April 30, 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 INTEGRATED INSPECTION REPORT 05000277/2004002 AND 05000278/2004002

Dear Mr. Crane:

On March 31, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Peach Bottom Atomic Power Station, Units 2 and 3. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 8, 2004, with Mr. Bob 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, observed activities, and interviewed personnel.

The report documents one NRC-identified finding of very low safety significance (Green). This finding was determined to involve violations of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this as a non-cited violation (NCV), in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you contest the NCV in this report, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Peach Bottom facility.

Since the terrorist attacks on September 11, 2001, NRC has issued five Orders and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over access authorization. In addition to applicable baseline inspections, the NRC issued Temporary Instruction 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures," and its subsequent revision, to audit and inspect licensee implementation of the interim compensatory measures required by order. Phase 1 of TI 2515/148 was completed at all commercial power nuclear power plants during calender year (CY) 2002, and the remaining inspection activities for Peach Bottom were completed in June 2003. The NRC will continue to monitor overall safeguards and security controls at Peach Bottom.

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 Web site at http://www.nrc.gov/reading-rm/adams.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.: 50-277, 50-278
License Nos.: DPR-44, DPR-56

Enclosure: Inspection Report 05000277/2004002 and 05000278/2004002
w/Attachment: Supplemental Information

cc w/encl: Chief Operating Officer, Exelon Generation Company, LLC
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Plant Manager, Peach Bottom Atomic Power Station
Regulatory Assurance Manager - Peach Bottom
Senior Vice President, Nuclear Services
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.:	50-277, 50-278
License Nos.:	DPR-44, DPR-56
Report No.:	05000277/2004002 and 05000278/2004002
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
Location:	1848 Lay Road Delta, Pennsylvania
Dates:	January 1, 2004 - March 31, 2004
Inspectors:	C. Smith, Senior Resident Inspector D. Schroeder, Resident Inspector R. Nimitz, Senior Health Physicist J. Jang, Senior Health Physicist N. McNamara, EP Inspector
Approved by:	Mohamed M. Shanbaky, Chief Projects Branch 4 Division of Reactor Projects

CONTENTS

SUMMARY OF FINDINGS

IR 05000277/2004002, 05000278/2004002; 01/01/2004 - 03/31/2004; Peach Bottom Atomic Power Station, Units 2 and 3; Maintenance Implementation.

The report covered a 13-week period of inspection by resident inspectors, and announced inspections by two senior health physicists, and an emergency preparedness inspector. One Green non-cited violation (NCV) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The NRC identified a non-cited violation (NCV) of 10 CFR 50.65, the Maintenance Rule, having very low safety significance (Green). As of December 14, 2003, the 2A reactor building closed cooling water (RBCCW) heat exchanger exceeded the unavailability criteria established by Exelon in its Maintenance Rule scoping document. The RBCCW system was not monitored against Exelon established criteria of two percent unavailability per 24 month period. Additionally, as of February 13, 2004, the E2 emergency diesel generator (EDG) exceeded the reliability criteria established by Exelon in its Maintenance Rule scoping document. The E2 EDG performance was not monitored against Exelon established criteria of one maintenance preventable functional failure (MPFF) per 24 month period. The events determined to be MPFFs on the E2 EDG occurred on March 21, 2003, and September 15, 2003.

  The finding is more than minor because the E2 EDG was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The 2A RBCCW heat exchanger was associated with the Equipment Performance attribute of the Initiating Events cornerstone. Exelon's not analyzing the E2 EDG or the 2A RBCCW heat exchanger performance in accordance with the maintenance rule was determined to have very low safety significance (Green) using Phase 1 of the Significance Determination Process (SDP) for Reactor Inspector Findings for At-Power reactor situations. (Section 1R12)

REPORT DETAILS

Summary of Plant Status

Unit 2 began this inspection period operating at 100 percent power. Unit 2 reduced power to 79 percent for approximately 12 hours on January 17, 2004, due to an accumulation of ice at the outer intake structure. Unit 2 was manually scrammed from 43 percent power on February 22, 2004, due to increasing off-gas flow and degrading main condenser vacuum. Unit 2 returned to service and achieved 100 percent power on February 27, 2004. Unit 2 operated the remainder of the inspection period at 100 percent power except for scheduled power changes to support routine maintenance and rod pattern adjustments.

Unit 3 began this inspection period operating at approximately 100 percent power. Unit 3 reduced power to 85 percent for approximately nine hours on January 17, 2004, due to an accumulation of ice at the outer intake structure. Unit 3 operated the remainder of the inspection period at 100 percent power except for scheduled power changes to support routine maintenance and rod pattern adjustments.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - 1 Sample)

a. Inspection Scope

The inspectors reviewed Exelon administrative procedure, OP-AA-108-109, "Seasonal Readiness," and evaluated Exelon's cold weather preparations and correction of deficiencies identified during performance of the winterization procedure. The inspectors discussed specific issues encountered over the winter season with operations management and confirmed that these items are being tracked for resolution. The inspectors reviewed the emergency service water (ESW) and circulating water systems due to the potential adverse effects of cold weather and freezing water on these systems. The ESW system was selected because it is a safety system used for mitigating the effect of transients. The circulating water system was selected because its risk significance to initiate a plant transient. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04 - 4 Samples)

a. Inspection Scope

Partial System Walkdowns (71111.04Q). The inspectors performed partial system walkdowns during this inspection period to verify system and component alignments 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. This inspection activity represented four samples. The following systems were reviewed:

- Control room emergency ventilation during system troubleshooting on January 7, 2004
- 'B' emergency service water train with the 'A' train out of service for maintenance on January 20, 2004
- Unit 2 'B' residual heat removal train with 'A' train out of service for maintenance the week of February 18, 2004
- Unit 2 reactor core isolation cooling system with high pressure coolant injection system inoperable for troubleshooting on March 10, 2004

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 10 Samples)

1. Routine Plant Area Tours

a. Inspection Scope

The inspectors reviewed the fire protection plan, technical requirements manual, and the respective pre-fire action plan procedures to determine 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 the following areas to assess control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. This inspection activity represented ten samples. The following fire areas were reviewed:

- Unit 2 high pressure service water pump (HPSW) room
- Unit 3 HPSW pump room
- Unit 3 E31 emergency auxiliary switchgear room
- Unit 3 E33 emergency auxiliary switchgear room
- Unit 3 E34 emergency auxiliary switchgear room
- Unit 3 reactor building closed cooling water heat exchanger and pump room
- Unit 3 reactor recirculation pump motor generator set room

- Standby gas treatment filter deluge nozzle and piping system
- Diesel driven fire pump room
- Cable spreading room

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07 - 1 Sample)

a. Inspection Scope

The inspectors observed Unit 2 'D' residual heat removal (RHR) heat exchanger testing conducted on January 18, 2004, in accordance with surveillance procedure RT-O-010-660-2, "RHR Heat Exchanger Performance Calculation Test." The test was used to determine if the heat removal capability of the heat exchanger met design requirements. The inspectors reviewed documentation for potential deficiencies, which could mask degraded performance or common cause performance problems.

The inspectors also reviewed the previous maintenance and test records associated with the Unit 2 'D' RHR heat exchanger to assess whether Exelon was meeting its commitments to Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment." This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Implementation (71111.12Q - 4 Samples)

a. Inspection Scope

The inspectors reviewed the follow-up actions for issues identified on systems, structures, or components (SSCs) and the performance of these SSCs, to assess the effectiveness of Exelon's maintenance activities. The following equipment performance issues were reviewed:

- September 15, 2003, E2 emergency diesel generator functional failure evaluation
- December 10, 2003, Unit 2 high pressure coolant injection (HPCI) suction check valve functional failure evaluation
- 2A reactor building closed-cooling water (RBCCW) heat exchanger performance monitoring
- 3B reactor building closed-cooling water (RBCCW) heat exchanger performance monitoring

The inspectors verified that problem identification and resolution of these issues 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. This inspection activity represented four samples.

b. Findings

Introduction. The inspectors identified a non-cited violation of 10 CFR 50.65, the Maintenance Rule, having very low safety significance (Green). As of December 14, 2003, the 2A reactor building closed cooling water (RBCCW) heat exchanger exceeded the unavailability criteria established by Exelon in its Maintenance Rule scoping document. The RBCCW system was not monitored against Exelon established criteria of two percent unavailability per 24 month period. Additionally, as of February 13, 2004, the E2 emergency diesel generator (EDG) exceeded the reliability criteria established by Exelon in its Maintenance Rule scoping document. The E2 EDG performance was not monitored against Exelon established criteria of one maintenance preventable functional failure (MPFF) per 24 month period. The events determined to be MPFFs on the E2 EDG occurred on March 21, 2003, and September 15, 2003.

Description. The 2A RBCCW heat exchanger was removed from service for maintenance on December 1, 2003. Eddy current and leak testing of heat exchanger tubes resulted in removing 34 tubes from service. Four of these tubes required stabilization, based on the eddy current testing results. Repairs were delayed due to a lack of parts and the Maintenance Rule two percent unavailability criteria was exceeded on December 14, 2003. RBCCW is listed as a risk significant system in Exelon's Maintenance Rule scoping document. On January 23, 2004, condition report (CR) 197249 documented the unavailability criteria as being exceeded, and a Maintenance Rule (a)(1) determination was initiated by the responsible system engineer. The system engineer documented the (a)(1) determination on February 3, 2004, and presented it to the maintenance rule expert panel on March 22, 2004. The system engineer recommended to the expert panel maintaining the RBCCW system in an (a)(2) status. The expert panel was unable to make a determination based on the evidence presented at the meeting. Additional information was gathered and the 2A RBCCW was declared to be in an (a)(1) status during the expert panel meeting held on April 2, 2004.

On March 21, 2003, the E2 EDG inadvertently started while technicians were installing test equipment in the starting circuit logic during troubleshooting. The system engineer's initial determination categorized this event as not a MPFF. The MPFF determination was reevaluated by the maintenance rule expert panel on October 27, 2003. New information was presented to the expert panel on November 24, 2003, however, the expert panel was still not able to make a final MPFF determination and requested additional information from the system engineer. On February 2, 2004, the expert panel finally concluded that the inadvertent start of the E2 EDG on March 21, 2003, should be considered a MPFF.

On September 15, 2003, the E2 EDG tripped after one hour while carrying the E-22 and E-23 buses following a loss of offsite power event. The EDG tripped on low jacket coolant pressure. The system engineer's initial determination was that the E2 EDG trip was not a MPFF. The maintenance rule expert panel concurred with this determination on October 27, 2003, but made an assignment to have the system engineer review this determination upon completion of the root cause analysis. After completing the root cause analysis, the system engineer reclassified the September 15, 2003 E2 EDG trip as a MPFF. The maintenance rule expert panel concurred on the MPFF determination on April 2, 2004. An (a)(1) determination of the E2 EDG was assigned following the concurrence of these MPFFs by the expert panel.

The inspectors concluded Exelon failed to perform the required (a)(1) Maintenance Rule determinations for the 2A RBCCW heat exchanger and E2 EDG. The 2A RBCCW heat exchanger exceeded its Maintenance Rule unavailability criteria in December 2003, and was not classified as an (a)(1) until April 2004. The E2 EDG exceeded its Maintenance Rule reliability criteria in September 2003, and as of the end of the inspection period, Exelon has not completed the (a)(1) determination. Exelon administrative procedure ER-AA-310-1005, "Maintenance Rule - Dispositioning Between (a)(1) and (a)(2)," states that "the (a)(1) determination should be made within thirty (30) days of identification of a SSCs unacceptable performance." In both cases described above, the inspectors found that Exelon failed to perform the required (a)(1) determinations within a reasonable period of time following identification of unacceptable system performance.

Analysis. Exelon did not monitor the performance of the 2A RBCCW heat exchanger or E2 EDG against its established Maintenance Rule performance indicator goals in accordance with Exelon procedures. Procedure ER-AA-310-1005 requires an (a)(1) analysis to be completed within thirty days of identification of unacceptable performance. The RBCCW exceeded Maintenance Rule unavailability criteria on December 14, 2003. The (a)(1) determination was made by the Expert Panel on April 2, 2004. The E2 EDG was assigned a second Maintenance Preventable Functional Failure (MPFF) on February 13, 2004, which exceeded the Maintenance Rule reliability criteria for the E2 EDG. The (a)(1) determination was made by the Expert Panel on April 15, 2004. This is a performance deficiency since the Maintenance Rule program is expected to monitor the performance or condition of systems, structures, and components against Exelon established goals in accordance with 10 CFR 50.65. Traditional enforcement does not apply because the issue did not have any safety consequence or potential for impacting the NRC's regulatory function and was not the

result of any willful violation of NRC requirements or Exelon procedures. The finding is more than minor because the 2A RBCCW heat exchanger was associated with the Equipment Performance attribute of the Initiating Events cornerstone. The E2 EDG was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Exelon's not analyzing the performance of the 2A RBCCW heat exchanger and the E2 EDG in accordance with the Maintenance Rule was determined to have very low safety significance (Green) using Phase 1 of the Significance Determination Process (SDP) for reactor inspector findings for at-power reactor situations. The finding was of very low safety significance because the finding is not a design qualification deficiency, does not represent an actual loss of safety function, and did not involve the loss of equipment specifically designed to mitigate a seismic, flooding, or severe weather initiating event.

Enforcement. Paragraph (a)(1) of 10 CFR 50.65 requires, in part, that the performance or condition of systems shall be monitored against established goals, to provide reasonable assurance that the systems are capable of performing their intended functions. Paragraph (a)(2) of 10 CFR 50.65 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 system is being effectively controlled through the performance of appropriate preventive maintenance such that the system remains capable of performing its intended function. Contrary to the above, Exelon had not demonstrated the performance of appropriate preventive maintenance, such that the system remained capable of performing its intended function, and Exelon had not implemented monitoring of the system against licensee established goals as required by paragraph (a)(1) of 10 CFR 50.65. Because this finding is of very low safety significance and has been entered into the corrective action program (CR 212515), this violation of paragraph (a)(1) of 10 CFR 50.65 is being treated as a non-cited violation, consistent with Section VI.A of the NRC Enforcement Policy: **NCV 05000277 & 278/2004002-01, Maintenance Rule Bases Exceeded on the 2A Reactor Building Closed-Cooling Water Heat Exchanger and E2 Emergency Diesel Generator**.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13 - 7 Samples)

a. Inspection Scope

The inspectors reviewed Exelon's 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 against 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. This inspection activity represented seven samples. The following planned and emergent work activities were reviewed:

- Emergent Unit 3 electrohydraulic control system troubleshooting on January 16, 2004
- Planned E2 emergency diesel generator (EDG) surveillance testing with the 'A' emergency service water pump out of service for maintenance on January 20, 2004
- Emergent Unit 2 main condenser silt accumulation testing on February 13, 2004
- Planned Unit 3 main steam isolation valve full stroke testing on February 7, 2004
- Planned Unit 2 'A' residual heat removal (RHR) system outage the week of February 18, 2004
- Emergent Unit 2 reactor recirculation pump motor generator set oil switch calibration on February 24, 2004
- Planned E2 and E4 EDG surveillance testing with 2B RHR out of service for maintenance on March 2, 2004

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.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions (71111.14 - 2 Samples)

a. Inspection Scope

The inspectors reviewed plant computer and recorder data, operator logs and approved procedures while evaluating the performance of operations, engineering, and instrument and maintenance personnel in response to two non-routine evolutions. The inspectors assessed personnel performance to determine whether the operator's response was appropriate and in accordance with procedures and training. The inspectors also assessed whether engineering and instrument and maintenance personnel followed procedures, as required, and were properly trained and briefed prior to performing work evolutions. This inspection activity represented two samples. The following non-routine evolutions were observed or reviewed:

- On January 17, 2004, operators performed an emergency power reduction to approximately 80 percent on both units due to an accumulation of ice at the

outer intake structure. Both units returned to 100 percent power within 12 hours of the initial power reduction.

- On February 22, 2004, operators manually scrammed Unit 2 from 43 percent reactor power due to increasing off-gas flow and degrading main condenser vacuum. Unit 2 returned to 100 percent power on February 27, 2004, following repairs to the 'A' reactor feed pump turbine exhaust expansion joint.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 5 Samples)

a. Inspection Scope

The inspectors reviewed 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 Exelon administrative procedure LS-AA-105, "Operability Determinations." The inspectors used the Technical Specifications, Technical Requirements Manuals, the Updated Final Safety Analysis Report and associated design basis documents as references during these reviews. This inspection activity represented five samples. The issues reviewed included:

- Inadvertent automatic start of the standby control room emergency ventilation system standby fan during testing on January 7, 2004
- High pressure service water (HPSW) piping wall thinning
- Unit 2 'D' HPSW pump base corrosion
- Unit 2 high pressure coolant injection torus suction valve failure to full open on March 8, 2004
- Emergency auxiliary switchgear seismic restraint device not properly installed on March 11, 2004

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (71111.16 - 1 Sample)

The inspectors reviewed both units for the effects of operator work-arounds and equipment deficiencies on the reliability, availability, and potential for misoperation of systems. The inspectors evaluated the effects of identified items on the ability of operators to respond in a correct and timely manner to plant transients and accidents. The inspectors also reviewed deficiencies to determine if any items complicating the operators' ability to implement emergency operating procedures had not been identified by Exelon as an operator work-around. The inspectors reviewed Exelon administrative procedure OP-AA-102-103, "Operator Work-Around Program," for implementation at the site. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17 - 1 Sample)

a. Inspection Scope

The inspectors reviewed installation of a permanent plant modification to the control room emergency ventilation power supply and associated documentation, Engineering Change Request 99-00979, "Main Control Room Fire Safe Shutdown Analysis." The modification dispositioned a design issue concerning loss of control room emergency ventilation during certain fire safe shutdown scenarios. Peach Bottom procedure ON-115, "Loss of Normal Main Control Room Ventilation," was also reviewed for adequacy. The inspectors verified the design bases, licensing bases, and performance capability of risk significant SSCs had not been degraded through the implementation of this plant modification. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 7 Samples)

a. Inspection Scope

The inspectors observed portions of post-maintenance testing activities in the field and reviewed selected test data at the job site. The inspectors observed whether the tests were performed in accordance with the approved procedures and assessed the adequacy of the test methodology based on the scope of maintenance work performed. In addition, the inspectors assessed the test acceptance criteria to verify whether the test demonstrated that the tested components satisfied the applicable design and licensing bases and the TS requirements. The inspectors reviewed the recorded test data to evaluate whether the acceptance criteria was satisfied. This inspection activity

represented seven samples. The inspectors reviewed post-maintenance tests performed in conjunction with the following maintenance activities:

- Unit 3 'C' core spray pump pressure switch snubber replacement on January 14, 2004
- Unit 2 'A' residual heat removal (RHR) train system outage on February 20, 2004
- E1 emergency diesel generator jacket cooling water sightglass installation on March 12, 2004
- 'A' emergency service water pump system outage on January 21, 2004
- Unit 3 'B' RHR system outage on January 30, 2004
- Diesel driven fire pump system outage on February 21, 2004
- Unit 2 B RHR minimum flow bypass valve motor actuator replacement on March 3, 2004

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 6 Samples)

a. Inspection Scope

The inspectors reviewed and observed portions of surveillance tests, and compared test data with established acceptance criteria to verify the systems demonstrated the capability of performing the intended safety functions. The inspectors also verified that the systems and components maintained operational readiness, met applicable technical specification requirements, and were capable of performing the design basis functions. This inspection activity represented six samples. The observed or reviewed surveillance tests included:

- Unit 2 reactor core isolation cooling steam line high flow instrument calibration on December 30, 2003
- Unit 3 'A' core spray loop pump, valve, and flow on January 14, 2004
- 'B' standby gas treatment filter train flow verification on January 7, 2004
- E4 emergency diesel generator fast start on January 9, 2004
- Unit 2 main steam line radiation monitor calibration on January 27, 2004
- Unit 2 reactor core isolation cooling pump, valve, and flow on March 29, 2004

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 1 Sample)

a. Inspection Scope

The inspectors reviewed a temporary plant modification that bypassed the Unit 3 condenser off-gas recombiner system low steam flow trip. The objectives of this review were to verify that (1) the design bases, licensing bases, and performance capability of risk significant structures, systems, and components had not been degraded through this modification, and (2) that implementation of the modification did not place the plant in an unsafe condition. The inspectors verified the modified equipment alignment through control room instrumentation observations; UFSAR, drawing, procedure, and work order reviews; and plant walkdowns of accessible equipment. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes (71114.04 - 1 Sample)

a. Inspection Scope

A regional in-office review was conducted of Exelon's revisions to the emergency plan, implementing procedures and EALs, which were received by the NRC during the period of January through March 2004. A thorough review was conducted of plan aspects related to the risk significant planning standards (RSPS), such as classifications, notifications and protective action recommendations. A cursory review was conducted for non-RSPS portions. These changes were reviewed against 10 CFR 50.47(b) and the requirements of Appendix E and they are subject to future inspections to ensure that the combinations of these changes continue to meet NRC regulations. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 4, and the applicable requirements in 10 CFR 50.54(q) were used as reference criteria. This inspection activity represented one sample.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety [OS]

2OS1 Access Control to Radiologically Significant Areas (71121.01 - 2 Samples)

a. Inspection Scope

The inspector reviewed selected activities, and associated documentation, in the below listed areas. The evaluation of Exelon's performance in these areas was against criteria contained in 10 CFR 20, applicable Technical Specifications, and applicable Exelon procedures. This inspection activity represented two samples.

Inspection Planning

The inspector reviewed Occupational Exposure Cornerstone performance indicators (PIs) for follow-up, as appropriate.

Plant Walkdowns and RWP Reviews

The inspector made tours of selected radiologically controlled areas (RCAs) in Units 2 and 3 and reviewed ambient radiological conditions. The inspector verified the adequacy of postings relative to existing conditions.

The inspector reviewed and discussed external and internal dose assessments since the previous inspection to identify unplanned external and internal occupational doses.

The inspector selectively reviewed controls for underwater storage of non-fuel radioactive materials.

High Risk Significant, High Dose Rate HRA and VHRA Controls

The inspector reviewed high and very high radiation area posting and controls, discussed the status of procedures for high and very high radiation area access controls, and physically challenged the locked access points to three locked high radiation area access points.

Problem Identification and Resolution

The inspector selectively reviewed corrective action reports to determine if identified access control problems were entered into the corrective action program for resolution. The inspector evaluated the corrective action database since the Unit 3 outage to identify repetitive deficiencies or significant individual deficiencies. The review also included evaluation of data to determine if any problems involved undetected PI events. (See Section 4OA2)

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 - 2 Samples)

a. Inspection Scope

The inspector conducted the following activities to determine if Exelon was properly implementing operational, engineering, and administrative controls to maintain personnel's occupational radiation exposure as low as is reasonably achievable (ALARA). The review was against the criteria contained in 10 CFR 20, applicable industry standards, and applicable Exelon procedures. This inspection activity represented two samples.

Verification of Dose Estimates and Exposure Tracking

The inspector compared the results achieved (dose rate reductions, person-rem expended) with the intended doses established in the initial ALARA plans for selected work activities conducted during the 2003 Unit 3 outage. In particular, the inspector reviewed those work activities most impacted by the elevated Co-60 concentrations during the outage to determine the adequacy and effectiveness of dose reduction efforts, as appropriate. The inspector reviewed the 2003 Unit 3 post-outage report.

Source-Term Reduction and Control

The inspector reviewed Exelon's evaluations of its response, in the area of source term controls, following identification of elevated Co- 60 concentrations during the 2003 Unit 3 outage. The inspector reviewed ongoing assessment activities associated with the elevated cobalt 60 concentrations and the inability to initially conduct clean-up activities using the reactor water clean-up (RWCU) system (AR176080, AR 176677). The inspector reviewed exposure mitigation activities, and results achieved for managing the elevated radiation levels.

Problem Identification and Resolutions

The inspector reviewed corrective action assignment reports in the ALARA area since the last inspection to determine if Exelon was including ALARA deficiencies and issues in its corrective action program. (See Section 4OA2.1)

The review included self assessments, audits and corrective action reports related to the ALARA program since the last inspection to determine if the follow-up activities were being conducted.

The inspector reviewed dose significant post-job (work activity) reviews and the post-outage ALARA report critiques of exposure performance to determine if identified problems were properly characterized, prioritized, and resolved in an expeditious manner.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03 - 2 Samples)

a. Inspection Scope

The inspector reviewed selected activities, and associated documentation, in the below listed areas. The evaluation of Exelon's performance in these areas was against criteria contained in 10 CFR 20, applicable Technical Specifications, and applicable Exelon procedures. This inspection activity represented two samples.

Calibration of Instruments and Equipment

The inspector selected one airborne radioactivity sampler (Sn 7887) setup for use in the reactor equipment pit and reviewed calibration and testing of the sampler. The review included adequacy of flow measuring devices used for the calibration and verification of flowrates for various sampler hose lengths.

Self-Contained Breathing Apparatus

The inspector reviewed the use and testing of self-contained breathing apparatus (SCBA) to determine if adequate quantities of such devices were available, filling stations were available, and appropriate personnel had been trained in the use of the devices, including the changing of air bottles, as appropriate. The inspector reviewed SCBA training and qualification records for control room operator crews for the week of February 2, 2004. The inspector also reviewed training records for maintenance, chemistry and radiation protection personnel. The components of three selected SCBA units, ready for use and stored in the Control Room (Pack 453), the Operations Support Center (Pack14), and the Turbine Building (Pack 71) were checked against approved component lists published by the SCBA manufacturer and the National Institute for Occupational Safety and Health (NIOSH). The inspector also reviewed periodic testing of the three SCBA units' components (i.e., hydro testing of tank, maintenance and testing of regulators) and reviewed conformance of the SCBAs with published certification lists. The inspector observed an SCBA (Pack 71) being inspected for purposes of return to service after use.

Problem Identification and Resolution

The inspector reviewed audits and self-assessments to determine if identified problems were entered into the corrective action program for resolution. The inspector reviewed condition reports and action requests to evaluate Exelon's threshold for identifying, evaluating, and resolving problems relating to radiation safety instrumentation. (See Section 4OA2.2)

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety [PS]

2PS1 Gaseous and Liquid Effluents (71122.01 - 9 Samples)

a. Inspection Scope

The inspector reviewed the following documents to evaluate the effectiveness of Exelon's radioactive gaseous and liquid effluent control programs. The requirements of the radioactive effluent controls were specified in the Improved Technical Specifications/Offsite Dose Calculation Manual (ITS/ODCM). This inspection activity represents the completion of nine samples relative to this inspection area (i.e., inspection procedure sections 02.01a,b,c,d and 02.02a, b, d, e, f, g, h, i, j, k).

- 2002 Radiological Annual Effluent Release Report and Radiation Dose Assessment Reports
- ODCM (Revision 12) and technical justifications for ODCM changes made
- ODCM updating process (for Revision 13), including the implementation of the Final Safety Analysis Report (FSAR)
- Analytical results for charcoal cartridge, particulate filter, and noble gas samples
- Implementation of the compensatory sampling and analysis program when the effluent radiation monitoring system (RMS) is out of service
- Selected 2003 radioactive liquid and gaseous release permits, including burning of radioactive waste oil required by Section 3.8.C of the ODCM
- Implementation of the NRC Bulletin 80-10 sampling program
- Associated effluent control procedures, including analytical laboratory procedures
- Calibration records for laboratory measurements equipment (gamma and liquid scintillation counters)
- Implementation of the measurement laboratory quality control program, including effluent intra-laboratory and inter-laboratory comparisons and control charts
- 2003 Quality Assurance Audit
- Effluent/ODCM self-assessments (November 4, 2002 to November 8, 2002)
- Surveillance testing results (visual inspection, delta P, in-place testings for HEPA and charcoal filters, air capacity test, and laboratory test for iodine collection

efficiency) for control room and standby gas treatment system listed in ITS 5.5.7, Ventilation Filter Testing Program:

- Trending and tracking evaluations for the maintaining negative pressures reactor buildings
- Channel calibration and channel functional test results for the radioactive liquid and gaseous effluent radiation monitoring system (RMS) and its flow measurement devices as listed in the ODCM for both units:

  Radiation Monitoring System (RMS)

  - Liquid radwaste effluent line radiation monitor (common)
  - Service water radiation monitors (units 2 & 3)
  - High pressure service water radiation monitors (units 2 & 3)
  - Reactor building closed cooling water radiation monitors (units 2 & 3)
  - Reactor vent stacks noble gas monitors (units 2 & 3)
  - Main stack noble gas monitor (common)
  - Reactor vent stacks high range noble gas monitors (units 2 &3); and
  - Main stack high range noble gas monitor (common).

  Flow Measurement Device

  - Liquid radwaste effluent line flow-circulating pump (common)
  - Main stack flow monitor (common)
  - Reactor vent stacks flow monitors (units 2 & 3)

The inspector toured and observed the following activities to evaluate the effectiveness of the licensee's radioactive gaseous and liquid effluent control programs:

- Walkdown to determine the equipment material condition and the operability of: (1) air cleaning systems and (2) gaseous and liquid effluent radiation monitoring systems including flow rate meters; and
- The observation of radioactive filter and charcoal cartridge sampling and preparation for gamma spectrometry measurements.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification (71151 - 3 Samples)

a. Inspection Scope

The inspectors reviewed selected records at the station to assess the accuracy and completeness of the NRC Performance Indicator (PI) data. The records reviewed included Technical Specification limiting condition for operation logs, system surveillance tests, licensee event reports, action requests and condition reports. The information reviewed was compared against the criteria contained in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment PI Guideline, Revision 2. The inspectors verified that conditions met the NEI criteria, were recognized, identified, and accurately reported. This inspection activity represented three samples. The following specific indicator data for the previous four calendar quarters was reviewed:

- Unit 2 and Unit 3 unplanned scrams
- Scrams with loss of normal heat removal
- Unplanned power reductions

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71121.01, 71121.02, 71121.03)

As required by Inspection Procedure 71152, “Identification and Resolution of Problems,” and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee’s corrective action program. This review was accomplished by reviewing hard copies of each condition report, attending daily screening meetings, and accessing Exelon’s computerized database.

1. Corrective Action Program Condition Reports Reviewed

a. Inspection Scope

The inspector reviewed assignment and condition reports (ARs/CRs) to determine if identified problems were entered into the corrective action program for resolution and to evaluate Exelon’s threshold for entering issues into the program. The review included a check of possible repetitive issues, such as radiation worker or radiation protection technician errors. The inspector also reviewed the scope of the audit program relative to 10 CFR 20.1101. (ARs 197749, 193141, 195792, 197599, 195135, 187836, 190285, 189311, 193146, 192237, 195336, 197429, 197812, 194898, 190828, 197934, 188649, 193131, 196401, and 199546)

The review was against the criteria contained in 10 CFR 20, Technical Specifications, and Exelon procedures.

b. Findings

No findings of significance were identified.

2. PI&R for Public Radiation Safety (71122.01)

a. Inspection Scope

The inspector reviewed the following 2003 Condition Report (CR) reports and Action Request (AR) reports to evaluate the effectiveness of Exelon's problem identification and resolution processes in the areas of radioactive liquid and gaseous effluent control programs.

- Effluent Radiation Monitoring System (RMS) (CR-195015, AR-195006, CR-138563, CR-138573, CR-140086, CR-141297, CR-142750, CR-149621, CR-152731, CR-154303, CR-158783, CR-162644, CR-165901, CR-168334, CR-168912, CR-171533, CR-171876, CR-173345, CR-179353, CR-179398, CR-185780, CR-186865, CR-188310, and AR-192081)
- Air Cleaning Systems (CR-160784, and AR-126840); and
- Routine Effluent Control Programs (CR-168046, CR-168912, CR-172669, CR-173345, CR-159151, CR-138055, CR-142750, CR-147683, CR-154631, CR-158783, CR-176650, CR-181496, CR-186787, CR-187308, CR-188310, CR-159746, CR-163094, and CR-163398).

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

1. (Closed) LER 05000277/2003005-00, Loss of High Pressure Coolant Injection System Function As a Result of Less Than Adequate Check Valve Condition

On December 10, 2003, during the performance of a routine logic system functional test for the high pressure coolant injection (HPCI) system, operations personnel detected an unexpected condition when a suppression pool high water level alarm was received. Based on engineering reviews, it was subsequently determined that the HPCI check valve in the suction path from the suppression pool was not properly closed. This resulted in the HPCI system possibly not being capable of performing its intended restart design function for certain design bases events. For these events, with HPCI aligned to the suppression pool, the HPCI system piping could be voided while the system is not operating resulting in water hammer conditions if the HPCI system would need to restart after performing its design function. There were no actual safety consequences or water hammer events associated with this event. The cause of the

HPCI suction check valve not closing properly was attributed to the valve disc not seating properly. This was caused by excessive clearances of certain check valve internal components due to maintenance procedures not containing adequate criteria concerning component clearances and alignment of the valve disc to the seat. In-body repairs were made to the HPCI suction check valve and the HPCI system was returned to a fully operable condition on December 12, 2003. The resident inspectors did not identify any new issues in this LER review. The licensee documented the problem in CR 189956. This LER is closed.

4OA6 Meetings, Including Exit

On March 8, 2004, the resident inspectors presented the inspection results to Mr. Bob Braun and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Exelon Generation Company

B. Braun, Site Vice President
J. Stone, Plant Manager

C. Behrend, Plant Engineering Senior Manager
P. Davison, Engineering Director
J. Dubon, Corrective Action Program Manager
E. Eilola, Operations Director
D. Foss, Senior Regulatory Engineer
F. Jordan, Chemistry Manager
J. Mallon, Manager, Regulatory Assurance
G. McCarty, Technical Manger - Radiation Safety
H. McCrory, Dosimetry Physicist
R. Norris, Radiation Protection Manager
J. Schwarz, Rad Engineer
G. Stathes, Maintenance Director
J. Volz, Physicist

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000277/2004002-01 05000278/2004002-01	NCV	Maintenance Rule Bases Exceeded on the 2A Reactor Building Closed-Cooling Water Heat Exchanger and E2 Emergency Diesel Generator (Section 1R12)

Closed

05000277/2003005-00	LER	Loss of High Pressure Coolant Injection System Function As a Result of Less Than Adequate Check Valve Condition

Discussed

None

LIST OF ACRONYMS

ALARA	as low as is reasonably achievable
AR	action request
CFR	Code of Federal Regulations
CR	condition report
CREV	control room emergency ventilation
EDG	emergency diesel generator
ESW	emergency service water
HPCI	high pressure coolant injection
HPSW	high pressure service water
HRA	high radiation area
ITS	Improved Technical Specifications
LER	licensee event report
MPFFs	maintenance preventable functional failures
NCV	non-cited violation
NEI	Nuclear Energy Institute
NIOSH	National Institute for Occupational Safety and Health
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PI	performance indicator
RBCCW	reactor building closed-cooling water
RCIC	reactor core isolation cooling
RHR	residual heat removal
RSPS	risk significant planning standards
SCBA	self-contained breathing apparatus
SDP	significance determination process
SSC	structure, system, and component
TS	Technical Specification