August 6, 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 INSPECTION REPORT NO. 05000277/2004009, 05000278/2004009

Dear Mr. Crane:

On July 2, 2004, the U. S. Nuclear Regulatory Commission (NRC) completed an engineering team inspection at the Peach Bottom Atomic Power Station. The enclosed report documents the results of that inspection which were discussed with Mr. Eilola, and other members of your staff, on July 2, 2004.

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 inspection consisted of a review of selected procedures and records, examination of components and systems, observation of activities, and interviews with site personnel.

On the basis of 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 and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Lawrence T. Doerflein, Chief
Systems Branch
Division of Reactor Safety

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

Enclosure: Inspection Report No. 05000277/2004009 and 05000278/2004009

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
Vice President, General Counsel and Secretary
Associate General Counsel, Exelon Generation Company
Correspondence Control Desk
Manager License Renewal
D. Quinlan, Manager, Financial Control, PSEG
R. McLean, Power Plant and Environmental Review Division
D. Levin, Acting Secretary of Harford County Council
Mr. & Mrs. Dennis Hiebert, Peach Bottom Alliance
Mr. & Mrs. Kip Adams
D. Allard, Director, Pennsylvania Bureau of Radiation Protection
Director, Nuclear Training
TMI - Alert (TMIA)
Board of Supervisors, Peach Bottom Township
R. Fletcher, Department of Environment, Radiological Health Program
J. Johnsrud, National Energy Committee, Sierra Club
Public Service Commission of Maryland, Engineering Division
J. Bradley Fewell, Assistant General Counsel, Exelon Nuclear
Commonwealth of Pennsylvania (c/o R. Janati, Chief, Division of Nuclear Safety, Pennsylvania Bureau of Radiation Protection)
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:	05000277/2004009, 05000278/2004009
Licensee:	Exelon Generation Company, LLC
Facility:	Peach Bottom Atomic Power Station, Units 2 and 3
Location:	1848 Lay Road Delta, Pennsylvania
Dates:	06/14-06/18/2004 and 06/28-07/02/2004
Inspectors:	Michael Modes, Senior Reactor Inspector, Division of Reactor Safety (DRS), Team Leader Christopher Cahill, Senior Reactor Inspector, DRS Aniello Della Greca, Senior Reactor Inspector, DRS Brice Bickett, Reactor Inspector, DRS Carey Colantoni, Reactor Inspector, DRS Thomas Sicola, Reactor Inspector, DRS Dante Johnson, Reactor Engineer (Trainee)
Approved by:	Lawrence T. Doerflein, Chief Systems Branch Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000277/2004009, 05000278/2004009; on 06/14-18/2004 and 06/28-07/02/2004; Peach Bottom Atomic Power Station, Engineering Team Inspection Report.

The inspection was conducted by six regional based reactor inspectors. This inspection identified no significant findings. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/reactors/operating/oversight.html

A. Inspector Identified Findings

None

B. Licensee Identified Violations

None

Report Details

1. **REACTOR SAFETY**

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R21 Safety System Design and Performance Capability (IP 71111.21)

a. Inspection Scope

The plant response of containment heat removal equipment followed by containment venting to a transient without power conversion system initiating event sequence formed the basis for this inspection. Specifically, the team evaluated the residual heat removal system in the suppression pool cooling mode of operation followed by containment venting. The inspectors also reviewed systems that interface with the residual heat removal system in response to the initiating event, such as the high pressure service water system. The inspectors reviewed the design basis documents, Technical Specifications, Updated Final Safety Analysis Report, and design output documents associated with residual heat removal, high pressure service water, and containment venting. The design output documents reviewed included system calculations, piping and instrumentation drawings, and one-line diagrams. This review was performed to determine whether the system and component functional requirements during normal, abnormal, and accident conditions were met and to ensure consistency with various design documents, design specifications, and control diagrams.

The inspectors specifically reviewed the design capability of major risk significant components of the systems including the residual heat removal pumps, the heat exchangers, the heat exchanger bypass valves, and the high pressure service water pumps. Inquiry into the capability of the high pressure SW pumps led to a review of the importance of the Conowingo Pond and its back-up, the emergency cooling tower. Electrical, control, and instrument systems that support these major components were reviewed. These reviews were performed to determine if the design basis was in conformance with the licensing commitments, regulatory requirements, and design output documents.

Selected mechanical, heat transfer, hydraulic, and electrical calculations and analyses were reviewed to verify the appropriate input assumptions were used and that the assumptions applied to the current system and plant configuration. The inspectors verified that adequate engineering methods were utilized and the technical bases supported the conclusions. The inspectors selected some design and electrical calculations and performed independent calculations to evaluate their adequacy. The inspectors also verified that recent plant modifications would not adversely affect the systems. The inspectors reviewed the effect of degraded voltage, voltage drop, and emergency diesel loading on the electrical system to verify that adequate protection existed.

The inspectors reviewed some of the procedures used to operate the residual heat removal, high pressure service water, and containment venting systems to verify that procedure actions matched the design analysis assumptions. The types of procedures reviewed included: system operating procedures, abnormal and emergency operating procedures, alarm responses, and surveillance tests. Surveillance test acceptance criteria and component performance data were compared with design analysis limits to determine if the design margin of the system was maintained and properly monitored. The inspectors reviewed the operator training lesson materials to ensure that these materials appropriately describe the design limits, functions and design features of the systems.

Several walkdowns of accessible portions of the residual heat removal and high pressure service water systems were performed to verify the physical installation of the system and to verify consistency with design documents, calculations, assumptions, and installation specifications. During these walkdowns, the inspectors examined the material condition, and the physical line-up of major components, including pumps, valves, piping, supports, heat exchangers, instrumentation, and breakers. The inspectors used walkdowns to verify that selected station procedures were adequate to accomplish the intended tasks and that the appropriate equipment was staged at the specified locations to assist operators in performing the appropriate manual actions when required by station procedures. The inspectors also interviewed site personnel, including licensed and non-licensed operators, system engineers, and maintenance personnel, regarding the operation and performance of the systems.

The inspectors observed the normal system environmental conditions to verify plant conditions were bounded by the equipment qualification assumptions and considered the accident condition environment that may be incurred in these locations. Inspectors reviewed the administrative controls on temporary modifications to assure physical system protection is maintained for earthquake, fire and flooding as described in design documents.

A sample of preventive maintenance activities were reviewed to verify that maintenance was performed as scheduled using controlled procedures and that individual components and the overall system met its design basis function during the maintenance evolution. The inspectors evaluated a sample of surveillance and post-maintenance test results to verify system capability.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (IP 71152)

a. Inspection Scope

The inspectors reviewed a sample of condition reports associated with the residual heat removal, high pressure service water, and containment venting systems, as identified in the attachment, to verify the licensee was identifying issues at an appropriate threshold, entering them in the corrective action program, and taking appropriate corrective actions.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

The inspectors presented the inspection results to Mr. Eilola and other members of licensee management at the conclusion of the inspection on July 2, 2004.

The inspectors reviewed some proprietary documents during this inspection. These were either destroyed or returned to the licensee. The inspectors verified that the inspection report does not contain proprietary information.

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

E. Eilola, Director - Operations
S. Allen, Regulatory Assurance Analyst
J. Jordan, Manager - Mechanical Design Engineering
A. Knoll, Risk Management
C. Behrend, Sr. Manager Plant Engineering
T. Wasong, Training Director
M. Newcomber, Sr. Manager Design Engineering
C. Wiederbam, Operations Support Manager
D. Mohre, Nuclear Oversight
J. Heyne, Maintenance Director

NRC Personnel

C. Smith, Sr Resident Inspector
D. Schroeder, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Opened and Closed

None

LIST OF DOCUMENTS REVIEWED

Administrative Procedures

MAG-CG-406, Flow Assisted Corrosion Program, Rev. 5
MAG-CG-409, Raw Water Corrosion Program, Rev. 3

Calculations

ME-500, Determine the Adequacy of the Proposed ESW System Lineup with all ESW Flow over One Cell Instead of Two, Rev. 1
PM-0525, Set Pressure for the Torus Hardened Vent Rupture Disc, Rev. 3
PM-546, Torus Hardened Vent-Flow Calculation, Rev. 3
PM-575, Verify Emergency Heat Sink has Sufficient Capacity for Removing Heat from the Plant's Systems in the Event the Normal Heat Sink is Unavailable, Rev. 1
ME-3, RHR Heat Exchanger Inlet Pressures for All Modes of RHR/HPSW Operation
ME-171, RHR Pump Discharge Pressure
ME-0530, Determination of Primary Containment Pressure Limit A, B, and C, Rev. 0
PEAM-0003, Evaluation of Pump Structure Ventilation System Design
PM-0589, RHR Heat Exchanger Performance Evaluation, Rev. 4
PM-1010, RHR Pump NPSH

Design Baseline Documents

P-S-27, Emergency Cooling Water System, Rev. 9
P-S-09, Residual Heat Removal System, Rev. 14
PM-546, Torus Hardened Vent, Rev. 2
PM-924, Hardened Vent Rupture Disk Evaluation for Post-LOCA Conditions Based on Re-rate Power, Rev. 0
P-S-25A, Primary Containment Pressure Suppression System, Rev. 10
P-S-25B, Primary Containment Auxiliary Systems, Rev. 9
P-S-26, Primary Containment Isolation System, Rev. 4
SE-3 Bases, Loss of Conowingo Pond, Rev. 10
P-S-04, High Pressure Service Water System, Rev. 10
P-T-12, Design Basis Accidents, Transients, and Events, Rev. 5
P-T-15, Motor Operated Valves, Rev. 4
Trip/Samp Curves, Tables, and Limits – Bases, Rev. 7
T-102, Primary Containment Control – Bases, Rev. 17

Modifications

05236, Torus Hardened Vent
ECR PB 02-00049-000, TS Change to Increase Maximum Allowable River Water Temperature
ECR PB 02-00563-001, PCV-3-36B-3502A
ECR PB 03-00517-000, PCV-3-36B-3502A Needs Safety Related/Dedicated Regulator
ECR PB-01-00400, 3/4" RHR Pump Discharge Instrument Line, Rev. 3, June 2002

ECR PB-00-001681, Error in GE Containment Analysis for Power Rerate, Rev. 0, Feb 2001
ECR-PB-01-00096, RO-3789D Down Stream Piping Wall Thinning, January 2002
ECR-PB-01-00047, Through Wall Leak on U3 HPSW Piping, January 2001

Self-Assessments

PB NRC SSDI Readiness FASA, May 24 -28, 2004
PB Maintenance Standards & Practices FASA, February 2003
PB Human Error Prevention FASA, March 2003
PB Use of OPEX by Maintenance FASA, May 2004

Specifications

6280-M-78, Emergency Cooling Tower, Addendum No. 1, Rev. 5
NE-164, Specification for Environmental Service Conditions, Peach Bottom Atomic Power Station, Units 2 & 3, Rev. 4

P&IDs

6280-M-367, Containment Atmospheric Control System, Rev. 83
6280-M-315, P & I Diagram Emergency Service Water and High Pressure Service Water Systems, SH 1, Rev. 65
6280-M-315, P & I Diagram Emergency Service Water and High Pressure Service Water Systems, SH 3, Rev. 51
6280-M-361, P & I Diagram Residual Heat Removal System, SH 3, Rev. 65
6280-M-361, P & I Diagram Residual Heat Removal System, SH 4, Rev. 67
6280-M-367, P & I Diagram Containment Atmosphere Control System, SH 1, Rev. 83

Drawings

T-100, Scram, SH1, Rev. 10
T-101, RPV Control, SH 1, Rev. 17
T-102, Primary Containment Control, SH 1, Rev. 15
T-102, Primary Containment Control, SH 2, Rev. 14
T-102, Primary Containment Control, SH 3, Rev. 1
T-103, Secondary Containment Control SH, Rev.14
T-104, Radioactive Release, SH 1, Rev. 8
T-111, Level Restoration, SH 1, Rev. 11
T-112, Emergency Blowdown, SH 1, Rev. 14
T-116, RPV Flooding, SH 1, Rev. 12
T-116, RPV Flooding, SH 2, Rev. 1
T-117, Level/Power Control, SH 1, Rev 13

Operability Evaluations

LSA #03-48, Failure AO-3-07B-3514
04-008, 2DE024, RHR Heat Exchanger D
03-045, MO-3-10-025A Pressure Seal Leak
03-017, 3C RHR Heat Exchanger Drain Isolation Valves

Procedures

RT-M-07B-950-2, Torus Hardened Vent Rupture Disc Integrity Test, Rev. 2
SE-3, Loss of Conowingo Pond, Rev. 16
SE-4, Flood, Rev. 20
SO 48.1.B, Emergency Cooling Water System Startup, Rev. 11
T-200-2, Primary Containment Venting, Rev. 9
T-200A-2, Containment Venting via the 2 in Torus Vent to SBGTS, Rev. 3
T-200B-2, Primary Containment Venting via the 2 in. Drywell Vent to SBGTS, Rev. 3
T-200C-2, Containment Venting via the 6 in. ILRT Line from the Torus, Rev. 7
T-200D-2, Containment Venting via the Torus 18 in. Vent to SBGTS, Rev. 3
T-200E-2, Containment Venting via the Torus Purge Supply Line, Rev. 3
T-200F-2, Containment Venting via the 6 in. ILRT Line from the Drywell, Rev. 3
T-200G-2, Containment Venting via the Drywell 18 in. Vent to SBGTS, Rev. 2
T-200H-2, Containment Venting via the Drywell Purge Supply Line, Rev. 3
T-200J-2, Containment Venting via the Torus Hardened Vent, Rev. 1

Surveillance & Completed Surveillance Test Procedures

RT-O-40C-530-2, Drywell Temperature Monitoring, Rev.5, completed March 12, 2004
ST-O-033-310-2, ESW Booster and ECW Pump and Valve Functional Inservice Test, Rev. 6
ST-O-098-02N-2, Daily Surveillance Log, Rev. 18
RT-X-010-661-3, RHR Heat Exchanger Performance Calculation Test, Rev. 3, completed March 4 & 9, 2004
RT-X-010-661-3, RHR Heat Exchanger Performance Calculation Test, Rev. 3, completed March 9, 2004
ST-M-07C-450-3, CAD Injection and Vent Valves In-Service Test, Rev. 14, completed March 23, 2004
ST-M-07C-450-3, CAD Injection and Vent Valves In-Service Test, Rev. 14, completed June 2, 2004
ST-O-010-301-2, “A” RHR Loop Pump, Valve, Flow, and Unit Cooler Functional and Inservice Test, Rev. 20, completed February 20, 2004
ST-O-010-306-2, “B” RHR Loop Pump, Valve, Flow, and Unit Cooler Functional and Inservice Test, Rev. 22, completed March 3, 2004
ST-O-010-350-2, RHR Loop A and Cross Tie Valve Position and Filled and Vented Verification, Rev. 6, completed April 21, 2004
ST-O-010-350-2, RHR Loop A and Cross Tie Valve Position and Filled and Vented Verification, Rev. 6, completed May 19, 2004
ST-O-010-355-2, RHR Loop B Valve Position and Filled and Vented Verification, Rev. 3, completed April 21, 2004
ST-O-010-355-2, RHR Loop B Valve Position and Filled and Vented Verification, Rev. 3,

completed May 27, 2004
ST-O-010-401-2, RHR Manual Isolation Valves Remote Position Indication Verification, Rev. 0, completed September 24, 2002
ST-O-010-420-2, RHR Loop X-Tie Valve Position Functional Test, Rev. 3, completed September 26, 2002
ST-O-010-490-2, RHR A Loop Stayfull Supply Check Valve Functional Test, Rev. 8, completed September 13, 2002
ST-O-010-495-2, RHR B Loop Stayfull Supply Check Valve Functional Test, Rev. 5, completed September 20, 2002
ST-O-010-501-2, RHR Loop A Valves Remote Position Indication Verification, Rev. 3, completed November 20, 2002
ST-O-010-506-2, RHR Loop B Valves Remote Position Indication Verification, Rev. 3, completed March 2, 2004
ST-O-032-301-2, HPSW Pump, Valve, and Flow Functional and Inservice Test, Rev. 18, completed April 4, 2004
ST-O-032-350-2, HPSW Valve Alignment Verification, Rev. 0, completed May 10, 2004
ST-O-032-350-2, HPSW Valve Alignment Verification, Rev. 0, completed April 12, 2004
ST-O-032-501-2, HPSW Valves Remote Position Indication Verification, Rev. 3, completed July 17, 2002
ST-O-007-510-2, PCIS Valves Remote Position Indication Verification, Rev. 4

Safety Evaluation and 50.59 Screens

Safety Evaluation for Modification #622, Torus Vent Debris Screens
Review for Modification No. 5236, Torus Hardened Vent Peach Bottom

Corrective Action Documents

A0949485	A1410657	A1059721	A1445708
A1059722	A1470688	A1127102	AR229285
AR229355	AR229332	C0207728	C0207897
C0207769	R0474948	R0474943	AR 224369
A1399310	A1447010	A1447013	A1439515
A1452632	A1470340	CR229332	A1406907
CR181364	A1349541	CR204981	A1446999
A1301534	A1450013	A1453490	A1450051
CR169758	A139534	A1419741	A1431201
A1454398	I0012155		

Miscellaneous Documents

P-S-27-001, Telephone Memorandum, “PBAPS - Emergency Cooling Tower”
Peach Bottom Atomic Power Station Direct Torus Vent Rupture Disc Design Data Sheet

Quarterly Ship System Report, PEA -02, CAD/CAC, March 01, 2004
SU# 95, Demonstration Test Report, Emergency Cooling Tower System, April 2, 1973
PLOT-5007, Initial Licensed Operator Training Module – Primary Containment, Rev. 1
PLOT-5010, Initial Licensed Operator Training Module – Residual Heat Removal, Rev. 4
PLOT-5032, Initial Licensed Operator Training Module – High Pressure Service Water, Rev. 1
Peach Bottom Atomic Power Station Level 1 Probabilistic Safety Assessment 2002 Update, March 2003
High Pressure Service Water System Health Overview Report, March 2004
RHR and RHR Sample System Health Overview Report, March 2004
2D RHR Heat Exchanger Maintenance History, June 14, 2004
Peach Bottom Unit 2 RHR and Containment Vent Component Importances
Unit 2 HPSW Pump Vibration Data, April 2003-April 2004
Unit 2 RHR Pump Vibration Data, May 2003-May 2004
Unit 3 HPSW Pump Vibration Data, April 2003-March 2004
Unit 3 RHR Pump Vibration Data, May 2003-May 2004
Peach Bottom Atomic Power Station Technical Specifications
Peach Bottom Atomic Power Station Updated Final Safety Analysis Report
RHR Heat Exchanger Matrix - Number of Tubes Plugged, May 28, 2004
NRC Generic Letter 89-13, Service Water System Problems Affecting Safety-Related Equipment
NRC Information Notice 96-60, Potential Common-Mode Post-Accident Failure of Residual Heat Removal Heat Exchangers
NRC Information Notice 97-90, Use of Nonconservative Acceptance Criteria in Safety-Related Pump Surveillance Tests
Maintenance Work History: MO-2-10-034B, MO-2-10-089B, MO-2-10-039B
Analysts, Inc.: HPSW Upper/Lower Bearing Oil Analysis, March-May 2004
Exelon Power labs Report, Failure Analysis of Cooling Coil Loop from 3B HPSW Motor Oil Cooler, December 3, 2003
System Health Overview Report - HPSW (system 32) - March 2004
PB Maintenance Rule Bases: Containment Atmospheric Control (system 7B), June 2004
PB Maintenance Rule Bases: Containment Atmospheric Dilution (system 7C), June 2004
PB Maintenance Rule Bases: RHR SDC (system 10), June 2004
PB Maintenance Rule Bases: HPSW (system 32), June 2004
WO-C0196207, UT Measurement of HPSW Piping Elbow, downstream RO-3789D, January 2001
ASME B&PV Code Case, N-513