



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

December 18, 2008

Mr. Benjamin C. Waldrep
Vice President
Carolina Power and Light Company
Brunswick Steam Electric Plant
P.O. Box 10429
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC TRIENNIAL FIRE
PROTECTION INSPECTION REPORT 05000325/2008009 AND
05000324/2008009

Dear Mr. Waldrep:

On November 21, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Brunswick Unit 1 and 2 facilities. The enclosed inspection report documents the inspection results, which were discussed on that date, 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 personnel.

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

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

Sincerely,

/RA/

Rebecca L. Nease, Chief
Engineering Branch 2
Division of Reactor Safety

Docket No.: 50-325, 50-324
License No.: DPR-71, DPR-62

Enclosure: (See page 2)

Enclosure: Triennial Fire Protection Inspection Report 05000325/2008009 and
05000324/2008009 w/Attachment: Supplemental Information

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Letter to Benjamin C. Waldrep from Rebecca L. Nease dated December 18, 2008.

SUBJECT: Triennial Fire Protection Inspection Report 05000325/2008009 and
05000324/2008009 w/Attachment: Supplemental Information

Distribution w/encl:

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-325, 50-324

License Nos.: DPR-71, DPR-62

Report Nos.: 05000325/2008009 and 05000324/2008009

Licensee: Carolina Power and Light (CP&L)

Facility: Brunswick Steam Electric Plant, Units 1 & 2

Location: 8470 River Road SE
Southport, NC 28461

Dates: November 3 - 7, 2008 (Week 1)
November 17 - 21, 2008 (Week 2)

Inspectors: P. Fillion, Senior Reactor Inspector (Lead Inspector)
C. Even, Reactor Inspector
R. Fanner, Reactor Inspector
N. Staples, Reactor Inspector
G. Wiseman, Senior Reactor Inspector

Accompanying
Personnel: J. Dymek, General Engineer
K. Miller, Reactor Inspector

Approved by: Rebecca Nease, Chief
Engineering Branch 2
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000325/2008009, 05000324/2008009; 11/03 - 07/2008 and 11/17 - 21/2008; Brunswick Steam Electric Plant, Units 1 & 2; Triennial Fire Protection Inspection.

This report covers an announced two-week triennial fire protection inspection by a team of five regional inspectors. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

None

B. Licensee Identified Violations

None

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R05 Fire Protection

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05TTP, "Fire Protection – NFPA 805 Transition Period (Triennial)," dated May 9, 2006. The objective of the inspection was to review the Brunswick Steam Electric Plant Units 1 and 2 fire protection program (FPP). The team selected three fire areas (FAs) for detailed review to examine the licensee's implementation of the FPP. The three FAs chosen for review were selected based on available risk information as analyzed onsite by a Senior Reactor Analyst from Region II, data obtained in plant walkdowns regarding potential ignition sources, location and characteristics of combustibles and location of equipment needed to achieve and maintain safe shutdown (SSD) of the reactor. Other considerations for selecting the FAs were the relative complexity of the post-fire SSD procedure, information contained in FPP documents, and results of prior NRC triennial fire protection inspections. Section 71111.05-05 of the IP specifies a minimum sample size of three FAs. Detailed inspection of these three FAs fulfills the procedure completion criteria. The three areas chosen were:

1. Unit 1 cable spreading/switchgear room, identified as Fire Zone CB-05. Alternate shutdown type compliance (III.G.3) applies to this fire zone.
2. Battery room 2B, identified as Fire Area CB-10. This room contains a 250 V battery, a 48 V battery, motor control centers, battery chargers, inverters, a small motor generator set and a number of cable trays. Shutdown would be controlled from the main control room.
3. Service water pump house, identified as Fire Area SW-1. Shutdown would be controlled from the main control room.

The team evaluated the licensee's FPP against applicable requirements, including Brunswick Steam Electric Plant (BSEP) Units 1 and 2 Updated Facility Operating License Condition 2.B.(6) and documents referenced therein; Title 10 of the Code of Federal Regulations (CFR), Part 50, Appendix R; 10 CFR 50.48; commitments to Appendix A of Branch Technical Position (BTP) Auxiliary and Power Conversion Systems Branch (APCSB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants"; related NRC safety evaluation reports (SERs); and plant Technical Specifications. The team reviewed related FPP requirements, as described in the Updated Final Safety Analysis Report (UFSAR), Section 9.5.1, Fire Protection System, Section 9.5.2, Communication System, and 9.5.3, Lighting Systems. The team reviewed the "Safe Shutdown Analysis (SSA) Report," the licensee's "Fire Protection Program Manual" and their "Fire Protection Commitment Document." The team evaluated all areas of this inspection, as documented below, against these requirements. Specific licensing basis documents reviewed are listed in the Attachment.

Enclosure

.01 SSA and Protection of SSD Capabilities

a. Inspection Scope

The team reviewed that portion of the SSA which listed the credited and fire-affected equipment for the three FAs selected. This review included an evaluation of the completeness and depth of the SSA in terms of the capacity and capability to achieve and maintain hot shutdown and transition to cold shutdown. The list of credited equipment in the SSA was compared to the SSD procedures. The team reviewed the circuit analysis portion of the SSA to ascertain the special post-fire operator actions specified by the analysis as resolution to potential fire-induced cable damage. It was then checked whether the SSD procedures included these actions. Conversely, a comparison of the SSA and the SSD procedure was made to check that equipment specified in the procedure had been addressed in the analysis. In addition, the accuracy of the SSA with regard to pinpointing the location of cables throughout the plant was inspected. This was done through in-plant inspection of the location of a random sample of about 80 raceways which in turn was compared to the location given in the analysis. Through a combination of licensing basis information review and in-plant inspection, the team ascertained whether the plant layout and the fire prevention and protection features in place to protect the SSD capability satisfy the requirements of 10 CFR 50, Appendix R, Section III.G.

b. Findings

No findings of significance were identified.

.02 Passive Fire Protection

a. Inspection Scope

The team inspected the material condition and as-built configuration of accessible passive fire barriers surrounding and within the FAs selected for review to evaluate the adequacy of the fire resistance in accordance with the requirements of 10 CFR 50, Appendix R, Section III.G, and Appendix A of BTP APCSB 9.5-1. Fire barriers in use included block walls, poured walls, ceilings, floors, mechanical and electrical penetration seals, doors, dampers and electrical raceway fire barrier systems (ERFBS). The as-built configuration of these fire barriers was compared to their tested or approved configuration. For example fire doors were examined for attributes such as material condition, tightness, proper operation, Underwriter's Laboratories (UL) label on door, frame, and latch, method of attachment to the wall, etc. Construction detail drawings were reviewed as necessary. Other types of fire barriers were inspected in a similar detail. Fire endurance test data were reviewed as necessary to verify the qualified fire resistance ratings of the selected fire barriers and ERFBS. In cases where the qualification of a fire barrier depended on engineering evaluations by the licensee in lieu of testing, the team requested the licensee to provide those evaluations for review. The team's review of fire barriers included evaluation of fire proofing applied to structural steel. Fire model calculations were generated by the team as appropriate using NRC recommended computer codes to evaluate the selected barrier's effectiveness to contain potential fires. The overall criterion applied to this element of the inspection procedure was that the passive fire barriers had the capability to contain fires for one hour or three

hours as applicable. The passive fire protection features included in the review are listed in the Attachment.

b. Findings

No findings of significance were identified.

.03 Active Fire Suppression

a. Inspection Scope

The team's review of active fire suppression included the fire detection systems, fire protection water supply system, automatic fire suppression systems and manual fire fighting fire hose and standpipe systems. The inspection of fire detection systems included a review and walk-down of the as-built configuration of the systems as compared to the applicable National Fire Protection Association (NFPA) standard. The testing and maintenance program and its implementation for the fire detection system were reviewed. The team reviewed and walked-down operational aspects of the fire detection system such as location of panels and alarms to determine the capability to rapidly pinpoint the location of any detected fires. At the time of the inspection the licensee was in the process of implementing a plant modification to replace the existing fire detection system(s) with a new addressable fire alarm network. An air sampling type incipient fire detection system is to be provided in both cable spreading rooms and cable access ways. This modification had already been partially completed for the three focus fire areas. The team reviewed Engineering Change EC-50724, Fire Detection System, and Engineering Change EC-51305, Progress Energy Specification for Fire Detection System.

The team inspected the material condition, operational lineup (i.e. position of valves), design and testing of the sprinkler systems in the cable spreading/switchgear room (Fire Zone CB-05) and service water pump house (Fire Area SW-1). Battery room 2B (Fire Area CB-10) did not have a fixed fire suppression system. Hydraulic calculations which demonstrated the fire pumps and piping had the capacity and capability to deliver proper flow and pressure were reviewed. The most recent flow and pressure test data were also reviewed. The locations of sprinkler heads were observed to check for obstructions. The redundancy of fire protection water sources and fire pumps to fulfill their fire protection function to provide adequate flow and pressure to hose stations and automatic suppression systems were reviewed as compared to licensing basis requirements.

All aspects of fire brigade readiness were reviewed, including but not limited to, personal protective and smoke control equipment availability and condition, training, fire drills, daily staffing levels of fire brigade personnel, hose station locations, hose lengths, nozzle types, pre-fire planning, emergency lighting, fitness for fire fighting duty of brigade members. In general, the acceptance criteria applied to active fire suppression systems were contained in applicable codes and standards listed in the Attachment as modified by the design basis documents.

b. Findings

No findings of significance were identified.

.04 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team evaluated whether the automatic fixed sprinkler systems or manual fire fighting activities could adversely affect the credited SSD equipment, inhibit access to alternate shutdown equipment, and/or adversely affect the local operator actions required for SSD in the selected fire areas. With regard to the fixed automatic sprinkler system in the cable spreading/switchgear room (Fire Zone CB-05), the team considered consequences of a pipe break and inadvertent system actuation. In the service water pump house (Fire Area SW-1), which contained all the service water cooling pumps and their ancillary equipment, the impact of sprinkler system actuation on equipment was evaluated. The team also checked that sprinkler system water would either be contained in the fire affected area or be safely drained off. In cases where the licensee's analysis of these concerns took credit for drains, the team evaluated the adequacy and condition of floor drains and sumps and ascertained whether the drains were maintained open through periodic cleaning and inspections.

The team also addressed the possibility that a fire in one FA could lead to activation of an automatic suppression system in another FA through the migration of smoke or hot gases, and thereby adversely affect SSD. The team reviewed air flow paths out of the selected FAs to verify that inter-area migration of smoke or hot gases would not inhibit necessary operator actions. This portion of the inspection was carried out through a combination of walk-downs, drawing review, and records review.

b. Findings

No findings of significance were identified.

.05 Operational Implementation for Shutdown from the Main Control Room and Alternate Shutdown

a. Inspection Scope

The team inspected the operational implementation of post-fire SSD for each of the three selected FAs. Walkthroughs of the shutdown procedures were performed (refer to the Attachment for a list of the procedures). Acceptance criteria applied to local operator actions specified in the shutdown procedures were contained in IP 71111.05TTP, Enclosure 2.

b. Findings

No findings of significance were identified.

.06 Circuit Analysis

a. Inspection Scope

For each of the three selected FAs, the team reviewed selected SSD components (refer to the Attachment for a list), which the licensee credited for post-fire SSD. The team reviewed routing information for credited components to determine if a fire in the chosen areas would impact them. If there was a potential for components to be impacted by fire, the team performed additional analysis and reviewed licensee credited resolutions. The individual circuit analysis review consisted of identifying the impacted cable, determining the purpose of the impacted cable, and verifying the licensee action to resolve the condition.

The control circuits for the service water pumps were reviewed to ascertain the permissives and interlocks needed for proper pump operation, how they could be affected by fire-induced cable damage, and whether the post-fire shutdown procedure for manual starting of the service water pumps ensured the equivalent start sequence. Also, a review was made of the overcurrent protection relays at the circuit breakers controlling the service water pump motors and at the bus incoming breaker to check that fire induced short-circuits would not lead to de-energization of the credited service water pump. The circuitry associated with the electric motor-driven fire pump and the diesel engine-driven fire pump remote control and automatic functions was reviewed to check that it implemented the desired start logic and would not be vulnerable to fire damage.

The team reviewed a sample of circuit diagrams to check that transfer/isolation switches needed for alternate shutdown were provided with contacts at appropriate points in the circuits.

This portion of the inspection was carried out through document review supplemented by in-plant inspection as deemed appropriate.

b. Findings

No findings of significance were identified.

.07 Communications

a. Inspection Scope

The team inspected the plant communications systems that would be relied upon to support safe shutdown, fire event notification, and fire brigade fire fighting activities. Attributes of the plant communications systems important to post-fire safe shutdown were addressed by the team, such as availability at designated locations, reliability ensured through periodic testing, batteries maintained sufficiently charged, good reception in all required areas of the plant, vulnerability to fire damage etc. Statements made by operations personnel during the inspection as to which communication system they would use were compared to statements in the UFSAR concerning communications for post-fire SSD. The team also reviewed selected fire brigade drill evaluation/critique reports to assess proper operation and effectiveness of the fire brigade command post portable radio communications during fire drills and identify any history of operational or performance problems with radio communications during fire drills. Communications

were inspected through a combination of in-plant observations, drawing and records review, and interviews.

b. Findings

No findings of significance were identified.

.08 Emergency Lighting

a. Inspection Scope

The team inspected the placement and aiming of emergency lighting units (ELUs) installed to provide illumination for operators carrying out the SSD procedures for the three selected FAs. The team reviewed the design, maintenance and testing of ELUs throughout the plant to confirm they would illuminate for an 8-hour period following interruption of normal power to the battery chargers. Copies of data sheets from recent past surveillance tests on the ELUs were reviewed. Refer to the Attachment to this report for procedure titles and dates of completion. In cases where an ELU failed the surveillance test, the team followed up to confirm the corrective action and programmatic treatment.

The team observed whether emergency exit lighting was provided for personnel evacuation pathways to the outside as identified in NFPA 101, Life Safety Code, and the Occupational Safety and Health Administration (OSHA) 29 CFR 1910, Occupational Safety and Health Standards. This review also included examination of whether backup ELUs were provided for the primary and secondary fire emergency equipment storage locker locations and dress-out areas in support of fire brigade operations should power fail during a fire emergency.

b. Findings

No findings of significance were identified.

.09 Cold Shutdown Repairs

a. Inspection Scope

The SSA did not identify any needed repairs necessary to achieve cold shutdown following postulated fires, and this aspect of the analysis was reviewed by the team.

b. Findings

No findings of significance were identified.

10. Compensatory Measures

a. Inspection Scope

The team reviewed the administrative controls for out-of-service, degraded, and/or inoperable, fire protection features (e.g., detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing post-fire

safe shutdown functions or capabilities). A sample of completed fire watch logs and records of recent and active fire protection features impairments were compared to the programmatic requirements, including the licensee's evaluation for having Unit 1 1A uninterruptible power supply in the bypass mode.

b. Findings

No findings of significance were identified.

11. Control of Combustibles and Ignition Sources

a. Inspection Scope

For the selected FAs, the team evaluated the fire event history, the potential for fires or explosions, the combustible fire load characteristics, and the potential exposure fire severity. The team reviewed the licensee's transient fire load calculations; selected fire emergency reports; generic plant access fire protection training; and selected portions of the FPP administrative procedures to determine if adequate controls were in place to control the handling of in-situ and transient combustibles in the plant. The team walked down numerous areas in the plant, including the selected plant FAs, to ensure that the licensee had properly evaluated in-situ combustible fire loads, limited transient fire hazards, and maintained general housekeeping consistent with the UFSAR, administrative procedures, and other FPP procedures. Hot work conforming to programmatic requirements in one of the selected areas was observed and discussed with the workers and the fire watch assigned to the activity.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed recent independent licensee audits for thoroughness, completeness and conformance to requirements. Requirements for the independent audits are contained in Regulatory Guide 1.189, "Fire Protection for Operating Nuclear Power Plants," Generic Letter 82-21, "Technical Specifications for Fire Protection Audits," and the licensee's Nuclear Quality Assurance Plan. Audits of the fire protection program reviewed were: B-FP-04-01, dated September 28, 2004, B-FP-06-01, dated September 11, 2006, and B-FP-08-01, dated August 13, 2008. In addition, a self assessment of the fire protection program was reviewed (Self-Assessment Report No. 178623-08, conducted August 2008).

The team also reviewed corrective action program documents, including completed corrective actions documented in selected Action Requests (ARs) and operating experience program documents, to ascertain whether industry-identified fire protection problems actually or potentially affecting Brunswick were appropriately entered into, and

resolved by, the corrective action program process. Items included in the operating experience program effectiveness review were NRC Information Notices, industry or vendor-generated reports of defects and non-compliances submitted pursuant to 10 CFR 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

The scope and frequency of the audits was consistent with the requirements and at least one member of each audit team was qualified to "member grade" status in the Society of Fire Protection Engineers. The self assessment appeared to be an effective review as it identified problems and initiated corrective action.

4OA6 Meetings, Including Exit

On November 21, 2008, the lead inspector presented the inspection results to Mr. B. Waldrep, Vice President, Brunswick Steam Electric Plant, and other members of the licensee's staff. The licensee acknowledged the results. Proprietary information is not included in this report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

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T. Sherrill, Licensing Engineer
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B. Waldrep, Vice President, Brunswick Steam Electric Plant
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M. Williams, Training Manager
E. Wills, Plant General Manager

NRC Personnel

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J. Austin, Senior Resident Inspector, Brunswick Steam Electric Plant
G. Kolcum, Resident Inspector, Brunswick Steam Electric Plant

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

There were no items to record.

LIST OF FIRE BARRIER FEATURES INSPECTED
(Refer Report Section 1RO5.02- Passive Fire Barriers)

<u>Interior Structural Components</u>	<u>Description</u>
Oil Containment Curbs	Fire Area SW-1, (1A Nuclear SW Pump to 1C Conventional SW Pump)
<u>Fire Wall Identification</u>	<u>Description</u>
Masonry Block Wall, 2-CTB-MAS-EL-023-9D Fireproofing, Column in 2-CTB-MAS-EL-023-9D	Fire Area CB-10 to Fire Area CB-9 Fire Area CB-10 to Fire Area CB-9
<u>Fire Door Identification</u>	<u>Description</u>
Door 110	Fire Area CB-5 to Stair-Well Unit 1
Door 115	Fire Area CB-10 to Fire Area CB-9
Door 117	Fire Area CB-5 to Fire Area CB-8
<u>Fire Damper Identification</u>	<u>Description</u>
2-CB-FDMP-68	Fire Area CB-10 to HVAC Duct Chase
2-CB-FDMP-70	Fire Area CB-10 to Fire Area CB-4
2-CB-FDMP-75	Fire Area CB-5 to HVAC Duct Chase
2-CB-FDMP-76	Fire Area CB-5 to HVAC Duct Chase
<u>Fire Barrier Penetration Seal Identification</u>	<u>Description</u>
CB-1-148	Fire Area CB-10 to Fire Area CB-9
CB-1-149	Fire Area CB-10 to Fire Area CB-9
CB-1-150	Fire Area CB-10 to Fire Area CB-9
CB-1-153	Fire Area CB-10 to Fire Area CB-9
CB-1-464	Fire Area CB-5 to Stair-Well Unit 1
CB-1-371	Fire Area CB-5 to Stair-Well Unit 1
CB-1-483	Fire Area CB-5 to Stair-Well Unit 1
<u>ERFBS Identification</u>	<u>Description</u>
Raceway Fire Barrier Enclosure	Fire Area SW-1, 1-Hour Rated 3-M Interam E-50A ERFBS

**THE FOLLOWING SSD PROCEDURES WERE REVIEWED AND WALKED THROUGH
(Refer Report Section 1R05.05 – Operational Implementation etc.)**

0ASSD-01, Alternative Safe Shutdown Procedure Index
 0ASSD-02, Safe Shutdown Control Building, Rev. 42
 - Section C, Service Water Building Operator Actions
 - Section F, Unit 1 SCO Actions
 - Section G, Diesel Generator Operator Actions
 - Section H, Alternate Shutdown Cooling
 0ASSD-09, Safe Shutdown Service Water Building, Rev. 19
 2ASSD-04, Safe Shutdown Train A Shutdown, Rev. 21

**LIST OF COMPONENTS REVIEWED
(Refer to Report Section 1R05.06 – Circuit Analysis)**

2-E41-C002, HPCI Turbine Auxiliary Oil Pump
 2-E11-F009, RHR Shutdown Cooling Inboard Isolation Valve
 2-E11-F008, RHR Shutdown Cooling Outboard Isolation Valve
 2-E11-F015A, RHR Inboard Injection Valve
 2-E41-F042, HPCI Pump Suction Valve
 2-E51-C002, RCIC Turbine Barometric Condenser Vacuum Pump
 2-SW-V102, RHR Conventional Nuclear Header valve
 2-SW-V105, RHR Nuclear Service Water Supply
 2-SW-V117, Nuclear Service Water to Header valve
 1-E11-F009, RHR Shutdown Cooling Inboard Isolation Valve
 1-E41-F002, HPCI Inboard Steam Line Isolation valve
 1-E41-F003, HPCI Outboard Steam Line Isolation valve
 1-E41-F042, HPCI Inboard Torus Suction valve
 1-E41-F041, HPCI Outboard Torus Suction valve
 1-E51-C002, RCIC Turbine Barometric Condenser Vacuum Pump
 1-E51-FIC-3325, RCIC System Flow
 NSW-1A, Nuclear Service Water Pump 1A

LIST OF DOCUMENTS REVIEWED

List of ARs Generated During this Inspection

AR 301975, Cable spread room sprinkler calculations have incomplete reference
 AR 304452, Curbs around service water pumps have been removed
 AR 305422, Drawing error (on cable tray drawing)
 AR 305580, Initiated fire watch for problem with curbs around service water pumps
 AR 305594, Service water building fire protection impairment will expire prematurely
 AR 305839, Service water building ELUs not properly aligned
 AR 306330, QA record associated with ELU surveillance lost
 AR 306620, Control building ELUs not properly aligned
 AR 307477, Procedure non-compliance in a surveillance of ELUs
 AR 307506, Two control building fire doors lack equivalency evaluation
 AR 307534, Certificates of compliance for concrete masonry not found

Procedures

0MST-ELU11Q, Battery Powered Emergency Lighting Units Functional Test, Revision (Rev) 5
 0PLP-01.5, Alternative Shutdown Capability Controls, Rev. 11
 MCP-NGGC-0402, Material Evaluation Battery & ELU's, Rev. 2
 OCM-BYC003, Battery and Charger Maintenance for the Exide F-100 Emergency Lighting Unit, Rev. 7
 OPT-48.4, ASSD Sound-Powered Phone System Functional Test, Rev. 14
 OPT-34.15.9.7 Cable and Conduit Fire Barriers Rev. 13
 OOI-01.03 Non Routine Activities Section 5.4 Freeze Protection in Cold Weather Rev.31
 FIR-NGGC-0003, Hot Work Permit, Rev. 3
 FIR-NGGC-0004, Determination of Combustible Loading and Equivalent Fire Severity, Rev. 2
 OPEP-04.4, Emergency Facilities and Equipment, Rev. 33
 OFPP-005, Fire Protection Procedure, Fire Watch Program, Rev. 25
 OFPP-013, Fire Protection Procedure, Transient Fire Load Evaluation, Rev. 36
 OFPP-014, Fire Protection Procedure, Control of Combustibles, Transient Fire Loads, and Ignition Sources, Rev. 31
 OFPP-015, Fire Protection Procedure, Fire Barrier Penetration Seal Work Control, Rev. 30
 OFPP-020, Fire Protection Procedure, Impairment Notification, Rev. 18
 OFPP-031, Fire Protection Procedure, Fire Brigade Staffing Roster and Equipment Requirements, Rev. 29
 OPFP-013, Pre-fire Plan Procedure, General Fire Plan, Rev. 28
 0PLP-01.2, Fire Protection System Operability, Action, and Surveillance Requirements, Rev. 33
 OPT-34.2.2.1, Fire Door, ASSD Access/Egress Door, Severe Weather Door Inspection, Rev. 34
 OPT-34.2.3.0, Monthly Fire Hose Station Inspection, Rev. 6
 OPT-34.2.5.0, Fire Suppression System Control Valve Position Verification, Rev. 21
 OPT-34.5.1.1, Fire Protection Valve Cycle Test, Rev. 20
 OPT-34.6.7.8, Fire Barrier Penetration Seals Control Building, Rev. 13
 OPT-34.7.2.1, Hose Station Flow, Rev. 8
 OTTP-219, Fire Protection Training Program, Rev. 5
 OSPP-FBS500, Installation of Fire Barrier, Pressure Boundary Penetration and Water/Moisture Seals, Rev. 8
 2OP-17, Residual Heat Removal System Operating Procedure, Rev. 149
 2OP-19, High Pressure Coolant Injection System Operating Procedure, Rev. 115

00P-50.1, Diesel Generator Emergency Power System Operating Procedure, Rev. 72
 0AOP-32.0, Plant Shutdown From Outside the Control Room, Rev. 46
 0ASSD-00, Alternative Safe Shutdown Procedure User's Guide, Rev. 35
 0EOP-01-UG, Emergency Operating Procedure User's Guide, Rev. 40
 0PFP-013, General Fire Plan, Rev. 28

Calculations, Analyses and Evaluations

BNP-E-7.010, Emergency Diesel Generator Static & Dynamic Load Study, Rev. 6
 0FP-1041 Code Compliance Verification Checklist NFPA 13-1976 Service Water Building
 El.4.0' and 23.0'
 Calculation 0-89-00001, Combustible Loading, Fire Zone SW-1, CB-5, & CB-10, Rev. 4
 Calculation 704-M-22, Evaluation of Fire Barrier Penetration Seals at Control/Reactor Building
 Conduit Penetrations, Rev. 2
 Calculation 0FP-001, Battery Room Hydrogen Generation, Rev. 2
 Engineering Evaluation, EER 88-0558, Deviations from NFPA 80, Door Frames, Rev. 0
 Engineering Evaluation, EER 89-0063, Non-Labeled Doors in Control Building, Rev. 0
 0FP-0086, Code Compliance Evaluation NFPA 30, Flammable and Combustible Liquids Code,
 Rev. 0
 BNP-E-9.006, Appendix R Separation Analysis, Rev. 5
 BNP-E-9.004, Safe Shutdown Analysis Report, Rev. 6

Drawings

Lighting and Communication

F-03022, 480 Volt One Line Lighting Distribution, Rev. 50
 D-03412, Sh. 1, Unit 1 Control Building Fire Protection Emergency DC Lighting EL. 23'-0" & 49'-
 0", Rev. 9
 D-03412, Sh. 3, Unit 1 Control Building Fire Protection Emergency DC Lighting EL. 23'-0" & 49'-
 0", Rev. 6
 D-03412, Sh. 6, Unit 1 Reactor Building Fire Protection Emergency DC Lighting EL. 20'-0", Rev.
 14
 D-03412, Sh. 9, Unit 1 & 2 (Controlled Access Corridor) Fire Protection Emergency DC Lighting
 EL. 20'-0" & 45'-0", Rev. 11
 D-03412, Sh. 10, Unit 1 & 2 Fire Protection Emergency DC Lighting Service Water Intake
 Structure, Rev. 10
 F-03690, Sound Powered Telephone System Cable & Interconnection Wiring Diagram, Rev. 2
 9527-F-3654, Service Water Structure Cable Trays, Rev. 3
 F-03557, Service Water Intake Structure Electrical Conduits Plans at Elevation 4'-0" & 20'-0",
 Rev. 2

Fire Protection

F-09124, Service Water Intake Structure Appendix "A" and "R" Fire Protection Coverings, Rev 3
 F-09115, Fire Protection Covering Details for Wrapped Conduit, Sheet No. 5, Rev. 0
 F-03896, Diesel Generator Building Fire Detection System Plans and Details, Sheet No. 5,
 Rev. 25
 L03578, Fire Protection System General Notes, Instructions and Details, Sheet No. 1, Rev. 8
 L03578, Fire Protection System Fire Stop of Cables in Stacked Cable Trays, Sheet No. 3,
 Rev. 10

L03578, Fire Protection System Fire Stop of Cables in Congested Areas, Sheet No. 6, Rev. 5
 FP-038-03, Service Water Intake Structure El. 20'-0" Fire Protection Piping Isometric, Rev. 5
 FP-038-04, Service Water Intake Structure El. 4'-0" Fire Protection Piping Isometric, Rev. 4
 9527-F-1588, Control Building, Concrete Embedded Steel-Door Frames, Rev. 5
 D-02043, Piping Diagrams Plant Fire Protection System, Units 1 & 2, Rev. 6
 LL-FB-05100, Control Building, Fire Barrier Penetrations General Layout, Rev. 2
 LL-FB-05108, Control Building, Fire Barrier Penetrations, Cable Spreading Area, Unit 1 Plan, Sheet 15, Rev. 3
 LL-FB-05108, Control Building, Fire Barrier Penetrations, Battery Room 2B Plan, Sheet 13, Rev. 1

Elementary Wiring Diagrams

1-FP-50098, RCIC System, Sheet 5, Rev. U
 1-FP-50098, RCIC System, Sheet 4, Rev. 22
 1-FP-50098, RCIC System, Sheet 3, Rev. W
 2-FP-50039, HPCI System, Sheet 2, Rev. N
 2-FP-50039, HPCI System, Sheet 3, Rev. U
 2-FP-50039, HPCI System, Sheet 4, Rev. P

Unit 2 Control Wiring Diagrams

LL-09236, Sheet 98, RHR Shutdown Cooling Inboard (Inbd) Valve, Rev. 22
 LL-09236, Sheet 98A, RHR Shutdown Cooling Inbd Valve, Rev. 2
 LL-09236, Sheet 99, RHR Shutdown Cooling Inbd Cable Diagram, Rev. 15
 LL-09239, Sheet 41, RHR Shutdown Cooling Inbd Suction Valve, Rev. 5
 LL-09272, Sheet 33, HPCI Pump Suction Valve from Suppression Chamber 2-E41-F042, Rev. 13
 LL-09272, Sheet 35, HPCI Pump Suction Valve from Suppression Chamber 2-E41-F041, Rev. 11
 LL-09272, Sheet 39, RHR Shutdown Cooling Outboard (Otbd) Suction Valve, Rev. 8
 LL-09272, Sheet 39A, RHR Shutdown Cooling Otbd Suction Throttle Valve, Rev. 2
 LL-09273, Sheet 41, RHR Shutdown Cooling Otbd Suction Throttle Valve, Rev. 20
 LL-09273, Sheet 42, RHR Shutdown Cooling Otbd Suction Throttle Valve, Rev. 14

Miscellaneous

F-01304, Building Door Schedule and Details, Rev. 18
 F-04024, Service Water Intake Ventilation System & Drainage Piping, Rev. 10
 F-04080, Control Building, Air Flow Diagram, Rev. 14
 F-04081, Control Building Air Conditioning and Ventilation, Rev. 10
 D-02523, Sheet 1, HPCI System Piping Diagram, Rev. 55
 D-02523, Sheet 2, HPCI System Piping Diagram, Rev. 49

Completed Surveillance or Test

00986343-01, 0MST-ELU11Q Battery-Powered Emergency Lighting Units Functional Test, 10/07
 01028994-01, 0MST-ELU11Q Battery-Powered Emergency Lighting Units Functional Test, 2/08
 01075276-01, 0MST-ELU11Q Battery-Powered Emergency Lighting Units Functional Test, completed 5/08
 01118702-01, 0MST-ELU11Q Battery-Powered Emergency Lighting Units Functional Test, completed 8/08

1012071-01, ASSD Sound Powered Phone System Functional Test, completed 2/08
 ASSD Sound Powered Phone System Functional Test, completed 5/08
 1128877-01, ASSD Sound Powered Phone System Functional Test, completed 8/08
 Combustible Load Equivalents Inspections, OFPP-013, Attachment 3, Control Building,
 Completed 6/30/08
 Combustible Load Equivalents Inspections, OFPP-013, Attachment 3, Control Building,
 Completed 8/11/08
 Combustible Load Equivalents Inspections, OFPP-013, Attachment 3, Service Water Building,
 Completed 9/8/08
 Combustible Load Equivalents Inspections, OFPP-013, Attachment 3, Service Water Building,
 Completed 10/6/08
 Hose Station Flow, Periodic Test Procedure OPT-34.7.2.1, Completed 4/29/03
 OPT-34.7.2.1, Hose Station Flow, Revision 4, Completed 04/27/2006
 OPT-34.7.2.1, Hose Station Flow, Revision 8, Completed 10/22/2008
 Work Order 00778059, System 8355, Control Building Drain Piping Inspection, Completed
 04/01/2007
 Work Order 1303075-01, System 8355, Control Building Drain Piping Inspection, Completed
 10/28/2008
 Work Order 00429031-11, 2B Battery Room Ventilation Fire Damper Inspection, Completed
 10/10/2005
 Work Order 00429031-19, Control Building Fire Damper Functional Inspection, Completed
 01/04/2006

ARs Reviewed During Inspection

AR 00288815, Evaluate ELU Performance,
 AR249481, ASSD Sound Powered Phone Failure During Training Drill, 10/05
 AR 224037, Evaluation of NRC IN 2007-07, Potential Failure of All Control Rod Groups to Insert
 in a Boiling Water Reactor Due to a Fire
 AR 233389, Evaluation of NRC IN 2007-17, Fires at Nuclear Power Plants Involving Inadequate
 Fire Protection Administrative and Design Controls
 AR 243083, Evaluation of NRC IN 2007-26, Combustibility of Epoxy Floor Coatings at
 Commercial Nuclear Power Plants
 AR 275634, Evaluation of NRC IN 2008-04, Counterfeit Parts Supplied to Nuclear Power Plants
 AR 290082, Operations Fire Brigade Advisor Participation in Fire Brigade Drills
 AR 205333-05, Associated with Licensee Response to RIS 2006-010
 AR 266415, Fleet review of emergency lighting
 AR 294058, 1-UPS-1A cannot be returned to normal mode
 AR 295308, Evaluate compensatory measure associated with 1-UPS-1A in bypass mode

Miscellaneous

04319R02, Battery & ELU's, Rev. 2
 3M Fire Protection Products Documentation for Flexible Wrap Systems, Vol. Nos. V, VI, VII, VIII
 3M Interam Fire Protection Systems Data Book with Fire Test Nos. 85-79 and 86-80
 Southport, North Carolina Period of Record - General Climate Summary of Temperature from
 1892-2008
 Weather Report November 19, 2008, BSEP Met Tower
 Specification 024-001, Special Doors dated 2/14/2001
 Specification 029-001, Masonry and Caulking, Rev. 4
 Specification 118-003, Fire Barrier and Pressure Boundary Penetration Seals, Rev. 7

Specification 9527-01-24-2, Hollow Metal Doors & Door Frames, Rev. dated 6/23/1972
 1PFP-CB-5, Pre-fire Plan, Unit 1 Cable Spreading Room, 23' Elevation, Rev. 4
 2PFP-CB-10, Pre-fire Plan, Unit 2 Battery Room 2B, 23' Elevation, Rev. 4
 BSEP Manual Action Evaluation for RIS 2006-010, Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions
 Fire Watch Standers Safety Inspections Logs for impairments (0FPP-005, Attachment 3) for Period 11/2-8/2008
 Fire Brigade Drill Critique Reports for Brigade Shifts from January, 2007, to September 2008
 Fire Protection System Health Report, dated 01/21/2008
 GET SSG, Fitness-For-Duty, Plant Access, and Radiation Worker Training, Rev. 17
 System Description, SD-62, Remote Shutdown Panel (RSP), Rev. 4
 System Description, D-16, Reactor Core Isolation cooling (RCIC) System, Rev. 5
 System Description, SD-19, High Pressure Coolant Injection (HPCI) System
 System Description, SD-51, DC Distribution System, Rev. 5
 OAP-033, Fire Protection Program Manual, Rev. 12
 Work Order 132362, Installation of Additional Steel Banding per Manufacturers Instructions on Interam E-50A Mat

Licensing Basis Documents

0PLP-01.1 Fire Protection Commitment Document Rev. 33
 Letter dated December 30, 1986, from Daniel R. Muller (NRC) to E.E Utley (CPL) regarding approved fire protection exemptions and associated safety evaluation reports
 Brunswick Safety Evaluation Report, dated November 22, 1977
 Brunswick Safety Evaluation Report, dated April 6, 1979
 Brunswick Safety Evaluation Report, dated June 11, 1980
 Brunswick Safety Evaluation Report, dated November 10, 1981
 Brunswick Safety Evaluation Report, dated July 27, 1983
 Brunswick Safety Evaluation Report, dated April 24, 1984
 Brunswick Safety Evaluation Report, dated December 30, 1986
 Brunswick Safety Evaluation Report, dated May 29, 1987
 Brunswick Safety Evaluation Report, dated August 27, 1987
 Brunswick Safety Evaluation Report, dated February 10, 1994
 Brunswick Individual Examination for External Events (IPEEE) Submittal, dated June 30, 1995
 NRC Letter, Exemption From The Requirements Of Appendix R To 10 CFR Part 50, Sections III.G And J, dated December 30, 1986
 Unit No. 1 Updated Facility Operating License, Condition 2.B.(6), Rev. 7/15/04
 Unit No. 2 Updated Facility Operating License, Condition 2.B.(6), Rev. 7/15/04
 UFSAR Section 9.5.1, Fire Protection System, Rev. 21
 UFSAR Section 9.5.2, Communication Systems, Rev. 21
 UFSAR Section 9.5.3 Lighting Systems, Rev. 21

Plant Modifications and Engineering Changes

Engineering Change EC-50724, Fire Detection System
 Engineering Change EC-51305, Progress Energy Specification for Fire Detection System
 Plant Modification PM 84-117, Re-route and Fire Wrap of Power Conduits for NSWP-1A and CSWP-2A
 Engineering Service Request 94-00345, Fire Protection Deluge Valve Latch Arm Gaskets
 Plant Modification 77-364, Install Control Building Fire Doors, Security Doors, and Walls, dated 1/9/1979

Applicable Codes and Standards

NFPA 13, Standard for the Installation of Sprinkler Systems, 1976 Edition
 NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 1976 Edition
 NFPA 20, Standard for the Installation of Centrifugal Fire Pumps, 1982 Edition
 NFPA 30, Flammable and Combustible Liquids Code, 1976 Edition
 NFPA 72D, Standard for the Installation, Maintenance, and Use of Proprietary Protection Signaling Systems, 1973 Edition
 NFPA 72E, Standard on Automatic Fire Detectors, 1974 Edition
 NFPA 80, Standard on Fire Doors and Windows, 1979 Edition
 NFPA 90A, Standard on Air Conditioning and Ventilating Systems, 1981 Edition
 NUREG-1552, Supplement 1, Fire Barrier Penetration Seals in Nuclear Power Plants, dated January 1999
 OSHA Standard 29 CFR 1910, Occupational Safety and Health Standards
 Underwriters Laboratory Standard 555, Standard for Fire Dampers and Ceiling Dampers, dated May, 14, 1979
 Steel Door Institute, SDI 100, Recommended Specifications for Standard Steel Fire Doors and Frames, Revision 11/2003
 Steel Door Institute, SDI 118-01, Basis Fire Door Requirements, Revision 2001
 Steel Door Institute, SDI 122-07, Installation and Troubleshooting Guide for Standard Steel Doors and Frames, Revision 2007
 ANSI A250.11-2001, Recommended Erection Instructions for Steel Frames, Revision 3/2001

Technical Manuals and Vendor Information

Data Sheet, FR2-1, for Fire Rated Three Sided Frames, Steelcraft Co., Revision 5/2002
 Data Sheet, FR3-1, for Fire Rated Doors, Steelcraft Co., Revision 5/2002
 Data Sheet, LPE200-NIMH-2700mAh-7.5, Ericson Replacement Battery FR2-1, for
 Data Sheet, Allenco No. 7160 Adjustable Spray Shut-off Fire Hose Nozzle, W. D. Allen Manufacturing Co.
 Data Sheet, FP-82633, for Pyrocrete 242 Fireproofing System, Revision E
 Maintenance Manual for LPE-200 Portable Radios, Revision 12/1996
 Underwriters Laboratory File R3994, Follow-up Service Procedure for Fire Door Frames and Fire Window Frames, , Steelcraft Co., Revision 10/2008
 Data Sheet for Air Balance UL-Classified Fire Damper, Model 319ALP, Revision C
 Underwriters Laboratory Letter to 3M Company, Type E50-D Endothermic Mat In 3- Hr Fire Rated Electrical Circuit Protective Systems For Conduit, Junction Box and Cable Bundle Drop Systems, dated 06/23/1986
 FP-81335, File of engineering data on ELUs supplied by LightGuard Co.

Audits and Self Assessments

SA178623-08, Self-Assessment Report, BNP Fire Protection and App R/SSA Program, dated 08/18-22/2008
 B-FP-04-01, Nuclear Assessment Section, Fire Protection Program Assessment, dated 9/28/2004
 B-FP-06-01, Nuclear Assessment Section, Fire Protection Program Assessment, dated 9/11/2006

B-FP-08-01, Nuclear Assessment Section, Fire Protection Program Assessment, dated 8/13/
2008

LIST OF ACRONYMS AND ABBREVIATIONS

AR	Action Request (a corrective action program document)
ANSI	American National Standards Institute
APCSB	Auxiliary and Power Conversion Systems Branch
BSEP	Brunswick Steam Electric Plant
BTP	Branch Technical Position
CFR	Code of Federal Regulations
DPR	demonstration power reactor
ELU	emergency lighting unit
ERFBS	electrical raceway fire barrier
FA	fire area
FPP	fire protection program
HPCI	high pressure coolant injection
IR	inspection report
IP	inspection procedure
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
NUREG	An explanatory document published by the NRC
OSHA	Occupational Safety and Health Administration
RCIC	reactor core isolation cooling
Rev.	revision
RHR	residual heat removal
SSA	safe shutdown analysis
SSD	safe shutdown
UFSAR	Updated Final Safety Analysis Report