

November 03, 2006

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 05000277/2006004 AND 05000278/2006004

Dear Mr. Crane:

On September 30, 2006, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Peach Bottom Atomic Power Station Units 2 and 3. The enclosed inspection report documents the inspection results, which were discussed on October 31, 2006, with Mr. J. Grimes 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 self-revealing finding of very low safety significance (Green). The finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it is entered into your corrective action program, the NRC is treating the finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, 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 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 the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

James M. Trapp, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

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

Enclosures: Inspection Report 05000277/2006004 and 05000278/2006004  
w/Attachment: Supplemental Information

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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.: 05000277/2006004 and 05000278/2006004

Licensee: Exelon Generation Company, LLC

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

Location: Delta, Pennsylvania

Dates: July 1, 2006 through September 30, 2006

Inspectors: F. Bower, Senior Resident Inspector  
M. Brown, Resident Inspector  
D. Tiff, Resident Inspector (Acting)  
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Approved by: James M. Trapp, Chief  
Reactor Projects Branch 4  
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## SUMMARY OF FINDINGS

IR 05000277/2006-004, 05000278/2006-004; 07/01/2006 - 09/30/2006; Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3; Event Followup.

The report covered a 3-month period of inspection by resident inspectors, and announced inspections by five regional specialist inspectors. One Green finding, which was a 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: Initiating Events

- Green. A self-revealing non-cited violation of Technical Specification (TS) 5.4.1.a, "Procedures," occurred when, during a pre-job walk down, a senior reactor operator (SRO) inappropriately operated an instrument valve without a procedure. This inappropriate valve manipulation resulted in a half Group 1 primary containment isolation logic signal. PBAPS has entered this issue into their corrective action program (CAP) for resolution.

This finding is greater than minor because it is associated with the Initiating Events Cornerstone attribute of human performance and affects the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Inappropriate operation of the instrument valve increased the likelihood of the main steam isolation valve's (MSIV) closing, and a reactor scram with loss of normal heat removal. The finding was of very low safety significance because it did not contribute to both the likelihood of a reactor scram and the likelihood that mitigation equipment or functions would not be available. A contributing cause of the finding has a cross-cutting aspect in the area of human performance work practices because operations personnel did not follow procedures when manipulating a main steam pressure switch instrument vent valve without the use of procedures. (Section 4OA3)

### B. Licensee-Identified Violations

None.

## REPORT DETAILS

### Summary of Plant Status

Unit 2 began the inspection period at approximately 100 percent rated thermal power (RTP) until July 24, 2006, when the end-of-cycle coastdown began. On July 28, a power reduction to 63 percent was begun to remove the fifth stage feedwater heaters from service, clean condenser water boxes, and conduct other planned maintenance and testing. The unit returned to maximum attainable power on July 30, 2006, where it remained in coastdown except for brief power maneuvers to support the pre-refueling outage (P2R16) maintenance. On September 15, Unit 2 was shutdown to begin P2R16. Unit 2 refueling outage was ongoing at the end of the inspection period.

Unit 3 began the inspection period at approximately 100 percent RTP until September 8, 2006, when power was reduced to 57 percent for hydraulic control unit maintenance and other planned maintenance and testing. The unit returned to full power on September 9, 2006, where it remained except for brief periods for the conduct of testing and rod pattern adjustments.

On August 15, an unusual event (UE) was declared due to a small fire on the emergency diesel generator (EDG) building roof that was not extinguished within 15 minutes. (Section 4OA3)

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R01 Adverse Weather Protection (711111.01 - 1 Site Sample)

##### a. Inspection Scope

On July 17, 2006, the power grid operator issued a maximum emergency generation warning due to grid conditions resulting from hot weather in the area. The maximum emergency generation warning was exited on the evening of July 18, as severe thunderstorms entered the area and high winds, rain, and lightning were experienced at the site. The inspectors reviewed PBAPS's actions taken in response to the maximum emergency generation warning and the severe thunderstorms that followed.

The inspectors verified the adequacy of Procedures OP-AA-188-107-1001, "Station Response to Grid Capacity Conditions," and AO 53.2-0, "Equipment Checks After a Thunderstorm." The inspectors also verified PBAPS appropriately implemented their procedures which included deferring production risk activities. The inspectors also verified that PBAPS implemented compensatory measures in accordance with Section 3.8.C.4 of the Offsite Dose Calculation Manual (ODCM) due to the loss of the main stack radiation monitors from a lightning strike.

##### b. Findings

No findings of significance were identified.

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1R04 Equipment Alignment (71111.04Q & 7111104S - 4 Partial Samples; 2 Complete Samples)

.1 Partial Walkdown (71111.04Q - 4 Samples)

a. Inspection Scope

The inspectors performed a partial walkdown of the following four systems to verify the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors attempted to identify any discrepancies that could impact the function of the system or increase risk. The inspectors reviewed applicable operating procedures, walked down system components, and verified that selected breakers, valves, and support equipment were in the correct position to support system operation. The inspectors also verified that PBAPS had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP.

- "A" Emergency Service Water (ESW) During Maintenance on "B" ESW
- "B" Loop Residual Heat Removal (RHR) System in Shutdown Cooling Mode While "A" Loop Out-of-Service
- "A" ESW While E-32 Bus is Out-of-Service
- E-1, E-2, and E-4 EDGs While E-32 Bus was Out-of-Service

.2 Complete Walkdown (71111.04S - 2 Samples)

a. Inspection Scope

4160 Volt Emergency Auxiliary Switchgear System

During the week of July 17, 2006, the inspectors performed one complete 4160 volt emergency auxiliary switchgear system walkdown to verify proper system alignment and configuration control. The inspectors reviewed breaker positions, electrical power availability, and the general condition of the components. The inspectors independently verified the 4160 volt emergency auxiliary switchgear system alignment using System Operation Check Off List (SO COL) 54.1.A, "4160 Volt Emergency Aux Switchgear System Normal Operations," and surveillance test, ST-O-054-950-2, "Offsite and Onsite Electrical Power Breaker Alignment and Power Availability Check." In addition, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), system design drawings, and the system health report. These reviews were conducted to identify discrepancies that could impact system operability.

Unit 2 "A" Loop of Residual Heat Removal (RHR) Shutdown Cooling

A complete system walkdown of the Unit 2 "A" loop of RHR system was performed during the week of September 24, 2006 (during P2R16), while the "B" loop of shutdown cooling was out-of-service. Specifically, the inspectors verified that the loop was properly aligned in the shutdown cooling mode of operation. The inspectors reviewed



valve alignment, snubber and pipe support positions and material condition, electrical power alignment. The inspectors also verified the availability of the RHR system to support the high pressure service water (HPSW). The proper use of tagging to indicate the equipment's protected status was verified. The inspectors reviewed issue reports (IRs) and the previous quarter's Plant Health Committee Report to identify any outstanding equipment problems of concern. These reviews were conducted to identify discrepancies that could impact system operability.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 9 Samples)

Fire Protection - Tours

a. Inspection Scope

The inspectors reviewed PBAPS's Fire Protection Plan, Technical Requirements Manual (TRM), and the respective pre-fire action plan procedures to determine the required fire protection design features, fire zone boundaries, and combustible loading requirements for the areas examined during this inspection. The fire risk analysis was reviewed to gain risk insights regarding the areas selected for inspection. The inspectors then performed walkdowns of the following areas to assess the material condition of active and passive fire protection systems and features. The inspection was also performed to verify the adequacy of the control of transient combustible material and ignition sources, the condition of manual firefighting equipment, fire barriers, and the status of any related compensatory measures. The following nine fire areas were reviewed for impaired fire protection features:

- Unit 2 Reactor Core Isolation Cooling (RCIC) Room, Elevation 88' (Fire Zone 60)
- Unit 2 Reactor Building (RB), Elevation 195' (Fire Zone 5K)
- Unit 2 RB, Elevation 165' (Fire Zone 5J)
- Unit 2 Torus Room RB2, Elevation 91'6" (Fire Zone 5C)
- Unit 2 North Isolation Valve Room, Elevation 135' (Fire Zone 23)
- Unit 2 South Isolation Valve Room, Elevation 135' (Fire Zone 19)
- Unit 2 "A" & "C" RHR Pump and Heat Exchanger (HX) Room, Elevations 91'6" & 116' (Fire Zone 1)
- Unit 2 High Pressure Coolant Injection (HPCI) Room, Elevation 88' (Fire Zone 59)
- Unit 2 "B" & "D" RHR Pump and HX Room, Elevations 91'6" & 116' (Fire Zone 3)

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 1 Internal Sample)Internal Floodinga. Inspection Scope

The inspectors reviewed PBAPS's internal flooding analysis contained in the Individual Plant Examination (IPE) for the Unit 2, "B" and "D" core spray rooms. The inspectors also reviewed Design Basis Document (DBD) P-T-09, Rev 8, "Internal Hazards." The inspectors walked down the 2 "B" and 2 "D" core spray rooms to verify internal flooding design features were as described in the IPE. The inspectors also verified that floor plugs were installed in the 2 "B" and "D" core spray room drains to prevent multiple core spray pumps from being affected by a flood. NRC Information Notice 83-44, "Potential Damage to Redundant Safety Equipment as a Result of Backflow Through the Equipment and Floor Drain System," was reviewed for this inspection.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07B - 3 Samples)a. Inspection Scope

Based on a plant specific risk assessment, past inspection results, and resident inspector input, the inspectors selected the following HX's for review:

- 2 "C" RHR
- 2 "D" RHR
- E-4 EDG Jacket Water, Lube Oil, and Air Cooler HXs

The inspectors reviewed PBAPS's methods and frequency of inspection, cleaning, chemical control, and performance monitoring for the selected components to ensure alignment with PBAPS's response to Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment." The inspectors compared surveillance and inspection results, including as-found conditions, photographs, and eddy current summary sheets, to the established acceptance criteria to verify that the HX's performance was acceptable and consistent with their design. The inspectors reviewed HX design basis values and assumptions, plugging limit calculations, and vendor information, to verify that this information was incorporated into the HX inspection and maintenance procedures.

The inspectors walked down the intake structures and the emergency cooling tower. The inspectors also walked down portions of the normal service water, HPSW, ESW, emergency cooling water, and RHR systems, to assess the material condition and operation of these systems and their associated components.

The inspectors reviewed a sample of condition reports related to the RHR and EDG HXs and the associated service water systems and interviewed the responsible system engineers to ensure that Exelon was appropriately identifying, characterizing, and correcting problems related to these systems and components. The inspectors verified that potential common cause heat sink performance problems that had the potential to increase risk were identified and corrected by the licensee. The inspectors also verified that potential macro fouling (silt, debris, etc.) issues and biotic fouling issues were closely examined by the licensee.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08 - 1 Sample)

a. Inspection Scope

A sample of non-destructive examination (NDE) activities was selected for review from the PBAPS P2R16 examination plan to assess the effectiveness of the inservice inspection (ISI) program for monitoring degradation of containment, reactor coolant system, and risk-significant piping system pressure boundaries. The inspection consisted of interviews with plant and contractor personnel, observations of NDE and calibrations of nondestructive test equipment. The inspectors also reviewed NDE procedures, examiner qualifications, and examination results in order to verify that the examinations were performed in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code requirements.

The inspectors also observed portions of the magnetic particle examination of the 2 "A" RHR heat exchanger integral support weld in order to evaluate examiner skill and examination technique. The inspectors verified the calibration of the alternating current magnetic yoke, that the examiner was properly qualified, and that the examination procedure was followed. The examination results were reviewed for recordable indications.

The inspectors also observed portions of the ultrasonic examination of the 2 "A" RHR heat exchanger lower shell to flange weld in order to evaluate examiner skill and examination technique. The inspectors verified the calibration of the complete ultrasonic system, that the examiner was properly qualified, and that the examination procedure was followed. The examination results were reviewed for recordable indications.

The inspectors reviewed the radiograph of field weld 5 of the 14" pipe elbow weld to the replacement of the 2 "C" RHR heat exchanger HPSW service water outlet valve (MO-2-10-089C) in order to verify that the examinations were performed in accordance with the ASME Code requirements. The examinations results were reviewed for recordable indications.

The inspectors also reviewed the modification package for the installation of hydrolaze ports on the scram discharge volume header (SDVH) piping to verify the design basis of the system would not be degraded as a result of the modification. The inspectors reviewed the 10 CFR 50.59 screening document to verify that NRC approval was not required for the modification. The inspectors verified that the welding procedure welders and magnetic particle examiners were properly qualified. The magnetic particle examination results for welds 7, 13, 23, 27, 31 and 39 were reviewed for recordable indications.

The inspectors conducted a review of the torus underwater pitting inspection to assess Peach Bottom's program for monitoring degradation of the torus shell. The inspectors verified that the divers were properly qualified to perform visual inspections, were performing the near-distance vision test chart verifications, and had approved inspection procedures. The inspectors verified that the engineering evaluations of the current torus corrosion pits were consistent with the methodologies in the ABB/Impell structural analysis that was approved in an NRC Safety Evaluation Report (SER) dated September 17, 1999. The inspectors reviewed the summary report of the coating inspection and photographs of the pits that were coated in 1991 to determine the presence of blistering, cracking or peeling that would indicate coating failure. The 2006 test results of the Bio-Dur 560 coating that was tested under design basis accident (DBA) conditions were reviewed to verify that the coating was acceptable for underwater coating of pits in the torus environment. The inspectors verified that PBAPS's pit inspection and evaluation plan included coating pits of a depth that met the plan's criteria. The inspectors verified that the divers were properly qualified to apply the Bio-Dur 560 coating and that the approved coating procedure used the same surface preparation and application method as the DBA test. Corrosion rate data for each of the pits in the one square foot control grids in each of the 16 bays of the torus was reviewed to determine average corrosion rates for the time periods of 1991-2006, 1991-1998 and 1998-2006, as applicable. The evaluation to project future corrosion rates was ongoing at the end of the inspection period. During this inspection, PBAPS personnel discussed plans to re-coat the Unit 2 torus in 2010.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q - 1 Sample)

Resident Inspector Quarterly Review

a. Inspection Scope

On August 10, 2006, the inspectors observed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate and that evaluators were identifying and documenting crew performance issues. The inspectors also verified that performance issues were discussed in the crew's post-scenario critiques. The inspectors also observed the operators

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implementation of operating procedures. The inspectors discussed the training, simulator scenarios, and critiques with the operators, shift supervision, and the training instructors. The three scenarios observed for this one sample are listed below:

- Plant Shutdown
- Drifting Control Rod
- Mispositioned Control Rod

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

.1 Routine Maintenance Effectiveness Issues (71111.12Q - 2 Samples)

a. Inspection Scope

The inspectors reviewed the follow-up actions for issues to assess the effectiveness of PBAPS's maintenance activities. The review included items such as: (1) appropriate work practices; (2) identifying and addressing common cause failures; (3) scoping in accordance with 10 CFR 50.65(b) of the Maintenance Rule (MR); (4) characterizing reliability issues for performance; (5) trending key parameters for condition monitoring; (6) charging unavailability for performance; (7) classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and (8) appropriateness of performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). In addition, the inspectors reviewed specific maintenance events. The items reviewed included the following:

- E-2 Vertical Drive Failure (IR 523380)
- Repair of Emergency Service Water Valves, HV-2-33-517 and CHK-2-33-513 (ARs A1386420 & A1275804)

b. Findings

No findings of significance were identified.

.2 Maintenance Rule Implementation (71111.12B - 5 Samples)

a. Inspection Scope

The inspectors reviewed a report of the Periodic Assessment of the MR as required by 10 CFR 50.65(a)(3). The evaluation covered the period from July 2004 to July 2006. The purpose of this review was to verify that PBAPS established appropriate goals and effectively assessed system performance and preventive maintenance activities. The inspectors verified that the assessment was completed within the required time period

and that industry operating experience was used, where applicable. Additionally, the inspectors verified that PBAPS appropriately balanced equipment reliability and availability and made adjustments when appropriate.

The inspectors selected a sample of five risk-significant systems to verify that: (1) the structures, systems, and components were properly characterized, (2) goals and performance criteria were appropriate, (3) corrective action plans were adequate, and (4) performance was being effectively monitored in accordance with station procedure ER-AA-310, "Implementation of the Maintenance Rule." The following systems were selected for this detailed review:

- EDG
- HPCI
- Reactor Building Closed Cooling Water (RBCCW)
- Primary Containment Isolation Valves (PCIV)
- RHR

These systems were either in (a)(1) status, had been in (a)(1) status at some time during the assessment period or had experienced degraded performance. The inspectors reviewed the corrective action documents for malfunctions and failures of these systems to determine if: (1) system failures had been correctly categorized as functional failures, and (2) system performance was adequately monitored to determine if a system was appropriately classified as (a)(1).

The inspectors interviewed the MR coordinator and system engineers, reviewed documentation for applicable systems and reviewed a sample of condition reports.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 8 Samples)

a. Inspection Scope

The inspectors reviewed PBAPS's planning and risk management actions for planned and emergent work activities to assess PBAPS's management of overall plant risk. The activities selected were based on plant maintenance schedules and systems that contributed to risk. As applicable, the inspectors reviewed PBAPS's probabilistic safety assessment risk evaluation results forms. The inspectors compared the risk assessment results and the risk management actions against the requirements of 10 CFR 50.65(a)(4) and the information in Regulatory Guide (RG) 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants," and Procedure WC-AA-101, "On-line Work Control Process." The inspectors verified that risk assessments were performed when required and appropriate risk management actions were identified. The inspectors also reviewed selected control room operating logs and interviewed personnel. These reviews were performed to determine whether

PBAPS properly assessed and managed plant risk and performed activities in accordance with applicable TSs and work control requirements. The following eight planned and emergent work order (WO) activities were reviewed:

- WO R1011685, "B" ESW Maintenance
- WO M1581965, Unit 2 "B" Electrohydraulic Control (EHC) Pump Failure
- WO C0213894, RCIC Steam Supply Inboard Isolation Valve Backseating
- WO R0973145, Unit 2 "A" RHR Loop Out-of-Service
- WO R0783531, Unit 2 E-32 Vital 4kV Bus Outage
- WO R0968832 & R0978348, Open, Inspect and Rework Inboard & Outboard MSIV's 80 "C" & "D" and 86 "A", "C" & "D."
- WO C0218970, Open 2 "D" RHR System to Inspect and Retrieve Foreign Material
- WO A1558894, Inspection of RHR Discharge to Spent Fuel Pool Crosstie Piping Inspection

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 6 Samples)

a. Inspection Scope

The inspectors reviewed six issues to assess the technical adequacy of the evaluations, the use and control of compensatory measures, and compliance with the licensing and design bases. As applicable, associated adverse condition monitoring plans, engineering technical evaluations and operational and technical decision making documents were also reviewed. The inspectors verified these processes were performed in accordance with the applicable procedures. The inspectors used the TSs, TRM, the UFSAR, and associated DBDs as references during these reviews. The issues reviewed included:

- Emergency Core Cooling System (ECCS) Room Coolers (IR 513000)
- Unit 2 HPCI (IR 508881)
- Increase in Unit 3 Drywell Unidentified Leakage Rate (IR 516696)
- Increase in Leakage Rate for 3 "D" RHR HX (IR 514302)
- 2 "B" HPSW through-wall piping leak (IR 532363)
- EDGs Without Hourly Fire Watch Prior to Cardox Modification Completion (AR A1349846-03)

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 5 Samples)a. Inspection Scope

The inspectors observed selected portions of post-maintenance testing (PMT) activities and/or reviewed completed test records. 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 were satisfied. The inspectors reviewed five post-maintenance tests performed in conjunction with the following maintenance activities:

- WO C0213927, Unit 2 RCIC PMT
- WO R1030528, Unit 3 "A" & "C" Core Spray PMT
- WO R1007319, 3 "C" HPSW
- WO R0966590, E-2 EDG PMT (Loaded to 3100 kW)
- WO C0216868, Diagnostic Testing Following Actuator Rebuild, MO-2-10-89C

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities.1 Unit 2 Refueling Outage (RFO) 16a. Inspection Scope

The Unit 2 RFO (P2R16) was conducted from September 15, 2006 through the end of the inspection period. Prior to the start of P2R16 on September 15, 2006, the inspectors reviewed the Outage Risk Assessment Management (ORAM) Plan against procedures OU-PB-104, "Shutdown Safety Management Program," OU-PB-104-1001, "Shutdown Risk Management for Outages," and OU-AA-103, "Shutdown Safety Management Program." The ORAM plan was reviewed to confirm that the PBAPS had appropriately considered risk, industry experience, and previous site specific problems in developing and implementing a plan that maintained shutdown safety defense-in-depth.

During the RFO, the inspectors observed portions of the shutdown process and performed the activities listed below to verify PBAPS controls over the outage activities:

- Hot Shutdown - reviewed vendor application of noble metals chemical addition in the steaming mode, with chemistry personnel .

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- Containment - conducted an initial drywell walkdown to check for unidentified leakage or other discrepant conditions.
- Clearance Activities - verified clearances on the "A" loop of RHR.
- Electrical Power - verified the PBAPS risk control plan for the E-23 bus maintenance met TS requirements, verified breaker alignment on the E-23 bus after its restoration.
- Decay Heat Removal - conducted complete system equipment alignment walkdown of "A" loop of RHR shutdown cooling, verifying proper alignment of decay heat removal systems while "B" RHR loop out-of-service.
- Inventory Control - verified procedures were being followed for the control rod drive decoupling/replacement.
- Reactivity Control - verified that control rod blade removal was being performed in accordance with PBAPS procedures and the TSs.
- Refueling Activities - verified that the PBAPS was using adequate controls to ensure the location of the fuel assemblies is properly tracked.
- PBAPS Identification and Resolution of Problems - verified that the PBAPS was properly documenting outage issues in their CAP.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 7 Samples)

a. Inspection Scope

The inspectors reviewed and/or 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 TS requirements, and were capable of performing the design basis functions. The surveillance tests reviewed and observed included:

- ST-O-032-301-3, Unit 3 HPSW Inservice Test (IST)
- ST-O-013-301-3, Unit 3 RCIC Pump, Valve, Flow and Unit Cooler Functional and IST (IST)
- ST/LLRT 20.14.01, Rev 9, "Local Leak Rate Test (LLRT) Core Spray "A" Loop" (CIV)
- SI3F-13-83-XXCQ, Unit 3 RCIC Steam Line High Flow Instrument Functional Test
- ST-O-052-702-2, E-2 EDG 24-Hour Endurance Run
- ST-O-052-124-2, E-4 EDG RHR Pump Reject Test
- ST-O-052-201-2, E-1 EDG Slow Start and Full Load Test

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 1 Sample)a. Inspection Scope

The inspectors reviewed one temporary modification to verify that implementation of the modification did not place the plant in an unsafe condition. The review was also conducted to verify that the design bases, licensing bases, and performance capability of risk significant SSCs had not been degraded through these modifications. The inspectors verified the modified equipment alignment through control room instrumentation observations, UFSAR, drawings, procedures, and work order reviews, and plant walkdowns of accessible equipment. The following temporary modification was reviewed:

- Engineering Change Request (ECR) 06-00004/A1545942, Installation of a Temporary Torus Water Filtering System to Support the P2R16 ISI Work

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY****Cornerstone: Occupational Radiation Safety**2OS1 Access Controls to Radiologically Significant Areas (71121.01 - 18 Samples)a. Inspection Scope

The inspectors 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 PBAPS procedures.

Inspection Planning - Performance Indicators

The inspectors reviewed performance indicators for the Occupational Exposure Cornerstone. The inspectors also discussed and reviewed current performance, relative to the indicators, with cognizant PBAPS personnel. The review also included evaluation of data to determine if any problems involved performance indicator (PI) events with dose rates greater than 25 R/hr at 30 centimeters, greater than 500 R/hr at 1 meter or unintended exposures greater than 100 millirem total effective dose equivalent (TEDE), 5 rem shallow dose equivalent (SDE), or 1.5 rem lens dose equivalent (LDE).

### Plant Walkdowns, Radiation Work Permit Reviews, and Jobs in Progress Reviews

The inspectors walked down selected radiological controlled areas and reviewed housekeeping, material conditions, posting, barricading, and access controls to radiological areas. The inspectors made selective independent ambient radiation level measurements to verify conditions. The inspectors observed and selectively reviewed ongoing work activities associated with Unit 2 fuel pool heat exchanger work and conduct of Unit 2 fuel inspection activities. During the Unit 2 outage, the inspectors toured the drywell, entered the torus to observe diving activities, observed ongoing refueling and in-vessel work activities, observed fuel sipping, observed main steam isolation valve work activities, observed in-service inspection, reviewed control rod drive work activities, reviewed spent fuel pool gate work and reviewed residual heat removal system work activities. The inspectors also observed ongoing turbine and condenser work. The inspectors reviewed radiation protection job coverage and radiation work permit (RWP) implementation. The inspectors verified adequacy of radiological controls. The inspectors evaluated dosimetry placement associated with monitoring of occupational exposure when working in radiation dose gradients. The inspectors reviewed electronic dosimeter alarm setpoints for conformity with survey indications and plant policy.

The inspectors reviewed and discussed internal dose assessments, since the previous inspection, to identify any apparent actual occupational internal doses greater than 50 millirem committed effective dose equivalent (CEDE). The review also included the adequacy of evaluation of selected dose assessments, as appropriate, and included selected review of the program for evaluation of potential intakes associated with hard-to-detect radionuclides (e.g., transuranics). The inspectors selectively reviewed in-plant source term evaluations including average energy determinations. The inspectors reviewed airborne radioactivity monitoring for job coverage and selectively reviewed use of continuous air monitors.

During the inspection, the inspectors also reviewed: the adequacy and effectiveness of routine contamination control and monitoring practices; evaluated the adequacy of contamination detection capabilities; evaluated the extent of station contamination, and evaluated the frequencies and magnitude of personnel contamination events; and evaluated the detection of contamination beyond established barriers for the radiological controlled area (RCA). In addition, the inspectors also evaluated and reviewed the radiation dose consequences of the personnel contaminations. Further, the inspectors also evaluated the frequencies and magnitude of internal contaminations of personnel.

The inspectors reviewed and discussed High Radiation Area controls including high-dose rate and very high dose-rate area controls with radiation protection supervisors and technicians to identify changes that could potentially reduce program effectiveness and level of worker protection. The inspectors observed and conducted a selective High Radiation Area key inventory. The inspectors reviewed use of electronic dosimetry for monitoring of workers in High Radiation Areas.

### Radiation Worker and Radiation Protection Technician Proficiency

During station tours, the inspectors observed radiation worker performance with respect to stated radiation protection work requirements. The inspectors selectively questioned radiation workers to determine if the workers were aware of the significant radiological conditions in their workplace; their RWP controls/limits in place; and that their performance took into consideration the level of radiological hazards present.

The inspectors observed radiation protection technician performance with respect to radiation protection work requirements to determine if they aware of the radiological conditions in their workplace and the RWP controls/limits, and if their performance was consistent with expectations for potential radiological hazards present.

The inspectors reviewed radiological problem reports since the last inspection to identify radiation worker or radiation protection errors traceable to a similar cause. Corrective actions were reviewed, as appropriate

#### b. Findings

No findings of significance were identified.

### 2OS2 ALARA Planning and Controls (71121.02 - 10 Samples)

#### a. Inspection Scope

The inspectors conducted the following activities to determine if PBAPS was properly implementing operational, engineering, and administrative controls to maintain personnel exposure as low as is reasonably achievable (ALARA). Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and applicable PBAPS procedures.

#### Inspection Planning

The inspectors reviewed pertinent information regarding PBAPS collective dose history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors determined the plant's current 3-year rolling average collective exposure for the period January 2003 - December 2005 and determined the site specific trends in collective exposures (using NUREG-0713 and plant historical data). The inspectors also compared station dose for the period 1995-2005, as reported by thermoluminescent dosimetry, to that measured and reported by electronic dosimetry worn by workers to evaluate dose trends identify dose trends an anomalies.

The inspectors reviewed planning and preparation for the Unit 2 refueling and maintenance outage. For this review, the inspectors selected work activities likely to result in the highest personnel collective exposures and reviewed the planning and preparation for those work activities to determine if ALARA requirements were

integrated into work procedure and radiation work permit documents. The work activities selectively reviewed included: torus inspection (diving activities), under vessel work/control rod drive change-out, in-service inspection, scaffolding activities, refueling activities, and valve work activities.

During the outage, the inspectors selectively reviewed ongoing and completed work activities to identify the adequacy and effectiveness of Exelon's planning efforts to reduce radiation exposures ALARA. The inspectors reviewed scaffolding work, control rod drive replacement, refueling work activities, in-vessel inspections, reactor vessel disassembly, main steam line valve work, and turbine and condenser work activities. The inspectors toured the radiological controlled areas and observed efforts to minimize occupational radiation exposure.

#### Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed the assumptions and basis for current annual collective exposure estimates. The inspectors reviewed the exposure tracking system to evaluate the level of detail, and exposure report timeliness. The inspectors reviewed the methods used for adjusting exposure estimates, or re-planning work when unexpected changes in scope or emergent work are encountered.

The inspectors selectively reviewed exposure results achieved, for the above tasks, with the intended dose established in ALARA plans for the work activities.

#### Source-Term Reduction and Control

The inspectors reviewed and discussed Exelon's understanding of the plant source-term, including knowledge of input mechanisms to reduce the source term; and the source-term control strategy in place. The inspectors evaluated Exelon's efforts to reduce radiation exposure including modified reactor shutdown and reactor coolant clean-up practices. The inspectors reviewed contingency plans for potential changes in source term and changes in plant source term.

#### Radiation Worker Performance

The inspectors observed radiation worker and radiation protection technician performance to determine if workers demonstrate exposure reduction practices. The inspectors also reviewed radiation protection technician performance to determine if whether training/skill level was sufficient with respect to radiological hazards and the work involved.

#### Declared Pregnant Workers

The inspectors reviewed exposure results and exposure controls for declared pregnant workers with respect to requirements of 10 CFR 20.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03 - 5 Samples)

a. Inspection Scope

The inspectors 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 station procedures.

Calibration, Operability, Alarm Setpoint

The inspectors selectively reviewed calibration of the following instrumentation used for radiological assessment.

- Area Radiation Monitor Channels 29, 31, 30 (Unit 2 Refueling Floor Areas)
- Alpha counter (SAC-4), 722
- Radiation survey meter (Telepole) - 76686
- Radiation survey meter (RO-2) - 4289
- Portable area monitor (AMP-100) - 78642, 78638
- Contamination monitors (RM-14) - 77416, 333008
- Personnel contamination monitor (PM-7) - 296
- Personnel contamination monitor (PMW-2E) - 9712008
- Gamma spectroscopy system (Ge-Li) - No. 2, No.3
- Unit 2 and 3 High Range containment monitoring system
- Personnel electronic dosimeters (34663, 28382)

The inspectors also reviewed the calibration and use of the Fastscan whole body counter.

The inspectors selectively reviewed operability checks; calibration, including use of appropriate sources; and alarm setpoints, as applicable.

Training on Use of Self-Contained Breathing Apparatus (SCBA)

The inspectors reviewed the training and qualification of personnel required to use SCBAs. The review was against criteria in Exelon Procedure EP-AA-1000, Rev.17. The inspectors reviewed qualification records to determine if control room operators and other emergency response personnel (e.g., radiation protection, chemistry, maintenance, instrumentation and control) were trained and qualified as required. The review included all work shifts.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA2 Identification and Resolution of Problems (71152 - 2 Annual Samples)

.1 Annual Sample: Corrective Actions For Torus Corrosion, IR 256909, IR 470036, IR 471829, IR 474783 and IR 495401 (1 - Sample)

a. Inspection Scope

This inspection focused on the problem identification & resolution (PI&R) aspects of the containment (torus and drywell) inspection activities which have been conducted during previous outages. ASME, Section XI, Subsection IWE and IWL are not being followed at PBAPS. PBAPS follows a licensee generated inspection program that was approved by the NRC via a relief request and SER issued on September 17, 1999. The inspectors performed a detailed review of torus inspection procedures, referenced documents, inspection video tapes, inspection reports; conducted walkdowns in both Unit 2 and Unit 3 torus rooms; and interviewed cognizant engineering and ISI personnel. Additionally, the inspectors reviewed the PBAPS's application of an alternate method of calculating the effect of localized torus pitting on torus structural integrity for the Unit 2 torus and Unit 3 tori that was established in 1991.

The inspectors selected five IRs for detailed review: 256909, 470036, 471829, 474783 and 495401. The IRs dealt with the corrosion which has existed in the PBAPS's Unit 2 and 3 tori internal surfaces since at least 1991.

b. Findings and Observations

No findings of significance were identified.

Observations: Though significant findings were not identified, the inspectors made several observations involving the licensee's application and use of its PI&R associated with issues and evaluations related to the condition and integrity of the torus.

It is recognized that PBAPS is using a non-ASME inspection program authorized by NRC SER granting relief from ASME code requirements on the drywell and torus of both Unit 2 and Unit 3. However, recognizing that the objective of any inspection program is to monitor and determine the condition (i.e., health) of the underlying component, the following observations are offered as opportunities to improve the performance of the PBAPS's inspection and ultimately provide a more accurate evaluation of the remaining structural integrity margin of the Unit 2 and Unit 3 tori.

These observations have been grouped into three categories as follows: Category 1 includes issues which had not been entered into the PI&R program to determine the significance and appropriate corrective actions; Category 2 includes issues which had not been recognized as potential problems and should have been entered into the PI&R program for evaluation; and Category 3 includes issues which were identified but not entered into the corrective action process in a timely manner.

Category 1 Observations: issues which had not been entered into the corrective action program prior to the inspectors pointing these items out to the engineers.

- A 1990 inspection discovered torus wall pits with depths of 0.128" and 0.083" which exceeded the acceptance criteria of 0.065", that were re-coated but not re-inspected since that time. The issue was not entered into the CAP when discovered to assure recognition and appropriated follow-up inspection. Accordingly, the affected areas were not re-inspected to assure that the condition was effectively addressed. Further, the inspectors observed that the present repair process qualification tests do not confirm the effectiveness of the repair coating to arrest the progress of the existing corrosion. ASME Section XI indicates that such conditions should be periodically inspected to confirm no observed change before determining the condition to be dormant. Subsequently, this matter was identified in IR 500730.
- Based upon the inspector's observation of several video tapes of previous inspections, the inspectors concluded that the selection of sample areas in the torus did not include the worst case pitting areas that were known to the licensee. This issue is identified in IR 500728. Engineers say there are between 17,000 and 23,000 pits in each torus.
- The torus inspections include only limited numbers of pitting indications on the inside of the torus shell that are being inspected and monitored. The videotape records clearly show areas of general corrosion, in addition to pits, which is not recorded or tracked. This issue is identified in IR 500728.
- The pitting inspections have inspected only 1 or 2 square feet of 17,000 square foot wetted surface area inside the torus, which is not a statistically significant sample. This issue is identified in IR 500747.
- There has not been a documented cause determination conducted on the mechanism(s) causing the torus pitting. This issue was identified in IR 500533 for Unit 2 and IR 500534 for Unit 3.

Category 2 Observations: includes issues which were known issues but had not been recognized as potential problems and should have been entered into the corrective action program.

- After the licensee completed torus inspections of Unit 2 and 3 in 2004, it was observed that the measured corrosion rate for the Unit 2 torus was significantly higher than the corrosion rate for Unit 3 torus. However, this matter was not



entered into the corrective action process to understand the conditions that were affecting the torus corrosion rates, including the effectiveness of past corrective actions in this area. Accordingly, actions were not initiated to effectively monitor and evaluate torus corrosion rates, or assess the effectiveness of the current inspection program. Subsequently, this issue was documented in IR 500617.

- The scope, depth, and findings of the licensee's inspection program relative to torus coating monitoring effectiveness could not be determined, i.e., what is inspected, monitored, or measured, since descriptive documentation of the inspection effort is either not maintained or completed. No data sheets or reports were found that describe the inspections. Subsequently, this issue was documented in IRs 500732 and 500740.
- The inspectors noted that the torus internal coating was acknowledged to be a sacrificial coating which has exceeded its recommended service life of 10 years. Notwithstanding, the issue was not documented in the CAP for evaluation. Subsequently, this issue was documented in IR 500751.
- The inspectors determined that the licensee has not completed all of the committed actions it identified in response to Generic Letter (GL) 87-05, relative to the drywell sand bed region. Specifically, the licensee has not tested the operation of the drywell drains and the seal drain line flow alarm operability as was identified in its May 11, 1987 response to the GL. Subsequently, this issue was documented in IR 500040.

Category 3 Observations: involves issues which were identified but not entered into the corrective action program in a timely manner.

During this inspection, the inspectors observed several instances where identified conditions were not entered into the CAP for periods of up to 3 days. While the licensee's stated expectations were to promptly enter issues into the CAP within a day of discovery, in several cases, issues were delayed from reporting for two or more days while the condition was apparently being evaluated and analyzed.

- The inspectors conducted walkdowns of the Peach Bottom Unit 2 and Unit 3 torus rooms. During the walkdowns, the inspectors noted that the housekeeping issues existed in both units. While promptly identified, several of the as-found conditions were not documented until several days after discovery. Subsequently, the matters were documented in IR's 499619, 499898, 499992, 508787, 508789, A1573380 and 500539.
- A condition affecting vibration of the Unit 2 HPCI steam line in the torus room was identified by the inspectors on June 13, 2006, but the condition was not documented in IR 500720 until June 15, 2006.

.2 Annual Sample: Generic Letter (GL) 96-05 Implementation (1 Sample)

a. Inspection Scope

This inspection reviewed PBAPS and NRC correspondence on GL 96-05, "Periodic Verification of Design Basis Capability of Safety-Related Motor-Operated Valves," motor operated valve (MOV) procedures, IRs, and MOV information contained in PBAPS's MOV database program (MIDAS) and interviews with the MOV engineer and MOV lead technician. The inspectors completed this review to verify that PBAPS's MOV program met the commitments the licensee made in response to GL 96-05.

b. Findings and Observations

No findings of significance were identified.

Observations: The inspectors noted that in a May 14, 1996, letter to the NRC, PBAPS requested schedule relief of 48 months during the transition to the Joint Owners' Group Program on MOV periodic verification to obtain sufficient trendable test data to validate the extension of high margin, low safety significance MOVs beyond the 5 year maximum periodic verification test (PVT) interval. PBAPS stated that they would perform a detailed technical analysis of MOV performance at the end of the program transition schedule extension. During this inspection, the inspectors found that the referenced detailed technical analysis was not documented. PBAPS documented this observation in the CAP (IR 526064).

The inspectors reviewed Exelon Procedure ER-AA-302-1003, "MOV Margin Analysis and Periodic Verification Test Intervals," and determined it provided detailed guidance on extending PVT intervals past 5 years. The inspectors also reviewed the MOV information contained in the MIDAS database on several MOVs, which were on a 10 year PVT interval. In addition, the inspectors noted that the data from each of the MOVs' PVTs had been reviewed by the MOV engineer and was documented in MIDAS. Based on the above, the inspectors concluded that the licensee was following their program for extending MOV PVT intervals past 5 years.

.3 Review of Items Entered Into the Corrective Action Program

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures, human performance issues or program issues for follow-up. The inspectors performed routine screening of issues entered into PBAPS's CAP. This review was accomplished by selectively reviewing copies of IRs, attending daily screening meetings, and accessing PBAPS's computerized database.

.4 Identification and Resolution of Problems (Radiation Safety) (71121.01, 71121.02, 71121.03)

a. Inspection Scope

The inspectors selectively reviewed self-assessments and audits since the previous inspection to determine if identified problems were entered into the corrective action program for resolution. The inspectors also reviewed audits and self-assessments to determine if identified problems were entered into the corrective action program for resolution. The inspectors also reviewed Issue Reports (IRs) to evaluate PBAPS's threshold for identifying, evaluating, and resolving problems, including identifying and implementing effective corrective actions. The inspectors evaluated the database of IRs for repetitive deficiencies or significant individual deficiencies to determine if self-assessment activities were identifying and addressing the deficiencies. The review included a check of possible repetitive issues such as radiation worker or radiation protection technician errors. The following documents were reviewed:

- Nuclear Oversight Quarterly Report - July 21, 2006
- Nuclear Safety Review Board Summary Report - May 11, 2006
- 2006 Radiation Protection Self-Assessment - Instrumentation (433413) - May 28, 2006
- Focus Area Self-Assessment - Instrumentation (452013-05) - July 11, 2006
- Focused Area Self-Assessments, 451978, 452013, 501876
- Issue Reports (IRs): 483974, 484391, 484625, 485225, 486015, 486959, 479248, 489490, 498106, 485239, 490226, 508798, 5127929, 517369, 517371, 517388, 517501, 517573, 517718, 518141, 534960, 529694

The inspectors selectively reviewed self-assessments and audits since the previous inspection to determine if identified problems were entered into the corrective action program for resolution. The inspectors evaluated the database for repetitive deficiencies or significant individual deficiencies to determine if self-assessment activities were identifying and addressing the deficiencies.

The inspectors reviewed condition reports and action requests to evaluate Exelon's threshold for identifying, evaluating, and resolving problems in this area.

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

b. Findings

No findings of significance were identified.

.5 Inservice Inspection Issue Dispositions (71111.08G)a. Inspection Scope

A sample of ISI related issues was reviewed to verify that PBAPS was identifying the issues at the appropriate threshold and was entering them into the CAP. The inspectors conducted interviews with plant personnel and reviewed IRs and the corresponding engineering evaluations generated from ISI and inspections of the torus inspection. The inspectors verified that deficiencies were being entered into the CAP at an appropriate threshold, and that the evaluations of recordable indications that were accepted for continued service were in accordance with the ASME Code.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153 - 4 Samples).1 Emergency Diesel Generator Building Roof Fire - August 15, 2006 (71153 - 1 Sample)a. Inspection Scope

The inspectors responded to an EDG building roof fire that occurred on August 15, 2006. The inspectors inspected the site of the extinguished fire with the site fire marshal. The inspectors also discussed the fire with operations, engineering and PBAPS management personnel to gain an understanding of the event and to assess their followup actions. The inspectors reviewed operator logs and operators' actions taken in accordance with licensee procedures. Based on the operators' narrative logs, the smoke and a burning odor were detected at the EDG building at approximately 1730 hours. Operations and engineering personnel investigated and identified flames on the roof adjacent to the E-3 EDG exhaust stack at approximately 1746 hours. The logs document that the fire was reported to the control room at 1759 hours. The fire brigade was dispatched at 1806 hours. An UE for a fire not extinguished within less than 15 minutes (emergency action level (EAL) HU6) was declared at 1814 hours. State and local government notifications were completed at 1825 hours. The fire was considered under control at approximately 1835 hours. At 2040 hours, the UE was terminated.

The inspectors also discussed problem identification, causal analysis and corrective actions with operations, engineering, emergency response and regulatory assurance personnel to assess their actions to gather, review, and assess information leading up to and following the fire. The inspectors later reviewed the emergency preparedness event evaluation report to assess adequacy of PBAPS's critique of the event. PBAPS concluded that the time to reach the EAL threshold was 15 minutes and the time to classify the event was 0 minutes. The inspectors concluded that the UE declaration was timely since it was made within 15 minutes of control room notification. The inspectors noted that 13 minutes elapsed between fire identification and control room notification. An IR (530039) was initiated and placed in the CAP to evaluate and correct this issue.

PBAPS's investigation identified that the root cause of the fire was that the roofing configuration at the exhaust was not installed in accordance with the detailed design drawings. The roofing materials were allowed to contact the exhaust piping and were not separated by an air gap and flashing as designed. An IR (520660) was initiated and placed in the CAP and the EDG building roof was returned to design specifications at each of the four EDG exhaust pipe penetrations.

b. Findings

No findings of significance were identified.

.2 Personnel Performance (71153 - 3 Samples)

a. Inspection Scope

The inspectors reviewed selected applicable plant records, corrective action documents and approved procedures while evaluating the performance of operations personnel in response to non-routine evolutions. The inspectors assessed personnel performance to determine what occurred and how the operators responded, and to determine if plant personnel's response was in accordance with plant procedures and training. The following non-routine evolutions were observed or reviewed:

- During operator rounds on August 23, 2006, leakage was observed from the "B" reactor water cleanup (RWCU) pump room. The inspectors reviewed the operators response to a small leak in the "B" RWCU line from the control room. Operators appropriately entered the procedure for a contaminated liquid spill in secondary containment. In parallel, the operators worked to shutdown the "B" RWCU pump and to determine if the leak was isolable. An entry into the "B" RWCU pump room determined the leakage source was between the pump and the discharge valve. The pump was shutdown, the discharge valve was closed and the leak was isolated. The inspectors also reviewed the documentation of the event in the CAP (IR 522869).
- During the evening of September 21, 2006, NDE personnel working on the reactor cavity work platform (RCWP) reported (IR 534509) that a calibration standard that was not tied off to the RCWP where it had been earlier in the day. The calibration standard was fabricated using stainless steel plate and plexiglass that were approximately 8 x 8 inches square. The calibration standard had been tethered with approximately 80 feet of 1/4 inch diameter rope. The calibration standard had been used in the annulus region of the reactor vessel. The material was not found during visual searches of the core, the annulus region and the connected piping. On September 25, a boroscope inspection was performed of the 2 "D" RHR pump and associated piping that had been in service providing shutdown cooling on September 21. The boroscope inspection identified a pieces of the lost material in the 2 "D" RHR pump and a downstream valve. PBAPS's efforts to retrieve and account for all pieces of calibrations standard and its tether were ongoing at the end of this inspection period.

- The inspectors reviewed the operators' response to a main steam line low pressure alarm and a half Group 1 isolation signal that occurred on July 9, 2006, as a result of an instrument valve being manipulated without a procedure. The operators verified that steam line pressure was steady with no indication of a pressure transient. Operators also verified reactor power and level were steady and normal. The operators reset the Group 1 isolation signal approximately eight minutes later. PBAPS conducted a Quick Human Performance Investigation of the event (IR 507555).

b. Findings

Introduction: A Green self-revealing non-cited violation of TS 5.4.1.a, "Procedures," occurred when operations personnel inappropriately operated an instrument valve during a pre-job walk down without instructions or authorization. This inappropriate valve manipulation resulted in a half Group 1 primary containment isolation signal.

Description: On July 9, 2006, in preparation for an upcoming surveillance test, a senior reactor operator (SRO) and a non-licensed operator performed a pre-job walk down of instrument valves that would require independent verification of valve position. The walk down was conducted prior to the pre-job brief to identify error precursors with the expectation there would be no manipulation of plant equipment.

Procedure NOM C-7.1, "Procedure Use," requires a procedure to be used for plant equipment manipulations. However, as a demonstration to the non-licensed operator, the SRO operated a main steam pressure switch instrument vent valve slightly in the open direction and back to the closed direction without the use of a procedure or authorization from shift management. Although the instrument line down stream of the vent valve was short and properly capped, the opening of the valve caused the instrument pressure switch to depressurize and resulted in an unexpected signal to one half of the Group 1 isolation logic. A full Group 1 isolation signal would close the MSIVs and cause the reactor to scram.

Analysis: PBAPS's failure to follow procedures is considered a performance deficiency since TS 5.4.1 requires that procedures shall be used for the manipulation of plant equipment. The finding was determined to be more than minor because it is associated with the Initiating Events Cornerstone attribute of human performance and affects the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Inappropriate operation of the instrument valve increased the likelihood of the MSIV's closing. MSIV closure would result in a reactor scram with loss of normal heat removal. Using the Phase 1 SDP worksheets, the finding was determined to be of very low safety significance (Green) because the finding did not contribute to both the likelihood of a reactor scram and the likelihood that mitigation equipment or functions would not be available.

The finding has a cross-cutting aspect in the area of human performance work practices because the operations personnel did not follow procedures when he manipulated a main steam pressure switch instrument vent valve was manipulated without the use of procedures or authorization.

Enforcement: TS 5.4.1.a requires written procedures be established, implemented, and maintained covering the activities specified in RG 1.33, Appendix A. RG 1.33, Appendix A, Item 4, requires procedures to be implemented for procedure adherence guidance. Section 3.3 of NOM-C-7.1, "Procedure Use," states that a procedure is required for performance of all plant equipment manipulations with the exception of those tasks considered "simple quick acts." Contrary to the above, on July 9, 2006, a SRO inappropriately operated an instrument vent valve during a pre-job walk down without procedures which resulted in a half Group 1 isolation signal. Because this failure to implement procedures is of very low safety significance and has been entered into the CAP (IR 507555), this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000277&278/2006004-01 Failure to Implement Procedures by Performing Equipment Manipulations Without Instructions.**

#### 4OA5 Other Activities

##### .1 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

###### a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment of PBAPS conducted in February 2006. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

###### b. Findings

No findings of significance were identified.

##### .2 INPO Maintenance and Technical Training Accreditation Evaluation Report Review

###### a. Inspection Scope

The inspectors reviewed the final report for the INPO accreditation review of the PBAPS maintenance and technical training programs was of PBAPS conducted in April 2006. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

###### b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

On October 31, 2006, the resident inspectors presented the inspection results to Mr. J. Grimes and other PBAPS staff, who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure



**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Exelon Generation Company personnel

R. Braun, Site Vice President  
J. Grimes, Plant Manager  
N. Alexakos, Manager, Engineering-Programs  
J. Armstrong, Regulatory Assurance Manager  
C. Behrend, Engineering Director  
C. Hardee, Radiological Engineering Manager  
J. Hunter, Operations Training Manager  
C. Jordan, Chemistry Manager  
D. Lewis, Operations Director  
M. Lyate, Radiation Support Manager  
G. Stathes, Maintenance Director  
S. Taylor, Manager, Radiation Protection  
A. Wasong, Training Director

NRC personnel

J. Trapp, Branch Chief, DRP, Branch 4

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

Opened and Closed

05000277, 278/2006004-01	NCV	Failure to Implement Procedures by Performing Equipment Manipulations Without Instructions (Section 40A3)
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Closed

None.

Discussed

None.

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather**

#### Corrective Action Program (CAP) Documents/Issue Reports

IR 509917, "PJM Entered Max. Emergency Gen. Alert Without Notification"

IR 510651, "Main Stack Flow Indications Failed Downscale"

IR 510657, "Main Stack Rad Monitors are Inoperable (No Process Flow)"

IR 510694, "RT-O-052-201-2 Not Performed As Scheduled"

IR 510617, "High Temperature in SBO Switchgear Building"

### **Section 1R04: Equipment Alignment**

#### Procedures

SO 54.1.A, Rev 2, "4160 Volt Emergency Aux Switchgear System Normal Operations"

SO 54.1.A COL, Rev 1, "4160 Volt Emergency Aux Switchgear"

ST-O-054-950-2, Rev 16, "Offsite and Onsite Electrical Power Breaker Alignment and Power Availability Check"

ST-O-033-500-2, Rev. 4, "ESW/ECW Valves Remote Position Indication Verification"

ST-O-033-505-2, Rev. 3, "ESW Valve Position Verification Test"

ST-O-010-355-2, Rev. 3, "RHR Loop B Valve Position and Filled and Vented Verification"

SO 33.1.A-2 COL, Rev 18, "Emergency Service Water System (Unit 2 and Common)"

SO 33.8.A, Rev 2, "Emergency Service Water System routine Inspection While in Standby Condition"

SO 33.2.A, Rev 2, "Emergency Service Water System Shutdown"

SO 33.1.A, Rev 2, "Emergency Service Water System Setup for Normal Standby Operation"

SO 33.8.B, Rev 1, "Emergency Service Water System Routine Inspection While System is in Operation"

SO 52A.1.A-1 COL, Rev 11, "E1 Diesel Generator Normal Standby"

SO 52A.1.A-2 COL, Rev 12, "E2 Diesel Generator Normal Standby"

SO 52A.1.A-4 COL, Rev 13, "E4 Diesel Generator Normal Standby"

SO 10.1.A-2A COL, Rev 18, "Residual Heat Removal System Set Up for Automatic Operation"

SO 32.1.A-2 COL, Rev 10, "High Pressure Service Water System"

#### Drawings

E-8, Rev 16, "Single Line Meter & Relay Diagram Standby Diesel Gens & 4160 Volt Emer. Power System, Unit No 2."

E-12, Rev 11, "Single Line Meter & Relay Diagram Standby Diesel Gens & 4160 Volt Emer. Power System, Unit No 3."

M-77, Sheet 2, Rev 37, "Diesel Generator Auxiliary Systems (Air Coolant and Jacket Coolant Systems)"

M-377, Sheet 3, Rev 37, "Diesel Generator Auxiliary Systems (Lube Oil System)"

M-377, Sheet 4, Rev 40, "Diesel Generator Auxiliary Systems (Diesel Fuel Oil System)"

M-315, Sheet 1, Rev 65, "Emergency Service Water and High Pressure Service Water Systems"

M-315, Sheet 4, Rev 53, "Emergency Service Water and High Pressure Service Water Systems"

Drawing 6280-E-8, Rev 16, "Standby Diesel Gens & 4160 Volt Emer. Power System, Unit No 2"

Drawing 6280-M-315, Rev 65, "Emergency Service Water And High Pressure Service Water Systems"

Drawing 6280-M-361, Rev 67, "Residual Heat Removal System"

#### Corrective Action Program Documents

IR 398636, "Unit 2 C RHR HX Leaking to HPSW"

\*IR 537753, NRC Inspector Identified a Potential Abnormal Valve Position

\*IR 537642, MO-2-10-089C Handwheel Not Connected

\* Identified as a result of this inspection

#### Other Documents

Quarterly System Health Report, 4 kV System, Second Quarter 2006

UFSAR, Rev 19, Section 8.4, "Auxiliary Power Systems"

UFSAR, Rev 19, Section 10.9, "Emergency Service Water System"

UFSAR, Rev 15, Section 8.5, "Standby AC Power Supply and Distribution"

2Q2006 Plant Health Committee Report, June 2006

### **Section 1R05: Fire Protection**

#### Procedures

OP-AA-201-009, Rev 5, "Control of Transient Combustible Material"

PF-23, Rev 1, "Prefire Strategy Plan North Isolation Valve Room Unit 2 Reactor Bldg 135' El. Fire Zone 23"

PF-3, Rev 3, "Prefire Strategy Plan 2B & 2D RHR Pp and HX Rm RB2 91'6" and 116' El. Fire Zone 3"

PF-5C, Rev 2, "Prefire Strategy Plan Unit 2 Torus Room RB2- 91'6" El. Fire Zone 5C"

PF-5J, Rev 2, "Prefire Strategy Plan/ Fire Zone 5J U/2 Rx Bldg 165' El."

PF-5K, Rev 3, "Prefire Strategy Plan U/2 Reactor Bldg 195' El. Fire Zone 5K"

PF-60, Rev 1, "Prefire Strategy Plan Unit 2 Reactor Bldg RCIC Room 88' El. Fire Zone 60"

PF-59, Rev 2, "Prefire Strategy Plan Unit 2 Rx Bldg HPCI Room 88' El. Fire Zone 59"

PF-19, Rev 1, "Prefire Strategy Plan South Isolation Valve Room Unit 2 Reactor Bldg 135' El. Fire Zone 19"

PF-1, Rev 2, "Prefire Strategy Plan 2A & 2C RHR Pp and HX Rm RB2- 91'6" and 116' El. Fire Zone 1"

### **Section 1R06: Flood Protection Measures**

#### Procedures

RT-W-020-930-2, Rev 1, "Survey for Floor Barriers in Reactor Building Drainage System"

RT-W-020-930-3, Rev 2, "Survey for Floor Barriers in Reactor Building Drainage System"

RT-W-045-980-2, Rev 4, "Water Tight Door Survey"

Drawings

M-518, Rev 12, "Plumbing and Drainage Reactor Building Unit No. 2 Plan at El 91' 6" "

CAP Documents/Issue Reports

IR 519312, "Unable to generate component label"  
 IR 515796, "Floor drain conditions not met for RT-W-20A-960-3"  
 IR 534784, \*Caulk Missing/Deteriorated at B&D Core Spray 116' Floor Plugs"

Other Documents

Peach Bottom Response to IN 83-44, "Potential Damage to Redundant Safety Equipment as a Result of Backflow Through the Equipment and Floor Drain System"  
 DBD No. P-T-09, Rev 8, "Internal Hazards"

**Section 1R07: Heat Sink Performance**

Calculations

PM-0575, Verify sufficient heat removal capacity for loss of normal heat sink, Rev 1  
 PM-0589, RHR Heat Exchanger Performance Evaluation, Rev 4  
 PM-0678, Performance Curves for Emergency Diesel Generator Heat Exchangers, Rev 0  
 PM-0788, Evaluation of service/cooling water systems for power rerate, Rev 001B  
 PM-0957, Calculation HPCI/RCIC room temperature profiles, Rev 1  
 PM-1042, Determination of diesel operability with cross-flow, Rev 2

Test Results

RT-X-010-661-3, 2A RHR Heat Exchanger Performance Calculation Test, Dated 11/23/05  
 RT-X-010-661-3, 2B RHR Heat Exchanger Performance Calculation Test, Dated 11/27/04  
 RT-X-010-661-3, 2C RHR Heat Exchanger Performance Calculation Test, Dated 2/22/05  
 RT-X-010-661-3, 2D RHR Heat Exchanger Performance Calculation Test, Dated 3/2/05  
 RT-X-010-661-3, 3A RHR Heat Exchanger Performance Calculation Test, Dated 1/10/06  
 RT-X-010-661-3, 3B RHR Heat Exchanger Performance Calculation Test, Dated 2/3/06  
 RT-X-010-661-3, 3C RHR Heat Exchanger Performance Calculation Test, Dated 1/10/06  
 RT-X-010-661-3, 3D RHR Heat Exchanger Performance Calculation Test, Dated 2/3/06

Work Orders

R0008905	R0904372	R0917833	R0934260
R0050429	R0904373	R0918106	R0934261
R0828958	R0904374	R0918109	R0974609
R0830377	R0915399	R0934255	

CAP Documents/Issue Reports

00240152	00390475	00494776	00514200*
00243553	00449561	00504774	00514203*
00263056	00453494	00505115	00514205*
00311735	00453838	00513000	00514212*
00314602	00480252	00513899*	00514214*
00383790	00484413	00514000*	

\*Identified as a result of this inspection

System Health Reports

Emergency Diesel Generators, 2nd Quarter 2006  
Generic Letter 89-13 Key Performance Indicators, 2nd Quarter 2006  
Generic Letter 89-13 Program, 2nd Quarter 2006  
High Pressure Coolant Injection, 2nd Quarter 2006  
Residual Heat Removal, 2nd Quarter 2006  
Service Water/SW Bay, 2nd Quarter 2006

Drawings

M-283, Diesel Generator Building Piping - Plan and Section, Rev 17  
M-315 Sheet 1, Emergency Service Water/High Pressure Service Water Systems, Rev 65  
M-315 Sheet 2, Emergency Service Water/High Pressure Service Water Systems, Rev 55  
M-315 Sheet 3, Emergency Service Water/High Pressure Service Water Systems, Rev 52  
M-330, Emergency Cooling System, Rev 35

Procedures and Administrative Procedures

ER-AA-335-1006, Heat Exchanger Electromagnetic Testing Methodology, Rev 1  
ER-AA-335-1007, Main Condenser NDE Test Program Guidelines, Rev 2  
ER-AA-340, GL 89-13 Program Implementing Procedure, Rev 3  
ER-AA-340-1001, GL 89-13 Program Implementation Instructional Guide, Rev 5  
ER-AA-340-1002, Service Water Heat Exchanger and Component Inspection Guide, Rev 3  
ER-AA-340-1003, GL 89-13 Program Performance Indicators, Rev 1  
ER-AA-340-2000, Balance of Plant Heat Exchanger Inspection, Testing, and Maintenance Guide, Rev 2

Miscellaneous

A0137845, Evaluate EDG HX Tube Plugging Limits, Rev 0  
E-5-168, Emergency Diesel Generators Vendor Tech Manual, Rev 13  
ECR-PB-00-01129-002, EDG Cross Flow Condition, Rev 0  
ECR-PB-97-01831-000, Emergency Cooling Tower Reservoir Walls, Rev 0  
PECO Letter, D. Helwig to NRC, dated 1/29/1990, Response to GL 89-13  
PECO Letter, G. Beck to NRC, dated 1/9/1991, Revision to response to GL 89-13  
PECO Letter, G. Beck to NRC, dated 6/1/1992, Implementation status of GL 89-13

**1R08: Inservice Inspection (ISI)**

Issue Reports

IR 527491, "Follow-up Actions for NRC on Torus Pitting Project - P2R16  
IR 531725, "Operability Evaluation - 2 "A" RHR HX Lower Support Issues Operability Evaluation for this Issue"  
IR 531760, "Loose Spacer on CS Spring Support 14GB-H-40"  
IR 532819, "Evaluate Test Results - Determine if Functional Failure and What Additional Actions May be Required"  
IR 532830, "Snubber Leaked Hydraulic Fluid in Snubber Test Trailer"  
\*IR 533278, "Pit Evaluator Handbook Update Required"

IR 533564, "Work Activities Referencing Wrong RWP"  
\*IR 533913, "Detailed Preparation Plans to Improve NDE Performance"

\*IR 533915

\*IR 534293

IR 534450

IR 534899

IR 535296

IR 536051

IR 536196

IR 536289

\* IRs generated as a result of this inspection

#### Calculations

0670-077-001, ABB Impell Calculation: Permissible Defect or Pit Size, Rev. 2

1092-0006-01, MPR Associates, Inc.: PMCap Stress Analysis, Rev. 0

PS-075, Evaluation of the Structural Acceptability of NCRs P-91096 & P-91115, Rev. 0

#### Procedures

GE-MT-100, Procedure for Magnetic Particle Examination, Rev. 6

GE-PDI-UT-1, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds,  
Rev. 5

IOP.02.22, Underwater Coating System Repair Procedure, Rev. 5

IOP.02.28A, Underwater Power Roller Coating Repair Operation and Maintenance Procedure,  
Rev. 1

QP.10.09A, Procedure for Containment Inspection - Visual Examinations (VT-1 and VT-3),  
Rev. 1

SA-AA-114, Confined Space Entry, Rev. 5

#### Reports/Evaluations

AR A1445059, Document the Results of the 2R15 Torus Pit Depth Inspection, 11/16/04

AR A1545908, Analysis of U/2 Torus Shell NDE Report, 9/15/06

MPR-2839, Peach Bottom Units 2 &3, Torus Pitting Inspection Evaluation Criteria, Rev. 0

MPR letter, Possible Causes of Higher Growth Rates in the Peach Bottom Unit 2 Torus, 4/14/05

ABB Impell Report, 03-0670-1360: Structural Analysis of the Peach Bottom Torus Shell and  
Vent System for the Effects of Local and Global Corrosion, 11/20/91

Keeler Long PPG Report, 06-0821: Radiation Tolerance and Design Basis Accident Testing of  
Various Safety-Related Underwater Cured Protective Coating Systems, 8/21/06

Underwater Engineering Services, Inc. Report: Underwater Desludging, Inspection and Coating  
Repair, 5/13/91

Underwater Construction Corporation Report: Unit 2 Immersion Phase Coating Inspection,  
10/29/98

#### Engineering Change Requests

ECR PB 05-00205 000, Install Hydrolaze Ports/Valves to SVDH Piping

#### Welding Documents

PQR A-001

PQR A-002  
PQR 1-50C  
WPS 1-1-GTSM-PWHT

NDE Documents

Ultrasonic Calibration and Examination Record, A RHR Heat Exchanger Lower Shell to Flange Weld

Ultrasonic Examination Summary Sheet, A RHR Heat Exchanger Lower Shell to Flange Weld  
Magnetic Particle Examination Report, A RHR Heat Exchanger Upper Integral Attachment Weld  
Magnetic Particle Examination Summary Sheet, A RHR Heat Exchanger Upper Integral Attachment Weld

Magnetic Particle Examination Data Sheet, Scram Volume Discharge Header Hydrolaze Ports, Welds 7, 13, 23, 27, 31, 39

Certificate of Qualification Records for Magnetic Particle Testing, Ultrasonic Testing, and Visual Testing

Radiography Reader Sheets for MO-2-10-089C, High Pressure Service Water Outlet Valve for C RHR Heat Exchanger

Drawings

200606-M-0001, Suppression Chamber Round PMCap Shop Fabrication Details, Rev. 0, Sheets 1-3

S-51, Containment Vessels - Requirements; Drywell - Plans and Sections, Rev. 11

S-52, Containment Vessels - Requirements; Drywell - Penetrations, Rev. 26

S-54, Suppression Chamber - Units 2 & 3; Plan Sections and Penetrations, Rev. 30

Other Documents

USNRC Letter, Safety Evaluation for Proposed Alternatives to ASME Section XI Requirements for Containment Inservice Inspection, Peach Bottom Atomic Power Station, Units 2 and 3, 9/27/99.

Torus Pit Evaluator Handbook, Rev. 2

Torus Grid Evaluation Data Sheets, 9/25/06

Bio-Dur 560 Product Data Sheet

Bio-Dur 561 Product Data Sheet

**Section 1R11: Licensed Operator Requalification Program**

Procedures

General Plant (GP) Procedure-3, Rev 105, "Normal Plant Shutdown"

GP-3, Rev. 106, Normal Plant Shutdown

Off Normal (ON) Procedure-122, Rev 6, "Mispositioned Control Rod - Procedure"

ON Procedure-121, Rev 8, "Drifting Control Rod"

Other Documents

PSEG-0107R, Rev 9, "Licensed Operator Requalification Training: Plant Shutdown from 40% Reactor Power"

PSEG-0209R, Rev 30, "Licensed Operator Requalification Training: Off Normal Procedures"

**Section 1R12: Maintenance Effectiveness**Administrative Documents and Procedures

Periodic (a)(3) Assessment of Maintenance Rule Program - Peach Bottom Atomic Power  
Station Units 2 and 3, October 2003 through September 2005

Peach Bottom Maintenance Rule Bases Information

ER-AA-310, Rev. 5, Implementation of the Maintenance Rule

ER-AA-310-1001, Rev. 2, Maintenance Rule Scoping

ER-AA-310-1002, Rev. 2, Maintenance Rule - SSC Risk Significance Determination

ER-AA-310-1003, Rev. 3, Maintenance Rule - Performance Criteria Selection

ER-AA-310-1004, Rev. 4, Maintenance Rule - Performance Monitoring

ER-AA-310-1005, Rev. 3, Maintenance Rule - Dispositioning Between a(1) and a(2)

ER-AA-310-1006, Rev. 2, Maintenance Rule - Expert Panel Roles and Responsibilities

ER-AA-310-1007, Rev. 3, Maintenance Rule - Periodic a(3) Assessment

M-510-603, Rev. 4, Walworth and Aloyco Bolted Bonnet Gate Valve Maintenance

CAP Documents/Issue Reports

171854	326191	437883	454724
175881	341918	437889	458879
221323	353566	444179	473522
231582	381063	449561	473526
287491	381079	451432	473528
293642	385454	451441	496816
307815	437007	454957	
318351			

IR 488899, "Aggregate impact concerns on the E2 EDG"

IR 523380, "E-2 vertical drive failure analysis"

Action Requests

A1430548	A1275804
A1456887	A1386420
A1498190	A1464232
A1565569	

Work Orders

C0174742

Peach Bottom Expert Panel Meeting Minutes

June 21, 2004 Meeting Minutes

July 26, 2004 Meeting Minutes

May 25, 2005 Meeting Minutes

June 22, 2005 Meeting Minutes

July 20, 2005 Meeting Minutes

August 24, 2005 Meeting Minutes

November 17, 2005 Meeting Minutes



January 5, 2006 Meeting Minutes  
January 31, 2006 Meeting Minutes  
February 28, 2006 Meeting Minutes  
March 22, 2006 Meeting Minutes  
April 20, 2006 Meeting Minutes  
May 25, 2006 Meeting Minutes  
June 29, 2006 Meeting Minutes

Miscellaneous Documents

PCIV (a)(1) Action Plan  
EDG (a)(1) Action Plan  
HPCI (a)(1) Action Plan  
EDG Plant Health Committee System Presentation, 1Q06  
HPCI Unit 2 Plant Health Committee System Presentation, 2Q06  
HPCI Unit 3 Plant Health Committee System Presentation, 1Q06  
PCIV Unit 2 Plant Health Committee System Presentation, 1Q06  
PCIV Unit 3 Plant Health Committee System Presentation, 1Q06  
RBCCW Unit 2 Plant Health Committee System Presentation, 2Q06  
RBCCW Unit 3 Plant Health Committee System Presentation, 2Q06  
RHR Unit 2 Plant Health Committee System Presentation, 2Q06  
RHR Unit 3 Plant Health Committee System Presentation, 2Q06  
6280—106-81, Rev. 1, Maintenance Manual - Cast Steel Bolted Bonnet Gate, Globe, and Swing Check Valves  
ECR PB 05-00160-006, Install Line Stop Hardware to Replace ESW 513/517 Valves

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Procedures

OP-AA-106-101-1005, Rev 0, "Quarantine of Areas, Equipment, and Records"  
OP-PB-108-101-1002, Rev 3, "Guidelines for Control of Protected Equipment"  
AO-10.3-2, Rev 7, "Residual Heat Removal System to Fuel Pool Cross-Connect Operation"  
WC-AA-101, Rev 12, "On-Line Work Control Process"  
RT-I-010-750-2, Rev 3, "Verification of RHR Loop A Interposing and 480V Equipment Relay Contactor Pickup Voltage"  
OU-PB-104-1001, Rev. 0, "Peach Bottom Atomic Power Station Shutdown Risk Management For Outages"  
OU-AA-103, Rev. 6, "Shutdown Safety Management Program"  
OU-PB-104, Rev. 0, "Peach Bottom Atomic Power Station Shutdown Safety Management Program"  
AO-56E.4-2, Rev. 9, E324-R-B, E324-R-D, E324-D-A, E324-T-B or E324-O-A, "Motor Control Centers or E324 Emergency Load Center Deenergization and Reenergization"  
AR 00534610, Discrepancies in U2 MSIV LLRT Results  
AR 00534622, Multiple MSIV LLRT Failures - P2R16  
AR 00534509, FME Integrity Lost When Cal Standard Was Not Accounted For  
AR 00535329, Disassemble 2D RHR Pump Suction Handvalve For Lost FME  
AR 00535354, NOS ID'D - Refuel Floor FME Drop Log Issues  
AR 00535575, Contingent IR For U2 Shutdown Cooling Piping FME Search

AR 00535437, Plan A Contingency Inspection of the 2D RHR Pump Impeller  
AR 00535446, Plan A Contingency Boroscopic Inspection of 2DE024: RHR Side  
OU-AA-103, "Shutdown Safety Management Program," Rev. 6  
OU-PB-104, "Peach Bottom Atomic Power Station Shutdown Safety Management Program,"  
Rev. 0  
OU-PB-104-1001, "Peach Bottom Atomic Power Station Shutdown Risk Management for  
Outages," Rev. 0  
AR 00534610, Discrepancies in U2 MSIV LLRT Results  
AR 00534622, Multiple MSIV LLRT Failures - P2R16  
OU-AA-103, "Shutdown Safety Management Program," Rev. 6  
OU-PB-104, "Peach Bottom Atomic Power Station Shutdown Safety Management Program,"  
Rev. 0  
OU-PB-104-1001, "Peach Bottom Atomic Power Station Shutdown Risk Management for  
Outages," Rev. 0  
COL 10.1.A-2A, Residual Heat Removal System Setup for Automatic Operation, Rev. 18  
\* AR 00537753, NRC Inspector Identified a Potential Abnormal Valve Position  
\* AR 00537642, MO-2-10-089C Handwheel Not Connected

\* Issued as a result of NRC inspection

#### Drawings

P014-395400-D01, Cast Steel Gate Valves  
6280-M-102B-113-10, Cast Steel Wedge Gate Valve  
6280-M-103-C8-8, 150lb Cast Swing Check Valves

#### Work Orders

WO R0973145  
WO R0780815

#### CAP Documents/Issue Reports

IR 493251, "ECW pump not protected while "B" ESW pump out of service"  
IR 525150, "2BP017 EHC pump failed to start"  
IR 509096, "U2 RHR to fuel pool spool piece flush inadequate walkdown"  
IR 534622, Multiple MSIV LLRT Failures - P2R16  
IR 534509, FME Integrity Lost When Cal Standard Was Not Accounted For  
IR 535329, Disassemble 2D RHR Pump Suction Handvalve For Lost FME  
IR 535354, NOS ID'D - Refuel Floor FME Drop Log Issues  
IR 535575, Contingent IR For U2 Shutdown Cooling Piping FME Search  
IR 535437, Plan A Contingency Inspection of the 2D RHR Pump Impeller  
IR 535446, Plan A Contingency Boroscopic Inspection of 2DE024: RHR Side

#### Other Documents

Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power  
Plants"  
Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at  
Nuclear Power Plants"  
Unit 3 Technical Specification Action Log 06-3-165

**Section 1R15: Operability Evaluations**

Procedures

RT-O-033-600-2, Rev 14, "Flow Test of ESW to ECCS Coolers and Diesel Generator Coolers"  
LS-AA-105, Rev 1, "Operability Determinations"

Drawings

M-366, Rev 47, "P&I Diagram, HPCI Pump - Turbine Details, Lube Oil and Control Systems"

Evaluations

EDG Manual CO<sub>2</sub> System Operability Evaluation

CAP Documents/Issue Reports

IR 513000, "ECCS Room Cooler Heat Transfer Test Review"  
IR 513038, "3DE058 Requires Cleaning (Micro-fouling)"  
IR 516995, "ECCS Room Cooler Heat Transfer Test Review"  
IR 516580, "2D RHR Room cooler (2GE058) Low Flow"  
IR 516854, "ECCS Room Cooler Heat Transfer Test Completion Timeliness LTA"  
IR 515725,\* "RHR/Core Spray Cooler Evals not up to Today's Standards"  
IR 513044, "2DE058 Requires Cleaning (Micro-fouling)"  
IR 512256, "3A RHR Room Cooler Had Low Flow"  
IR 508534, "FI-90363D not Indicating Flow, but Indicating Error Message"  
IR 507492, "HPCI Room Cooler Flow During RT-O-033-600-2"  
IR 504843, "U3 HPCI Room Cooler Degraded Flow"  
IR 504774, "PB U2 HPCI & RCIC RM Clr Flows Below Acceptance Criteria"  
IR 497307, "2D RHR Room Cooler 2GE058 Has Low Flow"  
IR 496816, "HPCI Room Cooler Flow Degrading"  
IR 496482, "2D Core Spray Room Cooler Low Flow"  
IR 488166, "2A RHR Room Cooler Has Low Flow"  
IR 487943, "2B RHR Room Cooler Has Low Flow"  
IR 482304, "RCIC Room Cooler Has Low Flow"  
IR 460806, "U3 HPCI Room Cooler Flow Indication Low"  
IR 223913, "Action Tracking - Fire Protection SHIP AP"  
IR 521334,\* "Proposed Op Eval for Auto to Manual Cardox Licensing Concern"  
IR 508881, "U/2 HPCI Turb Thrust Bearing Temp, (W103), Has HI Alarm In"  
IR 468187, "Stem leak at HO-2-23C-4513"  
IR 532761, "Plant Operation with Leak in Class 3 Pipe"  
IR 532363, "2B HPSW Pump Cooling Water Line Leak"  
IR 521334, "Proposed OP Eval for Auto to Manual Cardox Licensing Concern"  
IR 223913, "Complete Design Change for CSR/Compute Room Cardox"

Other Documents

ESW Flow Limits and Computational Methodology  
NFPA 12-2000, "Standard on Carbon Dioxide Extinguishing Systems"  
Letter from PBAPS to USNRC, dated September 26, 3003, "License Amendment Request,  
Change to Fire Protection Program Concerning Carbon Dioxide Fire Suppression  
Systems Actuation"

Letter from PBAPS to USNRC, dated December 8, 2004, "Response to Request for Additional Information"

Letter from USNRC to PBAPS, dated June 24, 2005, "Peach Bottom Atomic Power Station, Units 2 and 3 - Issuance of Amendment RE: Fire Protection Program Changes (TAC NOS. MC0987 AND MC0988)"

Plant Operations Review Committee Meeting Minutes, Number 06-11, July 18, 2006  
CO2 Summary: PORC Summary and Background for Manual CO2 Systems"

Engineering Change Request (ECR) 05-00385, "Convert/Upgrade EDG Cardox System to Manual System"

ECR 03-00071, "Temporary Configuration of Cardox Fire Protection Systems"

AR A1557505

NRC Generic Letter 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping"

### **Section 1R19: Post-Maintenance Testing**

ST-O-014-301-3, Rev 23, "Core Spray Loop A Pump, Valve, Flow, and Cooler Functional and Inservice Test"

ST-O-013-301-2, Rev 29, "RCIC Pump, Valve Flow and Unit Cooler Functional and Inservice Test"

ST-O-013-501-2, Rev 6, "RCIC Valves Remote Position Indication Verification"

RT-O-032-310-3, Rev 9, "High Pressure Service Water Oil Cooler Heat Transfer Capability Test"

IC-C-11-09003, Rev 1, "Accelerometer Calibration Check"

MA-AA-716-100, Rev 6, "Maintenance Alterations Process"

RT-O-052-252-2, Rev 21, "E2 Diesel Generator Inspection Post Maintenance Functional Test"

ST-O-032-501-2, Rev 4, "HPSW Valves Remote Position Indication Verification"

ST-O-032-301-2, Rev 20, "HPSW Pump, Valve and Flow Functional and Inservice Test"

AD-PB-101-1003, Rev 5, "Temporary Changes to Approved Documents and Partial Procedure Use"

### **Work Orders**

R1030528, "Core Spray A Loop PP, Valve, Cool IST"

C0217520, "Repack Valve. Contingent in-body inspection."

C0213927, "Replace Valve Actuator Parts and Perform PMT"

R1007319, "3CP042-DR (08/06)-PM: Clean Screens & Oil Cooler"

R0966590, "RT-O-052-252-2 E-2 D/G Insp Post-Maintenance Functional Test"

C0216868, "MO-2-10-089C: Proactive Valve Replacement"

### **Corrective Action Program Documents**

IR 510598, "Check valve did not close after pump run"

IR 510752, "3C core spray pump IST pump parameters"

IR 506134, "RCIC steam inlet appears to have oil soaked insulation"

Other Documents

AR A1497918  
AR A1493035

**Section 1R20: Refueling and Other Outage Activities**

Procedures

OU-PB-104-1001, Rev. 0, Peach Bottom Atomic Power Station Shutdown Risk Management For Outages  
OU-AA-103, Rev. 6, Shutdown Safety Management Program  
OU-PB-104, Rev. 0, Peach Bottom Atomic Power Station Shutdown Safety Management Program  
M-C-741-301, Rev 21, "Control Rod Blade, FSP and Control Rod Guide Tube Removal and Installation"  
GP-26, Rev 18, "Coordination of HCU, CRB, CRD, DBG, and PIP Work During a Refuel Outage"  
GP-6, Rev 14, "Refueling Operations"  
SO 18.1.A-2, Rev 18, "Operation of Refueling Platform"  
FH-6C, Rev 63, "Core Component Movement- Core Transfers"  
NF-AA-310, Rev 9, "Special Nuclear Material and Core Component Movement"  
NF-PB-310-2000, Rev. 0, Special Nuclear Material and Core Component Movement - Peach Bottom  
NF-AA-310, Rev. 9, Special Nuclear Material and Core Component Movement  
ST-O-054-753-2, Rev 17, "E32 4KV Bus Undervoltage Relays and LOCA LOOP Functional Test"  
AO 10.3-2, Rev. 8, "Residual Heat Removal System to Fuel Pool Cross-Connect Operation"  
ER-AA-600-1043, Rev 3, "Shutdown Risk Management"  
HP-315, Rev 13, "Initial Drywell Entry"  
GP-3, Rev 105, "Normal Plant Shutdown"  
GP-18, Rev. 23, "SCRAM Review Procedure"  
COL GP-18, Rev 40, "SCRAM Review Procedure Check List"  
SO 53.2.A-2, Rev 12, "Transferring Unit 2 Aux Loads From Unit Auxiliary Transformer to Startup Feed Buses"

Corrective Action Program Documents

IR 532259, "Oscillograph"  
IR 531708, "Housekeeping Deficiencies - U/2 Drywell"  
IR 531500, "Unexpected U2 Oscillograph Equipment Trouble Alarm"  
IR 507763, "Risk Management Issues for 2R16"  
IR 509442, "P2R16 - RHR Containment Cooling TSA - Unavailability Time"  
IR 513752, "Defect in PB2 New Fuel Found During Receipt"  
IR 513855, "P2R16 - Containment Cooling Operability Question"  
IR 532996, ""A" OB MSIV Failed LLRT"  
IR 532999, "AO-2-01A-086B Failed Its As Found LLRT"  
IR 533001, "AO-2-01A-086D Failed Its As Found LLRT"  
IR 533058, "Unit 3 Online Risk Condition Reported Incorrectly"

IR 533309, "Torus FME Issues and Recovery Plan"  
IR 533314, "NOS Stop Work on Torus Rigging Task"  
IR 533317, "Discrepancy in Torus FME Log"  
IR 533343, "PB Not Meeting Expectations For The Control Of FMEA 1 Zones"  
IR 533389, "Concerns with Torus FME Area and Controls"  
IR 534423, "2B Core Spray Suction Piping Found to Have Green Duct Tape"  
IR 534435, "NOS ID: FME Performance Escalation"  
IR 534509, "FME Integrity Lost When Cal Standard Was Not Unaccounted"

Other Documents

P2R16 Shutdown Safety Status

**Section 1R22: Surveillance Testing**

Procedures

SI3F-13-84-XXCQ, Rev 17, "Calibration Check of RCIC Steam Line High Flow Instrument DPIS 3-13-84"  
SI3F-13-83-XXCQ, Rev 20, "Calibration Check of RCIC Steam Line High Flow Instrument DPIS 3-13-83"  
ST-O-032-301-3, Rev 22, "HPSW Pump, Valve and Flow Functional and Inservice Test"  
RT-O-032-310-3, Rev 9, High Pressure Service Water Oil Cooler Heat Transfer Capability Test"  
ST-O-013-301-3, Rev 27, RCIC Pump, Valve, Flow and Unit Cooler Functional and In-Service Test"  
RT-O-052-251-2, Rev 14, "E1 Diesel Generator Inspection Post Maintenance Functional Test"  
RT-O-052-252-2, Rev 21, "E2 Diesel Generator Inspection Post Maintenance Functional Test"  
ST-O-052-124-2, Rev 4, "E4 Diesel Generator RHR Pump Reject Test"  
ST-O-052-201-2, Rev 18, "E1 Diesel Generator Slow Start and Full Load Test"  
ST-O-052-203-2, Rev 18, "E3 Diesel Generator Slow Start and Full Load Test"  
ST-O-052-414-2, Rev 20, "E4 Diesel Generator Fast Start and Full Load Test"  
ST-O-052-701-2, Rev 13, "E1 Diesel Generator 24 Hour Endurance Test"  
ST-O-052-702-2, Rev 14, "E2 Diesel Generator 24 Hour Endurance Test"  
ST-O-052-703-2, Rev 13, "E3 Diesel Generator 24 Hour Endurance Test"  
ST-O-052-704-2, Rev 13, "E4 Diesel Generator 24 Hour Endurance Test"

Work Orders

R0921341, "ST-O-052-702-2 E-2 D/G 24 Hour Endurance Test"  
R0976135, "St/LLRT Core Spray A" Loop"

Corrective Action Program Documents

IR 508539, "UFSAR Section 8.5.6 Inconsistency"  
IR 506146, "NRC request for supporting information on EDG testing limits"

Other Documents

Regulatory Guide 1.9, Rev. 3, Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants  
NRC Administrative Letter 98-10, Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety

Letter dated may 20, 2005, Peach Bottom Atomic Power Station, Units 2 and 3 - Issuance of Amendment Re: Diesel Generator Surveillances (TAC Nos. Mc3593 and MC 3594)

Letter dated June 7, 1995, Peach Bottom Atomic Power Station, Units 2 and 3, Supplement 10 to TSCR 93-16 Conversion to Improved Technical Specifications

Applicability of Regulatory Guide 1.9 By-passing of Diesel Generator Protective Trips

Safety Guide 9, Selection of Diesel Generator Set Capacity for Standby Power Supplies

Letter dated May 31, 1995, Summary of April 19-20, 1995, Meeting Between NRC and PECO Regarding Improved Technical Specifications

Safety Evaluation by the Office of Nuclear Reactor Regulation Related to Amendment No. 210 to Facility Operating License no. DPR-44 and Amendment No. 214 to Facility Operating License No. DPR-56 PECO Energy Company, Peach Bottom Atomic Power Station, Units 2 and 3, Docket Nos. 50-277 and 50-278

Letter dated August 30, 1995, Issuance of Improved Technical Specifications, Peach Bottom Atomic Power Station, Unit Nos. 2 and 3 (TAC Nos. M90746 and M90747)

Letter dated August 30, 1995, Issuance of Improved Technical Specifications, Peach Bottom Atomic Power Station, Unit Nos. 2 and 3

Letter dated March 25, 1993, Emergency Diesel Generator Surveillance Requirements, Peach Bottom Atomic Power Station, Units 2 and 3

Letter dated July 6, 1992, Emergency Diesel Generator Surveillance Requirements, Peach Bottom Atomic Power Station (PBAPS), Unit Nos. 2 and 3

FSAR, Supplement #1

UFSAR Section 8.5, Rev 15, "Standby AC Power Supply and Distribution"

PBAPS Table 8.5.2, Summary of Loading Diesel-Generators & Emergency Buses Safeguard & Selected Non-Safeguard Loads

PBAPS 8.5, Revision 15, "Standby AC Power Supply and Distribution"

Staff Evaluation of the Issue for Resolution (IFR): 2006-020, "EDG Capacity, Tech. Spec., and/or Testing Issues at Dresden, Indian Point, and Peach Bottom

Letter dated April 15, 1991, Peach Bottom Atomic Power Station, Unit 2 and 3 Response to March 12, 1991, Meeting on Emergency Diesel Generators

Letter dated March 25, 1993, Emergency Diesel Generator Surveillance Requirements, Peach Bottom Atomic Power Station, Units 2 and 3 (TAC NOS. M82778 and M82779)

Letter dated March 13, 1995, Summary of March 6, 1995, Meeting Between NRC and PECO Regarding Improved Technical Specifications (TAC NOS. M90746 and M90747)

Dresden Response to EDG TIA

Peach Bottom Atomic Power Station EDG Loading NRC Correspondence History

Request for Evaluation, "EDG Capacity, Tech. Spec., and/or Testing Issues at Dresden, Indian Point, and Peach Bottom." dated July 7, 2006

Letter dated July 7, 1995, Peach Bottom Atomic Power Station, Units 2 and 3 Revision B to TSCR 93-16 Conversion to Improved Technical Specifications

Letter dated June 15, 2004, License Amendment Request Increase Emergency Diesel Generator Load During Technical Specification Surveillance Testing; SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.14.b, and SR 3.8.1.15

Letter dated April 15, 1991, Peach Bottom Atomic Power Station, Units 2 and 3 Response to March 12, 1991, Meeting on Emergency Diesel Generators

Letter dated June 4, 1991, Peach bottom Atomic Power Station, Units 2 and 3 Additional Response to March 12, 1991, Meeting on Emergency Diesel Generators

Letter dated June 12, 1992, Peach Bottom Atomic Power Station, Units 2 and 3 Additional Response to March 12, 1991, Meeting on Emergency Diesel Generators

Letter dated January 12, 2005, License Amendment Request Increase Emergency Diesel Generator Load During Technical Specification Surveillance Testing: SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.14.b, and SR 3.8.1.15  
AR A0784276, Load Rejection SRS

**Section 1R23: Temporary Plant Modifications**

A1545942, U2 Torus Remediation Work (TCP 06-00004) Torus Cleanup  
A1545908, U2 Torus Cleaning & Coating Inspection & ISI Exams  
A1391378, Initiate and Track Transient Combustible Permits per OP-AA-201-009  
C0216874, 20s019; (Outage) Torus Cleaning/ISI/Coating Exams  
C0216981, 2R16 (Pre/Post) Outage ISI Torus Dive Inspection  
HU-AA-1212, Rev 1, Technical Task Risk/Rigor Assessment, Pre-job Brief, Independent Third Party review, Post-job brief  
A-C-134, Rev. 4, Control of Hazard Barriers  
RW-PB-101, Rev. 3, Operation of the Mechanical Filtration System in the Dewatering Building to Process Liquid Waste

**Section 2OS: Occupational Radiation Safety**

Procedures

ST-C-095-868, Unit 2, Unit 3, Drywell High Range Monitor Calibration, Rev. 6  
SI2R-63G-8103, 9103 (D1C2, C1C2, B1C, A1C2), Electronic Calibration/Functional Check of Drywell High Range Monitor  
IC-11-00376, Electric Calibration of General Electric Area Radiation Monitors, Rev. 4  
RP-AA-220, Bioassay Program, Rev. 3  
RP-AA-300, Radiological Survey Program, Rev. 1  
RP-AA-301, Radiological Air Sampling Program, Rev. 1  
RP-PB-301-1001, Radiological Air Sampling Documentation, Rev. 2  
RP-PB-742, Calibration of Eberline Model PM-7 Personnel Monitor, Rev. 0  
RP-PB-744, Calibration of the APTEC PMW Monitor, Rev. 0  
RT-H-099-930-2, Evaluation of Plant Radioisotopes and Energies, Rev. 2  
CH-156.1, Energy and Efficiency Calibration of Canberra Gamma Spectrometer Using the GENIE 2000 Computer Programs, Rev. 1  
CH-157.1, Energy and Efficiency Calibration of Canberra Gamma Spectrometer Using the GENIE-ESP Computer Programs, Rev. 0  
RT-C-095-858-2, Germanium Detector Calibration, Rev. 1  
CH-C-010, Chemistry Quality Assurance program, Rev. 4  
Ch-600-7, Determination of Gamma Activity with the Canberra Gamma Spectrometers, Rev. 7  
HP-C-403, Instrument Quality Checks, Rev. 1

**Section 4OA2: Problem Identification and Resolution**

Issue Reports and Non-Conformance Reports (NCRs)

\*500617, Unit 2 Torus Corrosion Rate Greater than Unit 3 Corrosion Rate  
178636, VT-3 & Coating Exam -Torus Submerged Areas Not Completed  
256885, Unable to Perform VT-3 Inspection of Submerged Area of Unit 2 Torus



499992, Unit 3 Torus Room Housekeeping Needs Improvement  
499898, Water on Unit 2 and Unit 3 Torus Room Floor  
500015, 2 PBAPS Engineers Exceeded Dose Estimate  
500536, 10 CFR 50.59 Not Available for ABB/Impell Report  
188632, ISI/CISI Program Oversight Assessment Items from 7-23-03  
256909, One Pit on Torus Shell Near Engineering Established Design Valve  
500040, Recurring Test Not Scheduled per Original Commitment  
499195, Capture NRC Torus Questions from 2Q06 PI&R  
499619, Unit 2 Torus Room Housekeeping Needs Improvement  
500514, Coating on the Exterior of the Unit 3 Torus is Degraded  
500531, Structural Support 3-10-HB-S-6  
500533, Cause of Unit 2 Torus Pitting Corrosion Not Identified  
471829, Contingency Torus Repair/Mod Plan Not Developed  
495401, Capture P2R16 NRC Resident Torus Inspection Questions  
499898, Water on Unit 2 & Unit 3 Torus Room Floor  
500510, Tube Tray for RTV-3-10-122B is Disconnected from Support  
500512, Coating on the Exterior of the Unit 2 Torus is Degraded  
500534, Cause of Unit 3 Torus Pitting Corrosion Not Identified  
470036, P2R16 Torus Pitting Action Items  
474783, Document Questions from NRC on Torus Inspections  
474922, 2R12 /Torus Inspection Report Not Available  
500669, NRC Resident Requires Unit 3 Torus Inspection Scope Clarification  
500617, Unit 2 Torus Corrosion Rate Greater Than Unit 3 Corrosion Rate  
507732, ABB/Impell Torus Pitting Report not in Document Control System  
500740, Does Coating Program Inspect All of the Torus Interior Surfaces  
500728, Torus Pit Examination Sample May Be Non-Conservative  
500747, Torus Pit Inspect Area is not Statistically Representative  
500732, The Torus Pit/Corrosion Inspection Scope is Narrowly Focused  
500751, Torus Coating Service Life Exceeded - Not Entered in CAP  
500539, Unit 2 HPCI Steam Line is Vibrating  
508787, Unit 2 Torus Room Scaffold Deficiencies  
508789, Ladder Found Wired to RHR Piping in Unit 3 Torus Room  
NCR P-91911, Inspection of Underwater Region of the Unit 3 Torus (Proper Identified 1161 pits greater than 0.45 inches. All pits greater than 0.45 inches were coating repaired. Reinspect torus coating during 1993 refuel outage and develop plan for coating repair or recoating.)  
359671  
370536  
371380  
450969  
469564  
469568  
485680  
485694  
486515  
488331  
495197  
\*526064

NCR P-91096  
NCR P-91115

\* Indicates this was generated as a result of this inspection.

Correspondence

PECO Nuclear letter Peach Bottom Atomic Power Station, Units 2 and 3, Limerick Generating Station, Units 1 and 2 Response to Generic Letter 96-05, "Periodic Verification of Design Bases Capability of Safety-Related Motor-Operated Valves," 11/15/96  
PECO Nuclear letter Peach Bottom Atomic Power Station, Units 2 and 3, Limerick Generating Station, Units 1 and 2 Response to Generic Letter 96-05, "Periodic Verification of Design Bases Capability of Safety-Related Motor-Operated Valves," 3/14/97  
USNRC letter Safety Evaluation on Joint Owners' Group Program on Periodic Verification of Motor-Operated Valves Described in Topical Report MPR-1807 (Revision 2), 10/30/97  
PECO Nuclear letter Peach Bottom Atomic Power Station, Units 2 and 3, Limerick Generating Station, Units 1 and 2 Response to Generic Letter 96-05, "Periodic Verification of Design Bases Capability of Safety-Related Motor-Operated Valves," 5/14/98  
USNRC Letter Request for Additional Information Regarding Generic Letter 96-05 Program at Peach Bottom Atomic Power Station, Units 2 and 3 (TAC NOS M97083 and M97084), 4/20/99  
PECO Nuclear letter Peach Bottom Atomic Power Station, Units 2 and 3, Limerick Generating Station, Units 1 and 2 Response to Requests for Additional Information (RAI) Regarding Generic Letter 96-05, "Periodic Verification of Design Bases Capability of Safety-Related Motor-Operated Valves," 7/2/99  
USNRC Letter Peach Bottom Atomic Power Station, Units 2 and 3 Generic Letter 96-05, "Periodic Verification of Design Bases Capability of Safety-Related Motor-Operated Valves," (TAC NOS M97083 and M97084), 11/16/00

Miscellaneous

ERIN Engineering, Generic Letter 89-10 Test Program Completion Report, Rev. 1  
C0216868  
A1493035

Procedures

LS-AA-125, Revision 8; Corrective Action Program (CAP) Procedure  
ER-PB-310-1010, Revision 3, Attachment 5; Peach Bottom Maintenance Rule Monitoring Program  
ER-AA-330-008, Revision 5; Exelon Service Level I And Safety-Related (Service Level III) Protective Coatings  
CC-AA-205, Revision 3; Control of Undocumented/Unqualified Coatings Inside the Containment  
RP-AA-300, Revision 1; Radiological Survey Program  
ER-AA-302, Motor-Operated Valve Program Engineering Procedure, Rev. 3  
ER-AA-302-1001, MOV Rising Stem Motor Operated Valve Thrust and Torque Sizing and Set-Up Window Determination Methodology, Rev. 4  
ER-AA-302-1003, MOV Margin Analysis and Periodic Test Verification Intervals, Rev. 4  
ER-AA-302-1006, Generic Letter 96-05 Program Motor-Operated Valve Maintenance and Test Guidelines, Rev. 3

Examination Reports

Peach Bottom Unit 2, Underwater Desludging, Inspection And Coating Repair, Final Engineering Report, 5/13/91, Underwater Engineering Services, Inc.

Engineering Reports

PECO Specification 6280-C-2, Revision 0, 1/11/67; Reactor Drywell And Suppression Chamber Containment Vessels For The Peach Bottom Atomic Power Station - Units 2 And 3  
PECO Specification 6280-C-2, Revision 2, 2/15/73; Reactor Drywell And Suppression Chamber Containment Vessels For The Peach Bottom Atomic Power Station - Units 2 And 3  
NE-069, Revision 0, 6/12/91; Specification For The Structural Analysis Of The Torus Shell For The Effects Of Local And Global Corrosion  
NE-047, Revision 5, 8/13/03; Specification For Torus Underwater Inspection And Repair At Peach Bottom Atomic Power Station  
MPR-2839, Revision 0, 2/06; Peach Bottom Units 2 & 3, Torus Pitting Inspection Evaluation Criteria

Completed Tests or Surveillances

Peach Bottom Unit 2, ILRT, Final Test Report, October 2000  
ST-J-07A-600-3, Integrated Leak Rate Test, Peach Bottom U3, Revision 4, completed 10/14/05

Drawings/Isometrics

Bechtel Dwg S-54, Revision 30, 1/28/00; Containment Vessels Requirement Suppression Chamber - Units 2 & 3, Plan Sections and Penetrations  
Bechtel Dwg S-51, Revision 11, 11/22/96; Unit Nos. 2 & 3 Containment Vessels Requirements, Drywell - Plans and Sections  
Bechtel Dwg S-52, Revision 26, 1/14/97; Unit Nos. 2 & 3 Containment Vessels Requirements - Drywell - Penetrations

Calculations

ABB/Impell Report, 03-0670-1360, Revision 0, 11/20/91; Structural Analysis of the Peach Bottom Torus Shell and Vent System For The Effects of Local and Global Corrosion  
ABB/Impell Calculation 0670-077-001, Structural Analysis of the Torus Shell for the Effects of Local and Global Corrosion at PBAPS, Revision 2, 11/15/91  
PS-041, Revision 0, 6/27/90; Determination of the Minimum Required Plate Thickness of the Torus Shell to Support the Inspection Being Performed by Mod. 5241  
PS-064, Revision 0, 11/90; Maximum allowable Pit Depth of Lower Shell of Torus  
Bechtel Calculation PBM-023, 11/29/80; Peach Bottom Atomic Power Station Unit 2 and Unit 3, Buckling Evaluation of Torus  
PM-1039, Revision 1, 4/16/02; Unit 3 Primary Containment Monitoring Program  
PS-075, Revision 0, 2/26/91; Evaluation of the Structural Acceptability of NCR's P-91096 and P-91115

Miscellaneous Documents

Peach Bottom Atomic Power Station, UFSAR, Section 5.2, Primary Containment  
ASME Code Case -284  
ASME Code Case -284-1  
Generic Letter 87-05, 3/12/87; Request For Additional Information - Assessment Of Licensee Measures To Mitigate And/Or Identify Potential Degradation Of Mark I Drywells

Attachment

Videotape, 10/28/90; Peach Bottom Us Torus  
Videotape, 2/91; Peach Bottom U2 Torus Collection of Coating Inspections As Found And Final Inspections, Bay Scans After Repairs  
Videotape, November 1991; Peach Bottom Atomic Power Station, U3 Torus, Scan of Rx In Bays 8, 9, 10, 11, 12, 16, 15, 14, 13  
Videotape, 12/20/90; Peach Bottom Atomic Generating Station, U3 Torus Underwater Inspection Summary Of Pressure Boundary  
SDLC-U-VC-00003; Document No. IOP-02.23, Revision 3, 9/9/96; Underwater Coatings Design Basis Accident (DBA) Testing Procedures  
NUREG-1769; Safety Evaluation Report Related To The License Renewal of Peach Bottom Atomic Power Station, Unit Nos. 2 and 3; Docket Nos. 50-277 and 50-278, 3/2003  
PECO Ltr. To NRC dated 5/11/87; Docket Nos. 50-277 and 50-278; Peach Bottom Atomic Power Station Generic Letter 87-05 dated March 12, 1987, Degradation of Mark I Drywells.

### **Section 40A3: Event Followup**

#### Procedures

SE-9, Rev 7, "Radioactive Liquid Spill - Procedure"  
SO 12.6.B-3, Rev 4, Reactor Water Cleanup System Recherche Pump Swapping"  
SI3P-2-134-B2CQ, Rev 10, "Calibration Check of Main Steam Line Low Pressure Instruments PS 3-2-134B and PS 3-2-134D"  
NOM-C-7.1, Rev 2, "Nuclear Operations Manual, Section 7.1, Procedure Use"  
HU-AA-104-101, Rev 0, "Procedure Use and Adherence"  
OP-AA-108-101, Rev 3, "Control of Equipment and System Status"  
HU-AA-101, Rev 3, "Human Performance Tools and Verification Practices"  
OP-AA-108-101-1001, Rev 1, "Component Position Determination"  
OP-PB-108-101-1001, Rev 2, "Simple Quick Acts / Transient Acts"  
OP-AA-103-103, Rev 0, "Operation of Plant Equipment"  
OP-AA-201-002, Fire Reports  
Fire Event Report dated August 28, 2006

#### Work Orders

WO C0218478, Repair Roof at Exhaust Stacks

#### Corrective Action Program Documents

AR A1580264, Fire at Roof Exhaust Penetration  
AR A1580315, E-4 Common Mode Failure Inspection - Exhaust Stack at Roof  
AR A1580317, E-1 Common Mode Failure Inspection - Exhaust Stack at Roof  
AR A1580316, E-2 Common Mode Failure Inspection - Exhaust Stack at Roof  
IR 522861, "3BP049 RWCPU Pump Leak"  
IR 522869, "SE-9 Entered for RWCPU Leak"  
IR 507388, "I&C Error causes extended time in ½ group 1 isolation"  
IR 507555, "Valve manip. outside of proc causes ½ grp 1 PCIS isol"  
IR 520322, E-3 EDG Fire at Roof Exhaust Penetration  
IR 520421, E-1 Common Mode Failure Inspection

IR 520423, E-2 Common Mode Failure Inspection  
IR 520427, E-4 Common Mode Failure Inspection  
IR 520549, Fire Fighting Hindered Due to Unresolved Issue  
IR 520660, EDG Roofing Configuration at Exhaust Stack not Per Design  
IR 520706, EOC Inspection of Aux Boiler Exhaust Stack  
IR 52709, EOC Inspection of Diesel Driven Fire Pump Exhaust Stack  
IR 520718, Technical Specification 3.8.1 Action B.4.2 Suitability  
IR 520721, E-3 Restoration Timeliness Opportunities for Improvement  
IR 520722, Critique of Operations Response to E-3 EDG Fire  
IR 520724, Process Supporting Development of Common Cause Evaluation LTA  
IR 520830, E-3 EDG UE Reporting Concerns  
IR 520952, Fire Brigade Critique - NOS Recommends Procedure Enhancement  
IR 521127, Pre-Fire Strategy Plan for Diesel Generator Building Roof  
IR 521135, OPS LTA Response to Indication of a Potential Fire (Smoke)  
IR 521321, ENS Communicator Issues During August 15, 2006, EDG UE  
IR 521796, Radio System Deficiencies Impacting Plant Operations  
IR 521800, Portable Phone System Deficiencies Impact Plant Operations  
IR 523024, Event Notification Worksheet Minor Concerns for UE Report  
IR 530039, Follow up Critique Item From E-3 EDG Fire on August 15, 2006  
IR 533070, Dialogics Unusual Event Scenario Lessons Learned  
IR 530083, OPS Event Response Timeline from the August 15, 2006, E-3 Roof Fire  
IR 533095, Review OP-AA-106-101 for Roles During an E-Plan Event  
IR 533157, DEP Timeliness Review for August 15, 2006, UE Declaration  
IR 534509, FME Integrity Lost When Cal Standard Was Not Unaccounted For  
IR 535329, Disassemble 2 "D" RHR Pump Suction Hand Valve for Lost FME  
IR 535354, NOS ID'd - Refuel Floor FME Drop Log Issues  
IR 535259, Disassemble 2 "D" RHR Pump Discharge Check Valve for Lost FME  
IR 535575, Contingent IR for Unit 2 Shutdown Cooling Piping FME Search  
IR 535437, Plan A Contingency Inspection of the 2 "D" RHR Pump Impeller  
IR 535446, Plan A Contingency Boroscopic Inspection of 2 "D" E024: RHR Side

Other Documents

ECR PB 97-00305000, MOD P00656, Roof Replacement Project - Diesel Generator Building  
PEA-17230, Evaluation of Sealant Material Associated with the August 15, 2006, Roofing Fire  
of the E-3 Emergency Diesel Generator (EDG) Building  
PBAPS Event Summary Report dated August 16, 2006

**LIST OF ACRONYMS**

ADAMS	Agency-wide Documents Access and Management System
ALARA	as low as is reasonably achievable
AR	action request
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CEDE	committed effective dose equivalent
CFR	Code of Federal Regulations
CR	condition report
DBA	design basis accident
DBD	Design Basis Document
EAL	emergency action level
ECCS	emergency core cooling system
ECR	engineering change request
EDG	emergency diesel generator
EHC	electrohydraulic control
ESW	emergency service water
GL	generic letter
HX	heat exchanger
HPCI	high pressure coolant injection
HPSW	high pressure service water
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operation
IPE	Individual Plant Examination
ISI	in-service inspection
IST	inservice test
IR	issue report
LDE	lens dose equivalent
LLRT	local leak rate test
MOV	motor-operated valve
MR	Maintenance Rule
MSIV	main steam isolation valve
NCV	non-cited violation
NDE	non-destruction examination
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
ORAM	outage risk assessment management
PBAPS	Peach Bottom Atomic Power Station
PCIV	primary containment isolation valves
PI	performance indicator
PI&R	problem identification & resolution
PMT	post-maintenance testing
PVT	periodic verification test
RB	reactor building
RBCCW	reactor building closed cooling water
RCA	radiological controlled area

RCIC	reactor core isolation cooling
RCWP	reactor cavity work platform
RFO	Refueling Outage
RG	Regulatory Guide
RHR	residual heat removal
RPV	reactor pressure vessel
RT	radiographic testing
RTP	rated thermal power
RWCU	reactor water cleanup
RWP	radiation work permit
SCBA	self-contained breathing apparatus
SDE	shallow dose equivalent
SDP	significance determination process
SER	safety evaluation report
SO COL	system operator check off list
SRO	senior reactor operator
SSCs	structures, systems, and components
SVDH	scram volume discharge header
TEDE	total effective dose equivalent
TRM	Technical Requirements Manual
TS	Technical Specification
UE	unusual event
UFSAR	Updated Final Safety Analysis Report
WO	work order