

May 5, 2009

Mr. Charles G. Pardee  
Senior Vice President, Exelon Generation Company LLC  
President and Chief Nuclear Officer, Exelon Nuclear  
4300 Winfield Rd.  
Warrenville, IL 60555

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 – NRC  
TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000277/2009006  
AND 05000278/2009006

Dear Mr. Pardee:

On April 3, 2009, 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 at an exit meeting on April 3, 2009, with Mr. W. Maguire and other members of your staff.

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

Based on the results of this inspection, no findings of significance were identified.

In accordance with Title 10 of the Code of Federal Regulations Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web Site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

John F. Rogge, Chief  
Engineering Branch 3  
Division of Reactor Safety

Docket No. 50-277; 50-278

License No. DPR-44; DPR-56

Enclosure: Inspection Report No. 05000277/2009006 and 05000278/2009006  
w/Attachment: Supplemental Information

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**SUNSI Review Complete:** JFR (Reviewer's Initials)

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NAME	LScholl/DS/LLS	JRogge/JFR	PKrohn/PGK	
DATE	4/30/09	5/5/09	5/5/09	

OFFICIAL RECORD COPY

cc w/encl:

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M. Pacilio, Chief Operating Officer, Exelon Nuclear  
W. Maguire, Site Vice President, Peach Bottom  
J. Grimes, Acting Senior Vice President, Mid-Atlantic  
R. Hovey, Senior Vice President, Nuclear Oversight  
G. Stathes, Plant Manager, Peach Bottom  
J. Armstrong, Regulatory Assurance Manager, Peach Bottom  
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S. Gray, Administrator, Maryland Power Plant Research Program  
S. Pattison, Secretary, SLO, Maryland Department of the Environment  
M. Griffen, Maryland Department of Environment  
Public Service Commission of Maryland, Engineering Division  
Board of Supervisors, Peach Bottom Township  
B. O'Connor, Council Administrator of Harford County Council  
Mr. & Mrs. Dennis Hiebert, Peach Bottom Alliance  
E. Epstein, TMI - Alert  
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Region I Docket Room (with concurrences)

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 05000277, 05000278

License No.: DPR-44 and DPR-56

Report No.: 05000277/2009006 and 05000278/2009006

Licensee: Exelon Generation Company, LLC

Facility: Peach Bottom Atomic Power Station (PBAPS) Units 2 and 3

Location: 1848 Lay Road  
Delta, Pa. 17314

Dates: March 16-20 and March 30 - April 3, 2009

Inspectors: L. Scholl, Senior Reactor Inspector, DRS (Team Leader)  
J. Tifft, Reactor Inspector, DRS  
O. Ayegbusi, Reactor Inspector, DRS

Approved by: John F. Rogge, Chief  
Engineering Branch 3  
Division of Reactor Safety

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## SUMMARY OF FINDINGS

IR 05000277/2009006, 05000278/2009006; 03/16/2009-04/03/2009; Exelon Generation Company LLC, Peach Bottom Atomic Power Station. Triennial Fire Protection Team Inspection.

The report covered a two-week triennial fire protection team inspection by three Region I specialist inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None

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## REPORT DETAILS

### Background

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05T, "Fire Protection." The objective of the inspection was to assess whether Exelon Generating Company, LLC has implemented an adequate fire protection program and that post-fire safe shutdown capabilities have been established and are being properly maintained at the Peach Bottom Atomic Power Station (PBAPS). The following fire areas (FAs) and fire zones (FZs) were selected for detailed review based on risk insights from the PBAPS Individual Plant Examination (IPE)/Individual Plant Examination of External Events (IPEEE):

- FA 25 (FZ 78H)
- FA 33
- FA 50 (FZ 78C)
- FA 58

Inspection of these areas/zones fulfills the inspection procedure requirement to inspect a minimum of three samples.

The inspection team evaluated the licensee's fire protection program (FPP) against applicable requirements which included plant Technical Specifications, Operating License Condition 2.C.4, NRC Safety Evaluations, 10 CFR 50.48, and 10 CFR 50, Appendix R. The team also reviewed related documents that included the Updated Final Safety Analysis Report (UFSAR), Section 10.12, the fire protection program (FPP), and the post-fire safe shutdown analysis.

Specific documents reviewed by the team are listed in the attachment.

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

1R05 Fire Protection (IP 71111.05T)

.01 Post-Fire Safe Shutdown from Outside Main Control Room (Alternative Shutdown) and Normal Shutdown

a. Inspection Scope

#### Methodology

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings (P&IDs), electrical drawings, the UFSAR and other supporting documents to verify that hot and cold shutdown could be achieved and maintained for fires that rely on shutdown from outside the control room. This review included

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verification that shutdown from outside the control room could be performed both with and without the availability of offsite power. Plant walkdowns were also performed to verify that the plant configuration was consistent with that described in the safe shutdown and fire hazards analyses. These inspection activities focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor decay heat removal, process monitoring instrumentation, and support systems functions. The team verified that the systems and components credited for use during this shutdown method would remain free from fire damage. The team verified that the transfer of control from the control room to the alternative shutdown location(s) would not be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

Similarly, for fire areas that utilize shutdown from the control room, the team also verified that the shutdown methodology properly identified the components and systems necessary to achieve and maintain safe shutdown conditions.

### Operational Implementation

The team verified that the training program for licensed and non-licensed operators included alternative shutdown capability. The team also verified that personnel required for safe shutdown using the normal or alternative shutdown systems and procedures are trained and available onsite at all times, exclusive of those assigned as fire brigade members.

The team reviewed the adequacy of procedures utilized for post-fire shutdown and performed an independent walk through of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team also verified that the operators could be reasonably expected to perform specific actions within the time required to maintain plant parameters within specified limits. Time critical actions, which were verified, included restoration of alternating current (AC) electrical power, establishing the remote shutdown and local shutdown panels, establishing reactor coolant makeup, and establishing decay heat removal.

Specific procedures reviewed for alternative shutdown, including shutdown from outside the control room included the following:

- ON-114, Actual Fire Reported in the Power Block, Diesel Generator Building, Emergency Pump, Inner Screen or Emergency Cooling Tower Structures, Rev. 15;
- SE-10, Alternative Shut Down, Rev. 14;
- T-325-2, Area 25 Fire Guide, Rev. 1;
- T-325-3, Area 25 Fire Guide, Rev. 1;
- T-333-2, Area 33 Fire Guide, Rev. 1;
- T-333-3, Area 33 Fire Guide, Rev. 2;
- T-350-2, Area 50 Fire Guide, Rev. 4;
- T-350-3, Area 50 Fire Guide, Rev. 4;



- T-358-2, Area 58 Fire Guide, Rev. 3; and
- T-358-3, Area 58 Fire Guide, Rev. 4

The team reviewed manual actions to ensure that they had been properly reviewed and approved and that the actions could be implemented in accordance with plant procedures in the time necessary to support the safe shutdown method for each fire area. The team also reviewed the periodic testing of the alternative shutdown transfer capability and instrumentation and control functions to ensure the tests are adequate to ensure the functionality of the alternative shutdown capability.

b. Findings

No findings of significance were identified.

.02 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the FHA, safe shutdown analyses, and supporting drawings and documentation to verify that safe shutdown capabilities were properly protected. The team ensured that separation requirements of Section III.G of 10 CFR 50, Appendix R were maintained for the credited safe shutdown equipment and their supporting power, control, and instrumentation cables. This review included an assessment of the adequacy of the selected systems for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and associated support system functions.

The team reviewed the licensee's procedures and programs for the control of ignition sources and transient combustibles to assess their effectiveness in preventing fires and in controlling combustible loading within limits established in the FHA. A sample of hot work and transient combustible control permits were also reviewed. The team performed plant walkdowns to verify that protective features were being properly maintained and administrative controls were being implemented.

b. Findings

No findings of significance were identified.

.03 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe material condition and the adequacy of design of fire area boundaries (including walls, fire doors and fire dampers), and electrical raceway fire barriers to ensure they were appropriate for the fire hazards in the area.

The team reviewed installation/repair and qualification records for a sample of penetration seals to ensure the fill material was of the appropriate fire rating and that the installation met the engineering design. The team also reviewed similar records for the fire protection wraps to ensure the material was of an appropriate fire rating and that the installation met the engineering design.

b. Findings

No findings of significance were identified.

.04 Active Fire Protection

a. Inspection Scope

The team reviewed the design, maintenance, testing, and operation of the fire detection and suppression systems in the selected plant fire areas. This included verification that the manual and automatic detection and suppression systems were installed, tested, and maintained in accordance with the National Fire Protection Association (NFPA) code of record, or as NRC approved exemptions, and that each suppression system would control and/or extinguish fires associated with the hazards in the selected areas. A review of the design capability of the suppression agent delivery systems were verified to meet the code requirements for the hazards involved. The team also performed a walkdown of accessible portions of the detection and suppression systems in the selected areas as well as a walkdown of major system support equipment in other areas (e.g. fire pumps, Halon and/or carbon dioxide (CO<sub>2</sub>) storage tanks and supply system) to assess the material condition of the systems and components.

The team reviewed electric and diesel fire pump flow and pressure tests to ensure that the pumps were meeting their design requirements. The team also reviewed the fire main loop flow tests to ensure that the flow distribution circuits were able to meet the design requirements.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed pre-fire plans and smoke removal plans for the selected fire areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation, and to facilitate suppression of a fire that could impact post-fire safe shutdown capability. In addition, the team inspected the fire brigade equipment (including smoke removal equipment) to determine operational readiness for fire fighting.

b. Findings

No findings of significance were identified.

.05 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and plant walkdowns to verify that redundant trains of systems required for hot shutdown are not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified that:

- A fire in one of the selected fire areas would not directly, through production of smoke, heat or hot gases, cause activation of suppression systems that could potentially damage all redundant safe shutdown trains.
- A fire in one of the selected fire areas (or the inadvertent actuation or rupture of a fire suppression system) would not directly cause damage to all redundant trains (e.g. sprinkler caused flooding of other than the locally affected train).
- Adequate drainage is provided in areas protected by water suppression systems.

b. Findings

No findings of significance were identified.

.06 Alternative Shutdown Capability

a. Inspection Scope

Alternative shutdown capability is discussed in section 1R05.01 of this report.

.07 Circuit Analysis

a. Inspection Scope

The team verified that the licensee performed a post-fire safe shutdown analysis for the selected fire areas and the analysis appropriately identified the structures, systems, and components important to achieving and maintaining safe shutdown. Additionally, the team verified that the licensee's analysis ensured that necessary electrical circuits were properly protected and that circuits that could adversely impact safe shutdown due to hot shorts, shorts to ground, or other failures were identified, evaluated, and dispositioned to ensure spurious actuations would not prevent safe shutdown.

The team's review considered fire and cable attributes, potential undesirable consequences and common power supply/bus concerns. Specific items included the credibility of the fire threat, cable insulation attributes, cable failure modes, and actuations resulting in flow diversion or loss of coolant events.

The team also reviewed cable raceway drawings for a sample of components required for post-fire safe shutdown to verify that cables were routed as described in the cable routing matrices.

Cable failure modes were reviewed for the following components:

- MO-2023-015, High Pressure Coolant Injection Turbine Steam Supply Valve;
- 'B' EDG and Associated Bus Feeder Circuit Breaker Control Circuits;
- SV-2-16A-8130, Nitrogen Supply Valve;
- RV-3-02-71C, Safety Relief Valve;
- 4 kV Bus 00A019 Offsite Power; and
- LI-2-02-3-112, Unit 2 Reactor Vessel Water Level Indication (Alternative Shutdown).

The team reviewed circuit breaker coordination studies to ensure equipment needed to conduct post-fire safe shutdown activities would not be impacted due to a lack of coordination. The team confirmed that coordination studies had addressed multiple faults due to fire.

b. Findings

No findings of significance were identified.

.08 Communications

a. Inspection Scope

The team reviewed safe shutdown procedures, the safe shutdown analysis, and associated documents to verify an adequate method of communications would be available to plant operators following a fire. During this review the team considered the effects of ambient noise levels, clarity of reception, reliability, and coverage patterns. The team also inspected the designated emergency storage lockers to verify the availability of portable radios for the fire brigade and for plant operators. The team also verified that communications equipment such as repeaters and transmitters would not be affected by a fire.

b. Findings

No findings of significance were identified.

.09 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of eight-hour emergency lights throughout the selected fire areas to evaluate their adequacy for illuminating access and

egress pathways and any equipment requiring local operation and/or instrumentation monitoring for post-fire safe shutdown. The team also verified that the battery power supplies were rated for at least an eight-hour capacity. Preventive maintenance procedures, the vendor manual, completed surveillance tests, and battery replacement practices were also reviewed to verify that the emergency lighting was being maintained in a manner that would ensure reliable operation.

b. Findings

No findings of significance were identified.

.10 Cold Shutdown Repairs

a. Inspection Scope

The team verified that the licensee had dedicated repair procedures, equipment, and materials to accomplish repairs of components required for cold shutdown which might be damaged by the fire to ensure cold shutdown could be achieved within the time frames specified in their design and licensing bases. The team verified that the repair equipment and components were available and accessible on site.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were in place for out-of-service, degraded or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g. detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing safe shutdown functions or capabilities). The team also verified that the short term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that the licensee was effective in returning the equipment to service in a reasonable period of time.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems

.01 Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team verified that the licensee was identifying fire protection and post-fire safe shutdown issues at an appropriate threshold and entering them into the corrective action program. The team also reviewed a sample of selected issues to verify that the licensee had taken or planned appropriate corrective actions.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The team presented their preliminary inspection results to Mr. W. Maguire, Vice President PBAPS, and other members of the site staff at an exit meeting on April 3, 2009. No proprietary information was included in this inspection report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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**ATTACHMENT**  
**SUPPLEMENTAL INFORMATION**  
**KEY POINTS OF CONTACT**

Licensee Personnel

N. Alexakos	Programs Engineering Manager
R. Bleeker	Electrical Design Engineer
D. Duane	Site Fire Marshal
E. Flick	Engineering Director
C. Howell	Mechanical Engineering Designer
K. Kaufmann	Batteries and Emergency Lighting System Engineer
J. Lyter	Operations Support and Training
S. O'Dwyer	Fire Protection System Engineer
C. Pragman	Corporate Fire Protection Manager
C. Sinopoli	Fire Protection Program Manager
R. Smith	Licensing Engineer
G. Stathes	Plant Manager
M. Taylor	Corporate Fire Protection Engineer

NRC

J. Rogge	Chief, Engineering Branch 3, Division of Reactor Safety
F. Bower	Senior Resident Inspector, PBAPS
M. Brown	Resident Inspector, PBAPS

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

NONE

## **LIST OF DOCUMENTS REVIEWED**

### Fire Protection Licensing Documents

NE-00296, Fire Protection Specification for Post-Fire Safe Shutdown Programs at PBSPS, Rev. 1  
Peach Bottom Atomic Power Station Units 2 & 3 Fire Protection Program, Rev. 14

### Calculations/Engineering Evaluation Reports

00067-0027-TR-01, Appendix C, NEI Application Guide Evaluations for PBAPS Fire Barrier Systems (Thermo-Lag), Rev. 0  
00067-0027-TR-01, Appendix F, PBAPS Fire Barrier System Upgrades Fire Barrier Systems 78H-01 and 78H-02, Rev. 1  
A1428054 Evaluation1, Peach Bottom Cable Spreading Room CO<sub>2</sub> Soak Time  
PE-0006, Multiple High Impedance Fault Due to an Appendix R Fire, Rev. 25  
PE-0246, Ampacity Derating of Cables in Thermo-Lag Enclosed Raceway, Rev. 0  
PF-0019, Fire Protection Hydraulic Calculation Sprinkler Systems for the 4 kV Switchgear Rooms, Rev. 0  
PF-0022, Hydraulic Analysis of Peach Bottom Pre-Action Sprinkler System PR6, Rev. 0  
PM-1028, Hydraulic Demand Analysis of Fire Area 5D, Fire Zone 78B, Rev. 0  
PSD-8, Penetration Seal Deviation, Rev. 0  
PSD-8A, Penetration Seal Deviation, Rev. 0  
PSD-10, Penetration Seal Deviation, Rev. 1  
P-T-10, Fire Safe Shutdown Design Baseline Document, Rev. 9  
PEAF-0002, Startup Source Loading for Fire Safe Shutdown, Rev. 0  
PEAF-0014, Penetration Seal Deviation Evaluations - Appendix R Fire Barriers, Rev. 0  
PEAF-0016-25, Fire Area 25 – Fire Safe Shutdown Analysis, Rev. 0  
PEAF-0016-33, Fire Area 33 – Fire Safe Shutdown Analysis, Rev. 0  
PEAF-0016-50, Fire Area 50 – Fire Safe Shutdown Analysis, Rev. 0  
PEAF-0016-58, Fire Area 58 – Fire Safe Shutdown Analysis, Rev. 0  
Peach Bottom Atomic Power Station Fire Risk Analysis Summary Report, Rev. 4

### Procedures

CC-AA-102, Design Input and Configuration Change Impact Screening, Rev. 17  
CC-AA-209, Fire Protection Program Configuration Change Review, Rev. 1  
CC-AA-211, Fire Protection Program, Rev. 3  
CC-PB-201, Hazard Barrier Control Program, Rev. 0  
MA-AA-716-003, Tool Pouch/ Minor Maintenance, Rev. 3  
MA-AA-716-025, Scaffold Installation, Modification, and Removal Request Process, Rev. 7  
MA-AA-716-234, FIN Team Process, Rev. 2  
MA-AA-796-024, Scaffold Installation, Inspection, and Removal, Rev. 8  
MA-AA-796-024-1001, Scaffolding Criteria for the Mid-Atlantic Stations, Rev. 6  
OP-AA-201-001, Fire Marshal Tours, Rev. 4



## A-3

OP-AA-201-003, Fire Drill Performance, Rev. 10, Rev. 11 (Draft)  
OP-AA-201-004, Fire Prevention for Hot Work, Rev. 8  
OP-AA-201-005, Fire Brigade Qualification, Rev. 7  
OP-AA-201-009, Control of Transient Combustible Material, Rev. 8  
OP-MA-201-007, Fire Protection System Impairment Control, Rev. 6  
ST-M-037-314-2, Visual Inspection of Encapsulated Electrical Raceways, Rev. 5  
TQ-AA-127, Fire Brigade Training Program, Rev. 4

### Operations Procedures

AO 10.12-2, Alternate Shutdown Cooling, Rev. 2  
AO 10.12-3, Alternate Shutdown Cooling, Rev. 2  
SE-2, Cardox Injection into the Cable Spread Room, Rev. 11  
SE-11, Loss of Off-Site Power, Rev. 13  
SO 22.1.A-2, Alternative Shutdown Communications System Operations, Rev. 1  
SO 53.7.G, Off-Site AC Power Restoration Following Loss of Grid, Rev. 14  
SO 53.7.P, Response to a Loss of #3 Off-Site Startup Source, Rev. 15  
T-302-2 Attachment 1, Transfer of Panel 20Y033 to Alternate Power Source, Rev. 6  
T-302-2 Attachment 2, Transfer of 125V Battery Charger 2AD003 to Alternate Power Source, Rev. 6  
T-302-3 Attachment 1, Defeat of 4KV Bus 2SU Feeder Breakers Degraded Voltage Trip Relays For E12, E22, E32, E13, E23, and 33 Buses, Rev. 3  
T-302-3 Attachment 2, Transfer of SU-25 Breaker Auxiliary Equipment to Alternate Power Source, Rev. 3  
T-304-2 Attachment 1, Transfer of Panel 20Y035 to Alternate Power Source, Rev. 3  
T-306N-2 Attachment 2, Bypass of SV-8130B, Rev. 3  
T-313N-3 Attachment 4, Transfer of 125V Battery Charger 3DD003 to Alternate Power Source, Rev. 2  
T-330-3 Attachment 2, Transfer of 125V Battery Charger 3AD003 to Alternate Power Source, Rev. 0  
T-330-3 Attachment 3, Local Manual Operation of MO-3-10-089A, Rev. 0  
T-333-3 Attachment 1, Transfer of Panel 30Y034 to Alternate Power Source, Rev. 2  
T-336-2 Attachment 1, Restoring Power to E12 Bus from E1 Diesel Generators, Rev. 0  
T-343-2 Attachment 1, Transfer of 125V Battery Charger 2DD003 to Alternate Power Source, Rev. 0  
T-350-2 Attachment 1, E12 Offsite Power Restoration, Rev. 5  
T-350-3 Attachment 2, E13 Offsite Power Restoration, Rev. 5

### Completed Tests/Surveillances

RT-O-10-310-2, RHR System Functional From the Alternative Control Panels, Rev. 9, Completed 5/28/07  
RT-O-10-310-3, RHR System Functional From the Alternative Control Panels, Rev. 9, Completed 4/12/08  
RT-O-22C-910-2, Alternative Shutdown Communication Functional Test, Rev. 3, Completed 12/24/07

RT-O-22C-910-3, Alternative Shutdown Communication Functional Test, Rev. 3, Completed 5/5/08

RT-O-023-750-2, HPCI Functional Test from Alternative Control Panels, Rev. 16, Completed 3/23/08

RT-O-023-750-3, HPCI Functional Test from Alternative Control Panels, Rev. 14, Completed 3/24/08

RT-O-023-770-3, Alternative Control Panel Power Supplies and Logic Relays Check, Rev. 4, Completed 12/19/07

RT-O-037-320-2, Monthly Inspection of Unit 2 Turbine Building Fire Extinguishers, Rev. 8, Completed 12/02/08

RT-O-037-332-2, Annual Inspection of Radwaste Area Fire Extinguishers, Rev. 4, Completed 3/30/08

RT-O-037-710-2, Complete Safe Shutdown Emergency Lighting Battery Pack Inspection, Rev. 3, Completed 2/19/08, 5/17/08, 8/15/08, 11/14/08

RT-O-037-719-2, Emergency Lighting Inspection, Rev. 0, Completed 9/20/04, 9/20/06, 9/21/08

RT-O-037-719-3, Emergency Lighting Inspection, Rev. 1, Completed 9/26/05, 9/29/07

RT-O-052-750-2, E2 Diesel Alternative Shutdown Control Functional, Rev. 9, Completed 8/21/08

RT-O-052-760-2, E4 Diesel and "A" ESW Pump Alternative Shutdown Control Functional, Rev. 11, Completed 3/23/08

RT-O-100-505-2, Emergency Operating Procedure Tool Inventory, Rev. 27, Completed 12/4/08

RT-O-100-950-2, Alternative Shutdown Key Accountability Verification, Rev. 4, Completed 12/10/08

RT-O-100-960-2, Main Control Room Key Control, Rev. 21, Completed 7/27/08

SI2F-10-177-XXC2, Calibration Check of Alternative Shutdown Panel RHR Heat Exchanger HPSW Flow Instruments FT/FI 2-10-177, Rev. 2, Completed 6/4/07

SI2F-10-178-XXC2, Calibration Check of Alternative Shutdown Panel RHR B Flow Instruments FT/FI 2-10-178, Rev. 2, Completed 7/3/07

SI2F-23-141-XXC2, Calibration Check of HPCI Flow Instruments (Alternative Shutdown Panel) FT/FI/PS 2-23-141, Rev. 1, Completed 7/14/08

SI2L-2-112-XXC2, Calibration Check of Alternative Shutdown Panel Reactor Vessel Level Instruments LT/LS/LI 2-2-3-112, Rev. 2, Completed 9/20/08

SI2L-7-8456-XXC2, Calibration Check of Alternative Shutdown Panel Suppression Pool Instruments LT/LI/LS 8456, Rev. 4, Completed 6/4/07

SI2L-27A-8459-XXC2, Calibration Check of Alternative Shutdown Panel CST Level Instruments LT/LI/LS 8459, Rev. 3, Completed 8/15/08

SI2P-2-60-B1C2, Calibration Check of Reactor Pressure Instruments PIT/PI 2-2-3-60B for Alternate Shutdown Panel, Rev. 0, Completed 9/20/08

SI2P-010-8458-XXC2, Calibration Check of Drywell Pressure Instruments PT/PI 8458 for Alternative Shutdown Panel, Rev. 2, Completed 7/23/08

SI2P-23-83-XXC2, Calibration Check of HPCI Pump and Turbine Pressure Instrument Loops For PT 2-23-83, PT 2-23-89, PT 2-23-95, PT 2-23-100 and PT 2-23-142, Rev.2, Completed 12/18/07

SI2P-33-7466-XXC2, Calibration Check of Emergency Service Water System Pressure Instruments PT-7466, Pi-8466, and PI-9466 (Alternative Shutdown Panel), Rev. 2, Completed 1/24/07

SI2T-02-320-XXC2, Calibration Check of 'A' SRV Discharge Temperature Instruments TE/TT/TI 2-2-320 (Alternative Shutdown Panel) Rev. 0, Completed 4/23/08

SI2T-7-2442-B1C2, Calibration Check of Suppression Pool Temperature Instrumentation TE/TT/TI 2442B, TI 2445 & TE/TT/TI 8457, Rev. 5, Completed 2/19/07

SI2T-2-8455-XXC2, Calibration Check of Drywell Temperature Instruments TE/TT/TI 8455 for Alternative Shutdown Panel, Rev. 0, Completed 1/25/07

SI3D-10-91-B2C2, Calibration Check of RHR Heat Exchanger Differential Pressure Instruments DPT 3-10-91B and D, DPI 3-10-130B and D, DPS 3-10-92B and D, and DPT/DPI 3-10-179, Rev. 4, Completed 11/25/08

SI3F-10-177-XXC2, Calibration Check of Alternative Shutdown Panel RHR Heat Exchanger HPSW Flow Instruments FT/FI 3-10-177, Rev. 3, Completed 7/3/07

SI3F-23-141-XXC2, Calibration Check of HPCI Flow Instruments (Alternative Shutdown Panel) FT/FI/FS 3-23-141, Rev. 1, Completed 8/7/07

SI3L-2-112-XXC2, Calibration Check of Alternative Shutdown Panel Reactor Vessel Level Instruments LT/LS/LI 3-2-3-112, Rev. 1, Completed 9/30/07

SI3L-7-9456-XXC2, Calibration Check of Alternative Shutdown Panel Suppression Pool Instruments LT/LI/LS 9456, Rev. 5, Completed 6/18/08

SI3L-27A-9459-XXC2, Calibration Check of Alternative Shutdown Panel CST Level Instruments LT/LI/LS 9459, Rev. 5, Completed 11/20/07

SI3M-23-GOV-XXC2, Calibration Check of HPCI Turbine Governor (EG-M, RGSC), Rev. 4, Completed 10/14/07

SI3P-2-60-B1C2, Calibration Check of Reactor Pressure Instruments PIT/PI 3-2-3-60B for Alternate Shutdown Panel, Rev. 0, Completed 9/30/07

SI3P-10-9458-XXC2, Calibration Check of Drywell Pressure Instruments PT/PI 9458 for Alternative Shutdown Panel, Rev. 2, Completed 7/24/08

SI3P-23-83-XXC2, Calibration Check of HPCI Pump and Turbine Pressure Instrument Loops For PT 3-23-83, PT 3-23-89, PT 3-23-95, PT 3-23-100 and PT 3-23-142, Rev.1, Completed 1/5/07

SI3T-2-320-XXC2, Calibration Check of 'A' SRV Discharge Temperature Instruments TE/TT/TI 3-2-320 (Alternative Shutdown Panel) Rev. 0, Completed 8/27/07

SI3T-2-9455-XXC2, Calibration Check of Drywell Temperature Instruments TE/TT/TI 9455 for Alternative Shutdown Panel, Rev. 0, Completed 7/17/08

SI3T-7-3442-B1C2, Calibration Check of Suppression Pool Temperature Instrumentation TE/TT/TI 3442B, TI 3445 & TE/TT/TI 9457, Rev. 4, Completed 3/26/07

ST-I-016-220-2, Main Steam Relief Valve Actuator and Backup N<sub>2</sub> Supply Valve Logic Test, Rev. 3, Completed 3/28/07

ST-I-016-220-3, Main Steam Relief Valve Actuator and Backup N<sub>2</sub> Supply Valve Logic Test, Rev. 1, Completed 6/5/08

ST-I-037-221-2, 13.8kV Switchgear Area Smoke Detectors Functional Test, Rev. 5, Completed 7/31/08

ST-I-037-223-3, Unit 3 4kV Switchgear and Battery Room Smoke Detectors Functional Test, Rev. 7, Completed 11/07/07

ST-I-037-292-3, MG Set Room 135' Smoke Detectors Functional Test, Rev. 8, Completed 10/23/08

ST-I-37A-310-2, Cable Spreading and Computer Room Cardox Simulated Actuation and Air Flow Test, Rev. 10, Completed 5/11/08

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ST-M-037-310-2, Visual Walk Around Inspection of Fire Barriers, Rev. 6, Completed 12/29/08  
ST-M-037-311-2, Detailed Visual Inspection of Penetration Seals and Difficult to View Fire Barriers, Rev. 3, Completed 6/11/02, 3/5/08  
ST-M-037-311-3, Detailed Visual Inspection of Penetration Seals and Difficult to View Fire Barriers, Rev. 4, Completed 04/27/01, 8/21/07  
ST-M-037-314-2, Visual Inspection of Encapsulated Electrical Raceways, Rev. 5, Completed 6/6/08  
ST-M-037-350-2, Safety Related Door Inspection, Rev. 2, Completed 10/30/08  
ST-M-037-399-2, Fire Damper Inspection, Rev. 8, Completed 1/16/08, 3/28/08  
ST-O-037-288-2, Cable Spreading Room Smoke Detectors Functional Test, Rev. 8, Completed 05/10/08  
ST-O-037-289-2, Cable Spreading Room Smoke Detectors Functional Test, Rev. 9, Completed 05/10/08  
ST-O-37A-340-2, Cardox System Weekly Check, Rev. 6, Completed 02/27/09, 03/06/09  
ST-O-37B-313-2, Hose Station Block Valve Operability and Blockage Check, Rev. 4, Completed 9/29/08  
ST-O-37B-322-2, 13kV Switchgear Area Sprinkler System Actuation, Rev. 4, Completed 4/01/08  
ST-O-37B-323-3, Unit 3 Battery Rooms and 4kV Switchgear Rooms Sprinkler System Actuation, Rev. 5, Completed 2/28/08  
ST-O-37B-324-3, Recirc Pump MG Set Room Sprinkler System Actuation, Rev. 8, Completed 7/26/08  
ST-O-37B-350-2, Unit 2 Turbine Building Fire Hose and Gasket Inspection, Rev. 1, Completed 5/20/08  
ST-O-37B-350-3, Unit 3 Turbine Building Fire Hose and Gasket Inspection, Rev. 1, Completed 5/24/07  
ST-O-37B-352-2, Radwaste Area Fire Hose and Gasket Inspection, Rev. 2, Completed 5/24/07  
ST-O-37B-381-2, Underground Fire Main Flow Test, Rev. 7, Completed 6/26/01, 11/8/04, 5/20/08  
ST-O-37C-330-2, Motor Driven Fire Pump Flow Rate Test, Rev. 9, Completed 1/30/08  
ST-O-37D-340-2, Diesel Driven Fire Pump Flow Rate Test, Rev. 14, Completed 8/7/08

### Quality Assurance (QA) Audits and Self Assessments

NOSA-PEA-09-14, Fire Protection Program Audit, February 23, 2009  
Fire Protection Check-In Assessment, February 26, 2009  
Fire Protection & App R Post Fire Safe Shutdown Self Assessment, January 9, 2009

### Drawings and Wiring Diagrams

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737-D-VC-71, Thermo-Lag Upgrade Fire Barrier 78H-01, Sheets 1-23, Rev. 1  
737-D-VC-72, Thermo-Lag Upgrade Fire Barrier 78H-02, Sheets 1-29, Rev. 1  
6280-A-168, Fire Detection and Suppression, Sheet 1, Rev. 13  
6280-A-486, Barrier Plans Elevation 135', Sheet 1, Rev. 6  
6280-E-540-123, Panel 20C004BX and 20C003-2X HPCI and RHR Alternate Control Enhancement Arrangement, Rev. 3

6280-E-540-125, Panel 30C004BX and 30C003-2X HPCI and RHR Alternate Control Enhancement Arrangement, Rev. 2

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6280-M-422, Heating, Ventilating, and Air Conditioning, Sheet 1, Rev. 19

6280-M-428, Heating, Ventilating, and Air Conditioning, Sheet 1, Rev. 14

6280-M-3010, Typical 3-Hour Fire Barrier Penetration, Sheet 56, Rev. 1

6280-M-4885, Fire Protection System, Sheet 3, Rev. 0

6280-M-4886, Fire Protection System, Sheet 7, Rev. 0

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6280-PS-265, Penetration Seal Locations, Sheet 1, Rev. 1

6280-PS-267, Penetration Seal Locations, Sheet 1, Rev. 1

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E-5-7, Standby Diesel Engine Generators, Rev. 50

E-7, Single Line Meter and Relay Diagram 13.8 KV Aux Power System Unit 3, Rev. 16

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E-540-181, Panel 20C822 Alternative Shutdown Enhancement Arrangement, Rev. 1

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E-540-177, Panel 2BC807 Alternative Shutdown Enhancement Arrangement, Rev. 1  
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 E-540-175, Panel 3AC807 Alternative Shutdown Enhancement Arrangement, Rev. 1  
 E-540-179, Panel 3BC807 Alternative Shutdown Enhancement Arrangement, Rev. 1  
 E-540-183, Panel 30C822 Alternative Shutdown Enhancement Arrangement, Rev. 1  
 E-540-187, Panel 30C823 Alternative Shutdown Enhancement Arrangement, Rev. 1  
 E-1600, Single Line Meter and Relay Diagram 1T4 and 2T4 Turbine Area L.C. and 1T4-T-B, 2T4-T-B, 2T4-T-C and 2T4-T-C Turbine Area MCC 440V, Unit 2, Rev. 30  
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M-1-S-52, All Sheets, Electrical Schematic Automatic Blowdown System, Rev. 42  
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M-351, Nuclear Boiler, Rev. 76 M-352, Nuclear Boiler Vessel Instrumentation, Rev. 60  
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M-362, Core Spray Cooling System, Rev. 61  
M-365, High Pressure Coolant Injection System, Rev. 62  
M-366, HPCI Pump Turbine Details, Rev. 56

### Vendor Manuals

563-A-VC-1, Chemetronics Micro 1-EV Control Panel, Rev. 1  
A-124-VC-1, Air Balance 3 Hour Static Rated Fire Damper, Rev. 0  
M-46-30, Cardox Fire Extinguishing Systems, Rev. 9  
M-713-6, Chemetron Fire Systems Class AAA Control Panel, Rev. 1  
Sentry Battery Corp, High Density PM Type Sealed Lead-Acid Battery

### Pre-Fire Plans

PF-12C, Rev. 4	PF-117, Rev. 5
PF-78C, Rev. 4	PF-127, Rev. 5
PF-78H, Rev. 4	

Operator Safe Shutdown Training

PLOT-5037, Fire Protection System - Initial Licensed Operator Training, Rev. 88  
 PLOT-5037X, Remote Shutdown Panel & Fire Safe Shutdown/Alternative Shutdown Panel  
 Controls - Initial Licensed Operator Training, Rev. 0  
 PLORT-08-01D, Fire Protection System Requalification Training, Rev. 0  
 PLORT-1565, PBAPS Transient Response Implementation Procedures (T-300 Series), Rev. 1  
 JPM PLOR-047C, Take Action for Control Room Evacuation  
 (SE-10 Attachment 6), Rev. 11  
 JPM PLOR-057P, Plant Shutdown from Alternative Shutdown Panel – HPCI Operations, Rev. 7  
 JPM PLOR-111C, Backfeeding Safe Shutdown Loads with E1 & E3 Diesel Generators  
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 JPM LOR-112C, Backfeeding Safe Shutdown Loads Using E1 Diesel Generator, Rev. 2  
 JPM PLOR-113P, Diesel Generator Lockout from the Main Control Room, Rev. 2

Hot Work Permits

A16809180001	C02236300102	C02248680101	R08554550701
C02214850101	C02239782401	C02262671702	R10142471001
C02224600501	C02240890501	R08487780101	R10284400601
C02235520101	C02241180101	R08487781101	

Miscellaneous Documents

Apparent Cause Report, CR# 851539, Fire Protection Program Areas Requiring Management  
 Attention  
 Cable Spread Room CO<sub>2</sub> Concentration Test Results  
 Component Technical Data, FD-3-40M-33442, TB3-135-267-4016, TBC-150-302-1-4033, TBC-  
 150-302-2-4001  
 E-light Performance Data 2007-2008  
 Evaluation of Voluntary Entry into TRM Action Statement for Water Fire Protection System to  
 Support Fire Protection Valve Replacement, 05/20/08  
 Exelon Site-Specific NFPA Codes Matrix, 01/09  
 Fire Brigade Drill Tracking, 2009  
 Fire Brigade Qualification Data, 3/19/09  
 Fire Detection Assessment, Attachment B, Page 3  
 Fire Drill Reports 2006, 2007, 2008, Q1 2009  
 Fire Marshal Tour Reports 01/09, 02/09  
 Fire Protection Impairment Log, 03/03/09  
 Fire Protection System Health Report, 3Q2008 and 4Q2008  
 IEEE 242-1986, IEEE Recommended Practice for Protection and Coordination of Industrial and  
 Commercial Power Systems  
 MR Basis Document, SSC #37, Fire Systems, Fire Safe Shutdown Emergency Lighting Units  
 MR Basis Document, SSC #57E, Emergency DC Lighting  
 Peach Bottom Atomic Power Station INDMS Cable Location Report  
 P-S-51, Design Basis Document for Fire Protection System, Rev. 10



Presentation Slides, Update on EDG and CSR Cardox System Modifications  
Review of Licensing Basis for Pre-Action Sprinkler System in the Unit 3 MG Set Room  
TRM Section 3.14

Impairment Permits

A16697320001	C02262280201	R09723370201
C02157560801	C02269210501	R10504150901

Engineering Change Requests

98-01697	98-02056	99-00332
98-01931	98-02894	03-00424

Condition Reports

118812	505320	634588	759361	847207	894520*
158429	520130	641640	762831	863449	895523*
271369	521313	695084	787565	868947	898861*
442667	569477	705436	795075	879287	899687*
445427	594838	718845	804761	880090	902248*
451634	629300	730091	820545	880177	902274*
485289	634497	732199	834692	893919*	

\* CRs written as a result of this inspection.

Work Orders

A1188788	A1642495	A1693380	C0224289
A1604854	A1650737	A1698571	R0792739
A1616365	A1674500	A1698946	R1045412
A1618376	A1680717	C0217498	R1059163
A1637363	A1689866	C0217499	R1077339

**LIST OF ACRONYMS**

ADAMS	Agencywide Documents Access and Management System
AC	Alternating Current
CFR	Code of Federal Regulations
CO <sub>2</sub>	Carbon Dioxide
CR	Condition Report
DRS	Division of Reactor Safety
FA	Fire Area
FHA	Fire Hazards Analysis
FPP	Fire Protection Program
FZ	Fire Zone
IP	Inspection Procedure
IPE	Individual Plant Examination
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
JPM	Job Performance Measure
MR	Maintenance Rule
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory commission
PAR	Publicly Available Records
PBAPS	Peach Bottom Atomic Power Station
P&ID	Piping and Instrumentation Drawing
QA	Quality Assurance
SCBA	Self-Contained Breathing Apparatus
SER	Safety Evaluation Report