

Mr. Steven E. Miltenberger
Vice President and Chief Nuclear
Officer
Public Service Electric & Gas
Company
Post Office Box 236
Hancocks Bridge, New Jersey 08038

Dear Mr. Miltenberger:

SUBJECT: EMERGENCY DIESEL GENERATOR SURVEILLANCE TESTS, SALEM NUCLEAR
GENERATING STATION, UNITS 1 AND 2 (TAC NOS. M79960 AND M79961)

The Commission has issued the enclosed Amendment Nos. 148 and 126 to Facility
Operating License Nos. DPR-70 and DPR-75 for the Salem Nuclear Generating
Station, Unit Nos. 1 and 2. These amendments consist of changes to the
Technical Specifications (TSs) in response to your application dated March 6,
1991, and supplemental letters dated September 20, 1991, December 19, 1991,
January 31, 1992, August 19, 1992, April 28, 1993, and September 30, 1993.

These amendments would modify the action statements and surveillance
requirements associated with the emergency diesel generators (EDGs) and A.C.
power sources. The changes are intended to reduce testing and improve
reliability of the EDGs consistent with Generic Letter 84-15, Proposed Staff
Actions to Improve and Maintain Diesel Generator Reliability.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be
included in the Commission's biweekly Federal Register notice. You are
requested to notify the NRC, in writing, when these amendments have been
implemented at Salem, Units 1 and 2.

Sincerely,

/s/

James C. Stone, Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

060014

Enclosures:

1. Amendment No. 148 to License No. DPR-70
2. Amendment No. 126 to License No. DPR-75
3. Safety Evaluation

cc w/enclosures:
See next page

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DFOI



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

November 30, 1993

Docket Nos. 50-272/311

Mr. Steven E. Miltenberger
Vice President and Chief Nuclear
Officer
Public Service Electric & Gas
Company
Post Office Box 236
Hancocks Bridge, New Jersey 08038

Dear Mr. Miltenberger:

SUBJECT: EMERGENCY DIESEL GENERATOR SURVEILLANCE TESTS, SALEM NUCLEAR
GENERATING STATION, UNITS 1 AND 2 (TAC NOS. M79960 AND M79961)

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These amendments would modify the action statements and surveillance requirements associated with the emergency diesel generators (EDGs) and A.C. power sources. The changes are intended to reduce testing and improve reliability of the EDGs consistent with Generic Letter 84-15, Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice. You are requested to notify the NRC, in writing, when these amendments have been implemented at Salem, Units 1 and 2.

Sincerely,

A handwritten signature in cursive script that reads "James C. Stone".

James C. Stone, Project Manager
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 148 to License No. DPR-70
2. Amendment No. 126 to License No. DPR-75
3. Safety Evaluation

cc w/enclosures:
See next page

Mr. Steven E. Miltenberger
Public Service Electric & Gas
Company

Salem Nuclear Generating Station,
Units 1 and 2

cc:

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Hancocks Bridge, New Jersey 08038



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

PUBLIC SERVICE ELECTRIC & GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-272

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 148
License No. DPR-70

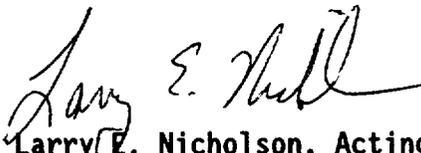
1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
 - A. The application for amendment filed by the Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated March 6, 1991, and supplemented by letters dated September 20, 1991, December 19, 1991, January 31, 1992, August 19, 1992, April 28, 1993, and September 30, 1993, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 set forth in 10 CFR Chapter I;
 - 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. DPR-70 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 148, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of the date of issuance

FOR THE NUCLEAR REGULATORY COMMISSION



Larry E. Nicholson, Acting Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 30, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 148

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Revise Appendix A as follows:

<u>Remove Pages</u>	<u>Insert Pages</u>
3/4 8-1	3/4 8-1
3/4 8-2	3/4 8-2
3/4 8-3	3/4 8-3
3/4 8-4	3/4 8-4
3/4 8-5	3/4 8-5
-	3/4 8-5a
-	3/4 8-5b
-	3/4 8-5c
B 3/4 8-1	B 3/4 8-1
B 3/4 8-2	B 3/4 8-2

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

=====

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent A.C. circuits between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and
- b. Three separate and independent diesel generators with:
 - 1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and
 - 2. A common fuel storage system consisting of two storage tanks, each containing a minimum volume of 20,000 gallons of fuel, and two fuel transfer pumps.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With an independent A.C. circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining independent A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and demonstrate OPERABILITY of three diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 24 hours; restore the inoperable independent A.C. circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the independent A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the diesel generator is inoperable for preventive maintenance, the two remaining OPERABLE diesel generators need not be tested. If the diesel generator is inoperable for any reason other than preventive maintenance, demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 24 hours. In any case, restore the inoperable diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

- c. With one independent A.C. circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining independent A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; demonstrate the OPERABILITY of the remaining OPERABLE diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 8 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two independent A.C. circuits and three diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- d. With two of the above required independent A.C. circuits inoperable, demonstrate the OPERABILITY of three diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 8 hours, unless the diesel generators are already operating; restore at least one of the inoperable independent A.C. circuits to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one of the independent A.C. circuits OPERABLE, restore the other independent A.C. circuit to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- e. With two or more of the above required diesel generators inoperable, demonstrate the OPERABILITY of two independent A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least two of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore three diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- f. With one of the above required fuel transfer pumps inoperable, either restore it to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- g. With one of the above required fuel storage tanks inoperable, either restore it to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

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4.8.1.1.1 Two physically independent A.C. circuits between the offsite transmission network and the onsite Class 1E distribution system (vital bus system) shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) vital bus supply from one 13/4 kv transformer to the other 13/4 kv transformer.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:
 - 1. Verifying the fuel level in its day tank.
 - 2. Verifying the diesel starts and accelerates to 900 rpm in less than or equal to 10 seconds*. The generator voltage and frequency shall be ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 13 seconds after the start signal.

Subsequently, verifying the generator is synchronized, gradually loaded to 2500-2600 kw**, and operates at a load of 2500-2600 kw for greater than or equal to 60 minutes.
 - 3. Verifying the diesel generator is aligned to provide standby power to the associated vital bus.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to one hour by checking for and removing accumulated water from the day tanks.
- c. At least once per 6 months the diesel generator shall be started from ambient conditions and accelerated to at least 900 rpm in less than or equal to 10 seconds*. The generator voltage and frequency shall be ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 13 seconds after the start signal.

The generator shall be synchronized to its emergency bus, loaded to 2500-2600** kw in less than or equal to 60 seconds, and operate at a load of 2500-2600 kw 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.2, may also serve to concurrently meet those requirements.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- 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 that, on rejection of a load greater than or equal to 820 kw, the voltage and frequency are restored to ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 4 seconds.
 3. Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization of the vital bus and load shedding from the vital bus.
 - b) Verifying the diesel starts on the auto-start signal*, energizes the vital bus with permanently connected loads within 13 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 loaded with the shutdown loads. The steady state voltage and frequency of the vital bus shall be maintained at ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz during this test.
 4. Verifying that on an ESF actuation test signal without loss of offsite power the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes*. The generator voltage and frequency shall be ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 13 seconds after the auto-start signal and shall be maintained within these limits during this test.
 5. Not Used.
 6. Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and:
 - a) Verifying de-energization of the vital bus and load shedding from the vital bus.
 - b) Verifying the diesel starts on the auto-start signal*, energizes the vital bus with permanently connected loads within 13 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. The steady state voltage and frequency of the vital bus shall be maintained at ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz during this test.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- c) Verifying that all nonessential automatic diesel generator trips (i.e., other than engine overspeed, lube oil pressure low, 4 KV bus differential and generator differential), are automatically bypassed upon loss of voltage on the vital bus concurrent with a safety injection actuation signal.

- 7. Verifying the diesel generator operates for at least 24 hours*. During the first 2 hours of this test, the diesel generator shall be loaded to 2760-2860 kw.** During the remaining 22 hours of this test, the diesel generator shall be loaded to 2500-2600 kw**. The steady state voltage and frequency shall be maintained at ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz during this test. Within 5 minutes after completing this 24 hour test, perform Surveillance Requirement 4.8.1.1.2.d.6.b.***

- 8. Verifying that the auto-connected loads to each diesel generator do not exceed the two hour rating of 2860 kw.

- 9. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizing the emergency loads with offsite power.

- e. At least once per ten years or after any modifications which could affect diesel generator interdependence by starting all diesel generators simultaneously*, during shutdown, and verifying that all diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

4.8.1.1.3 The diesel fuel oil storage and transfer system shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
 - 1. Verifying the level in each of the above required 20,000 gallon fuel storage tanks.
 - 2. Verifying that both fuel transfer pumps can be started and transfer fuel from the 20,000 gallon storage tanks to the day tanks.

- b. At least once per 92 days by verifying that a sample of diesel fuel from each of the above required 20,000 gallon fuel storage tanks is within the acceptable limits specified in Table 1 of ASTM D975-77 when checked for viscosity, water and sediment.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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4.8.1.1.4 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission in a Special Report pursuant to Specification 6.9.2 within 30 days. 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.

-
- * Surveillance testing shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube, warm-up and loading (unless loading times are specified in the individual Surveillance Requirements).
 - ** This band is meant as guidance to preclude routine exceedances of the diesel generator manufacturer's design ratings. Loads in excess of this band for special testing or momentary variations due to changing bus loads shall not invalidate the test.
 - *** Failure of a test per Surveillance Requirement 4.8.1.1.2.d.6.b, following performance of Surveillance Requirement 4.8.1.1.2.d.7, does not require that the 24 hour test of 4.8.1.1.2.d.7 be repeated. As an alternative, the EDG shall be loaded to 2500-2600 kw for one hour, or until operating temperatures have stabilized, prior to repeating Surveillance Requirement 4.8.1.1.2.d.6.b.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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TABLE 4.8-1
DIESEL GENERATOR TEST SCHEDULE

Number of Failures in Last 20 Valid Tests*	Test Frequency
Zero or 1	M
2 or more	W**

* Criteria for determining the number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures is determined on a per diesel generator basis.

** This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to zero or one.

ELECTRICAL POWER SYSTEMS

SHUTDOWN

LIMITING CONDITION FOR OPERATION
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3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and
- b. Two separate and independent diesel generators with:
 - 1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and
 - 2. A common fuel storage system containing a minimum volume of 20,000 gallons of fuel, and
 - 3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until the minimum required A.C. electrical power sources are restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS
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4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1, 4.8.1.1.2, 4.8.1.1.3 (except for requirement 4.8.1.1.3.a.2) and 4.8.1.1.4.

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

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3/4.8.1 and 3/4.8.2 A.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 Part 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 accident analyses and are based upon maintaining at least two independent sets 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 one onsite A.C. source.

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 based upon the recommendations of Regulatory Guide 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977.

For the purposes of establishing initial conditions for surveillance testing, "ambient conditions" mean that the diesel lube oil temperature is 120 ± 20 degrees F. The minimum lube oil temperature for an OPERABLE diesel is 100 degrees F. Lube oil heaters are designed to maintain the oil temperature at approximately 120 degrees F.

3/4.8.3 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance.

The surveillance frequency applicable to molded case circuit breakers and lower voltage circuit breakers provides assurance of breaker reliability by testing at least one representative sample of each manufacturer's brand of molded case and lower voltage circuit breakers. Each manufacturer's molded

3/4.8 ELECTRICAL POWER SYSTEMS

BASES (Continued)

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case circuit breakers and lower voltage circuit breakers are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of molded case or lower voltage circuit breakers, it is necessary to further divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for surveillance purposes.

A list of the required containment penetration conductor overcurrent protective devices, with information on location, size and equipment powered by the protective circuit is maintained in the UFSAR. The list is limited to those overcurrent devices installed for the purpose of keeping circuit fault current below the penetration rating. It does not apply to other overcurrent devices which protect penetrations where fault currents are less than the sustained rating of the penetration. This is consistent with the requirements of IEEE 741-1986 which states that no special consideration is required to protect electrical penetrations that can indefinitely withstand the maximum fault current available. Setpoints are controlled by plant procedures and drawings and any additions, deletions or modifications to the containment penetration conductor overcurrent protective devices list is governed by Section 50.59 of 10 CFR Part 50.



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

PUBLIC SERVICE ELECTRIC & GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-311

SALEM NUCLEAR GENERATING STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 126
License No. DPR-75

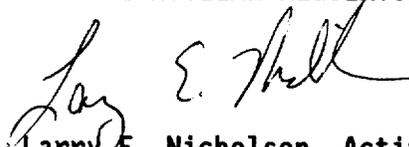
1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
 - A. The application for amendment filed by the Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated March 6, 1991, and supplemented by letters dated September 20, 1991, December 19, 1991, January 31, 1992, August 19, 1992, April 28, 1993, and September 30, 1993, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 set forth in 10 CFR Chapter I;
 - 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. DPR-75 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 126, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of the date of issuance

FOR THE NUCLEAR REGULATORY COMMISSION



Larry E. Nicholson, Acting Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 30, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 126

FACILITY OPERATING LICENSE NO. DPR-75

DOCKET NO. 50-311

Revise Appendix A as follows:

<u>Remove Pages</u>	<u>Insert Pages</u>
3/4 8-1	3/4 8-1
3/4 8-2	3/4 8-2
3/4 8-2a	-
3/4 8-3	3/4 8-3
3/4 8-4	3/4 8-4
3/4 8-5	3/4 8-5
3/4 8-6	3/4 8-6
3/4 8-7	3/4 8-7
-	3/4 8-7a
B 3/4 8-1	B 3/4 8-1
B 3/4 8-2	B 3/4 8-2

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION
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3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent A.C. circuits between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and
- b. Three separate and independent diesel generators with:
 1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and
 2. A common fuel storage system consisting of two storage tanks, each containing a minimum volume of 20,000 gallons of fuel, and two fuel transfer pumps.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With an independent A.C. circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining independent A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and demonstrate OPERABILITY of three diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 24 hours; restore the inoperable independent A.C. circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the independent A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the diesel generator is inoperable for preventive maintenance, the two remaining OPERABLE diesel generators need not be tested. If the diesel generator is inoperable for any reason other than preventive maintenance, demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 24 hours. In any case, restore the inoperable diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

- c. With one independent A.C. circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining independent A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; demonstrate the OPERABILITY of the remaining OPERABLE diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 8 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two independent A.C. circuits and three diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- d. With two of the above required independent A.C. circuits inoperable, demonstrate the OPERABILITY of three diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 8 hours, unless the diesel generators are already operating; restore at least one of the inoperable independent A.C. circuits to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one of the independent A.C. circuits OPERABLE, restore the other independent A.C. circuit to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- e. With two or more of the above required diesel generators inoperable, demonstrate the OPERABILITY of two independent A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least two of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore three diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- f. With one of the above required fuel transfer pumps inoperable, either restore it to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- g. With one of the above required fuel storage tanks inoperable, either restore it to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

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4.8.1.1.1 Two physically independent A.C. circuits between the offsite transmission network and the onsite Class 1E distribution system (vital bus system) shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) vital bus supply from one 13/4 kv transformer to the other 13/4 kv transformer.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:
 1. Verifying the fuel level in its day tank.
 2. Verifying the diesel starts and accelerates to 900 rpm in less than or equal to 10 seconds*. The generator voltage and frequency shall be ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 13 seconds after the start signal.

Subsequently, verifying the generator is synchronized, gradually loaded to 2500-2600 kw**, and operates at a load of 2500-2600 kw for greater than or equal to 60 minutes.
 3. Verifying the diesel generator is aligned to provide standby power to the associated vital bus.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tanks.
- c. At least once per 6 months the diesel generator shall be started from ambient conditions and accelerated to at least 900 rpm in less than or equal to 10 seconds*. The generator voltage and frequency shall be ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 13 seconds after the start signal.

The generator shall be synchronized to its emergency bus, loaded to 2500-2600** kw in less than or equal to 60 seconds, and operate at a load of 2500-2600 kw 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.2, may also serve to concurrently meet those requirements.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- 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 that, on rejection of a load of greater than or equal to 820 kw, the voltage and frequency are restored to ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 4 seconds.
 3. Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization of the vital bus and load shedding from the vital bus.
 - b) Verifying the diesel starts on the auto-start signal*, energizes the vital bus with permanently connected loads within 13 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 loaded with the shutdown loads. The steady state voltage and frequency of the vital bus shall be maintained at ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz during this test.
 4. Verifying that on an ESF actuation test signal without loss of offsite power the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes*. The generator voltage and frequency shall be ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz within 13 seconds after the auto-start signal and shall be maintained within these limits during this test.
 5. Deleted
 6. Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and
 - a) Verifying de-energization of the vital bus and load shedding from the vital bus.
 - b) Verifying the diesel starts on the auto-start signal*, energizes the vital bus with permanently connected loads within 13 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. The steady state voltage and frequency of the vital bus shall be maintained at ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz during this test.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- =====
- c) Verifying that all nonessential automatic diesel generator trips (i.e., other than engine overspeed, lube oil pressure low, 4 KV Bus differential and generator differential) are automatically bypassed upon loss of voltage on the vital bus concurrent with a safety injection actuation signal.
 - 7. Verifying the diesel generator operates for at least 24 hours*. During the first 2 hours of this test, the diesel generator shall be loaded to 2760-2860 kw**. During the remaining 22 hours of this test, the diesel generator shall be loaded to 2500-2600 kw**. The steady state voltage and frequency shall be maintained at ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz during this test. Within 5 minutes after completing this 24-hour test, perform Specification 4.8.1.1.2.d.6.b.***
 - 8. Verifying that the auto-connected loads to each diesel generator do not exceed the two hour rating of 2860 kw.
 - 9. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizing the emergency loads with offsite power.
 - e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting all diesel generators simultaneously*, during shutdown, and verifying that all diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

4.8.1.1.3 The diesel fuel oil storage and transfer system shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
 - 1. Verifying the level in each of the above required 20,000 gallon fuel storage tanks.
 - 2. Verifying that both fuel transfer pumps can be started and transfer fuel from the 20,000 gallon storage tanks to the day tanks.
- b. At least once per 92 days by verifying that a sample of diesel fuel from each of the above required 20,000 gallon fuel storage tanks is within the acceptable limits specified in Table 1 of ASTM D975-77 when checked for viscosity, water and sediment.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)
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4.8.1.1.4 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission in a Special Report pursuant to Specification 6.9.2 within 30 days. 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.

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- * Surveillance testing shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube, warm-up and loading (unless loading times are specified in the individual Surveillance Requirements).
 - ** This band is meant as guidance to preclude routine exceedances of the diesel generator manufacturer's design ratings. Loads in excess of this band for special testing or momentary variations due to changing bus loads shall not invalidate the test.
 - *** Failure of a test per Surveillance Requirement 4.8.1.1.2.d.6.b, following performance of Surveillance Requirement 4.8.1.1.2.d.7, does not require that the 24 hour test of 4.8.1.1.2.d.7 be repeated. As an alternative, the EDG shall be loaded to 2500-2600 kw for one hour, or until operating temperatures have stabilized, prior to repeating Surveillance Requirement 4.8.1.1.2.d.6.b.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

<u>Number of Failures in Last 20 Valid Tests*</u>	<u>Test Frequency</u>
Zero or 1	M
2 or more	W ^{**}

* Criteria for determining the number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures is determined on a per diesel generator basis.

** This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to zero or one.

ELECTRICAL POWER SYSTEMS

SHUTDOWN

LIMITING CONDITION FOR OPERATION
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3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and
- b. Two separate and independent diesel generators with:
 - 1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and
 - 2. A common fuel storage system containing a minimum volume of 20,000 gallons of fuel, and
 - 3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until the minimum required A.C. electrical power sources are restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS
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4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1, 4.8.1.1.2, 4.8.1.1.3 (except for requirement 4.8.1.1.3.a.2) and 4.8.1.1.4.

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

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3/4.8.1 AND 3/4.8.2 A.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 Part 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 accident analyses and are based upon maintaining at least two independent sets 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 one onsite A.C. source.

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 based upon the recommendations of Regulatory Guide 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977.

For the purposes of establishing initial conditions for surveillance testing, "ambient conditions" mean that the diesel lube oil temperature is 120 ± 20 degrees F. The minimum lube oil temperature for an OPERABLE diesel is 100 degrees F. Lube oil heaters are designed to maintain the oil temperature at approximately 120 degrees F.

3/4.8.3 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance.

The surveillance frequency applicable to molded case circuit breakers and lower voltage circuit breakers provides assurance of breaker reliability by testing at least one representative sample of each manufacturer's brand of molded case and lower voltage circuit breakers. Each manufacturer's molded

ELECTRICAL POWER SYSTEMS

BASES (Continued)

case circuit breakers and lower voltage circuit breakers are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of molded case or lower voltage circuit breakers, it is necessary to further divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for surveillance purposes.

A list of the required containment penetration conductor overcurrent protective devices, with information on location, size and equipment powered by the protective circuit is maintained in the UFSAR. The list is limited to those overcurrent devices installed for the purpose of keeping circuit fault current below the penetration rating. It does not apply to other overcurrent devices which protect penetrations where fault currents are less than the sustained rating of the penetration. This is consistent with the requirements of IEEE 741-1986 which states that no special consideration is required to protect electrical penetrations that can indefinitely withstand the maximum fault current available. Setpoints are controlled by plant procedures and drawings and any additions, deletions or modifications to the containment penetration conductor overcurrent protective devices list is governed by Section 50.59 of 10 CFR Part 50.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NOS. 148 AND 126 TO FACILITY OPERATING
LICENSE NOS. DPR-70 AND DPR-75
PUBLIC SERVICE ELECTRIC & GAS COMPANY
PHILADELPHIA ELECTRIC COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY
SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2
DOCKET NOS. 50-272 AND 50-311

1.0 INTRODUCTION

By letters dated March 6, 1991, September 20, 1991, December 19, 1991, January 31, 1992, August 19, 1992, April 28, 1993 and September 30, 1993, Public Service Electric and Gas Company (the licensee) submitted a request for changes to the Salem Nuclear Generation Station, Unit Nos. 1 and 2, Technical Specifications (TS). The requested changes would modify the action statements and surveillance requirements associated with the emergency diesel generators (EDG) and A.C. power sources. The proposed changes are intended to reduce testing and improve reliability of the EDGs consistent with Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability." In addition, changes were proposed to add separate Action Statements for fuel oil transfer pumps, fuel oil storage tanks and day tanks; and editorial changes. The licensee proposed additional changes to incorporate the Salem Diesel Generator Load Calculation, ES-9.002-0 (load study) results, and increase the minimum acceptable EDG output voltage during surveillance tests. The staff's evaluation of the proposed TS changes is provided below.

2.0 EVALUATION:

NOTES

1. This evaluation is based on the proposed revised technical specifications pages included with the September 30, 1993 supplement.
2. This evaluation applies to both Salem Units, unless specified otherwise.

Change 1: Throughout Specification 3.8.1. and 4.8.1. change the phrase "offsite AC circuits", "offsite circuits", "AC sources" or "independent circuits" to "independent AC circuits".

These changes are editorial and are therefore acceptable.

Change 2: Action Statement 3.8.1.1.a. currently specifies actions for the inoperability of one offsite circuit or EDG. In proposing changes to this action statement, the licensee has distinguished the loss of an offsite circuit from a loss of an EDG in that the EDG power source will be addressed in the new Action Statement 3.8.1.1.b. This is consistent with the format adopted by the staff in the new Standard Technical Specifications (STS). Additionally, the demonstration of EDG operability in Action Statement 3.8.1.1.a. has been changed to allow performance of Surveillance Requirement 4.8.1.1.2.a.2. (operability test of all three EDGs) within 24 hours in lieu of 1 hour. The requirement for performing Surveillance Requirement 4.8.1.1.2.a.2. once every 8 hours thereafter has been deleted. These changes are consistent with Generic Letter 84-15 and the staff finds them acceptable.

Change 3: New Action Statement 3.8.1.1.b. specifies actions to be taken if one EDG is inoperable. The operability of the independent A.C. circuits is determined by performing Surveillance Requirement 4.8.1.1.1.a. within 1 hour and at least once per 8 hours thereafter. The demonstration of the operability of the remaining EDGs has been changed to allow performance of Surveillance Requirement 4.8.1.1.2.a.2. within 24 hours in lieu of 1 hour. These changes are consistent with GL 84-15 and therefore acceptable.

In addition, the licensees have proposed to include in the Action Statement that if the EDG is declared inoperable for preventive maintenance, then the operability demonstration need not be performed for the remaining EDGs. When an EDG is declared inoperable for preventive maintenance, there is no reason to suspect the operability of the remaining EDGs. This change will allow activities such as a check for fluid accumulation in the engine cylinders, as described in Information Notice 91-62, without requiring a start test of the remaining two EDGs. This proposed change closely parallels the revised STS which states that only if a common cause failure is evident is an operability test of the remaining EDGs required. Therefore, the staff finds this change acceptable.

Change 4: The current Specification 3.8.1.1. Action Statement "b" becomes Action Statement "c". In addition, the requirement to perform Surveillance Requirement 4.8.1.1.2.a.2. (EDG operability test) within 1 hour and at least once per 8 hours thereafter, has

been replaced with the requirement to perform Surveillance Requirement 4.8.1.1.2.a.2. for the remaining operable EDGs within 8 hours. These changes are consistent with Generic Letter 84-15 and the staff finds them acceptable.

Change 5: The current Specification 3.8.1.1. Action Statement "c" becomes Action Statement "d". In addition, the requirement to perform Surveillance Requirement 4.8.1.1.2.a.2. (EDG operability test) within 1 hour and at least once per 8 hours thereafter, has been replaced with the requirement to perform Surveillance Requirement 4.8.1.1.2.a.2. for all three EDGs within 8 hours. This change is consistent with Generic Letter 84-15 and the staff finds it acceptable.

Change 6: The current Specification 3.8.1.1. Action Statement "d" becomes Action Statement "e".

This change is editorial and is acceptable.

Change 7: The licensee has requested revisions to Specification 3.8.1.1., adding Action Statements 3.8.1.1.f. and 3.8.1.1.g., which specify the limiting conditions for operation (LCO) if a fuel oil transfer pump or storage tank is inoperable. This revision to the TS would allow the licensee time to correct a problem with the transfer pump or storage tank without declaring an EDG inoperable. The design of the fuel system enables the redundant fuel oil transfer pumps to transfer fuel oil to the EDG day tanks from four 30,000 gallon storage tanks located in the auxiliary building. Each redundant transfer pump is capable of supplying fuel oil to all three EDGs at maximum rating. Therefore, the loss of one fuel oil transfer pump and/or fuel storage tank does not result in an inoperable EDG. The licensee, therefore, would not have to perform surveillance requirement 4.8.1.1.2.a.2. to demonstrate operability of the EDG each time a transfer pump or storage tank is lost. Using LCO time requirements consistent with one inoperable EDG, the licensee can either restore the transfer pump or storage tank to operable status within 72 hours or be in hot standby within the next 6 hours and cold shutdown within the following 30 hours. Since the LCO time requirements of the EDG and transfer pump/storage tank are identical, the plant would proceed to cold shutdown if the transfer pump/storage tank was not repaired and restored to operable status within the 72 hour action statement. We find that these changes do not alter the intent of on-site power requirements to safety systems given in General Design Criterion (GDC) 17 and meet the acceptance criteria of Standard Review Plan (SRP) 9.5.4. Therefore, the staff finds the proposed addition of Action Statements 3.8.1.1.f. and 3.8.1.1.g. acceptable.

Change 8: The licensee has proposed to add "*" in each Surveillance Requirement of 4.8.1.1.2. that requires starting the EDGs. The following footnote would be added at the end of Specification 4.8.1.1.4:

"* Surveillance testing shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube, warm-up and loading (unless loading times are specified in the individual Surveillance Requirements)."

At Salem the EDGs have a continuously operating prelubrication/warming system installed on each EDG. The system is designed to circulate the diesel lube oil continuously and maintain the lube oil temperature at $120 \pm 20^{\circ}\text{F}$. If the temperature drops below 100°F , the EDG is declared inoperable and action taken to increase the temperature of the lube oil. This note establishes the requirements to ensure the manufacturer's recommendations are met before the engine is started and establishes the conditions of the EDG before the test is run.

In addition, the loading of the EDG would be in accordance with the manufacturer's recommendation, unless the loading times are specified in the individual surveillance requirement. There is only one surveillance requirement that has an EDG loading time specification (4.8.1.1.2.c., the 6-month test that starts from ambient conditions and loads the EDG within 60 seconds). Operation of the prelubrication/warming system represents the ambient condition for the EDGs at Salem. This is being clarified by including it in the Bases.

This change meets the recommendations for reduced cold fast starts contained in Generic Letter 84-15 and the staff finds it acceptable.

Change 9: Throughout Specification 4.8.1.1.2., the licensee has proposed to change the acceptable EDG output voltage from 4160 ± 420 volts (4160 volts, $\pm 10\%$) to a range of ≥ 3950 and ≤ 4580 volts (4160 volts, $+10\%$, -5%). During a review by the licensee, of the degraded grid voltage calculations, the minimum recovery voltage of the vital buses required to ensure that vital loads would remain operable under degraded voltage conditions was determined to be 93.2%. The proposed minimum acceptable EDG voltage is being increased to 3950 volts, which is 95% of nominal, to ensure the operability of the vital bus loads under degraded voltage conditions.

This proposed change is more restrictive than the current TS requirements and reflects actual conditions at Salem. The change will provide greater assurance that the vital loads will remain operable. The staff finds this change acceptable.

Change 10: For Unit 1 only, the proposed change replaces, in Specification 4.8.1.1.2.a. "At least once per 31 days" with "In accordance with the frequency specified in Table 4.8-1".

This change specifies the frequency of performing surveillance tests based on the number of failures experienced and is consistent with the existing Unit 2 Technical Specifications and Generic Letter 84-15. The staff finds this acceptable.

Change 11: The current Specifications 4.8.1.1.2.a.2. and 4.8.1.1.2.a.3. require the EDG surveillances to be performed from ambient conditions and that the EDG accelerate to at least 900 rpm in less than or equal to 10 seconds, to load to greater than or equal to 1400 kw (Unit 1) or greater than or equal to 2600 kw (Unit 2) in less than or equal to 60 seconds and to operate for greater than or equal to 60 minutes. The licensee has proposed to combine the two surveillances as 4.8.1.1.2.a.2.; to delete "ambient" and reference an added footnote for manufacturer recommendations (see Change 8). The licensee has also proposed to allow gradual loading to a range of 2500 to 2600 kw in order to reduce EDG wear. These changes are consistent with Generic Letter 84-15 and the staff finds them acceptable.

In addition, the licensee proposes to add a new footnote to indicate that the load range is provided as a guidance to preclude exceeding the EDG manufacturer's design ratings. The above is consistent with what the staff has accepted on North Anna and is acceptable.

Change 12: The proposed change renumbers Specification 4.8.1.1.2.a.4. to 4.8.1.1.2.a.3. and changes "busses" to "bus" in this Specification.

These changes are editorial and are acceptable.

Change 13: For Unit 1 only, new Surveillance Requirement 4.8.1.1.2.b. states inspection criteria and requirements for the removal of accumulated water from fuel oil day tanks. This TS requires the removal of accumulated water from the fuel oil day tanks once every 31 days and after each operation of the EDG where the period of operation was greater than or equal to 1 hour.

This new surveillance requirement duplicates the existing surveillance requirement in the TS for Unit 2 and is a good preventive maintenance measure to maintain operability of the EDG. The staff finds this change acceptable.

Change 14: Specification 4.8.1.1.2.c. is a proposed new surveillance requirement. The proposed change will require starting each EDG at least once every 6 months from ambient conditions. The licensee proposes to perform the test per manufacturer's recommendations except for loading (See Change 8). The 6-month fast start test would differ from the current monthly test by requiring the EDG to be loaded to the 2500-2600 kw range in less than or equal to 60 seconds. The new surveillance requirement is consistent with the intent of Generic Letter 84-15 and the staff finds it acceptable.

In addition, the licensee proposes to add a new footnote to indicate that the load range is provided as a guidance to preclude exceeding the EDG manufacturer's design ratings. The above is consistent with what the staff has accepted on North Anna and is acceptable.

Change 15: The proposed change renumbers Specification 4.8.1.1.2.b. (Unit 1) and 4.8.1.1.2.c. (Unit 2) to 4.8.1.1.2.d., and changes "emergency busses" to "vital bus" in new Specification 4.8.1.1.2.d.3.b) (Unit 2).

These changes are editorial and are acceptable.

Change 16: For Unit 1 only, in Specification 4.8.1.1.2.d.2. (formerly Specification 4.8.1.1.2.b.2.), the licensee has proposed to change the acceptance criteria following the load rejection test from requiring that the EDG does not trip to restoration of the proper voltage and frequency within 4 seconds.

This proposed change is consistent with the Unit 2 TS and the staff finds it acceptable.

Change 17: In response to a request for additional information (RAI) dated October 15, 1991, the licensee performed a 50.59 Safety Evaluation dated January 23, 1992, to determine whether the EDG loading capacity is adequate under the new load profiles. The safety evaluation concluded that the largest load, the 1000 hp service water pumps, are now rated for 1030 hp. Based on the above, the licensee has proposed the load rejection values indicated in Specification 4.8.1.1.2.d.2. be increased to ≥ 820 kw which is slightly greater than the maximum load.

This change uses the latest information on the maximum single load on the EDGs and the staff finds it acceptable.

Change 18: For Unit 1, the licensee has proposed to add new Specifications 4.8.1.1.2.d.3. and 4.8.1.1.2.d.4., (revised numbers) for loss of offsite power test and engineered safety features (ESF) actuation signal without loss of offsite power test, respectively.

These additional tests are consistent with tests currently required at Unit 2. Therefore, the staff finds these changes acceptable.

Change 19: For Unit 2 only, in Specification 4.8.1.1.2.d.4., (revised number) for engineered safety features (ESF) actuation signal without loss of offsite power test, editorial changes were made which did not alter the original intent of the requirement. The staff finds these changes acceptable.

Change 20: For Unit 2 only, the licensee has proposed to delete the text in original Specification 4.8.1.1.2.c.5., now Specification 4.8.1.1.2.d.5., and insert "Deleted". This change deletes the requirement to demonstrate that upon a simulated loss of an EDG, with offsite power not available, the EDG cannot be auto-connected to a loaded bus, and subsequent loading is in accordance with design requirements.

The deletion of the surveillance requirement is consistent with Generic Letter 83-30 and the staff finds it acceptable.

Change 21: For Unit 1 only, Specification 4.8.1.1.2.d.6. (revised number), in the first line, the licensee proposed to change "a safety injection test" with "an ESF actuation test".

This change is editorial and makes the Unit 1 TS consistent with the Unit 2 TS. The staff finds this change acceptable.

Change 22: In original specification 4.8.1.1.2.b.3.a (Unit 1) and 4.8.1.1.2.c.6.a (Unit 2), now 4.8.1.1.2.d.6.a, the licensee proposes to change "vital busses" to "vital bus" in two places in each specification.

These changes are editorial and the staff finds them acceptable.

Change 23: The proposed change deletes from the original Specification 4.8.1.1.2.b.3.b (Unit 1) and 4.8.1.1.2.c.6.b (Unit 2), now 4.8.1.1.2.d.6.b, the phrase "from ambient condition" and adds a reference to the footnote on manufacturer's recommendations for EDG starts (See Change 8). For Unit 1, the licensee has proposed to add acceptance criteria for the loading time, voltage and

frequency of the vital bus.

This change clarifies the condition of the EDG before performance of the start test and changes the Unit 1 TS to be consistent with the Unit 2 TS. The staff finds these changes acceptable.

For Unit 2, the licensee proposed to change "emergency busses" to "vital bus" and for Unit 1, change "vital busses" to "vital bus". These are editorial changes and are acceptable.

Change 24: The proposed change rewrites original Specification 4.8.1.1.2.b.3.c (Unit 1) and 4.8.1.1.2.c.6.c (Unit 2), now Specification 4.8.1.1.2.d.6.c to read as follows:
"Verifying that all nonessential automatic diesel generator trips (i.e., engine overspeed, lube oil pressure low, 4 KV Bus differential and generator differential) are automatically bypassed upon loss of voltage on the vital bus concurrent with a safety injection actuation signal."

This change is editorial in nature. It is intended to clarify the test used to verify that nonessential, automatic EDG trips are bypassed. It does not alter the original intent of the requirement. Therefore, the staff finds the change acceptable.

Change 25: The proposed change deletes original Specification 4.8.1.1.2.b.4. which is now included in Specification 4.8.1.1.2.a.2. and adds the 24-hour EDG endurance test as new Specification 4.8.1.1.2.d.7. (Unit 1 only).

These changes make the Unit 1 TS consistent with the revised Unit 2 Specification 4.8.1.1.2.d.7. The staff finds these changes acceptable, as discussed below.

The proposed change also modifies the original Unit 2 Specification 4.8.1.1.2.c.7. (now Specification 4.8.1.1.2.d.7.) text to read as follows: "Verifying the diesel generator operates for at least 24 hours*. During the first 2 hours of this test, the diesel generator shall be loaded to 2760-2860 kw**. During the remaining 22 hours of this test, the diesel generator shall be loaded to 2500-2600 kw**. The steady state voltage and frequency shall be maintained at ≥ 3950 and ≤ 4580 volts and 60 ± 1.2 Hz during this test. Within 5 minutes after completing this 24-hour test, perform Specification 4.8.1.1.2.d.6.b****."

The original specification identified the EDG loading condition for the first 2 hours of the test as equal to or greater than 2860 kw which is 110% of continuous duty rating of the EDG and for the remaining 22 hours at a loading condition of greater than or equal to 2600 kw which is the continuous duty rating. The licensee proposed to use a range of 2760-2860 kw (106% to 110% of the continuous duty rating) for the first two hours and a range of

2500-2600 kw for the remaining 22 hours. The new proposed ranges envelope the original load values, while allowing for some minor variations in the EDG loading to avoid an overload condition. The staff finds these changes acceptable.

The proposed change also adds a footnote to clarify that a failure of Surveillance Requirement 4.8.1.1.2.d.6.b., following performance of Surveillance Requirement 4.8.1.1.2.d.7., does not require the 24-hour test of 4.8.1.1.2.d.7. to be repeated. The footnote requires that the retest of the surveillance requirement be performed under hot start or normal operating temperature condition. This is in agreement with the STS and the staff finds it acceptable.

Change 26: The proposed change to original Specification 4.8.1.1.2.b.5. (Unit 1) and 4.8.1.1.2.c.8. (Unit 2), now Specification 4.8.1.1.2.d.8., modifies the surveillance criteria from the 2000-hour rating of 2760 kw to the 2-hour rating of 2860 kw. This is in agreement with Regulatory Guide 1.9 which states that the operating loads should remain within the short time rating of the EDG. For Salem, the short time rating is the 2-hour rating or 2860 kw. In addition, in the September 30, 1993 supplement, the licensee responded to a staff comment pertaining to how the determination would be made to ensure the auto-connected loads did not exceed the 2-hour rating of the EDG. The licensee committed to revise the 18-month surveillance procedure to require operations (who performs the surveillance tests) to contact engineering (who performs the loading calculations), to obtain the information on the total auto-connected loads on the EDG. Based on the above discussion, the staff finds the proposed changes acceptable.

Change 27: Changing the word "energized" to "energizing" in original Specification 4.8.1.1.2.c.9., now 4.8.1.1.2.d.9. is an editorial change and is acceptable (Unit 2). For Unit 1, a new Specification 4.8.1.1.2.d.9. is added. This specification tests the capability of the EDG to change from the test mode to standby conditions on receipt of a safety injection signal. This change makes the Unit 1 TS consistent with the Unit 2 TS. The staff finds this change acceptable.

Change 28: The proposed change renumbers Specification 4.8.1.1.2.d. as 4.8.1.1.2.e. with regard to diesel generator ten-year interdependence test. This is an editorial change and is acceptable (Unit 2). For Unit 1, this test is added as Specification 4.8.1.1.2.e. and is identical to the Unit 2 specification. This change makes the Unit 1 TS consistent with the Unit 2 TS. The staff finds this change acceptable.

Change 29: The proposed change modifies Specification 4.8.1.1.4. to make reference to Specification 6.9.2 for special reporting, within 30 days, of EDG failures (Unit 2). This is an editorial change and

is acceptable. For Unit 1, this reporting requirement is added as Specification 4.8.1.1.4. and is identical to the Unit 2 specification. This change makes the Unit 1 TS consistent with the Unit 2 TS. The staff finds this change acceptable.

Change 30: For Unit 2, Table 4.8-1 a footnote, denoted by **, to the 7-day test frequency for greater than one EDG failure in the last 20 valid tests has been added. The footnote requires that the associated test frequency be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to less than or equal to one. Also, some editorial changes have been made to the table. The staff finds the revised Table 4.8-1 to be consistent with Generic Letter 84-15 and is acceptable. For Unit 1, Table 4.8-1 has been added and is identical to the Unit 2 table. This change makes the Unit 1 TS consistent with the Unit 2 TS. The staff finds this change acceptable.

Change 31: The proposed change inserts the phrase "(vital bus system)" between "system" and "and" in Specification 3.8.1.2.a.; inserts "separate and independent" between "Two" and "diesel" in Specification 3.8.1.2.b.; and adds "and" at the end of the sentence in Specification 3.8.1.2.b.1.

The above changes are editorial and do not alter the original intent of the requirement. Therefore, the staff finds the changes acceptable.

Change 32: The original surveillance requirement for diesel fuel oil testing in Specification 4.8.1.1.3.b. referenced ASTM standard ASTM D975-68 for the analysis of fuel oil samples. The licensee proposes to change the reference to ASTM D975-77. This change incorporates the same standard currently referenced in the STS and is currently used at the Hope Creek Nuclear Generating Station.

Also, the licensee committed to include a detailed description of the fuel oil testing program in the Salem Updated Final Safety Analysis Report (UFSAR). By letter dated December 19, 1991, the licensee provided the details of the fuel oil test program that is to be included in the UFSAR.

The staff finds the proposed change to be consistent with the STS and with previously approved Hope Creek requirements and is acceptable. The staff also agrees that the program for testing of the fuel oil samples to be added to the UFSAR is acceptable.

Change 33: The proposed change makes editorial changes to Specification 4.8.1.2. which defines the surveillance requirements when in Modes 5 and 6. The staff finds these changes acceptable.

Change 34: The proposed change makes a number of editorial changes in Bases 3/4 8.1 and 3/4 8.2, to clarify and make the Bases consistent between Salem 1 and 2.

For Unit 1 a new paragraph is added that discusses surveillance requirements and the use of Regulatory Guides in their development. This is consistent with Unit 2 Bases.

A new paragraph has been added that defines the ambient conditions of the EDG required for the performance of the 6-month test of Specification 4.8.1.1.2.c.

The above changes are intended to clarify and provide consistency in the Bases and provide information about the expected condition of the EDG before performing the surveillance test. The staff finds these changes acceptable.

Change 35: During preparation of the revised TS pages, the licensee identified the following editorial changes that have been incorporated:

- a. Specification 3.8.1.1, ACTION e., in the last sentence, the phrase "...or be at least HOT..." was changed to "...or be in at least HOT..."
- b. Specification 3.8.1.1, ACTION a., after "24 hours", the period was changed to a semicolon. (Unit 2 only)
- c. Surveillance Requirement 4.8.1.1.2.b, the spelling of the word "from" was corrected. (Unit 2 only)
- d. Surveillance Requirement 4.8.1.2, the parenthesis was closed after "4.8.1.1.3.a.2. (Unit 2 only)

These changes are editorial and the staff finds them acceptable.

Amendment 123 was issued on October 4, 1993, which modified the Action Statements 3.8.1.1.a, b, and c for Salem 2. However, these were one-time changes to the TS that were required for the performance of switchyard work during the Salem 1 refueling outage. These activities have been completed. Therefore, since the extended allowed outage times for one offsite power source are no longer required, these revised TS do not include the changes approved in Amendment 123 for Salem 2.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes 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 (58 FR 57858). 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.

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