UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

February 1, 2016

Mr. Bryan Hanson
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 – INTEGRATED INSPECTION REPORT 05000277/2015004 AND 05000278/2015004

Dear Mr. Hanson:

On December 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The enclosed inspection report documents the inspection results, which were discussed on January 15, 2016, with Mr. Pat Navin, Peach Bottom Plant Manager, and other members of your staff.

NRC Inspectors examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at PBAPS.

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's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Daniel L. Schroeder, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000277/2015004 and 05000278/2015004
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.	50-277 and 50-278
License Nos.	DPR-44 and DPR-56
Report No.	05000277/2015004 and 05000278/2015004
Licensee:	Exelon Generation Company, LLC
Facility:	Peach Bottom Atomic Power Station, Units 2 and 3
Location:	Delta, Pennsylvania
Dates:	October 1, 2015 through December 31, 2015
Inspectors:	B. Smith, (Acting) Senior Resident Inspector L. Micewski, (Acting) Senior Resident Inspector B. Reyes, (Acting) Senior Resident Inspector J. Patel, (Acting) Resident Inspector S. Barber, Senior Project Engineer N. Floyd, Reactor Inspector C. Graves, Health Physicist C. Highley, Project Engineer D. Kern, Senior Reactor Inspector M. Modes, Reactor Inspector D. Orr, Senior Reactor Inspector A. Turilin, Project Engineer
Approved By:	Daniel L. Schroeder, Chief Reactor Projects Branch 4 Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY

IR 05000277/2015004, 05000278/2015004, 10/01/2015 – 12/31/2015; Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3; Surveillance Testing.

This report covered a three-month period of inspection by resident inspectors, and announced baseline inspections performed by regional inspectors. The inspectors identified one non-cited violation (NCV), which was of very low safety significance (Green). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 19, 2013. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated July 09, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation (NCV) of very low safety significance of 10 *Code of Federal Regulations* (CFR) Part 50, Appendix B, Criterion III, "Design Control," for not ensuring that the adequacy of PBAPS' emergency diesel generator (EDG) lubrication oil (LO) supply was designed to withstand the effects of natural phenomena. Specifically, additional LO, evaluated by PBAPS to meet their EDG technical specification (TS) mission time of seven days of continuous operation, was housed in a non-class I structure that would be unable to withstand the effects of natural phenomena. PBAPS entered the issue into the correction action program (CAP) as issue report (IR) 02603369 and took immediate corrective actions to relocate the LO reserve inventory from their warehouse to the 135' elevation of the PBAPS' radwaste building, which is a seismic class I structure

  The finding is considered more than minor because it is associated with the Protection Against External Factors attribute of the Reactor Safety Mitigating Systems cornerstone and adversely affected the cornerstone's objective of ensuring reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors evaluated the significance of this finding using IMC 0609 Appendix A, "The SDP for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that this finding was of very low safety significance (Green) because the finding is a design deficiency which did not result in an actual loss of functionality of the EDGs. This finding did not have a cross-cutting aspect because the most significant contributor of the performance deficiency (PD) occurred during the 1994 conversion to improved technical specifications (ITS) and, thus, was not reflective of current plant performance. Specifically, PBAPS' current engineering change request (ECR) process would evaluate for natural phenomena considerations such as seismic, tornado, flood, etc. (Section 1R22)

  Other Findings

  None.

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period at 100 percent rated thermal power (RTP). On December 13, 2015, Unit 2 commenced a shutdown from 100 percent RTP and entered into a forced outage to repair packing on the 2 'C' inboard main steam isolation Valve (MSIV). On December 15, 2015, the Unit 2 reactor mode switch was placed in start-up and the main generator was synchronized to the electrical grid on December 17, 2015. On December 18, 2015, Unit 2 was returned to 100 percent RTP, and remained at 100 percent RTP until the end of the inspection period.

Unit 3 began the inspection period in a refueling outage (RFO) (P3R20). On October 21, 2015, the Unit 3 reactor mode switch was placed in start-up and the main generator was synchronized to the electrical grid on October 22, 2015. On October 25, 2015, Unit 3 was returned to 89 percent power (the pre-extended power uprate (EPU) 100 percent power limit). On November 24, 2015, Unit 3 down powered from 92 percent RTP to 77 percent RTP to perform breaker maintenance on the 3 'A' condensate pump. Unit 3 returned to 92 percent RTP later that same day. On December 3, 2015, Unit 3 raised power to the full 100 percent RTP EPU limit after final NRC approval for power ascension. Unit 3 remained at 100 percent RTP until the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

.1 Readiness for Impending Adverse Weather Conditions (1 sample)

a. Inspection Scope

The inspectors reviewed PBAPS' preparations for the onset of a thunderstorm on October 2, 2015, resulting from Hurricane Joaquin. The inspectors reviewed the implementation of PBAPS' adverse weather preparation procedures before the onset of the adverse weather condition. The inspectors walked down the north substation, EDGs, and output transformer yard system availability. The inspectors verified that operator actions defined in PBAPS' adverse weather procedure maintained the readiness of essential systems. The inspectors discussed readiness and staff availability for adverse weather response with operations and work control personnel. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 Winter Readiness – Seasonal Extreme (1 sample)

a. Inspection Scope

The inspectors reviewed PBAPS' readiness for the cold weather preparations on December 11, 2015. The review focused on the EDGs, the river water intake structure travelling screens, emergency cooling tower (ECT), circulating water pump house, and associated support equipment. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), TSs, and the CAP to determine the temperatures or other seasonal weather conditions that could challenge these systems. The review ensured PBAPS personnel had prepared adequately for the weather-related challenges. The inspectors reviewed station procedures, including PBAPS' seasonal weather preparation procedure, and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during cold weather conditions.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04 – 3 samples)

.1 Partial System Walkdowns (71111.04Q – 2 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 3 'B' residual heat removal (RHR) following the cross-tie modification on October 20, 2015
- Unit 3 reactor core isolation cooling (RCIC) following restoration after the RFO on October 21, 2015

The inspectors selected these systems based on their risk-significance relative to the Reactor Safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the UFSAR, TSs, work orders (WOs), IRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of its intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether PBAPS staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

During the week of September 28, 2015, the inspectors performed a complete system walkdown of accessible portions of the Unit 3 automatic depressurization system and associated Unit 3 safety relief valves (SRVs) to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests (STs), drawings, equipment line-up check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hanger and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the system to verify as-built system configuration matched plant documentation, and that system components and support equipment remained operable. The inspectors confirmed that systems and components were aligned correctly, free from interference from temporary services or isolation boundaries, environmentally qualified, and protected from external threats. The inspectors also examined the material condition of the components for degradation and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related IRs and WOs to ensure PBAPS appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05Q – 5 samples)

Resident Inspector Quarterly Walkdowns

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that PBAPS controlled combustible materials and ignition sources were controlled in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out-of-service (OOS), degraded or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Unit 3 recirculation pump motor generator (MG) set room and adjustable speed drive (ASD) trailer on October 1, 2015
- Unit 3 torus space on October 19, 2015
- Unit 3 outboard MSIV room on October 20, 2015
- Units 2 and 3 cable spreading room on October 30, 2015
- Units 2 and 3 main control room on November 5, 2015

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07A - 1 sample)

a. Inspection Scope

The inspectors reviewed the Unit 2 'A' RHR/high pressure service water (HPSW) heat exchanger (HX) during the week of November 2, 2015, to determine its readiness and availability to perform is safety functions. The inspectors reviewed the design basis for the component and verified PBAPS' commitments to NRC Generic Letter 89-13, "Service Water System Requirements Affecting Safety-Related Equipment." The inspectors reviewed the results of the most recent thermal performance monitoring test (performed February 12, 2015), the most recent internal visual inspection, including tube sheet partition plate inspection and eddy current testing (performed February 12, 2015), and trend assessment based on comparison with previous inspections and performance tests. The inspectors discussed the results of the most recent inspection with engineering staff. The inspectors verified that PBAPS initiated appropriate corrective actions for identified deficiencies. The inspectors also verified that the number of tubes plugged within the HX did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R08 In-service Inspection Activities (71111.08 – 1 sample)

a. Inspection Scope

The inspectors reviewed Exelon staff implementation of in-service inspection (ISI) program activities for monitoring degradation of the reactor coolant system boundary, risk significant piping and components, and containment systems during the PBAPS Unit 3 20th RFO. The inspection was completed onsite September 21 to 28, 2015, followed by in-office review October 8 to 9, 2015. The sample selection for this inspection was based on the inspection procedure objectives and risk priority of those pressure retaining components in systems where degradation would result in a significant increase in risk. The inspectors observed in-process non-destructive examinations (NDE), reviewed documentation, and interviewed Exelon personnel to verify that the NDE activities performed as part of the fourth interval, third period, of the Peach Bottom Unit 3 ISI program were conducted in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 2001 Edition with 2002 and 2003 Addenda.

NDE and Welding Activities

The inspectors performed direct observation of NDE activities in process and reviewed documentation of completed examinations listed below. Activities included review of ultrasonic testing (UT), radiographic testing (RT), and visual examination (VT).

The inspectors reviewed certifications of the NDE technicians performing the examinations and verified that the inspections were performed in accordance with approved NDE procedures and industry guidance. For UT activities, the inspectors also verified the calibration of equipment used to perform the examinations. The inspectors verified that the test results were reviewed and evaluated by certified Level III NDE personnel and that the parameters used in the test were in accordance with the limitations, precautions, and prerequisites specified in the test procedure.

ASME Code Required Examinations:

- Direct observation of the manual UT of the N4E nozzle-to-vessel weld in the feedwater system.
- Direct observation of the manual UT of the N4E nozzle inner radius and bore in the feedwater system.
- Documentation review of the manual UT of the reactor pressure vessel closure head studs (Studs 47-92).
- Documentation review of the RT of two pipe-to-flange welds (10-2XC020-11 and -12) and one pipe-to-pipe weld (10-2DC20-29), 20-inch diameter, performed as part of a modification activity in the RHR system.
- Direct observation of the VT of the drywell (i.e., containment) interior and exterior penetrations and surfaces. The inspectors independently examined the condition of the drywell interior liner surfaces at all floor elevations, including the moisture barrier at the 119'11" elevation. The inspectors performed a documentation review of the drywell VT records and compared those to the inspector walkdowns.

Review of Previous Indications Accepted by Evaluation

The inspectors did not review any previous indications because there were no relevant indications from the previous outage that required evaluation for continued service.

Repair/Replacement Activities Including Welding Activities

The inspectors reviewed the modification package associated with engineering change 11-00376, which implemented plant changes as part of the EPU project. Specifically, the scope of the modification was to install a piping cross-tie between the Unit 3 'A' and 'C' trains of the RHR system in order to increase the containment cooling capability following a postulated design basis event.

The inspectors performed a direct observation of the welding activities associated with two piping welds (10-2XC020-11 and -12) in progress and performed a documentation review of one completed weld (10-2DC20-29) to verify that welding and applicable NDE activities were performed in accordance with ASME code requirements. The inspectors reviewed the weld procedure and weld information data sheet, and also reviewed the radiography data sheets for final acceptance of the welds. The modification was performed under WOs C0255830 and C0255936.

Identification and Resolution of Problems

The inspectors reviewed a sample of PBAPS Unit 3 corrective action reports, which identified NDE indications, deficiencies, and other non-conforming conditions since the previous RFO and during the current outage. The inspectors verified that non-conforming conditions were properly identified, characterized, evaluated, and that corrective actions were identified and entered into the CAP for resolution.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11Q – 3 samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training (1 sample)

a. Inspection Scope

The inspectors observed a licensed operator requalification training scenario for the site area on November 9, 2015. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classifications made by the shift manager and the TS action statements entered by the shift technical advisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room (2 samples)

a. Inspection Scope

The inspectors observed and reviewed the licensed operator performance from the main control room during the reactivity evolutions listed below. The inspectors observed use of and compliance with procedures, crew communications, interpretation, diagnosis, and understanding of plant alarms, use of human error prevention techniques, documentation of activities, and management oversight of the evolution to verify that the crew was following procedures and plant expectations for conduct of operations.

- Unit 3 plant startup and heat up from RFO 3R20 on October 20 and 21, 2015
- Unit 2 plant shutdown and cooldown for a forced outage to repair a packing leak on the ‘C’ inboard MSIV on December 13, 2015

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 1 sample)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structures, systems, and components (SSCs) performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance WOs, and maintenance rule (MR) basis documents to ensure that PBAPS was identifying and properly evaluating performance problems within the scope of the MR. For each sample selected, the inspectors verified that the SSC was properly scoped into the MR in accordance with 10 CFR 50.65 and that the (a)(2) performance criteria established by the PBAPS staff were reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2) status. Additionally, the inspectors ensured that PBAPS staff was identifying and addressing common cause failures that occurred within and across MR system boundaries.

- Unit 3 recirculation system and ASDs on November 4, 2015

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 3 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that PBAPS performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the Reactor Safety cornerstones. As applicable for each activity, the inspectors verified that PBAPS personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When PBAPS performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Elevated risk, Unit 3 operation with a potential for draining the reactor vessel (OPDRV) during local power range monitor swaps on October 1, October 5, and October 6, 2015
- Elevated risk, Unit 2 E-43 bus outage on October 13, 2015
- Elevated risk, Unit 3 containment not fully inerted during plant startup on October 21, 2015

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

The inspectors reviewed operability determinations (ODs) for the following degraded or non-conforming conditions based on the risk significance of the associated components and systems:

- Unit 3 standby liquid control (SBLC) test in which an explosive (squib) valve did not appear to fire correctly on October 8, 2015
- Unit 3 reactor water cleanup class 1 piping below minimum wall thickness on October 8, 2015
- Unit 3 MSIV snubbers low oil identified in reservoirs on October 9, 2015
- Unit 3 'D' HPSW outlet valve tripped on torque switch on October 22, 2015
- Unit 3 high-pressure coolant injection (HPCI) drain valve leaking by on October 22, 2015
- Operator workarounds (OWAs) on November 5, 2015

The inspectors evaluated the technical adequacy of the ODs to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to PBAPS' evaluations to determine whether the components or systems were operable. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations, including compliance with in-service testing requirements. Where compensatory measures were required to maintain operability, such as in the case of OWAs, the inspectors determined whether the measures in place would function as intended and were properly controlled by PBAPS. Based on the review of selected OWAs listed above, the inspectors verified that PBAPS identified OWAs at an appropriate threshold and addressed them in a manner that effectively managed OWA-related adverse effects on operators and SSCs.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

Permanent Modification

a. Inspection Scope

The inspectors evaluated the following modification listed below:

- Unit 3 reactor recirculation pump and ASDs modification on November 2 to November 5, 2015

The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modifications. In addition, the inspectors reviewed modification documents associated with the upgrade and design change. The inspectors also reviewed 10 CFR 50.59 documentation, post-modification testing results, procedure revisions, training documentation, and conducted field walkdowns of the modifications.

b. Findings

No findings were identified

1R19 Post-Maintenance Testing (71111.19 - 9 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests (PMTs) for the maintenance activities listed below to verify that procedures and test activities tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with the information in the applicable licensing basis and/or design basis documents, and that the test results were properly reviewed and accepted and problems were appropriately documented. The inspectors also walked down the affected job site, observed the pre-job brief and post-job critique where possible, confirmed work site cleanliness was maintained, and witnessed the test or reviewed test data to verify quality control hold points were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

- Unit 3 'A' core spray (CS) valve local leak rate test (LLRT) following valve maintenance on October 4, 2015
- Unit 3 HPCI vacuum relief valves LLRTs following maintenance on October 5, 2015
- Unit 3 'A' inboard MSIV LLRT following rework after failed LLRT on October 7, 2015
- Unit 3 'A' HPSW following flex modifications on October 13, 2015
- Unit 3 RCIC overspeed trip test following maintenance outage on October 15, 2015
- Unit 3 'A' RHR PMT following crosstie modification on October 19, 2015
- Unit 3 emergency auxiliary transformer following maintenance outage on November 19, 2015
- Unit 3 'B' reactor feed pump PMT following maintenance on November 20, 2015
- Unit 2 'C' inboard MSIV stroke timing following repacking on December 16, 2015

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 2 samples)

.1 Unit 3 Refueling Outage (3R20) (1 sample)

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 3 maintenance and RFO (3R20), conducted September 21 to October 20, 2015. The inspectors reviewed Exelon's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable TSs when taking equipment OOS
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting
- Status and configuration of electrical systems and switchyard activities to ensure that TSs were met
- Monitoring of decay heat removal operations
- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss
- Activities that could affect reactivity
- Maintenance of secondary containment as required by TSs
- Fatigue management
- Refueling activities, including fuel handling and fuel receipt inspections
- Tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block the emergency core cooling system suction strainers, and startup and ascension to full power operation
- Identification and resolution of problems related to refueling outage activities

b. Findings

No findings were identified.

.2 Unit 2 Forced Outage (1 sample)

a. Inspection Scope

The inspectors observed a Unit 2 forced outage following elevated unidentified reactor coolant system (RCS) leakage, conducted December 13 to 15, 2015. The elevated leakage was later identified to be a packing leak from the Unit 2 'C' inboard MSIV. The inspectors reviewed Exelon's development and implementation of the forced outage schedule to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the forced outage plan for the key safety functions and compliance with the applicable TSs when taking equipment OOS
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Monitoring of decay heat removal operations
- Tracking of startup prerequisites, partial walkdown of the drywell to verify clearances had been removed and debris had not been left around the 'C' inboard MSIV which could block the emergency core cooling system suction strainers, and startup and ascension to full power operation
- Identification and resolution of problems related to the forced outage activities

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 samples)

a. Inspection Scope

The inspectors observed performance of STs and/or reviewed test data of selected risk SSCs to assess whether test results satisfied TSs, the UFSAR, and PBAPS procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following STs and routine tests:

- Unit 3 'B' standby liquid control (SBLC) test on October 15, 2015
- Unit 3 HPCI low pressure test on October 21, 2015
- Unit 3 'A' MSIV closure test on October 26, 2015
- Unit common, E-2 EDG monthly test on November 9, 2015
- Unit 2 RCS unidentified leakage surveillance on December 7, 2015

b. Findings

Introduction. The inspectors identified a NCV of very low safety significance of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for not ensuring that the PBAPS' EDG LO supply was designed to withstand the effects of natural phenomena. Specifically, additional LO, evaluated by PBAPS to meet their EDG TS mission time of seven days of continuous operation, was housed in a non-seismic Class 1 structure that was not designed to withstand the effects of natural phenomena.

Description. On November 9, 2015, the inspectors reviewed IR 02583825, concerning loss of LO inventory in the E-2 EDG LO storage tank during an E-2 EDG monthly ST. The IR documented in its basis for operability that total LO inventory onsite was within TS limits. In 1994, PBAPS converted from custom to ITS. During the ITS conversion, the NRC requested PBAPS to evaluate the EDG LO consumption rate to determine if inventory requirements met their intended design. In response to the request for information, PBAPS evaluated, under evaluation A0784276, the oil consumption rate to be 2.0 gallons per hour based both on vendor specifications and conservatism recommended by the vendor since LO consumption is affected by the quality of the oil used and engine wear. PBAPS identified that the EDGs required additional inventory to meet their design requirements because of the consumption rate, capacity of the in-room storage (i.e., LO tank, associated piping, and LO sump), and seven day continuous operational design requirement.

TS 3.8.3 requires a LO inventory of 350 gallons per EDG to be operable. The TS bases states that LO stored in the onsite warehouse can be credited towards achieving the required inventory. PBAPS performs a monthly verification of EDG lubrication oil to satisfy their TS requirement. The inspectors independently walked down the additional inventory in PBAPS' onsite warehouse and identified that the LO may become unavailable during a natural phenomena event.

The EDGs are part of the standby safety power supply system. PBAPS' UFSAR 8.5.2.4, "Safety Design Basis," states that, "each diesel generator unit is housed in a seismic Class I structure, and located such that the equipment is protected against other natural phenomena such as flood, tornado, rain, ice, snow, and lightning." Furthermore, UFSAR Section 8.5.4, "Safety Evaluation," states, in part, that, "diesel generator units are capable of operating continuously for a period of seven days without any offsite supplies," and that "the units and all necessary auxiliary systems are housed in seismic Class I structures and are protected against other natural phenomena." UFSAR 8.5.2.1 states that "the standby alternating current power supply design conforms to the intent of "Proposed Institute of Electrical and Electronics Engineers (IEEE) Criteria for Class 1E Electrical Systems for Nuclear Power Generating Stations," dated June, 1969. The "Proposed IEEE Criteria for Class 1E Electrical Systems for Nuclear Power Generating Stations," dated June, 1969, Section 5.2.4, "Standby Power Supply," states, in part, that the standby power supply shall consist of all components from the stored energy to the connection to the distribution systems supply breaker (e.g., generators and excitation equipment; all auxiliary systems and appurtenances.) This standard was subsequently approved as IEEE Standard 308-1971, "IEEE Standard Criteria for Class 1E Electric Systems for Nuclear Power Generating Stations," dated September 16, 1971, and which contains an identical description of a standby power supply. The IEEE standard also lists design basis events in Section 2 and in Table 1 to include the natural phenomena (i.e., seismic, flood, tornado, etc.) to which the Class 1E Electric Systems must remain functional under the conditions produced by the design basis events.

The inspectors questioned whether the LO stored in the warehouse was adequately protected and would remain available for replenishment into the EDG system following natural phenomena. The inspectors questioned how PBAPS ensured the integrity of the LO barrels to maintain the LO free from containments that might be introduced during a flood, and to prevent loss of the oil if the containers were damaged during a seismic event or tornado. The inspectors also questioned the accessibility of the barrels, and the feasibility of transporting the barrels from the warehouse to the EDG building during natural phenomena.

The inspectors identified that since the warehouse was not a seismic Class I structure, there is not reasonable assurance that the LO would be available for replenishment following a seismic event. In addition, the inspectors reviewed PBAPS' severe weather and seismic event procedures and found no instructions or preparations to relocate the required LO barrels in the event of natural phenomena. No additional design documentation was identified approving the warehouse as an acceptable storage location. As a result, PBAPS entered the issue into the CAP as IR 02603369 and took immediate corrective actions to relocate the LO reserve inventory from the warehouse to the 135' elevation of PBAPS' radwaste building, which is listed in the UFSAR Appendix C.1.2 as a seismic Class I structure. PBAPS specified a corrective action in IR 02603369 to evaluate a long term storage location and to enhance their severe weather and natural phenomena procedures.

Analysis. PBAPS' failure to ensure that the safety-related function of the EDG lubrication system was not susceptible to natural phenomena was a performance deficiency (PD). Specifically, barrels of LO for makeup to the EDGs credited towards the TS 3.8.3 requirement of 350 gallons on site were stored in a warehouse that is not a seismic Class I structure and would not be protected from natural phenomena specified in PBAPS' design basis. This PD was considered more than minor because it is associated with the Protection Against External Factors Attribute of the Reactor Safety Mitigating Systems cornerstone, and adversely affected the cornerstone's objective of ensuring reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).

The inspectors evaluated the significance of this finding using IMC 0609 Appendix A, "The SDP for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that this finding was of very low safety significance (Green) because the finding is a design deficiency which did not result in an actual loss of functionality of the EDGs.

This finding did not have a cross-cutting aspect because the most significant contributor of the PD occurred during the 1994 conversion to ITS and, thus, was not reflective of current plant performance. Specifically, PBAPS' current engineering change request (ECR) process would evaluate for natural phenomena considerations such as seismic, tornado, flood, etc.

Enforcement. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis as specified in the license are correctly translated into specifications, drawings, procedures, and instructions, and that measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the SSCs. Contrary to the above, PBAPS did not establish measures to review for suitability of

materials and processes that are essential to the safety-related functions of SSCs. Specifically, PBAPS did not ensure the adequacy of PBAPS' EDG LO supply design to withstand the effects of natural phenomena. Because this finding is of very low safety significance, and PBAPS has entered it into their CAP (IR 02603369), this violation is being treated as an NCV, consistent with section 2.3.2a of the NRC's Enforcement Policy. **(NCV 05000277/278/2015004-01, Failure to Ensure Design Basis of EDG Lubrication System)**

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 - 1 sample)

Emergency Preparedness (EP) Drill/Simulator Evaluation/Observation

a. Inspection Scope

The inspectors evaluated the shift manager\emergency director's EP implementation during a licensed operator annual requalification training scenario on November 9, 2015. The inspectors observed emergency response operations in the simulator to determine whether event classifications and notifications were performed in accordance with approved procedures. The inspectors also attended the control room simulator drill critique to compare inspector observations with those identified by PBAPS staff in order to evaluate whether PBAPS staff was properly identifying emergency preparedness weaknesses and entering them into the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 - 1 sample)

a. Inspection Scope

During September 28 – October 2, 2015, the inspectors reviewed Exelon's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR 20, TSs, applicable Regulatory Guides (RGs), and the procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the performance indicators for the occupational exposure cornerstone, radiation protection (RP) program audits, and reports of operational occurrences in occupational radiation safety since the last inspection.

Radiological Hazard Assessment

The inspectors reviewed recent plant radiation surveys and any changes to plant operations since the last inspection to identify any new radiological hazards for onsite workers or members of the public.

Contamination and Radioactive Material Control

The inspectors observed the monitoring of potentially contaminated material leaving the radiological control area and inspected the methods and radiation monitoring instrumentation used for control, survey, and release of that material. The inspectors selected several sealed sources from inventory records and assessed whether the sources were accounted for and were tested for loose surface contamination. The inspectors evaluated whether any recent transactions involving nationally tracked sources were reported in accordance with requirements.

Radiological Hazards Control and Work Coverage

The inspectors evaluated in-plant radiological conditions and performed independent radiation measurements during facility walk-downs and observation of radiological work activities. The inspectors assessed whether posted surveys, radiation work permits (RWPs), worker radiological briefings, the use of continuous air monitoring and dosimetry monitoring were consistent with the present conditions. The inspectors examined the control of highly activated or contaminated materials stored within the spent fuel pools and the posting and physical controls for selected high radiation areas (HRAs), locked high radiation areas (LHRAs) and very high radiation areas (VHRA) to verify conformance with the occupational exposure control effectiveness performance indicator.

Risk-Significant HRA and VHRA Controls

The inspectors reviewed the controls and procedures for HRAs, VHRAs, and radiological transient areas in the plant.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

2RS2 Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls (71124.02 – 1 sample)

a. Inspection Scope

During September 28 – October 2, 2015, the inspectors assessed Exelon's performance with respect to maintaining occupational individual and collective radiation exposures

ALARA. The inspectors used the requirements contained in 10 CFR 20, applicable RGs, TSs, and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors conducted a review of PBAPS' collective dose history and trends; ongoing and planned radiological work activities; radiological source term history and trends; and ALARA dose estimating and tracking procedures.

Radiological Work Planning

The inspectors selected the following radiological work activities based on exposure significance for review:

- RWP PB-C-15-00823, Feed Water Heater Replacement (3AE003 & 3CE003)
- RWP PB-C-15-822, Unit 3 High Pressure Turbine Disassembly, 1000 mrad, Heavy Work, High Efficiency Particulate Air & Wet Surface
- RWP PB-C-15-00510, Drywell Main Steam SRV Activities
- RWP PB-C-1500513, Control Rod Drive Exchange, Effective Dose Equivalent Monitoring Required

For each of these activities, the inspectors reviewed: ALARA work activity evaluations, exposure estimates, and exposure reduction requirements.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with ALARA planning and controls were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 - 1 sample)

a. Inspection Scope

During September 28 – October 2, 2015, the inspectors reviewed the control of in-plant airborne radioactivity and the use of respiratory protection devices for radiological protection. The inspectors used the requirements in 10 CFR 20, RG 8.15, RG 8.25, NUREG/CR-0041, TS, and procedures required by TS as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the UFSAR to identify ventilation and radiation monitoring systems associated with airborne radioactivity controls and respiratory protection equipment staged for emergency use. The inspectors also reviewed respiratory protection program procedures and current performance indicators for unintended internal exposure incidents.

Use of Respiratory Protection Devices

The inspectors reviewed the adequacy of the licensee's use of respiratory protection devices in the plant to include applicable ALARA evaluations, respiratory protection device certification, respiratory equipment storage, air quality testing records, and individual qualification records.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were identified at an appropriate threshold and addressed by the licensee's CAP.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05 – 1 sample)

a. Inspection Scope

During September 28 – October 2, 2015, the inspectors reviewed performance in assuring the accuracy and operability of radiation monitoring instruments used to protect occupational workers and for effluent monitoring and analysis. The inspectors used the requirements in 10 CFR 20, 10 CFR 50, Appendix I; TSs; Offsite Dose Calculation Manual (ODCM); RGs; applicable industry standards; and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed records of in-service survey instrumentation and procedures for instrument source checks and calibrations.

Walkdowns and Observations

The inspectors conducted walk-downs of plant area radiation monitors, continuous air monitors and radioactive gaseous and liquid effluent monitoring systems. The inspectors reviewed the calibration and source check status of various portable radiation survey instruments and contamination detection monitors for personnel and equipment.

Calibration and Testing Program

For the following radiation detection instrumentation, the inspectors reviewed the current detector and electronic channel calibration, functional testing results and alarm set-points: portal monitors; personnel contamination monitors; small article monitors; portable survey instruments; area radiation monitors; electronic dosimetry; air samplers; and continuous air monitors.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06 – 1 sample)

a. Inspection Scope

During September 28 – October 2, 2015, the inspectors reviewed the treatment, monitoring, and control of radioactive gaseous and liquid effluents. The inspectors used the requirements in 10 CFR 20, 10 CFR 50, Appendix I; TS; ODCM; applicable industry standards; and procedures required by TSs as criteria for determining compliance.

Groundwater Protection Initiative (GPI) Implementation

The inspectors reviewed: groundwater monitoring results; changes to the GPI program since the last inspection; anomalous results or missed groundwater samples; leakage or spill events including entries made into the decommissioning files (10 CFR 50.75(g)); and Exelon's evaluation of any positive groundwater sample results, including appropriate stakeholder notifications and effluent reporting requirements.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151 – 8 samples)

.1 Mitigating Systems Performance Index

a. Inspection Scope

The inspectors reviewed Exelon's submittal for the Mitigating Systems Performance Index (MSPI) for the period of October 1, 2014 through September 30, 2015.

- Unit 2 and Unit 3 HPCI (MS07)
- Unit 2 and Unit 3 RCIC (MS08)
- Unit 2 and Unit 3 RHR (MS09)
- Unit 2 and Unit 3 cooling water (MS10)

To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment PI Guideline," Revision 6. The inspectors also reviewed RCS sample analysis and control room logs of daily measurements of RCS leakage, and compared that information to the data reported by the PI.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 3 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure (IP) 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that PBAPS entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended condition report screening meetings. The inspectors also confirmed, on a sampling basis, that, as applicable, for identified defects and non-conformances, PBAPS performed an evaluation in accordance with 10 CFR Part 21.

b. Findings

No findings were identified.

.2 Annual Sample: Trend of Leaks in the ESW and HPSW System Piping (1 sample)

a. Inspection Scope

The inspectors performed an in-depth review of Exelon's apparent cause evaluation and corrective actions associated with CR AR 01695675, "ESW Pinhole Leak on Supply Elbow to Unit 2 Ring Header." Specifically, a through-wall leak developed on an ESW pipe fitting, which resulted in both subsystems of ESW being declared inoperable and an entry into the action statement associated with TS 3.7.2. The inspectors also reviewed leaks and wall thinning conditions identified in the HPSW system. Both the ESW and HPSW systems use the Susquehanna River as a water source for providing cooling to various safety-related plant components.

The inspectors assessed Exelon's problem identification threshold, cause analyses, extent of condition (EOC) reviews, compensatory actions, and the prioritization and timeliness of Exelon's corrective actions to determine whether Exelon's staff were appropriately identifying, characterizing, and correcting problems associated with the leak and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to Exelon's CAP and the requirements of 10 CFR 50, Appendix B. The inspectors interviewed engineering personnel to discuss the results of the cause evaluation and to assess the effectiveness of the implemented corrective actions. The inspectors also conducted walkdowns of the accessible portions of the ESW and HPSW systems to observe the general material conditions of the piping and associated components.

b. Findings and Observations

No findings were identified.

Exelon staff determined the apparent cause of the emergency service water (ESW) elbow leak was due to under deposit pitting corrosion and microbiologically influenced corrosion in raw water (i.e., river water) piping, which was increased by flow effects in this particular location. Specifically, deposits formed on the inside of the pipe from silt and microbiological organisms associated with the untreated river water that led to isolated pitting corrosion under the deposits and subsequently a pinhole leak. For the ESW elbow leak, Exelon staff determined that there was one contributing cause due to inadequate understanding of failure consequence and probability, which resulted in a lower examination priority.

The inspectors concluded that Exelon staff conducted an appropriate review to identify the likely causes of the piping leak. The inspectors also concluded that Exelon staff identified the EOC, which included all safety-related raw water piping in Peach Bottom Units 2 and 3. Immediate corrective actions included an evaluation of the component for operability and structural integrity, scheduling for replacement of the leaking component, and routine monitoring for any changes in leakage. The inspectors noted that Exelon utilized ASME Code Case N-513-3 to evaluate the leak, which allows temporary acceptance and operation of the component until replacement at the next RFO. Exelon staff was required to submit a relief request to the NRC because Code Case N-513-3 is limited to the evaluation of piping and does not include elbows, fittings, or other non-pipe components. Exelon staff implemented further corrective actions, which included a review of the raw water piping database to address the risk ranking factors and consequences; revision of ER-AA-5400-1001, “Raw Water Corrosion Program Guide,” to include additional guidance on risk ranking of piping with potential integrity threats; evaluation of corrosion rates based on results of this leak and EOC inspections; and a review of other elbows and fittings most susceptible to integrity concerns.

The inspectors reviewed Peach Bottom’s raw water corrosion database, including a sample of pipe locations currently being monitored for wall thickness, to verify that Exelon staff were adequately tracking and prioritizing pipes for inspection and replacement. The inspectors noted that the raw water corrosion engineer utilized a supplemental database, which incorporated additional parameters for establishing corrosion rates, estimating remaining life, and scheduling future inspections. The inspectors also reviewed another Peach Bottom specific tool that used risk ranking for large sections of system piping rather than individual pipe locations in order to prioritize vulnerable sections of piping for future replacement.

In addition, the inspectors reviewed currently ongoing and planned raw water piping projects to verify that Exelon staff were proactively mitigating piping integrity issues. One recent project involved the replacement of high risk-based piping at the ESW pumps discharge. While there were no chemistry control corrective actions identified in the apparent cause evaluation, the inspectors noted that there is a planned project in the review process to evaluate potential combinations of chemistry controls and cleaning for internal pipe corrosion. The inspectors determined Exelon’s overall response to the ESW elbow leak as well as other related raw water issues was commensurate with the safety significance, was timely, and included appropriate compensatory actions. The inspectors concluded that completed and planned actions were reasonable to correct the problem and help prevent reoccurrence.

.3 Annual Sample: Review of Unit 2 Torus Coating Defects (1 sample)

a. Inspection Scope

The inspectors reviewed corrective actions completed by Exelon staff as a consequence of CR 02413128, "Coating Defects and Pinpoint Rust in Torus Belly Band Area," and CR 02407173, "Pit with Depth of 126 mils." The inspectors reviewed the results of Exelon's report to identify, prioritize and resolve the causes of the coating defects, rust, and pitting. The inspectors also reviewed results of torus examinations on a sampling basis for the previous PBAPS Unit 2 RFOs back to 2006, and Unit 3 RFOs back to 2007.

The inspectors determined if the completion of corrective actions was in a timely manner commensurate with the safety significance of the issue. The inspectors considered if any delays in implementation were justified based on the safety significance of the issue. The inspectors considered if any permanent corrective actions required significant time to implement and if interim corrective actions and/or compensatory actions were identified and implemented to minimize the problem and/or mitigate its effects until the permanent action could be implemented.

The inspectors reviewed the actions taken to determine if the actions resulted in the correction of the identified problem. In the case of this condition, the inspectors determined if the corrective action taken would preclude repetition. Finally the inspectors reviewed operating experience to determine if it was adequately evaluated for applicability, and applicable lessons learned were communicated to appropriate organizations and implemented.

b. Findings and Observations

No findings were identified.

The corrective action of the coating defects and pinpoint rust in the torus belly band area, was to continue to monitor this area for further degradation. Exelon staff took into account operability, consideration of EOC and cause, generic implications, common cause, and previous occurrences. This corrective action was reviewed by the inspectors to determine if the classification and prioritization of the problem's resolution was commensurate with the safety significance.

The corrective action for the pit with a depth of 126 mils was to determine if the pit impacted operability and to repair and recoat the area. Exelon staff took into account the EOC by reviewing prior inspection reports for the area associated with the pit to determine if other pits, in the immediate area which had been repaired previously, could impact the integrity of the newly discovered pit. Exelon staff took into consideration generic implications, common cause, and previous occurrences. This corrective action was reviewed by the inspectors to determine if the classification and prioritization of the problem's resolution was commensurate with the safety significance.

The inspectors interviewed station personnel involved in developing the monitoring and repair plans. The derived information was compared with the corrective action's identification of contributing causes of the problem. The inspectors ascertained if the documented information was reported to appropriate levels of management. The

inspectors reviewed the corrective action to determine if the corrective action was appropriately focused to correct the problem (and to address the root and contributing causes for significant conditions adverse to quality).

The inspectors review determined Exelon staff established a defined threshold to assure that no pit would threaten the torus minimum wall thickness prior to the torus recoat activity. The threshold was sufficient to ensure that the torus pressure boundary remained acceptable. The inspectors determined the threshold included a corrosion allowance for all uncoated pits based on actual corrosion data and the planned recoat schedule. The inspectors determined that pits with depths exceeding the defined threshold were evaluated by Exelon engineering staff and were coated to assure no further degradation.

The inspectors determined the actions of monitoring, analysis, and recoating resulted in the correction of the identified problem. The inspectors determined the actions maintained the safety barrier integrity by assuring the torus wall thickness was above the design minimum requirement.

.4 Semi-Annual Trend Review (1 sample)

a. Inspection Scope

The inspectors performed a semi-annual review of site issues to identify trends that might indicate the existence of more significant safety concerns. As part of this review, the inspectors included repetitive or closely-related issues documented by PBAPS in trend reports, site PIs, priority work lists, system health reports, MR assessments, and maintenance or CAP backlogs. The inspectors also reviewed PBAPS' CAP database for the third and fourth quarters of 2015 to assess IRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRCs daily CR review (Section 4OA2.1). The inspectors reviewed the PBAPS' quarterly trend report for the third quarter of 2015, conducted under PI-AA-125-1005, Coding and Analysis Manual, Revision 0, to verify that PBAPS personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.

b. Findings and Observations

No findings were identified.

The inspectors evaluated a sample of CRs generated over the course of the past two quarters by departments that provide input to the quarterly trend reports. The inspectors determined that, in most cases, the issues were appropriately evaluated by PBAPS staff for potential trends and resolved within the scope of the CAP. The inspectors did identify repeated occurrences regarding a lack of awareness in the travel path of check valve swing arms in safety-related systems which did or could have impacted system operability. The inspectors identified three occurrences where PBAPS obstructed the travel path of check valve swing arms identified in IRs 1680741, IR 2519751, and IR 2559874. PBAPS initiated IR 2574611 to document the inspectors concern and evaluate how to increase awareness of the travel path of safety-related check valve swing arms.

The inspectors also noted and discussed with PBAPS staff ongoing minor adverse trends in rigor and attention to detail in CAP products, including apparent cause evaluations and work group evaluations, and in configuration control with tasks performed by PBAPS' maintenance department. However, the inspectors determined that there were no adverse safety consequences as a result of these low level trends. Based on the overall results of the semi-annual trend review, the inspectors determined that PBAPS was appropriately identifying and entering issues into the CAP, adequately evaluating the identified issues, and properly identifying adverse trends before they became more safety significant operability problems.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

(Closed) Licensee Event Report (LER) 05000/277-2-15-001: Condition Prohibited by TS Due to Insufficient Remote Shutdown System Surveillance Testing

The NRC determined on September 4, 2015, that insufficient surveillance requirement (SR) 3.3.3.2.1 testing was being performed for certain functions from the remote shutdown system (RSS) panel. Subsequently, during surveillance testing performed on September 16, 2015, operations personnel identified that the RCIC system steam admission valve (MO-2-13-131) would not open when operated from the RSS panel. Prompt troubleshooting performed on September 16, 2015, identified that a wire within the RSS panel associated with the logic for the MO-2-13-131 valve was not connected. This condition did not impact the normal operation of the MO-2-13-131 valve from the MCR, nor did it impact the automatic function of the MO-2-13-131 valve for licensed events. Only the manual open function of the valve from the RSS panel (located outside of the control room) was affected. The disconnected wire was re-landed and the MO-2-13-131 was verified to operate properly from the RSS panel. The cause of the event was previous insufficient RSS panel testing that did not detect this disconnected wire. Surveillance test procedures of the RSS panel functions have been upgraded. A Green NCV of TS 5.4.1a was identified and documented in the 2015003 inspection report (NCV 05000277/278/2015003-01, Incomplete Testing of Components from the Remote Shutdown Panel). This LER is closed.

4OA5 Other Activities

Extended Power Uprate (EPU) Closure and Summary (71004)

a. Inspection Scope

On August 25, 2014, the NRC approved PBAPS License Amendments Nos. 293 and 296 for an approximately 12.4-percent EPU at Units 2 and 3 and issued the associated safety evaluation (ADAMS package ML122860201). The inspectors have observed and reviewed selected activities throughout the phased EPU implementation on both units. The inspectors have determined, based on a sample review of these activities and comparison of records and tests with the current licensing documents, that Exelon's commitments have been met regarding the PBAPS Unit 2 and Unit 3 EPU and that Exelon has fully implemented the EPUs within its approved implementation timelines.

As required by IP 71004, Power Uprate, all inspection sample requirements for the power uprate on Unit 2 and Unit 3 have been verified completed and recorded, consistent with the inspection plan. This entry provides a summary of all inspection samples associated with implementation of and as required by IP 71004.

Inspection Sample	Inspection Procedure (IP)	Inspection Report
Operator Simulator Scenario	71111.11, 71004	2014004
Operator Simulator Scenario	71111.11, 71004	2014005
EC/FAC	71004	2014005
Integrated Plant Evolutions	71004	2014005
Major Plant Tests	71111.20, 71004	2014005
CST Standpipe Modification	71111.17, 71004	2015002
Unit 2 HPSW Cross-tie Modification	71111.17, 71004	2015002
Unit 3 'A' RHR Cross-tie Modification PMT	71111.19, 71004	2015004
Unit 2 'B' CS Suction MOV	71111.21, 71004	2015002
Unit 3 SBLC IST	71111.22, 71004	2015004

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Quarterly Resident Exit Meeting Summary

On January 15, 2016, the inspectors presented the inspection results to Mr. Pat Navin, Peach Bottom Plant Manager, and other members of the PBAPS staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Exelon Generation Company Personnel
M. Massaro, Site Vice President
P. Navin, Plant Manager
J. Armstrong, Regulatory Assurance Manager
J. Boil, EPU RHR Project Manager
G. Cilluffo, Raw Water Corrosion Engineer
D. Dullum, Regulatory Assurance Engineer
J. Hawkins, Exelon NDE Level III
B. Holmes, Radiation Protection Manager
H. McCroy, Radiation Protection Technical Support Manager
B. Rufo, ISI Program Owner

NRC PERSONNEL
B. Smith, (Acting) Senior Resident Inspector
L. Micewski, (Acting) Senior Resident Inspector
B. Reyes, (Acting) Senior Resident Inspector
J. Patel, (Acting) Resident Inspector
S. Barber, Senior Project Engineer
N. Floyd, Reactor Inspector
C. Graves, Health Physicist
C. Highley, Project Engineer
D. Kern, Senior Reactor Inspector
M. Modes, Reactor Inspector
D. Orr, Senior Reactor Inspector
A. Turilin, Project Engineer

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000277/278/2015004-01	NCV	Failure to Ensure Design Basis of Emergency Diesel Generator Lubrication System (Section 1R22)

Closed

05000277/2-15-001	LER	Condition Prohibited by TS Due to Insufficient Remote Shutdown System Surveillance Testing (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather

Procedures
MA-PB-1003, Winter Readiness and Storm Response Guidelines for the Peach Bottom Facility, Revision 11
OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 13
OP-PB-108-111-1001, Preparation for Severe Weather, Revision 13
RT-I-066-200-2, Heat Trace System Testing, Revision 11
RT-O-040-620-2, Outbuilding HVAC and Outer Screen Inspection for Winter Operation, Revision 22
RT-O-040-630-2, Winterizing Procedure, Revision 14
WC-AA-107, Seasonal Readiness, Revision 16

IRs
01610850
02481268

Miscellaneous
Memo from M. Massaro to T. Dougherty, Certification of 2015-2016 PBAPS Winter Readiness, dated October 29, 2015

Section 1R04: Equipment Alignment

Procedures
ARC-325 30C203B D-1, 'B' RHR Pump Auto Start
SO 10.1.E-3, RHR System Torus Cooling Using the RHR Loop Cross-Tie
SO 13.1.B-3 COL, RCIC System Control Board Lineup, Revision 3
SI3M-2-SRV-XXMM, Instrument Check of SRV Position Indicators, Revision 8
SI3T-2-SRV-XXF2, Channel Functional Check of MSRV MSSV Thermocouples, Revision 2

Section 1R05: Fire Protection

Procedures
CC-AA-201, Plant Barrier Control Program, Revision 2
CC-AA-209, Fire Protection Program Configuration Change Review, Revision 5
CC-AA-211, Fire Protection Program, Revision 6
LS-AA-128, Regulatory Review of Proposed Changes to the Approved Fire Protection Program, Revision 2
OP-AA-201-009, Control of Transient Combustible Material, Revision 17
PF-12C, Unit 3 Recirculation Pump MG Set Room Pre-Fire Strategy Plan, Revision 7
PF-117, Unit 3 Turbine Building, Emergency Battery Switchgear Rooms, Elevation 135'-0", Revision 10
PF-78H, Turbine Building Common, Cable Spreading and Computer Rooms – Elevation 150'-0", Revision 9
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Procedures
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Procedures
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GEH-PDI-UT-5, PDI Generic Procedure for Straight Beam Ultrasonic Examination of Bolts and Studs, Revision 6.1
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Procedures
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PSEG-0235R Scenario 2, Turbine Trip/ATWS
Peach Bottom Unit 3 BOC Startup Checklists
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Section 1R12: Maintenance Effectiveness

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

Procedures
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Miscellaneous
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Procedures
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ST-O-011-405-3, Standby Liquid Control 'B' Loop Injection Test, Revision 12
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WOs
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Section 1R18: Plant Modifications

Procedures
CC-AA-102, Design Input and Configuration Change Impact Screening, Revision 28
CC-AA-103, Configuration Change Control for Permanent Physical Plant Changes, Revision 27
CC-AA-104, Document Change Requests, Revision 16

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Procedures
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MA-AA-716-004, Complex Troubleshooting Data Sheet A, Revision 12
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CRs

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Section 1R20: Refueling Outage

Procedures
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OP-AA-108-108, Attachment 9, Emergency Exceptions Checklist, Revision 18

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WOs

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Procedures

EP-AA-1007, Addendum 3, Revision 0
MA-AA-723-301, Periodic Inspection of Limitorque Model SMB/SB/SBD-000 Through 5 Motor Operated Valves, Revision 10
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PI-AA-120, Issue Identification and Screening Process, Revision 3
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SO 13.7.A-2, Recovery From RCIC System Isolation or Turbine Trip, Revision 14
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ST-O-052-412-2, E-2 Diesel Generator Fast Start and Full Load Test, Revision 23
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ST-O-003-901-2, CRD Pump Remote Shutdown Panel Test, Revision 0
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ST-O-011-405-3, Standby Liquid Control System B Loop Injection Test, Revision 12
ST-O-013-201-2, RCIC Alternative Control Panel Test, and Remote Shutdown Panel Test, Revision 5
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ST-O-013-301-2, RCIC Pump, Valve, Flow and Unit Cooler Functional and In-service Test, Revision 45
ST-O-013-750-3, Emergency Shutdown Control Panel Test, Revision 7
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Section 1EP6: Drill Evaluation

Procedures
OP-AA-101-115, Senior Management of the Operating Crews, Revision 4

Miscellaneous
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Section 2RS1: Access Control to Radiologically Significant Areas

Procedures
RP-AA-19, HRA Program Description, Revision 2
RP-AA-100, Conduct of Radiation Protection Operations, Revision 0
RP-AA-111, Advanced Radiation Worker (ARW), Revision 2
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Section 2RS2: Occupational ALARA Planning and Controls

Procedures
RP-AA-401, Operational ALARA Planning and Controls, Revision 19
RP-AA-401-1002, Radiological Risk Management, Revision 7
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Section 2RS3: In-plant Airborne Radioactivity Control and Mitigation

Procedures
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RP-AA-301, Radiological Air Sampling Program, Revision 8
RP-AA-825-1001, Inspection of Respiratory Protection Equipment, Revision 5
RP-AA-825-1020, Operation and Use of Air Line Supplied Respirators, Revision 0
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Section 2RS5: Radiation Monitoring Instrumentation

Procedures
RP-AA-700-1501, Operation and Calibration of the Model SAM-9/11 Small Articles Monitor, Revision 1
RP-AA-700-1214, Operation and Calibration of the PCM-1B Personnel Monitor, Revision 1
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RP-AA-700-1239, Operation and Calibration of the SAM-12 Small Articles Monitor, Revision 1
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Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Procedures
CY-AA-130-205-F-02, Tritium, Gross Alpha, and Gross Beta Sample Preparation for Scintillation Counting, Revision 2
CY-AA-170-000, Radioactive Effluent and Environmental Monitoring Programs, Revision 6
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Section 4OA1: Performance Indicator Verification

Procedures
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LS-AA-2200, MSPI Data Acquisition and Reporting, Revision 5
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Section 4OA2: Problem Identification and Resolution

Procedures

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Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Miscellaneous

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LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ALARA	as low as reasonably achievable
ASD	adjustable speed drive
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CFR	Code of Federal Regulations
CR	condition report
CS	core spray
ECR	engineering change request
ECT	emergency cooling tower
EDG	emergency diesel generator
EP	emergency preparedness
EPU	extended power uprate
ESW	emergency service water
GPI	groundwater protection initiative
HPCI	high pressure coolant injection
HPSW	high pressure service water
HRA	high radiation area
HX	heat exchanger
IEEE	Institute of Electrical and Electronics Engineer
IMC	inspection manual chapter
IP	inspection procedure
IR	issue report
ISI	in-service inspection
ITS	improve technical specifications
LER	licensee event report
LHRA	locked high radiation area
LLRT	local leak rate test
LO	lubrication oil
MG	motor generator
MR	maintenance rule
MSIV	main steam isolation valve
MSPI	mitigating system performance index
NCV	non-cited violation
NDE	non-destructive examination
NRC	Nuclear Regulatory Commission
ODs	operability determinations
ODCM	offsite dose calculation manual
OOS	out of service
OWAs	operator workarounds
PARS	publicly available records
PBAPS	Peach Bottom Atomic Power Station
PD	performance deficiency
PI	performance indicator
PMT	post-maintenance testing
RFO	Refueling Outage
RCIC	reactor core isolation cooling

RCS	reactor coolant system
RG	Regulatory Guide
RHR	residual heat removal
RP	radiation protection
RPM	radiation protection manager
RSS	remote shutdown system
RT	radiographic testing
RTP	rated thermal power
RWP	radiation work permit
SBLC	standby liquid control
SDP	significance determination process
SR	surveillance requirement
SRV	safety/relief valve
SSCs	structures, systems, and components
ST	surveillance test
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
UT	ultrasonic testing
VHRA	very high radiation area
VT	visual examination
WOs	work orders