



## PECO NUCLEAR

A Unit of PECO Energy

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January 23, 1997

Docket Nos. 50-277

50-278

License Nos. DPR-44

DPR-56

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Subject: Peach Bottom Atomic Power Station Units 2 & 3  
Response to Notice of Violation (Combined Inspection Report No.  
50-277/96-07 & 50-278/96-07)

Gentlemen:

In response to your letter dated January 3, 1997, which transmitted the Notice of Violation concerning the referenced inspection report, we submit the attached response. The subject report concerned an NRC Inspection that was conducted August 5 through August 9, 1996. A Pre-decisional Enforcement conference concerning these issues was conducted November 15, 1996.

If you have any questions or desire additional information, do not hesitate to contact us.

Thomas N. Mitchell  
Vice President,  
Peach Bottom Atomic Power Station

### Attachments

cc: W. T. Henrick, Public Service Electric & Gas  
R. R. Janati, Commonwealth of Pennsylvania  
H. J. Miller, US NRC, Administrator, Region I  
W. L. Schmidt, US NRC, Senior Resident Inspector  
H. C. Schwemm, VP - Atlantic Electric  
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53A-1, Chesterbrook  
S23-1, Main Office  
SMB4-6, Peach Bottom  
62A-1, Chesterbrook  
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S13-1, Main Office  
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## RESPONSE TO NOTICE OF VIOLATION

### Restatement of Violation

10 CFR 50.65(a)(1) requires, in part, that the holders of an operating license shall monitor the performance or condition of structures, systems, or components, against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components, within the scope of the rule, be capable of fulfilling their intended functions. When the performance or condition of a structure, system, or component does not meet established goals, appropriate corrective action shall be taken. 10 CFR 50.65(a)(2) requires, in part, that monitoring as specified in paragraph (a) (1) is not required where it has been demonstrated that the performance or condition of a structure, system, or component is being effectively controlled through the performance of appropriate preventive maintenance, such that the structure, system, or component remains capable of performing its intended function.

Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 1, endorses NUMARC 93-01, "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," as an acceptable method for implementing the requirements of 10 CFR 10.65. Regulatory Guide 1.160 states that the methods described in the guide will be used in the evaluation of the effectiveness of maintenance activities of licensees who are required to comply with 10 CFR 50.65 unless a licensee has proposed an acceptable alternative method for compliance.

NUMARC 93-01, Section 9.3.2 states, in part, that performance criteria for risk-significant structures, systems, and components should be established to assure that reliability and availability assumptions used in the plant-specific probabilistic risk assessment, individual plant examination, or other risk determining analysis are maintained or adjusted when necessary. Standby systems are to be treated similarly. NUMARC 93-01 also indicates that non-risk significant operating systems are monitored using appropriate plant-level performance criteria.

Contrary to the above, on August 9, 1996, PECO Nuclear was not adequately monitoring the performance or condition of numerous systems and components against established goals, nor had PECO Nuclear demonstrated the effectiveness of preventive maintenance on these systems and components. The affected systems included the reactor protection system, emergency ventilation systems for the diesel generator building and the control room, the reactor recirculation system, the electrohydraulic control system, the feedwater system, the turbine bypass valves and the main steam safety relief valves (MSRVs). The monitoring of the effectiveness of preventive maintenance had not been adequately demonstrated in that the selected system performance criteria were not demonstrated to be fully effective because the licensee did not always

follow the guidance of Regulatory Guide 1.160 / NUMARC 93-01 and did not adequately justify those criteria selected that deviated from Regulatory Guide / NUMARC for all SSCs in the Maintenance Rule scope, as evidenced by the following examples:

- Safety Grade Instrument Gas (SGIG), the Control Rod Drive (CRD) standby pump, the Reactor Protection System (RPS), Control Room Emergency Ventilation (CREV), and the Emergency Diesel Generator (EDG) building ventilation, are risk-significant standby systems, which had train level performance criteria that did not include an unavailability criterion.
- Reactor Recirculation, EHC and Feedwater are non-risk significant systems with performance criteria established at the plant level. However, the performance criteria did not include unplanned capability loss factor, which was needed to measure functional performance.
- Adequate performance criteria for the EHC, turbine bypass valves and MSRV systems were not implemented to effectively monitor an important Maintenance Rule function (reactor pressure control) of these systems. These systems were only monitored using the plant level criteria of unplanned shutdowns.
- The MSRV system is a risk-significant standby system, which was only monitored at the plant level using unplanned shutdowns.

This is a Severity Level III violation.

### Reason for the Violation

The NRC published the Maintenance Rule in 1991 and set an effective date of July 10, 1996. Since inception, PECO has had various organizations and personnel assigned to the development and implementation of the Maintenance Rule. The industry developed a standard (NUMARC 93-01) for guidance in this area that the NRC accepted and endorsed. Four personnel from within the PECO organization participated in and were significant contributors to the development of the NUMARC document. Additionally, PECO participated in many Maintenance Rule workshops. During August 5-9, 1996, the NRC inspected PBAPS's implementation of the rule and identified several areas of weakness that resulted in the NRC violation. The NRC violation involved specific deficiencies in establishing appropriate performance monitoring of plant systems. Documentation of deviations from established NRC endorsed guidance in implementing the Maintenance Rule was also an issue. As a result of interviews with key personnel and a review of historical data, it was concluded that several causal factors contributed to PECO's less-than-adequate verbatim compliance in these areas. These causal factors included:

- The PECO core team had a mindset which resulted in unrecognized deviations from NUMARC 93-01. Interpretations were perceived to meet the intent of the rule and were not recognized as deviations. PECO's goal was to be proactive with the development of industry guidance and the in-house Maintenance Rule program. PECO utilized the same experts on the industry core team to develop PECO's program and to ensure that NUMARC 93-01 guidance was implemented. In fact, these experts were session leaders in industry workshops for the rule implementation. Due to PECO's close involvement with this core team in NUMARC 93-01 development, Q&A responses and industry workshops, the team believed they were developing a program in accordance with the intent of NUMARC 93-01. The program developed by the core team contained interpretations influenced by the Questions and Answers and industry workshops. Maintenance Rule implementation depended on the core team for direction and management did not sufficiently challenge core team interpretations to ensure requirements were being met.
- The core team underestimated the importance of documentation. The clarification provided by the Questions and Answers were believed to be part of the NUMARC 93-01 guidance. The involvement and knowledge level of the core team masked the need for documentation.
- Self-assessments were narrowly focused and did not provide a sufficiently independent or objective review of the Maintenance Rule implementation. The personnel involved in assessment were the same people who helped shape the industry guidance, participated in workshops and provided

assist visits to plants developing their programs. They were less likely to challenge interpretations. Also, the conduct of an internally driven program assessment, led by PECO's Engineering Assurance branch, performed just prior to the NRC inspection did not allow adequate time to implement corrective actions before the Rule went into effect.

#### Corrective Steps That Have Been Taken and the Results Achieved

PECO revised the governing document to better comply with the guidance of NUMARC 93-01. Furthermore, PECO formalized the performance criteria selection process and included it in the program procedure. This included clarifications of definitions to ensure understanding and consistency of approach. In addition, PECO developed a performance indicator selection flowchart that follows NUMARC 93-01 guidance.

Unavailability indicators for risk-significant systems, both normally operating and standby, were included along with unplanned capability loss factor on certain systems being monitored at the plant level. With respect to reliability monitoring, the bases for threshold values of Maintenance Preventable Functional Failures (MPFFs) were reviewed, adjustments to the Performance Criteria made when appropriate, and sensitivity studies performed to verify no unacceptable impact on core damage frequencies as calculated with the plant PSA model.

In addition, PECO completed an assessment of systems to verify appropriate scope, operating status (normally operating versus standby) and performance monitoring for all systems. This included the review and documentation of the bases for these decisions. Based on this, PECO re-confirmed and updated the performance criteria in accordance with our revised governing document. Based upon these reviews, no systems went from (a)(2) status to (a)(1).

PECO completed transfer of program ownership from the core team to the system managers. The Director of Engineering clearly communicated the roles and responsibilities of the system manager and the Maintenance Rule coordinator. PECO reinforced the expectation that system managers own the rule for their system and that the core team acts as a consultant to the system managers. Governing documents have been revised to reflect ownership roles.

A Performance Enhance Program (PEP) issue was performed to investigate this issue and identify root causes. The corrective actions required to address the specific issues identified in the violation have been completed. Several additional initiatives will be pursued as enhancements and to address potential generic implications.

These corrective actions will address those specific examples cited in the notice of violation.



#### Corrective Steps That Will Be Taken to Avoid Further Violations

The corrective steps that have been described above, in conjunction with the future actions specified below will serve to avoid further violations.

PECO will perform an independent assessment of the program including assessing the program plan, performance criteria selection process, and implementation (April of 1997). In addition, PECO will benchmark program against plants recognized by the NRC as having good programs (June of 1997).

#### Date When Full Compliance Was Achieved

Full compliance was achieved on November 14, 1996, by which time the following were completed:

- 1) Performance criteria was re-evaluated and reset as appropriate.
- 2) Inconsistencies with NUMARC 93-01 were corrected.
- 3) Verification was performed that changes to the performance criteria did not create an unacceptable impact on core damage frequency as determined by the PSA.
- 4) PECO program documents were updated to properly reflect the requirements of NUMARC 93-01 and the need to justify and document any alternative approaches.