



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

November 12, 2009

Mr. Charles G. Pardee  
Senior Vice President, Exelon Generation Company, LLC  
President and Chief Nuclear Officer, Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION - NRC INTEGRATED  
INSPECTION REPORT 05000277/2009004 AND 05000278/2009004

Dear Mr. Pardee:

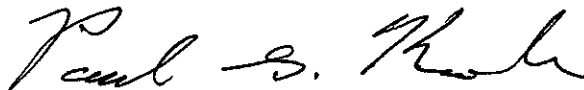
On September 30, 2009, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The enclosed integrated inspection report documents the inspection results, which were discussed on October 23, 2009, with Mr. William Maguire 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.

Based on the results of this inspection, one self-revealing finding of very low safety significance (Green) and one Severity Level IV inspector-identified violation were identified. These findings were determined to involve violations of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. However, because of the very low safety significance and because the findings were entered into your corrective action program (CAP), the NRC is treating the findings as non-cited violations (NCVs), consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any of the NCVs 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, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, U. S. NRC, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at the PBAPS. In addition, if you disagree with the characterization of the cross-cutting aspect of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region 1 and the NRC Senior Resident Inspector at PBAPS. The information you provide will be considered in accordance with Inspection Manual Chapter (IMC) 0305.

In accordance with Title 10 of the Code of Federal Regulations (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,



Paul G. Krohn, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

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

Enclosures: Inspection Report 05000277/2009004 and 05000278/2009004  
w/Attachment: Supplemental Information

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Sincerely,  
/RA/  
Paul G. Krohn, Chief  
Reactor Projects Branch 4  
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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.: 05000277/2009004 and 05000278/2009004

Licensee: Exelon Generation Company, LLC

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

Location: Delta, Pennsylvania

Dates: July 1, 2009 through September 30, 2009

Inspectors: F. Bower, Senior Resident Inspector  
M. Brown, Resident Inspector  
S. Barr, Senior. Emergency Preparedness Inspector  
J. Commiskey, Health Physicist  
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T. O'Hara, Reactor Inspector  
A. Ziedonis, Reactor Inspector

Approved by: Paul G. Krohn, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000277/2009004, 05000278/2009004; 07/01/2009 – 09/30/2009; Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3; Plant Modifications; Follow-up of Events and Notices of Enforcement Discretion.

The report covered a three-month period of inspection by resident inspectors and announced inspections by a senior emergency preparedness inspector, two health physicists, two regional reactor inspectors, and a resident inspector from Susquehanna. One inspector-identified and one self-revealing finding were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using 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. Cross-cutting aspects associated with findings are determined using IMC 0305, "Operating Reactor Assessment Program," dated August 2009. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated August 2006.

### Cornerstone: Mitigating Systems

- Severity Level IV. An inspector-identified, Severity Level IV NCV of 10 CFR 50.59 was identified when PBAPS made temporary alterations to their facility to address a degraded condition without performing a 50.59 review. Specifically, PBAPS installed a jumper that bypassed the trip feature of the Unit 3 'E' wide-range neutron monitoring (WRNM) system instead of using the WRNM bypass switch as is described in their plant's Final Safety Analysis Report (FSAR). Exelon entered this issue into their CAP and the jumper was subsequently removed restoring the original system configuration.

Because this was a violation of 10 CFR 50.59, it was considered a violation that potentially impeded or impacted the regulatory process; therefore, this violation was dispositioned using the traditional enforcement process. This finding was more than minor because there was a reasonable possibility that the change requiring a 10 CFR 50.59 Safety Evaluation (SE) would require NRC review and approval prior to implementation in accordance with 10 CFR 50.59(c)(2). This possibility is based on the likelihood that a second WRNM could be bypassed, with the bypass switch built into the WRNM system, without resulting in a trip of the associated reactor protection system (RPS). This condition would be contrary to the design of the WRNM and RPS, thereby creating the possibility for a malfunction of a structure, system, and component (SSC) important to safety with a different result than any previously evaluated in the FSAR (as updated). Although the SDP is not designed to assess traditional enforcement violations, the NRC assesses the significance of 10 CFR 50.59 violations through the SDP for risk insights. Accordingly, the inspectors evaluated the finding in accordance with IMC 0609, SDP, Attachment 0609.04, Phase 1 – "Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems cornerstone. The issue, associated with the installation of the one jumper, was determined to be of very low safety significance (Green) since the issue was determined to be a qualification issue confirmed not to result in loss of operability of the system.

This violation involved a facility change that likely would have required a license amendment before its implementation. Comparing this item to the examples in NRC Enforcement Policy, Supplement I, "Reactor Operations," this finding is similar to Item

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D.5, "Violations of 10 CFR 50.59 that result in conditions evaluated as having very low safety significance (i.e., Green) by the SDP." This is a Severity Level IV violation. Additionally, this finding was determined to have a crosscutting aspect in the area of Human Performance, Decision Making component, which states the licensee should use conservative assumptions in decision making and adopt a requirement to demonstrate that the proposed action is safe. Specifically, Exelon did not perform a 10 CFR 50.59 safety evaluation or screening when making a temporary alteration to the RPS system which would be installed for the remainder of the operating cycle. (Section 1R18.2) (IMC 0305 Aspect H.1(b))

### **Cornerstone: Barrier Integrity**

- Green. A self-revealing Green NCV was identified for failure to comply with Technical Specification (TS) 5.4.1, "Procedures," which required that procedures be established, implemented, and maintained for the safety grade instrument gas (SGIG) system. Specifically, the SGIG Pressure Building Circuit Outlet Block Valve (HV-0-7C-10) was manipulated without procedure guidance, was out of its normal position, and resulted in the inoperability of certain valves associated with the primary containment and containment atmosphere dilution (CAD) systems for both units.

Based on the above, the inspectors determined that manipulating the SGIG Pressure Building Circuit Outlet Block Valve (HV-0-7C-10) without procedure guidance was a performance deficiency that was reasonably within PBAPS's ability to foresee and prevent. The inspectors concluded that the manipulating HV-0-7C-10 without a procedure was a more than minor finding because it was associated SSC and barrier performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that the containment would protect the public from radionuclide releases caused by accidents or events. Specifically, certain valves associated with the primary containment and containment atmosphere dilution (CAD) systems could not be operated as designed due to this valve being out of its normal position. Traditional enforcement does not apply since there were no actual safety consequences or potential for impacting the NRC's regulatory function, and the finding was not the result of any willful violation of NRC requirements. Accordingly, the inspectors assessed the finding in accordance with IMC 0609, SDP, Attachment 0609.04, Phase 1 – "Initial Screening and Characterization of Findings," Table 4a, for the Containment Barrier cornerstone. The finding was determined to be of very low safety significance (Green) since the finding did not represent an actual open pathway in the physical integrity of the reactor containment (isolation valves).

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Work Practices component, because human error prevention techniques, such as peer and self checking, were inadequately used to prevent mispositioning the SGIG Pressure Building Circuit Outlet Block Valve (HV-0-7C-10). (Section 4OA3.3) (IMC 0305 Aspect H.4(a))

### Other Findings

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. This violation and the licensee's corrective action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

Unit 2 began the inspection period at 100 percent rated thermal power (RTP) where it remained until the end of the inspection period, except for brief periods to support planned testing and rod pattern adjustments.

Unit 3 began the inspection period at 100 percent RTP. On July 10, 2009, a planned power reduction to 85 percent was conducted to achieve the all rods out pattern adjustment, to support tuning of the recirculating pump motor generator set voltage regulator, to conduct a condenser air in-leakage search, and to perform channel distortion testing. On July 11, 2009, the unit was returned to full power. On July 22, 2009, the unit began its end-of-cycle coast down. Planned power reductions were performed on July 26 and August 12, 2009, respectively, to remove the fifth and fourth stage feedwater (FW) heat exchangers (HXs) from service during the end-of-cycle coast down. On September 13, 2009, a soft shutdown from 87 percent was commenced and the main generator breaker was opened to start the unit's 17th refueling outage (RFO) (P3R17). During the shutdown, operators inserted an unplanned manual scram from 1 ½ percent power in response to a reactor period that was shorter than the limit in operating procedures. The unit remained in P3R17 through the end of the inspection period.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity [REACTOR - R]**

#### 1R04 Equipment Alignment

#### .1 Partial Walkdown (71111.04Q – 3 Samples)

##### a. Inspection Scope

The inspectors performed a partial walkdown of three systems to verify the operability of redundant or diverse trains and components when safety-related equipment was inoperable. The inspectors performed walkdowns to identify any discrepancies that could impact the function of the system and potentially increase risk. The inspectors reviewed selected applicable operations procedures, walked down system components, and verified that selected breakers, valves, and support equipment were in the correct position to support system operation. The three systems reviewed were:

- Unit 3 'B' and 'D' 125/250V Direct Current (DC) Systems with Unit 3 'C' 125V DC System Inoperable;
- Unit 3 Reactor Core Isolation Cooling (RCIC) with Unit 3 High Pressure Coolant Injection (HPCI) Out-of-Service (OOS); and
- Unit 3 'A' Emergency Service Water (ESW) System with 'B' ESW OOS.

##### b. Findings

No findings of significance were identified.

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## 1R05 Fire Protection (71111.05Q – 5 Samples)

### .1 Fire Protection - Tours

#### a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment. The inspectors reviewed areas to assess if PBAPS had implemented the Peach Bottom Fire Protection Plan (FPP) and adequately: controlled combustibles and ignition sources within the plant; maintained fire detection and suppression capability; and maintained the material condition of passive fire protection features. For the areas inspected, the inspectors also verified that PBAPS had followed the Technical Requirements Manual (TRM) and the FPP when compensatory measures were implemented for OOS, degraded, or inoperable fire protection equipment, systems, or features. The inspectors verified: that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient combustible materials were managed in accordance with plant procedures; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. Documents reviewed during the inspection are listed in the Attachment. The inspectors toured the following areas:

- Unit 3 HPCI Room (Fire Zone 62);
- Unit 3 Torus Room (Fire Zone 13C);
- Unit 3 Outboard Main Steam Isolation Valve (MSIV) Room (Fire Zone 29);
- Unit 3 Drywell (Fire Zone 32); and
- Unit 3 Refuel Floor (Fire Zone 55).

#### b. Findings

No findings of significance were identified.

## 1R07 Heat Sink Performance (71111.07A – 2 Samples)

#### a. Inspection Scope

Based on a plant specific risk assessment and a review of issue reports in the CAP, the inspectors reviewed PBAPS's program for maintenance and testing of risk-important HXs for the emergency diesel generators (EDGs). Specifically, the review included the program for testing and analysis of the EDG HXs over three - two year cycles of cleaning and inspection from 2001 to 2007. The inspectors reviewed test results to verify that all acceptance criteria had been satisfied and to verify that the two-year cleaning and inspection intervals were adequate. The inspectors also reviewed calculations performed by PBAPS to establish fouling factor limits for the EDG air coolant HXs. Review of the following HXs constitutes two samples:

- EDG Air Coolant HXs; and
- EDG Jacket-water and Lube Oil Coolant HXs.

During this review, the inspectors evaluated an issue (Issue Report (IR) 960974) which was entered into the CAP regarding the missed performance of post-testing instrument calibration checks.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities (71111.08G – 1 Sample)

a. Inspection Scope

The inspectors observed selected samples of in-process nondestructive examination (NDE) activities. Also, the inspectors reviewed documentation of additional samples of NDE and component replacement activities which involved welding processes. The sample selection was based on the inspection procedure objectives and risk priority of those components and systems where degradation would result in a significant increase in the risk of core damage. The observations and documentation review were to verify activities were performed in compliance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code requirements. The inspectors reviewed a sample of inspection reports (data sheets) initiated as a result of nonconforming conditions identified during ISI examinations. Also, the inspectors evaluated the effectiveness of the identification and resolution of problems identified during ISI activities.

The inspectors observed the manual ultrasonic (UT), Performance Demonstration Initiative (PDI) testing performed for a weld on the FW nozzle N4F (Class 1). The inspectors observed the calibration of the UT equipment prior to the testing, observed the collection of UT data from the nozzle and reviewed the completed data sheet documenting the examination. The completed data sheet included Exelon Level III and American Nuclear Insurers Inspectors' (ANII) review and agreement. Also, the inspectors reviewed the NDE technician certification records and found them acceptable. The inspectors verified that this inspection was completed successfully and complied with the regulatory requirements for the examination.

The inspectors also observed the manual UT PDI testing, performed for a pipe to flange weld on HPCI piping inside the drywell (Class 1). The inspectors observed the calibration of the UT equipment prior to the testing, observed the collection of UT data from the pipe to flange weld and reviewed the completed data sheet documenting the examination. The completed data sheet included Exelon Level III and ANII review and agreement. Also, the inspectors reviewed the NDE technician certification records and found them acceptable. The inspectors verified that this inspection was completed successfully and complied with the regulatory requirements for the examination.

Additionally, the inspectors reviewed the completed reports (data sheets) for several other UT (6) and visual examination (VT) (3) inspections performed during this RFO or the prior RFO. These reviews verified the effectiveness of the testing procedures, testing performance activities, and the effectiveness of the examiner, test equipment and process in identifying degradation of risk significant SSCs and evaluated those activities for compliance with the requirements of ASME Section XI of the Boiler and Pressure Vessel Code.

The inspectors reviewed all indications recorded from the licensee's visual inspection program of the reactor internals. All indications were reported and subsequently dispositioned for use "as-is" based upon evaluation by the reactor vendor, General Electric (GE). During this outage, the licensee did not conduct any code radiographic examinations (RT).

The inspectors reviewed two ASME, Section XI Repair/Replacement packages. The inspectors reviewed Plan 09-100, WO C0229290, Class 2, CHK-3-23C-65, for the HPCI Turbine Exhaust Line Check Valve – Weld Buildup New Valve Seat and, also reviewed Plan 09-036, WO C0227929, Class 2, MO-3-10-026B, residual heat removal (RHR) Loop 'B' D/W Spray Outboard Isolation Valve Seal Weld Threaded Seat Ring repair. The inspectors also reviewed the welding aspects of these repairs and determined that the requirements of the ASME Code, Sections IX and XI had been complied with.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11Q – 1 Sample)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

On August 24, 2009, the inspectors observed one crew of licensed operators in the plant's simulator during licensed operator regualification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed Operator Performance;
- Crew's Clarity and Formality of Communications;
- Ability to Take Timely Actions in the Conservative Direction;
- Prioritization, Interpretation, and Verification of Annunciator Alarms;
- Correct Use and Implementation of Abnormal and Emergency Procedures;
- Control Board Manipulations;
- Oversight and Direction from Supervisors; and
- Ability to Identify and Implement Appropriate TS Actions and Emergency Plan (EP) Actions and Notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements as presented in the following documents:

- OP-AA-101-111, Roles and Responsibilities of On-Shift Personnel, Revision 3;
- OP-AA-103-102, Watchstanding Practices, Revision 8;
- OP-AA-103-103, Operation of Plant Equipment, Revision 0; and
- OP-AA-104-101, Communications, Revision 1.

This inspection constitutes one quarterly Licensed Operator Requalification Program sample as defined in Inspection Procedure (IP) 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q - 2 Samples)

a. Inspection Scope

The inspectors evaluated PBAPS's work practices and follow-up corrective actions for safety-related SSCs and identified issues to assess the effectiveness of PBAPS's maintenance activities. The inspectors reviewed the performance history of SSCs and assessed PBAPS's extent-of-condition (EOC) determinations for those issues with potential common cause or generic implications to evaluate the adequacy of the PBAPS's corrective actions. The inspectors assessed PBAPS's problem identification and resolution (PI&R) actions for these issues to evaluate whether PBAPS had appropriately monitored, evaluated, and dispositioned the issues in accordance with Exelon procedures, including ER-AA-310, "Implementation of the Maintenance Rule," and the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed selected SSC classifications, performance criteria and goals, and PBAPS's corrective actions that were taken or planned, to evaluate whether the actions were reasonable and appropriate. The inspectors performed the following two samples:

- EDG High Delta Temperature Issues (Action Request (AR) A171229); and
- 2 'C' Core Spray Pump Upper Motor Bearing Has High Oil Level (IR 937223).

During this review, the inspectors identified an issue related to the maintenance of the failure data in the maintenance rule database which was entered into the licensee's CAP (IR 960248).

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 5 Samples)

a. Inspection Scope

The inspectors evaluated PBAPS's implementation of their Maintenance Risk Program with respect to the effectiveness of risk assessments performed for maintenance activities that were conducted on SSCs. The inspectors also verified that the licensee managed the risk in accordance with 10 CFR Part 50.65(a)(4) and procedure WC-AA-101, "On-line Work Control Process." The inspectors evaluated whether PBAPS had taken the necessary steps to plan and control emergent work activities and to manage overall plant risk. The inspectors selectively reviewed PBAPS's use of the online risk monitoring software, and daily work schedules. The activities selected were based on plant maintenance schedules and systems that contributed to risk. The inspectors completed five evaluations of maintenance activities on the following:

- Emergent Work to Align Drawer for Steam Leak Detection Temperature Monitoring Switch (TIS-90547D) (Work Order (WO) C0229559);
- Emergent Work to Investigate and Repair Unit 2 Electrohydraulic Control (EHC) Pressure Regulator Setpoint Issue (WO C0229733);
- Emergent Work to Investigate and Troubleshoot 3 'C' WRNM (WO C0229999);
- P3R17 – Fuel Bundle Mispositioned During Core Shuffle II (IR 972679); and
- Emergent Work to Investigate Elevated Tritium Found in a New Sample Point (IR 939717).

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 7 Samples)

a. Inspection Scope

The inspectors reviewed seven issues to assess the technical adequacy of the operability evaluations, the use and control of compensatory measures, and compliance with the licensing and design bases. Associated adverse condition monitoring plans (ACMPs), engineering technical evaluations, and operational and technical decision making (OTDM) documents were also reviewed. The inspectors verified these processes were performed in accordance with the applicable administrative procedures and were consistent with NRC guidance. Specifically, the inspectors referenced procedure OP-AA-108-115, "Operability Determinations," and NRC IMC Part 9900, "Operability Determinations & Functionality Assessments for Resolutions of Degraded or Nonconforming Conditions Adverse to Quality or Safety." The inspectors also used TSs, TRM, Updated Final Safety Analysis Report (UFSAR), and associated Design Basis Documents (DBDs) as references during these reviews. The following degraded equipment issues were reviewed:

- TS Action Statement Interpretation Operating Experience (OE) (IR 938788);
- NUMAC Power Supply Operability with One Internal Power Supply (AR A1717803-03);
- Apparent Discrepancy Found in Fuel 50.59 SE (IR 945224);
- RPS Trip Capability for WRNM System for Soft Shutdown for P3R17 (IR 958205);
- ESW Pipe Support Gaps (IR 955121);
- WO Activities (Related to MOV inspections) Were De-scoped with Less than Adequate Review (IR 970639); and
- Perform Operability Determination for Dropped Fuel Channel (Empty) (IR 971385).

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 - 3 Samples)

.1 Permanent Modifications (1 Sample)

a. Inspection Scope

The inspectors reviewed one permanent modification to verify that modification implementation did not place the plant in an unsafe condition, particularly from a containment and decay heat removal perspective. The review was also conducted to verify that the design bases, licensing bases, and performance capability of risk significant SSCs had not been degraded as a result of these modifications. The inspectors verified the modified equipment alignment through control room instrumentation observations; UFSAR, drawings, procedures, and WO reviews; staff interviews and plant walkdowns of accessible equipment. The following permanent modification was reviewed:

- Engineering Change Request (ECR) 08-00338 002, Restore Torus Dewatering System for Unit 3.

b. Findings

No findings of significance were identified.

2. Temporary Modifications (2 Samples)

a. Inspection Scope

The inspectors reviewed the two temporary plant modifications listed below to ensure that installation of the modifications did not adversely affect systems important to safety. The inspectors compared the modifications with the licensing and design bases in the UFSAR and TS to verify that the modification did not affect system operability, reliability, availability, or adversely affect plant operations. The inspectors ensured that station personnel implemented the modification in accordance with the applicable temporary configurations change process. The inspectors verified the modified equipment alignment through control room instrumentation observations, drawings, procedures, WO reviews and plant walkdowns of accessible equipment, as appropriate. The impact on existing procedures was reviewed to verify PBAPS made appropriate revisions to reflect the temporary changes. The documents reviewed are listed in the Attachment.

- ECR 09-00339 000, Unit 2 Drywell Equipment Drain Sump Pump (2BP098) No Flow; and
- Jumper installed on Unit 3 'E' WRNM.

b. Findings

Introduction: An inspector-identified, Severity Level IV NCV of 10 CFR 50.59 was identified when PBAPS made temporary alterations to their facility to address a degraded condition without performing a 50.59 review. Specifically, PBAPS installed a jumper that bypassed the trip feature of the Unit 3 'E' wide-range neutron monitoring (WRNM) instead of using the WRNM bypass switch as is described in their plant's Final Safety Analysis Report (FSAR). Exelon entered this issue into their CAP and the jumper was subsequently removed restoring the original system configuration.

Description: The WRNM system is divided into two groups of four WRNM channels. Each group of WRNM channels is associated with one of the two trip systems of the

RPS. UFSAR Section 7.5.4, "WRNM Subsystem," states, in part, that the arrangement of the WRNM channels allows one WRNM channel in each group to be bypassed without compromising neutron monitoring. TS Bases 3.3.1.1, "RPS Instrumentation," incorporates NEDO-32368, "Nuclear Measurement Analysis and Control WRNM System Licensing Report for PBAPS, Units 2 and 3," dated November 1994. The vendor report states, in part, one WRNM manual bypass switch is provided for each RPS trip system and the characteristics of the switch permit only one of the four WRNM channels of the trip system to be bypassed at one time. Further, the report notes that with any channel bypassed in a given trip system, three channels remain operable to satisfy the protection system requirements. The inspectors noted that with one WRNM channel bypassed by a jumper in the back of the WRNM drawer, a second WRNM drawer could be bypassed using the bypass switch. The inspectors concluded that this condition would change the design of the WRNM system as described in the UFSAR.

Paragraph (c)(1) of Section 50.59 to Part 50 of Title 10 of the CFR states, in part, that a licensee may make changes in the facility as described in the FSAR (as updated) without obtaining a license amendment pursuant to Section 50.90 only if the change does not meet any of the criteria in paragraph (c)(2). Paragraph (c)(2) states that a licensee shall obtain a license amendment pursuant to Section 50.90 prior to implementing a proposed change, if the change would create the possibility for a malfunction of an SSC important to safety with a different result than any previously evaluated in the FSAR (as updated).

On January 20, 2009, the Unit 3 'E' WRNM was bypassed with jumpers installed, in the back of the WRNM drawer, per Clearance 09000102. The clearance and tagging instructions were completed in preparation for the Unit 3 maintenance outage to replace the 3 'C' main transformer and PBAPS planned to have the jumper remain installed until P3R17, a period of approximately eight months.. This was done to meet the GP-3 requirement of bypassing inoperable WRNMs prior to entering Mode 2. The Unit 3 'E' WRNM had been declared inoperable on December 12, 2008, due to a failed detector. The basis for bypassing the 3 'E' WRNM, by using jumpers versus the bypass switch designed into the WRNM, was documented in the clearance and tagging document (09000102). Specifically, the clearance stated that the jumper was installed to allow bypassing multiple WRNMs in the same trip system for replacement due to failure. The clearance also noted that the installation of the jumper would allow the use of the bypass switch for testing. The inspectors noted that Clearance 09000102 was revised on September 4, 2009, to remove the jumper (IR 961858).

The jumper installation met the criteria for a temporary alteration to the facility to address a degraded condition as defined in the Exelon procedure for implementing 10 CFR 50.59, LS-AA-104-1000, Revision 5, "Exelon 50.59 Resource Manual." Section 4.2.2 of LS-AA-104-1000, states, in part, that a 50.59 review is required, for temporary alterations to the facility, that are established to address a degraded or nonconforming condition and will be in effect for an interim period of time prior to the conduct of maintenance to restore the SSC to its as-designed condition. In this instance, since the WRNM was being bypassed to support entry into Mode 2 without giving the unit a half-scam, bypassing should have been accomplished using the installed WRNM bypass switch unless a 10 CFR 50.59 had been completed prior to jumper installation.

Analysis: The inspectors determined that the failure to conduct and maintain a record of a written evaluation which provides the basis for determination that a facility change

Enclosure

does not require a license amendment as required by 10 CFR 50.59(d)(1) was the performance deficiency that was reasonably within PBAPS's ability to foresee and prevent. Because this finding was a violation of 10 CFR 50.59, it was considered a violation that potentially impeded or impacted the regulatory process. Therefore, this violation was dispositioned using the traditional enforcement process instead of the SDP.

This finding was determined to be more than minor because there was a reasonable possibility that the change requiring a 10 CFR 50.59 safety evaluation would require NRC review and approval prior to implementation in accordance with 10 CFR 50.59(c)(2). This possibility is based on the change enabling the likelihood that a second WRNM could be bypassed without resulting in a trip of the associated RPS system. This condition would be contrary to the design of the WRNM and reactor protection systems, thereby creating the possibility for a malfunction of an SSC important to safety with a different result than any previously evaluated in the FSAR (as updated).

Although the SDP is not designed to assess traditional enforcement violations, the NRC assesses the significance of 10 CFR 50.59 violations through the SDP for risk insights. Accordingly, the inspectors evaluated the finding in accordance with IMC 0609, SDP, Attachment 0609.04, Phase 1 – "Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems cornerstone. The issue, associated with the installation of the one jumper, was determined to be of very low safety significance (Green) since the issue was determined to be a qualification issue confirmed not to result in loss of operability of the system, in that, another channel was not bypassed using the switch on the drawer while this jumper was installed.

This violation involved a facility change that likely would have required a license amendment before its implementation. Comparing this item to the examples in NRC Enforcement Policy, Supplement I, "Reactor Operations," this finding is similar to Item D.5, "Violations of 10 CFR 50.59 that Result in Conditions Evaluated as Having Very Low Safety Significance (i.e., Green) by the SDP." This is a Severity Level IV violation. Additionally, this finding was determined to have a crosscutting aspect in the area of Human Performance, Decision Making component, which states the licensee should use conservative assumptions in decision making and adopt a requirement to demonstrate that the proposed action is safe. Specifically, Exelon did not perform a 10 CFR 50.59 safety evaluation or screening when making a temporary alteration to the RPS system which would be installed for the remainder of the operating cycle. (H.1(b))

Enforcement: Paragraph (c)(1) of Section 50.59 to Part 50 of Title 10 of the CFR states, in part, that a licensee may make changes in the facility as described in the FSAR (as updated) without obtaining a license amendment pursuant to Section 50.90 only if the change does not meet any of the criteria in paragraph (c) (2). Paragraph (c)(2) states that a licensee shall obtain a license amendment pursuant to Section 50.90 prior to implementing a proposed change, if the change would create the possibility for a malfunction of an SSC important to safety with a different result than any previously evaluated in the FSAR (as updated). In addition, 10 CFR, Part 50.59(d)(1) requires, in part, that licensees maintain records of changes in the facility. These records must include a written evaluation which provides the basis for determination that the change does not require a license amendment. Contrary to the above, between January 21, 2009 and September 9, 2009, the PBAPS did not perform a written SE or 50.59 review

prior to making a temporary alteration (a change) to their facility to address a degraded condition. Specifically, PBAPS installed a jumper that bypassed the RPS trip feature of the Unit 3 'E' WRNM instead of using the WRNM's bypass switch as is described in their plant's UFSAR. Because this violation had a Severity Level of IV and was documented in PBAPS's CAP (IR 961858) this finding is being documented as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy, NUREG-1600:

**NCV 05000278/2009004-01, "Failure to Perform a 50.59 Review Prior to Installing Jumpers on 'E' WRNM."**

1R19 Post-Maintenance Testing (71111.19 - 5 Samples)

a. Inspection Scope

The inspectors observed and/or reviewed completed test records for selected post-maintenance testing (PMT) activities. The inspectors observed whether the tests were performed in accordance with the approved procedures or instructions 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 evaluate 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 verify that the acceptance criteria were satisfied. The inspectors reviewed five PMTs performed in conjunction with the following maintenance activities:

- Reactor Water Cleanup (RWCU) Filter Demineralizer Inlet Temperature Switch (WO M1725128);
- Unit 3 'B' Instrument Nitrogen Compressor Preventive Maintenance (WO R1106603);
- Adjust Discriminator Setting on 'D' WRNM (WO C0230377);
- Rework Drywell High Range Gamma Radiation Monitor (WO M1724652); and
- Replace Unit 3 'C' WRNM (WO R1081136).

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 Sample)

.1 Peach Bottom Unit 3 RFO 17 (P3R17)

a. Inspection Scope

The Unit 3 RFO (P3R17) was conducted from September 13, 2009, through the end of the inspection period. Prior to the start of P3R17 on September 13, 2009, the inspectors reviewed the station's work schedule and 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 and cooldown processes and selectively monitored the activities listed below to verify PBAPS controls over the outage activities:

- Observed Plant Operations Review Committee meetings where the reactor shutdown and shutdown safety plans were discussed;
- Observed the control room operators removing the main generator from the grid, initiate a soft shutdown of Unit 3, manually scram the reactor in response to a short period and stabilize the plant in Mode 3;
- Observed selected plant cool down activities;
- Conducted drywell walkdowns to check for discrepant conditions;
- Maintenance of secondary containment as required by TS;
- Configuration management, including maintenance of defense-in-depth, commensurate with the outage risk plan for the key safety functions and compliance with the applicable TS when taking equipment OOS;
- Monitoring of decay heat removal operations, including the spent fuel pool cooling system;
- Monitoring reactor water inventory controls including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss;
- Monitoring the status and configuration of electrical systems and switchyard activities to ensure that TS were met;
- Monitored activities that could affect reactivity;
- Monitored refueling activities, including fuel handling, control rod drive mechanism change-out and neutron detector replacement; and
- Identification and resolution of problems related to RFO activities.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 5 Samples)

a. Inspection Scope

The inspectors reviewed and observed selected portions of the following surveillance test (STs), 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 design basis functions. The five STs reviewed and observed included:

- ST-O-052-213-2, E-3 Diesel Generator Slow Start Full Load and IST Test [IST Sample];
- RT-R-003-960-3, Channel/Control Rod Blade Interference Monitoring;
- ST-O-010-306-3, 'B' RHR Loop Pump, Valve, Flow and Unit Cooler Functional and Inservice Test;
- ST-O-023-301-2, HPCI Pump, Valve, Flow and Unit Cooler Functional Test and Inservice Test [IST Sample]; and
- ST/LLRT 30.01A.02, MSIV Local Leak Rate Test [Isolation Valve Sample].

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness (EP)**

**1EP2 Alert and Notification System (ANS) Evaluation (71114.02 – 1 Sample)**

**a. Inspection Scope**

A review of the ANS was conducted to assess the maintenance and testing of the licensee's ANS. During this inspection, the inspectors interviewed EP staff responsible for implementation of the ANS testing and maintenance. IRs pertaining to the ANS were reviewed for causes, trends, and corrective actions. The inspectors further discussed with the licensee the ANS siren system and its performance from January 2008 through July 2009. The inspectors reviewed the licensee's procedures and the ANS design report to ensure compliance with design report commitments for system maintenance and testing. The inspection was conducted in accordance with NRC IP 71114, Attachment 2. Planning standard, 10 CFR 50.47(b)(5) and the related requirements of 10 CFR 50, Appendix E were used as reference criteria.

**b. Findings**

No findings of significance were identified.

**1EP3 Emergency Response Organization (ERO) Staffing and Augmentation System (71114.03 – 1 Sample)**

**a. Inspection Scope**

A review was conducted of the Peach Bottom ERO augmentation staffing requirements and of the process for notifying the ERO. The inspectors reviewed procedures and IRs associated with the ERO notification system and drills, and reviewed records from call-in drills. The inspectors interviewed personnel responsible for testing the ERO augmentation process, and reviewed the training records for a sampling of the ERO to ensure training and qualifications were up-to-date. The inspectors reviewed procedures for ERO administration and training. The inspection was conducted in accordance with NRC IP 71114, Attachment 3. Planning standard, 10 CFR 50.47(b)(2) and related requirements of 10 CFR 50 Appendix E were used as reference criteria.

**b. Findings**

No findings of significance were identified.

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

**a. Inspection Scope**

Since the last NRC inspection of this program area in April 2008, PBAPS implemented various changes to different sections of their Peach Bottom Emergency Plan. PBAPS had determined that, in accordance with 10 CFR 50.54(q), any change made to the Plan, and its lower-tier implementing procedure, had not resulted in any decrease in

effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.54(q). The inspectors reviewed all EAL changes and a sampling of Emergency Plan changes, including the changes to lower-tier emergency plan implementing procedures, to evaluate for any potential decreases in effectiveness of the Emergency Plan. However, this review was not documented in a NRC SE Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The inspection was conducted in accordance with NRC IP 71114, Attachment 4. The requirements in 10 CFR 50.54 (q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP5 Correction of EP Weaknesses (71114.05 – 1 Sample)

a. Inspection Scope

The inspectors reviewed a sampling of self-assessment procedures and reports to assess PBAPS's ability to evaluate the Peach Bottom EP performance and programs. The inspectors reviewed a sampling of IRs from January 2008 through July 2009, initiated by Exelon Nuclear at Peach Bottom from drills, self-assessments, and audits. Additionally, the inspectors reviewed Quality Assurance (QA) audits, including two 10 CFR 50.54(t) audits conducted in 2008 and 2009, and several self-assessment reports. Other drill reports reviewed included medical and call-in drill reports. This inspection was conducted in accordance with NRC IP 71114, Attachment 5. Planning standard, 10 CFR 50.47(b) (14) and the related requirements of 10 CFR 50 Appendix E were used as reference criteria.

b. Findings

No findings of significance were identified.

2. **RADIATION SAFETY**

**Cornerstone: Occupational Radiation Safety**

2OS1 Access Controls (71121.01 – 19 Samples)

a. Inspection Scope

The inspectors conducted the following activities to verify that Exelon was properly implementing physical, administrative, and engineering controls for access to locked high radiation areas and other radiologically controlled areas, and that workers were adhering to these controls when working in these areas. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, TSs, and station procedures.

Inspection Planning - Performance Indicators

The inspectors reviewed performance indicators (PIs) for the Occupational Exposure Cornerstone. The inspectors also discussed and reviewed current performance, relative to the indicators, with Exelon personnel. Additionally, electronic dosimeter alarm logs and investigations were reviewed.

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

The inspectors toured accessible radiological controlled areas in the Unit 2 and 3 reactor buildings, turbine buildings, and radwaste building and with the assistance of a radiation protection (RP) technician, performed independent radiation surveys of selected areas to confirm the accuracy of survey data and ambient radiological conditions, and the adequacy of postings. The inspectors reviewed housekeeping, material conditions, posting, barricading, radioactive and contaminated material controls, and access controls to radiological areas. RP technicians were questioned regarding their knowledge of plant radiological conditions for selected jobs, and the associated controls.

The inspectors identified radiologically significant jobs performed in the reactor, turbine, and radwaste buildings since the last inspection. The inspectors reviewed the applicable RWPs, as low as reasonably achievable (ALARA) plans, station ALARA committee reviews, and the electronic dosimeter dose and dose rate set points, for the associated tasks, to determine if the radiological controls were acceptable and if the set points were consistent with plant policy. Jobs reviewed included Unit 3 Drywell - Replace Relief Valve RV-3-02-071D, Unit 3 Drywell - Replace 3 'A' Recirculation Pump Seal, Unit 3 Drywell - 3 'A' Recirculation Pump Vent Mod, Radwaste Polymer Injection Mod, Unit 2 RHR HX - Remove and Replace the Lower Floating Head, Unit 3 Moisture Separator ('A' feed water heater) area at-power entry to repair valve POSR-3042A, Unit 3 Install Dewatering Pumps in Torus Room, and Radwaste Waste Collector Pump Room Pump Vibration Readings.

During the Unit 3 outage, the inspectors toured radiological areas of the station and reviewed on-going work activities. Activities reviewed included Unit 3 drywell work activities, Unit 3 torus diving activities; ongoing Unit 3 in-vessel work activities; Unit 3 turbine work activities including valve work activities; on-going Unit 3 moisture separator work; direct observation of Unit 3 control rod drive work activities; reactor water clean-up work activities, and Unit 3 spent fuel pool work. The inspectors reviewed RP job coverage and radiation work permit implementation. The inspectors verified adequacy of radiological controls including use of multiple dosimeters and re-positioning of dosimeters for work in radiation dose rate gradients. The inspectors reviewed electronic dosimeter alarm set-points for adequacy and conformity with survey indications and plant policy. The inspectors reviewed use of electronic dosimeters for monitoring of workers in high radiation areas.

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 control and 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. The inspectors 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 radiation area controls with RP supervisors and technicians to identify changes that could potentially reduce program effectiveness and level of worker protection. The inspectors observed and conducted a selective review of high radiation area program procedures with RP supervisors.

The inspectors selectively reviewed airborne radioactivity sampling, analysis, and assessment.

For the jobs reviewed, the inspectors evaluated and reviewed the relocation of dosimetry due to dose gradients requiring relocation of dosimetry. The inspectors determined that tele-dosimetry was extensively used to monitor and control worker exposure for dose intensive jobs.

There were no current radiation work permits for airborne radioactivity areas with the potential for individual worker internal exposures to exceed 50 mrem and none were planned for the upcoming Unit 3 outage. The inspectors reviewed air sampling records for ongoing jobs to confirm that airborne contamination was insignificant.

Exelon's physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel pools was observed.

The inspectors attended the pre-job RWP briefings for a planned Unit 3 moisture separator ('A' feed water heater) area at-power entry to repair valve POSR-3042A (Station ALARA Committee approval was required and obtained for the emergent work greater than 200 mrem), and radwaste waste collector pump room activities, to determine if workers were properly informed, including discussions of past OEs, identification of the radiological conditions associated with their tasks, electronic dosimetry dose/dose rate set points, and dose mitigation measures.

#### High Radiation Area (HRA) and Very High Radiation Area (VHRA) Controls

The inspectors reviewed procedures related to the control of high dose rate, HRA and VHRAs. The inspectors discussed these procedures with the RP Supervision to determine that any changes made to these procedures did not reduce safety measures.

Keys to locked high radiation areas (LHRA) were inventoried, and accessible HRA/LHRAs were verified to be properly secured and posted during a plant tour.

The inspectors reviewed the preparations made for various potentially high dose rate jobs including those listed previously. Included in this review were evaluating the effectiveness of contamination control measures, source term controls, and use of temporary shielding.

#### Radiation Worker and RP Technician Proficiency

During station tours, the inspectors observed radiation worker and RP technician performance with respect to stated RP work requirements. The inspectors selectively questioned workers to determine if they were aware of the radiological conditions in their workplace; their RWP controls/limits in place; and that their performance took into consideration the level of radiological hazards present. Also discussed was worker knowledge of electronic dosimeter alarm set-points and required actions upon alarm.

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

#### PI&R

The inspectors selectively reviewed self-assessments and audits, as applicable, since the previous inspection to determine if identified problems were entered into the CAP for resolution. The inspectors evaluated the database for repetitive deficiencies or significant individual deficiencies to determine if self-assessment activities was identifying and addressing the deficiencies. The review also included evaluation of data to determine if any problems involved 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).

#### b. Findings

No findings of significance were identified.

### 2OS2 ALARA Planning and Controls (71121.02 – 15 Samples)

#### a. Inspection Scope

The inspectors conducted the following activities to determine if Exelon was properly implementing operational, engineering, and administrative controls to maintain personnel exposure ALARA. Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and applicable station procedures. The inspectors also conducted reviews of Exelon's outage pre-planning activities for the Unit 3 refueling and maintenance outage.

#### Inspection Planning

The inspectors reviewed pertinent information regarding station 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 and determined the site specific trends in collective exposures (using NUREG-0713) and plant historical data.

The inspectors reviewed on-going, completed and planned activities that were 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 selected included, but were not limited to those identified in Section 2OS1 of this report. In addition, planned outage activities were reviewed, which included: Unit 3 torus diving and associated activities, refuel floor activities, drywell outboard MSIV / main steam relief valve/ ISI work, and control rod drive work. The inspectors selectively reviewed implementation of lessons learned and operational experience. The inspectors evaluated adequacy of work time estimates for conduct of the work, versus that used for ALARA planning efforts. The inspectors also reviewed and discussed various Station ALARA Committee minutes (2009) and reviewed the Peach Bottom 2009 – 2013 Exposure Reduction Plan, as well as the root cause analysis and actions from the previous Unit 3 RFO in 2007.

#### Radiological Work Planning

A list of work activities ranked by actual/estimated exposure was obtained that were in progress or that have been completed since the last inspection in this area that have highest exposure significance. Work activities reviewed included those previously listed. During the Unit 3 outage, the inspectors reviewed refueling and maintenance work activities. 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 selected included, but were not limited to: torus inspection (diving activities), under vessel work/control rod drive change-out, in-service inspection, scaffolding activities, drywell work activities, refueling activities, recirculation pump work, and valve work activities. The inspectors selectively reviewed implementation of lessons learned and operational experience. The inspectors evaluated adequacy of work time estimates for conduct of the work, versus that used for ALARA planning efforts. The inspectors evaluated shielding efforts as compared to shielding packages requested. The inspectors evaluated use of benefits of water filled components to provide shielding, as applicable.

During the Unit 3 outage, the inspectors reviewed on-going and completed work activities to identify the adequacy and effectiveness of planning efforts to reduce radiation exposures ALARA. The inspectors toured the radiological controlled areas, including the Unit 3 drywell and torus, and observed efforts to minimize occupational radiation exposure.

The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements and determined if Exelon had established procedures, engineering and work controls, based on sound RP principles, to achieve occupational exposures that are ALARA. The inspectors determined if Exelon had reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

The inspectors compared the results achieved (dose rate reductions, person-rem used) with the intended dose established in the ALARA planning for these work activities to determine the reasons for any discrepancies between intended and actual work activity doses.

The inspectors evaluated interfaces between operations, RP, maintenance planning, scheduling and other groups for interface problems or missing program elements. The inspectors reviewed occupational exposure performance associated with those activities that presented higher radiological risk potential. These tasks included those listed previously. The inspectors observed a Micro-ALARA and LHRAs briefing associated with a planned Unit 3 Moisture Separator ('A' feed water heater) area at-power entry to repair valve POSR-3042A. Station ALARA Committee approval was required and obtained for the emergent work greater than 200 mrem. In addition, the inspectors attended a RFO planning meeting.

The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements, to determine if Exelon had established procedures, engineering and work controls, based on sound RP principles, to achieve occupational exposures that are ALARA, and that Exelon had reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

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

The inspectors reviewed the assumptions and basis for work exposure estimates since the last inspections and those associated with the upcoming Unit 3 refueling and maintenance outage. 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 contingencies implemented for work exhibiting elevated dose rates.

The inspectors selectively reviewed exposure results achieved, for the previously listed tasks, with the intended dose established in ALARA plans for the work activities. The inspectors reviewed post-job evaluations and bases for additional exposures sustained for selected work activities. The inspectors also discussed Station ALARA Committee oversight of activities. The inspectors selectively reviewed contingencies implemented for work exhibiting elevated dose rates. The review included various ALARA Work-In Progress reviews, which modified aggregate exposure estimates. The inspectors selectively reviewed exposure results achieved, for the above discussed tasks, with the intended dose established in ALARA plans for the work activities. The inspectors discussed Station ALARA Committee oversight of 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, contingency plans for potential changes in source term, implementation of lessons in the area of source term control and occupational exposure

control, from previous outages. Specifically, the inspectors discussed reviews of Unit 3 chemistry controls for shut-down and discussed source term management and levels for the upcoming Unit 3 outage. The inspectors also evaluated implementation of Exelon's procedurally described program for source term control, including its Five Year Exposure Reduction Plan. The inspectors reviewed contingency plans for potential changes in source term and changes in plant source term as well as implementation of lessons learned. The inspectors reviewed source term controls and radiation exposure mitigation for reactor cavity drain-down, including implementation of lessons learned.

The inspectors determined whether Exelon had developed an understanding of the plant source term, including knowledge of input mechanisms to reduce the source term; determine whether Exelon had a source-term control strategy in place. The program included a cobalt reduction strategy and shutdown ramping and operating chemistry plan.

The inspectors determined what specific sources have been identified for exposure reduction actions and what priorities had been established for implementation of these actions.

#### Radiation Worker Performance

The inspectors observed radiation worker and RP technician performance during work activities being performed in radiation areas and HRAs to determine if workers demonstrate the ALARA philosophy in practice and whether there are any procedure compliance issues. The inspectors also observed radiation worker performance to determine whether the skill level is sufficient with respect to the radiological hazards and the work involved.

#### Declared Pregnant Workers

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

#### PI&R

The inspectors selectively reviewed applicable self-assessments, audits, and special reports related to the ALARA program since the last inspection. The inspectors evaluated if identified problems were entered into the CAP.

#### b. Findings

No findings of significance were identified.

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

#### a. Inspection Scope

The inspectors conducted the following activities to evaluate the operability and accuracy of radiation monitoring instrumentation, and the adequacy of the respiratory protection program for issuing self-contained breathing apparatus (SCBA) to emergency response personnel. Implementation of these programs was reviewed against the

criteria contained in 10 CFR 20, applicable TSs, industry standards, and procedures. Additionally, the inspectors toured the station, observed on-going work activities and evaluated instrument use to determine if appropriate radiological instrumentation was in use and had been properly source checked for operability prior to use.

#### Calibration, Operability, Alarm Setpoint

The inspectors selectively reviewed calibration records, operability checks, and response checks (including use of appropriate sources; and alarm set-points, as applicable) for various in-use radiation instrumentation and area radiation monitors (ARM) including those used for on-going radiological controls activities (Unit 3 torus diving, control rod drive work, and refueling floor activities). Exelon's 10 CFR Part 61 source term review and associated procedures and surveillances were reviewed to determine if the calibration sources used are representative of the plant source term and if Exelon was evaluating and considering changes in the plant's isotopic mix in a timely manner. The inspectors selectively reviewed operability checks; calibration, including use of appropriate sources; and alarm set-points, as applicable for radiation safety instrumentation used during various on-going work activities. The inspectors observed performance of daily source checking of selected RPs instruments including conformance with applicable procedures and acceptance criteria. Instruments selected for review included:

- Radiation Survey Meters: Telepoles: 079826, 074970, 079391, AMP100: 076699, 077591, Ionization Chambers: 330317, 99-1508, 9683;
- Source Checking Observed for Telepole Nos. 33473, 79827, and 76926;
- Air Samplers: AMS4 334635, Hi-Vol 6390;
- Contamination Monitors: SAM9 125, RM14 074052;
- Personnel Electronic Dosimeters; 3490, 7213, 16433, 28396, 30348, 43728, 60516, 183748;
- Shepherd Calibrator 14035;
- Reactor Building TIP Room ARMs (RIS-2/3-18-070AU);
- Refuel Floor Vent Exhaust (RIS-2-17-458A/B/C/D); and
- Counting instruments: BC4-33543, SAC4- 77174.

#### RP Technician Instrument Use

The inspectors selectively verified the calibration expiration and source response check currency on radiation detection instruments staged for use and observed RP technicians for appropriate instrument selection and self verification of instruments operability prior to use.

#### SCBA Maintenance and User Training

The inspectors evaluated the adequacy of the respiratory protection program regarding the maintenance and issuance of SCBA to emergency response personnel. Training and qualification records were reviewed for at least three (3) licensed operators from each of the operating shifts, and for selected RP personnel who would wear SCBAs in the event of an emergency. The inspectors observed a technician perform functional inspections on select SCBA's staged in the control room, Operations Support Center, Technical Support Center, and Turbine Deck, 165' elevation. Maintenance, hydrostatic

test records, and flow test records for selected SCBAs, were reviewed. The compressor air sample results were reviewed to confirm that the air quality met CGA G-7.1, Grade E (2004) standards.

The inspectors verified that personnel who perform maintenance and repairs on SCBA components vital to the unit's function possess manufacturer-certified training / qualifications. The inspectors selectively determined that the required, periodic air cylinder hydrostatic testing is documented and up to date, and the DOT required retest air cylinder markings are in place.

#### PI&R

The inspectors reviewed audits and self-assessments in this area to determine if identified issues in this area were entered into the CAP. The inspectors reviewed condition reports and action requests to evaluate Exelon's threshold for identifying, evaluating, and resolving problems in this area.

#### b. Findings

No findings of significance were identified.

#### **Cornerstone: Public Radiation Safety**

#### 2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01 – 1 Sample)

##### a. Inspection Scope

The inspectors discussed Exelon's understanding of groundwater flow patterns for the site, and in the event of a spill or leak of radioactive material (RAM), if the staff could estimate the pathway of a plume of contaminated fluid both onsite and beyond the owner controlled area. The inspectors reviewed recent groundwater well analysis data and reviewed on-going activities associated with any onsite leaks and spills that can impact groundwater and Exelon's actions to identify, communicate, assess off-site impacts, and mitigate the leaks.

##### b. Findings

No findings of significance were identified.

#### 2PS3 Radiological Environmental Monitoring Program (REMP) and Radioactive Materials (RAM) Control (71122.03 – 10 Samples)

##### a. Inspection Scope

The inspectors reviewed the 2007 and 2008 Annual Radiological Environmental Operating Reports, and Exelon assessment results, to verify that the REMP was implemented as required by TSs and the Offsite Dose Calculation Manual (ODCM). The review included changes to the ODCM with respect to environmental monitoring commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data. The

inspectors also reviewed the ODCM to identify environmental monitoring stations. In addition, the inspectors reviewed the following: Exelon self-assessments and audits, event reports, inter-laboratory comparison program results, the FSAR for information regarding the environmental monitoring program and meteorological (MET) monitoring instrumentation, and the scope of the audit program to verify that it met the requirements of 10 CFR 20.1101.

The inspectors walked down five (5) environmental air particulate and iodine sampling stations; three (3) water sampling stations; three (3) dairy farms; one (1) vegetable garden; and fourteen (14) thermo-luminescent dosimeter (TLD) monitoring locations; and determined that they were located as described in the ODCM and determined that any applicable equipment material condition to be acceptable.

The inspectors observed the collection and preparation of environmental samples, including air and water, and verified that environmental sampling was representative of the release pathways as specified in the ODCM and that sampling techniques were in accordance with procedures. The inspectors reviewed the software application verification and validation used for the dose assessments for environmental and effluent samples for adequacy. (Canberra Open EMS, Effluent Management Software)

Based on direct observation and review of records, the inspectors verified that the MET tower instruments were operable, calibrated, and maintained in accordance with guidance contained in the FSAR, NRC Safety Guide 23, and Exelon procedures. The inspectors verified that the MET data readout and recording instruments in the control room and at the tower were operable and comparable.

The inspectors reviewed each event documented in the Annual Radiological Environmental Monitoring Report which involved a missed sample, inoperable sampler, lost TLD, or anomalous measurement for the cause and corrective actions. The inspectors conducted a review of Exelon's assessment of any positive sample results. The latest two annual radiological effluent release reports were also reviewed to identify that there were no significant changes in reported dose values from previous effluent release reports. These reports were reviewed with respect to the environmental monitoring program.

The inspectors reviewed any significant changes made by Exelon to the ODCM as the result of changes to the land census or sampler station modifications since the last inspection. The inspectors also reviewed technical justifications for any changed sampling locations and verified that Exelon performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

The inspectors reviewed the calibration and maintenance records for air samplers. The inspectors reviewed the following: the results of Exelon's inter-laboratory comparison program to verify the adequacy of environmental sample analyses performed by Exelon, Exelon's quality control evaluation of the interlaboratory comparison program and the corrective actions for any deficiencies, Exelon's determination of any bias to the data and the overall effect on the REMP, and QA audit results of the program to determine whether Exelon met the TS/ODCM requirements. The inspectors verified that the appropriate detection sensitivities with respect to TS/ODCM are utilized for counting samples and reviewed the results of the quality control program including the

interlaboratory comparison program to verify the adequacy of the program. The inspectors also reviewed documents and procedures associated with Exelon's review of the plant isotopic mix as it relates to instrumentation efficiency and set-point determination.

The inspectors observed the RAM survey and release locations (RCA exit, chemistry lab exit, security ready-room entrance, RP count room equipment, turbine building ramp exit, control rooms entrance, radwaste control room entrance, and maintenance hot shop exit) and inspected the methods used for control, survey, and release to include observing the performance of personnel surveying and releasing material for unrestricted use and verifying that the work is performed in accordance with plant procedures.

The inspectors verified that the radiation monitoring instrumentation used for the release of material from the RCA, was appropriate for the radiation types present and was calibrated with appropriate radiation sources. The inspectors reviewed Exelon's equipment to ensure the radiation detection sensitivities were consistent with the NRC guidance contained in Circular 81-07 and Information Notice 85-92 for surface contamination and HPPOS-221 for volumetrically contaminated material. Calibration records and NIST source certificates for equipment used for the release of personnel and materials were reviewed for adequacy.

The inspectors reviewed Exelon's audits and self-assessments related to the radiological environmental monitoring program since the last inspection to determine if identified problems were entered into the corrective action program, as appropriate. Selected corrective action reports were reviewed since the last inspection to determine if identified problems accurately characterized the causes and corrective actions were assigned to each commensurate with their safety significance. Any repetitive deficiencies were also assessed to ensure that Exelon's self-assessment activities were identifying and addressing these deficiencies (see Section 4AO2).

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES (OA)**

4OA1 Performance Indicator (PI) Verification (71151- 3 Samples)

**Cornerstone: Emergency Preparedness (EP)**

.1 Emergency Preparedness PIs and Temporary Instruction 25525/175

a. Inspection Scope

The inspectors reviewed raw data for the Peach Bottom EP PIs which are: (1) EP01 - Drill and Exercise Performance (DEP); (2) EP02 - ERO Drill Participation; and (3) EP03 - ANS Reliability. The inspectors reviewed supporting documentation from drills and tests from April 2008 through July 2009, to verify the accuracy of the reported data. The review of these PIs was conducted in accordance with NRC IP 71151 using the

acceptance criteria documented in Nuclear Energy Institute 99-02, "Regulatory Assessment PI Guidelines," Revision 5.

Additionally, the inspectors performed NRC Temporary Instruction (TI) 2515/175, "Emergency Response Organization, Drill/Exercise Performance Indicator, Program Review" and ensured the completeness of the licensee's completed Attachment 1 from the TI, and forwarded that data to NRC Headquarters.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (PI&R) (71152 – 1 Sample)

.1 Review of Items Entered into the CAP

a. Inspection Scope

As required by IP 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed screening of all items entered into the licensee's CAP. This was accomplished by reviewing the description of each new action request/issue report and attending daily management review committee meetings.

b. Findings

No findings of significance were identified.

.2 Safety Relief Valve (SRV) ST Failures and Leakage (1 Annual Sample)

a. Inspection Scope

This inspection reviewed PBAPS's identification, evaluation, and resolution of deficiencies associated with SRVs. Specifically, SRVs had exceeded the allowable as-found lift set-point during several past STs. Additionally, SRV leakage rates have contributed to maintenance outages in February 2008 and January 2009, due to administrative operating limits imposed by PBAPS. PBAPS uses three-stage SRVs manufactured by the Target Rock Corporation (TRC). The inspectors noted industry OE has shown TRC SRVs to exhibit periodic leakage and set-point drift, as documented in NRC Regulatory Issue Summary 2000-012. This inspection was performed to determine if PBAPS was appropriately identifying and evaluating SRV issues at PBAPS, and taking appropriate corrective actions to ensure that SRVs remain operable.

The inspectors reviewed PBAPS's condition reports, corrective actions and surveillance test results to evaluate the adequacy of PBAPS's performance in the areas of problem identification, evaluation, extent of condition scoping, and corrective actions. The inspectors also used the guidance in NUREG-1022 to evaluate PBAPS's event reporting, as required by 10 CFR 50.73, associated with SRV as-found set-points that exceeded allowable TS limits. The inspectors reviewed ST procedures to ensure that testing was being performed in accordance with the current licensing basis. Additionally, the inspectors reviewed operator surveillance log entries, calculations, and engineering evaluations to evaluate the adequacy of PBAPS's administrative controls for SRV

leakage. The inspectors also interviewed PBAPS engineering staff to discuss SRV performance issues and associated corrective actions. Documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified. The inspectors noted several past examples of SRV as-found test results that exceeded the  $\pm 1$  percent tolerance permitted by TSs, including testing that was conducted in 2000, 2001, 2003, 2005, 2007 and 2008. The inspectors determined the deficiencies were appropriately entered into the CAP, the causes of the deficiencies were identified, and corrective action was taken as appropriate. PBAPS's evaluations concluded that each test failure was bounded by the plant overpressure analysis, and no safety limits were exceeded. The inspectors noted two long-term corrective action efforts that were ongoing at the time of inspection. IR 927340 was written to pursue a license amendment request to change the allowable TS as-found set-point tolerance from  $\pm 1$  percent to  $\pm 3$  percent. At the time of inspection, plant margin analyses and evaluations were ongoing. Additionally, a modification was being implemented (ECR 04-00596) to install thermocouple wells in the body of the SRVs to more accurately detect future sources of leakage from either the pilot (first) stage or the second stage. Once installed, the thermocouples will enable temperature readings to be evaluated against vendor test data correlations of temperature versus leakage. At the time of inspection, the inspectors observed that nine of thirty SRVs had thermocouple wells installed in the valve bodies to accommodate future thermocouple installation.

.3 Public Radiation Safety Cornerstone

a. Inspection Scope

The inspectors reviewed audits and self-assessments to determine if identified problems were entered into the CAP for resolution. The inspectors also reviewed corrective action condition reports to evaluate Exelon's threshold for identifying, evaluating, and resolving problems relating to public radiation safety. The inspectors verified that problems identified by these condition reports were properly characterized in the Exelon's event reporting system, and that applicable cause and corrective actions were identified, commensurate with the safety significance of the radiological occurrences. In cases where there were repetitive issues or issues that were not adequately addressed or corrected, QA audits and follow-up assessments identified these and initiated actions to correct the condition.

During the on-site inspection activities, the inspectors observed audit and debrief activities for Exelon's Nuclear Safety Review Board and Nuclear Oversight organizations. (Nuclear Oversight RP Audit NOSA-PEA-09-06, IR 939771)

The inspectors reviewed recent on-going groundwater activities associated with any onsite leaks and spills and Exelon's actions to identify, assess, and adequately address or correct these conditions.

b. Findings

No findings of significance were identified.

.4 Inservice Inspection of NDE Activities

a. Inspection Scope

The inspectors reviewed a sample of corrective action reports, shown in the attachment, which identified nonconforming conditions discovered during this and the previous outage. The inspectors verified that flaws and other nonconforming conditions identified during nondestructive testing were reported, characterized, evaluated, and appropriately dispositioned and entered into the CAP.

b. Findings

No findings of significance were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153 - 4 Samples)

.1 Unit 3 – Unplanned Manual SCRAM In Response to a Short Period (1 Sample)

a. Inspection Scope

The inspectors observed main control room activities during the scheduled shutdown to commence the Peach Bottom Unit 3 RFO (P3R17). Unit 3 was manually shutdown using the mode switch in accordance with GP-3, "Normal Plant Shutdown," when reactor period lowered below 50 seconds as indicated on the WRNM system. The feed water startup level controller was in automatic set at 23" when a small addition of cold water added enough positive reactivity to cause reactor period to be less than 50 seconds. The shortest period observed was 44 seconds. The operators took action to insert a manual scram as directed by the procedure when reactor period was observed to be less than 50 seconds. The WRNM system RPS automatic SCRAM setpoint is 19 seconds. The inspectors verified that the issue was reported as Event Notification 45348 and was entered into the CAP (IR964411). The inspectors reviewed the event report and correction action documents listed in the Attachment to this report. No performance deficiencies were identified.

b. Findings

No findings of significance were identified.

.2 (Closed) Licensee Event Report (LER) 05000278/2009004-00, Inoperable Ventilation Fan Results in Condition Prohibited by TSs (1 Sample)

A condition prohibited by TS was discovered when engineering personnel determined that the Unit 3 'B' high pressure service water (HPSW) / ESW ventilation subsystem was rendered inoperable as a result of preventive maintenance performed on April 13, 2009. Specifically, an inadequately torqued connection, on the motor control center breaker assembly, for the 3 'B' HPSW/ESW pump room ventilation supply fan, caused a high resistance connection and the resultant heating led to the actuation of the thermal overload relay. This condition existed until July 5, 2009, when repairs were made to the motor starter contactor/thermal overload relay connection. The underlying cause of this condition was that the associated maintenance procedure for the preventive

maintenance performed on April 13, 2009, did not provide clear instructions to torque the connection. The motor starter mechanism and thermal overload relay was repaired on July 5, 2009. The associated maintenance procedure is being revised. There were no actual safety consequences associated with this condition. The licensee documented this issue in the CAP (IR 938565). The inspectors reviewed this event report and documented a licensee-identified NCV for this issue in Section 4OA7; therefore, this LER is closed.

### 3 Personnel Performance – Mispositioning of a SGIG Valve (1 Sample)

#### a. Inspection Scope

The inspectors reviewed corrective action documents listed in the Attachment to this report, and discussed the events surrounding the mispositioning of the SGIG Pressure Building Circuit Outlet Block Valve (HV-0-7C-10) with cognizant PBAPS personnel. The inspectors reviewed Revision 2 of the Nuclear Operations Manual (NOM)-C-7.1, "Procedure Use," system operating procedure (SO) 7C.1.A-3, "CAD System Startup/Standby Operations," and Revision 12 of check off list (COL) 7C.1.A-3, "CAD System."

#### b. Findings

Introduction: A self-revealing Green NCV was identified for failure to comply with TS 5.4.1, "Procedures," which required that procedures be established, implemented, and maintained for the SGIG system. Specifically, the SGIG Pressure Building Circuit Outlet Block Valve (HV-0-7C-10) was manipulated without procedure guidance, was out of its normal position, and resulted in the inoperability of certain valves associated with the primary containment and containment atmosphere dilution (CAD) systems for both units.

Description: On August 24, 2009, during an investigation of the receipt of a low pressure alarm for the SGIG system, the SGIG Pressure Building Circuit Outlet Block Valve (HV-0-7C-10) was found (mispositioned) closed. HV-0-7C-10 is a valve that is normally open in accordance with SO 7C.1.A-3 and COL 7C.1.A-3. This valve is the normal initial nitrogen supply from the containment atmospheric dilution (CAD) tank vapor space to the Units 2 and 3 SGIG headers. HV-0-7C-10 isolates the normal CAD tank pressure maintenance flowpath. With this valve closed, and instrument air unavailable, a demand on the SGIG header to either Units 2 or 3 primary containments eventually would result in low CAD tank pressure, and low SGIG header pressure and an inability to provide sufficient nitrogen flow to the pneumatic loads. Operators declared the SGIG systems inoperable and entered the appropriate TS action statements. In addition, this event was reported (ENS #45289) as an event or condition that at the time of discovery could have prevented the fulfillment of the safety function of systems supplied by the station safety-grade pneumatic supply. The systems affected include certain primary containment isolation valves (PCIVs) (e.g., large PCIVs using boot seals) and the reactor building to torus vacuum breakers. HV-0-7C-10 was reopened within 75 minutes of being discovered.

PBAPS performed a root cause analysis (RCA) for this event (IR 956980). The RCA report stated that the specific activity that inappropriately closed the valve could not be determined. The RCA report stated that the most likely time of the mispositioning was between July 31 and August 14, 2009. A TS ST (ST-O-07C-345-2, "Containment

Atmosphere Dilution and SGIG Common Valve Alignment Verification and CAD Tank Fill Line Functional Verification") was performed to verify SGIG valve alignments on July 31, 2009, and verified that HV-0-7C-10 was in the open position. Access to the plant area containing the valve is controlled. Two known activities in this area were to fill the CAD tank, after the ST on July 31, and again on August 14. The procedure to fill the CAD tank, SO 7C.3.A, "CAD System Liquid Nitrogen Addition to Nitrogen Storage Tank," does not manipulate this valve; however, it does manipulate valves in close proximity to HV-0-7C-10. Therefore, a mispositioning error, during one of these activities was concluded to be most likely.

The RCA report concluded that there were two root causes for this event. First, was the inadequate application of human performance tools. Second, was failing to include HV-0-7C-10 in the station's locked valve program. The inspectors noted that corrective actions had been completed to add HV-0-7C-10 to the locked valve program.

Analysis: Based on the above, the inspectors determined that manipulating the SGIG Pressure Building Circuit Outlet Block Valve (HV-0-7C-10) without procedure guidance was a performance deficiency that was reasonably within PBAPS's ability to foresee and prevent. The inspectors concluded that the manipulating HV-0-7C-10 without a procedure was a more than minor finding because it was associated with the SSC and barrier performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that the containment would protect the public from radionuclide releases caused by accidents or events. Specifically, affected primary containment isolation valves would not have performed their safety function as required. Traditional enforcement does not apply since there were no actual safety consequences or potential for impacting the NRC's regulatory function, and the finding was not the result of any willful violation of NRC requirements. Accordingly, the inspectors assessed the finding in accordance with IMC 0609, SDP, Attachment 0609.04, Phase 1 – "Initial Screening and Characterization of Findings," Table 4a, for the Containment Barrier cornerstone. The finding was determined to be of very low safety significance (Green) since the finding did not represent an actual open pathway in the physical integrity of the reactor containment (PCIVs).

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Work Practices component, because human error prevention techniques, such as peer and self checking, were inadequately used to prevent mispositioning the SGIG Pressure Building Circuit Outlet Block Valve (HV-0-7C-10). (IMC 0305 aspect H.4(a))

Enforcement: PBAPS TS 5.4.1.a, requires that procedures be established, implemented, and maintained as recommended in Appendix A to RG 1.33, dated November 1972. RG 1.33, Appendix A, Section D, "Procedure for Startup, Operation and Shutdown of Safety Related BWR Systems," includes the Instrument Air System. SGIG is an instrument air system. NOM-C-7.1, "Procedure Use," requires that procedures be used for any task which has the potential to cause a system or component to become inoperable. Contrary to the above, between July 31 and August 24, 2009, procedures were not used when manipulating HV-0-7C-10, SGIG "Pressure Building Circuit Outlet Block Valve," resulting in the inoperability of the SGIG system and the systems and components supplied by the SGIS system. Because this failure to comply with TS 5.4.1.a is of very low safety significance (Green) and has been entered into PBAPS's CAP as IR 956980, this violation is being treated as an NCV,

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consistent with Section VI.A of the NRC Enforcement Policy: **NCV 05000277, 278/2009004-02, "Inadequate Procedure Adherence Results in the Loss of Safety Function of Systems Supplied by the SGIG System."**

.4 Personnel Performance - Unit 3 – Fuel and Fuel Component Handling Events (1 sample)

(Opened) Unresolved Item (URI) 05000277, 278/2009004-03, "Personnel Performance Errors While Handling Fuel and Fuel Components."

a. Inspection Scope

The inspectors reviewed Exelon's actions to address human performance events associated with fuel and fuel component handling in the reactor core and spent fuel pool (SFP). The inspectors also reviewed corrective action documents (IRs 971385, 972679, 974063, 974663, and 971916) that are listed in detail in the Attachment to this report. In addition, the inspectors observed fuel handling activities from the refueling platform and via remote monitoring equipment, and discussed the identified problems and evaluation activities with cognizant Exelon personnel.

b. Findings

Introduction: The inspectors identified an URI related to personnel performance errors and potential procedure adherence issues while handling fuel and fuel components in the reactor core and the SFP during the P3R17 refueling outage. On September 28, 2009, a fuel channel was dropped onto the spent fuel racks. On September 30, 2009, the first bundle of Core Shuffle II, Quadrant; 'B,' (Shuffle II-B) was placed in the incorrect core location resulting in suspension of fuel moves. On October 2, 2009, after a pause while lowering a fuel bundle into a core location, the refuel platform operator (RPO) incorrectly toggled the grapple disengage switch vice the hoist lower control. These events appear to be multiple examples of procedure adherence issues during fuel handling. This issue will remain unresolved pending completion of PBAPS's root cause determination and subsequent NRC review and follow up inspection.

Description: On September 28, 2009, during movement of a fuel channel from the channel rack to its SFP location, the channel was dropped from the channel handling tool and landed on the spent fuel racks (IRs 971385). On September 30, 2009, the first move of Shuffle II-B (step 226) erroneously moved Fuel Bundle JLU140 from SFP location CC-27 to core location 47-54 (step 228) instead of the intended core location 45-56. The as-left orientation was as specified by the fuel move sheet for location 45-56, but was 180 degrees out for the as-left location 47-54 (IR 972679). On October 2, 2009, during movement of a fuel bundle into a core location, the refuel platform hoist was paused at the top of the core, while the core location was being verified. The RPO removed his hands from the controls while the verification was in progress. After receiving the order to lower the fuel bundle into the core location, the RPO incorrectly toggled the grapple disengage switch vice the hoist lower control (IR 974063). The inspectors noted that the design of the grapple physically prevented dropping the fuel bundle.

In response to IR 971385 and several other fuel channel handling events in the SFP, PBAPS initially planned to perform a common cause analysis of fuel channel events that occurred during P3R17. Following the two fuel handling events in the reactor core, PBAPS determined that the performance of a root cause analysis was appropriate

(IR 972679). In addition, a common cause analysis for operations events, including IR 972679, was initiated (IR 974663). At the end of the inspection period, these causal analysis activities were still in progress; therefore, this item remains unresolved: **URI 05000277, 278/2009004-03, "Personnel Performance Errors While Handling Fuel and Fuel Components."**

#### 4OA5 Other Activities

##### .1 Quarterly Resident Inspector Observations of Security Personnel and Activities

###### a. Inspection Scope

During the inspection period the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

###### b. Findings

No findings of significance were identified.

##### .2 (Closed) URI 05000277, 278/2009002-04, "High Pressure Coolant Injection (HPCI) System Torus Suction Valve Failures"

In NRC Inspection Report (IR) 05000277/2009002, 05000278/2009002, the inspectors identified an URI related to the adequacy of preventive maintenance on motor-operated valves (MOVs). On March 12 and 21, 2009, HPCI torus suction valves in Unit 2 and Unit 3, respectively, failed to stroke fully open during routine testing. Dry and hardened stem lubricant was identified in both instances. This issue was left as unresolved pending completion of PBAPS's root cause determination and completion of extent of cause and condition evaluations of MOVs in other accident mitigation systems.

In NRC Inspection Report 05000277/2009003, 05000278/2009003, the inspectors reviewed PBAPS's identification, evaluation, and resolution of challenges associated with hardened grease on safety-related MOVs. The review included PBAPS's actions related to two HPCI valves which failed to stroke to the full open position during surveillance testing in March 2009. PBAPS's initial EOC evaluations revealed that two RHR valves developed less-than-required closing thrust for successful diagnostic test acceptance. Hardened grease was also identified on the stem and inside the stem nut of both RHR valves. PBAPS's final EOC scoping determined that 45 safety-related MOVs required additional evaluation appropriate to the circumstances, such as visual inspection, grease evaluation, diagnostic testing, and/or corrective maintenance. As a result of this inspection, the inspectors determined that a Green, self-revealing NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," existed. Specifically, PBAPS's MOV Program procedures lacked specific instructions to prescribe an acceptable frequency for performing valve stem lubrication, which resulted in test failures of safety-related MOVs and affected the reliability of the MOVs' safety functions.

Therefore, this URI has been adequately addressed and is closed. More information regarding this issue can be found in the documentation of NCV 05000277/2009003-01, and NCV 05000278/2009003-01, "MOV Program Procedures were Inadequate with Regard to Periodicity of Preventive Maintenance Activities for Stem Lubrication."

.3 Tour of Independent Spent Fuel Storage Installation (ISFSI) Facility (60855.1)

a. Inspection Scope

The inspectors toured the ISFSI facility containing 44 loaded casks and conducted independent gamma radiation surveys of the ISFSI facility and compared the results to previous surveys. The inspectors also observed and evaluated implementation of radiological controls, including RWPs and postings, and discussed the controls with RP personnel. The inspectors reviewed radiation surveys as well as environmental radiation monitoring data from thermoluminescent dosimeters around the facility. The inspectors reviewed surveillance activities associated with ISFSI cask inter-seal pressure verification, performed once every seven days, for compliance with TS (ST-S-071-901-2, Revision 44).

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On September 22, 2009, Mr. P. Krohn, Chief, USNRC, Region I, Division of Reactor Projects, Branch 4, toured the Unit 3 drywell, torus, and other selected areas of the plant and met with PBAPS staff.

On October 23, 2009, the resident inspectors presented the inspection results to Mr. W. Maguire and other PBAPS staff, who acknowledged the findings. Mr. P. Krohn, Chief, USNRC, Region I, Division of Reactor Projects, Branch 4, attended this quarterly inspection exit meeting. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as a NCV:

As documented in report section 4OA3.2, LER 05000278/2009004-00 reported a condition prohibited by TS which was discovered when engineering personnel determined that the Unit 3 'B' HPSW / ESW ventilation subsystem was rendered inoperable as a result of preventive maintenance performed on April 13, 2009. The TRM Section 3.11, "Engineered Safeguards Compartment Cooling and Ventilation," required immediate compliance with the TS Actions for the inoperability of one HPSW subsystem

if one HPSW / ESW pump structure ventilation subsystem is inoperable. TS 3.7.1, Condition A, required action to restore one inoperable HPSW subsystem to an operable status within seven days. TS 3.7.1, Condition B, required the plant be in Mode 3 within 12 hours if Condition A is not met. Contrary to the above, between April 13 and July 5, 2009, the Unit 3 'B' HPSW / ESW ventilation subsystem was inoperable and TS 3.7.1 was not entered until the inoperability was discovered on July 3, 2009. PBAPS documented this issue in the CAP as IR 938565. The inspectors reviewed the PBAPS Risk-Informed Inspection Notebook Table 2 and concluded that the HPSW / ESW pump structure ventilation system was not required to support HPSW and ESW pump core damage mitigation safety functions. A Region I senior reactor analyst verified this conclusion. Therefore, this issue was of very low (Green) safety significance, because of no impact on the safety function for either subsystem of the HPSW or ESW systems.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Exelon Generation Company Personnel

W. Maguire, Site Vice President  
G. Stathes, Plant Manager  
J. Armstrong, Regulatory Assurance Manager  
E. Flick, Engineering Director  
R. Franssen, Work Management Director  
L. Lucas, Chemistry Manager  
P. Navin, Operations Director  
R. Holmes, RP Manager  
T. Wasong, Training Director

#### NRC Personnel

P. Krohn, Branch Chief  
F. Bower, Senior Resident Inspector  
M. Brown, Resident Inspector  
S. Barr, Sr. Emergency Preparedness Inspector  
J. Commiskey, Health Physicist  
P. Finney, Susquehanna Resident Inspector  
R. Nimitz, Sr. Health Physicist  
T. O'Hara, Reactor Inspector  
A. Ziedonis, Reactor Inspector

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

05000277, 278/2009004-03	URI	Personnel Performance Errors While Handling Fuel and Fuel Components (Section 4OA3.4)
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Opened/Closed

05000278/2009004-01	NCV	Failure to Perform a 50.59 Review Prior to Installing Jumpers on 'E' WRNM (Section 1R18.2)
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05000277, 278/2009004-02	NCV	Inadequate Procedure Adherence Results in the Loss of Safety Function of Systems Supplied by the SGIG System. (Section 4OA3.3)
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Closed

05000278/2009004-00	LER	Inoperable Ventilation Fan Results in Condition Prohibited by TSs (Section 4OA3.2)
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05000277, 278/2009002-04	URI	High Pressure Coolant Injection (HPCI) System Torus Suction Valve Failures (Section 4OA5.2)
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Discussed

05000277, 278/2009003-01	NCV	MOV Program Procedures were Inadequate with Regard to Periodicity of Preventive Maintenance Activities for Stem Lubrication. (Section 4OA5.2)
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## LIST OF DOCUMENTS REVIEWED

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

COL 57B.1.B-3, Revision 11, 125/250 VDC System  
 Clearance 08001963, Multi Step Clearance – Main Transformers (A, B, and C)  
 Clearance 08001970, Multi Step Clearance – Support Testing 30C509 Panel and  
 Protection Relays  
 ST-M-57B-733-3, Unit 3 'C' 125/250 VDC Modified Battery Discharge Performance Test  
 SO 13.1.A-3 COL, Revision 14, RCIC System  
 SO 13.1.B-3 COL, Revision 2, RCIC System Control Board Lineup  
 COL 33.1.A-3, Emergency Service Water System (Unit 3 and Common)

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

PF-62, Revision 4, Prefire Strategy Plan Unit 3 HPCI Room, 88' Elevation, Fire Zone 62  
 PF-13C, Revision 2, Prefire Strategy Plan U3 Torus Room, 91'6" Elevation, Fire Zone 13C  
 PF-29, Revision 1, Prefire Strategy Plan U3 Outboard MSVI, Room 135' Elevation, Fire Zone 29  
 PF-32, Revision 0, Prefire Strategy Plan U3 Drywell, 135' Elevation, Fire Zone 32  
 PF-55, Revision 3, Prefire Strategy Plan U3 Refuel Floor, 234' Elevation, Fire Zone 55

### **Section 1R07: Heat Sink Performance**

Certificate of Calibration 1322, Exelon Power Labs: FE-2A, 2B, 3A, 3D, Performed 12/28/1999  
 Certificate of Calibration 217085, Exelon Power Labs: FE-1A, 1B, 2D, 3B, Performed  
 12/21/1999  
 Certificate of Calibration 217086, Exelon Power Labs: FE-4A-1, 4A-2, 4C, Spare, Performed  
 12/21/1999  
 ECR 98-02202, Revision 2, Install Test Equipment to Support EDG HX Testing  
 EDG HX Performance Data, Performed 04/07/06, 07/29/05, 06/27/04  
 Electric Power Research Institute NP-7552, HX Performance Monitoring Guidelines, December  
 1991  
 IR 707459, EDG GL 89-13 Testing Issues  
 IR 960974, E-4 EDG Heat Transfer Sensor Failure  
 Mechanical Engineering Reference Manual, 12<sup>th</sup> edition  
 Peach Bottom EDG HX Testing Report, Dated August 31, 2007  
 PM-533, Revision 0, EDG Operability with Reduced ESW Flow Rates  
 PM-678, Revision 0, Performance Curves for EDG HXs to Support Generic Letter 89-13  
 Monitoring Program  
 PM-1042, Revision 2, Determination of Diesel Operability with Cross-Flow  
 RT-O-052-204-2, Revision 22, E-4 Diesel Generator Load Run

### **Section 1R08: Inservice Inspection Activities**

#### **Issue Reports/Action Reports**

IR 967419	IR 970048-02	IR 971619	IR 967976
IR 967419A02	IR 970482	IR 970611-02	IR 967972
IR 97048	IR 970441-02	IR 971619-02	IR 967648
IR 968920-02	IR 970611	IR 967967	IR 967419
IR 970048	IR 970482-02	IR 967978	IR 966797

IR 953160	IR 966797	IR 967972	IR 856352
IR 891462	IR 967125	IR 967976	IR 856527
IR 967419	IR 967648	IR 967978	IR 856525
IR 968920	IR 967651	IR 968871	IR 856825
IR 934347	IR 967653	IR 866614	IR 936262
IR 965512	IR 967655	IR 933030	IR 891462
IR 965514	IR 967074	IR 864365	IR 836470
IR 965516	IR 967075	IR 817848	IR 856352
IR 965517	IR 968094	IR 822552	AR-A1554416
IR 966069	IR 967967	IR 899015	

### **General Electric-Hitachi (GEH) Customer Notification Forms (CNF)**

INR-PB3R17-09-01  
 INR-PB3R17-09-02, Revision 1  
 INR-PB3R17-09-03  
 CNR-PB3R17-09-01  
 INR-PB3R17-09-04, Revision 1  
 INR-PB3R17-09-06  
 INR-PB3R17-09-05

### **Surveillance Tests**

ST-M-007-900-3, Drywell Airgap Drains Flow Test, 4/19/09  
 ST-O-080-675-3, Reactor Pressure Vessel (ASME Class 1) Leakage Pressure Test, completed  
 11/6/07

### **NDT Examination Reports**

FW Nozzle, N4F-IRS, UT  
 FW Nozzle, N4F, Nozzle to Vessel Weld, UT  
 FW Nozzle, N4E, UT  
 FW Nozzle, N4E-IRS, UT  
 FW Nozzle, N4E-Bore, UT  
 Weldolet to Pipe, 12-O-20A, UT  
 FW Nozzle, N4F-Bore, UT  
 Procedure MA-PB-793-001, Revision 0; Visual Examination of Containment Vessels and  
 Internals, completed 10/07 (contains inspection data sheets), VT  
 AR-A1554416 (documents results of P3R16 torus pit inspections), VT

### **NDE Personnel Certifications**

GE-Hatachi Certificate of Qualification, Number 0757  
 GE-Hatachi Certificate of Qualification, Number 0752  
 GE-Hatachi Certificate of Qualification, Number 0677  
 GE-Hatachi Certificate of Qualification, Number 1287  
 GE-Hatachi Certificate of Qualification, Number 0774

### **NDT Examination Procedures**

GE Nuclear Procedure GE-UT-300, Version 10, "Procedure for Manual Examination of Reactor Vessel Assembly Welds In Accordance With Performance Demonstration Initiative (PDI)"

GE Hitachi Nuclear Energy Procedure GEH-UT-311, Version 16, "Procedure for Manual Ultrasonic Examination of Nozzle Inner Radius, Bore and Selected Nozzle to Vessel Regions," 3/17/09

### **Repair-Replacement Work Orders**

Plan 09-100, WO C0229290, Class 2, CHK-3-23C-65, HPCI Turbine Exhaust Line Check Valve – Weld Buildup New Valve Seat

Plan 09-036, WO C0227929, Class 2, MO-3-10-026B, RHR Loop 'B' D/W Spray Outboard Isolation Valve Seal Weld Threaded Seat Ring

American Society of Mechanical Engineers (ASME), Section XI Repair/Replacement Plan per ER-AA-330-009; P3R17 SRV Replacement

### **Work Orders**

WO C0227545, ISI – DW 135', VT-2 welds 4-RD-10/11/12

WO C0227531, ISI – 02 D/W 2-ASD-9 Branch Connection to Pipe; ISI – 02 NDE VT-2 2-ASD-9, Branch Conn. Pipe

WO R1081242, 30S019; (3R17) Torus Cleaning/Desludging, UT HPCI, RCIC, "J" & "K" MSR Discharge Lines

WO C0228088, Plan and Perform Material Analyzer Inspection

### **Program Self-Assessments**

PBAPS P3R17 Check-In Assessment for NRC ISI Inspection, 841809-02, 8/31/09

### **Miscellaneous**

Philadelphia Electric Company letter dated 5/11/87, Subject: Peach Bottom Atomic Power Station Generic Letter 87-05 dated March 12, 1987 Degradation of Mark I Drywells OPRX AT Assignment #924691-02; SIL No. 660 Revision 0, "Cracking in BWR-5 Jet Pump Riser Piping"

GE-Hitachi Services Information Letter (SIL) 660, Revision 0, 5/19/09; Cracking in BWR-5 Jet Pump Riser Piping

Electric Power Research Institute Letter 2009-202, 6/18/09; Transmittal of "Interim Guidance for Accelerated inspections of Jet Pump Riser to Riser Brace Welds and Wedges"

Peach Bottom Atomic Power Station Units 2 & 3, ISI Program Plan, Fourth Ten-Year Interval; Commercial Service Dates: Unit 1 – 7/5/74, Unit 2 – 12/23/74

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

OP-AA-101-111, Roles and Responsibilities of On-Shift Personnel, Revision 3

OP-AA-103-102, Watchstanding Practices, Revision 8

OP-AA-103-103, Operation of Plant Equipment, Revision 0

OP-AA-104-101, Communications, Revision 1

PSEG1106R, Revision 1, Hydraulic ATWS, Loss of Drywell Spray

**Section 1R12: Maintenance Effectiveness**

IR 609714, Exhaust Temperature Readings for E3 EDG > 250°F Difference  
 IR 567761 (Assignment 4) – EDG MSPI Margin FASA  
 IR 572347, Create Procedure Revision to Address Gas Intrusion  
 IR 175881, E-2 EDG Trip 1 Hour After Auto Start From Loss of Power Event  
 IR 845174, TI-70908B Inlet Union Oil Webpage  
 IR 840761, Eval's for Replacement Parts Have Not Been Answered at E-2  
 IR 948351, >250°F DT on TI-7273A During E-1 EDG Run  
 IR 943502, High Pitch Whistling Noise when E-2 EDG is Running  
 IR 773960, Individual Exhaust Temperature Differential on E-2 EDG OOS  
 IR 915179, E-2 Emergency Diesel – Air Noise Heard During Deceleration  
 IR 809505, E2 EDG Jacket Cooling Rubber Coupling Leak  
 IR 648809, E3 EDG Lube Oil Temperature Indicates Low  
 IR 917742, E3 EDG Lube Oil Leak  
 AR A1711229, E-3 Exhaust Temperature Out-of-Specification  
 Procedure ST-O-052-413-2, E-3 Diesel Generator Fast Start and Full Load Test  
 IR 590051, Fuel Injectors #11 Cylinder Performing UNSAT  
 IR 917739, E-3 Exhaust Temp Out-of-Specification  
 IR 703489, IN 2007-36 EDG Voltage Regulator Problems  
 IR 710058, INPO TR7-60 EDG Demand and Run Failures  
 EDG Unavailability Monitoring July 2006 to July 2009  
 IR 590032, E3 EDG Normal Running Speed Switch Out-of Tolerance Low  
 SO 52A.8.C, Revision 31, Diesel Generator Running Inspection  
 IR 937949, Trend in Oil Analysis Data Not Detected  
 IR 960248, Maintenance Rule Database Incomplete for IRs 891763 and 925953

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

IR 943231, Unit 2 EHC Pressure Regulator 'A' & 'B' In Control  
 IR 951630, 3 'C' WRNM indicating Low: Triggered ODA  
 WO A1722436, 3 'C' WRNM Indicating low  
 WO A1697287, Unit 3 WRNM-A is Believed to Not be Fully Qualified  
 WO A1689980, 3 'E' WRNM Reading Low  
 WO C0229999, Troubleshoot to Determine Condition of Detector  
 IR 939717, Elevated Tritium Identified in New Sample Point  
 Procedure LS-AA-1120, Revision 11, Exelon Reportability Reference Manual – Reportable  
 Event Rad 1.1 Events Involving Byproduct Source or Special Nuclear Material That Cause or  
 Threaten to Cause Significant Exposure or Release  
 Procedure HR-AA-1001, Revision 0, Stateholder Communications for Issues Management or  
 Security Threat  
 WO C0225862, 20T010, 30T010; Reseal Moat Floors  
 IR 926755, Unit 3 CST Moat Backtop Reseal  
 IR 932238, Small Water leak at Unit 3 CST

**Section 1R15: Operability Evaluations**

WO C0229560, Replace Power Supply and Align 3 'B' Steam Leak Detection Temperature  
 Monitoring Switch  
 IR 864346, UFSAR Section 10.3 May Need Updating for TSs Amendment 175/178  
 PB ECR 09-00121, UFSAR Section 10.3 Revision for TS Amendment 175/178  
 AR A1690633, Administrative UFSAR Changes

IR 955489, GP-3 Steps for Soft Shutdown with Multiple WRNM Inoperable  
 IR 955502, Evaluation Reportability for Multiple Inoperable Unit 3 WRNM  
 IR 955579, Need A/R for Unit 3 WRNM 'C' Contingency Temporary Configuration Change  
 LER 05000277/90-037-00, TS Due to Less Than Required Operable  
 Intermediate Monitor Channels Due to Personnel Error and Procedural  
 Weaknesses, dated December 17, 1990  
 GE NEDO-32368, Nuclear Measurement Analysis and Control WRNM  
 System Licensing Report for PBAPS Units 2 & 3, dated November 1994  
 GE NEDO-31439A, The Nuclear Measurement Analysis and Control (NUMAC) WRNM System  
 Licensing Topical Report, Dated October 1990  
 ANSI B31.1, Power Piping, 1971 Edition Including Summer 1973 Addenda - 06/15/73  
 Drawing HISO 3353, Revision 4, Reactor Building ESW Supply Cooling Water Area  
 IR 702406, HPSW Pipe Lifted Off its Supports  
 IR 955121, ESW Supports H127 and S73 Have Gaps and Not Carrying Loads  
 Specification No. M-618, Revision 3, Nuclear Safety-Related Specification for  
 Fabrication Installation and Inspection of Critical Pipe Supports, Hangars, and  
 Restraints  
 VT-3 Examination Report for Pipe Support 3-33HB-H127 and 3-33HB-S73, Performed  
 02/11/09  
 VT-3 Examination Report for Pipe Support 3-33HB-S79 and 3-33HB-S74, Performed  
 08/17/09  
 IR 970169, MOV Program: Scope Removal of Required Diagnostic Testing  
 IR 970171, MOV Program: Scope Removal of Required Diagnostic Testing  
 IR 970172, MOV Program: Scope Removal of Required Diagnostic Testing  
 IR 970644, Planned Actions from Technical Evaluation Not Performed  
 IR 898030, MO-3-10-13D, Stem Nut Wear and Underthrust

#### **Section 1R18: Plant Modifications**

WO A1693909, Damaged Electrical Ductbank  
 WO C0226402, Temp Power/TCCP Install Replace/Repair Cables  
 WO C0228220, I&C Rework Cables in Support of TCCP 09-00078  
 ECR 08-00371, Temporary Power for Critical Loads Fed From MCC E324-O-A  
 ECR 08-00338, Revision 2, Restore Torus Dewatering System for Unit 3  
 SO 27G.7.A-3, Revision 0, Torus Dewatering and Filtration  
 IR 878127, P3R17 Torus Cleaning and Inspection  
 IR 967556, Unit 3 Torus Dewatering Pump Unexpected Results During Test Run  
 IR 968598, NRC-Identified Foreign Material Concerns in U3 Torus Room  
 IR 970113, Unit 3 Torus Dewatering Pump Discharge Conical Strainer Inspect  
 AR A1657111-E53  
 UFSAR – Chapter 7, section 7.5.4, Wide Range Neutron Monitor Subsystem  
 LS-AA-104, Revision 6, Exelon 50.59 Review Process  
 IR 871864, Spurious 'A' WRNM Short Period trip  
 OP-MA-109-101, Revision 8, Clearance and Tagging  
 Clearance 09000272, 3A WRNM, 3C WRNM and 3E WRNM OOS for P3R17  
 Shutdown/ Repairs  
 Clearance 09000102, Maintain 3E WRNM Detector inop until replaced in 3R17  
 GP-3, Rev. 116, Normal Plant Shutdown  
 IR 961858, Evaluate the use of bypassing WRNM's with a Jumper  
 RT-O-100-926-2, Revision 9, Quarterly review of Clearances  
 LS-AA-104-1000, Revision 5, Exelon 50.59 Resource Manual

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

AR A1725128, Unit 2 RWCU Nonregenerative HX (NRHX) High Temperature Alarm  
 IR 960675, Unit 2 – RWCU NRHX High Temperature Alarm  
 WO R1106603, PM 3BK037 N2 Compressor and Accessories  
 Clearance 09001264, PM 3BK037 N2 Compressor and Accessories  
 WO A1672480, 3BK037, PM Compressor/ Associated Components  
 RT-O-016-200-3, Revision 12, Instrument Nitrogen Compressor Capacity Test  
 WO R1081136, Replace E, C and B WRNM Detectors for P3R17  
 WO A1689980, 3 'E' WRNM Reading Low  
 WO C0229999, Troubleshoot to Determine Condition of Detector  
 WO A1697287, Unit 3 WRNM 'A' is Believed to Be Not Fully Qualified  
 WO A1722436, 3 'C' WRNM Indicating Low, Triggered ODA  
 LER 3-09-05, Common Cause Failure of 'C' and 'E' WRNM  
 WO M1724652, Rework/replace RI As Required  
 WO A1724652, RI-9103C Remote Indications Not Working  
 Procedure SI3R-63G-9103-C1C2, Electronic Calibration Functional Check of Drywell High Range Monitor RI 9103C, Performed 8/31/09  
 Procedure IC-11-00571, Electronic Calibration of Drywell High Range Radiation Monitor  
 WO A1724609, RI-9103C Meter is Sticking  
 IR 959192, RI-9103C Remote Indications not Working  
 WO C0230377, Adjust Discriminator Setting IAW IC-11-00395  
 WO A1727017, WRNM 'D' High Out-of-Specification Per Rounds  
 IC-11-00395, Revision 7, Calibration and Alignment for NUMAC WRNM

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

IR 964063, GE Informed Peach Bottom of Problems with New Fuel Bundle  
 IR 965000, Just-In-Time Training (Shutdown) Not Conducted for Licensed Operators  
 IR 963954, 3A WRNM Hi-Hi Period Setpoint Indicates 200 Instead of 19  
 IR 961769\*, Additional High Risk Channel Distortion Cells Identified  
 IR 964780, RWM Inoperable During P3R17  
 IR 964411, Manual Scram Required During P3R17 Shutdown  
 IR 964910, Turbine Deck Electrical (OSHA) Work Practices  
 IR 961769, Additional High Risk Channel Distortion Cells Identified  
 IR 949705, TS and Bases Need Clarification for RWM Bypassing  
 IR 969588, Unable to Remove Channel From New Fuel Bundle JYJ622  
 IR 969612, Unable to Remove Channel From New Fuel Bundle JYJ797  
 IR 969611, MO-3-23-015: Significant Mag Rotor Degradation Identified  
 IR 969769, Unit 2 HPCI Stop Valve Indicates Packing Leak While Secured  
 IR 970115, Workers Breached System Without RP Present  
 IR 970529, P3R17 VT-3 Inspection of the Downcomers Submerged Surfaces  
 IR 970555, GE14 Channeled with Channel from Suspect Population Vice New  
 IR 970724, 3 'B' RPS MG Set Tripped  
 IR 971030, MOV Stem Grease Found at Grade 5 During PM Inspection  
 IR 971001, Orientation of Fuel Bundle Incorrect in Fuel Prep Machine  
 IR 970864, MO-3-10-025B Exceeded Its Admin Limit During LLRT  
 IR 970786, Review for Possible EOC From Quad Cities Core Spray Piping Leak  
 IR 970756, AO-3-10-046B Failed Offscale Leakage During LLRT  
 IR 971385, Fuel Channel Dropped in Unit 3 SFP  
 IR 971198, Position Indication for Rod 18-55 Remains at "- -"

IR 971277, LPRM 24-49A Failed Post-Installation Checkout  
 IR 971286, Fuel Channels Damaged During Staging for Inspection  
 IR 971313, MOV Stem Grease Found at Grade 4 During PM Inspection

### **Section 1R22: Surveillance Testing**

ST-O-052-213-2, E-3 Diesel Generator Slow Start Full Load and IST Test, Performed 8/14/09  
 SO 52A.1.B, Diesel Generator Operations  
 IR 953604, E-3 Diesel Local Frequency Gauge Inaccurate  
 RT-R-003-960-3, Channel/Control Rod Blade Interference Monitoring, Performed  
 08/27/09  
 TSs Section 3.1.3 and 3.1.4  
 ST-O-010-306-3, 'B' RHR Loop Pump, Valve, Flow and Unit Cooler Functional and Inservice  
 Test, Completed 7/29/09  
 ST-O-0230301-2, HPCI Pump, Valve, Flow and Unit Cooler Functional Test and  
 In-service Test, Completed 9/9/09  
 ST/LLRT 30.01A.02, MSIV Local Leak Rate Test  
 WO R1080521, LLRT: MSIV 'A'  
 WO R1083948, Temporary Power and Lights  
 WO A1635155, ST 30.1A.2 LLRT: MSIV 'A'  
 IR963077, HPCI Bearing Oil Pressures Outside Acceptable Range  
 IR963062, Unit 2 HPCI Booster Pump Bearing Vibration in Alert Range  
 IR 947265, 'B' Loop FI-3-10-139B Indication Oscillating During PVF  
 R1131580, RHR 'B' Loop PVF/IST

### **Section 1EP2: Alert and Notification System (ANS) Evaluation**

Peach Bottom Nuclear Power Plant Upgraded Public ANS Report (dated April 2005)  
 EP-AA-120, Emergency Plan Administration, Revision 10  
 EP-MA-121-1002, Exelon East ANS Program, Revision 6  
 EP-MA-121-1004, Exelon East ANS Corrective Maintenance, Revision 4  
 EP-MA-121-1005, Exelon East ANS Preventive Maintenance Program, Revision 3  
 EP-MA-121-1006, Exelon East ANS Siren Monitoring, Troubleshooting, and Testing, Revision 6  
 All open issue reports written against the Peach Bottom ANS, July 2007-July 2009  
 2008-2009 ANS Monthly Test Reports  
 2008-2009 ANS Repair Reports

### **Section 1EP3: Emergency Response Organization (ERO) Staffing and Augmentation System**

EP-AA-1000, Exelon Nuclear Standard Radiological Emergency Plan, Revision 19  
 EP-AA-112, Emergency Response Organization / Emergency Response Facilities Activation  
 and Operation, Revision 13  
 EP-AA-112-100-F-07, Mid Atlantic ERO Notification or Augmentation, Revision E  
 RT-E-101-912-2, Prompt Mobilization Communications Testing  
 OP-PB-112-101-1016, Minimum Shift Staffing, Revision 1  
 TQ-AA-113, ERO Training and Qualification, Revision 13  
 ERO Augmentation Drill (Call in/Drive in) Report, 6/2/2009 (2<sup>nd</sup> Quarter)  
 ERO Augmentation Drill (Pager Test) Memo, 11/20/2008  
 ERO Augmentation Drill (Pager Test) Memo, 1<sup>st</sup> Quarter 2009

### **Section 1EP4: Emergency Action Level (EAL) and Emergency Plan Changes**

EP-AA-120, Emergency Plan Administration, Revision 10  
EP-AA-120-1001, 10 CFR 50.54(q) Change Evaluation, Revision 5  
LS-AA-104, Exelon 50.59 Review Process, Revision 6  
All 10 CFR 50.54(q) Screenings Dated between May 2008 – July 2009  
Emergency Plan Change Evaluations: 08-38, 08-45, 08-58, 09-19, 09-33, 09-35, 09-67,  
and 09-70

#### **Section 1EP5: Correction of EP Weaknesses**

EP Audit NOSA-PEA-08-03  
EP Audit NOSA-PEA-09-04  
EP.1 EP Focused Area Self-Assessment Report 840099-03  
EP Check-In Self-Assessment Report 743972-02  
EP Check-In Self-Assessment Report 712409-02  
Peach Bottom EP Performance Quarterly Reports, January 2008- June  
2009  
All EP Related IRs initiated between January 2008 to July 2009

#### **Section 2OS1: Access Controls**

ODCM, Revision 13  
CY-AA-170-3100, ODCM Revision 13 Change Determination and Plant Operations Review  
Committee Review and Change Package  
Annual Radiological Environmental Operating Report Nos. 65 & 66  
Annual Radioactive Effluent Release Report Nos. 50 & 51  
Radiation Dose Assessment Report Nos. 23 (with addendum) & 24  
Conestoga-Rovers & Associates, Unit 1 Investigation, January 2009  
ACMP for elevated Tritium, dated July 2009.  
Well #4 Tritium Monitoring and Mitigation Action Plan, revision dated August 2009  
MET Monitoring Program Monthly Reports  
MET Tower Calibration Records and Associated Procedures (most recent)  
Water Sampler Calibration Certificates (ER-TMI-06, Attachment 6)  
Teledyne Brown Engineering Environmental Services Quality Assurance Report  
Teledyne Brown Engineering Quality Control Charts  
NOSA-COMP-08-04, May 2008  
NOSA-PEA-09-06 Daily Debrief notes (Aug. 2009)  
Check-in Self Assessment, LS-AA-126-1005, Revision 4, February 2009  
Focused Area Self Assessment (LS-AA-126-1001, Revision5) Audit of SCBA Vendor, dated  
May 2009.  
Focused Area Self Assessment (LS-AA-126-1001, Rev.5) Audit of Radiation Safety, dated  
February 2009, and Self-assessments -854116-03, 854123, 854131-02, 854139-01, 854143,  
854147-02, 864159-02, 828212, 854114-03  
Daily Radioactive Source Response Check Logs  
Analytics, Results of Radiochemistry Cross-Check Program 2009  
ST-C-095-900-2, Plant Effluent Concentration Dose Analysis (recent)  
ST-C-095-857-2, Effluent Report Data Sheets (recent)  
ST-S-071-901-2, ISFSI Cask Inter seal Pressure Check (recent)  
ST-H-071-803-2, Revision 5, ISFSI Casks Surface Dose Rates & Contamination (recent)  
RT-H-071-901-2, ISFSI Pad Survey# 09-0575  
SI2P-71-0744-XXC3, Revision 0, Channel Operational Test of ISFSI Low Pressure Switches  
PS-70744A/B (recent)

ST-I-063-203/204-2, Refuel Floor Vent Exhaust Rad Monitor Calibration & Functional Test for  
RIS-2-17-458A/B/C/D (recent)

Work Orders R1033997/R1057408, Reactor Building TIP Room ARMs

Calibration for RIS-2/3-18-070AU

RT-H-099-931-2, Revision 1, Rad Pro Shipping QA Review for 10CFR20, App. G, 2009

RT-H-099-990-2, Revision 12, One Hour SCBA Pack Inspections & Functional Test (recent)

Verification and Validation Documentation (V&V) for Effluent Management Software (EMS)

Current Scott Authorized Service Center Maintenance & Overhaul Certificates

Current Compressed Air/Gas Quality Testing

Root Cause Investigation for Refueling Outage P3R16 Dose Estimate, 2008

RP Pre-Outage (P3R17) Checklist

Recent Radiation Monitoring (System 63) Health Report

Peach Bottom 5 Year Exposure Reduction Plan (2009 – 2013)

RP Performance Report – PB-08-13

NOS Audit PEA-09-06.

#### Occupational Radiation Safety Cornerstone:

IR199777, IR680361, IR773468, IR809426, IR862725, IR865427, IR866683, IR866866,  
867764, IR871005, IR871828, IR872672, IR876537, IR876547, IR886501, IR888095,  
IR888627, IR892133, IR899100, IR908565, IR923897, IR929532, IR 939771, IR946014,  
IR954536, and IRs 960496, 961327, 961950, 961953, 963413, 963673, 963738, 964333,  
964459, 965088, 965365, 965501, 929957, 965541, 965878, 966034, and 966056.

#### Public Radiation Safety Cornerstone:

AR A1568597, AR A1612725, IR582009, IR758878, IR763392, IR773468, IR773499,  
IR776654, IR808183, IR808191, IR809026, IR809039, IR809426, IR834848, IR854027,  
IR864291, IR875012, IR909890, IR919674, IR921975, IR927784, IR928861, IR932238,  
IR939717, IR949738, IR944453, IR946095, IR946668, IR946674, IR947125

#### Procedures:

CY-AA-170-000, Revision 3, Radiological Effluent & Environmental Monitoring Programs

CY-AA-170-100, Revision 2, Radiological Environmental Monitoring Program

CY-AA-710-1000, Revision 5, Sample Collection Vendor Evaluation

CY-AA-170-3100, Revision 3, ODCM Revisions

EP-MA-124-1001, Revision 8, Facilities Inventories and Equipment Tests

RP-AA-203-1001, Revision 6, Personnel Exposure Investigations

RP-AA-400, Revision 4, ALARA Program

RP-AA-440, Revision 9, Respiratory Protection Program

RP-AA-460, Revision 19, Controls for HRA & VHRA

RP-AA-500, Revision 14, RAM Control

RP-AA-503, Revision 2, Unconditional Release Survey Method

RP-AA-605, Revision 2, 10CFR61 Program

RP-PB-605-1001, Revision 2, PBAPS 10 CFR 61 Sampling Program

RP-AA-700, Revision 2, Controls for RP Instrumentation

RP-PB-460-1001, Revision 5, LHRA Key Inventory

RT-H-099-990-2, Revision 12, One Hour SCBA Pack Inspections & Functional Test

RT-H-099-930-2, Revision 2, Evaluation of Plant Radioisotopes and Energies

RT-H-099-931-2, Revision 1, Rad Pro Shipping QA Review for 10CFR20, App. G

ST-C-095-833-02, Revision 9, P-32, FE-55, SR-89 & 90, Alpha, and Tritium Analysis in Liquid Radwaste  
 ST-H-071-803-2, Revision 5, ISFSI Casks Surface Dose Rates & Contamination  
 ST-S-071-901-2, Revision 44, ISFSI Cask Inter seal Pressure Check  
 SI2P-71-0744-XXC3, Revision 0, Channel Operational Test of ISFSI Low Pressure Switches PS-70744A/B

#### **Section 40A1: Performance Indicator (PI) Verification**

EP-AA-125-1001, EP PI Guidance, Revision 5  
 EP-AA-125-1002, ERO Performance – Pls Guidance, Revision 4  
 EP-AA-125-1003, ERO Readiness – Pls Guidance, Revision 6  
 EP-AA-125-1004, Emergency Response Facilities & Equipment – Pls Guidance, Revision 4  
 ERO Drill Participation PI data, April 2008 – June 2009  
 Public Notification System PI data, April 2008 – June 2009  
 DEP PI data, April 2008 – June 2009

#### **Section 40A2: Identification and Resolution of Problems**

AR A1133703, Review SRV As-Found Pressure Lift Data  
 ASME OM Code, Appendix I:IST of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants, 2001 Edition, 2003 Addenda  
 ECR 04-00596, Revision 1, Install Thermocouples in the Body of SRVs  
 IR 180015, Document and Required Regulatory Actions for Relief Valves  
 IR 680967, 3 SRV/SV As-Found Lifts not Within the TS Required +/- 1 percent  
 IR 750921, Assignment 3, Develop and Document S/N 18 (U3 'D' SRV in January 2009) Failure Analysis and Testing  
 IR 927340, PEA Relief Request for 6.5-year Frequency and 3% TS  
 LER 05000278 2007-01-00: Laboratory Analysis Identifies SRV and Safety Valve Set Point Deficiencies  
 LER 05000277 2006-02-00: Automatic Depressurization System SRV Deficiencies  
 LER 05000278 2005-04-00: Laboratory Analysis Identifies SRV Set Point and Performance Deficiencies  
 LER 05000277&8 2003-04-00: Unit 2 and 3 Automatic Scrams Resulting from an Off-Site Electrical Grid Disturbance  
 LER 05000277 2003-03-00: Generator Bus Ground Caused Foreign Material Results in Automatic Scram  
 LER 05000277 2001-04-00: Automatic Reactor Scram due to Electrical Fault on Generator Conductor  
 LER 05000277 2001-02-00: Main Turbine Trip Results in Actuation of the Reactor Protection System  
 NE-163-1, Revision 0, GE Power Rerate Safety Analysis Report for Peach Bottom 2&3 (May 1993)  
 NE-163-3, Revision 0, Peach Bottom Power Rerate Project (March 1994)  
 NRC Inspection Report 05000277&8/1997-007, Section E2.2: 'E' SRV Tailpipe Temperature Increase (Unit 3)  
 NRC Inspection Report 05000277&8/2006-005, Section 40A2.2: Annual Sample: Unit 3 SRV Test Failures  
 NRC Inspection Report 05000277&8/2007-002, Documents Reviewed Section 1R02  
 NRC Inspection Report 05000277&8/2007-003, Sections 1R15; 40A3.4 & 40A7

NRC Inspection Report 05000277&8/2007-005, Section 4OA3.1  
 NRC Inspection Report 05000277&8/2008-002, Summary of Plant Status & Section 1R15  
 NRC Inspection Report 05000277&8/2008-003, Section 1R15  
 NRC Inspection Report 05000277&8/2008-005, Sections 1R12 & 1R20  
 NRC Inspection Report 05000277&8/2009-002, Summary of Plant Status & Section 1R20  
 NUREG 1022, Revisions 1 and 2, Event Reporting Guideline  
 RT-O-098-01N-2, Revision 9, Daily Log Mode 1, 2 or 3  
 RT-O-098-01N-2, Daily Log Mode 1, 2 or 3, Data Sheet 1, 07/26/09 – 08/02/09  
 RT-O-098-01N-3, Revision 10, Daily Log Mode 1, 2 or 3  
 RT-O-098-01N-3, Daily Log Mode 1, 2 or 3, Data Sheet 1, 07/26/09 – 08/02/09  
 SRV and SV As-Found and As-Left Setpoint Data, Units 2 and 3, 1996 – 2008  
 Wyle Laboratories Certification Test Report, SRV Serial Number 18, Performed 07/31/09  
 Wyle Laboratories Certification Test Report, SRV Serial Number 22, Performed 07/21/09  
 Wyle Laboratories Certification Test Report, SRV Serial Number 25, Performed 07/21/09  
 Wyle Laboratories Certification Test Report, SRV Serial Number 77, Performed 07/21/09  
 Wyle Laboratories Certification Test Report, SRV Serial Number 84, Performed 07/21/09  
 Wyle Laboratories Certification Test Report, SRV Serial Number 145, Performed 07/21/09  
 Wyle Laboratories Certification Test Report, SRV Serial Number 180, Performed 07/21/09  
 Wyle Laboratories Certification Test Report, SV Serial Number BL-1103, Performed 05/27/09

#### **Section 4OA3: Event Followup**

Event Notification #45348, Manual Reactor SCRAM Due to Short Period During Plant Shutdown, Dated September 14, 2009  
 IR965000, Just in Time Training Not Conducted for Licensed Operators  
 IR 964411, Manual Scram Required During P3R17 Shutdown  
 IR 938565, Unit 3 – Intake Structure Vent Panel Trouble  
 IR 972679, P3R17 Fuel Bundle Mispositioned During Core Shuffle II  
 IR 971916, Reactor Services to Perform CCA on P3R17 Fuel Channel Events  
 IR 971385, Fuel Channel Dropped in Unit 3 Spent Fuel Pool  
 IR 974063, Refuel Bridge Disengage Toggle Switch Inadvertently Used  
 IR 974663, Perform CCA for Recent Ops Events  
 NOM-C-7.1, "Procedure Use"  
 SO 7C.1.A-3, "CAD System Startup/Standby Operations"  
 COL 7C.1.A-3, "CAD System"  
 SO 7C.3.A, "CAD System Liquid Nitrogen Addition to Nitrogen Storage Tank,"  
 ST-O-07C-345-2, "Containment Atmosphere Dilution and Safety Grade  
 Instrument Gas Common Valve Alignment Verification and CAD Tank FillLine Functional Verification"  
 IR 956980, HV-0-7C-10 Found Out of Position Closed

#### **Section 4OA7: Licensee-Identified Violations**

IR 938565, Unit 3 – Intake Structure Vent Panel Trouble

# LIST OF ACRONYMS

ACMP	Adverse Condition Monitoring Plan
ADAMS	Agency-wide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
ANS	Alert and Notification System
AR	Action Requests/Assignment Reports
ARM	Area Radiation Monitor
ASME	American Society of Mechanical Engineers
CAD	Containment Atmospheric Dilution
CAP	Corrective Action Program
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CR	Condition Report
DBD	Design-basis Document
DC	Direct Current
DEP	Drill and Exercise Performance
EAL	Emergency Action Level
ECR	Engineering Change Request
EDG	Emergency Diesel Generator
EHC	Electrohydraulic Control
EOC	Extent-of-Condition
EP	Emergency Preparedness
ERO	Emergency Response Organization
ESW	Emergency Service Water
FPP	Fire Protection Plan
FSAR	Final Safety Analysis Report
FW	Feedwater
GE	General Electric
GEH	GE - Hitachi
HPCI	High-Pressure Coolant Injection
HPSW	High Pressure Service Water
HRA	High Radiation Area
HX	Heat Exchanger
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
ISFSI	Independent Spent Fuel Storage Installation
ISI	In-service Inspection
IST	In-service Testing
LDE	Lens Dose Equivalent
LER	Licensee Event Report
LHRA	Locked High Radiation Area
MET	Meteorological
MOV	Motor-Operated Valves
MSIV	Main Steam Isolation Valve
NCV	Non-cited Violation
NDE	Nondestructive Examination
NOS	Nuclear Oversight
NOV	Notice of Violation

NRC	Nuclear Regulatory Commission
ODCM	Off-site Dose Calculation Manual
OE	Operating Experience
OOS	Out-of-Service
ORAM	Outage Risk Assessment Management
OTDM	Operational and Technical Decision Making
PARS	Publicly Available Records
PBAPS	Peach Bottom Atomic Power Station
PCIVs	Primary Containment Isolation Valves
PDI	Performance Demonstration Initiative
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PMT	Post-Maintenance Testing
QA	Quality Assurance
RAM	Radioactive Material
RCA	Radiological Controlled Area
RCA	Root Cause Analysis
RCIC	Reactor Core Isolation Cooling
REMP	Radiological Environmental Monitoring Program
RFO	Refueling Outage
RHR	Residual Heat Removal
RP	Radiation Protection
RPO	Refuel Platform Operator
RPS	Reactor Protection System
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
SE	Safety Evaluation
SFP	Spent Fuel Pool
SGIG	Safety Grade Instrument Gas
SRV	Safety Relief Valve
SSCs	Structures, Systems, and Components
SSFFs	Safety System Functional Failures
STs	Surveillance Tests
TEDE	Total Effective Dose Equivalent
TI	Temporary Instruction
TLD	Thermo Luminescent Dosimeter
TRC	Target Rock Corporation
TRM	Technical Requirements Manual
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
UT	Ultrasonic Test
VHRA	Very High Radiation Area
VT	Visual Examination
WO	Work Order
WRNM	Wide-Range Neutron Monitoring