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

April 30, 1993

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

Dear Mr. Conway:

SUBJECT: ISSUANCE OF AMENDMENTS FOR THE PALO VERDE NUCLEAR GENERATING STATION UNIT NO. 1 (TAC NO. M81837), UNIT NO. 2 (TAC NO. M81838), AND UNIT NO. 3 (TAC NO. M81839)

The Commission has issued the enclosed Amendment No. 70 to Facility Operating License No. NPF-41, Amendment No. 56 to Facility Operating License No. NPF-51, and Amendment No. 43 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 August 21, 1991, as supplemented February 19, 1992, and January 25, 1993.

These amendments revise the largest load to be rejected in the 18-month test for each of the emergency diesel generators; change the loading sequence for the 110% load test within the 24-hour full-load test; and add a requirement to conduct a full-load rejection test once every 18 months.

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

Sincerely,
Original signed by:
Charles M. Trammell, Senior Project Manager
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 70 to NPF-41
2. Amendment No. 56 to NPF-51
3. Amendment No. 43 to NPF-74
4. Safety Evaluation

cc w/enclosures:
See next page

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P PDR

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

April 30, 1993

Docket Nos. 50-528, 50-529
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These amendments revise the largest load to be rejected in the 18-month test for each of the emergency diesel generators; change the loading sequence for the 110% load test within the 24-hour full-load test; and add a requirement to conduct a full-load rejection test once every 18 months.

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Sincerely,

Charles M. Trammell

Charles M. Trammell, Senior Project Manager
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 70 to NPF-41
2. Amendment No. 56 to NPF-51
3. Amendment No. 43 to NPF-74
4. Safety Evaluation

cc w/enclosures:
See next page

cc:
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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. 70
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 August 21, 1991, as supplemented February 19, 1992, and January 25, 1993, 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:

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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 70, 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

Mel B. Fields

for Theodore R. Quay, Director
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 30, 1993

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 70 TO FACILITY OPERATING LICENSE NO. NPF-41

DOCKET NO. STN 50-528

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove	Insert
3/4 8-4	3/4 8-4
----	3/4 8-4a
3/4 8-5	3/4 8-5
3/4 8-6	3/4 8-6
B 3/4 8-1	B 3/4 8-1

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 (Continued)

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained in accordance with ASTM-D4176-82, is within the acceptable limits specified in Table 1 of ASTM D975-81 when checked for viscosity, water and sediment.

c. At least once per 184 days the diesel generator shall be started** and accelerated to generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz in less than or equal to 10 seconds. The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The generator shall be manually synchronized to its appropriate emergency bus, loaded to an indicated 5200-5400*** kW in less than or equal to 60 seconds, and operate for at least 60 minutes.

This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

d. At least once per 18 months during shutdown by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

2. Verifying the generator capability to reject a single largest load of greater than or equal to 903 kW (Train B AFW pump) for emergency diesel generator B or 842 kW for emergency diesel generator A (Train A Normal Water Chiller) while maintaining voltage at 4160 ± 420 volts and frequency at 60 ± 1.2 Hz.

3. Verifying the generator capability to reject a load of 5500 kW without tripping. The generator voltage shall not exceed 6200 volts during and following the load rejection.

4. Verifying that the automatic load sequencers are OPERABLE with the interval between each load block within ± 1 second of its design interval.

**This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

***This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

SURVEILLANCE REQUIREMENTS (Continued)

5. Simulating a loss of offsite power by itself, and:

   a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts** on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 (Continued)

loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency shall be maintained at 4160 ± 420 volts and 60 + 1.2/-0.3 Hz.

6. Verifying that on an ESF actuation test signal (without loss of power) the diesel generator starts* on the auto-start signal and operates on standby for greater than or equal to 5 minutes.

7. Simulating a loss-of-offsite power in conjunction with an ESF actuation test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts* on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer, and operates for greater than or equal to 5 minutes and maintains the steady-state voltage and frequency at 4160 ± 420 volts and 60 + 1.2/-0.3 Hz.

   c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential, and low lube oil pressure, are automatically bypassed upon loss of voltage on the emergency bus, upon a safety injection actuation signal or upon AFAS.

8. Verifying the diesel generator operates* for at least 24 hours. During the first 22 hours of this test, the diesel generator shall be loaded to an indicated 5200-5400 kW** and during the remaining 2 hours of this test, the diesel generator shall be loaded to an indicated 5800-6000 kW**. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.7.b).***

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*This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

**This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

***If Specification 4.8.1.1.2.d.7.b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at 5200-5400 kW** for 1 hour or until operating temperature has stabilized.

SURVEILLANCE REQUIREMENTS (Continued)

9. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 5500 kW.

10. Verifying the diesel generator's capability to:

    a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
    b) Transfer its loads to the offsite power source, and
    c) Proceed through its shutdown sequence.

11. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection actuation signal overrides the test mode by (1) returning the diesel generator to standby operation (running unloaded) and (2) the Class 1E bus remains energized with offsite power.

12. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:

    a) turning gear engaged
    b) emergency stop

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting** both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz in less than or equal to 10 seconds.

4.8.1.1.3 Reports - All diesel generator failures, valid or nonvalid, shall be reported to the Commission within 30 days in a Special Report pursuant to Specification 6.9.2. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

**This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1, 3/4.8.2 and 3/4.8.3 A.C. SOURCES, D.C SOURCES and ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety-related equipment required for (1) the safe shutdown of the facility and (2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criterion 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the safety analyses and are based upon maintaining at least one redundant set of onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss-of-offsite power and single failure of the other onsite A.C. source.

The required steady state frequency for the emergency diesels is 60 + 1.2/ -0.3 Hz to be consistent with the safety analysis to provide adequate safety injection flow.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that (1) the facility can be maintained in the shutdown or refueling condition for extended time periods and (2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The surveillance requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977. Surveillance load testing uses the referenced equipment or equivalent loading.

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. 56
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 August 21, 1991, as supplemented February 19, 1992, and January 25, 1993, 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 Part 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. 56 , 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 when the diesel generator testing becomes due after the current fourth refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

for Theodore R. Quay, Director
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 30, 1993

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 56 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.

Remove	Insert
3/4 8-4a	3/4 8-4a
3/4 8-5	3/4 8-5
3/4 8-6	3/4 8-6
B 3/4 8-1	B 3/4 8-1

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying the generator capability to reject a single largest load of greater than or equal to 903 kW (Train B AFW pump) for emergency diesel generator B or 842 kW for emergency diesel generator A (Train A Normal Water Chiller) while maintaining voltage at 4160 ± 420 volts and frequency at 60 ± 1.2 Hz.****

3. Verifying the generator capability to reject a load of 5500 kW without tripping. The generator voltage shall not exceed 6200 volts during and following the load rejection.

4. Verifying that the automatic load sequencers are OPERABLE with the interval between each load block within ± 1 second of its design interval.****

5. Simulating a loss of offsite power by itself, and:

   a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.****

   b) Verifying the diesel starts** on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is

****Deferred until cycle 3 refueling outage.

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 (Continued)

loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency shall be maintained at 4160 ± 420 volts and 60 + 1.2/-0.3 Hz.

6. Verifying that on an ESF actuation test signal (without loss of power) the diesel generator starts* on the auto-start signal and operates on standby for greater than or equal to 5 minutes.

7. Simulating a loss-of-offsite power in conjunction with an ESF actuation test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts* on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer, and operates for greater than or equal to 5 minutes and maintains the steady-state voltage and frequency at 4160 ± 420 volts and 60 + 1.2/-0.3 Hz.

   c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential, and low lube oil pressure, are automatically bypassed upon loss of voltage on the emergency bus, upon a safety injection actuation signal or upon AFAS.

8. Verifying the diesel generator operates* for at least 24 hours. During the first 22 hours of this test, the diesel generator shall be loaded to an indicated 5200-5400 kW** and during the remaining 2 hours of this test, the diesel generator shall be loaded to an indicated 5800-6000 kW**. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.7.b).***

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*This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

**This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

***If Specification 4.8.1.1.2.d.7.b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at 5200-5400 kW** for 1 hour or until operating temperature has stabilized.

SURVEILLANCE REQUIREMENTS (Continued)

9. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 5500 kW.

10. Verifying the diesel generator's capability to:

    a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
    b) Transfer its loads to the offsite power source, and
    c) Proceed through its shutdown sequence.

11. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection actuation signal overrides the test mode by (1) returning the diesel generator to standby operation (running unloaded) and (2) the Class 1E bus remains energized with offsite power.

12. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:

    a) turning gear engaged
    b) emergency stop

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting** both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz in less than or equal to 10 seconds.

4.8.1.1.3 Reports - All diesel generator failures, valid or nonvalid, shall be reported to the Commission within 30 days in a Special Report pursuant to Specification 6.9.2. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

**This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

3/4.8.1, 3/4.8.2 and 3/4.8.3 A.C. SOURCES, D.C SOURCES and ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety-related equipment required for (1) the safe shutdown of the facility and (2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criterion 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the safety analyses and are based upon maintaining at least one redundant set of onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss-of-offsite power and single failure of the other onsite A.C. source.

The required steady state frequency for the emergency diesels is 60 + 1.2/ -0.3 Hz to be consistent with the safety analysis to provide adequate safety injection flow.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that (1) the facility can be maintained in the shutdown or refueling condition for extended time periods and (2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The surveillance requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977. Surveillance load testing uses the referenced equipment or equivalent loading.

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. 43
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 August 21, 1991, as supplemented February 19, 1992, and January 25, 1993, 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. 43, 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

Mel B. Fields

for Theodore R. Quay, Director
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 30, 1993

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 43 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.

Remove	Insert
3/4 8-4	3/4 8-4
----	3/4 8-4a
3/4 8-5	3/4 8-5
3/4 8-6	3/4 8-6
B 3/4 8-1	B 3/4 8-1

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 (Continued)

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained in accordance with ASTM-D4176-82, is within the acceptable limits specified in Table 1 of ASTM D975-81 when checked for viscosity, water and sediment.

c. At least once per 184 days the diesel generator shall be started** and accelerated to generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz in less than or equal to 10 seconds. The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The generator shall be manually synchronized to its appropriate emergency bus, loaded to an indicated 5200-5400*** kW in less than or equal to 60 seconds, and operate for at least 60 minutes.

   This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

d. At least once per 18 months during shutdown by:

   1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

   2. Verifying the generator capability to reject a single largest load of greater than or equal to 903 kW (Train B AFW pump) for emergency diesel generator B or 842 kW for emergency diesel generator A (Train A Normal Water Chiller) while maintaining voltage at 4160 ± 420 volts and frequency at 60 ± 1.2 Hz.

   3. Verifying the generator capability to reject a load of 5500 kW without tripping. The generator voltage shall not exceed 6200 volts during and following the load rejection.

   4. Verifying that the automatic load sequencers are OPERABLE with the interval between each load block within ± 1 second of its design interval.

**This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

***This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

SURVEILLANCE REQUIREMENTS (Continued)

5. Simulating a loss of offsite power by itself, and:

   a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts** on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 (Continued)

loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency shall be maintained at 4160 ± 420 volts and 60 + 1.2/-0.3 Hz.

6. Verifying that on an ESF actuation test signal (without loss of power) the diesel generator starts* on the auto-start signal and operates on standby for greater than or equal to 5 minutes.

7. Simulating a loss-of-offsite power in conjunction with an ESF actuation test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts* on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer, and operates for greater than or equal to 5 minutes and maintains the steady-state voltage and frequency at 4160 ± 420 volts and 60 + 1.2/-0.3 Hz.

   c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential, and low lube oil pressure, are automatically bypassed upon loss of voltage on the emergency bus, upon a safety injection actuation signal or upon AFAS.

8. Verifying the diesel generator operates* for at least 24 hours. During the first 22 hours of this test, the diesel generator shall be loaded to an indicated 5200-5400 kW** and during the remaining 2 hours of this test, the diesel generator shall be loaded to an indicated 5800-6000 kW**. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.7.b).***

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*This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

**This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

***If Specification 4.8.1.1.2.d.7.b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at 5200-5400 kW** for 1 hour or until operating temperature has stabilized.

SURVEILLANCE REQUIREMENTS (Continued)

9. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 5500 kW.

10. Verifying the diesel generator's capability to:

    a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
    b) Transfer its loads to the offsite power source, and
    c) Proceed through its shutdown sequence.

11. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection actuation signal overrides the test mode by (1) returning the diesel generator to standby operation (running unloaded) and (2) the Class 1E bus remains energized with offsite power.

12. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:

    a) turning gear engaged
    b) emergency stop

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting** both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz in less than or equal to 10 seconds.

4.8.1.1.3 Reports - All diesel generator failures, valid or nonvalid, shall be reported to the Commission within 30 days in a Special Report pursuant to Specification 6.9.2. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

**This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1, 3/4.8.2 and 3/4.8.3 A.C. SOURCES, D.C SOURCES and ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety-related equipment required for (1) the safe shutdown of the facility and (2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criterion 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the safety analyses and are based upon maintaining at least one redundant set of onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss-of-offsite power and single failure of the other onsite A.C. source.

The required steady state frequency for the emergency diesels is 60 + 1.2/ -0.3 Hz to be consistent with the safety analysis to provide adequate safety injection flow.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that (1) the facility can be maintained in the shutdown or refueling condition for extended time periods and (2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The surveillance requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977. Surveillance load testing uses the referenced equipment or equivalent loading.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 70 TO FACILITY OPERATING LICENSE NO. NPF-41, AMENDMENT NO. 56 TO FACILITY OPERATING LICENSE NO. NPF-51, AND AMENDMENT NO. 43 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 letter dated August 21, 1991, 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 revise the requirements for testing the emergency diesel generators. Specifically, the single largest loads would be revised, the sequence of the overload test during the 18-month 24-hour load test would be changed, and a requirement to perform a full-load rejection test would be added.

2.0 DISCUSSION AND EVALUATION

The Technical Specifications for Palo Verde Nuclear Generating Station, Units 1, 2, and 3, require, among other things, that each diesel generator be tested once per 18 months with the unit shut down by:

1. Verifying that it is capable of rejecting a load equal to its single largest load, and

2. Running the diesel for two hours at 110% of full load, followed by a 22-hour run at full load.

At the present time, the TS identify the Train A high pressure safety injection (HPSI) pump as the largest Train A load at 696 kW, and the Train B auxiliary feedwater (AFW) pump as the largest Train B load at 839 kW.

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By letter dated August 21, 1991, the licensee stated that the load values for the largest loads had recently been recalculated, resulting in somewhat larger values for the largest loads. The Train A HPSI pump should be revised upwards to 771 kW and the Train B AFW pump should be changed to 903 kW. According to APS, the revised values are based on vendor data coupled with the worst-case Palo Verde pump demand to determine the actual worst-case kW loads on the motors. The licensee therefore proposes to update the TS with these new load values.

In reviewing this proposed change, the NRC staff pointed out to the licensee that Train A also supplies power to the non-safety-related AFP, which would be a larger load than the HPSI pump. Up to this point in time, the only loads that had been considered had been safety-related loads, since these are the loads that are automatically loaded onto the diesel generator. Nevertheless, it is certainly possible that the non-safety-related AFP could be used and powered by the emergency diesel under some circumstances. As a result, the licensee reviewed the non-safety-related loads as well as the safety-related loads to identify the largest load irrespective of its safety classification. In its review of the matter, APS identified a larger load than the non-safety-related AFP: the Train A normal water chiller at 842 kW.

By letter dated January 25, 1993, the licensee revised its proposed TS change to the largest load for Train A to 842 kW. Although the licensee correctly identified the HPSI as the largest safety-related load on Train A, APS determined that a larger load did exist. The licensee stated that, while it is credible, although highly unlikely, that this load would be shed from the diesel generator, it is nonetheless prudent to use this value in the surveillance test. We agree with the licensee's proposed revision for the same reason and find both revised load values to be acceptable.

The second aspect of the August 21, 1991, application addresses the loading of the emergency diesel generators during the 24-hour load test which is conducted every 18 months. This test requires each diesel generator to be operated for 24 hours. During the first two hours of the test, the diesel generator is to be loaded to 110% of the full-power rating called the two-hour rating (5800-6000 kW). During the remainder of the load test, the diesel generator is loaded to 100% or the continuous rating of 5200-5400 kW.

The licensee proposes to reverse the sequence of the test based on the manufacturer's recommendation. The new sequence of the test would cause the diesel generator to be run at 100% capacity for the first 22 hours and 110% for the last two hours of the 24-hour test. According to the licensee, the diesel generator manufacturer, Cooper Bessemer, recommends that the 110% load run be performed during the last two hours, advising that the present load testing does not allow for optimal stabilization of the engine component temperatures. The present practice could accelerate engine wear rates in the structural and running gear members.

In its review of this request, the NRC staff questioned whether the present load on each diesel was close to the continuous rating. The NRC staff concern was that if this were the case, performing the 110% portion of the load test

during the first two hours would be a better demonstration of the capability of the diesel to handle excess loading during the early stages of a worst-case postulated accident (loss-of coolant accident combined with a loss of off-site power). Palo Verde Calculation 13-EG-DG-200, Revision 6, dated October 9, 1991, showed that the maximum train "A" load is 4990 kW and the maximum train "B" load is 5222 kW, both well within the continuous rating of the diesel (5500 kW). By letter dated February 19, 1992, the licensee provided additional information on the transient loading of the more highly loaded diesel generator. It showed that the transient load on train "B" would exceed the continuous rating by less than one percent for a period of four seconds.

The transient load was not found to be a concern due to the small amount by which it exceeded the continuous diesel generator rating and the short period of time. Typically, transient loading will occur at the start of large loads and be present for only a few seconds. The NRC staff finds the licensee's proposed change to perform the 110% load test portion at the end of the 24-hour test acceptable.

As a final matter, in a letter dated March 2, 1992, the NRC staff pointed out to the licensee that the current diesel generator testing program did not fully conform to Regulatory Guide 1.108, Revision 1, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," in that there was no provision for a full-load rejection test at 18-month intervals. The licensee's commitment to this regulatory guide is contained in the Palo Verde Updated Final Safety Analysis Report (UFSAR). This requirement was originally included in the Unit 1 Technical Specifications, but was later deleted when the requirement for full-load rejection was not included in the Unit 2 Technical Specification as originally issued, apparently due to oversight.

The revised application dated January 25, 1993, provided a response to this matter, and proposed to add full-load rejection testing of each diesel generator to the Technical Specifications, in accordance with licensee's commitments in the UFSAR. This is acceptable.

3.0 STATE CONSULTATION

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

4.0 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 or 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 proposed findings that the amendments involve no significant hazards

consideration, and there has been no public comment on such findings (56 FR 57689 and 58 FR 16217). 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.

5.0 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: M. Pratt
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Date: April 30, 1993