



AUG 20 2002

LR-N02-0069
LCR H01-04

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Gentlemen:

**REQUEST FOR LICENSE AMENDMENT
A.C. SOURCES - OPERATING
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354**

Pursuant to 10 CFR 50.90, PSEG Nuclear LLC (PSEG) hereby requests a revision to the Technical Specifications (TS) for the Hope Creek Generating Station. In accordance with 10CFR50.91(b)(1), a copy of this submittal has been sent to the State of New Jersey.

The proposed changes will reduce degradation of the diesel generators associated with fast starting and rapid loading. Changes to the TS requirements for inoperable diesel generators will permit operating personnel to increase their focus on implementing corrective actions for the inoperable diesel generators. Changes to the voltage and load ranges for diesel generator surveillance testing will reduce the burden on plant personnel performing the tests. Other changes are proposed to provide clarity and eliminate duplication in TS requirements and to provide consistency with the current design basis. The proposed changes are consistent with the guidance in Regulatory Guide 1.9, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," Revision 3, and with NUREG-1433, "Standard Technical Specifications - General Electric Plants, BWR/4," Revision 2. The NRC has approved similar changes for other licensees as described in Attachment 1.

PSEG has evaluated the proposed changes in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c), and has determined this request involves no significant hazards considerations.

A description of the requested amendment, the reason for the changes, the justification for the changes, and the basis for no significant hazards consideration determination are provided in Attachment 1. The marked up Technical Specification pages are

A001

AUG 20 2002

provided in Attachment 2. The retyped Technical Specification pages are provided in Attachment 3.

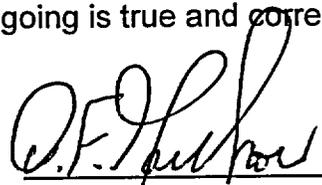
PSEG Nuclear LLC has determined that this request does not involve a significant hazards consideration pursuant to 10 CFR 50.92. In addition, there is no significant increase in the amounts or types of any effluents that may be released offsite, and there is no significant increase in individual or cumulative occupational radiation exposure. Consequently, the proposed amendment satisfies the criteria of 10 CFR 51.22(c)(9) for categorical exclusion from the requirement for an environmental assessment.

PSEG requests approval of the proposed License Amendment by February 28, 2003 to be implemented within 60 days.

Should you have any questions regarding this request, please contact Mr. Paul Duke at 856-339-1466.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 8/20/02



D. Garchow
Vice President - Operations

Attachments (3)

C Mr. H. J. Miller, Administrator - Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

U. S. Nuclear Regulatory Commission
ATTN: Mr. G. Wunder, Licensing Project Manager - Hope Creek
Mail Stop 08B3
Washington, DC 20555-0001

USNRC Senior Resident Inspector - Hope Creek (X24)

Mr. K. Tosch, Manager IV
Bureau of Nuclear Engineering
PO Box 415
Trenton, NJ 08625

**HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354**

**EVALUATION OF PROPOSED CHANGES TO THE TECHNICAL
SPECIFICATIONS FOR A.C. SOURCES - OPERATING**

**REQUEST FOR LICENSE AMENDMENT
A.C. SOURCES - OPERATING**

Table of Contents

| | | |
|-----|---|----|
| 1. | DESCRIPTION | 1 |
| 2. | PROPOSED CHANGE | 1 |
| 3. | BACKGROUND | 3 |
| 4. | TECHNICAL ANALYSIS | 7 |
| 5. | REGULATORY SAFETY ANALYSIS..... | 11 |
| 5.1 | No Significant Hazards Consideration..... | 11 |
| 5.2 | Applicable Regulatory Requirements/Criteria | 12 |
| 6. | ENVIRONMENTAL CONSIDERATION | 13 |
| 7. | REFERENCES | 13 |

1 DESCRIPTION

This letter is a request to amend Facility Operating License NPF-57 for the Hope Creek Generating Station. The proposed changes would revise the Technical Specifications (TSs) contained in Appendix A to the Operating License to modify the diesel generator Actions and Surveillance Requirements consistent with NUREG-1433, "Standard Technical Specifications - General Electric Plants, BWR/4," Revision 2, and with Regulatory Guide 1.9, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," Revision 3.

2 PROPOSED CHANGE

The marked up pages for the proposed changes to the Technical Specifications are included in Attachment 2 of this submittal.

1. TS 3.8.1.1 Actions "b," "c," "e" and "g" would be modified to eliminate the requirement to perform Surveillance Requirement 4.8.1.1.2.a.5 (one hour load-run test) when demonstrating the operability of the remaining diesel generators with one or two diesel generators inoperable. Satisfactory performance of SR 4.8.1.1.2.a.4 (start from standby conditions) would be sufficient to demonstrate operability of the remaining diesel generators when required.
2. TS 3.8.1.1 Action "b" would be modified to increase the time allowed from 16 hours to 24 hours to demonstrate operability of the remaining diesel generators with one diesel generator inoperable.
3. TS 3.8.1.1 Actions "e" and "g" would be modified to eliminate the requirement to test the remaining operable Emergency Diesel Generators (EDGs) when the diesel generators are inoperable due to an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, or when the absence of any potential common mode failure for the remaining diesel generators can be demonstrated. This change will eliminate unnecessary diesel generator surveillance testing when the cause of inoperability is known and there is no common mode failure.
4. Changes to the diesel generator start Surveillance Requirements:
 - a. SR 4.8.1.1.2.a.4 would be revised to delete the start time constraints and the start signal requirements for the monthly surveillance start test. A footnote to SR 4.8.1.1.2.a.4 would be added to state that a modified start involving idling and gradual acceleration to synchronous speed may be used for this SR and that, when modified start procedures are not used, the time,

- voltage, and frequency tolerances of the new SR 4.8.1.1.2.g must be met.
- b. A new SR 4.8.1.1.2.g would be added to verify at least once per 184 days that each diesel starts and achieves the minimum required voltage and frequency within the required time and subsequently achieves the required steady state voltage and frequency.
5. The steady state voltage criterion in SRs 4.8.1.1.2.a.4, 4.8.1.1.2.h.2, 4.8.1.1.2.h.4.b, 4.8.1.1.2.h.5, 4.8.1.1.2.h.6.b, 4.8.1.1.2.k.1 and 4.8.1.1.2.k.2 would be changed from 4160 ± 420 volts to the range between 3828 and 4580 volts.
 6. Changes to diesel generator loading criteria:
 - a. The minimum diesel generator loading criterion in SRs 4.8.1.1.2.a.5 and 4.8.1.1.2.k.1 and 4.8.1.1.2.k.2 would be changed from 4300 kW to 4000 kW. The footnotes to the SRs on pages 3/4 8-4 and 3/4 8-9 would be revised to be consistent with NUREG-1433.
 - b. For the two hour margin test, the minimum diesel generator loading criterion in SR 4.8.1.1.2.k.1 would be changed from 4800 kW to 4652 kW.
 7. The fast loading requirement in SR 4.8.1.1.2.a.5 would be deleted. The footnote to SR 4.8.1.1.2 on page 3/4 8-4 would be revised to reflect this change.
 8. SR 4.8.1.1.2.h.2 would be revised to delete the kW value for the RHR pump motor. This change is administrative in nature.
 9. Editorial Changes. The following changes are proposed to correct typographical errors or to eliminate duplication in TS requirements:
 - a. A typographical error in the footnote to TS 3.8.1.1 Action "c" on page 3/4 8-2 would be corrected.
 - b. "Verify" would be changed to "Verifying" in SR 4.8.1.1.2.a.4.
 - c. The redundant footnote to SR 4.8.1.1.2.h.4.b on page 3/4 8-6 would be deleted.
 - d. The redundant footnote to SR 4.8.1.1.2.h.6.b on page 3/4 8-7 would be deleted.

- e. Incorrect references to diesel generator test requirements in TS 3.8.1.1 Actions "d" and "e" would be deleted.

The proposed changes are consistent with the requirements of NUREG-1433, "Standard Technical Specifications - General Electric Plants, BWR/4," Revision 2 and Regulatory Guide 1.9, "Selection, Design, Qualification and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," Revision 3. The proposed changes will eliminate unnecessary diesel generator testing while maintaining reliability. The degradation associated with fast starting and rapid loading will be reduced. Changes to the TS requirements for inoperable diesel generators will permit operating personnel to increase their focus on implementing corrective actions for the inoperable diesel generators. Changes to the voltage and load ranges for diesel generator surveillance testing will reduce the burden on plant personnel performing the tests and provide consistency with the current design basis. The administrative and editorial changes will provide clarity and eliminate duplication in TS requirements.

3 BACKGROUND

The standby AC power source for Hope Creek Generating Station consists of four separate and independent diesel generators. The sizing of the standby diesel generators and the loads assigned among them is such that any combination of three out of four of the diesel generators is capable of shutting down the plant safely, maintaining the plant in a safe shutdown condition, and mitigating the consequences of accident conditions. Each generator is driven by a Colt-Pielstick PC 2.3V 12 cylinder engine. Each diesel generator is rated at 4430 kW for continuous operation and at 4873 kW for 2 hours of short time operation in any 24-hour period. The continuous rating is based on the maximum total load required at any one time. Each generator is connected exclusively to its dedicated 4.16-kV Class 1E bus. Each of the four Class 1E power supply channels feed loads in its own dedicated load group. The four diesel generators are completely independent. Their mechanical and electrical systems are designed so that a single failure affects the operation of only one diesel generator.

With exceptions as noted in the Updated Final Safety Analysis Report (UFSAR), Hope Creek diesel generator testing requirements comply with the guidance in Regulatory Guide 1.9, Revision 2, and Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1. However, Regulatory Guide 1.9, Revision 3 provides useful information regarding methods of diesel generator surveillance testing acceptable to the NRC staff. Regulatory Guide 1.9, Revision 3, integrates into a single regulatory guide pertinent guidance previously contained in Revision 2 of Regulatory Guide 1.9, Revision 1 of Regulatory Guide 1.108, "Periodic Testing of

Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plant," and Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability."

1. TS 3.8.1.1 Actions "b," "c," "e" and "g" currently require performance of SR 4.8.1.1.2.a.4 (start from standby conditions) and SR 4.8.1.1.2.a.5 (one hour load-run test) when demonstrating the operability of the remaining diesel generators with one or two diesel generators inoperable. Performing the one hour load-run test is an unnecessary operational burden since satisfactory performance of SR 4.8.1.1.2.a.4 (start from standby conditions) would be sufficient to demonstrate operability of the remaining diesel generators when required. Loading the diesel generator in order to perform SR 4.8.1.1.2.a.5 requires that the diesel generator be paralleled with the offsite power supply. This places demands on plant operating personnel that can lessen the focus on the corrective actions needed to restore the inoperable diesel generators to operable status.
2. TS 3.8.1.1 Action "b" currently requires that, with one diesel generator inoperable, surveillance testing to demonstrate operability of the remaining diesel generators be completed within 16 hours. The testing is required when the diesel generator is inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, unless the absence of any potential common mode failure for the remaining diesel generators is demonstrated. The current 16 hour allowance can cause unnecessary testing to be performed on operable diesel generators, particularly for a plant such as Hope Creek with four diesel generators, and is inconsistent with guidance in NRC Generic Letter 84-15 and with NUREG-1433 which allow 24 hours.
3. With two diesel generators inoperable, TS 3.8.1.1 Actions "e" and "g" currently require the remaining operable diesel generators to be tested within 8 hours. In cases where the diesel generators are inoperable due to an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, or where the absence of any potential common mode failure for the remaining diesel generators can be demonstrated, this requirement causes unnecessary testing to be performed and places a burden on operating personnel that can lessen the focus on implementing corrective actions for the inoperable diesel generators.
4. SR 4.8.1.1.2.a.4 currently requires verification at least once per 31 days that each diesel generator starts from standby conditions and achieves the minimum required voltage and frequency within 10 seconds after receipt of the start signal. Regulatory Guide 1.9, Revision 3, states that, for the monthly start test, the diesel generator can be slow started and

reach rated speed on a prescribed schedule to minimize stress and wear. Regulatory Guide 1.9, Revision 3, recommends that the "fast start test" which verifies the diesel generator reaches the required voltage and frequency within the required time be performed once every 184 days.

The governors currently installed on the Hope Creek diesel generators do not allow gradual acceleration, except by local manual control. However, PSEG is evaluating a design change that would permit remote starting and gradual acceleration.

5. Voltage analysis performed in accordance with Branch Technical Position PSB-1, "Adequacy of Station Electric Distribution System Voltages," July 1981, Revision 0, confirmed that the onsite distribution system voltages are adequate to support Class 1E loads within the equipment ratings and that the setting of the undervoltage relays on the source side of the incoming offsite source breakers on the Class 1E 4.16-kV buses will protect Class 1E loads from degraded voltages resulting from sustained low offsite system voltage condition. The minimum acceptable 4.16-kV bus voltage was determined to be 0.92 per unit in order to maintain acceptable voltages on downstream buses. Therefore, the undervoltage relays are set at 0.92 per unit of 4.16-kV with sufficient time delay to assure that automatic bus transfer does not occur on transient undervoltage conditions.

The current minimum voltage acceptance criterion in SRs 4.8.1.1.2.a.4, 4.8.1.1.2.h.2, 4.8.1.1.2.h.4.b, 4.8.1.1.2.h.5, 4.8.1.1.2.h.6.b and 4.8.1.1.2.k is 3740 volts which is less than the minimum acceptable voltage calculated in the degraded voltage analysis. This minimum value would be increased to 3828 volts, consistent with the degraded voltage analysis. Review of recent test data indicates that the actual steady state voltage is greater than or equal to 4100 volts. Therefore the proposed minimum steady state voltage of 3828 volts is readily achievable.

6. SR 4.8.1.1.2.a.5 (load-run test) verifies that each diesel generator is capable of synchronizing and accepting greater than or equal to the equivalent of the maximum expected accident loads. SR 4.8.1.1.2.k (endurance and margin test) demonstrates the full-load carrying capability of each diesel generator for a period of at least 24 hours. For SRs 4.8.1.1.2.a.5 and 4.8.1.1.2.k, the diesel generators are currently required to be loaded to between 4300 and 4400 kW. The footnotes to the SRs on pages 3/4 8-4 and 3/4 8-9 explain that the band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band shall not invalidate the test; the loads, however, shall not be less than 4300 kW. The currently specified range is equivalent to 97.1% to 99.3% of the continuous rating of 4430 kW and is more restrictive than the guidance in Regulatory Guide 1.9, Sections 2.2.2 and 2.2.9. The

relatively narrow load range places an unnecessary burden on plant personnel performing the test. The load limits in the footnotes on pages 3/4 8-4 and 3/4 8-9 are unnecessary.

For the two hour margin test, in SR 4.8.1.1.2.k.1, the diesel generators are currently required to be loaded to between 4800 and 4873 kW. The currently specified range is equivalent to 108.4% to 110.0% of the continuous rating of 4430 kW and is more restrictive than the guidance in Regulatory Guide 1.9, Section 2.2.9. This places an unnecessary burden on plant personnel performing the test.

7. SR 4.8.1.1.2.a.5 currently requires the diesel to be loaded to its continuous rating in less than or equal to 130 seconds. NUREG-1366, "Improvements to Technical Specification Surveillance Requirements," states that fast loading is the most significant cause of accelerated degradation of diesel generators and that it should be eliminated except for the loss of power test which is performed every 18 months.
8. SR 4.8.1.1.2.h.2 currently includes a value of 1003 kW in the requirement to verify the diesel generator capability to reject a load of greater than or equal to that of the RHR pump motor while maintaining voltage and frequency. This value corresponds to the load at the RHR pump motor's 1250 horsepower rating. At the design basis flow and differential pressure conditions for the RHR pump, the actual RHR pump motor load is less than 1003 kW. Inclusion of the motor's design load rating in the SR is confusing since it is not verified during the surveillance test and does not correspond to the actual RHR pump motor load during postulated accident conditions.
9. Editorial Changes:
 - a. The footnote to TS 3.8.1.1 Action "c" on page 3/4 8-2 contains an unnecessary comma after the word "restored."
 - b. "Verify" should be changed to "Verifying" in SR 4.8.1.1.2.a.4.
 - c. The footnote to SR 4.8.1.1.2.h.4.b on page 3/4 8-6 is redundant to the footnote to SR 4.8.1.1.2 on page 3/4 8-4 and may be deleted without affecting the SR.
 - d. The footnote to SR 4.8.1.1.2.h.6.b on page 3/4 8-7 is redundant to the footnote to SR 4.8.1.1.2 on page 3/4 8-4 and may be deleted without affecting the SR.
 - e. TS 3.8.1.1 Actions "d" and "e" refer to SRs 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 as satisfying the diesel generator test requirements of

Action "a." Hope Creek TS Amendment 72 (TAC Nos. M89219 and M90272) removed the requirement in Action "a" to perform diesel generator testing when an offsite power circuit becomes inoperable.

The current Technical Specifications contain requirements that result in unnecessary diesel generator testing that can contribute to accelerated degradation. These requirements are not consistent with current regulatory guidance.

4 TECHNICAL ANALYSIS

The proposed changes would eliminate unnecessary diesel generator testing while maintaining diesel generator reliability.

1. TS 3.8.1.1 Actions "b," "c," "e" and "g" would be modified to eliminate the requirement to perform Surveillance Requirement SR 4.8.1.1.2.a.5 (one hour load-run test) when demonstrating the operability of the remaining diesel generators with one or two diesel generators inoperable. When the absence of any potential common mode failure has not been demonstrated, satisfactory performance of SR 4.8.1.1.2.a.4 (start from standby conditions) would be sufficient to demonstrate operability of the remaining diesel generators. This proposed change is consistent with NUREG-1433, "Standard Technical Specifications - General Electric Plants, BWR/4," Revision 2.

Eliminating the requirement to perform SR 4.8.1.1.2.a.5 in TS 3.8.1.1 Actions "b," "c," "e" and "g" reduces the burden on operating personnel associated with synchronizing, loading, unloading and cooling down each operable diesel generator. This would permit operating personnel to increase the focus on implementing corrective actions for the inoperable diesel generators.

2. TS 3.8.1.1 Action "b" would be modified to increase the time allowed from 16 hours to 24 hours to demonstrate operability of the remaining diesel generators with one diesel generator inoperable. This would provide additional time to determine the cause of the inoperability and would further reduce the number of unnecessary tests and the associated wear and stress on operable diesel generators.

The proposed change is consistent with the guidance in NRC Generic Letter 84-15 and with NUREG-1433. The NRC approved a similar change for the Seabrook Station (TAC No. MB1292). The Technical Specifications for the Limerick Generating Station, which is similar to Hope Creek with four dedicated diesel generators per unit, allow 24 hours to demonstrate operability of the remaining diesel generators.

3. TS 3.8.1.1 Actions "e" and "g" (two diesel generators inoperable) would be modified to eliminate the requirement to test the remaining operable diesel generators when the diesel generators became inoperable due to an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, or when the absence of any potential common mode failure for the remaining diesel generators is demonstrated. The proposed change would eliminate unnecessary diesel generator starts when the cause of inoperability is known and there is no common mode failure and would permit operating personnel to increase their focus on implementing corrective actions for the inoperable diesel generators.

The requirement to restore at least one of the two inoperable diesel generators to operable status within two hours would not be changed.

4. SR 4.8.1.1.2.a.4 currently requires a fast start at least once per 31 days.
 - a. SR 4.8.1.1.2.a.4 would be revised to delete the start time constraint and the start signal requirements for the monthly surveillance start test. A footnote to SR 4.8.1.1.2.a.4 would be added to state that a modified start involving idling and gradual acceleration to synchronous speed may be used for this SR and that, when modified start procedures are not used, the time, voltage, and frequency tolerances of SR 4.8.1.1.2.g must be met.
 - b. A new SR 4.8.1.1.2.g would be added to verify at least once per 184 days that each diesel starts and achieves the minimum required voltage and frequency within the required time and subsequently achieves the required steady state voltage and frequency.

Performing the diesel generator fast start test once per 184 days would be an exception to Regulatory Guide 1.108, Regulatory Position C.2.c.(1). However, it would reduce unnecessary wear and stress on the diesel generators. The proposed changes are consistent with the guidance in Regulatory Guide 1.9, Revision 3, and NUREG-1433. The NRC approved a similar change for the Seabrook Station (TAC No. MB1292).

5. The proposed changes to the minimum steady state voltage criterion in SRs 4.8.1.1.2.a.4, 4.8.1.1.2.h.2, 4.8.1.1.2.h.4.b, 4.8.1.1.2.h.5, 4.8.1.1.2.h.6.b and 4.8.1.1.2.k are consistent with the current design basis values for degraded voltage conditions. Increasing the acceptance criterion from 3740 to 3828 volts ensures that voltages on downstream buses are acceptable when the 4.16-kV Class 1E buses are being supplied by the emergency diesel generators.

6. SR 4.8.1.1.2.a.5 currently requires each diesel generator to be loaded to between 4300 and 4400 kW for one hour. This range is equivalent to 97.1% to 99.3% of the continuous rating of 4430 kW. Diesel generator loading for the test is accomplished by synchronizing the generator with the offsite power source. Operation in this mode within the relatively narrow load range currently required by SR 4.8.1.1.2.a.5 requires close operator attention for the duration of the test.

The current requirement is more restrictive than the guidance in Regulatory Guide 1.9, Revision 3, Section 2.2.2, which permits the diesel generator to be loaded to between 90% and 100% of the continuous rating for the monthly load test.

Changing the lower limit in SR 4.8.1.1.2.a.5 from 4300 kW to 4000 kW (90.2% of the continuous rating) will reduce the burden on plant personnel performing the test while maintaining the effectiveness of the surveillance requirement.

The NRC approved a similar change for the Callaway Plant (TAC No. M93004).

SR 4.8.1.1.2.k.1 requires an endurance test to be performed for each diesel generator once per refueling cycle. For the first 22 hours of the test, the diesel generator is currently required to be loaded to between 4300 and 4400 kW, equivalent to 97.1% to 99.3% of the continuous rating of 4430 kW. For the remaining two hours of the test, the diesel generator is required to be loaded to between 4800 and 4873 kW, equivalent to 108.3% to 110.0% of the continuous rating of 4430 kW. Diesel generator loading for the test is accomplished by synchronizing the generator with the offsite power source. Operation in this mode within the relatively narrow load ranges currently required by SR 4.8.1.1.2.k.1 requires close operator attention for the duration of the test.

The current requirements are more restrictive than the guidance in Regulatory Guide 1.9, Revision 3, Section 2.2.9. For the endurance and margin test, Regulatory Guide 1.9 permits the diesel generator to be tested for two hours at a load equal to 105% to 110% of the continuous rating and for 22 hours at a load equal to 90% to 100% of the continuous rating.

The lower load limit for the first 22 hours in SR 4.8.1.1.2.k.1 would be changed from 4300 kW to 4000 kW. The lower load limit for the remaining two hours would be changed from 4800 kW to 4652 kW (105% of the continuous rating). These changes will reduce the burden on plant

personnel performing the test while maintaining the effectiveness of the surveillance requirements.

Proposed changes to the footnotes to SRs 4.8.1.1.2.a.5 and 4.8.1.1.2.k.1 on pages 3/4 8-4 and 3/4 8-9 are consistent with NUREG-1433 and are considered administrative in nature.

The hot restart test (SR 4.8.1.1.2.k.2) may be performed either within five minutes of completing the 24 hour endurance test or within five minutes of shutting down the diesel generator after operation for two hours between 4300 kW and 4400 kW. Similar to the discussion above for SRs 4.8.1.1.2.a.5 and 4.8.1.1.2.k.1, the relatively narrow load range currently specified in SR 4.8.1.1.2.k.2 represents an unnecessary operational burden. Changing the lower limit of this range from 4300 kW to 4000kW will reduce the burden on plant personnel performing the test and is consistent with SR 3.8.1.15 of NUREG-1433, "Standard Technical Specifications - General Electric Plants, BWR/4," Revision 2.

7. The fast loading requirement in SR 4.8.1.1.2.a.5 would be deleted. Fast loading is identified as the most significant cause of accelerated degradation of diesel generators in NUREG-1366. It can cause rapid piston ring and cylinder liner wear (up to 40 times greater than normal wear). NUREG-1366 states that, with the exception of the loss of offsite power test, fast loading should be eliminated in favor of gradual loading in accordance with the diesel generator manufacturer's recommendations.

The footnote to SR 4.8.1.1.2.on page 3/4 8-4 would also be changed as shown in Attachment 2 to reflect deletion of the fast loading requirement from SR 4.8.1.1.2.a.5.

The NRC approved similar changes for the LaSalle County, Braidwood and Byron Nuclear Power Stations (TAC Nos. M92567, M92568, M92569, M92570, M92571 and M92572)

8. SR 4.8.1.1.2.h.2 is performed at least once per 18 months during shutdown to verify each diesel generator's capability to reject a load of greater than or equal to that of the RHR pump motor while maintaining voltage and frequency within the required range. While the RHR pump motor is the largest single post-accident load for each diesel generator, 1003 kW is a design value that does not correspond to the load required when the RHR pump is operating at the design basis flow and differential pressure conditions. Under design basis conditions, the actual RHR pump motor load is less than 1003 kW. The motor load rating is not part of the verification performed during the surveillance test. Deleting the parenthetical load rating for the RHR pump motor does not change the manner in which the test is performed and is consistent with SR 3.8.1.9 in

NUREG-1433, Revision 2. The proposed change is administrative in nature.

9. The editorial changes do not change the intent of any TS requirements.

5 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

PSEG Nuclear (PSEG) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment" as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed changes do not affect the operational limits or the physical design of the emergency diesel generators.

The emergency diesel generator system is not an accident initiator. The proposed changes will minimize unnecessary testing that can result in accelerated degradation and will reduce the burden on plant operating personnel while continuing to ensure emergency diesel generator reliability. The editorial and administrative changes do not change the intent of any Technical Specification requirement.

Since the proposed changes do not affect any accident initiator and since the emergency diesel generators will remain capable of performing their design function, the proposed change does not involve a significant increase in the probability or off-site and on-site radiological consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed changes do not affect the operational limits or the physical design of the emergency diesel generators. The diesel generators will remain capable of performing their design function. No new failure mechanisms, malfunctions, or accident initiators are being introduced by the proposed changes. Therefore, the proposed changes do not create

the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed changes do not affect the operational limits or the physical design of the emergency diesel generators. The diesel generators will remain capable of performing their design function. Unnecessary testing that can result in accelerated degradation will be minimized by the proposed changes. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, PSEG concludes that the proposed changes present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

10 CFR 50 Appendix A, General Design Criterion (GDC) 17 requires that onsite electric power systems have sufficient independence, capacity, capability, redundancy, and testability to ensure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents, assuming a single failure.

10 CFR 50 Appendix A, GDC 18 requires that electric power systems important to safety be designed to permit appropriate periodic inspection and testing to assess the continuity of the systems and the condition of their components.

10 CFR 50 Appendix B, Criterion III and Criterion XI require that (1) measures be provided for verifying or checking the adequacy of design by design reviews, by the use of alternative or simplified calculational methods, or by the performance of a suitable testing program and (2) a test program be established to ensure that systems and components perform satisfactorily and that the test program include operational tests during nuclear power plant operation.

10 CFR 50 Section 50.63 requires that each light-water-cooled nuclear power plant be able to withstand and recover from a station blackout (i.e., loss of off-site and onsite emergency ac power systems) for a specified duration.

Diesel generators have been widely used as the power source for onsite power systems. Regulatory Guide 1.9, Revision 3, provides guidance acceptable to the NRC staff for complying with the Commission's requirements that diesel generator units intended for use as onsite emergency power sources in nuclear power plants be selected with sufficient capacity, be qualified, and have the necessary reliability and availability for station blackout and design basis accidents.

The changes proposed in this license amendment request are consistent with the guidance contained in Regulatory Guide 1.9, Revision 3, and overall compliance with regulatory requirements will be maintained following the implementation of these changes.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6 ENVIRONMENTAL CONSIDERATION

PSEG has determined the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or a surveillance requirement. The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

7 REFERENCES

1. Regulatory Guide 1.9, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," Revision 3.
2. Regulatory Guide 1.9, "Selection, Design, and Qualification of Diesel-Generator Units Used as Standby (Onsite) Electric Power Systems at Nuclear Power Plants," Revision 2.
3. Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1.

4. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability."
5. Generic Letter 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirement for Testing During Power Operation."
6. NUREG-1433, "Standard Technical Specifications - General Electric Plants, BWR/4," Revision 2.
7. NUREG-1366, "Improvements to Technical Specification Surveillance Requirements."

**HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354
REVISIONS TO THE TECHNICAL SPECIFICATIONS**

TECHNICAL SPECIFICATION PAGES WITH PROPOSED CHANGES

The following Technical Specifications for Facility Operating License No. NPF-57 are affected by this change request:

| <u>Technical Specification</u> | <u>Page</u> |
|--------------------------------|-------------|
| 3/4.3.8.1 | 3/4 8-1 |
| | 3/4 8-2 |
| | 3/4 8-3 |
| | 3/4 8-4 |
| | 3/4 8-6 |
| | 3/4 8-7 |
| | 3/4 8-9 |

3/4.8 ELECTRICAL POWER SYSTEMS

3/4 8.1 A.C. SOURCES

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 circuits between the offsite transmission network and the onsite Class 1E distribution system, and
- b. Four separate and independent diesel generators, each with
 - 1. A separate fuel oil day tank containing a minimum of 360 gallons of fuel,
 - 2. A separate fuel storage system consisting of two storage tanks containing a minimum of 44,800 gallons of fuel, and
 - 3. A separate fuel transfer pump for each storage tank.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION: a. With one offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the inoperable offsite circuit to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

b. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the above required A.C. offsite sources 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 became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 separately for each diesel generator within 24 hours unless the absence of any potential common mode failure for the remaining diesel generators is demonstrated. If continued operation is permitted by LCO 3.7.1.3, restore the inoperable diesel generator to OPERABLE status within 72 hours for diesel generators A or B, or within 14 days for diesel generators C or D, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

24

* This test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

=====

ACTION: (Continued)

- c. With one offsite circuit of the above required A.C. sources and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If a diesel generator became inoperable due to any causes other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generators separately for each diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 ~~and 4.8.1.1.2.a.5~~ within 16 hours unless the absence of any potential common mode failure for the remaining diesel generators is demonstrated*. If continued operation is permitted by LCO 3.7.1.3, restore at least two offsite circuits and all four of the above required diesel generators to OPERABLE status within 72 hours from time of the initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. A successful test(s) of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2.a.4 ~~and 4.8.1.1.2.a.5~~ performed under this ACTION statement for the OPERABLE diesel generators satisfies the diesel generator test requirements of ACTION Statement b.

- d. With both of the above required offsite circuits inoperable, restore at least one of the above required offsite circuits to OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours. With only one offsite circuit restored to OPERABLE status, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. ~~A successful test(s) of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 performed under this ACTION statement for the OPERABLE diesel generators satisfies the diesel generator test requirements of ACTION statement a.~~

INSERT A

- e. With two diesel generators of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the above required A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter ~~and demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5~~ separately for each diesel generator within 8 hours. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

INSERT B

* This test is required to be completed regardless of when the inoperable diesel generator is restored, to OPERABILITY.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

A successful test(s) of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2.a.4 ~~and 4.8.1.1.2.a.5~~ performed under this ACTION statement for the OPERABLE diesel generators satisfies the diesel generator test requirements of ACTION Statements ~~a and b~~.

- f. With two diesel generators of the above required A.C. electrical power sources inoperable, in addition to ACTION e., above, verify within 2 hours that all required systems, subsystems, trains, components, and devices that depend on the remaining diesel generators as a source of emergency power are also OPERABLE; otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

INSERT A

- g. With one offsite circuit and two diesel generators of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter ~~and~~ demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirements ~~4.8.1.1.2.a.4 and 4.8.1.1.2.a.5~~ separately for each diesel generator within 8 hours. Restore at least one of the above required inoperable A.C. sources to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. Restore the inoperable offsite circuit and both of the inoperable diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours.

INSERT B

- h. With the buried fuel oil transfer piping's cathodic protection system inoperable for more than 30 days, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the system to OPERABLE status.
- i. With one fuel oil transfer pump inoperable, realign the flowpath of the affected tank to the tank with the remaining operable fuel oil transfer pump within 48 hours and restore the inoperable transfer pump to OPERABLE status within 14 days, otherwise declare the affected emergency diesel generator (EDG) inoperable. This variance may be applied to only one EDG at a time.

* This test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring, manually and automatically, unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each of the above required diesel generators shall be demonstrated OPERABLE:*

- a. At least once per 31 days on a STAGGERED TEST BASIS by:
 - 1. Verifying the fuel level in the fuel oil day tank.
 - 2. Verifying the fuel level in the fuel oil storage tank.
 - 3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the fuel oil day tank.

4. Verify each diesel generator starts from standby conditions and achieves ± 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds after receipt of the start signal, and subsequently achieves steady state voltage of 4160 ± 470 volts and frequency of 60 ± 1.2 Hz. The diesel generator shall be started for this test by using one of the following signals:

- a) Manual.
- b) Simulated loss of offsite power by itself.
- c) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
- d) An ESF actuation test signal by itself.

5. Verifying the diesel generator is synchronized, loaded to between 4300 and 4400 kw (no less than or equal to 130 seconds), and operates with this load for at least 60 minutes.

* The diesel generator start (10 sec) and subsequent loading (130 sec) from standby conditions shall be performed at least once per 184 days in these surveillance tests. All engine starts and loading for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

** This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band shall not invalidate the test; the loads, however, shall not be less than 4300 kw nor greater than 4430 kw.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

g

~~Deleted~~ **INSERT E**

h. At least once per 18 months', during shutdown, by:

1. Deleted.
2. Verifying the diesel generator capability to reject a load of greater than or equal to that of the RHR pump motor (1003 kW) for each diesel generator while maintaining voltage ~~at 4160~~ **420** volts and frequency at 60 ± 1.2 Hz.
3. Verifying the diesel generator capability to reject a load of 4430 kW without tripping. The generator voltage shall not exceed 4785 volts during and following the load rejection.
4. Simulating a loss of offsite power by itself, and:
 - a) Verifying loss of power is detected and deenergization of the emergency busses and load shedding from the emergency busses.
 - b) Verifying the diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds after receipt of the start signal, energizes the autoconnected 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. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at ~~4160~~ **420** volts and 60 ± 1.2 Hz during this test.

INSERT C

INSERT C

~~This diesel generator start (10 sec) and subsequent loading (130 sec) from standby conditions may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.~~

* For any start of a diesel generator, the diesel may be loaded in accordance with the manufacturer's recommendations.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

5. Verifying that on an ECCS 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 diesel generator shall achieve ± 3950 volts and ± 59.8 Hz in ± 10 seconds following receipt of the start signal and subsequently achieve steady state voltage of 4760 ± 120 volts and frequency of 60 ± 1.2 Hz. INSERT C
6. Simulating a loss of offsite power in conjunction with an ECCS actuation test signal, and:
 - a) Verifying loss of power is detected and deenergization of the emergency busses and load shedding from the emergency busses.
 - b) Verifying the diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds after receipt of the start signal, energizes the autoconnected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4160 ± 420 volts and 60 ± 1.2 Hz during this test. INSERT C
7. Verifying that all automatic diesel generator trips, except engine overspeed, generator differential current, generator overcurrent, bus differential current and low lube oil pressure are automatically bypassed upon loss of voltage on the emergency bus concurrent with an ECCS actuation signal. #
8. Deleted.
9. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4430 kW.

~~*This diesel generator start (10 sec) and subsequent loading (130 sec) from standby conditions may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.~~

#Generator differential current, generator overcurrent, and bus differential current is two-out-of-three logic and low lube oil pressure is two-out-of-four logic.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code in accordance with ASME Code Section XI Article IWD-5000.

k. At least once per refueling cycle* by: **4000**

1. 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 between ~~4300~~ and 4400 kW** and during the remaining 2 hours of this test, the diesel generator shall be loaded to between ~~4800~~ and 4873 kW. The diesel generator shall achieve ≥ 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds following receipt of the start signal and subsequently achieve steady state voltage of ~~4160~~ ± 420 volts and frequency of 60 ± 1.2 Hz.

2. Within 5 minutes after completing 4.8.1.1.2.k.1, verify each diesel generator starts and achieves ≥ 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds after receipt of the start signal, and subsequently achieves steady state voltage of ~~4160~~ ± 420 volts and frequency of 60 ± 1.2 Hz.

- OR -

Operate the diesel generator between ~~4300~~ kW and 4400 kW for two hours. Within 5 minutes of shutting down the diesel generator, verify each diesel generator starts and achieves ≥ 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds after receipt of the start signal, and subsequently achieves steady state voltage of ~~4160~~ ± 420 volts and frequency of 60 ± 1.2 Hz. This test shall continue for at least five minutes.

4.8.1.1.3 Reports - Not used

4.8.1.1.4 The buried fuel oil transfer piping's cathodic protection system shall be demonstrated OPERABLE at least once per 2 months and at least once per year by subjecting the cathodic protection system to a performance test.

For any start of a diesel generator, the diesel may be loaded in accordance with manufacturer's recommendations.

This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band shall not invalidate the test; the loads; however, shall not be less than 4300 kW nor greater than 4873 kW.

INSERT F

Insert A

If either of the diesel generators became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing,

Insert B

unless the absence of any potential common mode failure for the remaining diesel generators is demonstrated.

Insert C

≥ 3828 and ≤ 4580

Insert D

** A modified diesel generator start involving idling and gradual acceleration to synchronous speed may be used for this surveillance. When modified start procedures are not used, the time, voltage, and frequency tolerances of Surveillance Requirement 4.8.1.1.2.g must be met.

Insert E

At least once per 184 days by verifying each diesel generator starts from standby conditions and achieves ≥ 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds after receipt of the start signal, and subsequently achieves steady state voltage ≥ 3828 and ≤ 4580 volts and frequency of 60 ± 1.2 Hz.

Insert F

Momentary transients outside the load range do not invalidate this test.

**HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354
REVISIONS TO THE TECHNICAL SPECIFICATIONS**

RETYPED TECHNICAL SPECIFICATION PAGES WITH PROPOSED CHANGES

The following Technical Specifications for Facility Operating License No. NPF-57 are affected by this change request:

| <u>Technical Specification</u> | <u>Page</u> |
|--------------------------------|-------------|
| 3/4.3.8.1 | 3/4 8-1 |
| | 3/4 8-2 |
| | 3/4 8-3 |
| | 3/4 8-4 |
| | 3/4 8-6 |
| | 3/4 8-7 |
| | 3/4 8-9 |

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

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 circuits between the offsite transmission network and the onsite Class 1E distribution system, and
- b. Four separate and independent diesel generators, each with:
 1. A separate fuel oil day tank containing a minimum of 360 gallons of fuel,
 2. A separate fuel storage system consisting of two storage tanks containing a minimum of 44,800 gallons of fuel, and
 3. A separate fuel transfer pump for each storage tank.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With one offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. Restore the inoperable offsite circuit to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the above required A.C. offsite sources 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 became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 separately for each diesel generator within 24 hours* unless the absence of any potential common mode failure for the remaining diesel generators is demonstrated. If continued operation is permitted by LCO 3.7.1.3, restore the inoperable diesel generator to OPERABLE status within 72 hours for diesel generators A or B, or within 14 days for diesel generators C or D, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

* This test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

- c. With one offsite circuit of the above required A.C. sources and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If a diesel generator became inoperable due to any causes other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generators separately for each diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 within 16 hours unless the absence of any potential common mode failure for the remaining diesel generators is demonstrated*. If continued operation is permitted by LCO 3.7.1.3, restore at least two offsite circuits and all four of the above required diesel generators to OPERABLE status within 72 hours from time of the initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. A successful test(s) of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2.a.4 performed under this ACTION statement for the OPERABLE diesel generators satisfies the diesel generator test requirements of ACTION Statement b.
- d. With both of the above required offsite circuits inoperable, restore at least one of the above required offsite circuits to OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours. With only one offsite circuit restored to OPERABLE status, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- e. With two diesel generators of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the above required A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If either of the diesel generators became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 separately for each diesel generator within 8 hours* unless the absence of any potential common mode failure for the remaining diesel generators is demonstrated. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

* This test is required to be completed regardless of when the inoperable diesel generator is restored, to OPERABILITY.

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

A successful test(s) of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2.a.4 performed under this ACTION statement for the OPERABLE diesel generators satisfies the diesel generator test requirements of ACTION Statement b.

- f. With two diesel generators of the above required A.C. electrical power sources inoperable, in addition to ACTION e., above, verify within 2 hours that all required systems, subsystems, trains, components, and devices that depend on the remaining diesel generators as a source of emergency power are also OPERABLE; otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- g. With one offsite circuit and two diesel generators of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If either of the diesel generators became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 separately for each diesel generator within 8 hours* unless the absence of any potential common mode failure for the remaining diesel generators is demonstrated. Restore at least one of the above required inoperable A.C. sources to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. Restore the inoperable offsite circuit and both of the inoperable diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours.
- h. With the buried fuel oil transfer piping's cathodic protection system inoperable for more than 30 days, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the system to OPERABLE status.
- i. With one fuel oil transfer pump inoperable, realign the flowpath of the affected tank to the tank with the remaining operable fuel oil transfer pump within 48 hours and restore the inoperable transfer pump to OPERABLE status within 14 days, otherwise declare the affected emergency diesel generator (EDG) inoperable. This variance may be applied to only one EDG at a time.

* This test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring, manually and automatically, unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each of the above required diesel generators shall be demonstrated OPERABLE: *

a. At least once per 31 days on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the fuel oil day tank.
2. Verifying the fuel level in the fuel oil storage tank.
3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the fuel oil day tank.
4. Verifying each diesel generator starts** from standby conditions and achieves steady state voltage ≥ 3828 and ≤ 4580 volts and frequency of 60 ± 1.2 Hz.
5. Verifying the diesel generator is synchronized, loaded to between 4000 and 4400*** kw and operates with this load for at least 60 minutes.

* All engine starts and loading for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

** A modified diesel generator start involving idling and gradual acceleration to synchronous speed may be used for this surveillance. When modified start procedures are not used, the time, voltage, and frequency tolerances of Surveillance Requirement 4.8.1.1.2.g must be met.

*** Momentary transients outside the load range do not invalidate this test.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- g. At least once per 184 days by verifying each diesel generator starts from standby conditions and achieves ≥ 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds after receipt of the start signal, and subsequently achieves steady state voltage ≥ 3828 and ≤ 4580 volts and frequency of 60 ± 1.2 Hz.
- h. At least once per 18 months[#], during shutdown, by:
1. Deleted.
 2. Verifying the diesel generator capability to reject a load of greater than or equal to that of the RHR pump motor for each diesel generator while maintaining voltage ≥ 3828 and ≤ 4580 volts and frequency at 60 ± 1.2 Hz.
 3. Verifying the diesel generator capability to reject a load of 4430 kW without tripping. The generator voltage shall not exceed 4785 volts during and following the load rejection.
 4. Simulating a loss of offsite power by itself, and:
 - a) Verifying loss of power is detected and deenergization of the emergency busses and load shedding from the emergency busses.
 - b) Verifying the diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds after receipt of the start signal, energizes the autoconnected 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. After energization, the steady state voltage and frequency of the emergency busses shall be maintained ≥ 3828 and ≤ 4580 volts and 60 ± 1.2 Hz during this test.

[#] For any start of a diesel generator, the diesel may be loaded in accordance with the manufacturer's recommendations.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

5. Verifying that on an ECCS 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 diesel generator shall achieve ≥ 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds following receipt of the start signal and subsequently achieve steady state voltage ≥ 3828 and ≤ 4580 volts and frequency of 60 ± 1.2 Hz.
6. Simulating a loss of offsite power in conjunction with an ECCS actuation test signal, and:
 - a) Verifying loss of power is detected and deenergization of the emergency busses and load shedding from the emergency busses.
 - b) Verifying the diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds after receipt of the start signal, energizes the autoconnected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained ≥ 3828 and ≤ 4580 volts and 60 ± 1.2 Hz during this test.
7. Verifying that all automatic diesel generator trips, except engine overspeed, generator differential current, generator overcurrent, bus differential current and low lube oil pressure are automatically bypassed upon loss of voltage on the emergency bus concurrent with an ECCS actuation signal.#
8. Deleted.
9. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4430 kW.

Generator differential current, generator overcurrent, and bus differential current is two-out-of-three logic and low lube oil pressure is two-out-of-four logic.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code in accordance with ASME Code Section XI Article IWD-5000.

k. At least once per refueling cycle# by:

1. 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 between 4000 and 4400 kW## and during the remaining 2 hours of this test, the diesel generator shall be loaded to between 4652 and 4873 kW. The diesel generator shall achieve ≥ 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds following receipt of the start signal and subsequently achieve steady state voltage ≥ 3828 and ≤ 4580 volts and frequency of 60 ± 1.2 Hz.
2. Within 5 minutes after completing 4.8.1.1.2.k.1, verify each diesel generator starts and achieves ≥ 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds after receipt of the start signal, and subsequently achieves steady state voltage ≥ 3828 and ≤ 4580 volts and frequency of 60 ± 1.2 Hz.

- OR -

Operate the diesel generator between 4000 kW and 4400 kW for two hours. Within 5 minutes of shutting down the diesel generator, verify each diesel generator starts and achieves ≥ 3950 volts and ≥ 58.8 Hz in ≤ 10 seconds after receipt of the start signal, and subsequently achieves steady state voltage ≥ 3828 and ≤ 4580 volts and frequency of 60 ± 1.2 Hz. This test shall continue for at least five minutes.

4.8.1.1.3 Reports - Not used.

4.8.1.1.4 The buried fuel oil transfer piping's cathodic protection system shall be demonstrated OPERABLE at least once per 2 months and at least once per year by subjecting the cathodic protection system to a performance test.

For any start of a diesel generator, the diesel may be loaded in accordance with manufacturer's recommendations.

Momentary transients outside the load range do not invalidate this test.