



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

May 9, 2018

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

**SUBJECT: PEACH BOTTOM ATOMIC POWER STATION UNITS 2 AND 3 – TRIENNIAL  
FIRE PROTECTION INSPECTION REPORT 05000277/2018010 AND  
05000278/2018010**

Dear Mr. Hanson:

On April 20, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Peach Bottom Atomic Power Station (Peach Bottom), Units 2 and 3. The NRC inspectors discussed the results of this inspection with Mr. Pat Navin, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. One of these findings involved a violation of NRC requirements. Further, inspectors documented a licensee-identified violation which was determined to be of very low safety significance in this report. The NRC is treating these violations as non-cited violations (NCVs), consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Peach Bottom. In addition, if you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC, 20555-0001; with copies to the Regional Administrator, Region I, and the NRC Resident Inspector at Peach Bottom.

B. Hanson

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Sincerely,

/RA/

Glenn T. Dentel, Chief  
Engineering Branch 2  
Division of Reactor Safety

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

Enclosure:  
Inspection Report 05000277/2018010  
and 05000278/2018010

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SUBJECT: PEACH BOTTOM ATOMIC POWER STATION UNITS 2 AND 3 – TRIENNIAL  
 FIRE PROTECTION INSPECTION REPORT 05000277/2018010 AND  
 05000278/2018010 DATED MAY 9, 2018

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Numbers: 50-277 and 50-278

License Numbers: DPR-44 and DPR-56

Report Numbers: 05000277/2018010 and 05000278/2018010

Enterprise Identifier: I-2018-010-0059

Licensee: Exelon Generation Company, LLC

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

Location: Delta, PA

Inspection Dates: April 2 – 20, 2018

Inspectors: C. Bickett, Senior Reactor Inspector (Team Lead)  
E. DiPaolo, Senior Reactor Inspector  
P. Ott, Operations Engineer  
J. Patel, Reactor Inspector  
C. Cahill, Senior Reactor Analyst

Approved By: G. Dentel, Chief  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring Exelon's performance at Peach Bottom Atomic Power Station, Units 2 and 3 by conducting the triennial fire protection team inspection in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. NRC and self-revealed findings, violations, and additional items are summarized in the tables below. A licensee-identified non-cited violation (NCV) is documented in report section 71111.05T.

### List of Findings and Violations

Failure to Identify Time-Critical Action			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000277, 05000278/2018010-01 Closed	P.2 – Problem Identification and Resolution, Evaluation	71111.05T
The inspectors identified a green finding because Exelon did not identify, validate, and incorporate a time-critical action referenced in calculation PF-0016-025, "Fire Area 025 – Fire Safe Shutdown Analysis," in accordance with Sections 4.2 and 4.3 of OP-AA-102-106, "Operator Response Time Program." Specifically, Exelon did not identify a 10-minute time-critical action to take the "transfer/isolation" switch for the high pressure coolant injection (HPCI) inboard steam isolation valve (MO-2(3)-23-015), to the "EMERG" position.			

Failure to Develop and Maintain Mitigating Strategy			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000277, 05000278/2018010-02 Closed	None	71111.05T
The inspectors identified a Green non-cited violation of 10 CFR 50.54(hh)(2), "Conditions of Licenses," and Peach Bottom Unit 2 and Unit 3 Renewed Facility Operating License Condition 2.C.(11), "Mitigation Strategy License Condition," because Exelon did not develop and maintain strategies for addressing large fires and explosions that include operations to mitigate fuel damage. Specifically, Exelon did not adequately develop and maintain procedures to manually depressurize the reactor using the automatic depressurization system safety relief valves in the event of a challenge to the reactor due to a postulated large fire and/or explosion.			

## INSPECTION SCOPE

This inspection was conducted using the appropriate portions of the inspection procedure (IP) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at

<http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>.

Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program – Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess Exelon performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## REACTOR SAFETY

### 71111.05T – Fire Protection (Triennial)

The inspectors evaluated the following from April 2 – 20, 2018:

#### Fire Protection Inspection Requirements (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas and/or fire zones:

- (1) Fire Area 25: Cable Spreading Room (Zone 78H) and Fan Room (Zone 108A)
- (2) Fire Area 36: Unit 2 E42 Emergency Switchgear Room (Zone 123)
- (3) Fire Area 2: Unit 3 Reactor Building Closed Cooling Water Room (Zone 12B)
- (4) Fire Area 13N: Unit 3 Reactor Building Operating Area (Zone 13J)

In performing this review, the inspectors performed an analysis of the following electrical circuits:

- (1) MO-4487, Reactor Core Isolation Cooling System Turbine Trip and Throttle Valve
- (2) 2-152-1704, E3 Emergency Diesel Generator Breaker to E32 Emergency Switchgear (20A17)
- (3) LT-8456 and LI-8456, Suppression Pool Level Transmitter and Indicator
- (4) MO3-23-017, High Pressure Coolant Injection (HPCI) System Pump Suction from Condensate Storage Tank
- (5) MO3-10-013A, Residual Heat Removal System Suction Isolation Valve From Suppression Pool
- (6) MO3-10-89B, Residual Heat Removal System Heat Exchanger High Pressure Service Water Discharge Valve

#### B.5.b Inspection Activities (1 Sample)

The inspectors evaluated feasibility of the following B.5.b Mitigating Strategy:

Extensive Damage Mitigation Guideline (EDMG) 2.0, Attachment 15, "Alternate 125 VDC Power Supply for Safety Relief Valve Operation," Revision 8

## INSPECTION RESULTS

Failure to Identify Time-Critical Action			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000277, 05000278/2018010-01 Closed	P.2 – Problem Identification and Resolution, Evaluation	71111.05T
<p>The inspectors identified a green finding because Exelon did not identify, validate, and incorporate a time-critical action referenced in calculation PF-0016-025, “Fire Area 025 – Fire Safe Shutdown Analysis,” in accordance with Sections 4.2 and 4.3 of OP-AA-102-106, “Operator Response Time Program.” Specifically, Exelon did not identify a 10-minute time-critical action to take the “transfer/isolation” switch for the high pressure coolant injection (HPCI) inboard steam isolation valve (MO-2(3)-23-015), to the “EMERG” position.</p>			
<p><u>Description:</u> Operators use procedure SE-10, “Alternative Shutdown,” to control the plant from the alternate shutdown panels in the event of a fire that results in evacuation of the main control room. SE-10, Attachment 6, Part A, directs the transfer/isolation of safety relief valve control and the setup and control of necessary 4KV and emergency diesel generator equipment at the alternate shutdown panels. This is in direct support of AC power restoration for MO-2(3)-23-015, and subsequent opening of the valve, as HPCI is the credited water makeup source for this scenario. These actions are required if the valve has shut due to a fire-induced spurious operation, and offsite power is not available.</p>			
<p>Issue report (IR) 2661579, dated 2016, documented that the station could not complete SE-10, Attachment 6, Part A, in 28 minutes, as required by fire safe shutdown calculation PF-0016-025. IR 2661579 identified that worst case, the actions took 93 minutes. Removing certain contingencies in the procedure, Exelon was able to complete the actions in 54 minutes. The inspectors noted that Exelon did not implement any compensatory measures to address this issue, and planned to revise the procedure to resequence actions such that they could be completed in the required time. On April 6, 2018, the inspectors questioned Exelon since they did not demonstrate that the required manual operator action time of 28 minutes could be met, and the procedure revision had yet to be issued. In response, Exelon performed a walkdown of the existing procedure and determined that the actions up to including energization of the E-22 and E-23 buses via the E-2 emergency diesel generator could be completed in 26 minutes and 28 seconds. Exelon then completed a temporary procedure change to ensure the actions to restore power with the E-2 emergency diesel generator were moved to earlier in the procedure attachment for expediency, and a second operator was added as a requirement to implement the actions. The inspectors noted that one of the reasons that the station could not meet the 28-minute time was likely due a procedure revision that added corrective actions to swap fuses in response to a previous unrelated issue.</p>			
<p>During this inspection, Exelon issued a revision to calculation PF-0016-025, which updated the manual operator action list and the corresponding required action times per the most recent thermal hydraulic analysis, which included the measurement uncertainty recapture update implemented in January 2018. The revised time to complete the actions required to provide power to MO-2(3)-23-015 was lowered from 28 to 24 minutes. The inspectors questioned whether the station would have been able to meet this revised time prior to the temporary procedure change. Exelon stated in the revised calculation, “operator action is provided to re-open HPCI Inboard Isolation Valve MO-2(3)-23-015 should it spuriously close prior to transfer of control from the main control room.</p>			

This prompt action is treated as a defense-in-depth action, as a specific sequence of failures must occur (spurious valve closure prior to transfer and subsequent loss of the primary source of power before transfer of control), and is not required for Appendix R compliance.” Exelon referenced a docketed August 16, 1984 letter to the NRC as justification for this conclusion.

The inspectors reviewed this licensing basis letter and noted that the justification was based on the assumption that within 10 minutes, operators would man the HPCI alternate control station and isolate the control circuit for this valve. This would leave a maximum of 10 minutes for the specific sequence of events to occur that would result in spurious closure of MO-2(3)-23-105, thus making this scenario unlikely. The inspectors noted Exelon did not thoroughly evaluate this letter to ensure that any conditions and/or assumptions were translated into the fire safe shutdown calculations and other station processes. As such, Exelon did not identify the 10-minute action as a prompt action. The inspectors determined that operators will likely be able to meet this 10-minute action with the current procedure. However, there are no administrative controls in place to ensure that future changes to the procedure will not challenge this time. Additionally, because the 10-minute action requirement is not documented in the operator time response program, the Operations Training department does not know to incorporate the requirement into training, and the operators do not recognize the need to expeditiously complete the procedure steps.

The inspectors also noted other weaknesses in the station’s evaluation and resolution of this issue. The inspectors concluded that Exelon incorrectly stated in IR 2661579 that “these actions are only necessary in the event of multiple spurious operations and as such, are not required to be satisfied to maintain plant operations within design or licensing bases.” This is incorrect because this is a single spurious operation scenario, which is required to be mitigated per 10 CFR 50 Appendix R requirements. Also of note, even though this issue was documented in their 2017 self-assessment for this inspection, Exelon still had not issued the revised procedure, nor implemented any compensatory actions prior to this inspection.

**Corrective Actions:** The station’s planned corrective actions include updating Peach Bottom’s time-critical operator action program to include the 10-minute action to take the “transfer/isolation” switch for MO-2(3)-23-015 to the “EMERG” position.

**Corrective Action Reference:** IR 4127608

**Performance Assessment:**

**Performance Deficiency:** The failure to identify, validate, and incorporate a time-critical action referenced in calculation PF-0016-025, in accordance with Sections 4.2 and 4.3 of OP-AA-102-106, “Operator Response Time Program” is a performance deficiency.

**Screening:** The performance deficiency was more than minor because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. The 10-minute requirement is not documented in the operator time response program; therefore, training has not been conducted, operators did not recognize the time-critical action, and future changes to the SE-10 procedure could result in challenging the 10-minute requirement.

**Significance:** The inspectors assessed the significance of the finding using IMC 0609, Appendix F, “Fire Protection SDP.” This issue screened to very low safety significance (Green) in Phase 1, Step 1.3 as the procedure as currently written does not impact the ability to achieve safe shutdown.



**Cross-cutting Aspect:** This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because although Exelon included a reference to the 1984 letter in the latest revision to the fire safe shutdown calculation, they did not thoroughly evaluate the letter to ensure that any conditions and/or assumptions were translated into the fire safe shutdown calculations and other station processes [P.2].

**Enforcement:** Inspectors did not identify a violation of regulatory requirements associated with this finding.

#### Failure to Develop and Maintain Mitigating Strategy

Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000277, 05000278/2018010-02 Closed	None	71111.05T

The inspectors identified a Green non-cited violation of 10 CFR 50.54(hh)(2), "Conditions of Licenses," and Peach Bottom Unit 2 and Unit 3 Renewed Facility Operating License Condition 2.C.(11), "Mitigation Strategy License Condition," because Exelon did not develop and maintain strategies for addressing large fires and explosions that include operations to mitigate fuel damage. Specifically, Exelon did not adequately develop and maintain procedures to manually depressurize the reactor using the automatic depressurization system safety relief valves in the event of a challenge to the reactor due to a postulated large fire and/or explosion.

**Description:** Exelon procedure EDMG 2.0, "Peach Bottom Operational Contingency Guidelines," provides the methods for implementation of strategies for addressing large fires and explosions that include operations to mitigate fuel damage. Exelon procedure EDMG 2.0, Attachment 15, "Alternate 125 VDC Power Supply for Safety Relief Valve Operation," describes the station's strategy for supplying alternate power to the five automatic depressurization system safety relief valves. Figure 1 of this attachment describes which terminal points are to be used to accomplish this task.

Since April 2008, Figure 1 has listed the incorrect terminal points for the 'G' and 'K' safety relief valves on both Unit 2 and Unit 3. Therefore, when an individual reached the step in the procedure to connect the jumpers for the 'G' and 'K' safety relief valves, they would be directed to terminal locations that did not exist. As a result, step 19 of the procedure, "Verify all five safety relief valve jumpers are connected at both ends, THEN continue," would not be able to be completed, and operators would likely not continue on with subsequent steps in the procedure. Because of this issue, inspectors determined that the procedure was not adequate to ensure that the strategy could be completed.

**Corrective Actions:** Exelon documented this issue in the corrective action program and implemented a revision to the procedure to correct the error.

**Corrective Action Reference:** IR 4125405

#### Performance Assessment:

**Performance Deficiency:** Exelon's failure to adequately develop and maintain procedures to manually depressurize the reactor using the automatic depressurization system safety relief valves, as required by 10 CFR 50.54(hh)(2) and Peach Bottom Unit 2 and Unit 3 Renewed Facility Operating License Condition 2.C.(11), was a performance deficiency.

Screening: This performance deficiency was more than minor because it is associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to assure the availability, reliability, and capability of the automatic depressurization system safety relief valves to respond to an event. Specifically, failure to provide an adequate procedure to provide alternate power to the safety relief valves would impact the station's ability to open those valves to manually depressurize the reactor during an event.

Significance: The inspectors assessed the significance of this issue using IMC 0609, Appendix L, "B.5.b. Significance Determination Process," Table 2. The inspectors determined that the finding did not meet the criteria listed in Table 2 for greater than green significance, and therefore screened this finding as Green.

Cross-cutting Aspect: No cross-cutting aspect was assigned to this finding because the inspectors determined that the finding did not reflect current plant performance.

Enforcement:

Violation: 10 CFR 50.54(hh)(2) requires, in part, that each licensee shall develop and implement guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or fire. Peach Bottom Unit 2 and Unit 3 Renewed Facility Operating License Condition 2.C.(11) requires that Exelon develop and maintain strategies for addressing large fires and explosions that include operations to mitigate fuel damage. Exelon procedure EDMG 2.0, "Peach Bottom Operational Contingency Guidelines," provides the methods for implementation of these strategies. EDMG 2.0, Attachment 15, "Alternate 125VDC Power Supply for Safety Relief Valve Operation," is the procedure for providing alternate power to the automatic depressurization system safety relief valves.

Contrary to the above, since April 2008, Exelon did not develop and maintain strategies for addressing large fires and explosions that include operations to mitigate fuel damage. Specifically, EDMG 2.0, Attachment 15, was inadequate to ensure that the station would be able to open the automatic depressurization system relief valves from the containment penetrations via an alternate power supply to allow manual depressurization in the event of a challenge to the reactor due to a postulated large fire and/or explosion.

Disposition: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Licensee Identified Non-Cited Violation	71111.05T
This violation of very low safety significance was identified by Exelon and has been entered into Exelon's corrective action program and is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: Peach Bottom Unit 2 and Unit 3 Renewed Facility Operating License Condition 2.C.(4) requires, in part, Exelon to implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report. "Fire Protection Program, Peach Bottom Atomic Power Station, Units 2 and 3," is incorporated by reference into the Updated Final Safety Analysis Report, as discussed in Section 10.12, "Fire Protection Program." Fire Protection Program Chapter 5.1, "Methodology," assumes that two or more circuit failures resulting in spurious operation of two or more valves in series at a high/low pressure interface may occur due to a postulated fire in any given area. Fire Protection Program Chapter 6.2, "Analysis of High/Low Pressure Interfaces," requires Exelon to address the situations for which the isolation valves at a given interface point consists of two electrically controlled valves in series and where the potential may exist for a single fire to cause damage to cables associated with both valves.	

Contrary to above, as of March 14, 2018, Exelon identified they failed to evaluate two motor-operated valves in series, MO-2-06-2663 and MO-2-06-038B for Unit 2, and MO-3-06-3663 and MO-3-06-038B for Unit 3, where the potential may exist for a single fire to cause damage to cables associated with both valves. Specifically, a postulated fire scenario could cause spurious opening of the valves, which may potentially result in a fire-induced loss of coolant accident through the high/low pressure system interface. Exelon's evaluation identified the affected valves' cables are routed through Fire Area 6N for the Unit 2 valves, and Fire Area 13N for the Unit 3 valves, and thus, a possibility exists for a single fire to cause damage to cables associated with both valves. This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.

Significance/Severity: The inspectors performed a Phase 2 Significance Determination Process screening for this issue, in accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process." This finding affected the post-fire safe shutdown category because of spurious operations of safe shutdown components. Based on a walkdown of Fire Areas 6N and 13N, the inspectors did not identify any credible fire ignition source scenarios that could affect both Unit 2 motor-operated valves or both Unit 3 motor operated valves. Therefore, based upon task number 2.3.5, the inspectors determined that this finding screened to very low safety significance (Green).

Corrective Action References: IR 04115309, EC 623585, EC 623586

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors verified no proprietary information was retained or documented in this report.

On April 20, 2018, the inspector presented the triennial fire protection team inspection results to Mr. Pat Navin, Site Vice President, and other members of the Exelon staff.

**DOCUMENTS REVIEWED**71111.05TFire Protection Licensing and Design Basis Documents

Letter from PECO (V.S. Boyer) to USNRC (Darrell Eisenhut), Peach Bottom Atomic Power Station Alternate Shutdown, dated 8/16/84

NE-00296, Post-Fire Safe Shutdown Program Requirements at PBAPS, Revision 4

NRC Exemption from the Requirements of 10 CFR Part 50, Appendix R, dated 10/3/91

NRC Exemption from the Requirements of 10 CFR Part 50, Appendix R, dated 3/13/85

NRC Safety Evaluation Report, Fire Protection Program, dated 5/23/79

NRC Safety Evaluation Report, Fire Protection Program, Supplement 1, dated 8/14/80

NRC Safety Evaluation Report, Fire Protection Program, Supplement 2, dated 9/15/80

NRC Safety Evaluation Report, Fire Protection Program, Supplement 3, dated 10/10/80

NRC Safety Evaluation Report, Fire Protection Program, Supplement 4, dated 11/24/80

Peach Bottom Atomic Power Station Fire Protection Program, Revision 17

Peach Bottom Atomic Power Station, Units 2 and 3 – Issuance of Amendment RE: Fire Protection Program Changes, dated 6/24/05

P-T-10, Fire Safe Shutdown, Revision 13

Safety Evaluation by the Office of Nuclear Reactor Regulation Related to Order No. EA-02-026, Exelon Generation Company, LLC, Peach Bottom Atomic Power Station, Units 2 and 3, dated 8/9/07

Calculations, Analysis, and Engineering Evaluations

10 CFR 50.59 Safety Review for Modification P00680, Fire Detection and Suppression System for Switchgear and Battery Rooms, Revision 1

EC 623620, Alternate Compensatory Measure for IR 4115309 Hi/Lo Interface Not Evaluated for Appendix R, dated 3/22/18

Fire Endurance Test on Silicone Foam Penetration Seal in a Masonry Floor, Design FC-270, dated 12/14/78

PEAF-EPU-001, T0611 Appendix R Fire Protection, Revision 5

PEAM-MUR-0611, Appendix R Fire Protection T0611, Revision 0

PF-0007, Combustible Loading Analysis, Revision 0

PF-0007, Combustible Loading Analysis, Revision 4

PF-0016-002, Fire Area 002 – Fire Safe Shutdown Analysis, Revision 1

PF-0016-013N, Fire Area 013N – Fire Safe Shutdown Analysis, Revision 1

PF-0016-025, Fire Area 025 – Fire Safe Shutdown Analysis, Revision 000V

PF-0016-025, Fire Area 025 – Fire Safe Shutdown Analysis, Revision 1

PF-0016-025, Fire Area 025 – Fire Safe Shutdown Analysis, Revision 2

PF-0016-036, Fire Area 036 – Fire Safe Shutdown Analysis, Revision 1

PF-0019, Fire Protection Hydraulic Calculation – Units 2 and 3 Sprinkler System for the 4 Kilo-Volt Switchgear Rooms, Battery Rooms, and Access Corridor, Revision 0

PF-0020, Fire Protection Hydraulic Calculation – Units 2 and 3 Main Fan Room (#381) Hydraulic Calculation, Revision 0

T-061-VC-1, Assessment of the Fire Protection Sprinkler and Hose Station Supply Piping, Revision 0

Drawings and Wiring Diagrams

6280-E-2890, Emergency DC Lighting Layout Alternate Control Stations, Revision 1  
6280-M-318, Piping and Instrumentation Drawing, Fire Protection System, Revision 70  
6280-M-359, Sheet 1, Piping and Instrumentation Drawing Reactor Core Isolation Cooling System, Revision 50  
6280-M-359, Sheet 2, Piping and Instrumentation Drawing Reactor Core Isolation Cooling System, Revision 48  
6280-NE-75-1, Penetration Seal Details NE-378545, Revision 1  
6280-NE-75-1, Sheet 19, Pipe or Conduit through 3-Hour Rated Fire Barrier, Revision 1  
737-D-VC-72, Thermo-Lag Upgrade Fire Barrier 78H-02, Revision 0  
A-484, Barrier Plans, Elevation 91' 6", Revision 8  
A-485, Barrier Plans, Elevation 116' 0" Sheets 1 and 2, Revisions 8 and 4  
A-486, Barrier Plans, Elevation 135' 0" Sheets 1 and 2, Revisions 11 and 1  
A-487, Barrier Plans, Elevation 165' 0" Sheets 1 and 2, Revisions 13 and 1  
C-49, Fire System Underground Yard Plan, Revision 25  
E-1, Sheet 1, Single Line Diagram Station, Revision 57  
E-12, Sheet 1, 4160 V Emergency Power System Unit 3, Revision 11  
E-1321, Sheet 3, Electrical Secondary and Control Connections Drywell Penetrations N-106A, B, C, D – Indication and Control, Unit 2, Revision 31  
E-1715, Sheet 1, E134 & E234 Emer. L.C., Revision 83  
E-1717, Sheet 1, E334 & E434 Emer. L.C., Revision 72  
E-184, Sheet 2, Electrical Schematic Diagram RHR Pump 4.16 kV Circuit Breaker, Revision 27  
E-193, Sheet 3, Electrical Schematic Diagram Emergency Auxiliary Switchgear Diesel-Generator 4160V Circuit Breaker, Revision 32  
E-2371, Sheet 1, Riser Diagram Distributed Antenna System, Revision 4  
E-2903, Sheet 1, Electrical Schematic Diagram Alternative Control Instrumentation, Revision 6  
E-2903, Sheet 3, Electrical Schematic Diagram Alternative Control Instrumentation, Revision 0  
E-8, Sheet 1, 4160V Emergency Power System Unit 2, Revision 20  
M-1-S-36, Sheet 20, Electrical Schematic Diagram High Pressure Coolant Injection System, Revision 78  
M-1-S-42, Sheet 13, Electrical Schematic Diagram Reactor Core Isolation Cooling System, Revision 74  
M-1-S-42, Sheet 18, Electrical Schematic Diagram Reactor Core Isolation Cooling System, Revision 79  
M-1-S-42, Sheet 5, Electrical Schematic Diagram Reactor Core Isolation Cooling System, Revision 87  
M-1-S-42, Sheet 7, Electrical Schematic Diagram Reactor Core Isolation Cooling System, Revision 76  
M-1-S-65, Sheet 45, Electrical Schematic Diagram Residual Heat Removal System, Revision 97  
M-1-S-65, Sheet 53, Electrical Schematic Diagram Residual Heat Removal System, Revision 99  
M-1-S-65, Sheet 62, Electrical Schematic Diagram Residual Heat Removal System, Revision 103  
PD-27, Sheet 1, Typical Penetration Seal Detail Grout Seal, Revision 1  
PD-5, Sheet 1, Typical Penetration Seal Detail External Pipe or Conduit Seal (SF-20), Revision 1  
PD-7, Typical Penetration Seal Detail, Cable Tray Wall Seal (SF-20), Revision 1  
PD-9, Typical Penetration Seal Detail, Penetration through Barrier Less Than Required Thickness, Revision 0  
PS-301, Penetration Seal Locations, Controlled Barriers-Room No. 301, Units 2 and 3, Area 3, Elevation 150' 0", Revision 1  
PS-302, Penetration Seal Locations, Controlled Barriers-Room No. 302, Units 2 and 3, Area 3, Elevation 150' 0", Revision 2

PS-444, Sheet 1, Penetration Seal Locations Controlled Barriers – Room No. 444 Unit 3,  
Revision 0

PS-444, Sheet 2, Penetration Seal Locations Controlled Barriers – Room No. 444 Unit 3,  
Revision 1

Fire Protection Evaluations of Modifications and Design Changes

622321, Generic Letter 86-10 Evaluation – Post Fire Operation of Manual Valves

623620, Alternate Compensatory Measure for IR 4115309, HI/LO Interface Not Evaluated for  
Appendix R

3968258, Generic Letter 86-10 Evaluation Supporting Configuration of Penetration  
RW2-116-105-3039

Quality Assurance Audits and Self Assessments

AR 3994319, 2018 Triennial Fire Protection Inspection Preparatory Self-Assessment

Procedures

AO 54.2, 4KV Breaker Manual Operation, Revision 0

CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Change  
Review, Revision 2

CC-AA-211, Fire Protection Program, Revision 8

CC-AA-211-1001, Fire Protection Engineering Evaluations, Revision 2

EDMG-1.0, Extensive Damage Mitigation Guideline for Loss of Large Area of the Plant,  
Revision 1

EDMG-2.0, Peach Bottom Operational Contingency Guidelines, Revision 8

ON-114, Actual Fire Reported in the Power Block, Diesel Generator Building, Emergency Pump,  
Inner Screen or Emergency Cooling Tower Structures, Revision 21

ON-114, Actual Fire Reported in the Power Block, Diesel Generator Building, Emergency Pump,  
Inner Screen or Emergency Cooling Tower Structures – Bases, Revision 20

ON-115, Loss of Normal Main Control Room Ventilation – Bases, Revision 19

ON-115, Loss of Normal Main Control Room Ventilation – Procedure, Revision 22

OP-AA-102-106, Operator Response Time Program, Revision 4

OP-AA-201-003, Fire Drill Performance, Revision 16

OP-AA-201-004, Fire Prevention for Hot Work, Revision 14

OP-AA-201-009, Control of Transient Combustible Material, Revision 20

OP-PB-102-106, Operator Response Time Program at Peach Bottom, Revision 9

RT-H-099-990-2, One Hour SCBA Pack Inspection and Functional Test, Revision 19

RT-O-037-375-2, In-Plant Fire Brigade Equipment Inventory and Inspection, Revision 7

RT-O-037-376-2, Outside Fire Brigade Equipment Inventory and Inspection, Revision 17

SE-10, Alternate Shutdown Sheet 1, Revision 21

SE-10, Alternate Shutdown Sheet 2, Revision 22

SE-10, Alternate Shutdown Sheet 3, Revision 1

SE-10, Alternate Shutdown Sheet 4, Revision 1

SE-10, Alternate Shutdown, Attachment 12, Revision 2

SE-10, Alternate Shutdown, Attachment 13, Revision 2

SE-10, Alternate Shutdown, Attachment 14, Revision 3

SE-10, Alternate Shutdown, Attachment 22, Revision 0

SE-10, Alternate Shutdown, Attachment 3, Revision 8

SE-10, Alternate Shutdown, Attachment 6, Revision 8

SE-10, Alternate Shutdown, Attachment 6, Revision 8A

SE-10, Alternate Shutdown, Attachment 9, Revision 3

SE-10, Plant Shutdown from the Alternate Shutdown Panels – Bases, Revision 29

T-100, Scram – Bases, Revision 15  
 T-100, Scram, Revision 11  
 T-302-2, Area 02 Fire Guide, Revision 10  
 T-302-3, Area 02 Fire Guide, Revision 9  
 T-313N-2, Area 13N Fire Guide, Revision 4  
 T-313N-3, Area 13N Fire Guide, Revision 7  
 T-325-2, Area 25 Fire Guide, Revision 1  
 T-325-3, Area 25 Fire Guide, Revision 1  
 T-336-2, Area 36 Fire Guide, Revision 4  
 T-336-3, Area 36 Fire Guide, Revision 4  
 TSG 4.1, Attachment 15, Alternate 125VDC Power Supply for SRV Operation, Revision 6  
 TSG 4.1, Attachment 15, Alternate 125VDC Power Supply for SRV Operation, Revision 7

#### Operator Safe Shutdown Training

DBIG PNLO-3106, SE-10, Plant Shutdown from the Alternate Shutdown Panels, Revision 3  
 JPM PLOR-047C, Take Action for Control Room Evacuation (SE-10 Attachment 6), Revision 11  
 JPM PLOR-057P, Plant Shutdown from Alternate Shutdown Panel – HPCI Operations,  
 Revision 8  
 PLORT-1605A, Fire Protection and Appendix R, Revision 0  
 PLOT-1565, PBAPS Transient Response Implementation Procedures (T-300 Series), Revision 2  
 PLOT-5037X, Remote Shutdown Panel & Fire Safe Shutdown/Alternate Panel Controls,  
 Revision 4  
 PLOT-6000, Licensed Operator Initial Qualification Manual, Revision 22  
 PLOT-6000A, Licensed Operator Initial OJT Module (RO Tasks), Revision 1  
 PLOT-6000B, Licensed Operator Initial OJT Module (EO Tasks), Revision 1  
 PLOT-6000C, Licensed Operator Initial OJT Module (SRO Tasks) Revision 1  
 PNLO-2215, Effects of Fire on Safe Shutdown Equipment, Revision 5  
 PNLO-6000E, Equipment Operator Initial Qualification Manual, Revision 3  
 Simulator Exercise Guide PSEG-0409R-03, Fire in Cable Spreading Room, Revision 0

#### Pre-Fire Plans

FF-01, Fire Fighting Plan, Revision 23  
 PF-0, Pre-Fire Strategy Plan Area and Location Index, Revision 9  
 PF-108, Pre-Fire Plan, Radioactive Waste Building, Fan Room, Elevation 165' 0",  
 Revision PF-127, Pre-Fire Plan, Unit 2 Turbine Building, Emergency Battery Switchgear  
 Rooms, Elevation 135' 0", Revision 10  
 PF-12B, Pre-Fire Plan, Unit 2 Reactor Building Closed Loop Cooling Water Room,  
 Elevation 116' 0", Revision 8  
 PF-13J, Pre-Fire Plan, Unit 2 Reactor Building General Area, Elevation 165' 0", Revision 3

#### Fire Brigade Training

FBP04, Fire Behavior and Essentials, Revision 8  
 FBP07, Hose Streams, Appliances, and Tools, Revision 6  
 Fire Brigade Leader Qualification Status Report, date 4/5/18  
 Fire Brigade Member Qualification Status Report, dated 4/5/18  
 FPB11, Tactics and Strategy, Revision 7  
 FPB15, Pre-Fire Plans, Revision 6  
 IMS-01, Incident Management System, Revision 2  
 PNLOC 1612A, 4<sup>th</sup> Quarter Fire Brigade Meeting, Revision 0

Fire Brigade Drills and Critiques

Fire Brigade Drill Third Party Observation Report, performed on 12/7/17

N-PB-OPS-EO-FB-DRILL1, PS01 4<sup>th</sup> Quarter Fire Drill and Critique, performed on 12/13/17

N-PB-OPS-EO-FB-DRILL1, PS02 4<sup>th</sup> Quarter Fire Drill and Critique, performed on 12/15/17

N-PB-OPS-EO-FB-DRILL1, PS04 4<sup>th</sup> Quarter Fire Drill and Critique, performed on 12/7/17

N-PB-OPS-EO-FB-DRILL1, PS05 1<sup>st</sup> Quarter Unannounced, Backshift Fire Drill and Critique, performed on 3/22/17

N-PB-OPS-EO-FB-DRILL1, PS05 4<sup>th</sup> Quarter Fire Drill and Critique, performed on 12/22/17

Transient Combustible, Hot Work, and Ignition Source Permits and Evaluations

Hot Work Permit 0611, RTV-2-14-29010A, Rework Valve/Replace Bonnet, dated 3/1/18

Hot Work Permit 0680, Install New Heat Exchanger, dated 12/11/18

Transient Combustible Permit 1070, Units 2 and 3 Turbine Building, Fire Zone 50-78A, Temporary Power

Transient Combustible Permit 1071, Unit 3 Turbine Building, Fire Zone 50-78T, Temporary Power

Transient Combustible Permit 1072, Unit 2 Reactor Building, Fire Zone 1-2, Temporary Power

Transient Combustible Permit 1073, Emergency Cooling Tower, Fire Zone 51-136, Test Equipment

Transient Combustible Permit 1075, E-42 Switchgear Room, Fire Zone 36-123, Temporary Instrumentation and Cabling

Completed Tests and Surveillances

R1302419-01, Calibration Check of Alternative Shutdown Panel Reactor Vessel Level Instruments, completed 10/25/16

RT-0-052-750-2, E2 Diesel Alternative Shutdown Control Functional, completed 3/21/16

RT-M-57E-700-2, Main Control Room Emergency Lighting Battery Yearly Inspection (20D304-2), completed 1/24/17

RT-M-57E-700-3, Main Control Room Emergency Lighting Battery Yearly Inspection (30D304-2), completed 1/24/17

RT-M-57E-710-2, Main Control Room Emergency Lighting Battery Discharge Performance Test (20D304-2), completed 8/11/17

RT-M-57E-710-3, Main Control Room Emergency Lighting Battery Discharge Performance Test (30D304-2), completed 1/22/18

RT-O-037-375-2, In-Plant Fire Brigade Equipment Inventory and Inspection, completed 2/5/2018

RT-O-037-376-2, Outside Fire Brigade Equipment Inventory and Inspection, completed 2/10/2018

RT-O-037-710-2, Complete Safe Shutdown Emergency Lighting Battery Pack Inspection, completed 2/10/18

RT-O-037-719-2, Emergency Lighting Inspection (Alternate Shutdown Control Station Access/Egress Lights), completed 11/2/16

RT-O-037-719-3, Emergency Lighting Inspection (Alternate Shutdown Control Station Access/Egress Lights), completed 11/6/17

RT-O-100-505-2, Emergency Operating Procedure Tool Inventory, completed 12/6/17

RT-O-100-580-2, B.5.b Tool and Material Inventory, completed 8/2/2017

ST-I-037-223-2, Unit 2 4 Kilo-Volt Switchgear and Battery Room and Radwaste 135' Corridor Smoke Detectors Functional Test, completed 6/3/15

ST-I-037-223-2, Unit 2 4 Kilo-Volt Switchgear and Battery Room and Radwaste 135' Corridor Smoke Detectors Functional Test, completed 8/3/17

ST-I-037-276-3, Reactor Building Elevation 165' Smoke Detectors Functional Test, completed 1/27/15



ST-I-037-276-3, Reactor Building Elevation 165' Smoke Detectors Functional Test, completed 7/28/17  
 ST-I-037-284-2, Fan Room (Room #381, Radwaste, Elevation 165) Smoke Detectors Functional Test, completed 6/23/15  
 ST-I-037-284-2, Fan Room (Room #381, Radwaste, Elevation 165) Smoke Detectors Functional Test, completed 1/13/17  
 ST-I-037-288-2, Cable Spreading Room Smoke Detectors Functional Test, completed 10/20/16  
 ST-I-037-288-2, Cable Spreading Room Smoke Detectors Functional Test, completed 6/22/17  
 ST-I-037-293-2, Recirculation Motor-Generator Set Lube Oil Pump 116' Smoke Detectors Functional Test, completed 5/11/17  
 ST-I-037A-310-2, Cable Spreading and Computer Room Cardox Simulated Actuation and Air Flow Test, completed 10/10/17  
 ST-I-037A-310-2, Cable Spreading and Computer Room Cardox Simulated Actuation and Air Flow Test, completed 5/31/16  
 ST-I-037A-310-2, Cable Spreading and Computer Room Cardox Simulated Actuation and Air Flow Test, completed 10/10/17  
 ST-M-037-311-2, Detailed Visual Inspection of Penetration Seals and Difficult to View Fire Barriers, completed 6/8/12  
 ST-M-037-311-3, Detailed Visual Inspection of Penetration Seals and Difficult to View Fire Barriers, completed 12/21/17  
 ST-M-037-314-2, Visual Inspection of Encapsulated Electrical Raceways, completed 6/14/16  
 ST-M-037D-380-2, Diesel Driven Fire Pump Inspection, completed 1/1/17  
 ST-O-037B-314-2, Fan Room (Room #381, Radwaste Elevation 165') Sprinkler System Actuation, completed 3/14/16  
 ST-O-037B-314-2, Fan Room (Room #381, Radwaste Elevation 165') Sprinkler System Actuation, completed 3/25/18  
 ST-O-037B-323-2, Unit 2 Battery Rooms, 4 Kilo-Volt Switchgear Rooms, and Radwaste Corridor Area Sprinkler System Actuation, completed 7/10/14  
 ST-O-037B-323-2, Unit 2 Battery Rooms, 4 Kilo-Volt Switchgear Rooms, and Radwaste Corridor Area Sprinkler System Actuation, completed 7/9/16  
 ST-O-037B-381-2, Underground Fire Main Flow Test, completed 6/10/15  
 ST-O-037B-381-2, Underground Fire Main Flow Test, completed 8/8/14  
 ST-O-037C-330-2, Motor Driven Fire Pump Flow Rate Test, completed 8/6/15  
 ST-O-037C-330-2, Motor Driven Fire Pump Flow Rate Test, completed 12/13/16  
 ST-O-037C-360-2, Motor Driven Fire Pump Operability Test, completed 1/23/18  
 ST-O-037C-360-2, Motor Driven Fire Pump Operability Test, completed 2/21/18  
 ST-O-037D-340-2, Diesel Driven Fire Pump Flow Rate Test, completed 11/25/15  
 ST-O-037D-340-2, Diesel Driven Fire Pump Flow Rate Test, completed 1/17/17  
 ST-O-037D-370-2, Diesel Driven Fire Pump Operability Test, completed 1/9/18  
 ST-O-037D-370-2, Diesel Driven Fire Pump Operability Test, completed 2/7/18

Issue Reports (\* written as a result of the NRC inspection)

00450846	01109076	01275720	01492237	01521603
01581135	02386737	02421301	02451017	02451647
02478057	02661579	02697843	02699896	02718710
03962962	03980676	04000043	04080702	04082065
04084069	04084077	04102768	04115309	04118443
04122474*	04122883*	04122970*	04127608*	04128972*
04129171*				

Work Orders

4319703	4595771	4648804	R1298970	R1326279
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Operating Experience

NRC Information Notice 1997-48, Inadequate or Inappropriate Interim Fire Protection Compensatory Measures

NRC Information Notice 2013-02, Issues Potentially Affecting Nuclear Facility Fire Safety

NRC Information Notice 2013-06, Corrosion in Fire Protection Piping Due to Air and Water Interaction

NRC Information Notice 2013-09, Compressed Flammable Gas Cylinders and Associated Hazards

NRC Information Notice 2014-10, Potential Circuit Failure-Induced Secondary Fires or Equipment Damage

NRC Information Notice 2014-15, Inadequate Controls of Respiratory Protection Accessibility, Training, and Maintenance

NRC Information Notice 2015-02, Anti-Freeze Agents in Fire Water Sprinkler Systems

NRC Regulatory Issue Summary 2005-07, Compensatory Measures to Satisfy the Fire Protection Program Requirements

Miscellaneous Documents

Bisco Report #748-49, Fire Test Configuration for a Three-Hour Rated Fire Seal Utilizing Bisco SF-20 Where a Steel Sleeve Condition with Pipe Penetrant Exists, dated 7/9/81

NLO B.5.b. Task List

NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 4A

NUREG 1552, Supplement 1, Fire Barrier Penetration Seals in Nuclear Power Plants, January 1999

PLORT 1610E, Extensive Damage Mitigation Guidelines, Revision 0

PLOT 2305, Extensive Damage Mitigation Guidelines 1.0 and 2.0, Revision 1

PM-1120, Evaluation of B.5.b Mitigation Strategies, Revision 0

Units 2 and 3 Fire Protection System 37 Health Reports, dated 4/4/18