

February 24, 1998

Mr. Harold W. Keiser  
Executive Vice President  
Nuclear Business Unit  
Public Service Electric & Gas Company  
PO Box 236  
Hancocks Bridge, NJ 08038

SUBJECT: Inspection Report 50-354/97-07

Dear Mr. Keiser:

This letter refers to your January 12, 1998, correspondence (LR-N97800), in response to three of the five violations cited in our November 13, 1997 letter. The three violations involved: 1) a failure to perform an appropriate 10CFR50.59 safety evaluation for a modification to the reactor core isolation cooling (RCIC) turbine trip logic on reactor vessel high water level; 2) a failure to follow the requirements of 10CFR50.49 applicable to the environmental qualification of five Struthers-Dunn relays; and 3) a failure to follow the requirements of 10CFR50, Appendix B, Criterion III, Design Control, when extending the service life of safety-related Agastat and Telemecanique relays in mild environments. Your response to the other two violations have already been received in PSE&G letter LR-N97767 dated December 12, 1997.

Thank you for informing us of the corrective and preventive actions for the Notice of Violation, as documented in your letter. We will evaluate the effectiveness of these corrective actions in an upcoming Engineering Core Inspection.

If you have additional concerns or comments, please feel free to contact us. Your cooperation is appreciated.

Sincerely,

ORIGINAL SIGNED BY:

James C. Linville, Chief  
Projects Branch 3  
Division of Reactor Projects

Docket No. 50 354

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Mr. Harold W. Keiser

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cc:

L. Storz, Senior Vice President - Nuclear Operations  
E. Simpson, Senior Vice President - Nuclear Engineering  
E. Salowitz, Director - Nuclear Business Support  
M. Bezilla, General Manager - Hope Creek Operations  
J. McMahon, Director - QA/Nuclear Training/Emergency Preparedness  
D. Powell, Manager - Licensing and Regulation  
A. C. Tapert, Program Administrator

cc w/cy of Licensee's Letter:

A. F. Kirby, III, External Operations - Nuclear, Delmarva Power & Light Co.  
J. A. Isabella, Manager, Joint Generation  
Atlantic Electric  
R. Kankus, Joint Owner Affairs  
Jeffrey J. Keenan, Esquire  
M. J. Wetterhahn, Esquire  
Consumer Advocate, Office of Consumer Advocate  
William Conklin, Public Safety Consultant, Lower Alloways Creek Township  
State of New Jersey  
State of Delaware

Mr. Harold W. Keiser

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Distribution w/copy of Licensee's Response Letter:

Region I Docket Room (with concurrences)

Nuclear Safety Information Center (NSIC)

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NRC Resident Inspector

C. O'Daniell, DRP

D. Screnci, PAO

J. Linville, DRP

S. Barber, DRP

B. McCabe, OEDO

J. Stolz, PD1-2, NRR

B. Mozafari, Project Manager, NRR

R. Correia, NRR

F. Talbot, NRR

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Public Service  
Electric and Gas  
Company

C. Simpson

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, NJ 08038 609-239-1700

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LR-N97800

United States Nuclear Regulatory Commission  
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Washington, DC 20555

REPLY TO NOTICE OF VIOLATION  
INSPECTION REPORT NO. 50-354/97-07  
HOPE CREEK GENERATING STATION  
FACILITY OPERATING LICENSE NPF-57  
DOCKET NO. 50-354

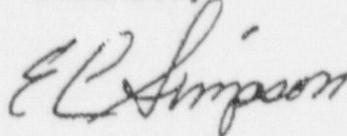
Gentlemen:

Pursuant to the provisions of 10CFR2.201, Public Service Electric and Gas Company (PSE&G) hereby submits a reply to the Notice of Violation (NOV) issued to the Hope Creek Generating Station in a letter dated November 13, 1997. The violations contained in Appendix A of the November 13th letter concerned: 1) a failure to promptly identify an inoperable electric motor-driven fire pump, as required by 10CFR50, Appendix B, Criterion XVI; 2) two examples of a failure to follow procedures, as required by Technical Specification 6.8.1.a, during maintenance activities; 3) a failure to appropriately perform a 10CFR50.59 safety evaluation for a design modification; 4) a failure to follow the requirements of 10CFR50.49 applicable to the environmental qualification of Struthers-Dunn relays; and 5) a failure to follow the requirements of 10CFR50, Appendix B, Criterion III, Design Control, when extending the service life of the safety-related Agastat and Telemecanique relays.

The response to the first two violations was provided via PSE&G letter LR-N97767, dated December 12, 1997. As discussed with NRC management on November 18, 1997, the details of this reply will address the remaining three violations listed above.

Should you have any questions or comments on this transmittal, do not hesitate to contact us.

Sincerely,



Attachment (1)



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LR-N97800

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JAN 12 1998

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

Ms. B. Mozafari, Licensing Project Manager - HC  
U. S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Mail Stop 14E21  
Rockville, MD 20852

Mr. S. Morris (X24)  
USNRC Senior Resident Inspector - HC

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



Attachment 1

LR-N97800

RESPONSE TO NOTICE OF VIOLATION  
INSPECTION REPORT NO. 50-354/97-07  
HOPE CREEK GENERATING STATION  
DOCKET NO. 50-354

I. REPLY TO THE NOTICE OF VIOLATION

A. 10 CFR 50.59 Violation

1. Description of the Notice of Violation

"10 CFR 50.59(b)(1) requires, in part, that the licensee shall maintain records of changes in the facility made pursuant to this section, to the extent that these changes constitute changes in the facility as described in the safety analysis report (UFSAR). These records must include a written safety evaluation which provides the bases for the determination that the change does not involve an unreviewed safety question.

Section 7.4.1.1. of the UFSAR describes the functions and operation of the reactor core isolation cooling (RCIC) system and include a flow control diagram showing instantaneous tripping of the turbine on high vessel water level.

Contrary to the above, on and before September 30, 1997, no written safety evaluation was performed to ensure that a change to the facility involving the delay of the RCIC turbine trip on high reactor vessel water level did not involve an unreviewed safety question."

This is a Severity Level IV violation (Supplement I).

2. Reply to Notice of Violation

PSE&G agrees with the violation.

3. Reason for the Violation

PSE&G has attributed the cause of the improper 10 CFR 50.59 applicability review to personnel error. When reviewing the 10 CFR 50.59 applicability review for the proposed design change, Engineering personnel determined that the addition of a time delay relay to suppress instrument ringing did not alter any control or logic functions of the Reactor Core Isolation Cooling (RCIC) system, and therefore, did not change the facility as described in the UFSAR. However, the reviewers did not recognize the need to revise the RCIC functional control diagrams, which do depict control and

logic time delay functions. As a result, a 10 CFR 50.59 safety evaluation was not performed for the RCIC modifications (the High Pressure Coolant Injection System was similarly modified).

4. Corrective Steps That Have Been Taken and Results Achieved

- a. A 10 CFR 50.59 safety evaluation and UFSAR change have been completed for the addition of the HPCI and RCIC time delay relay additions. The 10 CFR 50.59 safety evaluation concluded that the HPCI and RCIC modifications did not result in an Unreviewed Safety Question.
- b. To preclude similar occurrences, a discussion of this issue has been included in an edition of the PSE&G 10CFR50.59 Newsletter.

5. Corrective Steps That Will Be Taken to Avoid Further Violations

- a. In addition to the 10CFR50.59 Newsletter, procedural guidance concerning UFSAR changes and 10CFR50.59 will be provided by March 1, 1998.

6. Date When Full Compliance Will Be Achieved

Full compliance was achieved on January 9, 1998, when the 10 CFR 50.59 safety evaluation and associated UFSAR change were completed for the HPCI and RCIC modifications.

B. 10 CFR 50.49 Violation

1. Description of the Notice of Violation

"10 CFR 50.49, sections (d) and (j) require, in part, that licensees prepare a list of electric equipment important to safety covered by this section [requiring environmental qualification] and that a record of qualification be maintained in an auditable form to permit verification that each item of electric equipment important to safety is qualified for its application and meets its specified performance requirements when it is subjected to the conditions predicted to be present when it must perform its safety function up to the end of its qualified life.

Contrary to the above, on or before April 7, 1997, five safety-related Struthers-Dunn relays located in a harsh environment were not included in the list of equipment important to safety requiring environmental qualification; were not replaced at the end of the qualified life specified for other relays subjected to the same conditions predicted to be present when they must perform their safety function;

and were not adequately justified to be able to meet their performance requirements after the end of their qualified life."

This is a Severity Level IV violation (Supplement I).

2. Reply to Notice of Violation

PSE&G agrees with the violation relating to the failure to include the harsh environment Struthers-Dunn relays in the environmental qualification (EQ) program. However, PSE&G notes that an appropriate qualified life had been determined for these relays, and that these relays were replaced prior to the expiration of their qualified lives (see corrective actions for more details).

3. Reason for the Violation

PSE&G has attributed the cause of the failure to include four of the harsh environment Struthers-Dunn relays in the EQ Program to personnel errors during plant startup in the mid-1980s, when the EQ Program was developed. Specifically, an incomplete system bill of materials provided by a PSE&G vendor was used to develop the EQ Program scope. The relays were not identified on the Bill of Materials, and as a result, the relays were not included in the EQ Program. For the fifth relay, the cause was attributed to personnel error in the first refueling outage. In this case, a design change was performed which failed to include an appropriate review and revision to the EQ Program to reflect the addition of the new relay.

4. Corrective Steps That Have Been Taken and Results Achieved

- a. The five Struthers-Dunn relays have been added to the Hope Creek EQ Program.
- b. Engineering has determined that the appropriate qualified service life for four of these Struthers-Dunn relays with the magnetic vinyl bearing pad material is approximately 12 years. The fifth relay, which is energized for 20% of the time has a calculated qualified life of approximately 20 years. Calculation STRDUN-ARRH-001 was used to make these determinations, which appropriately considered the post-accident operability period. The difference in qualified life of the magnetic-vinyl pad relays (12 years) and the other similar relays (approximately 5 years) in the same panel is due to the fact that different qualification reports were used to determine the qualified life of the different relay designs (magnetic-vinyl vs. silicon-rubber bearing pads). The degradation experienced on the Struthers-Dunn relays (with magnetic vinyl bearing

pads) prior to the end of their calculated service life was determined to have no impact on operability. Engineering reached this determination since the relays were within the bounds of the testing conditions and that the degraded relays were not susceptible to any additional failure mechanisms which would have rendered the relays inoperable.

- c. A recurring task has been established to ensure that these five Struthers-Dunn relays are replaced prior to end of their qualified service lives. Four of the five relays were replaced with the improved silicon-rubber bearing pad material design prior to June 1997. The fifth relay (which is energized only 20% of the time) is scheduled to be replaced (in August 1999) prior to the end of its qualified service life (in 2006).

5. Corrective Steps That Will Be Taken to Avoid Further Violations

No additional corrective actions are planned.

6. Date When Full Compliance Will Be Achieved

Hope Creek achieved full compliance when the five harsh environment Struthers-Dunn relays were added to the Hope Creek EQ Program in April 1997.

C. 10 CFR 50, Appendix B, Criterion III Violation

1. Description of the Notice of Violation

"10 CFR 50, Appendix B, Criterion III, Design Control, requires, in part, that design control measures provided for verifying or checking the adequacy of design, such as by performance of design reviews, or by the performance of a suitable testing program.

Contrary to the above, on or before September 30, 1997, the control measures provided for verifying or checking the adequacy of the design were inadequate in that independent reviews of design calculations developed to extend the service life of safety-related Agastat and Telemechanique relays in a mild environment failed to verify the adequacy of the coil temperature rise used in the calculations. The use of incorrect coil temperature rise values resulted in longer service lives."

2. Reply to Notice of Violation

PSE&G agrees with the violation.

3. Reason for the Violation

PSE&G has attributed the cause for the lower coil heat rise values used in the relay life extension calculations to personnel error. Since these relays were in mild environments (where qualified service lives are not normally calculated as harsh environment EQ Program relays are), the Engineering personnel involved did not verify or validate assumptions and input parameters used in the relay life extension calculations. This inattention to detail resulted in the inappropriate establishment of service lives for the mild environment Agastat and Telemechanique relays.

4. Corrective Steps That Have Been Taken and Results Achieved

- a. The Engineering personnel involved were held accountable for their actions in accordance with PSE&G's disciplinary policy.
- b. The Agastat EGP type relays have been replaced at Hope Creek. In addition, the normally energized Agastat EGP relays service life has been reduced to 6.5 years, consistent with the General Electric recommended service life. Although the service life of the E7000 relays has remained at approximately 11 years (and extended as appropriate to the next refueling outage for E7000 relays still in service), an evaluation will be conducted to determine if changes to the life are required. This evaluation will be completed by January 15, 1998.
- c. For the Telemechanique (Gould) J10/J13 relays, a new relay design was installed on the "A" and "B" emergency diesel generators. The new relay design will also be installed on the "C" and "D" emergency diesel generators during scheduled diesel maintenance outages in 1998. A service life extension of 3.5 years was calculated, which accounted for a 92 degree F measured heat rise in the relays. Although more conservative relay configurations would shorten the 3.5 year life extension, Engineering has concluded that the J10 and J13 relays on the "C" and "D" diesel generators will remain operable prior to their scheduled replacements by June 1998.

5. Corrective Steps That Will Be Taken to Avoid Further Violations

- a. An evaluation will be conducted to determine if changes to the E7000 relay's service life are required. This evaluation will be completed by January 15, 1998.

- b. The new relay design (to replace the Gould J10 and J13 relay design) will be installed on the "C" and "D" emergency diesel generators during scheduled diesel maintenance outages in 1998 (first quarter of 1998 for the "D" emergency diesel generator, and the second quarter of 1998 for the "C" emergency diesel generator).
- c. The details of this event will be rolled out to appropriate Engineering personnel by February 28, 1998.
6. Date When Full Compliance Will Be Achieved

Hope Creek is in full compliance. The service lives of the relays in mild environments have been appropriately established for each relay application. The current schedule for the replacement of relays will ensure appropriate relay removal prior to expiration of its associated service life.