June 27, 2001

Mr. Oliver D. Kingsley, President
Exelon Nuclear
Exelon Generation Company, LLC
200 Exelon Way, KSA 3-E
Kennett Square, PA 19348

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION - NRC INSPECTION REPORT 05000277/2001-004, 05000278/2001-004

Dear Mr. Kingsley:

On May 19, 2001, the NRC completed an inspection at the Peach Bottom Atomic Power Station. The enclosed report documents the inspection results which were discussed on May 23, 2001, with Mr. G. Johnston, Plant Manager, and other members of your staff.

This inspection was an examination of 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, observed activities, and interviewed personnel.

No findings of significance were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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 Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

If you have any questions, please contact me at 610-337-5209.

Sincerely,

/RA/

Mohamed Shanbaky, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos.: 05000277, 05000278
License Nos.: DPR-44, DPR-56

Enclosure: Inspection Report No. 05000277/2001-004 and 05000278/2001-004

Attachments: (1) Supplemental Information

cc w/encl:
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J. Cotton, Senior Vice President, Operations Support
W. Bohlke, Senior Vice President, Nuclear Services
J. Skolds, Chief Operating Officer
J. Doering, Vice President, Peach Bottom Atomic Power Station
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REGION I

Docket Nos:	05000277 05000278
License Nos:	DPR-44 DPR-56
Report Nos:	05000277/2001-004 05000278/2001-004
Licensee:	Exelon Generation Company, LLC Correspondence Control Desk 200 Exelon Way, KSA 1-N-1 Kennett Square, PA 19348
Facility:	Peach Bottom Atomic Power Station Units 2 and 3
Inspection Period:	April 1, 2001 through May 19, 2001
Inspectors:	A. McMurtray, Senior Resident Inspector M. Buckley, Resident Inspector G. Smith, Senior Security Inspector
Approved by:	Mohamed M. Shanbaky, Chief Projects Branch 4 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000277/2001-004, 05000278/2001-004, on 04/01/01-05/19/01; Exelon Generation Company; Peach Bottom Atomic Power Station; Units 2&3. Integrated Report.

The inspection was conducted by resident inspectors and a senior security inspector. The inspection identified no findings of significance.

The significance of most findings is indicated by the color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "no color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process Web site at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.

Report Details

SUMMARY OF PLANT STATUS

UNIT 2

Unit 2 operated at approximately 100% power throughout the inspection period except for scheduled power changes to support maintenance activities.

UNIT 3

Unit 3 operated at approximately 100% power throughout this inspection period except for scheduled power changes to support maintenance activities.

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns to verify system and component alignment and note any discrepancies that would impact system operability. The inspectors verified selected portions of redundant or backup systems/trains were available while a system was out of service. The inspectors reviewed selected valve positions, electrical power availability, and the general condition of major system components. The walkdowns included the following systems:

- 4 kV and remaining emergency diesel generators (EDGs) during E1 and E2 EDG mini-outages
- Motor driven fire pump and associated piping and valves, including available power, during replacement of the diesel driven fire pump

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed the Fire Protection Plan and Technical Requirements Manuals and determined the required fire protection design features, fire area boundaries, and combustible loading requirements for the areas examined during this inspection. The inspectors then performed walkdowns of these area to assess control of transient

combustible material and potential ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The areas included:

- Unit 2 control rod drive equipment area and corridor, drywell access, and isolation valve compartment
- Unit 3 turbine building wing areas
- Unit 2 and Unit 3 13.2 kV switchgear areas
- Unit 2 and Unit 3 emergency switchgear rooms
- Main control room, cable spreading room, fan room (165' elevation)

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors observed the following testing and verified that the test results were adequate to ensure proper heat transfer for the heat exchangers that were tested:

- Residual Heat Removal Room Cooler Emergency Service Water Heat Transfer Test (RT-l-033-631-2, Rev 5)

The inspectors reviewed heat exchanger test methodology, frequency of testing, test conditions, acceptance criteria and trending of results. The inspectors assessed the trending of the measured data for the components inspected and discussed with system managers and technical specialists the proposed actions for any results that were identified not to be within specified acceptance criteria.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed two systems, structures, or components (SSCs) to assess the effectiveness of Exelon's maintenance activities on these SSCs.. The inspectors verified that problem identification and resolution of issues on these SSCs had been appropriately monitored, evaluated, and dispositioned in accordance with Exelon's procedures and the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed selected SSC classification, performance criteria and goals, and corrective actions to verify that the actions were reasonable and appropriate. The following SSCs and documents were reviewed:

SSCs

- Unit 2 Primary Containment
- Unit 2 and Unit 3 Automatic Depressurization System, Safety Relief Valves and Main Steam Isolation Valves

Procedures and Documents

- AG-CG-28.1, Rev. 8, "Maintenance Rule Implementation Program"
- AG-CG-028.1-5, Rev 1, "PECO Energy Approach To Use Maintenance Preventable Functional Failures For Maintenance Rule Performance Monitoring"
- AG-CG-028.1-9, Rev 6, "Guidance for Identifying and Evaluating Maintenance Preventable Functional Failures"

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed risk evaluations and contingency plans for selected planned and emergent work activities to verify that appropriate risk evaluations were performed and to assess Exelon's management of overall plant risk. The inspectors compared the risk assessments and risk management actions to the requirements of 10 CFR 50.65(a)(4) and the recommendations of NUMARC 93-01 Section 11, "Assessment of Risk Resulting from Performance of Maintenance Activities." The inspectors verified that risk assessments were performed when required and appropriate risk management actions were identified.

The inspectors attended planning meetings and discussed the risk management of the activities with operators, maintenance personnel, system engineers, and work coordinators to verify that risk management action thresholds were identified correctly. The inspectors also verified that appropriate implementation of risk management actions were performed in accordance with the following Exelon procedures:

- OS-CG-102, Rev 1, " Risk Assessments Using ORAM-Sentinel and Contingency Plan Development"
- AG-CG-043-2, Rev 0, "Peach Bottom Atomic Power Station a(4) System Scope"
- AG-CG-026.9, Rev 3, "Monitoring Performance of Maintenance Activities"
- NOM-C-8, Rev. 0, "Robust Operational Barriers"

In addition, the inspectors reviewed the assessed risk configurations against the actual plant conditions and any in-progress evolutions or external events to verify that the assessments were accurate, complete, and appropriate for the issues. The inspectors performed control room and field walkdowns to verify that compensatory measures identified by the risk assessments were appropriately performed. The specific plant configurations included:

- Unit 3 electro-hydraulic pressure set push button replacement

- Unit 2 startup source maintenance work preparation and work cancellation

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions

a. Inspection Scope

The inspectors reviewed plant computer and recorder data, operator logs and approved procedures and observed control room operators while evaluating the performance of operations personnel in response to the following non-routine evolutions:

- Reactor recirculation pump vibration data collection using Troubleshooting, Rework, Testing Control Process (TRT) No. 01-60 (4/17/2001)
- Entry into OT-111-Reactor Low Pressure - Failure of pressure set lower push button (4/18/2001)

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed two operability evaluations to assess the adequacy of the evaluations, the use and control of compensatory measures, compliance with the Technical Specifications, and the risk significance of the issues. The inspectors verified that the operability determinations were performed in accordance with NOM-C-11.1, Rev. 1, “Operability” and A-C-901, Rev. 10, “Control of Nonconformances.” The inspectors used the Technical Specifications, Technical Requirements Manuals, the Final Safety Analysis Report, and associated Design Basis Documents as references during these reviews. The issues reviewed included:

- E1 emergency diesel generator supplemental fan failure to start
- Unit 2 Reactor Core Isolation Coolant Discharge to Feedwater Line B Valve (MO-2-13-021) outside acceptable stroke time

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed selected portions of the testing of modification MOD P907, "Station Blackout (SBO) Enhancement Modification." Specifically, the inspectors reviewed Action Request (A/R) No. A1257510 and observed the walkdown of new manual operator actions and demonstrated opening of the new manual "SBO 34.5 Kilovolt Load Break Switch (00S079)." This walkdown testing verified that the requirements of 10 CFR 50.63, "Loss of all Alternating Current Power" and NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," were met.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors observed portions of post-maintenance testing activities and reviewed selected test data. The inspectors assessed the adequacy of the test methodology based on the scope of maintenance work performed and the acceptance criteria to demonstrate that the tested components satisfied the design and licensing bases and Technical Specification requirements. The specific items reviewed included:

- E1 Emergency Diesel Generator Cross-Flow Valve Installation Testing, (RT-O-052-201-2, Rev. 12, "E1 Diesel Generator Load Run")
- E2 Emergency Diesel Generator Cross-Flow Valve Installation Testing, (RT-O-052-202-2, Rev. 13, "E2 Diesel Generator Load Run")
- Unit 3 Testing following Replacement of the Electro hydraulic Control Lower Push Button for Pressure Set (TRT 01-61)
- Diesel Driven Fire Pump Replacement Testing, (ST-O-37D-340-2, Rev. 3, "Diesel Driven Fire Pump Flow Rate Test") and (ST-O-37D-370-2, Rev. 12, "Diesel Driven Fire Pump Operability Test")

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors reviewed and observed portions of the following surveillance tests, and compared test data with established acceptance criteria to verify the systems demonstrated the capability of performing their intended safety functions. The inspectors also verified that the systems and components maintained their operational readiness, met applicable Technical Specification requirements, and were capable of performing their design basis functions. The observed or reviewed surveillance tests included:

- Unit 2 Reactor Core Isolation Coolant Pump, Valve, and Flow and Unit Cooler Functional and In-Service Test (ST-O-013-301-2, Rev. 20)
- E2 Diesel Generator Load Run (RT-O-052-202-2, Rev. 13)
- Site Evacuation Alarm Test (RT-O-101-900-2, Rev. 2)
- Unit 3 'A' Residual Heat Removal Loop Pump, Valve, Flow and Unit Cooler Functional and Inservice Test (ST-O-010-301-3, Rev. 18)
- Unit 2 High Pressure Service Water Pump , Valve and Flow Functional Test (RT-O-032-300-2, Rev. 9)

b. Findings

The public address (PA) and evacuation alarm communication system is described in the Peach Bottom Nuclear Emergency Plan as the means to notify personnel of protective actions required during an emergency. ERP-130, Rev. 14, "Site Evacuation," required the evacuation alarm to be activated for two-one minute periods during an emergency. ERP-130 also required that prior to sounding the evacuation alarm an announcement be made to inform the station staff to evacuate the site. In the power block, the evacuation alarm used the PA speakers to alert personnel of an emergency and these speakers are also used to provide instructions to station personnel.

The PA and evacuation alarm communication system was degraded or unavailable for a prolonged period of time from November 17, 1999 through the end of this inspection period. In addition, since December 2000, the PA and evacuation alarm communication system in the buildings of the power block did not meet requirements to notify personnel as described in ERP-130. The inspectors determined that both the primary and backup power supply breakers would have tripped open during the specified two-one minute actuations of the evacuation alarm.

The PA system degraded after station staff discontinued routine testing of the PA system in 1992. On November 17, 1999, following an emergency preparedness drill, emergency preparedness personnel initiated A/R No. A1239491 to document that the PA system was not audible in several plant locations. No action was taken until April 19, 2000, when A/R No. A1262176 was written to verify proper operation of the plant PA system and ensure the ability of site personnel to hear emergency announcements. When station personnel tested the system in April 2000, the determined that announcements could not be heard or understood in several locations in the plant and 47% (233 of 491 PA speakers) were degraded/inoperable.

Station personnel completed repairs to the PA system in December 2000. During the repairs to the PA and evacuation alarm communications system, technicians increased the volume of several speakers and repaired others so that PA system announcements could be heard throughout the plant. Station personnel did not recognize that these repairs and volume changes increased the electrical power requirements on the system.

After this maintenance, one of the two power supply breakers for the PA system tripped open during the next four consecutive performances of the "Site Evacuation Alarm Test" (RT-O-101-900-2).

Engineering analysis concluded that during performance of RT-O-101-900-2 on January 19, 2001, the increased load from the system during activation of the evacuation alarm caused the primary power supply breaker for the PA system in the power block to trip open. The inspectors and site engineering personnel determined the breaker had tripped open from analysis of the breaker set point curves. This analysis indicated that the increased power requirements caused the breakers to trip open after the site evacuation alarm was activated for 49 seconds. After the primary system breaker tripped open system power was automatically transferred to the backup breaker, as designed. There was no direct indication of the position of either the primary or backup breaker in the control room. In addition, operations personnel did not routinely verify the position of either breaker. The system operated on the backup power breaker from the time that the primary power supply breaker tripped open on January 19, 2001, until testing was performed on February 13, 2001.

Following performance of RT-O-101-900-2 on February 13, 2001, control room personnel noted that the PA system would not work during shift turnover. While troubleshooting this problem, operations personnel discovered that both the primary and backup breakers for the PA and evacuation alarm system to the power block had tripped open. The system was unavailable for approximately 4.5 hours. Although operations personnel initiated an action request (A/R) No. A1314877, no actions were taken for this problem other than to reset the breakers until a second complete loss of the PA system occurred on April 17, 2001.

Similarly, engineering analysis concluded that the primary breaker tripped open again during testing on March 20, 2001, the power automatically transferred to the backup breaker, and the system operated on the backup breaker until April 17, 2001. The inspectors noted that for two periods of approximately one month each, the PA and evacuation alarm communication system in the power block was powered only through the backup power supply breaker. If the evacuation alarm was activated during this period, this breaker would have tripped after 49 seconds and Exelon would not have been able to implement procedure ERP 130, which required two-one minute actuations of the evacuation alarm.

During performance of the RT-O-101-900-2 on April 17, 2001, the PA and evacuation alarm communication system deactivated. Station staff found that the primary and backup power supply breakers tripped open, which rendered the PA and evacuation alarm communication system unavailable to the power block. After troubleshooting, operations personnel restored the system by resetting the breakers. The system was

unavailable for approximately 1.5 hours. Site personnel initiated Performance Enhancement Program (PEP) Nos. I0011145 and I0012537 to ensure that system degradation issues and these system failures were addressed and to investigate the system design issues.

Engineering and operations personnel were not fully aware of the relationship between the PA system and site evacuation alarm. They did not evaluate the cause of the February 13, 2001, trip of both breakers nor did they notify site emergency preparedness personnel of this failure. The emergency preparedness specialist became aware of this failure in discussions with the NRC resident staff on May 7, 2001. Subsequently, the emergency preparedness specialist initiated PEP No. I0012604 to investigate the inadequate reviews of the PA and evacuation system inoperability.

The inspectors concluded that the PA and evacuation alarm communication system was degraded or unavailable for a prolonged period of time from November 17, 1999, through the end of this inspection period. Additionally since December 2000, the PA and evacuation communication system in the power block would not have been able to accomplish the two-one minute actuations specified in ERP-130. Specifically, the primary and backup breakers would trip during the two-one minute actuations rendering the system unavailable to the power block. The inspectors determined that further review and evaluation of this issue is required to make a determination regarding regulatory compliance and evaluate the safety significance of the system degradation and failures. The PA and evacuation alarm communication system failures and inadequacies affect the Emergency Preparedness cornerstone. These issues are considered unresolved pending further NRC review and evaluation. **(URI 5000277/2001-004-01; 5000278/2001-004-01)**

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary plant modification that supported continued operability of the supplemental fan for the E1 Emergency Diesel Generator. This review was performed to determine whether the temporary changes adversely affected system or support system availability, or adversely affected a function important to plant safety. The inspectors reviewed the associated system design bases, including the FSAR and Technical Specifications, and assessed the adequacy of the 10 CFR 50.59 safety evaluations screening for this issue. The inspectors also assessed configuration control of the temporary changes by reviewing selected drawings and procedures to verify that appropriate updates had been made, and in compliance with Exelon Nuclear's procedure, "Temporary Plant Alternations (TPA)," MOD-C-7, Rev. 6. The inspectors compared the actual installations against the temporary modification documents to verify that the implemented changes were consistent with the approved documents. The inspectors reviewed selected post-installation test results to confirm that the actual impact of the temporary changes had been adequately verified by test. The following temporary modification and documents were included in the review:

Temporary Modifications

- Supplemental Fan Automatic Start With Start of E1 Emergency Diesel Generator (ECR PB 01-00402)

Procedures and Documents

- MOD-C-7, Rev. 6 “Temporary Plant Alternations (TPA),”
- TS 3.8.1, “AC Sources - Operating”
- PBWO C0197293, “NCR To Bypass Temperature Switches For Diesels”
- UFSAR Section 7.19.1, “Effects of Loss of Air Conditioning and Ventilation on Control Room and Equipment Room Equipment”
- UFSAR Section 10.14, “Emergency Ventilation System”

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency preparedness drill conducted by the licensee on April 26, 2001. The inspector evaluated the licensee’s conduct of the drill critique, reviewed the licensee’s drill report, and compared the identified weaknesses and deficiencies in the drill report to those covered at the critique. This included determining whether the licensee was identifying any failure to properly make classification declarations for existing conditions, to make appropriate notifications, and to develop appropriate protective action recommendations during the drill.

b. Findings

No findings of significance were identified.

3. Safeguards

3PP4 Security Plan Changes

a. Inspection Scope

An in-office review was conducted of changes to the Physical Security Plan, Revisions 14 through 17, Contingency Plan, Revisions 12 through 15, and Training and Qualification Plan, Revisions 10 through 12. These plan revisions were submitted to the NRC in August, September, November 2000, and January 2001, in accordance with the provisions of 10 CFR 50.54(p). The review was conducted to confirm that the changes were made in accordance with 10 CFR 50.54(p), and did not decrease the effectiveness of the plans.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA6 Meetings

.1 Exit Meeting Summary

The inspectors presented the results of the inspection to Mr. G. Johnston, Plant Manager, and members of Exelon's management on May 23, 2001. Exelon management acknowledged the findings presented. No proprietary information was identified.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000277;278/2001-004-01; URI Site Evacuation Alarm

Opened/Closed

None

Closed

None

PARTIAL LIST OF PERSONS CONTACTED

Exelon Generation Company

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G. Johnston, Plant Manager
P. Davison, Site Engineering Director
J. Bouck, Senior Manager, Operations
C. Mudrick, Plant Engineering Senior Manager
T. Powell, Plant Engineering Manager, Electrical and I&C Systems
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