



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I**
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

January 29, 2013

Mr. Michael J. Pacilio
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 05000277/2012005 AND 05000278/2012005**

Dear Mr. Pacilio:

On December 31, 2012, 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 18, 2013, with Mr. Michael Massaro, Site Vice President, 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, no findings were identified. However, three licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. However, because of the very low safety significance, and because they are entered into your corrective action program (CAP), the NRC is treating these findings as non-cited violations (NCVs), consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any 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, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the PBAPS.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR), Section 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the

Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Mel Gray, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000277/2012005 and 05000278/2012005
w/Attachment: Supplementary Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.: 50-277, 50-278

License Nos.: DPR-44, DPR-56

Report No.: 05000277/2012005 and 05000278/2012005

Licensee: Exelon Generation Company, LLC

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

Location: Delta, Pennsylvania

Dates: October 1, 2012 through December 31, 2012

Inspectors: S. Hansell, Senior Resident Inspector
A. Ziedonis, Resident Inspector
A. Rosebrook, Senior Project Engineer
J. Furia, Senior Health Physicist
M. Modes, Senior Reactor Inspector
T. Burns, Reactor Inspector

Approved by: Mel Gray, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000277/2012005, 05000278/2012005; 10/01/2012 - 12/31/2012; Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3; Integrated Inspection.

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspects for the findings were determined using IMC 0310, "Components Within Cross-Cutting Areas." Findings for which the SDP does not apply may be Green, or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

None.

Other Findings

Three violations of very low safety significance, which were identified by Exelon personnel, have been reviewed by the inspectors. Corrective actions taken or planned by Exelon have been entered into the corrective action program (CAP). These violations and the corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period shutdown for the 19th refueling outage (RFO) (P2R19). On October 17, 2012, the reactor mode switch was placed in start-up and the unit was synchronized to the grid on October 19. On October 21, the unit was returned to 100 percent rated thermal power (RTP). Unit 2 remained at RTP until the end of the inspection period, except for brief periods to support planned testing and control rod pattern adjustments.

Unit 3 began the inspection period at 100 percent RTP. On November 10, operators reduced power to approximately 70 percent to perform main turbine control valve trouble-shooting and repair, and a control rod pattern adjustment. The unit was returned to 100 percent RTP the next day. The unit remained at RTP through the end of the inspection period, except for brief periods to support planned testing and control rod pattern adjustments.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

.1 Super Storm Sandy (1 Grid sample)

a. Inspection Scope

The inspectors reviewed plant features and procedures for operation and continued availability of offsite and backup power systems during Super Storm Sandy on October 30, 2012. The 500 Kilovolt (KV) grid voltage reached a maximum voltage of 550KV due to the reduced grid electrical demand during the storm. The inspectors reviewed the control room operator response to Alarm Response Card (ARC), "South 500 KV Sub-Station General Alarm," ARC-006 00C224 J-5, Revision 2, and procedure AO 53.2-0, "Equipment Checks After a Thunderstorm," Revision 4. The inspectors reviewed communication protocols between the control room personnel and electrical system operations, as well as measures prescribed and taken to maintain the availability and reliability of alternating current systems during the abnormal high grid voltage.

Additionally, the inspectors reviewed procedures for severe weather preparation, main control room (MCR) logs, and condition reports (CRs). Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 Readiness for Seasonal Extreme Weather Conditions (1 Seasonal sample)

a. Inspection Scope

The inspectors performed a review of PBAPS's readiness for the onset of seasonal cold temperatures. The review focused on the auxiliary boiler system heating steam supply,

emergency diesel generators (EDGs), emergency cooling tower (ECT), emergency service water (ESW) and high pressure service water (HPSW) pump rooms, outer intake cooling water pump structure building, and the inner intake cooling water screen structure. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), Technical Specifications (TSs), control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure PBAPS personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including PBAPS's 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. The inspectors also reviewed CAP items to verify that PBAPS was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04 - 5 samples)

.1 Partial System Walkdowns (71111.04Q - 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following four systems:

- All four EDGs during Super Storm Sandy on October 30
- Unit 3 'B' train of residual heat removal (RHR) with 'A' train unavailable on November 13 and 14
- Unit 3 4Kv electrical buses with offsite power startup source 343 out-of-service (OOS) on November 29
- Unit 2 125 volt direct current (DC) electrical buses during yellow risk on November 28

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), CRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their 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

On December 11 and 12, 2012, the inspectors performed a complete system walkdown of accessible portions of the 'B' train of ESW to verify the existing equipment lineup was correct while the 'A' train was unavailable for planned maintenance. 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, hangar and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related CRs and work orders (WOs) to ensure PBAPS staff appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05Q - 7 samples)

.1 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 OOS, degraded or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Unit 2 circulating water pump structure on November 7
- Unit 3 circulating water pump structure on November 7
- Unit 3 'B' and 'D' RHR pump and heat exchanger (HX) rooms on November 13
- Unit 2 refuel floor on December 10
- Unit 2 'B' and 'D' RHR pump and HX rooms on December 12
- Unit 2 reactor building (RB) 135' elevation on December 13
- ECT structure on December 18

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 - 1 sample)

.1 Internal Flooding Reviews

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to assess susceptibilities involving internal flooding. The inspectors also reviewed the CAP to determine if PBAPS personnel identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors focused on the safety-related pump structure to verify the adequacy of equipment seals located below the flood line, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11 - 2 samples)

.1 Quarterly Review of Licensed Operator Regualification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator regualification simulator training on November 28, 2012, which included high reactor recirculation pump (RRP) vibration, loss of an auxiliary electrical bus including the second RRP, manual reactor scram, and the restart of one RRP. The inspectors evaluated operator performance during the simulated events 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 classification 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

a. Inspection Scope

The inspectors observed the following activity in the main control room (MCR):

- Off-site power transformer 343 start-up source restoration

The inspectors observed infrequently performed tests or evolution briefings, pre-shift briefings, and reactivity control briefings to verify that the briefings met the criteria specified in Exelon's procedure HU-AA-1211, "Pre-Job Briefings," Revision 7. Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q - 2 samples)

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 verified 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). Additionally, the inspectors ensured that PBAPS staff was identifying and addressing common cause failures that occurred within and across MR system boundaries.

- Unit 2 average power range monitor (APRM) 2-out-of-4 voter failure on November 1
- Diesel driven fire pump 'A' battery charger high amp reading on November 19 and November 21

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 4 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 during ST-O-052-122-2, "E-2 EDG RHR Pump Reject Test," Revision 9, on November 5
- Elevated risk with 3 'A' RHR OOS on November 13 and 14
- Unit 3 'F' reactor recirculation jet pump flow deviations on November 19
- Elevated risk during E-1 EDG unavailability for planned maintenance on December 11 and 12

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 - 5 samples)

a. Inspection Scope

The inspectors reviewed five operability determinations (ODs) for the following degraded or non-conforming conditions:

- Unit 2 wide-range neutron monitoring (WRNM) during core reload on October 10
- Unit 2 and Unit 3 reactor water cleanup (RWCU) motor-operated valve (MOV) primary containment isolation valve operability evaluations on October 15
- Unit 3 automatic depressurization system safety relief valves (SRVs) with Buna-N material on October 31 and November 1
- Unit 2 DC grounds in the drywell on November 5 and 6
- 'A' ESW supply pipe flow on November 20

The inspectors selected these issues based on the risk significance of the associated components and systems. 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's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by PBAPS. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 - 6 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 ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents (DBDs), and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- Unit 2 SRV actuator functional as-left testing on September 27
- Unit 2 E-22 bus logic testing on October 2
- Unit 2 main steam isolation valve (MSIV) as-left stroke timing on October 9
- Motor driven fire pump operability test following maintenance on November 7
- Unit 2 APRM functional test following trouble-shooting on November 30
- E-1 EDG Surveillance Test (ST) following maintenance on December 3

b. Findings

No findings were identified.

1R20 Refueling Outage (71111.20 – 1 sample)a. Inspection Scope

The Unit 2 RFO (P2R19) was conducted from September 9, 2012 through October 18, 2012. During this inspection period, the inspectors performed the activities listed below to verify PBAPS's controls of 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 instrumentation 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 sustained operation of the spent fuel pool (SFP) cooling system
- Reactor water inventory controls, including flow paths, alternative means for water inventory additions, and controls to prevent unexpected inventory changes
- Maintenance of secondary containment as required by TSs

- Core verification - independently reviewed selected portions of core verification activities and reactor physics testing
- Torus closure - conducted a thorough walkdown of accessible torus areas above the suppression pool water line prior to reactor startup to verify that all debris, tools, and diving gear were removed
- Drywell closure - conducted a thorough inspection and walkdown of the primary containment prior to reactor startup to identify any remaining debris, tools, and equipment were removed prior to reactor startup
- Reactor startup preparations – reviewed the tracking of startup prerequisites and observed the Plant Operations Review Committee meeting on October 15, 2012, to ensure outstanding outage issues were resolved, and startup reviews were detailed
- Startup and ascension to full power operation – observed selected activities including: reactor criticality; portions of the plant heat-up, main generator synchronization to the grid, and portions of the power ascension to full power operation
- Licensee identification and resolution of problems - reviewed corrective action reports related to RFO and startup activities to verify that PBAPS was identifying issues at the appropriate level and taking adequate corrective action to resolve the issues

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 - 5 samples)

a. Inspection Scope (4 routine surveillances; 1 RCS sample)

The inspectors observed performance of STs and/or reviewed test data of selected risk-significant 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:

- ST-M-57B-744-2, Unit 2D 125/250 Volts DC Battery Service Test, on October 1
- ST-O-054-754-2, E42 4KV Bus Undervoltage Relays and LOCA/LOOP Functional Test and E42 and E424 Alternate Shutdown Control Functional Test on October 4
- ST-O-080-675-2, Reactor Pressure Vessel (ASME Class I) Leakage Pressure Test, on October 15 and 16, 2012
- ST-O-023-301-2, High-Pressure Coolant Injection (HPCI) Pump, Valve, Flow and Unit Cooler Functional and In-Service Test, on October 19
- ST-O-020-560-2(3), Reactor Coolant Leakage Test, various tests from October 1 through December 31, 2012 (RCS leakage sample)

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 EP Drill Evaluation (71114.06 - 1 sample)

Simulator Evaluation

a. Inspection Scope

The inspectors evaluated the conduct of a routine PBAPS emergency drill on December 12, 2012, to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator, and technical support center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with 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 PBAPS's critique and to verify whether PBAPS staff was properly identifying weaknesses and entering them into the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational/Public Radiation Safety (PS)

2RS5 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

During the week of December 3 - 7, 2012, the inspectors verified that Exelon personnel were ensuring the accuracy and operability of radiation monitoring instruments that are used to (1) monitor areas, materials, and workers to ensure a radiological safe work environment, and (2) detect and quantify radioactive process streams and effluent releases. The instrumentation subject to this review included equipment used to monitor radiological conditions incident to normal plant operations, including anticipated operational occurrences, and conditions resulting from postulated accidents. The inspectors used the requirements in 10 CFR Part 20, 10 CFR Part 50 Appendix A - Criterion 60, "Control of Release of Radioactivity to the Environment," and Criterion 64, "Monitoring Radioactive Releases," 10 CFR 50 Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to meet the Criterion "As Low as is Reasonably Achievable" (ALARA) for Radioactive Material in Light-Water – Cooled Nuclear Power Reactor Effluents," 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations," NUREG-0737, "Clarification of Three Mile Island Corrective Action Requirements," Offsite Dose Calculation Manual (ODCM), TSs, applicable industry standards, and Exelon's procedures required by TSs as criteria for determining compliance.

The inspectors performed plant walkdowns of effluent radiation monitoring systems, including liquid and gaseous systems. The inspectors verified that effluent/process monitor configurations align with ODCM descriptions.

The inspectors verified that channel calibration and functional tests were performed consistent with radiological effluent TSs (RETS)/ODCM. The inspectors verified that (a) Exelon calibrated its monitors with National Institute of Standards and Technology (NIST) traceable sources, (b) if a primary calibration, it adequately represents the plant nuclide mix, (c) if a secondary calibration, it verifies the primary calibration, and (d) the channel calibrations encompass the instrument's alarm set points.

The inspectors verified that effluent monitor alarm set points were established as provided in the ODCM and station procedures. For changes to effluent monitor set points, the inspectors evaluated the basis for changes to ensure that an adequate justification exists.

The inspectors selected laboratory analytical instruments used for radiological analyses and verified that daily performance checks and calibration data indicated that the frequency of the calibrations was adequate and there were no indications of degraded instrument performance.

As part of the problem identification and resolution (PI&R) review, the inspectors verified that appropriate corrective actions were implemented in response to indications of degraded instrument performance.

The inspectors selected the drywell/containment high-range monitor and reviewed the calibration documentation since the last inspection.

The inspectors verified that an electronic calibration was completed for all range decades above 10 rem/hour and that at least one decade at or below 10 rem/hour was calibrated using an appropriate radiation source.

The inspectors determined that the calibration acceptance criteria were reasonable, accounting for the large measuring range and the intended purpose of the instruments.

The inspectors reviewed Exelon's capability to collect high-range, post-accident iodine effluent samples.

The inspectors observed electronic and radiation calibration of these instruments to verify conformity with Exelon's calibration and test protocols.

The inspectors reviewed Exelon's 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source term to determine if the calibration sources used were representative of the types and energies of radiation encountered in the plant.

The inspectors verified that problems associated with radiation monitoring instrumentation were being identified by Exelon personnel at an appropriate threshold and were properly addressed for resolution in Exelon's CAP.

b. Findings

No findings were identified.

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

a. Inspection Scope

During the week of December 3 - 7, 2012, the inspectors: (1) ensured that the gaseous and liquid effluent processing systems were maintained so that radiological discharges are properly mitigated, monitored, and evaluated with regard to public exposure; (2) ensured that abnormal radioactive gaseous or liquid discharges and conditions, when effluent radiation monitors were OOS, were controlled in accordance with applicable regulatory requirements and Exelon procedures; (3) verified that Exelon's quality control program ensured that the radioactive effluent sampling and analysis requirements were satisfied so that discharges of radioactive materials were adequately quantified and evaluated; and (4) verified the adequacy of public dose calculations and projections resulting from radioactive effluent discharges. The inspectors used the requirements in 10 CFR Part 20; 10 CFR 50.35(a) TSs; 10 CFR Part 50 Appendix A - Criterion 60, "Control of Release of Radioactivity to the Environment," and Criterion 64, "Monitoring Radioactive Releases; 10 CFR 50 Appendix I Numerical Guides for Design Objectives and Limiting Conditions for Operations to Meet the Criterion "ALARA" for Radioactive Material in Light-Water – Cooled Nuclear Power Reactor Effluents;" 10 CFR 50.75(g), "Reporting and Recordkeeping for Decommissioning Planning;" 40 CFR Part 141, "Maximum Contaminant Levels for Radionuclides;" 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations;" the guidance in Regulatory Guides 1.109, 1.21, 4.1 and 4.15; NUREG-1301 or 1302 ODCM Guidance: Standard Radiological Effluent Control, as well as applicable Industry standards, and Exelon procedures required by TSs/ODCM as criteria for determining compliance.

The inspectors reviewed the Annual Radiological Effluent Release Reports issued since the last inspection. The inspectors determined that the reports were submitted as required by the ODCM/TSs. The inspectors identified radioactive effluent monitor operability issues reported by Exelon as provided in effluent release reports, and determined that the issues were entered into the CAP and adequately resolved.

The inspectors reviewed changes to the ODCM made by Exelon since the last inspection. The inspectors determined that Exelon had not identified any non-radioactive systems that had become contaminated as disclosed either through an event report or as documented in the ODCM since the last inspection.

The inspectors reviewed reported groundwater monitoring results, and changes to Exelon's written program for identifying and controlling contaminated spills/leaks to groundwater.

The inspectors reviewed licensee event reports (LERs) and/or special reports related to the effluent program issued since the previous inspection. The inspectors identified no additional focus areas for the inspection based on the scope/breadth of problems described in these reports. The inspectors reviewed effluent program implementing procedures, particularly those associated with effluent sampling, effluent monitor set point determinations and dose calculations.

The inspectors performed walkdowns of selected components of the gaseous and liquid discharge systems to verify that equipment configuration and flow paths align with the documents reviewed and assess equipment material condition. For equipment or areas associated with the systems selected above, that were not readily accessible due to radiological conditions, the inspectors reviewed Exelon's material condition surveillance records. The inspectors walked down those filtered ventilation systems whose test results were reviewed during the inspection. The inspectors verified that there were no conditions, such as degraded high efficiency particulate air (HEPA)/charcoal banks, improper alignment, or system installation issues that would impact the performance, or the effluent monitoring capability, of the effluent system.

The inspectors determined that Exelon had not made any significant changes to their effluent release points.

The inspectors observed the routine processing and discharge of effluents (including sample collection and analysis). The inspectors verified that appropriate effluent treatment equipment was being used and that radioactive liquid waste was being processed and discharged in accordance with procedure requirements and aligns with discharge permits.

The inspectors selected effluent sampling activities and verified that adequate controls had been implemented to ensure representative samples were obtained. The inspectors determined that the facility was not routinely relying on the use of compensatory sampling in lieu of adequate system maintenance, based on the frequency of compensatory sampling since the last inspection.

The inspectors reviewed the results of the inter-laboratory comparison program to verify the quality of the radioactive effluent sample analyses. The inspectors verified that the inter-laboratory comparison program included hard-to-detect isotopes as appropriate.

The inspectors reviewed the methodology that Exelon uses to determine the effluent stack and vent flow rates. The inspectors verified that the flow rates are consistent with RETS/ODCM or UFSAR values, and that differences between assumed and actual stack and vent flow rates do not affect the results of the projected public doses.

The inspectors verified that surveillance test results since the previous inspection for TS required ventilation effluent discharge systems (HEPA and charcoal filtration) met TS acceptance criteria.

The inspectors reviewed radioactive liquid and gaseous waste discharge permits. The inspectors verified that the projected doses to members of the public were accurate and based on representative samples of the discharge path. The inspectors evaluated the methods used to determine the isotopes that are included in the source term to ensure all applicable radionuclides were included, within delectability standards. The inspectors reviewed the current 10 CFR Part 61 analyses to ensure hard-to-detect radionuclides were included in the source term.

The inspectors reviewed changes in PBAPS's offsite dose calculations since the last inspection. The inspectors verified that the changes are consistent with the ODCM and Regulatory Guide 1.109. The inspectors reviewed meteorological dispersion and deposition factors used in the ODCM and effluent dose calculations to ensure appropriate factors were being used for public dose calculations. The inspectors

reviewed the latest land use census and verified that changes have been factored into the dose calculations.

The inspectors verified that Exelon was continuing to implement the voluntary Nuclear Energy Institute (NEI)/Industry Groundwater Protection Initiative (GPI) since the last inspection. The inspectors reviewed monitoring results of the GPI to determine if Exelon had implemented its program as intended, and to identify any anomalous results. No anomalous results were identified.

The inspectors reviewed identified leakage or spill events and entries made into 10 CFR 50.75 (g) records. The inspectors reviewed evaluations of leaks or spills, and reviewed any remediation actions taken for effectiveness. The inspectors reviewed onsite contamination events involving contamination of groundwater.

The inspectors verified that on-site groundwater sample results and a description of any significant on-site leaks/spills into groundwater for each calendar year were documented in the Annual Radiological Environmental Operating Report for REMP or the Annual Radiological Effluent Release Report for the radiological effluent TS (RETS).

The inspectors verified that problems associated with the effluent monitoring and control program were being identified by Exelon at an appropriate threshold and were properly addressed for resolution in Exelon's CAP.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151 – 12 samples)

.1 Mitigating Systems Performance Index (10 MSPI samples)

a. Inspection Scope

The inspectors sampled PBAPS's submittals of the Mitigating Systems Performance Index (MSPI) for the following systems for the period of October 1, 2011 through September 30, 2012:

- Unit 2 and Unit 3 Emergency Alternating Current Power System (MS06)
- Unit 2 and Unit 3 HPCI System (MS07)
- Unit 2 and Unit 3 RCIC System (MS08)
- Unit 2 and Unit 3 RHR System (MS09)
- Unit 2 and Unit 3 Support Cooling Water System (MS10)

To determine the accuracy of the performance indicator (PI) data reported during this period, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment PI Guideline," Revision 6. The inspectors also reviewed PBAPS operator narrative logs, CRs, MSPI derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Occupational Radiation Safety Cornerstone (1 sample)

a. Inspection Scope

The inspectors reviewed a listing of licensee action reports for issues related to the occupational radiation safety PI (OR01), which measures non-conformances with high radiation areas greater than 1 Roentgen/hour (R/hr) and unplanned personnel exposures greater than 100 millirem (mrem) total effective dose equivalent (TEDE), 5 rem skin dose equivalent (SDE), 1.5 rem lens dose equivalent (LDE), or 100 mrem to the unborn child. The inspectors determined that no PI events for occupational radiation safety had occurred during the assessment period.

b. Findings

No findings were identified.

.3 Public Radiation Safety Cornerstone (1 sample)

a. Inspection Scope

The inspectors reviewed a listing of licensee action reports for issues related to the public radiation safety PI (PR01), which measures radiological effluent release occurrences per site that exceed 1.5 mrem/quarter (qtr) whole body or 5 mrem/qtr organ dose for liquid effluents; or 5 millirads (mrads)/qtr gamma air dose, 10 mrads/qtr beta air dose; or 7.5 mrems/qtr organ doses from Iodine-131, I-133, Hydrogen-3, and particulates for gaseous effluents. The inspectors determined that no PI events for public radiation safety had occurred during the assessment period.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152 - 1 sample)

Routine Review of PI&R 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 CR screening meetings.

b. Findings and Observations

No findings were identified.

.2 Semi-Annual Review to Identify Trends (1 Semi-annual Trend sample)

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, "Problem Identification and Resolution," to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-related issues that may have been documented by Exelon outside of the corrective action program, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or corrective action program backlogs. The inspectors also reviewed Exelon's corrective action program database to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRCs daily condition report review (Section 40A2.1). The inspectors reviewed 9,048 issue reports (IR) that PBAPS initiated and entered into the CAP action tracking system (Passport) from June 1, 2012 through November 30, 2012. The inspectors evaluated the IRs against the requirements of Exelon CAP procedure, LS-AA-125, and 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action."

b. Findings and Observations

No findings were identified.

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 problems.

The inspectors noted adverse trends identified by PBAPS in the Maintenance and Operations Department in the area of human performance; including configuration control and clearance and tagging that have resulted in low-level issues of minor risk significance:

- Operations
 - Common Cause Analysis 1419073, "Nuclear Oversight Identified: Operations Shortfalls in Use of Human Performance Tools"
 - Common Cause Analysis 1423654, "Adverse Trend in Clearance and Tagging Events"
 - IR 1430391, "Declining Trend in Site Configuration Control"
 - IR 1430644, "Corporate Escalation due to Continued Adverse Human Performance Event Trend"
- Maintenance
 - IR 1425757, "Nuclear Oversight Identified: Lapses in Work Standards Results in Adverse Trend"
 - IR 1430748, "Elevation for Maintenance Department Human Performance at Peach Bottom"

- Common Cause Analysis 1394685, “Adverse Trend in Maintenance Department and Crew Clock Resets”
- Common Cause Analysis 1436530, “Safety and Human Error Prevention Tools Declining Trend in Maintenance”

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

- .1 (Closed) LER 05000277/2012001-00, Laboratory Analysis Identified Safety Relief Valve and Safety Valve Setpoint Deficiencies (1 sample)

On September 25, 2012, site engineering personnel determined, based on information received from a vendor laboratory performing SRV / safety valve (SV) as-found testing, that SRV /SV the open lift setpoint deficiencies existed with six SRVs and one SV that were in place during the 19th Unit 2 operating cycle. The SRVs /SV were determined to have their as-found opening setpoints outside of the TS allowable $\pm 1\%$ tolerance. The six SRVs outside of their TS allowable setpoint range were within the ASME Code allowable $\pm 3\%$ tolerance. The one SV outside of its TS allowable setpoint range also exceeded the ASME Code allowable $\pm 3\%$ tolerance. The cause of the SRVs /SV being outside of their allowable as-found setpoints is due to setpoint drift. The SRVs /SV were replaced with refurbished SRVs / SV for the 20th Unit 2 operating cycle. There was no actual safety consequences associated with this event. The enforcement aspects of this LER are discussed in Section 4OA7. This LER is closed.

- .2 (Closed) LER 05000277/2012002-00, Common Cause Inoperability of Reactor Protection System Turbine Control Valve Instruments (1 sample)

On October 1, 2012, during surveillance testing performed during the P2R19 RFO, Instrumentation and Controls personnel identified that two of the four instruments used to perform the RPS scram and end-of-cycle recirculation pump trip (EOC-RPT) functions for turbine control valve (TCV) fast closure were outside of their TS allowable value of > 500 psig oil pressure. The 'A' pressure sensing instrument (PS-4121A) was found at a trip setting of 495 psig and the 'B' pressure sensing instrument (PS-4121B) was found at a trip setting of 493 psig. The cause of this event is due to instrument drift. This occurrence is reportable as a result of a common cause inoperability that resulted in two instruments drifting low outside of the TS allowable value. The 'A' and 'B' instruments were replaced and calibrated to within acceptable limits. There was no actual safety consequences associated with this event. If an operational transient would have occurred during power operations, the 'C' and 'D' instrument channels were operable and would have provided the RPS scram and EOC-RPT trip functions. The enforcement aspects of this LER are discussed in Section 4OA7. This LER is closed.

- .3 (Closed) LER 05000278/2012003-00, Loss of Control Room Emergency Ventilation Function Due to Failure of Ventilation Fan to Start (1 sample)

On October 4, 2012, during surveillance testing of a 4KV emergency bus, the 'A' MCR emergency ventilation (MCREV) fan did not start as expected when an initiation signal was generated. Although the 'B' MCREV fan started per design, the bus that powers the 'B' train of MCREV was considered inoperable due to planned testing. PBAPS determined that the cause of this event was that the 'A' MCREV fan switch was positioned such that the switch contacts were still open, thereby preventing a start of the 'A' fan. PBAPS determined this event was reportable because it could have prevented the fulfillment of the MCREV safety function with both trains inoperable simultaneously.

The switch was correctly repositioned on the same day, and the system was returned to an operable status. PBAPS entered this item into the CAP for investigation, extent-of-condition review, and evaluation for any additional corrective action that may be required. No findings or violations of NRC requirements were identified because TS allowed outage times were not exceeded. This LER is closed.

.4 Event Response – Super Storm Sandy (1 sample)

a. Inspection Scope

From October 25 to October 28, 2012, the inspectors reviewed PBAPS's activities to prepare for the potential arrival of Super Storm Sandy. PBAPS personnel implemented the actions specified by procedure OP-PB-108-111-1001, "Preparation for Severe Weather." On October 29, 2012, inspectors responded to PBAPS due to the expected arrival of Super Storm Sandy within the next 24 hours. Inspectors remained on-site continuously until the passing of the Super Storm on the following day. The inspectors noted that PBAPS had staffed the Outage Control Center (OCC) on October 29, 2012, to track Super Storm Sandy and provide a centralized location for control of severe weather-related actions. The inspectors monitored plant activities in the MCR and the OCC and monitored selected plant parameters, including: actual and projected onsite weather conditions; offsite power status; key safety equipment status; river water intake conditions; plant equipment issues; security readiness and equipment issues; and emergency planning considerations.

b. Findings

No findings were identified.

4OA5 Other Activities

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

a. Inspection Scope

The inspectors reviewed the final report for the PBAPS INPO assessment conducted in April 2012. The inspectors reviewed this report to ensure that any issues identified were consistent with NRC perspectives of PBAPS performance and to determine if INPO identified any significant safety issues that required further NRC follow-up.

b. Findings

No findings were identified.

.2 Temporary Instruction (TI) 2515/182, Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks, Phase 1 (2515/182 - 1 sample)

a. Inspection Scope

Exelon's buried piping and underground piping and tanks program was inspected in accordance with paragraphs 03.01a through 03.01c of the TI and was found to meet all applicable aspects of the NEI document 09-14, Revision 1, as set forth in Table 1 of the TI 2515/182.

b. Findings

No findings were identified.

.3 TI 2515/185 Follow-up on the Industry's GPI

a. Inspection Scope

The objective of this TI is to assess groundwater protection programs to determine whether licensees' have implemented the program elements in their groundwater protection programs that were identified as incomplete in TI 2515/173.

During December 3 - 7, 2012, the inspectors reviewed previously identified incomplete program elements within Exelon's Industry GPI. The incomplete program elements previously identified (NRC Inspection Report 05000277/2010004: 05000278/2010004) were:

1. GPI Objective 1.2 g - At the time of the inspection, a specific frequency had been established for periodic reviews of SSCs and work practices. However, the frequency had not yet been placed in a procedure. This matter was identified in a self-assessment and placed in the CAP. (AR924237)
2. GPI Objective 1.3 f - At the time of the inspection, Exelon had established a program for the preventative maintenance of groundwater wells. However, the program had not yet been incorporated into all applicable implementing procedures. Exelon placed this issue into its CAP. (AR924237)
3. GPI Objective 1.4 a.- At the time of the inspection, written procedures had not been established outlining the decision making process for remediation of leaks or spills or other instances of inadvertent releases, including consideration of migration pathways. Exelon identified this issue during an assessment of GPI implementation and placed this issue into its CAP. (AR924237)
4. GPI Objective 1.4 c.- At the time of the inspection, an evaluation had not been performed and documented on the decommissioning impacts resulting from remediation activities or the absence thereof (e.g., do licensee procedures include a decision making process to evaluate prompt remediation or delayed remediation and its impact on decommissioning). Exelon identified this issue during an assessment of GPI implementation and placed this issue into its CAP. (AR924237)
5. GPI Objective 1.5 - Exelon developed program procedures to establish a record keeping program to meet the requirements of 10 CFR 50.75(g) and developed an historical spill/leak list. However, Exelon identified, during a June 2010 audit, that the individual record files did not reflect some information contained in station files. Exelon initiated a review to ensure all appropriate information, consistent with criteria in 10 CFR 50.75(g) and the program procedure, were included in its decommissioning files. Exelon placed this matter into its CAP. (AR1081998)
6. GPI Objective 3.2 a. - An independent, knowledgeable individual had not performed, under the auspices of NEI, an initial review within one year of the initial self-

assessment, per GPI Objective 3.1.a. This assessment was completed on February 28, 2010. Exelon placed this matter into its CAP. (AR1041430)

The inspectors reviewed actions taken to correct the above listed incomplete items:

b. Findings and Observations

No findings were identified.

The inspectors concluded that Exelon had satisfactorily addressed the incomplete items documented in TI 2515/173 as discussed below.

Item 1: Exelon inserted in section 4.3.2 of Procedure EN-AA-408-4000 the frequency for reviewing and updating the risk associated with SSCs.

Item 2: Exelon inserted in section 4.1.3.3 of Procedure EN-AA-408-4000 a groundwater well preventative maintenance program; For incomplete item 3, Exelon inserted in section 4.1.7 of Procedure EN-AA-408-4000 and Attachment 2 of Procedure EN-AA-407 the decision making process for the remediation of leaks or spills.

Item 3: Exelon inserted in section 4.1.7 of Procedure EN-AA-408-4000 and Attachment 2 of Procedure EN-AA-407 the decision making process for the remediation of leaks or spills.

Item 4: Exelon inserted in section 4.1.7 of Procedure EN-AA-408-4000, and created with an Operational Technical Decision, a methodology for evaluating decommissioning impacts resulting from groundwater remediation activities.

Item 5: Exelon amended Procedure RP-AA-228 (Revision 1) to ensure adequate records are maintained to meet the requirements of 10 CFR 50.75(g). The inspectors noted that this issue was associated with Exelon's Three Mile Island site and not PBAPS.

Item 6: Although the independent assessment was not performed in the time frame specified in the NEI letter, as noted in NRC Inspection Report 05000277/2010004: 05000278/2010004, this assessment was completed on February 28, 2010, and no further action is necessary.

.4 TI 2515/187 – Inspection of Near-Term Task Force Recommendation 2.3 – Flooding Walkdowns

a. Inspection Scope

The inspectors verified that PBAPS's walkdown packages for both the accompanied and independent plant area walkdowns listed below contained the elements as specified in NEI 12-07 Walkdown Guidance document.

The inspectors accompanied PBAPS and contracted personnel on their flooding walkdowns of the following plant areas:

- E-1 EDG room
- E-2 EDG room
- E-3 EDG room
- E-4 EDG room
- EDG cardox and ESW booster pump room

The inspectors verified that PBAPS confirmed the following flood protection features:

- Visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed.
- Reasonable simulation of manual flood protection actions.
- Critical SSC dimensions were measured.
- Available physical margin, where applicable, was determined.
- Flood protection feature functionality was determined using both visual observation and documentation review.

The inspectors independently walked down the safety-related pump structure, and verified that the following flood protection features were in place:

- Penetration seals
- Flood doors and gaskets
- Internal and external walls
- Floor
- Roof parapet and drains
- Sump system
- Reasonable simulation of manual flood protection actions

The inspectors verified that noncompliances with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into PBAP's CAP. In addition, issues identified in response to Item 2.g that could challenge risk significant equipment and PBAPS's ability to mitigate the consequences will be subject to additional NRC evaluation.

.5 TI 2515/188 – Inspection of Near-Term Task Force Recommendation 2.3 – Seismic Walkdowns

a. Inspection Scope

The inspectors accompanied PBAPS and contracted personnel on their seismic walkdowns of selected portions of the following plant areas:

- Safety-related pump structure
- Service water traveling screen structure

The inspectors observed walkdowns of the following equipment listed on the PBAPS seismic walkdown equipment list (SWEL):

- MO-2-30-2233A, Unit 2 'A' sluice gate
- 2CP042, Unit 2 'C' HPSW pump
- P0D-2-40H-20223-3, Unit 2 HPSW pump room outside air supply damper
- P0D-2-40H-20223-4, Unit 2 HPSW pump room exhaust return to room damper
- DPS30224-4, Unit 2 HPSW pump room DP sensor
- 2AV060, Unit 2 HPSW pump room air supply fan 'A'

The inspectors independently performed their walkdown of the Unit 2 drywell on September 30 and October 12, 2012, and the following equipment listed on the PBAPS seismic walkdown equipment list (SWEL):

- 2GT545, 'G' ADS instrument nitrogen accumulator
- 2KT545, 'K' ADS instrument nitrogen accumulator

The inspectors verified that, for the equipment listed above, the PBAPS and contracted personnel confirmed that the following seismic features were free of potential adverse seismic conditions:

- Anchorage was free of bent, broken, missing, or loose hardware
- Anchorage was free of corrosion that is more than mild surface oxidation
- Anchorage was free of visible cracks in the concrete near the anchors
- Anchorage configuration was consistent with plant documentation
- SSCs will not be damaged from impact by nearby equipment or structures
- Overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls are secure and not likely to collapse onto the equipment
- Attached lines have adequate flexibility to avoid damage
- The area appears to be free of potentially adverse seismic interactions that could cause flooding or spray in the area
- The area appears to be free of potentially adverse seismic interactions that could cause a fire in the area
- The area appears to be free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)

Observations made during the walkdown that could not be determined to be acceptable were entered into PBAPS's CAP for evaluation.

Additionally, inspectors verified that PBAPS did not identify any items that could allow the SFP to drain down rapidly; therefore, no such items were added to the SWEL for a walkdown by PBAPS personnel.

b. Findings

No findings were identified.

.6 Post-Approval Site Inspection for License Renewal (IP 71003)

a. Inspection Scope

On a sampling basis, the inspectors verified that Exelon had completed the necessary actions to comply with the license conditions that are a part of the renewed operating

license, and had implemented the aging management programs included in the NRC staff's license renewal safety evaluation report. The inspectors verified that Exelon followed the guidance in NEI 99-04 for the license renewal commitment change process, including the elimination of commitments, and properly evaluated, and reported where necessary, changes to license renewal commitments listed in the UFSAR in accordance with 10 CFR 50.59.

This inspection verified, by observation, selected:

- License conditions added as part of the PBAPS renewed license
- License renewal commitments and selected aging management programs
- License renewal commitments revised after the renewed license was granted, were implemented in accordance with Title 10 of the *Code of Federal Regulations* (CFR) Part 54, "Requirements for the Renewal of Operating Licenses for Nuclear Power Plants"

b. Findings and Observations

No findings were identified.

The inspectors concluded that Exelon's actions regarding the commitments described below were complete and met regulatory expectations as reflected in the NRC staff's safety evaluation report.

Commitments and Aging Management Programs

Flow-Accelerated Corrosion Program

The inspectors observed ultrasonic measurements taken of the standby liquid control tank suction piping (WO CO241697). The piping was examined 12-inches on either side of the weld between valve HV-2-11-11 and the tee downstream of the weld location. The examination was implemented in accordance with procedure ER-AA-335-045, "Manual Ultrasonic Requirements for Non-PDI Examinations," Revision 2. This evolution was evidence of the implementation of the aging management program proposed in the original Exelon license renewal application Section B.1.1, "Flow-Accelerated Corrosion Program," which was codified by the renewed license condition requiring renewal related aging management programs entered into the UFSAR.

Commitment 6 – Inspection of Outer Sluice Gates

Commitment 6, in the renewal Safety Evaluation Report, Appendix A, requires Exelon to perform an inspection of outer sluice gates in the circulating water pump structure. This commitment encompassed by the UFSAR, Section A.2.5, "Outdoor, Buried, and Submerged Component Inspection Activities," and must be performed prior to period of extended operation. This commitment was generated in the applicant's response to the NRC's request for additional information request (RAI) 3.5-3, in a letter dated May 21, 2002. This commitment was tracked by Exelon as Commitment T04329, which was noted on the work order implementing the inspection.

The outer sluice gates work in conjunction with the ESW system to support safe shutdown following a loss of the normal heat sink. As a consequence of the safe shutdown function of the structural steel sluice gates, Exelon identified the structural

steel sluice gates and embedment, in Table 2.4-11 of the original application to renew their license, as a long-lived structural component of the circulating water pump structure that is subject to an aging management review. The sluice gates and embedment have the intended function of maintaining the pressure boundary when the emergency cooling water system is called upon to operate. During the Unit 2 outage, when desilting operations are implemented at the intakes, the circulating water pump structure, the ESW cross-tie sluice gate, ESW and HPSW cross-tie sluice gate, and the Unit 2 'A' and 'B' sluice gates, were visually examined for a significant loss of material. The inspectors observed the diving and inspection activities implemented as part of the desilting operations, interviewed the operation manager, and reviewed the recurring task activity (WO NBR R1178278).

Commitment 8 – Reactor Pressure Vessel Top Guide Inspection

Commitment 8, in the renewal Safety Evaluation Report, Appendix A, requires that Exelon perform an inspection of the reactor pressure vessel top guide prior to the period of extended operation. The commitment is part of the aging management program as described in the UFSAR, Section A.2.7, "Reactor Pressure Vessel and Internals ISI Program." This commitment was made in response to an open item 4.5.2-1, in a letter to the NRC dated January 14, 2003. The NRC inspectors observed the implementation of remote visual examinations of the reactor pressure vessel top guide and reviewed the ongoing video interrogation of the guides by trained and knowledgeable vendors.

MR Structure Monitoring Program

The inspectors observed the implementation of a visual examination of the structures associated with the 'B' and 'D' core spray rooms. This inspection was part of aging management program B1.16, "MR Structure Monitoring Program." The inspectors noted that the check list used during the visual inspection included all the essential elements of a maintenance monitoring program. Such items as corrosion, missing or degraded grout, and crack welds in structural steel components were included in the checklist. Masonry walls, although limited, were visual inspected for cracked joints, deteriorated penetrations, and missing or broken blocks. Component supports were checked for missing or loose bolts and cracked welds.

40A6 Meetings, Including Exit

Quarterly Resident Exit Meeting Summary

On January 18, 2013, the resident inspectors presented the inspection results to Mr. Michael Massaro, Site Vice President, and other PBAPS staff, who acknowledged the findings. Mr. M. Gray, Chief, USNRC, Region 1, Division of Reactor Projects, Branch 4, attended this quarterly inspection exit meeting. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by Exelon and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as NCVs.

- TS 3.4.3 Limiting Condition for Operation (LCO) requires that 11 of 13 SRVs\SVs shall be operable in reactor operating modes 1, 2, and 3. TS 3.4.3.1 surveillance

requirement states that the SRVs/SVs opening lift setpoints are maintained within $\pm 1\%$ tolerance of the design opening pressure. Contrary to the above, information received by site engineering from a laboratory performing SRV/SV as-found testing, determined that on September 25, 2012, the valve setpoint deficiencies existed with six SRVs and one SV that were in place during the Unit 2 19 operating cycle. The SRVs /SV were determined to have their as-found setpoints outside of the TS allowable $\pm 1\%$ tolerance. The six SRVs outside of their TS allowable setpoint range were within the ASME Code allowable $\pm 3\%$ tolerance. The one SV outside of its TS allowable setpoint range also slightly exceeded the ASME Code allowable $\pm 3\%$ tolerance at a value of $+ 3.4\%$. The cause of the SRVs /SV being outside of their allowable as-found setpoints was due to setpoint drift. The SRVs /SV were replaced with refurbished SRVs/SV for the 20th Unit 2 operating cycle. The amount of setpoint drift was within the as found Target Rock SRV values when compared to industry data. The SRVs/SV were replaced with refurbished valves that were tested and opened within the allowable $\pm 1\%$ tolerance. The inspectors determined that the finding was of very low safety significance (Green) in accordance with Section A of Exhibit 2 in Appendix A of IMC 0609, "The Significance Determination Process for Findings at Power," because the SRV's safety function was not affected. Although outside the lift setpoint tolerance, the as found SRV/SV lift pressure values would not have challenged the reactor vessel design maximum pressure rating during the most limiting postulated accident event.

The inspectors reviewed PBAPS's planned corrective actions to address the SRV setpoint drift issue and considered a planned industry standard TS setpoint change submittal to a $\pm 3\%$ tolerance appropriate. Because this finding is of very low safety significance, the as-found out of tolerance SRVs were replaced with SRVs that had the proper lift setpoint prior to the Unit 2 reactor plant startup, and the issue was entered into Exelon's CAP under IR 1418320 and apparent cause evaluation 1120516, this violation is being treated as a Green NCV consistent with the NRC's Enforcement Policy.

- TS LCO 3.3.1.1, Condition B, requires that with one RPS instrument function with one or more required channels inoperable, action shall be taken within six hours to place a channel or trip system in a tripped condition within six hours. Additionally, TS LCO 3.3.4.2, Condition A, requires that with one or more required end of cycle (EOC) recirculation pump trip (RPT) instrument channels inoperable, action be taken to place the channel in a tripped condition within 72 hours if the channel is not restored to operable status. Contrary to the above, PBAPS determined that the 'A' and 'B' channels of the Unit 2 turbine control valve (TCV) fast closure pressure sensing instruments were inoperable for a period of time greater than allowed by TS. Specifically, the as-found trip setpoints of the 'A' and 'B' sensing instruments were identified to be below the allowable trip setting during surveillance testing on October 1, 2012. PBAPS Unit 2 was defueled to support the 19th RFO during performance of the ST. Both instruments were replaced and calibrated to within acceptable limits prior to reactor startup. The inspectors determined that the finding was of very low safety significance (Green) in accordance with Section C of Exhibit 2 in Appendix A of IMC 0609, " The Significance Determination Process for Findings at Power," because RPS system trip capability was maintained with the 'C' and 'D' instrument channels. Because this finding is of very low safety significance and has been entered into Exelon's CAP under IR 1421069, this violation is being treated as a Green NCV consistent with the NRC Enforcement Policy.

- 10 CFR 50.54(q) requires, in part, that a power reactor licensee follow an Emergency Plan that meets the requirements of 10 CFR 50.47(b). 10 CFR 50.47(b) requires, in part, that a standard emergency classification and action level scheme, the bases of which includes facility system and effluent parameters, is in use by Exelon. Contrary to the above, between December 2008 and November 2012, the standard emergency classification and action level scheme associated with radiological effluents at PBAPS was not updated to reflect the changes in X/Q dispersion factor that occurred during the December 2008 ODCM revision. Consequently, the effluent monitor emergency classification and action level thresholds for the reactor building exhaust vent stack were non-conservative until this condition was identified and promptly corrected by PBAPS in November 2012. The inspectors determined that the finding was of very low safety significance (Green) in accordance with NRC IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Table 5.4-1, because the emergency action level (EAL) classification process would not be capable of classifying an Unusual Event (UE) within 15 minutes, but would still be capable of declaring all other EALs within 15 minutes. Because this finding is of very low safety significance, and has been entered into Exelon's CAP under IR 1439489, this violation is being treated as a Green NCV consistent with the NRC's Enforcement Policy.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Exelon Generation Company Personnel

Michael Massaro, Site Vice President
P. Navin, Plant Manager
J. Armstrong, Regulatory Assurance Manager
T. Moore, Site Engineering Director
M. Herr, Operations Director
J. Kovalchick, Security Manager
P. Rau, Work Management Director
R. Reiner, Chemistry Manager
R. Holmes, Radiation Protection Manager
J. Bowers, Training Director
B. Henningan, Operations Training Manager

NRC Personnel

M. Gray, Branch Chief
S. Hansell, Senior Resident Inspector
A. Ziedonis, Resident Inspector
T. Burns, Reactor Inspector
J. Furia, Senior Health Physicist
M. Modes, Senior Reactor Engineer
A. Rosebrook, Senior Project Engineer

LIST OF ITEMS OPENED, CLOSED, DISCUSSED

Opened

None

Opened/Closed

None

Closed

05000277/2012001-00	LER	Laboratory Analysis Identifies Safety Relief Valve and Safety Valve Setpoint Deficiencies (Section 4OA3.1)
05000277/2012002-00	LER	Common Cause Inoperability of Reactor Protection System Turbine Control Valve Instruments (Section 4OA3.2)

05000278/2012003-00	LER	Loss of Control Room Emergency Ventilation Function Due to Failure of Ventilation Fan to Start Failure of Primary Containment (Section 4OA3.3)
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Discussed/Closed

None.

LIST OF DOCUMENTS REVIEWED

* -- Indicates NRC-identified

Section 1R01: Adverse Weather Protection

Procedures

RT-I-066-200-2, Heat Trace System Testing, Revision 10, Completed 09/26/12
 RT-O-040-620-2, Outbuilding HVAC and Outer Screen Inspection for Winter Operation, Revision 16, Completed 11/11/12
 RT-O-040-630-2, Winterizing Procedure, Revision 12, Completed 11/11/12
 MA-PB-1003, Winter Readiness and Storm Response Guidelines for the Peach Bottom Facility, Revision 8
 OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 9
 OP-PB-108-111-1001, Preparation for Severe Weather, Revision 9
 ARC Number: South 500 KV Sub Station General Alarm ARC-006 00C224 J-5, Revision 2, PBAPS Alarm Response Card
 AO 53.2-0, Equipment Checks After a Thunderstorm, Revision 4

Condition Reports

1432946, Water Intrusion E-2 EDG Bay from Door #D03, Performed on 10/30
 1432957, Update to IR 1431650 for 500 KV CB Trouble Alarm
 1197180, 2011-2012 Winter Readiness Tracking Assignments
 1244622, 2011-2012 Winter Readiness Tracking Assignments (Snow)
 1344584, 2011-2012 Post-Winter Readiness Critique
 1355667, PBAPS Winter Readiness Critique for 2011-2012
 1304044, Engineering Review Requested
 1296874, 2AE052 U2 RB Vent Supply Heating Coil Replacement
 1420796, Backdraft Damper did not Auto Close
 1420797, Backdraft Damper did not Auto Close
 1418459, Insulation Cover Broken off on Penetration "S" on U2 CST
 1421639, 'A' Auxiliary Boiler Suspected Leakage
 1435494, 'A' Auxiliary Boiler Failed Post Maintenance PMT
 1454745, 'A' Auxiliary Boiler Replacement: B&W Notified PM of Delivery Date
 1429450, 0BE139 Temperature Control not Functioning
 1429547, Heating Unit not Working
 1431972, Mechanically Restrain Cooling Tower Fans In Accordance With OP-PB-108-111-1001
 1437802, Unit 2 Change in Reactor Drywell Pressure Indications
 1437808, Fan Does Not Start

1438614, Test Equipment Prevents Closing Louvers for Winter Readiness
1438884, TIS-00520-02 Shows Signs of Wire Damage
1442654, Work Week 1247 PMM6 Unable to Complete Scheduled Work
1442663, Work Week 1247 This IR Goes with 1442654
1443988, Nitrogen Leaking from Boilers
1444436, BRE #3 Wall Heater OOS
1452161, Wall Heater in BRE 8 is Broken
1444437, BRE #9 Wall Heater OOS
1444491, 0AK019 – Low Condenser Refrigerant Pressure
1444496, 0AK019 – Low Evaporator Entering Water Temperature
1444518, No Steam or Water at Hand Valve When Placing Steam Hear In Service
1445229, Develop Procedure for MCR Chiller Winter Operation
1445423, Multiple Trips of Ionics Skid
1445515, 2012-2013 Winter Readiness Exception to WC-AA-107 Attachment 1
1444626, Potential Asbestos Contamination
1444977, Aux Steam Trap Through Wall Leak D/S HV-3-24F-38349
1445469, Work Not Completed as Scheduled
1446454, Valve Packing Leak RB Heating System
1446572, 0AK019 Low Condenser Refrigerant Pressure
1447482, 2BK018 Low Condenser Refrigerant Pressure
1452170, Abnormal Lineup Required to Keep RB Negative DP in Spec
1452736, HV-2-24F-28426A RB Heating Coil 2AE053 Drain Valve
1452708, 2BE052 RB Ventilation Supply Heating Coil 'B'
1453924, Unit 2 RB Face Damper not Modulating
1455467, TBCCW Head Tank Now Lowering
1456262, OP-AA-102-102 Gap Found
1456604, Leaking Steam Trap in Return Line of Area Heater
1457021, Preparation for Discharge Canal to Intake Pond Cross-Tie Gate Removal
1458286, Tracking for AO 29.2

Miscellaneous

SE-16 Bases, Grid Emergency – Bases, Revision 12, Performed on October 30, 2012
Peach Bottom Certification Letter for Winter Readiness, dated November 15, 2012
Unified Control Room Log, Monday, November 26, 2012, Day Shift
Unified Control Room Log, Thursday, December 13, 2012, Night Shift
Unified Control Room Log, Friday, December 14, 2012, Night Shift
Unified Control Room Log, Sunday, December 16, 2012, Day Shift
Unified Control Room Log, Monday, December 17, 2012, Night Shift
Unified Control Room Log, Monday, October 29-31, 2012, Day and Night Shifts

Section 1R04: Equipment Alignment

Procedures

SO 10.1.A-3B COL, RHR System Setup for Automatic Operation Loop B, Revision 21

Condition Reports

*1452357, MSO Impacted MCC Not Updated on System Operating Procedure Check Off List

WOs / ARs

01432946, Water Intrusion E-2 EDG Bay from Door #D03
01429435, Loose Nut Found in E-3 Standby Diesel Generator Room

Section 1R05: Fire Protection

Procedures

PF-10, Unit 3 RB 'B' RHR Pump and HX Room, Revision 2
PF-9, Unit 3 RB 'D' RHR Pump and HX Room, Revision 2
PF-3, Unit 2 RB 'D' RHR Pump and HX Room, Revision 4
PF-5H, Unit 2 RB General Area, North – Elevation 135', Revision 3
PF-5P, Unit 2 RB General Area, South – Elevation 135', Revision 4
PF-136, ECT, General Area – Elevation 123' and 153', Revision 2

Condition Reports

1448248, Ground Water Intrusion in 2 'D' RHR Room
1443419, Housekeeping Zone #6 Unit 2 RB 135' Walkdown
1443720, Combustible Material in Combustible Free Zone
1446031, No Control for Combustible Material on Rad Waste 135' Elevation
1446039, No Control for Combustible Material on Unit 2 RB 135' Elevation
1450015, Housekeeping Issues in Unit 2 RB
1452738, Cart with Wood Blocks on 135' RB South End
1453765, Transient Combustibles Under Stairwell
1455595, Housekeeping Zone #6 Unit 2 RB Walkdown

Miscellaneous

Technical Requirement Manual, 3.14.2, Fire Hose Stations, Circulating Water Pump Structure, Revision 6

Section 1R06: Flood Protection Measures

Drawings

M-541, Plumbing and Drainage Circulating Water Pump Structure Plan and Details, Revision 6

Miscellaneous

Internal Plant Examination, Volume 1, Section 3.3.8 – Internal Flooding Analysis
PB-PRA-012, PBAPS PRA Internal Flood Evaluation Summary Notebook, Revision 1
P-T-09, Internal Hazards Design Basis Document, Revision 9

Section 1R11: Licensed Operator Regualification Program

Procedures

OT-100, Reactor Low Level, Revision 12
OT-111, Reactor Low Pressure - Procedure
T-101 Sheet 1, RPV Control
T-102 Sheet 1-3, Primary Containment Control
T-103 Sheet 1, Secondary Containment Control
T-104 Sheet 1, Radioactivity Release
T-111, Sheet 1, Level Restoration
T-116, Sheet 1-2, RPV Flooding
T-204-2/3, Initiation of Containment Sprays Using RHR
T-216-2/3, Control Rod Insertion by Manual Scram or Individual Scram
T-220-2/3, Driving Control Rods during Failure to Scram
T-250-2/3, RPV Pressure Control using HPCI with Suction from CST
TQ-AA-150, Operator Training Programs, Revision 5

Miscellaneous

PSEG0325R, T-100 Scram, Scenario 4, Revision 9

Section 1R12: Maintenance Effectiveness

Condition Reports

1165407, RPS Test Box did not Light During SI2N-60A-APRM-41C2
1166983, Refurb APRM Voter Unit Found Defective Upon Installation
1220525, Failure of Unit 3 APRM #1 2/4 Voter
1225141, Replace A19 and A20 Cards in APRM 2/4 Voter
1286163, APRM-LM-3-PB3 2/4 Logic Module did not Drop Out RPS Logic
1286435, A2 Channel ½ Scram During APRM 3 Logic Module Repair
1287120, APRM Voter Card Failures – Need Accelerated Replacement
1321901, APRM-LM-3-PB3 Failed PMT Under C0240771
1322276, Unexpected RBM Alarm During APRM #3 Module Swap
1434493, 2/4 Voter Failed to Actuate Trip During Surveillance
*1443078, Gaps in the PCM Process MA-AA-716-210
*1445266, IRs With No/Inaccurate Affected Systems Identified
1451965, APRM HFA Relay Load Currents Required
1452962, APRM HFA Relay Load Currents Required
1452963, APRM HFA Relay Load Currents Required
1452964, APRM HFA Relay Load Currents Required

Miscellaneous

MR Scoping Document, System 60A – APRM and LPRM Instrumentation

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

OP-PB-108-101-1002, Control of Protected Equipment Tracking Sheets, Revision 7
ST-O-052-122-2, E-2 Diesel Generator RHR Pump Reject Test, Revision 9, Performed
November 5, 2012 (Yellow Risk)

Section 1R15: Operability Evaluations

Procedures

SE-16 Bases, Grid Emergency, Revision 12
SE-16, Grid Emergency, Revision 11

Condition Reports

1418236, WRNM C Reading Higher Than Expected
1418238, WRNM F Reads Higher Than Expected
1419377, Risk Assessment Required for WRNM's Prior to Refueling
1421363, Revision to P2R19 Reload CCTAS
1422250, WRNM Identified with a Potential Loose Adapter
1423132, NT-2-07-041D Discriminator Curves Not as Expected

Miscellaneous

Unified Control Room Log, Monday, October 8, 2012, Night Shift
Unified Control Room Log, Tuesday, October 30, 2012, Night Shift
Licensed Operator Training, PLOT 5060C, WRNM Instrumentation

Outage Control Center Log, Tuesday, October 2, 2012, Days
Outage Control Center Log, Friday, October 5, 2012, Night
Outage Control Center Log, Monday, October 8, 2012, Night
TS 3.3.1.2, WRNM Instrumentation
TS Bases 3.3.1.2, WRNM Instrumentation
TS 3.8.1 AC Sources - Operating
TS 3.8.4 DC Sources - Operating
ECR PB 94-04697, RX Recirc Motor A Air CLR DRN Pan LVL

Section 1R19: Post-Maintenance Testing

Procedures

ST-M-016-220-2, Main Steam Relief Valve Actuator Functional Test, Revision 6,
Performed 09/27/12
SI2K-54-E22-XXC2, Calibration Check of E22 4kV Bus Undervoltage and Sequential Loading
Relays, Revision 5, Performed 09/29/12
SI2K-54-E42-XXC2, Calibration Check of E42 4kV Bus Undervoltage and Sequential Loading
Relays, Revision 5, Performed 10/03/12
ST-M-01A-471-2, MSIV Timing, Springs Only Closure and Position Switch
Adjustment, Revision 12, Performed 10/05/12
ST-O-07G-470-2, MSIV Valve Closure Timing, Revision 17, Performed 10/05/12
ST-O-37C-360-2, Motor Driven Fire Pump Operability Test, Revision 14
ST-O-054-752-2, E-22 4Kv Bus Undervoltage Relays and LOCA LOOP Functional Test and
E-22 and E-224 Alternative Shutdown Control Functional Test, Revision 22
SI2N-60A-APRM-31FS, Functional Check of APRM 3, Revision 5, Performed 11/30/12

Condition Reports

1422717, Stroke Adjustments Made to MSIVs
1423056, Evaluate MSRV Pressure Switches
1419952, Relay 144-16 Sticking During SI2K-54-E22-XXC2
1414208, SI2K-54-E12-XXC2 Relay 144-15 Out of Cal High, Black Box Unsat
1427364, 2B Core Spray Pump Did Not Start In Accordance with E22 Bus LOCA Test
1422133, P2R19 MSIV-80A As-Found Stroke Time Fast
1422697, MSIV Stroke Times Near End of Acceptable Range
1445911, APRM-LM-3-PB2 Keylock Switch
1446620, Scheduled Work Not Completed

WOs / ARs

A/R A1638519

Miscellaneous

Outage Control Center Log, Thursday, October 4, 2012, Night
Technical Requirement Manual, 3.14.1, Water Fire Protection System, Revision 9
TC 12-0192, Exercise the Logic Module Keylock Switch during SI2N-60A-APRM-31FS
WC-AA-111, Attachment 3, Test Results Evaluation Form for SI2N-60A-APRM-31FS,
Performed 11/30/12, Revision 4

Section 1R20: Refueling and Other Outage Activities

Procedures

AO 27.1-2, Unit 2 Reactor Cavity Let Down During Vessel Re-assembly, Revision 13
GP-2, Normal Plant Startup, Revision 130

GP-6, Refueling Operations, Revision 22
Operability Evaluation 11-03, Conducted Under IR 1254155-09
OP-AA-108-108, Engineering Department Start-up Checklist, Revision 12
OP-AA-108-108, Unit 2 Startup PORC Meeting, Revision 12, Performed on 10/15/12
OP-AA-108-115, Operability Evaluation 12-006 Revision 1, MO-2-10-025B (RHR Loop B Inboard Discharge Valve), Revision 11
ST-O-080-675-2, Reactor Pressure Vessel (ASME Class I) Leakage Pressure Test, Revision 22
ST-R-003-495-2, CRD Scram Insertion Timing of Selected Control Rods During Hydro, Revision 5

Condition Reports

Common Cause Analysis 1434403, Clearance and Tagging Adverse Trend
1422610, Peach Bottom RCR Inadvertent Release of Lube Oil from Turbine Bearing Lift System
*1425906, HV-2-16-23169L Leaking By
1428185, The PB2C20 Startup Critical Occurred Beyond the ECP
1428377, PB 2 Cycle 20 Startup Shutdown Margin Actual Versus Design
1430817, Minor Revision to ST-R-002-900-2(3) Required

Miscellaneous

Shutdown Safety Approval / Notification Form: Use of 3.0.4.b, Dated 10/12/12
Technical Specification 3.5.2: ECCS – Shutdown, Amendment No. 259
Technical Specification 3.5.2 Bases: ECCS – Shutdown, Revision 0
General Electric BWR/4 STS 3.5.2 Bases, Revision 4.0
Unified Control Room Log, Friday, October 12, 2012, Night Shift

Section 1R22: Surveillance Testing

Procedures

ST-M-57B-744-2, Unit 2D 125/250 VDC Battery Service Test, Revision 10, Performed on 10/1/12
SO 40D.7.B, Place Control Room Ventilation Emergency Ventilation in Service from the Control Room, Revision 12
ST-O-054-754-2, E42 4kV Bus Undervoltage Relays and LOCA/LOOP Functional Test and E42 and E424 Alternate Shutdown Control Functional Test, Revision 19, Performed 10/04/12 (LOOP only portions)
TC 12-0148, Temporary Change to ST-O-054-754-2, Revision 19, Performed 10/05/12
ST-O-054-754-2, E42 4kV Bus Undervoltage Relays and LOCA/LOOP Functional Test and E42 and E424 Alternate Shutdown Control Functional Test, Revision 19, Performed 10/16/12 (LOOP LOCA portion)
ST-O-080-675-2, Reactor Pressure Vessel (ASME Class I) Leakage Pressure Test, Revision 22, Performed 10/15/12
ST-R-003-495-2, CRD Scram Insertion Timing of Selected Control Rods During Hydro, Revision 5
ST-R-003-495-2, CRD Scram Insertion Timing of Selected Control Rods During Hydro, Revision 5, Performed 10/14/12
ST-O-023-301-2, HPCI Pump, Valve, Flow and Unit Cooler Functional and IST, Revision 61, Performed on 10/19/12,
ST-O-013-301-2, RCIC Pump, Valve, Flow and Unit Cooler Functional and IST, Revision 40

ST-O-023-200-3, HPCI Flow Rate at Less than or Equal to 175 psig, Revision 16
 ST-O-013-200-2, RCIC Flow Rate at Less than or Equal to 175 psig, Revision 16
 RT-O-023-725-3, HPCI Response Time Test, Revision 17
 RT-O-013-725-3m RCIC Response Time Test, Revision 10
 ST-O-020-560-2(3), Reactor Coolant Leakage Test, various tests from October 1 through
 December 31, 2012

Condition Reports

1422221, ST-O-054-754-2 Failed Acceptance Criteria
 1422294, 0AV030 Failed to Auto Start
 1422551, Conditional TC to SO 40D.1.A
 1422527, Alarm "Control Room Supply Fan 0A-BV30 Standby Fan" Not Received
 1423138, MCR Vent Rad Monitor Loss of Indication
 1427772, NOS ID: EDG TS Surveillance Requirement Not Met
 1427846, NOS ID: Shift SRO Review Failed to Identify Inoperability
 1439848, A Change of TS SR 3.8.1.18 Needs to be Made
 1426616, NOS ID: Enhance Pressure Test IPA Brief for Parallel Activity
 1426672, Unit 2 Reactor Head Vent AO-17 No Closed Indication in MCR
 1426761, 2R19 Hydro – Leakage Identified on CRD-2-03-2239
 1426762, 2R19 Hydro – Leakage Identified on CRD-2-03-4259
 1426763, 2R19 Hydro – Leakage Identified on CRD-2-03-1823
 1426764, 2R19 Hydro – Leakage Identified on CRD-2-03-5011
 1426765, 2R19 Hydro – Leakage Identified on CRD-2-03-4235
 1426785, 2R19 Hydro – Leakage Identified on XFC-2-02-73H
 1426794, 2R19 Hydro – Packing Leak on HV-2-06-35A
 1426795, 2R19 Hydro – Packing Leak on HV-2-06-34B
 1426796, 2R19 Hydro – Leak From HV-2-01A-84C Test Tap Cap
 1426798, 2R19 Hydro – Test Tap Cap Leak on HV-2-13C-47A
 1426800, 2R19 Hydro – Leakage Identified on RV-2-12-8474
 1426802, 2R19 Hydro – Leakage Identified on HV-2-12-17
 1426803, 2R19 Hydro – Packing Leak Identified on RTV-2-12A-20530A
 1426807, 2R19 Hydro – Leakage Identified at Dragon Block Valve
 1426823, 2R19 Hydro – Packing Leak on AO-2-01A-080D
 1426824, 2R19 Hydro – Packing Leak on HV-2-10-88
 1426825, 2R19 Hydro – Packing Leak on MO-2-06-029A
 1429185, Recommend Tuning of Unit 2 HPCI Governor Controls
 1438936, Step Increase in Unit 2 Drywell Unidentified Leak Rate Identified

Miscellaneous

Event Notification 48376, Both Trains of Control Room Emergency Ventilation Out-of-Service
 PBAPS OE 301444, Failure of Control Room Emergency Ventilation Fan to Auto Start
 PBAPS OE 301456, Delayed Re-energizing of 4kV Emergency AC Bus During Loss of Power
 ST due to Failed Relay
 PBAPS Unit 2 TS Bases 3.0.6
 UFSAR Table 8.5.1, Sequence of Events in the Automatic Application of Emergency AC Loads
 on LOCA without Offsite Power, Revision 21
 UFSAR Table 8.5.4, Sequence of Events in the Automatic Application of Emergency AC Loads
 on LOCA with One Offsite Source Available, Revision 21
 UFSAR Table 8.5.5, Sequence of Events in the Automatic Application of Emergency AC Loads
 on LOCA with Two Offsite Sources Available, Revision 21
 Outage Control Center Log, Thursday, October 4, 2012, Night

Unified Control Room Log, Thursday, October 4, 2012, Day Shift
Unified Control Room Log, Thursday, October 4, 2012, Night Shift
Unified Control Room Log, Friday, October 5, 2012, Day Shift
Unified Control Room Log, Monday, October 15, 2012, Night Shift
Outage Control Center Log, Monday, October 15, 2012, Night

Section 1EP6: Drill Evaluation

EP-AA-112-200, "TSC Activation and Operation," Revision 8
EP-AA-122-1001-F-10, "Drill & Exercise Post-Event Critique & Report Development Guidance,"
Revision C
EP-AA-122-1001-F-11, "Drill & Exercise Comment & Feedback Form," Revision D
Exelon Nuclear Emergency Preparedness Peach Bottom – December 12, 2012 Station Drill
Controller\Evaluator Instructions
Peach Bottom Station December 12, 2012, Station DEP Drill
Peach Bottom – Scenario 0839, Revision 3
Peach Bottom December 12, 2012, Medical Drill Revision A
SE-12, Injury Response, Revision 23

Section 2RS05: Radiation Monitoring Instrumentation

Calibration & Test Procedures:

SI2R-63F-050-A1CE, Revision 11, Main Stack Rad Monitor RY-0-17-050A Electronics
Calibration Check
SI2R-63F-050-A1FQ, Revision 12, Main Stack Rad Monitor RY-0-17-050A Functional Check
SI2R-63F-050-B1CE, Revision 13, Main Stack Rad Monitor RY-0-17-050B Electronic
Calibration Check
SI2R-63F-050-B1FQ, Revision 13, Main Stack Rad Monitor RY-0-17-050B Functional Check
SI2F-40B-2805-A1CE, Revision 2, Calibration Check of RB Vent Stack Flow Loop
Instruments FT 2805A and FR 2805
SI2F-40B-2805-B1CE, Revision 2, Calibration Check of RB Vent Stack Flow Loop
Instruments FT 2805B and FR 2805
SI2R-63E-2979-A1CE, Revision 10, Vent Stack Rad Monitor RY-2979A Electronic Calibration
Check
SI2R-63E-2979-A1FQ, Revision 9, Vent Stack Rad Monitor RY-2979A Electronic Functional
Check
SI2R-63E-2979-B1CE, Revision 10, Vent Stack Rad Monitor RY-2979B Electronic Calibration
Check
SI2R-63E-2979-B1FQ, Revision 11, Vent Stack Rad Monitor RY-2979B Electronic Functional
Check
SI-3F-40B-3805-A1CE, Revision 6, Calibration Check of RB Vent Stack Flow Loop
Instruments FT 3805A and FR 3805
SI3F-40B-3805-B1CE, Revision 5, Calibration Check of RB Vent Stack Flow Loop
Instruments FT 3805B and FR 3805
SI3R-63E-3979-A1CE, Revision 10, Vent Stack Rad Monitor RY-3979A Electronic Calibration
Check
SI3R-63E-3979-A1FQ, Revision 8, Vent Stack Rad Monitor RY-3979A Electronic Functional
Check
SI3R-63E-3979-B1CE, Revision 11, Vent Stack Rad Monitor RY-3979B Electronic Calibration
Check
SI3R-63E-3979-B1FQ, Revision 10, Vent Stack Rad Monitor RY-3979B Electronic Functional
Check

SI2R-63M-350-XXC1, Revision 8, Electronic Calibration/Functional Check of the Radwaste Effluent Radiation Monitor RIS 0-17-350
ST-0-63M-810-2, Revision 6, Liquid Radwaste Monitor and Discharge Valve Functional Test

Section 2RS06

Annual Radiological Effluent Release Report, January 1, 2011 through December 31, 2011, dated 4/27/12

ODCM, Revision 14

Liquid Radwaste Discharges: 605-12, dated 8/15/12; 516-12, dated 7/16/12; 517-12, dated 7/16/12; 716-12, dated 9/18/12; 708-12, dated 9/18/12

Weekly Gaseous Iodine and Particulate dated: 4/4/12; 2/8/12; 8/22/12; 7/23/12; 5/30/12

Condition Reports: 01445222; 01440410; 01439489; 01299543; 01328430

Check-In Self-Assessment:

1201437-02, KT7R, Met Tower, REMP/RETS

1141803-01, Radiochemistry Instrumentation

1133689-02, Chemistry Laboratory and Radiochemistry Quality Control

1165276-02, Pre-NRC Self-Assessment for Procedure 71124.06

1321090-02, RECP and ODCM Pre-NRC Assessment

Eckert & Ziegler Analytics Cross-Check Program results for: 1st Quarter 2012; 2nd Quarter 2012; 3rd Quarter 2012

Procedure CY-AA-130-201, Revision 2, Radiochemistry Quality Control Inspection & Test Procedures:

RT-I-037-239-2, Revision 6, Recombiner Filter A Heat Detectors Functional Test

RT-I-037-240-2, Revision 7, Recombiner Filter B Heat Detectors Functional Test

RT-M-37B-359-2, Revision 0, Recombiner Building Exhaust Filter Train A Deluge System Airflow Test

RT-M-37B-360-2, Revision 0, Recombiner Building Exhaust Filter Train B Deluge System Airflow Test

ST-M-09A-600-2, Revision 14, SBT System Filter Train A

ST-M-09A-601-2, Revision 14, SBT System Filter Train B

ST-M-037-351-2, Revision 3, SBT Filter Train A Deluge System Nozzle and Piping Inspection

ST-M-037-352-2, Revision 4, SBT Filter Train B Deluge System Nozzle and Piping Inspection

ST-M-037-353-2, Revision 1, SBT Filter Train A Deluge System Airflow Test

ST-M-037-354-2, Revision 1, SBT Filter Train B Deluge System Airflow Test

ST-M-40D-905-2, Revision 19, Control Room Emergency Ventilation Filter Train A Test

ST-M-40D-910-2, Revision 20, Control Room Emergency Ventilation Filter Train B Test

Section 40A1: Performance Indicator Verification

MSPI Deviation Reports and System Manager Notebooks:

October 2011 through September 2012, Unit 2 and Unit 3 RHR/HPSW

October 2011 through September 2012, Unit 2 and Unit 3 ESW

October 2011 through September 2012, Unit 2 and Unit 3 EDGs

October 2011 through September 2012, Unit 2 and Unit 3 HPCI

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ER-AA-2008, MSPI Failure Determination Evaluation, Revision 2

ER-AA-2020, INPO Consolidated Events System, Revision 7

LS-AA-2001, Collecting and Reporting of NRC PI Data, Revision 14
LS-AA-2080, Monthly Data Elements for NRC SSFFs, Revision 4
LS-AA-2200, MSPI Data Acquisition and Reporting, Revision 5

Miscellaneous:

NEI 99-02, Regulatory Assessment Indicator Guideline, Revision 6
PBAPS MSPI Basis Document, Revision 7

Section 4OA2: Identification and Resolution of Problems

Procedures

LS-AA-125, CAP Procedure, Revision 17

Condition Reports

*1429435, Nut Found in E3 EDG Room
*1438812, Documentation of SOC Member Review of SY Procedure
1442958, Analysis of Drywell Head Strongback Incorrectly Used CMTRS
1445119, Insulation Not Able to be Reused (Due to 2 'B' RHR Flow orifice flange leak)
*1451404, Packing Leak on AO-2-23-053
1419073, Nuclear Oversight Identified: Operations Shortfalls in Use of Human Performance
1423654, Adverse Trend in Clearance and Tagging Events
1430391, Declining Trend in Site Configuration Control
1430644, Corporate Escalation due to Continued Adverse Human Performance Event Trend
1425757, Nuclear Oversight Identified: Lapses in Work Standards Results in Adverse Trend
1430748, Elevation for Maintenance Department Human Performance at Peach Bottom
1394685, Adverse Trend in Maintenance Department and Crew Clock Resets

Miscellaneous

Peach Bottom Station Trend Review – 2Q12 Analysis
Peach Bottom Station Trend Review – 3Q12 Analysis

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

Procedures

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SY-AA-101-146, Severe Weather Preparation and Response, Revision 0

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1432999, Loss of 28 of 97 EPZ Sirens (\geq 25% Threshold)
*1434345, Wind Speed Instrument Use
1431972, Mechanically Restrain Cooling Tower Fans In Accordance with OP-PB-108-111-1001
1451414, RT-M-045-990-2 Could Not Be Performed for D03 (sand bags outside E3 EDG Maintenance door)
1418320, MSR/MSSV Failed P2R19 As-Found Lift Tolerance

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SE-4 Procedure, Flood – Procedure, Revision 32
AO 28.2, Response to High/Low River Level, Revision 2
SE-3 Procedure, Loss of Conowingo Pond – Procedure, Revision 21
eSoms, Peach Bottom Unified Control Room Log on October 30

Hurricane Sandy Plant Status Matrix on October 30
Technical Specification SRV Surveillance Requirements SR 3.4.3.1
Apparent Cause Evaluation 1120516-04, Historical SRV As-Found Lift Setpoint Drift
NRC PI&R Inspection Report 05000277/2011010 AND
05000278/2011010
PBAPS Maintenance Rule Scope and Performance Monitoring, System 01A-Main Steam: Main
Steam Safety Valves and Main Steam Relief Valves
PORC Meeting, ACE – Multiple MSRV/MSSV Failed P2R19 As-Found Lift Tolerance 12/11/12

Section 40A5: Other Activities

Procedures

ER-AA-5400, Revision 5, Buried Piping and Raw Water Corrosion Program (BPRWCP)
ER-AA-5400-1001, Revision 5, Raw Water Corrosion Program Guide
ER-AA-5400-1002, Revision 4, Buried Piping Examination Guide
ER-AA-5400-1003, Revision 4, BPRWCP PIs
LS-AA-126-1005, Revision 5, Self Assessment NRC Buried Piping TI Inspection (Phase1)
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PBAPS Buried Pipe and Raw Water System Long Term Asset Management Strategy
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MPR-3670 Revision 0, Buried Piping Alternatives Analysis
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RP-AA-228, Revision 1, 10 CFR 50.75(g) and 10 CFR 72.30(d) Documentation Requirements
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Initiative to Control Degradation of Underground Piping and Tanks
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and Tank Integrity
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Procedures

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SE-4 Bases, Revision 22

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*1406251, Fukushima – Flex Conduit Fitting Separated
*1414866, Fukushima – Flood W/Ds – Valves Not Stroked Periodically
1444588, Fukushima – Available Physical Margin (APM) at Peach Bottom
1373999, Inspection Deficiencies on Sluice Gate 3A
1404681, EACE Rejected at MRC
1403209, Documentation of Water Intrusion Open Deficiencies

1405635, A1821132 Should be Pulled Into 2R19
 1416066, Fukushima Flood W/Ds – AR to Inspect E224-P-A Conduits
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 1420405, Opportunity to Seal Conduits in E224-P-A When De-energized
 1451882, Contingent Work Order for Conduit Flood Seals in MCC E224PA
 1388780, Water Intrusion in 2C RHR Room
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Section 40A7: Licensee-Identified Violations

Procedures

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1439489, ODCM Change Did Not Include EAL Recalculation
1440410, ODCM X/Q Values to be Updated in ODCM Revision Planned
1418320, P2R19 MSRV/MSSV As-Found Lift Test Results
1421109, P2R19 – SRV S/N 17 and S/N 81 Failed Manual Lift
1445263, 2R19 SRV/SV A/F Test Results – Perform (a)(1) Determination
1411036, Unit 2 CV #4 Upper Push Rod Pin
1411069, PS-4121A Found Out of Cal Low During SI2P-5-4121-A1C2
1411469, CV-2 Unit 2 Investigate for Possible Pin Migration
1411485, CV-3 Unit 2 Upper Control Arm Clevis Not Assembled as per GE
1411488, Possible Grub Screw Migration on Upper Control Arm Clevis
1415734, U2 CV 1 Lower Spring Housing Lower Guide
1416600, SMT – CV 4 Upper Control Arm / Lower Tension Rods
1416922, SMT – CV 4 Actuator Push Rod
1429163, EOC Inspection FAS for TCV 2
1423668, Replacement of Barksdale Switch for CAP Investigation
1450780, Perform Mid-Cycle PS-4121C and 4121D

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LIST OF ACRONYMS

ADAMS	Agency wide Documents Access and Management System
ALARA	as low as is reasonably achievable
APRM	average power range monitor
AR	action request
ARC	alarm response card
CAP	corrective action program
CFR	Code of Federal Regulations
CRs	condition reports
DBD	design basis document
DC	direct current
ECT	emergency cooling tower
EDG	emergency diesel generator
ESW	emergency service water
FSAR	final safety analysis report
GPI	groundwater protection initiative
HEPA	high efficiency particulate air
HPCI	high pressure coolant injection
HPSW	high pressure service water
HX	heat exchanger
IMC	inspection manual chapter
INPO	Institute of Nuclear Power Operations
IP	inspection procedure
IR	issue report
LCO	limiting condition for operation
LDE	lens dose equivalent
LERs	licensee event reports
MCR	main control room
MCREV	main control room emergency ventilation
MDA	minimum detectable activity
MOV	motor operated valve
MR	Maintenance Rule
MSPI	mitigating system performance index
MSIV	main steam isolation valve
NCV	non-cited violation
NEI	Nuclear Energy Institute
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation Program
OCC	outage control center
OD	operability determination
ODCM	offsite dose calculation manual
OOS	out-of-service
OSLD	optically stimulated light dosimeter
PARS	publicly available records
PBAPS	Peach Bottom Atomic Power Station
PI	performance indicator
PI&R	problem identification and resolution
PMT	post-maintenance test

RAI	request for additional information
RB	reactor building
RETS	radiological effluents technical specification
RFO	refueling outage
RG	regulatory guide
RHR	residual heat removal
RPS	reactor protection system
RPT	recirculation pump trip
RRP	reactor recirculation pump
RTP	rated thermal power
RWCU	reactor water cleanup
SDE	shallow dose equivalent
SFP	spent fuel pool
SRV	safety relief valve
SSCs	structures, systems, and components
STs	surveillance tests
SV	safety valve
SWEL	seismic walkdown equipment list
TCV	turbine control valve
TEDE	total effective dose equivalent
TI	temporary instruction
TS	technical specification
UFSAR	updated final safety analysis report
WOs	work orders
WRNM	wide range neutron monitoring