

January 8, 2003

Mr. John L. Skolds  
Chief Operating Officer  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION - NRC INSPECTION  
REPORT 50-277/02-012, 50-278/02-012

Dear Mr. Skolds:

On December 11, 2002, the NRC completed the third of three inspections of your application for renewal of the operating licenses for the Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The inspection included a review of your response to the open items previously identified in report 50-277/02-010, 50-278/02-010 and a review of the aging of the Standby Gas Treatment System. The results of the inspection were discussed with members of your staff on December 11, 2002, at an exit meeting held at your Kennett Square office. The enclosed inspection report presents the results of that inspection.

The inspection was conducted in accordance with NRC Manual Chapter 2516, "Policy and Guidance for the License Renewal Inspection Program," using NRC Inspection Procedure 71002, "License Renewal Inspections." The inspection consisted of a selected examination of procedures and representative records, a walkdown of the Standby Gas Treatment System, and interviews with personnel regarding the aging management of systems, structures and components within the scope of license renewal in accordance with the Code of Federal Regulations (10 CFR Part 54). The inspection also reviewed your annual update to the license renewal application.

Your license renewal activities were being implemented or planned as described in your license renewal application and your updated license renewal application. The documentation supporting your application is in an auditable and retrievable form. The programs identified by your application can acceptably identify and manage the structures, systems, and components within the scope of license renewal.

Mr. John L. Skolds

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If you have any questions, please contact David Lew of my staff at (610) 337-5120.

Sincerely,

*/RA/*

Wayne D. Lanning, Director  
Division of Reactor Safety

Docket Nos: 50-277, 50-278  
License Nos: DPR-44, DPR-56

Enclosure: Inspection Report Nos. 50-277/02-012 and 50-278/02-012

cc w/encl: Senior Vice President, Mid-Atlantic Regional Operating Group  
Chief, Operating Officer, Exelon Generation Company, LLC  
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Vice President, Mid-Atlantic Operations Support  
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Site Vice President, Peach Bottom Atomic Power Station  
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Manager, Licensing - Limerick and Peach Bottom  
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Mr. John L. Skolds

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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: 50-277/02-012, 50-278/02-012

Licensee: Exelon Generation Company, LLC

Facility: Peach Bottom Atomic Power Station, Units 2 and 3

Location: 1848 Lay Road  
Delta, Pennsylvania

Dates: December 9 to 11, 2002

Inspectors: Michael Modes, Senior Reactor Engineer, Region I

Approved by: David C. Lew, Chief  
Performance Evaluation Branch  
Division of Reactor Safety

## SUMMARY OF FINDINGS

IR 05000277-02-012, IR 05000278-02-012, on December 9 - 11, 2002; Peach Bottom Atomic Power Station, Units 2 & 3; License Renewal Application, Final Inspection Report.

This inspection of license renewal activities was performed by a regional based inspector. The inspection program followed was NRC Manual Chapter 2516 and NRC Inspection Procedure 71002. This inspection did not identify any "findings" as defined in NRC Manual Chapter 0612.

The inspector concluded that items opened as a result of the aging management inspection were resolved and are closed. Exelon's license renewal activities were being implemented or planned as described in Exelon's license renewal application and Exelon's updated license renewal application. The documentation supporting Exelon's application is in an auditable and retrievable form. The inspector concluded Exelon's aging management programs can identify the structures, systems, and components within the scope of license renewal and provide reasonable assurance the effects of aging will be managed.

## Report Details

### I. Inspection Scope

The inspection objective was to determine if the programs submitted for selected systems and structures, as part of the license renewal application, are consistent with NRC guidance for license renewal including the statements of consideration that accompanied the rule (60FR22461, published May 8, 1995); Regulatory Guide 1.188, "Standard Format and Content for the Application to Renew Nuclear Power Plant Operating Licenses," dated July 2001; and the draft license renewal standard review plan, "Standard Review Plan for the Review of License Renewal Applications for Nuclear Power Plants," dated April 21, 2000, and other staff guidance documents.

The inspection included a review of your response to the open items previously identified in report 50-277/02-010, 50-278/02-010 and a review of the aging of the Standby Gas Treatment System.

The inspection was the third of three NRC inspections that review your application for a renewed license for the PBAPS facilities. The inspection consisted of a selected examination of procedures and representative records, a walkdown of the Standby Gas Treatment System, and interviews with personnel regarding the aging management of systems, structures and components within the scope of license renewal, in accordance with the Code of Federal Regulations (10 CFR Part 54). The inspection also reviewed your annual update to the renewal license application.

### II. Findings

#### A. Previously Opened Items

##### 1. Open Item 50-277/02-10-01; 50-278/02-10-01

Fuse holders (including fuse clips and fuse blocks), within the scope of the application, were originally classified as active components by the applicant. Classification of some of the holders as active was considered, by the NRC, to be incorrect. This view was documented as open item 50-277/02-09-02; 50-278/02-09-02 in the report of the inspection performed on the applicant's scoping process.

On May 16, 2002, the NRC staff issued draft staff guidance on the identification and treatment of electrical fuse holders for license renewal. The staff guidance was that a fuse holder, not part of a larger assembly and supporting a safety-related and nonsafety-related function, in which the failure of a fuse holder precludes a safety function from being accomplished, should be considered within the scope of license renewal as a passive component. The guidance also takes the position that "operational experience as discussed in NUREG-1760, 'Aging Assessment of Safety-Related Fuses Used in Low-and Medium-Voltage Applications in Nuclear Power Plants,' identified that fuse holders have experienced a large number of degradation-related failures," and that managing age-related failures of fuse holders would have a positive effect on the safety performance of the plant."

The applicant subsequently agreed with the proposed position that fuse holders were within the scope of license renewal as a passive component (closing 50-277/02-09-02; 50-278/02-09-02). However, at the time of the NRC inspection of the applicant's aging management process, the applicant had not completed an aging management review that addressed both the phenolic and nylon insulating portion of the fuse holders, as well as the copper, tinned copper, brass, bronze, and aluminum portion of the fuse block. This incomplete analysis resulted in NRC open item 50-277/02-10-01; 50-278/02-10-01.

The applicant researched the population of fuse assemblies that fit the criteria established in the proposed staff position and determined the criteria applied to approximately a dozen fuse assemblies at Peach Bottom Nuclear Power Station (PBAPS). The applicant concluded, after the NRC aging management inspection, that the phenolic and nylon insulating portion of the fuse holders in these fuse assemblies would be subjected to the same aging affect of "loss of material properties" as a phenolic or nylon electrical terminal. The applicant included the phenolic and nylon portion of these fuse holders in the "Non-EQ Accessible Cable Aging Management Activity" program B.3.3. The applicant further researched failures that occurred in fuse assemblies, industry wide including NUREG-1760, and determined that if failures of fuse holders induced by operator performance (i.e., bending or breaking clips when inserting fuses) were eliminated, the number of failures that occurred from age related phenomena was not significant. As a consequence of the applicant's aging management review, the applicant concluded there was reasonable assurance the small population of fuse holders at PBAPS, fitting the criteria stated in the proposed NRC staff guidance, would continue to perform their safety function in the absence of an aging management program for the metallic portion of the fuse holder because of the reduced significance of aging problems. The applicant concluded the copper, tinned copper, brass, bronze, and aluminum portion of the fuse block did not require an aging management program.

The Office of Nuclear Reactor Regulation (NRR) confirmed their understanding of the applicant's position in Safety Evaluation Report (SER) Confirmatory Item 3.6.2.2.2-1. The applicant responded to the confirmatory item clarifying their position that only the phenolic or nylon portion of the fuse holder required aging management. NRR is considering the position taken by the applicant and will decide whether the approach is acceptable. The proposed staff guidance is being revised and will reflect the final resolution of this issue at PBAPS.

The NRC held open item 50-277/02-10-01; 50-278/02-10-01, in the inspection report, as a consequence of the incomplete analysis at the time of the inspection. Although the acceptability of the applicant's approach is being reviewed by NRR, the open inspection item is closed, based on the applicant's completion of their analysis.

The NRC is closing open item 50-277/02-10-01; 50-278/02-10-01.



2. Open Item 50-277/02-10-02; 50-278/02-10-02

Where applicable Exelon took advantage of the existing Boiling Water Reactor Vessel and Internals Project procedures to manage the affects of aging of the reactor vessel internals. One of the procedures, BWRVIP-76, was not completely reviewed for acceptability by the NRC at the time the Peach Bottom Atomic Power Station License Renewal Application. Exelon subsequently agreed to implement BWRVIP-76 in whatever form it finally takes after the comments. Draft license renewal SER, Section 3.0.3.9.2, reflects this commitment by the applicant as part of accepting the aging management program for reactor vessel internals at PBAPS.

Open Item 50-277/02-10-02; 50-278/02-10-02 is being closed.

3. Open Item 50-277/02-10-03; 50-278/02-10-03

As part of the aging management program for cable, the applicant committed to develop a program to train the staff inspecting cable for the affects of aging. Originally, the applicant indicated they were going to use a training tool similar to the Electric Power Research Institute's aged cable kit. The kit, as presented to the NRC at the time of the inspection in July 2002, did not contain samples of the types of aging affects anticipated at PBAPS because some of the insulation types used at PBAPS were not represented in the cable kit. The use of this kit remained an open item pending resolution of the aged cable sample in the kit actually used by the applicant for the purposes of training.

The applicant revised their license renewal application commitment T04337 for the "PBLR (Peach Bottom License Renewal) Fire Safe Shutdown (FSSD) Cable Insp. Activities," in A/R A1332409, for Unit 2, and A/R 1332506, for Unit 3, to read: "The individual performing this inspection must be task qualified per the applicable Exelon training requirements." This commitment allows the applicant to respond appropriately to the real aging affects that are occurring when the program is implemented in 2010. It addresses the previous NRC concerns about the types of samples used to train the inspection personnel by allowing the applicant to choose the most appropriate method of training during a period of time closer to the extended period of operation. The training chosen may or may not use samples of aged cable for the purposes of illustrating the aging affects.

The inspector also verified the issue of cyclic wetting, as an aging affect on cables at PBAPS, was being resolved with NRR (Open item 3.6.1.2.1-1). NRR acknowledged that EPR-insulated replacement cable is more resistant to water treeing. However, the staff still did not accept that moisture is not an aging effect requiring aging management. The applicant's response to this position is still being reviewed by NRR.

The NRC is closing open item 50-277/02-10-03; 50-278/02-10-03.

## B. Standby Gas Treatment System (SGTS)

A walkdown of the system, including a visual examination of all accessible exterior surfaces, was performed. There was no age related degradation noted during the walkdown. There was evidence of ground water intrusion through the concrete platform under the filter plenum of train A, however, there was no evidence this wetted the underside of the plenum itself which is raised above the platform by supports. At the time of the inspection the area under the plenum appeared to be dry. It was also noted there was evidence of moisture intrusion through the ceiling penetration at the point where the common SGTS exhaust tubing exits the SGTS room. The evidence of moisture appeared to roll down the outside of the duct and not affect the painted surface, where it was caught by a temporary catch drain that diverted the moisture to a floor drain and away from the SGTS. At the time of the inspection, the area around and beneath the penetration appeared to be dry.

The carbon steel fire suppression deluge piping was traced from the penetration at the SGTS to the valved manifold containing one common header gate valve, and one gate valve and one ball valve on each of the branch lines to each of the SGTS trains. The valved manifold was not in the same room as the SGTS, but located in a stairwell adjacent to the SGTS room. The inspector observed that each valve was physically chained and padlocked in the closed position. In order to allow water to the SGTS portion of the deluge system, it is necessary to physically unlock and open a minimum of three valves; after the deluge fire pumps were started and the system. The inspector verified through a review of surveillance records, procedures, and interviews with the SGTS manager and Fire Control manager that the valves are normally locked and closed and must be manually opened to engage the suppression system. This assures water is not present within the SGTS plenum and cannot leak or cause corrosion.

The inspector reviewed the records of the SGTS Train A and Train B surveillance, Deluge System Airflow Test, Deluge System Nozzle and Piping Inspection, and Deluge System Functional Test for the last two years. There was no recorded evidence that water was present in the SGTS during that period of time and there was no recorded observation of any age related degradation. The condition of the system, as reflected in the records, was verified in discussions with the system manager.

## III. Conclusion

The inspector concluded that items opened as a result of the aging management inspection were resolved and are closed. Exelon's license renewal activities were being implemented or planned as described in Exelon's license renewal application and Exelon's updated license renewal application. The documentation supporting Exelon's application is in an auditable and retrievable form. The inspector concluded Exelon's aging management programs can identify the structures, systems, and components within the scope of license renewal and provide reasonable assurance the affects of aging will be managed.

## **Management Meetings**

### Exit Meeting Summary

The results of this inspection were discussed with members of the Exelon staff on December 11, 2002. At the exit meeting, the inspector verified that no materials retained by the inspector was considered to be proprietary.

## ATTACHMENT 1

### SUPPLEMENTAL INFORMATION

#### KEY POINTS OF CONTACT

##### Exelon Generating Company

A. Fulvio, License Renewal Site Coordinator and Mechanical Engineer  
D. Honan, License Renewal Project Manager  
E. Patel, License Renewal Technical Lead  
J. Philabaum, License Renewal Licensing Engineer  
P. Thomas, License Renewal Electrical Engineer

#### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

##### Open:

None

##### Closed:

- 50-277/02-10-01; 50-278/02-10-01 The aging management program that will be applied to fuse clips has not been specified.
- 50-277/02-10-02; 50-278/02-10-02 One Boiling Water Owners Group Vessel Interns Program procedure was included in the application before the procedure was endorsed by the NRC.
- 50-277/02-10-03; 50-278/02-10-03 A training kit, used to assure that inspectors can identify cable aging effects, did not include samples of the kinds of cable that are installed at Peach Bottom.

#### LIST OF ACRONYMS

ACRS	Advisory Committee on Reactor Safety
PBAPS	Peach Bottom Atomic Power Station
NRR	Office of Nuclear Reactor Regulation
SER	Safety Evaluation Report
SGTS	Standby Gas Treatment System

## LIST OF DOCUMENTS REVIEWED

Plant Commitment T04342 "PBLR Fire Protection Activities"  
Plant Commitment T04337 "PBLR Fire Safe Shutdown (FSSD) Cable Insp. Activities."  
Plant Commitment T04324 "PBLR Ventilation System Insp. and Testing Activities."  
Action Request A/R A1332409 "Generic System, \*\* ID used to perform System MAI"  
Action Request A/R A1332506 "Generic System, \*\* ID used to perform System MAI"  
Action Request A/R A1264583 "Standby Gas Treatment Room"  
Action Request A/R A1363658 "Generic System, \*\* ID used to perform System MAI"  
Work Order R0819226 "SBGT Filter Train A Deluge System Funct."  
Work Order R0770145 "SBGT Filter Train A Deluge System Funct."  
Work Order R0818920 "SBGT Filter Train A Deluge System Funct."  
Work Order R0773484 "SBGT Filter Train A Deluge System Funct."  
Station Work Order C0193795 "Replace Broken Line"  
Surveillance Test ST-M-037-351-2 "SBGT Filter Train A Deluge System Nozzle and Piping Inspection" 5/10/02  
Surveillance Test ST-M-037-351-2 "SBGT Filter Train A Deluge System Nozzle and Piping Inspection" 6/29/01  
Surveillance Test ST-M-037-351-2 "SBGT Filter Train A Deluge System Nozzle and Piping Inspection" 5/2/00  
Surveillance Test ST-M-037-352-2 "SBGT Filter Train B Deluge System Nozzle and Piping Inspection" 1/16/02  
Surveillance Test ST-M-09A-600-2 "Standby Gas Treatment System Filter Train A" 6/20/02  
Surveillance Test ST-M-09A-601-2 "Standby Gas Treatment System Filter Train B" 3/13/02  
Surveillance Test ST-M-09A-601-2 "Standby Gas Treatment System Filter Train B" 3/21/01  
Surveillance Test ST-M-09A-601-2 "Standby Gas Treatment System Filter Train B" 1/27/00  
Draft Amendment 1 to the Application for Renewed Operating License  
Peach Bottom Atomic Power Station Updated Final Safety Analysis Report  
Design Basis Document Standby Gas Treatment System  
Design Basis Document Standby Gas Treatment System Fire Protection System