



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

March 29, 2017

William R. Gideon  
Site Vice President  
Brunswick Steam Electric Plant  
8470 River Rd. SE (M/C BNP001)  
Southport, NC 28461

**SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT – NRC TRIENNIAL FIRE  
PROTECTION INSPECTION REPORT 05000325/2017007 AND  
05000324/2017007**

Dear Mr. Gideon:

On February 17, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Brunswick Steam Electric Plant, Units 1 and 2, and discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy. If you contest the violation or significance of this NCV, 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 20555-001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, U.S Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the Brunswick Steam Electric Plant.

If you disagree with a cross-cutting aspect assignment 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 II; and the NRC resident inspector at the Brunswick Steam Electric Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Scott M. Shaeffer, Chief  
Engineering Branch 2  
Division of Reactor Safety

Docket Nos. 50-325 and 50-324  
License Nos. DPR-71 and DPR-62

Enclosure:  
Inspection Report 05000325/2017007,  
05000324/2017007 w/Attachment:  
Supplemental Information

cc: Distribution via Listserv

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT – NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000325/2017007 AND 05000324/2017007

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos: 50-325 and 50-324

License Nos.: DPR-71 and DPR-62

Report Nos.: 05000325/2017007 and 05000324/2017007

Licensee: Duke Energy Progress, Inc.

Facility: Brunswick Steam Electric Plant

Location: 8470 River Rd. SE  
Southport, NC 28461

Dates: January 30-February 3, 2017 (Week 1)  
February 13-17, 2017 (Week 2)

Inspectors: J. Dymek, Reactor Inspector  
J. Montgomery, Senior Reactor Inspector (Lead Inspector)  
J. Patel, Reactor Inspector  
W. Satterfield, Reactor Inspector (Training)  
M. Singletary, Reactor Inspector

Approved by: Scott M. Shaeffer, Chief  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

## SUMMARY

Inspection Report (IR) 05000325/2017007, 05000324/2017007; 01/30/2017 – 02/03/2017 and 02/13/2017 – 02/17/2017; Brunswick Steam Electric Plant; Fire Protection - NFPA 805 (Triennial)

This report covers an announced two-week triennial fire protection inspection by a team of five regional inspectors. One Green non-cited violation (NCV) was identified. The significance of inspection findings are indicated by their color (i.e., greater than Green, Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross Cutting Areas" dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG- 1649, "Reactor Oversight Process," Revision 6.

Cornerstone: Mitigating Systems

- Green. The NRC identified a Green non-cited violation (NCV) of Brunswick Operating License Condition (OLC) 2.B(6) for Units 1 and 2, for the licensee's failure to correct a nonfunctional fire door in the diesel generator (DG) building. Specifically, on three occasions, NRC inspectors identified door 2-DGB-DR-EL023-118 in the DG building as having a stuck open latch, which prevented the door from closing and latching securely. Upon the third discovery of the nonfunctional fire door, the licensee initiated AR 02100405, entered the appropriate action statement in accordance with site procedure 0PLP-01.2, "Fire Protection System Operability, Action, and Surveillance Requirements," and took actions to install a new thumb latch, and to install a new door closure mechanism.

The inspectors determined that the licensee's failure correct nonfunctional fire door was a performance deficiency (PD). The PD was determined to be more than minor because if left uncorrected, the PD could have the potential to lead to a more significant safety concern. Specifically, if the door was not repaired adequately, it could have the potential to not be able to perform its design function in the case of a fire in diesel generator cell nos. 1 or 2 (FA DG-4 or DG-5). Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the finding was screened as Green at task 1.4.3-C because there was a fully functional automatic suppression system on at least one side of the fire barrier. The finding has a cross-cutting aspect in the area of problem identification & resolution associated with the 'Evaluation' attribute because the organization did not thoroughly evaluate the condition of the door to ensure that the resolution addressed the underlying cause of the nonfunctional fire door (PI.2). (Section 4OA2)

## REPORT DETAILS

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R05 Fire Protection

This report documents the results of a Triennial Fire Protection Inspection (TFPI) at the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. The inspection was conducted in accordance with NRC Inspection Procedure (IP) 71111.05XT, "Fire Protection - NFPA 805 (Triennial)," issued January 31, 2013. The objective of the inspection was to evaluate the design, operational status, and material condition of the licensee's Fire Protection Program (FPP). An additional objective was to review site specific implementation of one mitigating strategy from Section B.5.b of NRC Order EA-02-026, "Order for Interim Safeguards and Security Compensatory Measures" (commonly referred to as B.5.b); as well as the storage, maintenance, and testing of B.5.b mitigating equipment. Section 71111.05-05 of the IP specifies a minimum sample size of two fire areas (FAs) and one B.5.b mitigating strategy for addressing large fires and explosions. The team selected three FAs based on available risk information as analyzed onsite by a senior reactor analyst from Region II, data obtained from in-plant walkdowns regarding potential ignition sources, location and characteristics of combustibles, and location of equipment needed to achieve and maintain the reactor in a safe and stable condition. Other considerations for selecting the FAs were the relative complexity of the post-fire safe shutdown (SSD) procedures, information contained in FPP documents, and results of prior NRC TFPIs. In selecting the B.5.b mitigating strategy sample, the team reviewed licensee submittal letters, safety evaluation reports (SERs), licensee commitments, B.5.b implementing procedures, and previous NRC inspection reports. This inspection fulfilled the requirements of the procedure by selecting a sample of three FAs and one B.5.b mitigating strategy.

- Fire Zone (FZ) CB-05 – Unit 1 Cable Spreading Room (Part of FA CB-23E-- Control Room-Extended)
- FA CB-08 – Unit 1 Division 2 Battery Room
- FZ RB1-01B – Reactor Building Northwest Core Spray (Part of FA RB1-1)
- B.5.b Strategy – Depressurization of RPV and Injection with Portable Pump

For each of the selected FAs, the team evaluated the licensee's FPP against applicable NRC requirements and licensee design basis documents (DBDs). Documents reviewed by the team are listed in the Attachment.

#### .1 Protection of Safe Shutdown Capabilities

##### a. Inspection Scope

The team examined BSEP emergency operating procedures (EOPs), as well as fire alternate safe shutdown (ASSD) procedures, and compared them to the NFPA 805 NSCA and Fire Risk Evaluation (FRE), system flow diagrams, and other DBDs to determine if equipment required to achieve post-fire safe and stable plant conditions was properly identified and adequately protected from fire damage in

accordance with the requirements of 10 CFR 50.48(c) and the approved FPP. Cable routing information was reviewed for a selected sample of SSD components to verify that either the associated cables would not be damaged for the selected FA's fire scenarios or the licensee's analysis determined that the fire damage would not prohibit achieving safe and stable plant conditions. A list of SSD components examined for cable routing is included in the Attachment. The specific fire response EOPs and ASSD procedures reviewed are listed in the Attachment.

The team reviewed applicable sections of the site's EOPs, as well as ASSD procedures for the selected FAs and fire scenarios to verify that the shutdown methodology properly identified the components and systems necessary to achieve and maintain safe and stable plant conditions. The team performed in-plant walk-throughs of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team verified the licensee personnel credited for procedure implementation had procedures available, were trained on implementation, and were available in the event a fire occurred.

b. Findings

No findings were identified.

.2 Passive Fire Protection

a. Inspection Scope

The team conducted walkdowns to examine the material condition and as-built configuration of accessible passive barriers, both surrounding and within the FAs selected for review. Inspectors also evaluated the adequacy of their fire resistance in accordance with NFPA 805 calculations. Fire barriers inspected included reinforced concrete ceilings, floors and walls, installed mechanical and electrical penetration seals, fire doors, and fire dampers. The team compared the as-built barrier configurations to the approved construction details and supporting fire endurance test data, which established the rating of the fire barriers. Fire doors and dampers were examined for attributes such as their material condition, clearances, and proper operation and fire test certification of the door and frame as well as hardware and accessories. Architectural details and schedules were reviewed to confirm that the methods of attachment to the rated barrier conformed with the tested configurations. Doors were examined to verify that no modifications had been performed which would void their classification listing, or that such modifications had been previously evaluated and approved. The team reviewed licensing bases documentation such as 10 CFR 50.48(a), 10 CFR 50.48(c) and the NRC NFPA 805 SER to verify that passive fire protection features met current licensing commitments. In addition, a sample of completed surveillances and maintenance procedures for selected fire doors, fire dampers and penetration seals were reviewed to ensure that these passive barriers were being properly inspected and maintained.

b. Findings

No findings were identified.

### .3 Active Fire Protection

#### a. Inspection Scope

The team conducted fire protection system design reviews and performed walkdowns to examine the material condition and as-built configuration of fire detection systems, automatic water-based fire suppression systems and firefighting standpipe and hose systems protecting the selected FAs. Fire brigade pre-plans, training documents and fire response procedures for these areas were also reviewed. The team reviewed the adequacy of the design, installation and operation of the incipient and ionization-type fire detection and alarm systems to promptly detect fires in the selected FAs and to announce in the control room. The review included a confirmation of as-built configurations, and an examination of the type of detectors, detector spacing, detector location relative to ignition sources, room geometry, fixed obstructions, and ventilation airflow, to assess whether the areas were protected in accordance with code of record requirements. The team also reviewed the licensee's fire alarm response procedures, fire protection DBD, NFPA 805 License Amendment Request (LAR) submittals and associated SER to verify that the fire detection and alarm systems for the selected FAs were installed in accordance with the design and licensing bases for the plant.

The team inspected the material condition, operational configuration and documentation of periodic testing of the wet-pipe sprinkler and manual standpipe hose systems providing area-wide and transient fire hazard protection in the N.W. Core Spray Room and the Cable Spreading Room. The team also reviewed code compliance evaluations to determine if there were any outstanding code deviations for these systems.

The team reviewed the firefighting pre-plans and fire response procedures for the selected FAs to determine if appropriate information was provided to fire brigade members to facilitate suppression activities. These plans were reviewed and confirmed by field walkdowns to verify that they accurately reflected current plant configurations and firefighting equipment locations. These walkdowns also confirmed that fire hose and extinguisher access was properly maintained throughout the plant. The team evaluated whether the fire response procedures and pre-plans could be implemented as intended, and that they addressed equipment important to safety, ventilation of heat and smoke from a fire, and drainage/runoff from installed fixed fire suppression systems and manual hose streams. Additionally, fire brigade drill records for recently run drills in each area were reviewed to confirm drill scenarios addressed specific hazards to likely be encountered in the areas and to verify actual fire brigade response times supported the fire brigade response time performance basis criteria. A walkdown of staged fire brigade personal protective equipment (PPE) was performed, with gear selected to ascertain its physical condition. An operating shift fire brigade was randomly selected to confirm that all members were currently qualified with regard to their medical and fire brigade training records. Current mutual aid agreements with local outside fire departments response to the plant in a fire emergency were reviewed as well as drill records for outside department participation for a postulated fire event.

#### b. Findings

No findings were identified.



#### .4 Protection from Damage from Fire Suppression Activities

##### a. Inspection Scope

The team inspected the selected FAs to evaluate whether the ability to achieve the nuclear safety performance criteria could be adversely affected due to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. The team addressed the possibility that a fire in one FA could lead to the migration of smoke or hot gasses to other plant areas. The team also evaluated whether the installed automatic sprinkler systems or the manual firefighting activities could adversely affect the credited nuclear safety equipment, and/or adversely affect local operator recovery actions for the selected fire areas. Additionally, the team checked that the firefighting water would either be contained in the fire-affected area, or be safely drained off through floor drains or stairwells. A review of potential flooding through unsealed floor cracks and absorption of water through penetration seals to areas beneath the selected FAs was conducted. This portion of the inspection was carried out through a combination of walkdowns, and reviews of drawings, calculations and installation records.

##### b. Findings

No findings were identified.

#### .5 Shutdown from a Primary Control Station

##### a. Inspection Scope

For postulated fire scenarios in the Unit 1 Cable Spreading Room (FZ CB-05), which may impair main control room (MCR) functions, the licensee credited shutdown from a primary control station to achieve hot standby conditions. For the limiting fire, this would involve transfer of plant control from the MCR to the remote shutdown panel (RSDP).

The team reviewed the licensee's FPP, system flow drawings, electrical drawings, electrical schematics, and other supporting documents to verify that control circuits and power for the credited equipment controlled from the RSDP would be free of fire damage when isolated by disconnect switches. The team reviewed the RSDP transfer switches' testing methodology and completed surveillances to assess the capability and functionality of the isolation. The reviews ensured that the required functions to achieve post-fire safe and stable conditions were included in the fire response procedures. The review included assessing the adequacy of procedural guidance for establishing and maintaining hot standby conditions from the RSDP.

##### b. Findings

No findings were identified.

## .6 Circuit Analysis

### a. Inspection Scope

The inspectors reviewed the licensee's UFSAR, NSCA, licensee circuit analysis documents, post-fire procedures, electrical schematics and system flow diagrams to gain an understanding of the licensee's SSD strategy in order to verify that the licensee had properly identified required and associated circuits that could impact the ability to achieve and maintain safe and stable conditions for the selected FAs. The inspectors assessed whether the licensee's identified structures, systems and components (SSCs) important to meeting the 10 CFR 50.48 requirements were consistent with the established licensing basis. The team performed walk-downs of the selected FAs to independently verify the assumptions and results of the licensee's fire scenario development analysis. The team verified, on a sample basis, that the licensee properly identified cables and equipment required to achieve and maintain safe and stable conditions for the selected fire scenarios in the selected FAs. The inspectors also reviewed cable routing drawings, electrical one-line diagrams, component block diagrams, and electrical control wiring diagrams for the selected SSD components to determine if these cables had either been adequately protected from the potential adverse effects of fire damage or analyzed to show that fire induced faults (single and/or multiple) would not prevent shutdown to safe and stable conditions.

The team also reviewed, on a sample basis, breaker/fuse coordination study documents and several EC packages to ensure proper coordination existed between load and incoming supply breakers. The specific components and references reviewed are listed in the Attachment.

### b. Findings

No findings were identified.

## .7 Communications

### a. Inspection Scope

The team reviewed plant communication capabilities to evaluate the sound powered phone (SPP) system (i.e., the credited communication medium per calculation, BNP-E-9.007, "ASSD Recovery Action Feasibility") in supporting plant personnel shutting down both Unit 1 and Unit 2 from the RSDPs during a fire scenario that requires evacuation of the MCR. This included the performance of a plant walk-down with the licensee's operations staff to assess the safe shutdown (SSD) procedures associated with a MCR evacuation scenario, which also encompassed a review of the SPP system utilization. Surveillance documentation was reviewed to verify that the SPP communication equipment was being properly maintained and tested.

The team also reviewed and tested radio communications that would be relied upon to support fire brigade firefighting activities to verify their availability. Specifically, the team observed the licensee conducting communications tests with the portable fire brigade radios at the selected FAs. Additionally, a walk-down of the fire brigade storage

building was conducted to verify the material condition status of the fire brigade's communication systems.

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

b. Findings

No findings were identified.

.8 Emergency Lighting

a. Inspection Scope

The team verified the adequacy of the plant's emergency lighting systems through inspection walk-downs and review of maintenance aspects of the fixed 8-hour battery pack emergency lighting units (ELUs), which are credited for SSD activities by calculation, BNP-E-9.007, "ASSD Recovery Action Feasibility". The team performed plant walk-downs of the selected FAs and the SSD procedures associated with a MCR evacuation to observe the placement and coverage area of the ELUs required to illuminate operator access and egress pathways, as well as any equipment requiring local operation and/or instrumentation monitoring for post-fire SSD. This review also included examination of whether backup ELUs were provided for the primary and secondary fire emergency equipment storage locations and dress-out areas in support of fire brigade operations should power fail during an emergency.

The team also reviewed completed test records for the ELU batteries to ensure that they were sized, tested, and rated for at least an 8-hour capacity and maintained consistent with vendor guidance and license requirements. The vendor manual was reviewed to ensure that the ELUs were being maintained consistent with the manufacturer's recommendations and verified maintenance practices were being followed in accordance with the vendor guidance.

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

b. Findings

No findings were identified.

.9 Cold Shutdown Repairs

a. Inspection Scope

The licensee does not require transitioning to cold shutdown to achieve the safe and stable condition, and therefore does not require cold shutdown repairs to be implemented.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team reviewed the Fire Protection Impairment Log, which included out-of-service, degraded, and/or inoperable fire protection features (e.g., detection and suppression systems and passive fire barriers); and NFPA 805 implementation deficiencies. The Fire Protection Impairment Log was also assessed to determine the adequacy of the assigned compensatory measures. Additionally, the team verified that the risk associated with removing the fire protection feature from service was properly assessed and the compensatory measures were implemented in accordance with the approved FPP. The team reviewed impairment and compensatory measures forms for fire watch tours for selected FAs and confirmed by direct observation that fire watch rounds were conducted in the required plant areas at their scheduled intervals. Hourly and roving watch personnel were interviewed to ascertain that their duties and responsibilities were properly understood.

b. Findings

No findings were identified.

.11 Radiological Release

a. Inspection Scope

The team reviewed possible radiological release paths to any unrestricted area due to the direct effects of fire suppression activities for each of the selected FAs. Fire pre-plans addressed ventilation paths and specified monitoring of contamination levels of smoke. Fire brigade training and pre-plans were reviewed to verify the performance requirements of NFPA 805 for radioactive release were being met. FA CB-08 (Unit 1 Division 2 Battery Room) and FZ CB-05 (Unit 1 Cable Spreading Room) were outside the Radiological Control Area and were concluded to not have any possible release path. FZ-RB1-01B (Reactor Building N.W. Core Spray Room) is inside the Radiological Control Area, and inspectors concluded that the licensee's fire pre-plan adequately addressed the possibility of radiation release to any unrestricted area due to the direct effects of fire suppression activities.

b. Findings

No findings were identified.

.12 Non Power Operations

a. Inspection Scope

The team reviewed the site's non-power operations (NPO) procedure to verify that the associated license requirements had been adequately implemented. The review included the evaluation of supporting calculations that formed the bases of the licensee's NPO program. The team verified that the licensee had identified key safety functions for maintaining the plant in a safe and stable condition during NPO modes. The site did not enter any outages during the time period that the team was on-site.

b. Findings

No findings were identified.

.13 Monitoring Program

a. Inspection Scope

The team reviewed procedure AD-EG-ALL-1503, "NFPA 805 Monitoring", as well as calculation 0FP-1222, "BNP NFPA 805 Monitoring, Rev 2," to verify that a monitoring program was established to ensure that the availability and reliability of the fire protection systems and features credited in the performance-based analyses are maintained and to assess the performance of the FPP in meeting the performance criteria in accordance with NFPA 805. The licensee established performance monitoring groups that provide a link between components and functions that are monitored together. The items in scope were being monitored for performance based on the established criteria as part of the normal engineering health reporting process. The team also verified that the monitoring program instituted appropriate corrective actions to return availability, reliability, and performance of systems that fall outside of established levels.

b. Findings

No findings were identified.

.14 Plant Change Evaluation

a. Inspection Scope

The team reviewed AD-EG-ALL-1501, Fire Protection Change Process, Rev 1, along with other documents to verify that the licensee had a program to determine if a change to the approved FPP could be made without prior NRC approval. The team also interviewed the licensee personnel responsible for evaluating the risk associated with fire protection program changes to verify that their process is followed. The team reviewed a sample of engineering changes to verify the adequacy of the Fire Protection Program Change Evaluation forms.

b. Findings

No findings were identified.

.15 Control of Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed the administrative control of combustible materials and ignition sources to verify that the FPP performance requirements of NFPA 805 Chapter 3 were satisfied. Plant administrative procedures were reviewed to determine if adequate controls were in place to control the amounts and types of transient materials within each fire zone as well as the potential ignition sources of welding and grinding and the handling of transient combustibles in the plant. The team walked down numerous areas

in the plant, including the selected FAs, for control of combustible materials, storage of in-plant materials, transient combustibles, and general housekeeping. The team verified that containers with combustibles were UL or Factory Mutual listed.

b. Findings

No findings were identified.

.16 B.5.b Mitigating Strategy

a. Inspection Scope

The team reviewed the licensee's preparedness to handle large fires or explosions by reviewing the mitigating strategy of depressurization of reactor pressure vessel and injection with portable pump. To verify that the licensee continued to meet the requirements of their B.5.b related license conditions and 10 CFR 50.54 (hh)(2), the team reviewed procedures to ensure that they were being maintained and were adequate; and performed walkdowns with licensee staff to ensure that the actions were feasible. Inspectors also verified that the required equipment was properly staged and maintained, and that the staff was properly trained.

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES**

4OA2 Problem Identification and Resolution

a. Inspection Scope

The team reviewed a sample of recent independent licensee audits, CRs, self-assessments, and system/program health reports for thoroughness, completeness and conformance to FPP requirements. Guidance for the independent audits are contained in Regulatory Guide 1.189, "Fire Protection for Operating Nuclear Power Plants," and Generic Letter 82-21, "Technical Specifications for Fire Protection Audits."

The team also reviewed other CAP documents, including completed corrective actions documented in selected CRs and operating experience program documents, to ascertain whether industry identified fire protection issues (actual or potential) affecting BSEP were appropriately entered into the CAP for resolution. Items included in the operating experience program effectiveness review were NRC information notices, regulatory guides, regulatory issues summary, industry or vendor generated reports of defects and non-compliances submitted pursuant to 10 CFR Part 21, and vendor information letters. The team evaluated the effectiveness of the corrective actions for the identified issues. The documents reviewed are listed in the Attachment.

b. Findings

Introduction: The NRC identified a Green NCV of Brunswick OLC 2.B(6) for Units 1 and 2, for the licensee's failure to correct a nonfunctional fire door in the DG building. Specifically, on three occasions, NRC inspectors identified door 2-DGB-DR-EL023-118 as having a stuck open latch, which prevented the door from closing and latching securely.

Description: Door 2-DGB-DR-EL023-118 was a single, hollow metal, swinging door equipped with self-closing hardware. It is an Underwriters Laboratory listed, three-hour rated door installed for access/egress between diesel generator cell no. 1 and diesel generator cell no. 2. The door is credited as a three-hour fire rated barrier separating the diesel cells. On February 10, 2017 the NRC inspectors found the latch mechanism for the door intermittently sticking, such that the door would not secure in the closed position. The licensee initiated AR 02099153, and dispatched an operator to investigate the door. The operator reported that they manipulated the door several times with no deficiencies noted, but recommended that maintenance lubricate the latch. On February 14, 2017, the inspection team followed up on the issue and found the door unlatched upon arrival. The licensee investigated the condition, declared the door non-functional, and initiated AR 02099929. The licensee entered the appropriate action statement in accordance with site procedure 0PLP-01.2, "Fire Protection System Operability, Action, and Surveillance Requirements," and maintenance replaced the old latching mechanism with a new one. After repair, the door was reported working satisfactorily and the action statement was exited. The following morning, February 15, 2017, the team returned to the diesel generator building to confirm the door was repaired adequately. Upon arrival, the team, again, found the door unlatched. In response, the licensee investigated the condition, declared the door non-functional, and initiated AR 02100405. The licensee entered the appropriate action statement in accordance with site procedure 0PLP-01.2. The licensee took actions to install a new thumb latch, and to install a new door closure mechanism. The door was tested satisfactorily and the action statement was exited. Examination of the old hardware noted wear and tear on internal hardware parts, as well as a burr on one of the internal metal parts that most likely prevented full and consistent closure of the door. As a part of the corrective action, the licensee also initiated a cause evaluation to evaluate the repetitive nature of the failure, and the adequacy of the post-maintenance testing.

Analysis: The inspectors determined that the licensee's failure correct a nonfunctional fire door was a PD. The PD was determined to be more than minor because if left uncorrected, the PD could have the potential to lead to a more significant safety concern. Specifically, if the door was not adequately repaired, it could have the potential to not be able to perform its design function in the case of a fire in diesel generator cell nos. 1 or 2 (FA DG-4 or FA DG-5). Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the finding was screened as Green at task 1.4.3-C because there was a fully functional automatic suppression system on at least one side of the fire barrier. The finding was identified to have a cross-cutting aspect in the area of problem identification and resolution associated with the 'Evaluation' attribute because the organization did not thoroughly evaluate the condition of the door to ensure that the resolution addressed the underlying cause of the nonfunctional fire door (PI.2).

Enforcement: Brunswick OLC 2.B(6), for Units 1 and 2, states, in part, that Duke Energy Progress, LLC shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated September 25, 2012 and as approved in the SER dated January 28, 2015. Section 4.7.3 of the licensee's NFPA 805 Transition Report, which is enclosed with the license amendment request, states, in part, that the licensee will maintain the existing fire protection quality assurance (QA) program. Section 3.8.4 of the SER acknowledges that the fire protection quality QA program in place at the time was established in accordance with the guidelines of NUREG 0800, Section 9.5-1, BTP CMEB Position C.4 "Quality Assurance Program" and that the use of the existing fire protection QA program was acceptable. The fire protection QA program is described in section 5.2 of site procedure 0AP-033, "Fire Protection Program Manual." Section 5.2.2.A.A of procedure 0AP-033 states, in part, that conditions adverse to quality of fire protection related items shall be identified, reported, dispositioned and corrected in accordance with NGGM-PM-007, Section 12, "Quality Assurance Program Manual."

Contrary to the above, on February 10, 2017 and February 14, 2017, the licensee failed to correct a nonfunctional fire door, in accordance with site procedure 0AP-033. Upon the third discovery of the nonfunctional fire door, the licensee initiated AR 02100405, entered the appropriate action statement in accordance with site procedure 0PLP-01.2, and took actions to install a new thumb latch, and to install a new door closure mechanism. This violation is being treated as an NCV consistent with Section 2.3.2.a of the Enforcement Policy. (NCV 05000325, 324/2017007-01, Failure to Correct a Nonfunctional Fire Door).

#### 4OA6 Meetings, Including Exit

On February 17, 2017, the inspection team leader presented the preliminary inspection results to Mr. W. Gideon and other members of the licensee's staff. The licensee acknowledged the results. Proprietary information is not included in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION



## **SUPPLEMENTARY INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

S. Boyce, Nuclear Ops Specialist  
J. Brady, Nuclear Licensing Consultant  
C. Browne, Contract Safe Shutdown Engineer  
L. Davidson, Safe Shutdown Engineer  
J. Gaver, Ops Fire Marshal  
L. Grzeck, Manager Nuclear Regulatory Affairs  
M. Goddard, Fire Protection Programs  
W. Gideon, Vice President, BNP  
A. Holder, Fleet Risk Informed Fire Protection  
J. Ertman, Fleet Risk Informed Fire Protection  
R. Tart, NFPA 805 Project Manager  
J. Bryant, Reg. Affairs

#### **NRC Personnel**

M. Catts, Senior Resident Inspector  
M. Schweg, Resident Inspector  
S. Shaeffer, Chief, Engineering Branch 2, DRS, Region II

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

#### **Opened & Closed**

05000325, 324/2017-007-01	NCV	Failure to Correct a Nonfunctional Fire Door (Section 4OA2)
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**LIST OF FIRE BARRIER FEATURES INSPECTED**  
(Refer Report Section 1R05.02- Passive Fire Barriers)

**Fire Barriers Floors/Walls/Ceiling Identification**

<b><u>Fire Barriers Floors/Walls/Ceiling Identification</u></b>	<b><u>Description</u></b>
3-Hour Wall(s)	Unit 1 CSR
3-Hour Floor	Unit 1 CSR
3-Hour Wall(s)	Battery Room 1B
3-Hour Ceiling	Battery Room 1B
3-Hour Floor	Battery Room 1B

**Fire Door Identification**

<b><u>Fire Door Identification</u></b>	<b><u>Description</u></b>
3-Hour Door (FD-116, Double Door)	Battery Room 1A to 1B
3-Hour Door (FD-117, Double Door)	Battery Room 1B to CSR
3-Hour Door (FD-128, Single Door)	DG-07 to DG-01
3-Hour Door (FD-111, Single Door)	CSR to Cable Access Way

**LIST OF COMPONENTS REVIEWED**

(Refer to Report Sections 1R05.01 / 1R05.03 / 1R05.05 / 1R05.06)

50KVA Standby UPS 1B  
1-1XDB 125V/250V MCC  
1-B21-F013E-SV3: Safety Relief Valve  
1-E51-FIC-3325: RCIC Disch Flow Indic Controller at RSDP  
2-E51-FIC-3325: RCIC Disch Flow Indic Controller at RSDP  
1-B21-LI-5977: Remote Reactor Water Level Indicator for ASSD  
2-B21-LI-5977: Remote Reactor Water Level Indicator for ASSD  
1-CAC-TR-778: Suppression Pool Water Temperature  
2-CAC-TR-778: Suppression Pool Water Temperature  
Remote Shutdown Panel

## LIST OF DOCUMENTS REVIEWED

### Procedures

PD-EG-ALL-1500, Fleet Fire Protection Program Manual, Rev. 0  
0AP-033, Fire Protection Program Manual, Rev. 19  
OPEP-02.1, Initial Emergency Actions, Rev 53  
0AP-022, BNP Outage Risk Management, Rev 55  
OMA-NGGC-0203, Shutdown Risk Management, Rev 5  
0PLP-01.5, Alternative Shutdown Capability Controls, Rev 14  
0AOP-36.1, Loss of Any 4160V Buses or 480V E-Buses, Rev 70  
0EOP-01-FSG-07, "Portable Pump Setup and Operation"  
0EDMG-001, "Extreme Damage Mitigation Initial Response" Rev 7  
AD-EG-ALL-1501, Fire Protection Change Process, Rev 1  
AD-LS-ALL-0007, Applicability Determination Process, Rev 2  
AD-EG-ALL-1132, Preparation and Control of Design Change Engineering Changes, Rev 6  
AD-DC-ALL-0201, Development and Maintenance of Controlled Procedure Manual Procedures, Rev. 18  
0AOP-18.0, Nuclear Service Water System Failure, Rev 34  
AD-EG-ALL-1503, NFPA 805 Monitoring, Rev 1  
AD-EG-ALL-1520, Transient Combustible Control, Rev 6  
AD-EG-ALL-1540, Fire Protection Nuclear Safety Capability Assessment (NCSA), Rev 0  
0AP-064, Time Critical Operator Actions, Rev 0  
0ASSD-01, Alternative Safe Shutdown Procedure Index, Rev 41  
0ASSD-02, Control Building, Rev 57  
0ASSD-05, E7 Switchgear Room, Rev 0  
0PFP-013, General Fire Plan, Rev 49  
1ASSD-05, Reactor Building North, Rev 33  
1OP-51 Att. 3, "DC Electrical System Operating Procedure", Rev. 75  
BNP-PSA-086 Att. 15, " Fixed Initiator Target Name Update", Rev. 1  
AD-EG-ALL-1541, Circuit Analysis, Rev. 0  
AD-EG-ALL-1502, Fire Protection Impact Screening for Plant Design Changes, Rev. 0  
AD-EG-ALL-1520, Transient Combustible Control  
AD-EG-ALL-1521, Hot Work Permits, Rev.5  
AD-EG-ALL-1522, Duties of a Fire Watch, Rev. 0  
AD-EG-ALL-1531, Selection, Care and Maintenance of Fire Fighting Ensembles, Rev. 0  
AD-EG-ALL-1532, Pre-Fire Plans, Rev. 0  
AD-MN-ALL-0015, Nuclear Station Scaffolding Erection, Tracking and Dismantling, Rev.8  
AD-TQ-ALL-0086, Fire Brigade Training, Rev. 0  
0FPP-008, Fire Protection Equipment Semiannual Inspection, Rev. 65  
0FPP-060, Fire Drill Program, Rev. 2  
0OI-50.9, 4160V Bus Common A Electrical Load List, Rev. 77  
0PLP-01.2, Fire Protection System Operability, Action and Surveillance Requirements, Rev. 49  
0PM-DPM500, HVAC Damper Inspection, Rev.018  
0PT-34.2.2.1, Fire Door, Pressure Boundary Door, ASSD Access / Egress Door Inspections, Rev. 54  
1PT-34.4.1.1, Unit 1 Reactor Building Fire Detection Instrumentation Operability Test, Rev. 17  
1PT-34.4.1.2, Unit 1 Reactor Building Fire Detection Logic Functional Test, Rev. 3  
0PT-34.5.1.1, Fire Protection Valve Cycle Test, Rev. 33  
0PT-34.2.5.0, Fire Suppression System Control valve Position Verification, Rev. 32  
0PT-34.5.5.0, Diesel and Electric Fire Pump Functional Test, Rev. 34  
0PT-34.6.7.8, Fire Barrier Penetration Seals-Control Building, Rev. 22  
0PT-34.7.1.0, Fire Suppression Water System Flow Test, Rev. 17

OPT-34.7.2.1, Hose Station Flow Test, Rev. 21  
 OPT-34.13.1.0, Dry Barrel Hydrant Test, Rev. 25  
 OPT-34.15.9.7, Cable and Conduit Fire Barriers, Rev. 26  
 OPT-34.24.6.1, Cont. Bldg. Cable Spreading Room Sprinkler System Operability Test, Rev. 19  
 1PT-34.5.1.3, Reactor Building Fire Protection Valve Cycle Test, Rev. 13  
 1PT-34.6.7.5, Fire Barrier Penetration Seals Reactor / Turbine Building, Rev. 19  
 1PT-34.12.1.1, Unit 1 Reactor Building Sprinkler System Water Flow Alarm Functional Test, Rev. 15  
 1PT-34.13.3.1, Control Building Incipient Fire Detection Quarterly Functional Test and Maintenance, Rev. 0  
 1PT-34.13.3.1, Control Building Incipient Fire Detection Annual Functional Test with FACP Alarm and System Maintenance, Rev. 3  
 1PT-34.13.3.2, Unit 1 Control Building Fire Detection Instrumentation Operability Test, Rev. 2  
 DBD-61, Design Basis Document, Gaseous Suppression Systems, Rev. 2  
 DBD-62, Design Basis Document, Water Based Fire Suppression Systems, Rev. 5  
 DBD-63, Design Basis Document, Fire Detection Systems, Rev. 1  
 DBD-144, DBD External and Internal Flooding Topical Design Basis Document, Rev. 0

### **Calculations, Evaluations, & Specifications**

BNP-E-9.010, NFPA 805 Nuclear Safety Capability Assessment (NSCA), Rev. 2  
 1FP-1070, NFPA 805 Transition - Fire Area CB-23E Fire Safety Analysis for Unit 1, Rev. 1  
 1FP-1072, NFPA 805 Transition - Fire Area CB-8 Fire Safety Analysis for Unit 1, Rev. 0  
 1FP-1111, NFPA 805 Transition - Fire Area RB1-1 Fire Safety Analysis for Unit 1, Rev. 1  
 1FP-1090, NFPA 805 Transition - Fire Area DG-4 Fire Safety Analysis for Unit 1, Rev. 1  
 1FP-1091, NFPA 805 Transition - Fire Area DG-5 Fire Safety Analysis for Unit 1, Rev. 1  
 BNP-PSA-080, BNP Fire PRA – Quantification, Rev. 5  
 BNP-PSA-083, BNP Fire PRA – Plant Partitioning and Ignition Frequency, Rev. 3  
 BNP-PSA-086, Fire Scenario Data, Rev. 1  
 BNP-E-9.011, NFPA 805 Transition – Non Power Operational Mode Review  
 OFP-1222, BNP NFPA 805 Monitoring, Rev 2  
 OVLVS-0006, Evaluation of MOV Pressure Boundaries for IN92-18 Hot Short Events  
 BNP-E-9.010, NFPA 805 Nuclear Safety Capability Assessment (NSCA), Rev. 2  
 1FP-1070, Fire Area CS-23E, Rev 1  
 BNP-PSA-083, Plant Partitioning and Ignition Frequency  
 BNP-PSA-080, Fire PRA – Quantification, Rev 5  
 BNP-PSA-086, Fire Scenario Data  
 BNP-E-9.007, ASSD Recovery Action Feasibility, Rev 1  
 BNP-LR-664, License Renewal Aging Management Program  
 BNP-E-9.007, ASSD Recovery Action Feasibility, Rev 1  
 GE-NE-0000-0004-6894-01, Brunswick Nuclear Plant, July 2002, Rev 0  
 BNP-MECH-B5B, Extreme Damage Mitigation Guidelines  
 EER89-0052, Evaluate NFPA 13 Deviation (Sprinkler Locations), Rev. 0  
 ESR97-00571, Fire Door Problem Resolution, 9/26/1998  
 ESR98-00121, Engine Driven Fire Pump Test Result Evaluation, Rev. 0  
 OFP-0086, NFPA 30, Flammable and Combustible Liquids Code Compliance Evaluation, Rev. 3  
 OFP-0088, Hydraulic Calculation for the Unit 1 & 2 Cable Spreading Room, Rev. 001  
 OFP-1018, NFPA 20, Standard for the Installation of Centrifugal Fire Pumps Code Compliance Evaluation, Rev. 4  
 OFP-1033, NFPA 72E, Standard on Automatic Fire Detection-Reactor Buildings Code Compliance Evaluation, Rev. 1  
 OFP-1038, NFPA 13, Installation of Sprinkler Systems-Reactor Buildings Code Compliance Evaluation, Rev. 3

Unit 1 LCOTR No. 0-1-17-00101, Door 1-CBT-DR-EL023-116 non-Functional as a Fire Door  
 Unit 1 LCOTR No. 0-1-17-00101, Door 1-CTB-DR-EL023-118 non-Functional as a Fire Door  
 1FP-0062, Hydraulic Calculation, Unit 1 Reactor Building 20'-0", Rev. 0  
 1FP-1070, NFPA 805 Transition Fire Area CB-23E, Fire Safety Analysis for Unit 1, Rev. 1  
 OFP-1018, Code Compliance Evaluation, NFPA 20, Rev. 4  
 OFP-1039, Code Compliance Evaluation NFPA 13, Control Building, Rev. 3  
 OFP-1213, Code Compliance Evaluation NFPA 805 Performance Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants 2001 Edition, Rev. 1

### **Work Orders**

WO 20010059, Repack Electric Fire Pump, 04/22/16  
 WO 12154569, Diesel Fire Pump Shaft Guard, 04/18/16  
 WO 01958568, Small Hole in Exhaust Elbow, 07/27/11  
 WO 00775911, Unit 1 License Renewal Cable Aging Management Program  
 WO2000119711-01, Fire Protection Equipment Semiannual Inspection, 8/08/2016  
 WO20017039-02 and WO200117039-03, Fire Door, Pressure Boundary Door, ASSD Access/Egress Door Inspections, 6/26/2016  
 WO20057258, Fire Door, Pressure Boundary Door, ASSD Access/Egress Door Inspections, 1/23/2017  
 WO20147081-01, 2-DGB-DR-EL-023-118, Repair Door, 2/14/2017  
 WO02059975, 1CBT-DR-EL023-116, Repair Door Latching Mechanism, 1/31/2017  
 WO20061463, 2-DGB-DOR-EL-023-118, Latch not Working, 2/14/2017  
 WO20061715, Door Latch Broken on DGB Fire Door, 2/15/2017  
 WO13440462, Task Nos. 1-15, Ventilation Exhaust Fan and Damper Linkage Broken, 3/2/2015

### **Drawings**

D-02542, Reactor Building Piping Diagram Service Air System  
 D-02525, Reactor Building Residual Heat Removal System Piping Diagram  
 D-02527, Reactor Building Reactor Water Clean-Up System Piping Diagram  
 F-09527, Auto Blowdown Relay Vertical Board  
 F-09559, 480V Power Penetration 2X-105K  
 F-09559, 120V Control Penetration 2X-102F  
 LL-92037, MCC 1XB Control Wiring Diagram  
 LL-92037, MCC 1XB Switch Development  
 D-25023-1, RCIC Cooling Water Supply  
 D-42017, Reactor Core Isolation Cooling System  
 D-42016, Residual Heat Removal System Torus Cooling Train B  
 D-42015, Residual Heat Removal System Torus Cooling Train A  
 D-42013, Residual Heat Removal System Shutdown Cooling  
 D-02525, Reactor Building RHR Piping Diagram  
 E-AC-BNP-023E, Primary 50 KVA UPS Power Supply (PM 86-011), 2/2/17  
 F-90099, "50 KVA Uninterruptible Power System Primary & Standby Units 1A & 1B Interconnection Wiring Diagram", Rev. 0  
 F-90098, "120/208 Volt – 50 KVA Uninterruptible Power System Single Line Diagram, Rev. 20  
 F-30008, "125/250V DC System MCC, 1XDA, 1XDB, 1TDA, 1TDB Three Line Diagram", Rev. 32  
 F-30006, "Single Line Diagram 125/250 Volt DC System Distribution Switchboard 1A & 1B", Rev. 37  
 F-03001, 230KV & 24KV Systems Main One Line Diagram, Rev. 36  
 9527-LL-9259, Units No 1&2 Motor Control Center "WTA" Miscellaneous Control Diagrams, Rev. 3  
 1-FP-05887, "Unit 1 Auto Depressurization System Elementary Diagram", Rev. Q

1-FP-50098, "RCIC System Elementary Wiring Diagram", Rev. U  
 LL-09275, Unit No. 1 Unit Substation Common "C" Compt. 1  
 Brunswick Nuclear Plant Unit 1 and 2 Electrical Distribution System, 6/23/16  
 0-FP-04285, Sheet 1, Fairbanks Morse 1972 Fire Pump Certification Curve  
 1-FP-81283, Unit 1 Cable Spreader Room Sprinkler System, Rev. C  
 D-02043, Plant Fire Protection System Piping Diagram, Sheet 1, Rev. 8  
 D-02043, Plant Fire Protection System Piping Diagram, Sheet 2, Rev. 1  
 D-02058, Plant Fire Protection System Piping Diagram, Sheet 3B, Rev. 6  
 D-02299, Reactor Building Fire Protection Piping, Sprinkler System Piping Diagram, Rev. 11  
 D-02304, Piping Water Service Water, Radwaste & Treatment Buildings Fire Protection  
 Sprinkler System Rev. 13  
 D-29099, Reactor Building Piping Diagram Fire Protection Piping Sprinkler System Sheet 2,  
 Rev. 5  
 D-04106, Plant Fire Protection System Piping Diagram, Rev. 25  
 F-01021, Site Plot Plan, Rev. 15  
 F-01302, Fire Protection Units 1 & 2, Reactor, Control, S.W. & Radwaste Buildings, Building  
 Masonry, Plaster and F.P. Doors, Rev. 9  
 F-01304, Fire Protection Reactor, DG, Radwaste, SW, Control & Service Buildings; Building  
 Door Schedule & Details, Rev. 1 and Rev. 19  
 F-01345, Site Fire Protection Plan Site Layout, Rev. 11  
 F-03896, Fire Detection System Plan, Reactor Building, El. (-) 17'-0", Sheet 1, Rev. 12  
 F-03896, Units No 1 & 2, Fire Detection System Plan, Control Building, El. 23'-0", Sheet 11,  
 Rev. 1  
 F-03896, Units No 1 & 2, Fire Detection System Plan, Control Building Battery Rooms,  
 El. 23'-0", Sheet 12, Rev. 1  
 F-03896, Fire Detection System Plan, Reactor Building, El. (-) 17'-0", Sheet 20, Rev. 0  
 F-04020, Fire Protection System Units 1 & 2, Tank and Fire Pumps Piping and Details, Rev. 16  
 F-07008, Control Building General Arrangement Plans, Rev. 53  
 F-24000, Reactor Building Fire Protection System Plan at El. (-)17'-0", Sheet 1, Rev. 12  
 F-25001, Reactor Building General Arrangement Plan, Below Grade (-)17'-0", Rev. 20  
 LL-FB-05100, Sh.1, Fire Barrier Penetrations, General Layout Unit 1 & 2, Rev. 2  
 LL-FB-05101, Sh.1, Cable Spreading Area Unit No. 1 West Floor Plan, Rev. 3  
 LL-FB-05101, Sh.2, Cable Spreading Area Unit No. 1 East Floor Plan, Rev. 3

### **Completed Surveillance Procedures, Test Records**

OPT-19.11.L, Safety Relief Valve Local Control Operability Test, 3/11/16  
 OPT-10.16.L, "Remote Shutdown Panel RCIC Flow Controller, RCIC Manual Turbine Trip, and  
 RCIC Turbine Trip Reset Local Control Operability Test", 4/24/15  
 OPT-10.16.L, "Remote Shutdown Panel RCIC Flow Controller, RCIC Manual Turbine Trip, and  
 RCIC Turbine Trip Reset Local Control Operability Test", 1/24/13  
 OPT-10.16.L, "Remote Shutdown Panel RCIC Flow Controller, RCIC Manual Turbine Trip, and  
 RCIC Turbine Trip Reset Local Control Operability Test", 6/26/15  
 OPT-10.16.L, "Remote Shutdown Panel RCIC Flow Controller, RCIC Manual Turbine Trip, and  
 RCIC Turbine Trip Reset Local Control Operability Test", 10/24/13  
 0FPP-008, Fire Protection Equipment Semiannual Inspection, 8/18/16  
 OPT-34.2.2.1, Fire Door, Pressure Boundary Door, ASSD Access / Egress Door Inspections,  
 7/02/2015, 6/26/2016 & 7/02/2016 and 1/23/2017  
 OPT-34.5.5.0, Diesel and Electric Fire Pump Functional Test, 4/23/2015  
 OPT-34.5.5.0, Diesel and Electric Fire Pump Functional Test, 4/23/2016  
 OPT-34.7.1.0, Fire Suppression Water System Flow Test, 2/17/11  
 OPT-34.7.1.0, Fire Suppression Water System Flow Test, 1/26/14

**Plant Modifications and Engineering Changes**

EC 0000407039, Flex Pump use for Partial Fire Suppression Supply Flow  
 EC 407214, Functionality Evaluation for the Motor and Engine Drive Fire Pumps, Rev 0  
 EC 406895, FPRA Input on HSS Components for BNP  
 EC 0000300860, Hydraulic Analysis for Fukushima Flex Connections Mods  
 EC 294764 ,FP Diesel FO Storage Vent and Mounting Steel  
 EC 294763, 4-Day Diesel FO Storage Tank Vent  
 EC 294283, Unit 2 Alternate Safety Related Battery Chargers  
 EC 294764, NFPA 805 Mod 8B FP Diesel FO Storage Vent and Mounting Steel, Rev. 3  
 EC 407409, Functionality Assessment of Fire Door 1-CTB-DR-EL023-115, Rev. 0

**Fire Fighting Preplan Strategies**

0PFP-CB, Unit 1 Cable Spreading Room Pre-fire Plans, Rev. 14  
 0PFP-CB, Battery Room 1B Pre-fire Plans, Rev. 14  
 1PFP-RB, Northwest Core Spray Room Pre-fire Plans, Rev. 20

**Applicable Codes & Standards**

IEEE 848-1996, IEEE Standard Procedure for the Determination of the Ampacity Derating of Fire Protected Cables  
 NFPA 10-1975, Portable Fire Extinguishers  
 NFPA 13-1983, Installation of Sprinkler Systems  
 NFPA 14-1971, Fire Standpipe Systems  
 NFPA 20-1971, Standard for the Installation of Centrifugal Fire Pumps  
 NFPA 24-1973, Standard for the Installation of Private Service Mains and their Appurtenances  
 NFPA 30-1973, Flammable Combustible Liquids Code  
 NFPA 72D-1973, Standard for the Installation, Maintenance, and Use of Proprietary Protection Signaling Systems  
 NFPA 72E-1974, Standard on Automatic Fire Detectors

**Technical Manuals, Vendor Information**

FP-9316, Valve, Safety/Relief Model 7567F  
 Steelcraft Technical Data Manual, Door Variations and Options, Hardware Preparations and Fire Rated Product Approvals, Book Revision 10/28/2016  
 Allegion / Ives INST.FB31, Installation Instructions for Automatic Flush Bolt for Metal Doors, Rev. 06/15

**Audits & Self-Assessments**

System Health Report-Fire Protection, 2016Q3 and 2016Q4  
 Program Health Report-Fire Protection, 2016Q2-4 and Quarter 1, 2017  
 B-FP-14-01, Assessment of BNP Fire Protection Program, 7/29/14  
 2016 BNP-FP-01 Assessment of BNP Fire Protection Program, 5/03/2016

**License Basis Documents**

BNP Unit 1 and Unit 2 Operating License Conditions 2.B(6), Fire Protection  
 Transition to 10 CFR 50.48(c) - NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition – Transition Report(s), dated September 25, 2012  
 NRC Safety Evaluation Report dated January 28, 2015  
 BNP UFSAR, Section 9.5.1, Fire Protection System, Rev. 25  
 BNP UFSAR, Section 9.5.2, Communication Systems, Rev. 24  
 BNP UFSAR, Section 9.5.3, Lighting Systems, Rev. 24  
 NRC Fire Protection Program Evaluation, dated June 23, 1977

BNP Operating License Conditions 2.P, Unit 1; and 2.M Unit 2; Mitigation Strategy License Condition; 10 CFR 50.54(hh)(2)

**Other Documents**

LOI-CLS-LP-304, Licensed Operator Initial Training – ASSD  
 AOI-CLS-LP-304, Non-Licensed Operator Training – ASSD  
 BNP Operations Roster, 1/4/17  
 Focused Self Assessment 01989103-03  
 NFPA 805 Monitoring BNP Expert Panel Meeting Minutes, 12/1/2015  
 NFPA 805 Monitoring BNP Expert Panel Meeting Minutes, 06/28/2016  
 NUREG/CR-6681 – Ampacity Derating and Cable Functionality for Raceway Fire Barriers  
 Station Health Report – Fire Protection, Q3 – 2016  
 Station Health Report – Fire Protection, Q4 - 2016  
 TIMD 202 Description of Fire Door 116 Automatic Flush Bolt, 2/01/2017  
 TIMD 204 Description of Fire Door 116 Inactive Latch, 2/01/2017  
 Specification No.9527-01-24-2, Hollow Metal Doors, 5/02/1798  
 Active LCO Report for Both Units Including Unit 0 LCO's, 2/14/2017  
 FIR-NGGC-0003 Page 29 of 32, Hot Work Log 2/14/2017 through 2/15/2017  
 Transient Combustible Permit Nos. 325-327 and 330-331 dated 10/31/2016 through 12/06/2016  
 Off-Site Fire Department Drill Evaluation 11/17/2016  
 Unannounced Fire Drill Evaluation for Independent Observers, 4/13/16, 6/21/2016 and 10/24/2016  
 NANTel Generic Plant Access Training Content Document, 11/19/2016  
 BNP Site Communication "Fire Door Requirements and Expectations", 8/14/2014  
 Fire Protection Impairment Log, 2/14/2017  
 Mutual Aid Agreement, Brunswick Nuclear Plant and Southport, North Carolina, 12 June 2014  
 NFPA 805 Hourly Fire Watch Log, 2/14/17  
 NFPA 805 Compensatory Measures Log, 2/14/17  
 Fire Brigade Training Records, Fire Brigade and Incident Commander, Day Shift for 2/13/13  
 Operating Experience (OE) Report, NRC IN2009-29, Fire Pump Failure to Start

**Action Requests (ARs) /Condition Reports (CRs) Reviewed During Inspection**

CR 02090488, Acceptance Criteria for OPT-34.5.5.0 Inadequate  
 CR 2090903, Intake Damper Stuck  
 CR 00706628, Review and Update the VFDR, RA Lists in the FSAs  
 AR 00710266, ASSD procedure directs the use of uncredited equipment  
 AR 00710262, Safe Shutdown analysis and ASSD procedure review  
 AR 00707844, Time critical task evaluations for ASSD procedures  
 AR 00650871, Implementation Items for NFPA 805  
 AR 02048553, Site Performance Gap – LF.1-2  
 AR 02045218, Trend in Improper Storage of Transient Combustible Materials  
 AR 02063916, B.5.b Commitment Review  
 AR 02071423, Industry OE on NFPA 805 Monitoring Potential Impact to BNP  
 AR 02078835, Fire Protection Change Management Issue  
 AR 02067868, NOS ID'd: Incomplete Fire Protection Screening on EC#300888  
 AR 02067394, NOS ID'd: Documentation of FPRA Review for EC29476s  
 AR 02036653, Project in Jeopardy due to FPRA/SSD requirements  
 AR 02016009, EC Fire Protection Program Reviews not identified  
 NCR02090500, OOP-41, Section 6.3.55, Auxiliary Pressure Source Inadequate  
 NCR02090488, OPT-34.4.4.0 Acceptance Criteria Inadequate  
 CR00690257, Fire Door Behaviors



CR9800550, Engine Driven Fire Pump Test Results  
CR2090903, Ventilation Exhaust Fan and Damper Linkage Broken

**List of ARs Generated as a Result of This Inspection**

AR 02096652, 0ASSD-02

02100855, 2017 Triennial Fire Protection Non-Power Operations

02100405, 2017 Triennial Fire Protection Door Latch Broken on DGB Fi

02100675, Lack of fire door closure verification

02099153, Door 2-DGB-DR-EL023-118 Latch Is Sticking

02100639, PA Announcements Not Heard in Hall Outside TAC CR 1-637

02100633, PA Announcements Not Heard in TAC Conference Room 1-637

02100413, Plant PA Announcements Not Effectively Relayed to Outbuildings

02099929, 2-DGB-DOR-EL023-118 Latch Not Latching

02099985, Procedure Requirement of AD-EG-ALL-1503 Not Met

02098594, BNP-E-9.011, NFPA 805 Transition Non-Power Operational Mod

02097348, Cable Tray 68B/DA Pull Box shows rust (SW BLDG)

02096600, Remote Shutdown Panel recorder 1-CAC-TR-778 placard error

02096236, Repair Door Latching Mechanism 1-CTB-DR-EL023-116