



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

March 22, 2017

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

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION - DESIGN BASES
ASSURANCE INSPECTION REPORT 05000277/2017007 AND
05000278/2017007

Dear Mr. Hanson:

On February 10, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Peach Bottom Atomic Power Station. The enclosed inspection report documents the inspection results, which were discussed on February 10, 2017, 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. In conducting the inspection, the team examined the adequacy of selected components and modifications to mitigate postulated transients or accidents, maintain containment integrity and/or minimize the potential for initiating events. The inspection involved field walkdowns, examination of selected procedures, calculations and records, and interviews with station personnel.

No findings were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Docket Room or from the Publicly Available Records component of the NRC Document System, Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC's Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Mel Gray, Chief
Engineering Branch 1
Division of Reactor Safety

Docket No. 50-277 and 50-278
License No. DPR-44 and DPR-56

B. Hanson

2

Enclosure:

Inspection Report 05000277/2017007 and 05000278/2017007

w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION - DESIGN BASES
 ASSURANCE INSPECTION REPORT 05000277/2017007 AND
 05000278/2017007 DATED MARCH 22, 2017

DISTRIBUTION w/encl: (via E-mail)

- DDorman, RA
- DLew, DRA
- MScott, DRP
- DPelton, DRP
- RLorson, DRS
- JYerokun, DRS
- DSchroeder, DRP
- SBarber, DRP
- ATurilin, DRP
- KHeller, DRP
- JHeinly, DRP, SRI
- BSmith, DRP, RI
- SSchmitt, DRP, AA
- JBowen, RI, OEDO
- RidsNrrPMPeachBottom Resource
- RidsNrrDorlLp1-2 Resource
- [ROPreports Resource](#)

DOCUMENT NAME: G:\DRS\Engineering Branch 1\Mangan\Peach Bottom DBA Inspection Rpt 2017007.docx
 ADAMS ACCESSION NUMBER: ML17082A043

<input checked="" type="checkbox"/> SUNSI Review		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	
OFFICE	RI/DRS	RI/DRP	RI/DRS		
NAME	KMangan/KM	DSchroeder/DS	MGray/MG		
DATE	03/21/17	03/22/17	03/22/17		

OFFICIAL RECORD COPY

UNITED STATES NUCLEAR REGULATORY COMMISSION**REGION I**

Docket No: 50-277 and 50-278

License No: DPR-44 and DPR-56

Report No: 05000277/2017007, 05000278/2017007

Licensee: Exelon Generation Company, LLC (Exelon)

Facility: Peach Bottom Atomic Power Station

Location: Delta, Pennsylvania

Inspection Period: January 30th through February 10th, 2017

Inspectors: K. Mangan, Senior Reactor Inspector, Division of Reactor Safety (DRS),
Team Leader
J. Schoppy, Senior Reactor Inspector, DRS
L. Dumont, Reactor Inspector, DRS
M Yeminy, NRC Mechanical Contractor
S. Kobylarz, NRC Electrical Contractor

Approved By: Mel Gray, Chief
Engineering Branch 1
Division of Reactor Safety

SUMMARY

IR 05000277/2017007, 05000278/2017007; 1/30/2017 – 2/10/2017; Peach Bottom Atomic Power Station; Engineering Team Inspection.

The report covers the Design Basis Assurance Inspection conducted by a team of three U.S. Nuclear Regulatory Commission (NRC) inspectors and two NRC contractors. No findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Cross-cutting aspects associated with findings are determined using IMC 0310, "Components Within the Cross-Cutting Areas." The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6, dated July 2016.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R21 Design Basis Assurance Inspection (IP 71111.21M)

.1 Inspection Sample Selection Process

The team selected risk significant components for review using information contained in the Peach Bottom Atomic Power Station (PBAPS) Probabilistic Risk Assessment (PRA) and the U.S. Nuclear Regulatory Commission's (NRC's) Standardized Plant Analysis Risk (SPAR) model for PBAPS. Additionally, the team referenced the Risk-Informed Inspection Notebook for PBAPS in the selection of potential components for review. In general, the selection process focused on components that had a risk achievement worth (RAW) factor greater than 1.3 or a risk reduction worth (RRW) factor greater than 1.005. The components selected were associated with both safety-related and non-safety related systems and included a variety of components such as pumps, transformers, operator actions, electrical busses, and valves.

The team also selected six modifications that potentially affecting the design bases, licensing bases, and performance capability of the associated structures, systems, and components (SSC). The team selected modifications completed in the last three years that had not been previously inspected by an NRC modification team using inspection procedure 71111.17T. The team selected modifications that were performed on risk significant components that were associated with the initiating event, mitigating system or containment integrity cornerstones. The team selected a sample of electrical and mechanical modifications. Additionally, the complexity of the modification was also considered in selecting the modifications reviewed.

The team initially compiled a list of components based on the risk factors previously mentioned and risk significant modifications that had been completed. Additionally, the team reviewed the previous *Component Design Bases Inspection (CDBI)* and *Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications* NRC inspection reports and excluded those components and modifications previously inspected. The team then performed an assessment to narrow the focus of the inspection to five components, six modifications and one operating experience (OE) items. The team selected one sample based on large early release frequency (LERF) implications. The team's assessment evaluated possible low design margin included consideration of original design issues, margin reductions due to modifications, or margin reductions identified as a result of material condition/equipment reliability issues. The assessment also included items such as failed performance test results, corrective action history, repeated maintenance, Maintenance Rule (a)(1) status, operability reviews for degraded conditions, NRC resident inspector insights, and industry OE. Finally, consideration was given to the uniqueness and complexity of the design and the available defense-in-depth margins.

The inspection performed by the team was conducted as outlined in NRC Inspection Procedure (IP) 71111.21M. This inspection effort included walkdowns of selected components and modifications; interviews with operators, system engineers, and design engineers; and reviews of associated design documents and calculations to assess the adequacy of the components to meet design basis, licensing basis, and risk-informed beyond design basis requirements.

Additionally, for the modification portion of the inspection, the team determined whether the modifications were adequately implemented; that procedures and design and license basis documentation affected by modification had been adequately updated to reflect any changes to the design or license basis of the facility after the change had been performed. Additionally, the team verified that any changes to the design and/or licensing bases had been performed in accordance with NRC guidance. Summaries of the reviews performed for each component, modification, and OE sample are discussed in the subsequent sections of this report. Documents reviewed for this inspection are listed in the Attachment.

.2 Results of Detailed Reviews

.2.1 Results of Detailed Component Reviews (5 samples)

.2.1.1 4160 V Vital Bus E43

a. Inspection Scope

The team inspected the 4160 Vac vital bus, E43, to determine whether it was capable of performing its design basis function. The team reviewed the updated final safety analysis report (UFSAR) and electrical distribution calculations including load flow, voltage regulation, and short-circuit analysis. This review was performed to evaluate the adequacy and appropriateness of design assumptions, to evaluate whether bus capacity was exceeded, and to assess if bus voltages remained above minimum acceptable values under design basis conditions. The team reviewed the bus voltage profile history to assess whether voltage conditions were consistent with the analytical limits in the voltage regulation study. The team also reviewed the design and test results for automatic and manual transfers of alternating current (AC) offsite power sources to determine whether they satisfied the design basis requirements. Additionally the team reviewed the electrical overcurrent, undervoltage, and ground protective relay settings for selected circuits to evaluate whether the trip set points interfered with the ability of the supplied equipment to perform its safety function but were also set to provide adequate bus protection. The loss of voltage and degraded voltage relay surveillances and calibration results were also reviewed to verify that they ensured the requirements of the associated technical specifications (TS) were met. Additionally, the team reviewed system maintenance test results, interviewed system engineers, and conducted field walkdowns to verify that equipment alignment, nameplate data, breaker positions, and relay settings were consistent with design drawings and to assess the material condition of the bus (switchgear). Finally, the team reviewed corrective action documents and system health reports and interviewed system and design engineers to determine whether there were any adverse operating trends or existing issues affecting bus reliability and to assess Exelon's performance to evaluate and correct problems.

b. Findings

No findings were identified.

.2.1.2 Emergency Diesel Generator Room E-3 Ventilation

a. Inspection Scope

The team inspected the ventilation system for the E-3 emergency diesel generator (EDG) room to determine whether it was capable of meeting its design basis requirements. The ventilation system is designed to start upon an EDG start to maintain an acceptable operating environment in the EDG room, provide combustion air, and remove heat generated by equipment to ensure proper operation of the EDGs following design basis events. The team reviewed design and licensing documents, including the UFSAR, the TSs, associated design basis documents (DBD), drawings, and other design documents to determine the specific design functions. The team reviewed EDG test results and operating procedures to ensure that the EDG ventilation support system was operating as designed and verified that Exelon performed appropriate maintenance on the system. The team also reviewed the EDG system procedures and vendor manuals to determine if Exelon operated the ventilation system within the vendor design limits. The team reviewed the vendor manual and worst-case environmental conditions to evaluate whether EDG fan capacity was sufficient to provide adequate flow for heat removal during design basis events. The team reviewed inspection and testing procedures to evaluate whether Exelon performed appropriate maintenance activities and reviewed past test results to determine if the ventilation system was capable of removing the required heat load. Additionally, the electrical data for the ventilation components, degraded voltage conditions, and voltage drop calculation results were reviewed to confirm the system would have sufficient voltage and power available to perform its safety function at degraded voltage conditions and the associated electrical breakers would not inadvertently trip during accident mitigation. The team conducted several walkdowns of the EDG ventilation system and associated components to assess the observable material condition, configuration control, and operating environment. Finally, the team reviewed corrective action documents and available trend data to evaluate whether there were adverse operating trends and to assess Exelon's ability to evaluate and correct problems.

b. Findings

No findings were identified.

.2.1.3 Unit 2 Standby Liquid Control Pump "A" and Standby Liquid Control Tank

a. Inspection Scope

The team inspected the unit 2 "A" standby liquid control (SLC) pump (2AP40) and SLC tank (2OT018) to determine whether they were capable of meeting their design basis requirements. The SLC system is a manually initiated, safety-related system designed to bring the reactor to a shutdown condition at any time in core life independent of control rod capabilities, including anticipated transient without scram (ATWS) events. The team reviewed the UFSAR, calculations, drawings, associated DBDs, and procedures to identify the most limiting requirements for the SLC pump and tank. The team also reviewed a sample of surveillance test results to verify that pump performance met the acceptance criteria and that the flowpath was adequately tested. The team reviewed calculations for pump net positive suction head (NPSH) available versus NPSH required and pump vortexing limits to ensure that the pump could successfully inject into the reactor vessel consistent with design assumptions for the most limiting event.

The team also evaluated the pump discharge piping safety relief valve setpoint to determine if the relief valve setting was low enough to protect the piping yet high enough such that the relief valve would not lift during pump operation. The team discussed the design, operation, and corrective maintenance of the SLC pump with the engineering staff to gain an understanding of the performance history and overall component health. The team also conducted several walkdowns of accessible portions of the SLC system, including control room instrumentation, to assess the observable material condition, configuration control, and operating environment. Finally, the team reviewed corrective action documents and available trend data to evaluate whether there were adverse operating trends and to assess Exelon's performance to evaluate and correct problems.

b. Findings

No findings were identified.

.2.1.4 Unit 3 High Pressure Coolant Injection System

a. Inspection Scope

The team inspected the high pressure coolant injection (HPCI) system to determine whether it could fulfill its design basis requirements of delivering flow to the reactor vessel in the event of a postulated accident. The team interviewed the system engineer and reviewed pump testing results for the HPCI pump and steam turbine driver system to assess system performance. The UFSAR and TSs were reviewed to assure consistency between the pump parameters and the tested design basis flow rate and pressure. The team reviewed pump operation with suction supply from the condensate storage tank (CST) as well as operation while taking suction from the suppression pool to determine whether the formation of air vortices could jeopardize pump operation. Furthermore, in order to determine adequate pump performance at limiting conditions, the team reviewed whether there would be sufficient NPSH, without crediting drywell pressure, while the pump suction was aligned to the suppression pool and whether Exelon's emergency operating procedures properly cautioned the operators to reduce pump flow rate at high suppression pool temperature. The team's review focused on the impact of the recently implemented power uprate with emphasis on the effect of elevated torus temperature on the pump's NPSH at minimum suppression pool water level. The team also reviewed the heat load in the HPCI turbine and pump area to assess whether the pump and turbine will be capable of performing their safety function with only natural room cooling. The team conducted walkdowns of the HPCI System and associated support systems to assess Exelon's configuration control, the material condition, the operating environment. Finally, the team reviewed corrective action documents to determine if there were any adverse trends associated with the HPCI pump and turbine and to assess Exelon's performance to evaluate and correct problems.

b. Findings

No findings were identified.

.2.1.5 Unit 3 HPCI Electrical Circuitry

a. Inspection Scope

The team inspected the electrical control circuit associated with the unit 3 HPCI system to determine whether the electrical system was capable of performing its design basis requirements. The team reviewed one-line diagrams, electrical schematics, and protective relay diagrams associated with HPCI system to evaluate the adequacy of the electrical structure and logic circuitries of the HPCI system. The team interviewed plant staff engineers and reviewed the maintenance and operating history of the circuits to evaluate the adequacy of maintenance and configuration control. The team also walked down HPCI system's electrical controls, alarms, indications trip relays, pressure and temperature instrumentation, alternate control panel, and associated support systems to assess the material condition and operating environment of the equipment. The team reviewed loop uncertainty calculations of level transmitters associated with HPCI to determine whether the allowable values, nominal trip set points, and actual trip set points for the HPCI reactor vessel low water level auto initiation signals were detected by the level transmitters. Additionally, the team reviewed completed surveillance tests associated with HPCI valves and components from the alternate control panel to ensure that applicable test acceptance criteria related to alternate control panel were met. Finally, team reviewed corrective actions documents, the HPCI system health reports, and applicable test results to determine if there were any adverse operating trends and to assess Exelon's performance to evaluate and correct problems.

b. Findings

No findings were identified.

.2.2 Results of Detailed Modification Review (6 samples)

.2.2.1 Unit 2 M0-2-01A-077: Motor Size Increase to Improve MOV Margin (14-00386)

a. Inspection Scope

The team reviewed modification 14-00386-001 that installed a new direct current (DC) motor for steam trap isolation motor operated valve (MOV) (M0-2-01A-077). The modification was performed to improve the thrust characteristics of the motor following the identification of degraded performance of the installed motor. Exelon installed a larger HP motor with this modifications in order to assure that adequate thrust was available to the valve in order to provide additional operational margin as discussed in the Joint Owners Group Motor Operator Valve Program guidance. Additionally, the modification replaced the MOV actuator with an equivalent actuator.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the valve and/or electrical system had been degraded by the modifications. The team interviewed design engineers, and reviewed design drawings and calculations to determine if the motor and electric circuit met the design and licensing requirements. The team reviewed the associated work order instructions and documentation to verify that maintenance personnel had implemented the modification as designed. Additionally, the team reviewed post-modification test (PMT) requirements, results and associated maintenance work orders to determine if the changes were appropriately implemented and to determine whether the system functioned as designed following the modification.

The team reviewed procedures, design documents, and drawings affected by the changes to verify that these documents had been adequately updated.

b. Findings

No findings were identified.

.2.2.2 Incorporate 2SU Coordination Study (CALC PE-0292) (15-00150)

a. Inspection Scope

The team reviewed modification PB 15-00150 that created a new calculation *2SU Coordination Study* (PE-0292). Exelon performed the calculation to verify that proper electrical coordination existed between the 2 startup transformer (00X003), associated 13.8 KV buses (2SU, 2SUA, 2SUB), and the 2 Emergency Auxiliary Transformer (EAT) (0X004.) This new calculation determined whether existing protective relay settings to verify that the relays were coordinated. The design functions of the 13.8KV system is to provide power from offsite source to the EAT in order to supply the class 1E 4160V system during all operating conditions.

The team reviewed the new calculation to determine whether Exelon had adequately evaluated the design bases, licensing bases, and performance capability of the protective relays associated with the buses with this new calculation. The team interviewed design engineers to evaluate the calculation's methodology. Additionally, the team reviewed the input assumptions to assess if they were aligned with the Peach Bottom design and licensing bases. The team assessed the calculation and associated analysis to verify that the assumptions used in the calculation were valid. The team evaluated whether the 2 startup transformer (00X003), the associated 13.8 KV buses (2SU, 2SUA, 2SUB), and the 2 Emergency Auxiliary Transformer (EAT) (0X004) were coordinated with the upstream and downstream devices while maintaining the maximum calculated credible fault current and overload protection for the equipment connected to the above buses. The team also reviewed the plots of the coordination curves generated by the Electrical Transient and Analysis Program (ETAP) software to confirm that protective relays were properly coordinated. In addition, the team verified that procedures, design documents, and drawings affected by the modification had been adequately updated.

b. Findings

No findings were identified.

.2.2.3 Unit 2 Condensate Storage Tank Cross Tie Pipe

a. Inspection Scope

The team reviewed modification 15-00374 that installed cross connect piping between the high pressure coolant injection (HPCI)/reactor core isolation cooling (RCIC) suction line and the main condenser hotwell make-up/reject line on the unit 2 CST. Exelon implemented the modification to provide a suction path from the CST to condensate pumps or control rod drive pumps in order to provide an additional injection sources to the reactor vessel to mitigate beyond design basis events. The team reviewed the modification to determine whether the design and licensing bases had been degraded by the modification.

The team specifically evaluated whether operability of the HPCI system, RCIC system, and CST had been adversely affected by the modification. The team interviewed design engineers and reviewed evaluations, pipe stress calculations, surveillance, non-destructive examination (NDE) results, and associated maintenance work orders to determine whether Exelon appropriately implemented the cross connect piping modification and maintained the HPCI and RCIC CST suction piping design requirements in accordance with licensing and design requirement. The team also performed a walkdown of the accessible portions of the cross connect piping modification to ensure that the installed configuration was in accordance with design instructions and that HPCI and RCIC CST suction piping integrity was maintained. Finally, the team reviewed corrective action IRs and available CST trend data to determine if there were reliability or performance issues that may have resulted from the modification.

b. Findings

No findings were identified.

.2.2.4 Unit 2 ASD Modification (15-00378)

a. Inspection Scope

The team reviewed modification 15-00378 which installed a recirculation pump adjustable speed drive (ASD). The new drive system replaced the motor generator speed control system for the reactor recirculation pumps. The modification was performed to increase the efficiency of the system, reduce maintenance and provide electronic speed control of the pump motors.

The team assessed whether the performance capability and operating history of the replacement ASD equipment met reliability expectations and whether the completed modification resulted in an increased probability of a plant transient. The team interviewed design engineers and reviewed design drawings to evaluate the effectiveness of the redundancy provided in the ASD power supply and control equipment, including the redundancy provided for cooling the ASD equipment. The team also reviewed the design features for a supplemental heating, ventilation, and air conditioning (HVAC) system that was provided to supplement the existing area ventilation equipment to maintain an acceptable operating environment for the ASD equipment. Finally, the team performed a walk down of the ASD equipment, the ASD cooling equipment, and the supplemental HVAC area cooling equipment installations to assess the overall material conditions of the systems.

b. Findings

No findings were identified.

.2.2.5 Unit 2 Main Steam Isolation Valve (MSIV) Poppet Skirt Modification (16-00346)

a. Inspection Scope

The team reviewed modification 16-00346 that installed spacer on the poppet of one main steam isolation valve (AO-2-01A-080D). Exelon implemented the modification in order to stabilize the poppet against the valve body in the full open position in order to minimize valve movement which had been identified as the cause for previously identified wear on the poppet. The wear had been identified as a valve leakage failure mechanism. The team also reviewed a work authorization that was developed to install a new poppet skirt on the back side of the poppet which was necessary to help expedite the emergent work as part of the P2R21 outage.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the MSIV had been degraded by the modification. The team interviewed design engineers, and reviewed design drawings to determine whether the closure/isolation time met the design and licensing requirements. Additionally, the team reviewed the results of post modification testing to determine if the changes were properly implemented and whether sufficient margin for valve operation and mechanical stresses was available.

b. Findings

No findings were identified.

.2.2.6 Unit 2 Residual Heat Removal (RHR) Back-Up Power Supply Modification (14-00071/13-00209)

a. Inspection Scope

The team reviewed modification 13-00209 that installed a new electrical design for the RHR MOV. The modifications revised the electrical supply to the RHR MOVs such that two separate electrical trains were able to supply power to the MOVs. The modification was performed to meet licensing requirements, as a result of power uprate, for the RHR system in order to assure adequate NPSH was available for the RHR pumps during a design basis events. Exelon installed a new motor control center (MCC) for the normal and back-up power to the RHR cross-tie isolation valves and actuation circuits which provided the capability to remotely switch MOV power from a normal to an alternate power source.

The team reviewed the modification to assess whether the design basis, licensing basis, and the safety-related independence requirements of the emergency electrical power system(s) were maintained by the modification. Specifically the team evaluated whether the normal and alternate power sources, provided from buses powered from different emergency diesel generators, maintained their required electrical separation. The team interviewed design engineers and reviewed design drawings and analyses to determine whether the design met the Peach Bottom design and licensing requirements. Additionally, the team performed a walk down of the power source transfer controls in the main control room, the controls provided at the alternate shutdown panel, and the new MCCs to evaluate whether the modification was installed in accordance with the design and to assess the overall material conditions of the equipment and the environmental and design conditions at the new MCC locations. The 10 CFR 50.59 applicability review and screening associated with this modification were also reviewed.

b. Findings

No findings were identified.

.2.3 Results of Review of Industry Operating Experience (1 sample)

The team reviewed selected OE issues for applicability at PBAPS. The team performed a detailed review of the OE issues listed below to verify that Exelon had appropriately assessed potential applicability to site equipment and initiated corrective actions when necessary.

.2.3.1 NRC Information Notice (IN) 2015-13, Main Steam Isolation Valve (MSIV) Failure Events

a. Inspection Scope

The team reviewed Exelon's response to IN 2015-13, *Main Steam Isolation Valve Failure Events*. Specifically, the team reviewed AR 02600694 which documented Exelon's review of the issues described in the IN. The team reviewed the similarity between the MSIV designs associated with the failures documented in the IN and the MSIV design at Peach Bottom to determine whether Exelon properly assessed the applicability of the documented failures to the MSIVs at Peach Bottom. The team also reviewed Exelon's evaluation of "Operability Concerns" to determine whether crediting Peach Bottom MSIV closure time tests and MSIV leak rate testing cover the modes of failure described in the IN. The team also reviewed engineering evaluations, preventive and corrective maintenance history, surveillance test results, and corrective action condition reports associated with MSIVs to assess their material condition and to assess the potential of the MSIVs at Peach Bottom to fail in ways similar to those discussed in the IN.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (IP 71152)

a. Inspection Scope

The team reviewed a sample of problems that Exelon had previously identified and entered into the corrective action program. The team reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions. In addition, issue reports (IRs) written on issues identified during the inspection, were reviewed to verify adequate problem identification and incorporation of the problem into the corrective action system. The specific corrective action documents that were sampled and reviewed by the team are listed in the Attachment.

b. Findings

No findings were identified.

4OA6 Meetings, including Exit

On February 10, 2017, the team presented the inspection results to Mr. Michael Massaro, Site Vice President, and other members of the PBAPS staff. The team reviewed proprietary information, which was returned to Exelon at the end of the inspection. The team verified that no proprietary information was documented in the report.

ATTACHMENT
SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Exelon Personnel

M. Massaro, Site Vice President
J. Armstrong, Regulatory Assurance Manager
T. Wickel, Design Engineering Senior Manager
J. Chizevers, Mechanical Design Engineering Manager
M. Nowoswiat, Design Engineer
M. Hoffman, Projects Engineering
R. Nsidze, Systems Engineering
R. Binz, IST/Appendix J Program Manager
D. Dullum, Regulatory Assurance Engineer
T. Gehman, Mechanical Design Engineer
J. Laverde, Senior Design Engineer
M. Simon, Senior System Engineering
C. Allen, Senior Design Engineer
R. Brightup, System Engineer
P. Pasqual, Design Engineer
T. Strayer, Operations

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

10 CFR 50.59 Evaluations

50.59 Applicability Review Form ECR 13-00209 and ECR 14-00071, Revision 0
PB-2014-012-S, 50.59 Screening No. PB-2014-012-S, RHR Cross-Tie Modification (Unit 2 A/C and B/D LOOPS) – Electrical / I&C and RHR Back Up Power Supply, Revision 0
PB-2016-010-S, Unit 2 Cross-Connect Pipe, dated 3/29/16

Calculations & Engineering Evaluations

16-00125, Loop Uncertainty Calculation for LT 3-02-3-072A, Revision 3
16-00125, Loop Uncertainty Calculation for LT 3-02-3-072C, Revision 3
18247-M-001, Maximum Torus Temperatures Allowed (assuming no Torus back pressure) for the ECCS Systems, Revision 7A
18247-M-016, HPCI/RCIC Pump Suction Timing, Revision 4
18247-M-035, CST – Minimum Water Level to Prevent Vortex Formation, Revision 2
27-06, CST ECCS Suction to Hotwell Makeup Reject X-Conn Piping Qualification, Revision 1
49-48/F, Standby Liquid Control Tanks and Pump Suctions – Seismic Analysis for Anchor Bolts, Revision 1

A1889854 #3, MO-2-01A-077 Actuator Replacement, dated 1/2/14
A1889854 #6, MO-2-01A-077 Winding Resistance Results, dated 10/31/14
A1889854 #8, Evaluate Raychem Installation of Motor Leads, dated 11/13/14
A1957427 #6, Evaluate Weight Change of MO-2-01A-077-OP Motor, dated 11/2/14
A1994336-38, Evaluate Range of Pressures for X-Tie Differential Leak Test, Revision 0
A2016107-E06, Aging Management Review for ECR 15-00374, dated 2/23/16
A2016107-E11, IST Impact Review for ECR 15-00374, dated 3/2/16
A2016107-E20, Maintenance Planning Review for ECR 15-00374, dated 3/7/16
A2016107-E43, Torque Computations for CST Flanges, dated 10/6/16
AR 264666-02, E-3 EDG Generator Bearing High Temperature Equipment Apparent Cause Evaluation, dated 1/12/05
AR 264666-04, Op Eval for High Generator Bearing Temperature, Revision 0
EC 617368, Standby Liquid Control Calculation for NPSHA and Vortex Conditions, Revision 0
ECR 11-00378, Attachment 32, Unit 3 CST Cross Connect Piping Pressure Differential Computation, Revision 2
ECR PB 05-00385, Convert/Upgrade EDG Cardox System to Manual System, Revision 2
ECR PB 99-00389, SBLC Discharge RV Set Pressure Discrepancy, Revision 0
LS-3-23-074/1, Loop Uncertainty Calculation for LS-2-23-074, Revision 2
ME-0178, Determine Weight of Enriched Boric Acid Needed for SLCS to Meet the ATWS Rule (10CFR50.62) as well as Technical Specification Curve Valves Concentration and Enrichment Requirements, Revision 5
ME-0208, Determine New Standby Liquid Control Instrumentation Setpoints Which Result from the Properties of the Enriched Sodium Pentaborate Solution, Revision 3
ME-0293, Determine Pressure Drop between the HPCI Pump Discharge and the RPV with a Flow Rate of 5000 GPM, Revision 1
ME-0693, Determination of the Vortex Limits for LPCI, HPCI, Core Spray, and RCIC, Revision 0
White Paper - NRC DBAI Unresolved Item E3 Emergency Diesel Generator, dated 3/16/17
PE-0017, Perform 125/250 VDC Class 1E Battery Capacity Analysis and Distribution Voltage Analysis, Revision 0
PE-0121, Voltage Regulation Study, Revision 0
PE-0140, Class 1E 125/250 VDC System "What if" Cases, Revision 0
PE-0178, 13.8 KV Protective Relay Settings, Revision 5
PE-0182, Perform 125 VDC Voltage Analysis, Revision 15
PE-0194, Coordination for 4KV 1E Switchgear, Revision 4
PE-0205, Load Study for the Station Auxiliary System (PBSPS), Revision 9
PE-0292, 2SU Protective Relay Coordination Study, Revision 0
PE-112, Cable Sizing, Load and Voltage Design Verification for Unit 3 Offsite Startup Power Source, dated 1/18/96
PEAF-0001, Flow Path Analysis for Development of INDMS Fire Safe Shutdown, Revision 1F
PEAM-EPU-37, T0406 Net Positive Suction Head, Revision 1A
PM-0802, Determine Emergency Diesel Generator Room Maximum Temperature Following Failure of a Single Steam Heater while EDG is Running, Revision 1
PM-0829, Emergency Diesel Generator Building Heating & Ventilation, Revision 5
PM-1040, Determine Pressure Drops in the Standby Liquid Control System Piping, Revision 1
PM-1151, CST Support Qualification - Addition of Stand Pipe to Nozzle J, Revision 2
PM-1208, Standby Liquid Control (SBLC) Net Positive Suction Head (NPSH), Revision 0
PM-498, Emergency Diesel Generator Building Cooling Load and Ventilation Requirements, Revision 3

Corrective Action Condition Reports

00117067	01454712	02384855	02704549	03969189*
00264666	01464421	02387576	02705759	03969256*
00453254	01479028	02389902	02710389	03969702*
00508959	01485535	02402458	02715341	03969980*
00517319	01508250	02404489	02727505	03972285*
00753940	01517882	02411066	02739822	03972336
00766110	01531713	02471084	03943456	03972463*
00774274	01536867	02487260	03951006	03972775
00902283	01545128	02569338	03951473	03973950*
01010049	01551389	02571677	03962563	03974012*
01026036	01553896	02583235	03965510	03974784*
01097860	01609050	02595060	03965606	03975019*
01242654	01632693	02600694	03965638	03975044*
01329445	01636763	02605073	03966209	03975057*
01360193	01643584	02671523	03966281	03975210*
01381865	01658604	02672172	03966586	A0655417
01385325	01662225	02676478	03968267*	
01396022	01957254	02694141	03968692	

* CR generated as a result of this inspection

Design and Licensing Basis Documents

M.PP 2AP040, Standby Liquid Control Pump A IST Pump and Valve Safety Function Data, dated 11/16/16

P-S-03, High Pressure Coolant Injection System Design Baseline Document, Revision 24

P-S-07, Diesel Generator and Auxiliary Systems Design Baseline Document, Revision 18

P-S-08D, Miscellaneous HVAC Systems Design Baseline Document, Revision 10

P-S-38, Standby Liquid Control System, Revision 9

P-S-41, Condensate Storage and Transfer System Design Baseline Document, Revision 9

P-S-51, Fire Protection System Design Baseline Document, Revision 11

P-T-07, External Hazards Design Baseline Document, Revision 3

P-T-09, Internal Hazards Design Baseline Document, Revision 11

P-T-12, Design Basis Accidents, Transients, and Events, Revision 8

Drawings

E-1, Single Line Diagram Station, Revision 56

E-10, Single Line Meter & Relay Diagram Startup & emergency Power Systems, Revision 36

E-12, Single Line Meter & Relay Diagram Standby Diesel Gens & 4160 Volt Emer Power System – Unit No 3, Revision 11

E-1615, Sht. 2, Single Line Meter & Relay Diagram E1/324-R-C, E2/424-R-B & E3/124-R-B Reactor MCC & E4/224-W-A Radwaste MCC 440V. Unit 2, Revision 0

E-1615, Single Line Meter & Relay Diagram E124 & E224 Emerg. L.C. E124-R-C & E224-R-B Reactor MCC. and E124-T-B & E224-T-B Turbine MCC. 440V. Unit 2, Revision 82

E-1617, Sht. 1, Single Line Meter & Relay Diagram E324 & E424 Emerg. L.C. and E324-R-B, E424-W-A, E324-R-D, & E424-R-D Reactor MCC. 440V. Unit 2, Revision 70

E-1619, E124-D-A, E234-D-A, E324-D-A & E434-D-A Diesel MCC 440V Single Line Meter and Relay Diagram, Revision 37

E-26, Sht. 2, 125/250 VDC System Unit, Revision 63

E-2903, Sht. 1, Electrical Schematic Diagram Alternative Control Instrumentation, Revision 6

E-294, Diesel Generator Supply Fan Schematic Diagram, Revision 21

E-5254, Electrical Protective Relay Index, Revision 58

E-5254, Sht. 39.0, Relay Setting Cards, Revision 0

E-5254, Sht. 39.1, Relay Setting Cards, Revision 0
 E-540-123, Panel 20C0048BX & 20C003-2X HPCI & RHR Alternate Control Enhancement
 E-71, Shts. 23 and 31, Electrical Schematic Diagram Emer Aux Swgr Reg Trans Source 4.16KV
 Circuit Breaker, Revs. 36 and 35
 E-7-356, Indoor Metalclad Switchgear General Electric Dwg. No. 0109D7762, Revision 14
 E-8, Shts. 1 and 2, Single Line Meter & Relay Diagram Standby Diesel Gens & 4160 Volt Emer
 Power System – Unit No 2, Revs. 19 and 31
 ISO 3-23-7, High Pressure Coolant Injection, Revision 2
 ISO 3-23-8, High Pressure Coolant Injection, Revision 2
 ISO-2-11-1, Unit 2 Standby Liquid Control Isometric, Revision 4
 M-1-EE-100, Sht. 1, Arrangement Panel 9-3, Revision 67
 M-1-S-23, Electrical Schematic Diagram Primary Containment Isolation System, Revision 100
 M-1-S-36, Shts. 1A, 2, 3, 8, and 15, Electrical Schematic Diagram High Pressure Coolant
 Injection System, Revs. 78, 74, 76, 75, and 80
 M-1-S-46, Sht. 2, Electrical Schematic Diagram Stand-by Liquid Control System, Revision 22
 M-1-S-65, Shts. 11A, 17, 17C, 26A, 26C, 26E, 26F, 36O, Electrical Schematic Diagram Residual
 Heat Removal System, Revision 100, 0, 0, 0, 0, 0, and 81
 M-282, Condensate Storage Tank, Fuel Pool - Piping, Plan & Section, Revision 7
 M-309, Sht. 1, Condensate & Refueling Water Storage & Transfer Systems P & I Diagram,
 Revision 63
 M-315, Sht. 1, P&I Diagram Emergency Service Water and High Pressure Service Water Sys's,
 Revision 86
 M-351, Nuclear Boiler P & I Diagram, Revision 75
 M-358, Standby Liquid Control System P & I Diagram, Revision 39
 M-361, Shts. 1 and 2, P&I Diagram Residual Heat Removal System, Revs. 86 and 71
 M-365, High Pressure Coolant Injection System, Revision 63
 M-366, HPCI Pump Turbine Details, Revision 53
 M-385, Emergency Diesel Generator Building, Boiler Building, Shop & Warehouse Building
 Temperature Control Diagram, Revision 30
 M-392, Miscellaneous Buildings Ventilation Flow Diagrams, Revision 19
 PTA 032480, Overload Relay Time-Current Characteristics, Revision 1
 T-102, Shts. 1 and 2, Primary Containment Control, HPCI and RCIC Pump NPSH Limits,
 Revs. 22 and 16

Functional, Surveillance and Modification Acceptance Testing

M-C-700-345, Relief Valve Maintenance and Testing (RV-2-11-39A), performed 11/20/14
 MO-2-01A-077-OP, Operator PM for the Main Steam Lines Outboard Isolation Valve, performed
 2/18/15
 R1060337, E3 D/G Building Ventilation Fan Motor Electrical Test, performed 2/6/13
 R1139988, Functional Test of Switch TS-70773C, performed 1/16/14
 R1222528, D/G Fan OBV091 Temp Permissive SW Instrument Calibration, performed 3/19/15
 R1252756, OCV064 Fan/Coupling/Motor/Dampers PM, performed 1/25/15
 R1273603, PRD-0-40F-11427C Inspection, performed 9/25/14
 R1317757, RT-O-040-610-2 – Outbuilding HVAC and Equipment Inspection for Summer
 Operation, performed 4/27/16
 RT-O-023-240-3, HPCI Overspeed Trip Test Using Aux Steam, performed 10/15/15
 RT-O-023-302-3, HPCI Turbine Overspeed Trip Reset Time Check/Adjustment and HPCI
 Auxiliary Oil Pump and Manual Trip Lever Tension Test, performed 10/29/16
 RT-O-023-725-3, HPCI Response Time Test, performed 7/1/14
 RT-O-023-760-3, HPCI Valve and Component Test from Alternative Control Panel, performed
 8/1/15

SI2L-2-72-D1FQ, Functional Test of ECCS D Compensated Trip System, performed 1/31/2017
 SI3M-54-E43-XXC4, Calibration Check and Functional Test of E43 Bus and E434 Bus Meters and Overcurrent Relays, performed 3/6/12 and 9/7/16
 SI3M-54-E43-XXCE, Calibration Check E43 4kV Undervoltage Relays, performed 10/22/14 and 3/26/16
 ST/LLRT 20.01A.02, Main Steam Isolation Valve Local Leak Rate Test, performed 11/4/16 and 10/19/16
 ST-I-052-052-253-2, E3 Diesel Generator Inspection Post Maintenance Instrumentation and Logic Test, performed 1/29/15
 ST-I-40F-253-2, E3 Diesel Generator Ventilation Logic Test, performed 11/6/15
 ST-M-023-600-3, High Pressure Coolant Injection Filled and Vented Verification, performed 9/25/16
 ST-M-023-630-3, HPCI Testable Check Valve Seat Leakage Test, performed 9/20/15
 ST-O-023-200-3, HPCI Flow rate at Less or Equal to 175 psig Steam Pressure, performed 12/21/15
 ST-O-023-350-3, HPCI Valve Alignment and Filled and Vented Verification, performed 6/23/16
 ST-O-054-754-3, E43 4KV Bus Undervoltage Relays and LOCA LOOP Functional Test and E43 and E434 Alternative Shutdown Control Functional Test, performed 10/15/15
 ST-O-07G-470-2, Main Steam Isolation Valve Closure timing, performed 11/4/16
 ST-O-60F-405-2, MSIV Partial Closure and RPS Input Functional Test, performed 11/8/16

Miscellaneous

2A SLC Pump (2AP040) IST Trend Data, from 10/3/12 – 11/8/16
 Apparent Cause Report RCIC MO-3-13-021 Would not Stroke Open, dated 10/18/2/13
 C0260048-03, Final Weld #10, 11, 12, & 13 Liquid Penetrant Examination, performed 9/29/16
 C0260630-03, Final Weld #14 Liquid Penetrant Examination, performed 8/12/16
 C0260630-03, Final Weld #15 Liquid Penetrant Examination, performed 8/18/16
 C0260630-03, Final Weld #16 & #18 Liquid Penetrant Examination, performed 8/25/16
 C0260630-03, Final Weld #17 Liquid Penetrant Examination, performed 8/31/16
 C0260630-03, Final Weld #19 Liquid Penetrant Examination, performed 8/19/16
 C0260630-03, Final Weld #20 Liquid Penetrant Examination, performed 8/10/16
 C0260630-03, Final Weld #21 & #22 Liquid Penetrant Examination, performed 9/2/16
 C0260630-03, Final Weld #23 & #24 Liquid Penetrant Examination, performed 8/12/16
 Diesel Generator Rounds, performed 1/14/17 – 1/21/17
 Engage Health, System Health Report (2017-T2) Draft Peach Bottom
 52/54/55/55E/56/56E/57/57B/57C/57E/57G/57H (DIS-AC/DC)
 FWCL C-16-20, Weld W21 Field Weld Check List, dated 9/2/16
 HVAC - Air Handling Equipment PM Template, Revision 3
 HVAC - Dampers and Ducting PM Template, Revision 4
 IQ Review, Medium Voltage Circuit Breakers, Revision 6
 Letter from Flowserve to Peach Bottom, HPCI Booster Pump, dated 1/4/08
 M-066/660-04, TS-00274 E3 D/G Room Temperature Instrument Calibration Sheet, Revision 5
 Maintenance Rule Walkdown Report (U2 RX Bldg 195'), performed 1/11/13
 MA-MA-716-010-1008, Attachment 1, Post-Installation Walkdown Checklist, performed 11/8/16
 NE-256, Specification Design Criteria for Electrical Separation, Revision 0
 NUREG-0460, Anticipated Transients without Scram for Light Water Reactors, Volume 1
 PB-2-27A-F-MISC, FW 15, FW 17, & FW 18 Certificate of Inspection Radiography, dated 9/7/16
 PC-38604, HPCI Booster Pump Head Capacity Curve, dated 1/20/93
 PEAM-EPU-37, GE Task Report T0406, Revision 1
 Power Transformer Characteristics and their Effect on Protective Relays, dated 10/19/06
 P-S-03, Design Basis Document – High Pressure Coolant Injection System, Revision 24
 P-S-08D, Design Basis Document – Miscellaneous HVAC Systems, Revision 10
 Purchase Order for Limitorque 10422, dated 9/3/88

U2 and U3 System Health Report for HPCI, 2nd Quarter 2015
 U2 Condensate Storage Tank Operator Rounds, performed 1/14/17 – 1/21/17
 U2 CST Level Trend, for the period 1/1/17 – 1/23/17
 U2 SBLC Operator Rounds, performed 1/14/17 – 1/21/17

Modifications

ECR 13-00209, Design Attributes Review, ECR Attachment #1, Revision 1
 14-00071, RHR Cross-Tie Modification (Unit 1 A/C and B/D Loops) - Electrical / I&C and RHR Backup Power Supply, Revision 0
 13-00209, RHR Cross-Tie Modification (Unit 1 A/C and B/D Loops) - Electrical / I&C and RHR Backup Power Supply, Revision 0
 15-00378, U/2 ASD MOD, Revision 7
 PB 14-00386 001, Motor Size Increase to Improve MOV Margin MO-2-01A-077, dated 11/14/14
 PB 15-00150 000, Incorporate 2SU Coordination Study (Calc PE-0292), dated 4/25/15
 07-00236 000, 3SU Trans Neutral Grounding Resistor Banks in Poor Condition, Revision 0
 PB 16-00346, MSIV Poppet Modification, Revision 0

Operating Procedures

AO 27.1-2, Unit 2 Reactor Cavity Let Down during Vessel Re-Assembly, Revision 16
 AO 27.6-2, Filling the Unit 2 Reactor Well, Dryer, and Separator Pit from the Core Spray, Condensate System or Refueling Water Pumps, Revision 23
 AO 5.3.A-2, Condensate System Hotwell Fill, Revision 7
 ARC 211 J-2, Standby Liquid Tank Hi-Lo Level, Revision 7
 ARC 211 J-3, Standby Liquid or Pipe Hi-Lo Temp, Revision 5
 ARC OCC097 B-4, Diesel Gen. Compartment 3 Exhaust Air High/Low Temp, Revision 9
 ARC OCC097 D-5, Generator Bearing High Temperature, Revision 5
 OP-AA-102-106, Attachment F, Operator Response Validation Sheet, Revision 3
 OP-PB-102-106, Operator Response Time Program at Peach Bottom, Revision 6
 RRC 23.1-3, HPCI System Operation during a Plant Event, Revision 6
 SE-10, Attachment 5, Alternate RPV Injection Using CRD, Revision 5
 SE-10, attachment 9, HPCI Operations from the Alternate Shutdown Panel, Revision 2
 SE-10, Plant Shutdown from the Alternative Shutdown Panels – Bases, Revision 28
 SE-10.1, Alternative Shutdown Restoration, Revision 18
 SE-11 Attachment W, CRD Lineup for Reactor Makeup during Loop Events, Revision 5
 SO 11.1.A-2, Standby Liquid Control System Setup for Operation, Revision 9
 SO 11.1.B-2, Standby Liquid Control System Initiation, Revision 4
 SO 11.8.A-2, Standby Liquid Control System Routine Inspection, Revision 10
 SO 23.1.A-3, High Pressure Coolant Injection System Setup for Automatic or Manual Operation, Revision 24
 SO 23.1.B-3, HPCI System Manual Operation, Revision 22
 SO 23.2.A-3, HPCI System Shutdown, Revision 19
 SO 23.7.A-3, HPCI System Automatic Initiation Response, Revision 10
 SO 2J.1.A-2, Startup and Normal Operation of the Adjustable Speed Drive (ASD) Cooling Water System, Revision 1
 SO 40F.7.A-2, Emergency Diesel Generator and Pump Structure Room Ventilation Operation for Personnel Comfort, Revision 3
 SO 52A.1.A, Diesel Generator Lineup for Automatic Start, Revision 14
 SO 52A.8.A, Diesel Generator Daily Shutdown Inspection, Revision 60
 ST-I-023-100-2, HPCI Logic System Functional Test, Revision 20
 T-101, PBAPS Trip Procedure, Revision 22
 T-210-2, CRD System Non-Enriched Boric Acid and Borax Injection, Revision 12

T-211-2, CRD System SBLC Injection, Revision 10
 T-212-2, RWCU System SBLC Injection, Revision 11
 T-247-2, Aligning CST Bottom Suction to Main Condenser Hotwell and CRD Pumps, Revision 2

Operating Experience

NRC Information Notice 2001-13, Inadequate Standby Liquid Control System Relief Valve Margin, dated 8/10/01
 NRC Information Notice 2010-27, Ventilation System Preventive Maintenance and Design Issues, dated 12/16/10
 NRC Information Notice 2012-01, Seismic Considerations - Principally Issues Involving Tanks, dated 1/26/12
 NRC Information Notice 2012-12, HVAC Design Control Issues Challenge Safety System Function, dated 7/24/12
 OPXR ATI AR 1166034-08, NRC IN 2010-27 OPEX Evaluation, dated 3/31/11
 OPXR ATI AR 1328230-09, NRC IN 2012-01, Seismic Considerations – Principally Issues Involving Tanks OPEX Evaluation, dated 5/8/12
 OPXR ATI AR 1393630-08, NRC Information Notice 2012-12, HVAC Design Control Issues Challenge Safety System Function OPEX Evaluation, dated 10/16/12

Procedures

CC-AA-102, Design Input and Configuration Change Impact Screening, Revision 29
 CC-AA-103, Configuration Change Control for Permanent Physical Plant Changes, Revision 29
 CC-AA-107, Configuration Change Acceptance Testing Criteria, Revision 9
 CC-MA-103-2001, Setpoint Methodology for PBAPS and LGS, Revision 2
 CC-MA-308-1002, Protective Device Sizing, Revision 1
 GP-2-2, Normal Plant Start-Up, Revision 9
 M-300, Specification for Piping Materials, Instrument Piping Standards and Valve Classifications for Peach Bottom Atomic Power Station Units 2 and 3, Revision 18
 M-301, Specification for Field Fabrication and Installation of ANSI B31.1 Piping and Instrumentation for Peach Bottom Atomic Power Station Units 2 and 3, Revision 14
 M-054-001, Magne-Blast Circuit Breaker Maintenance (4 & 13 KV) Complete Overhaul, Revision 26
 M-056-001, 480 Volt Motor Control Center Circuit Breaker Assembly and Cubicle Terminal Maintenance, Revision 33
 M-510-107, Inspection and Refurbishment of Atwood and Morrill Mark No. 234 and 237 Swing Check Valves, Revision 22
 MA-AA-716-008, Foreign Material Exclusion Program, Revision 13
 MA-AA-716-012, Post Maintenance Testing, Revision 22
 MA-AA-723-300, Diagnostic Testing of Motor Operated Valves, Revision 11
 MA-PB-1003, Winter Readiness and Storm Response Guidelines for the Peach Bottom Facility, Revision 11
 M-C-700-602, Core Boring, Revision 8
 OP-AA-108-103, Locked Equipment Program, Revision 2
 OP-AA-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 15
 OP-PB-108-103-2, Locked Valve List - PBAPS Unit #2, Revision 7
 OP-PB-111-1001, Preparation for Severe Weather, Revision 16
 RT-O-040-610-2, Outbuilding HVAC and Equipment Inspection for Summer Operation, Revision 24
 RT-O-040-630-2, Winterization Procedure, Revision 16
 ST-I-052-253-2, E3 Diesel Generator Inspection Post Maintenance Instrumentation and Logic Test, Revision 9
 ST-I-40F-253-2, E3 Diesel Generator Ventilation Logic Test, Revision 6

Vendor Technical Manuals

- M-1-JJ-40-2, Standby Liquid Control Pump Vendor Manual, Revision 3
- M-1-U-114-1, Standby Liquid Control Pump Data Sheet, dated 12/27/67
- M-1-U-195-5, Standby Liquid Control System Design Specification, dated 10/4/68
- M-51-182-2, Centrifugal Fans Series 134 Vendor Manual, Revision 5
- M-70-21-2, Switchgear Supply Booster Fan, Motor Generator, Room Exhaust Vendor Manual, Revision 2
- ML-RaychemS150-IM-Install 046, Raychem Industrial Heat-Tracing Installation and Maintenance Manual, Revision 6
- VTM No. E-7-219-1, Vendor Manual 6280-E7-219-1, General Electric Co. GEH-1802X, Unit #2 4.16 KV Metalclad Switchgear Types M-26 and M36 for Magne-Blast Air Circuit Breaker Types AM-4.16 and AM 23.8, Revision 8
- VTM No. E-7-509-2, Vendor Manual 6280-E7-509-2, General Electric Co. GEH-1802X, Unit #3 4.16 KV Metalclad Switchgear Type M-26 for Magne-Blast Air Circuit Breaker Type AM-4.16-250, Revision 5

Work Orders

A1776668	C0260630	R1293382	R0620653
A1930497	R1059474	R1081950	R1069905
C0241050	R1185222	R1248511	
C0260048	R1222528	R1196442	
C0260549	R1287736	R1109257	

LIST OF ACRONYMS

AC	Alternating Current
ADAMS	Agencywide Documents Access and Management System
ASD	Adjustable Speed Drive
ATWS	Anticipated Transient Without Scram
CDBI	Component Design Basis Inspection
CFR	Code of Federal Regulations
CST	Condensate Storage Tank
DBD	Design Basis Document
DRS	Division of Reactor Safety
EAT	Emergency Auxiliary Transformer
EDG	Emergency Diesel Generator
EPU	Extended Power Uprate
ETAP	High Pressure Coolant Injection
HPCI	High Pressure Coolant Injection
HVAC	Heating, Ventilation and Air Conditioning
IMC	Inspection Manual Chapter
IN	Information Notice
IR	Issue Report
KV	Kilo-Volt
LERF	Large Early Release Frequency
MCC	Motor Control Center
MOV	Motor Operated Valve
MSIV	Main Steam Isolation Valve
NDE	Non-destructive Examination
NPSH	Net Positive Suction Head
NRC	Nuclear Regulatory Commission
OE	Operating Experience
PBAPS	Peach Bottom Atomic Power Station
PMT	Post Modification Test
PRA	Probabilistic Risk Assessment
RAW	Risk Achievement Worth
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RRW	Risk Reduction Worth
SDP	Significance Determination Process
SLC	Standby Liquid Control
SPAR	Standardized Plant Analysis Report
SSC	System, Structure or Component
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report