

Public Service  
Electric and Gas  
Company

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Vice President - Nuclear Engineering

NOV 14 1994

NLR-N94208

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

REPLY TO NRC's NOTICE OF VIOLATION  
INSPECTION REPORT NO. 50-354/94-19  
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) submits the enclosed response to the Notice of Violation issued to the Hope Creek Generating Station in a letter dated October 14, 1994.

Also, as requested, Attachment II of this letter provides a description of actions, taken or planned, for reducing challenges to both the plant protective equipment and operators.

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

Sincerely,



S. LaBruna  
Vice President -  
Nuclear Engineering

Attachments (2)

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REF: NLR-N94208


STATE OF NEW JERSEY       )  
                                  ) SS.  
COUNTY OF SALEM        )

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

I am Vice President - Nuclear Engineering 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 14th day of November, 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 I

REPLY TO A NOTICE OF VIOLATION  
INSPECTION REPORT NO. 50-354/94-19  
HOPE CREEK GENERATING STATION  
FACILITY OPERATING LICENSE NPF-57  
DOCKET NO. 50-354

NLR-N94208

### REPLY TO NOTICE OF VIOLATION

#### 1. Description of Violation

"Technical Specification 6.8.1 requires, in part, that written procedures shall be implemented for applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, which include procedures for performing maintenance that can affect the performance of safety-related equipment.

Hope Creek procedure, HC.MD-AP.ZZ-0009(Q), Control of Station Maintenance, in part requires that technicians shall verify fuse replacement using a 'like-for-like' comparison of the old and new fuses.

Contrary to the above, on February 16, 1994, a maintenance technician replaced a fuse in the safety-related Bailey logic panel fuse module AC652-8-6-13 and did not verify the replacement using a 'like-for-like' comparison, causing a loss of configuration control for the protective fuses and resulting in a loss of the safety-related Bailey logic panel due to a short condition experienced on August 30, 1994."

#### 2. Reason for the Violation

PSE&G does not dispute this violation.

On February 16, 1994, a technician was assigned to troubleshoot and replace a blown fuse. Because this blown fuse was a repeat failure, troubleshooting was initiated per HC.MD-AP.ZZ-0009(Q) to determine the cause of the fault. The failure was attributed to the recent GL 89-10 MOV testing. The Logic Cabinet (AC652), in which the blown fuse is located, contains interfaces with various control circuits, including Safety Auxiliary Cooling System (SACS). Maintenance Administrative Procedure, HC.MD-AP.ZZ-0009(Q), specifies that the Bill of Materials(BOM), the drawing and a like-for-like old and new fuse verification be performed. The circuit fuse to be replaced has a design rating of 0.75 amps. The BOM for the panel lists a 0.75 amp fuse and a 1.5 amp fuse, as well as

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other fuses. The drawing for the panel, which indicates the placement of these fuses, can be misleading to the technician, resulting in confusion between the application of the 1.5 amp panel fuse and the 0.75 amp load fuse. The technician believes he obtained a 1.5 amp fuse based upon his review of the drawing for the panel. Since the task was near the end of the technicians work shift, Technician #1 turned over work to Technician #2 who was to complete the work order. The new fuse was subsequently installed without adhering to the guidance in the Maintenance Administrative Procedure, HC.MD-AP.ZZ-0009(Q).

Investigation of the reactor scram which occurred on August 30, 1994, revealed that the reasons for the violation were personnel error and lack of adherence to the fuse control process. Causal factors were inadequate shift turnover, inadequacy of the procedure used, misleading drawing, inadequate supervisory oversight and worker follow through, and inadequate root cause investigation of the repeat fuse failures in February. The cause of the fuse failure was later determined to be a nicked conductor in a Fuel Pool Cooling MOV electrical enclosure. See Licensee Event Report (LER) 354/94-012-00 for additional information.

A. Corrective Actions Taken and Results Achieved

1. The correct size fuse, 0.75 amp, was installed in the logic module.
2. A functional test and inspection of the components and circuits downstream of the oversized fuse was conducted. The system tested satisfactorily.
3. The conductor was repaired.
4. A review of work orders which identified Bailey fuse replacements of the affected size (0.75 amps and 1.5 amps) fuses since 1991 was performed to verify that correct size and type fuses were installed. This population was chosen based upon the possibility for confusion when reading the drawing. One additional non-safety related fuse replacement error was noted and corrected immediately.
5. The Maintenance department has conducted lessons learned training on this event with department personnel. This training included expectations related to procedure adherence, adequate shift turnovers, instruction on reading Bailey drawings, adequate root cause analysis, and supervisory oversight.
6. The Operations Department has conducted lessons learned training on this event with department personnel. This

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training included a discussion of 1) the specific details of the new maintenance procedure which requires for more stringent control of fuse replacements, and 2) the expectations related to the proper response and follow-up documentation when an incorrect fuse is encountered in the field.

7. An implementing procedure, specific to fuse control, has been established to control the replacement of fuses and to ensure that work orders will not be closed out until fuse verification has been documented. Maintenance personnel have been provided the new procedure, and have been given guidance in its use.
8. Individuals, including the supervisor, involved in this incident have been counselled, emphasizing the importance of procedural adherence, proper shift turnovers, adequate root cause analysis, and supervisory oversight.

B. Corrective Actions To Be Taken To Avoid Further Violation

1. Hope Creek Maintenance Department will conduct an in-field review of control cabinet and distribution panel fuses, as identified in the Managed Maintenance Information System. Probabilistic Risk Assessment (PRA) will be used, where applicable, to help prioritize in-field reviews and develop a schedule to ensure that safety significant systems are given priority. The review of safety related fuses is an ongoing process with a schedule based on safety significant prioritization and results of the ongoing review. This review will be completed no later than the end of the seventh refueling outage. The non-safety related fuses will be reviewed and scheduled in a similar manner and will be completed no later than the end of the eighth refueling outage.
2. This event will be reviewed again during operating experience feedback sessions. These sessions will be attended by appropriate station personnel, with an emphasis on root cause analysis and procedure adherence.
3. Fuse replacement is being added to the recurring training for Maintenance personnel involved with fuse replacement.
4. Lessons learned will be provided to Salem Station and Site Services for review and corrective actions as required.
5. A new root cause analysis guideline has been recently issued. This guideline provides additional information and guidance for investigative processes in the use of various

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root cause analysis techniques that are proven effective in resolving both human and equipment performance problems. Training will be provided to appropriate station personnel.

C. Date When Full Compliance Will Be Achieved

Full compliance has been achieved.

## ATTACHMENT II

### Response to information requested related to efforts to reduce challenges to plant equipment and operators:

PSE&G management is concerned over the recent increased number of challenges to plant operations by various causes, mostly involving balance of plant equipment failures, and is taking action to assure continued event free operations.

### Corrective Actions Taken or Planned

1. A new root cause analysis guideline was recently issued. It provides additional direction for identifying specific causal factors, root causes, and contributing factors to equipment and human performance problems. It discusses several root cause analysis methods and provides recommendations as to when each method should be employed. It provides guidance to assist in developing corrective actions that will prevent recurrence and yield systematic benefits.

Training on the new guideline will be provided to nuclear department personnel that are involved in root cause evaluations. The training will provide a common understanding of the root cause process and management's expectations concerning that process. This will contribute to a more consistent application of thorough root cause analysis.

2. An independent assessment of the most recent five scrams lead by the Safety Review Group (Independent Safety Engineering Group) has been initiated. This team will assess: 1) barriers to prevent recurrence; 2) adequacy of corrective actions previously planned, recommended, or taken; 3) missing or unaddressed issues; and 4) common threads among recent events. Upon completion of the independent assessment, the necessary actions will be taken.
3. The in-field fuse review, discussed in the Corrective Actions to be Taken as a result of the violation, will diminish challenges to equipment and operators, including challenges involving Balance of Plant equipment failures.
4. Following the October 7, 1994 scram, a meeting, called by the Hope Creek General Manager, assembled all available Hope Creek supervision and management to review the last 5 scrams and define underlying causal factors. A meeting will be held with Hope Creek supervision to clarify and finalize the action plan for addressing these factors.



Attachment II  
Additional Information Requested

5. PSE&G is implementing the Maintenance Rule which includes Balance of Plant systems which have contributed to the recent plant challenges. This program will result in more reliable Balance of Plant systems and reduce the number of equipment and operator challenges that are a result of these systems. The methodology of the new Root Cause Analysis Guideline is being incorporated into the Maintenance Rule.
6. A Root Cause Analysis Survey was sent to all Hope Creek employees. The objective of the survey is to find ways to improve the effectiveness of root cause and corrective action efforts, identifying precursors to large events and resolving issues while they are small, and conducting a thorough analysis in a timely manner. The results of the survey will be evaluated and corrective actions implemented to emphasize a questioning attitude and a focus on safety.
7. Other plants have been contacted to learn from their experience in dealing with similar situations. The lessons learned at these other utilities will be reviewed for applicability to Hope Creek and appropriate corrective actions will be applied.

PSE&G is proactively pursuing several efforts, as noted above, to address concerns with plant and operator challenges. These efforts emphasize understanding the root causes and underlying causal factors of Hope Creek's recent challenges. The lessons learned as a result of these independent and management assessments will be discussed with the NRC on a continuing basis.