



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
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February 8, 2010

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 05000277/2009005 AND 05000278/2009005

Dear Mr. Pardee:

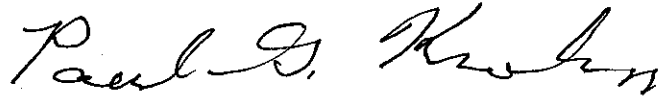
On December 31, 2009, the U. S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The enclosed integrated inspection report documents the inspection results, which were discussed on January 15, 2010, with Mr. William 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, two inspector-identified findings and one self-revealing finding of very low safety significance (Green) were identified. Two of 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 a 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,

A handwritten signature in black ink, reading "Paul G. Krohn". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

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

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

Enclosures: Inspection Report 05000277/2009005 and 05000278/2009005
w/Attachment: Supplemental Information

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

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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.: 05000277/2009005 and 05000278/2009005

Licensee: Exelon Generation Company, LLC

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

Location: Delta, Pennsylvania

Dates: October 1, 2009 through December 31, 2009

Inspectors: F. Bower, Senior Resident Inspector
A. Ziedonis, Resident Inspector
G. Johnson, Reactor Inspector
S. McCarver, Project Engineer
R. Nimitz, Senior Health Physicist
A. Rosebrook, SPE
J. Tomlinson, Operations Examiner

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

Enclosure

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SUMMARY OF FINDINGS

IR 05000277/2009005, 05000278/2009005; 10/01/2009 – 12/31/2009; Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3; Flood Protection Measures; Problem Identification and Resolution (PI&R).

The report covered a three-month period of inspection by resident inspectors and announced inspections by one regional reactor inspector, a regional health physicist, and a regional operations examiner. One self-revealing, Green NCV and two NRC-identified findings 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 December 2006.

Cornerstone: Mitigating Systems

- Green. The inspectors identified an NCV of 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," because PBAPS has not maintained safety-related power cables (including low voltage cables) in an environment for which they were designed and tested. Specifically, PBAPS did not adequately select and review for suitability of application of materials a 480 volt ac power cable feeding a safety-related motor control center (E424-O-A) that has been in a submerged environment in manhole 35 for an extended period of time and at least since 2002. Additionally, PBAPS personnel did not take actions to properly evaluate and mitigate the effects of long term submergence of these safety-related electrical power cables. The issue was entered into the licensee's CAP as IR 1022206.

This finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and the associated cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. This finding was evaluated in accordance with IMC 0609.04, Phase 1 – "Initial Screening and Characterization of Findings" and was determined to be of very low safety significance because it did not represent an actual loss of safety function nor contribute to external event core damage sequences. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Exelon did not thoroughly evaluate problems such that the resolutions addressed causes including evaluating for operability conditions adverse to quality [P.1(c)]. Specifically, station personnel did not adequately evaluate the impacts on operability and service life of operating the cables submerged in water for an extended period of time. (Section 1R06.2)

- Green. The inspectors identified a finding for the failure to follow the Exelon fleet procedure for cable monitoring (ER-AA-3003) of non-safety-related cables within the scope of the 10 CFR 50.65 (the Maintenance Rule). Specifically, PBAPS had reported to the NRC that they were implementing this procedure for cables within the scope of GL 2007-01; however, actions were not specified to identify or remediate the cause of repetitive flooding and restore the function of the degraded electrical manhole/vault drain

systems. PBAPS initiated IR 1016075 to enter the issues associated with this finding into the CAP.

- This finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and the associated cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. This finding was evaluated in accordance with IMC 0609.04, Phase 1 – “Initial Screening and Characterization of Findings” and was determined to be of very low safety significance because it did not represent an actual loss of safety function or contribute to external event core damage sequences. This finding had a cross-cutting aspect in the area of PI&R, Operating Experience, because Exelon did not adequately implement and institutionalize industry operating experience through changes to station processes and procedures [P.2(b)]. Specifically, work order instructions were inadequately scoped in that they were limited to manholes with safety-related cables and did not include all manholes with Maintenance Rule power cables contrary to the scope identified in ER-AA-3003 or GL 2007-01. (Section 1R06.2)

Cornerstone: Barrier Integrity

- Green. A Green self-revealing NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified when PBAPS inadequately implemented human performance tools and verification practices for fuel handling and fuel component handling activities, resulting in a dropped fuel channel in the spent fuel pool (SFP) and a mispositioned fuel bundle in the reactor core during the P3R17 refueling outage (RFO). The inspectors verified that corrective actions were promptly performed, including an operability evaluation and video inspection of the SFP racks, and reactor engineering evaluation for the mis-positioned fuel bundle. Additionally, the issues were entered into the PBAPS CAP.

This finding was more than minor because it was associated with the human performance attribute of the Barrier Integrity cornerstone, and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide release cause by accidents or transients. This finding was determined to be of very low safety significance (Green) in accordance with IMC 0609, Appendix M, “SDP Using Qualitative Criteria,” because evaluations performed by PBAPS, and verified by the inspectors, determined that there was no actual degradation to the physical barrier integrity. This finding had a cross-cutting aspect in the area of Human Performance, Work Practices, because PBAPS management and personnel did not effectively communicate human error prevention techniques commensurate with the risk of the assigned tasks, such that the work activities were performed safely [H.4(a)]. Specifically, PBAPS management and personnel did not adequately reinforce the importance of using human performance tools and verification practices, including self-check (STAR), concurrent verification, and independent verification, prior to performance of activities involving fuel component handling. (Section 4OA2.1)

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 shutdown in its 17th RFO (P3R17). On October 11, 2009, the reactor was restarted and the unit was synchronized to the grid on October 13, 2009. On October 15, 2009, the unit was returned to 100 percent RTP where it remained until the end of the inspection period, except for brief periods to support planned testing and rod pattern adjustments.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 Samples)

.1 External Flooding (1 External Flooding Sample)

a. Inspection Scope

The inspectors reviewed selected risk-important plant design features intended to protect the plant and its safety-related equipment from external flooding events. The inspectors reviewed the external flood analyses in Design Bases Document (DBD) P-T-07, "External Hazards," and in selected sections of the Updated Final Safety Analysis Report (UFSAR). On November 19 and 20, 2009, the inspectors walked down the emergency cooling tower and high pressure service water (HPSW) rooms to review the material condition of PBAPS's external flood protection features. Special Event Procedure (SE)-4, "Flood Procedure," was used as a guide while walking down these flood protection features. In addition, procedures and corrective action documents listed in Attachment 1 were reviewed.

b. Findings

No findings of significance were identified.

.2 Preparation for Cold Weather Conditions (1 System Sample)

a. Inspection Scope

The inspectors performed a detailed review of PBAPS's and Exelon's written procedures for winter readiness and low temperatures to evaluate PBAPS's implementation of adverse weather preparation and compensatory measures for the affected conditions prior to the onset of cold weather. The inspectors selected the following structures, systems and components to verify the physical condition of the cold weather protection features, and to verify that adequate controls were in place to ensure operability:

- Emergency Diesel Generator (EDG) and Cardox Buildings;

- Pump Structure Building;
- Emergency Service Water (ESW) and HPSW Pump Rooms;
- Intake Screen Structure; and
- Unit 3 Condensate Storage Tank Moat.

The above selection constituted one sample. The inspectors also reviewed adverse weather procedures to ensure they are adequate to maintain readiness of essential systems. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

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. Documents reviewed are listed in the Attachment. The three systems reviewed were:

- E-3 Diesel Generator Starting Air System Startup;
- 'A' Control Room Emergency Ventilation (CREV) During 'B' CREV Maintenance Outage; and
- 2 'B' Isophase Bus Duct Cooling Fan After a Trip of the 2 'A' Isophase Bus Duct Fan.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown (71111.04S - 1 Sample)

a. Inspection Scope

The inspectors performed a complete system walkdown of the accessible portions of the Unit 2 125/250 volts direct current (VDC) system, verifying that accessible breakers, were properly aligned to support system operation, adequate voltage was being supplied from the battery chargers, and that adequate electrolyte level was present inside each battery cell. The inspectors reviewed system operating procedures and inspection surveillance acceptance criteria to verify that the system standby configuration was consistent with the station procedural controls. Additionally, the inspectors discussed

the system alignment with the system engineer to ensure adequate configuration and control. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 5 Samples)

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 out-of-service (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 Core Spray Rooms (Fire Zones 13 A, B, D, E);
- E-2 EDG Room (Fire Zone 132);
- Unit 3 High Pressure Coolant Injection (HPCI) Room (Fire Zone 59);
- Unit 3 Reactor Core Isolation Cooling (RCIC) Room (Fire Zone 63); and
- Water Treatment Building (Fire Zone 168).

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 – 2 Samples)

.1 Internal Flood Protection

a. Inspection Scope

The inspectors reviewed selected risk-important plant design features intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed the flood analysis and UFSAR. The inspectors walked down the Unit 3 RCIC room for internal flooding on November 10, 2009, to evaluate the condition of penetration seals, watertight doors, and other internal design features to verify that

they were as described in the Individual Plant Examination (IPE). Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Underground Cables (1 Sample - Underground Cables)

a. Inspection Scope

The inspectors selected internal flood protection measures regarding cables located in underground manholes as a sample for review. The Exelon Nuclear Cable Condition Monitoring Program is controlled under procedure ER-AA-3003, "Cable Condition Monitoring Program." Since PBAPS did not perform any inspections of underground cables in the third and fourth calendar quarters of 2009, which would allow direct observation, the inspectors selected the most recent work order (WO) records for the inspection of manholes and underground cables for review. The inspectors reviewed the WO instructions to verify that PBAPS's inspections verify through direct observation: that the cables in manholes are not submerged in water; that the cables and/or splices and their supports are not damaged or degraded; and that manhole drainage system is functioning properly. The inspectors also reviewed the inspection results and other plant records to ensure that the cables were appropriately maintained within their design environment. The inspectors also reviewed PBAPS's response to GL 2007-01 to selectively verify that the licensee was implementing their cable monitoring program as stated in the response letter.

b.1 Findings

Introduction: The inspectors identified an NCV of 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," existed because PBAPS has not maintained safety-related power cables (including low voltage cables) in an environment for which they were designed and tested. Specifically, PBAPS did not adequately select and review for suitability of application of materials a 480 volt alternating current (ac) power cable feeding a safety-related motor control center (E424-O-A) that has been in a submerged environment in manhole 35 for an extended period of time. Additionally, PBAPS personnel did not take actions to properly evaluate and mitigate the effects of long term submergence of these safety-related electrical power cables.

Description: The inspectors reviewed NRC GL 2007-01 and noted that the NRC specifically requested licensees to describe inspection, testing, and monitoring programs to detect the degradation of inaccessible or underground power cables (at all voltage levels) that support EDGs, offsite power, ESW, service water (SW), component cooling water (CCW) and other systems that are within the scope of 10 CFR 50.65 (the Maintenance Rule). PBAPS responded to this request in Attachment 4 of an Exelon letter dated, May 7, 2007. PBAPS's response stated that the Exelon Nuclear Cable Condition Monitoring Program is controlled under procedure ER-AA-3003, "Cable Condition Monitoring Program," which was issued during January 2007. The inspectors noted that the response did not take exception to the scope specified in GL 2007-01 or identify that the scope of ER-AA-3003 differed from the GL 2007-01 scope.

The inspectors reviewed the current procedure, ER-AA-3003, Revision 0, the most recent underground cable inspection results, and discussed the cable monitoring program with engineering personnel at PBAPS. The inspectors noted that the scope of ER-AA-3003 was defined differently than the scope of GL 2007-01. Specifically, ER-AA-3003 is broader in scope in that Exelon's cable program scope includes any cables associated with power generation or whose failure could result in entering a Technical Specification (TS) action statement. However, ER-AA-3003 is more narrowly scoped in that the portions related to underground or inaccessible power is limited to medium voltage cables (601 to 35000 V). ER-AA-3003 considers power cables used in 600 V and below applications to be control cables that are only considered to be susceptible to heat stressors; therefore, no specific inspection, testing or monitoring programs beyond system manager walkdowns were deemed necessary.

The inspectors discussed the underground cable monitoring portion of ER-AA-3003, Revision 0, with engineering personnel at PBAPS. Engineering personnel stated that, at PBAPS, the underground cable monitoring program is a recurring annual preventive maintenance (PM) activity that inspects manholes. The engineering personnel also stated that the most recent underground cable inspections were performed in accordance with WO instructions contained in R1085938, "Perform Critical Manhole Inspection," that was performed during portions of the fourth quarter of 2008 and the first quarter of 2009.

The inspectors reviewed the R1085938 records and discussed the WO with engineering personnel. The inspectors observed that the WO instructions required the water level in the manholes to be recorded and required pumping the water out of the manholes. However, the WO instructions did not require maintenance technicians to record whether or how many cables were wetted or submerged during the inspection. The WO also did not identify whether the manholes have drains or verify if the drains were functioning properly. PBAPS captured these observations in Issue Report 1001542.

The WO R1085938 records also indicated that there was standing water in seven of the 33 manholes inspected. PBAPS engineering personnel and the inspectors reviewed drawing E-1400, "Manhole Symbols, Notes and Details," and the recorded water levels and determined that a safety-related 480 volt ac power cable feeding a safety-related motor control center (E424-O-A) was found submerged in water in manhole 35 when it was inspected on November 24, 2008. The inspectors reviewed several previous inspections of manhole 35 and concluded that the safety-related power cable may have been submerged between each of the previous manhole inspections and de-watering operations that were performed on September 25, 2008, November 21, 2007, and August 7, 2006.

Also, based on a review of drawing E-1400, the inspectors concluded that medium voltage safety-related power cables in two additional manholes (61 and 64) were water wetted, but not submerged. For the remaining four manholes, the water level was below the location of the conduits that entered and exited the manholes (9, 25, 26 & 90). The inspectors also noted that neither ER-AA-3003 nor the WO instructions directed actions to evaluate and mitigate the effects of long term submergence of the safety-related electrical power cables.

The inspectors searched the CAP and found that in 2002, IR 105462 was written to document that manhole 35 was full of water and was not draining. The drain pipe was suspected to be clogged. An associated Action Request (AR) A1364470 inspected the

manhole and noted algae growth on the cable, indicating that the manhole had not been draining for an extended period of time. The AR documented further investigation that concluded that the drain pipe from the manhole was sloped incorrectly (uphill) so that draining could not occur. The inspectors found no CAP or WO documentation that would indicate that this problem has been corrected.

Additionally, the inspectors found that the testing specified for the cable materials selected during the design control process did not test the cables under the most adverse design conditions. The 480 volt ac low voltage (less than 600 volts) power cable feeding a safety-related motor control center (E424-O-A) was not qualified for submergence. The cable testing, detailed in Specification 6280-E-30, was performed after the cable was immersed for six (6) hours. The results of the testing were not extrapolated to qualify the cable for continuous submersion for extended periods of time or for the 40 year life of the plant. The inspectors consulted with the Electrical Engineering Branch (EEB) in NRC's Office of Nuclear Reactor Regulation (NRR) to verify that the cable was not designed to be installed in a submerged environment and that there was supporting data available to the industry following GL 2007-01 that failure rates for unqualified 480 volt cables operating in a submerged environment were high enough to bring reliability of the cables operating in this environment into reasonable doubt.

Analysis: Failure to maintain safety-related power cables (including low voltage cables) in an environment for which they were designed and tested was a performance deficiency. This finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and the associated cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding in accordance with IMC 0609.04, Phase 1 – "Initial Screening and Characterization of Findings." This finding was of very low safety significance because it did not represent an actual loss of safety function or contribute to external event core damage sequences.

This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Exelon did not thoroughly evaluate problems such that the resolutions addressed causes, including evaluating for operability and conditions adverse to quality [P.1(c)]. Specifically, station personnel did not adequately evaluate the impacts on operability and service life of operating the cables submerged in water for an extended period of time.

Enforcement: 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established for the selection and review for suitability of application of materials, parts, and equipment that are essential to the safety-related functions of the structures, systems, and components (SSCs). These design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of a suitable testing program and where a test program is used to verify the adequacy of a specific design feature in lieu of other verifying or checking processes, it shall include suitable qualifications testing of a prototype unit under the most adverse design conditions. Design control measures shall be applied to items such as the compatibility of materials and the delineation of acceptance criteria for inspections and tests.

Contrary to the above, PBAPS has not maintained safety-related cables in an environment for which they were designed and tested. Specifically, PBAPS did not

Enclosure

adequately select and review for suitability of application of materials a 480 volt ac power cable feeding a safety-related motor control center (E424-O-A) that was discovered in a submerged environment in manhole 35 when it was inspected on November 24, 2008. Additionally, these cables were found submerged during inspections that were performed on September 25, 2008, November 21, 2007, and August 7, 2006. However, PBAPS personnel did not take actions to properly evaluate and mitigate the effects of long term submergence of these safety-related electrical power cables. The issue was entered into the licensee's CAP as IR 1022206. Because this finding was of very low safety significance, and it was entered into PBAPS's CAP, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000277, 278/2009005-01, Continuously Submerged Cables Design Deficiency)**

b.2 Findings

Introduction: The inspectors identified a Green finding for the failure to follow the Exelon fleet procedure (ER-AA-3003) for cable monitoring of non-safety-related cables within the scope of the 10 CFR 50.65 (the Maintenance Rule). Specifically, PBAPS had reported to the NRC that they were implementing this procedure for cables within the scope of GL 2007-01; however, actions were not specified to identify or remediate the cause of repetitive flooding and restore the function of the degraded electrical manhole/vault drain systems.

Description: The inspectors reviewed NRC GL 2007-01 and noted that the NRC specifically requested licensees to describe inspection, testing, and monitoring programs to detect the degradation of inaccessible or underground power cables (at all voltage levels) that support EDGs, offsite power, ESW, SW, CCW and other systems that are within the scope of 10 CFR 50.65 (the Maintenance Rule). PBAPS responded to this request in Attachment 4 of an Exelon letter dated, May 7, 2007. PBAPS's response stated that the Exelon Nuclear Cable Condition Monitoring Program is controlled under procedure ER-AA-3003, "Cable Condition Monitoring Program," which was issued on January 2007.

The inspectors reviewed the current procedure, ER-AA-3003, Revision 0, the most recent underground cable inspection results, and discussed the cable monitoring program with engineering personnel at PBAPS. The inspectors noted that the scope of ER-AA-3003 was defined differently than the scope of GL 2007-01. Specifically, ER-AA-3003 is broader in scope in that Exelon's cable program scope includes all plant control and medium voltage cables including any cables associated with power generation or whose failure could result in entering a TS action statement. However, ER-AA-3003 is more narrowly scoped regarding power cables in that it considers power cables used in 600 V and below applications to be control cables. Further, ER-AA-3003 limits the inspection and testing of underground cables to medium voltage cables.

The inspectors discussed the cable monitoring program with engineering personnel at PBAPS. Engineering personnel stated that the most recent underground cable inspections were performed in accordance with WO instructions contained in R1085938, "Perform Critical Manhole Inspection," that was completed on March 10, 2009. The inspector reviewed R1085938 and discussed the WO with engineering personnel. The WO is a recurring PM task that is performed annually. The inspectors observed that the WO instructions required recording the water level in the manholes and requires pumping the water out of the manholes; but did not require maintenance technicians to

record if, and how many cables are wetted or submerged during the inspection. The WO also did not identify whether the manholes have drains or verify if the drains are functioning properly. PBAPS captured these observations in IR 1001542. Additionally, actions were not specified to identify or remediate the cause of repetitive flooding and restore the function of the degraded electrical manhole/vault drain systems.

Through discussions with engineering personnel, the inspectors determined that the PBAPS site has 134 manholes; however, the PM activity performed by the WO was limited to visually inspecting and de-watering, as necessary, 33 manholes. PBAPS personnel acknowledged that no diagnostic testing of cables is being done. Discussions with engineering personnel indicated that these 33 manholes are the population of manholes with safety-related cables. The inspectors reviewed drawing E-1400, "Manhole Symbols, Notes and Details," and used cable raceway designators to verify that no other manholes enclosing safety-related medium voltage or control cables existed.

However, further discussions with engineering personnel indicated that 17 manholes housed medium voltage non-safety-related cables that are within the scope of the Maintenance Rule. There were no WO instructions or records to demonstrate that an adequate PM activity exists for inspecting the underground cables in these 17 manholes. The inspectors expressed concern that the WO instructions developed and implemented at PBAPS, for the inspection of cables in manholes, did not meet the scope identified in ER-AA-3003 or GL 2007-01. Specifically, the WO instructions were inadequately scoped in that they were limited to manholes with safety-related cables and did not include all manholes with Maintenance Rule power cables, including those at 600 Volts and below.

Analysis: Failure to follow the Exelon fleet procedure (ER-AA-3003) for cable monitoring of non-safety-related power cables within the scope of the 10 CFR 50.65 was a performance deficiency since PBAPS had reported to the NRC that they were implementing this procedure for cables within the scope of GL 2007-01. This finding is more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and the associated cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding in accordance with IMC 0609.04, Phase 1 – "Initial Screening and Characterization of Findings." This finding was of very low safety significance because it did not represent an actual loss of safety function or contribute to external event core damage sequences.

This finding had a cross-cutting aspect in the area of PI&R, Operating Experience, because Exelon did not adequately implement and institutionalize industry operating experience through changes to station processes and procedures [P.2(b)]. Specifically, work order instructions were inadequately scoped in that they were limited to manholes with safety-related cables and did not include all manholes with Maintenance Rule power cables contrary to the scope identified in ER-AA-3003 or GL 2007-01.

Enforcement: The inspectors determined that the finding did not represent a violation of regulatory requirements because it involved a failure to follow procedures for non-safety-related SSCs. PBAPS initiated IR 1016075 to enter the issues associated with this finding into the CAP. **(FIN 05000277, 278/2009005-02, Failure to Follow Procedures and Implement the Exelon Nuclear Cable Condition Monitoring**

Program For Non-Safety-Related Control And Power Cables Within The Scope Of The Maintenance Rule)

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

Resident Inspector Quarterly Review

a. Inspection Scope

On November 10, 2009, the inspectors observed operators in PBAPS's simulator during licensed operator requalification training to verify that operator performance was adequate and that evaluators were identifying and documenting crew performance issues. The inspectors verified that performance issues were discussed in the crew's post-scenario critiques. The inspectors discussed the training, simulator scenarios, and critiques with the operators, shift supervision, and the training instructors.

- Observed Classroom Training on Human Performance and Nuclear Instrumentation;
- Observed Simulator Scenarios that included loss of offsite power (LOOP) and loss-of-coolant accident (LOCA); and
- Observed Post-scenarios De-brief.

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 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. Documents reviewed are listed in the Attachment. The inspectors performed the following two samples:

- Unit 3 – System 7 (Primary Containment) Maintenance Rule (a)(1) Determination (IR 994585); and
- Unit 2 and Unit 3 Component Health Report Data Assessments (IR 984412).

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 4 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. Documents reviewed are listed in the Attachment. The inspectors completed four evaluations of maintenance activities on the following:

- Emergent Work to Investigate 'A' and 'B' Reactor Feed Pump (RFP) Trips during Start-up from P3R17 (Equipment Prompt Investigation for IR 979537);
- Emergent Work to Investigate and Repair 'B' ESW Pump Discharge Check Valve CHK-0-33-515B (WO C0230912);
- Credited Operator Actions to Maintain Availability of Emergency Cooling Tower During Planned Maintenance (AR A1474968-02 and WOs 968968/904060); and
- Emergent Work to Investigate Below Minimum Wall Thinning of the ESW Piping to the E-4 EDG Jacket Water Cooler (IR 1005319).

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 5 Samples)a. Inspection Scope

The inspectors reviewed five 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, UFSAR, and associated DBDs as references during these reviews. Documents reviewed are listed in the Attachment. The following degraded equipment issues were reviewed:

- Initiative to Evaluate Changing the TRM Definition of an Operation with the Potential for Draining the Reactor Vessel (OPDRV) (IR 985243);

- Reactor-Building-to-Torus Vacuum Breaker Supply Pressure Potentially Exceeded (IR 991558);
- OTDM on the Decision to Defer Unit 2 Torus Recoat from P2R18 (2010) to P2R19 (2012) (IR 826011-14);
- Wrong TS Description of Post-DBA LOCA Adequate Core Cooling (IR 999981); and
- Long Term Lead Shielding on Safety-related Piping Requires 50.59 Review (IR 981729).

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 - 1 Sample)

Temporary Modifications

a. Inspection Scope

The inspectors reviewed one temporary modification to verify that modification implementation did not place the plant in an unsafe condition. The review was also conducted to verify that the design bases, licensing bases, and performance capability of risk significant SSCs had not been degraded 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. Documents reviewed are listed in the Attachment. The following temporary modification was reviewed:

- Operation with Both Unit 2 'C' RFP Turbine Hydraulic Power Unit Pumps in Service (AR A1740487, Evaluation 01).

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors observed 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 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. Documents reviewed are listed in the Attachment. The inspectors reviewed five PMTs performed in conjunction with the following maintenance activities:

- RCIC Discharge Isolation Motor-operated Valve Mo-3-13-021 Actuator Rebuild (C0230751 and IR 976933);

- E-2 Diesel Generator Heat Detectors Functional Test (ST-I-037-242-2 and IR 996156);
- PMT Associated with Unit 2 'C' 125 VDC Battery Charger (ST-M-57B-763-2);
- PMT Associated with Troubleshooting of Unit 2 Main Turbine Mechanical Overspeed Trip Valve (RT-O-01D-404-2, AR A1739831 and IR 1007958); and
- PMT Associated with Troubleshooting and Repair of Isophase Bus Cooling System (AR A1740101, AR 1740105, IR 1008400, IR 1008416).

b. Findings

No findings of significance were identified.

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

Peach Bottom Unit 3 RFO 17 (P3R17)

a. Inspection Scope

The Unit 3 RFO (P3R17) was conducted from September 13, 2009 through October 13, 2009. During this inspection period, the inspectors performed the activities listed below to verify PBAPS's controls over outage activities:

- Refueling Activities - verified that PBAPS was using adequate controls to ensure the location of the fuel assemblies were properly tracked and verified that procedures for foreign material control and retrieval were implemented on the refueling floor;
- Core Verification - independently reviewed other core verification activities;
- Torus Closure - conducted a thorough walkdown of accessible torus areas above the suppression pool prior to reactor startup to verify that all debris, tools, and diving gear were removed (IRs 974985 and 974998);
- Drywell Closure - conducted a thorough inspection and walkdown of containment prior to reactor startup to identify remaining debris, tools, and equipment for removal (IR 977259);
- Safety Relief Valves (SRVs) - reviewed the post-removal lift test results and noted that two (2) SRV failed to lift within the TS required pressure range of their normal setpoint and this condition was documented in the CAP (IR 9743000);
- Startup Preparations – reviewed the tracking of startup prerequisites;
- Startup and Ascension to Full Power Operation – observed selected activities including: criticality; portions of the plant heat-up, preparations for main generator synchronization to the grid; portions of the power ascension to full power operation; and
- Licensee Identification and Resolution of Problems - reviewed corrective action reports related to RFO activities to verify that PBAPS was identifying issues at the appropriate level and taking adequate corrective action.

Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 6 Samples)a. Inspection Scope

The inspectors reviewed or observed selected portions of the following surveillance tests (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. Documents reviewed are listed in the Attachment. The six STs reviewed or observed included:

- RT-0-023-302-2, Revision 15, Unit 2 - HPCI Aux Oil Pump Surveillance;
- ST-O-052-213-2, Revision 22, E-3 Diesel Generator Slow Start Full Load and IST Test;
- ST-O-023-301-3, Revision 52, HPCI Pump, Valve, Flow and Unit Cooler Functional and In-Service Test [1 IST sample];
- ST-O-57B-710-3, 3AD001 and 3CD001 Station Battery Quarterly Inspection;
- ST-O-52-121-2, E1 Diesel Generator RHR Pump Reject Test; and
- ST-N-080-900-3, PBAPS Visual Examination of Drywell and Torus Surfaces.

b. Findings

No findings of significance were identified.

2. **RADIATION SAFETY****Cornerstone: Occupational Radiation Safety**2OS1 Access Controls (71121.01 – 3 Samples)a. Inspection Scope

The inspectors selectively reviewed activities and associated documentation in the below listed areas. The evaluation of PBAPSs performance in these areas was against criteria contained in 10 CFR 20, applicable TSs, and applicable PBAPS 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. (See 4OA1.3)

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

The inspectors walked down selected radiological controlled areas in Units 2 and 3 and reviewed housekeeping, material conditions, posting, barricading, and access controls to radiological areas. The inspectors made selective independent ambient radiation level measurements to verify radiological conditions.

The inspectors reviewed and discussed external and internal dose assessments since the previous inspection including results for the Unit 3 outage. 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 reviewed the frequencies and magnitude of personnel contamination events and also reviewed the radiation dose consequences of the personnel contaminations. The inspectors evaluated the frequencies and magnitude of internal contaminations of personnel.

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

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 – 3 Samples)

a. Inspection Scope

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

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors selectively reviewed exposure results achieved, for various tasks including: refueling activities, reactor vessel disassembly and re-assembly; moisture separator re-tubing; drywell snubbers, insulation, scaffolding; reactor cavity decontamination; control rod drive work activities; in-service inspection; moisture separator up-grade work; torus diving; and various valve work activities. The inspectors compared the intended dose established in ALARA plans for the work activities, with that accrued for the work. The inspectors reviewed post-job evaluations and bases for additional exposures sustained for selected work activities. The inspectors also evaluated person-hours completed versus that estimated during conduct of initial ALARA reviews.

PI&Rs

The inspectors selectively reviewed applicable self-assessments, audits, and special reports related to the ALARA program since the last inspection. (See Section 4OA2.6)

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES (OA)**

4OA1 Performance Indicator (PI) Verification

Cornerstone: Mitigating Systems

.1 Mitigating Systems PIs (71151 - 10 Samples)

a. Inspection Scope

The inspectors reviewed a selected sample of the PBAPS's information submitted for the five Mitigating Systems PIs listed below to assess the accuracy and completeness of the data reported to the NRC for these PIs. The PI definitions and the guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 6, and Exelon procedure LS-AA-2200, "Mitigating System Performance Index Data Acquisition and Reporting," Revision 2, were used to verify that procedure and reporting requirements were met. The inspectors reviewed raw PI data collected between October 2008 and October 2009 and compared graphical representations from the applicable PI reports to the raw data to verify the data was included in the report. The inspectors also examined a selected sample of operations logs, licensee event reports (LERs), CAP records, equipment clearances and Maintenance Rule data to verify the PI data was appropriately captured for inclusion into the PI report and that the individual PIs were correctly calculated. Documents reviewed are listed in the Attachment.

- MSPI – Emergency AC Power System, Unit 2 and Unit 3;
- MSPI – High Pressure Injection System, Unit 2 and Unit 3;
- MSPI – Heat Removal System, Unit 2 and Unit 3;
- MSPI – Residual Heat Removal System, Unit 2 and Unit 3; and
- MSPI – Cooling Water System, Unit 2 and Unit 3;

b. Findings

No findings of significance were identified.

.2 Review of Safety System Functional Failures (SSFFs) PIs (71151 - 2 Samples)

a. Inspection Scope

The inspectors reviewed PBAPS's submittals for the SSFFs PIs for both Units 2 and 3. For the functional failures, the inspectors looked at the period from the October 2008 through October 2009. The PI definitions and the guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 6, and Exelon procedure LS-AA-2080, "Monthly Data Elements for NRC SSFFs," Revision 5, were used to verify that procedure and reporting requirements were met.

The inspectors reviewed LERs issued during the referenced time frame for SSFFs. The documents reviewed are listed in the Attachment. The inspectors also compared

graphical representations from the most recent PI report to the raw data to verify that the data was correctly reflected in the report.

b. Findings

No findings of significance were identified.

.3 Occupational Exposure Control Effectiveness (71151 - 1 Sample)

Cornerstone: Public Radiation Safety

a. Inspection Scope

The implementation of the Occupational Exposure Control Effectiveness PI Program was reviewed. The inspectors selectively reviewed CAP records for occurrences involving High Radiation Areas, Very High Radiation Areas, and unplanned personnel radiation exposures over the past four complete quarters in this area. The inspectors also selectively reviewed individual radiation work permit entries indicating greater than 100 millirem. The review was against the applicable criteria specified in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The purpose of this review was to verify that matters that met NEI criteria were recognized and identified as Performance Indicator occurrences, as applicable.

b. Findings

No findings of significance were identified.

.4 RETS/Off-site Dose Calculation Manual (ODCM) Radiological Effluent Occurrences (71151 - 1 Sample)

a. Inspection Scope

The implementation of the RETS/ODCM PI was reviewed. The inspector selectively reviewed CAP records and projected monthly and quarterly dose assessment results due to radioactive liquid and gaseous effluent releases for the past four complete quarters. The inspector also reviewed the 2008 Annual Effluent Release Report and the 2008 Annual Radiological Environmental Operating Report. As part of this review, the inspector also reviewed PBAPS's implementation of the NEI Groundwater Initiative and ground water monitoring results. The review was against the applicable criteria specified in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The purpose of this review was to verify that matters that met NEI criteria were recognized and identified as Performance Indicator occurrences, as applicable.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (PI&R) (71152 – 2 Annual Samples; 1 Semi-annual Trend Sample; 1 OWA Sample; 71121.03 - 1 Sample; 71122.01 - 1 Sample; 71122.02 - 1 Sample; 71122.03 – 1 Sample)

.1 Fuel and Fuel Component Handling Issues (1 Annual Sample)

(Closed) URI 05000277, 278/2009004-03, Personnel Performance Errors While Handling Fuel and Fuel Components

a. Inspection Scope

URI 05000277, 278/2009004-03 was opened in NRC Inspection Report 05000277; 05000278/2009004, and was 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 RFO. The URI remained open pending the results of a root cause analysis (IR 972679) that was performed by PBAPS in response to personnel performance errors while handling fuel and fuel components in the reactor core and SFP during the P3R17 RFO. This inspection was performed after PBAPS had completed the root cause analysis, to determine if PBAPS was appropriately identifying and evaluating the fuel and fuel component handling events, and taking appropriate corrective actions in response to the events.

The inspectors reviewed PBAPS's condition reports, fuel handling procedures, and corrective actions to evaluate the adequacy of PBAPS's performance in the areas of problem identification, evaluation, EOC scoping, and corrective actions. The inspectors reviewed the operability evaluation and video inspection of the SFP rack integrity that was performed after the fuel channel drop event. Additionally, the inspectors reviewed the reactor engineering evaluations that were performed by Reactor Engineering following the mispositioned fuel bundle event. The inspectors also interviewed PBAPS reactor engineering personnel, as well as Exelon reactor services personnel, to discuss the performance issues and associated corrective actions. The documents reviewed are listed in the Attachment.

b. Findings and Observations

Introduction: A Green self-revealing NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when PBAPS inadequately implemented human performance tools and verification practices for fuel handling and fuel component handling activities, resulting in a dropped fuel channel in the SFP and a mispositioned fuel bundle in the reactor core.

Description: During the P3R17 RFO, from September 13 to October 13, 2009, the inspectors observed that PBAPS experienced several human performance events during refueling-related activities, including:

- Two fuel bundles were channeled with the incorrect channel (IRs 967200 and 970555);
- A fuel bundle was misoriented in the fuel preparation machine (IR 971001);
- Two fuel channels were damaged during staging for inspection (IR 971286);
- A fuel channel was dropped in the SFP during rechanneling activities (IR 971385);
- A fuel bundle was inserted into the incorrect location in the reactor core during refueling activities (IR 972679); and
- The fuel grapple disengage toggle switch was inadvertently used prior to lowering a fuel bundle into the reactor core. The grapple disengage interlocks prevented an actual fuel bundle drop into the reactor core (IR 974063).

The inspectors verified that corrective actions were promptly performed to address each deficiency noted above. In response to the 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). The inspectors observed two human performance events from the above list as posing the greatest challenge to maintain the fuel barrier integrity: the dropped fuel channel in the SFP, and the mispositioned fuel bundle in the reactor core.

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). The fuel handling crew immediately identified the dropped channel, verified that conditions in the SFP were stable, and suspended all fuel floor activities. PBAPS performed a detailed video inspection of the impacted fuel racks and fuel assemblies, and discovered minor physical damage to some of the spent fuel assemblies. An operability evaluation was performed, and concluded that the spent fuel racks continued to perform their design function to maintain the effective neutron multiplication factor, or k-effective, less than 0.95, and to prevent offsite doses from exceeding regulatory limits. The inspectors reviewed the video inspection and operability evaluation, and agreed with PBAPS's conclusions.

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). Step 227 was successfully performed. Prior to the performance of step 228 for placement of a bundle in core location 47-54, the Fuel Handling Supervisor (FHS) was contacted by the remote operated vehicle (ROV) camera operator and informed that the ROV technician believed the previous bundle (JLU140) had erroneously been placed in core location 47-54. All fuel movement was stopped, and Reactor Engineering was contacted to verify shutdown margin and nuclear instrumentation connectivity. The inspectors verified that shutdown margin was determined to be within the core design limits, and nuclear instrumentation connectivity was verified.

The inspectors reviewed PBAPS's root cause analysis (IR 972679) for technical adequacy of the issues identified, thorough and proper evaluation of the issues, and corrective actions established to address the root causes and contributing causes. PBAPS concluded that two root causes led to the event: (1) "Execution of verifications by fuel and fuel component handling crews were inadequate to prevent significant fuel floor events during P3R17 due to inconsistent use or application of work methods;" and (2) "Reactor Services and Station Leadership did not recognize that fuel and fuel component handling work methods were not adequately detailed to fully prepare work teams and did not adequately reinforce consistent use of fuel handling standards through observation / trending to ensure human performance verification barriers were sufficient to prevent fuel floor events." The inspectors concluded that the PBAPS root cause analysis was adequate.

Analysis: The inspectors determined that PBAPS's inadequate implementation human performance tools and verification practices for fuel handling and fuel component

handling activities constituted a performance deficiency. The failure to adequately verify that actions were correct with respect to fuel rechanneling and core loading resulted in a dropped fuel channel in the SFP and a mispositioned fuel bundle in the reactor core. This finding was more than minor because it was associated with the human performance attribute of the Barrier Integrity cornerstone, and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide release cause by accidents or transients. In the case of the dropped fuel channel, it was necessary for PBAPS to perform an operability evaluation and visual inspections of the spent fuel assemblies and storage racks, to provide reasonable assurance that the spent fuel and racks were of sufficient robustness and geometry to perform their safety function, preclude a criticality event, and prevent offsite exposures from exceeding regulatory limits. In the case of the mispositioned fuel bundle, it was necessary for PBAPS to review the core reactivity and criticality monitoring implications to provide reasonable assurance that shutdown margin design limits were maintained. PBAPS UFSAR, Section 14.5.3.5, states that a misoriented fuel bundle during power operation could potentially lead to unmonitored violations of core thermal limits.

This finding was determined to be of very low safety significance (Green), in accordance with IMC 0609, Appendix M, "SDP Using Qualitative Criteria," because evaluations performed by PBAPS, and verified by the inspectors, determined that there was no actual degradation to the physical barrier integrity.

This finding had a cross-cutting aspect in the area of Human Performance, Work Practices, because PBAPS management and personnel did not effectively communicate human error prevention techniques commensurate with the risk of the assigned tasks, such that the work activities were performed safely [H.4(a)]. Specifically, PBAPS management and personnel did not adequately reinforce the importance of using human performance tools and verification practices, including self-check (STAR), concurrent verification, and independent verification, prior to performance of activities involving fuel component handling.

Enforcement: Title 10 of the CFR, Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed and accomplished by documented procedures. Exelon procedure HU-AA-101, "Human Performance Tools and Verification Practices," Section 4.1.1, requires, in part, that "Self-check shall be used for component identification and equipment manipulations." Specifically, the individual performing the task will "pause before performing a task to enhance the attention to detail in an attempt to eliminate the distractions; prior to performing any actions, verify the action to be taken is correct by questioning the intended actions and understanding the expected responses; without losing physical or visual contact, perform the intended action; and, verify the actual response is the expected response."

Contrary to this, fuel handling and fuel component handling personnel at PBAPS did not adequately use self-check for component identification and equipment manipulations on two separate occasions. Specifically, a fuel channel was dropped into the SFP during rechanneling activities on September 29, 2009; and fuel bundle JLU140 was incorrectly placed in core location 47-54 on September 30, 2009. In the first example, the fuel handling personnel (refuel platform operator, spotter, and fuel handling supervisor) lost visual contact of the physical engagement of the fuel channel handling tool before completing the intended action to move the fuel channel into a SFP storage location.

As a consequence of this, the fuel channel was dropped into the spent fuel pool during rechanneling activities. In the second example, the fuel handling personnel inadequately questioned and verified that the actual response (placing the bundle in location 47-54) was the intended response (locating to 45-56). As a consequence of this, fuel bundle JLU140 was incorrectly placed in core location 47-54. Because this finding is of very low safety significance and has been entered into Exelon's CAP (IR 972679), this violation is being treated as a Green NCV in accordance with section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000278/2009005-03, Inadequate Verification Practices while Handling Fuel and Fuel Components)**

2. Semi-Annual Review to Identify Trends (1 Semi-annual Resident Inspector Sample)

a. Inspection Scope

The inspectors reviewed lists of CAP items to identify trends (either NRC or licensee identified) that might indicate the existence of a safety issue requiring more detailed inspection follow-up. The inspectors reviewed a list of approximately 8,600 Issue Report (IR) that PBAPS initiated and entered into the CAP action tracking system (Passport) from June 1, 2009 through December 1, 2009. The inspectors also reviewed a list of approximately 1,000 IRs for which corrective actions remained open. The lists were reviewed and screened to complete the required semi-annual PI&R trend review. A sample of 38 Passport IRs (listed in the Attachment) were selected from the list and reviewed in more detail to verify whether the issues were adequately identified and evaluated, and that corrective actions were either closed or planned appropriately. The inspectors evaluated the IRs against the requirements of Exelon procedure, LS-AA-125, and 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action."

b. Assessments and Observations

No findings of significance were identified.

The inspectors observed that the plant continues to be challenged by human performance events, in particular with respect to fuel handling and fuel component handling activities during the most recent Unit 3 RFO P3R17 (reference section 40A2.1 and NCV 05000278/2009005-03, Inadequate Verification Practices While Handling Fuel and Fuel Components). Each of the issues was documented in the CAP, received thorough evaluation, and corrective actions have been scheduled or completed.

The inspectors also observed a high number of IRs in the CAP related to motor operated valves (MOV). PBAPS has previously experienced degraded MOV reliability due to degraded lubrication, resulting from inadequate preventive maintenance practices (reference NCV 05000277/278/2009003-01). A number of corrective actions were performed during P3R17, including the disassembly, inspection and testing of MOVs inside of plant areas which are accessible while the plant is in a shutdown condition. Additionally, the inspectors have noted a higher level of station sensitivity to MOV lubrication adequacy, as well as overall MOV performance.

Based on the overall review of the selected sample, the inspectors concluded that PBAPS was: appropriately identifying and entering issues into the CAP, properly evaluating the identified issues, and actively identifying adverse trends before they became more safety significant problems.

3. Annual Sample: Ground Water Monitoring (1 Annual Sample)

a. Inspection Scope

The inspectors selectively reviewed PBAPS's implementation of the Ground Water Monitoring Program and follow-up of tritium sample results for Well MW-4, a well located within the station's restricted area. The inspector reviewed applicable corrective action documents, ground water sampling results, geo-hydrological reports, and adverse condition monitoring plans (ACMP). The inspectors also reviewed and discussed ground water, effluent, and environmental monitoring results with cognizant PBAPS staff.

The review was completed using criteria contained in TSs, the Offsite Dose Calculation Manual, and PBAPS's Ground Water Monitoring Program.

b. Findings

No findings of significance were identified. The inspectors did not identify any public or occupational radiological dose impact due to the tritium.

PBAPS implemented an expanded ground water monitoring program in 2006 which included installation of fourteen ground water monitoring wells. PBAPS developed a program to implement the guidance contained in NEI-07-07, "Industry Ground Water Protection Initiative - Final Guidance Document (August 2007)." As part of this program, PBAPS collected and analyzed periodic ground water samples and analyzed the samples for radioactivity.

In August 2008 (IR 808183), PBAPS noted an increase in tritium concentrations in well MW-PB-4 (Well 4). No other radioactivity was identified. Well 4 is an onsite, shallow (overburden) ground water monitoring well located within the site Restricted Area. PBAPS subsequently initiated various actions to trend the well data, locate the source of the tritium, and stop the source. In this regard PBAPS established a Well 4 Tritium Monitoring and Mitigation Action Plan, established a Failure Modes Complex Troubleshooting team, established a High Impact Team, and established an ACMP to develop plans and make recommendations to locate and correct the source of the tritium. PBAPS initiated actions to identify and locate the cause of the increase by: increasing frequency of sampling, installing additional wells to characterize the levels and aid in detection of the source; and evaluate system integrity (pipes and tanks) through systematic reviews and testing of likely sources. PBAPS also conducted "dating analysis" to date the age of the tritium to determine if it may be legacy activity or a recent leak and conducted a "rainout/washout" study to determine if the tritium may be associated with washout.

PBAPS had previously inspected the Unit 3 condensate storage tank (CST). PBAPS's reviews identified the tritium was from recent leakage, and that the likely cause of the tritium was a small valve packing leak in a valve in a moat associated with the Unit 3 condensate system. PBAPS repaired the leak (June 2009), re-sealed the outdoor moat associated with the valve, and continued to sample the various wells including the newly installed wells to evaluate trends. PBAPS continued to sample the wells and noted decreases in previously identified tritium levels. PBAPS also conducted ground water transports analyses which indicated the leaking valve was a plausible cause of the tritium. At the conclusion of the inspection period,

PBAPS continued to monitor wells, and evaluate data, to ensure the source had been identified and repaired. PBAPS conducted an extent of condition review to detect and repair similar issues. PBAPS has scheduled near a term inspection of the torus water drain tank.

PBAPS reported its initial evaluation of the MW-PB-4 ground water monitoring results, and investigation, in its 2008 Annual Radiological Environmental Operating Report, and further discussed the issue in its 2008 Annual Radioactive Effluent Release Report.

PBAPS implemented the NEI voluntary reporting criteria, for state and local officials, for ground water sampling results. PBAPS made a press release regarding the ground water monitoring results on July 10, 2009.

PBAPS conducted mass-flux analyses for ground water transport to estimate potential tritium release concentrations. These values were used for purposes of projected dose calculations which were reported in the annual reports. No significant doses were identified.

PBAPS plans to provide a report of its 2009 ground water monitoring program results in its 2009 Annual Report. PBAPS's on-going analyses of ground water transport, and projected doses associated with transport, indicated no significant doses were identified. All dose calculations were well below applicable regulatory values. Exelon has also conducted ground water monitoring at the Unit 1 facility and has not detected tritium in its ground water monitoring wells to date.

4. Operator Workarounds (OWAs) (1 OWA Sample)

a. Inspection Scope

As required by Inspection Procedure (IP) 71152, "Identification and Resolution of Problems," the inspectors conducted a review of the OWA program to verify that PBAPS was identifying OWAs problems at an appropriate threshold, have entered them in the CAP, and proposed or implemented appropriate corrective actions. The inspectors reviewed the list of OWAs and Operator Challenges (OCs) identified and managed in accordance with Exelon Procedure, OP-AA-102-103, "OWA Program." Specifically, the review was conducted to determine if any OWAs for mitigating systems affected the mitigating system's safety functions or affected the operators' ability to implement abnormal and emergency operating procedures. The inspectors reviewed the following open OWAs being tracked by PBAPS:

- Unit 3 - 3 'B' Recirc Seal Purge (IR 975913)

The inspectors also reviewed the lists of open OCs (deficiencies that are obstacles to normal plant operations), periodically walked down the panels in the main control room, and have reviewed control room deficiencies to identify and be cognizant of: (1) OWAs that have not been evaluated by PBAPS, and (2) OWAs that increase the potential for personnel error, including OWAs that:

- Require operations contrary to past training or require more detailed knowledge than routinely provided;

- Require a change from longstanding operational practices;
- Require operation of a system or component in a manner different from similar systems or components;
- Create the potential for the compensatory action to be performed on equipment or under conditions for which it is not appropriate;
- Impair access to required indications, increase dependence on oral communications, or require actions under adverse environmental conditions; and
- Require the use of equipment and interfaces that have not been designed with consideration of the task being performed.

The inspectors also interviewed an equipment operator and reactor operator to determine if any compensatory actions they routinely take are (or should be) categorized as workarounds/challenges. Finally, the inspectors reviewed current operator turnover documentation to determine if there are documented compensatory actions that should be categorized as workarounds/challenges.

b. Findings

No findings of significance were identified.

.5 Resident 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 resident 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 or attending daily management review committee meetings.

b. Findings

No findings of significance were identified.

.6 Review of Items in the CAP (71121.03 - 1 Sample; 71122.01 -1 Sample; 71122.02 - 1 Sample; 71122.03 - 1 Sample)

a. Inspection Scope

The inspector reviewed IRs to evaluate PBAPS's threshold for identifying, evaluating, and resolving problems, including identifying and implementing effective corrective actions. The review included a check of possible repetitive issues such as radiation worker or RP technician errors. The following documents were reviewed:

- IRs (978740, 954471, 998020, 933419, 860999, 865867, 976469, 852295, 933183, 907934, 964916, 946014, 977985, 984363, 946095, 862694, 909343, 937706, 955179, 962463, 991349, 995768, and 894793).

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

b. Findings

No findings of significance were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153 - 3 Samples).1 (Closed) LER 05000277&278/2009-02-00, Pneumatic Supply Degraded for Containment Isolation Valves Due to Mis-positioned Valve (1 Sample)

On August 24, 2009, it was determined that certain valves associated with the primary containment and containment atmosphere dilution (CAD) systems were inoperable. This determination was the result of the discovery by maintenance personnel that a 1.5-inch manual isolation valve (HV-0-7C-10) was out-of-position closed, upon investigation of control room alarms that were received during routine primary containment isolation valve stroke testing. This normally-open valve provides gaseous nitrogen to the safety grade instrument gas (SGIG) system, which in turn provides a pneumatic supply to operate certain valves associated with primary containment isolation and vacuum relief, as well as the CAD system. The condition affected both Unit 2 and Unit 3 since the nitrogen supply originates from a common tank. Once discovered out-of-position, the valve was promptly re-opened, the associated line-up was verified, and the associated systems were restored to an operable status. The enforcement aspects of this issue were documented in Inspection Report 05000277&8/2009004, Section 4OA3.3, as a self-revealing, Green NCV (05000277&8/2009004-02). Specifically, TS 5.4.1 was not complied with when the SGIG pressure building circuit outlet block valve (HV-0-7C-10) was manipulated without procedure guidance. Therefore, this LER is closed.

.2 (Closed) LER 05000278/2009-05-00, Common Cause Failure of 'C' and 'E' Wide Range Neutron Monitors (WRNM) (1 Sample)

As a result of a cause evaluation completed on September 15, 2009, it was determined that 'C' and 'E' WRNM had failed, while in Mode 1, as a result of an apparent common cause. The cause evaluation determined that both of these WRNMs failures were likely the result of a degraded connection between the upper cable and the WRNM detector element. This condition was considered reportable as a common cause that resulted in the inoperability of multiple WRNMs. The failures were considered random and no specific manufacturing defect was identified. At the time of these failures, the WRNMs were not required to be operable. The safety function of the 'C' and 'E' WRNMs was ensured to be met prior to entering the mode of applicability by placing the 'A' Reactor Protection System (RPS) in a trip condition prior to entering Mode 2 on September 13, 2009 in preparation for a planned RFO. The 'C' and 'E' WRNMs were replaced during the RFO. No previous similar LERs were identified.

The inspectors reviewed the event and concluded that the condition was appropriately reported as a common-cause inoperability. The inspectors verified that no performance deficiency, violation of TSs, or condition prohibited by TSs existed. The safety function of the WRNMs was assured prior to entering the mode of applicability. Therefore, this LER is closed.

.3 (Closed) LER 05000278/2009-06-00, Unplanned Manual Scram Due to Shortening Reactor Period during Scheduled Shutdown (1 Sample)

On September 19, 2009, operations personnel manually scrammed the Unit 3 reactor at 0.2% power as a result of an observed shortening reactor period. In accordance with plant operating procedures, operators manually scrammed the reactor by placing the mode switch in the shutdown position. There were no actual safety consequences associated with this event. The scram function operated as designed and there were no complications as a result of the manual scram. The event was considered not to be risk significant. The cause of the manual scram was due to a shortening reactor period during a planned soft shutdown using control rods. The manual scram was required due to a small amount of relatively cold feedwater being added (positive reactivity) to the reactor during a time period when control rods (negative reactivity) were not being inserted. This resulted in a decrease in the reactor period. Plant shutdown procedures for Units 2 and 3 will be revised to provide additional control of operational activities to minimize the likelihood of short period when performing a soft shutdown. PBAPS identified no previous similar LERs.

The inspectors reviewed the event and concluded that the condition was appropriately reported as a manual RPS actuation. A previous review of this event was documented in Section 4OA3.1 of IR 05000277/2009005 and 05000278/2009005. The inspectors verified that no performance deficiency, violation of TSs, or condition prohibited by TSs existed. Therefore, this LER is closed.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with site 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 review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

.1 Regional Management Site Visit and Meeting

On October 1, 2009, Mr. M. Gray, Acting Deputy Director, USNRC, Region I, Division of Reactor Projects, toured the Unit 3 drywell, torus, and other selected areas of the plant and met with Mr. W. Maguire and other PBAPS staff.

.2 Access Controls/ALARA Planning and Controls

The inspectors presented the inspection results of 2OS1 and 2OS2 to PBAPS personnel on December 18, 2009. No proprietary information is presented in this report.

.3 Quarterly Resident Exit Meeting Summary

On January 15, 2010, the resident inspectors presented the inspection results to Mr. W. Maguire and other PBAPS staff, who acknowledged the findings. Mr. P. Krohn, Chief, U.S. NRC, Region 1, 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) or Severity Level IV was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as a NCV.

The Reload 16, Cycle 17, Revision 4, mid-cycle Core Operating Limits Report (COLR) was prepared and approved between November 21 and 26, 2008. This COLR revision was issued for implementation on March 12, 2009, and was submitted to the NRC by a letter from P. B. Cowan to the U.S. NRC, "Issuance of Proprietary and Non-Proprietary COLRs," dated October 1, 2009. TS 5.6.5.d, "COLR," states, in part, the COLR, including any mid-cycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC. Contrary to the above, between its issuance on March 12, 2009, and its submittal on October 1, 2009, the Reload 16, Cycle 17, Revision 4, mid-cycle COLR was not provided in a timely manner to the NRC nor upon its issuance. This issue was documented in the CAP as IR 970608. Traditional enforcement applies since this was a violation that potentially impeded or impacted the regulatory process. This was considered a non-cited Severity Level IV violation since the untimely submittal did not have a material impact on licensed activities.

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
 J. Kovalchick, Security Manager
 L. Lucas, Chemistry Manager
 P. Navin, Operations Director
 R. Holmes, Radiation Protection Manager
 T. Wasong, Training Director

NRC Personnel

P. Krohn, Branch Chief
 F. Bower, Senior Resident Inspector
 A. Ziedonis, Resident Inspector
 M. Gray, Acting Deputy Director
 G. Johnson, Reactor Inspector
 S. McCarver, Project Engineer
 R. Nimitz, Senior Health Physicist
 A. Rosebrook, SPE
 J. Tomlinson, Operations Examiner

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSEDOpened

None.

Opened/Closed

| | | |
|--------------------------|-----|--|
| 05000277, 278/2009005-01 | NCV | Continuously Submerged Cables Design Deficiency (Section 1R06.2) |
| 05000277, 278/2009005-02 | FIN | Failure to Follow Procedures and Implement the Exelon Nuclear Cable Condition Monitoring Program for Non-Safety-Related Control and Power Cables Within The Scope of the Maintenance Rule (Section 1R06.2) |

| | | |
|-------------------------|-----|--|
| 05000278/2009005-03 | NCV | Inadequate Verification Practices while Handling Fuel and Fuel Components (Section 4OA2.1) |
| <u>Closed</u> | | |
| 05000277&278/2009-02-00 | LER | Pneumatic Supply Degraded for Containment Isolation Valves due to Mis-positioned Valve (Section 4OA3.1) |
| 05000278/2009-05-00 | LER | Common Cause Failure of 'C' and 'E' Wide Range Neutron Monitors (Section 4OA3.2) |
| 05000278/2009-06-00 | LER | Unplanned Manual Scram Due to Shortening Reactor Period during Scheduled Shutdown (Section 4OA3.3) |
| 05000277&278/2009004-03 | URI | Personnel Performance Errors While Handling Fuel and Fuel Components Section 4OA2.1) |
| 05000277&278/2007004-03 | URI | (Closed) RI 05000277,278/2009004-03, Personnel Performance Errors While Handling Fuel and Fuel Components (Section 4OA2.1) |

Discussed

None.

LIST OF DOCUMENTS REVIEWED**Section 1R01: Adverse Weather Protection**

PBAPS UFSAR, Revision 22, April 2009; Sections:

1.6.1.1.8, "Hydrology"

1.6.1.1.10, "Design Bases Dependent Upon Site and Environs"

2.4.3.5, "Floods"

12.0 – "Structures and Shielding"

C.2.5.4 "Flood Loads and Flood Protection"

J.3.3.4, "Station-Site Flood Protection Studies"

PBAPS, Units 2 and 3, IPE of External Events Submittal, dated May 1996, Section 5.2

DBD P-T-07, External Hazards, Revision 2

Special Event Procedure (SE)-4, "Flood Procedure," Revision 23

Abnormal Operating Procedure (AO) 20A.1, Temporary Removal and Installation of Flood Barriers in the Reactor Building Drainage System, Revision 12

OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 4

NE-CG-265-3, Hazard Barrier Program Supporting Documentation, Revision 1

CC-PB-201, Hazard Barrier Control Program, Revision 0

Drawing A-490, Barrier Plans – C.W Pump Structure, ECT and Diesel Generator Building, Revision 4
 Drawing A-486, Barrier Plans – 135' – 0"
 Drawing M-541, Plumbing & Drainage – Circ. Water Pump Structure - Plan and Details
 IR 996786, Water Intrusion in Emergency Cooling Tower 'C' LC Room
 IR 996502, Configuration Control for HV-28A-11443 and HV-28A-11444
 IR 570723, CWPS Flood Program Vulnerability
 IR 563253, Potential External Flood Vulnerability – CW Pump Structure
 IR 776658, Penetration Seal Extends Slightly from Wall
 IR 775621, NRC ID'd ECT Door T01 Gap Greater Than 1/8"
 AR A1598498, Create Work Order to Service and Position CWPS Roof Drain Valves
 AR A1698328, Fire System Piping and Instrument Tubing Insulation Required
 Work Order C0228566, Install Insulation on Unit 2 and Unit 3 Fire Piping
 IR 844105, RT-O-040-630-2 Winterizing Procedure
 IR 844638, 2008-2009 Winter Readiness Critique Issue
 IR 868307, Fire System Break Causing U2 Transient
 IR 878889, Fire System Piping Instrument Tubing Insulation Required
 IR 878918, Revise SO 28A.8.A-2
 IR 878932, Revise SO 28A.8.A-3
 IR 906702, 2008 and 2009 Winter Execution Critique Action Items
 IR 934565, 2009-2010 Winter Readiness Tracking Assignments
 IR 949078, Insulation on Pipe on Side of CST is Falling Off
 IR 1004114, Challenges to Winter Readiness
 RT-I-066-200-2, Revision 7, Heat Trace System Testing, completed 11/09/09
 RT-O-040-620-2, Revision 14, Outbuilding HVAC and Outer Screen Inspection for Winter Operation, completed 11/29/09
 RT-O-040-630-2, Revision 12, Winterizing Procedure, completed 11/27/09
 SO 28A.8.A-2, Revision 12, Circulating Water System Routine Inspection
 SO 28A.8.A-3, Revision 14, Circulating Water System Routine Inspection
 SO 48.4.A, Revision 4, Draining ESW and High Pressure Service
 OP-PB-108-111-1001, Revision 4, Preparation for Severe Weather
 WC-AA-107, Revision 6, Seasonal Readiness
 eSOMS Suite Operator Rounds: Operator Daily Outside Rounds
 Water Return Lines to Emergency Cooling Tower for Winter Freeze Protection
 Peach Bottom Winter Execution Morning Plant Status Report, dated 11/30/09
 Peach Bottom Winter Execution Morning Plant Status Report, dated 12/04/09
 2009-2010 Winter Readiness and Execution Report, dated 12/04/09

Section 1R04: Equipment Alignment

COL 52C.1.A-3, Revision 11, E-3 Diesel Generator Starting Air System Startup
 SO 40D.8.A, Revision 4, Control Room Ventilation System Routine Inspection
 SO 40D.1.A, Revision 11, Control Room Ventilation Startup and Control Room Emergency Ventilation High Radiation Ventilation Trip Restoration and Automatic Operation Alignment
 COL 40D.1.A, Revision 6, Control Room Ventilation System
 IR 1008608, Control Switch Broken for 2BE015
 IR 1008557, EOC Inspection of FS-5450
 IR 1008540, As Found Condition of Tubing to FS-4450
 IR 1008530, Isophase Bus Loss of Cooling Load Reduction
 IR 1008451, Determine if Additional GP-5 Guidance Can Be Provided

IR 1008416, Unit 2 Loss of Isophase Bus Cooling Alarm
IR 1008400, 2 'A' Isophase Cooler Trip
IR 1007149, 2 'B' Isophase Bus Cooler Fan Recurring Trip
IR 999398, 2 'B' Isophase Cooler Tripped

Section 1R05: Fire Protection

IR 996156, Water Intrusion in E2 Diesel Causes Control Room Alarm
SO 57.B.1-2, Revision 5, 125/250 Volt Station Battery Charger Operations
ST-O-57B-750-2, Revision 28, 125/250 VDC Station Battery Weekly Inspection
ST-O-57B-710-2, Revision 15, 2AD001 & 2CD001 Station Battery Quarterly Inspection
ST-O-57B-720-2, Revision 15, 2BD001 & 2DD001 Station Battery Quarterly Inspection
COL 57.B.1.B, Revision 0, 125/250 VDC System Common Plant
COL 57.B.1.B-2, Revision 14, 125/250 VDC System
PF-59, Revision 4, Prefire Strategy Plan Unit 2 Reactor Building HPCI Room 88'
Elevation Fire Zone 59
PF-63, Revision 1, Prefire Strategy Plan Unit 3 Reactor Building RCIC Room 88'
Elevation Fire Zone 63
PF-168, Revision 0, Prefire Strategy Plan Water Treatment Building Fire Zone PF-168

Section 1R06: Flood Protection Measures

UFSAR 4.10.3.4, Detection of Abnormal Leakage Outside the Primary Containment
UFSAR J.3.4.2, Suction Piping System Supply Water to ECCS Design Aspects
IPEEE Section 3.3.8.3.2 Reactor Building
IPEEE Table 3.3.8-2, Flood Frequencies for Reactor Building Flood Areas
Alarm Response Card 222 20C204C; A-4 RCIC Pump Room Flood
T-103, Revision 18, "Secondary Containment Control"
NRC GL 2007-01, "Inaccessible or Underground Power Cable Failures
that Disable Accident Mitigation Systems or Cause Plant Transients
NUREG-1769, Safety Evaluation Report Related to the License Renewal of PBAPS, Units 2 and
3, dated March 2003
Exelon Letter RS07-067, D. M. Benyak to USRNC Document Control Desk, "Response
to NRC GL 2007-01, "Inaccessible or Underground Power Cable Failures that Disable
Accident Mitigation Systems or Cause Plant Transients," dated May 7, 2007
Check-In Assessment (IR 861186-02, Peach Bottom License Renewal Commitment
Readiness
NEI 06-05, Medium Voltage Underground Cable White Paper, dated April 2006
ER-AA-3003, Cable Condition Monitoring Program
MA-AA-723-330, Electrical Testing of AC Motors Using Baker Instrument Advanced
Winding Analyzer, Revision 2
MA-AA-723-500, Inspection of Non EQ Cables and Connections for Managing Adverse
Localized Environments, Revision 2

IR 1022206, 480V Safety Related Cable Identified Submerged in Manhole 35
IR 1016075, Expand Scope of Manhole Dewatering
IR 1013740, ER-AA-3003 Revision Required
IR 1013730, Submerged Cables in Manhole 035
IR 1000598, Need to Confirm Manhole 35 Drain
IR 1000596, Need to Confirm Manhole 009 Drain
IR 1001542, NRC-Identified Improvement for PM Work Order Activities

IR 1001509, INDMS Planner Sign Offs Not Done for ECR 09-00084 Cables, Etc.
 IR 997864, Cable Submergence Strategy Potentially Inadequate
 IR 997332, Need to Confirm Manhole 92 Drain
 IR 997315, Need to Confirm Manhole 17 Drain
 IR 997323, Need to Confirm Manhole 18 Drain
 IR 997326, Need to Confirm Manhole 40 Drain
 IR 997330, Need to Confirm Manhole 91 Drain
 IR 970509, Hi Pot Testing Non-Seg Bus Risks Cable Degradation
 IR 852301, Cable Testing/Replacement for Reactor Recirc System
 IR 815814, Cable Testing and Replacement for HPSW
 IR 760587, SEN 272 Shutdown Due To Underground Cable Fault
 IR 739939, Benchmarking: "Tan Delta" Testing TVA Browns Ferry Station
 IR 738329, Test Medium Voltage Cable 00P186-DR (ECW)
 IR 738327, Test Medium Voltage Cable 0AX026
 IR 738314, Test Medium Voltage Cable 343SU
 IR 738299, Implement MV Cable Testing SBO Cable Transitions
 IR 656157, Medium Voltage Cable Testing Program
 IR 652269, Cable Testing for SBO Line Test Circuit
 IR 651101, AS4/BS4, Cooling Tower, SBO Test Line Cable Testing
 IR 635900, T&RM on Cable – Replacement Readiness in Progress
 IR 603721, Review of Medium Voltage Cables for Treeing
 IR 591281, NRC GL 2007-01 – Power Cable Failures
 IR 543500, T&RM ER-AA-3003, Inaccurate Statement Regarding PB Cable History
 IR 517509, MH035 - Cables Found Off of Supports and Lying on Unistrut
 IR 496788, Conflicting Data on the Existence of Splices in MH 40
 IR 431254, Exelon Cable Monitoring and Predictive Maintenance Program
 IR 305072, Check-in Assessment: Cables
 IR 274183, Attachment 9 for E3 Underground Cable Replacement
 IR 211560, Baker Motor Testing
 IR 105462, Drain Pipe to Manhole 35 Clogged Preventing Water Drainage
 IR 82163, Unplanned TSA – Trip of 343 SU Bus
 IR 974066, Summary and Recommendation for WTP Overload Condition
 IR 959483, Cable 0B1462B and 0B1462D Low Megger Readings to Ground

AR A1652001, Test Medium Voltage Cable 0AX026
 AR A1652006, Implement MV Cable Testing SBO Cable Transitions
 AR A1329928, Letter to NRC: PB Unit 2 & 3 – License Renewal Application
 AR A1391394, Critical Manholes Do Not Have Associated PM Work
 AR A1362010, NRC Information Notice 2002 -12: Submerged Safety-Related Electrical Cables
 AR A1364470, Water Leaking Down Cable Tray
 AR A1364472, SBTG Pipe Has Potential Degraded Condition
 AR A1349428, Brunswick Green Finding, Electrical Site Manhole Degradation

Section 1R12: Maintenance Effectiveness

IR 975705, E313 Breaker Exceeded its MRule Unavailability Criterion
 IR 998238, MREP Meeting Action Items – November 23, 2009
 IR 384941, Document Approved Revision 10 to (a)(1) Action Plan
 IR 972266, AO-3-20-94 Failed Thru Valve Leak Rate During Surveillance Test\LLRT
 IR 984412, Component Health Report CHR 2009 Data Assessments
 IR 922429, Component Health Report CHR 2008 Data Assessments

IR 831420, Component Health Report CHR 2008
 IR 1001495, Quarterly Trending – Department Review
 ER-AA-3002, Revision 4, Component Cross-System Monitoring and Component Health Reporting
 ER-AA-310, Revision 6, Implementation of the Maintenance Rule

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

A1263820, RFPT A HPU
 A1315151, RFPT B HPU
 A1390525, RFPT C HPU
 A1731448, RFPT 3B Speed Control System HPU
 A1731449, RFPT 3A HPU Filter 02
 IR 977230, 3A RFPT Failed to Trip at Conclusion of RT-O-06D-261-3
 IR 978974, 3A RFPT Governor HPU Plugged Filter Alarm
 IR 978977, 3B RFPT Governor HPU Plugged Filter Alarm
 IR 979170, DPI-90661A Requires Replacement
 IR 979478, AO-3-06C-3139A has No Indication in the MCR
 IR 979599, AO-3-06C-3139A has No Indication in the MCR when Open
 IR 979537, 3A RFPT
 IR 979566, 3B RFPT Due to HPU Filter Swap While In Standby Configuration
 IR 979763, 3B RFPT HPU DP Indicator is Failed
 IR 979779, RFP Trips During HPU Filter Swaps
 M-6-3, RFPT Instrumentation, Sheet 1, Revision 20
 SO 6D.7.E-3, Response to A, B or C RFPT Controller Trouble or Governor Trouble Alarm, Swap of HPU Filter and Bypass of 'A' or 'B' RFPT Governor UPS, Revision 5
 IR 984032, CHK-0-33-515B Not Seated Causes RT-0-033-600-2 to be Aborted
 IR 984070, C&T Emergent Clearance Written for 'B' ESW Pump Check Valve
 IR 984163, In-Body Erosion on CHK-0-33-515B
 IR 1005319, E-4 EDG Jacket Cooling Water Piping Below Minimum Wall
 USNRC GL 90-05, Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping
 DWG. ISO-2-33-102, System 33, ESW, Revision 1
 AR A1733036, CHK-0-33-515B Not Seated Causes RT-0-033-600-2 to be Aborted
 AR A1474968-02, Evaluate Time for ECT Availability
 COL 32.1.A-2, Revision 10, HPSW System
 COL 33.1.A-2, Revision 22, ESW System (Unit 2 and Common)
 IR 1003637, NRC Concerns Regarding 10CFR50.65 (a)(4) Equipment Availability Guidance
 M-315, Revision 67, ESW and HPSW Systems P&ID
 M-330, Revision 35, Emergency Cooling System P&ID
 WO R0904060-07, E234-D-A (5442) Perform MCU Inspection (for MO-2-32-2486 Breaker)
 WO R0968968-13, MO-2-32-2908 Motor Operator PM

Section 1R15: Operability Evaluations

IR 934663, 2009 Fleet Outage Lessons Learned Tracking
 IR 967964, PBAPS PORC Remanded OPDRV Definition Change for CRDM Exchange

IR 991558, Pressure Supply to AO-2(3)-07B-2(3)502B Potentially Exceeded
P-144-3-1, AO-2(3)-07B-2(3)2502B Design Spec Data Sheet, Dated 01/25/83
P-144-19-1, GH-Bettis Qualification Test Report 37274, Volume II, Sections 3.0 and 3.5,
Received 02/22/83
PM-386, dated 08/31/90, Design Analysis to Verify Size of SGIG System N2 Pressure
Regulators PCV-7651A&B

Section 1R18: Plant Modifications

IR 1009579, Standby HPU Pump Started for the 2C RFP
AR A1740487
Drawing M-6-3, Revision 20, RFPT Instrumentation

Section 1R19: Post-Maintenance Testing

IR 969611, MO-3-23-015: Significant Magnesium Rotor Degradation Identified
IR 969616, MO-3-23-015: Motor Installed P3R16 Not Evaluated
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 971783, Assignment 2, Evaluate Past Operability of MO-3-10-31B Underthrust
IR 976933, MO-3-13-021 Exceeded Stroke Times
IR 977733, Lessons Learned from MO-3-13-021 Issue
IR 996156, Water Intrusion in E-2 Diesel Causes Control Room Alarm
IR 996397, E-2 EDG Roof Leak and partially Clogged Roof Drains
ST-I-037-242-2, Revision 12, E-2 Diesel Generator Heat Detectors Functional Test
AR A 1711912, 2 'C' Station Battery Charger Trouble
C0229315, Troubleshoot/Repair Charger Fail Alarm Problem
C0231386, Troubleshoot/Repair Charger Fail Alarm Problem
IR 919666, 2 'C' Station Battery Charger Trouble
ST-M-57B-763-2, Battery Charger 2CD003-1 and 2CD003-2 Capability Test, Completed
12/03/09
AR A1739831, Troubleshoot Mechanical Trip Valve
IR 1007958, Mechanical Trip Valve Failed to Reset during Testing
NUREG-0800: Standard Review Plan Section 3.5.1.3, Revision 3, Turbine Missiles
RT-O-01D-404-2, Revision 12, Main Turbine Mechanical Trip Valve Test
UFSAR Section 11.2.4, Revision 22, Turbine-Generator Power Generation Evaluation
UFSAR Section C.2.5.1, Revision 22, Turbine Missiles
ARC 206 F-4, Revision 6, Isophase Bus Loss of Cooling Alarm
ARC 205 F-5, Revision 8, Isophase Bus Trouble
Instrument Calibration Sheet for Isophase Bus Cooler Air Flow Switch FS-4450
IR 999398, 2 'B' Isophase Cooler Tripped
IR 10048400, 2 'A' Isophase Cooler Trip
IR 1008416, Unit 2 Loss of Isophase Bus Cooling Alarm
IR 1009311, SO 52D.6.A-2 Permanent Revision TC Tracking Item
IR 1009312, SO 50D.6.A-3 Tracking Item for Permanent Revision TC
IR 1008530, Isophase Bus Loss of Cooling Load Reduction
IR 1009277, 2 'B' Isophase Bus Fan Tripped
IR 1009414, Emergent Clearance Generated for U/2 Isophase Cooler Trip
IR1009802, 2 'B' Isophase Fan Belts Found Degraded

Section 1R20: Refueling and Other Outage Activities

GP-2, Normal Plant Start-up, Revision 120

IR 961858, Evaluate the Use of Bypassing WRNMs with a Jumper

IR 964411, Manual SCRAM Required During P3R17 Soft Shutdown

IR 971916, Reactor Services to Perform CCA on P3R17 Fuel Channel Events

IR 972679, Fuel Bundle Mispositioned During Core Shuffle II

IR 974300, Two SRV "As-Found" Lifts Not Within the TS required +/- 1%

IR 974336, Control Rod Drifts with CRD in Service

IR 974413, ST-O-054-752-3 (E-23 LOCA-LOOP Test), Step 6.2.42 Completed with Unexpected Results

IR 973795, Bubbles in the Reactor Core Affecting Fuel Movement

IR 974063, Refuel Bridge Disengage Toggle Switch Inadvertently Used

IR 974140, NOS ID: CCA Not Initiated For 32 P3R17 PCEs

IR 974148, NOS ID: IR on P3R17 CRE Goal Exceeded Closed to Actions

IR 974301, P3R17 HU PINV Exceed Goal of Less Than 6

IR 974302, P3R17 Site Clock Resets Exceed Outage Goal

IR 974495, P3R17 Drywell Critical Insulation Inspection Results

IR 974909, P3R17 CISI Documentation Of Condition of Downcomers

IR 974985, Items Found and Retrieved During Final Torus FME Inspection

IR 974998, Piece of Wire Found Wedged on Unit 3 Torus Proper Catwalk

IR 975190, Unit 3 Control Rod 10-39 Stuck Fully Inserted

IR 975499, Refuel Platform Bridge/Trolley Encoders Not Accurate

IR 975513, Unit 3 SFP Rack Labels (NE Corner of Pool) LTA

IR 976933, MO-3-13-021 Exceeded Stroke Times

IR 976991, Unit 3 CRD 22-11 Temperature Indication Erratic, DAS Point Bypassed

IR 977142, Mispositioned Washer in Solenoid 122 DCV

IR 977218, No Blue Lights During Zero Pressure Scram Time Testing

IR 977225, No Blue Lights During Hydro Scram Time Testing

IR 977672, Unit 3 CRD 50-39 Not Withdrawing From Position 02

IR 978942, ON-106 Entry for Unit 3 CRD 18-15

IR 979933, 3B Recirculation Pump Motor Hi Oil Level Alarm

IR 976933, MO-3-13-021 Exceeded Stroke Times

IR 976780, Control Rod 26-03 Difficult to Move Between Positions 00 - 08

IR 977157, Avoiding Orange Risk in Paragon During RFO

IR 977259, Drywell Closeout Inspection Coordination with NRC

AR A1712682, Need CM Type Work Order to Connect Torus Dewatering Hoses

LS-AA-119, Fatigue Management and Work Hour Limits

FH-6C, Core Compoinet Movement – Core Transfers

OU-AB-4001, BWR Fuel Handling Practices

SO 18.1.A-3, Operation of Refueling Platform

M-C-797-019, Channeling/Dechanneling of Fuel Bundles

Section 1R22: Surveillance Testing

ST-O-052-213-2, Revision 22, E-3 Diesel Generator Slow Start Full Load and IST Test

ASME OM Code, 2001 Edition through the 2003 Addenda

ER-PB-321-1000, Revision 1, Pump and Valve IST Program Fourth Ten Year Interval

IR 827889, Air Voids Identified in Various U2 HPCI Lines – P2R17

IR 977203, Air Identified in U3 HPCI Gland Seal Condenser Cooling Water Pipe

IR 977333, Air Void Identified Upstream of HPCI Flow Orifice FE-3-23-080

IR 977743, CHK-3-23-62 HPCI Min-Flow Check to Torus
 IR 977823, VBT-90321 Booster Pump Speed is Not Indicating
 M-365, Sheet 1, Revision 62, HPCI System
 Operability Evaluation 03-43, Revision 0, HPCI Minimum Flow to Torus Check Valve
 CHK-3-23B-62
 ST-O-023-301-3, Revision 52, HPCI Pump, Valve, Flow and Unit Cooler Functional and
 In-Service Test, Performed 10/13/09
 IR 984423, Average Specific Gravity Reading Below 1.205
 PTSA-3-TS-09-0130, Specific Gravity for the 3 'A' Battery is Less Than the Requirements
 of Table 3.8.6-1
 PIMS Commitment Number T04604, Battery Specific Gravity Limits
 IR 995172, E1 DG RHR Reject Recorder Data Missed

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

MSPI Deviation Reports:

October 2008 - 2009, Unit 2 and Unit 3 RHR/HPSW
 October 2008 - 2009, Unit 2 and Unit 3 ESW
 October 2008 - 2009, Unit 2 and Unit 3 EDGs
 October 2008 - 2009, Unit 2 and Unit 3 HPCI
 October 2008 - 2009, Unit 2 and Unit 3 RCIC

LERs

2-09-01, Clearance Performance Error Results in Condition Prohibited by TSs
 2-09-02, Pneumatic Supply Degraded for Containment Isolation Valves Due to Mis-positioned
 Valve
 3-09-01, Control Rods Inoperable During Mode 2 Operations As a Result of Interferences
 3-09-02, Inoperable 'A' WRNM Results in Condition Prohibited by TSs
 3-09-03, Inoperable Containment Isolation Valve Results in Condition Prohibited by TSs
 3-09-04, Inoperable Ventilation Fan Results in Condition Prohibited by TSs
 3-09-05, Common Cause Failure of 'C' and 'E' WRNM

Section 40A2: Identification and Resolution of Problems

IR 975913, 3B Recirc Seal Purge - Evaluate for Operator Workaround and Operator Challenge
 *IR 1000371, TS 3.3.5.1 Bases Contains Inappropriate Sentence
 *IR 1006174, (Security) Door #300 U/2 Reactor Building Difficult to Latch
 *IR 1007021, Improvement for EDG Simulated ECCS Auto Start Test
 OP-AA-102-103, Revision 3, Operator Workaround Program
 OP-AA-102-103-1001, Revision 2, Operator Burden And Operationally Significant Decisions
 Impact Assessment Program
 OP-PB-108-105-1001, Revision 1, Equipment Deficiency Tagging
 LS-AA-125, Revision 13, CAP Procedure
 IR 967200, GNF-2 Fuel Bundle Rechanneled with New GE-14 Fuel
 IR 970555, GE14 Channeled with Channel from Suspect Population Vice New

IR 971001, Orientation of Fuel Bundle Incorrect in Fuel Prep Machine
 IR 971286, Fuel Channels Damaged During Staging for Inspection
 IR 971385, Fuel Channel Dropped in Unit 3 SFP
 IR 971916, Reactor Services to Perform CCA on P3R17 Fuel Channel Events
 IR 972679, P3R17 Fuel Bundle Mispositioned During Core Shuffle II
 IR 972679, Assignment 7, Root Cause Investigation: P3R17 Fuel Floor Handling Issues
 IR 974063, Refuel Bridge Disengage Toggle Switch Inadvertently Used
 IR 974301, P3R17 PINV Exceed Goal of Less Than 6
 IR 974302, P3R17 Site Clock Resets Exceed Outage Goal
 IR 974663, Perform CCA for Recent Ops Events
 IR 980329, NOS ID: PBAPS Operations Rated Red 3T09
 IR 984372, Opportunity for Improvement Benchmarking Refuel Training
 246-GP-37-PB3, Revision 15, Removal and Reinstallation of a Channel on a Fuel Bundle in a Fuel Prep Machine with Chain Stops set for Irradiated Fuel
 ECR 09-00036, Peach Bottom Unit 3 Shuffle Works Shutdown Margin Calculation
 FH-6C, Core Component Movement – Core Transfers
 FH-35, Control of Material Movement in the Fuel Pool
 HU-AA-101, Revision 4, Human Performance Tools and Verification Practices
 Human Performance Issue Verbal Report Format (Peach Bottom), dated 10/03/09
 M-C-797-019, Revision 14, Channeling / Dechanneling of Fuel Bundles
 M-C-797-046, Revision 9, Control of Fuel Inspection Activities
 NF-AA-309 Fuel Move Sheet: P3R17 Fix JLU140 Core Location, performed 09/30/2009
 Operability Evaluation 09-005, Operability Evaluation of the SFP Racks
 Peach Bottom Unit 3 Dropped Fuel Channel Inspection, Discs 1 and 2, dated 09/29/09
 Reactor Services Peach Bottom Recovery Plan, dated 09/28/09
 SO 18.1.A-3, Revision 20, Operation of Refueling Platform
 SO 18.1.B-0, Revision 5, Fuel Floor Auxiliary Hoist Work Platform Operation
 ST-R-002-930-3, Refueling Shutdown Margin Verification, performed 09/30/09
 Station Event Free Clock Reset for Human Performance Error during Unit 3 Core Reload, dated 09/30/09
 UFSAR Section 14.5.3.5, Revision 22, Misoriented Bundle Event
 U.S NRC Information Notice 94-13, Unanticipated and Unintended Movement of Fuel Assemblies and other Components due to Improper Operation of Refueling Equipment

Issue Reports from Semi-Annual Trend Review (Section 40A2.2)

941055, HCU High Temperature Alarms During Weekly Rod Exercises
 956558, CRD Hydraulic High Temps During Rod Exercise
 959990, U3 CRD High Temperature Alarms
 940514, CV-2-03A-13127DO-OP has Small Air Leak from Diaphragm
 940317, CV-3-03A-13126GQ-OP: Ultrasonic Identified an Air Leak
 940511, CV-2-03A-13126CM-OP has Small Air Leak from Diaphragm
 967089, Drain Pipe for HV-3-30-31843C is Clogged
 966122, Drain Pipe for HV-3-30-31004B is Clogged
 973576, Drain Lines were not Successfully Unclogged
 967974, LTA Timeliness of Rework of Pipe Supports
 965512, 3R17 IS Hangar 33HB-S63 Support Rod is Bent
 965517, 3R17 ISI Support 33HB-S152 Thread Engagement of a Nut
 971116, Unit 3 ESW Pump Sluice Gate MO-3213 Did Not Stroke Open
 982346, TS 3.8.7 Interpretation Concerns – AC Distribution Systems
 932650, TS Testing Impacted by HPCI/Diesel TSA's
 934657, Procedure Compliance Issue

934661, Procedure Compliance Issue
 934665, Procedure Compliance Issue
 962467, Isophase Bus Cooling Performance Data
 962470, Isophase Bus Cooling Performance Data
 994760, URI 2009004-03 P3R17 Refuel Floor Human Performance Errors
 935914, Peach Bottom Human Performance Stand-downs
 937282, Maintenance Human Performance FASA Deficiency
 980506, Monthly Human Performance Error Data Needs Revision\
 993644, Human Performance Observation
 163240, Conowingo Pond Level Management and SBO Line Vulnerabilities
 733410, Improve Technical Human Performance in the Maintenance Department
 854095, Engineering Department Clock Reset – Technical Human Performance
 864880, Peach Bottom Technical Human Performance Plan
 923818, Maintenance Department Human Performance Action Plan
 864431, Potential Non-compliance with 10 CFR 50.59
 827889, Air Voids Identified in Various Unit 2 HPCI Lines – P2R17
 707459, EDG GL 89-13 Testing Issues
 960974, EDG E4 Heat Sensor Failure
 759000, NRC ID: PE-0182 Not Updated with PE-0017 Starting Voltages
 759183, NRC ID: Battery Calc PE-17 Clarity on Connection Resistances
 762371, NRC CDBI – URI for Load Tap Changer Licensing Basis
 777756, NRC Identified – EDG Lube Oil Temp Not Adequately Evaluated

* Indicates NRC-identified

Section 40A3: Event Followup

IR 974663, Perform CCA for Recent Ops Events

Section 40A7:

IR 985000, NRC-Identified Record Keeping Inconsistencies for HCU Work
 IR 968159, Proprietary Information in PB3 COLR
 IR 970608, PB3 COLR Revision 4 Not Provided to Licensing in a Timely Manner

LIST OF ACRONYMS

| | |
|-------|--|
| AC | Alternating Current |
| ACMP | Adverse Condition Monitoring Plan |
| ADAMS | Agency-wide Documents Access and Management System |
| ALARA | As Low As Reasonably Achievable |
| AR | Action Requests/Assignment Reports |
| CAD | Containment Atmosphere Dilution |
| CAP | Corrective Action Program |
| CCW | Component Cooling Water |
| CFR | Code of Federal Regulations |
| COLR | Core Operating Limits Report |
| CR | Condition Report |
| CREV | Control Room Emergency Ventilation |
| CST | Condensate Storage Tank |
| DBD | Design-basis Document |
| EDG | Emergency Diesel Generator |

| | |
|-------|--|
| EEB | Electrical Engineering Branch |
| EOC | Extent-of-Condition |
| ESW | Emergency Service Water |
| FHS | Fuel Handling Supervisor |
| FPP | Fire Protection Plan |
| GL | Generic Letter |
| HPCI | High Pressure Coolant Injection |
| HPSW | High Pressure Service Water |
| HX | Heat Exchanger |
| IMC | Inspection Manual Chapter |
| IP | Inspection Procedure |
| IPE | Individual Plant Examination |
| IR | Issue Report |
| LER | License Event Reports |
| LOOP | Loss of Offsite Power |
| LOCA | Loss of Coolant Accident |
| MOV | Motor Operated Valve |
| NCV | Non-cited Violation |
| NEI | Nuclear Energy Institute |
| NRC | Nuclear Regulatory Commission |
| NRR | Nuclear Reactor Regulation |
| OCs | Operator Challenges |
| ODCM | Off-site Dose Calculation Manual |
| OE | Operating Experience |
| OOS | Out-of-Service |
| OPDRV | Operation with the Potential for Draining the Reactor Vessel |
| OTDM | Operational and Technical Decision Making |
| OWA | Operator Workarounds |
| PARS | Publicly Available Records |
| PBAPS | Peach Bottom Atomic Power Station |
| PI | Performance Indicator |
| PI&R | Problem Identification & Resolution |
| PM | Preventive Maintenance |
| PMT | Post-Maintenance Testing |
| RFP | Reactor Feed Pump |
| RCIC | Reactor Core Isolation Cooling |
| RFO | Refueling Outage |
| RHR | Residual Heat Removal |
| ROV | Remote Operated Vehicle |
| RP | Radiation Protection |
| RPS | Reactor Protection System |
| RTP | Rated Thermal Power |
| SDP | Significance Determination Process |
| SFP | Spent Fuel Pool |
| SGIG | Safety Grade Instrument Gas |
| SSCs | Structures, Systems, and Components |
| SSFFs | Safety System Functional Failures |
| SRVs | Safety Relief Valves |
| STs | Surveillance Tests |
| SW | Service Water |
| TRM | Technical Requirements Manual |

| | |
|-------|--------------------------------------|
| TS | Technical Specification |
| UFSAR | Updated Final Safety Analysis Report |
| URI | Unresolved Item |
| VDC | Volts Direct Current |
| WO | Work Order |
| WRNM | Wide-Range Neutron Monitoring |