

November 19, 1991

Docket No. 50-354

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

Dear Mr. Miltenberger:

SUBJECT: CATHODIC PROTECTION SYSTEM AMENDMENT, HOPE CREEK GENERATING  
STATION (TAC NO. 81821)

The Commission has issued the enclosed Amendment No. 45 to Facility Operating  
License No. NPF-57 for the Hope Creek Generating Station. This amendment  
consists of changes to the Technical Specifications (TSs) in response to your  
application dated October 10, 1991.

This amendment separates the surveillance requirements associated with the  
buried fuel oil transfer piping's cathodic protection system from those used  
to determine diesel generator operability.

A copy of our safety evaluation is also enclosed. Notice of Issuance will be  
included in the Commission's biweekly Federal Register notice.

Sincerely,

/s/

Stephen Dembek, Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

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Enclosures:

1. Amendment No. 45 to License No. NPF-57
2. Safety Evaluation

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

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Sincerely,

A handwritten signature in cursive script, appearing to read "Stephen Dembek".

Stephen Dembek, Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

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cc w/enclosures:  
See next page

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

Hope Creek Generating Station

cc:

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

PUBLIC SERVICE ELECTRIC & GAS COMPANY

ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-354

HOPE CREEK GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 45  
License No. NPF-57

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for amendment filed by the Public Service Electric & Gas Company (PSE&G) dated October 10, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-57 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 45, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PSE&G shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

*Charles L. Miller*

Charles L. Miller, Director  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: November 19, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 45

FACILITY OPERATING LICENSE NO. NPF-57

DOCKET NO. 50-354

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. Overleaf pages provided to maintain document completeness.\*

Remove

3/4 8-3  
3/4 8-4

3/4 8-5  
3/4 8-6

3/4 8-9  
3/4 8-10

Insert

3/4 8-3  
3/4 8-4\*

3/4 8-5\*  
3/4 8-6

3/4 8-9  
3/4 8-10\*

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

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#### ACTION: (Continued)

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 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.
- 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.
- 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.

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

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

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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. In accordance with the frequency specified in Table 4.8.1.1.2-1 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 the diesel starts from ambient conditions and accelerates to at least 514 rpm in less than or equal to 10 seconds after receipt of the start signal.\* The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 10 seconds after receipt of the start signal. 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 in less than or equal to 130 seconds,\* and operates with this load for at least 60 minutes.

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\*The diesel generator start (10 sec) and subsequent loading (130 sec) from ambient conditions shall be performed at least once per 184 days in these surveillance tests. All other 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)

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6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
  7. Verifying the pressure in all diesel generator air start receivers to be greater than or equal to 325 psig.
  8. Verifying the lube oil pressure, temperature and differential pressure across the lube oil filters to be within manufacturer's specifications.
- b. At least once per 31 days by visually examining a sample of lube oil from the diesel engine to verify absence of water.
  - c. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the fuel oil day tank.
  - d. At least once per 92 days by removing accumulated water from the fuel oil storage tanks.
  - e. At least once per 31 days by performing a functional test on the emergency load sequencer to verify operability.
  - f. At least once per 92 days and from new fuel oil prior to addition to the storage tanks by obtaining a sample in accordance with ASTM-D4057 and by verifying that the sample meets the following minimum requirements and is tested within the specified time limits:
    1. As soon as sample is taken or from new fuel prior to addition to the storage tank, as applicable, verify in accordance with the tests specified in ASTM-D975-77 that the sample has:
      - a) A water and sediment content of less than or equal to 0.05 volume percent.
      - b) A kinematic viscosity @ 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes or a Saybolt Second Universal (SSU) viscosity at 100°F of greater than or equal to 32 SSU but less than or equal to 40.1 SSU.
      - c) A specific gravity as specified by the manufacturer as API gravity @ 60°F of greater than or equal to 28 degrees but less than or equal to 42 degrees.
    2. Within one week after obtaining the sample, verify an impurity level of less than 2 mg of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

3. Within 2 weeks after obtaining the sample, verify that the other properties specified in Table 1 of ASTM-D975-77 and Regulatory Guide 1.137, Position 2.a, are met when tested in accordance with ASTM-D975-77.
- g. Deleted
- h. At least once per 18 months #,## during shutdown, by:
  1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
  2. Verifying the 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  $4160 \pm 420$  volts and frequency at  $60 \pm 1.2$  Hz.
  3. Verifying the diesel generator capability to reject a load of 4430 kW without tripping. The generator voltage shall not exceed 4580 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  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz during this test.

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\*This diesel generator start (10 sec) and subsequent loading (130 sec) from ambient 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 must be loaded in accordance with the manufacturer's recommendations.

##The surveillance interval for Emergency Diesel Generators 1AG400 and 1DG400, overdue beginning August 19 and 27, 1989 respectively, is extended until October 15, 1989 and the provisions of Specification 4.0.2.a are not applicable for this one-time extension (i.e., this surveillance interval will be considered as an 18-month interval). With regard to the provisions of Specification 4.0.2.b, the combined time interval accrued for previous consecutive intervals for this surveillance section by all four Emergency Diesel Generators, on a one-time basis, is considered to be zero upon completion, during the second refueling outage, of all 18-month surveillance of this Specification.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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- i. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting all diesel generators simultaneously, during shutdown, and verifying that all diesel generators accelerate to at least 514 rpm in less than or equal to 10 seconds.
- j. At least once per 10 years by:
  - 1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or equivalent, and
  - 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.

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

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.

TABLE 4.8.1.1.2-1

DIESEL GENERATOR TEST SCHEDULE

<u>Number of Failures in Last 20 Valid Tests*</u>	<u>Number of Failures in Last 100 Valid Tests*</u>	<u>Test Frequency</u>
<u>≤ 1</u>	<u>≤ 4</u>	Once per 31 days
<u>≥ 2**</u>	<u>≥ 5</u>	Once per 7 days

\*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, but determined on a per diesel generator basis.

For the purposes of determining the required test frequency, the previous test failure count may be reduced to zero if a complete diesel overhaul to like-new condition is completed, provided that the overhaul including appropriate post-maintenance operation and testing, is specifically approved by the manufacturer and if acceptable reliability has been demonstrated. The reliability criterion shall be the successful completion of 14 consecutive tests in a single series. Ten of these tests shall be in accordance with the routine Surveillance Requirement 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5, four tests, in accordance with the 184-day testing requirement of Surveillance Requirement 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5. If this criterion is not satisfied during the first series of tests, any alternate criterion to be used to transvalue the failure count to zero requires NRC approval.

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



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 45 TO FACILITY OPERATING LICENSE NO. NPF-57

PUBLIC SERVICE ELECTRIC & GAS COMPANY

ATLANTIC CITY ELECTRIC COMPANY

HOPE CREEK GENERATING STATION

DOCKET NO. 50-354

1.0 INTRODUCTION

By letter dated October 10, 1991, the Public Service Electric & Gas Company and Atlantic City Electric Company (the licensees) submitted a request for changes to the Hope Creek Generating Station, Technical Specifications (TS). The requested changes would separate the surveillance requirements associated with the buried fuel oil transfer piping's cathodic protection system from those used to determine diesel generator operability.

2.0 EVALUATION

TS 4.8.1.1.2 delineates surveillance requirements that are to be performed to demonstrate operability of the Diesel Generators. TS 4.8.1.1.2.g delineates the surveillance requirements necessary to verify that the impressed current cathodic protection system for the buried portion of the fuel oil transfer piping is operable. Since this surveillance requirement is currently a sub-item of TS 4.8.1.1.2, literal interpretation of the TS could preclude maintenance on the cathodic protection system (if that maintenance requires that the system be made inoperable) and/or potentially result in a station shutdown due to failure of the cathodic protection system causing all the Diesel Generators to be declared inoperable.

The cathodic protection system was installed by the licensee to protect the buried fuel oil transfer piping from external corrosion. Installation and testing of this system is included in the guidance provided by Regulatory Guide 1.137 (Revision 1, October 1979). The licensee has proposed removing the cathodic protection system surveillance requirements from TS 4.8.1.1.2 and creating a separate TS (TS 4.8.1.1.4) to verify the operability of the cathodic protection system. Additionally, PSE&G proposed to create a new action statement (TS 3.8.1.1.h) to delineate the actions necessary if the cathodic protection system is inoperable for more than thirty days.

Based on the staff's review of Section 9.5.4 of the Hope Creek Safety Evaluation Report (SER) (NUREG-1048) and Section 9.5.4 of the Updated Final Safety Analysis Report (UFSAR); the staff agrees that the buried portion of the fuel oil transfer piping does not determine diesel generator operability. Therefore, the cathodic protection system for the buried fuel oil transfer piping does not affect diesel generator operability. The review of the above

referenced documents show that the buried portion of the fuel oil transfer piping is provided to allow for convenient loading of diesel fuel at a truck/barge fill connection outside the restricted area. The fuel oil is transferred from this connection through a section of underground piping that is common to all four Diesel Generators and then into the plant where it splits into a distribution manifold. The buried piping is not safety related, since an emergency fill connection is provided inside the diesel generator building, which can be isolated from the buried portion of the fill piping by an isolation valve located inside the diesel generator building. This emergency fill connection provides a protected fill path to the diesel fuel oil storage tanks; none of this protected fill path is buried piping. Additionally, UFSAR Section 9.5.4.2.6 describes an alternate method for filling the fuel oil storage tanks using temporary hoses to deliver oil directly into the storage tanks should the emergency fill connection become unusable. Furthermore, the Hope Creek fuel oil storage system is sized in accordance with the guidance of Standard Review Plan 9.5.4 and Regulatory Guide 1.137 with sufficient fuel to operate a diesel engine continuously for approximately seven days and six hours; so that refilling the tanks during a Loss of Offsite Power or a Design Basis Accident is not likely.

Therefore, the staff finds that the licensee's proposal to remove the cathodic protection system surveillance requirements from the TS that determine diesel generator operability is acceptable. The licensee's proposal to create a new action statement to be applied when the cathodic protection system is inoperable for more than 30 days is also acceptable. The cathodic protection system is designed to limit external corrosion to the buried piping over long periods of time. In addition to the cathodic protection system the piping has a protective coating to limit external corrosion. Therefore, the induced current cathodic protection system can be disconnected for short periods of time with minimal corrosive damage to the buried piping.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32 and 51.35, an environmental assessment and finding of no significant impact has been prepared and published in the Federal Register (56 FR 57535) dated November 12, 1991. Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of the amendment will not have a significant effect on the quality of the human environment.

## 5.0 CONCLUSION

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

Principal Contributor: S. Dembek

Date: November 19, 1991