



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

February 1, 2018

EA-17-207

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

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION – INTEGRATED INSPECTION REPORT
05000277/2017004 AND 05000278/2017004 AND EXERCISE OF ENFORCEMENT
DISCRETION

Dear Mr. Hanson:

On December 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Peach Bottom Atomic Power Station, Units 2 and 3. On January 12, 2018, the NRC inspectors discussed the results of this inspection with Mr. Matthew Herr, Plant Manager, and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors did not identify any finding or violation of more than minor significance.

The inspectors also reviewed Licensee Event Report 05000278/2017-001-00, which described the details associated with a reactor coolant system pressure boundary leak from a 1-inch socket welded recirculation system instrumentation line on the Unit 3 'B' recirculation line. Although this constituted a violation of technical specifications involving the reactor coolant system pressure boundary, the NRC concluded that the issue was not within Exelon's ability to foresee and correct, Exelon's actions did not contribute to the degraded condition, and the actions taken were reasonable to address the issue. As a result, the NRC did not identify a performance deficiency. A risk evaluation was performed, and the issue was determined to be of very low safety significance (Green). Based on the results of NRC's inspection and assessment of this issue, I have been authorized, after consultation with the Director, Office of Enforcement, and the Regional Administrator, to exercise enforcement discretion, in accordance with NRC's Enforcement Policy Section 2.2.4, "Using Traditional Enforcement of Disposition Violations Identified at Power Reactors," and Section 3.10, "Reactor Violations With No Performance Deficiencies."

B. Hanson

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Sincerely,

/RA/

Erin E. Carfang, Acting Branch Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000277/2017004
and 05000278/2017004 w/Attachment:
Supplementary Information

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SUBJECT: PEACH BOTTOM ATOMIC POWER STATION – INTEGRATED INSPECTION
REPORT 05000277/2017004 AND 05000278/2017004 AND EXERCISE OF
ENFORCEMENT DISCRETION DATED FEBRUARY 1, 2018

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U. S. NUCLEAR REGULATORY COMMISSION**REGION I**

Docket Nos. 50-277 and 50-278

License Nos. DPR-44 and DPR-56

Report No. 05000277/2017004 and 05000278/2017004

Licensee: Exelon Generation Company, LLC

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

Location: Delta, Pennsylvania

Dates: October 1, 2017 through December 31, 2017

Inspectors: J. Heinly, Senior Resident Inspector
G. Stock, Acting Senior Resident Inspector
B. Smith, Resident Inspector
J. Cassata, Health Physicist
J. DeBoer, Emergency Preparedness Inspector, DRS
J. Kulp, Senior Reactor Inspector
B. Dionne, Senior Health Physicist

Approved By: Erin E. Carfang, Acting Branch Chief
Reactor Projects Branch 4
Division of Reactor Projects

Enclosure

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SUMMARY

Inspection Report 05000277/2017004 and 05000278/2017004; 10/01/2017 – 12/31/2017; Peach Bottom Atomic Power Station (PB), Units 2 and 3; Integrated Inspection Report.

This report covered a three-month period of inspection by resident inspectors, and announced baseline inspections performed by regional inspectors. The Nuclear Regulatory Commission's (NRC) program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

No findings were identified during this inspection.

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period at 100 percent rated thermal power (RTP). On October 18, 2017, operators performed a downpower to 57 percent RTP to perform planned waterbox cleaning. On October 19, 2017, operators returned the unit to 100 percent RTP. On December 15, 2017, operators performed a downpower to 40 percent RTP to perform waterbox cleaning, turbine control valve testing, and troubleshooting on the 'A' reactor recirculation pump upper and lower bearing oil level systems. On December 17, 2017, operators returned the unit to 100 percent RTP and remained at 100 percent RTP except for brief periods to support planned testing and control rod pattern adjustments.

Unit 3 began the inspection period at 86 percent RTP in end-of-cycle coastdown for refueling outage (RFO) P3R21. On October 22, 2017, operators commenced a shutdown from 78 percent RTP and entered into RFO (P3R21). On November 6, 2017, the Unit 3 mode switch was placed in start-up and the main generator was synchronized to the electrical grid on November 7, 2017. On November 9, 2017, Unit 3 was returned to 100 percent RTP and remained at 100 percent RTP until 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 – 1 sample)

Winter Readiness – Seasonal Extreme

a. Inspection Scope

The inspectors reviewed PB's readiness for the cold weather conditions during the week of October 13, 2017. The review focused on the high-pressure service water (HPSW) system, the emergency cooling tower, the circulating water pump house, and associated support equipment. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), technical specifications (TSs), and the corrective action program (CAP) to determine the temperatures or other seasonal weather conditions that could challenge these systems. The review ensured PB's personnel had prepared adequately for the weather-related challenges. The inspectors reviewed station procedures, including PB'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.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04Q – 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 2 and Unit 3 standby gas treatment on October 26, 2017
- Unit 3 'B' shutdown cooling on October 26-27, 2017
- Unit 3 reactor core isolation cooling (RCIC) on November 6, 2017

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, TS, work orders (WOs), issue reports (IRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of its intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Exelon staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

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

a. Inspection Scope

During the week of October 30, 2017, the inspectors performed a complete system walkdown of accessible portions of the Unit 3 high-pressure coolant injection (HPCI) system to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests (STs), drawings, equipment line-up check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hanger and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the system to verify as-built system configuration matched plant documentation, and that system components and support equipment remained operable. The inspectors confirmed that systems and components were aligned correctly, free from interference from temporary services or isolation boundaries, environmentally qualified, and protected from external threats. The inspectors also examined the material condition of the components for degradation and observed operating parameters of equipment to verify that there were no deficiencies.

Additionally, the inspectors reviewed a sample of related IRs and WOs to ensure Exelon appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 6 samples)

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

- Unit 3 main condenser (PF-78) on October 24, 2017
- Unit 3 main steam isolation valve (MSIV) room (PF-29) on October 25, 2017
- Unit 3 drywell (PF-32) on October 26, 2017
- Unit 3 torus (proper) (PF-13C) on October 30, 2017
- Unit 2 refuel floor (PF-57) on November 30, 2017
- Unit 3 refuel floor (PF-55) on November 30, 2017

b. Findings

No findings were identified.

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

a. Inspection Scope

From October 30, 2017 to November 3, 2017, the inspectors conducted an inspection and review of in-service inspection (ISI) activities in order to assess the effectiveness of Exelon's program for monitoring degradation of the reactor coolant system (RCS) boundary, risk-significant piping boundaries, and the containment system boundaries during the PB Unit 3 21st RFO.

Non-destructive Examination and Welding Activities (IP Section 02.01)

The inspectors observed a sample of in-process non-destructive examinations (NDE), reviewed completed documentation, and interviewed Exelon personnel to verify that the NDE activities performed as part of the fourth interval, third period, of the PB Unit 3 ISI program were conducted in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 2001 Edition with the 2003 Addenda. For augmented examinations, the inspectors verified that activities were performed in accordance with Exelon's augmented inspection program and procedures, and with any applicable industry guidance documents.

The inspectors verified that indications and defects, if present, were dispositioned in accordance with the ASME Code or an NRC-approved alternative, and verified that relevant indications were compared to previous examinations to determine if any changes had occurred.

Activities included a review of ultrasonic testing (UT), magnetic particle testing (MT), dye penetrant testing (PT), radiographic testing, and visual testing (VT). The inspectors reviewed certifications of the NDE technicians performing the examinations and verified that the inspections were performed in accordance with qualified NDE procedures and industry guidance. For UT activities, the inspectors also verified the calibration of equipment used to perform the examinations. The inspectors verified that the test results were reviewed and evaluated by certified Level III NDE personnel and that the parameters used in the test were in accordance with the limitations, precautions, and prerequisites specified in the test procedure.

ASME Code Required Examinations:

- Direct observation of the manual UT weld 10-IB-19 in the residual heat removal (RHR) system.
- Direct observation of the manual UT of welds 12-13-11, 12-13-12, and 12-13-13 in the reactor water cleanup (RWCU) system. Documentation review of manual UT of welds 12-14-11, 12-14-12, and 12-14-13.
- Direct observation of the PT/VT of socket welds RTV-3-02A-5449A/W-1 and HV-3-02A-5A/W-22 in the reactor recirculation system.
- Documentation review of the VT (VT-3) of reactor pressure vessel (RPV) stabilizing bars at 270 and 315 degrees (F-A/F.1.40).
- Documentation review of the MT of the N3 reinforcing plate (N3-(RP)-A).
- Documentation review of the MT of welded attachment RHRHX-A-LS (IA) on the A RHR heat exchanger (HX).
- Documentation review of the RT of welds 12-13-12, 12-13-13, and 12-13-11A following repair activities.

Other Augmented, License Renewal or Industry Initiative Examinations:

- Direct observation of the manual UT of non-safety related RWCU welds 12-13-12 and 12-13-13 and documentation review for welds 12-14-12 and 12-14-13 satisfying Generic Letter (GL) 88-01 requirements.
- Document review of the remote enhanced VT records of the reactor vessel internals during in-vessel visual inspection activities in accordance with BWRVIP-03. Specifically, the inspectors reviewed the core spray (CS) sparger bracket welds, feedwater end bracket welds, steam dryer supports, and jet pump components, including the main wedges and the wedge hold down system components.

Review of Previous Indications

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

Welding on Pressure Boundary Systems

The inspectors reviewed the risk-significant pressure boundary welding activity, including the associated NDE, of the installation of a new 4-inch elbow and associated piping as a corrective action (CA) following discovery of an intergranular stress corrosion cracking indication in weld 12-13-12 in the RWCU system. Specifically, the scope of the activity was to remove and replace a 4-inch elbow and other attached piping which were affected by the indication. The inspectors performed a documentation review of the welding activities to verify that the welding, RT/PT/VT examinations, and final acceptance were performed in accordance with the ASME Code requirements. The inspectors reviewed the welding procedure to ensure it contained the required essential and supplemental essential weld variables and that those variables were within the ranges demonstrated by the supporting qualification record. The repair was performed under WO 4596010.

Identification and Resolution of Problems (IP Section 02.05)

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

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance (71111.11Q – 2 samples)

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

a. Inspection Scope

The inspectors observed licensed operator regualification training on October 2, 2017, which involved the mitigation of a scenario with a primary containment leak, anticipated transient without scram (ATWS), and entry into the emergency operating procedures (EOPs). The inspectors evaluated operator performance in the control room simulator during the training and verified completion of risk significant operator actions, including the use of abnormal and EOPs. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classifications made by the shift manager and the TS action statements entered by the shift technical advisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors observed and reviewed the licensed operator performance from the main control room during the Unit 3 start up activities on November 7, 2017. The inspectors observed use of and compliance with procedures, crew communications, interpretation, diagnosis, and understanding of plant alarms, use of human error prevention techniques, documentation of activities, and management oversight of the evolution to verify that the crew was following procedures and plant expectations for conduct of operations.

The inspectors observed control room briefings and power changes. Additionally, the inspectors observed power changes 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 – 3 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 Exelon 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 *Code of Federal Regulations* (CFR) 50.65 and verified that the (a)(2) performance criteria established by the Exelon staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and (CAs) to return these SSCs to (a)(2) status. Additionally, the inspectors ensured that Exelon staff was identifying and addressing common cause failures that occurred within and across MR system boundaries.

- Unit 2 and Unit 3 quality control program during the week of November 13, 2017
- Unit 2 and Unit 3 a(3) assessment during the week of November 27, 2017
- Unit 3 reactor pressure boundary function during the weeks of December 4, and 11, 2017

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 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 Exelon 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 Exelon personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Exelon 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.

- Unit 3 reactor cavity flood-up activity (reduced inventory) on October 24, 2017
- Unit 3 reactor cavity drain down activity (reduced inventory) on November 3, 2017
- Unit 3 containment de-inerted on November 8, 2017
- Unit 2 'D' RHR heat exchanger relief valve maintenance on November 27, 2017
- Unit 2 startup transformer outage on December 4, 2017

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 4 samples)

a. Inspection Scope

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

- Unit 3 jet pump wedge measurements out-of-tolerance on October 31, 2017
- Unit 3 'A' safety/relief valve solenoid disconnected wire on November 1, 2017
- Unit 3 shutdown cooling snubber test failures on November 6, 2017
- Unit 2 and Unit 3 E-3 emergency diesel generator (EDG) turbo air inlet and exhaust gas temperatures outside of acceptable range on November 14, 2017

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 Exelon's evaluations to determine whether the components or systems were operable.

The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations, including compliance with IST requirements. Where compensatory measures were required to maintain operability, such as in the case of operator workarounds, the inspectors determined whether the measures in place would function as intended and were properly controlled by Exelon.

b. Findings

No findings were identified.

1R18 Plant Modification (71111.18 – 2 samples)

Permanent Modifications

a. Inspection Scope

The inspectors evaluated the following two modifications:

- Unit 3 digital electro-hydraulic control during the week of November 13, 2017
- Unit 3 digital feedwater during the week of November 20, 2017

The inspectors reviewed 10 CFR 50.59 documentation and post-modification testing results, and conducted field walkdowns of the modifications to verify that the permanent modifications did not degrade the design bases, licensing bases, and performance capability of the affected system.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 samples)

a. Inspection Scope

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

- Unit 3 E-13 bus undervoltage relay replacement on October 28, 2017
- Unit 2 and Unit 3 E-1 EDG governor tuning on November 1, 2017
- Unit 3 HPCI outboard steam isolation valve maintenance on November 1, 2017
- Unit 3 'B' MSIV 86B stroke timing following poppet modification on November 1, 2017
- Unit 3 'A' CS injection valve maintenance on November 2, 2017
- Unit 3 RCIC valve stroke testing following outage inspection test on November 5, 2017
- Unit 3 HPCI 150 pound flow test during outage start-up following HPCI maintenance on November 9, 2017

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)Unit 3 RFO (P3R21)a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 3 P3R21 RFO, conducted October 23, 2017 to November 7, 2017. The inspectors reviewed Exelon's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

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

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 4 samples)a. Inspection Scope

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 Exelon 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:

- Unit 3 'A' CS injection valve local leak rate testing (LLRT) on October 24, 2017
- Unit 3 inboard and outboard MSIV LLRTs for containment isolation valves on October 25, 2017
- Unit 3 'A' standby liquid control biennial comprehensive in-service test (IST) on October 29, 2017
- Unit 2 and Unit 3 E-33 loss of offsite power (LOOP)/loss-of-coolant accident (LOCA) testing on November 2, 2017

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04 – 1 sample)

a. Inspection Scope

Exelon implemented various changes to the PB Emergency Action Levels (EALs), Emergency Plan (EP), and Implementing Procedures. Exelon had determined that, in accordance with 10 CFR 50.54(q)(3), any change made to the EALs, EP, and its lower-tier implementing procedures, had not resulted in any reduction in effectiveness of the Plan, and that the revised Plan continued to meet the standards in 50.47(b) and the requirements of 10 CFR 50 Appendix E.

The inspectors performed an in-office review of all EAL and EP changes submitted by Exelon as required by 10 CFR 50.54(q)(5), including the changes to lower-tier EP implementing procedures, to evaluate for any potential reductions in effectiveness of the EP. This review by the inspectors was not documented in an NRC Safety Evaluation Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The requirements in 10 CFR 50.54(q) were used as reference criteria. The specific documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)Emergency Preparedness Drill/Simulator Evaluation/Observationa. Inspection Scope

The inspectors evaluated the shift manager/emergency director's emergency preparedness implementation during a licensed operator out-of-the-box simulator training on October 2, 2017, which involved an ATWS and primary containment failures. The inspectors observed emergency response operations in the simulator to determine whether event classifications and notifications were performed in accordance with approved procedures. The inspectors also attended the control room simulator drill critique to compare inspector observations with those identified by Exelon staff in order to evaluate whether Exelon staff were properly identifying emergency preparedness weaknesses and entering them into the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY**Cornerstone: Occupational and Public Radiation Safety**2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)a. Inspection Scope

The inspectors reviewed Exelon's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR 20, TS, applicable regulatory guides (RGs), and the procedures required by TS as criteria for determining compliance.

Radiological Hazard Assessment

The inspectors conducted independent radiation measurements during walk-downs of the facility and reviewed the radiological survey program, air sampling and analysis, continuous air monitor use, recent plant radiation surveys for radiological work activities, and any changes to plant operations since the last inspection to verify survey adequacy of any new radiological hazards for onsite workers or members of the public.

Instructions to Workers

The inspectors reviewed radiation work permit (RWP) controls and use in high radiation areas and locked high radiation areas. The inspectors observed containers of radioactive materials and assessed whether the containers were labeled and controlled in accordance with requirements. The inspectors verified follow-up investigations of actual radiological conditions for unexpected radiological hazards were performed.

Contamination and Radioactive Material Control

The inspectors observed the monitoring of potentially contaminated material leaving the radiological controlled area and inspected the methods and radiation monitoring instrumentation used for control, survey, and release of that material.

Radiological Hazards Control and Work Coverage

The inspectors evaluated in-plant radiological conditions and performed independent radiation measurements during facility walkdowns and observation of radiological work activities. The inspectors assessed whether posted surveys; RWPs; worker radiological briefings and radiation protection job coverage; the use of continuous air monitoring, air sampling and engineering controls; and dosimetry monitoring were consistent with the present conditions.

Radiation Worker Performance and Radiation Protection Technician Proficiency

The inspectors evaluated radiation worker performance with respect to radiation protection work requirements. The inspectors evaluated radiation protection technicians in performance of radiation surveys and in providing radiological job coverage.

b. Findings

No findings identified.

2RS02 Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls (71124.02)

a. Inspection Scope

The inspectors assessed Exelon's performance with respect to maintaining occupational individual and collective radiation exposures ALARA. The inspectors used the requirements contained in 10 CFR 20, RGs 8.8 and 8.10, TSs, and procedures required by TSs as criteria for determining compliance.

Radiological Work Planning

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

- RWP No. 506, Drywell Scaffolding Activities
- RWP No. 510, Main Steam Safety Relief Valve Activities
- RWP No. 515, Drywell Under-vessel Equipment Maintenance
- RWP No. 548, Drywell Recirculation Pump Seal and Motor Activities
- RWP No. 901 Reactor Disassembly/Reassembly Activities

For each of these activities, the inspectors reviewed: ALARA work activity evaluations, exposure estimates, exposure/contamination reduction controls, results achieved (dose rate reductions, actual dose), person-hour estimates and results achieved.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed the current annual collective dose estimate; basis methodology; and measures to track, trend, and reduce occupational doses for ongoing work activities. The inspectors evaluated the adjustment of exposure estimates and planning of work.

Implementation of ALARA and Radiological Work Control

The inspectors reviewed radiological work controls and ALARA practices during the observation of in-plant work activities. The inspectors verified use of shielding, contamination controls, airborne controls, RWP controls, and other work controls were consistent with ALARA plans.

The inspectors also verified that the ALARA staff was involved with emergent work activities and were revising both dose estimates and ALARA controls in the associated RWPs/ALARA plans, as appropriate.

b. Findings

No findings were identified.

2RS03 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

The inspectors reviewed the control of in-plant airborne radioactivity and the use of respiratory protection devices in these areas. The inspectors used the requirements in 10 CFR 20, RG 8.15, RG 8.25, NUREG/CR-0041, TS, and procedures required by TS as criteria for determining compliance.

Engineering Controls

The inspectors reviewed operability and use of both permanent and temporary ventilation systems and the adequacy of airborne radioactivity radiation monitoring in the plant based on location, sensitivity, and alarm set-points.

Use of Respiratory Protection Devices

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

Problem Identification and Resolution

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

b. Findings

No findings were identified.

2RS04 Occupational Dose Assessment (71124.04)

a. Inspection Scope

The inspectors reviewed the monitoring, assessment, and reporting of occupational dose. The inspectors used the requirements in 10 CFR 20, RGs, TSs, and procedures required by TSs as criteria for determining compliance.

External Dosimetry

The inspectors reviewed: onsite storage of dosimeters; the use of “correction factors” to align electronic personnel dosimetry results with national voluntary laboratory accreditation program dosimetry results; dosimetry occurrence reports; and CAP documents for adverse trends related to external dosimetry.

Internal Dosimetry

The inspectors reviewed: internal dosimetry procedures; whole body counter measurement sensitivity and use; adequacy of the program for whole body count monitoring of plant radionuclides; adequacy of the program for dose assessments based on air sample monitoring and the use of respiratory protection; and internal dose assessments for any actual internal exposure.

Special Dosimetric Situations

The inspectors reviewed: Exelon’s worker notification of the risks of radiation exposure to the embryo/fetus; the dosimetry monitoring program for declared pregnant workers; external dose monitoring of workers in large dose rate gradient environments; and dose assessments performed since the last inspection that used skin dose or neutron dose assessments.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with occupational dose assessment were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Mitigating System Performance Index (MSPI) (12 samples)

a. Inspection Scope

The inspectors reviewed Exelon's submittal of the MSPI for the following systems for the period of July 1, 2016, through September 30, 2017:

- Unit 2 and Unit 3 MSPI – Safety System Functional Failures (MS05)
- Unit 2 and Unit 3 MSPI – Emergency AC Power Systems (MS06)
- Unit 2 and Unit 3 MSPI – HPCI Systems (MS07)
- Unit 2 and Unit 3 MSPI – RCIC Systems (MS08)
- Unit 2 and Unit 3 MSPI – RHR Systems (MS09)
- Unit 2 and Unit 3 MSPI – Cooling Water Systems (MS10)

To determine the accuracy of the performance indicator (PI) data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment PI Guideline," Revision 7. The inspectors also reviewed Exelon's 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 Exposure Control Effectiveness (1 sample)

a. Inspection Scope

The inspectors reviewed Exelon's submittals for the occupational radiological occurrences PI for the period of October 1, 2016 through September 30, 2017. The inspectors used PI definitions and guidance contained in NEI 99-02, Revision 7, to determine the accuracy of the PI data reported. The inspectors reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors conducted walkdowns of various locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

.3 Radiological Effluent TSs/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences (1 sample)

a. Inspection Scope

The inspectors reviewed licensee submittals for the radiological effluent TS/ODCM radiological effluent occurrences for PI for the period of October 1, 2016 through September 30, 2017. The inspectors used PI definitions and guidance contained in NEI 99-02, Revision 7, to determine if the PI data was reported properly. The inspectors reviewed the public dose assessments for the PI for public radiation safety to determine if related data was accurately calculated and reported.

The inspectors reviewed the CAP database to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous and liquid effluent summary data and the results of associated offsite dose calculations to determine if indicator results were accurately reported.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 2 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure (IP) 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that Exelon entered issues into the CAP at an appropriate threshold, gave adequate attention to timely CAs, 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 IR screening meetings. The inspectors also confirmed, on a sampling basis, that, as applicable, for identified defects and non-conformances, Exelon performed an evaluation in accordance with 10 CFR Part 21.

b. Findings

No findings were identified.

.2 Annual Sample: Validation of Emergency Pump Structure Flood Protection

a. Inspection Scope

The inspectors performed an in-depth review of Exelon's evaluation and CAs related to validating Exelon's emergency pump structure was adequately protected from an external flood as documented in IRs 2708422 and 2711402. Specifically, the NRC had identified several vulnerabilities related to structure in-leakage, bypassing flood barriers, and the testing of credited sump pumps.

The inspectors assessed Exelon's implemented and planned CAs to evaluate whether Exelon staff appropriately identified, characterized, prioritized, and corrected problems associated with this issue. The inspectors compared the actions taken to the requirements in Exelon procedure PI-AA-125, "CAP Procedure," and the PB Fire Protection Program. The inspectors also reviewed associated documents, conducted interviews with station personnel, and completed field walkdowns to gain an understanding of the implemented and planned CAs associated with this issue.

b. Findings and Observations

No findings were identified.

On August 25, 2016, the NRC identified a potential flood flow path from outside the emergency pump structure via an open 2-inch vent line through the diesel driven fire pump storage tank overflow line and out the flame arrestor located within the emergency pump structure. The vent opening was located below the external flood level found in PB special event procedure, SE-4, "Flood," Revision 42.

Exelon generated IR 2708422 and implemented CAs to appropriately cap the vent line, revise SE-4 to provide additional guidance, and calculate the in-leakage of the bypass during the maximum external flood and verify the in-leakage would not exceed the sump pump removal capacity,

As a result of additional questions from the IR 2708422 review, Exelon's senior leadership team at PB met on August 31, 2016, to develop an action plan to ensure adequate flood protection features existed for the emergency pump structure. IR 2711402 was generated and specified several CAs to be completed.

Exelon performed a holistic review of the emergency pump structure by performing a reassessment of post-Fukushima inspections, including walking down penetrations, inspecting seals, and reviewing all systems that interacted with the pump structure to determine if any additional flood vulnerabilities existed, similar to the one identified in IR 2708422. Exelon also performed a review of its programmatic controls to ensure routine maintenance did not inadvertently disable flood protection features without proper controls. Furthermore, Exelon determined the design basis in-leakage of the pump structure and revalidated the sump pump removal capacity.

The inspectors reviewed Exelon's holistic review of the emergency pump structure external flooding revalidation as well as the CAs performed. The inspectors independently walked down the pump structure and reviewed a sampling of Exelon's seal inspections. Finally, the inspectors reviewed the calculation of in-leakage for the pump structure, the test performed of the sump pump capacity, and verified that the equipment within the structure would remain operable during a design basis external flood. The inspectors found that Exelon's CAs were sufficient for the identified deficiencies.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues to identify trends that might indicate the existence of more significant safety issues. As part of this review, the inspectors included as appropriate, repetitive or closely related issues documented by Exelon in trend reports, site PIs, major equipment problem lists, system health reports, MR assessments, and maintenance or CAP backlogs. The inspectors also reviewed Exelon's CAP database for the third and fourth quarters of 2017 to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRC's daily CR review (Section 4OA2.1). The inspectors reviewed Exelon's quarterly trend report for the third and fourth quarters of 2017 in the departments of operations, engineering, and maintenance to verify Exelon personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.

b. Findings and Observations

No findings were identified.

The inspectors evaluated a sample of issues and events that occurred over the course of the third and fourth quarters of 2017 to determine whether issues were appropriately considered as emerging or adverse trends. The inspectors verified that these issues were addressed within the scope of the CAP or through department review.

The evaluation did not reveal any new trends that could indicate a more significant safety issue. The inspectors assessed that Exelon personnel were identifying trend issues at a low threshold and entering them into the CAP for resolution and were appropriately prioritizing investigation reviews. The inspectors noted minor adverse trends identified by Exelon staff in the areas of CA process implementation (04040983), thermal overload failures (04030605, 04034958), supplemental workforce performance gaps (04062291), and issues associated with operator medical requirements (04065158).

There were no adverse safety consequences as a result of these low-level trend issues. Based on the overall results of the semi-annual trend review, the inspectors determined that Exelon was properly identifying adverse trends at Peach Bottom before they became more significant safety problems. The inspectors independently evaluated the deficiencies noted above for significance in accordance with the guidance in Inspection Manual Chapter (IMC) 0612, Appendix B, "Issue Screening," and Appendix E, "Examples of Minor Issues." The inspectors determined these conditions were deficiencies of minor significance and, therefore, are not subject to enforcement action in accordance with the NRC's Enforcement Policy.

40A3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

(Closed) Licensee Event Report (LER) 05000278/2017-001-00: Reactor Pressure Boundary Leakage Due to Weld Failure in 1-inch Diameter Instrument Line

a. Inspection Scope

On October 23, 2017, during initial walkdown of the containment at the start of the Unit 3 RFO, a leak was identified in a socket weld for a 1-inch diameter pressure transmitter instrument line. The line is connected to discharge piping for the 'B' recirculation pump and is part of the ASME Class 1 primary coolant system pressure boundary. Because the leak was misting, the leakage rate could not be quantified. The apparent cause evaluation (ACE) determined that cause of the crack in the instrument line weld was caused by lack of fusion defects on the inside diameter of the fitting and propagated by normal vibration of the pipe.

The affected section of the pipes and fitting were replaced by new pipe and fitting and replaced with a new socket weld with a 2x1-weld profile, which reduces susceptibility to vibration-induced failures. The LER and associated evaluations and follow-up actions were reviewed for accuracy, the appropriateness of CAs, violations of requirements and potential generic issues. This LER is closed.

b. Findings

Description. On October 23, 2017, during initial walkdown of the containment at the start of the Unit 3 RFO, a leak was identified in a socket weld for a 1-inch diameter pressure transmitter instrument line. The line is connected to discharge piping for the 'B' recirculation pump and is part of the ASME Class 1 primary coolant system pressure boundary. Because the leak was misting, the leakage rate could not be quantified. Additionally, Exelon determined that this leakage constituted a violation of the Unit 3, TS 3.4.4, "RCS Operational Leakage," that requires that there be no pressure boundary leakage. The condition was reported in event notification 53031, as required by 10 CFR 50.72(b)(3)(ii)(A), because it represented a degradation of a principal safety barrier.

Exelon evaluated the flaw and determined the cause of the RCS pressure boundary leakage was that a crack developed in the weld material of an instrument line socket weld which was caused by lack of fusion defects on the inside diameter of the welded fitting and propagated by normal vibrations of the piping.

The inspectors reviewed the LER and Exelon's ACE of the event. The inspectors reviewed the event information and leakage data over the previous cycle and concluded that reactor pressure boundary leakage reasonably began on an unknown date before October 23, 2017, during the operating cycle but more than 36 hours prior to the October 23, 2017, shutdown. However, the inspectors determined that the existence of RCS pressure boundary leakage was not within Exelon's ability to foresee and correct and, therefore, was not a performance deficiency (PD). Specifically, the 1-inch socket welds in the recirculation system instrument lines are exempt from periodic examination as described in ASME Section XI Section IWB-1220, "Components Exempt from Examination." The inspectors screened the significance of the condition using IMC 0609, Appendix A, "The Significance Determination Process For Findings At-Power," and determined that the condition represented very low safety significance (Green), because it would not result in exceeding the RCS leak rate for a small LOCA and would not have likely affected other systems used to mitigate a LOCA.

Enforcement. TS 3.4.4.a requires, in part, that RCS operational leakage shall be limited to no pressure boundary leakage. If pressure boundary leakage exists, the TS 3.4.4.C limiting condition for operation action statement requires Unit 3 to be in at least hot shutdown within 12 hours and in cold shutdown within the next 24 hours. Contrary to the above, for a period that began on an unknown date that was very likely more than 36 hours before October 23 2017, and ending on October 23, 2017, RCS pressure boundary leakage existed, and Exelon did not place Unit 3 in at least hot shutdown within 12 hours and in cold shutdown within the next 24 hours.

This issue is considered within the traditional enforcement process because there was no PD associated with the violation of NRC requirements. IMC 0612, "Power Reactor Inspection Reports," Section 03.22 states, in part, that traditional enforcement is used to disposition violations receiving enforcement discretion or violations without a PD.

The NRC Enforcement Policy, Section 2.2.1 states, in part, that, whenever possible, the NRC uses risk information in assessing the safety significance of violations. Accordingly, after considering that the condition represented very low safety significance, the inspectors concluded that the violation would be best characterized as Severity Level IV under the traditional enforcement process. However, the NRC is exercising enforcement discretion (EA-17-207) in accordance with Section 3.10 of the NRC Enforcement Policy, which states that the NRC may exercise discretion for violations of NRC requirements by reactor licensees for which there are no associated PD. In reaching this decision, the NRC determined that the issue was not within the licensee's ability to foresee and correct; the licensee's actions did not contribute to the degraded condition; and the actions taken were reasonable to identify and address the condition. Furthermore, because the licensee's actions did not contribute to this violation, it will not be considered in the assessment process or the NRC's action matrix.

4OA6 Meetings, Including Exit

On January 12, 2018, the inspectors presented the inspection results to Matthew Herr, Plant Manager, and other members of Exelon's staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION KEY POINTS OF CONTACT

Exelon Generation Personnel

P. Navin, Site Vice President
 M. Herr, Plant Manager
 N. Alexakos, Emergency Preparedness Manager
 J. Armstrong, Regulatory Assurance Manager
 D. Baracco, Radiation Protection Manager
 J. Bullen, GE UT Level II
 C. Crabtree, Chemistry Groundwater Engineer
 D. Dullum, Regulatory Assurance Engineer
 S. Griffith, Manager Site Security
 G. Gustofson, Exelon NDE Supervisor
 J. Hawkins, Exelon NDE Supervisor
 D. Henry, Operations Director
 S. Hess, Engineering Director
 B. Holmes, Radiation Protection Manager
 D. Hornberger, Chemistry/Radwaste
 P. Kester, Senior Design Engineer
 B. Miller, Fire Protection Engineer
 M. Rector, Engineering Response Team Manager
 M. Retzer, Senior Manager Systems Engineering
 R. Ridge, Health Physicist
 R. Riley, Radwaste Shipper
 Z. Setzer, GE PT Level II
 J. Stenclik, Chemistry Supervisor
 M. Weidman, Work Management Director
 T. Wickle, Senior Design Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Closed

05000278/2017-001-00	LER	Reactor Pressure Boundary Leakage Due to Weld Failure in 1-inch Diameter Instrument Line (Section 4OA3)
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LIST OF DOCUMENTS REVIEWED

* -- Indicates NRC-identified

Section 1R01: Adverse Weather Protection

Procedures

WC-AA-107, Seasonal Readiness, Revision 18

Section 1R04: Equipment Alignment

Procedures

SO 10.1.B-2, RHR System Shutdown Cooling Mode Manual Start, Revision 51ST-O-023-300-3, HPCI Pump, Valve, Flow and Unit Cooler Functional and IST Without Vibration Data Collection, Revision 12

Drawings

6280-M-361, Sheet 4, RHR System, Revision 74
DBN-23-MI-203-7, Sheet 0001, HPCI 23DBN-10IN from MO-16 to Turbine Stop Valve, Revision 1
M-1-S-36, Sheet 06, Elementary Diagram HPCI System, Revision 76

IRs

4058653
4060179

Miscellaneous

BWROG-TP-14-016, HPCI Steam Admission Valve Leakage, Revision 0

Section 1R05: Fire Protection

Procedures

CC-AA-211, Fire Protection Program, Revision 8
RT-O-037-351-2, Transient Combustibles Inspection
PF-13C, Unit 3 RX BLDG Torus Room, Revision 5
PF-32, Unit 3 RX BLDG Drywell Area, Revision 6
PF-55, Unit 3 RX BLDG Refuel Floor – Elevation 234'0, Revision 5
PF-57, Unit 2 RX BLDG Refuel Floor – Elevation 234'0, Revision 6

IRs

*4068725

Section 1R08: In-Service Inspection

Procedures

ER-AA-330-009, ASME Section XI Repair/Replacement Program, Revision 13
ER-AA-330-009, ASME Section XI Repair/Replacement Program, Revision 13
ER-AA-335-001, Qualification and Certification of NDE Personnel, Revision 10
ER-AA-335-002, PT Examination, Revision 9
ER-AA-335-003, MT Examination, Revision 8
ER-AA-335-003, UT Measurement of Material Thickness and Interfering Conditions, Revision 7
GEH-PDI-UT-1, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Welds, Version 11
GEH-PDI-UT-2, PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds, Revision 11
GEH-VT-204, Procedure for In-vessel Visual Inspection (IVVI) of BWR 4 RPV Internals, Revision 17
M-065-005, Mechanical Snubber Testing on Model 100/150 Snubber Test Machine, Revision 10
M-065-014, Hydraulic Snubber Performance Testing, Revision 15
MA-PB-793-001, Visual Examination of Containment Vessels and Internals, Revision 3

Drawings

6280-ISI-354, Sheet 2, ASME Section XI ISI Boundaries, RWCU System, Revision 8
 6280-M-353, Sheet 4, Reactor Recirculation Pump System, Revision 59
 DCA-10-MI-303-9-B, Sheet 1, RHR 10DCA-24" from MO25B to 28" Recirculation Pump Discharge, Revision 1
 DE-12-MI-303-6, Sheet 1, RWCU Return from Regen HX to Valve MO-68, Revision 2
 ISI-203-RV-04, Sheet 1, ISI Component Drawing RPV Details, Revision 0
 M-100-J-12-128-4, Sheet 1, ISO-3-12-113, Revision 6
 M-296, Sheet 63, Critical Small Piping Isometrics Inside Drywell #3, Revision 7
 M-296, Sheet 74, Critical Small Piping Isometrics Inside Drywell #3, Revision 6

WOs

4705157	4705244	4702689	4596010	4705157	4705244
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CRs

2560404	2561005	2561844	4065691	4068143	4070332
2569613	4070216	4067473	4069476	4068703	4068776
4068789	4068795	4068937	4068946	4069248	4069249
4069251	4069252				

Miscellaneous

0249070-12, OPEX Evaluation: NRC IN 2015-04, Fatigue in Branch Connection Welds, dated June 25, 2015
 386HA480, GE Hitachi Nuclear Energy Written Practice, Certification of NDE Testing Personnel, Revision 27
 BOP-PT-17-033, Liquid Penetrant Examination of Existing Tee/Pipe (Existing Leak Detected), RTV-3-02A-5449B, dated October 24, 2017
 BOP-PT-17-054, Liquid Penetrant Examination of 1 inch Pipe/Fitting, RTV-3-02A-5449B/Root Valve 3BP034, dated November 2, 2017
 BOP-PT-17-059, Penetrant Test Record for RTV-3-02-5A/W23, dated November 2, 2017
 BOP-PT-17-060, Penetrant Test Record for RTV-3-02A-5449A/W2, dated November 2, 2017
 BOP-PT-17-061, Liquid Penetrant Examination of Elbow End Preps for Welds 12-13-12 and 12-13-13, dated November 2, 2017
 BOP-PT-17-062, Liquid Penetrant Examination of Pipe/Fitting, W22 Final Valve to Pipe (HV-3-02A-5A/W-22), dated November 2, 2017
 BOP-PT-17-063, Liquid Penetrant Examination of Pipe/Fitting, W1 Final Valve to Pipe (RTV-3-02A-5449A/W-1), dated November 2, 2017
 BOP-PT-17-064, Liquid Penetrant Examination of 4-inch Existing Pipe for Weld 12-13-12, dated November 3, 2017
 BOP-PT-17-065, Liquid Penetrant Examination of 4-inch Existing Pipe for Weld 12-13-13, dated November 3, 2017
 BOP-PT-17-066, Liquid Penetrant Examination of 4-inch Existing Pipe for New 4 inch Elbow, Pup Piece End Preps for W12-13-12 & 12-13-13, dated November 3, 2017
 BOP-PT-17-072, Liquid Penetrant Examination of Pipe (New)/4 inch Elbow (New), Final Weld 12-13-12, dated November 4, 2017
 BOP-PT-17-073, Liquid Penetrant Examination of 4-inch RWCU Pipe Replacement, dated November 24, 2017
 BOP-PT-17-076, Liquid Penetrant Examination of Welds 12-13-13 Pipe to Elbow and 12-13-11A Pipe to Pipe, dated November 4, 2017
 EN 53031, Leakage Identified on 1-inch Line Socket Weld for the 'B' Recirculation Pump, dated October 23, 2017

EPRI Performance Demonstration Initiative Program PDI Generic Procedure (PDI-UT-1) for the Ultrasonic Examination of Ferritic Pipe Welds for Examiner 336, dated February 13, 2013

EPRI Performance Demonstration Initiative Program PDI Generic Procedure (PDI-UT-2) for the Ultrasonic Examination of Austenitic Steel Pipe Welds for Examiner 336, dated February 13, 2013

EPRI Performance Demonstration Initiative Program PDI Generic Procedure (PDI-UT-3) for the Ultrasonic through Wall Sizing in Pipe Welds for Examiner 336, dated February 13, 2013

EPRI Performance Demonstration Initiative Program PDI Generic Procedure (PDI-UT-1) for the Ultrasonic Examination of Ferritic Pipe Welds for Examiner 554, dated February 13, 2013

EPRI Performance Demonstration Initiative Program PDI Generic Procedure (PDI-UT-10) for the Ultrasonic Examination of Dissimilar Metal Welds for Examiner 554, dated February 13, 2013

EPRI Performance Demonstration Initiative Program PDI Generic Procedure (PDI-UT-2) for the Ultrasonic Examination of Austenitic Steel Pipe Welds for Examiner 554, dated February 13, 2013

Exelon Letter, Submittal of the ISI Owner's Activity Report OAR) for the 20th Refueling Outage for Unit 3, dated January 20, 2016

GE Hitachi Certificate of Qualification for Certification Number 0638, dated October 23, 2017

GE Hitachi Certificate of Qualification for Certification Number 0735, dated September 27, 2017

GE Hitachi Certificate of Qualification for Certification Number 2138, dated September 27, 2017

GE Hitachi Certificate of Qualification for Certification Number 1995, dated January 23, 2017

GE Hitachi Certificate of Qualification for Certification Number 2053, dated March 29, 2017

GE Hitachi Certificate of Qualification for Certification Number 1829, dated August 12, 2016

GE Hitachi Certificate of Vision Acuity Record for Certification Number 0638, dated October 16, 2017

GE Hitachi Certificate of Vision Acuity Record for Certification Number 0735, dated February 13, 2017

GE Hitachi Certificate of Vision Acuity Record for Certification Number 2138, dated January 19, 2017

GE Hitachi Certificate of Vision Acuity Record for Certification Number 1995, dated January 20, 2017

GE Hitachi Certificate of Vision Acuity Record for Certification Number 2053, dated November 18, 2016

GE Hitachi Certificate of Vision Acuity Record for Certification Number 1829, dated October 19, 2016

GE Nuclear Examination Summary Sheet 10-IB-19 Pipe Bend to Elbow, dated October 6, 2017

GEH Certificate of Qualification for Examiner 0227, LIII VT-1, VT-3 limited to IVVI, dated September 27, 2017

GEH Certificate of Qualification for Examiner 0502, LIII VT-1, VT-3 limited to IVVI, dated September 27, 2017

GEH Certificate of Qualification for Examiner 1624, LIII VT-1, VT-3 limited to IVVI, dated September 27, 2017

GEH Visual Acuity Record for Examiner 0227, dated August 28, 2017

GEH Visual Acuity Record for Examiner 0502, dated January 12, 2017

GEH Visual Acuity Record for Examiner 1624, dated August 23, 2017

GL 88-01, NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping, dated January 25, 1988

GL 88-01, Supplement 1, NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping, dated February 4, 1992

IN 5-04, Fatigue in Branch Connection Welds, dated April 24, 2015
IN 95-16, Vibration Caused by Increased Recirculation Flow in a Boiling Water Reactor, dated March 9, 1995
INR PB3R21, IVVI 17-02-R2, Jet Pump 11-20 WD-1 and Rod Wear Loop A, dated November 1, 2017
INR PB3R21, IVVI 17-04, Steam Dryer Support Shims, dated October 27, 2017
INR PB3R21, IVVI 17-09, CS Sparger Bracket 05 at 136 degrees, dated October 29, 2017
INR PB3R21, IVVI 17-10, Feedwater End Bracket at 355 degrees, dated October 29, 2017
MT-17-012, Magnetic Particle Examination of N3 Reinforcing Plate (N3 (RP)-A), dated October 29, 2017
MT-17-013, Magnetic Particle Examination of Welded Attachment RHRHX-A-LS(IA), dated October 29, 2017
PBT05.G03, PB Units 2&3 ISI Program Plan Fourth Ten-Year Inspection Interval, Revision 5
PECO Energy letter, PB, Units 2 and 3, GL 88-01, Supplement 1, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping," dated May 24, 1995
Philadelphia Electric Company letter, Response to NRC GL 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping" for PB, dated August 2, 1988
RIS 2010-06, NRC Regulatory Issue Summary 2010-06 ISI and Testing Requirements of Dynamic Restraints (Snubbers), dated June 1, 2010
RT Report for Weld 12-13-11A, dated November 3, 2017
RT Report for Weld 12-13-12, dated November 3, 2017
RT Report for Weld 12-13-13, dated November 3, 2017
USNRC letter, RWCU System Weld Inspections at PB, Units 2 and 3 (TAC NOS. M92442 and M92443), dated September 15, 1995
USNRC letter, Response to GL 88-01 (TAC NOS. 69150 and 69151), RE: PB, Units 2 and 3, dated March 27, 1990
UT-17-052, Pipe to Elbow for Weld 12-14-13, dated November 1, 2017
UT-17-054, Pipe to Elbow for Weld 12-14-12, dated November 1, 2017
UT-17-055, Pipe to Elbow for Weld 12-13-12 Sizing Data, dated October 31, 2017
UT-17-056, Pipe to Elbow for Weld 12-13-13, dated October 30, 2017
UT-17-057, Pipe to Elbow for Weld 12-13-12, dated October 30, 2017
Vendor Personnel NDE Certification Review Attribute List for GE Certification Number 0638, dated October 21, 2017
Vendor Personnel NDE Certification Review Attribute List for GE Certification Number 0735, dated October 11, 2017
Vendor Personnel NDE Certification Review Attribute List for GE Certification Number 2138, dated October 21, 2017
VT-17-065, Visual Examination of Pipe Hanger, Support or Restraint (VT-3) for RPV Stab Bar at 270 Degrees, dated October 27, 2017
VT-17-066, Visual Examination of Pipe Hanger, Support or Restraint (VT-3) for RPV Stab Bar at 315 Degrees, dated October 27, 2017
Welder Information Data Sheet for WO 4705157, HV-3-02-5A, dated October 29, 2017
Welder Information Data Sheet for WO 4705157, HV-3-02A-5449A, dated October 29, 2017

Section 1R11: Licensed Operator Requalification Program

Procedures

GP-3-3, Normal Plant Shutdown, Revision 8

Section 1R12: Maintenance Effectiveness

Procedures

ER-AA-310-1005, MR – Dispositioning Between A1 and A2, Revision 7

IRs

1118530	2563769	4068120	4077304	4078626	4078978
*4079492	*4079500	4082286			

Miscellaneous

10 CFR 50.65 (a)(3), Periodic Assessment of MR Program, PB, Units 2 and 3,
dated April 2015 through March 2017
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October 2017
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P3R21 Decay Heat Removal
P3R21 Inventory Control
P3R21 Paragon Shutdown Safety Overview
P3R21 Shutdown Safety Profile
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0966085	1508893
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0075403	2444679	3995230	4000453	4000578	4033575
4050431	4053424	4053452	4053511	4054022	4055985
4064414	4064440	4065552	4068914	4074369	

WO

4706129

WR

1369477

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04596806

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4066216	4066479	4068050	4068060	4068074	4068091
4069936	4070268	4070610	4071256	4072188	4072189
4072190	4072694				

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4065554	4068070	4068123	4068666	4068908
4069927	4070531	4071246	4072133	4072432

WOs

2844920	4175009	4252258
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4067104

4068051

4071076

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Procedures

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4067092

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Miscellaneous

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Section 2RS01: Radiological Hazard Assessment and Exposure Controls

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4065710

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Procedures

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RP-AA-402, Radiation Protection Dose Excellence Planning Process, Revision 8
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RP-AA-462, Controls for Radiological Operations, Revision 13
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Procedures

RP-AA-224, Committed Effective Dose Equivalent Dose Tracking Using Lapel Air Samplers, Revision 2
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4017820

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Section 2RS04: Occupational Dose Assessment

Procedures

RP-AA-210, Dosimetry Issue, Usage and Control, Revision 27
 RP-AA-210-1004, Shallow Dose Equivalent Program Review, Revision 0
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 RP-AA-232-1001, Calibration Verification of Whole Body Counting Systems Using APEX In-vivo, Revision 1
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 RP-AA-280, Occupational Exposure Reporting, Revision 10
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CAs

2737459	2737616	3981040	4045649	4059740
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Section 4OA1: Performance Indicator

Procedures

LS-AA-2001, Collecting and Reporting of NRC PI Data, Revision 14
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Section 4OA2: Problem Identification and Resolution

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4074196	4079390				

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

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 PEA-62046, Failure Analysis of Socket Weld at Tee Fitting, Ref. CR: 04065691, dated December 13, 2017

LIST OF ACRONYMS

ACE	apparent cause evaluation
ALARA	as low as reasonably achievable
ASME	American Society of Mechanical Engineers
ATWS	anticipated transient without scram
CA	corrective action
CAP	corrective action program
CFR	<i>Code of Federal Regulations</i>
CR	condition report
CS	core spray
EAL	emergency action level
EDG	emergency diesel generator
EOP	emergency operating procedure
EP	emergency plan
GL	generic letter
HPCI	high pressure coolant injection
HPSW	high pressure service water
HX	heat exchanger
IMC	inspection manual chapter
IP	inspection procedure
IR	issue report
ISI	in-service inspection
IST	in-service test
LER	licensee event report
LLRT	local leak rate testing
LOCA	loss-of-coolant accident
MR	maintenance rule
MSIV	main steam isolation valve
MSPI	mitigating system performance index
MT	magnetic particle testing
NDE	non-destructive examination
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OD	operability determinations
ODCM	offsite dose calculation manual
OOS	out of service
PARS	publicly available records
PB	Peach Bottom Atomic Power Station
PD	performance deficiency
PI	performance indicator
PMT	post-maintenance testing
PT	dye penetrant testing

RCIC	reactor core isolation cooling
RCS	reactor coolant system
RFO	refueling outage
RG	regulatory guide
RHR	residual heat removal
RPV	reactor pressure vessel
RTP	rated thermal power
RWCU	reactor water cleanup
RWP	Radiation work permit
SSC	structure, system, and component
ST	surveillance test
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
UT	ultrasonic testing
VT	visual testing
WOs	work orders