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

November 13, 2013

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

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION REPORT NOS.: 05000325/2013004, AND 05000324/2013004

Dear Mr. Hamrick:

On September 30, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Brunswick Unit 1 and 2 facilities. The enclosed integrated inspection report documents the inspection findings, which were discussed on October 24, 2013, with you and other members of your staff.

NRC inspectors documented two findings of very low safety significance (Green) in this report. These two findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or the significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States 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 Regional Administrator, Region II, and the NRC Resident Inspector at the Brunswick Steam Electric Plant.

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 Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

George T. Hopper, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket Nos.: 50-325, 50-324
License Nos.: DPR-71, DPR-62

Enclosure: Inspection Report 05000325, 324/2013004
w/Attachment: Supplemental Information

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Letter to George Hamrick from George T. Hopper dated November 13, 2013

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION REPORT NOS.: 05000325/2013004, 05000324/2013004

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REGION II

Docket Nos.:	50-325, 50-324
License Nos.:	DPR-71, DPR-62
Report Nos.:	05000325/2013004, 05000324/2013004
Licensee:	Carolina Power and Light (CP&L)
Facility:	Brunswick Steam Electric Plant, Units 1 & 2
Location:	8470 River Road, SE Southport, NC 28461
Dates:	July 1, 2013, through September 30, 2013
Inspectors:	M. Catts, Senior Resident Inspector M. Schwieg, Resident Inspector J. Austin, Senior Resident Inspector (Section R12Q, R22) A. Nielsen, Sr. Health Physicist (Section 40A6) S. Sanchez, Sr. Emergency Preparedness Inspector (Section EP2, EP3, EP5, EP6) M. Speck, Sr. Emergency Preparedness Inspector (Section EP2, EP3, EP5, EP6) N. Staples, Senior Project Inspector (Section R04, R05, R11, R19, IR22) J. Zeiler, Senior Resident Inspector (Section 4OA1)
Approved by:	George T. Hopper, Chief Reactor Projects Branch 4 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000325/2013004, 05000324/2013004: 07/01/13 – 09/30/13; Brunswick Steam Electric Plant, Units 1 & 2; Operability Evaluations and Post Maintenance Testing.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, issued June 19, 2012, "Significance Determination Process" (SDP). The cross-cutting aspects were determined using IMC 0310, "Components Within the Cross-Cutting Areas," issued October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated January 28, 2013. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Rev. 4.

NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. An NRC identified Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the failure of the licensee to identify and correct a condition adverse to quality (CAQ) on the 1B nuclear service water pump (NSWP). Specifically, between June 26, 2012, and January 12, 2013, the licensee failed to identify or correct the pump shaft degradation on the 1B Nuclear Service Water Pump (NSWP) pump. This resulted in the shaft bearing delaminating and bearing material becoming dislodged and trapped in the pump strainer which caused the 1B NSWP to become inoperable. The licensee replaced the pump shaft and returned the pump to operable. The licensee entered this issue into the corrective action program (CAP) as nuclear condition report (NCR) 582584.

  The inspectors determined that the failure of the licensee to identify and correct the 1B NSWP shaft degradation before the pump failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the shaft degradation resulted in the 1B NSWP being inoperable. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating structure, system and component (SSC), the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the technical specifications (TS) allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the CAP

attribute because the licensee failed to implement a CAP with a low threshold for identifying issues, specifically the licensee did not enter this issue into the CAP in June 2012. [P.1(a)] (Section 1R15)

- Green. A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have an adequate preventative maintenance procedure for the service water pump breakers. Specifically, from December 1, 2004, through the end of this inspection period (September 30, 2013), the licensee failed to have an adequate preventative maintenance procedure to ensure the 52S mechanism was securely bolted to the breaker for the 2C conventional service water pump (CSWP). This resulted in both discharge valves failing to open when the 2C CSWP was started, and the inoperability of the 2C CSWP. The licensee securely bolted and tightened the 52S mechanism to the breaker. The licensee entered this issue into the CAP as NCR 604452.

  The inspectors determined the failure to have an adequate preventative maintenance procedure for the service water pump breakers was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure the 52S mechanism was securely bolted to the 2C CSWP breaker resulted in the failure of both 2C CSWP discharge valves to open. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The 2C CSWP breaker was refurbished in December 2004 and installed in the plant in January 2005. (Section 1R19)

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at rated thermal power (RTP). On July 9, 2013, power was reduced to 65 percent due to loss of the Castle Hayne 230KV line. Power was returned at or near full power on July 10, 2013. On September 7, 2013, power was reduced to 70 percent for a control rod sequence exchange. On September 11, 2013, power was returned to RTP and operated at or near full power for the remainder of the inspection period.

Unit 2 began the inspection period at RTP. On August 8, 2013, power was reduced to 20 percent to repair the 2C main power transformer (MPT) high side bushing. On August 13, 2013, power was reduced to 70 percent for a control rod sequence exchange. On August 15, 2014, power was reduced to 65 percent for control rod improvement. On August 17, 2013, power was reduced to 70 percent for a control rod improvement. On August 22, 2013, power was returned to RTP and operated at or near full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity and Emergency Preparedness

1R01 Adverse Weather Protection

External Flooding (71111.01 – 1 sample)

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Final Safety Analysis Report (UFSAR) for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure (AOP) for mitigating the design basis flood to ensure it could be implemented as written.

b. Findings

Findings associated with this procedure will be documented in a future inspection report.

1R04 Equipment Alignment

.1 Quarterly Partial System Walkdowns (71111.04Q – 3 samples)

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- Unit 2 residual heat removal service water (RHRSW)
- Unit 1 emergency diesel generator (EDG) 2
- Unit 1 core spray system

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify that system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On September 3, 2013, the inspectors performed a complete system alignment inspection of the Unit 2 high pressure coolant injection (HPCI) system to verify the functional capability of the system. This system was selected because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line-ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, and operability of support systems. In addition, the inspectors ensured that ancillary equipment or debris did not interfere with equipment operation. The inspectors reviewed any outstanding maintenance work requests on the system/train and any deficiencies that could affect the ability of the system to perform its

function(s). The inspectors reviewed any outstanding design issues, including temporary modifications, operator workarounds, and items that are tracked by the engineering department. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved.

b. Findings

No findings were identified.

1R05 Fire Protection

Quarterly Resident Inspector Tours (71111.05Q – 5 samples)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- 0PFP-DG-19, EDG fuel cells -1'6" Elevation
- 1PFP-DG-4, 1 PFP-DG-5, 2PFP-DG-3, and 2PFP-DG-2 EDG Cell 1-4, 23' Elevation
- 1PFP-RB1-1g N and 1PFP-RB1-1g S, Unit 1 Reactor Building 20' Elevation
- 1PFP-RB1-1a, Unit 1 Core Spray Room -17' Elevation
- 1PFP-CB-5 and 1PFP-CB-6, Unit 1 and Unit 2 Cable Spreading Room 23' Elevation

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and that fire doors, dampers, and penetration seals were in satisfactory condition.

b. Findings

No findings were identified.

1R06 Flood Protection Measures

.1 Review of Areas Susceptible to Internal Flooding (71111.06 – 1 sample)

a. Inspection Scope

The inspectors reviewed selected risk-important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and AOPs for licensee commitments. Documents reviewed are listed in the Attachment. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant areas to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- EDG Building
- Fuel Oil Transfer Chamber

b. Findings

No findings were identified.

.2 Annual Review of Cables Located in Underground Bunkers/Manholes

a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could disable risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including manhole MH-1SA, to verify that the cables were not submerged in water, that cables and/or splices appear intact and to observe the condition of cable support structures. When applicable, the inspectors verified proper dewatering device (sump pump) operation and verified level alarm circuits were set appropriately to ensure that the cables would not remain submerged. Where dewatering devices were not installed; the inspectors ensured that drainage was provided and was functioning properly. The sample will be documented as complete when one additional manhole is inspected. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

.1 Quarterly Review of Licensed Operator Requalification Testing and Training (71111.11Q - 1 sample)

a. Inspection Scope

On July 23, 2013, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and to ensure that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Ability to take timely actions in the conservative direction
- Prioritization, interpretation, and verification of annunciator alarms
- Correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Ability to identify and implement appropriate TS actions and Emergency Plan (EP) actions and notifications

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room (71111.11Q – 1 sample)

a. Inspection Scope

Inspectors observed and assessed licensed operator performance in the plant and main control room, particularly during periods of heightened activity or risk and where the activities could affect plant safety. Specifically, on July 9, 2013, the inspectors observed Unit 1 evolutions following the loss of the Castle Hayne 230KV line. Documents reviewed are listed in the Attachment. The inspectors evaluated the following areas:

- Operator compliance and use of procedures
- Control board manipulations
- Communication between crew members
- Use and interpretation of plant instruments, indications and alarms
- Use of human error prevention techniques
- Documentation of activities, including initials and sign-offs in procedures

- Supervision of activities, including risk and reactivity management
- Pre-job briefs and crew briefs

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 1 sample)

a. Inspection Scope

The inspectors evaluated a degraded performance issue involving the following risk-significant system:

- 2C RHRSW motor cooler developed a significant water leak on April 7, 2013

The inspectors reviewed events where ineffective equipment maintenance may have resulted in equipment failure or invalid automatic actuations of Engineered Safeguards Systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and verifying appropriate performance criteria for SSCs/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for maintenance and emergent work activities affecting risk-significant equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Unit 2 elevated risk due to Residual Heat Removal (RHR) B outage on July 10, 2013
- Unit 1 elevated risk due to 1B RHRSW outage on August 7, 2013
- Unit 2 elevated risk due to 2C Main Power Transformer (MPT) repair on August 10, 2013
- Unit 2 elevated risk due to RHR outage on September 11, 2013
- Unit 1 elevated risk due to reactor core isolation (RCIC) cooling and 1A NSWP outage on September 24, 2013

These activities were selected based on their potential risk-significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15 – 5 samples)

a. Inspection Scope

The inspectors reviewed the following issues:

- Unit 2 containment hatch cracks on July 11, 2013
- Through wall leak upstream of service water pipe 1-SW-V94 on July 17, 2013
- 1B NSWP failure on July 17, 2013
- Unit 2 EDG 4 broken alternate safe shutdown insulator on August 15, 2013
- Wall thinning on the EDG air receivers on September 16, 2013

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the

subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations.

b. Findings

Introduction. An NRC-identified Green NCV of 10CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the failure of the licensee to identify and correct a CAQ on the 1B NSWP. Specifically, between June 26, 2012 and January 12, 2013, the licensee failed to identify or correct the pump shaft degradation on the 1B NSWP. This resulted in the shaft bearing delaminating and bearing material becoming dislodged and trapped in the pump strainer which caused the 1B NWSP to become inoperable.

Description. On June 26, 2012, the 1B NSWP was placed in service and an auxiliary operator (AO) reported a large volume of water was leaking from the packing area, smoke from the 1B NSWP packing and heavy vibration was felt from the pump. The pump was immediately secured, declared inoperable, and placed under clearance per WO 2104000. Maintenance personnel removed the packing from the stuffing box and found the pump shaft was pitted. The packing was replaced and the pump was returned to service. The shaft condition was not entered in the CAP through a condition report or a work order.

On December 31, 2012, the 1B NSWP developed another packing leak in excess of the capacity of the drain system. This was the third time in three days the packing required adjustments due to excessive packing leakage. The pump was secured until maintenance personnel could resolve the problem. The licensee entered the excessive packing leakage into the CAP as NCR 580155. On January 6, 2013, the pump was started and maintenance personnel determined the seal leakage could not be improved because there was no packing adjustment left. The AO also found the 1B NSWP strainer had a possible broken shear pin. Without the strainer functional, the 1B NSWP was declared inoperable because it could not complete its mission time of 30 days.

The pump was placed under clearance to investigate the cause of the strainer and packing failure. On January 7, 2013, the licensee determined the strainer was locked due to bearing material from the 1B NSWP. On January 12, 2013, it was again noted by maintenance personnel in WO 2184270, that the pump shaft had pitting inside the stuffing box area. Maintenance personnel again did not write a condition report or work order to address the pitted shaft. Maintenance personnel repacked the pump, removed the clearance order, and returned the pump to available, to support the post maintenance testing (PMT) for the operability of the pump. The pump had to be secured due to excessive packing leakage. Maintenance personnel put the pump back under

clearance, and when the pump stuffing box and head shaft were disassembled and inspected, maintenance personnel discovered the new packing was damaged and would not have provided a proper seal. The shaft was removed and examined by Metallurgy Services. The pump shaft had pitting along the full length and two large pitted areas in the area adjacent to the packing rings. Metallurgy Services determined the more severe, localized corrosion near the packing area was due to crevice corrosion that was exacerbated by higher temperatures and stagnant conditions. Due to the extent of severe degradation on the pump shaft and a slow corrosion rate, the inspectors determined the degradation existed on June 26, 2012, when maintenance personnel identified the shaft was pitted.

On January 16, 2013, the 1B NSWP pump shaft was replaced and 1B NSWP was returned to service. The licensee entered the failure to identify the degraded pump shaft condition on January 12, 2013, into the CAP as NCR 582584. The licensee determined the cause of the packing and bearing failure, after putting the 1B NSWP in service, was due to mechanics failing to stop work and make the appropriate notifications when faced with unexpected pump shaft degradation.

The inspectors reviewed the licensee's cause evaluation which determined the mechanical cause of the excessive packing leak to be pump shaft degradation. This allowed the shaft to travel more than expected and make hard contact with the bearing, causing packing failures and bearing de-lamination. This resulted in the shaft bearing material becoming dislodged and trapped in the pump strainer causing the 1B NWSP to become inoperable.

The inspectors reviewed WO 2104000, written on June 26, 2012, and determined the licensee failed to enter the pump shaft pitting and degradation into the CAP as an NCR or a WO. This is required by procedure CAP-NGGC-0200, Condition Identification and Screening Process, which requires reporting any undesired condition or CAQ. The inspectors determined the failure to enter this issue into the CAP resulted in the failure to correct the 1B NSWP shaft degradation before the inoperability of the 1B NSWP.

Analysis. The inspectors determined that the failure of the licensee to identify and correct the 1B NSWP shaft degradation before the pump failed was a performance deficiency. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the shaft degradation resulted in the 1B NSWP being inoperable. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding had a cross-cutting aspect in the area of problem identification and resolution associated with the CAP attribute because the licensee failed to implement a

CAP with a low threshold for identifying issues, specifically the licensee did not enter this issue into the CAP in June 2012. [P.1(a)]

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, between June 26, 2012 and January 16, 2013, the licensee failed to identify and correct the pump shaft degradation on the 1B NSWP pump. This resulted in the shaft bearing delaminating and becoming dislodged and trapped in the pump strainer which caused the 1B NWSP to become inoperable. The licensee replaced the pump shaft and returned the pump to operable. Because this finding is of very low safety significance and was entered into the licensee's CAP as NCR 582584, consistent with Section 2.3.2.a of the NRC's Enforcement Policy, this violation is being treated as a NCV: NCV 05000325/2013004-01, Failure to Identify and Correct Nuclear Service Water Pump Shaft Degradation.

1R19 Post Maintenance Testing (71111.19 – 6 samples)

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- WO 2235173-01, 2C CSWP following breaker switch repair on April 28, 2013
- WO 2247156-02, 1-C11-PSY5 Power Supply Verify Proper Rod Indication on June 10, 2013
- 2OP-43, Service Water System Operating Procedure following the 2B NSWP repair on June 14, 2013
- 0PT-09.2, HPCI System Operability Test following the maintenance outage on July 20, 2013
- 1PT-24.1-1, Service Water Pump and Discharge Valve Operability Test on the 1A NSWP on September 25, 2013
- 0PT-10.1.1, RCIC System Operability Test following the maintenance outage on September 27, 2013

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following: the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing; and test documentation was properly evaluated. The inspectors evaluated the activities against TS and the UFSAR to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents

associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were corrected commensurate with their importance to safety.

b. Findings

Introduction. A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified for the failure of the licensee to have an adequate preventative maintenance procedure for the service water pump breakers. Specifically, from December 1, 2004, through the end of this inspection period (September 30, 2013), the licensee failed to have an adequate procedure to ensure the 52S mechanism was securely bolted to the breaker for the 2C CSWP.

Description. On April 27, 2013, the 2C CSWP was placed in service. The pump was initially aligned to the conventional service water header, but the discharge valve, 2-SW-V17 would not open as seen by no flow or discharge pressure in the control room. The pump was then aligned to the nuclear service water (NSW) header, but the discharge valve 2-SW-V18 would also not open. Without a discharge flow path, the 2C CSWP was declared inoperable.

The inspectors reviewed the cause evaluation the licensee performed in NCR 604452. The licensee determined that the discharge valves are controlled by contacts on the 52S device of the associated service water pump breaker. The 52S device is an auxiliary switch that changes state when the breaker changes state. Closing the breaker to start the pump causes the 52S switch contacts to close, which provides an open command to the discharge valves. The licensee found the 52S contacts were not changing state when the breaker operated because the 52S switch mechanism was not securely bolted to the breaker. The licensee securely bolted and tightened the 52S mechanism to the breaker.

The cause determination identified that the breaker/compartment preventative maintenance, performed in Procedure 0PM-BKR001, ITE 4kV Breaker and Compartment Checkout, did not include specific instructions to ensure that the 52S switch mechanism was securely bolted to the breaker. The breaker was last refurbished in December 2004 and installed in the plant January 2005 under WO 45220. The inspectors determined that the Vendor Manual FP-30118, ITE Type Electrical Equipment, Section 5.1, Maintenance and Adjustments stated, “During maintenance checks, all accessible bolts, nuts and screws should be routinely checked to ensure they are tight.” The licensee’s corrective actions included revising Procedure 0PM-BKR001 to add a specific step to check the switch actuator for tightness, and perform an extent of condition check on the tightness of the other service water pump 52S mechanisms.

Analysis. The inspectors determined the failure to have an adequate procedure for the service water pump breakers was a performance deficiency. The finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure the 52S switch

mechanism was securely bolted to the 2C CSWP breaker resulted in the failure of both 2C CSWP discharge valves to open. Using IMC 0609, Appendix A, issued June 19, 2012, the SDP for Findings At-Power, the inspectors determined the finding was of very low safety significance (Green) because the finding did not affect the design or qualification of a mitigating SSC, the finding did not represent a loss of system and/or function, the finding did not represent an actual loss of a function of a single train for greater than the TS allowed outage time, the finding did not represent an actual loss of a function of one or more non-TS trains of equipment, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The finding does not have a cross-cutting aspect since the performance deficiency is not indicative of current plant performance. The 2C CSWP breaker was refurbished in December 2004 and installed in the plant in January 2005.

Enforcement. 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, states, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, from May 24, 2013 through the end of the inspection period, the licensee failed to have an adequate procedure to ensure the 52S switch mechanism was securely bolted to the breaker for the 2C CSWP. This resulted in the failure of both discharge valves to open when the 2C CSWP was started, and the inoperability of the 2C CSWP. The licensee securely bolted and tightened the 52S mechanism to the breaker. Because this finding is of very low safety significance (Green) and was entered into the licensee's CAP as NCR 604452, consistent with Section 2.3.2.a of the NRC's Enforcement Policy, this violation is being treated as an NCV: NCV 05000324/ 2013004-02, Inadequate Preventative Maintenance Procedure for the Service Water Pump Breakers.

1R22 Surveillance Testing

.1 Routine Surveillance Testing (71111.22 – 3 samples)

a. Inspection Scope

The inspectors either observed surveillance tests or reviewed the test results for the following activities to verify the tests met TS surveillance requirements, UFSAR commitments, in-service testing requirements, and licensee procedural requirements. The inspectors assessed the effectiveness of the tests in demonstrating that the SSCs were operationally capable of performing their intended safety functions. Documents reviewed are listed in the Attachment.

- 0MST-DG500R, Emergency Diesel Generators 24-Month Flow Test on June 7, 2013
- 0MST-HPCI122Q, HPCI Steam Line Low Press Inst Chan Cal on August 15, 2013
- 0E&RC-1000, Sampling and Analysis for Technical, Offsite Dose Calculation Manual and Technical Requirements Manual Specification Chemistry on August 27, 2013

b. Findings

No findings were identified.

.2 In-Service Testing (IST) Surveillance (71111.22 – 1 IST sample)

a. Inspection Scope

The inspectors reviewed the performance of RCIC Pump on August 27, 2013, to evaluate the effectiveness of the licensee's American Society of Mechanical Engineers (ASME) Section XI testing program for determining equipment availability and reliability. The inspectors evaluated selected portions of the following areas: RCS1) testing procedures; 2) acceptance criteria; 3) testing methods; 4) compliance with the licensee's IST program, TS, selected licensee commitments, and code requirements; 5) range and accuracy of test instruments; and 6) required corrective actions.

b. Findings

No findings were identified.

.3 Reactor Coolant System (RCS) Leak Detection Inspection Surveillance (71111.22 – 1 RCS leak sample)

a. Inspection Scope

The inspectors observed and reviewed the test results for a RCS leak detection surveillance, 0OI-03.1, Reactor Operator Daily Surveillance Report, on August 27, 2013. The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether: effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; and the calibration frequency were in accordance with TSs, the UFSAR, procedures, and applicable commitments; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; test data and results were accurate, complete, within limits, and valid. Inspectors verified that test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable; equipment was returned to a position or status required to support the performance of its safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the CAP. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1EP2 Alert and Notification System Evaluation (71114.02 – 1 sample)

a. The inspectors evaluated the adequacy of the licensee's methods for testing and maintaining the alert and notification system in accordance with NRC Inspection Procedure 71114, Attachment 02, Alert and Notification System Evaluation. The applicable planning standard, 10 CFR Part 50.47(b)(5) and its related 10 CFR Part 50, Appendix E, Section IV.D requirements were used as reference criteria. The criteria contained in NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Revision 1, were also used as a reference.

The inspectors reviewed various documents which are listed in the Attachment, interviewed personnel responsible for system performance, and observed aspects of periodic siren maintenance and testing. This inspection activity satisfied one inspection sample for the alert and notification system on a biennial basis.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03 – 1 sample)

a. Inspection Scope

The inspectors reviewed the licensee's Emergency Response Organization (ERO) augmentation staffing requirements and process for notifying the ERO to ensure the readiness of key staff for responding to an event and timely facility activation. The qualification records of key position ERO personnel were reviewed to ensure all ERO qualifications were current. A sample of problems identified from augmentation drills or system tests performed since the last inspection was reviewed to assess the effectiveness of corrective actions.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03, Emergency Response Organization Staffing and Augmentation System. The applicable planning standard, 10 CFR 50.47(b)(2), and its related 10 CFR Part 50, Appendix E requirements were used as reference criteria.

Documents reviewed are listed in the Attachment. This inspection activity satisfied one inspection sample for the ERO staffing and augmentation system on a biennial basis.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness (71114.05 – 1 sample)

a. Inspection Scope

The inspectors reviewed the corrective actions identified through the Emergency Preparedness (EP) program to determine the significance of the issues, the completeness and effectiveness of corrective actions, and to determine if issues were recurring. The licensee's post-event after action reports, self-assessments, and audits were reviewed to assess the licensee's ability to be self-critical, thus avoiding complacency and degradation of their emergency preparedness program. Inspectors reviewed the licensee's 10 CFR 50.54(q) change process, personnel training, and selected screenings and evaluations to assess adequacy. The inspectors toured facilities and reviewed equipment and facility maintenance records to assess licensee's adequacy in maintaining them. The inspectors evaluated the capabilities of selected radiation monitoring instrumentation to adequately support Emergency Action Level (EAL) declarations.

The inspection was conducted in accordance with NRC Inspection Procedure 71114.05, Maintenance of Emergency Preparedness. The applicable planning standards, related 10 CFR Part 50, Appendix E requirements, and 10 CFR 50.54(q) and (t) were used as reference criteria.

Documents reviewed are listed in the Attachment. This inspection activity satisfied one inspection sample for the maintenance of emergency preparedness on a biennial basis.

b. Findings

No findings were identified.

1EP6 Emergency Planning Drill Evaluation (7114.06 – 1 sample)

a. Inspection Scope

The inspectors observed a site EP training drill in the simulator conducted on July 23, 2013. The inspectors reviewed the drill scenario narrative to identify the timing and location of classifications, notifications, and protective action recommendations development activities. During the drill, the inspectors assessed the adequacy of event classification and notification activities. The inspectors observed portions of the licensee's post-drill critique. The inspectors verified that the licensee properly evaluated the drill performance with respect to performance indicators and assessed drill performance with respect to drill objectives. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Mitigating Systems Cornerstone (71151- 2 samples)

a. Inspection Scope

- Mitigating Systems Performance Index, Residual Heat Removal – Unit 1
- Mitigating Systems Performance Index, Residual Heat Removal – Unit 2

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) performance indicators listed above for the period from the third quarter 2012 through the second quarter 2013. The inspectors reviewed the licensee's MSPI derivation reports, operator narrative logs, CAP database, Maintenance Rule database, System Health Reports, and licensee event reports for the period to validate the accuracy of the submittals. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated Inspection reports for the period to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2 Barrier Integrity Cornerstone (71151 – 4 samples)

a. Inspection Scope

- RCS Specific Activity – Unit 1
- RCS Specific Activity – Unit 2

The inspectors reviewed licensee submittals for the Reactor Coolant System Specific Activity performance indicator for the period from the 3rd quarter 2012 through the 2nd quarter 2013. The inspectors reviewed the licensee's RCS chemistry samples, RCS chemistry results database, TS requirements, CAP database, and licensee event reports for the period to validate the accuracy of the submittals. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample.

- RCS Leakage – Unit 1
- RCS Leakage – Unit 2

The inspectors sampled licensee submittals for the Reactor Coolant System Leakage performance indicator from the 3rd quarter 2012 through the 2nd quarter 2013. The inspectors reviewed the licensee's operator logs, RCS leakage tracking data, CAP database, TS requirements, and event reports for the period to validate the accuracy of the submittals. The inspectors reviewed the licensee's operator logs, RCS leakage tracking data, issue reports, and event reports for the period to validate the accuracy of the submittals. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.3 Emergency Preparedness Cornerstone (71151 – 3 samples)

a. Inspection Scope

The inspectors sampled licensee submittals relative to the PIs listed below for the third quarter 2012 through the second quarter 2013. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 6, were used to confirm the reporting basis for each data element.

- Drill/Exercise Performance (DEP)
- Emergency Response Organization Drill Participation
- Alert and Notification System Reliability (ANS)

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for the ERO drill and exercise performance through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. This inspection satisfied three inspection samples for PI verification on an annual basis. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems

.1 Routine Review of Items Entered Into the CAP

a. Inspection Scope

To aid in the identification of repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed frequent screenings of items entered into the licensee's CAP. The review was accomplished by reviewing daily action request reports.

b. Findings

No findings were identified.

.2 Assessments and Observations

Annual Sample: Review of Operator Workarounds (OWAs) (71152 – 1 sample)

a. Inspection Scope

The inspectors evaluated the licensee's implementation of their process used to identify, document, track, and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of the OWAs on system availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents. The inspectors performed a review of the cumulative effects of OWAs. The inspectors reviewed both current and historical operational challenge records to determine whether the licensee had identified operator challenges at an appropriate threshold, entered them into their CAP, and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. Daily plant and equipment status logs, degraded instrument logs, and operator aids or tools being used to compensate for material deficiencies were also assessed to identify any potential sources of unidentified OWAs. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.3 Selected Issue Follow-up Inspection (71152 – 1 sample)

a. Inspection Scope

The inspectors performed a detailed review of NCR 556579 associated with no clear guidance for mission times used in the operability determinations. The inspectors had previously identified that mission times were not clearly identified for safety-related components. The licensee performed an evaluation to determine the proper mission times and reviewed the past three years to determine if any operability or reportability issues were incorrect due to the incorrect mission time. The inspectors reviewed this evaluation to verify that the issue was captured completely and accurately in the CAP. Additional documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

The inspectors identified that mission times were not clearly identified for safety-related components. The licensee performed a review over the past three years to determine if any operability or reportability issues were incorrect due to incorrect mission times. The licensee identified that no operability or reportability conclusions were changed due to an incorrect mission time. The inspectors reviewed this evaluation and agreed with this conclusion.

4OA3 Follow-up of Events (71153 – 1 sample)

(Closed) Event Notification (EN) 48168 Invalid Actuation Auto Start of All Four Emergency Diesel Generators

a. Inspection Scope

The inspectors reviewed the licensee's 10 CFR 50.73 telephone notification, for an invalid autostart of all EDGs on May 7, 2013. The actuation was caused by an inadvertent trip of the Unit 2 main generator. The emergency buses remained energized from the normal power supply and all emergency generators operated properly. The cause of the inadvertent trip was the main generator lockout due to the reserve power relay energizing with main generator breaker still open. The inspectors reviewed the 10 CFR 50.73 notification to assess appropriate reporting within established criteria. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA5 Other Activities

Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period the inspectors reviewed the security logs to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. The inspectors also observed security personnel and activities during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings were identified.

4OA6 Management Meetings

On September 4, 2013, the inspectors held a teleconference with licensee staff to discuss the status of the groundwater monitoring program. The licensee provided an update on tritium concentrations in water collected from onsite and offsite groundwater and surface water sampling locations and discussed ongoing remediation efforts associated with the Storm Drain Stabilization Pond and areas near a Unit 1 Condensate Storage Tank underground pipe leak. The licensee has installed a network of sub-surface pumping wells that continuously remove water from the affected areas; thereby reducing the overall tritium concentration in groundwater and limiting plume migration. Publicly available information regarding onsite groundwater monitoring and radionuclide concentrations in the environment near Brunswick Steam Electric Plant can be found in the Annual Radiological Environmental Operating Report. Recently issued reports can be found on the NRC's public website: http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/bru1-2.html.

On October 24, 2013, the inspectors presented the inspection results of the quarterly integrated inspection report to Mr. G. Hamrick, Site Vice President, and other members of the staff. The inspectors confirmed that proprietary information was not provided or reviewed during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
K. Allen, Manager – Design Engineering
Y. Anagostopoulos, Manager – Major Projects
A. Brittain, Manager – Security
K. Crocker, Supervisor – Emergency Preparedness
P. Dubrouillet, Manager – Nuclear Systems Engineering
S. Gordy, Manager – Maintenance
L. Grzeck, Supervisor – Licensing
K. Hamm, Superintendent – Mechanical Maintenance
G. Hamrick, Site Vice President
B. Houston, Manager – Environmental and Radiological Controls
J. Kalamaja, Manager – Operations
G. Kilpatrick , Manager – Training
J. Krakuszeski, Plant General Manager
W. Murray, Licensing Specialist
A. Padleckas, Manager – Shift Operations
D. Petrusic, Superintendent – Environmental and Chemistry
A. Pope, Manager – Nuclear Support Services
J. Price, Director – Engineering
B. Raper, Supervisor – U1 Outage Manager
T. Sherrill, Licensing Specialist
J. Shumate, Manager – Outage and Scheduling
M. Turkal, Licensing Specialist
E. Willis, Director – Site Operations
O. Wrisbon, Superintendent – Electrical, Instrumentation and Controls Maintenance

NRC Personnel
George Hopper, Chief, Reactor Projects Branch 4
J. Dodson, Senior Project Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed		
05000325; 324/2013004-01	NCV	Failure to Identify and Correct Nuclear Service Water Pump Shaft Degradation (Section 1R15)
05000325; 324/2013004-02	NCV	Inadequate Preventative Maintenance Procedure for the Service Water Pump Breakers (Section 1R19)
Closed		Invalid Actuation Auto Start of All Four Emergency
48168	EN	Diesel Generators (Section 4OA3)

Attachment

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

0AOP-13.0, Operation During Hurricane, Flood Conditions, Tornado, or Earthquake, Rev. 54
0AI-68, Brunswick Nuclear Plant Response to Severe Weather Warnings, Rev. 44
0BNP-TR-019, External Event Protection Features, Rev. 0
0O1-01.03, Non-Routine Activities, Rev. 49
0PEP-02.6, Severe Weather, Rev. 17

Condition Reports

613355	613354	588742	600850	629064	573930
603867	600678	604725	559173	611122	613339
621802	611169	490292	567417	612979	612661

Drawings

D-02779, Reactor Building Floor and Wall Sleeves, Tabulation and Details, Rev. 4
F-04022, Diesel Generator Building, Fire Protection & Drainage Piping, Rev. 20
F-25001, Reactor Building General Arrangement Plan – Below Grade, Rev. 20

Miscellaneous

DBD-106, Hazard Analysis, Rev. 1
Engineering Change 80408
Individual Plant Examination for External Events Submittal, June 1995
Specification 9527-01-24-3, Rolling Steel Doors for Turbine Building and Radwaste Building and Diesel Generator Building, October 8, 1971
Specification 024-001, Personnel and Railroad/Track Doors, Rev. 8

Section 1R04: Equipment Alignment

Procedures

0OP-39, Diesel Generator Operating Procedure, Rev. 146
1OP-18, Core Spray System Operating Procedure, Rev. 58
2OP-17, Residual Heat Removal System Operating Procedure, Rev. 148
2OP-19, High Pressure Coolant Injection System Operating Procedure, Rev. 133

Condition Reports

547081	550985	603932	609083

Drawings

D-02523, High Pressure Coolant Injection System P&ID Sheet 1, Rev. 58
D-02523, High Pressure Coolant Injection System P&ID Sheet 2, Rev. 53
D-02537, Reactor Building Service Water Piping Diagram Sheet 1, Rev. 95
D-02537, Reactor Building Service Water Piping Diagram Sheet 2, Rev. 90
D-02268, Units 1 and 2 EDG Fuel Oil Piping Diagram
D-02265, Units 1 and 2 Starting Air for EDGs Piping Diagram
D-02270, Units 1 and 2 EDG Lube Oil Piping Diagram, Sheet 1B

Miscellaneous
BN-19.0.1, High Pressure Coolant Injection (HPCI) System, Rev. 2
Engineering change 091740
Engineering change 092771
SD-19, High Pressure Coolant Injection (HPCI) System, Rev. 22
SD-43, Service Water System, Rev. 25

Section 1R05: Fire Protection

Procedures
0PFP-CB, Control Building Prefire Plans, Rev. 9
0PFP-DG, Diesel Generator Building Prefire Plans, Rev. 15
1PFP-RB, Reactor Building Prefire Plans, Rev. 14

Section 1R06: Flood Protection

Procedures
0O1-01.03, Non-Routine Activities, Rev. 49

Condition Reports

490292	559173	567417	573930	588742	600678
600850	603867	604725	611169	611122	612661
613354	613339	613355	621802	629064	612979

Work Orders
2140336

Drawings
F03343, East Yard Area Units No. 1 & 2 Electrical Underground Duct Runs, Rev. 29
F03450, Cir. Water Intake Structure Unit No's 1 & 2 Cable Vault Conduit, Rev. 7
F03558, Service Water Intake Structure Units No. 1 & 2 Electrical Conduit Sections 7 Details, Rev. 31
D-02779, Reactor Building Floor and Wall Sleeves, Tabulation and Details, Rev. 4
F-04022, Diesel Generator Building, Fire Protection & Drainage Piping, Rev. 20
F-25001, Reactor Building General Arrangement Plan – Below Grade, Rev. 20

Miscellaneous
WO 1137982 Perform Manhole Inspections
WO 770466 Perform Manhole Inspections
EGR-NGGC-0351 Condition Monitoring of Structures
EGR-NGGC-0507, Cable Aging Management Activities
EGR-NGGC-0512, Licensing Renewal Aging Management Activities
EGR-NGGC-0156, Environmental Qualification of Electrical Equipment Important to Safety
NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients."
NRC Information Notice 2002-012, "Submerged Safety Related Electrical Cables"
DBD-106, Hazard Analysis, Rev. 1
Engineering Change 80408
Individual Plant Examination for External Events Submittal, June 1995

Specification 9527-01-24-3, Rolling Steel Doors for Turbine Building and Radwaste Building and Diesel Generator Building, October 8, 1971
Specification 024-001, Personnel and Railroad/Track Doors, Rev. 8

Section 1R11: Licensed Operator Requalification

Procedures

0AOP-22, Grid Instability, Rev. 22

Miscellaneous

0TPP, Licensed Operator Continuing Training Program
TRN-NGGC-0014, NRC Initial Licensed Operator Exam Development and Administration
1EOP-01-LPC, Level/Power Control
0PEP-2.1.1, Emergency Control – Notification of Unusual Event, Alert, Site Area Emergency, or General Emergency
0PEP-02.1, Initial Emergency Actions

Section 1R12: Maintenance Effectiveness

Procedures

0AP-022, BNP Outage Risk Management, Rev. 42
ADM-NGGC-0101, Maintenance Rule Program, Rev. 23
ADM-NGGC-0203, Preventive Maintenance and Surveillance Testing Administration, Rev. 20
EGR-NGGC-0351, Condition Monitoring of Structures, Rev. 19
NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Rev. 4A

Condition Reports

421423 600035

Work Orders

0142691 1814469

Miscellaneous

Engineering Change 46748, RHRSW Booster Pump Motor Drawing Review, Rev. 2
Engineering Change 83589, 2-E11-C001C-HX RHRSW Pump Motor Cooler Interior Coatings, Rev. 0
Engineering Change 91306, RHRSW Booster Pump Motor Oil Leak Evaluation, Rev. 0

Section 1R13: Maintenance Risk Assessment and Emergent Work Control

Procedures

0AP-022, BNP Outage Risk Management, Rev. 41
0AP-025, BNP Integrated Scheduling, Rev. 47
ADM-NGGC-0104, Work Management Process, Rev. 42

ADM-NGGC-0006, Online EOOS Model, Rev. 8
WCP-NGGC-0500, Work Activity Integrated Risk Management Program, Rev. 3
0AP-025, BNP Integrated Scheduling, Rev. 47
OPS-NGGC-1311, Protected Equipment, Rev. 3

Work Orders
2274631 299396

Miscellaneous
Unit 1 & 2 Control Room logs
BNP EOOS Risk Assessment Week 12W28
BNP EOOS Risk Assessment, on August 7, 2013
BNP EOOS Risk Assessment, on August 10, 2013
BNP EOOS Risk Assessment, on September 9, 2013
0AP-022, BNP Outage Risk Management
ADM-NGCC-0104, Work Management Process
0AI-144, Risk Management
ADM-NGGC-0006, Online EOOS Model

Section 1R15: Operability Evaluations
Procedures
OPS-NGGC-1305, Operability Determinations, Rev. 8
OPS-NGGC-1307, Operational Decision Making, Rev. 4
1PT-24.1-1, Service Water Pump and Discharge Valve Operability Test, Rev. 72
OMMM-018, Packing, Rev. 21

Condition Reports
201240 582584 546346 580155 581152 582483
615533 614238 617441 617963 617965 619218
627781

Work Orders
1927993 2104000 2143329 2184270 2265887 2266167
2292996

Drawings
F-02502, Reactor Building Plan – Grade EL. 20.0 General Arrangement, Rev. 0
FP-84867, Stuffing Box Modification Details for Service Water Pumps

Miscellaneous
ASME Section VIII
Engineering Change 70110
Engineering Change 92965
Engineering Change 92966
EOOS Risk Assessment, on September 24, 2013
NGG-PMB-PMP-01, NGG Equipment Reliability Template Vertical Pump
Unit 1 and 2 Control Room Logs

Section 1R18: Plant Modifications
Procedures
EGR-NGGC-0005, Engineering Change, Rev. 35
EGR-NGGC-0011, Engineering Product Quality, Rev. 18

Condition Reports
546816 609717

Miscellaneous
EC91918 Temporary Modification for Leak Repair of Line 1-SW-72-4-157, Rev. 2
EC92172 Leak Evaluation for 1-SW-72-4-157, Rev. 0
EC92173 Evaluation of Through-wall Corrosion on 1-SW-72-4-157, Rev. 0
ASME 2011a Section XI Mechanical Clamping Devices for Class 2 and 3 Piping Pressure Boundary

Section 1R19: Post Maintenance Testing

Procedures
0PM-BKR001, ITE 4kV Breaker and Compartment Checkout, Rev. 42
0PT-09.2 HPCI System Operability Test, Rev. 139
0PT-10.1.1, RCIC System Operability Test, Rev. 99
1PT-24.1-1, Service Water Pump and Discharge Valve Operability Test, Rev. 75
2OP-17, Generator and Exciter System Operating Procedure, Rev. 66
2OP-43, Service Water System Operating Procedure, Rev. 149

Condition Reports
604452 611971 621177 629930 631074 631458

Work Orders
2079432 2135464 2253534 2274631 2292996 2293821

Drawings
F-03563, Main and Auxiliary Transformers General Arrangement – Sections, Rev. 12

Miscellaneous
Engineering Change 93203
Operator logs
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402755