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

April 30, 2015

Mr. William R. Gideon
Vice President
Duke Energy Progress, Inc.
Brunswick Steam Electric Plant
P.O. Box 10429
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION REPORT NOS.: 05000325/2015001 AND 05000324/2015001

Dear Mr. Gideon:

On March 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Brunswick Units 1 and 2 facilities. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 22, 2015, with you and other members of your staff.

The NRC inspectors did not identify any findings of more than minor significance.

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: IR 05000325, 324/2015001
w/Attachment: Supplemental Information

cc Distribution via ListServ

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Letter to William R. Gideon from George T. Hopper dated April 30, 2015.

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT - NRC INTEGRATED INSPECTION REPORT NUMBERS: 05000325/2015001 AND 05000324/2015001

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REGION II

Docket Nos.:	50-325, 50-324
License Nos.:	DPR-71, DPR-62
Report No.:	05000325/2015001, 05000324/2015001
Licensee:	Duke Energy Progress, Inc.
Facility:	Brunswick Steam Electric Plant, Units 1 & 2
Location:	Southport, NC
Dates:	January 1, 2015 through March 31, 2015
Inspectors:	M. Catts, Senior Resident Inspector A. Scarbeary, Acting Senior Resident Inspector M. Schwieg, Resident Inspector M. Coursey, Reactor Inspector (Section 1R08) A. Nielsen, Senior Health Physicist (Sections 2RS1, 2RS3, 2RS4, 4OA5) W. Loo, Senior Health Physicist (Sections 2RS5, 4OA1) J. Rivera, Health Physicist (Sections 2RS2, 4OA1) J. Panfel, Health Physicist (training status) (Sections 2RS5, 4OA1) L. Wheeler, NRR (training status)
Approved by:	George T. Hopper, Chief Reactor Projects Branch 4 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000325/2015001, 05000324/2015001; January 1, 2015 – March 31, 2015; Brunswick Steam Electric Plant, Units 1 and 2; Integrated Inspection Report

This report covers a three-month period of inspection by resident inspectors and regional inspectors. No findings were identified during this inspection period. The significance of inspection findings are indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated June 19, 2012. The cross-cutting aspects are determined using IMC 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operations of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Rev. 5.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at rated thermal power (RTP). On February 6, 2015, the unit was down powered to 70 percent for a control rod sequence exchange. The unit was returned to RTP on February 7, 2015, and remained at or near RTP for the remainder of the inspection period.

Unit 2 began the inspection period at RTP. On January 10, 2015, the unit was down powered to 72 percent for a scheduled control rod improvement. The unit was returned to RTP on January 11, 2015. On January 17, 2015, the unit was down powered to 71 percent for a scheduled control rod improvement. The unit was returned to RTP on January 18, 2015. On January 28, 2015, the unit was down powered to 70 percent for a scheduled control rod improvement and main turbine lift pump troubleshooting and repairs. The unit was returned to RTP on January 29, 2015. On February 20, 2015, the unit was shutdown to commence scheduled refueling outage B222R1 and remained shutdown for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

a. Inspection Scope

Impending Adverse Weather Conditions

The inspectors reviewed the licensee's preparations to protect risk-significant systems from extreme low temperatures expected during January 7-9, 2015. The inspectors evaluated the licensee's implementation of adverse weather preparation procedures and compensatory measures, including operator staffing, before the onset of and during the extreme cold conditions. The inspectors reviewed the licensee's plans to address the ramifications of potentially lasting effects that may result from extreme cold temperatures. The inspectors verified that operator actions specified in the licensee's adverse weather procedure maintain 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. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04 – 4 samples)

a. Inspection Scope

Partial Walkdown

The inspectors verified that critical portions of the selected systems were correctly aligned by performing partial walkdowns. 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. Documents reviewed are listed in the attachment.

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

- Unit 2, 2A residual heat removal (RHR) and RHR service water (RHRSW) systems
- Units 1 and 2, emergency diesel generator (EDG) 4 with EDG 3 out of service
- Unit 2, conventional service water (SW) system
- Unit 1, standby liquid control system

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05Q – 5 samples)

a. Inspection Scope

Quarterly Inspection

The inspectors evaluated the adequacy of selected pre-fire plans and fire protection procedures by comparing the pre-fire plans to the defined hazards and defense-in-depth features specified in the fire protection program. In evaluating the pre-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 (CAP)

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

- 0PFP-SW-01A/B, Units 1 and 2, SW Building 20' and 4' elevations
- 2PFP-TB2-1k, Unit 2, Turbine Building North Area 38' and 41' elevations
- 1PFP-RB1-1b, Unit 1, Reactor Building North Core Spray Room -17' elevation
- 1PFP-RB1-1jW, Unit 1, Reactor Building West 80' elevation
- 0PFP-DGS-1, Supplemental Diesel Generator Platform

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07 – 2 samples)

a. Inspection Scope

Annual Review

The inspectors verified the readiness and availability of the 2A RHR heat exchanger and 2A RHR room cooler heat exchanger to perform their design functions by observing the licensee's heat exchanger inspection. Additionally, the inspectors verified that the licensee had entered any significant heat exchanger performance problems into the CAP and that the licensee's corrective actions were appropriate. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08 – 1 Sample)

a. Inspection Scope

Non-Destructive Examination Activities and Welding Activities

From March 2 – 6, 2015, the inspectors conducted an onsite review of the implementation of the licensee's inservice inspection (ISI) program for monitoring degradation of the reactor coolant system boundary, risk-significant piping and component boundaries, and containment boundaries in Unit 2.

The inspectors either directly observed or reviewed the following non-destructive examinations (NDEs), mandated by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), (Code of Record: 1998 Edition with 2000 Addenda), to evaluate compliance with the ASME Code, Section XI and Section V requirements, and if any indications or defects were detected, to evaluate if they were dispositioned in accordance with the ASME Code or an NRC-approved alternative

requirement. The inspectors also reviewed the qualifications of the NDE technicians performing the examinations, to determine whether they were current and in compliance with the ASME Code requirements.

- Visual Examination (VT) of Steam Dryer Tie Bars 2 and 7, Augmented Exam (observed)
- VT of Reactor Pressure Vessel (RPV) Upper Interior – 35 to 0 degree and 90 to 70 degree CCW, Augmented Exam (observed)
- Ultrasonic Testing (UT), RPV H9 Weld, Class 1(observed)
- VT-1 of SC-ML-BWL (Torus Bay 3, 7, and 11), IWE Containment (reviewed)
- UT of SC-ML-BWL (Torus Bay 3, 7, and 11), IWE Containment (reviewed)
- UT of 2E1189-18-SWA Elbow to Pipe Weld, Class 2 (reviewed)

The inspectors either directly observed or reviewed the following welding activities, qualification records, and associated documents, in order to evaluate compliance with procedures and the ASME Code, Section XI and Section IX requirements. Specifically, the inspectors reviewed the work order (WO), repair and replacement plan, weld data sheets, welding procedures, procedure qualification records, welder performance qualification records, and NDE reports.

- 2-SW-104-14-157, RHRSW Pump Intake Pipe Weld, Class 3 (reviewed)
- 2-B21-F028A, Outboard MSIV A Weld, Class 2 (reviewed)

During non-destructive surface and volumetric examinations performed since the previous refueling outage, the licensee did not identify any relevant indications that were analytically evaluated and accepted for continued service; therefore, no NRC review was completed for this inspection procedure (IP) attribute.

Identification and Resolution of Problems

The inspectors reviewed a sample of ISI-related issues entered into the CAP determine if the licensee had appropriately described the scope of the problem, and had initiated corrective actions. The review also included the licensee's consideration and assessment of operating experience events applicable to the plant. The inspectors performed this review to ensure compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11 – 2 samples)

a. Inspection Scope

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification

The inspectors observed a simulator scenario for the loss of shutdown cooling conducted for training of an operating crew for an upcoming refueling outage.

The inspectors assessed the following:

- licensed operator performance
- the ability of the licensee to administer the scenario and evaluate the operators
- the quality of the post-scenario critique
- simulator performance

Documents reviewed are listed in the attachment.

.2 Resident Inspector Quarterly Review of Licensed Operator Performance in the Actual Plant/Main Control Room

The inspectors observed licensed operator performance in the main control room during the Unit 2 shutdown for the B222R1 refueling outage.

The inspectors assessed the following:

- use of plant procedures
- control board manipulations
- communications between crew members
- use and interpretation of instruments, indications, and alarms
- use of human error prevention techniques
- documentation of activities
- management and supervision

Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 1 sample)

a. Inspection Scope

The inspectors assessed the licensee's treatment of the issue 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. Documents reviewed are listed in the Attachment.

- EDG building damper ventilation tubing crack on March 5, 2015

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 6 samples)

a. Inspection Scope

The inspectors reviewed the six 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 CAP. Additionally, for maintenance resulting from unforeseen situations, the inspectors assessed the effectiveness of the licensee's planning and control of emergent work activities. Documents reviewed are listed in the attachment.

- Unit 2, January 7-8, 2015, yellow risk condition for 2B RHR train maintenance
- Unit 1, January 8-10, 2015, emergent plant issue when Unit 1 east moisture separator reheater drain tank level control valve went closed and caused a Condensate system transient
- Unit 2, February 13, 2015, refueling outage B222R1 risk assessment
- Unit 2, February 23, 2015, yellow risk condition for lower cavity water inventory
- Unit 1 and 2, February 25, 2015, yellow risk condition for EDG 3 maintenance work window
- Unit 2, March 31, 2015, yellow risk condition for Division II electrical outage

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

The inspectors selected the six 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 technical specification 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 technical specification 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. Documents reviewed are listed in the Attachment.

- Unit 1, low pressure safety injection (LPCI) manual injection valve 1-E11-F060b indicates dual position, February 17, 2015
- Unit 1, SLC valve corrosion, February 17, 2015
- Units 1 and 2, EDG building supply fan C rotating clockwise while idling, February 20, 2015
- Units 1 and 2, EDG 4 starting air system excessive run times, March 4, 2015
- Unit 2, Unit auxiliary transformer high total amps, March 25, 2015
- Units 1 and 2, Atrium-10 fuel assembly load chain failure event at Chinshan – impact for operating cycle, March 30, 2015

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 2 samples)

a. Inspection Scope

The inspectors verified that the 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 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. Documents reviewed are listed in the Attachment.

- Engineering Change (EC) 79468, EDG governor replacement modification
- EC 97231, EDG 3 automatic voltage regulator replacement

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 samples)

a. Inspection Scope

The inspectors either observed post-maintenance testing or reviewed the test results for the six 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.

- WO 13394477, January 20, 2015, EDG 4 supply air check valve 2-DSA-V5007 after maintenance
- WO 2229993, March 1, 2015, 1A RHR pump breaker maintenance
- WO 2224415, March 9, 2015, EDG 3 automatic voltage regulator replacement
- WO 13499886, March 19, 2015, EDG 3 loading test after output breaker maintenance
- WO 13354886, March 30, 2015, FLEX diesel building roof leaks
- WO 1374781, March 31, 2015, 2B conventional SW discharge valve 2-SW-V16 to the nuclear header after replacing both flanges on 2-SW-V16

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. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

For the Unit 2 refueling outage from February 20, 2015, through the remainder of the inspection period, 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 technical specification (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 – 7 samples)

a. Inspection Scope

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

- Unit 2, 0MST-SRM23R, Source Range Monitor Channel B Calibration and Functional Test, January 14, 2015
- Unit 1, 1OP-19, High Pressure Coolant System Operating Procedure, February 20, 2015
- Unit 2, 2MST-RHR41BR, RHR – LPCI Loop B Logic System Functional Test, March 14, 2015
- Unit 2, 0SMP-RPV502, Reactor Pressure Vessel Head Stud Elongation, March 25, 2015
- Unit 2, 0PT-80.1, Reactor Pressure Vessel American Society of Mechanical Engineers Section XI Pressure Test, March 28, 2015

Containment Isolation Valve

- Unit 2, 0PT-20.5, Integrated Primary Containment Leak Rate Test, March 30, 2015

In-Service Tests (IST)

- Unit 2, 2PT-24.1-2, SW Pump and Discharge Valve Operability Test, 2-SW-V15, March 15, 2015

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 – 1 sample)

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 and high radiation areas (HRAs) established within the radiologically controlled area (RCA) of the Unit 1 (U1) and Unit 2 (U2) reactor buildings, spent fuel storage installation, 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 surveys for alpha emitters, discrete radioactive particles, airborne radioactivity, gamma surveys with a range of dose rate gradients, neutron exposure, and pre-job surveys for upcoming tasks. The inspectors also discussed changes to plant operations that could contribute to changing radiological conditions since the last inspection. For selected outage jobs, the inspectors attended pre-job briefings and reviewed radiation work permit (RWP) details 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 Locked High Radiation Area (LHRA) locations and discussed changes to procedural guidance for LHRA and Very High Radiation Area controls with health physics (HP) supervisors. The inspectors reviewed implementation of controls for the storage of irradiated material within the spent fuel pools (SFPs). Established radiological controls (including airborne controls) were evaluated for selected U2 Refueling Outage 22 (B222R1) tasks including

replacement of control rod drive mechanisms (CRDMs) and decontamination activitieson the refuel floor. In addition, the inspectors reviewed licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations.

Through direct observations and interviews with licensee staff, inspectors evaluated occupational workers' adherence to selected RWPs and HP technician proficiency in providing job coverage. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results for selected B222R1 job tasks. The inspectors also reviewed the use of personnel dosimetry (ED alarms, extremity dosimetry, multibadging in high dose rate gradients, etc.) and 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 (SAM), personnel contamination monitor (PCM), and portal monitor (PM) instruments. The inspectors reviewed calibration records for selected release point survey instruments and discussed equipment sensitivity, alarm setpoints, and release program guidance with licensee staff. The inspectors compared recent 10 CFR Part 61 results for the Dry Active Waste (DAW) radioactive waste stream with radionuclides used in calibration sources to evaluate the appropriateness and accuracy of release survey instrumentation. 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)s 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 requirements of Updated Final Safety Analysis Report (UFSAR) Section 12; TS Sections 5.4 and 5.7; 10 CFR Parts 19 and 20; 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". Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

2RS2 Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls (71124.02 – 1 sample)

a. Inspection Scope

Work Planning and Exposure Tracking

The inspectors reviewed work activities and their collective exposure estimates for the B222R1 outage. The inspectors reviewed ALARA planning packages for activities related to the following high collective exposure tasks: refuel floor flood-up, CRDM exchange, and torus diving. For the selected tasks, the inspectors reviewed established dose goals and discussed assumptions regarding the bases for the current estimates with responsible ALARA planners. The inspectors evaluated the incorporation of exposure reduction initiatives and operating experience, including historical post-job reviews, into RWP requirements. Day-to-day collective dose data for the selected tasks were compared with established dose estimates and evaluated against procedural criteria (work-in-progress review limits) for additional ALARA review. Where applicable, the inspectors discussed changes to established estimates with ALARA planners and evaluated them against work scope changes or unanticipated elevated dose rates.

Source Term Reduction and Control

The inspectors reviewed the collective exposure three-year rolling average from 2011-2013. The inspectors evaluated historical dose rate trends for recirculation system piping and compared them to current B222R1 data. Source term reduction initiatives, including cobalt reduction and chemical decontamination, were reviewed and discussed with Chemistry and HP staff. The inspectors also reviewed temporary shielding packages for the B222R1 outage.

Radiation Worker Performance

The inspectors observed pre-job ALARA briefings and radiation worker performance for CRDM replacement and for various HRA jobs in the U2 reactor building and drywell. Radiation worker performance was also evaluated as part of IP 71124.01. While observing job tasks, the inspectors evaluated the use of remote technologies to reduce dose including teledosimetry and remote visual monitoring.

Problem Identification and Resolution

The inspectors reviewed and discussed selected CAP documents associated with ALARA program implementation. 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.

ALARA program activities were evaluated against the requirements of UFSAR Section 12, TS Section 5.4, 10 CFR Part 20, and approved licensee procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 -1 sample)

a. Inspection Scope

Engineering Controls

The inspectors reviewed the use of temporary and permanent engineering controls to mitigate airborne radioactivity during the B222R1 refueling outage. The inspectors observed the use of portable air filtration units for work in contaminated areas of the RCA and reviewed filtration unit testing certificates. The inspectors evaluated the effectiveness of continuous air monitors and air samplers placed in work area "breathing zones" to provide indication of increasing airborne levels.

Respiratory Protection Equipment

The inspectors reviewed the use of respiratory protection devices to limit the intake of radioactive material. This included review of devices used for routine tasks and devices stored for use in emergency situations. As part of Inspection Procedure (IP) 71124.02, the inspectors reviewed ALARA evaluations for the use of respiratory protection devices during CRDM removal. Selected Self-Contained Breathing Apparatus (SCBA) units and negative pressure respirators (NPRs) staged for routine and emergency use in the Main Control Room and other locations were inspected for material condition, SCBA bottle air pressure, number of units, and number of spare masks and air bottles available. The inspectors reviewed maintenance records for selected SCBA units for the past two years and evaluated SCBA and NPR compliance with National Institute for Occupational Safety and Health certification requirements. The inspectors also reviewed records of air quality testing for supplied-air devices and SCBA bottles.

The inspectors observed the use of air-supplied suits during CRDM removal. The inspectors discussed training for various types of respiratory protection devices with HP staff and interviewed radiation workers and control room operators on use of the devices including SCBA bottle change-out and use of corrective lens inserts. The inspectors reviewed respirator qualification records (including medical qualifications) for several Main Control Room operators and emergency responder personnel in the Instrumentation and HP departments. In addition, inspectors evaluated qualifications for individuals responsible for testing and repairing SCBA vital components.

Problem Identification and Resolution

The inspectors reviewed and assessed NCRs associated with airborne radioactivity mitigation and respiratory protection. 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.

Licensee activities associated with the use of engineering controls and respiratory protection equipment were reviewed against TS Section 5.4; 10 CFR Part 20; Regulatory Guide (RG) 8.15, "Acceptable Programs for Respiratory Protection"; and applicable licensee procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04 – 1 sample)

a. Inspection Scope

External Dosimetry

The inspectors reviewed the licensee's National Voluntary Laboratory Accreditation Program (NVLAP) certification data for accreditation for the current year for Ionizing Radiation Dosimetry. The inspectors reviewed program procedures for processing EDs and onsite storage of Thermoluminescent Dosimeters (TLDs). Comparisons between ED and TLD results, including correction factors, were reviewed. The inspectors reviewed ED alarm logs as part of IP 71151.

Internal Dosimetry

The inspectors reviewed and discussed the *in vivo* bioassay program with the licensee. The inspectors reviewed procedures that addressed methods for determining internal or external contamination, release of contaminated individuals, the assignment of dose, and the frequency of measurements depending on the nuclides. The inspectors reviewed and evaluated Whole Body Counter (WBC) dose assessment results and instrument calibration records. The inspectors also evaluated the licensee's program for *in vitro* monitoring.

Special Dosimetric Situations

The inspectors reviewed records for declared pregnant workers (DPWs) from March 2013 - March 2015 and discussed guidance for monitoring and instructing DPWs. Inspectors reviewed and witnessed the licensee's practices for monitoring external dose in areas of expected dose rate gradients, including the use of multi-badging and extremity dosimetry. The inspectors evaluated the licensee's neutron dosimetry program including instrumentation which was evaluated under IP 71124.05. In addition, the inspectors discussed shallow dose assessment methodology with licensee staff and reviewed Personnel Contamination Event logs.

Problem Identification and Resolution

The inspectors reviewed and discussed licensee CAP documents associated with occupational dose assessment. Inspectors evaluated the licensee's ability to identify and resolve the identified issues in accordance with licensee procedures. The inspectors also reviewed recent self-assessment results.

HP program occupational dose assessment activities were evaluated against the requirements and guidance of UFSAR Section 12; TS Section 5.4; 10 CFR Parts 19 and 20; RG 8.40, “Methods for Measuring Effective Dose Equivalent from External Exposure”; RG 8.32, “Criteria for Establishing a Bioassay Program”; and approved licensee procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05 – 1 sample)

a. Inspection Scope

Walkdowns and Observations

During tours of the reactor buildings, SFP areas, control room, and RCA exit points, the inspectors observed installed radiation detection equipment including the following instrument types: area radiation monitors (ARMs), continuous air monitors, PCMs, SAMs, PMs, and liquid and gaseous effluent monitors. The inspectors observed the physical location of the components, noted the material condition, and compared sensitivity ranges with UFSAR requirements. In addition to equipment walk-downs, the inspectors observed source checks and alarm setpoint testing of various portable and fixed detection instruments, including ion chambers, a telepole, PCMs, SAMs, and PMs. Material condition of source check devices, device operation, and establishment of source check acceptance ranges were also discussed with calibration lab personnel. The inspectors also performed inspections of storage areas for 'ready-to-use' portable instruments.

Calibration and Testing

The inspectors reviewed calibration records for selected ARMs, PCMs, PMs, SAMs, and containment high-range ARMs and the most recent calibration record for a whole body counter. The inspectors reviewed records of survey instrument function/source checks. Calibration source documentation was reviewed for the ARM high-range calibrator and the Cs-137 source used for portable instrument checks. Calibration stickers on portable survey instruments were also reviewed. The inspectors reviewed alarm setpoint values for selected ARMs, PCMs, PMs, SAMs, and effluent monitors. The inspectors also reviewed count room quality control records for selected germanium detectors and liquid scintillation detectors.

Problem Identification and Resolution

The inspectors reviewed selected NCRs in the area of radiological instrumentation. 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.

Operability and reliability of selected radiation detection instruments were reviewed against details documented in the following: 10 CFR Part 20; NUREG-0737, "Clarification of TMI Action Plan Requirements"; TS Section 3; UFSAR Chapters 11 and 12; and applicable licensee procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 8 samples)

.1 Cornerstone: Initiating Events

a. Inspection Scope

The inspectors reviewed a sample of the performance indicator (PI) data, submitted by the licensee, for the Unit 1 and Unit 2 PIs listed below. The inspectors reviewed plant records compiled between January 1, 2014, and December 31, 2014, 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 Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee procedures. The inspectors verified the accuracy of reported data that were used to calculate the value of each PI. 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. Documents reviewed are listed in the Attachment.

Cornerstone: Initiating Events (6 samples)

- Unplanned scrams per 7000 critical hours
- Unplanned power changes per 7000 critical hours
- Unplanned scrams with complications

b. Findings

No findings were identified.

.2 Occupational Radiation Safety and Public Radiation Safety Cornerstones (2 samples)

a. Inspection Scope

Occupational Radiation Safety Cornerstone

The inspectors reviewed recent Occupational Exposure Control Effectiveness PI results for the Occupational Radiation Safety Cornerstone and reviewed PI records compiled between January 2014 and December 2014. 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 Attachment.

Public Radiation Safety Cornerstone

The inspectors reviewed recent Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone and reviewed PI records compiled between January 2014 and December 2014. For the assessment period, the inspectors reviewed cumulative and projected doses to the public contained in liquid and gaseous release permits and CAP documents related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 2 samples)

.1 Routine Review

The inspectors screened items entered into the licensee's CAP 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 Issues

a. Inspection Scope

The inspectors conducted a detailed review of the following condition reports:

- CR 728556, Atrium-10 fuel assembly load chain failure event at Chinshan
- CRs 734403, 734428, 734660, 735098, 736179, 737708, 739180, 739742, Foreign Material and Lost Parts in the Reactor Pressure Vessel

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

Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

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

Event Notification 50751: Notice of Unusual Event (NOUE) Declared Due to Toxic Gas in the Security Diesel Building

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 January 22, 2015, operations personnel declared a NOUE for Units 1 and 2 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 Security Diesel Uninterruptible Power Supply (UPS) Room. Fire alarms were received in the building, smoke was reported coming from the building, the fire protection Novec system discharged, and the fire brigade responded to the building. No other plant equipment was effected. The licensee determined the cause to be a faulty filtering capacitor in the UPS cabinet. The UPS capacitors were replaced, and there are no other similar capacitors onsite. The licensee wrote NCRs 728951 and 728953 to address this event.

b. Findings

No findings were identified.

4OA5 Other Activities

On March 17, 2015, the inspectors held a teleconference with licensee staff and a State of North Carolina radiation protection representative 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 removes 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.

4OA6 Meetings, Including Exit

On April 22, 2015, the resident inspectors presented the inspection results to Mr. William R. Gideon and other members of the licensee's staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

On March 20, 2015, the radiation protection inspectors presented the inspection results to Mr. William R. Gideon, and other members of the licensee's staff. The inspectors noted that no proprietary information had been reviewed.

On March 6, 2015, the engineering/ISI inspectors presented the inspection results to Mr. William R. Gideon and other members of the licensee's staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

W. Gideon	Vice President
J. Krakuszeski	Plant Manager
K. Allen	Director, Design Engineering
J. Aremu-Cole	Lead Scientist
A. Brittain	Director, Nuclear Plant Security
S. Brown	Manager, Nuclear Oversight
J. Bryant	Senior Nuclear Engineer
K. Crocker	Manager, Nuclear Emergency Preparedness
C. Cruz	Buried Piping Program Owner
L. Grzeck	Manager, Nuclear Regulatory Affairs
R. Heiber	Superintendent, Nuclear Maintenance
J. Hicks	Manager, Nuclear Training
B. Houston	Manager, Maintenance
F. Jefferson	Director, Nuclear Engineering
J. Johnson	Manager, Nuclear Chemistry
J. Kalamaja	Manager, Nuclear Operations
S. Larson	ISI Program Owner
J. Magee	Silar Services
C. Martinec	Licensing Engineer
M. McGowan	Lead EHS Professional
W. Murray	Lead Nuclear Engineer
E. Neal	Manager, Nuclear Rad Protection
J. Nolin	General Manager, Nuclear Engineering
W. Orlando	Superintendent, E/I&C
A. Padleckas	Assistant Ops Manager, Shift
O. Palidiy	Welding & Repair/Replacement Coordinator
F. Payne	Manager, Nuclear Work Management
A. Pope	Director, Nuclear Operating Experience
M. Regan	Major Projects
T. Roeder	Senior Scientist, Chemistry
M. Schultheis	Manager, Nuclear Performance Improvement
T. Silar	Silar Services
M. Smiley	Manager, Nuclear Ops Training
J. Spencer	URS Contractor
R. Wiemann	Director, Electrical/Rx Systems
E. Williams	Superintendent, Nuclear Maintenance
S. Williams	BWRVIP Program Coordinator

North Carolina Department of Environment and Natural Resources

P. Cox	Environmental Radiation Protection Section

NRC Personnel

G. Hopper	Chief, Reactor Projects Branch 4
J. Dodson	Senior Project Engineer
R. Cady	Hydrogeologist – Office of Nuclear Material Safety and Safeguards

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

Event Notification 50751	EN	Notice of Unusual Event (NOUE) Declared Due to Toxic Gas in the Security Diesel Building (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Common Documents Reviewed

Updated Final Safety Analysis Report
Individual Plant Examination
Individual Plant Examination of External Events
Technical Specifications and Bases
Technical Requirements Manual
Control Room Narrative Logs
Plan of the Day

Section 1R01: Adverse Weather Protection

Procedures

0OI-01.03, Non-Routine Activities, Rev. 52
0AP-025, BNP Integrated Scheduling, Rev. 51
0OI-01.01, BNP Conduct of Operations Supplement, Revision 63
0AP-062, Seasonal Preparations, Rev. 3
0AOP-22.0, Grid Stability, Rev. 26
0PM-HT001, Preventative Maintenance on Plant Freeze Protection and Heat Tracing System, Rev. 14

Condition Reports

734334 725313 733965 734661 734334

Section 1R04: Equipment Alignment

Procedures

0OP-39, Diesel Generator Operating Procedure, Rev. 159
2OP-43, SW Operating Procedure, Rev. 154
1OP-05, SLC Operating Procedure, Rev. 52

Condition Reports

726903 726902 726946 730915 730914

Drawings

D-02269, Fuel Oil to Diesel Generators Piping Diagram, Sheet 2B. Rev. 30
D-02271, Piping Diagram Diesel Generator Lube Oil System, Sheet 2B Rev. 22
D-02273, Diesel Generator Jacket Water System Piping Diagram, Sheet 2B, Rev. 14
D-02526, Reactor Building RHR System Piping, Sheet 2B, Rev. 80
D-02526, Reactor Building RHR System Piping, Sheet 2A, Rev. 54

Section 1R05: Fire Protection

Procedures

AD-EG-ALL-1520, Transient Combustible Control, Rev. 0
0FPP-005, Fire Watch Program, Rev. 34
0PLP-01.1, Fire Protection Program Document, Rev. 39
0PLP-01.2, Fire Protection System Operability, Action, and Surveillance Requirements, Rev. 44
0AP-033, Fire Protection Program Manual, Rev. 16
BNP-E-9.010, Safe Shutdown Analysis in Case of Fire, Rev. 1
0PLP-01.5, Alternative Shutdown Capability Controls, Rev. 13

0FPP-015, Fire Barrier Penetration Seal Work Control, Rev. 36
0PFP-PBAA, Power Block Auxiliary Areas Prefire Plans, Rev. 24
2PFP-TB, Unit 2 Turbine Building Areas Prefire Plans, Rev. 25
1PFP-RB, Unit 1 Reactor Building Areas Prefire Plans, Rev. 16
0PFP-PBAA, Power Block Auxiliary Areas Prefire Plans, Rev. 25

Work Orders
13475117

Section 1R07: Heat Sink Performance

Procedures
0ENP-2704, Administrative Control of NRC Generic Letter 89-13 Requirements, Rev. 23
0ENP-2705, EDG Jacket Water Heat Exchanger Thermal Performance Testing, Rev. 7
0PM-ACU500, Inspection and Cleaning of RHR / Core Spray Room Aerofin Cooler Air Filters and Coolers, Rev. 15

Condition Reports
734932 740237

Work Orders
2233959 2233799

Miscellaneous
EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines

Section 1R08: Inservice Inspection Activities

Procedures
0PT-90.1, Vessel Internal Component Remote Examinations, Rev. 39
54-ISI-363-007, Remote Underwater In-Vessel Visual Inspection of Reactor Pressure Vessel Internals, Components, and Associated Repairs in Boiling Water Reactors, Rev. 7
54-ISI-69-31, Administrative Procedure for Processing Nondestructive Examination Data, Rev. 31
54-ISI-112-014, Ultrasonic Examination for Thickness Measurement Using Pulse-Echo Techniques, Rev. 14
54-ISI-882-001, Procedure for the Single Line Encoded Phased Array Ultrasonic Examination of BWR Shroud Support Welds from the Reactor Vessel OD, Rev. 1
B222-2015-000, Brunswick Outage B222R1 H9 Ultrasonic Examination Scan Plan, Rev. 4

Condition Reports
735474 735820 736095 737005 737178 738304

Calculations
SA-E11-937, BNP-2 – Flaw Evaluation of RHR System Weld 2E1189-18-SWA, Rev. 0
0RIP-1009, Torus Liner Revised Acceptance Criteria, Rev. 0
0RIP-1013, Drywell Liner Repair, Rev. 8
9527-1-RB-JM-16, Analysis and Design for Linear Plate Structural Calculations, Rev. 0

NDE Examiner Qualifications
NDE Examiner Certification: N. Bauman, J. Breza, G. Chapman, K. Fish, L. Gorel, J. Herold, W. Reid, K. Smith, and C. Williams

Work Orders
01155316-01, Cut out and Replace the Flange on 2-SW-104-14-157
02092727-12, 2-B21-F028A, Install Carbon Junk Ring for Outboard MSIV A

Miscellaneous
180-9236819-000, Brunswick B222R1 Ultrasonic Phased Array Examination of the H9 Shroud Support Weld, dated 3/10/2015
Certificate of Conformance for CB-02-085, Carbon Steel Calibration Block; CB-02-086, Stainless Steel Calibration Block; CB-02-087, 304 Stainless Steel Calibration Block, dated 11/30/2001
Examination Data Report for Metallic Surfaces Item Group DW-ML-5 dated 3/10/2015
Examination Data Report for Metallic Surfaces Item Group SC-ML-BWL (Bay 3) dated 3/22/2015
Examination Data Report for Metallic Surfaces Item Group SC-ML-BWL (Bay 7) dated 3/22/2015
Examination Data Report for Metallic Surfaces Item Group SC-ML-BWL (Bay 11) dated 3/22/2015
UT Calibration/Examination for 2E1189-18-SWA Elbow to Pipe dated 3/8/2015
Welder Certification and Continuity Reports for: J. Brown, J. Dills, P. Gantt, and E. White

Section 1R11: Licensed Operator Requalification
Procedures
2OP-17, RHR System Operating Procedure, Rev. 17
0AOP-15, Loss of Shutdown Cooling, Rev. 30
LOT-GP5-04, Loss of Shutdown Cooling
0PEP-02.1, Initial Emergency Actions, Rev. 52
0OI-01.06, Post Trip Review, Rev. 41
0GP-05, Unit Shutdown, Rev. 172
0GP-06, Cold Shutdown to Refueling (Head Unbolted), Rev. 41
0GP-07, Preparations for Core Alterations, Rev. 59
0GP-08, Refueling to Cold Shutdown, Rev. 48
0GP-12, Power Changes, Rev. 75

Section 1R12: Maintenance Effectiveness
Procedures
AD-MN-ALL-0005, Nuclear Planning, Rev. 7
AD-PI-ALL-0100, Corrective Action Program, Rev. 2
ADM-NGGC-0101, Maintenance Rule Program, Rev. 29

Condition Reports
740651 720215 728302 728621

Work Orders
13479706 13480576 13480575 13480574 13479706

Drawings
0-FP-04357, Unit 1 & 2 Diesel Generator Building Air Supply Johnson Service Company, Rev. J

Miscellaneous
Operations Shift Logs

Section 1R13: Maintenance Risk Assessment and Emergent Work Control
Procedures
0AP-060, Technical Task Risk/Rigor Assessment, Rev. 0
ADM-NGGC-0006, Online EOOS Model, Rev. 8
ADM-NGGC-0104, Work Implementation and Completion, Rev. 50
AD-WC-ALL-0410, Work Activity Integrated Risk Management, Rev. 0
AD-WC-ALL-0200, Online Work Management, Rev. 3
AD-OP-ALL-0201, Protected Equipment, Rev. 0
1OP-32, Condensate and Feedwater System Operating Procedure, Rev. 172
0AOP-23.0, Condensate/Feedwater System Failure, Rev. 41
SD-34, Extraction Steam, Feedwater Heater Drains, Vents, and Level Control System, Rev. 19
0AP-022, BNP Outage Risk Management, Rev. 50
0AP-025, BNP Integrated Scheduling, Rev. 52

Condition Reports
726627 726190 531194

Work Orders
13474969 1340857 2072446

Drawings
BN-34.0.01, Extraction Steam, Rev. 0
D-20035, Moisture Separator Reheater Drain System Piping Diagram, Sheet 1, Rev. 9

Miscellaneous
EOOS Risk Assessment
Plant Operations Logs
ODM: Adverse Trend with Heater Drain Pump Level Control Valves, Rev. 0

Section 1R15: Operability Evaluations
Procedures
2OI-03.2, Reactor Operator Daily Surveillance Report, Rev. 134
OPS-NGGC-1305, Operability Determinations, Rev. 11
0OP-37.4, Diesel Generator Building Heating and Ventilation System Operating Procedure, Rev. 40

Condition Reports
733949 721993 648050 647593 733106 733909

Work Orders
11660615

Drawings
1-FP-82256, Globe Socket Weld Ends Sheet 1, Rev. A
1-FP-82256, Globe Socket Weld Ends Sheet 2, Rev. A
0-FP-06415, 1500# Gate Valves, Rev. 0

Miscellaneous
SD-50.1, 4160 Electrical Distribution System, Rev. 23
BNP-E-7.002, Voltage/Load Flow/Fault Current Study, Rev. 9A
EC 99624

Section 1R18: Plant Modifications

Procedures
0OP-39, Diesel Generator Operating Procedure, Rev. 143
0PT-12.2C, Diesel Generator Monthly Load Test, Rev. 98
0AOP-39.0, Loss of DC power, Rev. 36
0APP-DG-00, Annunciator Procedures for the Local Diesel Generator Panel, Rev. 7
EGR-NGGC-0005, Engineering Change, Rev. 39
REG-NGGC-0010, 10 CFR 50.59 and Selected Regulatory Reviews, Rev. 22

Condition Reports

738526	738522	738314	738270	738228	738220
737167	737155	736810	736726	736775	

Work Orders
1348839

Drawings
0-FP-02788, Diesel Generator Wiring Diagram, Rev. D
0-FP-02913, Dual Unit Generator Control Panel Layout, Rev B
0-FP-20408, Flywheel & Generator Shaft Assembly
F-09347, Diesel Generator No. 3 Circuits Control Wiring, Rev. 38

Miscellaneous
EC 79468
EC 97231
EC 70989
005-011, Seismic Design Criteria, Rev. 6
MPR Associates, Brunswick EDG 3 Transient Performance Summary Following Margin Improvement Modifications, Rev. 0

Section 1R19: Post Maintenance Testing

Procedures
OCM-VCK524, BNL Industries in line check valves, Rev. 6
0MST-DG13R, DG-3 Loading Test, Rev. 19
MNT-NGGC-0010, Use of Teledyne Equipment for MOV Testing, Rev. 3
0PLP-20, Post-Maintenance Testing Program, Rev. 45

Condition Reports

721993	737167	737155	736810	736726	736775

Work Orders

13394477	13499886	1374781	2229993	13354886	2224415

Drawings
D-02266 Starting Air for Diesel Generators Diesel Generator No. 4, Rev. 0
LL-9255 Sheet 24

Miscellaneous
EC 90388, FLEX Diesel Roof Sealing System PMT

Section 1R20: Outage Activities

Procedures
0OI-01.06, Post Trip Review, Rev. 41
0GP-05, Unit Shutdown, Rev. 172
0GP-06, Cold Shutdown to Refueling (Head Unbolted), Rev. 41
0GP-07, Preparations for Core Alterations, Rev. 59
0GP-08, Refueling to Cold Shutdown, Rev. 48
0GP-12, Power Changes, Rev. 75
0MMM-015, Operation and Inspection of Cranes and Material Handling Equipment, Rev. 62
0SMP-RPV501, Reactor Vessel Disassembly, Rev. 29
0ENP-54, Building Ventilation Pressure Control Program, Rev. 32
2SP-15-101, Unit 2 Enforcement Guidance Memorandum 11-003 Operations with the Potential for Draining the Reactor Vessel (OPDRV) Activities, Expires 12-31-15, Rev. 0
0ENP-24.0, Reactor Engineering Guidelines, Rev. 61
0AP-022, BNP Outage Risk Management, Rev. 48

Condition Reports

738016	734902	736148	736634	735945	736052
736034	736638	735497	735667	735400	735349
735291	734963	735047	735082	735086	735133
735124	734292	734222	733934	733866	730272
414234	414319	414208	414215	414213	459323
738148					

Work Orders

2233959	2233799	1908778	13371472	2041602	13503349
2222517	13319423				

Miscellaneous
Daily Outage Reports
Daily Key Safety Function Status Sheets
Daily Risk Profiles
Crew Turnover Reports
Fatigue Rule Management
List of OPDRVs
Mode Change Checklists

Progress Reporter Schedule
Outage Risk Assessment
NRC EGM 11-003, Rev. 2, Dispositioning Boiling Water Reactor Licensee Noncompliance with Technical Specification Containment Requirements during OPDRVs
Operator Logs
List of Outage Modifications

Section 1R22: Surveillance Testing

Procedures

0MST-SRM23R, SRM Channel B Calibration and Functional Testing, Rev. 9
0SMP-RPV502, Reactor Vessel Reassembly, Rev. 34
0PT-20.5, Integrated Primary Containment Leak Rate Test, Rev. 52
0PT-80.1, Reactor Pressure Vessel American Society of Mechanical Engineers Section XI Pressure Test, Rev. 69
2MST-RHR41BR, RHR – LPCI Loop B Logic System Functional Test, Rev. 3
2PT-24.1-2, SW Pump and Discharge Valve Operability Test, Rev. 76
1OP-19, High Pressure Coolant System Operating Procedure, Rev. 93

Condition Reports

740240 741171 741173 741193 734945

Work Orders

2247857 2233959 2247857

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures

0AI-112, Control of Materials in Spent Fuel Pool, Rev. 24
AD-RP-ALL-2017, Access Controls for High, Locked High, and Very High Radiation Areas, Rev. 0
AD-RP-ALL-2005, Posting of Radiological Hazards, Rev. 1
AD-RP-ALL-2014, Work in Alpha Environments, Rev. 1
0E&RC-0215, Removal of Materials from the Radiological Control Area, Rev. 50
AD-PI-ALL-0100, Corrective Action Program, Rev. 2

Condition Reports

678239 672261 672590 673460 738968 738774

Miscellaneous

Radwaste Database Change Request, Sheet 1 of 1, Form 36, HPS-NGGC-0001, Rev. 31, Update DAW Waste Stream and DAW Waste Types with 2014 Sample Data, 09/18/14
BNP Plant Characterization for Alpha Zones, 2015
Sealed Source Leak Test List, 8/13/14 – 8/25/14
Confirmation of Annual NSTS Inventory Reconciliation, Dated 01/12/15
Description of Materials in Spent Fuel Pool, Unit 1, Work Order 13337467
RWP 2605, U2 RWCU System Maintenance, Rev. 1
RWP 2575, Torus Diving Activities, Rev. 0
RWP 2508, DW – Refuel Floor Support, 117 IVVI H9 Welds, Rev. 1
RWP 2523, DW – CRD Activities, Rev. 0
RWP 2590, U2 ISI Inspections (Multibadging), Rev. 0

Radiological Survey BNP-M-20150308, 2RB 50' RWCU Pump Room A Job Coverage
Radiological Survey BNP-M-20141202-6, Control Room Direct Frisk Survey
Radiological Survey 021915-007, Survey of ISFSI Area
Radiological Survey 030815-032, U2 177' Refuel Floor Gator Pit Air Sample
Radiological Survey 030915-014, U2 177' Refuel Floor Gator Pit Air Sample
Radiological Survey BNP-M-20150309-2, U2 177' Refuel Floor
Radiological Survey BNP-M-20150309-6, U2 177' Refuel Floor
Radiological Survey BNP-M-20150308-7, U2 177' Refuel Floor
Radiological Survey BNP-M-20150228-5, 2RB 50' RWCU Clearance for Drain Down
Radiological Survey BNP-M-20150223-20, 2RB 0' Torus Initial Inboard Underwater Survey
Radiological Survey BNP-M-20150224-14, 2DW Under Vessel
Radiological Survey BNP-M-20150227-30, 2DW Under Vessel
Radiological Survey 030215.047, Post Insulation Removed From N8B Survey
Radiological Survey BNP-M-20150225-17, U2 DW Multiple Elevation Survey
Radiological Survey BNP-M-20140825-6, 1RB 50' RWCU Heat Exchanger Room
Radiological Survey BNP-M-20140820-3, 1RB 50' RWCU Heat Exchanger Room
Quick Hitter Self-Assessment Report 723996, HRA Controls, 12/1/14 – 12/16/14

Section 2RS2: Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls

Procedures
AD-RP-ALL-9001, ALARA Planning, Rev. 0
AD-RP-ALL-9000, ALARA Program, Rev. 1
0AI-90, Cobalt Reduction Program, Rev. 3

Condition Reports

623123	635259	645109	671827	673346	681030
703869	706947	712207			

Miscellaneous
2014 ACRE Site Challenge Budget vs. Actual Graph
2015 ACRE Site Challenge Budget vs. Actual Graph (up to 3/18/15)
U2 BRAC Graph (dose rate trend), 1999-2015
ALARA Committee Meeting Minutes, 3/2/15
ALARA Updates, 3/16/15, 3/18/15, and 3/19/15
ALARA Work Plan 2262, CRDM Exchange, Rev. 15
ALARA Work Plan 2280, Refuel Floor Flood Up Activities for B222R1, Rev. 15
ALARA Work Plan 2300, B222R1 U2 Torus De-sludge, Inspection, and Repair, Rev. 15
Brunswick Nuclear Plant Five Year ALARA Plan, 10/30/13
Radiological Survey No. BNP-M-20130304-13, DW 38', 3/4/13
Radiological Survey No. BNP-M-20150225-17, DW 38', 2/25/15
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