



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

September 30, 2015

EA-15-195

Mr. Eric A. Larson
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
P. O. Box 4, Route 168
Shippingport, PA 15077

**SUBJECT: BEAVER VALLEY POWER STATION - TRIENNIAL FIRE PROTECTION
INSPECTION REPORT 05000334/2015007 AND 05000412/2015007
EXERCISE OF ENFORCEMENT DISCRETION**

Dear Mr. Larson:

On August 21, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at your Beaver Valley Power Station, Units 1 and 2 facility. The enclosed inspection report documents the inspection results, which were discussed on August 21, 2015, with you 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 station personnel. The inspectors also reviewed mitigation strategies for addressing large fires and explosions.

Based on the results of this inspection, three findings of very low safety significance (Green) were identified by the NRC. These findings were also determined to be violations of NRC requirements. The NRC screened these and determined that two of the findings warranted enforcement discretion per Section 9.1 of the NRC Enforcement Policy, "Enforcement Discretion for Certain Fire Protection Issues (10 Code of Federal Regulations (CFR) 50.48)." A third finding, because of its very low safety significance, and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a written response within 30 days of the date of this inspection report with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Senior Resident Inspector at the Beaver Valley Power Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding 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 Regional Administrator, Region I, and the Resident Inspector at the Beaver Valley Power Station.

E. Larson

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In accordance with Title 10 of the *Code of Federal Regulations* (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 Public Document Room or from the Publicly Available Records System (PARS) component of the NRC's document system, Agencywide Documents Access and Management 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/

Raymond K. Lorson, Director
Division of Reactor Safety

Docket Nos.: 50-334 and 50-412
License Nos.: DPR-66 and NPF-73

Enclosure: Inspection Report
05000334/2015007 and 05000412/2015007
w/Attachment: Supplemental Information

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E. Larson

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos. 50-334 and 50-412

License Nos. DPR-66 and NPF-73

Report Nos. 05000334/2015007 and 05000412/2015007

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Beaver Valley Power Station (BVPS), Units 1 and 2

Location: Shippingport, PA 15077

Dates: August 3, 2015 through August 21, 2015

Inspectors: D. Orr, Senior Reactor Inspector, Division of Reactor Safety (DRS)
C. Cahill, Senior Reactor Analyst, DRS
S. Galbreath, Reactor Inspector, DRS
J. Patel, Reactor Inspector, DRS
J. Rady, Reactor Inspector, DRS

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

SUMMARY OF FINDINGS

Inspection Report 05000334/2015007 and 05000412/2015007; 08/3/2015 - 08/21/2015; Beaver Valley Power Station, Units 1 and 2; Triennial Fire Protection Inspection Report.

The report covered a two-week triennial fire protection team inspection by specialist inspectors. One finding of very low significance was identified for assessment. This finding was determined to be a non-cited violation. 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." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5, dated February 2014.

Cornerstone: Mitigating Systems

Green. On April 30, 2014, FENOC identified a violation of very low safety significance of 10 CFR 50, Appendix R, Section III.G for BVPS Unit 1 in that unfused direct current (DC) control circuits for DC motors were routed from the turbine building through other fire areas. The DC breakers used to protect the motor power conductors were insufficient to protect the control conductors for these circuits and it is postulated that a fire induced short in one fire area could adversely impact safe shutdown equipment by overheating the cable and causing a secondary fire in other fire areas where the cable is routed. The team identified that FENOC did not establish a fire watch in one of the affected fire areas, the turbine building, as a compensatory measure. Therefore, because FENOC did not initiate immediate corrective action or compensatory measures or both within a reasonable time, enforcement discretion will not be exercised. This violation will be treated as a NRC-identified violation. In response to the NRC finding, FENOC promptly initiated a one hour roving fire watch patrol in the turbine building. The lack of compensatory measures in the turbine building occurred because administrative procedure, 1/2-ADM-1900, Fire Protection Program, used to determine compensatory measures for fire protection program deficiencies, was inadequate in its guidance to plant personnel for review of cable separation issues. For cable separation issues, 1/2-ADM-1900 required fire watches in only one of two affected adjacent fire areas. FENOC entered this issue into its corrective action program as condition report (CR) CR-2015-10546 and planned to revise 1/2-ADM-1900 to ensure fire watches were established in all affected fire areas that involved cable separation issues. FENOC initiated CR-2014-07961 to resolve the DC circuit non-conformance using National Fire Protection Association (NFPA) 805 performance based fire risk evaluations considering the low probability of a secondary cable fire due to overheating of cables associated with the pump motor control circuits during an electrical fault condition with no circuit protection.

This finding was more than minor because it adversely affected the protection against external factors (i.e., fire) attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences.

FENOC reviewed the cable routes and evaluated this issue through use of its fire probabilistic risk assessment (PRA). FENOC determined that the change in core damage frequency attributed to the issue for Unit 1 was $8.5E-7$ per reactor year. NRC staff reviewed this evaluation and concluded that the risk numbers were bounded by conservative assumptions and that this issue would be of very low safety significance. This finding had a cross-cutting aspect in the area of Human Performance, Resources, because FENOC did not ensure that procedures were adequate to support nuclear safety. Specifically, 1/2-1900-ADM was too restrictive for safe shutdown circuit separation issues in that it mandated an hourly fire watch patrol in only one of the two adjacent fire areas and for this issue FENOC did not appropriately establish an hourly fire watch patrol in the Unit 1 turbine building. [H.1] (Section 1R05.06)

Other Findings

None

REPORT DETAILS

Background

This report presents the results of a triennial fire protection inspection conducted in accordance with the U.S. Nuclear Regulatory Commission (NRC) Inspection Procedure (IP) 71111.05T, "Fire Protection (Triennial)." The objective of the inspection was to assess whether FENOC had implemented an adequate fire protection program (FPP) and whether post-fire safe shutdown capabilities had been established and were properly maintained at the BVPS, Units 1 and 2 facility. The following fire areas (FA) were selected for detailed review based on prior inspection results and risk insights from the BVPS Individual Plant Examination /Individual Plant Examination of External Events:

- FA 1 DG-1, Unit 1 Diesel Generator Cubicle;
- FA 1 CR-2, Unit 1 Control Room Heating Ventilation and Air Conditioning (HVAC) Equipment Room;
- FA 2 CB6, Unit 2 Control Building West Communication Room; and,
- FA 2 SB-1, Unit 2 Service Building Emergency Switchgear (Orange).

Inspection of these FAs fulfills the inspection procedure requirement to inspect a minimum of three samples.

The inspection team evaluated FENOC's FPP against applicable requirements which included plant Technical Specifications, Operating License Condition 2.C.(5) and 2.F for Units No. 1 and 2 respectively, NRC Safety Evaluation Reports (SER), 10 CFR 50.48, 10 CFR Part 50, Appendix R, and Branch Technical Position (BTP) Chemical Engineering Branch (CMEB) 9.5-1, Appendix A. The team also reviewed related documents that included the Updated Final Safety Analysis Report (UFSAR), Section 9.5.1, the fire protection plan, the fire hazards analyses (FHA), and the post-fire safe shutdown analyses report.

The team also evaluated seven licensee mitigating strategies for addressing large fires and explosions as required by Operating License Condition 2.C.(11) and 2.C.(13) for Units 1 and 2 respectively, and 10 CFR 50.54(hh)(2). Inspection of these strategies fulfills the inspection procedure requirement to inspect a minimum of one sample.

Specific documents reviewed by the team are listed in the attachment to this report.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (IP 71111.05T)

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the FHA, safe shutdown analyses, and supporting drawings and documentation to verify that post-fire safe shutdown capabilities were properly protected.

The team ensured that applicable separation requirements of Section III.G of 10 CFR Part 50, Appendix R (Unit 1), BTP 9.5-1 (Unit 2), and the licensee's design and licensing bases 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.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to evaluate whether the material conditions of the fire area boundaries were adequate for the fire hazards in the area. The team compared the fire area boundaries including walls, ceilings, floors, fire doors, fire dampers, penetration seals to the design and licensing basis requirements, industry standards, and the BVPS FPP, as approved by the NRC, to identify any potential degradation or non-conformances.

The team reviewed selected engineering evaluations, installation and repair work orders, and qualification records for a sample of penetration seals to determine whether the fill material was properly installed and whether the as-left configuration satisfied design requirements for the intended fire rating.

The team also reviewed recent inspection and test records for fire dampers and the inspection records for penetration seals and fire barriers to verify whether the inspection and testing was adequately conducted, the acceptance criteria were met, and any potential performance degradation was identified. In addition, the team reviewed recent test results for the carbon dioxide (CO₂) and halon fire damper functionality tests for the selected fire areas to verify the testing was adequately conducted, the acceptance criteria were met, and any performance degradation was identified.

b. Findings

No findings were identified.

.03 Active Fire Protection

a. Inspection Scope

The team evaluated manual and automatic fire suppression and detection systems in the selected fire areas to determine whether they were installed, tested, maintained and operated in accordance with NRC requirements, NFPA codes of record and the BVPS FPP. The team also assessed whether the suppression systems capabilities were adequate to control and/or extinguish fires associated with the hazards in the selected areas.

The team reviewed the as-built capability of the fire water supply system to verify whether the design and licensing basis and NFPA code of record requirements were satisfied and to assess whether those capabilities were adequate for the hazards involved. The team reviewed the fire water system design to assess the adequacy of the system to supply the largest single hydraulic load on the fire water system plus concurrent fire hose usage with one fire pump out of service. The team evaluated fire pump performance tests to assess the adequacy of the test acceptance criteria for pump minimum discharge pressure at the required flow rate to verify whether the criteria was adequate to ensure that the design basis requirements were satisfied. The team also evaluated the underground fire loop flow tests and flushes to verify whether the combination of the tests and flushes adequately demonstrated that the flow distribution circuits were able to meet design basis requirements. In addition, the team reviewed recent pump and loop flow test results to verify whether the testing was adequately conducted, the acceptance criteria were met and any potential performance degradation was identified.

The team reviewed initial discharge testing, design specifications, vendor requirements, engineering evaluation and routine functional testing for the CO₂ and halon systems for the selected fire areas to verify adequacy. The team walked down accessible portions of the CO₂ and halon systems, including storage tanks and supply systems, to independently assess the material condition, operational lineup and availability of the systems.

The team walked down accessible portions of the detection and water suppression systems in the selected areas and major portions of the fire water supply system, including both diesel and motor driven fire pumps, interviewed system and program engineers, and reviewed selected corrective action program documents to independently assess the material condition of the systems and components. In addition, the team reviewed recent test results for the fire detection and suppression systems for the selected fire areas to verify whether the testing was adequately conducted, the acceptance criteria were met and any potential performance degradation was identified.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed FENOC's firefighting strategies (i.e., pre-fire 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. The team independently inspected the fire brigade equipment, including personnel protective gear (e.g., turnout gear) and smoke removal equipment, to determine operational readiness for firefighting. In addition, the team reviewed FENOC's fire brigade equipment inventory and inspection procedure and recent inspection and inventory results to verify whether adequate equipment was available, and whether any potential material deficiencies were identified.

b. Findings

No findings were identified.

.04 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and plant walkdowns to determine whether redundant trains of systems required for post-fire safe shutdown, located in the same or adjacent fire areas, were subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. During the walkdowns, the team evaluated the adequacy and condition of floor drains, equipment elevations, and spray protection. Specifically, the team evaluated whether:

- A fire in one of the selected fire areas would release smoke, heat or hot gases that could cause unintended activation of suppression systems in adjacent fire areas which could potentially damage all redundant safe shutdown trains or;
- A fire suppression system rupture, inadvertent actuation or actuation due to a fire, in one of the selected fire areas, could directly damage all redundant trains (e.g. sprinkler caused flooding of other than the locally affected train); and,
- Adequate drainage was provided in areas protected by water suppression systems.

b. Findings

No findings were identified.

.05 Post-Fire Safe Shutdown Capability – Normal and Alternative

a. Inspection Scope

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings, electrical drawings, the UFSAR and other supporting documents for the selected fire areas to verify that the licensee had properly identified the systems and components necessary to achieve and maintain post-fire safe shutdown conditions.

The team assessed the adequacy of the selected systems and components credited by the safe shutdown analyses for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring and support system functions to assess the adequacy of FENOC's alternative shutdown methodologies. This review included verification that alternative post-fire safe shutdown 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. The team verified that the systems and components credited for use during shutdown would remain free from fire damage.

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 safe 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.

Specific procedures reviewed for normal and alternative post-fire shutdown included the following:

- 1OM-56C.4.B, Shift Manager Procedure;
- 1OM-56C.4.B, Unit Supervisor Procedure;
- 1OM-56B.4.C, Safe Shutdown Following A Serious Fire in the Control Building;
- 1OM-56B.4.D, Safe Shutdown Following A Serious Fire in the Diesel Generator Building;
- 2OM-56B.4.I, Safe Shutdown Following a Serious Fire in the Service Building;
- 2OM-56C.4.B, Unit Supervisor Procedure;
- 2OM-56C.4.C, NCO Procedure;
- 2OM-56C.4.D, Nuclear Operator #1 Procedure;
- 2OM-56C.4.E, Nuclear Operator #2 Procedure;
- 2OM-56C.4.F-1, ASP Activation; and,
- 2OM-56C.4.H, Nuclear Operator #3 Procedure.

The team reviewed operator 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

.1 Unit 1 Control Room HVAC Equipment Room Safe Shutdown Capability Affected by Smoke Migration

Introduction. The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50 Appendix R, III.L.3. for failure to establish an alternative safe shutdown capability independent of the Unit 1 control room HVAC equipment room, sub-fire area CR-2. Specifically, a fire in CR-2 will generate heat and smoke that will rise to the Unit 1 main control room where post-fire safe shutdown equipment is remotely operated in response to a fire in CR-2. This issue was determined to satisfy the criteria specified for the exercise of enforcement discretion for plants in transition to a fire protection program that meets the requirements of 10 CFR 50.48(c), "National Fire Protection Association Standard NFPA 805."

Description. The team reviewed the Updated Fire Protection Appendix R Report, Rev. 31 for BVPS Unit 1 and noted that Duquesne Light Company filed an exemption request on January 14, 1985, in part for fire area CR-2, from the requirements of 10 CFR 50, Appendix R. The exemption request also redefined CR-2 as a subarea of the main control room fire area, CR-1, based on a ventilation shaft traversing the CR-2 ceiling and CR-1 floor. The exemption request redefined CR-2 and CR-1 as a single alternative shutdown fire area in accordance with Section III.G.3 of Appendix R. The NRC approved the exemption request in a letter dated December 4, 1986.

The team noted that Duquesne Light Company's exemption request justified adequate separation for safe shutdown systems and fire suppression and detection within the affected fire area, but did not identify that operators would be required to remain in the main control room to operate safe shutdown equipment for a fire in CR-2. This is unlike the established safe shutdown capability for the main control room where operators would leave the main control room to locally operate safe shutdown equipment. Local operation of safe shutdown equipment ensured equipment and circuits were isolated from the effects of the fire and operators would not be subject to smoke or heat. The team noted that Updated Fire Protection Appendix R Report, Rev. 31 credited safe shutdown equipment for a fire in CR-2 to be operated from the main control room and procedure 1OM-56B.4.C, Safe Shutdown Following A Serious Fire in the Control Building, Rev. 12, specific to fires in CR-2 and CR-3, the relay room, provided operating instructions consistent with the fire safe shutdown analysis.

The team additionally noted that the unqualified fire damper in the ventilation shaft between CR-2 and CR-1 can only be operated at a local panel inside CR-2. The team considered that operators remaining in the main control to establish post-fire safe shutdown for a fire in CR-2 was an alternative safe shutdown capability that was not independent of the fire area.

In response to the team's concern for smoke and heat rising from CR-2 affecting operator visibility or main control room habitability, FENOC provided calculation, SCI-17756-03, NFPA 805 Fire PRA Task 11c, Multi Compartment Fire Analysis for BVPS

Unit 1, Rev. F. Attachment 3 of this calculation analyzed the potential for propagation of hot gases into the main control room via the non-fire rated ventilation duct shaft. The team determined the analysis was conservative and concluded that operators could remain in the main control room and would have more than one hour to initiate the Unit 2 main control room ventilation system in smoke purge mode.

The team judged that procedure 1OM-56B.4.C, Safe Shutdown Following A Serious Fire in the Control Building, Rev. 12, was deficient because it did not provide any caution to control room operators that a fire in CR-2 could generate heat and smoke that could rise to the main control room. Additionally, the procedure did not provide any instructions to remove the heat and smoke such as by placing the Unit 2 main control room ventilation system in smoke purge mode. FENOC promptly entered this safe shutdown issue into their corrective action program (CAP) as CR-2015-10577 and intended to revise 1OM-56B.4.C, Safe Shutdown Following A Serious Fire in the Control Building, to include a note to initiate smoke purge mode of the Unit 2 control room ventilation system as needed for a fire in CR-2. The team considered FENOC's corrective actions appropriate.

Analysis. The failure to establish an alternative safe shutdown capability independent of the Unit 1 control room HVAC equipment room, sub-fire area CR-2, is a performance deficiency (PD). This PD is more than minor because it is associated with the external events (fire) attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using IMC 0609, Appendix F, Fire Protection Significance Determination Process, the team determined that this issue screens to Green in task 1.3.1 because the reactor is able to reach and maintain safe shutdown: a conservative calculation determined the main control room operators would not be impaired.

Cross-cutting aspects are not applicable to findings involving enforcement discretion.

Enforcement. 10 CFR 50.48(b)(2) requires that all nuclear power plants licensed to operate before January 1, 1979, must satisfy the applicable requirements of 10 CFR 50, Appendix R, including specifically the requirements of Sections III.G, III.J, and III.O.

10 CFR Part 50, Appendix R, Section III.G.2 requires, in part, that, where cables or equipment of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the stated means of ensuring that one of the redundant trains is free of fire damage shall be provided. The stated means include separation of cables and equipment and associated non-safety circuits of redundant trains through the use of specified fire barriers, distance, or suppression systems.

10 CFR part 50, Appendix R, Section III.G.3 requires, in part, that alternative or dedicated shutdown capability should be provided where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of paragraph G.2 of this section.

10 CFR Part 50, Appendix R, Section III.L.3, in part, specifies that alternative shutdown capability shall be independent of the specific fire area.

Contrary to the above, since December 4, 1986, BVPS Unit 1, a nuclear power plant licensed to operate before January 1, 1979, has not satisfied the applicable requirements of 10 CFR 50, Appendix R, Section III.G, in that the licensee did not provide alternative shutdown capability that was independent of a specific fire area where the protection of systems whose function is required for hot shutdown was not ensured to be free of fire damage. Specifically, for a fire in CR-2, FENOC required operators to remain in the main control room to operate safe shutdown equipment. However, the main control room was not independent of the fire area, since the main control room will be impacted by heat and smoke generated from a fire in CR-2.

The violation was historical and occurred when Duquesne Light Company, a predecessor to FENOC, implemented a January 14, 1985, exemption request from the requirements of Appendix R. FENOC is in transition to NFPA 805 and, therefore, this NRC-identified violation was evaluated in accordance with the criteria established in Section 9.1 of the NRC Enforcement Policy, "Enforcement Discretion for Certain Fire Protection issues (10 CFR 50.48)." Specifically, because all of the criteria were met, the NRC is exercising discretion and not issuing a violation for this issue.

.2 Unit 2 Alternative Post-Fire Shutdown Procedures Deficiencies for Some Postulated Spurious Operations

Introduction. The team identified a finding of very low safety significance (Green) of BVPS Unit 2 License Condition 2.F, Fire Protection Program, for failure to implement and maintain all aspects of the approved FPP. Specifically, FENOC's alternative post-fire safe shutdown operating procedures for some postulated fire-induced spurious circuit operations did not provide adequate guidance to ensure that; (1) the charging system flow path was established for reactor coolant system (RCS) makeup; (2) service water was provided for emergency diesel generator (EDG) cooling; and (3) reactor coolant pump (RCP) seal injection flow was secured prior to reinitiating charging flow beyond a ten minute lapse to preclude a RCP seal loss of coolant accident (LOCA). This issue was determined to satisfy the criteria specified for the exercise of enforcement discretion for plants in transition to a fire protection program that meets the requirements of 10 CFR 50.48(C), National Fire Protection Association Standard NFPA 805.

Description. In response to a significant fire in the Unit 2 fire areas CB-1 (Instrument Relay Room), CB-2 (Cable Spread Room), CB-3 (Control Room), CB-6 (Control Building West Communication Room), and CT-1 (Cable Tunnel), control room operators would implement the 2OM-56C.4 series procedures. These procedures are collectively the alternative post-fire safe shutdown procedure. As directed by the alternative post-fire safe shutdown procedure, control room operators relocate to the alternate shutdown panel (ASP) to establish and maintain post-fire safe shutdown.

The team reviewed these procedures and identified that procedures, specifically, 2OM-56C.4.B - Unit Supervisor Procedure, Rev. 32 effective October 21, 2014, 2OM-56C.4.F-1 – ASP Activation, Rev. 12 effective March 2, 2007, and 2OM-56C.4.D -Nuclear Operator #1 Procedure, Rev. 24 effective October 21, 2014, did not provide adequate guidance to ensure that the alternative shutdown performance goals would be maintained considering some postulated fire-induced spurious operations. The team identified three deficiencies within these procedures:

- 2OM-56C.4.D directed operators to use a charging system flow path to establish RCS makeup that was not free of fire damage for associated alternative shutdown fire areas;
- 2OM-56C.4.F-1 did not have adequate steps to verify the 21A service water pump was operating and adequate service water cooling flow established to the 2-1 EDG; and,
- 2OM-56C.4.B did not have sufficient precautions or steps to preclude a RCP seal LOCA.

The charging system flow path procedure errors occurred when FENOC made procedure changes effective October 21, 2014 to 2OM-56C.4.D to address a corrective action item for terminating a fire-induced spurious safety injection signal. FENOC inappropriately assumed a B train motor operated safety injection valve, 2SIS-MOV867B, would remotely operate open, but for the associated fire areas, its cables were subject to fire damage and the valve cannot be relied on to open. FENOC promptly initiated CR-2015-10757 and revised 2OM-56C.4.D to include a local operator manual action, consistent with the fire safe shutdown analysis, to establish charging flow for RCS makeup.

The adequate service water flow for the 2-1 EDG procedure errors occurred because 2OM-56C.4.F-1 provided a table that included required positions for components on the ASP and did not specify alignment order or provide any precaution to verify adequate service water flow to the 2-1 EDG after it was started. The 21A SWP switch alignment was listed third in the table and the 2-1 EDG switch alignment was listed sixth in the table. For a LOOP scenario, the 21A SWP cannot be started until the 2-1 EDG is successfully started and its output breaker closed to the 4 kV vital bus. Additionally, during control room abandonment and relocation to the ASP, the 21A SWP could spuriously operate while the 2-1 EDG auto starts. For this scenario, the procedure lacked sufficient precaution to ensure service water flow was restored from the ASP in a timely manner. FENOC promptly initiated CR-2015-1116 for long term resolution and issued Standing Operating Order 15-006 that the 2-1 EDG may not auto start and load during ASP activation.

The potential for a RCP seal LOCA during execution of 2OM-56C.4.B can occur during a loss of offsite power scenario if the charging pump auto starts when the 2-1 EDG is started from the ASP and more than ten minutes has elapsed since RCP seal cooling was lost. 2OM-56C.4.B lacked sufficient precautions and procedure steps for local operator manual actions to ensure a RCP seal LOCA did not occur during the postulated

LOOP scenario. FENOC promptly initiated CR-2015-11044 for long term resolution as part of transition to NFPA 805 and established interim compensatory measures in the form of fire watch patrols in the fire areas where these circuit interactions could occur.

For all three post-fire alternative safe shutdown procedure deficiencies, the team concluded that FENOC's immediate and long term corrective actions were appropriate and commensurate with the risk significance.

Analysis. Failure to ensure that the alternative post-fire safe shutdown operating procedures for some postulated fire-induced spurious circuit operations provided adequate guidance to ensure that; (1) the charging system flow path was established for RCS makeup; (2) service water was provided for EDG cooling; and (3) RCP seal injection flow was secured prior to reinitiating charging flow beyond a ten minute lapse to preclude a RCP seal LOCA is a PD. This PD is more than minor because it is associated with the external events (fire) attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). FENOC reviewed the post-fire alternative safe shutdown procedure deficiencies and evaluated the issues through use of its fire PRA. FENOC determined that the change in core damage frequency attributed to the procedure issues was $1.9E-8$ (Green). NRC staff reviewed this evaluation and concluded that the risk number was bounded by conservative assumptions and that this issue would be of no greater than very low safety significance.

Cross-cutting aspects are not applicable to findings involving enforcement discretion.

Enforcement. Beaver Valley Unit 2 License Condition 2.F requires in part that FENOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report (FSAR).

BVPS Unit 2 Updated FSAR, Rev. 21, Section 9.5.1.1 states that the fire protection system is designed using the guidance of BTP CMEB 9.5-1, Rev. 2.

BTP CMEB 9.5-1, Rev. 2, Section C.5.c.(3) requires that the alternative shutdown capability shall accommodate post-fire conditions where offsite power is available and where offsite power is not available for 72 hours and procedures shall be in effect to implement this capability.

Contrary to above, since March 2, 2007, FENOC has not had procedures in effect to implement alternative shutdown capability that accommodates post-fire conditions where offsite power is available or is not available for 72 hours. Specifically, the BVPS Unit 1 alternative post-fire safe shutdown procedures did not ensure that: (1) RCS makeup function was established; (2) service water cooling was provided to the 2-1 EDG; and (3) the RCP seal injection flow was isolated to preclude a RCP seal LOCA.

FENOC is in transition to NFPA 805 and therefore this NRC-identified violation was evaluated in accordance with the criteria established by Section A of the NRC's Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR Part 50.48) for a licensee in NFPA 805 transition. Specifically, because all of the criteria were met, the NRC is exercising discretion and not issuing a violation for this issue.

.06 Circuit Analysis

a. Inspection Scope

The team verified that the licensee performed post-fire safe shutdown analyses 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 FENOC's analyses ensured that necessary electrical circuits were properly protected and that circuits that could adversely impact safe shutdown due to hot shorts or shorts to ground were identified evaluated and dispositioned to ensure spurious actuations would not prevent safe shutdown.

The team's review considered fire and cable attributes, cable routing, 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 and/or cable routing databases for a sample of components required for post-fire safe shutdown to verify that cables were routed as described in the safe-shutdown analyses. Additionally, the team reviewed equipment important to safe shutdown, but not part of the success path, to verify that the licensee had taken appropriate actions in accordance with the design and licensing basis and NRC Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants," Revision 2.

Cable failure modes were reviewed for the following components:

- MOV-FW151A(B), Unit 1 Auxiliary Feed Header Throttle Valves;
- MOV-CH115B(D), Unit 1 RWST Isolation to Charging Pump Valves;
- LI-1FW-485BP, Unit 1 Steam Generator 'B' Narrow Range Level Indicator;
- 2SWS*P21A, Unit 2 Service Water Pump 'A';
- 2CHS*MOV289, Unit 2 Charging Header Isolation Valve; and,
- 2RCS*PI455F, Unit 2 Pressurizer Pressure Indicator.

The team reviewed a sample of 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 that could result in a common power supply or common bus concern. In addition, the team reviewed a sample of circuit breaker maintenance records, for components required for post-fire safe shutdown, to determine whether the breakers were properly maintained.

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).

b. Findings

Unanalyzed Condition Resulting from Unfused Direct Current Control Circuits

Introduction. FENOC identified violations of very low safety significance of 10 CFR 50, Appendix R, Section III.G for BVPS Unit 1, and Operating License Condition 2.F for BVPS Unit 2. FENOC identified that BVPS Unit 1 and Unit 2 each have unfused direct current DC control circuits for DC motors which are routed from the turbine building through other fire areas. The DC breakers used to protect the motor power conductors are insufficient to protect the control conductors for these circuits and it is postulated that a fire induced short in one fire area could adversely impact safe shutdown equipment by overheating the cable and causing a secondary fire in other fire areas where the cable is routed. For BVPS Unit 1 the team identified that FENOC did not establish a fire watch in the turbine building. Therefore FENOC did not initiate immediate corrective action or compensatory measures or both within a reasonable time and enforcement discretion will not be exercised. This BVPS Unit 1 violation will be treated as a NRC-identified violation. For BVPS Unit 2 this issue was determined to satisfy the criteria specified for the exercise of enforcement discretion for plants in transition to a fire protection program that meets the requirements of 10 CFR 50.48(c), "National Fire Protection Association Standard NFPA 805."

Description. FENOC reviewed industry operating experience and identified on April 30, 2014, that Unit 1 and Unit 2 hydrogen seal oil pump and emergency bearing oil pump motors included control circuits that were unfused. The DC breakers used to protect the motor power conductors are insufficient to protect the control conductors for these circuits. It is postulated that a fire induced short in one fire area could adversely impact safe shutdown equipment by overheating the cable and causing a secondary fire in other fire areas where the cable is routed. The postulated secondary fires or cable failures are outside the assumptions of each unit's fire protection analysis. FENOC reported this issue to the NRC in Licensee Event Report (LER) 2014-004-00 dated June 27, 2014.

The following are examples of the potential impact on post-fire safe shutdown capability:

- For BVPS Unit 1, three fire areas were affected: the main control room (MCR), the cable spread room (CSR), and the turbine building (TB). The MCR and CSR safe shutdown analysis credits use of the same shutdown equipment and associated cables but the TB safe shutdown analysis credits opposite trains of auxiliary feedwater equipment compared to the MCR and CSR.
- For BVPS Unit 2, several fire areas were affected: the MCR, the CSR, the control building west communication room, the instrument relay room, the cable tunnel, the cable vault and rod control room, the service building cable tray area, the normal switchgear room, and the TB. The cable vault and rod control fire area safe shutdown analysis credits the purple train of electrical power but all other fire areas credit the orange train of electrical power.

The team reviewed corrective actions and compensatory measures for the licensee identified issues. FENOC initiated CR-2014-07961 for BVPS Unit 1 and CR-2014-07964 for BVPS Unit 2 to track and complete corrective actions. FENOC intended to resolve the non-conformances using NFPA 805 performance based fire risk evaluations considering the low probability of a secondary cable fire due to overheating of cables associated with the pump control circuits during an electrical fault condition with no circuit protection. FENOC established compensatory measures in accordance with 1/2-ADM-1900, The Fire Protection Program. The compensatory measures in the form of hourly fire watch patrols were to remain in place until such time that the non-conformance is resolved. The team reviewed the fire watch logs and discovered that two of the affected fire areas for BVPS Unit 1, the MCR and TB were not included in the fire watch log sheets. The Unit 1 main control room is continuously manned and would meet the intent of a roving hourly fire watch.

The team inquired why hourly roving fire watch patrols were not established in the Unit 1 turbine building or administratively tracked for the MCR. FENOC determined the compensatory measures were established in accordance with Section 7.16.5 of 1/2-1900-ADM, Fire Protection Program, which stated *If inadequate separation of trains of safe shutdown equipment or circuits is identified, the condition SHALL be considered a nonfunctional fire barrier for determination of compensatory measures.* Attachment B, Technical Requirements For Fire Protection System, of 1/2-1900-ADM, for nonfunctional fire barriers required, in part, that an hourly fire watch patrol be established in one of the two adjacent fire areas for a nonfunctional fire barrier. FENOC determined for BVPS Unit 1 involving three contiguous fire areas, that an hourly fire watch patrol established in the middle fire area, the cable spread room, would satisfy the requirements of Section 7.16.5 of 1/2-1900-ADM. However, the team noted for this unique circuit issue that a secondary fire could be postulated to occur in a fire area not adjacent to the primary fire area. Therefore hourly fire watch patrols established in all affected fire areas was appropriate. Because the compensatory measures were determined to be inadequate, the BVPS Unit 1 violation will not receive enforcement discretion. FENOC promptly initiated an hourly fire watch patrol in the Unit 1 TB and administratively tracked the fire watch for the MCR. This issue was entered into FENOC's CAP for long term corrective actions as CR-2015-10546.

Although Section 7.16.5 of 1/2-1900-ADM was similarly reviewed and applied for the affected fire areas at Unit 2, an hourly fire watch patrol was established in all affected Unit 2 fire areas. The team considered that 1/2-1900-ADM was too restrictive for safe shutdown circuit separation issues in that it mandated an hourly fire watch patrol in only one of the two adjacent fire areas and for this unique circuit separation issue did not provide guidance to establish hourly fire watch patrols in all affected fire areas.

Analysis. FENOC's failure to ensure Unit 1 and Unit 2 hydrogen seal oil pump and emergency bearing oil pump motors' control circuits were fused and protected to prevent overheating such that a secondary fire would not occur was a performance deficiency. This finding was more than minor because it adversely affected the protection against external factors (i.e., fire) attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences.

FENOC reviewed the cable routes and evaluated this issue through use of its fire PRA. FENOC determined that the change in core damage frequency attributed to the issue for Unit 1 was 8.5E-7 per reactor year (Green) and 7.8E-8 (Green) for Unit 2. NRC staff reviewed this evaluation and concluded that the risk numbers were bounded by conservative assumptions and that this issue would be of very low safety significance for Unit 1 and Unit 2.

For BVPS Unit 1, the team determined the finding had a cross-cutting aspect in the area of Human Performance, Resources, because FENOC did not ensure that procedures were adequate to support nuclear safety. Specifically, 1/2-1900-ADM was too restrictive for safe shutdown circuit separation issues in that it mandated an hourly fire watch patrol in only one of the two adjacent fire areas and for this issue FENOC did not appropriately establish an hourly fire watch patrol in the Unit 1 TB. [H.1]

For BVPS Unit 2, cross-cutting aspects are not applicable to findings involving enforcement discretion.

Enforcement. 10 CFR 50.48(b) specifically requires that all nuclear power plants licensed to operate prior to January 1, 1979, such as BVPS Unit 1, implement fire protection features described in Appendix R, Section III.G. Section III.G requires that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage. Similarly for BVPS Unit 2, Operating License Condition 2.F requires that FENOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the FSAR. The Unit 2 BVPS Updated FSAR section 9.5.1.1 states that the fire protection system is designed using the guidance of BTP CMEB 9.5-1, Rev. 2. BTP CMEB 9.5-1 Section C.5.b.(1)(a) also requires that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage. Contrary to the above, FENOC identified on April 30, 2014, that they failed to meet this requirement for a postulated fire induced short in one fire area which could adversely impact safe shutdown equipment by overheating the cable and causing a secondary fire in other fire areas where the cable is routed. These violations were historical and occurred when BVPS completed its first safe shutdown analysis.

FENOC is in transition to NFPA 805 and, therefore, these licensee-identified violations were evaluated in accordance with the criteria established in Section 9.1 of the NRC Enforcement Policy, "Enforcement Discretion for Certain Fire Protection issues (10 CFR 50.48)."

For BVPS Unit 1, one criteria was not met. Specifically FENOC did not establish compensatory measures in the Unit 1 TB. Therefore the NRC is treating this violation as NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy because the violation was of very low safety significance (Green) and was entered into FENOC's CAP (CR-2015-10546). **(NCV 05000334/2015007-01, Unanalyzed Condition Resulting from Unfused Direct Current Control Circuits)**

For BVPS Unit 2, because all of the enforcement discretion criteria were met, the NRC is exercising discretion and not issuing a violation for this issue.

.07 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 were identified.

.08 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 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 consistent with the manufacturer's recommendations and in a manner that would ensure reliable operation.

b. Findings

No findings were identified.

.09 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, components, tools and materials (e.g. pre-cut cables with prepared attachment lugs) were available and accessible on site.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team verified 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, pumps, valves or electrical devices providing safe shutdown functions or capabilities). The team evaluated whether the short term compensatory measures adequately compensated for the degraded function or feature until appropriate corrective action could be taken and if the licensee was effective in returning the equipment to service in a reasonable period of time.

b. Findings

No findings were identified.

.11 Fire Protection Program Changes

a. Inspection Scope

The team reviewed recent changes to the approved fire protection program to verify that the changes did not constitute an adverse effect on the ability to safely shutdown.

b. Findings

No findings were identified.

.12 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed FENOC'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 reviewed to assess the adequacy of FENOC's fire protection program administrative controls. The team performed plant walkdowns to independently verify whether transient combustibles and ignition sources were being properly controlled in accordance with the administrative controls.

b. Findings

No findings were identified.

.13 Large Fires and Explosions Mitigation Strategies

a. Inspection Scope

The team reviewed selected mitigation strategies intended to maintain or restore core cooling and spent fuel pool cooling capabilities under the circumstances associated with the loss of large areas of the plant due to explosions and/or fires. The team assessed whether FENOC continued to meet the requirements of Operating License Condition 2.C.(11) and 2.C.(13) for Units 1 and 2 respectively for 10 CFR 50.54(hh)(2).

The team reviewed the following mitigation strategies and associated station procedures:

- Units 1 and 2 Manual Operation of Turbine-Driven AFW Pump;
- Unit 1 Manual Depressurization of SG's to Reduce Inventory Loss;
- Units 1 and 2 Portable Sprays; and,
- Units 1 and 2 Spent Fuel Pool Local Spray Strategies.

The team's review included a detailed assessment of the procedural guidance; a walkdown of the strategy with a trained operator to assess the feasibility of the strategy and operator familiarity; maintenance and surveillance testing of all designated strategy equipment and an inventory check of strategy equipment to ensure the appropriateness of equipment storage and availability. The team also evaluated the adequacy of corrective actions associated with issues identified during previous inspections in this area.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems (IP 71152)

.01 Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team reviewed a sample of CAP condition reports associated with the fire protection program, post-fire safe shutdown issues and mitigation strategy issues to determine whether FENOC was appropriately identifying, characterizing, and correcting problems associated with these areas and whether the planned or completed corrective actions were appropriate.

b. Findings

No findings were identified.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

(Closed) LER 05000334/2014-004-00: Unanalyzed Condition Resulting from Unfused Direct Current Control Circuits

On April 30, 2014, during a review of industry operating experience, FENOC identified postulated fire induced circuit failures involving unfused DC control circuits for DC motors at BVPS Units 1 and 2. The postulated fire-induced circuit failures could cause a secondary fire that could adversely affect safe shutdown equipment. Specifically, the licensee identified 125 volt DC control circuits for DC motors associated with four non-safety pumps (Air Side Seal Oil Backup Pumps and Main Turbine Emergency Bearing Oil Pumps) at Units 1 and 2 that were not provided overcurrent protection.

FENOC determined the cause of the condition to be an original design and construction oversight involving the failure to include protective devices in the DC control circuits for DC motors. There were no actual safety consequences of this condition.

The licensee submitted LER 05000334/2014-004-00 to report this event in accordance with 10 CFR 50.73(a)(2)(ii)(B) as an event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety. The licensee entered this issue into their CAP as CR-2014-07961 (Unit 1) and CR-2014-07964 (Unit 2) and implemented compensatory measures in all but one of the affected fire areas pending final resolution of the issue. The details of a compensatory measure not implemented in the Unit 1 TB are discussed in Section 1R05.06 of this inspection report.

The team reviewed the LER, the associated causal analysis and corrective actions, interviewed FENOC staff, and walked down associated cables. This LER is closed. The significance and enforcement aspect of this issue are discussed in Section 1R05.06 of this inspection report. LER 05000334/2014-004-00 is closed.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The team presented the inspection results to Mr. Eric Larson, Site Vice President, and other members of FENOC's staff at an exit meeting on August 21, 2015. No proprietary information was included in this inspection report.

Attachment: Supplemental Information

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

E. Larson	Site Vice President
B. Bartko	Unit 2 Operations Shift Manager
T. Collopy	Safe Shutdown Engineer
W. Cothen	Manager Regulatory Compliance
C. Eberle	Operations Procedure Writer
D. Gmys	Fire Protection System Engineer
C. Lord	Safe Shutdown Engineer
C. Mancuso	Design Engineering Manager
J. Miller	Fire Marshall
B. Sepelak	Regulatory Compliance Engineer
R. Stremple	PRA Engineer
E. Thomas	Regulatory Compliance Supervisor
J. Tolbert	Operations Training Supervisor
R. Worst	Unit 2 Reactor Operator

NRC Personnel

J. Rogge	Chief, Engineering Branch 3, Division of Reactor Safety
C. Cahill	Senior Reactor Analyst, Division of Reactor Safety
J. Krafty	Senior Resident Inspector, Beaver Valley Power Station
B. Reyes	Resident Inspector, Beaver Valley Power Station

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000334/2015007-01	NCV	Unanalyzed Condition Resulting from Unfused Direct Current Control Circuits (Section 1R05.06)
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Closed

05000334/2014-004-00	LER	Unanalyzed Condition Resulting from Unfused Direct Current Control Circuits (Sections 1R05.06 and 4OA3)
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Discussed

None

LIST OF DOCUMENTS REVIEWED

Fire Protection Licensing Documents

BVPS-1, 8700-B-084, Fire Hazards Analysis, Rev. 13
BVPS-1, Exemption dated 3/14/83, Request for Exemption from some Requirements of Appendix R to CFR Part 50
BVPS-1, SER dated 1/5/83, SER for Appendix R to 10CFR50, Items III.G and III.L
BVPS-1, SER dated 6/6/79, SER Related to Amendment No. 18 to Facility Operating License No. DPR-66
BVPS-1, UFSAR, Section 9.10, Fire Protection, Rev. 28
BVPS-1, Updated Fire Protection Appendix R Report, Rev. 31
BVPS-2, 10080-B-085, Fire Hazards Analysis (Addendum), Rev. 14
BVPS-2, 10080-B-085, Fire Hazards Analysis, Rev. 14
BVPS-2, Fire Protection Safe Shutdown Report, Addendum 38
BVPS-2, SER dated 10/1985, NUREG-1057
BVPS-2, SER dated 11/1986, NUREG-1057, Supplement 3
BVPS-2, SER dated 5/1987, NUREG-1057, Supplement 5
BVPS-2, SER dated 8/1987, NUREG-1057, Supplement 6
BVPS-2, UFSAR, Section 9.5.1, Fire Protection System, Rev. 21
BVPS-2, UFSAR, Section 9.5A, Fire Protection Evaluation Report, Rev. 21

Calculations, Analysis, and Engineering Evaluations

10080-DMC-0710, Evaluation of Appendix R Safe Shutdown Requirement of Achieving Cold Shutdown Conditions within 72 Hours with Excess Letdown Flow Path Open, Rev. 0
10080-DMC-0825, Pressurizer Level Response Following a Fire, Rev. 1
10080-DMC-0915, Beaver Valley Unit 1 and Unit 2 Fire Water Analysis, dated 12/4/14
10080-E-0307, Unit 2 Electrical Protective Device Settings Calculations for 480V Emergency Bus 2N, Rev.0
10080-E-0308, Unit 2 Electrical Protective Device Settings Calculations for 480V Emergency Bus 2P, Rev.0
10080-E-0309, Unit 2 Electrical Protective Device Settings Calculations for 4160V Emergency Bus 2AE, Rev.0
10080-E-0310, Unit 2 Electrical Protective Device Settings Calculations for 4160V Emergency Bus 2DF, Rev.1
10080-N-773, Emergency Diesel Generator Operating Time with Loss of SWS, Rev. 0
11-0482-000, Engineering Change Package, Rev. 3
8700-E-309, Unit 1 Protective Relay Settings Calculations for 480V Emergency Bus 1N, Rev.0
8700-E-310, Unit 1 Protective Relay Settings Calculations for 480V Emergency Bus 1P, Rev.0
8700-E-342, Unit 1 Electrical Protective Device Settings Calculations for 4160V Emergency Bus 1AE, Rev.0
8700-E-343, Unit 1 Electrical Protective Device Settings Calculations for 4160V Emergency Bus 1DF, Rev.0
A1.03B, Auxiliary Building Fire Protection Sizing Piping for Hose Racks, dated 6/21/83

Design Basis Documents

BVPS-1, 1DBD-33B, DBD for Fire Protection System, Rev. 13
BVPS-2, 2DBD-33B, DBD for Fire Protection System, Rev. 10

Procedures

- 1/2-ADM-1900, Fire Protection Program, Rev. 36
- 1/2-ADM-1902, Fire Brigade, Rev. 12
- 1/2-ADM-1903, Fire Protection Program Change Process, Rev. 3
- 1/2-ADM-1904, Control of Ignition Sources (Hot Work) and Fire Watches, Rev. 4
- 1/2-ADM-1905, Fire Protection/Fire Barrier Impairments, Rev. 4
- 1/2-ADM-1906, Control of Transient Combustible and Flammable Materials, Rev. 11
- 1/2-ADM-1907, Fire Protection Performance Based Surveillance Program, Rev. 0
- 1/2-AMD-2024, Fuse Control Program, Rev. 2
- 1/2OM-56B.4A.B, Fire Brigade and Fire Fighting Procedures, Rev. 6
- 1/2OM-56B.4A.C, Fire Brigade Equipment Operation Procedures, Rev. 0
- 1/2OM-56B.4A.D, Fire Evacuation Plan, Rev. 1
- 1/2OST-33.31, Fire Brigade Equipment Test, Rev. 17
- 1/2OST-33.33, Fire Protection Equipment Inventory Verification, Rev. 11
- 1/2OST-56B.1, Appendix R Equipment Verification, Rev. 11
- 1/2-PMP-E-36-015, ITE Medium Voltage Circuit Breaker Inspection and Test Model 5HK-250/350, Revs. 20 and 21
- 1OST-45.10, Back-up Instrumentation Panel Valve Control Switch Test, Rev. 4
- 1OST-45.9, Back-up Instrumentation Panel Instrumentation and Source Range Indication Test, Rev. 16
- 1PMP-38VB-EL-1E, Appendix R and Non-Appendix R Emergency Lighting Maintenance, Testing, inspection, and Repair, Rev. 30
- 2OST-45.9, Alternate Shutdown Panel Checks in Modes 1, 2, and 3, Rev. 16
- 2OST-45.9A, Alternate Shutdown Panel Checks in Modes 4, 5, 6, and Defueled, Rev.5
- 2OST-45.9B, Alternate Shutdown Panel Control Checks, Rev. 0
- 2PMP-38-EMERLGT-4E, Appendix R and Non Appendix R Emergency Lighting Operability Test, Inspection, and Repair, Rev. 21

Operations Procedures

- 1OM-56B.4.C, Safe Shutdown Following A Serious Fire in the Control Building, Rev. 12
- 1OM-56B.4.D, Safe Shutdown Following A Serious Fire in the Diesel Generator Building, Rev. 9
- 1OM-56B.4.J, Safe Shutdown Following A Serious Fire in the Turbine Building, Rev. 7
- 1OM-56B.4.RECOVERY, Safe Shutdown Load Recovery, Rev. 1
- 1OM-56C.4.B, Shift Manager Procedure, Rev. 44
- 1OM-56C.4.B, Unit Supervisor Procedure, Rev. 32
- 1OM-56C.4.F-10, Dedicated AFW Pump [1FW-P-4] Startup, Rev. 6
- 2OM-25.1.D, Steam Generator Blowdown System, Rev. 1
- 2OM-56B.4.I, Safe Shutdown Following a Serious Fire in the Service Building, Rev. 13
- 2OM-56C.1.A, Basis/Background, Rev. 1
- 2OM-56C.1.B, Summary Description, Rev. 3
- 2OM-56C.4.A, Intent and Methodology, Rev. 14
- 2OM-56C.4.B, Unit Supervisor Procedure, Rev. 32
- 2OM-56C.4.C, NCO Procedure, Rev. 20
- 2OM-56C.4.D, Nuclear Operator #1 Procedure, Rev. 24
- 2OM-56C.4.E, Nuclear Operator #2 Procedure, Rev. 21
- 2OM-56C.4.F-1, ASP Activation, Rev. 12

2OM-56C.4.F-19, Operation of Reactor Head Vent Valves, Rev. 1
2OM-56C.4.F-8, Placing in Service Motor Operated Block Valve [2RCS*MOV536] and Power Operated Relief Valve [2RCS*PCV456], Rev. 8
2OM-56C.4.H, Nuclear Operator #3 Procedure, Rev. 0

Large Fires and Explosions Mitigation Strategies Documents

1/2OM-53C.4A.100.4, Spent Fuel Pool, Issue 1 Rev. 9
1/2OM-53C.4A.100.6, Extreme Damage Mitigation Guidelines, Issue 1 Rev. 10
10080-B-437, Using Portable Fire Pumps to Substitute for an Out-of-Service Fire Pump
Maintenance Plan 74141, Backup Fire Water Supply to Fire Protection Loop
Successful Completion Report OTG-B5b Overview

Completed Tests/Surveillances

1/2OST-33.12, Fire Protection System Loop Flow Test, Completed 1/16/14
1/2OST-33.12, Fire Protection System Loop Flow Test, Completed 1/16/14
1/2OST-33.12, Fire Protection System Loop Flow Test, Completed 2/19/14
1/2OST-33.12, Fire Protection System Loop Flow Test, Completed 2/20/14
1/2OST-33.12, Fire Protection System Loop Flow Test, Completed 4/6/15
1/2OST-33.12, Fire Protection System Loop Flow Test, Completed 4/3/15
1/2OST-33.31, Fire Brigade Equipment Test, Completed 5/15/15
1/2OST-33.31, Fire Brigade Equipment Test, Completed 6/14/15
1/2OST-33.33, Fire Protection Equipment Inventory Verification, Completed 5/18/15
1/2OST-33.33, Fire Protection Equipment Inventory Verification, Completed 12/10/14
1/2PMP-75VS-VNT-4M, Ventilation System Fire Damper Maintenance and Trip Check, Completed 12/6/13
1/2PMP-75VS-VNT-4M, Ventilation System Fire Damper Maintenance and Trip Check, Completed 2/28/13
1/2PMP-75VS-VNT-4M, Ventilation System Fire Damper Maintenance and Trip Check, Completed 8/22/13
1OST-24.7, Dedicated Auxiliary Feed Pump [1FW-P-4] Test, Completed 4/13/15
1OST-33.13B, Deluge Valve Fire Protection System Instrument Test, Completed 9/21/12
1OST-33.13B, Deluge Valve Fire Protection System Instrument Test, Completed 1/15/14
1OST-33.13C1, Ten Ton CO2 Fire Protection System Test, Completed 1/11/14
1OST-33.13C1, Ten Ton CO2 Fire Protection System Test, Completed 3/10/12
1OST-33.13F, Ten Ton CO2 System Nozzle, Piping, and Damper Inspection, Completed 6/15/15
1OST-33.13F, Ten Ton CO2 System Nozzle, Piping, and Damper Inspection, Completed 12/13/13
1OST-33.16F, Early Warning Smoke Detection Instrumentation Test, Completed 2/6/14
1OST-33.16F, Early Warning Smoke Detection Instrumentation Test, Completed 4/20/15
1OST-33.35E, Fire Rated Assemblies Visual Inspection, Completed 1/6/14
1OST-33.35E, Fire Rated Assemblies Visual Inspection, Completed 6/8/13
1OST-33.4, Fire Protection System Hydrant Test, Completed 4/23/15
1OST-33.4, Fire Protection System Hydrant Test, Completed 5/28/14
1OST-33.5, Fire Protection System Inspection Test, Completed 2/10/15
1OST-33.5, Fire Protection System Inspection Test, Completed 8/11/14
1OST-33.7, Motor Driven Fire Pump Operation Test, Completed 4/24/15
1OST-33.7, Motor Driven Fire Pump Operation Test, Completed 5/23/15
1OST-33.8, Diesel Engine Driven Fire Pump Operation Test, Completed 5/1/15
1OST-33.8, Diesel Engine Driven Fire Pump Operation Test, Completed 5/30/15

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1OST-33.8, Diesel Engine Driven Fire Pump Operation Test, Completed 8/4/15
1OST-33.8, Diesel Engine Driven Fire Pump Operation Test, Completed 6/27/15
1OST-45.10, Back-up Instrumentation Panel Valve Control Switch Test, Completed 5/2/15
1OST-45.9, Back-up Instrumentation Panel Instrumentation and Source Range Indication Test, Completed 5/21/15
1PMP-38VB-EL-1E, Appendix R and Non Appendix Emergency Lighting Operability Test, Inspection, and Repair, Completed 1/29/15
200530410, Appendix R Equipment Inventory Verification, Completed 9/18/14
200562443, Appendix R Toolbox Content Verification, Completed 3/30/15
2BVT-2.38.1, Emergency Lighting Verification, Completed 11/6/03
2OST-33.16C, Early Warning Smoke Detection Instrumentation Test, Completed 12/29/14
2OST-33.35, Fire Rated Assemblies Visual Inspection, Completed 10/8/12
2OST-33.4, Fire Protection System Hydrant Test, Completed 5/15/15
2OST-33.4, Fire Protection System Hydrant Test, Completed 6/16/14
2OST-45.9, Alternate Shutdown Panel Checks in Modes 1, 2, and 3, Completed 5/21/15
2OST-45.9A, Alternate Shutdown Panel Checks in Modes 4, 5, 6, and Defueled, Completed 4/26/14
2PMP-38-EMERLGT-4E, Appendix R and Non Appendix Emergency Lighting Operability Test, Inspection and Repair, Completed 3/4/15
SOV-2.33E.01, Halon System Test, Completed 8/10/87

System Health Reports

Fire Protection Program, 1st thru 4th qtr. 2013
Fire Protection Program, 1st thru 4th qtr. 2014
Unit 1 AC and DC Systems, 1st thru 4th qtr. 2014
Unit 1 Fire Protection Systems, 1st thru 4th qtr. 2014
Unit 2 AC and DC Systems, 1st thru 4th qtr. 2014
Unit 2 Fire Protection Systems, 1st thru 4th qtr. 2014

Drawings and Wiring Diagrams

10080-E-11D, Elementary Diagram-Misc Circuits, Air Side Seal Oil Backup Pump, Rev. 9
10080-E-11JU, Elementary Diagram – 125V DC Ckts Reactor Head Vent Isolation Valves, Rev. 5
10080-E-11L, Sht. 1, Elementary Diagram 125Vdc Circuits Pressurizer Power Operated Relief Valves, Rev. 17
10080-E-6JL, Elementary Diagram 480V MCC Circuits Charging System Valves, Rev. 25
10080-E-6ME, Elementary Diagram-480V MCC , Circuit Turbine Lube Oil System, Rev. 14
10080-RB-3B, Fire Protection Arrangement 718' to 735', Rev. 10
10080-RB-3C, Fire Protection Arrangement 735' to 760', Rev. 6
10080-RB-3D, Fire Protection Arrangement 760' to 794', Rev. 7
10080-RB-3E, Fire Protection Arrangement 735' to 752', Rev. 5
10080-RE-10AA, Sht. 1, Wiring Diagram 125Vdc Miscellaneous Containment, Rev. 9
10080-RE-10X, Wiring Diagram 125Vdc Switchboards 2-1 and 2-2, Rev. 9
10080-RE-1A, Sht. 1, Unit 2 Main One Line Diagram, Rev. 17
10080-RE-1AH, Sht. 1, Unit 2 120Vac One Line Diagram, Rev. 31
10080-RE-1AK, Sht. 3, Unit 2 120Vac One Line Diagram, Rev. 17
10080-RE-1AR, Sht. 1, 125Vdc One Line Diagram, Rev. 22
10080-RE-1B, Sht. 2, Unit 2 Main One Line Diagram, Rev. 17
10080-RE-1C, Equipment One Line Diagram, Rev. 14

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10080-RE-1D, Sht. 1, Unit 2 4160V One Line Diagram, Rev. 9
10080-RE-1DF, Sht. 1A, Unit 2 4160V One Line Diagram, Rev. 3
10080-RE-1DG, Sht. 1A, Unit 2 Main One Line Diagram, Rev. 2
10080-RE-1E, Sht. 2, Unit 2 4160V One Line Diagram, Rev. 9
10080-RE-1F, Sht. 3, Unit 2 4160V One Line Diagram, Rev. 20
10080-RE-1G, Sht.1, Unit 2 480V One Line Diagram, Rev. 14
10080-RE-1P, Sht. 5, Unit 2 480V MCC One Line Diagram, Rev. 12
10080-RE-3HK, Wiring Diagram Auxiliary Emergency Relay Panel 269R, Rev. 16
10080-RE-3HZ, Wiring Diagram ASP Instrument Power Supply Panel PNL-PWR-260, Rev. 4
10080-RE-8EK, Sht. 10, Wiring Diagram 4KVS*2AE Cubicle 2E10, Rev. 13
10080-TLD-006-026-01, Test Loop Diagram Reactor Coolant System Pressurizer 2RCS*PRE21 Pressure, Rev. 4
10080-TLD-006-026-02, Test Loop Diagram Reactor Coolant System Pressurizer 2RCS*PRE21 Pressure, Rev. 4
12241-E-11JW, Elementary Diagram – 125V DC Ckts Reactor Vessel Head Vent Throttle Valves, Rev. 5
12241-E-5DN, Elementary Diagram Service Water Pump 2SWS*P21A, Rev. 17
12241-E-5DT, Elementary Diagram 480V Emergency Substation 2-8, Rev. 10
12241-E-6BR-8, Elementary Diagram 480V Emergency MCC Feeder Breakers, Rev. 7
8700-RB-0002V, General Arrangement Fire Protection-SH.5, Rev. 4
8700-RB-2L, Fire Protection Arrangement, Rev. 6
8700-RB-2M, Fire Protection Arrangement, Rev. 13
8700-RB-2N, Fire Protection Arrangement, Rev. 0
8700-RB-2P, Fire Protection Arrangement, Rev. 6
8700-RB-2S, General Arrangement Fire Protection-SH.2, Rev. 6
8700-RB-2T, General Arrangement Fire Protection-SH.3, Rev. 4
8700-RB-2U, General Arrangement Fire Protection-SH.4, Rev. 2
8700-RB-2W, General Arrangement Fire Protection-SH.6, Rev. 4
8700-RB-2X, General Arrangement Fire Protection-SH.7, Rev. 3
8700-RB-2Y, General Arrangement Fire Protection-SH.8, Rev. 1
8700-RB-2Z, General Arrangement Fire Protection-SH.9, Rev. 2
8700-RE-10D, Wiring Diagram 125Vdc Distribution Panel 3, Rev. 16
8700-RE-11D, Sht. 1, Wiring Diagram 120V Emergency Distribution Panels AC-E1 through E6, Rev. 31
8700-RE-1A, Sht. 1, Unit 1 Main One Line Diagram, Rev. 26
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8700-RE-21FR, Sht. 4, Elementary Diagram Charging and Volume Control, Rev. 13
8700-RE-21HF, Sht. 7, Elementary Diagram Feed Water Pump, Rev. 17
8700-RE-21HR, Sheet 2, Elementary Diagram, Turbine Lube Oil, Rev. 98700-RE-3AN, Sht. 37, Wiring Diagram Bench Board Section A, Rev. 18
8700-RE-3BA, Wiring Diagram Bench Board Section C, Rev. 18
8700-RE-4K, Sht. 2, External Connections Miscellaneous Instruments, Rev. 30
8700-RE-9GM, Sht. 1, Wiring Diagram 480V MCC1-E4 Auxiliary Building, Rev. 17

Piping and Instrumentation Diagrams

10080-RM-0407-001A, Sht. 1, Unit 2 CVCS, Rev. 20
 10080-RM-0407-001B, Sht. 2, Unit 2 CVCS, Rev. 11
 10080-RM-0407-002, Unit 2 Charging System VCT and Makeup, Rev. 19
 10080-RM-0407-003, Unit 2 RCP Seal Water and Excess Letdown, Rev. 18
 10080-RM-0410-001, Unit 2 RHR, Rev. 16
 10080-RM-0411-001, Unit 2 Low and High Head Safety Injection, Rev. 17
 10080-RM-0411-002, SI Accumulators/Nitrogen, Rev. 19
 10080-RM-0415-001, Unit 2 Primary Component Cooling Water, Rev. 18
 10080-RM-0415-002, Unit 2 Primary Component Cooling Water, Rev. 19
 10080-RM-0415-003, Unit 2 Primary Component Cooling Water, Rev. 9
 10080-RM-0415-004, Unit 2 Primary Component Cooling Water, Rev. 5
 10080-RM-0415-005, Unit 2 Primary Component Cooling Water, Rev. 10
 10080-RM-0424-003, Unit 2 Auxiliary Feedwater, Rev. 14
 10080-RM-0430-001, Unit 2 Service Water Supply and Distribution, Rev. 32
 10080-RM-0430-001A, Standby Service Wtr Supply, Rev. 7
 10080-RM-0430-002, Service Water Primary Cooling, Rev. 40
 10080-RM-0430-003, Service Water Primary Cooling, Rev. 25
 10080-RM-0430-004, Service Water Secondary Cooling, Rev. 2
 8700-RM-0406-002, Unit 1 Reactor Coolant System, Rev. 24
 8700-RM-0407-001, Unit 1 CVCS, Rev. 34
 8700-RM-0407-002, Unit 1 CVCS, Rev. 4
 8700-RM-0407-003, Unit 1 CVCS, Rev. 24
 8700-RM-0407-004, Unit 1 CVCS, Rev. 27
 8700-RM-0411-001, Unit 1 Safety Injection System, Rev. 27
 8700-RM-0415-001, Unit 1 Component Cooling Water, Rev. 23
 8700-RM-0424-002, Unit 1 Feedwater System, Rev. 18
 8700-RM-0430-001, Unit 1 River Water System, Rev. 34

Fire Fighting Strategies (i.e., Pre-Fire Plans)

1PFP-DGBX-735, Diesel Generator 1 Room Fire Area DG-1, Rev. 2
 1PFP-SRVB-715, Control Room HVAC Equipment Room CR-2, Rev. 0
 2PFP-CNTB-707, West Communication Room Fire Area CB-6, Rev. 2
 2PFP-SRVB-730, AE Switchgear Room Fire Area SB-1, Rev. 4

Fire Brigade Drills and Critiques

1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 3/14/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 2/13/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 1/18/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 4/2/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 1/16/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 4/15/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 3/18/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 1/23/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 1/24/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 6/25/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 2/3/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 6/27/15
 1/2-ADM-1902.F01, Fire Brigade Drill Evaluation Form, dated 10/4/14

Fire Brigade Training

FB-9323/71-03-001, Fire Marshal Training Program, Rev. 2
 FB-9327, Fire Watch Training Program, Rev. 9
 FB-9339, Initial fire Brigade Training, Rev. 2

Operator Safe Shutdown Training & Job Performance Measures

2PL-037, Alternate Shutdown from the Diesel Generator Building, Rev. 7
 2PL-061, Transferring Power for 2RHS*MOV702A, Rev. 8
 2PL-076, Isolate AFW during Alternate Safe Shutdown, Rev. 6
 OTLC-20140456BC_BV1, Operator Training Licensed – Continuing, Rev. 0

Hot Work and Ignition Source Permits

I-HWP-15-213905	I-HWP-15-214098	I-HWP-15-253200
I-HWP-15-214024	I-HWP-15-253067	I-HWP-15-253409

Transient Combustible Permits and Evaluations

I-TCP-15-206664	I-TCP-15-213964	I-TCP-15-253259
I-TCP-15-208828	I-TCP-15-223793	

Condition Reports

CR-2012-07558	CR-2014-07964	CR-2015-10562*
CR-2012-08570	CR-2014-08501	CR-2015-10564*
CR-2012-11302	CR-2014-14338	CR-2015-10577
CR-2012-11398	CR-2015-00350	CR-2015-10757*
CR-2012-11877	CR-2015-05162	CR-2015-10792*
CR-2012-12142	CR-2015-07221	CR-2015-10849
CR-2013-10647	CR-2015-08838	CR-2015-10961*
CR-2013-11383	CR-2015-09645	CR-2015-10962*
CR-2014-02166	CR-2015-09879*	CR-2015-10985
CR-2014-02314	CR-2015-10355*	CR-2015-11044*
CR-2014-04758	CR-2015-10490*	CR-2015-11079
CR-2014-06315	CR-2015-10527*	CR-2015-11111
CR-2014-07212	CR-2015-10534*	CR-2015-11116*
CR-2014-07961	CR-2015-10546*	

* NRC identified during this inspection

Vendor Documents

A3.001B, 12 VDC Emergency Lighting Installation and Maintenance Instructions, Rev. L
 01.034-0025, Emergency Battery Powered Lighting Units Technical Manual, dated 4/24/01

Work Orders

200354396	200403614	200587524
200365748	200545298	200587525
200385507	200564106	200592599

Miscellaneous Documents

BVPS Units 1 and 2 Fire Watch Logs dated 7/21/15 thru 7/26/2015

BVRM-OPS-0010, Timelines – 2OM-56C.4.B, C, D, E, and H, Rev. 2

Electrical Cable and Conduit Routing Information

SO-15-006, EDG may not auto start and load during ASP activation, Rev. 0

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ASP	Alternate Shutdown Panel
BTP	Branch Technical Position
BVPS	Beaver Valley Power Station
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
CMEB	Chemical Engineering Branch
CR	Condition Report
CSR	Cable Spread Room
DC	Direct Current
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EDG	Emergency Diesel Generator
FA	Fire Area
FENOC	FirstEnergy Nuclear Operating Company
FHA	Fire Hazards Analysis
FPP	Fire Protection Program
HVAC	Heating, Ventilation, and Air Conditioning
FSAR	Final Safety Analysis Report
IMC	Inspection Manual Chapter
IP	Inspection Procedure
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MCR	Main Control Room
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records System
PD	Performance Deficiency
PRA	Probabilistic Risk Assessment
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
SER	Safety Evaluation Report
TB	Turbine Building
UFSAR	Updated Final Safety Analysis Report