October 27, 2004

Mr. Christopher M. Crane
President and CNO
Exelon Nuclear
Exelon Generation Company, LLC
200 Exelon Way
Kennett Square, PA 19348

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION - NRC SUPPLEMENTAL INSPECTION REPORT 05000277/2004010 AND 05000278/2004010

Dear Mr. Crane:

On September 17, 2004, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Peach Bottom Atomic Power Station Units 2 and 3. The enclosed supplemental inspection report documents the inspection findings, which were discussed on September 17, 2004 and October 26, 2004, with Mr. Robert Braun and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records and interviewed personnel.

Based on the results of this inspection no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

John F. Rogge, Chief
Electrical Branch
Division of Reactor Safety

Docket Nos.: 50-277, 50-278
License Nos: DPR-44, DPR-56
Enclosure: Inspection Report 05000277/2004010 and 05000278/2004010
w/Attachment: Supplemental Information

cc w/encl:
Chief Operating Officer, Exelon Generation Company, LLC
Site Vice President, Peach Bottom Atomic Power Station
Plant Manager, Peach Bottom Atomic Power Station
Regulatory Assurance Manager - Peach Bottom
Senior Vice President, Nuclear Services
Vice President, Mid-Atlantic Operations
Vice President - Operations Support
Vice President - Licensing and Regulatory Affairs
Director, Licensing and Regulatory Affairs, Exelon Generation Company, LLC
Manager, Licensing - Peach Bottom Atomic Power Station
Manager License Renewal
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R. Fletcher, Department of Environment, Radiological Health Program
Commonwealth of Pennsylvania (c/o R. Janati, Chief, Division of Nuclear Safety,
Pennsylvania Bureau of Radiation Protection)
Public Service Commission of Maryland, Engineering Division
Board of Supervisors, Peach Bottom Township
D. Levin, Acting Secretary of Harford County Council
Mr. & Mrs. Dennis Hiebert, Peach Bottom Alliance
TMI - Alert (TMIA)
J. Johnsrud, National Energy Committee, Sierra Club
Mr. & Mrs. Kip Adams
T. Snyder, Director, Air and Radiation Management Administration,
Maryland Department of the Environment **(SLO)**

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos:	50-277, 50-278
License Nos:	DPR-44, DPR-56
Report Nos:	05000277/2004010, 05000278/2004010
Licensee:	Exelon Generation Company, LLC Correspondence Control Desk 200 Exelon Way Kennet Square, PA 19348
Facility:	Peach Bottom Atomic Power Station Units 2 and 3
Location:	1848 Lay Road Delta, Pennsylvania
Dates:	September 13 - 17, 2004
Inspectors:	R. Fuhrmeister, Senior Reactor Inspector
Approved by:	John F. Rogge, Chief Electrical Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000277/2004010, 05000278/2004010; 09/13/2004 - 09/17/2004; Peach Bottom Atomic Power Station Units 2 and 3; Supplemental Inspection.

Cornerstone: Mitigating Systems

The U.S. Nuclear Regulatory Commission (NRC) performed this supplemental inspection to assess Exelon's evaluation associated with the failure of the E2 emergency diesel generator (EDG) on September 15, 2003. This performance issue was previously characterized as having low to moderate risk significance ("white") in NRC Inspection Report 50-277&278/03-13. During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspectors determined that Exelon performed a comprehensive evaluation of the failure of the E2 EDG during a partial loss of offsite power event on September 15, 2003. Exelon's evaluation identified the primary root cause of the performance issue to be lack of proper controls for installation of cylinder liner adapter gaskets during installation in 1992. The lack of adequate gasket crush, along with gasket relaxation, led to leakage of combustion gasses into the cooling water system, and subsequent trip on low cooling water pressure.

Exelon's performance is acceptable in addressing the diesel generator failure, therefore, the white finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in IMC 0305, "Operating Reactor Assessment Program." Implementation of Exelon's corrective actions will be reviewed during a future inspection.

REPORT DETAILS

01 INSPECTION SCOPE

The U.S. Nuclear Regulatory Commission (NRC) performed this supplemental inspection to assess Exelon's evaluation associated with the failure of the E2 EDG during a partial loss of offsite power event on September 15, 2003. This performance issue was previously characterized as "white" in NRC Inspection Report 50-277&278/03-13, and is related to the mitigating systems cornerstone in the reactor safety strategic performance area.

02 EVALUATION OF INSPECTION REQUIREMENTS

02.01 Problem Identification

a. Determination of who (i.e., licensee, self-revealing, or NRC) identified the issue and under what conditions

The issue was self-revealing, and was identified when the E2 EDG tripped on low jacket water pressure approximately one hour after starting and loading during the partial loss of offsite power event on September 15, 2003.

b. Determination of how long the issue existed, and prior opportunities for identification

Exelon determined that the issue existed since the cylinder liners were replaced on the engine in 1992. Exelon determined that the condition could have been identified on two occasions in the spring of 2003 when low jacket water pressure was noted during test runs of the E2 EDG but was not fully investigated or resolved.

c. Determination of the plant-specific risk consequences (as applicable) and compliance concerns associated with the issue

Exelon performed a risk assessment using the Phase 2 worksheets from Risk-Informed Inspection Notebook for Peach Bottom Units 2 and 3. Exelon estimated change in core damage frequency (ΔCDF) in the very low risk (Green) range.

NRC performed a phase 2 evaluation and determined the EDG failure had low to moderate risk and that further refinement of the results was warranted. NRC performed a Phase 3 evaluation using SPAR Model 3.01 for Peach Bottom and calculated ΔCDF and ΔLERF values of White for Unit 2 and Green for Unit 3. The difference between the results for Unit 2 and Unit 3 is due to differences in loads on the electrical busses.

02.02 Root Cause and Extent of Condition Evaluation

a. Evaluation of methods used to identify root cause and contributing causes.

Exelon used Event and Causal Factor Charting and Barrier Analysis to determine why the E2 EDG failed to continue to run and carry load.

b. Level of detail of the root cause evaluation

The root cause evaluation assessed multiple potential causes for the loss of cooling water pressure on the E2 Emergency Diesel Generator. Troubleshooting activities were conducted and were able to replicate the performance observed during the event and identified the presence of combustion gasses in the coolant system.

c. Consideration of prior occurrences of the problem and knowledge of prior operating experience

During the evaluation of the cause of the combustion gas leak, Exelon determined that on two occasions in the spring of 2003, low cooling water pressure was observed. Subsequent troubleshooting identified no abnormalities, and the cause of the observed low pressure was never identified.

d. Consideration of potential common cause(s) and extent of condition of the problem

During repairs to the E2 EDG following the September 15, 2003, event, Exelon determined that leaking cylinder liner adapter gaskets allowed combustion gasses to enter the cooling system as a result of not achieving adequate gasket crush on initial installation in 1992. Exelon determined that inadequate procedural guidance for performing maintenance resulted in the faulty installation. Exelon also found that because the same procedure was used at both Limerick and Peach Bottom, by the same work group that the problem could potentially apply to the engines at both sites. Exelon performed monitoring to determine if there was evidence of gas leakage into the cooling systems of all the engines. In addition, Exelon performed a review to determine if solid metallic gaskets were used elsewhere and whether adequate guidance existed for their installation.

02.03 Corrective Actions

a. Appropriateness of corrective actions

Exelon has reviewed the manufacturer's guidance for the installation of cylinder liner adapter gaskets and revised procedures to incorporate the recommended method. Exelon has also obtained special tools necessary for the installation and trained maintenance personnel on the installation method and use of the tools. Exelon has also implemented enhancements to troubleshooting and corrective action guidance to ensure that, in the future, resolution of identified problems is more rigorously pursued. Exelon also scheduled reviews of all the EDG manufacturer's service advisories to ensure that all appropriate recommendations had been incorporated.

b. Prioritization of corrective actions

Exelon took actions to ensure that the installation procedure revisions and technician training were completed before the next scheduled EDG inspection and overhaul. Exelon also implemented monitoring of the engines for evidence of gas leakage into the cooling systems and prompt correction of any leakage observed.

c. Establishment of schedule for implementing and completing the corrective actions

Exelon initiated activities to ensure the updated maintenance procedures were in place at all the sites using the same EDGs prior to the next occurrence of inspection and overhaul of the engines at each site.

d. Establishment of quantitative or qualitative measures of success for determining the effectiveness of the corrective actions to prevent recurrence

Exelon performed an effectiveness review of the corrective actions for the low cooling water pressure. In their review, Exelon identified several additional enhancements and initiated steps to implement them. In addition, Exelon has added coolant system monitoring activities during each engine run to provide early detection of any combustion gas leakage which might occur.

03. MANAGEMENT MEETINGS

Exit Meeting Summary

The inspector discussed the results of the inspection with Mr. R. Braun and other members of the Peach Bottom staff at a meeting on September 17, 2004 and October 26, 2004.

Some of the information reviewed during the inspection was marked as proprietary. All proprietary information was returned to Exelon at the end of the inspection. This report contains no proprietary information.

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Exelon personnel

R. Braun, Site Vice President
J. Grimes, Plant Manager
P. Cowan, Nuclear Oversight Manager
J. Mellor, Regulatory Assurance Manager
D. Foss, Licensing Engineer
J. McLaughlin, System Manager
J. Rogenmuser, System Manager

NRC personnel

C. Smith, Senior Resident Inspector
D. Orr, Senior Resident inspector (Salem)

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

None

Closed

05000277/2003013-01	AV	Failure to adequately maintain the E2 Emergency Diesel Generator
05000278/2003013-02	AV	Failure to adequately maintain the E2 Emergency Diesel Generator

Discussed

NONE

LIST OF DOCUMENTS REVIEWED

Condition Reports

00081006 00175881 00176774 00178117 00178754 00229154
00236339 00236363 00236367 00236373 00236377 00236380

Focused Area Self-Assessments

ASSA 216940, FASA (LS): CA Adequacy for E2 EDG Main White Finding
ASSA 134384, FASA Engr Programs: Probalistic Risk Assessment

Procedures

—052-011, Rev. 7, Standby Diesel Generator Cylinder liner Replacement
—052-003, Rev. 4, Injection Nozzle Rebuild and Storage
RT-052-202-2, Rev. 16, E2 Diesel Generator Load Run
ST-052-312-2, Rev. 19, E2 Diesel Generator Slow Start Full Load and IST Test
ST-052-702-2, Rev. 13, E2 Diesel Generator 24 Hour Endurance Test

Miscellaneous Documents

NER PB-03-046, Trip of the Peach Bottom E2 Emergency Diesel Generator (EDG) on Low Jacket Water Pressure
LS-AA-125-1001, Rev. 4, Root Cause Analysis Manual
PEA-79116, Analysis of E2 and E4 Jacket Cooling Water Samples
PEA-79117, Analysis of E2 Crankcase oil
PEA-79489, Rev. 01, Failure Analysis of Copper Gaskets and the #8 Kiene Valve Adapter from the E2 Emergency Diesel Generator
PEA-81146, Emergency Cylinder liner Copper Gasket Testing, Peach Bottom Common
Fairbanks Morse Service Information Letter, Volume A, Issue 15
Fairbanks Morse Service Information Letter, Volume A, Issue 24

LIST OF ACRONYMS

CDF	Core Damage Frequency
EDG	Emergency Diesel Generator
LERF	Large Early Release Fraction
NRC	Nuclear Regulatory Commission