



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

April 29, 2014

George T. Hamrick
Vice President
Brunswick Steam Electric Plant
P.O. Box 10429
Southport, NC 28461

**SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION
REPORT NOS. 05000325/2014002 AND 05000324/2014002**

Dear Mr. Hamrick:

On March 31, 2014, 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 April 22, 2014, 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.

No NRC-identified or self-revealing findings were identified during this inspection. However, two licensee-identified violations which were determined to be of very low safety significance are documented in this report. The NRC is treating these findings as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the subject or severity of any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, 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.

Additionally, as we informed you in the most recent NRC integrated inspection report, cross-cutting aspects identified in the last six months of 2013 using the previous terminology were being converted in accordance with the cross-reference in Inspection Manual Chapter (IMC) 0310. Section 4OA5 of the enclosed report documents the conversion of these cross-cutting aspects which will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review. If you disagree with the cross cutting aspect assigned, 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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's Rules of Practice, a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

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, 324/2014002
w/Attachment: Supplemental Information

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Letter to George T. Hamrick from George Hopper dated April 29, 2014.

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION
REPORT NOS.: 05000325/2014002 and 05000324/2014002

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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.: 05000325/2014002, 05000324/2014002

Licensee: Duke Energy Progress, Inc.

Facility: Brunswick Steam Electric Plant, Units 1 & 2

Location: 8470 River Road SE
Southport, NC 28461

Dates: January 1, 2014 through March 31, 2014

Inspectors: M. Catts, Senior Resident Inspector
M. Schwieg, Resident Inspector
S. Herrick, RII Project Engineer
A. Nielsen, Senior Health Physicist (Sections 2RS6, 2RS8, 4OA1)
R. Hamilton, Senior Health Physicist (Sections 2RS1, 4OA1)
J. Rivera, Health Physicist (Section 2RS7)
M. Coursey, RII Reactor Inspector (Section 4OA5)

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

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SUMMARY OF FINDINGS

IR 05000325/2014002, 05000324/2014002; 01/01/14 – 03/31/14; Brunswick Steam Electric Plant, Units 1 and 2; Integrated Report.

This report covers a three-month period of inspection by resident inspectors and regional inspectors. The significance of findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated June 19, 2012. 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," Revision 5.

NRC-Identified and Self-Revealing Findings

None

Licensee-Identified Violations

Two violations of very low safety significance that were identified by the licensee have been reviewed by the NRC. Corrective actions planned or taken by the licensee have been entered into the licensee's corrective action program (CAP). These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

Enclosure

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at rated thermal power (RTP). On January 4, 2014, power was reduced to 85 percent for control rod sequence exchange and returned to RTP on January 5, 2014. On March 1, 2014, the unit was shut down for a refueling outage and remained shut down for the remainder of the inspection period.

Unit 2 began the inspection period at RTP. On January 17, 2014, power was reduced to 70 percent for control rod sequence exchange and returned to RTP on January 18, 2014. On February 6, 2014, the unit was down powered to 20 percent to repair a steam leak. Power was returned to RTP on February 11, 2014, and remained at or near RTP for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

Impending Adverse Weather Conditions

The inspectors reviewed the licensee's preparations to protect risk-significant systems from winter storm Leon expected on January 29, 2014. The inspectors evaluated the licensee's implementation of adverse weather preparation procedures and compensatory measures, including operator staffing, before the onset of the adverse weather conditions. The inspectors reviewed the licensee's plans to address the ramifications of potentially lasting effects that may result from winter storm Leon. The inspectors verified that operator actions specified in the licensee's adverse weather procedure maintained readiness of essential systems. The inspectors verified that required surveillances were current, or were scheduled and completed, if practical, before the onset of anticipated adverse weather conditions. The inspectors also verified that the licensee implemented periodic equipment walkdowns or other measures to ensure that the condition of plant equipment met operability requirements. This constitutes one sample. Documents reviewed are listed in the Attachment.

b. Findings

No findings of were identified.

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1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial Walkdown

The inspectors verified that the licensee correctly aligned critical portions of selected risk-significant systems. The inspectors selected systems for assessment because they were a redundant or backup system or train, were important for mitigating risk for the current plant conditions, had been recently realigned, or were a single-train system. The inspectors determined the correct system lineup by reviewing plant procedures and drawings. The inspectors verified that critical portions of the selected systems were correctly aligned by performing partial walkdowns. This constitutes four samples. Documents reviewed are listed in the Attachment.

The inspectors selected the following four systems or trains to inspect:

- Unit 1 residual heat removal (RHR) system on January 10, 2014
- Augmented off-gas (AOG) system on January 16, 2014
- Unit 1 high pressure cooling injection (HPCI) on January 27, 2014
- Unit 1 residual heat removal service water (RHRSW) on February 26, 2014

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05AQ)

a. Inspection Scope

.1 Quarterly Inspection

The inspectors evaluated the adequacy of selected fire plans by comparing the fire plans to the defined hazards and defense-in-depth features specified in the fire protection program. In evaluating the fire plans, the inspectors assessed the following items:

- control of transient combustibles and ignition sources
- fire detection systems
- water-based fire suppression systems
- gaseous fire suppression systems
- manual firefighting equipment and capability
- passive fire protection features
- compensatory measures and fire watches
- issues related to fire protection contained in the licensee's corrective action program

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The inspectors toured the following fire areas to assess material condition and operational status of fire protection equipment. This constitutes five samples. Documents reviewed are listed in the Attachment.

- 1PFP-DG-11/12/13/14, E1-E4 Switchgear Room 50' elevation
- 1-PFP-RB1-1c and 1-PFP-RB1-1d, North and South RHR Room -17' elevation
- 1PFP-RB1-1h E/W, Unit 1 Reactor Building East and West 50' elevation
- 1PFP-TB1-1, Breezeway, Unit 1 Turbine Building, 20' elevation; 1PFP-TB1-5, 1A Reactor Feed Pump Room, Unit 1 Turbine Building, 20' elevation; 1PFP-TB1-4, 1B Reactor Feed Pump Room, Unit 1 Turbine Building, 20' elevation; 1PFP-TB1-1f, 4kV Switchgear Area, Unit 1 Turbine Building, 20' elevation; and 1PFP-TB1-1k, Unit 1 Turbine Building South Area, 38' and 41' elevations
- 2PFP-TB2-1, Breezeway, Unit 2 Turbine Building, 20' elevation and 2PFP-TB2-1f, 4kV Switchgear Area, Unit 2 Turbine Building, 20' elevation, 2PFP-CB-6, Unit 2 Cable Spreading Room, 23' elevation

.2 Annual Inspection

The inspectors evaluated the licensee's fire brigade performance during a drill on January 22, 2014, and assessed the brigade's capability to meet fire protection licensing basis requirements. The inspectors observed the following aspects of fire brigade performance:

- capability of fire brigade members
- leadership ability of the brigade leader
- use of turnout gear and fire-fighting equipment
- team effectiveness
- compliance with site procedures

The inspectors also assessed the ability of control room operators to combat potential fires, including identifying the location of the fire, dispatching the fire brigade, and sounding alarms. This constitutes one sample. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

.1 Internal Flooding

The inspectors reviewed related flood analysis documents and walked down the area listed below containing risk-significant structures, systems, and components susceptible

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to flooding. The inspectors verified that plant design features and plant procedures for flood mitigation were consistent with design requirements and internal flooding analysis assumptions. The inspectors also assessed the condition of flood protection barriers and drain systems. In addition, the inspectors verified the licensee was identifying and properly addressing issues using the corrective action program. This constitutes one sample. Documents reviewed are listed in the Attachment.

- Unit 1, piping upstream of Unit 1 service water drain line 1-SW-V93

.2 Underground Cables

The inspectors reviewed related flood analysis documents and inspected the areas listed below containing cables whose failure could disable risk-significant equipment. The inspector directly observed the condition of cables and cable support structures and, as applicable, verified that dewatering devices and drainage systems were functioning properly. In addition, the inspectors verified the licensee was identifying and properly addressing issues using the corrective action program. This does not constitute one sample. The sample will be documented when two additional manholes are inspected. Documents reviewed are listed in the Attachment.

- Manhole 2-MH-10SW

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

Annual Review

The inspectors verified the readiness and availability of the 1A core spray heat exchanger and the 1A RHR heat exchanger to perform its design function by observing performance tests, verifying the licensee uses the periodic maintenance method outlined in EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines, observing the licensee's implementation of biofouling controls, observing the licensee's heat exchanger inspections, verifying critical operating parameters through direct observation or by reviewing operating data, and verifying correct categorization and receipt of maintenance under the Maintenance Rule. Additionally, the inspectors verified that the licensee had entered any significant heat exchanger performance problems into the corrective action program and that the corrective actions were appropriate. This constitutes two samples. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

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1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification

On February 3, 2014, the inspectors observed a crew of licensed operators in the plant's control room during the declaration and notifications involving a Notice of Unusual Event (NOUE) in accordance with Emergency Action Level HU 3.1, Toxic, corrosive, asphyxiate, flammable gas release that could affect normal operations, due to smoke in the Unit 1 "B" Battery room. The inspectors verified operator performance was adequate, and managers were identifying and documenting crew performance problems. 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 actions and notifications

This constitutes one sample. Documents reviewed are listed in the Attachment.

.2 Resident Inspector Quarterly Review (Licensed Operator Performance):

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 January 10, 2014, the inspectors observed Unit 1 evolutions following the loss of the Caswell Beach power supply and the declaration of a NOUE in accordance with Emergency Action Level HU 2.2 for an explosion in the Protected Area. The inspectors reviewed various licensee policies and procedures 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

This constitutes one sample. Documents reviewed are listed in the Attachment.

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b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors assessed the licensee's treatment of the issues listed below to verify the licensee appropriately addressed equipment problems within the scope of the maintenance rule (10 CFR 50.65, Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants). The inspectors reviewed procedures and records to evaluate the licensee's identification, assessment, and characterization of the problems as well as their corrective actions for returning the equipment to a satisfactory condition. The inspectors also interviewed system engineers to assess the accuracy of performance deficiencies and extent of condition. This constitutes two samples. Documents reviewed are listed in the Attachment.

- Control Room Emergency Ventilation 2A failure while performing a modification on November 12, 2013
- Emergency Diesel Generator (EDG) 2 air starting filter failure on February 24, 2014

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the maintenance activities listed below to verify that the licensee assessed and managed plant risk as required by 10 CFR 50.65(a)(4) and licensee procedures. The inspectors assessed the adequacy of the licensee's risk assessments and implementation of risk management actions. The inspectors also verified that the licensee was identifying and resolving problems with assessing and managing maintenance-related risk using the corrective action program. Additionally, for maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities. This constitutes five samples. Documents reviewed are listed in the Attachment.

- Unit 1 elevated risk due to planned surveillance test 0MST-RHR26Q, RHR Core Spray Low Reactor Pressure Permissive Trip Unit Channel Calibration on January 8, 2014
- Unit 1 and Unit 2 elevated risk due to winter storm Leon on January 28, 2014
- Unit 1 refueling outage risk assessment on February 28, 2014

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- Unit 1 elevated risk due to reduced reactor vessel inventory on March 3, 2014
- Unit 1 elevated risk during refueling outage due to the unavailability of the E2 bus on March 11, 2014

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors selected the operability determinations or functionality evaluations listed below for review based on the risk-significance of the associated components and systems. The inspectors reviewed the technical adequacy of the determinations to ensure that TS operability was properly justified and the components or systems remained capable of performing their design functions. To verify whether components or systems were operable, the inspectors compared the operability and design criteria in the appropriate sections of the TS and updated final safety analysis report to the licensee's evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with operability evaluations. This constitutes six samples. Documents reviewed are listed in the Attachment.

- Unit 2 Recirculation Loop flow mismatch on January 5, 2014
- Unit 1 RHR 1-E41-F001 steam leak on January 21, 2014
- Unit 1 Nuclear Header Drain Valve 1-SW-V94 leakage on February 4, 2014
- Unit 1 RHRSW piping vibration on February 6, 2014
- Unit 2 RCIC oil level positioner for the outboard bearing loose on February 20, 2014
- Unit 1 1B-1 Battery Output Breaker failed to close on March 2, 2014

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors verified that the two plant modifications listed below did not affect the safety functions of important safety systems. The inspectors confirmed the modifications did not degrade the design bases, licensing bases, and performance capability of risk significant structures, systems and components. The inspectors also verified modifications performed during plant configurations involving increased risk did not place

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the plant in an unsafe condition. Additionally, the inspectors evaluated whether system operability and availability, configuration control, post-installation test activities, and changes to documents, such as drawings, procedures, and operator training materials, complied with licensee standards and NRC requirements. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with modifications. This constitutes one sample. Documents reviewed are listed in the Attachment.

- Engineering Change 82322, Online Noble Metal Injection

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors either observed post-maintenance testing or reviewed the test results for the maintenance activities listed below to verify the work performed was completed correctly and the test activities were adequate to verify system operability and functional capability.

- OPT-06.1 standby liquid control system operability test on December 5, 2013
- OPT-10.1.8 RCIC System Valve Operability Test on January 2, 2014
- OPT-34.2.2.1 Pressure Boundary Door Inspection on January 23, 2014
- OPT-12.2.1D Emergency Core Cooling System EDG 4 Logic Test on January 27, 2014
- 2-MD-V18 leak checks on February 6, 2014
- OOP-39, Diesel Generator Operating Procedure on March 13, 2014

The inspectors evaluated these activities for the following:

- Acceptance criteria were clear and demonstrated operational readiness
- Effects of testing on the plant were adequately addressed
- Test instrumentation was appropriate
- Tests were performed in accordance with approved procedures
- Equipment was returned to its operational status following testing
- Test documentation was properly evaluated

Additionally, the inspectors reviewed a sample of corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with post-maintenance testing. This constitutes six samples. Documents reviewed are listed in the Attachment.

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b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)a. Inspection Scope

For the Unit 1 refueling outage from March 1, 2014, through March 31, 2014, the inspectors evaluated the following outage activities:

- Outage planning
- Shutdown, cooldown, refueling
- Reactor coolant system instrumentation and electrical power configuration
- Reactivity and inventory control
- Decay heat removal and spent fuel pool cooling system operation

The inspectors verified that the licensee:

- Considered risk in developing the outage schedule
- Controlled plant configuration in accordance with administrative risk reduction methodologies
- Developed work schedules to manage fatigue
- Developed mitigation strategies for loss of key safety functions
- Adhered to operating license and TS requirements

Additionally, inspectors verified that safety-related and risk-significant structures, systems, and components not accessible during power operations were maintained in an operable condition. The inspectors also reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with outage activities. This does not constitute one sample. The sample will be documented when the outage is complete. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)a. Inspection Scope

The inspectors reviewed the surveillance tests listed below and either observed the test or reviewed test results to verify testing adequately demonstrated equipment operability and met TS and licensee procedural requirements. The inspectors evaluated the test activities to assess for preconditioning of equipment, procedure adherence, and

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equipment alignment following completion of the surveillance. Additionally, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with surveillance testing. Documents reviewed are listed in the Attachment.

Routine Surveillance Tests

- OPT-12.4d, No. 4 Diesel Generator Fuel Oil Test on January 28, 2014
- OPT-12.2C, No. 3 Diesel Generator Monthly Load Test on February 10, 2014
- OE&RC-1010, Diesel Fuel Oil Program on February 25, 2014

This constitutes three samples.

Containment Isolation Valve

- OPT-20.3a.5, Main Steam Isolation Valve Leak Test on March 2, 2014
- OPT-20.3, Local Leakrate test on March 10, 2014

This constitutes two samples.

In-Service Tests (IST)

- OPT-06.1, Standby Liquid Control System Operability Test - 1B Pump on December 5, 2013

This constitutes one sample.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS1 Radiological Hazard Assessment and Exposure Controls

a. Inspection Scope

Hazard Assessment and Instructions to workers: During facility tours, the inspectors directly observed labeling of radioactive material and postings for radiation areas, High Radiation Areas (HRAs), and Locked High Radiation Areas (LHRAs) established within the Radiologically Controlled Area (RCA) of the auxiliary building, reactor containment building, and radioactive waste (radwaste) processing and storage locations. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected RCA areas. The inspectors reviewed survey records for several plant areas, including pre-job surveys for refueling outage tasks. The inspectors also discussed changes to plant operations that could contribute to changing

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radiological conditions since the last inspection. The inspectors attended HRA briefings and reviewed Radiation Work Permit (RWP) details for selected jobs to assess communication of radiological control requirements and current radiological conditions to workers.

Hazard Control and Work Practices: The inspectors evaluated access barrier effectiveness for selected LHRA locations and discussed changes to procedural guidance for LHRA and Very High Radiation Area controls with Health Physics (HP) supervisors. The inspectors evaluated controls for storage of irradiated material within the spent fuel pool. Established radiological controls (including airborne controls) were evaluated for selected refueling outage tasks including control rod drive removal, various jobs inside the drywell, and radiography activities. In addition, licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations were reviewed and discussed.

Occupational workers' adherence to selected RWPs and HP technician proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. The inspectors evaluated electronic dosimeter (ED) alarm set points and worker stay times against area radiation survey results for selected work activities. The use of personnel dosimetry in high dose rate gradients was reviewed and discussed. The inspectors also evaluated worker responses to dose and dose rate alarms during selected work activities.

Control of Radioactive Material: The inspectors observed surveys of material and personnel being released from the RCA using small article monitor, personnel contamination monitor, and portal monitor instruments. The inspectors discussed equipment sensitivity, alarm setpoints, and release program guidance with licensee staff. The inspectors also reviewed records of leak tests on selected sealed sources and discussed nationally tracked source transactions with licensee staff.

Problem Identification and Resolution: The inspectors reviewed and assessed Nuclear Condition Reports (NCR) associated with radiological hazard assessment and control. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with licensee procedures. The inspectors also reviewed recent self-assessment results.

Radiation protection activities were evaluated against the guidance and requirements of Updated Final Safety Analysis Report (UFSAR) Section 12; Technical Specifications (TS) Section 5; 10 CFR Parts 19 and 20; Regulatory Guide (RG) 8.38, Control of Access to High and Very High Radiation Areas in Nuclear Power Plants; and approved licensee procedures. Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, Control of Radioactively Contaminated Material. This constitutes one sample. Documents reviewed are listed in the Attachment.

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b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment

a. Inspection Scope

Radioactive Effluent Treatment Systems: The inspectors walked-down selected components of the gaseous and liquid radwaste processing and effluent discharge systems. To the extent practical, the inspectors observed and evaluated the material condition of in-place waste processing equipment for indications of degradation or leakage that could constitute a possible release pathway to the environment. Inspected components included drain tanks, saltwater release tanks, standby gas treatment systems, liquid waste processing equipment, and associated piping and valves. The inspectors interviewed licensee staff regarding radwaste equipment configuration and effluent monitor operation. The inspectors also reviewed surveillance testing records for standby gas treatment systems.

Effluent Sampling and Release: The inspectors observed the collection and processing of airborne effluent samples from the main plant stack. The inspectors reviewed recent liquid and gaseous release permits including pre-release sampling results, effluent monitor alarm setpoints, and public dose calculations. The inspectors reviewed the 2012 Annual Radioactive Effluent Report to evaluate reported doses to the public, to review any anomalous events, to evaluate groundwater sampling results, and to review Offsite Dose Calculation Manual (ODCM) changes. The inspectors also reviewed compensatory sampling data for time periods when selected radiation monitors were out of service. The inspectors discussed quality control activities for count room equipment with chemistry staff and reviewed the results of the 2012 and 2013 radiochemistry cross-check program. The inspectors also reviewed effluent source term evaluation and changes to effluent release points. In addition, the inspectors evaluated recent land use census results and meteorological data used to calculate doses to the public.

Ground Water Protection: The inspectors reviewed the licensee's continued implementation of the industry's Ground Water Protection Initiative (Nuclear Energy Institute (NEI) 07-07) and discussed any changes to the program. The inspectors discussed program guidance for dealing with spills, leaks, and unexpected discharges with licensee staff and reviewed recent entries into the 10 CFR 50.75(g) decommissioning file. The inspectors reviewed and discussed the licensee's program for monitoring of structures, systems, and components with the potential to release radioactive material to the environment. Potential effluent release points due to onsite surface water bodies were also evaluated. 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 old 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

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overall tritium concentration in groundwater and limiting plume migration. Information regarding onsite groundwater monitoring and radionuclide concentrations in the environment near Brunswick Nuclear 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>.

Problem Identification and Resolution: The inspectors reviewed Corrective Action Program documents in the area of gaseous and liquid effluent processing and release. The inspectors evaluated the licensee's ability to identify and resolve the identified issues. The inspectors also reviewed recent self-assessment results.

Radwaste system operation, effluent processing activities, and groundwater protection efforts were evaluated against requirements and guidance documented in the following: 10 CFR Part 20; 10 CFR Part 50 Appendix I; ODCM; UFSAR Section 11; RG 1.21, Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants; RG 1.109, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50 Appendix I; NEI 07-07, Industry Groundwater Protection Initiative – Final Guidance Document; and TS Section 5. This constitutes one sample. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope

REMP Implementation: The inspectors observed routine sample collection and surveillance activities as required by the licensee's environmental monitoring program. The inspectors noted the material condition and operability of airborne particulate filter and iodine cartridge sample stations and observed collection of weekly air samples at selected monitoring locations. Environmental thermoluminescent dosimeters at selected sites were checked for material condition. In addition, the inspectors observed collection of surface water samples in Nancy's Creek and the Cape Fear River. The inspectors determined the current location of selected sample points using a global positioning system. Land use census results, changes to the ODCM, monitoring for hard-to-detect radionuclides, and sample collection/processing activities were discussed with environmental technicians and licensee staff.

The inspectors reviewed the last two calibration records for selected environmental air samplers. The inspectors also reviewed the 2011 and 2012 Annual Radiological Environmental Operating Reports, the 2012 Annual Radioactive Effluent Report, results of the 2012 and 2013 interlaboratory cross-check program for Harris Energy &

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Environmental Center and EnRad Laboratories, and procedural guidance for environmental sample collection and processing. Selected environmental measurements were reviewed for consistency with licensee effluent data, evaluated for radionuclide concentration trends, and compared with detection level sensitivity requirements.

Meteorological Monitoring Program: The inspectors observed the physical condition of the tower and its instrumentation and discussed equipment operability and maintenance history with licensee staff. The inspectors evaluated transmission of locally generated meteorological data to other licensee groups such as main control room operators. For the meteorological measurements of wind speed, wind direction, and temperature, the inspectors reviewed the last two calibration records for applicable tower instrumentation. The inspectors also evaluated measurement data recovery for 2012 and 2013.

Groundwater Monitoring Program: The licensee's groundwater monitoring program and documentation, including program guidance for dealing with spills, leaks, and unexpected discharges, and the 10 CFR 50.75(g) decommissioning file, were evaluated as part of Inspection Procedure 71124.06 (Section 2RS6).

Identification and Resolution of Problems: The inspectors reviewed selected NCRs in the areas of radiological environmental monitoring and meteorological tower maintenance. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with licensee procedures. The inspectors also reviewed recent self-assessment results.

REMP implementation and meteorological monitoring were reviewed against the guidance and requirements of 10 CFR Part 20; Appendices E and I to 10 CFR Part 50; TS Section 5.0; UFSAR Chapter 2; ODCM; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment; Regulatory Guide 1.23, Meteorological Monitoring Programs for Nuclear Power Plants; Branch Technical Position, An Acceptable Radiological Environmental Monitoring Program – 1979; and approved licensee procedures. This constitutes one sample. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

a. Inspection Scope

Waste Processing and Characterization: During inspector walk-downs, accessible sections of the liquid and solid radwaste processing systems were assessed for material condition and conformance with system design diagrams. Inspected equipment included storage tanks, transfer piping, resin dewatering and packaging components, and

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abandoned radwaste processing equipment. The inspectors discussed component function, processing system changes, and radwaste program implementation with licensee staff.

The inspectors reviewed the 2012 Annual Radioactive Effluent Report and radionuclide characterizations from 2011 - 2013 for each major waste stream. For reactor water cleanup resin and Dry Active Waste (DAW) the inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined quality assurance comparison results between licensee waste stream characterizations and outside laboratory data. Waste stream mixing and concentration averaging methodology for resin waste streams were evaluated and discussed with radwaste staff. The inspectors also reviewed the licensee's procedural guidance for monitoring changes in waste stream isotopic mixtures.

Radioactive Material Storage: During walk-downs of indoor and outdoor radioactive material storage areas, the inspectors observed the physical condition and labeling of storage containers and the posting of Radioactive Material Areas. The inspectors also reviewed licensee procedural guidance for storage and monitoring of radioactive material.

Transportation: The inspectors directly observed preparation activities for a shipment of contaminated protective clothing. The inspectors noted package markings, vehicle placarding, observed dose rate measurements, and interviewed shipping technicians regarding Department of Transportation (DOT) regulations. The inspectors evaluated shipping records for consistency with licensee procedures and compliance with NRC and DOT regulations. The inspectors reviewed emergency response information, DOT shipping package classification, waste classification, and radiation survey results. Licensee procedures for opening and closing Type B shipping casks were compared to Certificate of Compliance requirements.

Problem Identification and Resolution: The inspectors reviewed NCRs in the areas of shipping and radwaste processing. The inspectors evaluated the licensee's ability to identify and resolve the issues. The inspectors also reviewed recent self-assessment results.

Radwaste processing, radioactive material handling, and transportation activities were reviewed against the guidance and requirements contained in the licensee's Process Control Program, UFSAR Chapter 11, 10 CFR Part 20, 10 CFR Part 61, 10 CFR Part 71, the Branch Technical Position on Waste Classification (1983), and NUREG-1608. This constitutes one sample. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

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4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Cornerstone: Initiating Events

a. Inspection Scope

The inspectors reviewed a sample of the performance indicator (PI) data, submitted by the licensee, for the PIs listed below. The inspectors reviewed plant records compiled between January 2013 and December 2013 to verify the accuracy and completeness of the data reported for the station. The inspectors verified that the PI data complied with guidance contained in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, and licensee procedures. The inspectors also confirmed the PIs were calculated correctly. In addition, the inspectors reviewed a sample of related corrective action documents to verify the licensee was identifying and correcting any deficiencies associated with PI data. This constitutes six samples. Documents reviewed are listed in the Attachment.

- Unplanned scrams per 7,000 critical hours
- Unplanned power changes per 7,000 critical hours
- Unplanned scrams with complications

b. Findings

No findings were identified.

.2 Occupational Radiation Safety and Public Radiation Safety Cornerstones

a. Inspection Scope

Occupational Radiation Safety Cornerstone: The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the Occupational Radiation Safety Cornerstone from January 2013 through December 2013. For the assessment period, the inspectors reviewed ED alarm logs and NCRs related to controls for exposure significant areas. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in the report Attachment.

Public Radiation Safety Cornerstone: The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from January 2013 through December 2013. The inspectors reviewed cumulative and projected doses to the public contained in liquid and gaseous release permits and NCRs related to Radiological Effluent Technical Specifications/ODCM issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. This constitutes two samples. Documents reviewed are listed in the Attachment.

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b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152).1 Routine Review

The inspectors screened items entered into the licensee's corrective action program in order to identify repetitive equipment failures or specific human performance issues for follow-up. The inspectors reviewed condition reports, attended screening meetings, or accessed the licensee's computerized corrective action database.

.2 Annual Follow-up of Selected Issuesa. Inspection Scope

The inspectors conducted a detailed review a 10 CFR Part 21 notification associated with NCR 648359, EDG starting air pressure regulating valves. The inspectors evaluated the following attributes of the licensee's actions:

- Complete and accurate identification of the problem in a timely manner
- Evaluation and disposition of operability and reportability issues
- Consideration of extent of condition, generic implications, common cause, and previous occurrences
- Classification and prioritization of the problem
- Identification of root and contributing causes of the problem
- Identification of any additional condition reports
- Completion of corrective actions in a timely manner

This constitutes one sample. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA3 Follow-up of Events (71153).1 (Closed) Licensee Event Report (LER) 05000324/2013-004-00, Operation Prohibited by Technical Specification – Recirculation Loop Flow Mismatcha. Inspection Scope

On June 20, 2013, engineering personnel determined that Unit 2 had operated with recirculation loop jet pump flow mismatch in excess of the limits established by TS 3.4.1, Recirculation Loops Operating, Surveillance Requirement (SR) 3.4.1.1. The SR limits recirculation loop jet pump flow mismatch to less than five percent. It was found that the

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recirculation mismatch flow had exceeded five percent on four separate occasions. Therefore, the recirculation loop flow was determined to be inoperable while Unit 2 was in operation. Since recirculation loop mismatch flow was greater than five percent, this condition was reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as operation prohibited by the plant's TS. The licensee submitted LER 05000324/2013-004-00 on August 19, 2013, for this issue. This constitutes one sample. Documents reviewed are listed in the Attachment.

b. Findings

The enforcement aspects of this finding are discussed in Section 4OA7 of this report. This LER is closed.

.2 (Closed) LER 05000324/2013-005-00, Secondary Containment Door Seal Leakage

a. Inspection Scope

On October 31, 2013, the licensee identified gaps in the Unit 2 Reactor Building exterior railroad door and 50 foot personnel access door. The gaps resulted in exceeding the allowable leakage margin of the Secondary Containment pressure boundary. During periods in which the degraded doors were relied upon for the Secondary Containment pressure boundary, the Secondary Containment was considered inoperable per TS 3.6.4.1, Secondary Containment. Since the exterior railroad door and the 50 foot personnel access door were degraded, the condition was reported in accordance with 10 CFR 50.73(a)(2)(v)(C) as a condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material. The licensee submitted LER 05000324/2013-005-00 on December 19, 2013, for this issue. This constitutes one sample. Documents reviewed are listed in the Attachment.

b. Findings

The enforcement aspects of this finding are discussed in Section 4OA7 of this report. This LER is closed.

.3 NOUE for Explosion in the Protected Area

a. Inspection Scope

For the plant event listed below, the inspectors reviewed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional NRC personnel, and compared the event details with criteria contained in IMC 0309, issued October 28, 2011, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that the licensee made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR 50.72. The inspectors reviewed the licensee's

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follow-up actions related to the events to assure that the licensee implemented appropriate corrective actions commensurate with their safety significance. This constitutes one sample. Documents reviewed are listed in the Attachment.

- On January 10, 2014, operations personnel declared a NOUE for Unit 1 in accordance with Emergency Action Level HU2.2, explosion in the protected area, when security guards heard an explosion associated with the non-safety related Unit 1 Caswell Beach transformer. The transformer received a lockout and four of the eight Caswell Beach pumps tripped. The plants remained at 100 percent power and stable. No personnel were injured. No fire or smoke occurred. The licensee wrote NCR 654944 to address this event.

b. Findings

No findings were identified.

.4 NOUE for Toxic, Corrosive, Asphyxiate or Flammable Gases in Amounts that Have or Could Adversely Affect Normal Plant Operation

a. Inspection Scope

For the plant event listed below, the inspectors reviewed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional NRC personnel, and compared the event details with criteria contained in IMC 0309, issued October 28, 2011, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that the licensee made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR 50.72. The inspectors reviewed the licensee's follow-up actions related to the events to assure that the licensee implemented appropriate corrective actions commensurate with their safety significance. This constitutes one sample. Documents reviewed are listed in the Attachment.

- On February 3, 2014, operations personnel declared a NOUE for Unit 1 in accordance with Emergency Action Level HU 3.1, toxic, corrosive, asphyxiate, flammable gas release that could affect normal operations, due to smoke in the Unit 1 "B" Battery room. The Unit 1 standby UPS inverter cabinet was smoking and leaking fluid. The fire brigade responded and declared the room uninhabitable due to smoke. The standby inverter was de-energized and the smoke subsided. The standby inverter was not in service and no plant equipment was lost. Unit 2 was not affected. The licensee wrote NCR 666251 to address this event.

b. Findings

No findings were identified.

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4OA5 Other Activities

.1 Temporary Instruction (TI) - 2515/182 – Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks

a. Inspection Scope

Leakage from buried and underground pipes has resulted in ground water contamination incidents with associated heightened NRC and public interest. The industry issued a guidance document, NEI 09-14, Guideline for the Management of Buried Piping Integrity (ADAMS Accession No. ML103090142), to describe the goals and required actions (commitments made by the licensee) resulting from this underground piping and tank initiative. On December 31, 2010, NEI issued Revision 1 to NEI 09-14, Guidance for the Management of Underground Piping and Tank Integrity (ADAMS Accession No. ML110700122), with an expanded scope of components which included underground piping that was not in direct contact with the soil and underground tanks. On November 17, 2011, the NRC issued TI-2515/182, Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks, to gather information related to the industry's implementation of this initiative.

From January 27 – February 4, 2014, the inspectors conducted a review of records and procedures related to the licensee's program for buried pipe, underground pipe and tanks in accordance with Phase II of TI-2515/182. This review was done to confirm that the licensee's program contained attributes consistent with Sections 3.3.A and 3.3.B of NEI 09-14 and to confirm that these attributes were scheduled and/or completed by the NEI 09-14 Revision 3 deadlines. To determine if the program attribute was accomplished in a manner which reflected good or poor practices in program management, the inspectors interviewed licensee staff responsible for the buried pipe program and reviewed buried pipe program related activities.

The licensee's buried piping and underground piping and tanks program was inspected in accordance with paragraph 03.02.a of the TI and it was confirmed that activities which correspond to completion dates specified in the program which have passed since the Phase 1 inspection was conducted, have been completed. Additionally, the licensee's buried piping and underground piping and tanks program was inspected in accordance with paragraph 03.02.b of the TI and responses to specific questions found in <http://www.nrc.gov/reactors/operating/ops-experience/buried-pipe-ti-phase-2-insp-req-2011-11-16.pdf> were submitted to the NRC headquarters staff.

Based upon the scope of the review described above, Phase II of TI-2515/182 was completed.

b. Findings

No findings were identified.

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.2 Cross-Reference for Transition to New Cross-Cutting Aspects

The table below provides a cross-reference from the 2013 and earlier findings and associated cross-cutting aspects to the new cross-cutting aspects resulting from the common language initiative. These aspects and any others identified since January 2014 will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review.

Finding	Old Cross-Cutting Aspect	New Cross-Cutting Aspect
05000324;325/2013004-01	P.1(a)	P.1
05000324;325/2013005-02	H.2(c)	H.7
05000324;325/2013007-05	H.4(c)	H.2

4OA6 Meetings

Exit meetings were conducted on March 13, 2014, and April 22, 2014, with Mr. G. Hamrick and other members of the licensee staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

4OA7 Licensee-Identified Violations

The following findings of very low significance (Green) were identified by the licensee and are violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as NCVs.

.1 Unit 2 Recirculation Loop Flow Exceeding Mismatch Limit

TS 3.4.1, Recirculation Loop Operating, requires two recirculation loops with matched flows in Modes 1 and 2. Contrary to the above, on December 3, 2010, and December 18, 2010, the recirculation loop mismatch flow exceeded the limits specified in SR 3.4.1.1. Specifically, the loop mismatch duration exceeded the TS completion time of six hours to restore matching flows. The licensee took action to revise procedures 1OI-03.1 and 2OI-03.2, Reactor Operator Daily Surveillance Report, to require use of plant process computer loop flow points as well as control room recirculation loop flow indicators when performing SR 3.4.1.1. This violation screened to IMC 0609, Appendix A, The SDP for Findings at Power, Exhibit 2 – Mitigating Systems Screening Questions. This violation was determined to be very low safety significance (Green) because the finding did not result in a mismanagement of reactivity by operator(s) (e.g., reactor power exceeding the licensed power limit, inability to anticipate and control changes in reactivity during crew operations). The licensee entered this issue into their CAP as NCR 613201.

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.2 Unit 2 Secondary Containment Inoperable Due to Door Gaps

TS 3.6.4.1, Secondary Containment, requires secondary containment to be operable during Modes 1, 2, and 3. Contrary to the above, from September 18, 2013, to September 24, 2013, and from October 2, 2013, to October 15, 2013, Unit 2 Secondary Containment had door gaps exceeding the allowable leakage criteria. During periods in which the degraded doors were relied upon for Secondary Containment pressure boundary, the Secondary Containment was inoperable. This violation screened to IMC 0609, Appendix A, The SDP for Findings at Power, Exhibit 3 – Barrier Integrity Screening Questions. This violation was determined to be very low safety significance (Green) because the finding only represents a degradation of the radiological barrier function provided for the spent fuel pool and standby gas treatment system. The licensee entered this issue into their CAP as NCR 641834. The license took action to repair the degraded doors, translate the design basis requirements for secondary containment into acceptance criteria for the doors in Engineering Change 93918, Determine Reactor Building Pressure Boundary Door Seal Inspection Acceptance Criteria, and revised Procedure OPT-34.2.2.1, Fire Door, Pressure Boundary Door, Alternate Safe Shutdown Access/Egress Door, and Severe Weather/Flood Control Door Inspections, to incorporate the criteria for Reactor Building pressure boundary doors.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

K. Allen, Manager – Design Engineering
Y. Anagostopoulos, Manager – Major Projects
M. Braden, Regulatory Affairs
A. Brittain, Manager – Security
K. Crocker, Supervisor – Emergency Preparedness
C. Cruz, Buried Piping Program Owner
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
J. McGee, Silar Services Hydrologist
M. McGowan, Environmental Lead
M. Millinor, Supervisor – Chemistry
W. Murray, Licensing Specialist
J. Nolin, Director – Engineering
A. Padleckas, Manager – Shift Operations
F. Payne, Manager – Outage and Scheduling
D. Petrusic, Superintendent – Environmental and Chemistry
A. Pope, Manager – Nuclear Support Services
B. Raper, Supervisor – U1 Outage Manager
M. Regan, BNP Projects
T. Roeder, Chemistry
T. Sherrill, Licensing Specialist
M. Turkal, Licensing Specialist
E. Willis, Director – Site Operations
O. Wrisbon, Superintendent – Electrical, Instrumentation and Controls Maintenance
R. Zambo, Licensing Engineer

NRC Personnel

G. Hopper, Chief, Reactor Projects Branch 4
J. Dodson, Senior Project Engineer
M. Miller, Deputy Director – Division of Reactor Safety
J. Pelchat, Sr. Regional Governmental Liaison Officer
T. Nicholson, Sr. Technical Advisor for Radionuclide Transport –
Office of Nuclear Regulatory Research
W. Ford, Sr. Physical Scientist – Office of Nuclear Reactor Regulation

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

2515/182	TI	Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks – Phase II (Section 4OA5)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

0AOP-13.0, Operation During Hurricane, Flood Conditions, Tornado, or Earthquake, Rev. 54
0AP-062, Seasonal Preparations, Rev. 2
0A1-68, Brunswick Nuclear Plant Response to Severe Weather Warnings, Rev. 44
0O1-01.03, Non-Routine Activities, Rev. 49
0PEP-02.6, Severe Weather, Rev. 17
0PM-HT001, Preventative Maintenance on Plant Freeze Protection and Heat Tracing System, Rev. 14

Condition Reports

666547

Section 1R04: Equipment Alignment

Procedures

1OP-19, High Pressure Coolant Injection System Operating Procedure, Rev. 92
1OP-17, Residual Heat Removal System Operating Procedure, Rev. 121
1OP-43, Service Water System Operating Procedure, Rev. 114

Drawings

D-25025, Residual Heat Removal System Piping Diagram Unit 1Sh. 1A, Rev. 56
D-25025, Residual Heat Removal System Piping Diagram Unit 1Sh. 1B, Rev. 71
D-25023, Piping diagram HPCI sheet 1/2, Rev. 60
D-25037, Reactor Building Service Water System Piping System Sh1, Rev. 98
D-25037, Reactor Building Service Water System Piping System Sh2, Rev. 88

Miscellaneous

BN-19.0.1, HPCI System, Rev. 02
SD-43, Service Water System, Rev. 25
BN-43.0.01, Service Water System, Rev. 0

Section 1R05: Fire Protection

Procedures

0PFP-DG, Diesel Generator Building Prefire Plans, Rev. 15
0PFP-CB, Control Building Prefire Plans, Rev. 9
1PFP-RB, Reactor Building Prefire Plans, Rev. 14
1PFP-TB, Turbine Building Prefire Plans, Rev. 18
2PFP-TB, Turbine Building Prefire Plans, Rev. 20
2PFP-RB, Reactor Building Prefire Plans, Rev. 14

Section 1R06: Flood ProtectionProcedures

SAF-NGGC-2174, Confined Space Entry Procedure, Rev. 11
 EGR-NGGC-0351, Condition Monitoring of Structures, Rev. 20

Condition Reports

609717 546816 668533

Work Orders

2104511 2144790 2144787 2143329 11615966

Miscellaneous

Engineering Change 92172R0
 Engineering Change 92173R0
 Engineering Change 91918R4
 N-513-3, Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping
 Digital Ultrasonic Thickness NDE Reports
 Operator Logs

Section 1R07: Heat Sink PerformanceProcedures

0ENP-2704, Administrative Control of NRC Generic Letter 89-13 Requirements, Rev. 22
 0ENP-2705, Service Water Heat Exchanger Thermal Performance Testing, Rev. 6
 0PM-ACU500, Inspection and Cleaning of Residual Heat Removal / Core Spray Room Aerofin Cooler Air Filters and Coolers, Rev. 15

Work Orders

2076209 2076096

Miscellaneous

EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines

Section 1R11: Licensed Operator RequalificationProcedures

1APP-UA-24, Annunciator Procedure for Panel UA-24, Rev. 43
 0AOP-12.0, Loss of Uninterruptible Power Supply, Rev. 25
 1OP-52, 120 Volt AC Uninterruptible Power Supply, Emergency, and Conventional Electrical Systems Operating Procedure, Rev. 43
 0PEP-02.1, Initial Emergency Actions, Rev. 52

Condition Reports

663439 663823 663825 654944 666414 673246
 666251 666252

Work Request

11611191

Miscellaneous

Nuclear Power Plant Emergency Notification Form, January 10, 2014

Nuclear Power Plant Emergency Notification Form, February 3, 2014

Section 1R12: Maintenance EffectivenessProcedures

ADM-NGGC-0116, Nuclear Planning

Condition Reports

669518	669519	669520	669521	644421	666080
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Work Orders

13316282	213458-13	213458-35
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Drawings

FP-85992, Starting Air Dryer System and Compressors, Rev. A

Miscellaneous

Engineering change EC 70110

Operations Shift Logs

Section 1R13: Maintenance Risk Assessment and Emergent Work ControlProcedures

0AP-022, BNP Outage Risk Management, Rev. 41

0AP-025, BNP Integrated Scheduling, Rev. 47

ADM-NGGC-0006, Online EOOS Model, Rev. 8

ADM-NGGC-0104, Work Management Process, Rev. 42

WCP-NGGC-0500, Work Activity Integrated Risk Management Program, Rev. 3

AD-OP-ALL-0201, Protected Equipment, Rev. 0

Condition Reports

667341	667342	667343	667345	667354	667356
667360	667363				

Miscellaneous

EOOS Risk Assessment

Unit 1 Control Room logs

Unit 2 Control Room logs

Unit 1 Outage Risk Assessment

Section 1R15: Operability EvaluationsProcedures

EGR-NGGC-0005, Engineering Change, Rev. 35

OPS-NGGC-1305, Operability Determinations, Rev. 11

1MST-BATT11BR, 125 VDC Battery 1B Service Capacity Test, Rev. 4

Condition Reports

663404	613201	650273	617441	671722	671911
671910	673069	669819			

Work Orders

11612063	1318400
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Drawings

C-24009, Service Water to Discharge Canal Hanger Locations, Rev 4

Miscellaneous

Engineering change EC92966
 Engineering change EC95600R1
 Load Support Summary Report 1E11-128PG612
 AMSE O&M Code Part 3
 1-SW-V94 Ultrasonic Test Report on August 26, 2013
 1-SW-V94 Ultrasonic Test Report on July 17, 2013
 GE Energy DRF Number: 0000-0164-2273
 Operator Logs
 Trico Glass, LS, or SS Opto-Matic Oiler Vendor Manual

Section 1R18: Plant ModificationProcedures

EGR-NGGC-0005, Engineering Change, Rev. 36
 OPS-NGGC-1316, Aggregate Risk Impact Assessment Program, Rev. 4
 REG-NGGC-0010, 10 CFR 50.59 and Selected Regulatory Reviews, Rev. 21

Work Orders

2255630

Drawings

D-20032, Piping Diagram, Reactor Feedwater System

Miscellaneous

Engineering change 82322 "U1 Implementation of OLNC"
 Engineering change 89749 "OLNC injection – Plant response and expectations"

Section 1R19: Post Maintenance TestingProcedures

0PLP-20, Post-Maintenance Testing Program, Rev. 42
 0PT-12.2.1D ECCS D/G #4 Logic Test, Rev. 4
 0PT-10.1.8 RCIC System Valve Operability Test, Rev. 33
 0PT-06.1, Standby Liquid Control System Operability Test, Rev. 79
 0PT-34.2.2.1, Pressure Boundary Door Inspections, Rev. 47
 0OP-39, Diesel Generator Operating Procedure, Rev. 155

Condition Reports

653299	653310	641834
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Work Orders

13306282 2293700

Drawings

FS-P-664, Ext Steam Piping Turbine Building

F-09346, Diesel Generator No. 2 Circuits Sheet 2, Rev. 41

Miscellaneous

248-117, Installation of Piping Systems, Rev. 31

BN-16.0.1, RCIC System, Rev. 03

Operator logs

Section 1R20: Outage ActivitiesProcedures

1OP17, Residual Heat Removal System Operating Procedure

0GP-05, Unit Shutdown

0GP-06, Cold Shutdown to Refueling (Head Unbolted)

0GP-08, Refueling to Cold Shutdown

0GP-12, Power Changes

0MMM-015, Operation and Inspection of Cranes and Material Handling Equipment

0SMP-RPV501, Reactor Vessel Disassembly

Condition Reports

667341 667342 667343 667345 667354 667356

667360 667363

Miscellaneous

Daily Outage Reports

Daily Key Safety Function Status Sheets

Daily Risk Profiles

Crew Turnover Reports

Fatigue Rule Management

List of Operations with the Potential for Draining the Reactor Vessel

Mode Change Checklists

Progress Reporter Schedule

Outage Risk Assessment

Section 1R22: Outine Surveillance TestingProcedures

0PT-12.4d, No. 4 Diesel Generator Fuel Oil Test, Re. 19

0PT-12.2C, No. 3 Diesel Generator Monthly Load Test, Rev. 101

0E&RC-1010, Diesel Fuel Oil Program, Rev. 43

0PT-06.1, Standby Liquid Control System Operability Test, Rev. 78

0PT-20.3a.5, MSIV Leak Test, Rev. 9

0PT-20.3, Local Leakrate Testing, Rev. 82

Condition Reports

650273 673848

Work Orders

2116029

Miscellaneous

Main storage tank (7day) monthly fuel oil sample result

Selma fuel truck annual compliance test result

Selma Certificate of Analysis

Section 2RS1: Radiological Hazard Assessment and Exposure ControlsProcedures, Guidance Documents, and Manuals

0E&RC-0040, Administrative Controls for High Radiation Areas, Locked High Radiation Areas, and Very High Radiation Areas, Rev. 39

0E&RC-0100, Radiation Surveys Methods, Rev. 35

0E&RC-0101, Performance and Tracking of Routine Surveillances, Rev. 6

0E&RC-0111, Survey Methods for Removable Surface Contamination, Rev. 32

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