

Public Service
Electric and Gas
Company

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MAR 31 1994

Vice President and Chief Nuclear Officer

NLR-N94041
LCR 93-23

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

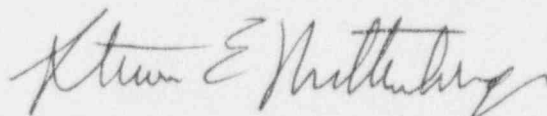
**LICENSE AMENDMENT APPLICATION
DIESEL GENERATOR SURVEILLANCE REQUIREMENTS CHANGES
FACILITY OPERATING LICENSE NPF-57
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354**

This letter submits an application for amendment to Appendix A of Facility Operating License NPF-57 for the Hope Creek Generating Station, and is being filed in accordance with 10CFR50.90. The amendment request incorporates NUREG-1433 diesel fuel oil storage operability requirements and revises the five minute diesel hot restart test conditions. In addition, the amendment request also revises the Surveillance Requirements to allow the 24 hour diesel generator endurance test to be conducted during any operational condition.

A description of the requested amendment, supporting information and analyses for the change, and the basis for a no significant hazards consideration determination are provided in Attachment 1. The Technical Specification pages affected by the proposed change are marked-up in Attachment 2. Pursuant to the requirements of 10CFR50.91(b)(1), a copy of this request for amendment has been sent to the State of New Jersey.

Upon NRC approval of this proposed change, PSE&G requests that the amendment be made effective on the date of issuance, but implemented within 60 days to provide sufficient time for associated administrative activities. Should you have any questions regarding this request, we will be pleased to discuss them with you.

Sincerely,



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Affidavit
Attachments (2)

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Mr. C. S. Marschall (S09)
USNRC Senior Resident Inspector

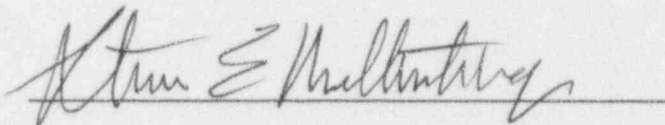
Mr. K. Tosch, Manager IV
NJ Department of Environmental Protection
Division of Environmental Quality
Bureau of Nuclear Engineering
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Trenton, NJ 08625

REF: NLR-N94041
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STATE OF NEW JERSEY)
) SS.
COUNTY OF SALEM)

S. E. Miltenberger, being duly sworn according to law deposes and says:

I am Vice President & Chief Nuclear Officer of Public Service Electric and Gas Company, and as such, I find the matters set forth in the above referenced letter, concerning the Hope Creek Generating Station, are true to the best of my knowledge, information and belief.



Subscribed and Sworn to before me
this 31st day of March, 1994



Notary Public of New Jersey

My Commission expires on _____

KIMBERLY JO BROWN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires April 21, 1998

ATTACHMENT 1
PROPOSED CHANGES TO TECHNICAL SPECIFICATIONS

LICENSE AMENDMENT APPLICATION
DIESEL GENERATOR SURVEILLANCE CHANGES
FACILITY OPERATING LICENSE NPF-57
HOPE CREEK GENERATING STATION
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I. DESCRIPTION OF THE PROPOSED CHANGES

As indicated on the marked-up pages in Attachment 2, PSE&G requests that:

- 1) A note be added to Technical Specification 3.8.1.1.b.2 which maintains diesel OPERABILITY for a 48 hour period when the fuel storage system of one or more diesel generators contains less than a seven day supply of fuel.
- 2) Surveillance Requirement 4.8.1.1.2.h.8 be deleted and replaced by a new Surveillance Requirement 4.8.1.1.2.k.1 which permits the 24 hour diesel generator endurance run to be performed in any operational condition.
- 3) Surveillance Requirement 4.8.1.1.2.k.2 be established for the five minute hot restart test. This change permits the diesel generator five minute hot restart test to be conducted not only after proposed Surveillance Requirement 4.8.1.1.2.k.1, but also after the diesel generator has operated between 4300 kW and 4400 kW for one hour or after anytime the diesel generator operating temperature has stabilized.

II. REASON FOR THE CHANGES

The addition of a note to Technical Specification 3.8.1.1.b.2, which provides a 48 hour period to replenish the diesel fuel oil supply, is being made to maintain the OPERABLE status of the diesel generators and avoid unnecessary entry into the Technical Specification Action statements following surveillance testing (specifically the 24 hour endurance run test), full load operation required for an inadvertent start while at the minimum required fuel level, or feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations.

Technical Specification Surveillance Requirement 4.8.1.1.2.h.8 currently requires that a 24 hour diesel generator endurance test be performed once every 18 months during shutdown conditions. By establishing a new Surveillance Requirement 4.8.1.1.2.k.1, PSE&G

proposes to allow this endurance test to be performed during any mode of operation. This proposed change could: 1) reduce the amount of required critical path surveillance testing during outage periods with heavy maintenance schedules; 2) increase operational flexibility in scheduling surveillance testing activities and 3) enable the staggering of diesel generator 24 hour endurance run tests. The proposed change could provide operational flexibility, economic benefits, and an increased level of safety (through the staggering of surveillances) for Hope Creek.

The establishment of the new Surveillance Requirement 4.8.1.1.2.k.2, allows the five minute diesel hot restart test to be performed following either: 1) proposed surveillance 4.8.1.1.2.k.1 (24 hour run); 2) one hour of diesel operation between 4300 kW and 4400kW; or 3) at anytime after the diesel generator operating temperature has stabilized. This new Surveillance Requirement provides increased operational flexibility in scheduling the five minute hot restart diesel generator testing.

III. JUSTIFICATION FOR THE CHANGE

The revision to Technical Specification 3.8.1.1.b.2 incorporates Specification 3.8.3, Action a, of the BWR/4 Standard Technical Specifications, to provide a 48 hour period to replenish the diesel fuel oil supply. As stated in NUREG-1433, the basis for establishing this 48 hour period is to provide sufficient time to complete restoration of the required fuel oil (including the performance of required analyses prior to the addition of the fuel oil to the tank) level prior to declaring the diesel generator inoperable. The establishment of a 48 hour period to restore diesel fuel oil supply is also justified at Hope Creek since:

- 1) A minimum 44,709 gallon supply (six day supply requirement for operation of "the worst case diesel generator" with the highest loading using UFSAR Tables 8.3-2 through 8.3-6) of fuel oil will be maintained for these 48 hours;
- 2) Procedures exist to obtain replenishment fuel oil when the level falls below 48,800 gallons of fuel (for each diesel generator)
- 3) The probability of an event requiring the onsite power sources during this brief 48 hour period is low (as stated in NUREG-1433).

This change maintains the OPERABLE status of the diesel generators and precludes unnecessary entry into the Technical Specification Action statements (including initiation of shutdown

procedures) following surveillance testing, full load operation required for an inadvertent start while at the minimum required fuel level, or feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations. The attendant risk of maintaining the diesel generator OPERABLE status under temporary conditions where fuel oil supply is below 48,800 gallons, but greater than 44,709 gallons, is less than the attendant risk of initiation and completion of shutdown actions currently required by Technical Specifications under these conditions.

Justification for the proposed changes to Technical Specification Surveillance Requirement 4.8.1.1.2(h).8 is based upon the increased level of safety derived from an ability to stagger testing of the diesel generators, improved maintenance scheduling capabilities permitted by a more flexible surveillance requirement, and maintained capability throughout the surveillance test to safely complete emergency shutdown procedures following a design basis accident coincident with a single failure. This justification is analogous to that approved by the NRC staff in the Safety Evaluation Report for the Limerick Generating Station, dated September 28, 1989.

Continued capability of the Hope Creek Generating Station to safely complete shutdown procedures following a design basis accident coincident with a single failure is ensured by the design features of the on-site Class 1E electrical system. During a 24 hour endurance run test, the diesel generator response for an emergency start [Loss of Offsite Power (LOP)/LOCA conditions] is essentially the same as a normal manual start, however, certain control functions are modified:

- 1) The test lockout relay (86T) is deactivated;
- 2) The normal stop switches are deactivated (emergency stop is still functional);
- 3) The governor shifts to Isochronous mode (if in droop). The governor speed controls are deactivated and the governor motor operated potentiometer is centered to 60 Hz; and
- 4) The voltage regulator shifts to automatic. The voltage regulator Raise/Lower switches are deactivated and the voltage regulator output is centered at 4160 volts.

The above modifications to the normal manual start enable the diesel generator to respond to the emergency start signal effectively. Furthermore, the 24 hour endurance test does neither disable any of the automatic actuations and interlocks of the diesel generator control functions, nor does it prevent the

satisfactory completion of the LOP or LOCA/LOP loading sequence if a IOP or LOCA signal is received at any time during the test. The diesel generator and all of its support systems will remain operable throughout the surveillance test, and the onsite Class-1E AC electrical distribution system and all of its support systems will remain capable of completing plant shutdown and maintaining safe shutdown conditions following a design basis accident. If the diesel generator fails the 24 hour endurance test, it will be declared inoperable and the appropriate technical specification action statements will be followed.

When the 24 hour endurance run test is conducted, one diesel generator will be operating in parallel with an offsite power source. However, concerns about operating diesel generators in parallel with the grid have been raised in NRC Information Notice 84-69, the Standard Review Plan Section 8.3.1 and in NUREG-1433. These concerns focus on the following:

- 1) When a diesel generator is connected to offsite or nonvital loads, the emergency power system is not independent of disturbances on the nonvital and offsite power systems that can adversely affect emergency power availability (a trip may result due to overcurrent or reverse power or a lockout device may be actuated, requiring local operator action to reset the lockout);
- 2) If a fault develops while the diesel generator is connected to non-emergency loads, the diesel generator may not trip, but the operation of the LOP load sequencer may be adversely affected (the load sequencer timers are linked with the closing of the diesel generator output breaker or with detection of loss of voltage on the bus);
- 3) The vulnerability of the diesel generator to trip signals which are bypassed for emergency demands but are operable for manual starts and during running test purposes (the diesel generator is more vulnerable to such trips);
- 4) An accident concurrent with a loss of offsite power and a single failure preventing the opening of the feeder isolation breaker through which the paralleling of the power systems is being accomplished could cause the total loss of power to the safety buses; and
- 5) During operation with the reactor critical, performance of the 24 hour endurance test could cause perturbations to the electrical distribution systems that would challenge continued steady state operation, and as a result, plant safety systems.

When reviewed against the proposed Surveillance Requirement 4.8.1.1.2.k.1 and the unique features of the Hope Creek design,

the above concerns can be adequately addressed. Justification for parallel diesel generator operation is based upon the following (respective to the five concerns listed above):

1) The primary concern of diesel generator operation in parallel to offsite or nonvital loads is that loss of the offsite source could result in loss of the diesel generator. During surveillance tests, no more than one diesel generator is operated in parallel to the offsite power grid. This configuration provides the maximum independence of the onsite power sources from the offsite power grid while still enabling operations to prove that the diesel generators are operable by surveillance testing. In this configuration, it is possible for only one diesel generator to be affected by an unstable offsite power grid such that an operator will be required to manually reset the lock out relay so that the one affected diesel generator can be restarted. In this scenario alone, or coincident with a LOCA, the plant will remain within its design basis since at all times safe shutdown can be achieved with any three of the four diesel generator sets.

2) If a fault develops while the diesel generator is in the test mode and the diesel generator does not trip, then that particular channel will not respond to a LOP condition since this channel has not experienced a loss of power. However, the other three channels will respond if a LOP condition exists, and be supported by the initiation of their respective diesel generators. In this scenario, the plant will remain within its design basis since at all times safe shutdown can be achieved with any three of the four diesel generator sets.

3) When running in the test mode, the diesel generators are more conservatively protected and therefore are more susceptible to perturbations in the offsite power grid causing a diesel generator to be tripped and locked out. Should an event occur, only the diesel generator operating in the test mode is affected, and as previously stated, the plant will remain within its design basis since at all times safe shutdown can be achieved with any three of the four diesel generator sets.

4) NUREG-0800 states that an accident concurrent with a LOP and a single failure preventing the opening of the feeder isolation breaker through which the paralleling of the power systems is being accomplished could cause the total loss of power to the safety buses. For the 24 hour endurance run test, the test diesel generator (and associated 4.16 kV vital bus) will be isolated from the three remaining diesel generators and vital buses. In this

configuration, the three (non-test) channels will respond to a simultaneous LOP/LOCA accident (coincident with a single failure described above) appropriately in the following situations:

a. In the unlikely event of a complete LOP affecting both offsite sources, the non-test vital buses and the balance of plant (BOP) loads will sense the test diesel generator output, determine that the channel's preferred power source is available, and fast transfer to that channel. When the fast transfer occurs, the BOP loads will cause the test diesel generator to trip on overcurrent in less than one second. At that time, the non-test vital bus breakers will open, and their associated diesel generators will start and sequence loads appropriately. The required onsite AC sources will be able to respond to a simultaneous LOP/LOCA accident in this scenario.

b. If a partial LOP occurs affecting only the offsite source the test diesel generator is operating in parallel with, the non-test vital buses will not be affected since no fast transfer of vital buses will take place.

c. If a partial LOP occurs affecting only the offsite source that the non-test vital buses are tied to, a fast transfer of the vital buses and BOP loads to the unaffected offsite source will take place, and the non-test diesel generators will not be required to start. If the transfer is unsuccessful, causing the alternate offsite source to be lost, the test diesel generator will trip on overcurrent in less than one second, the non-test vital bus breakers will open, and their associated diesel generators will start and sequence loads appropriately. The required onsite AC sources will be able to respond to simultaneous LOP/LOCA accident in this scenario.

5) The possibility that the diesel generator could induce electrical distribution system perturbations during the 24 hour endurance test is acknowledged (i.e., generator catastrophic failure, engine failure, feeder failure, etc.), and has been previously reviewed by PSE&G for the monthly 1 hour surveillance tests (Sargent & Lundy Independent Design Verification Program Report). The above risks of testing the diesel generator at power have been found acceptable by the NRC for the existing Technical Specification Surveillance Requirements for the monthly 1 hour test. Also, testability is required to satisfy General Design Criterion 18. The Hope Creek SER (NUREG-1048) concludes that the onsite power system is designed to be testable during station operation.

Since the electrical distribution system response to the

above diesel generator related failures is the same for the proposed online 24 hour endurance run test, PSE&G concludes that the SER (NUREG-1048) conclusion is unaffected by this proposal.

In addition, the proposed change allows the operator to perform the diesel generator 24 hour endurance test on a staggered basis. The staggering of the surveillances could reduce the maximum length of time (currently 18 months) since a 24 hour endurance run test was last conducted, and potentially reduce the interval of continued plant operation with a previously undetected common mode failure (e.g., a failure affecting the diesel generator during the 24 hour test while running at 110% of continuous rating). Thus, utilizing a staggered test schedule could result in an increase in the level of plant safety. The same bases used for establishing other existing diesel generator surveillances on a staggered test schedule could also apply for the 24 hour endurance run test.

Finally, the proposed change provides an economic benefit derived from increased operational flexibility in maintenance scheduling. Since the proposed change to Surveillance Requirement 4.8.1.1.2(h).8 would allow the 24 hour endurance test to be conducted in other than shutdown conditions, the plant operators could reduce the number of critical path activities that must take place during the refueling outages and shorten the schedule for diesel generator maintenance activities by up to four days.

The establishment of the new Surveillance Requirement 4.8.1.1.2.k.2, allows the five minute diesel hot restart test to be performed at times other than after the 24 hour endurance test. However, this change does not alter nor modify the test requirements currently required by Surveillance Requirement 4.8.1.1.2.h.4.b. The current Technical Specifications and the proposed Surveillance Requirement 4.8.1.1.2.k.2 both require the demonstration (once every 18 months) of functional capability at full-load temperature conditions by restarting and reloading the diesel generator 5 minutes after either: 1) the 24 hour endurance run test; 2) one hour of diesel operation between 4300 kW and 4400kW; or 3) at anytime after the diesel operating temperature has stabilized.

The proposed Surveillance Requirement 4.8.1.1.2.k.2 maintains the test conditions required by current Specifications, satisfies the intent of Regulatory Guide 1.9, Rev. 3, paragraph 2.2.10., and provides increased operational flexibility in scheduling the five minute hot restart diesel generator testing.

IV. SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

PSE&G has, pursuant to 10 CFR 50.92, reviewed the proposed amendment to determine whether our request involves a significant hazards consideration. We have determined that operation of the Hope Creek Generating Station in accordance with the proposed changes:

1. Will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The addition of a 48 hour period to complete restoration of the required fuel oil level prior to declaring the diesel generator inoperable does not significantly increase the probability or consequences of an accident previously evaluated. PSE&G believes that the attendant risk of maintaining the diesel generator OPERABLE status under temporary conditions where fuel oil supply is below 48,800 gallons (but greater than 44,709 gallons) is less than the attendant risk of initiation and completion of shutdown actions currently required by Technical Specifications under these conditions. Since a minimum 44,709 gallon [6 day] supply of oil will be maintained for these 48 hours, and procedures are implemented to obtain replenishment fuel oil when the level falls below 48,800 gallons of fuel, and the probability of an event requiring the onsite power sources during this brief period are low (as stated in NUREG-1433), PSE&G concludes that this change does not increase the likelihood of accidents occurring nor significantly affect the performance of any system involved in the occurrence or mitigation of the accidents.

The proposed amendment to allow the 24 hour diesel generator endurance run to be conducted during any mode of operation does not significantly increase the probability or consequences of an accident previously evaluated in Chapter 15 of the UFSAR since the capability to safely shutdown the plant following a Loss of Offsite Power (LOP), LOCA or LOCA/LOP coincident with a single failure is maintained throughout the surveillance test. The 24 hour endurance test does not disable any of the automatic actuations and interlocks of the diesel generator control functions, nor prevent the satisfactory completion of the LOP or LOCA/LOP loading sequence if a LOP or LOCA signal is received at any time during the test. Required Class-1E onsite power OPERABILITY during normal operation, shutdown cooling, loss of off-site power, and accident conditions will be the same.

In addition, the performance of proposed Surveillance Requirement 4.8.1.1.2.k.1 during Operational Conditions 1 or 2 will not significantly increase the consequences of perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation

or to plant safety systems. Performance of proposed Surveillance Requirement 4.8.1.1.2.k.1 during Operational Conditions 1 or 2, or failure of the surveillance, will not cause, or result in, an anticipated operational occurrence with attendant challenges to plant safety systems that has not been previously analyzed for the existing monthly surveillances.

Therefore, PSE&G concludes that this above change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The establishment of the new Surveillance Requirement 4.8.1.1.2.k.2, allows the five minute diesel hot restart test to be performed at times other than after the 24 hour endurance run test, but does not alter nor modify the test requirements currently required by Surveillance Requirement 4.8.1.1.2.h.4.b. The proposed Surveillance Requirement 4.8.1.1.2.k.2 maintains the test conditions required by current Specifications, and satisfies the intent of Regulatory Guide 1.9, Rev. 3, paragraph 2.2.10. Therefore, PSE&G believes that this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment does not involve any physical changes to plant structures, systems or components, or change the manner in which the plant is operated. Therefore, the proposed changes will not increase the probability of accidents of a different type, nor will they create malfunctions of a different type than any previously evaluated in the SAR.

3. Will not involve a significant reduction in a margin of safety.

The basis for this statement is outlined in Item 1 above.

V. Conclusion

Based on the preceding discussion, PSE&G has concluded that the proposed change to the Technical Specifications does not involve a significant hazards consideration insofar as the change: (i) does not involve a significant increase in the probability or consequences of an accident previously evaluated, (ii) does not create the possibility of a new or different kind of accident from any accident previously evaluated, and (iii) does not involve a significant reduction in the margin of safety.