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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

October 20, 1997

EA 97-160

Mr. Leon R. Eliason  
Chief Nuclear Officer & President  
Nuclear Business Unit  
Public Service Electric and Gas Company  
Post Office Box 236  
Hancocks Bridge, New Jersey 08038

SUBJECT: NOTICE OF VIOLATION  
(NRC Inspection Report No. 50-354/97-01)

Dear Mr. Eliason:

This letter refers to the NRC routine inspection conducted at the Hope Creek Generating Station between February 2 and March 17, 1997, the results of which were discussed with Mr. L. Storz and other members of your staff at an exit meeting on March 27, 1997. The inspection report was sent to you on April 14, 1997. During the inspection, the NRC identified weaknesses in the safety evaluations for design change packages which added crosstie piping and valves between the Residual Heat Removal (RHR) subsystems. In a teleconference between Mr. M. Bezilla of your staff and Mr. J. Linville of the NRC, on June 26, 1997, another exit meeting was held to inform you that the NRC had concluded that two of the weaknesses in the safety evaluations involved apparent violations of NRC requirements. On August 12, 1997, a predecisional enforcement conference (conference) was conducted with you and other members of your staff to discuss the apparent violations identified during the inspection, their causes, and your corrective actions.

Based on our review of the inspection findings, and information provided during the conference, one violation of NRC requirements is being cited and is described in the enclosed Notice of Violation (Notice). The violation involves inadequate safety evaluations for a modification that was installed in April 1994. The modification involves the installation of crosstie piping, with two isolation valves, between the A and C RHR loops downstream of the RHR pumps to allow for additional flexibility during shutdown cooling operations. The safety evaluations were inadequate because you failed to identify that: 1) the change involved an unreviewed safety question (USQ) since the change introduced the possibility of a loss of independence of the low pressure coolant injection (LPCI) loops due to an erroneous valve lineup; and 2) the crosstie isolation valves needed to be included in the monthly emergency core cooling system (ECCS) flowpath verification required by Technical Specifications (TS), which is required for any valve in the ECCS flowpath that is not locked closed.

Even though you recognized that installation of the crosstie piping changed the mechanical separation criteria of the LPCI subsystems, and you properly evaluated the potential for internal flooding events, you did not rigorously review the potential loss of more than one LPCI flow path resulting from an erroneous valve alignment, which is a malfunction of a different type than had been previously evaluated in the UFSAR. If a change introduces a malfunction

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of a different type than any evaluated previously in the UFSAR, it constitutes a USQ, and Commission approval is required prior to implementation. In this case, the modification was installed without prior Commission approval. At the conference, you acknowledged that the original design of the crosstie piping was inadequate in that the design specified one of the two isolation valves to be normally open while the reactor was at power. In such a configuration, valve misalignment such that the loops would be crosstied, should have been considered as a credible failure and, therefore, should have been identified as a USQ. However, you also provided your view that the USQ associated with the RHR crosstie modification was eliminated in March 1995, when you recognized the need to shut both crosstie isolation valves when the reactor is at power. You determined that the probability of unintentionally mispositioning the two manual crosstie isolation valves was several orders of magnitude lower than the probability of other similar conditions evaluated in the UFSAR. Therefore, misalignment of both crosstie valves did not have to be considered as creating the possibility of a malfunction of a different type because it was not a credible event. You indicated that this determination was based on guidance in Nuclear Safety Analysis Center (NSAC)-125, "Guidelines for 10 CFR 50.59 Safety Evaluations." Nevertheless, this arrangement created the possibility for a malfunction of a different type.

This violation is significant because between April 1994, when the crosstie piping was installed, and March 1995, when changes were made to require both isolation valves to be closed whenever the reactor was at power, a single valve alignment error could have resulted in the loss of independence of the LPCI subsystems. Fortunately, both valves were always closed while the reactor was at power due to an error in the system drawings, but there were no administrative controls in place to ensure that the valves were in the correct position and remained in that position. The violation is also of regulatory concern because the NRC relies upon licensees correctly assessing proposed modifications to ensure that USQs do not exist. Therefore, this violation has been categorized at Severity Level III in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy), NUREG-1600.

In accordance with the Enforcement Policy, a base civil penalty in the amount of \$50,000 is considered for a Severity Level III problem or violation that occurred prior to November 12, 1996. Hope Creek has been the subject of escalated enforcement actions within the last 2 years<sup>1</sup>. Therefore, the NRC considered whether credit was warranted for *Identification and Corrective Action* in accordance with the civil penalty assessment process in Section VI.B.2 of the Enforcement Policy. Credit is warranted for *Identification* because, even though you did not identify the inadequacies in your safety evaluations until prompted by the NRC, you did recognize the need to shut both crosstie isolation valves during a safety system functional review in March 1995, and identified the need for administrative controls to ensure that the valves are shut when the reactor is at power during review of the safety evaluation for the B and D loop crosstie in December 1995. Subsequent to the conference, you submitted a TS

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A Notice of Violation and Proposed Imposition of Civil Penalties in the amount of \$150,000 was issued to PSE&G on October 23, 1996, for several violations, including a similar failure to obtain NRC approval prior to implementing a change to the Hope Creek service water system which involved a USQ. (EAs 96-125 and 96-281)

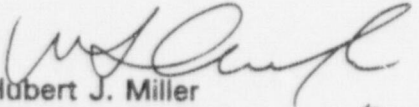
amendment request for the RHR crosstie modification. Credit is also warranted for *Corrective Action* since your corrective actions to address the inadequate safety evaluations were considered both prompt and comprehensive after the violation was identified. These actions included, but were not limited to: (1) reassessment of the safety evaluations for the RHR crosstie modifications; (2) evaluation of 50.59 and engineering performance issues; (3) enhanced training for engineering staff and Station Operations Review Committee (SORC) members; (4) implementation of an independent peer review process; and (5) modification of your safety evaluation process to be consistent with NRC guidance.

Therefore, to encourage prompt identification and comprehensive correction of violations, I have been authorized, after consultation with the Director, Office of Enforcement, not to propose a civil penalty in this case. However, significant violations in the future could result in a civil penalty.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be placed in the NRC Public Document Room (PDR).

Sincerely,

  
Hubert J. Miller  
Regional Administrator

Docket No. 50-354  
License No. NPF-57

Enclosure: Notice of Violation

cc w/encl:

L. Storz, Senior Vice President - Nuclear Operations  
E. Simpson, Senior Vice President - Nuclear Engineering  
E. Salowitz, Director - Nuclear Business Support  
A. Kirby, III, External Operations - Nuclear, Delmarva Power & Light Co.  
J. Isabella, Manager, Joint Generation Atlantic Electric  
M. Bezilla, General Manager - Hope Creek Operations  
J. McMahon, Director - Quality Assurance & Nuclear Safety Review  
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