus undervoltage relays. The amendments correct the TS minimum acceptable voltage (to correspond to the licensing basis assumptions) and allows the setpoint to be increased in the conservative direction. A minimum voltage is necessary to maintain adequate voltage to those loads fed by the 4.16 kV ESF bus. Increasing the undervoltage relay trip value will

reduce the acceptable operating range for the grid voltage. This could result in additional undervoltage relay trips; however, the potential increase in 4.16 kV ESF bus isolations resulting from these additional undervoltage relay trips is an acceptable risk in view of the increased assurance of adequate voltage to equipment powered by the 4.16 kV ESF bus.

The original license amendments proposed to correct the TS minimum acceptable voltage (to correspond to the licensing basis assumptions) for degraded-voltage conditions and allow the setpoint to be increased in the conservative direction. Palo Verde SER Supplement 5 describes the second level of undervoltage protection, stating that the instantaneous undervoltage relays are set at 90 percent of the design voltage with a time delay of 35 seconds. The licensee proposed a minimum value of ≥3744 volts that corresponds to this design requirement. However, a maximum value was not submitted. The staff requested the licensee to provide a maximum allowable value to provide an acceptable range of relay operation (similar to the Standard TS format). This range of relay operation will preclude relay drift in the high direction, which could contribute to unnecessary diesel generator starts and separation from the preferred power source. By letter dated March 24, 1995, the licensee withdrew the current proposed degraded-voltage relay settings and proposed including calculated upper and lower setpoint tolerances around the nominal value of 3744 volts. These changes were submitted by letter dated June 21, 1995. This clarification provided a voltage band for the revised trip values of 3697 to 3786 volts.

Settings need to be established for the degraded voltage relays such that (1) spurious actuations do not occur, and (2) downstream equipment is protected. The licensee's recent calculations have established that the current degraded voltage relays have a maximum relay dropout of 3786 volts, a minimum relay dropout of 3697 volts (due to instrument uncertainties), and a nominal value of 3744 volts. These values provide an acceptable band for relay setpoint settings and will ensure that the trip setpoint adequately protects that equipment powered by the 4.16 kV ESF bus from a potentially damaging degraded voltage condition.

The licensee also proposed the addition of Figure 3.3-1 to improve the clarity of the loss-of-voltage relay requirements. The licensee was asked to provide the technical manual for these undervoltage relays to verify that the relay response was as indicated on Figure 3.3-1. The inverse-time relay characteristics are correctly presented and provide acceptable relay response times over the range of loss-of-voltage values provided. This information improves the operator's ability to verify proper system response. The staff has determined that clarifying the minimum acceptable voltage for loss-of-voltage scenarios (by the inclusion of Figure 3.3-1) will ensure that 4.16 kV ESF bus voltages are sufficient. Since adequate voltages to equipment necessary for accident response will be ensured, the above TS change is acceptable.

Change No. 2

By selecting a common power supply when installing the new degraded-voltage relays, the licensee has been forced to comply with the restrictive 1-hour action statement of TS 3.0.3 in case, for example, power is lost to the relays. Accordingly, the licensee proposed a new ACTION 19 to provide time to make repairs should, for example, a loss of control power be experienced. Following questions from the staff, the wording of the proposed ACTION 19 was clarified as to the number of INOPERABLE relays required for the ACTION to be applicable. As current ACTION 13 applies to one of the total number of four degraded voltage relays being INOPERABLE, and current ACTION 14 applies to one of the minimum number of three degraded voltage relays being INOPERABLE, it is clear that TS ACTION 3.0.3 would only be applicable if three or four of the total of four degraded voltage relays were INOPERABLE. The TS wording as originally submitted used the term "required" rather than "minimum" or "total," which are used in ACTIONS 13 and 14. The revised wording provided by letter dated June 21, 1995, clearly defines the number of INOPERABLE relays, as measured from the total number of relays per bus, for ACTION 19 to be applicable. The new ACTION 19 continues to provide an 8-hour period (identical to the original submittal) to return one or two relays to OPERABLE status, and then appropriately references complying with ACTIONs 13 and 14. The ACTION includes the standard requirement to continue to COLD SHUTDOWN should these ACTIONS not be completed.

The licensee has compared the situation of losing the degraded-voltage relays with LCO 3.8.3.1a for loss of an entire 4.16 kV bus. This specification requires that the inoperable bus be reenergized within 8 hours. The loss of monitoring for a degraded-voltage condition in each 4.16 kV bus is of less safety significance than the loss of the bus itself. Furthermore, even with the loss of all four degraded-voltage relays on one 4.16 kV bus, the four loss-of-voltage relays monitoring that bus would be unaffected, as would be the loss of four degraded-voltage relays and four loss-of-voltage relays monitoring the opposite bus.

The amendments add an action statement to TS Table 3.3-3, item VIII B, which would allow 8 hours to effect repairs. This action statement would be entered if more than two of the required four degraded-voltage relays on either 4.16 kV bus are inoperable or not energized. If the 8-hour allowed outage time is not met, the unit is placed in Hot Standby within 6 hours and in Cold Shutdown within the next 30 hours. TS 3.8.3.1 currently allows 8 hours to restore a 4.16kV bus in the event of a loss of power to that bus. The loss of degraded-voltage relays on that bus does not impact plant nuclear safety any more than the loss of the bus itself. Furthermore, even with the loss of all four degraded-voltage relays monitoring one 4.16 kV bus (for example, due to a blown 125 vdc circuit fuse), the loss-of-voltage relays on that bus and the degraded-voltage relays and the loss-of-voltage relays monitoring the other bus would be unaffected. There are no changes to the maintenance, surveillance, and/or qualification of any component or function in Table 3.3-3.

The status of the power source to these relays is available to the operators in the main control room (a control room alarm is activated on loss of 125 vdc control power to the relays). Also, the new relays are provided with a local status light indicating relay functionality. The licensee's quality assurance organization performed a review of this modification and recommended that the local status-indicating lights be added to the operators' logs. The staff verified that the operators check these lights twice per day. This action resolved the staff concern that a relay failure for any reason other than loss of 125 vdc control power might go unrecognized.

The TS requirements and the components to which they apply are not altered by these amendments. The new solid-state degraded-voltage relays in each 4.16 kV bus were installed under the 10 CFR 50.59 change process. The staff questioned the licensee whether they evaluated the system reliability when the modification was planned (replacing the mechanical fail-safe relays with a solid state fail as-is relay device, susceptible to loss-of-125-vdc-control-power scenarios). APS stated that their PRA group evaluated the modification, concluding that the system modifications provided a substantial improvement in system reliability. APS determined that the installation created no unreviewed safety question.

The amendments do not change the existing TS requirements associated with each ESFAS function listed in TS Tables 3.3-3 or 3.3-4. An added action statement, more commensurate for the new design of degraded-voltage relays, has been added to the TS to preclude unnecessary plant shutdown should, for example, a loss of 125 vdc control power to the relays be experienced. The staff has determined that the added action statement provides for a reasonable allowed outage time, while maintaining a forced shutdown requirement if the repairs are delayed. Therefore, the associated change is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Arizona State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. 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 (59 FR 29625 and 59 FR 42334). 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: B. Holian
J. Lazevnick

Date: July 21, 1995